Environmental Assessment

For the Normal Year Fire Rehabilitation Plan

EA No. NV-020- 04-21

United States
Department
of the Interior

Bureau of Land
Management

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North Fork of the Little Humboldt River Valley View of the Kelly Creek Fire 2002.
Photograph by Terri Barton

1 Introduction

In accordance with the National Environmental Policy Act (NEPA), the Bureau of Land Management (BLM), Winnemucca Field Office (WFO) has prepared this Normal Year Fire Rehabilitation Plan (NFRP) to analyze impacts to the human environment from Emergency Stabilization and Rehabilitation (ESR) treatments designed to mitigate the detrimental effects of wild land fire. The intent of this Programmatic Environmental Assessment (PEA) is to examine the anticipated environmental consequences of implementing, individually or in combination, 10 different types of ESR treatments. In addition, the NFRP examines the environmental consequences of taking a no intervention action toward stabilization and rehabilitation. Under this alternative, burned areas would be allowed to rejuvenate naturally and multiple resource use would continue unchanged.

The proactive, programmatic approach to environmental assessment represents a departure from former ESR NEPA compliance procedure. The first NFRP was completed in 1986, revised 1987 and revised in 1994. Since 2000, each ESR project proposed by the WFO has required the preparation of a separate environmental assessment (EA). Given that, on average, approximately 94 wild fires occur within the administrative boundary of the WFO each year, the project-specific approach to the assessment of environmental impacts has proven to be a protracted, repetitive exercise, inconsistent with the urgent nature of ESR.

Under a programmatic approach, a single, landscape-scale PEA is prepared. Each ESR proposal would be then assessed and appropriate treatment method(s) recommended contained within the PEA. Every proposal would then be evaluated site-specifically based upon the analysis in the PEA to ensure NEPA compliance. Where applicable, a separate Decision Record would be issued for individual projects. If the treatments identified in a ESR proposal are unusual and are not consistent with the treatments in the PEA, then a stand alone EA or EIS would be prepared for the proposal.

This programmatic approach streamlines the NEPA compliance process and enables the WFO to shorten timeframes between the initiation of proposals and the completion of treatments. Shorter timeframes will, in turn, translate into increased success of stabilization and rehabilitation efforts and decreased impacts to important resource values.

1.1 Purpose & Need

During the past ten years (1992-2002) wild land fires have burned approximately 1.5 million acres of public land administered by the WFO Office (Table 1). It is estimated that fires have impacted approximately 20 percent of the native vegetative communities within the WFO administrative boundary (See Map 10.2). These impacts include a reduction in habitat for a wide variety of plant and animal species and a loss of forage base for livestock. This results in negative economic consequences for grazing permittees, and an increase in denuded and scorched landscapes. This creates a condition

that facilitates wind and water erosion and promotes the invasion of noxious or non-native plant species.

Table 1. WFO Fire History

FIRE YEAR	NUMBER OF FIRES	ACRES
1992	66	12,046
1993	50	2,781
1994	60	34,390
1995	101	38,707
1996	145	332,362
1997	80	25,576
1998	58	26,693
1999	151	640,080
2000	83	222,276
2001	96	214,637
2002	48	14,945
TOTAL	938	1,564,493

The Winnemucca Field Office (WFO) has established the ESR program to mitigate these adverse effects to resources from wild fire. The ESR program has eight principal objectives:

1) To promptly stabilize and prevent further degradation to affected resources on lands within a fire perimeter.

2) To repair damages caused by fire suppression operations in accordance with approved land management plans, regulations, policies, and all relevant federal, state, and local laws.

3) Prevent losses of private structures and property on public lands.

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

5) To repair or improve lands damaged directly by the wild land fire and unlikely to recover naturally from severe fire damage by emulating historic or pre-fire ecosystem structure, function, diversity, and dynamics.

6) To restore and/or establish healthy, stable ecosystems in the burned area, even if these ecosystems cannot fully emulate historic or pre-fire condition.

7) To restore sagebrush habitats that fall within sage-grouse/sagebrush obligate species use areas.

8) Deter the establishment and spread of noxious and invasive species.

A wide array of treatment options and/or actions would be considered to attain these objectives.

1.2 Management Decisions

In accordance with the National Environmental Policy Act (NEPA), this PEA would be used by the authorized officer to determine the environmental effects of proposed ESR management actions and alternatives. In addition, the authorized officer would determine if there are significant impacts to the human environment due to the implementation of the proposed action and alternatives that would require the preparation of an environmental impact statement (EIS) under Section 102 of NEPA. Upon completion of this PEA, the authorized officer would issue a finding of no significant impact (FONSI) or determine an EIS is necessary. If no EIS is required, a separate Decision Record/FONSI would be issued.

1.3 Area Covered by the NFRP

The area encompasses public lands administered by the WFO, totaling approximately 8.5 million acres. This total includes lands designated as Wilderness Study Areas (520,502 acres), Wilderness Areas (751,844 acres), Areas of Critical Environmental Concern (2,137 acres), Instant Study Areas and the Black Rock Desert High Rock Canyon Emigrant Trails National Conservation Area (815,068 acres).

1.4 Issues

Based on public comments received on past ESR EA's and input from BLM staff specialists, the following issues have been identified:

- How can native species be re-established?
- How will special status species habitats be re-established?
- How will air quality be maintained?
- How will wind and water erosion be reduced?
- How and when will range closures be implemented?
- How can the failure of past fire rehabilitation efforts be avoided in the future?

1.5 Relationship to BLM Plans and Policies

Land Use Plan Conformance

The proposed action of this PEA is in conformance with the Paradise-Denio and Sonoma-Gerlach Management Framework Plans (MFPs), and is consistent with federal, state, and local laws, regulations, and plans.

The proposed action is consistent with the pending Resource Management Plan for the Black Rock Desert High Rock Canyon Emigrant Trails National Conservation Area and Associated Wilderness Areas.

Policy

The proposed action is also consistent with the Standards and Guidelines for Rangeland Health. These Standards and Guidelines include guidance relative to the reestablishment of native vegetative communities, range closure, the abatement of noxious weeds, and the establishment of cooperate agreements in pursuit of ESR objectives. CFR 4180.2 (e) (11) and (12) provides guidance on reestablishment of native and introduced vegetative communities.

2 Proposed Action and Alternatives

2.1 Process

The ESR process requires the following once a wild fire is controlled:

- Establishment of Interdisciplinary Team to include, but not limited to, a Soil Scientist, Wildlife Biologist, Fisheries Biologist, Realty Specialist, Rangeland Management Specialist, Fire Ecologist, Wild Horse/Burro Specialist, Hydrologist, Wilderness Specialist, and Archaeologist.

- Evaluate damage to resources and recommend ESR treatments.

- Consult with US Fish and Wildlife Service on ESR projects which effect federally Threatened, Endangered, Proposed, or Candidate species or their critical habitat.

- Complete ESR proposal/funding request and conformance with NEPA.

2.2 Alternative 1: Proposed Action

The proposed action consists of a variety of emergency stabilization and rehabilitation treatments, any combination of which would be considered for a given burned area. In the course of implementing the proposed action, the attached Standard Operating Procedures (SOP's) would be followed (Appendix 6.1).

2.2.1 Emergency Stabilization treatment options and/or actions:

Emergency stabilization activities are conducted in the immediate post-suppression context and ordinarily have the objective of preventing or arresting the adverse effects of wind and water erosion in the first year after the fire. Four emergency stabilization treatments would be considered:

2.2.1.1 Treatment 1S – Dozer line stabilization

Dozer lines constructed during fire suppression efforts can be subject to soil erosion and invasion by nonnative weeds. Using heavy equipment (dozers, graders) treatments to minimize erosion and weed invasion would normally include re-contouring of dozer lines by pulling bladed materials

back over bare areas, leveling berms, and constructing water bars in areas of steep topography. The seeding treatment would be completed by broadcasting seed via helicopter, ATV, pickup, by hand, or with heavy equipment.

2.2.1.2 Treatment 2S – Road repair

The stabilization of existing roads damaged during fire suppression activities would be necessary to provide safe access and avoid the formation of potholes, gullies, and ponds. Damaged roads would often require reestablishment of the road prisms. Road repairs would be completed to bureau specifications. Road repair is not intended to improve damaged roads beyond pre-existing conditions, but rather to reestablish drainage and surface requirements for public safety.

2.2.1.3 Treatment 3S – Construction of erosion or sediment control structures

Construction of erosion or sediment control structures would be considered on burned areas where the potential to impact water quality or damage private property is high. Types of erosion or sediment control structures include excelsior mulch fabric, straw bale check dams, and straw wattles. All structures would be inspected annually up to three years following the fire to determine their condition and evaluate their effectiveness.

2.2.1.4 Treatment 4S – Range Improvements and Facilities

Range improvements damaged as a result of fire or fire suppression activity would be replaced or repaired to bureau specifications.

Public facilities including troughs, picnic tables, buildings, kiosks or any other structure located on public land that was damaged by suppression activities would be repaired or replaced as needed.

2.2.2 Rehabilitation treatment options and/or actions:

Rehabilitation activities have the longer-term goal of repairing and improving lands that require intervention to return them to a healthy state. Six rehabilitation treatment techniques would be considered:

2.2.2.1 Treatment 1R – Natural Re-vegetation.

This treatment would be considered for burned areas that have the potential for natural recovery due to the presence of surviving perennial plants or a sufficient seed source. Areas selected for natural recovery

would be closed to livestock, wild horses and burros. These animals would be removed or excluded from burned areas until rehabilitation objectives have been met.

2.2.2.2 Treatment 2R – Seeding

The application of seed mixtures would be considered in areas lacking potential for natural recovery and where favorable topography, soil, and precipitation characteristics exist.

Seed mixtures would be tailored for individual burn areas. Seeding rates would range from 20 to 40 pure live seeds (PLS) per square foot. All seed would be tested for purity, germination, noxious, poisonous and/or prohibited plant species. All seeded species will meet the current year bureau specifications.

Seed may be treated with a water soluble fertilizer coating to promote germination and root development. In general, these fertilizers consist of three percent nitrogen, eight percent phosphate, and three percent potassium.

The use of Micorrhizae innoculatives may also be considered to promote the establishment of seeded species.

One or more of the following seeding techniques would be used:

- Drill seeding would be used on slopes of 0 to 25 percent. Drills would be run perpendicular to slopes to prevent the formation of rills and gullies. Drills would be run parallel to state and interstate highways to lessen the potential for wind erosion.

- Aerial seeding would be considered for areas of greater than 25 percent slope or areas otherwise unsuitable for seeding via drills.

- Broadcast seeding would be considered as an alternative to aerial seeding when the area is small, making other methods impractical. This technique is commonly used for seeding dozer lines and archaeological sites avoided by ground disturbing methods such as drilling.

- Chaining would be considered on aerial and broadcast seeded areas when soil types and topography are favorable. The success of aerial and broadcast seeding can be increased by covering the seed with soil by chaining.

2.2.2.3 Treatment 3R – Closure

This treatment is usually implemented to allow either natural vegetation or seeded species to (re)establish after a wild fire. Closure usually involves the construction of fencing to exclude livestock, wild horses and burros from the affected area. Once natural vegetation and seeded species have established, fences would be evaluated for future management and removed if not needed. For more specific information on the release of closures, see Monitoring (Section 2.2.3) and WFO Standard Operating Procedures (Appendix 6.1).

2.2.2.4 Treatment 4R – Replacement of Burned Facilities

Public facilities including troughs, picnic tables, buildings, kiosks, fences and/or other structures located on public lands would be repaired or replaced as needed.

2.2.2.5 Treatment 5R – Greenstripping

Greenstrips are long, narrow vegetative fuelbreaks (generally 150 to 300 feet wide) composed of seeded fire resistant or fire tolerant plant species. In order to implement the treatment, existing seed beds are broken up by discing and/or mowing. The method of seeding would include drill seeding. Greenstrips are placed in strategic locations designed to protect the maximum amount of resource value.

2.2.2.6 Treatment 6R – Nonnative weed control

Noxious weed infestations existing within or in proximity to burned areas have the potential to spread and compete with perennial species. This treatment would include surveys of burned areas at risk of weed invasion and the use of integrated pest management techniques (herbicides, biological, mechanical and other control methods) to control any detected invasions. Existing impact analysis specific to the WFO can be found in the Programmatic Environmental Assessment of Integrated Weed Management, EA# NV-020-02-19.

Noxious weed control projects on land administered by the WFO are coordinated with other federal, state, tribal, county agencies and other organizations. Partnerships have been developed with the USFS, NRCS, Shoshone-Paiute Tribes, Humboldt, Pershing and Washoe Counties, NDF, Humboldt County Weed Task Force, Paradise Valley Weed District, and two recently established Cooperative Weed Management Areas (CWMAs): Gerlach and Pershing County CWMAs.

2.2.3 Monitoring

Monitoring would be conducted both as a quality control measure at the implementation phase of a treatment(s) and as a means to evaluate the treatment(s) effectiveness. Implementation monitoring is conducted by an assigned Project Inspector (PI) whose role is to ensure that a given treatment is implemented to the standards presented in the proposal or, if it has not, determine the extent of additional work required to achieve proposal standards.

Effectiveness monitoring, on the other hand, is undertaken to evaluate whether the implemented treatment has had the intended effect (the monitoring of treatments may be conducted up to 3 years following control of a wild fire). The intensity of monitoring required to evaluate effectiveness varies widely between the treatments. For example, all of the stabilization treatments (Treatments 1S through 4S) and one of the rehabilitation treatments (Treatment 4R) will either require little monitoring beyond implementation or will necessitate no more than informal, periodic inspection.

In contrast, those treatments associated with either natural revegetation or seedings (Treatments 1R-3R, 5R) will often require longer-term effectiveness monitoring employing some form of systematic, qualitative or quantitative measurement.

Of particular relevance in the WFO is effectiveness monitoring as it relates to grazing or range closure (Treatment 3R). This treatment is usually implemented to allow either natural vegetation or seeded species to (re)establish after a wild fire. In order to justify a release from closure, there must be sufficient data to indicate that these treatments have been successful. Toward this end, effectiveness monitoring activities are oriented toward addressing the following questions:

- Have the desirable species been successfully established and do they provide sufficient cover to adequately protect the site from soil erosion?

- Is there evidence that a self-sustaining community has been established?

- Are vegetative reproduction (e.g. rhizomes) and establishment of the desirable seeded species occurring?

These questions are addressed by comparing the treated area to adjacent, unburned reference areas. The goal is to approximate the percentage of perennial plant cover in the reference area, thereby emulating a pre-burn condition. For areas where existing vegetative types adjacent to the burn areas are severely disturbed, the appropriate ecological or range site descriptions would be used for comparative purposes.

In order to quantify the comparisons, effectiveness monitors would use sampling methodologies presented in BLM Technical Reference 1734-4 (BLM 1996).

Once the area has attained the requisite percentage of ground cover, an interdisciplinary team could recommend the release of the area from closure. The release criteria for closure may require specific release standards for individual plant species or vegetative types, for example, willows and aspen.

2.3 Alternative 2: No Action

Under this alternative, no ESR treatment options and/or actions would be initiated in burned areas on public lands administered by the WFO. All natural resources damaged by fires would be left to the processes of natural rehabilitation. Livestock grazing would be authorized as outlined in the current term grazing permit and no deferment or rest would be required. All resource uses would continue as if the fire did not occur.

3 Affected Environment

After a wild land fire, burned areas are greatly altered from their pre-burn condition and may include burned vegetation, scorched soils and little remaining wildlife habitat. More intensively burned areas may be completely denuded of vegetation, desiccated, destabilized, and water sources within burned areas impacted by sedimentation after the fire.

Because the precise nature of post-burn resource impacts is unknown, this section describes the affected environment both in its present, pre-burn condition and its potential state after a wild fire. The intent is to provide a context to understand the environmental consequences of implementing the proposed action and alternatives.

A variety of laws, regulations, executive orders, and policy directives mandate that the effects of a proposed action and alternative(s) on certain critical environmental elements be considered. Not all of the critical elements that require inclusion in this PEA will be present, or if they are present, may not be affected by the proposed action and alternatives (Table 2). Only those mandatory critical elements that are present and affected are including in the subsequent analysis.

In addition to the mandatory critical elements, there are additional resources that require impact analysis relative to the proposed action and alternatives. These are presented in Section 3.2, Additional Affected Resources.

3.1 Critical Environmental Elements

The following critical elements of the human environment are subject to requirements specified in statute, regulations, or executive order. Those elements present within the project area have been analyzed in this EA; all others have not been further evaluated.

Table 2. Critical Elements of the Human Environment.

Critical Elements	Present	Affected		Sections	Critical Elements	Present	Affected		Sections
		Yes	No				Yes	No	
Air Quality	X	X		3.2	Nat. Amer. Rel. Concerns	X	X		3.4.1
ACEC's	X		X		T & E Species	X	X		3.9
Cultural Resources	X	X		3.4	Wastes, Hazardous/Solid			X	
Environmental Justice			X		Water Quality	X	X		3.6.4
Farmlands, Prime/Unique			X		Wetlands/ Riparian Zones	X	X		3.6
Floodplains			X		Wild & Scenic Rivers			X	
Invasive, Nonnative Species	X	X		3.5	Wilderness/ Wilderness Study Areas				
Migratory Birds	X	X		3.10.3		X	X		3.8

3.2 Air Quality

Meteorological data from Winnemucca, Valmy and mines in northern Nevada indicate average winds of 8-10 miles per hour, with wind directions showing a general bimodal distribution. The primary mode is south-southwesterly during the summer months. The secondary mode is north-northeasterly during the winter. The ground level wind directions in Nevada are locally modified by the north/south trending mountain ranges and valleys of the Basin and Range topography of the region.

Presently, the air quality on lands administered by the WFO is good except for periods during late spring, summer, and early fall when particulate concentrations (dust) become excessive. Windborne dust from west-southwesterly winds blowing across the Black Rock Desert in late spring, summer, and early fall causes a degradation of air quality in the region. Dust generated in the Black Rock Desert is carried across the state, reaching as far east as Elko during severe low-pressure disturbances.

During winter, stagnating air masses called anticyclones often remain over the region for two or more days preventing vertical atmosphere movement and thus causing atmospheric mixing depths to remain shallow. This condition is prevalent over Nevada from November through January. These conditions, coupled with generally light winds, tend to allow air pollution to accumulate. However, because the area is virtually undeveloped and has few sources of pollution, these meteorological conditions cause little impact on the air quality in the area. In future years, other pollutant sources may become important particularly if industrialization or population increases occur within the

area. There is also the possibility of outside emission sources affecting the ambient air quality of the area.

Periodic wild fires emit particulate matter (smoke) into the air, producing noticeable deterioration of air quality within the area. Burned areas are exposed to wind erosion, which suspends ash and soil particles that decrease air quality.

3.3 Areas of Critical Environmental Concern (ACEC's)

Two ACEC's are located within the administrative boundary of the WFO; the Soldier Meadows-Desert Dace ACEC and the Osgood Mountain Milkvetch ACEC. The Soldier Meadows-Desert Dace ACEC encompasses approximately 2077 acres, while the Osgood Mountain Milkvetch ACEC is approximately 60 acres. The Soldier Meadows-Desert Dace ACEC is home to a federally listed threatened species, the desert dace (*Eremichthys acros*), and its federally designated control habitat. The Basalt Cinquefoil (*Potentilla basaltica*), a federally listed plant species and the Elongate mud meadow springsnail (p. noticola) a federally listed candidate snail also occurs in the ACEC. The numerous hot springs in the area may also contain habitat for several species of hydrobiid snails. The Osgood Mountain Milkvetch ACEC is habitat for the Osgood Mountain Milkvetch (*Astragalus yoder-williamsii*), state listed as critically endangered.

Both ACECs have sparse vegetation and it is unlikely that wildfires could burn more than small patches within the habitats of the species that the ACECs are designed to protect.

3.4 Cultural Resources

At present, approximately 500,000 acres or about 5 percent of the land administered by the WFO have been surveyed for cultural resources. These surveys have resulted in the documentation of approximately 6,000 archaeological sites. Prehistoric archaeological resources documented on lands administered by the WFO vary widely in size, location, and degrees of complexity. Amongst these resources are base camps, temporary camps, rock shelters, hunting blinds, toolstone quarries, and petroglyph sites that represent the remains of human habitation dating from perhaps 10,000 to approximately 150 years ago. In addition to the vast depth of time represented by these resources, a wide breadth of behaviors are also indicated, including hunting and gathering, tool manufacture, trade and exchange, and spirituality.

Similarly, historic period sites indicate a considerable amount of variation reflective of activities that attracted people to the region. Mining and mining-related sites, historic trails, freight and stage roads, ranches and ranching-related facilities, and towns are all represented within the area managed by the WFO.

While archaeologists have studied some aspects of these activities, many more are not well understood. The evaluation of these sites indicates that many contain information that can be used to address questions that can aid in our understanding of these lesser-known aspects of past human behavior. Further inventory will undoubtedly reveal the

existence of many more properties of important research value. In most cases, they are the only sources of information available to archaeologists in their efforts to understand the past and are, thus, valuable non-renewable resources.

Wildland fire is likely to degrade these resources. During a fire, wooden and other perishable artifacts are consumed, petroglyphs can become smudged or spalled, and datable materials, such as charcoal and obsidian, can become altered.

The construction of dozer and hand lines, the clearing of safety zones and base camps, and the movement of personnel and equipment can create a large amount of ground disturbance that has the potential to destroy or displace artifacts and features, disrupt intact and datable deposits and, in its most severe form, completely obliterate the resource.

In addition, bare ground created by the consumption of vegetation greatly increases ground surface visibility making archaeological resources susceptible to unauthorized collection, and increases their vulnerability to wind and water erosion.

3.5 Native American Religious Concerns

The Winnemucca District lies within the traditional territory of Northern Paiute, and to a lesser extent, Western Shoshone peoples. At the present time, only a handful of properties within the district are known to be places of traditional or religious importance to these groups. These properties range from topographic features such as mountains, vistas, hot springs and traditional use areas to more specific locations such as burial grounds, prayer rocks, and vision quest sites. These locations are the embodiment of the beliefs and traditions of local and regional native cultural groups and, thus, merit consideration and respect with regard to ESR planning.

It is difficult to estimate the potential consequences of wild fire on places of Native American traditional or religious importance since the term can potentially encompass a wide range of property types. For example, if a traditional pinyon nut gathering grove is completely consumed by wildfire, then the effect can be considered devastating and irreversible. If, on the other hand, a mountain, vista or vision quest site burns, the effect may be considered relatively minor and transitory as long as native plant species are reestablished.

3.6 Noxious Weeds

Noxious weeds are non-native invasive plants that are fast-spreading, expensive to treat and difficult to control. When introduced to an area, noxious weeds can quickly dominate native species, particularly when their populations are uncontrolled. In severe cases, they can proliferate to such a degree that plant species beneficial to wildlife and livestock can be eradicated. Noxious weed species are not generally eaten by wildlife or livestock as their thorns, spines, and/or chemical context render them unpalatable.

Noxious weeds are spread from infested areas by the activities of people, equipment, wildlife and livestock, and by natural processes such as the wind. The potential for additional weed infestations grows proportionally with increases in human activities such as mining, oil and gas exploration, road maintenance, grazing, and recreational activities, primarily off-road vehicle use.

The potential for weed infestations is high after a wild fire. Although existing noxious weeds would initially be consumed, the lack of competition from other plant species can allow weeds to become established. In addition, ground disturbance associated with fire suppression activities and the deposition of noxious weed seeds by dozer and other suppression equipment can promote infestation.

In recognition of the noxious weed problem, several Federal and State laws have authorized the control of noxious weeds on public land under their administrative jurisdiction (e.g., The Federal Insecticide, Fungicide and Rodenticide Act (1972); Federal Noxious Weed Act (1974); FLPMA (1976); Public Rangelands Improvement Act (1978); and Chapter 555.05 of the Nevada Revised Statues).

In response to these mandates, the WFO conducts ongoing inventories of noxious weeds through both contract and in-house personnel. The species that have been documented to date are shown in Table 3. Once their locations are documented, control and eradication measures are planned and implemented.

Treatments have been completed or are planned for several of the most problematic species, including leafy spurge, perennial pepperweed, scotch thistle, whitetop or hoary cress, and yellow star thistle. These treatments, which are conducted in conjunction with the Nevada Department of Agriculture, are completed by both contract and field office personnel certified as pesticide applicators.

Table 3. Noxious Weed Species known to be Present

Common Name	Scientific Name
Poison Hemlock	*Conium maculatum*
Russian Knapweed	*Acroptilon repens*
Spotted Knapweed	*Centaria maculosa*
Leafy Spurge	*Euphorbia elsua*
Medusahead	*Taeniatherum caput-medusae*
White Top or Hoary Cress	*Cardaria draba*
Puncturevine	*Tribulus terrestris*
Salt Cedar (Tamarisk)	*Tamarix ramosissima*
Canada Thistle	*Circium arvense*
Musk Thistle	*Cardus nutans*
Scotch Thistle	*Onopordum acanthium*
Yellow Star Thistle	*Centaria solstitalis*
Perennial Pepperweed	*Tamiarix ramosissima*

3.7 Water Resources

Surface Water

The majority of the land administered by the WFO is influenced by the rain shadow affect created by the Sierra Nevada Mountains. Average precipitation varies between 5-25 inches, with the majority being received as snow during the months of November through March. Numerous small mountain streams flow within the area, many of which are perennial within their respective headwaters.

The majority of stream flow occurs during the spring in direct response to the melting of the snow pack. Typical stream flow originates at the upper elevations and enters the stream by way of overland flow and shallow groundwater discharge (interflow). As this flow exits the mountain block and moves onto the alluvial fan, the surface expression is quickly lost as it infiltrates into the valley fill aquifers. Riparian vegetation exists in the mountainous areas prior to the water being lost as recharge to the alluvial aquifer.
There are approximately 850 miles of perennial streams on lands administered by the WFO. There are three primary drainage features that are perennial on their respective valley floors. These are the Quinn, Owyhee, and Humboldt Rivers.

Springs

There are numerous springs within the Winnemucca District. Perched or contact springs are the most common type of spring encountered. The source water for these springs is infiltrating precipitation that has been captured and concentrated in areas where fractured or unconsolidated material is underlain by less permeable material (aquitards) that inhibit the downward migration of water. These springs emanate at locations where the aquitard intersects the surface of the ground and the "perched" water seeps out. These springs are not directly connected with the surrounding water table and are generally unaffected by groundwater flow. A less common, but ecologically and culturally significant spring that is encountered is the thermal spring. These springs are surface expressions of geothermal resources.

Groundwater

Mountains on lands administered by the Winnemucca Field Office expose bedrock, which is usually igneous, intrusive or extrusive, but may locally, consist of consolidated sediments. Materials eroded from the mountains fill the basins formed with unconsolidated sediments, which range from coarse gravels to clays. The valley fill sediments may be associated with alluvial deposits or lake deposits. While alluvial fan deposits define the mountain/valley boundary at land surface, the structural boundary is defined by normal faults, which formed the mountains. All of these geologic elements are significant in the groundwater regime of the region.

Welch and Preissler (1990) describe a model of groundwater flow for the Black Rock Desert that is typical of basins in the region. The greater portion of precipitation and recharge occurs in higher elevations owing to orographic effects. High evapotranspiration rates on the valley floor generally overwhelm precipitation and little recharge is thought to occur through the valley fill sediments. Precipitation in the mountains infiltrates the

bedrock or flows from the mountain block and infiltrates as stream channels across mountain front faults or at the apex of alluvial fans. Recharged waters flow through fractures and faults in the bedrock and from the bedrock to the valley fill. Ground water in the valley fill may rise to near ground surface and discharge as evapotranspiration or it may flow in the subsurface to an adjacent basin. Groundwater may also discharge as spring flow when geologic and hydraulic conditions force water upward to land surface.

Water Quality

The physical and chemical character of a natural water source is determined by the mineral content of contacted rock and local land use practices. Processes and conditions which influence the concentration of dissolved constituents include contact time between water and rock-forming minerals, evaporation and evapotranspiration, and temperature. Precipitation, because it has not yet come in contact with geologic materials, typically has very low concentrations of dissolved minerals and is considered to be of very good quality. The contact time between precipitation runoff and rock minerals is short for water in streams and lakes at higher elevations where precipitation is most common. Generally, these waters also have low concentrations of dissolved minerals and are considered good quality.

Groundwater moves relatively slowly through rocks that comprise an aquifer and therefore, has greater potential to dissolve minerals. Greater distance from the recharge area implies greater contact time between groundwater and the aquifer rocks. As a result, groundwater chemistry at discharge areas generally exhibit somewhat higher concentrations of dissolved minerals and is of lesser quality than water in the recharge area. Evaporation and evapotranspiration can have a significant impact on water quality. Because these processes remove water molecules from the source but leave dissolved minerals, the concentration of dissolved minerals increases in the water that remains. Groundwater that rises to near ground surface, and is subject to evaporation and evapotranspiration, has increased concentrations of dissolved minerals. This process results in the formation of playas, which are common in the western half of the Winnemucca District.

Wild land fire has the potential to alter water quality by increasing sedimentation and turbidity, increasing stream temperatures, and increasing concentrations of nutrients resulting from surface runoff. These affects, which can decrease both on-site and off-site water quality, may be either short or long lived. For example, decreased water quality associated with sedimentation appears to be relatively short-lived on level ground, but increased sediment yields may persist for months, even years, on steep slopes.

Stream temperatures may increase after the fire occurs due to the removal of protective vegetation, a condition may be adverse to some cold water aquatic species. Slightly increased concentrations of nitrogen, phosphorus, and some cations, coupled with increased water temperatures, may contribute to euthrophication or algal blooms that could last as long as one or two years.

Riparian Areas and Wetlands

Riparian areas consist of plant communities associated with streams. The structure, food, and water provided in riparian areas make them the single most diverse and productive habitat for wildlife. However, they represent less than one percent of the lands managed by the WFO. Where site potential allows, multi-canopy riparian areas with trees, shrubs, grasses, forbs, sedges, and rushes are exceptionally valuable as habitat for a wide array of wildlife species. Riparian areas dominated by herbaceous communities and with low potential for multi-canopy structure are nevertheless important as water and succulent food sources for wildlife. The presence of multiple-aged classes of woody and herbaceous vegetation is generally indicative of healthy wildlife habitat conditions.

Other permanently wet or seasonally wet areas, typically called wetlands, include reservoirs, vegetated playas, meadows, springs, and seeps. They are also commonly found independent of a defined stream channel and can occur throughout various elevations and landscape settings. This is particularly true for meadows, springs, and seeps that may be present within very arid areas and at low elevations. Wetlands are similar to riparian areas in that the site potential for wildlife habitat can vary markedly. Regardless of the habitat type, wetlands typically provide wildlife succulent green forage, insects, and drinking water. Green forage is especially important for many wildlife species during the summer and fall when upland vegetation has dried out. Meadow habitats are vulnerable to grazing and other surface-disturbing uses that affect soil stability, water-holding capacity, and plant composition. Riparian habitats or wetlands in non-functioning or functional at-risk condition due to erosion, lowered water table or reduced vegetation composition or structure associated with wild land fire, result in decreased wildlife habitat values.

Wilderness/Wilderness Study Areas

Located with the lands administered by the WFO are the North Jackson Mountains, South Jackson Mountains, Black Rock Desert, North Black Rock Range, Pahute Peak, High Rock Lake, and Calico Mountains Wilderness areas, as well as portions of the Little High Rock Canyon, and East Fork High Rock Canyon Wilderness areas. These areas were designated as wilderness in December of 2000. A description of the Wilderness Areas can be found in the Nevada Statewide Wilderness Report, 1991, which is incorporated by reference.

The Wilderness Act of 1964 mandates that wilderness areas be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness, and to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness. The Wilderness Act also mandates that wilderness areas be managed in such a manner as to maintain or enhance the values of naturalness, opportunities for solitude, opportunities for primitive or unconfined recreation, and any special features found in the areas. Several special features were specifically mentioned in the BRHR NCA Act of 2000. They include; wagon ruts, historic inscriptions, evidence of early homesteading,

prehistoric and historic Native American sites, sensitive plants, and a largely untouched emigrant trail view shed.

Wilderness Study Areas (WSA's) include the Poodle Mountain, Fox Range, Pole Creek, Augusta Mountains, Selenite Range, Mount Limbo, Tobin Mountains, China Mountain, Blue Lakes, Alder Creek, Pueblo Mountains, North Fork Little Humboldt River, Disaster Peak and the Lahontan Cutthroat Trout Wilderness Study Areas. A description of the Wilderness Study Areas can be found in the Nevada Statewide Wilderness Report, 1991. The WSAs are managed under the Interim Management Policy for Lands under Wilderness Review until Congress designates them as wilderness or releases them for other purposes. The areas must be managed in a manner so as to not impair the suitability of the areas for preservation as wilderness.

Describing post fire conditions in the Wilderness and Wilderness Study Areas is difficult because the areas include a broad range of landforms, habitats and vegetation communities that all react differently to fire. Summaries on how fire interacts with these different resources can be found in other sections of this EA.

Generally, in Wilderness and Wilderness Study Areas the goal of fire management is to restore fire as nearly as possible to its natural role in the ecosystem. This goal can be difficult to accomplish in areas where the natural fire regime has been altered due to past suppression efforts or in areas prone to post fire conversion to exotic annual plants that would negatively impact the naturalness and wildlife habitats of the areas. Wildfire can maintain or enhance naturalness in those portions of the Wilderness or WSAs where the plant communities and habitats are fire dependent and are not prone to post fire conversion to exotic annual plant species. These areas are generally the higher elevation portions of the areas. Wildfire can also have a negative impact on the naturalness of the areas by increasing erosion, degrading important wildlife habitat, and allowing exotic plants to become established and dominate the areas. These impacts generally occur in the lower elevations of the Wilderness and WSAs.

Special Status Species

Federal and state agencies have identified several threatened, candidate and sensitive species that may occur in northern Nevada (USFWS; Nevada Natural Heritage Program, January 2003; Tables 4 and 5). It is Bureau policy to manage public lands to recover, protect and preserve these species and their habitat. Various aspects of these species are described below.

Table 4. Threatened and Candidate Species that

Threatened Species	
Bird	
Bald Eagle	*Haliaeetus leucocephalus*
Fishes	
Desert dace	*Eremichthys acros*

Lahontan Cutthroat Trout	*Oncorhynchus clarki henshawi*
Candidate Species	
Bird	
Western yellow-billed cuckoo	*Coccyzus americanus*
Invertebrate	
Elongate Mud Meadows Springsnail	*Pyrugulopsis notidicola*
Plant	
Basalt Cinquefoil	*Potentilla basaltica*

Bald eagle (*Haliaeetus leucocephalus*)

The bald eagle is found within the Winnemucca District during its spring and fall migrations, although no nesting territories are known. The eagle uses trees with heavy branches for perching and forages across a wide range of habitats for fish, waterfowl and carrion.

Desert dace (*Eremichthys acros*)

The Desert dace is found within a series of hot springs and thermal outlets at Soldier Meadows, in the northwestern portion of the district. The Desert dace has been federally listed as Threatened since 1985 (Federal Register Volume 50, p. 50304,) and is the only member of the genus, Eremichthys. At the time of listing, the critical habitat, an area encompassing 50 feet on each side of designated thermal springs and their outflow streams was also listed (USFWS 1997). At least ten thermal outlets and their associated downstream channels support this unique, spring-dwelling species.

Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*, LCT).

This species occupies nearly two dozen stream systems within the district. In spite of extended periods of drought, the majority of these populations are stable and some are increasing in size. A major factor in the stability of these populations has been improved land-use practices and management at the watershed scale.

However, some populations of LCT are depressed due to these extended periods of drought, which has reduced summer stream flows and elevated water temperatures. Another factor contributing to low numbers among some populations are degraded road conditions and livestock grazing that have contributed to the sedimentation of headwater reaches. The current occurrence of LCT and the recovery stream watershed boundaries are shown in Map 9.7)

Western yellow-billed cuckoo (*Coccyzus americanus*)

The Western yellow-billed cuckoo is a large bird associated with trees and shrubs in open woodlands with dense undergrowth. In the West, they are typically associated with riparian cottonwoods and willows. The cuckoo nests in trees utilizing twigs and other materials. Preferred food includes insects, small amphibians, berries and other fruits.

No occurrences of Western Yellow-billed cuckoo are known to exist on the public lands administered by the Winnemucca District. However, extensive areas of riparian and aspen vegetation that could seasonally support the bird are located locally in the district. Burned aspen woodland and riparian cottonwood forest have decreased value for nesting and foraging habitat.

Elongate Mud Meadows Springsnail (*Pyrugulopsis notidicola*)

This rare, poorly known species of springsnail is found within one spring system near Soldier Meadows.

Basalt Cinquefoil (*Potentilla basaltica*)

Basalt cinquefoil is a low-growing, rhizomatous, herbaceous plant with long prostrate stems. The plant produces bright yellow flowers in loose clusters at the ends of the stem. The species is found on moist salt-crusted clay/silt micro sites in alkaline meadows, seeps and marsh habitats bordering thermal springs, outflow streams, and depressions associated with the Soldier Meadows hot spring complex. Due to the harsh soil conditions the species favors and the growth pattern, it is considered unlikely that the species could be affected by fire.

Table 5. Sensitive Species that may occur on lands administered by the Winnemucca Field Office (NNHP, January 2003).

Mammals	
Pygmy rabbit	*Brachylagus idahoensis*
Townsend's big-eared Bat	*Corynorhinus townsendii*
Spotted bat	*Euderma maculatum*
Western small-footed myotis	*Myotis ciliolabrum*
Long-eared myotis	*Myotis evotis*
Fringed myotis	*Myotis thysanodes*
Long-legged myotis	*Myotis volans*
Yuma myotis	*Myotis yumanensis*
Birds	
Northern goshawk	*Accipiter gentiles*
Western burrowing owl	*Athene cunicularia hypugaea*
Sage grouse	*Centrocercus urophasianus*
Black tern	*Chlidonias niger*
Western least bittern	*Ixobrychus exilis hesperis*
White-faced ibis	*Plegadis chihi*
Fishes	
Alvord chub	*Gila alvordensis*

Dixie Valley tui chub	*Gila bicolor ssp. (unnamed)*
Insects	
Rice's blue	*Euphilotes pallenscens ricei*
Nevada viceroy	*Limenitis archippus lahontani*
Denio sandhill skipper	*Polites sabuleti sinemaculata*
Plants	
Lonesome milkvetch	*Astragalus solitarius*
Tiehm milkvetch	*Astragalus tiehmii*
Osgood Mountains milkvetch	*Astragalus yoder-williamsii*
Schoolcraft catseye	*Cryptantha schoolcraftii*
Goodrich biscuitroot	*Cymopterus goodrichii*
Windloving buckwheat	*Eriogonum anemophilium*
Crosby buckwheat	*Eriogonum crosbyae*
Grimy mousetail	*Ivesia rhypara var. rhypara*
Owyhee prickly phlox	*Leptodactylon glabrum*
Smooth stickleak	*Mentzelia mollis*
Nevada oryctes	*Oryctes nevadensis*
Cordelia beardtongue	*Penstemon floribundus*
Obscure scorpionflower	*Phacelia inconspicua*

Pygmy rabbit (*Brachylagus idahoensis*)

The Pygmy rabbit is the smallest North American rabbit, sagebrush obligate. The rabbit uses tall, dense stands of big sagebrush, primarily basin big sagebrush, with deep, friable soils typically loamy in texture. The Pygmy rabbit mates in early spring and summer. Its primary food is sagebrush, which makes up to 98% of its winter diet. Grasses are important during the summer, comprising as much as 30-40% of its diet. No inventories for pygmy rabbits have been completed in the Winnemucca District, though potential high quality habitat sites are considered rare. Potential sites include the edges of floodplains in the upper portions of watersheds and degraded floodplains at lower elevations where channel down-cutting has allowed for the invasion of Basin big sagebrush into sites that were formerly occupied by wet and semi-wet meadows.

Stands of tall sagebrush with herbaceous understories are susceptible to wild fire and burned sites would have low value for pygmy rabbit habitat.

Townsend's big-eared bat (*Corynorhinus towsendii*)
Spotted bat (*Euderma maculatum*)
Western small footed-myotis (*Myotis ciliolabrum*)
Long-eared myotis (*Myotis evotis*)
Fringed myotis (*Myotis thysanodes*)
Long-legged myotis (*Myotis volans*)
Yuma myotis (*Myotis yumanesis*)

All of these species use natural caves and cracks in rock outcrops or man-made cavities for breeding, rearing, and/or hibernating. There is limited specific information related to breeding colonies of these species in the Winnemucca District. Potential breeding and hibernating habitat is considered common in abandoned mines, mountains and rocky areas. Bats depend upon insect prey and the best potential for insect prey occurs near wet meadows, open waters and marshlands. Wild fires would generally reduce flying insect densities associated with shrubby upland and riparian communities.

Northern goshawk (*Accipter gentiles*)

The Northern goshawk is a known breeder in the Winnemucca District. This bird is found in a variety of dense, mature or old growth aspen habitat. They require large, healthy multi-story stands for nesting and foraging. Burned aspen stands would not be able to support goshawk until the trees recover.

Western burrowing owl (*Athene cunicularia hypugea*)

Colonies of Western burrowing owls have been observed in the District; however a district-wide survey has not been completed. These owls require open terrain with low vegetation, burrows created by mammals, and an adequate prey base. Burned sites would have decreased value for the owls due to decreased prey densities.

Sage-grouse (*Centrocercus urophasianus*)

The sage-grouse is a common large game bird of the sagebrush zone. Sage-grouse are sagebrush obligates and require large areas of contiguous sagebrush communities. Sagebrush is the primary nesting cover and for much of the year sagebrush leaves form the major component of their diet. Historic records, which are mostly anecdotal, indicate that sage grouse populations have fluctuated widely in Nevada. The Nevada Division of Wildlife (NDOW) has indicated it considers sage grouse populations to be declining (Willis et al. 1993). Much of the regional decline is thought to be related to predation in areas of low quality nesting habitat and loss of sagebrush due to wild fire and cheatgrass invasion.

This species is highly dependent upon the presence of several species and subspecies of shrubs, notably Wyoming, mountain, and basin big sagebrush. Other species such as low and Lahontan sagebrush are also important. Nesting tends to occur at mid-elevation habitats that support adequate shrubby and herbaceous plant cover. Burned sites have very low value for nesting sage-grouse.

Black tern (*Childonias niger*)

The Black tern is a migratory bird species that uses both coastal and inland wetlands. Nesting occurs in small colonies in wetlands with a mix of emergent vegetation and open water. The black tern uses marsh and slough habitats with fairly dense cattail or other

marsh vegetation and pockets of open water. These sites occur at very low density within the District and not likely to burn.

Western least bittern (*Ixobrychus exilis hesperis*)

Bittern habitat consists of fresh water marshes and reedy ponds. Habitat types for the bittern are sparse within the district. These sites occur at very low density within the District and not likely to burn.

White-faced ibis (*Plegadis chihi*)

Ibis are seen occasionally as migrants in the fall. They nest in marshes (mainly hardstem bulrush) and feed in marshes and meadows. These sites occur at very low density within the District and not likely to burn.

Alvord chub (*Gila alvordensis*)
Dixie Valley tui chub (*Gila bicolor* ssp. (unnamed)

These rare fishes occur in small, isolated populations associated with spring systems in the vicinity of Soldier Meadows, the Pine Forest Range, and areas in the extreme southern portion of the District.

Rice's blue (*Euphilotes pallenscens ricei*)

Rice's blue is a small butterfly associated with dry desert flats and dune edges. Both the caterpillars and the adults depend upon buckwheat species as host plants. Wild fire could reduce the occurrence of buckwheat plants.

Nevada viceroy (*Limenithus archippus lahontani*)

The Nevada viceroy is a butterfly whose preferred host plants are willows and aspen. Habitat includes riparian areas, meadows, and aspen wood edges. Wild fires that remove woody riparian vegetation would remove the host plants for the butterfly.

Denio sandhill skipper (*Polites sabuleti sinemaculata*)

Denio sandhill skipper is small, non-showy butterfly that uses alkali grasslands, meadows, salt marshes and other grassy areas. The caterpillars are dependent on grasses as host plants. The adults use flower nectar from a variety of plant species. Wild fires could reduce the density of host plants until grasses recover.

Lonesome milkvetch (*Astragalus solitarius*)

Lonesome milkvetch is a perennial locoweed found on clay soils, badlands, and low gullied hills at low elevations. It is an upright herb with small whitish or yellowish flowers.

Tiehm milkvetch (*Astragalus tiehmii*)

Tiehm milkvetch is a multi-branched, mat-forming perennial locoweed located on dry, white, ashy, barren outcrops within sagebrush vegetation types. These outcrops are usually sparsely vegetated and occur on slopes and tops of low hills. Substrates include water-deposited volcanic ash deposits weathered to deep clay soils, generally on gentle slopes. Tiehm milkvetch often occurs with Schoolcraft cryptantha (*Cryptantha schoolcraftii*) or Crosby buckwheat (*Eriogonum crosbyae*) at 5,400 to 5,600 foot elevations.

Schoolcraft cryptantha (*Cryptantha schoolcraftii*)

Schoolcraft cryptantha is a short-lived perennial or biennial herb, with a taproot exhibiting one to several erect stems. It is often located in the sagebrush steppe vegetation zone, from 4800 to 5770 feet and is associated with Astragulus tiehmii and/or Eriogonum crosbyae. The species prefers fluvio-lacustrine volcanic ash deposits that weather to deep clay soils

Crosby buckwheat (*Eriogonum crosbyae*)

Crosby's buckwheat is low, matted, perennial buckwheat with highly branched stems forming tufted mats. The species occurs in sagebrush areas on white tuffaceous parent material with little soil development or deep clay soils developed in hydrothermal altered vent areas. Crosby buckwheat occurs in association with Tiehm milkvetch (*Astragalus tiehmii*) or Schoolcraft cryptantha (*Cryptantha schollcraftii*).

Osgood Mountains milkvetch (*Astragalus yoder-williamsii*)

Osgood Mountains milkvetch is a dwarf perennial herb with inconspicuous, whitish flowers that form dense clumps. It is found on dry, open decomposed granodiorite soils in sagebrush communities.

Goodrich biscuitroot (*Cymopterus goodrichii*)

Goodrich biscuitroot is a small perennial herb with white or purple flowers that grows from a buried root crown. Its habitat is moderate to steep, high elevation scree and talus slopes of slate or limestone.

Windloving buckwheat (*Eriogonum anemophilum*)

Windloving buckwheat is a long-lived perennial herb with leafless flower stalks rising above prostrate leaves. It is unusual in that it inhabits different habitats at high and low elevations. At high elevations, it inhabits dry, exposed, ridges and ridgeline knolls on outcrops or shallow rocky soils over bedrock. At low elevations it prefers dry, relatively

barren and undisturbed knolls and slopes of light colored, platy volcanic tuff weathered to form stiff clay soils.

Grimy ivesia (*Ivesia rhypara var. rhypara*)

Grimy ivesia is a low-growing perennial herb that spreads from a branched woody base. Its leaves are covered with dense, grayish white hairs. It is found primarily on dry, relatively barren, yellowish or light-colored outcrops or badlands of welded, sometimes hydrothermally altered, ash-fall tuff. It is also found on shallow gravel grus or on unsorted cobbly riverbed deposits mixed with underlying volcanic ash. This species often occurs in single species stands.

Owyhee prickly phlox (*Leptodactylon glabrum*)

Owyhee prickly phlox is shrubby, perennial herb with funnel-shaped flowers and deeply lobed leaves. It occupies dry crevices in steep or vertical volcanic canyon walls.

Smooth stickleaf (*Mentzelia mollis*)

Smooth stickleaf is an erect, bright yellow-flowered annual herb. It is found on sparsely vegetated landscapes of white, green, or gray volcanic ash/claybed outcrops derived from the Succor Creek Formation. The species occurs on dry, open, nearly barren eroding shoulders and side slopes of brightly colored shrink-swell clay badlands.

Nevada oryctes (*Orcytes nevadensis*)

Nevada oryctes is a small annual that only appears in years with optimal rainfall. It occurs in loose sand associated with stabilized dunes, washes, and valley flats.

Cordelia beardtongue (*Penstemon floribundus*)

Cordelia beardtongue is a perennial herb with tubular blue-violet flowers originating from the top half of the flower stem. It blooms from May through June. It is found predominantly on steep mountain slopes and associated alluvial fans in limestone rock deserts. The species occurs on dry, open, mostly dark-colored volcanic talus, very rocky slopes, or alluvium with predominantly westerly exposures.

Obscure scorpionflower (*Phacelia inconspicua*)

Obscure scorpionflower is an annual herb with a head of congested white flowers. It occupies sites with deep, undisturbed organic-rich soils on steep, concave slopes where snow drifts persist into spring.

State listed and BLM sensitive species occupy very narrow habitats based on soil and rock chemistry and moisture regimes. In all cases their habitats contain sparse vegetation

due to harsh habitat conditions. The likelihood that habitats of any of these species would be subject to wild fire is low with low burn intensities.

The potential for special status species to be affected by wild fire varies as a function of the distribution of their respective habitats (Table 6). For example, widespread bird species such as the Western burrowing owl and sage grouse, and mammalian species such as the Pygmy rabbit, both reproduce and feed in shrub and sagebrush habitats that are common in the Winnemucca District. Therefore, the probability of wild fire adversely affecting these species is high.

Conversely, rare bird species such as the Bald eagle and Black tern use riparian habitats or at least habitats where water is proximate. These habitats are relatively rare in the Winnemucca District and, consequently, the likelihood of these species being adversely affected by wild fire is fairly low.

Table 6. The Potential for Selected Special Species Habitat

Type	Common Name	Likelihood of Habitat affected by Wild Fire		Habitat Use within Plant Communities Likely to be Affected by Wild Fire	Distribution in District
		Reproduction	Feeding		
BIRD	Bald Eagle	Low	Low	Winter foraging near riparian areas	Rare
	Northern goshawk	Low	High	Foraging areas in shrublands adjacent to aspen groves	Uncommon
	Western burrowing owl	High	High	Variety of shrub types	Widespread
	Sage-grouse	High	High	Low and tall sagebrush areas	Widespread
	Black tern	Low	Low	Foraging in shrub and grasslands near water	Rare
	Western least bittern	Low	Low	No data	Rare
	White-faced ibis	Low	Low	No data	Rare
	Western yellow-billed cuckoo	Low	Low	Cottonwood forest in riparian areas	One location private land
MAMMAL	Pygmy rabbit	High	High	Tall sagebrush areas	Widespread
	Townsend's big-eared bat	Low	Unknown	Foraging for insects over a wide range of communities.	Point locations recorded
	Spotted bat	Low	Unknown	No data	Point locations recorded
	Western small-footed myotis	Low	Unknown	No data	Point locations recorded
	Long-eared myotis	Low	Unknown	No data	Point locations recorded

	Fringed myotis	Low	Unknown	No data	Point locations recorded
	Long-legged myotis	Low	Unknown	No data	Point locations recorded
	Yuma myotis	Low	Unknown	No data	Point locations recorded
INSECT	Rice's blue	Low	Low	Foraging areas in shrublands	Rare
	Nevada viceroy	Low	High	Foraging areas in shrublands adjacent to aspen, willow and meadows	Rare
	Denio sandhill skipper	Low	Low	Foraging in sagebrush	Rare

3.8 Wildlife

A wide variety of terrestrial and aquatic wildlife species are represented on lands administered by the WFO. Habitat types and associated species are presented below.

3.8.1 Terrestrial Wildlife Habitat

The habitat and wildlife within the Winnemucca District are representative of northern Great Basin flora and fauna. Sagebrush, with patchy grasslands, provides year-long habitat for mule deer, sage grouse, and pronghorn antelope. Aspen, juniper and mountain mahogany woodlands provide nesting sites for a variety of bird species commonly found in more heavily timbered areas. Large and small rim rock complexes in canyons and along mountain ridges provide cliff and rock slope habitats that are primary nesting sites for swallows, swifts, golden eagles, prairie falcons, turkey vultures, and numerous species of hawks. These rim rocks also provide escape cover for bighorn sheep, denning sites for mountain lions and bobcats, and year round homes for many small mammals including ground squirrels, wood rats, rabbits and marmots.

Water sources are important to the location and survival of plants and animals. Seeps and springs provide water and meadow habitats of green lush vegetation to various wildlife species, including sage grouse. Riparian and wetland habitats are used extensively by wildlife, including neo-tropical migrant birds in the spring and fall months, including hummingbirds, finches, warblers, thrushes, and orioles. Small, shallow depressions and playa areas filled from precipitation provide

seasonal habitat for resident and migrant waterfowl and shorebirds. The small streams and spring outlets provide wet meadow and stream-side riparian habitats used by a great variety of species.

Wildlife habitat needs vary significantly by species. It is generally true that healthy and sustainable wildlife populations can be supported where there is a diverse mix of multi-canopied plant communities to supply structure, forage, cover, and other specific habitat requirements. Broadly grouped wildlife habitats are described under the headings that follow.

Sagebrush Communities

Sagebrush steppe/sagebrush includes a number of upland vegetation communities with a shrubland aspect and a variable understory of grass and forbs. Examples of shrub species include varieties of big sagebrush, low sagebrush, and rabbitbrush. The shrubs in these communities are important to a wide variety of wildlife species because they supply food as well as hiding cover and structure. The thermal relief provided by shrub cover helps wildlife to survive the rigors of summer heat and winter cold. Sagebrush communities are the most important type within the region; hence, the welfare of this important shrub community has great influence on the health of many common and special status wildlife species. Sagebrush is essential to some species, such as sage grouse, pygmy rabbit, and Brewer's sparrow, all of which are sagebrush obligates. Sagebrush plant communities also support many other species including most mule deer, bighorn sheep, and pronghorn antelope populations. Other non-game species, including golden eagles, cottontail rabbits and numerous rodents, migrant birds and reptiles also benefit directly and indirectly from wildlife habitat provided by sagebrush communities.

Saltbrush

Saltbrush desert vegetation communities support a wide range of wildlife species with substantial overlap with the sagebrush communities. However, because salt desert types are substantially drier, the abundance and diversity of wildlife is lower. Notable salt desert wildlife species include kit fox and antelope ground squirrel. Reptiles are well represented in this type because of the lower elevations and warmer conditions.

Utah Juniper, Aspen and Mahogany Woodlands

Woodland communities are associated with the relatively widespread Utah juniper stands discontinuously located in the mountainous parts of the Winnemucca District. Juniper stands tend to occur at midlevel elevations and are interspersed with small patches of aspen or mahogany at higher elevations. Woodland habitats vary greatly in their value to wildlife depending on site-specific factors such as stand size, height, stocking density, age of trees, and understory composition. Large trees provide cavities for nesting birds like bluebirds and northern flickers or features used by bats. Medium-sized trees provide nest sites on limbs for American robins and ruby-crowned kinglets. Mule

deer use woodland sites for fawning and thermal and escape cover. During severe winters, Utah juniper cover may be critical to deer survival. Many non-game species like the least chipmunk and scrub jay use woodlands for food and cover. Dead trees and snags are also important for wildlife cover and food and help recycle nutrients back to the soil.

3.8.2 Terrestrial Species and Habitat Interactions

There is a limited amount of systematic survey data on record for many species and wildlife habitats. The unknowns of where, when and how much habitat will be burned in wildland fires do not allow more than a broad scale overview of how wildlife and wildlife habitats interact with wildland fires. Therefore, the primary emphasis in this section is placed on generalized vertebrate species and habitat relationships as described in Wildlife Habitats in Managed Rangelands—The Great Basin of Southeastern Oregon (Maser, Thomas and Anderson 1984). Maser, Thomas and Anderson (1984) classified over 300 species of terrestrial wildlife species into 16 Life Form categories based on where each species feed and reproduce. This categorization was designed for broad-scale planning efforts where site-specific information about project size and location is only approximately known. The 16 Life Form categories are further divided into major vegetation communities and structural stages that correspond well with the major vegetation communities found in the Winnemucca District. Using the applicable vegetation communities within the District, 273 species of terrestrial wildlife were evaluated for their feeding and reproduction habits. Table 7 summarizes the Life Form description, the number of species and representative species for each group.

Table 7. Life Form Summary

Life Form		# of Species	Representative Species
#	Description		
1	Reproduces in Water Feeds in Water	2	bull frog
2	Reproduces in Water Feeds on ground, in shrubs or trees	3	Pacific treefrog Western toad
3	Reproduces on ground near water or on floating vegetation Feeds in water, on ground, in shrubs and trees	33	common garter snake ducks wading birds yellow-headed blackbird
4	Reproduces in cliffs, caves, rims Feeds on ground or in the air	44	western fence lizard prairie falcon bats bobcat
5	Reproduces on ground Feeds on ground	45	gopher snake sage-grouse pygmy rabbit mule deer pronghorn antelope bighorn sheep

Life Form		# of Species	Representative Species
#	Description		
6	Reproduces on ground Feeds in shrubs, trees or air	4	common nighthawk Townsend's solitaire
7	Reproduces in shrubs Feeds on ground, in water or air	29	scrub jay Brewer's sparrow
8	Reproduces in shrubs Feeds in shrubs, trees or air	5	yellow warbler American goldfinch
9	Reproduces primarily in deciduous trees Feeds in shrubs, trees or air	7	house finch cedar waxwing
10	Reproduces primarily in conifers Feeds in shrubs, trees or air	7	western flycatcher pinyon jay
11	Reproduces in trees Feeds on ground, in shrubs, trees or air	13	Cooper's hawk Steller's jay mourning dove
12	Reproduces on very thick branches Feeds on ground or in water	6	great blue heron great horned owl
13	Reproduces- excavates own hole in tree Feeds on ground, in shrubs, trees or air	9	woodpeckers
14	Reproduces in found hole Feeds on ground, in shrubs, trees or air	25	American kestrel western bluebird raccoon
15	Reproduces in burrow Feeds on or near ground	32	burrowing owl ground squirrels, mice badger coyote
16	Reproduces in burrow Feeds in water on ground or in air	9	bank swallow shrews muskrat
Total		273	

Wildlife species require suitable habitat with a variety of structural components including food, water, and cover. Wild fires eliminate these habitats by changing the vertical and horizontal structure, cover, space, nutrients, species presence, and either direct or indirect competition from other species. Table 8 presents the number of species expected to forage and reproduce in major vegetation communities represented in the Winnemucca District. Similar data for a grassland-herbaceous, representing a recently burned area, is also presented. With few exceptions, grassland-herbaceous communities support fewer wildlife species than those dominated by shrubs and trees. Therefore, the habitat values for wildlife populations following wildland fire are almost always reduced relative to pre-burn conditions.

Table 8. The Representation of Terrestrial Wildlife Species by Vegetation Community[1].

Life Form	Species (N)	Number of Species Reproducing (R)[2] or Feeding (F)[3] in each Vegetation Community													
		Grassland-Herbaceous		Shadscale/ Saltbush		Greasewood		Low Sagebrush		Tall Sagebrush		Juniper		Aspen	
		R	**F**	**R**	**F**	**R**	**F**	**R**	**F**	**R**	**F**	**R**	**F**	**R**	**F**
1	2														
2	3	1	2							3	3				
3	44			1	1	2	2	1	1	2	2	2	2		2
4	33	4	10	4	8	8	11	10	12	24	27	16	20	5	9
5	45	2	4	6	13	11	18	14	20	22	30	11	22	2	9
6	4				3		3	2	3	3	3	2	2	3	3
7	29		1		6	1	12		12	18	21	18	25	15	22
8	5				1		1		1	1	4	1	3	2	3
9	7										1	1	3	1	3
10	7										2	3	5	3	6
11	13		1		2	1	2		1	2	6	5	10	11	12
12	6		1		3		3		3		3	3	5	3	4
13	9				1		1		1		1	6	6	5	8
14	25				6		6		7		11	9	13	12	12
15	32	5	6	9	9	10	10	10	10	15	16	13	13	2	2
16	9									1	3				2
Totals	273	12	25	20	53	33	69	37	71	91	133	90	129	64	97

3.8.3 Migratory Birds

Neo-tropical migrant birds are species that migrate from the temperate portions of the continent to winter in the tropics of North and South America. Neo-tropical migrants are most commonly associated with habitats with a strong vertical component of woody shrubs and trees.

Within the Winnemucca District, the most important habitats are associated with riparian communities. Riparian habitats comprise a small portion of the district, but the values of these habitats far exceed their limited geographic extent. It is estimated that over half of the bird species considered potential breeders in the district are dependent upon riparian communities. Additionally, migrants that pass through the district in the fall and spring make disproportional use of riparian habitats. Additional migratory species are found in other habitats in the District.

[1] The Grassland-Herbaceous community represents a post-fire situation.
Shaded boxes indicate situations where species use in the post-fire Grassland-Herbaceous community exceeds that in the shrub or tree dominated community. Totals in the bottom row over all the plant communities will not total to 273 species because many species use multiple vegetation communities.
[2] R=Species Reproducing
[3] F=Species Feeding

Executive Order #13186 dated 01/11/01 requires that migratory bird species be considered in federal actions. A list of the migratory birds affected by the Executive Order #13186 is contained in 43 CFR 10.13. A complete migratory bird inventory has not been completed for the Winnemucca District, although preliminary surveys have been collected at several locations. At the present time, these data are insufficient to identify trends. Neo-tropic migrant species needs are generally met when a diversity of habitat structure, including multi-aged and multi-height woody vegetation, is present.

If a given riparian habitat is completely consumed by wild fire or if important component species of the structure are destroyed, the bird species will likely respond by seeking a similar, unburned habitat elsewhere. If, on the other hand, the burn was incomplete or if vital component species are not destroyed, there may be little or no behavioral alterations over the long term. In either case, the species is unlikely to abandon an area unless large areas of riparian or other habitats have been destroyed.

3.8.4 Aquatic Species

A diversity of habitats are present on the public lands administered by the Winnemucca Field Office. These habitats contain a range of aquatic species, which include mollusks, fish, and insects. The types of habitats present are further described within the Water Resources Section. The table below identifies some common aquatic species that occur on the lands administered by the Winnemucca Field Office.

The affected habitats for aquatic resources within the context of this document would be denuded of vegetation, desiccated, destabilized, and/or impacted by sedimentation after the fire. These areas would contain patches of upland and riparian vegetation, which are surrounded or partially surrounded by scorched vegetation and bare ground. The level of disturbance and the effects on aquatic species from the direct and indirect effects of the fire would vary by species. Generally, the cold water aquatics, such as trout species and species of springsnail, would be moderately to severely impacted by the fire event depending on the intensity and coverage of the fire on the aquatic habitat. Warm water species, such as bass and minnows would be less affected by the fire event; however if water temperatures were heated above the species critical thermal maxima for an extended period of time these species would perish.

Table 9. Common Aquatic Species Occurring on the Lands Administered by the WFO

Common Name	F=Fish M=Mollusk	Scientific Name	Geographic Occurrence (Based Ira LaRivers (1962) and the 2004 Nevada Department of Wildlife fishing regulations)
Brown Bullhead	F	*Ictalurus nebulosus*	Primarily Rye Patch Reservoir and the Humboldt River System
Channel Catfish	F	*Ictalurus punctatus*	Primarily Rye Patch Reservoir, Chimney Dam Reservoir and the Humboldt River System
White Catfish	F	*Ictalurus catus*	Primarily Rye Patch Reservoir
Mosquitofish	F	*Gambusia affinis*	Rare; isolate thermal spring systems
Yellow Perch	F	*Perca flavescens*	Primarily Dufurrena Ponds
Walleye	F	*Stizostedion vitreum*	Primarily Rye Patch Reservoir, Chimney Dam Reservoir and the Humboldt River System
Largemouth Bass	F	*Micropterus salmoides*	Primarily Rye Patch Reservoir, Dufurrena Ponds and the Humboldt River System
Smallmouth Bass	F	*Micropterus dolomieui*	Primarily in Humboldt River System
Spotted Bass	F	*Micropterus punctulatus*	Primarily in Humboldt River System and Rye Patch Reservoir
Wiper	F	*Morone saxatilis X chrysops*	Primarily in Humboldt River System and Rye Patch Reservoir
Bluegill	F	*Lepomis macrochirus*	Primarily ranch ponds and Humboldt River System
Green Sunfish	F	*Lepomis cyanellus*	Primarily ranch ponds and Duferrena Ponds
Redear Sunfish	F	*Lepomis microlophus*	Primarily Duferrena Ponds
Crappie	F	*Pomoxis sp.*	Primarily Rye Patch Reservoir, Chimney Dam Reservoir, Dufurrena Ponds and the Humboldt River System
Rainbow Trout	F	*Oncorhynchus mykiss*	Widespread; impoundments and numerous perennial streams
Hybrid Trout	F	*Oncorhynchus mykiss X clarki*	Widespread; impoundments and numerous perennial streams
Brown Trout	F	*Salmo trutta*	Widespread; numerous perennial streams
Brook Trout	F	*Salvelinus fontinalis*	Widespread; impoundments and numerous perennial streams
Goldfish	F	*Carassius auratus*	Rare; Associated with the Spring Systems in Soldier Meadows and various small impoundments
Carp	F	*Cyprinus carpio*	Widespread; impoundments and high order streams
Tahoe Sucker	F	*Catostomus tahoensis*	Primarily the Humboldt River System and Tributaries
Lahontan Mountain Sucker	F	*Pantosteus lahontan*	Primarily the Humboldt River System and Tributaries
Desert Dace[4]	F	*Eremichthys acros*	Rare; spring systems associated with Soldier Meadows
Tui Chub and sub species	F	*Gila bicolor ssp.*	Rare; Isolated Populations Associated with Spring Systems in the vicinity of Soldier Meadows, the

			Pine Forest Range, and areas in the extreme southern portion of the District
Speckled Dace	F	*Rhinichthys osculus*	Widespread; impoundments and numerous perennial streams
Lahontan Speckled Dace	F	*Rhinichthys osculus robustus*	Primarily the Humboldt River System
Lahontan Redside Shiner	F	*Richardsonius egregius*	Widespread; mainly perennial streams
Tahoe Sucker	F	*Catostomis tahoensis*	Widespread; impoundments and numerous perennial streams
Lahontan Cutthroat Trout[4]	F	*Oncorhynchus clarki henshawi*	Less than two dozen populations within the Black Rock – Quinn Basins and the Humboldt Basin; populations are associated with perennial streams with the exception of one lake dwelling population in Summit Lake.
Springsnails	M	*Prygulopsis sp Tryonia sp Fluminicola sp.*	P. gibba is generally widespread, but numerous unique and rare species occur in isolated habitats throughout the District. These species are limited to spring systems and little is known about their habitat preferences, although data indicate that individual species have specific habitat requirements

3.9 Soils

The dominate soil orders found within the area administered by the WFO are Aridisols, Entisols, and Mollisols. These soils are mineral soils; layers are highly variable in thickness, texture, rock fragment content, and physical and chemical properties. Elevation, geology, climate, vegetation, and landform position have a strong influence on the distribution of the soils in the region.

Aridisols

Soils that formed in dry environments. These soils may have one or more pedogenic horizons that formed under the present climate conditions or may be relicts of formation during former climate regimes. Aridisols are light-colored, low in organic matter and have accumulations of calcium carbonates and soluble salts. Older Aridisol have substantial accumulation of calcium carbonate and reddened clay horizons. The properties of older Aridisols can make them less pervious to precipitation and, therefore, more likely to generate surface runoff. Aridisols form on lake-plain terraces, fan piedmonts, and low mountain slopes.

Entisols

Soils that have little to no evidence of pedogenic horizons. Entisols have formed on deposits of very young material. They typically consist of relatively unconsolidated deposits of sand and gravel. Entisols are very low in organic matter. Entisols are found on lake plains, stream terraces, sand dunes and sheets.

Mollisols

[4] Federally listed Threatened Species

Soils that are found at the higher elevations of mountain ranges. They are dark-colored and high in organic carbon. Mollisols developed under grass-dominated soils.

3.9.1 Erosion Hazard

One of the primary consequences of wild fire is the reduction of protective plant and litter cover. This loss leaves soils highly susceptible to water and wind erosion. The susceptibility to erosion, or the erosion hazard, for a soil varies with geology, parent material, elevation, slope, aspect, vegetation cover, microclimate, land use, and landscape history. Because of the large number and complex spatial distribution of soil units, it is only possible to make a general assessment of water and wind erosion hazards. Soil parameters available in the NRCS-SSURGO database allow development of erosion hazard groupings. A soil erodibility factor (K factor), slope (S), wind erodibility index (I), and climate (C factor) were obtained from the SSURGO database. This information allows for a general guide for estimating erosion hazard for bare soil.

The water erosion hazard for a given soil is estimated by using the formula, soil erodibility factor (K) x slope. The relative water erosion hazard is divided into three classes: slight = less than four, moderate = four to eight and high = greater than eight (Map 10.5).

Slight water erosion hazard (WAEH=<4)

This class includes soils of all soil texture classes formed on slopes of less than four percent. It also includes soils formed on slopes of up to 15 percent for the following soil textures: sand, fine sand, loamy sand, and coarse sandy loam.

Moderate water erosion hazard (WAEH=4-8)

Soils formed on slopes from 4 to 15 percent for loams, silt loams, fine sandy loams, sandy clay loams, and clays and on slopes from 15 to 30 sands for fine sands, loamy fine sands, and coarse sandy loams constitute a moderate water erosion hazard.

High water erosion hazard (WAEH=>8)

Loams, silt loams, very fine sandy loams, sandy loams, sandy clay loams, and clays formed on slopes from 15 to 30 percent and all soils formed on slopes of greater than 30 percent are considered to constitute a high water erosion hazard.

3.9.2 Wind Erosion Hazard

The erosion hazard is estimated by the formula, wind erodibility index (I) x climate factor (C). The wind erosion hazards are divided into three classes: slight= =less than 40, moderate= 40 to 80, and high=greater than 80 (Map 10.4).

Slight wind erosion hazard (WIEH=<40)

Soils of all textures with greater than 35 percent rock fragments that are formed on are greater than 30 percent slopes are considered to have slight wind erosion potential.

Moderate wind erosion hazard (WIEH=40-80)
Soil having textures of clay, silty clay, silty clay loam, silt loam, loam, very fine sandy loam, and sandy loam with less than 15 percent rock fragments and formed on slopes from 15 to 30 percent slope are considered to have moderate wind erosion potential.

High wind erosion hazard (WIEH=>80)
Soil having textures of loamy fine sand, fine sand, and sand containing less than less than 15 percent rock fragments and formed slopes of less than 15 percent.

3.9.3 Soil Erosion Related to Landform

The general erosion hazard classes above can be grouped within broad classes of landforms (Table 10). This provides an additional means to predict the potential for soil erosion after a wild fire. These landforms represent the major types found in the District (See Maps 10.4 and 10.5).

Table 10. Erosion Hazard by Landform

Landforms	Water Erosion Hazard	Wind Erosion Hazard
Playa/lake plain	Slight	Moderate
Beach plain (lake bars)	Slight to moderate	Slight to moderate
Sand sheet	Slight	High
Fan piedmont	Moderate	Slight
Mountains	High	Slight

As indicated in Table 10, the relative degrees of erosion potential are generally inversely related, that is, the higher the water erosion potential, the less the wind erosion potential and vise versa.

Regardless of landform, the highest potential for both wind and water erosion occurs immediately after a wild fire and will not be reduced until vegetative cover reestablishes.

3.10 Vegetation

Extremes of climate, elevation, exposure, and soil types combine to produce a diverse variety of plant communities within the Winnemucca District. It is estimated that these fires have impacted approximately 20 percent of the native vegetative communities within the WFO administrative boundary (See Map 10.2). Six primary vegetative communities, including Desert sink scrub, Saltbush scrub, Sagebrush scrub, Riparian, Meadow, and Woodland, are represented (Map 10.2).

Desert Sink scrub

Approximately 615,000 acres or 6.5 percent of the vegetation within the Winnemucca District belongs to the Desert Sink Scrub community. Primary species among these are Iodine Bush, Black greasewood, and Basin big sagebrush. Few grasses are generally represented. This community tends to occur in areas where the water table is high, such as alkali meadows and dry bottomlands.

Saltbrush scrub

The Saltbrush Scrub community makes up approximately 3.1 million acres or about 33 percent of the plant communities in the district. This community, which is comprised primarily of shadscale, bud sagebrush, Bailey, black greasewood, four-wing saltbrush, and winterfat, occurs in valleys, on alluvial fans, and low foothills.

Sagebrush scrub

Sagebrush Scrub is the most dominant plant community, totaling 5.5 million acres or about 58 percent of the district. A variety of sagebrush types, in addition to Rabbitbrush and a number of grasses are the primary plant species. This community occurs in mountains and hills where soils tend to be less saline. Because it prefers similar topographic and soil conditions, cheatgrass often competes successfully against sagebrush scrub species after a wild fire.

Riparian

Approximately 104,000 acres or about one percent of the vegetation in the district is Riparian. As the name implies, this community occurs in well-waters area of the district, most commonly near perennial streams or springs. Willows and silver buffaloberry are the primary species.

Meadows

Meadows are rare making up about 2,700 acres or less than one percent of vegetation in the district. In general, meadows occur on valley bottoms with high water tables where soils tend to be alkaline. Tufted hairgrass, Nevada bluegrass, and creeping wild rye are the primary species. Existing meadows have been subjected to heavy livestock grazing.

Woodland

The final vegetative community, Woodland, makes up approximately 160,000 acres or about 2 percent of the vegetation in the district. Pinyon pine, White Bark pine, Mountain mahogany, and Utah junipers are most common on hillsides and well-drained soils at moderate elevations. Utah junipers occur in pure stand at lower elevations, while pinyons can occur in pure stands at the higher elevation limits of the community.

As presented in Table 11, all of these vegetative communities have been impacted to some degree by wild fire. The most severe impact, as measured by the proportion of acres burned, has been sustained by the Sagebrush scrub community. Almost one-quarter or approximately 1.3 million acres of this community have been burned. This total accounts for approximately 76 percent of all burned acreage, despite the fact that the community represents only about 58 percent of the vegetation in the district. This

disparity suggests that a disproportionate amount of the Sagebrush scrub community has been impacted by wild fire.

One reason for the apparent disparity relates to precipitation. Sagebrush scrub communities thrive where precipitation levels range between 8 and 16 inches per year. At this precipitation level, vegetation is capable of burning from late spring to early fall, a relatively long period of time. In addition, the understory at these precipitation levels is primarily cheatgrass, a fine, flashy fuel type. Cheatgrass dries quickly and ignites easily. At precipitation ranges of less than 6 inches, vegetation is not generally dense enough to provide sufficient fuels to carry a wild fire. Vegetative communities present where precipitation levels are greater than 12 inches remain green and moist until the late summer months and are thus susceptible to ignition for a relatively short period of time.

Table 11. Plant Communities/Associations and the Impact of Wild Fire

Plant Community/Association	Scientific Name	Acres	Acres Impacted by Fire	% of Impact
A. Desert sink scrub		**615,073**	**14,397**	**2 %**
1 – Iodine bush	*Allenrolfea occidendentalis*	16,233	0	0%
2 – Alkali sacaton/ inland saltgrass/ alkali bluegrass	*Sporobolus airoides/Distichlis spicata/Poa juncifolia*	20,311	280	1%
3 – Black greasewood	*Sacrcobus vermiculatus*	512,185	5960	1%
4 – Black greasewood/basin big sagebrush	*Sacrcobus vermiculatus/ Artemisia tridentata*	66,344	8157	12%
B. Saltbush scrub		**3,093,621**	**386,291**	**12%**
1 – Shadscale/black greasewood	*Atriplex confertifolia/ Sacrcobus vermiculatus*	20,646	1871	9%
2 – Shadscale/bud sagebrush	*Atriplex confertifolia /Artemisia spinescens*	2,120,302	293,420	13%
3- Shadscale/Bailey greasewood	*Atriplex confertifolia /Sacrcobus vermiculatus var.baileyi*	671,821	49,066	7%
4 – Shadscale/Cooper wolfberry	*Atriplex confertifolia/Lycium cooperi*	4,746	0	0%
5 – Sickle saltbush	*Atriplex falcata*	3,735	784	20%
6- Fourwing saltbush	*Atriplex canescens var. canescens*	165,324	4108	2%
7 - Torrey's quailbush	*Atriplex torreyi*	60,116	1111	1%
8 – Spiny hopsage	*Grayia spinosa*	7,598	4109	54%
9 - Winterfat	*Krasheninnikovia lanata*	39,333	9225	23%
C. Sagebrush scrub		**5,472,478**	**1,289,589**	**23%**
1 – Wyoming big sagebrush	*Artemisia tridentata var. wyomingensis*	2,651,451	756,652	28%
2 – Mountain big sagebrush	*Artemisia tridentata ssp. vaseyana*	789,781	217,860	27%
3 - Low gray sagebrush	*Artemisia arbuscula ssp. arbuscula*	587,176	109,960	18%
4 – Lahontan sagebrush	*Artemisia arbuscula ssp. longicaulis*	845,304	106,225	12%

5 – Basin big sagebrush	*Artemisia tridentata*	143,138	14,191	9%
6 – Big sagebrush	*Artemisia tridentata*	285,583	61,715	21%
7 – Theetip sagebrush	*Artemisia tripartita*	2,615	33	1%
8 – Black sagebrush	*Artemisia nova*	158,183	22,953	14%
9 - Rabbitbrush	*Chrysothannus*	9,247	0	0%
D. Riparian		**92,826**	**2,541**	**2%**
1 – Willows	*Salix*	88,790	2440	2%
2 – Silver buffaloberry	*Shepherdia argentea*	4,037	101	2%
E. Meadow		**2,657**	**110**	**4%**
1 – Tufted hairgrass	*Deschampsia cespittosa ssp. cespittosa*	1,075	110	10%
2 – Nevada bluegrass	*Poa nevadaensis*	1,312	0	0%
3 – Creeping wildrye	*Leymus triticoides*	270	0	0%
F. Woodland		**171,923**	**10,628**	**6%**
1 – Pinyon/Utah Juniper	*Pinus monophylia/ Juniperus osterosperma*	43,055	1046	2%
2 – Utah Juniper	*Juniperus osterosperma*	117,411	9579	8%
3 – Mountain mahogany	*Cercocarpus ledifolis*	9,920	3	
4 – Whitebark pine	*Pinus albicaulis*	1,537	0	
G. Barren		**659,661**	**0**	
H. Water		**22,673**	**0**	
	Total Vegetated	**9,448,578**	**1,703,556**	**18%**

3.11 Range

The WFO administers 103 grazing allotments which encompass the District's 8.5 million acres. There are approximately 110 livestock operators associated with these allotments. The majority of the grazing permits in the WFO authorize cattle grazing on public lands; however a few authorize sheep and horse use. Livestock grazing on public lands in the WFO is normally authorized during the spring and summer in the higher elevations, with fall and winter use in the lower elevations. Annually, the WFO licenses livestock operators to harvest approximately 240,000 Animal Unit Months (AUMs) of forage.

Wild fire can remove some or the entire forage base that sustains livestock grazing. The magnitude of the effect wild fire have upon individual permittees and livestock operations is dependent upon several factors, including the percentage of the allotment or use area that was burned, the degree of fire intensity and its effect on the vegetative resource, and the ability of the vegetative resource to recover the forage base. In addition, the amount of time closure may be required to allow for effective recovery and the ability of permittees to adjust their livestock operations to the loss of all or a part of their permitted use area define the nature of wild fire effects.

Wild fire also has detrimental effects upon range improvements established for the orderly and efficient management of livestock grazing. These range improvements include fences installed to control livestock movements, corrals, and water developments such as aboveground pipelines, as well as other improvements or structures installed for livestock management. Most range improvements effected by a wild fire sustain some level of damage and generally must be repaired or replaced prior to the resumption of livestock grazing.

3.12 Wild Horse and Burros

Approximately 5388 wild horses and 426 burros are currently found on 20 Herd Management Areas (HMAs) and 13 Herd Areas (HAs) in the Winnemucca Field Office District. Although these HMAs are dispersed throughout the District, some of them are in close proximity to one another and the animals move freely between them. Wild horses typically inhabit higher mountain areas during the summer months and can usually be found on valley floors and lower mountain slopes during the winter. Their habitat ranges from pinyon-juniper to saltbush scrub communities. Appropriate Management Levels (AMLs) have currently been established through allotment evaluations and final multiple use decisions on all but three of the HMAs. The AMLs should be established for those three HMAs by 2005. HAs have AMLs set at zero; they are not managed for wild horses and burros.

After a wild fire, lack of forage and contaminated water sources would force horses and burros to move out of the immediate area. They could move into adjacent areas within a HMA or they might move into areas outside a HMA, in which case they would need to be temporarily removed. Whether the burned area would be seeded or allowed to re-vegetate naturally, horses in close proximity to the burn would move back into the area as soon as it started to green up unless restrained by fencing. In the event of a large wild fire that decimated the majority of a HMA there would not be enough forage left for horses or burros and they would have to be temporarily removed until the HMA recovered.

Periodically wild horses and burros are gathered and some are removed in order to keep their population numbers at or below AML. This provides for the health of the herds, prevents degradation of the resources, encourages a thriving natural ecological balance, and allows for multiple use of the range.

3.13 Recreation

A wide variety of outdoor recreation activities occur on BLM-administered lands. These dispersed recreation activities include sightseeing, pleasure driving, rock collecting, photography, water sports, winter sports, off-road vehicle use, picnicking, camping, fishing, hiking, mountain biking, and hunting. This wide range of activities is possible because most of the lands within the WFO boundary are public lands that are accessible and offer a variety of settings suitable for different recreation activities. In addition to dispersed recreation use a number of commercial recreation events occur within the WFO administrative boundary, which include; OHV racing, mule racing, various horse events, wagon trains, cattle drives, land sailing, rocketry, and other miscellaneous events. The following table lists common recreational areas and visitor use located within the WFO.

Table 12. Local Recreation Visitation (2001)

NUMBER	RECREATION AREA	ANNUAL VISITORS
1	WFO Area	104,300
2	Dispersed Black Rock Area	73,000
3.	Pine Forest Recreation Area	8,400
4	Water Canyon Recreation Area	4,000
5	Humboldt Range	2,500
6	Trego Hot Springs	2,400
7	California National Historic Trail	1,900
8	Winnemucca Dry Lakebed OHV	800
9	Winnemucca Mountain Trail Bike System	760
10	Various Caves	75

With the exception of OHV use, lands affected by wild fire have damages to the recreation setting which make them unattractive for recreation use until the setting is restored.

3.14 Visual Resources

The BLM initiated visual resource management (VRM) during planning processes to manage the quality of the landscape and minimize potential impacts to visual resources resulting from development activities. In determining VRM class designations, the inventory process considers the scenic value of the landscape, viewer sensitivity to the scenery, and the distance of the viewer to the subject landscape. These management classes identify various permissible levels of landscape alteration, while protecting the overall visual quality of the region. Management classes are divided into four levels (Class I, II, III, and IV), with Class I designated as being most protective of visual resources (see table below). The objectives of these classes vary from very limited management activity to activity that allows major landscape modifications.

Table 13. BLM Visual Resource Management Classes

Visual Class	Description
I	Objective: Preserve existing landscape character. This class provides for Natural ecological changes. It does not, however, preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
II	Objective: Retain existing landscape character. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract a casual observer's attention. Any changes must repeat the basic elements of line, form, color and texture found in the predominant natural features of the characteristic landscape.
III	Objective: Partially retain existing landscape character. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the casual observer's view. Changes should repeat the basic elements found in the

	predominant natural features of the characteristic landscape.
IV	Objective: Provide for management activities that require major modification of the existing landscape character. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. Every attempt, however, should be made to minimize the impact of these activities through careful location, minimal disturbance and repeating the basic landscape elements.

Although site-specific plans are not identified in the proposed action, each rehabilitation project would be evaluated for its impact to visual resources. Management classes are utilized to identify the level of permissible impact to the visual resource.

Once potential impacts to visual resources have been identified for each location, visual design considerations could be incorporated on a case-by-case basis. Mitigation measures, using the following design techniques, may be developed for each plan to minimize adverse impacts to visual resources and to maintain the appropriate VRM class: Minimize disturbances during seeding; Attempt to repeat the form, line, texture and color of the surrounding native landscape; and rehabilitate topography to minimize variations in natural topography.

The assessment area is located within the northern Basin and Range physiographic province. Basin and range landscapes in northern Nevada are characterized by elongated, generally north trending mountain ranges separated by broad, open basins. This type of landscape allows for long viewing distances.

The public lands managed by the Winnemucca Field Office contain VRM Classes I-IV. Class I, the most protective class, is found in all the Wilderness Areas and Wilderness Study Areas. Class II and III areas are generally the scenic mountain ranges near communities and/or along Interstate 80, State Highway 95 and State Highway 140 and the other well traveled corridors in the area. The remainder of the area is Class IV.

Once an area is burned it is very noticeable and affects the VRM for at least the first year. The visual resource management qualities can be severely diminished by a large, hot fire.

3.15 Realty

There are several hundred authorized infrastructural uses of lands administered by the WFO. These include, but are not limited to, utility lines, water and gas pipelines, gravel storage areas, roads, communication sites, and wind energy sites. Authorized uses are issued to a Holder for a 30 year period with an option for renewal. These uses come with specific rights which are set forth within the Grant. Generally, an authorized use is not exclusive, but instead allows for other Holders to share authorized use if the uses are not conflicting.

4 Environmental Consequences

4.1 Air Quality

Air quality concerns relative to the proposed action and alternatives are rooted primarily in potential public health and safety hazards associated with windblown dust.

Proposed Action
Treatment1S-Dozerline stabilization
Treatment 2S-Road repair
Treatment 3S-Construction of erosion or sediment control structures
Treatment 4S-Repair of range improvements and facilities
These treatments would all generate dust during implementation. These impacts should be localized short-term. Motor vehicles used to transport personnel and equipment would introduce particulate matter to the local atmosphere, though in both cases, these impacts should be negligible.

The emergency rehabilitation treatments would have variable impacts on air quality. **Treatment 1R-Natural re-vegetation** would have slight to moderate impacts to air quality until natural recovery occurs.

Treatment 2R-Seeding would increase air borne particulates during the implementation phase if drilling, broadcasting, or chaining was employed as the seeding methodology. The vehicles and equipment associated with drilling and chaining would disturb soil surfaces, effects should be localized short-term and would generate dust and vehicle emissions during implementation. This particulate matter should quickly dissipate upon completion of the treatment. Little to no dust would be created during broadcast seeding since this method is usually conducted by ATV's or on foot. Regardless of seeding method, the treatment will aid in the establishment of groundcover and therefore, reduce the potential for particulates to affect air quality.

Treatment 3R-Closure would have no direct effect on air quality, since the treatment is limited to the installation of temporary fencing and turning off water facilities. However, the exclusion of livestock, wild horses and burros would allow groundcover to become established, thereby reducing windborne dust originating from the burned area.

The **Treatment 4R-Replacement of burned facilities** could potentially create dust due to the movement of vehicles and equipment. However, air borne particulates should be localized and suspended for a short period of time. Therefore, the effect on air quality will be negligible.

Treatment 5R-Greenstripping involves the use of discing and/or mowing to prepare seed beds. The vehicles and equipment associated with discing and drilling would disturb soil surfaces, effects should be localized short-term and would generate dust and vehicle emissions during implementation. The impact on air quality as a consequence of seeding depends on the technique used, as described under Treatment 2R above.

Treatment 6R-Nonnative weed control should have a negligible effect on air quality. The most common control method used, the application of herbicides, would be implemented after vegetation has been established, thus the creation of dust from the physical application of the treatment is of little concern. The herbicide is typically applied in small amounts on individual weeds, and dissipates quickly when contacted by air. Therefore, there should be no impact to air quality from its use.

In general, the types of herbicide used by the WFO are designed to eradicate specific types of weeds. Since their use will not result in large areas of denuded ground, the potential for dust suspension as a consequence to their use is minimal.

No Action

The No Action alternative would have a substantial effect on air quality in areas completely denuded of vegetation. Windblown dust, in the form of loose surface soils and ash, can become entrained in the ambient air to which the public will be exposed. This situation can result in increased health hazards for sensitive groups such as children, elderly, and individuals with asthma and emphysema. Reduced visibility caused by blowing dust and ash within transportation corridors can result in an increased potential for vehicle accidents. These potential consequences would continue until the burned area slowly stabilized by the natural establishment of ground cover.

4.2 ACECs

Proposed Action

ACECs are designated to provide special management actions for relevant and important resource values. In the case of the two ACECs within the Winnemucca District, the relevant and important resource values are associated with the presence of rare species. The Soldier Meadows ACEC contains three taxa, desert dace (a fish), Basalt cinquefoil (a plant) and elongate Mud Meadows springsnail (an aquatic snail). The Osgood Mountain Milkvetch ACEC is based upon known habitat of the Osgood Mountain milkvetch, a plant species. Both, ACECs are small in size and vegetation is relatively sparse, therefore the probability that wild fire would burn more than portions is considered low.

The Osgood Mountain Milkvetch ACEC would not be impacted by the application of any stabilization or rehabilitation treatments because fire occurrence is not expected and the application of the Standard Operating Procedure for special status plant species would ensure that ESR actions within the ACEC could only occur if there would be no impact on the plant species.

The Soldier Meadows ACEC contains popular recreation campsites associated with the hot springs which creates a possibility that campfires may escape into native plant communities. No stabilization measures would be required due to the gentle nature of the terrain. Actions taken to replace burned facilities would have no impacts on the rare species because these facilities have been located away from habitats of these species. The ACEC would not be impacted by the application of any rehabilitation treatments because the application of the Standard Operating Procedure for special status plant

species and the inclusion of a wildlife biologist on any planning team would ensure that rehabilitation actions within the ACEC could only occur if there would be no impact on the special status species.

Therefore implementation of the proposed action would have no affect on ACECs or the resources for which they were designated.

No Action
No ESR measures would be undertaken in either of the two ACECs therefore there would be no impact on the ACECs or the values for which they were designated.

4.3 Special Status Plant Species

The special status plant species that occur in the district all are associated with narrowly defined habitat requirements, related to very specific soils and parent materials. The sites these species occupy are almost always tend to have sparser vegetation than surrounding areas and occupy very small patches on the landscape. The probability of these habitats burning in a wild fire is low and often when surrounding plant communities do burn these sites have such sparse vegetation that fire does not carry across the special status species habitats.

Proposed Action
Short-term Impacts
Inclusion of a wildlife biologist on the interdisciplinary team planning for emergency stabilization and rehabilitation projects as outlined in Section 2.3 would allow for site-specific considerations of special status plant species. This would result in a reduction of potential impacts when these open sites are inadvertently disturbed during application of emergency stabilization and vegetation rehabilitation projects. However due to the small area that these species occupy on the landscape, the likelihood of such disturbance is considered very low.

Long-term Impacts
No long term impacts would be foreseen. The specialized characteristics of the soils and preferred landscape settings usually allow these species to successfully rehabilitate if they were subject to a wild fire.

No Action
Short-term Impacts
No impacts would be foreseen. In the unlikely event that a wild fire burned on or near the habitat for any special status plant species, no additional human disturbance would be undertaken that could impact habitats for special status plant species.

Long-term Impacts
Impact would be the same as the Proposed Action.

4.4 Cultural Resources

As mandated by Section 106 of the National Historic Preservation Act, it is the responsibility of the WFO to take into account the effects of the proposed action and alternatives on cultural properties included in or eligible for the National Register of Historic Places (i.e., significant cultural properties). Of particular concern is the prevention or mitigation of adverse effects. Although adverse effects can take a variety of forms, the primary source in the context of the proposed action and alternatives stem from ground disturbance.

Proposed Action

The potential impacts to cultural resources vary widely depending upon the treatment method(s) proposed. The source and potential severity of both direct and indirect effects associated with each treatment method is presented in Table 12. As a general rule, treatments associated with extensive ground disturbance have the most potential to adversely affect cultural properties. The most extensive ground disturbing treatments (e.g., **Treatment 1S, 2R, and 5R**) have the greatest potential to disturb site integrity, destroy artifacts, disrupt intact and datable cultural deposits, or completely destroy the resource. Those treatments associated with less ground disturbance (e.g., **Treatment 3S, 1R, 3R, and 4R**) have correspondingly less potential to impart these impacts.

However, any treatment or combination of treatments that has the potential to impose an adverse effect regardless of severity would require some level of cultural resource investigation prior to project implementation (see Table 14). The investigation process begins by first examining existing records as to the location and nature of known cultural resources in the area (Class I inventory). In some cases, resources within the area of disturbance may be known and their significance established. If the area has been intensively inventoried for cultural resources within the last 10 years, no new inventory work is usually conducted, though individual properties will be reexamined.

Table 14. Potential Impacts and Preventative Actions Associated with the Proposed Action.

Treatment Alternatives	Source of potential adverse Impacts	Potential severity of adverse impacts	Proposed mitigation measures to prevent adverse impacts
Emergency Stabilization			
1S Dozer line stabilization	Equipment movement and blade disturbance	Adverse impacts are generally severe due to the weigh of tracked equipment and ground-disturbing nature of dozer line stabilization.	-A Class I and Class III cultural resource survey would have been conducted as part of the fire suppression damage assessment and no new inventory should be necessary. -Significant cultural resources identified during the fire suppression damage assessment will be avoided.
2S Road repair	Equipment movement and excavation	Road repair does not generally impart adverse impacts as long as the repairs are confined to the	-A Class I and Class III survey of undisturbed areas if applicable. -Evaluation of the road as a historic property if indicated from

		existing roadbed or other areas of previous disturbance. Adverse impacts can be very severe if the repairs involve undisturbed areas.	the Class I inventory. -Significant cultural resources will be avoided through project redesign or mitigation measures will be developed and implemented.
3S Construction of erosion or sediment control structures	Ground disturbance associated with construction and potential accumulation of sediments	The construction of straw bale check dams, straw wattles, the placement of excelsior mulch fabric should not impart adverse impacts, although the accumulation of sediments associated with their use could. Such potential impacts will vary widely depending upon slope and soils.	-A Class I inventory of affected areas. -A Class III survey would conducted at individual locations if the construction of the structures involves ground disturbance. Monitoring may be recommended if erosion or the accumulation of sediments have the potential to impact a significant cultural property. -Significant cultural resources will be avoided through project redesign or mitigation measures will be developed and implemented.
4S Range Improvements and Facilities	Vehicular and equipment movement and excavation associated with repair.	Adverse impacts could be non-existent to severe depending upon the nature of the repair. In many cases, cultural resource inventories have been conducted prior to the original construction of facility.	A Class I inventory of areas slated for repair. Class III survey only in cases where it was not conducted during original construction.
Rehabilitation			
1R Natural Revegetation	No direct adverse impacts are associated with this treatment, although erosion could impart such impacts where revegetation is slow or does not occur.	Because this treatment is not associated with a ground-disturbing action, no direct adverse impacts are anticipated. However, erosion could be negligible to severe depending upon slope, soils, and precipitation levels.	-A Class I of the affected area. -Stabilization measures may be required if significant cultural properties are threatened by erosion.

2R Seeding	Broadcast and drill seeding	The extent of adverse impacts depends upon seeding methodology. Aerial methods are not associated with adverse impacts. Broadcasting can impart minor to moderate adverse impacts if pickups are used to disperse seed. Broadcasting will not impart such impacts if it is conducted by hand, ATV or helicopter. Due to the extensive ground disturbance associated with drill seeding, the method will impart severe adverse impacts to cultural resources located in the treatment area. Such impacts can also be severe if chaining is used to cover seed dispersed through broadcast or aerial methods.	-A Class I survey of the area slated for seeding. -If the area has not been previously surveyed and if seed will be applied via drill or chained, either a Class II (low potential areas) or Class III (high potential areas) survey will be completed and significant sites avoided. If the area has been surveyed in the last 10 years, then significant sites will be relocated and flagged for avoidance. -Aerial or broadcast seeding without chaining will not normally require survey, though stabilization measures may be required if known significant cultural properties are threatened by erosion
3R Closure	Construction of fence and/or cattle guards	Construction impacts are generally negligible with fence construction. The placement of cattle guards should not generally impart significant impacts, as they are usually placed in existing roads. Impacts associated with cattle trailing can vary widely depending on the number of livestock and frequency of trailing. Where the number of cattle is large and trailing is frequent adverse impacts can be very severe.	-A Class I survey of proposed fence line and/or cattle guard areas. -A Class III survey of the fence line route would be conducted. Significant cultural resources will be avoided through project redesign. -Evaluation of the road associated with the proposed cattle guard as a historic property if indicated from the Class I survey.
4R Replacement of Burned Facilities	Vehicular and equipment movement and excavation associated with repair.	Adverse impacts should be negligible. In many cases, cultural resource inventories have been conducted prior to the original construction of facility.	-A Class I inventory of facilities location. -If the location of the burned facilities has been previously inventoried, no further action is usually necessary. -If the repairs involve ground disturbance and the location has not been previously surveyed, then a Class III of the area of potential effect would be conducted.

5R Green stripping	Equipment movement, plowing, mowing, drilling associated with removal of existing vegetation and reseeding	Adverse impacts can be moderate to severe depending upon the methods used to remove natural vegetation and to seed fire-retardant species.	-A Class I inventory of the proposed green strip area. -If the area has not been previously inventoried in the last 10 years, a Class II (low potential area) or a Class III (high potential area) would be conducted and significant cultural properties flagged for avoidance.
6R Non-native weed control	Equipment movement, erosion	Adverse impacts are likely to be non-existent to moderate depending upon the control methods used and the amount of bare ground created.	-A Class I inventory of the treatment area. -If a spot treatment is conducted on foot or from ATV's then no further work would be conducted. If a area treatment is conducted that will result in denuded areas then a Class II (low potential) or a Class III (high potential) inventory would be conducted. Significant cultural resources will either be avoided entirely or spot treated. Periodic monitoring may be required to ensure that significant properties are not threatened by erosion.

However, given that such a small proportion of the lands administered by the WFO have been examined for cultural resources, some level of field inventory and site evaluation will usually be necessary. In these cases, the Class I inventory affords guidance as to the potential of the area to contain significant cultural resources and forms the basis for decisions regarding the level of field inventory required. Areas of potential effect that are judged to have a low probability of containing significant cultural values are usually inventoried at a relatively low level of intensity (i.e., sample survey [Class II] or wide transect survey). High probability areas are generally inventoried at a Class III or a continuous, intensive level. More specific guidance regarding appropriate survey intensity is provided in the State Protocol Agreement between the BLM and Nevada State Historic Preservation Office and associated amendments. Deviations for the guidance provided in the state protocol will be implemented after SHPO consultation and concurrence.

Archaeological resources identified with the area of potential effect will be documented and evaluated for significance. Resources that are considered to be eligible for the National Register of Historic Places will be avoided or have potential adverse effects mitigated through more intensive data collection. Avoidance is the preferred management option with regard to such properties and can take several forms, from flagging to project redesign. In the absence of reasonable avoidance options, mitigation measures will be implemented in consultation with the Nevada State Historic Preservation Office and local tribal groups prior to the project implementation.

No Action

Under the no action alternative, there will be no effect on cultural resources as a direct consequence of implementing treatment(s). However, the lack of intervention will subject archaeological resources to wind and water erosion due to the lack of ground cover. In addition, increased visibility will subject cultural resources to unauthorized collection. These vulnerabilities will not be reduced until natural ground cover becomes established.

4.5 Native American Religious Concerns

As indicated, few places of traditional or religious concern to Northern Paiute and Western Shoshone groups are known on land administered by the WFO. Unlike archaeological resources, places of Native American traditional or religious importance may not contain material remains recognizable to cultural resource specialists and may go undetected using standard inventory methodologies. Therefore, it is vital that input be solicited from local and regional tribal officials, individuals with the knowledge of these places and an interest in their protection. The various tribal organizations contacted for this PEA are presented in Table 15 (see also Appendix V).

Table 15. Native American Groups Contacted for the NFRP.

Alturas Indian Rancheria	Klamath Tribe
Battle Mountain Band	Lovelock Paiute Tribe
Burns Paiute Tribe	Pit River Tribe
Cedarville Rancheria	Pyramid Lake Paiute
Confederated Tribes of Warm Springs Reservation	Shoshone-Bannock Tribes
Duck Valley Shoshone-Paiute Tribe	Summit Lake Paiute Tribe
Fallon Paiute-Shoshone Tribe	Susanville Indian Rancheria
Fort Bidwell Indian Community	Walker River Paiute Tribe
Fort McDermitt Tribe	Washoe Tribe
Inter-Tribal Council of Nevada	Winnemucca Tribe

Solicitation usually occurs by notifying tribal officials of the location of the ESR project and specifying proposed treatments and potential impacts associated with their implementation (see Table 14). In addition, the solicitation requests tribal assistance in identifying places of traditional and religious concern in the vicinity. It is important to follow the solicitation with telephone calls or direct contact in order to initiate consultation. Information relative to the location and nature of traditional and religious places is sensitive to tribal groups and the BLM will consider such information confidential.

In cases where traditional or religious places are identified within the area of potential effect of a given ESR project, Section 106 of the National Historic Preservation Act requires that the location is documented and evaluated for NRHP eligibility. Direction for the satisfaction of this requirement is provided in the National Register Bulletin, Guidelines for Evaluating and Documenting Traditional Cultural Properties.

While the level of ground disturbance associated with each treatment provides a general guideline to adverse impacts (see Table12), the potentially wide variety of property types having traditional or religious importance precludes a straightforward analysis of effects as in the case of many prehistoric and historic period archaeological sites. Here again consultation with tribal groups is critical. If the tribal group feels that the ground disturbance associated with a given treatment will not result in the loss of significance of a place, then the treatment may be implemented as planned as long as the Nevada SHPO concurs.

If, on the other hand, the tribal group feels that the ground disturbance associated with a treatment(s) will result in the loss of significance of the place to any degree, then the BLM will insure that measures are taken to avoid or reduce the impact.

4.6 Noxious Weeds

Proposed Action

Noxious weeds are very aggressive introduced plants that readily occupy disturbed sites, such as burned areas then spread to adjacent areas. Noxious weeds are highly competitive and can effectively compete with and replace native perennial plant species. Once established, monocultures of weeds can develop and are accompanied by declining resource values such as lack of biodiversity, wildlife habitat and livestock forage.

Emergency Stabilization Treatment Options 1S-4S

Under the dozerline, road repair, range improvements and facility construction treatments, the ground disturbing activities would have a tendency to spread the establishment of invasive weeds. Seeding of disturbed areas would reduce the potential of establishment of invasive weeds. Once perennial species have been established routine maintenance would control any potential spread in the burned areas and/or surrounding areas.

Rehabilitation Treatment Options 1R-6R

These treatments include natural re-vegetation, seedings, greenstrips, and weed control. Reestablishment and seeding of perennial vegetation would compete with any invasive and/or noxious weed infestations. Equipment utilized for seeding and construction of greenstrips could introduce weed seeds into areas. However based on implementation of SOPs, these impacts would be minimal as equipment would be washed prior to use. The cost associated with noxious weed control escalates as the plants become established and infestation size increases. In order to economically eradicate or control noxious weed infestations, control efforts should be initiated at the earliest possible time. Monitoring of rehabilitation areas would identify if invasive weeds are getting established. Seeding and noxious weed control efforts would further reduce impacts associated with noxious weeds. Overall impacts from noxious weeds would be minimal.

No Action

Under the No Action alternative noxious weeds would not be controlled. New discoveries of weed infestations would continue to spread, adversely impacting habitat quality and

quantity of both terrestrial and aquatic wildlife habitat. Wilderness values would be affected and the visual setting of wilderness could change. Noxious weeds would establish themselves in areas of habitat for special status species and habitat for migratory birds, changing the amount of cover and potential food sources for these species.

Long term negative impacts to riparian areas and associated fish habitat would occur under the no action alternative as noxious weeds could out compete native riparian species causing potential increases in sedimentation, unstable banks and limited shading of water from vegetation. The loss or decline of multi-storied vegetation due to noxious weed infestations and associated mono - cultures, could increase water temperature and reduce the supply of invertebrate food sources for fish and affect wildlife.

4.7 Water Resources

Proposed Action

After a wildland fire has occurred in an area, the immediate adverse impacts to the environment are obvious. There are numerous options that can be taken to ameliorate the affects of fire. Together, these separate options make up the proposed action in chapter 2. Given the specific conditions of each individual fire, the Authorized Officer will have the ability to select the treatment(s) that best fit the circumstances. Accordingly, this analysis will analyze the impacts associated with each treatment individually:

Treatment 1S-Dozer Line Stabilization

Negative impacts to water resources from dozer line stabilization are limited. This treatment has been designed to mitigate the effects of fire suppression activities. Properly placed water bars serve to reduce the flow distance of run off, thereby reducing the erosive power. This action is made more effective by "pulling" back the bladed material which minimizes the area in which runoff has to concentrate. Negative impacts may occur in areas where proper water bar spacing does not occur. In those areas where the spacing is too distant water will have the opportunity to concentrate and generate sufficient mass and velocity to cause erosion at the point of the outfall ditch.

Treatment 2S-Road Repair

Road repair activities which could cause negative impacts to water resources include surface disturbance or re-disturbance of areas that could lead to erosion and sedimentation of water ways on a small scale. This impact is not likely given that the stated purpose of this treatment is to restore drainage. Much like water bars, the re-establishment of the road prism would prevent additional erosion and sedimentation on a large scale. Adherence to BLM specifications would further reduce the potential for impacts.

Treatment 3S-Construction of Erosion or Sediment Control Structures

Erosion and sediment control structures have the potential for extensive, negative impacts if implemented improperly. The range and severity of impacts would vary by type of structure installed and the environmental setting where they are placed. These structures are, by design, obstructions to the natural flow of water, and can result in the alteration of

the natural flow path resulting in severe onsite erosion and downstream sedimentation. To avoid this possibility it is imperative that the structures be sized in accordance with their contributing watershed, and built within their respective design specifications.

When designed and built properly these structures can reduce the overall sediment load to the downstream receiving waters, and serve to interrupt flow paths thereby reducing erosion potential. Given the potential for failure, these devices should only be built where the threat to downstream resources is severe.

Treatment 4S-Range Improvements and Facilities
Repair and replacement of facilities damaged by fire suppression activities would have negligible impacts on water resources as compared to their pre-burn condition. Minor erosion may occur from any additional surface disturbance (vehicle traffic) associated with repair and or replacement.

Treatment 1R-Natural Re-vegetation
Direct impacts associated with this action would be minor. Indirect impacts related to this treatment would be beneficial to watershed resources due to the associated closure to authorized livestock and/or wild horses and burros. The decision to implement this treatment would be based in part on watershed resources. An interdisciplinary review would occur that would evaluate the health of the remaining vegetation and the environmental setting. This review would determine that the setting is such that the natural community would re-establish itself and would eventually return to the pre-burn condition or that physical and climatic factors were such that the potential success of other treatments would be outweighed by negative impact of increased surface disturbance, in either instance additional intervention would not be warranted.

Treatment 2R-Seeding
Direct impacts to water resources from seeding will be dependant upon the seeding methodology that is selected. Assuming normal seeding success rates, this treatment would result in the quickest return to pre-burn watershed conditions and natural erosion and sedimentation potentials. Direct impacts associated with drill seeding are the concentration of overland flows within the drill furrow. This condition is substantially mitigated by the standard operating procedure of drilling along contour, or perpendicular to the slope (which will actually reduce sediment transport by increasing surface roughness). In those areas where state and interstate highways cause the drill seeding to run parallel to the slope rill erosion would occur. The severity of this erosion would be dependant upon the length and gradient of the slope.

Aerial seeding by itself would not result in impacts to water resources. If the treatment is further modified by selecting the chaining methodology to accompany the aerial seeding then minor erosion and sedimentation may occur. The act of chaining will disturb a large percentage of the ground surface, loosening the uppermost soil layer. These impacts are normally short lived due to the shallow depth of disturbance and further mitigated by the resulting surface roughness that would be created. Impacts related to broadcast seeding would be indistinguishable from those related to aerial seeding.

Treatment 3R-Closure
Direct impacts to water resources from closure will be minimal. Burned area closures speed the recovery of vegetation in the affected areas, indirectly providing positive impacts for water resources by allowing disturbed areas to settle, and by providing the maximum opportunity for watersheds to return to their pre-burn condition.

Treatment 4R-Replacement of Burned Facilities
The impacts to water resources under this treatment would be the same as those listed under Treatment 4S.

Treatment 5R-Greenstrips
Direct impacts to water resources from Greenstrips would be similar to those of Treatment 2R since the technique to create the Greenstrips would have to be selected from the methodology presented in Treatment 2R. Indirect impact to water resources would be beneficial due to the degree of watershed protection that the Greenstrips would provide.

Treatment 6R-Noxious Weed Control
Direct impact to water resources from noxious weed control would be dependant upon the manner in which they are controlled. Mechanical treatment would result in some surface disturbance and the associated potential for erosion, the degree of erosion and sediment potential would be dependent upon the setting and size of the infestation. Chemical controls would result in no negative impacts provided that the application would be done within the specific limitations presented on each chemical's label. Improper application could result in contamination of water resources. Indirect impacts would be beneficial due to the maintenance of the native vegetation community and the corresponding watershed function.

No Action
The direct impacts associated with this alternative are limited since the affects of the fire have already transpired. Indirect impacts associated with this alternative can be extensive however, depending upon the level of fire intensity and the activities employed for suppression. The main affects will be increased erosion and sedimentation, but there will also be long lasting changes to watershed characteristics, such as: increased flood frequency and magnitude, decreased flow duration and depleted water storage capacity.

Implementation of this alternative will result in linear features, such as roads and dozer lines that will act to collect and concentrate storm runoff. Depending upon the orientation of these features to the topography, it is likely that gully erosion will develop if reclamation practices are not applied.

Likewise, watersheds left untreated normally respond through adjustments in stream channel geometry. These adjustments are contingent upon watershed size, gradient and elevation. In steeper areas the expected response would be for channels to incise, thereby restricting floodplain access and increasing their erosive force, and in the lower gradient

areas the normal response would be for channels to broaden and become more of a depositional feature. Each of the aforementioned conditions would result in a lesser potential for riparian recovery and diminished aquatic habitat conditions.

4.8 Wildlife

Terrestrial Wildlife

The specific locations, size and intensity of wildland fires that would cause BLM to consider any of the stabilization or rehabilitation treatments is unknown. Therefore a specific analysis of the impacts on wildlife habitats and populations is impossible. The analysis below is based upon several assumptions that allow for a generalized approach to wildlife habitat and population trends following wildland fires:

Wildland fires would remove essentially all standing woody material that provides the vertical habitat structure that provides the primary basis for wildlife habitat diversity and populations. Comparison between wildlife species use for feeding and reproduction in grass/herbaceous communities and mature stands of various shrub and tree dominated plant communities (as indicated in Table 8) provides a valid means to evaluate the impacts of various stabilization and restoration projects on wildlife habitats and general population trends. All of the activities proposed with the potential exception of portions of fencing in support of Treatment 3R-Closure and implementation of Treatment 5R-Greenstrips would be conducted in previously burned areas. The process outlined in section 2.3 would enable site specific wildlife occurrence, habitat and population information to be incorporated in the specific design of projects.

Proposed Action

Short-term Impacts

Emergency stabilization treatments including **Treatment 1S-Dozer line stabilization**, **Treatment 2S-Road repair** and construction of **Treatment 3S-erosion control structures** would be locally beneficial to wildlife habitat and populations. Collectively these measures which would be applied on a small fraction of the burned area of any fire, but decrease the risk that additional loss of habitat would occur due to adverse erosion from unprotected sites. The repair of **Treatment 4S-Improvements and facilities** would have minimal effects on wildlife except for a localized beneficial impact where repair of those sites would restore artificial perches.

Application of Rehabilitation treatments would have limited impact on wildlife habitats and populations. Habitat conditions would remain altered from pre-burn conditions due to the loss of plant species and structural diversity associated with the wildland fire. In the case of reburns of sites previously dominated by annual grasses, there would be no change in habitat structure conditions. Where rehabilitation is successful, the development of shrubs and trees would be at a stage where only young plants would be established. Therefore the structural diversity would be only slightly improved when compared to the post-burn herbaceous dominated plant communities.

Applications of two treatments, **3R-Closure** and **5R-Greenstrips**, would be expected to involve unburned plant communities. Construction of fencing in unburned existing shrub stands would locally increase wildlife related mortality associated with animal-fence collisions. Development of greenstrips would locally decrease the amount of vertical structure available for wildlife populations.

Long-term Impacts
The application of Stabilization treatments would result in long-term stabilization of about half the areas disturbed during fire suppression efforts. This would be a beneficial impact to wildlife populations and habitats.

Application of the six rehabilitation treatments would support the return of wildlife habitats to pre-burn conditions on 40 to 50 percent of the areas burned by wildland fires. About 35% of the district is expected to naturally re-vegetate burned areas with plant communities dominated with native species, including woody species. Another 15% is suitable for seeding with expected success on two of three acres. The remaining 50% has limitations in soils, slope, rockiness and precipitation that do not allow for successful restoration.

Of the 16 life forms described adapted from Maser et al (1984) and described in the Affected Environment section, only one (Life Form 1, Reproduces in water-Feeds in water) does not have species that benefit from the restoration of the vertical structure associated with shrubs or trees. Of the 123 instances shown in Table 8 where species would be expected either to feed or reproduce within mature shrub or tree dominated plant communities there are only 4 instances where species occurrence would be higher in the post fire grass/herbaceous community. These correspond to the shaded boxes in the table.

Table 16 provides a summary of the value of restoration of shrub and woodland sites to pre-burn conditions for 273 wildlife species. Each column indicates the additional number of species that either feed or reproduce in each plant community where woody plants are present compared to the post-burn grass-herbaceous community that lack mature shrubs or trees. The restoration of native plant communities has the potential to increase the number of species using those communities by over 100 species in the cases of feeding species in tall sagebrush and juniper woodland communities. Plant communities with less vertical structure have lower potential increases, but in none of the upland communities that may be affected by fire is the post-burn grass-herbaceous community better for wildlife than shrub or tree dominated communities.

Table 16. Increase in the Number of Species Reproducing (R) or Feeding (F) in each Vegetation Community compared to the Post-burn Grass/Herbaceous Community

Total Number of Species	Shadscale/ Saltbush		Greasewood		Low Sagebrush		Tall Sagebrush		Juniper		Aspen	
	R	F	R	F	R	F	R	F	R	F	R	F
273	8	29	21	45	25	47	77	107	78	105	52	72

For the Tall Sagebrush communities, the plant communities that have historically burned in greater proportion than their occurrence on the landscape, restoration that leads to the establishment of mature sagebrush would create a potential for 77 more species reproducing and 107 more species feeding when compared to the post burn grass/herbaceous communities that occupy potential tall sagebrush sites. Life form 5, species that reproduce on the ground and feed on the ground, includes economically important species, neo-tropical migrants and other resident non-game species including sage-grouse, pronghorn antelope, mule deer, chukar and California bighorn sheep. Restoration of tall sagebrush habitats could increase the number of species in this Life Form reproducing by 20 and the number of species feeding by 26.

Application of **Treatment 1R-Natural Revegetation** would result in two different outcomes for wildlife habitats and species. Those areas with the potential for natural recovery (estimated to be 35% of areas burned by wildland fire) would be expected to recover over the long-term to near pre-burn conditions. These sites would include all the aspen and low sagebrush sites and tall sagebrush and juniper plant communities at higher elevations. This would allow for increasing wildlife species occupancy as shown in Table 13 and increasing population densities as woody species matured. The outcome would be different on the estimated 50% of burned areas that would receive no rehabilitation treatment due to soils, precipitation, slopes, rockiness and other limiting factors. On these sites, habitats would be remain dominated by grass/herbaceous plant communities for the foreseeable future and return to shrub dominated only where sprouting shrubs (e.g. greasewood) were dominant before the burn. On these areas wildlife species diversity would remain substantially less than pre-burn.

Treatment 2R-Seedings would be expected to be applied to about 15% of the burned areas with an expectation that the seeding are successful about two thirds of the time. A portion of the seedings would include native shrubs in the seed mixtures. Seedings that fail would be expected to result in impacts to wildlife similar to those described above for the 50% of burned areas not expected to recover naturally, but not suited to seedings. Successful seedings would be expected to slowly recover toward preburn conditions due to the establishment of shrubs included in the seed mix or the slow invasion of seedings by native shrubs from outside the treated area. In either case this process would slowly lead to improving wildlife habitat and population conditions associated with the reestablishment of shrubs on the landscape.

Treatment 3R-Closure would be expected to indirectly benefit wildlife habitats and populations over the long-term. Fencing required to allow for successful closure would increase the likelihood of success of this rehabilitation treatment by protecting recovering and newly established plants. Closure would reduce herbivory on burned sites during the time period when recovering existing or seeded species are most vulnerable to disturbance. Closure would improve the likelihood that natural revegetation and seedings are successful, leading to future reestablishment of plant communities with shrub and tree vegetation.

Treatment 4R-Replacement of Burned Facilities would have little long-term impact on wildlife habitats and populations except where these facilities provide water to wildlife.

Treatment 5R-Greenstrips would be likely to decrease the size of future burned areas by providing potential control lines and reducing fuel continuity with a net result of decreased areas burned by wildland fires. Decrease burned areas would reduce the rate at which wildlife habitats are lost or damaged to wild fires.

Treatment 6R-Nonnative weed control would indirectly benefit wildlife habitats and populations over the long-term. Weed control would reduce competition between aggressive invasive species and native or desirable seeded species on burned sites during the time period when recovering existing or seeded species are most vulnerable to competition. Control would improve the likelihood that natural revegetation and seedings are successful, leading to future reestablishment of plant communities with shrub and tree vegetation.

No Action

Under the No Action Alternative, the post wild fire areas would not be stabilized or rehabilitated. None of the proposed stabilization measures would be carried out. On about 15% of burned areas suitable for seedings, no seeding would be conducted. No closures to livestock, wild horses and burros would be required, no weed control or greenstrips would be implemented.

Short-term Impacts

Localized water erosion in and adjacent to dozer lines and roads would locally decrease habitat values for wildlife. Loss of water sources associated with damaged livestock or wildlife water projects would decrease habitat use by wildlife in the vicinity of damaged projects.

Long-term Impacts

On the 35% of burned areas suitable for natural revegetation and the 50% of burned areas not suitable for seedings, impacts would be similar to those discussed for the Proposed Action. However, continued livestock, wild horse and burro use, and often concentration of these animals on recently burned areas, would slow recovery rates on sites where natural recovery is likely to be successful. On the 15% of burned areas suitable for seedings, these sites would remain grassland/herbaceous communities and be at substantial risk for invasion of noxious weedy species for the foreseeable future. This would preclude any possibility of long-term restoration of native woody communities.

4.9 Threatened, Endangered or Sensitive

4.9.1 Aquatic Species

Same impacts as described for the Proposed Action and No Action Alternatives in Section 4.6 Fisheries/Aquatic Resources.

4.9.2 Terrestrial Species

The analysis below is based upon several assumptions that allow for a generalized approach to wildlife habitat and population trends following wildland fires:

Wildland fires would remove essentially all standing woody material that provides the vertical habitat structure that provides the primary basis for wildlife habitat diversity and populations. The process outlined in section 2.3 would enable site specific special status species occurrence, habitat and population information to be incorporated in the specific design of projects.

Species with a high likelihood of having their habitat affected by wildland fire and with a widespread distribution are much more likely to be affected by potential fire rehabilitation efforts than species will low likelihood of habitat affect and limited distribution. This analysis will focus on the species with the greatest possibility of being affected by the Proposed Action as shown in Table 6 in the Affected Environment section. The species to be considered here are western burrowing owl, sage-grouse, pygmy rabbit and Desert bighorn sheep.

Proposed Action

Short-term Impacts

Impacts would be similar to those discussed for terrestrial wildlife species. The western burrowing owl and pygmy rabbit occupy burrows that could be disturbed during emergency stabilization actions and during implementation of seedings. Sage-grouse breeding and nesting could be disturbed by implementation of stabilization or rehabilitation activities during the spring when these habitats are being used by sage-grouse. Inclusion of a wildlife biologist on the interdisciplinary team planning for emergency stabilization and rehabilitation projects as outlined in Section 2.3 would allow for site-specific and seasonal considerations for all special status species. This would result in a reduction of potential adverse impacts to species.

Long-term Impacts

Impacts would be similar to those discussed for terrestrial wildlife species. Treatments that increase the likelihood of long-term restoration of plant communities with a strong component of woody species used by special status species would be expected on about 10% of burned areas. Sage-grouse could be impacted indirectly by fence construction and changes in livestock or wild horse concentrations associated with implementation of closure in breeding, nesting and brooding habitats. Seeding treatments that include surface disturbance could disturb burrows of western burrowing owl and pygmy rabbit, although the ability of pygmy rabbits to successfully occupy burned areas over the long-term is considered low. All four species would benefit from closures that increase the amount of native herbaceous vegetation that directly provide forage for pygmy rabbit, California bighorn sheep and sage-grouse or indirectly by improving prey items for the western burrowing owl or sage-grouse (e.g. insects). Inclusion of a

biologist on the team planning these restoration projects would increase site-specific consideration of these species and reduce potential adverse impacts associated with implementation of restoration measures.

No Action

Short-term Impacts

Impacts would be similar to those discussed for terrestrial wildlife species. Increased water erosion and often increased livestock and wild horse grazing due to animals concentrating on recently burned areas would adversely affect wildlife habitats. The primary impact would be delaying the establishment of healthy stands of native plants on the 35% of the district where natural revegetation of burned sites would be expected to occur. This would indirectly impact all four species likely to be affected by wild fires.

Long-term Impacts

Impacts would be similar to those discussed for terrestrial wildlife species. About 65% of burned areas would remain dominated by grass/herbaceous plant communities with diminished woody vegetation that support the majority of wildlife species including most special status species. Allowing livestock or wild horse grazing to continue during natural revegetation on about 35% of burned areas would delay recovery of habitats and impact habitat quality and populations densities for all four species.

4.10 Fisheries/Aquatic Resources

Proposed Action

Impacts to aquatic resources from fire rehabilitation and stabilization will vary by treatment. The effects of each treatment on fisheries and aquatic resources would include those described for water resources, in addition to those below:

Treatment 1S–Dozer line stabilization

No direct effect on aquatic resources is expected; however beneficial indirect effects would occur. These indirect effects include a reduced potential for erosion and subsequent sedimentation of aquatic habitats.

Treatment 2S–Road repair

Similar to Treatment 1S

Treatment 3S–Construction of erosion or sediment control structures

Similar to Treatment 1S

Treatment 4S–Range Improvements and Facilities

No direct effect on aquatic resources is expected; however minor indirect benefits to aquatic resources may occur. These beneficial effects would be primarily due to the reconstruction of riparian exclosures, fences, and troughs; all of which reduce potential

impacts to aquatic habitats from livestock and/or wild horse and burro grazing during the recovery period.

Treatment 1R–Natural Re-vegetation
The direct and indirect effects of this treatment on aquatic resources would be beneficial, but would vary by site condition and the period of time it would take to recover vegetative habitats to pre-burn condition.

Treatment 2R–Seeding
Same as 1R; however the reduced success rates of this treatment would also reduce the potential for the recovery of these habitats.

Treatment 3R–Closure
This treatment would eliminate livestock and/or wild horse and burro grazing from a burned area for a period of time. Aquatic resources would directly and indirectly benefit from this treatment. By eliminating large grazing ungulates from aquatic habitats, direct negative impacts to streambank and riparian habitats from grazing and trampling would be also eliminated. This "rest" would be important considering the sensitive condition of aquatic resources following a wild fire event.

Treatment 4R–Replacement of Burned Facilities
Similar to Treatment 4S

Treatment 5R–Greenstrips
Indirect beneficial effects of this treatment include the reduced potential for future catastrophic wild fires, which could result in the potential loss of fish populations and severe impacts to aquatic habitats.

Treatment 6R–Nonative weed control
The effects of this treatment would vary by the type of application and the condition of the post burn aquatic resources. In general, vegetative resources adjacent to aquatic habitats would be partially or completely removed by the wild fire event. Therefore, the treatment of the riparian area to prevent non-native plant establishment would have minimal negative effects on the aquatic resources. These effects include; short term sedimentation from mechanical treatments and potentially herbicide treatment, which could result in direct mortality of aquatic species, if still present. The long term effects are beneficial, since maintenance of native riparian communities insures channel stability and provides organic material input into the aquatic system, which is necessary for ecosystem function.

All impacts on aquatic resources from fire rehabilitation efforts would be beneficial to the long term condition of those resources. In addition, the implementation of the Standard Operating Procedures (Appendix 6.1) would reduce or eliminate further adverse impacts from occurring to the burned area(s) during rehabilitation or stabilization efforts within affected watersheds and in the vicinity of aquatic habitats. These efforts would also accelerate the recovery of these habitats to pre-burn conditions and, in general, would be

conducted during the fall, which would aid in reducing sedimentation and erosion during the following spring runoff events.

An assessment of the effects from fire and fire suppression activities to aquatic habitats would be completed by an interdisciplinary team of resource specialists, subsequent to a wild fire event. Based on this assessment, appropriate rehabilitation measures would be identified consistent with Departmental Emergency Stabilization and Rehabilitation Handbook guidance and would include, but would not be limited to, some or all of those found in the Standard Operating Procedures for Aquatic Resources (Appendix IV).

No Action

The no action alternative would have major adverse impacts to the aquatic resources within the burned watershed and also further downstream. A healthy, productive and diverse plant community on the uplands and in the riparian areas is necessary for water infiltration, preventing erosion, stabilization of lotic and lentic habitats, providing coarse organic material inputs, and for stabilization of the thermal regime during seasonal temperature extremes. Many sites would be recolonated by non-native plant species in the absence of stabilization and rehabilitation efforts. These species would impact the quality of riparian and upland habitats; which would result in increased runoff, erosion, and reduced aquatic habitat quality over time.

4.11 Soils

A primary consideration when evaluating the consequences of the Proposed Action and Alternative on soils is their effect on wind and water erosion potential. The reduction of protective plant cover and litter after a wild fire makes soils highly susceptible to erosional processes.

Proposed Action

Treatment 1S-Dozer line stabilization, and **Treatment 2S-Road Repair**, would increase soil disturbance during implementation of re-contouring and water barring. The above treatments would reduce water erosion potential. Seeding associated with dozer line stabilization will aid in the reestablishment of ground cover, further arresting the potential for wind and water erosion.

Treatment 3S-Construction of erosion or sediment control structures (e.g., excelsior mulch fabric, straw bale check dams and straw wattles) require minimal ground disturbance during implementation. These structures would be expected to be most effective in fan piedmont and mountains settings, particularly where soils consist of medium textures and are free of rock fragments. These structures are likely to be less effective and may not be considered if soils are too steep, too rocky and where bedrock is shallow.

Treatment 4S-Range improvements and facilities would not be expected to have a substantial impact on erosion potential, except in cases where damaged water facilities allow the unrestricted flow of water.

The majority of the rehabilitation treatments are aimed at reestablishing ground cover and reducing the size and frequency of wild fire. The effect of **Treatment 1R-Natural Re-vegetation**, on wind and water erosion potential depends largely on the time necessary for groundcover to reestablish. If vegetation is slow to establish or does not establish, a substantial erosion risk would persist

To reduce erosion potential and maintain natural soil processes over the long term, a healthy, productive and diverse plant community is necessary. The reestablishment of a diverse plant community is the goal of **Treatment 2R-Seeding**. Successful seedings would promote soil stabilization and the reestablishment of soil processes. Successful seeding would discourage the establishment of invasive annual species and noxious weeds that prevent or limit the natural succession of native plants.

The success of natural re-vegetation or seeding would be improved by **Treatment 3R-Closure**. This treatment is implemented by the construction of fences around the affected area to exclude livestock, wild horses and burros or closing pastures or allotments to grazing. The exclusion of these animals would allow the natural and/or seeded species to germinate, develop roots, shoots, and leaves that produce food and litter. These areas would be closed to grazing until rehabilitation objectives have been met or an interdisciplinary team determines a seeding failure.

Treatment 4R-Replacement of burned facilities would have a minimal effect on soil resources. Treatment 5R-Greenstripping or the planting of vegetative fuelbreaks, would stabilize soils thereby decreasing erosion potential across the treated area and reducing the spread of wild fire.

Treatment 6R-Nonnative weed control would decrease the likelihood that noxious weeds would infest the burned area and out compete desirable native plant species. In a more severe form, weed infestations can result in the creation of monocultures which can permanently alter nutrient cycling leading to decreases in soil productivity. When properly controlled, such detrimental effects can be avoided or minimized.

No Action

The No Action alternative would impart a variety of adverse impacts to soil resources. In the absence of intervention, soil stabilization may not occur, subjecting lands to potentially severe wind and water erosion. If new natural growth did occur, livestock, wild horses and burros would likely consume it before roots and shoots could develop, destroying the plant. This situation would perpetuate high erosion potential and prevent soil processes from occurring. Under such conditions, it is unlikely that a healthy, productive and diverse plant community could be reestablished. It is more likely that a burned area would be invaded by noxious weeds or undesirable annual grasses (e.g., cheatgrass), that would not only permanently decrease soil productivity, but also increase the probability of recurring wild fire.

4.12 Vegetation

The environmental consequences of the Proposed Action and Alternative on vegetation are evaluated by assessing the potential of the action that contributes to reestablishment of native plant communities.

Proposed Action

In general, stabilization treatments have the goal of arresting erosion and thus assist in the reestablishment of native vegetative communities by preserving site potential. The effect of **Treatment 1S-Dozer line stabilization** and **Treatment 3S- Construction of erosion and sediment control structures**, while positive, would largely depend on the spatial scale of the treated area. If the affected area is steep and contains many miles of dozer lines, then Treatments 1S and 3S are likely to have a considerable impact on the reestablishment of native vegetative communities. If, on the other hand, the affected area is generally flat and contains few dozer lines, the effect of these treatments will be correspondingly minor. The remaining stabilization treatments: **Treatment 2S-Road repair**, and **Treatment 4S- Range Improvements and Facilities** would have minimal effects on vegetative resources.

Treatment 1S-Natural Re-vegetation and **Treatment 3R-Closure** would allow for natural recovery. The success of the natural revegetation treatment depends on the types of pre-burn plant communities, the plant community condition, and the post management.

For example, Desert sink, Saltbush scrub, and Meadow communities contain plant associations that can recover from either seed reserves or re-sprouting plants after a wild fire and thus have good potential to recover naturally in a 1 to 5 year period (Table 15). Therefore, the treatment would have a positive consequence for these communities, which represent approximately 35 percent of the vegetative resource on lands administered by the WFO.

However, the remaining 65 percent of vegetation consists of Sagebrush scrub and Woodland communities that either take long periods of time to recover naturally or do not recover naturally at all. In these cases, Treatment 1S would likely result in the proliferation of annual grasses, such cheatgrass, and/or the invasion of noxious weeds, resulting in a reduction in biodiversity.

Table 17. The Potential for Natural Recovery of Plants

Plant community/Association	Acres	Percentage of total plant communities/associations	Potential/Time required to recover naturally
A. Desert sink scrub	**615,073**	**6.5%**	
1 – Iodine bush	16,233		Good - 3 to 5 years
2 – Alkali sacaton/inland saltgrass/alkali bluegrass	20,311		Good – 3 to 5 years
3 – Black greasewood	512,185		Good - 3 to 5 years
4 – Black greasewood/basin big sagebrush	66,344		Good - 3 to 5 years/

			Poor - 25 years
B. Saltbush scrub	**3,093,621**	**32.7%**	
1 – Shadscale/black greasewood	20,646		Good – 3 to 5 years
2 – Shadscale/bud sagebrush	2,120,302		Good – 3 to 5 years
3- Shadscale/Bailey greasewood	671,821		Good – 3 to 5 years/poor unknown
4 – Shadscale/Cooper wolfberry	4,746		Good – 3 to 5 years/poor unknown
5 – Sickle saltbush	3,735		Good – 3 to 5 years
6- Fourwing saltbush	165,324		Good – 3 to 5 years
7 - Torrey's quailbush	60,116		Good – 3 to 5 years
8 – Spiny hopsage	7,598		Good – 3 to 5 years/poor unknown
9 - Winterfat	39,333		Good – 3 to 5 years
C. Sagebrush scrub	**5,472,478**	**57.9 %**	
1 – Wyoming big sagebrush	2,651,451		Poor - unknown
2 – Mountain big sagebrush	789,781		Fair- 10 to 20 years
3 - Low gray sagebrush	587,176		Poor - unknown
4 – Lahontan sagebrush	845,304		Poor- unknown
5 – Basin big sagebrush	143,138		Fair – 20-40 years
6 – Big sagebrush	285,583		Poor – 20-40 years
7 – Theetip sagebrush	2,615		Good – 3 to 5 years
8 – Black sagebrush	158,183		Poor unknown
9 - Rabbitbrush	9,247		Good – 3 to 5 years
D. Riparian scrub-forest	**104,283**	**1.1%**	
1 – Willows	88,790		Good – 3 to5 years
2 – Silver buffaloberry	4,037		Fair – 10 to 20 years
3 – Mountain mahogany	9,920		Unknown
4 – Whitebark pine	1,537		Unknown
E. Meadow	**2,657**	**<1%**	
1 – Tufted hairgrass	1,075		Good – 1 to 2 years
2 – Nevada bluegrass	1,312		Good – 1 to 2 years
3 – Creeping wildrye	270		Good – 1 to 2 years
F. Woodland	**160,466**	**1.7%**	
1 – Pinyon/Utah Juniper	43,055		Poor - unknown
2 – Utah Juniper	117,411		Poor - unknown

Emergency Stabilization Treatment Options

Construction of erosion control structures would help to preserve vegetative site potential, including riparian vegetation by preventing gullies and sedimentation of downstream areas.

Emergency Rehabilitation Treatment Options

Vegetation objectives can be achieved through natural recovery on 35 percent of the acres affected. Vegetation communities and plant associations that have not been

impacted by fire are not analyzed. These communities and plant association are: iodine bush, alkali sacaton/inland saltgrass/alkali bluegrass, and shadescale/Cooper wolfberry

Black Greasewood/Basin Big Sagebrush

This plant community is dominated by black greasewood with a minor component of basin big sagebrush and basin wildrye (Leymus cinereus) 12 percent of this plant community has been impacted by fires. Black greasewood and basin wildrye survive and sprout after fire. These plants would fully recover in three to five years. Basin big sagebrush plants have poor establishment, plants would be established from seed reserves in the soil. Natural recovery for basin big sagebrush would take approximately 25 years. Invasive annual weeds have not dominated the burned sites. Examples fires are: Double H 1985 and Sentinel 1985.

Shadscale/Black greasewood

This plant community is dominated by shadscale and black greasewood with a component of bud sagebrush. Nine percent of this plant community has been impacted by fires. Black greasewood survives and sprouts after fire. Shadscale plants recover from seed reserves in the soil. Natural recovery for these plants is three to five years. Invasive annual weeds have potential to dominate the burn sites. Examples fires are: Double H 1985, Sentinel 1985 and Wilder 1985.

Shadscale/Bud Sagebrush and Shadscale/Bailey Greasewood

Shadscale communities in late ecological status have the potential for natural recovery, 13 percent of the shadscale/bud sagebrush and 7 percent of the shadscale/Bailey greasewood has been impacted by fires. It is essential these areas be rested from grazing for a minimum of two years. Bud sagebrush densities are reduced from pre-burn condition. Bailey greasewood has not recovered after burning. Two years rest is required for spines to develop for both shadscale and bud sagebrush. Full recovery of shadscale is three to five years. Examples fires are: AMAX 1985, Dixie 1985 (northern Pumpernickel and North Buffalo allotments), Double H 1985 (Pole Creek allotment), Grass Valley #2 1999, Jackson 1999, Pettit 1985, Poker Brown 1999, Rochester 1999, Valmy 1985, and Wilders 1984. One-year rest has resulted in invasive annual weeds dominating the site, example fires are: Double H and Preble 1986. No rest has resulted in invasive annuals weeds dominating the site. Examples fires are Dixie 1985 (southern Pumpernickel allotment), Empire 1985, and Keystone 1998.

Shadscale and bud sagebrush plant communities that have had reoccurring burns prior to ten years have been converted to invasive annual weeds; an example fire is the Sheep Creek 1985, burned again in August of 1986. Shadscale and bud sagebrush plant communities that have reoccurring burns greater than 14 years have potential for natural recovery AMAX 1985 re-burned in 1999 by the Sombrero fire and the Pettit 1985 re-burned in 1999 by the Lone Butte fire. Shadscale and bud sagebrush recovery is greater on the fan piedmonts, then on lake plain soils.

Early and mid seral status communities lack seed reserves for recovery. Shadscale and bud sagebrush plants recover from seed reserves in the soil. Reoccurring burns within 10

years lack a seed source for recovery of this plant community. It is recommended to seed these areas with shadscale to prevent annual invasive weeds from dominating the site. Shadscale seedings have worked well on mine reclamation projects. Drill seeding shadscale has occurred once in the Winnemucca Field Office establishment was poor, Preble 1986. Shadscale has been seeded on the Mud Spring fire of 2002; it is too early to determine results.

Sickle Saltbush

Sickle saltbush survives and sprouts after fire, 20 percent of this plant community has been impacted by fires. Natural recovery of this plant community is expected to be three to five years. Only one fire has affected this plant community, Poker Brown 1999.

Fourwing Saltbush/Horsebrush

This plant community is dominated by fourwing saltbush, horsebrush Nevada dalea (*Psorothamnus polydenius*) and a grass under story of Indian ricegrass (*Achnatherum hymenoides*) and needle and thread (*Stipa comata*), two percent of this plant community has been affected by fires. These plants survive and sprout after fire. Invasive annual weeds have not dominated the burned areas. Example fires are: AMAX 1985, Blue Mountain 1999, Cyanco 1999, Jungo 1985, and Sombrero 1999. Natural recovery for grasses is two to four years, shrubs is expected to be five to ten.

Spiny Hopsage

The spiny hopsage plant community is a transition zone between the shadscale/bud sagebrush and Wyoming big sagebrush communities, 54 percent of this plant community has been impacted by fires. Most spiny hopsage plants do not survive the fire; a few sprout. Example fire is the Poker Brown 1999. Invasive annual weeds have potential to dominate the burned sites. These plant communities are associated with the Wyoming big sagebrush and are treated the same for rehabilitation treatments.

Winterfat

Winterfat survives and sprouts after fire, 23 percent of this plant community has been impacted by fire. Example fires are AMAX 1985 and re-burned Sombrero 1999. First year sprouts can be killed by severe cold winters. Invasive annual weeds have potential to dominate the burned sites. Potential winterfat sites have been converted to invasive annual weeds, prior to fire. If these invasive annual weed sites burn, they would be seeded to restore the winterfat plant community. Example is the Gooseberry fire 2001, a few winterfat were observed the first year, more time is needed to determine seeding results.

Wyoming Big Sagebrush

Wyoming big sagebrush has poor natural recovery, 28 percent of this plant community has been affected by fires. Early and mid seral status communities lack potential for natural recovery. These areas if not treated would become dominated by invasive annual weeds and this state remains static. These invasive annual weed sites have fire cycle of 10 to 15 years. It is not possible for Wyoming big sagebrush to establish. Example fires are: Rock Creek 1939, Barber 1985, Box Spring 1984, Button Point 1986, Dun Glen 1986,

Eden Valley 1986, Empire 1985, Getchell 1985, Montana 1985, Pettit 1985, Sentinel 1985, Silverstate Valley 1986, and Thacker 1985. These early and mid seral status sites need to be seeded to prevent invasive annual plants from establishment.

Prior to 1992 the dominant seeded species was crested wheatgrasses with forbs of alfalfa, small burnet, sainfoin, and minor amounts of fourwing saltbush. Since 1992 crested wheatgrasses seedings have primarily been used for fuel breaks or to reduce established invasive annual weeds areas. Examples fires are: Alta 1995, Barber 1995, Cosgrave 1985 &1999, Dutch Flat 1996, Eden 1998, Hot Spring 1985, Howard 1985, Junction 1995, Jungo 1985, National 1986, Paradise hill 1992, Porcupine 1985, Prairie Dog 1996, Preble 1986, Provo 1985, Quinn 1985, Quinn 1995, Twin Creek 1997, and UC 1987.

Wyoming big sagebrush has invaded crested seedings that were implemented as emergency fire rehabilitation projects. Example fires are: Asa Moore 1973, Porcupine 1985, Provo 1985, and Wilders 1985.

In 1993, the Winnemucca Field Office attempted its first broadcast seeding of Wyoming big sagebrush on the Willow Fire. Drainages were seeded, sagebrush established and this was the beginning effort to restore Wyoming big sagebrush. A standard wildlife mix was established using fourwing saltbush, crested wheatgrass, alfalfa, blue fax, and Wyoming big sagebrush. Since 1999, crested wheatgrass has been reduced or eliminated from the seed mix and replaced with native grasses of bluebunch wheatgrass and bluegrass. Successful establishment of broadcasted Wyoming big sagebrush fire examples are: Bloody Run 1996, Chimney 1999, Denio 1999, Double H 2000, Humboldt 1996, Moore 1994, Pass Creek 1999, Quinn Odell 1996, Sombrero 1999, and Poker Brown 1999. It is important to broadcast Wyoming big sagebrush seed prior to February for establishment. Only the Double H 2000 fire has established Wyoming big sagebrush seedlings and was seeded after February 1, 2001.

The first drill seeding Wyoming big sagebrush was the Moore 1994 fire. No grasses were included in this mix. This is the only drill seeding that grass was not included. Diversity of shrubs and forbs decrease as grass increases. Seed rates are 10 to 15 large grass seeds per linear foot. Small grass seed such as bluegrass do not appear to impact diversity of species. Successful examples of drilled seeded Wyoming big sagebrush are: Andorno 1999, Buffalo 1995, Buffalo 1997, Cherry 2000, Denio 1999, Moore 1994, Siard 1999, Spaulding 1998, and Virgin Creek 1999.

Greenstrips are vegetative firebreaks (generally 100 meters wide) composed of fire resistant and fire tolerant vegetation. Greenstrips are located primarily in Wyoming big sagebrush communities, greenstrips have been proposed in the shadscale/bud sagebrush plant community but none have been implemented. There purpose is to protect urban developments, reduce the size of fires, and protect remaining sagebrush communities. Greenstrips have been implemented on the following fires Bloody Run 1996, Buffalo 1995, Buffalo 1997, Junction 1995 & 1999, Moore 1994, Paradise Hill 1992, Prairie Dog 1996, Sentinel 1997, Wash O Neil 1995, Willow 1993, and Winnemucca 1996.

Mountain Big Sagebrush

Mountain big sagebrush plants recover from seed reserves in the soil. Natural recovery is 10 to 20 years. Mountain big sagebrush communities have the potential for natural recovery, 27 percent of this plant community has been impacted by fires. Annual invasive weeds dominate mountain big sagebrush communities for one to three years. Example fires are: Denio 1999, Fox Middle Fork 1985, Humboldt 1996, King River 1996, Lovely 1991, Railroad 1986, Rodeo Creek 1986, Snowstorm 1974, and Water Canyon 1988.

Low Gray Sagebrush

This plant community is scattered through the mountains and plateaus, 18 percent of this plant community has been impacted by fires. Fires have a detrimental affect on low gray sagebrush communities. Natural recovery has not been observed. Low gray sagebrush seed is limited or unavailable. The Winnemucca field office has seeded low gray sagebrush on South Willow fire 2000, Little Humboldt 2001, and Spaulding fire 2001, more time is needed to determine seeding results. Natural recovery for low gray sagebrush is not expected.

Lahontan Sagebrush

This plant community is scattered through the western mountains and plateaus of the Winnemucca Field Office. 12 percent of this plant community has been impacted by fires. Prior to 1999 fires did not impact this community. Since 1999, Lahontan sagebrush communities have burned on Poker Brown 1999, Rosebud 1999, Cow 2000, South Willow 2000, Truckee 2000, Dry Mountain 2001, and Two Tips 2002. Fires have a detrimental affect on Lahontan sagebrush communities. Natural recovery has not been observed, on the Droughty Claypan range site NV027XY070, which primarily occurs on south aspects. Natural recovery has been observed on the Gravelly Claypan site NV027XY079, Lahontan sagebrush is sparse, but it appears to have some potential for natural recovery. Example fires are: Poker Brown 1999, and Rosebud 1999. Lahontan sagebrush seed is unavailable.

Basin Big Sagebrush

Basin big sagebrush has potential for natural recovery, recovery is slow. Basin big sagebrush communities occur on sandy or granitic soils and drainages; nine percent of this plant community has been impacted by fires. Example fires are: Denio 1999, Dixie 1985, Granite 1974, Pettit 1986, Provo1985, Quinn1985, Quinn 1995, and Wilder 1985.

Big Sagebrush

This plant community is a combination of Wyoming big sagebrush, basin big sagebrush and mountain big sagebrush; the individual species have not been determined. This plant community would be considered the same as the Wyoming big sagebrush community previously discussed, 21 percent of this plant community has been impacted by fires.

Threetip Sagebrush

Threetip is re-sprouting sagebrush it occurs on concave north facing slope, one percent of this plant community has been impacted by fires. Threetip sagebrush natural recover is 3

to 5 years. Examples fires are: Bloody Run 1996, Eugene 1999, Jungo 1985, and Moore 1994.

Black Sagebrush

This plant community is dominated by black sagebrush. This plant community is scattered on the mountains in the southeastern portion of the Winnemucca Field office, 14 percent of this plant community has been impacted by fires. Fires have a detrimental affect on black sagebrush communities. Natural recovery has not been observed. Black sagebrush seed is limited or unavailable. No black sagebrush seed has been seeded in the Winnemucca Field Office. Examples fires are: China 2002, Humboldt City 1986, Lang Syne1999, and Unionville 1999. Natural recovery for black sagebrush is not expected.

Rabbitbrush

Rabbitbrush re-sprouts and occur most commonly on vertisol soil in the western portion of the field office. Fire has not affected this plant community. Rabbitbrush occurs throughout the Winnemucca Field Office, but is generally not the dominant plant. Rabbitbrush natural recovery is 3 to 5 years.

Willows

Willow re-sprouts and occurs throughout the Field office in riparian zones. Fire has impacted numerous willow riparian zones. Two percent of this plant community has been impacted by fires. Willows natural recovery is 3 to 5 years. Example fires are: Bloody Run 1996, Dutch Flat 1996, Fox Middle 1985, Humboldt City 1986, Humboldt 1996, Provo 1985, Railroad 1986, Rodeo Creek 1986, and Unionville 1999.

Silver Buffaloberry

Two percent of this plant community has been impacted by fires. Silver buffaloberry re-sprouts and occurs throughout the Field office in riparian zones. Fire has impacted numerous riparian zones containing silver buffaloberry, natural recovery estimated at 10 to 20 years. Example fires are: Bloody Run 1996, Dutch Flat 1996, and Unionville 1999.

Mountain Mahogany

Most mountain mahogany plants do not survive the fire; a few sprout. Mountain mahogany is scattered in small pockets and occurs in the western and northern portions of the field office. Impacts of fire have been minimal. Example fires are: Denio 1999, Fox Middle Fork 1985, and Unionville 1999.

Whitebark Pine

Whitebark pine occurs in the Pine Forest Range. Fire has not impacted this plant community in recent times. There are burnt stumps, trunks and branches. This plant community has recovered from previous fires. It may have burnt in the early 1900's an exact date cannot be confirmed.

Tufted Hairgrass

Tufted hairgrass occurs in riparian wetland scatter throughout the Winnemucca Field Office, 10 percent of this plant community has been impacted by fires. Natural recovery is 1 to 2 years.

Creeping Wildrye/Nevada Bluegrass
Creeping wildrye and Nevada bluegrass occurs in riparian wetland scatter throughout the Winnemucca Field Office. Fires have had minimal effect on this plant community. Natural recovery is 1 to 2 years.

Pinyon/Utah Juniper
This plant community occurs in the mountains southeastern portion of the Winnemucca Field Office, seven percent of this plant community has been impacted by fires. Primary shrub under story is black sagebrush. Fires have been small with minimal effect on this plant community.

Utah Juniper
This plant community occurs in mountains in the southern and western portions of the Winnemucca Field Office, eight percent of this plant community has been impacted by fires. Primary shrub under story is Wyoming big sagebrush. This plant community lacks the potential for natural recovery and would be dominated by invasive annual weeds. Examples fires are: Barber 1985, Barber 1995, Blue Mountain 1999, Jupiter 1995, Keystone 1998, Lang Syne 1999, and Rose Creek 1987.

Aspen
Aspen dominates this plant community. Aspen re-sprout and are scattered in mountains throughout the Winnemucca Field Office. Fire has impacted numerous aspen communities. Aspen communities have increased in size after fires. Example fires are: Bloody Run 1996, Denio 1999, Dutch Flat 1996, Humboldt 1996, Moore 1994, Rodeo Creek 1986, and Unionville 1999. Quaking aspen (Populus tremuloides), was a minor component in soil units and/or inclusion. Acres and percentages of Aspen impacted by fire have not been determined.

Treatment 2R-Seedings
Seedings are implemented on 15 percent of the acres affected. Burn areas lacking perennial plant species for natural recovery would be seeded.
The seeding mixtures would not include any exotic species. Native species shall be used, unless through the NEPA process it is determined that: (1) suitable native species are not available; (2) the natural biological diversity of the proposed action would not be diminished; (3) exotic and naturalized species can be confined within the proposed management area; (4) analysis of the site indicate that native species are unable to compete with invasive weeds; (5)All seeds used are approved by the U.S. Department of Agriculture and (6) no seeds that are planted will be listed as a noxious or invasive weeds by all states or federal list on the U.S. Department of Agriculture PLANTS website at http://plants.usda.gov.

Introduced seed species would be used when suitable native species are not available; introduced seed can be confined to the proposed treatment area; provide for the management and protection of native rangelands; and analysis of the site indicates that native species are unable to compete with invasive weeds. Introduced seed can be an interim step in the process to eventually restore the site with native plants.

Areas proposed for seeding lack sufficient perennial native species for natural recovery. The use of native seed would partially restore the native plant community. A major disadvantage of using native seed is that native species have the potential to alter the genetic makeup of local plant species. The same native species from different locations may have developed adaptation for their locale that may not be compatible with local species. The same native species can interbreed, which could alter local native plants adaptations. To mitigate these concerns three actions would be taken: (1) use native species that have developed cultivars and are approved for use by the Department of Agriculture; (2) use source identified seed from Northern Great Basin; and (3) use seed collected from the Northern Great Basin.

Vegetative objectives can not be achieved on 50 percent of the burned areas. Topography, surface soil features such as rock fragments, and low precipitation prevent establishment of native species and most introduced species. These areas have not been seeded in the past, due to the high probability of seeding failure. Native and most introduced species can not compete with cheatgrass. Cheatgrass is a non-native dominating the site, preventing the establishment of native species. Broadcasted forage kochia can establish on these burn sites. Forage kochia has the ability to compete with cheatgrass. Forage kochia would allow opportunities for establishment of native species. Forage kochia has excellent forage quality for livestock, wildlife and provides cover for rodents and birds.

There is considerable debate on the use of forage kochia (Kochia prostrata). Forage kochia was released by the Department of Agriculture in 1984. This release was in compliance with Executive Order 11987 Exotic Organisms May 24, 1977. The USDA Plants website does not list forage kochia as an invasive or noxious weed. Therefore, forage kochia is in compliance Executive Order 13112 Invasive Species February 3, 1999. The Director of the BLM on September 28, 1987 authorized the use of forage kochia on Bureau of Land Management lands. “The Secretary of Agriculture has determined that Kochia prostrata does not have an adverse effect on the natural ecosystem.”

Research Report 162 - FORAGE KOCHIA Its Compatibility and Potential Aggressiveness on Intermountain Rangelands states “However, some people are concerned that it will invade and suppress or eliminate native plant populations. Many are concerned that because forage kochia is an introduced species it may spread vigorously throughout western rangelands. We conclude that these concerns are largely unfounded.”

“On many rangeland sites, resource managers are currently faced with the persistence of alien annuals, such as cheatgrass and medusa head rye that result in degradation of the

resource base through continued wild fires and soil erosion. The establishment of Immigrant (forage kochia) could help protect these environmental resources, yet allow native perennial communities to become re-established." Forage kochia in the Winnemucca Field Office has been primarily used to combat invasive annual weeds from wildfires. Forage kochia has the ability to compete with cheatgrass and halogeton on depleted rangelands. Forage kochia is highly palatable. Grazing preference for forage kochia reduces grazing pressure on native species allowing for their recovery and establishment.

The State of Nevada and the U.S. Department of Agriculture have not recognized forage kochia as an invasive or noxious weed. Commercial seed production of forage kochia occurs on private lands in Humboldt County, Nevada. The Nevada Division of Wildlife supports the use of forage kochia. Forage kochia has excellent forage quality for livestock, big game, along with providing food and cover for upland game birds.

Proposed Action

Emergency Stabilization Treatment Options

Construction of erosion control structures would help to preserve site potential, including riparian areas by stabilizing drainage ways and preventing gullying and sedimentation of downstream areas. These areas would be seeded using native and non-native species for stabilization of the area.

Emergency Rehabilitation Treatment Options

Most of the wild fires in the Winnemucca Field Office occur in the sagebrush scrub plant community. Much of the proposed action would result in beneficial impacts to the vegetative resources in the burned areas in both the short and long-term periods. The Proposed Action would replace lost native vegetation with a mix of native and non-native species or, if the treatment areas lie within Wilderness Study Areas, all native species.

> **Treatment 1R-Natural re-vegetation** a minimum of two growing seasons rest provides perennial species the opportunity to develop vegetative shoots and leaves to actively produce plant food, regaining carbohydrate reserves restoring plant vigor. Two growing seasons of rest would produce litter which usually does not accumulate in any significant amount until the end of the second year or later.
>
> **Treatment 2R-Seeding** would provide rest from grazing which would benefit seedings by allowing sufficient time for germination of seed, development of adequate seedling root growth to prevent uprooting by grazing animals, develop good vigor and produce viable seed.
>
> Livestock grazing to reduce cheatgrass seeds on rehabilitation will not be conducted, this results in harm to seeded and native species. Cheatgrass has the ability to produce multiple seed heads, if grazed or clipped after the boot stage and before seed ripe cheatgrass can re-grow another seed head. Grazing cheatgrass to reduce seed production does not have a significant impact to the cheatgrass seed bank.

Treatment 3R-Closure support facilities are necessary to control livestock, wild horse and burros grazing in adjacent unburned areas. These facilities would present physical barriers to livestock, wild horse and burros to assure that unauthorized grazing in the burn areas does not occur. These facilities may cause short-term adverse impacts to vegetation where they are to be constructed in unburned areas, due to vegetation destruction during the construction phase. This would result in minimal damage to existing vegetation over the short-term. The proposed closure support facilities are being strategically located in allotments to provide for future management of livestock grazing.

Treatment 3R-Closure would result in watershed stabilization by increasing surficial vegetative cover and litter, reducing erosion by protecting the soil surface from raindrop splash and reducing runoff energy. The closure would provide rest for surviving perennial plant species enabling them to regain vigor and to prevent livestock from uprooting new seedlings. Areas to be seeded would be deferred from grazing for a minimum of at least two growing seasons to benefit the seeded species by allowing time for germination and development of root growth. This deferment does not preclude the use of early spring grazing in the third growing seasons if the vegetation criteria have not been met to reduce cheatgrass. Grazing to reduce cheatgrass would only be allowed during the month April.

When cover objectives have not been met and/or obtained after two growing seasons and seedlings are present, additional critical growing seasons of rest are needed to allow for establishment of seeded species and to protect the investment spent. Cheatgrass cover increases for the first three years then decreases as seeded species become fully established. Grazing the third growing season in the month of April may reduce cheatgrass biomass. In late April cheatgrass goes to the boot stage (start of seed formation), livestock decrease use on cheatgrass and livestock preference is increased on seeded species and native species. These seeded and native species need rest during the critical growth period to allow these plants to increase basal cover for grasses and canopy cover for shrubs.

Post rehabilitation management, utilization objectives for seeded and native species are based on final multiple use decisions. If multiple use decisions have not been completed utilization level would be 50 percent for grasses and forbs and 40 percent on shrubs.

<u>No Action</u>
The no action alternative is expected to result in an adverse impact on the ecological condition and trend of the vegetation communities, not only on the burned areas but throughout the field office. The continued grazing by animals would deplete the root reserves of surviving perennial grass species. If new growth is harvested, remaining perennial plants already in a weakened state are easily killed.

Grazing livestock tend to concentrate on areas of lush green growth after burns if these areas are not protected from livestock grazing. These sites that burn are highly susceptible to annual plant species invasion (such as cheatgrass, halogeton, mustards, and Russian thistle).

Under this alternative, there would be no rangeland seedings implemented in burn areas or fire closures. The lack of implementing these rangeland seedings or protection of the perennial plant base to counteract the accelerated erosion processes and loss of site productivity is essentially sanctioning the known deterioration of the vegetation resources.

4.13 Range

The impacts of the Proposed Action and Alternative on range resources are described by considering their short-and long-term effect on the forage base and supporting facilities.

Proposed Action

As presented in Table 16, the majority of treatments would either result in the repair of facilities important to the management of livestock (Treatments 2S and 4S), prevent the further degradation of rangeland (Treatments 3S, 5R, 6R), or result in the rehabilitation of the forage base damaged by wild fire (Treatments 1R-3R).

Table 18.The Nature of Impacts of the Proposed

Treatment Alternative	Nature of Impact
Emergency Stabilization	
1S Dozer line stabilization	No impact
2S Road Repair	Repaired roads would allow resumed access to areas important for livestock management.
3S Construction of Erosion and Sediment Control Structures	While the construction of these structures will have no direct effect on grazing, erosion and sediment accumulation, processes that degrade rangeland, will be reduced.
4S Range Improvements and Facilities	Range improvement structures and facilities were implemented to attain allotment specific objectives according to the standards for rangeland health. Repair/replacement of existing range improvements and facilities would assist in restoring sound livestock management practices to the burned area.
Emergency Rehabilitation	
1R Natural Re-vegetation	-Over the short term, potential increases in forage production are possible due to removal of shrub species which allows for an increase in forage species density. -Over the long term, recovery of natural vegetation communities would allow for sustainability of livestock grazing by providing healthy native rangelands.
2R Seeding	-In areas where natural re-vegetation would not allow native range to recover, seeding would enhance the forage base and prevent the invasion of annual grasses, such as cheatgrass. -Over the long term, a successful seeding would provide a sustainable forage base that is more resilient and has a lessened fire frequency than areas dominated by annual grasses or noxious weeds.

3R Closure	-Temporary closure would have short-term adverse economic consequences for permittees. The severity of this impact is dependant on several factors, including the percentage of the allotment or use area that was burned and the amount of time closure is required to allow for effective rehabilitation. In some cases, permittees may have to reduce their herd size, move to rented pasture, or buy additional feed. -Over the long term, closure would permit the vegetative resource to recover either through natural re-vegetation or seeding, allowing the restoration of the forage base necessary for livestock grazing.
4R Replacement of Burned Facilities	No impact
5R Greenstripping	Greenstrips would arrest the spread of wild fires thereby protecting the forage base and reducing closure.
6R Nonnative Weed Control	The control of nonnative weeds would prevent the development of mono-cultures which can severely reduce the forage base.

One potential adverse impact of the proposed action is the short-term economic consequences of closure (**Treatment 3R**) to livestock permittees. Closure will result in the reduction of rangelands available for grazing until vegetation (either natural or seeded species) becomes established. Permittees may be forced to rent pasture, buy supplemental feed, or reduce herds, thereby increasing their operating costs or reducing their economic base.

In the absence of closure, however, eventual degradation of rangelands is likely. Over the long term, these lands could be become degraded to the point that they lose the capability to support pre-burn plant communities and could become dominated by undesirable annual species or noxious weeds. This adverse impact would be realized through reductions in livestock production (e.g., calf weaning weights, calf crop weaned, percent lamb crop, and lamb weight and increased death loss) that would extent over a period of time substantially longer than that of the closure.

No Action

The no action alternative would have an adverse impact to livestock grazing. Burned areas of native rangeland would likely deteriorate into annual grasslands composed of invasive nonnative species or noxious weeds. This would reduce the forage base available for livestock grazing. Range improvements designed and installed for the orderly management of livestock grazing would not be repaired, resulting in adverse impacts to livestock operations and rangeland resources that are dependent upon functional range improvements for the orderly management of livestock grazing.

4.14 Wild Horse and Burros

Proposed Action

Wild horse and burro populations are always impacted as a result of fires that occur in their respective Herd Management Areas (HMAs). Forage is consumed by the fire, and their source of water may be sullied. Rehabilitation impacts are discussed below.

Emergency Stabilization Treatment Options

Emergency stabilization treatments 1S through 4S would all impact wild horses and burros in a similar manner; the horses and burros would be temporarily displaced due to human disturbance. After stabilization efforts are complete, if horses or burros have not been removed, impacts would decrease.

Treatment 1S Dozer line stabilization – the completion of this treatment, broadcasting seed, would help restore a forage base that would ultimately benefit wild horses and burros.

Treatment 2S Road repair – would have no impact on horses and burros other than temporary displacement due to human disturbance.

Treatment 3S Construction of erosion or sediment control structures – would help to preserve site potential, including riparian areas by stabilizing drainage-ways and preventing gullying and sedimentation of down stream areas. This would benefit wild horse and burro populations by preserving traditional water sources.

Treatment 4S Range improvements and facilities – repair or replacement of water troughs would benefit wild horses and burros, especially if their natural water sources were rendered unavailable. If available water sources would be fenced in such a way as to ensure access to herds, as well as livestock and wildlife, it would be a definite benefit.

Rehabilitation Treatment Options

As with stabilization treatments, rehabilitation treatments 1R through 6R would temporarily displace wild horse and burro populations due to human disturbance. After completion of the treatments, if horses and burros have not been removed, impacts would decrease. Rehabilitation treatments would benefit wild horse and burro populations in the long-term by providing forage, improving water quality, and preserving ecological site potential.

Treatments 1R Natural re-vegetation and **Treatment 2R Seeding** – construction of new fences to protect natural re-vegetation areas or seedings would reduce the forage base for wild horse and burro populations and would displace them until rehabilitation objective were met and the area reopened to grazing. The ultimate consequence of natural re-vegetation or seeding would be beneficial to wild horse and burro populations by restoring their forage base. In the event the fire and the resultant fenced area were extensive, or if the area would not be fenced but cattle would be removed, temporary removal of wild horses and/or burros might be necessary. If a wild horse and burro gather and temporary removal would be necessary, the animals would need to be transported from the gather site, fed, and maintained until such time as the range would be rejuvenated and could support them again. At that time they could be returned to their respective HMAs. Some animals would be put up for adoption after their removal. Impacts and mitigating measures associated with wild horse and burro

gathers have been analyzed in the Winnemucca District Wild Horse/Burro Removal Programmatic Environmental Assessment (#NV-020-7-24). If a removal were not required, individual animals might sustain injuries from the barbed wire on temporary fire fences until they become acclimated to them. To minimize injuries, fences would be flagged with reflective horse stays to help acclimate the animals more quickly.

Treatment 3R Closure – would result in horses and burros being displaced until such time as rehabilitation objective would be met and the area reopened to grazing. Fencing and/or a temporary removal of equines with impacts as stated above under treatment 1R and 2R, might be necessary.

Treatment 4R Replacement of burned facilities – consequences would be the same as for treatment 4S under emergency stabilization options.

Treatment 5R Greenstripping – the creation of green strips would not impact wild horses and burros once the human element was removed, but the horses and burros might impact the green strips, if they were not fenced.

Treatment 6R Nonnative weeds control – this treatment would temporarily disrupt horse and burro herds due to human disturbance. Ultimately, weed control would benefit the range and the animals that forage on it by providing for a better quality and more abundant forage base.

No Action

No action would result in range deterioration because of erosion and non-native weed invasion. Water quality would be compromised. This would reduce the productivity of the range and result in the inability of the range to support as many AUMS, including livestock, wildlife, and wild horses and burros. In low precipitation zones herds depending on natural re-vegetation would probably disperse to adjacent areas increasing the population densities in those areas. If herds did not disperse, their grazing on natural re-vegetating areas would prolong the period when insufficient forage would be produced. Monitoring results would be used to determine impacts and ultimately lead to adjustments in AUM numbers. If a fire were to burn enough vegetation to heavily impact wild horses and burros by drastically reducing or eliminating the forage base, a gather and temporary removal would result. If rehabilitation would not be implemented and vegetation did not regenerate enough, the horses would not be able to return to their respective HMAs.

4.15 Wilderness Areas

Proposed Action

Although the proposed treatments are a human manipulation of the wilderness environment they would only be implemented to mitigate other human manipulations and impacts to the Wilderness Areas. These impacts include; increased fire frequency,

unnatural fuel loads due to fire suppression, and introduction of non-native annual grasses which have changed the natural fire regime.

Only those treatments determined to be the minimum tools for implementing ESR projects will be implemented in the Wilderness Areas. Impacts from those specific treatments are found below. If treatments other than those listed in the Minimum Tool Analysis in Appendix 6.3 are proposed for the Wilderness Areas they would require additional NEPA documentation and impacts from those treatments would need to be analyzed.

Treatment 3S- Construction of erosion or sediment control structures

Naturalness

This treatment would only occur on sites where an unnatural amount of erosion could occur after a wild fire. The structures would help maintain the naturalness of the areas by decreasing the rate of erosion, stabilizing soils, and minimizing the amount of sediment loading occurring in adjacent streams and springs. The presence of these manmade structures would also impact the appearance of naturalness in the immediate vicinity of the projects. Because the structures would be temporary and would be removed once the site had stabilized the impacts from the structures would also be temporary.

Opportunities for Solitude and Primitive Recreation

During the time frame that the crews would be implementing the treatment the solitude and primitive recreation would be impacted, but the impact would be temporary and relatively short in duration.

Special Features

No impacts would occur

Treatment 4S- Reconstruction of Range Developments

Naturalness

This treatment would only involve reconstructing existing range developments so there would be no additional impacts to the naturalness of the areas.

Opportunities for Solitude and Primitive Recreation

During the time frame that the crews would be implementing the projects the solitude and primitive recreation would be impacted, but the impact would be temporary and relatively short in duration.

Special Features

No impacts would occur

Treatment 1R- Natural Revegetation

Naturalness

In areas where the native plant communities would reestablish after a fire there would be no impacts to naturalness. In areas that are prone to post wild fire conversion to exotic annual plants this treatment could negatively impact the naturalness of the wilderness, by allowing the exotics to become established and dominant on the site.

Opportunities for Solitude and Primitive Recreation

No impacts would occur.

Special Features

The viewshed of the emigrant trail could be altered from its current appearance by wild fire and by allowing the plant communities to naturally reestablish after the wild fire. This alteration of the viewshed is a natural process and was occurring prior to the emigrant trail being established through the area. For details on possible impacts to visual resources see the VRM section of this EA.

Treatment 2R- Seeding (Using non-motorized or mechanized equipment or aircraft)

Naturalness

This treatment would maintain the naturalness of the Wilderness Areas and WSAs by allowing the native and naturally occurring vegetation communities to have a higher probability of competing with non-native plants that frequently become established on sites impacted by wild fire. The treatment would also mitigate impacts that could occur from wild fires such as increased erosion.

Opportunities for Solitude and Primitive Recreation

During the time frame that the crews or aircraft would be implementing the treatment the solitude and primitive recreation would be impacted, but the impact would be temporary and relatively short in duration.

Special Features

The viewshed of the emigrant trail could be altered from its current appearance by wild fire and by seeding the burns after the wild fire. The alteration of the viewshed from wild fire is a natural process and was occurring prior to the emigrant trail being established through the area. For details on possible impacts to visual resources see the VRM section of this EA.

Treatment 3R- Closure

Naturalness

Excluding livestock and wildhorses from the burned areas would maintain the naturalness of the areas by increasing the probability of native plant communities reestablishing in the burned sites.

Opportunities for Solitude and Primitive Recreation

Excluding livestock and wildhorses from the burned areas could increase the opportunities for solitude and primitive recreation in the areas. Wilderness visitors would not encounter livestock or livestock operations during the closure which could increase their ability to experience solitude.

Special Features

Many special features (i.e. Prehistoric sites, homestead sites) would be maintained by excluding livestock and wildhorses in the burned areas. Livestock and wildhorses can impact these features by trampling, rubbing or leaning against them. The benefits to these features would be temporary and the possibility of damaging the sites would continue once the area was reopened to livestock and wildhorse use.

Treatment 6R- Nonnative weed control

Naturalness

Removal of noxious weeds would increase the naturalness of the wilderness areas by allowing the native and naturally occurring vegetation communities to function as they normally would without the competition from non-native plants

Opportunities for Solitude and Primitive Recreation
This treatment would not enhance the opportunities for solitude or primitive and unconfined recreation. The majority of wilderness users do not recognize that non-native plants have an impact on the natural vegetation community, so it does not impact their sense of being in a remote area or their ability to connect with nature. During the time frame that the crews would be implementing the projects the solitude and primitive recreation would be impacted, but the impact would be temporary and relatively short in duration.

Special Features
No impacts would occur

4.16 Wilderness Study Areas

Proposed Action
Impacts to the wilderness character of the WSAs would be the same as those to the Wilderness Areas found above.

No Action
Impacts to the wilderness character of the WSAs would be the same as those to the Wilderness Areas found above.

4.17 Recreation

Proposed Action

Emergency Stabilization Treatment Options

Treatment 1S - Dozer line Stabilization, Treatment 2S – Road Repair and **Treat 3S - Construction of Erosion or Sediment Control Structures**
Implementation of the above treatments would improve access for recreation use. Dozer stabilization and erosion control structures would ensure that the potential for erosion is reduced and is especially important in areas where water resources offer recreational use opportunities down gradient from the burned area. Road repair would reduce or eliminate road hazards and ensure safe travel for recreation use.

Treatment 4S - Range Improvements and Facilities
Repairing or replacing damaged facilities such as picnic tables and kiosks would be a benefit to recreation as camping and picnicking facilities would be restored. It is anticipated that these benefits would increase over time as the land would heal and more people return to areas previously burned.

Rehabilitation Treatment Options

Treatment 1R - Natural Revegetation

Areas that would be considered for natural re-vegetation would also be areas that have fewer adverse impacts to the recreation setting as sufficient vegetation and seed bank would be available. In areas such as Wilderness/WSA, natural re-vegetation would have low adverse affects to the recreation setting, but in the long term beneficial affects as the natural setting is restored.

Treatment 2R - Seeding
Seeding should allow certain areas to recover in a shorter timeframe which would improve the recreation setting in the long term and be a benefit to recreation use.

Treatment 3R - Closure
There would be adverse impacts to OHV recreation users as access to lands for OHVs would be restricted. These impacts would be expected to be low as users would move to other areas with higher quality recreation settings.

Treatment 4R - Replacement of Burned Facilities
The impacts to recreation would be similar to those identified under Treatment 4S.

Treatment 5R - Green stripping
There would be a positive affect on recreation as green strips would protect areas from damage from future wild fires.

Treatment 6R - Nonnative Weed Control
There would be few impacts to recreation from nonnative weed control. Nonnative weed removed from camping areas would improve the recreation setting for some users.

No Action

There would be an adverse impact to all types of recreation activities due to the change in vegetation and long term change in habitat by not performing any rehabilitation measures.

4.18 Visual Resource Management

Proposed Action

Emergency Stabilization Treatment Options

All the **Treatments (1S-4S)** would assist in rehabilitating the VRM in the area back to the standards for the VRM Class that the area is within.

There could be temporary impacts to visual resources from the short lines created by **Treatment 3S–Construction of erosion or sediment control structures**.

Rehabilitation Treatment Options

Treatments 1R, 2R, 3R and 6R would have a beneficial impact to visual resources.

Treatment 4R–Replacement of Burned Facilities may have a slight adverse impact on visual resources as manmade items would be reintroduced back to the area. This affect could be mitigated by attempting to blend the manmade feature into the environment.

Treatment 5R–Green Stripping may have a slight adverse impact on visual resources due to possible color, line and/or texture changes introduced into the visual setting.

No Action

There would be an adverse impact to visual resources in all Classes due to the change in color, texture and line features by not performing any rehabilitation measures.

4.19 Realty

Realty actions relative to the proposed action and alternatives, are based primarily on the potential disruption of the services provided by the authorized user on the Federal land.

Proposed Action

The following discussions are specific to the proposed treatments:

Treatments 1S-4S
Infrastructures could be broken or damaged by implementation of treatments 1S-4S. Implementation of the SOPs would insure coordination between the Holder and BLM.

Treatment 1R - Natural Re-vegetation
In locations where authorized uses are present, the Holder has the legal allowance to utilize their authorized use according to the Grants terms and conditions. The Holder could re-seed their authorized on-the-ground location. Seeds could escape onto the burned area outside the boundaries of the authorized uses and compete with natural recovery of native species. These impacts would be expected to be localized and would have minimal impacts to the localized area. The allowed seed mixes are part of the Holder's specifications, and have been approved for use by the BLM.

Treatment 2R - Seeding
Seedings would stabilize soil erosion, reducing dust abrasion and excess weathering of facilities.

Treatment 3R - Closure
Little or no impacts to authorized users.

No Action
The no action alternative could result in undesired impacts compromising the infrastructure due to wind and water erosion.

5 CUMULATIVE IMPACTS

The Council of Environmental Equality (CEQ) regulations defines cumulative impacts as: "…[T]he impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or Non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

The cumulative impact assessment area for this EA includes lands identified as Land Resource Regions and Major Land Resource Areas per the U.S. Department of Agriculture, Soil Conservation Service (Agriculture Handbook 296, 1981).
These areas include the Western Range and Irrigated Region comprised of the following Major Land Resource Areas; # 23 Malheur High Plateau Area, # 24 Humboldt Area, # 25 Owyhee High Plateau Area and # 27 Fallon-Lovelock Area. Land Resource Regions and Major Land Resource Areas consist of geographically associated units and resources areas and are used for national planning purposes. (See Cumulative Assessment Area Attachment 7). The cumulative impact assessment area includes about 11,103,877 total acres, of which approximately 8,279,734 acres are public lands.

5.1 Past/Present Actions

Past and Present Actions occurring within the assessment area includes; livestock grazing, mineral actions, recreation, and fire rehabilitation.

Livestock Grazing – Forage allocation of vegetation on a multiple use basis to livestock has occurred from the early 1980s to the present. The BLM establishes resource management objectives and livestock grazing management actions by livestock grazing allotment. Grazing on public lands is dispersed throughout the cumulative impact assessment area.

Mineral Actions – The assessment area has a long history of minerals development dating back to the 1860s. Currently there are about 11 active gold/silver mines and 5 other industrial mineral mines. Geothermal development includes 3 geothermal electrical generation power plants and 1 vegetable dehydration plant.

Recreation – Past recreation use within the assessment area included dispersed recreation activities such as hunting, fishing, wildlife viewing, hiking and rock hounding.

Present recreation include similar dispersed activities as described for past use plus more off highway vehicle travel and commercial recreation activities.

Fire Rehabilitation – Past fire rehabilitation efforts have been ongoing since the early 1980s. Within the past few years, particularly after the widespread wildfires of 1999, 2000, and 2001 attention has been focused on the health of the land and improving ecological conditions.

5.2 Reasonable Foreseeable Future Actions (RFFAs)

RFFA located within the cumulative impact assessment area includes; livestock grazing, mineral actions, increased recreation, and future fire rehabilitation.

Livestock Grazing – It is anticipated that levels of livestock grazing would remain consistent at present levels which vary by allotment.

Mineral Actions – Mineral actions would probably remain at current levels for hard rock mining. However, mineral actions may increase or decrease depending on the commodity price for silver, gold and industrial minerals.

Recreation – Recreation use on public lands within the assessment area is increasing based on continued population growth within Nevada. Increasing uses vary from off highway vehicle (OHV) travel, hiking, hunting, fishing, rock hounding, climbing, camping, and wildlife watching by single individuals to commercial OHV racing events.

Fire Rehabilitation – It is anticipated that the increase in the number of fires will create more areas that will require fire rehabilitation as overall deteriorating ecological conditions of vegetative communities and habitat loss for sagebrush obligate species continues within the WFO.

5.3 CUMULATIVE IMPACT ANALYSIS – Proposed Action

5.3.1 Air Quality

Past & Present

Livestock grazing - Within the assessment area contributes few adverse impacts to air quality. Trailing of livestock may generate fugitive dust however these impacts are short term and localized. Heavy concentrations of livestock may produce various levels of methane gas into the air and are dependent on the number of livestock and atmospheric conditions. Livestock grazing would have minimal impacts to air quality within the assessment area.

Mineral Actions – These actions affect air quality through the production of dust during mining and exploration, emissions from heavy equipment, and emissions from processing facilities. These impacts are dependent on the nature and degree of surface disturbance and atmospheric conditions. Adverse impacts to air quality from mineral actions are mitigated by federal and state permit requirements. Air

quality impacts from mineral actions are low due to the dispersed location of the mines and due to the undeveloped and rural nature of lands within the assessment area.

Recreation - Impacts to air quality include the generation of fugitive dust by OHVs. These impacts are generally localized to specific areas and are of short duration and would have a minimal affect on air quality.

Fire rehabilitation - actions could impact air quality through the generation of fugitive dust during seeding, erosion structure stabilization, and road and trail maintenance. These impacts would affect air quality in localized areas and would have overall low impacts to air quality.

RFFAs
Impacts from livestock grazing are expected to remain similar to those identified in past and present livestock grazing analysis.

Minerals – It is anticipated that impacts to air quality from mineral actions would remain similar to those impacts identified under past and present actions. However, market increases in commodity values could increase or decrease exploration and mining of ore reserves which were previously uneconomical to mine. Associated impacts to air quality such as generation of fugitive dust and emissions from equipment and processing facilities would be localized and impacts mitigated by federal and state permit requirements. It would be anticipated that impacts from mineral actions would be moderate in areas and low overall considering the size of the assessment area.

Recreation - Increased use would adversely affect air quality by creating more fugitive dust. Increased OHV use and organized recreation events would increase traffic along existing routes and off road travel could crush vegetation making soils more susceptible to wind erosion.

Fire Rehabilitation - Continued fire rehabilitation projects within the assessment area would impact air quality by generating additional fugitive dust during road repair, maintenance and seeding operations.

Impacts to air quality could range from low to moderate depending on the re-vegetation success rates of previous rehab projects. Should re-seeded areas not get established, soils would remain vulnerable to wind and water erosion.

5.3.2 Areas of Critical Environmental Concern (ACECs)
Past & Present
Livestock grazing would impact habitat within ACECs by removing forage and possibly impacting T&E/Sensitive plants. These impacts would be considered low as vegetation recovers from grazing except in areas of heavy concentrated use. Impacts to T&E/Sensitive animals within ACECs could occur from livestock

use degrading water sources. These effects have been and are being mitigating by construction of rangeland fences to keep livestock out of areas of sensitive habitat.

Mineral Actions – There would be no adverse affects to ACECs from mineral actions as these areas are closed to mineral development.

Recreation - Impacts to ACECs could include trampling of sensitive plants and degradation of water quality due to recreation uses such as bathing. These impacts are expected to be low based on implementation of the Black Rock High Rock Emigrant trail National Conservation Act Management Plan.

Fire Rehabilitation – There have been no past or present impacts to ACECs from fire rehabilitation activities as none have occurred within an ACEC.

RFFAs
Livestock grazing and Mineral actions - Impacts from these actions are expected to remain similar as past and present actions.

Recreation –Recreation impacts should increase with the increase in recreation use. It would be anticipated that recreation impacts to the Soldier Meadows ACEC would be reduced subject to the implementation of the Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area, Resource Management Plan. Recreation facilities may be located away from waters containing T&E fish (Desert Dace) or from sensitive plants (Basalt Cinquefoil).

Fire Rehabilitation - Impacts to ACECs from fire rehabilitation efforts would be high as equipment could physically damage any remaining vegetation. Seeding may out compete sensitive plants within the ACECs causing a decline in population.

5.3.3 Cultural Resources

Past & Present
Livestock Grazing – Impacts to cultural resources from livestock grazing remains low. There could be direct physical damage to cultural resources from trampling. Areas where over grazing has occurred can remove vegetation exposing cultural resources and making them more vulnerable to potential illegal collection.

Mineral Actions – Mineral actions have moderate impacts to cultural resources. Mining and exploration equipment can physically damage resources or bury them. For projects that require a plan of operations, these impacts are reduced subject to requirements during the BLM permitting process to inventory areas prior to surface disturbance activities. Once inventories are completed mining actions would avoid any cultural resources identified or other mitigation measures are developed to reduce impacts.

Recreation –OHV travel can remove vegetation exposing cultural resources. Areas in the vicinity of permanent and intermittent water sources (i.e. riparian areas) have the highest potential for cultural resource sites. These areas are also attractive for recreation use thus increasing the potential for illegal collection.
Fire Rehabilitation – Impacts to cultural resources would be low as standard operating procedures have been developed to inventory areas prior to implemental rehabilitation treatments. Once the inventories are completed any identified resources would be avoided.

RFFAs
Livestock grazing and Mineral actions – Impacts to cultural resources would be expected to remain similar as those analyzed under past and present.

Recreation – Increased recreation use would incrementally remove more vegetation due to OHV travel exposing cultural resources. Increased visitor use in areas which have sensitive cultural resources could also increase potential for illegal collection. Mitigation measures to reduce these impacts may be developed in future land use plans or amendments within the WFO.

Fire Rehabilitation – Cultural resource impacts would be expected to be similar as those described under past and present actions.

5.3.4 Noxious Weeds
Past & Present
Livestock grazing - Within the assessment has promoted the establishment and spread of noxious weeds through dispersal of seed or by removal of vegetation in areas of heavy concentration and utilization. These impacts have been mitigated by proper livestock management, meeting allotment specific objectives and Standards for Rangeland Health. In addition, current noxious weed control programs are being implemented within portions of the assessment area.

Mineral Actions –Mineral actions disturb large areas of land which could promote the establishment and spread of noxious weeds. These impacts are low based on federal and state permit requirements to re-vegetate disturbed areas and control noxious weeds on reclaimed areas.

Recreation - Activities can denude areas of vegetation from OHV travel and in concentrated use areas. Areas where vegetation has been removed are more prone to the establishment of noxious weeds. OHVs can also spread noxious weeds seeds as they fall off of the under carriage of vehicles. Overall these impacts remain low but could increase over time.

Fire Rehabilitation - treatments including seeding of burned areas help reduce the potential for establishment and spread of noxious weeds. Moderate impacts from noxious weeds could be expected should numerous fire rehabilitation seeding

treatments fail within the cumulative assessment area. Failure of the seedings would allow noxious weeds to get established.

RFFAs

Livestock grazing and Mineral actions - Impacts from these actions are expected to remain similar as past and present actions.

Recreation – Increases in recreation activity could remove, damage, and destroy vegetation from OHV travel and camping creating areas where noxious weeds could get established and spread. Should a noxious weed source be available impacts would be gradual and increase over time from low to moderate. Long term land use planning would help identify and create management actions which would reduce adverse affects from recreation.

Fire Rehabilitation - Treatments would increase overtime if climate changes continue to trend towards hotter and drier conditions. These conditions would increase the potential for larger rangeland wild fires. The potential for rehabilitation treatments to fail would increase should drought conditions prevail, allowing for increased potential for noxious weeds to establish and spread. Overall these impacts would be moderate as re-treatment of areas and noxious weed control programs would mitigate affects to some degree.

5.3.5 Wildlife

Past & Present Actions

Livestock grazing – Past overgrazing by livestock and wild horses and burros has adversely impacted habitat for cover and forage availability for wildlife. Current impacts include degradation of wildlife habitat from concentrated livestock and wild horse and burros use. Overall these impacts are low to moderate and vary by grazing allotment. Based on implementation of allotment specific objectives and Standards for Rangeland Health adverse impacts to wildlife from overgrazing would be reduced.

Minerals Actions – Mineral actions remove vegetation which adversely impact habitat for cover and forage availability. In addition, mines may force wildlife to relocate due to noise such as blasting or from equipment. Wildlife may experience direct mortality should they consume processing agents such as cyanide. These impacts are mitigated based on requirements of federal and state agencies during the permitting process. Overall impacts from mineral actions should be low.

Recreation – Hunting and fishing activities may chase wildlife out of areas. It is expected that these impacts would be short term and seasonal. OHV traffic may affect certain species such as big horn sheep, especially during lambing season. OHVs may remove forage for wildlife in areas of heavy use.

Fire Rehabilitation - Loss of species diversity on all levels of plants and wildlife habitat types would occur in the short term until seeded species get established. With proper seed mixes and proper installation of rehabilitation treatments, habitats would be expected to recover to native vegetation types, which would re-establish wildlife habitat.

RFFAs

Livestock grazing & Mineral actions – It is anticipated that impacts from livestock grazing and minerals development would be similar to impacts identified under the past and present analysis.

Recreation – Increase recreation could place more pressure on wildlife forcing them to relocate to nearby habitat. Other impacts would be similar to those identified under the past and present analysis however the degree of impact would incrementally increase and would be dependent on the number of recreation users.

Rehabilitation – Increases in rehabilitation projects could affect large areas of habitat which may not be suitable for certain species until recovery of native vegetation occurs. These impacts may be low to moderate depending on the number of fires and rehabilitation projects implemented.

5.3.6 Threatened, Endangered & Sensitive Species

Past & Present

Livestock grazing – Livestock grazing has affected threatened, endangered and sensitive species in areas where overgrazing has occurred. In these areas habitat and forage availability would impact wildlife. Grazing also could affect water resources that are habitat for T&E fish. Grazing may remove T&E plants, these impacts would be low as the plants should naturally recover from grazing, except in areas of overgrazing. Implementation of allotment specific objectives and Standards for Rangeland Health would help mitigate impacts from overgrazing.

Mineral Actions – Mineral actions could affect T&E species if those species occur within the project area for mineral actions. Permitting requirements by federal and state agencies would include mitigating measures to reduce any impacts to T&E species.

Fire Rehabilitation – In the short term fire rehabilitation treatments would have moderate impacts to T&E and Sensitive Species as habitat loss and associated impacts to water resources would continue. However, in the long term, seeded species and remaining plant species would slowly regenerate and ultimately re-establish T&E/Sensitive Species habitat. The re-establishment of vegetation would also reduce impacts to water sources by stabilizing soils and reducing sedimentation. High impacts may occur to certain sensitive plants if an insufficient number of plants do not survive to provide the necessary seed base for natural re-vegetation.

RFFAs

Livestock grazing & Mineral actions – It is anticipated that impacts from livestock grazing and mineral actions would remain similar to those described under the past and present actions.

Recreation – Increased recreation would continue to impact vegetation and subsequent T&E /Sensitive Species habitat in areas where these species reside. Increase in OHV travel can damage or destroy T&E/sensitive plants and sagebrush communities which are important habitats for sagebrush obligate species such as Sage Grouse.
These impacts would range from low to moderate depending on the increase in recreation use and if use becomes more concentrated in areas.

Fire Rehabilitation – Increase fire rehabilitation within the assessment area could have a moderate affect on T&E/Sensitive Species. Even though rehabilitation employs efforts to rejuvenate burned areas, these areas will take many years to reach a natural re-vegetation community.

In the meantime, habitat for T&E species would remain unavailable forcing these species to relocate and compete for available food resources within a smaller land area. Certain sensitive plant species may be permanently destroyed if there are insufficient surviving plants which provide a source of seed to establish new plants.

5.3.7 Water Resources and Fisheries

Past & Present Actions

Livestock grazing - past and present actions have primarily affected water quality. Overgrazing near riparian areas can increase bank erosion causing sedimentation, increasing water temperatures, and may affect water quality with coli form bacteria. Overall these impacts range from are low to high depending on the allotment. Implementation of allotment specific objectives and Standards for Rangeland health would mitigate the potential for overgrazing.

Mineral Actions – Mineral actions have moderate effects on water quantity and quality. These impacts are generally localized. However, water quality may be adversely affected from leaking facilities and spills. In addition, groundwater availability may be affected due to pit dewatering. Overall, mineral actions can have moderate to high impacts to water resources. These impacts would be reduced based on federal and state permit requirements.

Recreation – Recreation impacts to water resources would primarily be related to camping, bathing, and OHV travel. OHV travel through perennial creeks and streams can contribute sediment to the water. Overall impacts from recreation would be low based on current dispersed recreation use within the area.

Fire Rehabilitation – Impacts to water resources could be high should fire burn an entire watershed. Short term erosion and subsequent sedimentation of creeks and streams would occur, which would impact aquatic habitat. Removal of vegetation would increase water temperatures. These impacts would gradually reduce over time as seeded species or natural recovery progresses.

RFFAs
The impacts to water resources from livestock grazing and mineral actions would be similar to those described under past and present actions.

Recreation – Increased recreation could affect water quality in areas of concentrated use such as popular camping areas. Increase OHV travel would increase sedimentation of creeks and streams from driving through or across these areas. Crushing and removal of vegetation would increase the potential for soil erosion and subsequent sedimentation potential to water resources. These impacts would gradually increase overtime and would range from low to moderate.

Fire Rehabilitation – Increase fire rehabilitation could affect large areas depending on fire frequency and intensity. Fire rehabilitation projects from previous years combined with new projects would incrementally impact water resources and have adverse affects short term. In the long term re-vegetation and sediment control structures should stabilize erosion potential and subsequent sedimentation of water resources.

5.3.8 Soils

Past & Present Actions
Livestock grazing –Areas where overgrazing from livestock and wild horses have occurred combined with the introduction of invasive or exotic species has adversely impacted soils leaving them susceptible to erosion. Cheatgrass was first identified in Nevada in the early 1900's. The loss of native grasses has resulted in dominance by invasive annual weeds and has resulted in a change of the fire cycle.

Mineral Actions – Mineral activities include removal of vegetation leaving soils susceptible to wind erosion. These impacts would be low as they are generally localized to a certain areas and mitigation measures are developed and implemented during the federal and state permitting process. In addition reclamation requirements include re-establishing vegetation to reduce erosion potential to soils.

Recreation – Soils are damaged by OHV use either through compaction or by removal of vegetation in areas making soils susceptible to wind erosion. These impacts are considered low overall as recreation activities are dispersed throughout the assessment area. Concentrated recreation use areas would have

moderate impacts to soils as vegetation and compaction occurs in a relatively small area.

Fire Rehabilitation – Projects would reduce soil erosion by re-establishing vegetation and stabilizing soils from water erosion. These impacts would be beneficial to soil resources.

RFFAs
Livestock grazing and Mineral actions - Impacts from these actions are expected to remain similar as past and present actions.

Recreation – Increased recreation would create moderate impacts to soils as the number of OHVs would increase compaction of soils and wind erosion potential as more vegetation is removed.

Fire Rehabilitation – Increase in fire rehabilitation projects should stabilize soils in the short term. However, adverse impacts to soils caused by wind erosion could occur over time if treatments fail. These impacts could ultimately affect large areas of land and have moderate impacts to soils within the cumulative assessment area.

Summary
Incremental impacts from past, present and RFFA to soils has varied over time from low to moderate depending on the degree of fire intensity, size, and success of emergence rehabilitation treatments. Present impacts remain moderate to high for soils without the implementation of management actions. Management action would allow for overall improvement of vegetation condition, thereby reducing the potential for soil erosion.

5.3.9 Vegetation

Past Actions & Present
Livestock - Historic impacts to vegetation occurred from overgrazing livestock at the turn of the century. These impacts combined with the introduction of invasive species, such as cheatgrass led to a reduction in under story grasses and forbs. It also led to early to mid ecological status in the remaining sagebrush habitats. Vegetation impacts by fire to desert sink scrub has been low, saltbush scrub is moderate, sagebrush scrub is high, riparian scrub-forest is low, meadow habitats is low, woodland habitat is moderate.

Mineral Actions – Mineral actions have removed vegetation in large areas. Reclamation requirements have off set the degree of these impacts to vegetation however, plant community diversity has declined in areas mined in the short term. In the long term natural vegetative communities would be expected to re-establish as they were prior to mineral development.

Recreation – As recreation use continues to increase OHVs and concentrated use areas will continue to adversely affect vegetation. Overall these impacts are expected to be moderate, as they are localized in areas.

Fire rehabilitation - Seedings have decreased annual plant species invasion on the majority of the seeded areas and have re-established vegetation. Short term impacts include a loss of vegetation community diversity. However, it is anticipated that long term, the diversity would return.

RFFAs

Livestock grazing and Mineral actions - Impacts from these actions are expected to remain similar as past and present actions.

Recreation – Increased recreation use would have low to moderate impacts to vegetation from incremental increases in OHV use in areas. Vegetation would be subject to being crushed and ultimately removed in areas.

Fire Rehabilitation – It is anticipated that larger areas within the assessment boundary would be subject to fire rehabilitation, creating moderate to high impacts. Vegetation diversity would be reduced in areas until they slowly re-vegetate towards natural conditions. This effect could occur simultaneously with other rehabilitation projects depending on the number of fires.

5.3.10 Range

Past & Present

Livestock grazing - Fires were generally not a problem, before the mid nineteen eighties. Forage base adjustments as a result of wild fires were limited as wild fires were small and livestock numbers could be accommodated by making minor adjustments in the grazing use. In the past ten years 1,564,493 acres have burned, BLM lands are closed to grazing for a minimum of two growing seasons. Short-term adjustments in the forage base were made to protect the soil and vegetative resources. The implementation of the emergency livestock closures forced some livestock permittees to reduce herd size, rent pastures, and buy additional feed for the closure period. In the long term permittees have benefited from the rehabilitation treatments implemented as the forage base becomes re-established.

Mineral Actions – Past and present mineral development has had low impacts to livestock operators as the number of AUMs lost to these actions have been relatively minor. In some cases, the mineral industry has compensated livestock operators for loss of AUMs. Reclamation of mine and exploration sites include re-establishment of vegetation which would be a benefit to livestock operators as forage for livestock would be re-established.

Recreation – Adverse impacts from recreation to livestock operators include vandalism of facilities such as troughs and fences, harassment of livestock, and potential for starting a rangeland wild fire from a campfire or sparks from OHVs. These impacts have had moderate impacts to the livestock operators as additional

funds have to be expended to repair or replace facilities or protect livestock and provide additional forage for livestock which has been destroyed by fire.

Fire Rehabilitation – Fire rehabilitation could close areas to grazing until seeded species get established. In the short term livestock operators would have to expend more money to feed livestock while rehabilitation areas heal. These impacts could be low to moderate depending on the size of the rehabilitation area. In the long term fire rehabilitation would benefit livestock operators by re-establishing a diverse forage base.

RFFAs
Livestock grazing and Mineral actions - Impacts from these actions are expected to remain similar as past and present actions.

Recreation – Increase recreation use could have moderate impacts to livestock operations as vandalism, harassment of livestock, and potential for causing wild fires would incrementally increase over time.

Fire Rehabilitation - Increases in fire rehabilitation over time would produce short term unavailability of forage but in the long term would result in a long term increase in forage production.

5.3.11 Wild Horse and Burros

Past & Present Actions
Livestock grazing – Past and present livestock grazing has affected wild horses and burros primarily from competition for forage.

Mineral Actions – Mineral actions remove forage and have closed off available range in areas to wild horse and burros. These impacts overall have had minimal impacts as a number of mines are not located in Herd Management Areas or Herd Areas.

Recreation – OHV travel can harass wild horse and burro herds. Horses and burros are especially vulnerable during foaling season. Based on permit requirements, commercial recreation events may have mitigation measures that protect wild horses and burros from OHV racing.

Fire Rehabilitation – Fire rehabilitation would be beneficial for wild horses and burros after new seeding become established and temporary fencing removed. If wild horse and/or burro gathers were necessary as a result of fire rehabilitation treatments, herd structure and behavior would be temporarily suspended during the time animals were in temporary holding. The behavioral impact of the suspension could be permanent for some animals while others would resume their former behavior when returned to their home ranges. However, the herd structure would be permanently altered and would need to be restructured. In the long term

adverse impacts to wild horse and burro herds would be low as the herds would recover.

RFFAs
Livestock grazing and Mineral actions - Impacts from these actions are expected to remain similar as past and present actions.

Recreation – Increased recreation and OHV usage would incrementally impact wild horse and burro herds as the potential for harassment would increase. These impacts would be expected to be low to moderate as not all dispersed recreation would occur in HMAs or HAs. Long term, development of Land Use Plans could close or restrict OHV use in areas which would reduce potential impacts to wild horse and burro herds.

Fire Rehabilitation – Increase fire rehabilitation would provide long term benefits to wild horse and burro herds as re-vegetation is established. However, large areas where fire rehabilitation projects are in varying degrees of progress may impact the diversity of plant species and forage base. Overall these impacts may range from low to moderate depending on the number of projects.

5.3.12 Wilderness Study Areas/Wilderness

Past & Present
In the 1980s Wilderness Study Areas were designated within the analysis area. These areas have been managed under the Interim Management Policy to protect their wilderness values until Congress decides to designate them as wilderness or release them for other purposes. The NCA Act of 2000 designated a portion of the WSAs within the cumulative analysis area as Wilderness Areas.

Livestock Grazing – Potential livestock grazing impacts to WSAs and Wilderness Areas would be associated with changes in grazing management (ie number of cattle, time of use). For the purposes of this analysis it is also assumed that the sights and sounds associated with grazing operations has a negative impact for opportunities for solitude and primitive recreation in WSAs and Wilderness Areas.

Mineral Actions – Other than mineral activities associated with valid and existing rights, there would be minimal, if any impacts to Wilderness/WSAs from mineral actions as these actions are not allowed in these areas.

Recreation – Impacts to Wilderness/WSAs have been primarily from unauthorized motorized traffic. These impacts would adversely affect wilderness values such as opportunities for solitude and primitive recreation.

Fire Rehabilitation – Fire rehabilitation actions consistent with the Minimum Tool analysis and standard operating procedures, would have minimal impacts to the Wilderness/WSAs.

RFFAs
It is anticipated that impacts from livestock grazing, mineral actions, increased recreation and fire rehabilitation would be similar to those described under past and present actions. The pending NCA RMP proposes management for wilderness, which should improve wilderness values.

5.3.13 Recreation
Past & Present
Livestock grazing – Past and present livestock grazing has had little effect on recreation users. Livestock grazing can impair the experience of recreation users especially near camp sites or other recreation areas. Others consider livestock grazing as part of the western outdoors experience.

Mineral Actions – Minerals actions have had low impacts to recreation users. Adverse impacts may include removal of areas of public lands which are no longer available to recreation use.

Recreation – Adverse impacts can occur by competing recreation uses within the cumulative assessment area. Impacts from competing recreation uses would be dependent on the users and type of activity. These impacts would be considered low based on the large land area and rural nature of lands within the analysis area.

Fire Rehabilitation – It would be expected that few impacts to recreation use would occur from fire rehabilitation.
The lands being rehabilitated are burned and no longer an attractive recreation experience to most users. Closure of areas to OHV travel may limit areas to off road use.

RFFAs

Livestock Grazing, Mineral Actions, Recreation and Fire Rehabilitation
RFFA impacts from these actions would be similar to the past and present analysis. The potential for competing recreation use would increase over time.

5.3.14 Visual Resource Management

Past & Present Actions
Livestock Grazing – Prior to the 1970s, visual resources were not considered in making land use decisions. Range improvement projects have impacted view sheds by creating linear features such as fence lines. Presently range improvement projects continue to affect and may intrude on view sheds however,

these impacts are mitigated through a number of techniques such as painting facilities to blend with the surrounding background.

Mineral actions – Moderate impacts occur to the setting from mineral actions. Exploration roads can create highly visible linear features. Mines create permanent facilities such as pits, waste dumps, and heap leach pads which can be highly visible. Federal and state permit requirements reduce visual impacts by requiring reclamation of facilities that blend with the surrounding topography.

Recreation – Impacts related to recreation include areas where vegetation is removed by OHV travel. These areas are readily visible and can create linear features such as new trails.

Fire Rehabilitation – There would be few impacts to the setting as the natural setting has already been impacted by wild fire. Temporary fencing may stand out in contrast to the black background of the burn. Installation of green strips could create linear intrusions to the setting. Overall these impacts would be considered minimal as re-vegetating rehabilitation areas would improve the visual resource setting.

RFFAs

Livestock grazing and Mineral actions - Impacts from these actions are expected to remain similar as past and present actions.

Recreation – Increase in recreation use and OHV travel would create moderate impacts that include removal of vegetation. It is anticipated that these impacts would increase over time.

5.4 CUMULATIVE IMPACTS – No Action

Cumulative impacts from the no action would be similar to the proposed action for past, present and RFFAs with the exception of fire rehabilitation actions. Under the no action, no fire rehab treatments would occur.

Air Quality – Under the no action burned areas would naturally re-vegetate however this process would be slower than if areas are seeded. Blowing dust and ash would continue over a longer period of time until plants have been re-established.
Dust and ash may cause public health concerns and impair visibility depending on climatic factors. Air quality impacts could be moderate depending on the size of the burn area and location of the burn with respect to population centers.

ACECs – The no action would have positive affects within the ACECs compared to the proposed action. Rehabilitation treatments could destroy the remaining sensitive plants

and seeding would compete with native sensitive plant seeds. The combination of these impacts would contribute to the reduction of sensitive plant populations.

Noxious Weeds – The No Action would promote the establishment and spread of noxious weeds should a noxious weed seed source be available. Since rehabilitation action such as seeding would not occur, there would be no seeded species to compete with the noxious weeds. Once established, noxious weeds could spread to adjacent areas.

Range – There would be no closure of burned areas so operators would not have to find additional pasture to feed their livestock. However, the existing burned pasture would be susceptible to domination of annual invader species which would have a lower forage value.

Soils – Impacts from the no action would increase the duration of soil erosion from both wind and water. These adverse impacts could range from low to high depending on weather events.

Vegetation – Impacts from the no action would promote establishment of annual weed species which would inhibit the ability of natural vegetation to re-establish to pre-burn conditions. Vegetation diversity would decrease and wildlife habitat may not re-establish for species using the area prior to wild fires. No livestock closure of the area would also contribute towards the establishment of annual grasses as bunchgrass, young forbs and shrubs would be preferred forage for livestock. This would allow annuals to out compete the native species due to improved vigor. Overall impacts from implementation of the no action would have moderate affects to vegetation.

Visual Resource Management - The no action would slow down re-establishment of native vegetation allowing large areas of annual grass monocultures to dominate the landscape.
The visual intrusion of the burn would be apparent longer and native species would be replaced by monocultures of annual species which would contrast the burn area compared to areas not impacted by fire.

Recreation – The no action would reduce the recreation experience to users as the burned areas would slowly heal and monocultures of annual grass species would dominate. Impacts would range from minimal for OHV use to moderate for those seeking scenic view sheds and camping.

Water Resources / Fisheries – The no action would prolong re-vegetation allowing for erosion to continue over a long period of time. It would take longer for natural re-vegetation to occur along stream banks which would maintain higher water temperature over a longer period of time. No stabilization of dozer line and roads would allow erosion processes to contribute additional sediment into local waters.
Increase water temperatures and sedimentation would destroy fish habitat in areas and may interfere with spawning success. Impacts from the no action to water resources and fisheries would be high in areas that have perennial waters.

Wild Horse and Burros – Wild Horse and Burro populations would be adversely affected by the no action alternative. Burned areas with higher potential for reseeding success would be allowed to natural re-vegetate. This could prolong re-vegetation of the site and promote invasion of annual species, reducing forage quality which might not be sufficient to support wild horse and burro populations. There would be no erosion stabilization structures thereby creating gullies and sedimentation of down stream water which could effect the quality and availability of water for wild horse and burro herds. Under the no action no wild horse or burro gathers would occur. This may benefit herd structure and behavior, however, habitat loss and changes may place herds under risk.

Wildlife – The no action alternative would increase the potential for permanent habitat loss as burn areas may become dominated with annual invader species. In other areas, it would take longer for habitat to naturally heal to pre-fire conditions. Species requiring a forb / shrub component would not be able to use areas for forage or habitat. Annuals would out compete sage brush thereby adversely affecting sagebrush obligates such as sage hens. Sedimentation of water resources would continue and stabilization of riparian areas which are key habitats would be slower as erosion processes would continue for a longer time period.

T&E and Sensitive Species – Under the no action T&E and sensitive species habitat would take longer to re-establish forcing species to relocate over a greater time period. Some habitat may not re-establish as annual invader species would dominate in areas. Seeds from dormant sensitive plants within the soil may not be able to compete with the annuals making them increasingly scarce. The reduction of habitat for T&E and sensitive species would have a direct correlation to reducing populations. Impacts to T&E and sensitive species would be moderate to high depending on site specific factors due to implementation of the no action alternative.

Wilderness & Wilderness Study Areas (WSAs) - Under the no action, wilderness and WSA would adversely be impacted as the beauty and solitude of the area would be compromised. Possible long term habitat changes from diverse vegetation communities to annual invader species would affect the experience of the wilderness visitor. Erosion would continue over a longer time period which could create gullies and other unstable areas that could permanently change the wilderness/WSA setting.

Cultural Resources - Impacts to cultural resources from the no action alternative would be minimal. There would be no potential of damage to resources from seeding, blading, or plowing. In areas, natural re-vegetation may take longer than seeding which would expose cultural resource in the open for a longer period time, making them more vulnerable for illegal collection.

5.5 Coordination and Consultation

Alturas Indian Rancheria
Battle Mountain Band Council
Burns Paiute Tribe
Cedarville Rancheria
Duck Valley Shoshone-Paiute Tribe
Fallon Paiute-Shoshone Tribe
Fort Bidwell Indian Community
Ft. McDermitt Tribal Office
Inter-Tribal Council of Nevada
Klamath Tribe
Pit River Tribe
Lovelock Paiute Tribe
Shoshone-Bannock Tribes
Summit Lake Paiute Tribe
Pyramid Lake Paiute Tribe
Susanville Indian Rancheria
Washoe Tribe
Confederated Tribes of the Warm Springs Reservation
Walker River Paiute Tribe
Winnemucca Tribe

5.6 Agency/Group/Individuals Contacted

Livestock Operators	
U.S. Fish & Wildlife Service	
Nevada State Clearinghouse	Heather Elliot
Chairman of the RAC Committee	
Humboldt County Extension Agent	Brad Shultz
Humboldt County Library	
Pershing County Library	
Humboldt County Commissioners	
Pershing county Commissioners	
Tina Nappe	
Richard Heap	
Historic Preservation Office	Rebecca Palmer
Committee for the High Desert	
Nature Conservancy Northern Nevada Office	
Nevada Cattlemen's Association	
Nevada Land and resource Company	
Public Resource Associate	Susan Lynn
Sierra Club, Toiyabe Chapter	Rose Strickland
Sierra Pacific Power Company	Steve Siegel
Nevada Bell	Diana Callahan

5.7 List of Preparers

Terri Barton	ESR Program Lead/GIS
Mike Zielinski	Soils/Vegetation
Matthew Varner	Fisheries/Riparian/T&E
Steve Bird	Wildlife/T&E
Roger Farschon	Wildlife
Craig Drake	Water Resources
Nadine Paine	Wild Horses/Burros
Mark Ennes	Cultural & Native American
Brian Murdock	Wilderness/WSAs Resources
Derrick Messmer	Range
Barbara Keleher	Recreation & VRM
Jeff Johnson	Environmental Coordinator
Lynn Trost	Lands & Realty
Chuck Neill	Noxious Weeds

5.8 LITERATURE CITED

Clean Air Act of 1970 (P.L. 91-604)
Executive Orders #11987 Exotic Organisms, May 24, 1977
Executive Order # 13112 Invasive Species February 3, 1999
Federal Insecticide, Fungicide and Rodenticide Act (1972)
Federal Noxious Weed Act (1974)
Federal Land Planning Management Act (1975)
Handbook of Best Management Practices, NAC 445A.336
Interagency Burned Area Emergency Stabilization Handbook, v4.0, 2/2004
Integrated Weed Management, Programmatic Environmental Assessment, EA# NV-020-02-19
Interim Wilderness Study Area Management Policy
Maser, Thomas and Anderson (1984), Wildlife Habitats in Managed Rangelands-The Great Basin of Southeastern Oregon
Nevada Revised Statutes, Chapter 555.05, Noxious weeds
Nevada Natural Heritage Program (2003)
Nevada State Historic Preservation Office (SHPO)
Nevada Statewide Wilderness Report (1991)
National Conservation Act of 2000, Black Rock Desert, High Rock Canyon, Emigrant Trails
National Register Bulletin, Guidelines for Evaluating and Documenting Traditional Cultural Properties
Paradise-Denio Management Framework Plan
Public Rangelands improvement Act (1978)
Sampling Vegetation Attributes, Interagency Technical Reference, 1996 BLM/RS/ST-96/002+1730
Sonoma-Gerlach Management Framework Plan
U.S. Department of Agriculture, Soil Conservation Service (Agriculture Handbook 296, 1981)
Welch, Preissler (1990)
Wilderness Act 1994

6 Appendices

6.1 Standard Operating Procedures (SOPs)

Realty
To ensure coordination of activities Holders of rights-of-way will be notified prior to any Emergency Stabilization and Rehabilitation treatment within their right-of-way.

Wilderness/Wilderness Study Areas

A Minimum Tool Analysis was conducted for ESR activities in the Wilderness and Wilderness Study Areas and is included in this document in Appendix 10.4. All ESR work occurring in these areas must be consistent with the analysis. The SOPS pertaining to Wilderness and WSAs are a result of the Minimum Tool analysis.

Specific operating requirements for ESR projects in the Wilderness and WSAs are;

- Seeding will only occur on sites that do not have the likelihood of naturally recovering from fire.
- Only native seed would be used, unless a site specific environmental analysis indicates that native species would be unable to effectively compete with invasive species at the site. Under these circumstances a naturalized species may be seeded to stabilize the area and to increase the likelihood of the eventual restoration of native species to the site
- All seeding will be implemented with non-motorized equipment or aircraft.
- No motorized equipment or vehicle, mechanical transport, or landing of aircraft will be allowed inside the Wilderness Areas or WSAs for ESR activities, unless a separate Minimum Requirements/Minimum Tool Analysis determines that such activities are the minimum required action for managing the area's wilderness character.
- Construction of any fencing in the Wilderness Areas or WSAs will require a separate Minimum Requirements/Minimum Tool and Environmental Analysis.
- The burned areas would be closed to grazing for approximately two years following a burn.
- Monitoring will occur as a normal part of the ESR program
- No motorized equipment or vehicles, mechanical transport, or landing of aircraft will be allowed inside the Wilderness Areas or WSAs for ESR monitoring activities.

Fire Rehabilitation
All seed testing for purity, germination, noxious, poisonous and/or prohibited plant species would be done in coordination with the Nevada State Department of Agriculture unless certified weed free seed is purchased.

Weeds
Control of invasive, nonnative weed species on public lands is mandated under BLM policy.
All burned areas would be evaluated for any present or potential infestations that may occur.

All vehicles and seeding equipment will be thoroughly washed before and after entering and leaving the project area.

Cultural
Prior to initiation of surface disturbing activities, cultural resource inventories would be conducted. Procedures to protect cultural resources from the impacts of the proposed action are defined in the Nevada BLM Cultural Resources Inventory General Guidelines, the Nevada Historic Preservation Office and the Advisory council on Historic Places.

Properties that have been recommended as eligible for the National Register of Historic Places or are unevaluated for eligibility will ordinarily be avoided, although in some cases mitigation measures (i.e., detailed data collection) may be implemented.

Stabilization measures may be required if significant cultural properties are threatened by erosion.

Range Management
Livestock management practices will resume when a minimum of two growing seasons of rest has been provided for native species or until objectives of the closure are met. This may be more than two growing seasons. Seedings would also be protected from livestock grazing for a minimum of two growing seasons.

The Winnemucca Field Office will monitor the recovery of the burned area to see if the objectives of the closure are being achieved. If the fire rehabilitation criteria for natural recovery and new seedings are not met, additional rest may occur. If monitoring data indicates that seeded and/or natural revegetation is occurring and the plants are present, and the criteria is not met after two growing seasons, an additional year or years growing season rest will occur to allow for further establishment of vegetation. If the objectives of the closure are met after two growing seasons rest, livestock management practices will resume with reduced stocking rates along with changes in seasons of use to further improve and/or maintain the rehabilitated areas.

Soil, Water, Air
All actions taken will be consistent with the Handbook of Best Management as defined by NAC 445A.336 unless specific practices are in conflict with the Land Use Plan.
Vegetation

No alfalfa would be planted in the Quinn or Kings River Valley, which are commercial alfalfa seed producing areas. Alfalfa in the seed mixture could be a potential host for the alfalfa seed chalcid Bruchophoque roddi.

Wildlife-Aquatic Wildlife
Threatened and Endangered/ Sensitive Species

Treatments within habitats of special status species would consider existing guidelines, recovery plans, and often conservation recommendations for the maintenance and recovery of listed and other special status plants and animals. Treatments that may affect species listed or species proposed for listing under the ESA would require consultation with Fish and Wildlife Service.

Standard Operating Procedures for TES Resources

- Close the affected watershed and/or stream channel to livestock grazing for 2 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.
- Reconstruct damaged fences and/or construct new fences to ensure protection of the stream channel from grazing. In WSAs, fence construction and/or reconstruction should be in accordance with Interim Management Policy Guidelines.
- Monitor stream and riparian habitats to allow for comparison of post-fire impacts to existing baseline information.
- 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., using weed free straw) to mitigate overland flow effects to the stream channel.
- 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.
- Rehabilitate all improved roads and fire lines established for each incident.
- Rehabilitate all disturbed ground within 300 ft (91.5 m) of the stream channel as determined necessary to mitigate potential sedimentation into the stream channel.
- Implement appropriate integrated noxious weed control measures where determined necessary by the interdisciplinary review team and/or where determined appropriate through post-fire monitoring.
- Where determined necessary by the interdisciplinary review team, initiate temporary road closures for at least 1 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.
- No seedings would be allowed within or immediately adjacent to habitats of special status plant species unless it is determined that the seeding would not be detrimental of the habitats or populations of the affected special status plant species.

6.2 Species List from U.S. Fish & Wildlife Service

USFWS Species List
THREATENED AND CANDIDATE SPECIES AND SPECIES OF CONCERN that may occur in the WINNEMUCCA DISTRICT, BUREAU OF LAND MANAGEMENT, Humboldt and Pershing Counties, Nevada

File No. 1-5-03-SP-186; May 30, 2003

Updated by Mark Maley (USFWS Biologist) , 2004

Threatened Species

Bird

Bald Eagle	*Haliaeetus leucocephalus*

Fishes

Desert Dace	*Eremichthys acros*
Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*

Candidate Species

Bird

Western yellow-billed cuckoo	*Coccyzus americanus*

Invertebrate

Elongate mud meadows springsnail	*Pyrugulopsis notidicola*

Plant

Soldier Meadow cinquefoil	*Potentilla basaltica*

6.3 Wilderness Area Minimum Tool Analysis

Minimum Requirement/Minimum Tool Worksheets for Winnemucca Field Office ESR Projects in Designated Wilderness Areas

Step 1- Determining the Minimum Requirement (a two-part process)

Part A. Minimum Requirement Key to making determinations on wilderness management proposals. (This flow chart will help you assess whether the project is the minimum required action for the administration of the area as wilderness. Answering these questions will determine if this proposed action really is the minimum required action in wilderness.)

Table 19. MT Flow Chart

Guiding Question	Answers and Explanations
1. Is this an emergency? (i.e. a situation that involves an inescapable urgency and temporary need for speed beyond that available by primitive means, such as fire suppression, health and safety of people, law enforcement efforts involving serious crime or fugitive pursuit, retrieval of the deceased or an immediate aircraft accident investigation) If Yes> Document the rationale for line officer approval using the minimum tool form and proceed with action. If No> Go to question 2	No. The proposed action is not considered an emergency as defined in the Wilderness Act.
2.Does the project or activity conflict with the stated management goals, objectives and desired future conditions of applicable legislation, policy and management plans? If Yes> Do not proceed with the proposed project or activity. If No> Go to question 3	No. Currently no approved wilderness management plan exists for the involved wilderness areas. Management is based on law, regulation, and policy. BLM Wilderness Regulations section 6304.22 states that BLM may prescribe measures to control noxious weeds and non-native invasive plants. The proposed action is being implemented to stop the spread of noxious and non-native plants and to reestablish native plant communities following a wildfire. BLM Manual 1742 allows or seeding of wilderness areas after a wildfire using the minimum tool necessary.
3. Are there any less intrusive actions that should be tried first? (i.e. signing, visitor education, or information) If Yes> Implement other actions using the appropriate process. If No> Go to question 4	Maybe. Depending on the elevation, slope, and soils present at the site it may be determined that allowing for natural revegetation would be less intrusive. Where this is the case seeding will not occur.
4. Can this project or activity be accomplished outside of wilderness and still achieve its objectives?(such as some group events) If Yes> Proceed with action outside of wilderness using the appropriate process. If No> Go to question 5	No. ESR needs to be conducted in the areas that have been impacted by wildfire. If a wildfire occurs in a wilderness area than some method of ESR may need to occur within the wilderness.
5. Is this project or activity subject to valid existing rights? (such as mining claims or right of way easements) If Yes> Proceed to Minimum Tool Analysis If No> Go to question 6	No. Valid existing rights are not associated with the proposed action.

6. Is their special provisions in legislation (the Wilderness Act or Black Rock Act) that allows this project or activity? If Yes> the proposed project or activity should be considered but is not necessarily required just because it is mentioned in legislation. Go to part B If No> Go to Part B	Yes. The Technical Amendment to the NCA bill of 2000 specifically states that nothing in the Act precludes Federal, State, or local governments from conducting wildland fire managment operations within the wilderness areas.

Part B- Determining the Minimum Requirement

Responsive Questions for Minimum Requirement Analysis: Explain your answer in the response column. If your responses indicate potential adverse affects to wilderness character, evaluate whether or not you should proceed with the proposal. If you decide to proceed, begin developing plans to mitigate impacts, and complete a Minimum Tool Analysis. Some of the following questions may not apply to every project.

Effects on Wilderness Character	Responses
1. How does this project/activity benefit the wilderness as a whole as opposed to one resource?	Conducting ESR projects would maintain the naturalness of the wilderness areas by allowing the native and naturally occurring vegetation communities to better compete with non-native plants that often move onto areas impacted by wildfire. The projects would also mitigate impacts that could occur from wildlfires such as increased erosion, which will also maintain the naturalness of the areas. The seeding would only occur when it can be shown that it would maintain the wilderness values of the areas.
2. If this project/activity were not completed, what would be the beneficial and detrimental effects to the wilderness resources?	If the proposal were not completed unnatural weed populations would have a greater chance of creating monocultures in the affected wilderness areas after a wildlfire. The spread of the non-natives would impact the native vegetation communities and in some extreme cases may completely outcompete the native communities. There would also be a greater chance of impacts to naturalness from erosion occurring after a fire. The temporary impacts to solitude associated with the proposal would not occur if the project were not completed.
3. How would the project or activity help ensure that the wilderness provides outstanding opportunities for solitude or a primitive and unconfined type of recreation? (e.g. does the project/activity contribute to the people's sense that they are in a remote place with opportunities for self-discovery, adventure, quietness, connection with nature, freedom, etc.)	The project would not enhance the opportunities for solitude or for primitive and unconfined recreation. The majority of wilderness users do not recognize that non-native plants have an impact on the natural vegetation community, so it does not impact their feelings of being in a remote area or their ability to connect with nature. During the time frame that the

	crews would be implementing the projects the solitude and primitive recreation would be impacted in a negative way, but the impact would be temporary and relatively short in duration.
4. How would the project/activity help ensure that human presence is kept to a minimum and that the area is affected primarily by the forces of nature rather than being manipulated by humans?	Although ESR projects are a human manipulation of the environment this proposal would help mitigate other past human manipulations and impacts to the areas. These impacts include; increased fire frequency, unnatural fuel loads due to fire suppression, and introduction of non-native annual grasses which have changed the natural fire regime. By reseeding and stabilizing soils after a fire the proposed action would be allowing the native plant communities to better compete with the non-natives.
Management Situation 5. What does your management plan, policy, and legislation say to support proceeding with this project?	Currently no approved wilderness management plan exists for the involved wilderness areas. Management is based on law, regulation, and policy. BLM Wilderness Regulations section 6304.22 states that BLM may prescribe measures to control fire, noxious weeds and non-native invasive plants. The enabling legislation specifically states that nothing in the Act precludes Federal, State, or local governments from conducting wildland fire management operations within the wilderness areas, and BLM Manual 1742 allows or seeding of wilderness areas after a wildfire using the minimum tool necessary.
6. How did you consider wilderness values over convenience, comfort, political, economic or commercial values while evaluating this project/activity?	The purpose of the proposed action is to enhance the naturalness of the wilderness areas by stabilizing soils and planting native seeds onto burned areas. Convenience, comfort, political, economic and commercial values are not being considered in this proposal.
7. Should We Proceed?	Yes, Go to step 2 (Minimum Tool Analysis) No, Stop the project

Step 2 - Determining the Minimum Tool (the MimimumTool Analysis)

These questions will assist you in determining the appropriate tool(s) to accomplish the project or proposed activity with the least impact to the wilderness resource.

Develop several alternate approaches to implementing the project or activity. At a minimum consider the following three alternatives.

Alt#1 An alternative using motorized equipment or mechanized transport	Alt#2 An alternative using non-motorized equipment or non-mechanized transport	Alt#3 Variations of methods1 and 2, as appropriate	Alt# 4 Other ideas?

Describe the alternatives. Be specific and provide detail.
-What is proposed?
-Why is it being proposed in this manner?

-Who is the proponent?
-When will the project take place?
-Where will the project take place?
-How will it be accomplished? (What methods and techniques)

Alt#1 Rehabilitating burned areas in wilderness by seeding a mixture of native grass/forb/shrubs by means of, drilling, broadcasting or aerial seeding. Only native seed would be used, unless a site specific analysis indicates that native species would be unable to effectively compete with invasive species at the site. Under these circumstances a naturalized species may be seeded to stabilize the area, eventually allowing native plants to revegetate the site. Under this alternative chaining would also occur to provide better soil to seed contact. Temporary erosion or sediment control structures would be constructed on sites where an unnatural amount of erosion could occur after a wildlfire. Range developments destroyed in a wildfire would be reconstructed and noxious weeds would be controlled.The areas would also be closed to grazing for approximately two years following a burn. This alternative would allow for the highest likelihood of successful stabilization following a fire. BLM is the proponent. The project would occur after a wilderness area has been burned by a fire. Project would occur in areas that have been burned by wildlfire.	Alt#2 Burned areas would be allowed to naturally revegetate, no seeding would occur. The areas would be closed to grazing for approximately two years following a burn.	Alt#3 Same as Alternative 1, but seeding would only occur on sites where natural recovery is not expected to occur. Only native seed would be used, unless a site specific analysis indicates that native species would be unable to effectively compete with invasive species at the site. Under these circumstances a naturalized species may be seeded to stabilize the area, eventually allowing native plants to revegetate the site. Seeding would only occur by means of broadcasting (using non-motorized means) or aerial seeding.

Utilize the following criteria to assess each alternative (a brief statement should suffice)

<u>Biophysical effects</u>
-Describe the environmental resource issues that would be affected by the proposed action.
-Describe any effects this action will have on protecting natural conditions within the regional landscape, (i.e. non-native insects and disease, or noxious weed control)
-Include both biological and physical effects.

Alt#1 This alternative would have the highest likelihood of success for stabilizing and re-establishing vegetation on site after a wildfire.	Alt#2 This alternative has the highest potential of allowing certain sites within the wilderness areas to be converted to monocultures of exotic annual grasses (i.e. cheatgrass).	Alt#3 This alternative would allow areas not prone to invasion of exotic plants to reestablish themselves naturally while allowing those sites prone to

Because this alternative allows for seed drilling to occur, there is the potential to create unnatural looking distribution of plants in the wilderness areas.		invasion to have a higher likelihood of native plants be reestablished.

Social/recreation/experiential effects

-Describe how the wilderness experience may be affected by the proposed action

-Include effects to recreation use and wilderness character

-Consider the proposed effect the proposal may have on the public and their opportunity for discovery, surprise and self-discovery

Alt#1 This alternative allows for motorized use (drilling, and chaining),as well as broadcast and aerial seeding to occur inside of wilderness. These activities would impact opportunities for solitude in the areas during the length of the project. As stated above the drilling and chaining could also create unnatural looking plant distribution which could impact visitor's sense of discovery and impact opportunities for primitive recreation in the areas.	Alt#2 There would be no impact to opportunities for solitude under this alternative. Because of the higher potential for certain sites to convert to exotic plant communities, the primitive recreation experience of visitors who recognize these unnatural conditions, may be impacted. This impact could occur under any of the alternatives but this alternative has the highest potential for producing these impacts.	Alt#3 Broadcast and aerial seeding would impact opportunities for solitude in the areas during the length of the project. These impacts would probably be less than those associated with Alternative 1, because the drilling would not occur and broadcast seeding would be accomplished with non-motorized equipment.

Societal/political effects

-Describe any political considerations, such as MOUs, agency agreements, local positions that may be affected by the proposed action.

-Describe relationship of method to applicable laws

Alt#1 There is considerable local and regional interest in avoiding the conversion of more acreage, within the Great Basin, to cheatgrass monocultures. This alternative would attempt to minimize the amount of acreage that is converted to cheatgrass.	Alt#2 This alternative would have the greatest likelihood of allowing cheatgrass conversion.	Alt#3 Same as Alt 1

Health and safety concerns

-Describe and consider any health and safety concerns associated with the proposed action. Consider the types of tools used, training, certifications and other administrative needs to ensure a safe work environment for employees. Also consider the effect the proposal may have on the health and safety of the public.

Alt#1 No health or safety concerns are associated with the proposal.	Alt#2 No health or safety concerns are associated with the proposal.	Alt#3 No health or safety concerns are associated with the proposal.

Economic and timing considerations

-Describe the costs and timing associated with implementing each alternative

-Assess the urgency and potential cumulative effect from this proposal and similar actions

Alt#1 Because motorized use would be allowed to occur, this alternative would take less time to implement than Alternative 3. The cost would probably be relatively similar to Alternative 3.	Alt#2 This alternative would have no costs associated with it other than monitoring the natural revegetation of the area.	Alt#3 This alternative would take the longest amount of time to implement because all broadcast seeding would occur by hand or by aircraft. . The cost would probably be relatively similar to Alternative 1.

Formulate a preferred alternative from the above alternatives and describe in detail below

The preferred alternative is Alternative 3. Seeding would only occur on sites where natural recovery is not expected to occur. Only native seed would be used, unless a site specific environmental analysis indicates that native species would be unable to effectively compete with invasive species at the site. Under these circumstances a naturalized species may be seeded to stabilize the area and to increase the likelihood of the eventual restoration of native species to the site. Seeding would only occur by means of broadcasting (using non-motorized means) or aerial seeding. Temporary erosion or sediment control structures would be constructed on sites where an unnatural amount of erosion could occur after a wildlfire. Range developments destroyed in a wildfire would be reconstructed and noxious weeds would be controlled. The areas would be closed to grazing for approximately two years following a burn.

Further refine the alternative to minimize impacts to wilderness

-What will be the specific operating requirements?

Seeding will only occur on areas that do not have the likelihood of naturally recovering from fire. Any use of non-native (including naturalized seed) will require a site specific EA.

All seeding will be done with non-motorized equipment or aircraft.

No motorized equipment, transport, or landing of aircraft will be allowed inside the wilderness areas for ESR activities, unless a separate Minimum Requirements/Minimum Tool Analysis determines that such activities are the minimum required action for managing the area as wilderness.

Construction of any fencing in the wilderness areas will require a separate Minimum Requirements/Minimum Tool and Environmental Analysis.

-What are the maintenance requirements?

Any maintenance of a ESR Project will be consistent with the operating requirements above.

-What standards and designs will apply? See above

-Develop and describe any mitigation measures that apply?

Any camps associated with ESR projects will attempt to be located outside of the wilderness areas

-What provisions have been made for monitoring and feedback to strengthen future efforts and/or prevent the need for recurring future actions?

Monitoring will occur as a normal part of the ESR program

No motorized equipment, transport, or landing of aircraft will be allowed inside the wilderness areas for ESR monitoring activities.

6.4 Wilderness Study Area Minimum Tool Analysis

Step 1- Determining if the proposal falls under one of the exceptions to the non-impairment criteria and if not, does the proposal meet the non-impairment standard, and should the proposal be authorized.

Part A. Determining if the proposal falls under one of the exceptions to the non-impairment criteria.

(This flow chart will help you assess whether the project is subject to the non-impairment criteria or if it falls under one of the exceptions to the criteria)

Table 20. MT WSA Flow Chart

Guiding Question	Answers and Explanations
1. Is the proposal part of the development of a valid existing right (such as a valid mining claim, mineral lease, or right-of-way)? If Yes> Proceed with the proposed project or activity complying with the stipulations, conditions, and limitations stated in the law or approval document that created the right Ensure that the project or activity would satisfy the non-impairment standard, unless this would unreasonably interfere with enjoyment of the benefit of the rights. If No> Go to question 2	No. ESR projects are not considered a valid existing right
2. Does the proposal qualify as a "grandfathered" mineral or grazing use continuing in the same manner and degree as on October 21, 1976? If Yes> The proposal will probably be considered acceptable under the IMP subject to regulation ensuring that the use or facility does not cause unnecessary or undue degradation and that the use only occurs at the same manner and degree as it occurred prior to passage of FLPMA. Complete the Minimum Tool Analysis (if applicable) and proceed with project. If No> Go to question 3	No. ESR projects are not considered to be "grandfathered" uses
3. Does the proposal involve an emergency such as suppression activities associated with wildfire or search and rescue operations? If Yes> Proceed with the proposal while ensuring that the action is conducted in the manner which least impairs wilderness suitability. Reclaim the resulting impacts as soon as possible after the situation has ended. If No> Go to question 4	No. ESR projects are not considered an emergency as defined by the Interim Management Policy.
4. Is the proposal required to reclaim impacts to wilderness values created by IMP violations and	No. The proposal would rehabilitate areas after a wildlfire, which would not be considered a IMP

emergencies, or required to reclaim pre-FPLMA impacts? If Yes> Complete the Minimum Tool Analysis (if applicable) and proceed with project. If No> Go to question 5	violation or a pre-FLPMA impact.
5. Would the proposal clearly protect or enhance the land's wilderness values? If Yes> Complete the Minimum Tool Analysis (if applicable) and proceed with project. If No> Go to question 6	Yes. Conducting ESR projects in the WSAs on sites where natural recovery would not occur or in areas that are prone to invasion from exotic plants, would protect the naturalness of the areas.
6. Is the proposal the minimum necessary for action for public health and safety in the use and enjoyment of the wilderness values? If Yes> Complete the Minimum Tool Analysis (if applicable) and proceed with project. If No> Go to Part B	

Part B- Determining if the proposal meets the non-impairment criteria

Guiding Question	Answers and Explanations
1. Is the use, facility, or activity temporary? (Can the use, facility, or activity be easily and immediately terminated upon wilderness designation?) If Yes> Go to Question 2 If No> The Proposal does not meet the non-impairment criteria and should be denied	
2. Will the proposal create surface disturbance that will require reclamation (i.e., recountouring of the topography, replacement of topsoil, and/or restoration of native plant cover)? If Yes> The Proposal does not meet the non-impairment criteria and should be denied. If No> Go to Question 3	
3. Would the addition of this proposal produce an aggregate negative effect upon the area's wilderness characteristics and values that would constrain Congress's decision to designate the area as wilderness, considering the condition of the area at the time the Secretary sent the recommendation the President? If Yes> The Proposal does not meet the non-impairment criteria and should be denied. If No> The proposal meets the non-impairment standard and may be authorized .Answer the following questions on the potential effects to wilderness values to assist you in deciding to authorize the proposal.	
Potential Impacts to Wilderness Values 4. What impacts will the proposal have on the naturalness of the area (i.e., soil stability, condition or trend of vegetation, natural biological diversity, quality of surface water, T&E species)	
5. What impacts will the proposal have on the opportunities for solitude and primitive recreation in	

the area?	
6. What impacts will the proposal have on the special features found in the area?	
7. Should We Proceed?	Yes, Go to step 2 (Minimum Tool Analysis) No, Stop the project

Step 2 - Determining the Minimum Tool (the MimimumTool Analysis)

These questions will assist you in determining the appropriate tool(s) to accomplish the project or proposed activity with the least impact to the wilderness resource.

Develop several alternate approaches to implementing the project or activity. At a minimum consider the following three alternatives.

Alt#1 An alternative using motorized equipment or mechanized transport	Alt#2 An alternative using non-motorized equipment or non-mechanized transport	Alt#3 Variations of methods1 and 2, as appropriate	Alt# 4 Other ideas?

Describe the alternatives. Be specific and provide detail.
-What is proposed?
-Why is it being proposed in this manner?
-Who is the proponent?
-When will the project take place?
-Where will the project take place?
-How will it be accomplished? (What methods and techniques)

Alt#1 Rehabilitating burned areas in wilderness by seeding a mixture of native grass/forb/shrubs by means of, drilling, broadcasting or aerial seeding. Only native seed would be used, unless a site specific analysis indicates that native species would be unable to effectively compete with invasive species at the site. Under these circumstances a naturalized species may be seeded to stabilize the area, eventually allowing native plants to revegetate the site. Temporary erosion or sediment control structures would be constructed on sites where an unnatural amount of erosion could occur after a wildlfire. Range developments destroyed in a wildfire would be reconstructed and noxious weeds would be controlled. Under this alternative chaining would also occur to provide better soil to seed contact. The areas would also be closed to grazing for approximately two years following a burn.	Alt#2 Burned areas would be allowed to naturally revegetate, no seeding would occur. The areas would be closed to grazing for approximately two years following a burn.	Alt#3 Same as Alternative 1, but seeding would only occur on sites where natural recovery is not expected to occur. . Only native seed would be used, unless a site specific analysis indicates that native species would be unable to effectively compete with invasive species at the site. Under these circumstances a naturalized species may be seeded to stabilize the area, eventually allowing native plants to revegetate the site. Seeding would only occur by means of broadcasting (using non-motorized means) or aerial seeding. The areas would be closed to grazing for

This alternative would allow for the highest likelihood of successful stabilization following a fire. BLM is the proponent. The project would occur after a wilderness area has been burned by a fire. Project would occur in areas that have been burned by wildlfire.		approximately two years following a burn.

Utilize the following criteria to assess each alternative (a brief statement should suffice)

Biophysical effects

-Describe the environmental resource issues that would be affected by the proposed action.

-Describe any effects this action will have on protecting natural conditions within the regional landscape, (i.e. non-native insects and disease, or noxious weed control)

-Include both biological and physical effects.

Alt#1 This alternative would have the highest likelihood of success for stabilizing and re-establishing vegetation on site after a wildfire. Because this alternative allows for seed drilling to occur, there is the potential to create unnatural looking distribution of plants in the wilderness areas.	Alt#2 This alternative has the highest potential of allowing certain sites within the wilderness areas to be converted to monocultures of exotic annual grasses (i.e. cheatgrass).	Alt#3 This alternative would allow areas not prone to invasion of exotic plants to reestablish themselves naturally while allowing those sites prone to invasion to have a higher likelihood of native plants be reestablished.

Social/recreation/experiential effects

-Describe how the wilderness experience may be affected by the proposed action

-Include effects to recreation use and wilderness character

-Consider the proposed effect the proposal may have on the public and their opportunity for discovery, surprise and self-discovery

Alt#1 This alternative allows for motorized use (drilling, and chaining),as well as broadcast and aerial seeding to occur inside of wilderness. These activities would impact opportunities for solitude in the areas during the length of the project. As stated above the	Alt#2 There would be no impact to opportunities for solitude under this alternative. Because of the higher potential for certain sites to convert to exotic plant communities, the primitive recreation experience of visitors who recognize these unnatural conditions, may be impacted. This impact could occur under any of the alternatives but	Alt#3 Broadcast and aerial seeding would impact opportunities for solitude in the areas during the length of the project. These impacts would probably be less than those associated with Alternative 1, because the drilling would not occur and broadcast seeding would be

drilling and chaining could also create unnatural looking plant distribution which could impact visitor's sense of discovery and impact opportunities for primitive recreation in the areas.	this alternative has the highest potential for producing these impacts.	accomplished with non-motorized equipment.

Societal/political effects

-Describe any political considerations, such as MOUs, agency agreements, local positions that may be affected by the proposed action.

-Describe relationship of method to applicable laws

Alt#1 There is considerable local and regional interest in avoiding the conversion of more acreage, within the Great Basin, to cheatgrass monocultures. This alternative would attempt to minimize the amount of acreage that is converted to cheatgrass.	Alt#2 This alternative would have the greatest likelihood of allowing cheatgrass conversion.	Alt#3 Same as Alt 1

Health and safety concerns

-Describe and consider any health and safety concerns associated with the proposed action. Consider the types of tools used, training, certifications and other administrative needs to ensure a safe work environment for employees. Also consider the effect the proposal may have on the health and safety of the public.

Alt#1 No health or safety concerns are associated with the proposal.	Alt#2 No health or safety concerns are associated with the proposal.	Alt#3 No health or safety concerns are associated with the proposal.

Economic and timing considerations

-Describe the costs and timing associated with implementing each alternative

-Assess the urgency and potential cumulative effect from this proposal and similar actions

Alt#1 Because motorized use would be allowed to occur, this alternative would take less time to implement than Alternative 3. The cost would probably be relatively similar to Alternative 3.	Alt#2 This alternative would have no costs associated with it other than monitoring the natural revegetation of the area.	Alt#3 This alternative would take the longest amount of time to implement because all broadcast seeding would occur by hand or by aircraft. . The cost would probably be relatively similar to Alternative 1.

Formulate a preferred alternative from the above alternatives and describe in detail below
The preferred alternative is Alternative 3. Seeding would only occur on sites where natural recovery is not expected to occur. Only native seed would be used, unless a site specific environmental analysis indicates that native species would be unable to effectively compete with invasive species at the site. Under these circumstances a naturalized species may be seeded to stabilize the area and to increase the likelihood of the eventual restoration of native species to the site. Seeding would only occur by means of broadcasting (using non-motorized means) or aerial seeding. Temporary erosion or sediment control structures would be constructed on sites where an unnatural amount of erosion could occur after a wildlfire. Range developments destroyed in a wildfire would be reconstructed and noxious weeds would be controlled. The areas would be closed to grazing for approximately two years following a burn.

Further refine the alternative to minimize impacts to wilderness
-What will be the specific operating requirements?
Seeding will only occur on areas that do not have the likelihood of naturally recovering from fire.
Any use of non-native (including naturalized seed) will require a site specific EA.
All seeding will be done with non-motorized equipment or aircraft.
No motorized equipment, transport, or landing of aircraft will be allowed inside the wilderness areas for ESR activities, unless a separate Minimum Requirements/Minimum Tool Analysis determines that such activities are the minimum required action for managing the area as wilderness.
Construction of any fencing in the wilderness areas will require a separate Minimum Requirements/Minimum Tool and Environmental Analysis.

-What are the maintenance requirements?
Any maintenance of a ESR Project will be consistent with the operating requirements above.

-What standards and designs will apply? See above

-Develop and describe any mitigation measures that apply?
Any camps associated with ESR projects will attempt to be located outside of the wilderness areas

-What provisions have been made for monitoring and feedback to strengthen future efforts and/or prevent the need for recurring future actions?
Monitoring will occur as a normal part of the ESR program
No motorized equipment, transport, or landing of aircraft will be allowed inside the wilderness areas for ESR monitoring activities.

7 Maps

1) Winnemucca District Fire History
2) Winnemucca District Lost Scrub Communities
3) Winnemucca District Wind Erosion Hazard
4) Winnemucca District Water Erosion Hazard
5) Winnemucca District Lahontan Cutthroat Trout Recovery Watersheds
6) Winnemucca District Wilderness/Wilderness Study Areas
7) Cumulative Assessment Area