Environmental Assessment #OR134-01-EA-006
For

Union Valley Emergency Fire Rehabilitation

Chelan County, Washington

Prepared by:
Emergency Response Team
U.S. Department of Interior
Bureau of Land Management
Wenatchee Resource Area
Wenatchee, Washington

August 2001

Finding of No Significant Impact (FONSI) and Decision Record/Rationale

Finding of No Significant Impact (FONSI)

Based on the attached environmental assessment and other available information, I have determined that the selected alternative does not constitute a major Federal action affecting the quality of the human environment, constituting a Finding of No Significant Action (FONSI). Therefore, an EIS is not necessary and will not be prepared.

Decision/Rationale

It is my decision to implement the proposed action to rehabilitate public lands managed by the Bureau of Land Management (BLM). The proposed rehabilitation is in accordance with the Spokane District Resource Management Plan, as well as the Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook (version1.0, dated 6/14/01). Implementing this action will prevent significant loss of site productivity and damage to other resources on BLM-administered lands, as well as private lands. In addition, the action will reduce the potential for the spread of noxious weeds, which in turn will help recover wildlife habitat to preburn condition. Establishing perennial vegetation will increase management options and maintain nutrient and energy cycling in accordance with the Standards and Guidelines for Rangeland Health.

/s/ James F. Fisher 8/24/01

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James F. Fisher, Field Manager Date

Wenatchee Resource Area

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Introduction

This environmental assessment addresses fire rehabilitation on public lands located approximately 3 miles northeast of the town of Chelan in north-central Washington, in Chelan County (see Map 1). These lands are managed by the Bureau of Land Management, Spokane District, Wenatchee Resource Area. In the Spokane Resource Management Plan (RMP)(1985), the RMP's Record of Decision (1987), and the RMP Amendment ROD (1992), these lands are within the Scattered Tracts Management Area. Due to the intermingled land ownership pattern in this area and lack of public access, these lands are managed to conserve their potential for rangeland, wildlife and fishing habitat, woodlands, and recreation opportunities.

Although these lands are eligible for land tenure adjustments, none are presently planned.

Location

The burned area proposed for rehabilitation is along the west side of the Columbia River, on the eastern edge of the Chief Joseph Watershed, within a block of BLM land totaling about 1500 acres. Boundaries of the burned area are Union Valley to the west; Howard Flats (a large orchard area) on the east, Washington Creek to the north, and Deer Mountain to the south.

The average annual total precipitation for the town of Chelan is 11 inches. Approximately two thirds of the precipitation falls in this area from October through March. Most winter precipitation falls as snow. Summer thunderstorms occasionally occur in the area and have resulted in flood events; rain on snow events also occur in the area. Average daily maximum air temperatures range from 31°F in January to 86°F in July. Minimum daily air temperatures range from 21°F in January to 60°F in July.

Background

The Union Valley Fire (P411) started July 28, 2001 from human-caused ignition in Section 25, T. 28 N., R 22 E. The fire spread rapidly as moderate southwest winds pushed the fire to the northeast. The fire was declared controlled on August 5, 2001. Of the approximately 4,518 acres that burned, about 1,345 acres are public lands administered by the BLM, 500 acres are administered by the Forest Service, and 224 acres are State Department of Natural Resources lands (Map 2). The other 2449 acres are privately owned. Approximately 36.5 miles of dozer line was constructed around the perimeter to control the fire, of which approximately 2.9 miles of that line was constructed on BLM lands.

The fire history of the area is unknown. Judging by the ages of the trees in the area, however, the last large fire in the area occurred about 40 to 60 years ago; other small fires may have occurred in the area since then. The fire ecology of the area can be classified as a nonlethal fire regime where fires historically occurred on an average of 10 to 20 years, producing open park-like stands

of ponderosa pine. Most of the area likely burned at near natural fire severity and with impacts to resources within the range of natural variation. Due to the infrequency of fires in recent years, some parts of the Union Valley fire may have burned more severely than a natural regime, especially in areas with tree cover and decadent shrub cover (5 to 10 percent of area) where fuel build up was greater.

Need for the Proposal

Personnel from the BLM, Natural Resources Conservation Service (NRCS), and U. S. Forest Service surveyed the burned area the week following its control to:

- map the severity of burned areas (Map 3)
- determine the overall intensity of the fire
- locate any fire damage to facilities
- assess rehabilitation potential

Mapped areas show that the majority of the burned area (about 84%) had incurred light burn intensity, roughly 12 percent had moderate burn intensity, and only about 4 percent burned with high intensity (Table 1). Less than 1 percent of the lands within the fire perimeter was totally unburned and was not specifically mapped due to small patch size.

Areas subjected to moderate or high burn intensity were primarily located in areas with tree cover or dense shrub cover, where fuel loads had accumulated over time. Prior to the fire, much of the area was vegetated with high and moderate amounts of grasses and shrubs. The fire consumed most vegetation and organic litter, but a variable percentage of bunch grass root crowns and shrub root crowns survived in most areas.

The resource specialists concluded that bare and disturbed soils resulting from the wildfire and wildfire control activities present the potential for weed establishment and expansion, as well as erosion related impacts. The proposed fire rehabilitation presented in this document, responds to the need to revegetate the burned area, for the purpose of preventing soil erosion, re-establishing wildlife habitat, and protecting values on adjacent private lands, which include some homesites and orchards.

Table 1 Union Valley Fire, the acres and percent of burn severity on BLM lands and for all ownerships within the burned area.

Burn Severity Class	Acres of BLM Ownership Burned	Percentage of BLM Land Burned	Acres of All Ownerships Burned	Percentage of All Ownerships Burned
High	37	03	181	04
Moderate	27	02	375	08
Moderate - Low	37	03	168	04
Low	1244	92	3794	84
Totals	1345	100	4518	100

Description of the Alternatives

Three alternatives were analyzed. Each of those alternatives is described individually below.

Alternative 1 - Rehabilitate Public Lands (Proposed Action)

The proposed rehabilitation includes seeding, erosion control, and weed control, as summarized below.

Proposed Seeding
The proposed treatment includes grass seeding, as described below:

- Seed native grasses appropriate to the site on a total of approximately 117 acres of BLM-administered land where the burn intensity was moderate or high and along about 2.9 miles of dozer-constructed fire line and 1.5 mile of existing road (see Map 3).
- Seeding on dozer-constructed fireline, roadsides and other accessible areas that have high or moderate burn severity would be done using rangeland drills. Rangeland drills will be used primarily on areas that have been previously disturbed. Approximately 10 acres of the 117 acres to be seeded would be revegetated using a rangeland drill.
- Seed drills would be pulled by rubber-tired tractors (except for disturbed areas such as dozer lines) and restricted to relatively level ground where slopes are 20% or less
- The seed mix by drilling method would be applied at 13 pounds per acre.
- Maximum depth to drill seed would be 0.5 inch.
- Seeding on slopes over 20% would be applied by helicopter. Helicopter seeding would occur over about 107 acres.
- Seed selection and seeding operations will be implemented using the criteria on the native/non-native worksheet (see Attachment 1).
- Seeding will be completed in late fall prior to snowfall.
- Where monitoring shows revegetation is below desired success rates, followup seeding could be implemented in those areas.

The proposed seeding treatment was based on experience with seeding in similar environments, as well as information in scientific documents1,2,3.

1Washington State Rangeland Committee. 1983. The Washington Interagency Guide for Forage and Conservation Plantings, Misc. Publication 0058, Washington State Cooperative Extension1

2Wasser, Clinton H. 1982. Ecology and Culture of Selected Species useful in Revegetating Disturbed Lands in the West, Fish and Wildlife Service /Office Biological Services.

3McLendon, T. and E. F. Redente. 1997. Revegetation Manual for the Environmental Restoration Contractor, Bechtol Hanford.

Erosion Control Treatments

- On high or moderate severity BLM lands, approximately 20 burned logs per acre from onsite would be strategically placed and secured in shallow trenches as an erosion control measure on steep slopes prior to their seeding. The trenches would be dug and burned trees would be placed and secured by hand. This treatment would occur on approximately 14 acres of BLM lands where suitable burned trees are available.

Noxious Weed Control Treatments

- Noxious weeds along constructed fire line areas, existing roadsides, and adjacent patches of established weeds would be treated with herbicides using spot spraying application methods. Approximately 10 acres of noxious weeds would be treated with herbicides.
- Biological agents would be introduced into selected patches of noxious weeds where heavy populations of weeds occur within the interior of burned area. Sufficient biological control agents for treatment of 10 acres of weeds would be released.

Alternative 2 (No Action)

Under Alternative 2, no rehabilitation activities would be implemented on the BLM-managed public lands burned in the Union Valley Fire. The burned areas would be allowed to rehabilitate naturally, without management intervention.

Alternative 3 Rehabilitate Public Lands (Additional Treatments)

This alternative would employ all of the actions described in alternative 1. Under this alternative the following additional resource protection measures would be applied:

- All 1345 acres of public lands managed by BLM in the burned area would be seeded, since much bare ground occurs within the low burn severity areas. Seeding would be done following procedures described in Alternative 1.
- Fertilizer would be aerially applied to all BLM lands
- Rock cage (gabion) dams would be constructed on areas having high and moderate burn severity in the three drainages on BLM-administered lands.

Alternatives Considered But Not Analyzed In Detail – Alternative 4 (Salvage)

The only option to salvage most of the stands would be by helicopter yarding; however, for these stands salvage is not an option due to the overall small diameter of the trees. Also, there is a large reduction in value for fire-killed trees of approximately $100/MBF, which would make selling these trees uneconomical. One stand of trees is accessible by road but the diameters of those trees are quite small.

Tree planting may be an option in the severely burned stands, but it is not necessary since there are nearby live trees that provide a seed source for natural regeneration. Those portions where mortality was high will probably not come back to ponderosa pine and may best be reseeded with grasses.

A management option would be to conduct a small scale tree planting trial and monitor for survival. If successful, a more extensive effort could be implemented to interplanting trees on some of the higher intensity burn areas. The costs of hand replanting are high and benefits to the resource over time are likely to be similar to natural regeneration.

Management Actions Common to Action Alternatives

- Appropriate resource inventories (including cultural, botanical and wildlife) will be conducted prior to implementing specific projects on the proposed rehabilitation area. If important resources are identified or located, the project would be redesigned to reduce or eliminate impacts to those resources. Actions requiring rare plant surveys would be delayed to allow surveys to be conducted at the appropriate time of year during seeding, herbicide application, or placement of structures.
- If cultural properties cannot be avoided, consultation will be conducted with the Office of Archaeology and Historic Preservation, tribal governments or historical societies, as appropriate, and in some cases the Advisory Council of Historic Preservation

- Effectiveness monitoring will be established for the burned areas to be treated with seeding, as well as burned areas left untreated.

- Seeding in late fall when the seed is exposed to moist and cold conditions would improve germination success and successful revegetation. Experience with fire rehabilitation in the same area and other nearby areas has shown falls seedings are most successful. The 107 acres of burned area subjected to moderate or high intensity fire may have limited revegetation success and should be monitored closely.

- Seeded areas will be monitored for three years after being seeded.

- The untreated burned area will be monitored for recovery by visual observations at representative points.

- Soil erosion evaluations will be completed during other monitoring and in the three drainages within the burned area.

- Weed treatments will be applied in accordance with the Spokane District Weed Treatment EA (#OR 130-00-04). The proposed weed control is consistent with the Spokane District Noxious Weed Control Program (1996) and is tiered to the Final Environmental Impact Statement (FEIS) for Vegetation Treatment on Bureau of Land Management Lands in Thirteen Western States (May 1991) and its Record of Decision (July 1991), which are incorporated herein by this reference.

    - Optimum control of Dalmatian toadflax is realized when its treated after the first killing frost. Dalmatian toadflax will be treated with a tank mix of Tordon 22K (Picloram) at a rate of 1.0 quart (0.50 pounds active ingredient per acre) and Escort (Metsulfuron Methyl) at a rate of 1.0 ounce (0.375 pounds active ingredient per acre.) A silicone surfactant i.e., R-900 will be added to each 100 gallon tank mix. To insure adequate coverage of

Dalmatian toadflax, the herbicide and surfactant tank mix will be applied at a rate of 30 gallons per acre.

- Diffuse knapweed which is actively growing away from trees and water will be treated with Tordon 22K (Picloram) at a rate of 1.5 pints (0.38 pounds active ingredient per acre). Diffuse knapweed growing within trees will be treated with Transline (Clopyralid) at a rate of 1.0 to 1.25 pints (0.38 to 0.47 pounds active ingredient per acre.) Diffuse knapweed occurring farther than 1 foot from water will be treated with Weedar-64 (2,4-D Amine) at a rate of 2.0 quarts (1.9 pounds active ingredient per acre.) Diffuse knapweed within 1 foot of water will be treated with Rodeo (Glyphosate) at a rate of 2.0 quarts (2.7 pounds active ingredient per acre.) Rodeo (Glyphosate) can be applied full strength when wicking or wiping on to the target weed. Rodeo (Glyphosate) is a non-selective herbicide that will be applied directly to the plant to avoid off-target damage

Affected Environment and Environmental Impacts

Soils and Impacts to Soil Resources

Description - The soils in the burned area are primarily of the Entiat-Dinkelman and the Chelan-Margerum associations. The major soils in Entiat-Dinkelman association are dominantly moderately coarse textured, steep and very steep soils underlain by bedrock at a depth of 14 to 60 inches. The soils were formed in decomposing granodiorite and granite, and may have varying amounts of loess, volcanic ash and pumice. Bedrock outcrops occur in some places. The major soils in the Chelan-Margerum association formed in glacial till, loess, volcanic ash and pumice. They are dominantly gravelly or cobbly, medium-textured and moderately coarse textured (USDA, Soil Conservation Service, Soil Survey of Chelan Area, Washington 1969). The Entiat-Dinkelman association soils cover approximately 75% of the burned area.

The soils in the burned area are primarily (>75%) sandy loam, occurring on 25 to 65 percent slopes. The remaining areas are composed of cobbly sandy loams. Runoff is rapid and surface erosion hazard is high to very high. The majority of the runoff and soil erosion will occur during intense rain storms and during periods of rapid winter/spring snow melt or rain-on-snow events.

Uses of these soil types in the area are related to range, wildlife habitat and limited timber production.

Soil Resource Concerns - The area does not appear to have much off-road soil compaction or displacement. Some access roads are severely disturbed and require maintenance to avoid further soil displacement and sediment delivery to drainage areas. Other soil resource concerns include:

- The absence of vegetative cover within intensely burned areas next winter and spring
- lack of soil structure and productivity
- potential for surface (rill & sheet) erosion.

A few rehabilitation techniques that have proven successful at reducing the above impacts include:

- Aerial application of seed in late fall may provide cover, retard the erosion process and augment recovery of native vegetation.

- Check dams may maintain low velocities and catch sediment in drainage areas which are most susceptible to erosion. Construction materials could consist of on-site debris. Close spacing of dams on steep slopes may require maintenance i.e., clean out. Dams may erode if structures are not keyed in at the sides and bottom.

- The placement of trees strategically on areas with steep slopes will restrict water and soil movement until vegetation can re-establish. As they revegetate, the bare and disturbed soils would stabilize and be less prone to erosion.

Alternative Assessment – Under all alternatives soils will erode at a slightly greater rate than before the fire. The vegetative litter and woody debris burned by the fire provided a blanket against the effects of wind and rain. No alternative will prevent this from occurring in the short term.

Alternative 1 (Proposed Action) would reduce erosion by providing long erosion control structures on hillsides where burned trees are present. These hillsides are at a greater risk of erosion because there are few grasses to hold soil in place. The native grasses seeded under this alternative will reduce erosion over the next few years as grass cover increases on high and moderate severity areas.

Alternative 2 (No Action) would result in high and unchecked rates of erosion in high and moderate severity burned areas. Soil productivity could be reduced in these areas resulting in an extended time for recovery of soil stability.

Alternative 3 (Additional Treatments) would have effects similar to alternative 1, but would have the additional effect of decreasing short term erosion on low severity burn areas. Most low severity areas should return to preburn erosion levels within 3 to 5 years without treatment.

Native Vegetation and Impacts to Native Vegetation

Grasses, Forbs, Shrubs and Trees - Detailed descriptions of the native plant communities of the area before the Union Valley Fire are not available. In general, however, vegetation types within the area include young ponderosa pine forest (20-30% of burned area), shrub-steppe (70 – 80%), and riparian vegetation (< 5%). Steep, often rocky slopes, with narrow canyon bottoms, and relatively flat ridgetop plateaus and benches, dominate the terrain**.**

North-facing slopes and higher elevations were generally forested and dominated by ponderosa pine, mostly in dense stands of young trees (< 80 years old). There are also older pines scattered throughout the shrub-steppe vegetation, generally in isolated, rocky areas and draws. Douglas-fir trees are present, primarily in the draw bottoms, lower north-facing slopes, and riparian areas,

where they may comprise up to 50% of the canopy cover in some places.

Shrub-steppe communities dominate on south-facing and shallow-soiled slopes and ridges, with occasional pines scattered throughout. Bitterbrush (*Purshia tridentata*) is by far the dominant shrub in these areas; others include sagebrush (*Artemisia tridentata*) and squaw currant (*Ribes cereum)*. Dominant bunchgrasses include bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg's bluegrass (*Poa secunda*), needle-and-thread (*Stipa comata*), and Thurber's needle-grass (*Stipa thurberiana*).

Riparian canyon bottoms are vegetated with shrubs and trees, including black cottonwood, quaking aspen, red-osier dogwood, Douglas maple, mock-orange, serviceberry, and snowberry. In Brownfield Canyon (T. 28N, R. 23E, Secs. 20 & 29), fire effects on these riparian species were relatively minor. However, greater damage was observed in the unnamed canyon immediately to the south of Brownfield Canyon.

Weeds include dalmatian toadflax (*Linaria genistifolia* spp. *dalmatica*), and diffuse knapweed (*Centaurea diffusa*). Dalmatian toadflax is occasional to common throughout the area, generally in low densities on roadside, canyon bottoms, and on steep slopes. Diffuse knapweed was occasional along roadsides throughout the area, and particularly dense in the lower valley bottoms (especially T. 28N, R. 23E, Sec. 28, SE ¼). Both of these species are expected to increase in response to the fire.

Rare Plant Resources - Currently, there are no known federally Endangered, Threatened, or other BLM Special Status plant species on BLM lands within the boundaries of the Union Valley Fire. However, surveys of the area have not been conducted, and are required prior to some proposed activities. Surveys are required for *drill-seeding* and *herbicide* use in *all areas other than roadsides, firelines, or other areas of previous ground disturbance*. Because of the seasonal nature of rare plant surveys, fall 2001 treatments would be precluded in those areas needing surveys.

Forested Stands and Salvage Potential - Few forested stands had 100% tree mortality, and there is approximately 40-60% survival over all burned stands of trees on BLM lands. Some stands were thinned by the fire and the remaining live trees will be released from competition and grow at an accelerated rate. A few patches of trees burned completely and will reseed as young even-aged stands that will add age class diversity to the landscape.

Alternative Assessment

Under all alternatives, native vegetation will recover at variable degrees depending on plant species and habitats. Dry habitats that burned with high or moderate severity will recover more slowly than moist habitats, although many dry habitat types burned with only low severity due to a lack of fuel build up in those areas. Under all alternatives, the majority of the shrub component in the shrub-steppe vegetation will be slow to recover (*Purshia tridentata and Artemisia tridentata).*

Under all alternatives, cheatgrass will likely increase in all burned areas. This increase in an

annual grass that dries out early in the summer and easily burns could result in a more frequent fire cycle.

Alternative 1 (Proposed Action) would result in natural recovery of most plant habitats over 90 to 95 percent of the burn area. The remaining 5 to 10 percent would receive increased amounts of native grasses in high and moderate severity areas. These grasses could compete with native seed sources and plants that escaped the fire and could increase the recovery time for some native species that are poor competitors. On the other hand, the risk of erosion reducing the long term productivity of the soils without seeding could prevent long term recovery for some species. Also, the unchecked spread of weeds could greatly reduce the recovery of some native plant species. This alternative would require a rare plant survey prior to drill-seeding of some undisturbed areas.

Alternative 2 (No Action) could result in large patches of weeds throughout the burned area that out compete native plants for resources and greatly reduce native plant species in some areas. Erosion in the high and moderate burn severity areas could reduce soil productivity and change plant species composition of eroded areas.

Alternative 3 (Additional Treatments) could reduce erosion and maintain soil productivity on all burn severity areas, which could result in better native plant recovery. On the other hand, native grasses are expected to fully recover naturally in the low severity burn areas. Additional seeded non-natives or cultivars could out compete some native plants for moisture and reduce the recovery of those species. This alternative would require a rare plant survey prior to drill-seeding of some undisturbed areas.

Weeds and Control Measures

Diffuse knapweed (*Centaura diffusa*) and Dalmatian toadflax (*Linaria genistifolia ssp. dalmatica*) were apparently common throughout the burned area prior to the fire. Both weed species were observed along roads, trails and in canyon bottoms. Diffuse knapweed is biennial species, or occasionally a short lived perennial, that spreads through the production of large numbers of seeds. Vehicles dragging knapweed seed heads disperse seeds along trails and roadways. Knapweed thrives on the droughty soils common to the area.

Dalmatian toadflax is a perennial species that reproduces from seed and underground rootstocks. It is an aggressive invader and spreads along roadsides and other disturbed areas. It has an extensive root system and waxy leaves which make control difficult. Dalmatian toadflax also thrives on the droughty soils common to the area.

Most noxious weed populations observed in the area are confined to road right-of-ways. Some populations were thriving off -road on level to gently sloping ground. Ground disturbances created by fire fighting apparatus and wind blown seed will most likely contribute to the further spread of noxious weed populations.

The following treatments have been shown to be effective at controlling weeds when carried out

persistently:

- Herbicide treatment of Dalmatian toadflax should begin in late fall.
- Diffuse knapweed is controlled with herbicide applications in early to mid spring at rosette stage, with follow-up treatments of secondary growth in the fall.
- Targeted noxious weeds should be spot sprayed with ground-based equipment i.e., truck mounted tanks with hose and handguns, ATV mounted tanks with hose/handgun & specialized spray nozzles and backpack spray units.
- Biological noxious weed control agents could be utilized in areas where there is poor or no access, or within areas that have no land use disturbances.
- Manual control (hand pull, bag & proper disposal) could be utilized on non-rhizomatous weed species i.e., diffuse knapweed. This control method is the least effective. However, it would be beneficial in areas containing sensitive plants that could suffer as a result off-target damage from herbicide treatments.

Alternative Assessment

No alternative can completely control the spread of noxious weeds in the burned area. Even if all weeds were controlled on BLM lands within the burned area, weed sources exist on public and private lands outside of the burned area and will spread into the burned area over time.

Alternative 1 (Proposed Action) would greatly reduce the spread of noxious weeds, both in the short term and over the long term by reducing the spread of weeds from roads and firelines. Weed control actions in this alternative would give a boost to the natural recovery of the ecosystem without the immediate invasion of weeds from disturbed areas. Over the long term, biological controls may help reduce weed spread throughout areas occupied by native vegetation.

Alternative 2 (No Action) would result in large weed populations in the short term near all disturbed soils and in many of the high and moderate severity areas. Over the long term, higher populations of weeds in these areas would result in more weeds invading low severity areas as well.

Alternative 3 (Additional Treatments) could potentially reduce weed spread into low burn severity areas by weeds competing with higher populations of grasses. It is unclear how effective this would be since over the long term, soils may not support denser stands of grasses with the low precipitation levels in this area. Application of fertilizer may have undesirable side effects by increasing the vigor of weeds, which may increase the level of weed infestation.

Hydrology and Impacts to Water Resources

The Brownfield Canyon watershed encompasses an area of roughly 5500 acres. Approximately 85% of the watershed was burned in the fire. The entire watershed drains into Brownfield Canyon. The tributaries of Brownfield Canyon include Bigelow Canyon and 3 unnamed

canyons. Brownfield Canyon drains into orchards in the Howard Flat area. There is no direct connectivity with the Columbia River or other perennial surface water. Surface water was observed in the stream channel near the bottom of the watershed. There may be seasonal water flowing in the canyon.

The terrain in the fire area is steep, slopes generally are between 25 to 65%. The elevation of the burned area ranges between 3100 and 1400 feet.

Alternative Assessment

No alternative can completely eliminate the potential for erosion, floods or landslides in the drainages of the burn area. The area is prone to flood events based on the erosive soil types and reports of a flood in Bigelow Canyon that destroyed a homestead in a 1940 flood event (personal conversation with Mallory Lenz, U.S. Forest Service biologist).

Alternative 1 (Proposed Action) would reduce soil erosion on the most severely burned slopes with log structures. Erosion will occur at higher levels than before the burn, but within the natural range of variation. Some short term higher than natural levels of erosion will come from roads and firelines, but this would be greatly reduced by grass seeding.

Alternative 2 (No Action) would result in higher than natural levels of erosion in the short term and higher levels of erosion in the long term as the potential for rill and gully erosion exists.

Alternative 3 (Additional Treatments) would reduce erosion on high and moderate severity lands, but erosion will occur. Erosion would be reduced on low severity burned areas, but erosion in these areas would likely be within the natural range for burned lands. The erosion control structures in this alternative would reduce the amount of silt reaching the main drainage at the eastern edge of the burned area and would slightly improve water quality in the drainage.

Wildlife Species, Habitats and Impacts to Wildlife

Wildlife habitat on BLM lands in the burned area is comprised of three basic types:

- Forested stands occur primarily on north-facing hillsides.
- Riparian stringers of deciduous trees and shrubs occur primarily on drainage bottoms.
- Shrub steppe habitats comprised of grasses and shrubs occur on south and east-facing slopes.

No threatened, endangered, or sensitive species are known to occur in the project area. Potential habitat probably did occur in the area before the fire for the western gray squirrel, ferruginous hawk, and sharp-tailed grouse - all Washington State species of concern.

Potential habitat for the gray squirrel was probably reduced by 40 to 60 percent when stands of trees were burned. Remaining habitat may be sufficient to sustain populations at reduced numbers. Potential habitat for ferruginous hawks and sharp-tailed grouse was reduced by about

60 to 80 percent as many patches of grasses and shrubs were burned. In most areas, these habitats will return gradually over the next 10 years to preburn condition.

Game species in the area likely included mule deer, ruffed grouse, blue grouse, chukar and California quail. The bird species used the area year around. The mule deer, although present year around, become more abundant in the area during late fall and spring. Lower elevations along the eastern edge of the area are also used as winter range throughout the winter.

All of these game species that were displaced by the fire may avoid parts of the burned area during the first year following the burn, but will return to the area in subsequent years as the vegetation begins to recover.

Migratory birds occur in all habitat types of the burned area. Most of the burned lands were shrub-steppe habitats, which are considered critical to several species of migratory bird species. The conservation strategy for land birds in this area1 includes a couple of strategies applicable to burned area rehabilitation including 1) encourage biological weed controls where possible, and 2) limit herbicide application to invasive non-native plants and use in conjunction with habitat enhancement projects.

Other migratory bird habitats will recover naturally.

No habitats have been identified in the area that could be classified as unique or critical.

Alternative Assessment

Under all action alternatives, revegetating bare and exposed soils would enhance wildlife habitat values by reducing the spread of weeds, reducing erosion, and advancing the recovery of wildlife cover and forage. Under all action alternatives, no salvage of burned trees is proposed, which will leave abundant snags for migratory birds, especially woodpeckers.

Alternative 1 (Proposed Action) provides for a mostly natural recovery of wildlife habitats where low burn severity occurred. Seeding and herbicide treatments allow for faster than natural recovery of grass cover in high and moderate burn severity areas. Shrub and tree cover in high and moderate severity areas will come back very slowly but will eventually return in the absence of future fires. Although some burned trees would be felled under this alternative to create erosion control structures (up to 20 per acre on 14 acres), only a small percentage of burned trees would be used and abundant dead trees would remain. Big game hiding cover will return quickly in riparian areas but slowly in other habitat types.

Alternative 2 (No Action) would allow all areas to recover naturally. However, since weed spread and erosion will not be reduced, wildlife habitats in high and moderate severity areas and disturbed areas will recover very slowly, and may never return to preburn conditions. Also, with

1 Altman, B. and A. Holmes, Conservation strategy for landbirds in the Columbia Plateau of eastern Oregon and Washington. Oregon-Washington Partners in Flight. March 2000.

additional weed sources in the area, low burn severity areas may be invaded by weeds to a greater degree than before the burn and may be reduced in habitat quality from preburn conditions.

Taking no action to control the spread of noxious weeds would allow incremental loss or degradation of existing native plant communities and wildlife habitat. According to data compiled for the Interior Columbia Basin Ecosystem Management Project, non-native, or exotic, vegetation dominates at least 11 % of federal land in the Columbia Basin. Exotic vegetation alters fire regimes and natural vegetation patterns, affects biological soil crusts, increases soil erosion, diminishes forage quantity and quality, degrades breeding, nesting, and rearing habitat for many shrub-steppe wildlife, and inhibits or creates physical barriers to animal movement. If eaten by wildlife, some noxious weeds may poison, impair microbial activity in ruminants, or cause averse post-ingestive feedback. These adverse effects can directly impact wildlife or can have indirect effects that reduce reproductive success or interfere with rearing and survival of young animals.

Alternative 3 (Additional Treatment) would provide additional grass cover and improve vegetation growth in low burn severity areas, which could improve habitat for some wildlife species in the short term. In the long term, the habitat would likely return to conditions similar to before the fire. The additional erosion control structures in this alternative would probably not greatly affect wildlife habitat; although burned trees will be used for structures, abundant dead trees will remain for woodpeckers to use.

Cultural Resources Impacts to Cultural Resources

The initial Cultural Resources investigation was conducted at the onset of the wildfire, on July 29, 2001. A search of the database for existing Cultural Resources sites was conducted to allow protection of those sites from fire fighting equipment disturbances. An initial assessment of planned dozer lines, terrain features, and probability zones for sites was made at that time. A second trip to the fire area was conducted shortly after the fire, on 8/8/01, with the Rehabilitation Team.

The rough terrain, poor quality soil, and lack of water within the burned area contribute to a low probability assessment for prehistoric cultural resources. Findings from team specialists, the BLM Archeologist, the Natural Resource Conservation Service Archeologist, and the Archeologist for the Confederated Tribes of the Colville Reservation all support the finding of low cultural values within the fire perimeter.

Sites that were located were remnants of late historic sites that lacked good site integrity. It is likely that cultural sites received further impacts over the years due to the close proximity and easy access to the area from nearby population centers. Such impacts may have contributed to the relatively low cultural value of the area.

Alternative Assessment

Since no sensitive cultural sites were located in this area, none of the alternatives is anticipated to impact cultural resources. Cultural resource surveys will be conducted prior to implementing specific projects on the proposed rehabilitation area. Should any cultural resource sites be encountered during rehabilitation actions in alternatives 1 or 3, all work in the area will cease until a qualified archaeologist surveys the area and provides a report allowing activities to continue.

Other Resource Values Considered in the Analysis but not discussed in detail because no impacts were found:

- Air Quality
- Wild and Scenic Rivers
- Floodplains and Wetlands
- Special Area Designations
- Hazardous Materials

Cumulative Impacts

Many other fires have occurred in the surrounding vicinity of the Union Valley fire in the past few years. Fires in the Chelan County area in August of 2001 are shown on Map 4. Rehabilitation of most of these burned areas has included and will include seeding, weed control and erosion control measures similar to those proposed in this Environmental Assessment. For example, the Chelan Butte, Tyee, and Dinkelman burns occurred in areas around the city of Chelan within the past several years and were rehabilitated by grass seeding, weed control and erosion control measures. No major resource issues have been identified through the monitoring efforts following those rehabilitation treatments. Where fires have burned hot in the past, private lands have been rehabilitated through assistance from the U.S. Natural Resources and Conservation Service.

The reasonably foreseeable future is likely to see many other fires in the Chief Joseph and surrounding watersheds. The on-going Rex fire and Virginia Lake fires are examples and indicators of this probability. The cumulative effects of these fires on all resources is increasingly wide spread impacts on resources from wildfire related disturbances such as additional miles of fireline, additional weed spread, and additional erosion. Agencies will continue to rehabilitate public lands to the extent practical, but a small percent of the area will be adversely affected and take many years to recover.

A high percentage of these fires are natural events, and will improve ecological conditions over the long term by providing new growth of trees and shrubs and providing a diversity of early successional stage habitat over the landscape. Animal communities, for example frequently undergo a “reorganization” following a fire, with increases in some species accompanied by decreases in others1.

1 Smith, Jane Kapler, ed. 2000. Wildland Fire in Ecosystems : Effects of Fire on Fauna. Gen Tech Rep. RMRS-GTR-42-vol1. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 83p.

Coordination With Other Agencies, Interest Groups, and Individuals
An Emergency Response Team was formed to review the Union Valley Fire, identify needed rehabilitation, and analyze potential effects to the affected resource values. Members of that team included:

U.S. Bureau of Land Management
- Dana Peterson, Rangeland Specialist, BLM, Co-leader, Rangeland Specialist
- Jim Rees, Wildlife Biologist, BLM, Co-leader, Wildlife Biologist/Fire Coordinator
- Robert Troiano, Weed, Hydrology, and Soils Specialist
- Allen Gardner, Forester
- Jeanne Ponzetti, Botanist
- Steve Christi, Archaeologist

Assistance was also provided from the following individuals:
U.S. Natural Resources Conservation Service
Andrea Mann, Resource Specialist

Washington Department of Natural Resources
Dave Wischer, Geographic Information Specialist

Colville Tribe
Sean Hess, Archaeologist

U.S. Forest Service
Mallory Lenz, Wildlife Biologist
Dave Tharp, Situation Analysis Unit Leader, Union Valley Fire

U.S. Bureau of Land Management
- Kathy Helm, Planner and Environmental Coordinator, Spokane BLM District
- Peter Dauer, GIS Specialist

Some adjacent private landowners were also contacted.