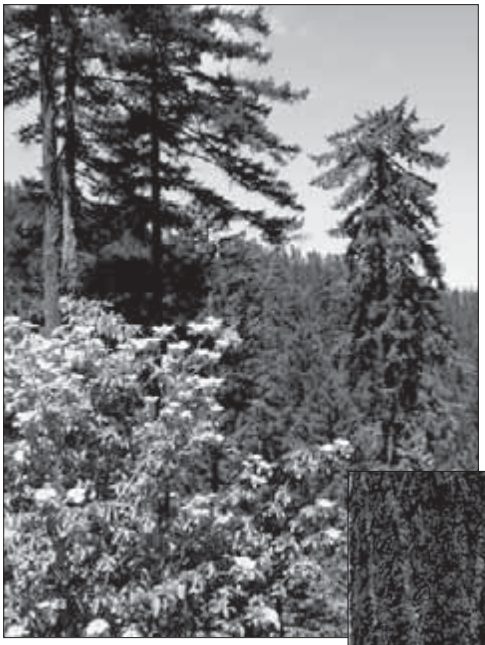
Summary



S1. Summary

- Includes brief overview of Final EIS.
- Includes need and objectives, identifies major issues, discusses controversy of salvage logging, and identifies decisions to be made.
- Includes summary of proposed projects for each alternative.
- Presents summary of effects of implementing the alternatives.
- Includes map of Alternative G, the Preferred Alternative

S1.1 Introduction

The Timbered Rock Fire began Saturday, July 13 from a lightning strike on Timbered Rock. The Timbered Rock Fire burned with varying degrees of intensity across approximately 27,000 acres of high elevation (4,600 feet) mixed conifer and low elevation (2,000 feet) mixed conifer/hardwood. About 12,000 acres of Bureau of Land Management (BLM) administered land, primarily within the Elk Creek Late-Successional Reserve (LSR), were burned. The point of origin was located approximately 8 miles from the nearest residence. The fire burned across a mixed ownership of federal, private, and industrial forest lands.

The fire created extensive areas of dead and dying trees and shrubs dispersed across a landscape that historically had high vegetation densities and high fuel loading. As trees die from insect kill and burn-related stress, snags will continue to be created within the burned areas.

Public lands administered by the BLM in the Elk Creek Watershed were designated as Late-Successional Reserve through the Northwest Forest Plan (NFP) in April 1994 and incorporated into the 1995 Medford District Resource Management Plan (RMP).

Preceding the Timbered Rock Fire, the Elk Creek Watershed Analysis (WA) was completed in 1995 and the South Cascades Late-Successional Reserve Assessment (LSRA) was completed in 1998. These documents emphasized the need to restore watershed functions, protect remaining mature and old-growth stands from catastrophic loss, accelerate development of late-successional habitats, reduce fuel levels in strategic locations, and create stand conditions to lower the potential for future catastrophic fire. This Final Environmental Impact Statement (EIS) addresses this new condition while still pursuing recommendations from the South Cascade LSRA and Elk Creek WA.

S1.2 Purpose and Need

S1.2.1 Proposed Action

Due to the Timbered Rock Fire, the Butte Falls Resource Area, Medford District, BLM, proposes to take two actions. First, the BLM proposes to implement a number of restoration projects located within the Elk Creek Watershed. Second, the BLM proposes to recover the economic value of trees killed as a result of the Timbered Rock Fire (salvage) while meeting LSR objectives. Opportunities to conduct research related to post-fire logging may be incorporated into any action alternative or into a stand-alone alternative.

Based upon previous recommended restoration actions from the Elk Creek WA and the South Cascades LSRA, possible restoration projects would include, but not be limited to:

- Road decommissioning or improvement.
- Installation of fuel management zones.
- Thinnings to accelerate development of late-successional forest.
- Wildlife and fisheries habitat improvements.

Timber sales may be used as a tool to implement some of the fuel management zones or conduct thinnings to accelerate development of late-successional conditions in younger stands. Implementation of the restoration and protection projects would occur over the next 10 years. Implementation of LSR restoration projects or research proposals would be subject to availability of funding, personnel, and priorities, but could begin in 2004.

Research related to post-fire logging is sparse in scientific literature, particularly as it relates to the drier parts of southwest Oregon and northern California. Opportunities exist to conduct scientific research and test assumptions of standard and guidelines relating to LSR management. The proposed action is to incorporate some of these learning opportunities into this EIS.

S1.2.2 Description of the Project Area

The Elk Creek LSR and the Timbered Rock Fire area are located approximately 20 miles east of Medford, Oregon and just west of Lost Creek Reservoir (see Map 1-1). Of the 85,424 acres within the Elk Creek Watershed, 23,866 are public lands administered by the BLM. The Timbered Rock Fire affected approximately 27,000 acres of mixed federal, private, and commercial forest lands in what is generally referred to as a “checkerboard” ownership pattern (see Table S-1).

Table S-1. Land Ownership/Jurisdiction in Acres within the Timbered Rock Fire, Elk Creek Watershed, and Elk Creek LSR

Land Owner/Jurisdiction	Elk Creek Watershed	Elk Creek LSR	Timbered Rock Fire
Public Lands			
Bureau of Land Management	23,866	23,866	11,774
Rogue River NF (LSR 222)	26,863	25,505	2,647
Umpqua NF (LSR 222)	186	186	84
Army Corps of Engineers	2,617		611
Oregon Division of State Land	238		234
Private Lands			
Industrial Forestland	27,319		11,140
Other Private Lands	4,335		610
Totals	85,424	49,557	27,100

NOTE: Acres were calculated using GIS. Fire acres include 182 acres in the Lost Creek Watershed.

The "project area" includes only public lands administered by the BLM. Opportunities for protection, enhancement, acceleration, and restoration of late-successional habitat and other proposed projects may occur anywhere within the Elk Creek LSR (LSR 224). A 400-foot "buffer" outside the watershed along the divides with Trail and Lost creeks has been included within the project area to provide an opportunity to analyze creation of fuel management zones along these divides, as presented in the South Cascades LSRA. Salvage opportunities would be confined to BLM-administered lands within the Timbered Rock Fire perimeter.

S1.2.3 Need and Objectives

S1.2.3.1 Need

The Timbered Rock Fire created the need:

- To rehabilitate fire damaged landscape.
- To assess changes in late-successional habitat conditions within the Elk Creek LSR.
- To reevaluate restoration and other actions to enhance or accelerate development of late-successional forest habitat conditions and increase resiliency to disturbance throughout the Elk Creek LSR.
- To assess the possibility of economic recovery of fire-killed trees (salvage) within the fire perimeter, consistent with LSR objectives.
- To consider conducting research related to post-fire logging.

Given the controversy associated with management of Late-Successional Reserves and any proposal to recover the economic value of fire-killed trees (salvage) (particularly within an LSR), it was determined that preparation of an Environmental Impact Statement (EIS) would best serve the public and land managers.

S1.2.3.2 Objectives

Objectives to be addressed in this EIS are as follows:

1. Manage to protect and enhance conditions of late-successional and old growth forest ecosystems (NFP). Desired future condition identified in LSRA is 55 percent of LSR and 75 percent of riparian reserves in late seral vegetation 80 or more years old. (LSRA) (acres)
2. Reduce potential amount of sedimentation resulting from the Timbered Rock Fire and any past or future management actions. (tons of sediment)
3. Manage to create, protect, and improve special habitats within the Elk Creek Watershed. (WA) (acres)
4. Restore anadromous fish habitat to increase survival rates by improving the abundance and quality of spawning gravels, deep pool habitat, side channels, and overwintering habitat (channel structures and log jams which can shelter fish), while maintaining water temperatures and quality that can sustain multiple fish species within the Elk Creek Watershed. (WA) (miles of habitat)
5. Manage the LSR to a level where no more than 28 percent of acres are in a high fire risk condition. (LSRA) (acres)
6. Improve existing suppression facilities and reestablish the role of fire to reduce wildfire size and cost and to increase resiliency to site disturbance.
7. Recover some economic value of fire-killed trees while meeting LSR and watershed objectives. (NFP and LSRA) (MMBF).

8. Where possible, conduct scientific investigations that could be implemented within the LSR to respond to controversial issues and scientific uncertainties related to salvage of fire-killed trees or fire effects on critical resources.
9. Analyze effects associated with fire salvage so future efforts can be tiered to this analysis.

S1.2.4 Major Issues and Controversy

S1.2.4.1 Major Issues

The following issues were identified as major issues through public scoping and internal evaluation and are addressed in detail in this Final EIS:

- Issue 1: Recovery of the economic value of fire-killed trees.
- Issue 2: Fuel loading within the Elk Creek Watershed.
- Issue 3: Coarse woody debris and snag levels.
- Issue 4: Late-Successional forest habitat.
- Issue 5: Cumulative effects from the fire and activity on commercial timberlands.
- Issue 6: Road density and delivery of sediment to streams.
- Issue 7: Threatened or endangered and other sensitive species.

The following issues were identified during scoping but were determined to be minor issues. These issues will be addressed but not in great detail.

- Consistency with the Northwest Forest Plan and Medford District Resource Management Plan.
- Insect outbreak following the Timbered Rock Fire.
- Introduction or spread of noxious weeds.
- Hazardous trees along travel routes (public safety).

S1.2.4.2 Controversy

Economic recovery of trees killed by wildfires (salvage) has become a very controversial subject. There are differing viewpoints in the scientific literature. State and federal land management and regulatory agencies present differing information. Some groups use guidelines from "*Wildfire and Salvage Logging*" (Beschta, et al. 1995) as rationale for no salvage logging, and some groups push for maximum economic recovery of dead timber. A number of scientists contend that salvage can eliminate or reduce future fire intensity. Conversely, others contend that salvage logging would not affect future fire intensity. Some maintain that any impacts from salvage logging are not justified because of the impacts already created by the wildfire. However, with all the controversy, a study by McIver and Starr in 2001 reports that only 21 studies worldwide have actually examined the environmental effects of post-fire logging.

The results of delay in salvaging fire-killed trees are also a matter of controversy. Delay causes a loss in quantity, utility, and economic value of the dead trees. This loss in recoverability is directly related to size. Smaller trees lose their quality and economic value quicker than larger trees. Considering the time needed to prepare the required environmental analysis documents, the delay could result in a loss of salvage opportunity in small diameter trees.

Debate also exists in the reported role of salvage as a mechanism to fund restoration and rehabilitation activities following a wildfire. Under the BLM's budgeting process, receipts from BLM green timber sales are deposited into the US Treasury or into special accounts established by Congress for a variety of purposes. Receipts from BLM salvage sales are deposited into a Forest Health account to be used in other areas. Funds annually appropriated by Congress are used to finance rehabilitation and restoration projects. Some road maintenance or improvement projects may be funded through timber sale(s) where that work is needed to implement the timber sale(s).

Finally, there could be disagreements regarding proposals to implement commercial thinnings to accelerate late-successional forest characteristics in Douglas-fir stands from 30 to 80 years old. Also, thinning in pine release stands could include trees greater than 80 years old, consistent with LSRA recommendations. Both of these types of projects are recommended in the LSRA and could involve commercial removal of green trees within an LSR.

S1.2.5 Decisions to be Made

The following decisions are to be made through this analysis:

- Whether to pursue restoration activities on BLM-administered lands within and adjacent to the LSR and Elk Creek Watershed and, if so, at what level and where,
- Whether to salvage fire-killed trees from BLM-administered lands within the Timbered Rock fire perimeter and, if so, at what level and where,
- What levels of snags and coarse woody debris (CWD) should be retained, if salvage does occur,
- Whether to implement the proposed action, to vary the design of the proposed action while still meeting the Purpose and Need, or to defer any action at this time.

Salvage within an LSR is subject to review by the Regional Ecosystem Office (REO) (USDA and USDI 1994, C-13). The EIS team identified four other concerns that were forwarded to REO or to the LSR Working Group for consistency considerations. These included:

- acreage limitations for various treatments identified in the South Cascades LSR Assessment;
- interpretation of the "10-acre rule" for salvage within an LSR;
- research within an LSR; and
- appropriate snag and CWD levels.

Following LSR Working Group review, a few modifications were made to Alternative G, the Preferred Alternative. Based upon these changes and responses and exemptions from the LSR Working Group, it has been determined that restoration and salvage proposals presented in Alternative G, the Preferred Alternative, are consistent with the NFP and the South Cascades LSRA, as appropriate.

Alternative G, the Preferred Alternative, is also consistent with the Medford District RMP.

Some of the restoration decisions to be made would require further NEPA analysis prior to implementation. Others could be implemented as soon as the Record of Decision is approved. However, implementation would progress as funding and personnel are available. Many of the restoration and protection projects, particularly those outside the fire perimeter, would require site-specific surveys for various species or cultural resources and NEPA documentation prior to project implementation.

Salvage operations could proceed in the summer of 2004 as authorized through timber sales. This could include limited road improvements necessary to conduct salvage logging. Some of the late-successional forest restoration thinnings and pine release projects could also be implemented through timber sales or through stewardship contracts. Most of the restoration projects, including road decommissioning and improvements, some late-successional forest restoration projects, and fuel management zones proposals would only be implemented through appropriated funds.

S1.3 Alternatives

S1.3.1 Introduction

Seven alternatives were developed to provide different responses to the issues identified in Section S1.2.4. A No Action Alternative (Alternative A) was included. Alternative G is identified as the BLM's Preferred Alternative. Alternative G, the Preferred Alternative was modified based upon public comment received on the Draft EIS and internal review.

The action alternatives contain two major categories of proposed projects:

1. Salvage within the fire perimeter (Alternatives C-G).
2. Restoration projects located throughout the Elk Creek Watershed (Alternatives B-G).

Table S-2 provides a comparison of the alternatives in table format.

S1.3.2 Proposed Projects

The EIS proposes two approaches to salvage and a number of projects aimed at restoring, protecting, accelerating the development of, or otherwise enhancing late-successional forest habitat or enhancing habitat for threatened species, as summarized below. These proposals are described in more detail in Chapter 2 and Appendices D and E. The following illustrates how the alternatives are organized.

Salvage
- Area Salvage
  - Salvage Research Proposal (Alternative G only)
- Roadside Salvage

Restoration
- Fish Habitat Improvement
  - Culvert Replacement
  - Fish Structures
- Vegetation Treatments
  - Late-Successional Habitat Restoration
  - Pine Habitat Restoration
  - Riparian Habitat Restoration
  - Oak Woodland and Meadow Restoration
  - Noxious Weed Treatment
  - Reforestation
  - Reforestation Research Proposal
- Fuels Treatments
  - Fuel Management Zones
  - Fuel Hazard Reduction
- Wildlife Projects
  - Eagle Habitat Improvement
  - Denning Habitat Project
- Road Projects
  - Road Reconstruction
  - Road Stream Crossing Upgrades
  - Road Maintenance
  - Road Decommissioning
  - Seasonal Road Closures
- Pump Chance Reconstruction
- Rock Quarry Closure and Rehabilitation

S1.3.2.1 Area Salvage

Area salvage is proposed on BLM-administered lands within the Timbered Rock Fire perimeter where trees were killed by the fire. Only trees that are considered dead would be salvaged. As used in this EIS, a fire-killed tree is defined as "a tree with no apparent sign of green foliage." The

location and amount of salvage being considered varies by alternative. Harvest systems in all alternatives would include tractor, cable, and helicopter logging. Snag and CWD levels to be retained were important alternative design criteria.

In Alternatives A and B, no salvage would occur.

Alternatives C and D focus on high and moderate burn severity areas greater than 10 acres and less than 40 percent canopy cover where the fire resulted in a stand replacement event. Alternative C is based on guidelines from the LSRA including snag and CWD retention recommendations. Alternative D follows the guidelines from the NFP (USDA and USDI 1994, C-14). Snag and CWD retention levels in this alternative were based on the DecAID wood advisor from the LSR working group.

Alternative E considered high, moderate, low, and very low burn severity areas for salvage. Snag retention levels within the high and moderate burn severity areas for this alternative would be 6-14 snags per acre, based on study by Haggard and Gaines, 2001. The study found the highest diversity in cavity nesting species and highest number of nests in areas where snag densities ranged from 6-14 snags per acre. Snag retention within the low and very low burn severity areas would be four snags per acre. The CWD level in this alternative would be 120 linear feet per acre.

In Alternative F, the emphasis is based on guidance contained in *Recommendations for Ecologically Sound Post-Fire Salvage Management and Other Post-Fire Treatments on Federal Lands in the West* (Beschta, et al. 1995). Emphasis would be placed on recommendations to avoid severely burned areas, erosive sites, fragile soils, riparian areas, steep slopes, or sites where accelerated erosion is possible. Other recommendations from this paper were considered but were not included. Existing snags and CWD levels would be retained on all these areas. Salvage would occur in patches of fire-killed trees between 3 and 10 acres. Within each of these patches, a minimum of two acres would be reserved from salvage.

Alternative G is designed to investigate the influences of post-fire salvage and salvage intensity on wildlife response. This alternative was designed in collaboration with Oregon State University scientists and the Cooperative Forest Ecosystem Research (CFER) group. Also included is reforestation research. Salvage outside of research units would follow the DecAID wood advisor.

S1.3.2.2 Roadside Salvage

Roadside salvage along open roads is proposed in Alternatives C-G. The intent is to capture the economic value of the fire-killed trees that are or could be a hazard to road users, including the public, government employees, private landowners, and contractors. Trees felled within riparian areas or needed for log piles for wildlife habitat would be excluded from salvage.

The area considered for roadside salvage is generally a 200' strip above and below the open roads or roads needed on a temporary basis for post-fire operations. Not all trees within this 200' strip are hazards and would not be salvaged; only those trees that pose a threat or potential threat would be harvested. Guidance from the Occupational Safety and Health Administration (OSHA) would be considered to determine hazard trees. Roadside hazards would vary by location along the road and burn severity. Areas below the road would have fewer hazard trees than areas above the road. Stand replacement areas (generally high and moderate severity) would have higher concentrations of hazard trees. Areas of low and very low severity would have fewer hazard trees and would be isolated trees scattered along the roads.

S1.3.2.3 Restoration

Restoration projects are proposed in the action alternatives, Alternatives B-G. Alternative A (No Action) has no restoration projects proposed, but rehabilitation and stabilization projects proposed in the Timbered Rock Fire Emergency Stabilization/Rehabilitation Plan (ESRP) would be implemented.

Four levels of restoration projects are proposed in the six action alternatives: no restoration, focused, moderate, and extensive. The alternatives vary by the scope of the projects (acres, miles of roads, etc.), intensity of the treatments, and location of the treatments. Restoration projects are located both within the Timbered Rock Fire perimeter and outside the fire area. Most projects are located within the Elk Creek Watershed; however, a proposed eagle nest project and some fuel management zone (FMZ) projects are located on a ridge top within adjacent watersheds. Projects are based on recommendations presented in the LSRA and/or Elk Creek WA, or were developed to address specific issues.

Projects proposed within the fire area focus on road projects to reduce existing and potential sedimentation from the road network, fish improvement projects, development of FMZs, and reducing future hazardous fuel conditions within existing Northern Spotted Owl activity centers. Reforestation of the burned area was assessed in the ESRP Environmental Assessment. A reforestation study is included in Alternative G which would evaluate a variety of planting densities, species, and follow-up treatments in both salvage and unsalvaged areas. A number of projects designed to accelerate development of late-successional forest habitat conditions are proposed for areas outside the fire but within the LSR in Alternatives B, C, D, E, and G.

S1.3.3 Description of Alternatives Considered in Detail

S1.3.3.1 Alternative A: No Action or Continuation of Current Management

Salvage

Area Salvage

No programmed area salvage.

Salvage of Roadside Hazard Trees

Identified hazard trees would be cut. Any salvage of hazardous trees would be determined through appropriate NEPA documentation.

Restoration

Continue current management under NFP and RMP direction and the Timbered Rock Fire ESRP. Continue to plan and implement other restoration projects as funding and time permits, but implement the ESRP as described.

S1.3.3.2 Alternative B: No Salvage; Focused Restoration

Salvage

Area Salvage

No programmed area salvage.

Salvage of Roadside Hazard Trees

Identified hazard trees would be cut. Any salvage of hazardous trees would be determined through appropriate NEPA documentation.

Restoration

Implement a focused level of restoration projects (see Table S-2). Emphasis would be placed on reducing noncommercial-size vegetative competition in overstocked stands with density management treatments, fuels reduction treatments, and pine habitat restoration. Areas proposed for treatment would be those in most need of competing vegetation reduction. Within the fire perimeter, restoration would focus on high priority road work. LSR restoration actions would focus on non-commercial projects.

S1.3.3.3 Alternative C: South Cascades LSRA Criteria for Salvage; Moderate Restoration

Salvage

Area Salvage

- Salvage 247 acres using guidelines from the South Cascades LSRA (see Appendix B).
- Harvest in stand replacement patches greater than 10 acres; less than 40 percent canopy closure.
- Prohibit salvage in the following areas:
  - Low and very low burned areas (40 percent or greater live canopy).
  - Riparian areas.
  - Patches less than 10 acres.

Salvage of Roadside Hazard Trees

- Roadside salvage 1,078 acres.
- BLM would identify hazard trees along open roads or roads needed for temporary use for post-fire operations except roads within riparian areas and owl activity centers with suitable habitat.
- Hazard trees identified by road users within riparian areas and remaining owl activity centers with suitable habitat would be felled and left in place, except where trees or portions of trees fall within road prism.

Restoration

Implement a moderate level of restoration (see Table S-2). Emphasis would be placed on reducing vegetative competition in overstocked stands with density management treatments and pine habitat restoration to accelerate development of late-successional forest conditions. Fuel management zones would be placed on ridge tops to potentially reduce future fires to 5,000 to 7,000 acres and to provide protection to lands within the wildland urban interface. Within the fire perimeter, restoration would focus on high priority road work.

S1.3.3.4 Alternative D: LSR Salvage using DecAID Wood Advisor for Snags and CWD; Moderate Restoration

Salvage

Area Salvage

- Salvage 820 acres.
- Salvage in stand replacement patches greater than 10 acres; less than 40 percent canopy closure.
- Use snag and CWD levels from DecAID Wood Advisor.
- Prohibit salvage in the following areas:
  - Low and unburned areas; 40 percent or greater live canopy.
  - Riparian areas.
  - Patches less than 10 acres in size.
  - Selected owl activity centers in T32S, R1W, Section 1 and T33S, R1W, Section 1.

Salvage of Roadside Hazard Trees

- Roadside salvage 1,064 acres.
- Follow same guidelines as in Alternative C.

Restoration

Implement a moderate level of restoration (see Table S-2).

- Same as Alternative C.

S1.3.3.5 Alternative E: High Level of Salvage; Extensive Restoration

Salvage

Salvage would be considered in all burn severity levels. This would include areas where stand replacement occurred as well as stands with scattered or clumps of fire-killed trees. Snag levels within the high and moderate severity areas would be based on levels suggested in study by Haggard and Gaines in 2001. This study concluded the highest diversity in cavity nesting species and highest number of nests were found in densities ranging from 6-14 snags per acre.

Area Salvage

- Salvage 3,269 acres.
- Salvage fire-killed trees in all stands (high/moderate/low/unburned severity areas).
- In high and moderate burn severity areas:
  - Leave 8 snags per acre in Douglas-fir plant series.
  - Leave 12 snags per acre in White fir plant series.
  - Snags will be greater than 14" DBH.
- In low and very low burn severity areas, leave 4 snags per acre greater than 14" DBH.
- In all stands, leave minimum of 120 linear feet of CWD per acre greater than 16" DBH.
- Prohibit salvage in riparian areas.

Salvage of Roadside Hazard Trees

- Roadside salvage 536 acres.
- Follow same guidelines as in Alternative C.

Restoration

Implement an extensive level of restoration (see Table S-2). Guidelines would be the same as Alternative C, except more acres and roads would be treated.

S1.3.3.6 Alternative F: Salvage Based on Report by Beschta et al.; Focused Restoration within the Fire Area Only

Salvage

Area Salvage

- Salvage 213 acres.
- Salvage pockets of dead trees between 3-10 acres in size located in green stands; leave a minimum of 2 acres untouched within each pocket.
- No salvage in the following areas:
  - Clumps of dead trees less than 3 acres or greater than 10 acres.
  - High and moderate burn severity areas.
  - Erosive sites or sites where accelerated erosion is possible.
  - Fragile soils.
  - Steep slopes.
  - Riparian areas.

Salvage of Roadside Hazard Trees

- Roadside salvage 1,182 acres.
- Follow same guidelines as in Alternative C.

Restoration

The Beschta, et al. report does not address actions outside of a burned area. As a result, no LSR restoration actions are proposed. Restoration projects would include those in Alternative B, but only within the fire perimeter (see Table S-2).

S1.3.3.7 Alternative G (Preferred Alternative): Salvage Based on Research Questions and Salvage in Stand Replacement Units greater than 10 Acres; Moderate Restoration Emphasis (see Map 2-6f)

Salvage

Salvage would be considered in stand replacement (high and moderate burn severity) areas greater than 10 acres and less than 40 percent canopy closure. Two types of area salvage proposed – “research units” and “remaining area.” Salvage in research units would be based on responding to research questions revolving around the influences of post-fire salvage and salvage intensities on wildlife species. Snag levels in research units would be based on study design. Snag levels in remaining area salvage units would be based on DecAID wood advisor and other local and regional references (see Appendix D).

Area Salvage

1. Research Units

Salvage would be based on responding to research questions revolving around the influences of post-fire salvage and salvage intensities on wildlife species. Snag levels in research units would be based on study design.

- Salvage 282 acres.
- 12 units included in research proposal.
- Units are 30 acres or greater.
- Three treatments levels implemented:
  1. Control – no salvage activity.
  2. Moderate Salvage – 30% unsalvaged; 70% salvaged leaving 6 snags per acre greater than 20" DBH.
  3. Heavy Salvage – entire site salvaged leaving 6 snags per acre greater than 20" DBH.
- Salvage would occur in approximately 11 acres of Riparian Reserve.
- Harvest systems include:
  - cable - 136 acres
  - tractor - 7 acres
  - helicopter - 139 acres

2. Remaining Area Salvage

Salvage outside of research units, "remaining area," would consider salvaging of stand replacement (high and moderate burn severity) areas greater than 10 acres and less than 40 percent canopy closure. Snag levels in these units would be based on DecAID Wood Advisor and other local and regional references (see Appendix D).

- Salvage 679 acres in units greater than 10 acres.
- Use small patch clear cuts or group selection. Openings created would not exceed 20 acres.
- Snags would be retained in reserved area outside of cut patches
- Leave average of 8 snags per acre in Douglas-fir plant series.
- Leave average of 12 snags per acre in White fir plant series.
- Snags will be greater than 14" DBH.
- Harvest systems include:
  - cable - 266 acres
  - tractor - 106 acres
  - helicopter - 272 acres
  - bull-line - 35 acres
- Construct and rehabilitate 0.9 miles of temporary road.
- No new permanent roads.
- Prohibit salvage in riparian areas.

Salvage of Roadside Hazard Trees

- Roadside salvage 1,188 acres.
- Follow same guidelines as in Alternative C.

Restoration

- Implement a moderate level of restoration (see Table S-2).
- Same as Alternative C.

S1.4 Summary of the Effects of the Alternatives

The summary of the effects from implementing any alternative is presented in Table S-3. This table is the same as Table 2-2.

Table S-2. Comparison of Alternatives

Proposed Projects	Alternative A No Action – Continuation of Current Management	Alternative B No Salvage; Focused Restoration	Alternative C LSRA Salvage; Moderate Restoration	Alternative D LSR Salvage with DecAID; Moderate Restoration	Alternative E High Salvage; Extensive Restoration	Alternative F Salvage based on Report by Beschta et al.; Focused Restoration in Fire Area Only	Alternative G Salvage based on Research; Moderate Restoration
Salvage							
Area Salvage	• None	• None	• 247 acres	• 820 acres	• 3,269 acres	• 213 acres	**Research units:** • 282 acres **Outside research units:** • 679 acres
Roadside Salvage	• None	• None	• 1,078 acres bull-line	• 1,064 acres bull-line	• 536 acres bull-line	• 1,182 acres bull-line	• 1,188 acres bull-line
Restoration							
Fish Habitat Improvement							
Culvert for fish passage		• Replace 4 culverts	• Replace 4 culverts	• Replace 4 culverts	• Replace 4 culverts	• Replace culverts	• Replace 4 culverts
Fish Structures over 8 miles		• 3 rock weirs and 15 logs per mile	• 5 rock weirs and 20 logs per mile	• 5 rock weirs and 20 logs per mile	• 10 rock weirs and 25 logs per mile	• 3 rock weirs and 25 logs per mile	• 5 rock weirs and 20 logs per mile
Vegetation Treatments							
Late-Successional Forest Habitat Restoration		• Thin 1,102 acres	• Thin 1,328 acres	• Thin 1,328 acres	• Thin 1,978 acres	• None	• Thin 1,328 acres
Pine Restoration		• Thin 156 acres	• Thin 793 acres	• Thin 793 acres	• Thin 2,005 acres	• None	• Thin 793 acres
Riparian Reserve Thinning		• Thin 117 acres	• Thin 359 acres	• Thin 359 acres	• Thin 1,050 acres	• None	• Thin 359 acres
Oak Woodland and Meadow		• Thin 1,003 acres	• Thin 1,544 acres	• Thin 1,544 acres	• Thin 1,544 acres	• Thin 540 acres	• Thin 1,544 acres
Reforestation	• 6,000 acres	• 1,192 acres	• 2,152 acres	• 2,152 acres	• 6,000 acres	• 1,045 acres	• 2,152 acres
Fuels Treatments							
FMZs		• 1,300 acres	• 1,300 acres	• 1,300 acres	• 1,300 acres	• 500 acres	• 1,300 acres

Table S-2. Comparison of Alternatives

Proposed Projects	Alternative A No Action – Continuation of Current Management	Alternative B No Salvage; Focused Restoration	Alternative C LSRA Salvage; Moderate Restoration	Alternative D LSR Salvage with DecAID; Moderate Restoration	Alternative E High Salvage; Extensive Restoration	Alternative F Salvage based on Report by Beschta et al.; Focused Restoration in Fire Area Only	Alternative G Salvage based on Research; Moderate Restoration
Fuel Treatments within Owl Activity Centers		• 425 acres within 4 sites	• 425 acres within 4 sites	• 425 acres within 4 sites	• 425 acres within 4 sites	• 300 acres within 3 sites	• 425 acres within 4 sites
Fuels Treatment-West Branch Fire		• 70 acres	• 70 acres	• 70 acres	• 70 acres	• None	• 70 acres
Wildlife Projects							
Eagle Nesting Habitat		• Thin 50 acres at 2 sites	• Thin 50 acres at 2 sites	• Thin 50 acres at 2 sites	• Thin 50 acres at 2 sites	• None	• Thin 50 acres at 2 sites
Log Piles for Wildlife Habitat		• None	• 6 sites	• 6 sites	• 6 sites	• 6 sites	• 6 sites
Road Projects							
Reconstruction		• 2.6 miles	• 2.6 miles	• 2.6 miles	• 2.6 miles	• 2.6 miles	• 2.6 miles
Stream Crossing Upgrades		• 15 sites	• 11 sites	• 11 sites	• 26 sites	• 26 sites	• 11 sites
Maintenance		• 100 miles	• 100 miles	• 100 miles	• 115 miles	• 68 miles	• 100 miles
Decommission: partial or full		• 35 miles	• 35 miles	• 35 miles	• 43 miles	• 17 miles	• 35 miles
Road closures:		• 21 miles	• 21 miles	• 21 miles	• 21 miles	• 14 miles	• 21 miles
Seasonal Road Closures		• None	• None	• None	• 114 miles; mid-October to April 30	• None	• 114 miles, mid-October to Apr. 30
Pump Chance Reconstruction		• 8 sites	• 8 sites	• 8 sites	• 8 sites	• 4 sites	• 8 sites
Rock Quarry Closure		• 5 sites	• 5 sites	• 5 sites	• 5 sites	• 5 sites	• 5 sites

Table S-3. Summary of the Effects of the Alternatives

Proposed Projects	Alternative A No Action - Continuation of Current Management	Alternative B No Salvage; Focused Restoration	Alternative C LSRA Salvage; Moderate Restoration	Alternative D LSR Salvage with DecAID; Moderate Restoration	Alternative E High Salvage; Extensive Restoration	Alternative F Salvage based on Report by Beschta, et al.; Focused Restoration in Fire Area Only	Alternative G Salvage based on Research; Moderate Restoration
Recovery of the Economic Value of Fire-Killed Trees (Salvage)							
Volume of salvage recovered	• None	• None	• 8.6 mmbf	• 21.0 mmbf	• 29.4mmbf	• 8.0mmbf	• 23.4mmbf
Revenue per mbf	• $0.0	• $0.0	• $225	• $209	• $184	• $229	• $204
Expected receipts from timber sale	• None	• None	• $1.9 million	• $4.4 million	• $5.4 million	• $1.8 million	• $4.8 million
Value of salvage to regional economy	• None	• None	• $7.4 million	• $18.1 million	• $25.2 million	• $6.9 million	• $20.1 million
Direct jobs from salvage	• None	• None	• 81	• 199	• 277	• 76	• 221
Total direct and indirect jobs to regional economy from salvage	• None	• None	• 130	• 318	• 443	• 121	• 354
Economic Value of Restoration Projects							
Direct and indirect jobs created from all restoration projects	• 122	• 146	• 215	• 215	• 325	• 84	• 215
Pine Release and LSR Thinnings							
Volume of harvest from vegetation treatments	• None	• None	• 2.5 mmbf	• 2.5 mmbf	• 5.5 mmbf	• None	• 2.5 mmbf
Cost of harvesting vegetation treatments	• None	• None	• $159,800	• $159,800	• $362,000	• None	• $159,800
Direct and indirect jobs created	• None	• None	• 38	• 38	• 83	• None	• 38

Table S-3. Summary of the Effects of the Alternatives

Proposed Projects	Alternative A No Action - Continuation of Current Management	Alternative B No Salvage; Focused Restoration	Alternative C LSRA Salvage; Moderate Restoration	Alternative D LSR Salvage with DecAID; Moderate Restoration	Alternative E High Salvage; Extensive Restoration	Alternative F Salvage based on Report by Beschta, et al.; Focused Restoration in Fire Area Only	Alternative G Salvage based on Research; Moderate Restoration
Road projects, reforestation, fuel management zones, fish structures, eagle nests, oak woodland treatments, and other restoration projects							
Cost of projects	• $3,400,000	• $5,200,000	• $5,900,000	• $5,900,000	• $8,400,000	• $2,800,000	• $5,900,000
Direct and indirect jobs created	• 122	• 142	• 161	• 161	• 232	• 78	• 161
Cost of Research							
Reforestation		• $0	• $0	• $0	• $0	• $0	• $415,600 over 6 years
Wildlife/snags		• $0	• $0	• $0	• $0	• $0	• $920,581 over 6 years
Fuel Loading Within the Elk Creek Watershed							
Acres of FMZs	• No reduction in fuel profiles	• 1,300 acres of fuel hazard reduction and fuel profile modification • Reduce fire intensity and size of future fires throughout LSR	• 1,300 acres of fuel hazard reduction and fuel profile modification • Reduce fire intensity and size of future fires throughout LSR	• 1,300 acres of fuel hazard reduction and fuel profile modification • Reduce fire intensity and size of future fires throughout LSR	• 1,300 acres of fuel hazard reduction and fuel profile modification • Reduce fire intensity and size of future fires throughout LSR	• 500 acres of fuel hazard reduction and fuel profile modification • Reduce fire intensity and size of future fires only within fire perimeter	• 1,300 acres of fuel hazard reduction and fuel profile modification • Reduce fire intensity and size of future fires throughout LSR
Protection to wildland urban interface and industrial forestland	• No additional protection to wildland urban interface and industrial forestland	• Reduce fire intensity and severity on 4,090 acres of hazardous fuels • Provides additional protection to 30,700 acres within WUI	• Reduce fire intensity and severity on 5,557 acres of hazardous fuels • Provides additional protection to 30,700 acres within WUI	• Reduce fire intensity and severity on 5,557 acres of hazardous fuels • Provides additional protection to 30,700 acres within WUI	• Reduce fire intensity and severity on 6,914 acres of hazardous fuels • Provides additional protection to 30,700 acres within WUI	• Reduce fire intensity and severity on 1,340 acres of hazardous fuels • Provides minimal protection to 30,700 acres within WUI	• Reduce fire intensity and severity on 5,557 acres of hazardous fuels • Provides additional protection to 30,700 acres within WUI

Protection to remaining LSR habitat	• No additional protection	• 3,088 acres of fuel hazard reduction and fuel profile modification	• 4,013 acres of fuel hazard reduction and fuel profile modification	• 4,013 acres of fuel hazard reduction and fuel profile modification	• 5,360 acres of fuel hazard reduction and fuel profile modification	• No treatment	• 4,013 acres of fuel hazard reduction and fuel profile modification
Underburning of oak woodlands and owl centers	• Continued encroachment to oak woodlands • Remains high fire hazard	• 1,428 acres of fuel hazard reduction and fuel profile modification	• 1,969 acres of fuel hazard reduction and fuel profile modification	• 1,969 acres of fuel hazard reduction and fuel profile modification	• 1,969 acres of fuel hazard reduction and fuel profile modification	• 840 acres of fuel hazard reduction and fuel profile modification	• 1,969 acres of fuel hazard reduction and fuel profile modification
Coarse Woody Debris (CWD) and Snags							
Estimated fire-killed trees (≥8" DBH) removed or retained in fire area	• Removed: 0 trees • Retained: 347,303 trees (100%)	• Removed: 0 trees • Retained: 347,303 trees (100%)	• Removed: 17,148 trees • Retained: 330,115 trees (95%)	• Removed: 42,529 trees • Retained: 304,774 trees (88%)	• Removed: 65,794 trees • Retained: 281,509 trees (81%)	• Removed: 15,481 trees • Retained: 331,822 trees (96%)	• Removed: 43,787 trees • Retained: 303,516 trees (87%)
Stand-replacement acres not salvaged	• 2,586 acres (100%).	• 2,586 acres (100%)	• 2,339 acres (90%)	• 1,766 acres (68%)	• 656 acres (25%)	• 2,373 acres (92%)	• 1,625 acres (63%)
Acceleration of Late-Successional Forest Habitat Characteristics							
Treatment of young stands	• No change • Slower development of late-successional habitat	• Accelerate development of late-successional habitat on 1,258 acres	• Accelerate development of late-successional habitat on 878 acres	• Accelerate development of late-successional habitat on 878 acres	• Accelerate development of late-successional habitat on 1,258 acres	• No change • Slower development of late-successional habitat	• Accelerate development of late-successional habitat on 878 acres
Treatment of mid-seral stands	• No change. • Slower development of late-successional habitat	• Slower development of late-successional habitat	• Accelerate development of late-successional habitat on 557 acres	• Accelerate development of late-successional habitat on 557 acres	• Accelerate development of late-successional habitat on 1,038 acres	• No change • Slower development of late-successional habitat	• Accelerate development of late-successional habitat on 557 acres
Treatment of 80+ year old pine stands	• No change	• No change	• Increase resiliency to fire and maintain pine in late-successional stands on 686 acres	• Increase resiliency to fire and maintain pine in late-successional stands on 686 acres	• Increase resiliency to fire and maintain pine in late-successional stands on 1,749 acres	• No change	• Increase resiliency to fire and maintain pine in late-successional stands on 686 acres

Table S-3. Summary of the Effects of the Alternatives

Proposed Projects	Alternative A No Action - Continuation of Current Management	Alternative B No Salvage; Focused Restoration	Alternative C LSRA Salvage; Moderate Restoration	Alternative D LSR Salvage with DecAID; Moderate Restoration	Alternative E High Salvage; Extensive Restoration	Alternative F Salvage based on Report by Beschta, et al.; Focused Restoration in Fire Area Only	Alternative G Salvage based on Research; Moderate Restoration
Thinning and burning of oak woodlands and meadows	• No restoration • Areas continue to decline	• Increased vigor and resiliency of oak woodlands and meadows on 1,003 acres within fire perimeter • Continued decline outside of fire perimeter	• Increased vigor and resiliency of oak woodlands and meadows on 1,554 acres throughout LSR	• Increased vigor and resiliency of oak woodlands and meadows on 1,554 acres throughout LSR	• Increased vigor and resiliency of oak woodlands and meadows on 1,554 acres throughout LSR	• Increased vigor and resiliency of oak woodlands and meadows on 540 acres within fire perimeter • Continued decline outside of fire perimeter	• Increased vigor and resiliency of oak woodlands and meadows on 1,554 acres throughout LSR
Reforestation	• Maximum conifer establishment on 6,000 acres across fire area	• 3,016 acres planted • Expedite conifer establishment on high and moderate burn severity areas • More gap effect	• 2,152 acres planted • Expedite conifer establishment on high and moderate burn severity areas • More gap effect	• 2,152 acres planted • Expedite conifer establishment on high and moderate burn severity areas • More gap effect	• Maximum conifer establishment on 6,000 acres planted across fire area	• Reforestation only on most critical 1,045 acres • Remainder; no reforestation for 3 years and then reevaluate • Slowest development of late-successional forest	• 2,152 acres planted. • Expedite conifer establishment on high and moderate burn severity areas. • More gap effect. • Research to better understand reforestation effects
Riparian Reserve reforestation	• Maximize conifer establishment in Riparian Reserves	• Establish a more biologically diverse mix of riparian vegetation	• Establish a more biologically diverse mix of riparian vegetation	• Establish a more biologically diverse mix of riparian vegetation	• Maximize conifer establishment in Riparian Reserves	• Establish a more biologically diverse mix of riparian vegetation	• Establish a more biologically diverse mix of riparian vegetation

Riparian Reserve restoration thinning	• No treatments • Slower development of late-successional forest conditions	• Faster development of late-successional forest conditions on 117 acres treated • Girdling of trees provides a sustained pulse of snags/CWD	• Faster development of late-successional forest conditions on 359 acres • Girdling of trees provides a sustained pulse of snags/CWD	• Faster development of late-successional forest conditions on 359 acres • Girdling of trees provides a sustained pulse of snags/CWD	• Faster development of late-successional forest conditions on 1,050 acres • Girdling of trees provides a sustained pulse of snags/CWD	• No treatments. • Slower development of late-successional forest conditions	• Faster development of late-successional forest conditions on 359 acres • Girdling of trees provides a sustained pulse of snags/CWD
Road Density							
Road density within Elk Creek Watershed	• 4.7 miles per square mile	• 4.5 miles per square mile	• 4.4 miles per square mile	• 4.4 miles per square mile	• 4.3 miles per square mile	• 4.5 miles per square mile	• 4.4 miles per square mile
Road density on BLM-administered land	• 4.3 miles per square mile	• 3.4 miles per square mile.	• 3.4 miles per square mile	• 3.4 miles per square mile	• 3.1 miles per square mile	• 3.8 miles per square mile	• 3.4 miles per square mile
Percent decrease in BLM road miles	• None	• 23%	• 23%	• 23%	• 27%	• 10%	• 23%
Soils							
Erosion: Salvage effect primarily caused by type of logging system employed (% is area affected): • Tractor; 12% • Bull-line; 12% • Cable; 5% • Helicopter; 4%	• No effect	• No effect	• Increased sediment relative to acres salvaged and yarding system used: Tractor 21 acres Bull-line 1,090 acres Cable 123 acres Helicopter 91 acres	• Increased sediment relative to acres salvaged and yarding system used: Tractor 112 acres Bull-line 1,083 acres Cable 368 acres Helicopter 321 acres	• Increased sediment relative to acres salvaged and yarding system used: Tractor 165 acres Bull-line 724 acres Cable 853 acres Helicopter 2,063 acres	• Increased sediment relative to acres salvaged and yarding system used: Tractor 29 acres Bull-line 1,198 acres Cable 46 acres Helicopter 122 acres	• Increased sediment relative to acres salvaged and yarding system used: Tractor 113 acres Bull-line 1,223 acres Cable 402 acres Helicopter 411 acres
Soil compaction (12% of tractor-yarded acres)	• No effect	• No effect	• Increased compaction and soil displacement • Maximum compaction of 3 acres	• Increased compaction and soil displacement • Maximum compaction of 13 acres.	• Increased compaction and soil displacement • Maximum compaction of 20 acres	• Increased compaction and soil displacement • Maximum compaction of 4 acres	• Increased compaction and soil displacement • Maximum compaction of 14 acres

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Soil productivity	• No effect	• No effect	• Slight long-term adverse from removing some organic matter from 1,325 acres	• Slight long-term adverse from removing some organic matter from 1,884 acres	• Slight long-term adverse from removing some organic matter from 3,805 acres	• Slight long-term adverse from removing some organic matter from 1,395 acres	• Slight long-term adverse from removing some organic matter from 2,149 acres
Delivery of Sediment to Streams							
Road decommissioning: reduces sediment delivery by 80-100% on treated road miles.	• No roads decommissioned • Continue existing erosion rates from roads.	• Potential short-term increase in delivery to streams followed by long-term reduction on 35 miles decommissioned • Return 144 acres to natural forest condition • Removal of 55 stream-crossings reduces annual road mass wasting rate by 3%	• Potential short-term increase in delivery to streams followed by long-term reduction on 35 miles decommissioned • Return 144 acres to natural forest condition • Removal of 133 stream-crossings reduces annual road mass wasting rate by 8%	• Potential short-term increase in delivery to streams followed by long-term reduction on 35 miles decommissioned • Return 144 acres to natural forest condition • Removal of 133 stream-crossings reduces annual road mass wasting rate by 8%	• Potential short-term increase in delivery to streams followed by long-term reduction on 43 miles decommissioned • Return 172 acres to natural forest condition • Removal of 148 stream-crossings reduces annual road mass wasting rate by 9%	• Potential short-term increase in delivery to streams followed by long-term reduction on 17 miles decommissioned • Return 68 acres to natural forest condition • Removal of 55 stream-crossings reduces annual road mass wasting rate by 3%	• Potential short-term increase in delivery to streams followed by long-term reduction on 35 miles decommissioned • Return 144 acres to natural forest condition • Removal of 133 stream-crossings reduces annual road mass wasting rate by 8%
Road maintenance: reduces sediment delivery by about 46% on treated road miles.	• Continued erosion rates from roads	• Treat 100 miles	• Treat 100 miles	• Treat 100 miles	• Treat 115 miles	• Treat 68 miles	• Treat 100 miles

Stream-crossing upgrades.	• No upgrades • 13% increase in annual road mass wasting rate	• Upgrade 15 high risk sites containing 11,000 yd^3 of sediment • 13% decrease in annual road mass wasting rate	• Upgrade 11 sites containing 8,000 yd^3 of sediment • 16% decrease in annual road mass wasting rat.	• Upgrade 11 sites containing 8,000 yd^3 of sediment • 16% decrease in annual road mass wasting rate	• Upgrade 26 sites containing 19,000 yd^3 of sediment • 22% decrease in annual road mass wasting rate	• Upgrade 26 high risk sites containing 19,000 yd^3 of sediment • 13% decrease in annual road mass wasting rate	• Upgrade 11 sites containing 8,000 yd^3 of sediment • 16% decrease in annual road mass wasting rate
Seasonal closures of 114 miles of road	• None	• None	• None	• None	• Reduce road damage and sediment delivery to streams	• None	• Reduce road damage and sediment delivery to streams
Threatened or Endangered Species							
Northern Spotted Owl							
Salvage: Assume occupancy in 11 sites (active sites)	• No change	• No change	• No salvage within ¼ mile • Enters 40 acres within ½-mile radius • Lowest risk of adverse impact	• No salvage within ¼ mile • Enters 8 sites; 111 acres within ½ mile • Low risk of adverse impacts	• Enters 9 sites; 219 acres within ¼ mile and 826 acres within ½ mile • Enters units <10 acres and areas with >40% canopy • Degrades suitable habitat • High risk of adverse impacts	• No salvage within ¼ mile • Enter 6 sites; 40 acres within ½ mile • Enters units <10 acres in size • Degrades suitable habitat • Moderate risk of adverse impacts	Research Units • Enters 3 sites; 49 acres within ¼ mile • Enters 4 sites; 138 acres within ½ mile Area Salvage: • No salvage within ¼ mile • Enters 10 sites: 169 acres within ½ mile • Moderate risk of adverse impacts

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Salvage: Assume no occupancy in 8 sites (non-active)	• No change	• No change	• Enters 4 sites; 109 acres within ¼ mile • Enters 6 sites; 221 acres within ½ mile • Low risk of adverse effec	• Enters 4 sites; • Enters 4 sites; 125 acres within ¼ mile • Enters 9 sites; 314 acres within ½ mile • Low risk of adverse effect	• Enters 9 sites; 240 acres within ¼ mile • Enters 10 sites; 672 acres within ½ mile • Enters units <10 acres and areas with >40% canopy • Degrades suitable habitat • Highest risk of adverse effect	• Enters 5 sites; 24 acres within ¼ mile • Enters 8 sites; 70 acres within ½ mile • Enters units <10 acres in size • Degrades suitable habitat • Moderate risk of adverse effect	Research Units: • Enters 2 sites; 100 acres within ¼ mile • Enters 2 sites; 162 acres within ½ mile Area Salvage: • Enters 5 sites; 72 acres within ¼ mile • Enters 7 sites; 232 acres within ½ mile • Moderate risk of adverse effect

Restoration	• No beneficial effects from thinnings or habitat improvements • No adverse effect	**1,300 acre FMZ** • Low short-term adverse effect modifying suitable habitat • Moderate long-term benefit protecting habitat **Thinnings** • Accelerate development of late-successional habitat on 1,704 acres • Moderate long-term beneficial effect	**1,300 acre FMZ** • Low short-term adverse effect modifying suitable habitat. • Moderate long-term benefit protecting habitat. **Thinnings** • Accelerate development of late-successional habitat on 1,560 acres • Moderate long-term beneficial effect	**1,300 acre FMZ** • Low short-term adverse effect modifying suitable habitat • Moderate long-term benefit protecting habitat **Thinnings** • Accelerate development of late-successional habitat on 1,560 acres • Moderate long-term beneficial effect	**1,300 acre FMZ** • Low short-term adverse effect modifying suitable habitat • Moderate long-term benefit protecting habitat **Thinnings** • Accelerate development of late-successional habitat on 2,637 acres • Moderate long-term beneficial effect	**500 acre FMZ** • Inside fire, no short-term adverse effect modifying suitable habitat • Low long-term benefit protecting future habitat **Thinnings** • No beneficial effects from thinnings • No adverse effect	**1,300 acre FMZ** • Low short-term adverse effect modifying suitable habitat • Moderate long-term benefit protecting habitat **Thinnings** • Accelerate development of late-successional habitat on 1,560 acres • Moderate long-term beneficial effect
American Bald Eagle							
Restoration: Eagle nesting habitat projects	• No change	• Future nesting habitat established at 2 sites (50 acres) • Could contribute to delisting	• Future nesting habitat established at 2 sites (50 acres) • Could contribute to delisting	• Future nesting habitat established at 2 sites (50 acres) • Could contribute to delisting	• Future nesting habitat established at 2 sites (50 acres) • Could contribute to delisting	• No change	• Future nesting habitat established at 2 sites (50 acres) • Could contribute to delisting
Coho Salmon							
Salvage	• No salvage, no effect	• No salvage, no effect	• Insignificant/ discernible effect to fish and fish populations • May affect, NLAA	• Insignificant/ discernible effect to fish and fish populations • May affect, NLAA	• Insignificant/ discernible effect to fish and fish populations • May affect, NLAA	• Insignificant/ discernible effect to fish and fish populations • May affect, NLAA	• Insignificant/ discernible effect to fish and fish populations • May affect, NLAA

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Proposed Projects	Alternative A No Action - Continuation of Current Management	Alternative B No Salvage; Focused Restoration	Alternative C LSRA Salvage; Moderate Restoration	Alternative D LSR Salvage with DecAID; Moderate Restoration	Alternative E High Salvage; Extensive Restoration	Alternative F Salvage based on Report by Beschta, et al.; Focused Restoration in Fire Area Only	Alternative G Salvage based on Research; Moderate Restoration
Restoration	• No change; Substantial adverse effects • May affect, LAA	• Short-term adverse and low long-term beneficial effect • May affect, NLAA	• Short-term adverse and moderate long-term beneficial effect • May affect, NLAA	• Short-term adverse and moderate long-term beneficial effect • May affect, NLAA	• Short-term adverse and substantial long-term beneficial effect • May affect, NLAA	• Short-term adverse and moderate long-term beneficial effect • May affect, NLAA	• Short-term adverse and moderate long-term beneficial effect • May affect, NLAA
Sensitive Species							
Cavity nesters: Salvage	• No change	• No change	• Negligible impacts (80-100% of snags remain)	• Very low impacts (manage for 80% and 50% tolerance levels)	• Moderate impact; highest number of snags removed	• Low impact (<2 acre patches and all burn outside green patches remain)	• Low impact (patches <10 acres 100% snags remain; 8-12 snags/acre left in treated acres)
Late-Successional habitat associated species: Salvage	• No impacts	• No impacts	• Negligible effects to late-successional habitat	• Negligible effects to late-successional habitat	• Low to moderate effects due to adverse impact to late-successional stand development	• Low due to adverse impact to late-successional stand development	• Negligible effects to late-successional habitat

Late-Successional habitat associated species: Restoration	• No change	• Slower development of late-successional habitat • Low effects to species that would use dense understory in FMZs	• Low short-term disturbance during activity • Long-term benefit to species that use high canopy and open understory • Low effects to species that would use dense understory in FMZs	• Low short-term disturbance during activity • Long-term benefit to species that use high canopy and open understory • Low effects to species that would use dense understory in FMZs	• Low short-term disturbance during activity • High benefit to habitat development • Low effects to species that would use dense understory in FMZs	• Slower development of late-successional habitat • Low effects to species that would use dense understory in FMZs	• Low short-term disturbance during activity • Long-term benefit to species that use high canopy and open understory • Low effects to species that would use dense understory in FMZs
Big game: road restoration projects	• No change in road density	• Potential increase in winter vehicle traffic from road restoration • Decommission and closure of 35 miles of road reduces poaching and disturbance	• Potential increase in winter vehicle traffic from road restoration • Decommission and closure of 35 miles of road reduces poaching and disturbance	• Potential increase in winter vehicle traffic from road restoration • Decommission and closure of 35 miles of road reduces poaching and disturbance	• Potential increase in winter vehicle traffic from road restoration • Decommission and closure of 43 miles of road reduces poaching and disturbance • Reduces poaching and disturbance by seasonally closing 114 miles of road	• Potential increase in winter vehicle traffic from road restoration • Decommission and closure of 17 miles of road reduces poaching and disturbance	• Potential increase in winter vehicle traffic from road restoration • Decommission and closure of 35 miles of road reduces poaching and disturbance • Reduces poaching and disturbance by seasonally closing 114 miles of road
Special Status and Survey and Manage Plants (vascular and nonvascular)							
Salvage	• No change	• No change	• Slight negative effect from tractor harvest and temporary roads	• Low adverse effect from tractor harvest and temporary roads	• Moderate adverse effect from tractor harvest and temporary roads	• Very slight negative effect from tractor harvest. No roads	• Low negative effect from tractor harvest and temporary roads

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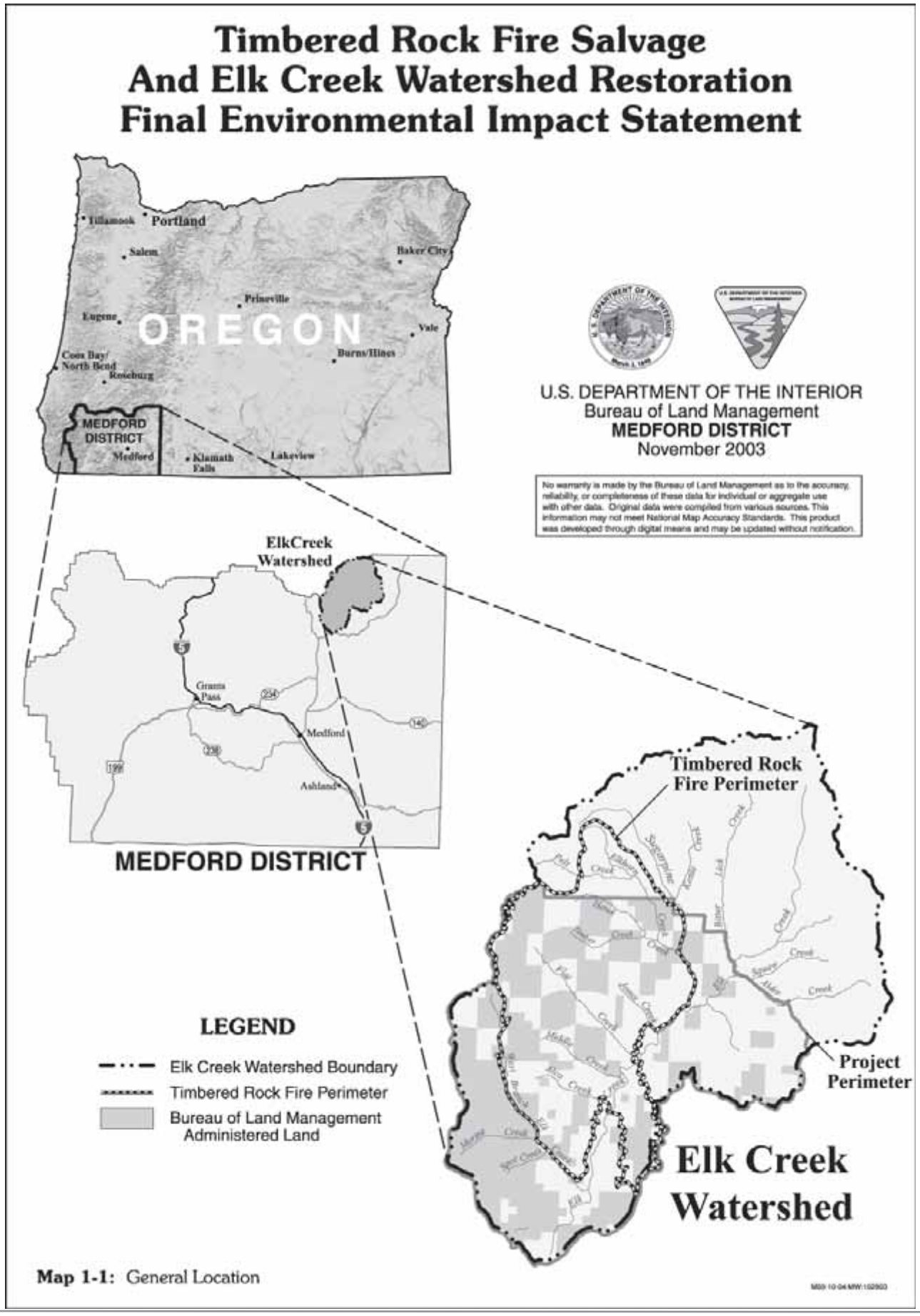
Restoration	• No benefits from habitat enhancement projects	• Low beneficial effects from habitat enhancement and fuels reduction projects	• Moderate beneficial effects from habitat enhancement and fuels reduction projects • Slight negative impact from tractor harvest	• Moderate beneficial effects from habitat enhancement and fuels reduction projects • Low negative impact from tractor harvest	• High beneficial effects from habitat enhancement and fuels reduction projects • Moderate negative impact from tractor harvest	• Low beneficial effects from habitat enhancement and fuels reduction projects	• Moderate beneficial effects from habitat enhancement and fuels reduction projects • Low negative impact from tractor harvest
Insect Outbreak							
Salvage	• Wood borer; moderate to high increase • Bark beetle; low to moderate increase	• No change	No noticeable change	• Wood borer; very slight decrease • Bark beetle: very slight decrease	• Wood borer: slight to moderate decrease • Bark beetle: slight decrease	• No noticeable change	• Wood borer: slight decrease • Bark beetle: slight decrease
Restoration	• Wood borer: no change • Bark beetle: slight increase	• No change	• Wood borer: very slight increase • Bark beetle: very slight increase	Wood borer: very slight increase • Bark beetle: very slight increase	• Wood borer: slight increase • Bark beetle: low to moderate increase	• No change	• Wood borer: very slight increase • Bark beetle: very slight increase
Noxious Weeds Populations							
Salvage	• No increased risk of invasion	• No increased risk of invasion	• Increased risk of noxious weed establishment relative to disturbance and harvest systems	• Increased risk of noxious weed establishment relative to disturbance and harvest systems	• Increased risk of noxious weed establishment relative to disturbance and harvest systems	• Increased risk of noxious weed establishment relative to disturbance and harvest systems	• Increased risk of noxious weed establishment relative to disturbance and harvest systems

Restoration		• Increased risk of noxious weed establishment relative to disturbance	• Increased risk of noxious weed establishment relative to disturbance	• Increased risk of noxious weed establishment relative to disturbance	• Increased risk of noxious weed establishment relative to disturbance	• Increased risk of noxious weed establishment relative to disturbance	• Increased risk of noxious weed establishment relative to disturbance
Public Safety							
Road side hazard tree removal	• Potential hazards removed when identified • Higher risk to public	• Potential hazards removed when identified • Higher risk to public	• Potential hazard trees cut reduces risk to public	• Potential hazard trees cut reduces risk to public	• Potential hazard trees cut reduces risk to public	• Potential hazard trees cut reduces risk to public	• Potential hazard trees cut reduces risk to public
Total area within fire perimeter with lower snag levels	• 22%	• 22%	• 24%	• 29%	• 49%	• 23%	• 33%
Consistency of Actions with NFP/RMP/LSRA							
Salvage: Consistency concerns related to ■ 10-acre rule ■ Salvage in areas with greater than 40% canopy ■ Snags and CWD requirements ■ Acres treated ■ Research	• No salvage	• No salvage	• Consistent with NFP, RMP, and LSRA with exemption for acres salvaged	• Consistent with NFP, RMP, and LSRA with exemption for acres salvaged	• Not consistent with NFP, RMP, or LSRA • Plan amendment required for: ■ Salvage in stands with >40% canopy ■ Salvage stands <10 acres in size	• Not consistent with NFP, RMP, or LSRA • Plan amendment required for: ■ Salvage stands <10 acres in size	• Research consistent with NFP • Consistent with NFP, RMP, and LSRA with exemption for acres salvaged
Restoration: Consistency concerns related to ■ FMZs ■ Late-successional habitat enhancement ■ Acres treated	• Reforestation consistent with NFP and RMP	• Treatments consistent with LSRA guidelines for FMZs and late-successional habitat enhancement • Consistent with NFP, RMP, and LSRA with exemption for acres treated	• Treatments consistent with LSRA guidelines for FMZs and late-successional habitat enhancement • Consistent with NFP, RMP, and LSRA with exemption for acres treated	• Treatments consistent with LSRA guidelines for FMZs and late-successional habitat enhancement • Consistent with NFP, RMP, and LSRA with exemption for acres treated	• Treatments consistent with LSRA guidelines for FMZs and late-successional habitat enhancement • Consistent with NFP, RMP, and LSRA with exemption for acres treated	• Treatments consistent with LSRA guidelines for FMZs and late-successional habitat enhancement	• Treatments consistent with LSRA guidelines for FMZs and late-successional habitat enhancement • Consistent with NFP, RMP, and LSRA with REO exemption for acres treated



Map 1-1: General Location