



United States  
Department  
Of Agriculture



Forest  
Service

October 2004

# Final Environmental Impact Statement



## 18 Fire Salvage Recovery Project

Bend/Fort Rock Ranger District, Deschutes National  
Forest

Deschutes County, Oregon

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program

<b>PURPOSE AND NEED FOR ACTION</b> .....	<b>1</b>
INTRODUCTION.....	1
PROJECT LOCATION.....	2
18 FIRE PROJECT LOCATION MAP.....	3
BACKGROUND.....	4
PROJECT AREA.....	4
ADDITIONAL RESOURCE RECOVERY PROJECTS.....	5
PURPOSE OF AND NEED FOR ACTION.....	6
BURN INTENSITY MAP.....	7
PROPOSED ACTION.....	8
MANAGEMENT DIRECTION.....	10
MANAGEMENT AREA MAP.....	12
SCOPING AND PUBLIC INVOLVEMENT.....	13
<i>Consultation with Affected Tribes</i> .....	13
ISSUES.....	13
<i>Key Issues</i> .....	14
<i>Analysis Issues</i> .....	15
<i>Issues Not Addressed in Detail</i> .....	17
<b>ALTERNATIVES, INCLUDING THE PROPOSED ACTION</b> .....	<b>18</b>
INTRODUCTION.....	18
DEVELOPMENT OF ALTERNATIVES.....	18
ALTERNATIVES CONSIDERED IN DETAIL.....	18
NO ACTION – ALTERNATIVE 1.....	18
ALTERNATIVE 2 – PROPOSED ACTION.....	20
ALTERNATIVE 3.....	22
MITIGATION AND MANAGEMENT REQUIREMENTS.....	23
<i>Soils</i> .....	24
<i>Wildlife Habitat</i> .....	28
<i>Noxious Weeds</i> .....	29
<i>Cultural Resources</i> .....	29
<i>Scenic</i> .....	30
<i>Range</i> .....	30
<i>Fuels Treatment and Air Quality</i> .....	30
<i>Monitoring</i> .....	31
COMPARISON OF ALTERNATIVES.....	32
MAP 1. ALTERNATIVE 2 SALVAGE HARVEST.....	33
MAP 2. ALTERNATIVE 3 REFORESTATION.....	34
SALE AREA IMPROVEMENTS.....	34
<b>AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES</b> .....	<b>35</b>
INTRODUCTION.....	35
SOIL PRODUCTIVITY (KEY ISSUE 1).....	36
<i>Soil Productivity Introduction</i> .....	37
<i>Soil Productivity Background Information for Existing Condition Assessment</i> .....	38
<i>Soil Productivity Affected Environment or Existing Condition</i> .....	40
<i>Soil Productivity Summary Discussion Relevant to the Issue Indicators</i> .....	47
<i>Soil Productivity Management Direction</i> .....	50
<i>Environmental Consequences</i> .....	52
<i>Beschata</i> .....	68
WILDLIFE HABITAT (KEY ISSUE 2).....	74
<i>Wildlife Habitat Introduction</i> .....	74
<i>Wildlife Habitat Existing Condition</i> .....	77
<i>Wildlife Habitat Environmental Consequences</i> .....	85
AIR QUALITY.....	99
<i>Air Quality Management Direction</i> .....	99
<i>Air Quality Environmental Consequences</i> .....	99
BOTANICAL RESOURCES.....	101

<i>Botanical Resources Introduction</i> .....	101
<i>Botanical Resources Existing Condition</i> .....	101
<i>Botanical Resources Environmental Consequences</i> .....	102
NOXIOUS WEEDS .....	104
<i>Noxious Weeds Risk Ranking</i> .....	104
<i>Noxious Weeds Environmental Consequences</i> .....	108
CULTURAL RESOURCES .....	112
<i>Cultural Resources Introduction</i> .....	112
<i>Cultural Resources Existing Condition</i> .....	112
<i>Cultural Resources Environmental Consequences</i> .....	113
ECONOMIC AND SOCIAL ANALYSIS .....	114
<i>Economic and Social Analysis Introduction</i> .....	114
<i>Economic and Social Analysis Existing Condition</i> .....	114
<i>Economic and Social Analysis Environmental Consequences</i> .....	118
FIRE AND FUELS ACCUMULATION .....	125
<i>Fire and Fuels Accumulation Introduction/Existing Condition</i> .....	125
<i>Fire and Fuels Accumulation Environmental Consequences</i> .....	127
FOREST VEGETATION AND TIMBER MANAGEMENT .....	131
<i>Forest Vegetation and Timber Management Introduction</i> .....	131
<i>Forest Vegetation and Timber Management Existing Condition</i> .....	131
<i>Forest Vegetation Environmental Consequences</i> .....	144
INSECTS AND DECAY .....	151
<i>Insects and Decay Introduction</i> .....	151
<i>Insects and Decay Existing Condition</i> .....	151
<i>Insects and Decay Environmental Consequences</i> .....	153
RECREATION RESOURCES .....	155
<i>Recreation Resources Introduction</i> .....	155
<i>Recreation Resources Existing Condition</i> .....	155
<i>Recreation Resources Environmental Consequences</i> .....	156
ROADS AND TRANSPORTATION .....	158
<i>Roads and Transportation Introduction</i> .....	158
<i>Roads and Transportation Environmental Consequences</i> .....	159
SCENIC QUALITY .....	161
<i>Scenic Quality Existing Condition</i> .....	161
<i>Scenic Quality Environmental Consequences</i> .....	162
RANGE ALLOTMENT .....	164
<i>Range Allotment Introduction</i> .....	164
<i>Range Allotment Existing Condition</i> .....	164
<i>Range Allotment Environmental Consequences</i> .....	165
OTHER DISCLOSURES .....	169
<b>PREPARERS AND CONTRIBUTORS</b> .....	<b>174</b>
<b>APPENDIX A: NOTIFICATION LIST</b> .....	<b>177</b>
<b>APPENDIX B: LITERATURE SITED</b> .....	<b>180</b>
<b>APPENDIX C: GLOSSARY OF ABBREVIATIONS AND TERMS</b> .....	<b>186</b>
ABBREVIATIONS .....	186
TERMS .....	187
<b>APPENDIX D: WILDLIFE BIOLOGICAL EVALUATION/ASSESSMENT</b> .....	<b>205</b>
<b>APPENDIX E: WILDLIFE REPORT</b> .....	<b>212</b>
<b>APPENDIX F: BIOLOGICAL EVALUATION PLANTS</b> .....	<b>236</b>
<b>APPENDIX G: RESPONDING TO RECOMMENDATIONS OF BESCHTA ET AL. (1995)</b> .....	<b>245</b>

## CHANGES BETWEEN THE DRAFT EIS AND THE FINAL EIS

Within Chapter 1, only minor edits and clarifications have been made for the Final EIS.

## PURPOSE AND NEED FOR ACTION

### Introduction ---

The Forest Service has prepared this Environmental Impact Statement (EIS) in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This Environmental Impact Statement discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into a summary, four chapters, and appendix data as described:

- **Summary:** Project location, project design criteria, specific activities proposed, and a concise list of the affected resources are drawn from the entire Environmental Impact Statement and condensed to provide a single overview of the document.
- **Chapter 1:** Purpose and Need for Action: This chapter includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- **Chapter 2:** Alternatives, including the Proposed Action: This chapter provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.
- **Chapter 3:** Affected Environment and Environmental Consequences: This chapter describes the relevant natural and social environment, and the environmental effects of implementing the proposed action and other alternatives. The chapter is organized by resources, with those resources that are "key" to the analysis identified.
- **Chapter 4:** Preparers and Contributors: This chapter provides a list of preparers and individuals consulted during the development of the Environmental Impact Statement.

- **Appendices:** The appendices provide more detailed information to support the analyses presented in the Environmental Impact Statement. Reference the Table of Contents for the location and subject of specific appendix files.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Bend-Fort Rock Ranger District, Bend, Oregon.

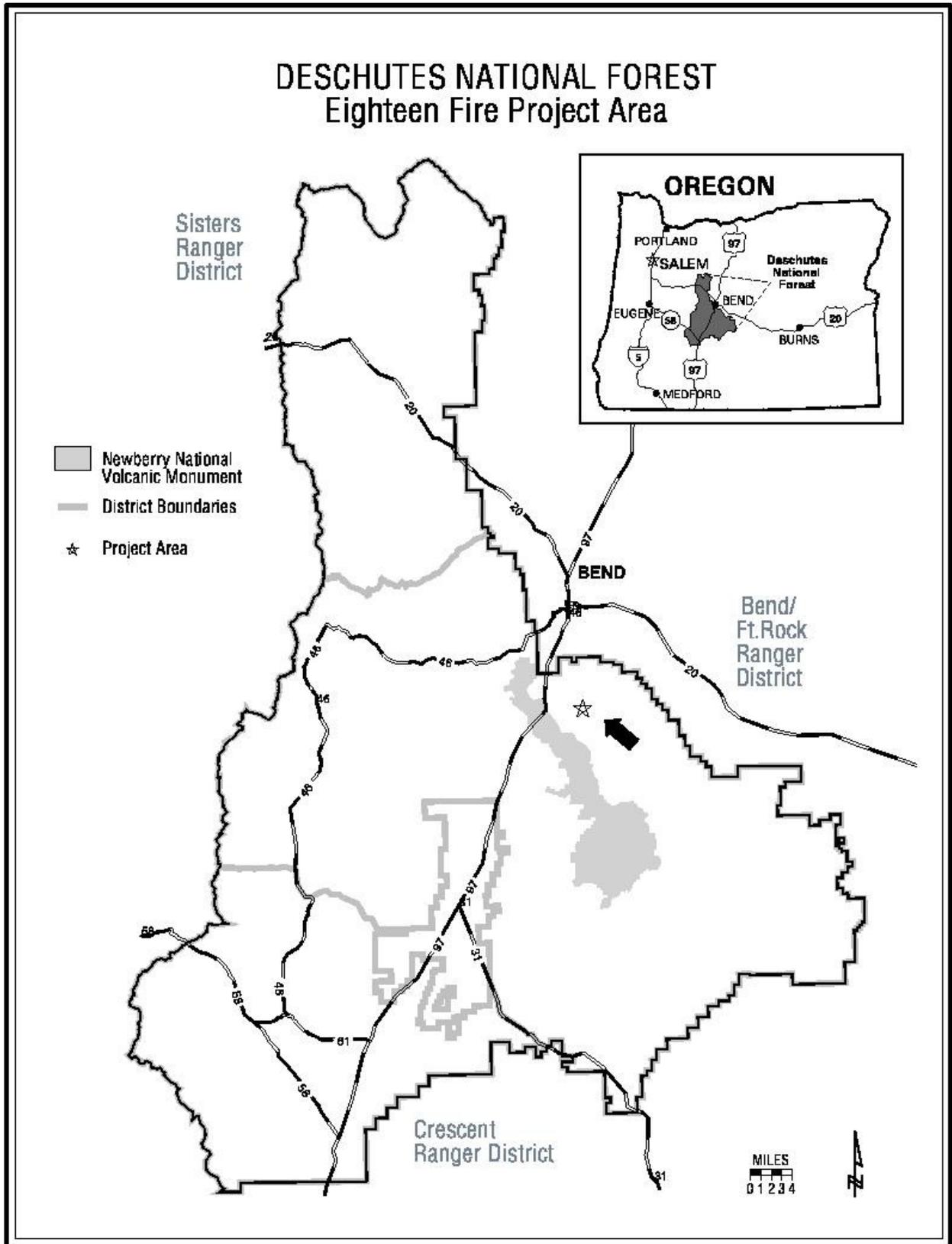
### **Project Location**

The 18 Fire is located outside the range of the northern spotted owl, approximately 3.5 miles southeast of Bend, Oregon. The legal description is:

Township 19 South, Range 12 East, Sections 2, 3, 10, 11, 14 – 16, 21 – 23, and 26 – 28.

This space left intentionally blank (map on following page)

Figure 1-1. 18 Fire Project Location



## Background

---

On the afternoon of July 23<sup>th</sup>, 2003 a human caused wildfire, of an undetermined specific cause, was ignited on the north side of the China Hat Road. Despite fire crew line construction and air tanker retardant suppression, the fire grew rapidly in flat terrain with daytime temperatures reaching around 90 degrees Fahrenheit. The fire was fueled by bitterbrush, needle cast, and ponderosa pine with a few scattered juniper and lodgepole trees and was contained on July 24<sup>th</sup>, at approximately 3,810 acres.

All 3,810 acres that burned are on Deschutes National Forest (DNF) land. Within the fire's perimeter, 2,420 acres (greater than 95 percent mortality) of the 3,810 acres experienced stand replacement.

The area burned is the focus of this environmental impact statement, though all of the fire area and adjacent lands are considered in the analysis process (Figure 1-1). All of the area on the DNF is located on the Bend/Fort Rock Ranger District.

## Project Area

---

The project area is located approximately 3.5 miles southeast of the city of Bend, Oregon and ranges in elevation from 4,200 to 5,120 feet. There are no perennial, intermittent or ephemeral streams, wetlands, or water bodies within or adjacent to the 18 Fire. The nearest watercourse is the Deschutes River located 7 miles to the west. The entire project area was clearcut harvested by a private company in the 1920s and subsequently acquired by the federal government for incorporation into the DNF. The plant association group is primarily ponderosa pine woodlands and bitterbrush with occasional juniper and lodgepole trees. The area encompasses lands within the DNF Land and Resource Management Plan (LRMP) as amended by the Inland Native Fish Strategy (INFISH), and Regional Forester's Eastside Forests Plan Amendment No.2 (Eastside Screens).

The 18 Fire Recovery Project FEIS analysis is within the Pilot Butte Watershed. The burn effect of the 18 Fire on conifers was primarily a high mortality event.-

The effects on the resources surrounding (and adjacent to) the 18 Fire boundary have been considered, and are included in the project analysis. The proposed harvest of fire killed trees would only occur within the boundaries of the July 2003, 18 Fire.

## Additional Resource Recovery Projects

The 18 Fire Recovery Project FEIS proposal is one of several projects planned to occur within the 18 Fire area. This FEIS focuses on the activity of salvage of commercial timber and connected actions, such as reforestation, fuels treatment and road closures.

Management activities for restoration of the 18 Fire area would continue based on separate NEPA projects, contingent on funding, and independent of any selected alternative. Restoration actions which have been accomplished and are planned follow.

**Hazard Trees:** Trees along primary roads, which pose an imminent hazard to human safety were felled and harvested in the winter months of 2004. The removal of felled hazard trees was included in the Decision Memo for the 18 Fire Roadside Salvage Categorical Exclusion (CE).

**Reforestation:** Approximately 73 acres will be planted in the spring of 2005 under the hazard tree Decision Memo for the 18 Fire Roadside Salvage Categorical Exclusion (CE). In addition to 73 acres of planting, a ½ acre study plot was planted on Bessie Butte in the spring of 2004.

**Road Management:** A Roads Analysis has been completed under a separate NEPA analysis (Kelsey Vegetation Management Environmental Assessment) for the 18 Fire Recovery Project and surrounding area. In addition to not identifying the need for any new permanent roads in the 18 Fire Recovery Project area, the following roads are not needed for long-term administrative or recreational access and would be obliterated: 1810300, 1810485, 9711600, 9711820, and 9711910 (see Chapter 2, Alternative 2 map). The portion of the Kelsey analysis area that is within the 18 Fire Recovery Project will be incorporated into this FEIS. To improve deer habitat effectiveness, road management activities, including Knutson-Vandenberg Act (KV) road decommissioning and road inactivation, are addressed in this analysis.

**Weed Treatment:** Treatment and monitoring of noxious weeds was approved under the Burned Area Emergency Rehabilitation (BAER) process and the Deschutes National Forest Noxious Weed Control Environmental Assessment September, 1998. Treatment is ongoing and considered in the analysis. Other weed treatments may be planned as needed through the monitoring of weed populations.

**Area Closure:** An area closure restricting motor vehicle use to designated open roads is in place and would likely continue to be in effect for 2 years (through 2005) in order to prevent additional resource impacts to the area affected by the fire. The Kelsey Vegetation Management Environmental Assessment (EA) (September, 2004) includes a seasonal road closure in deer winter range that also incorporates the 18 Fire Recovery Project. Exemptions to this closure include individuals with an issued permit, and federal, state, or local officials performing work related duties.

## Purpose Of and Need for Action

---

Fire intensity is the appearance of post-fire canopy conditions. Within the 18 Fire, fire intensity was separated into the following three categories: High (no needles left and 99 percent mortality), moderate (mosaic of no needled and brown needled trees with 95 percent mortality), and low (mosaic of brown and green needles with individual and

scattered pockets (<3 acres) of fire-killed trees). An estimated 2,420 acres burned at moderate to high intensities with tree mortality from 95 to 99 percent and the forests within this portion of the fire have reverted to the stand initiation stage (see map on following page).

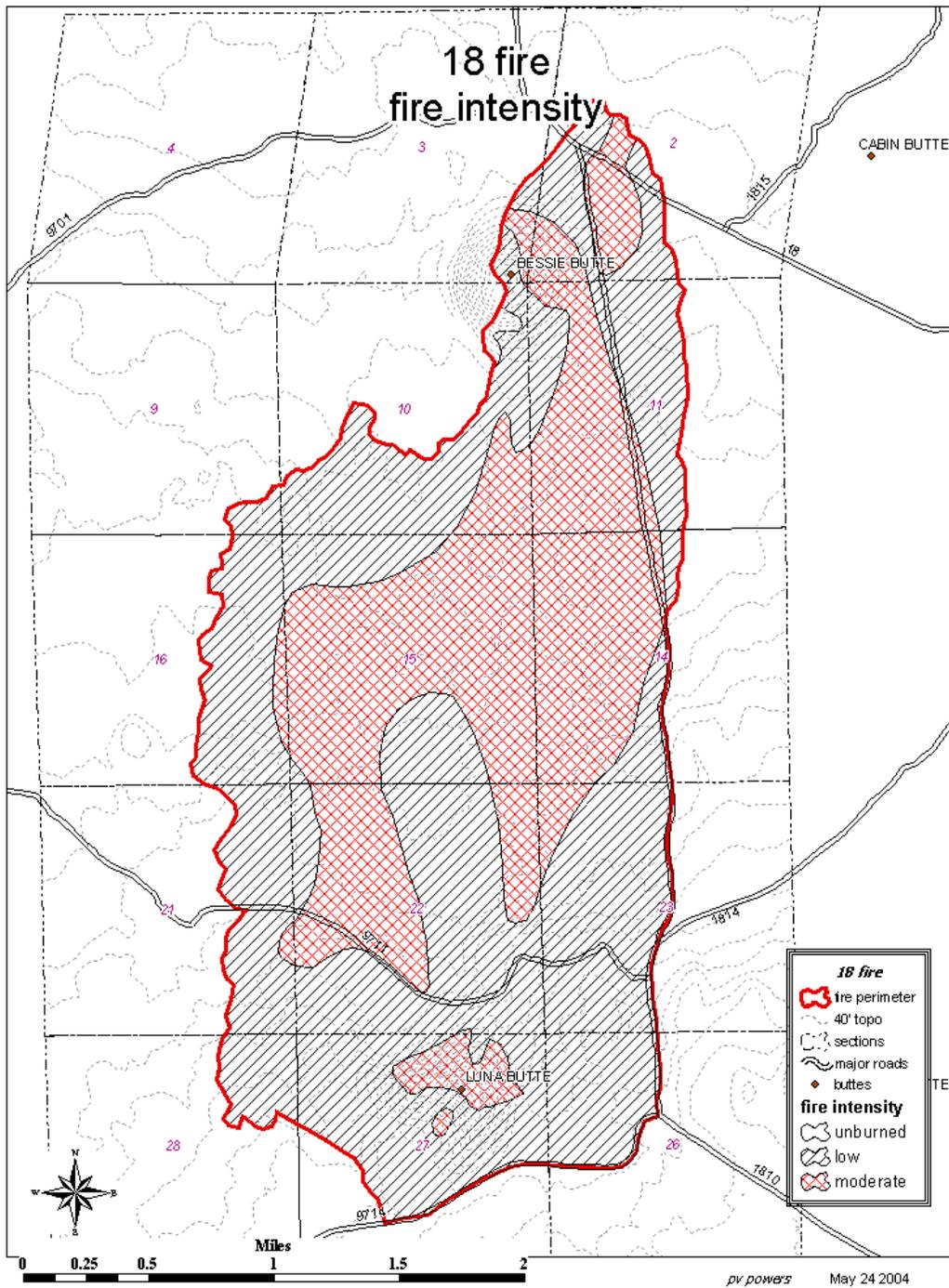
The overriding purpose of entering the 18 Fire is to:

- Recover commercial value.
- Expedite the establishment and restoration of a dry, forest ponderosa pine forest following a stand replacing fire.
- Reduce future fuel loadings to lessen the potential effects of future fire behavior potential.

Habitat recovery following a stand replacing fire within the dry ponderosa pine forest type has a number of factors to consider including shrub response (competition), browsing by big game, seed source, and future fuel loadings. Natural regeneration of ponderosa pine is dependent on seed dispersal from healthy, live trees. In many areas, particularly within the interior areas of the fire, adjacent seed sources are no longer available. The majority of the high mortality area is located within deer winter range (deer habitat). Based on shrub response (competition with tree seedlings), browse damage, and experience within adjacent wildfires, such as the Bessie Butte, Skeleton, and Evans West Fires of 1996, interior areas with high tree mortality would require reforestation by planting ponderosa pine in order to ensure and expedite forest restoration.

Lowering fuel loads to a level that reduces the future likelihood of a high severity fire occurring in the 18 Fire area could help promote the long-term survival and growth of planted trees. Over the next 20 years, the majority of the fire-killed, standing trees within the 2,420 acres of stand replacement will fall down and become a heavy surface fuel load of 38 to 62 tons per acre versus a desired level of 5 to 20 tons per acre for warm dry ponderosa pine (Brown, 2003). A future fire ignition in the heavy surface fuels created by the 18 Fire could increase the duration of elevated temperatures to levels capable of altering soil properties and affecting site productivity in addition to complicating efforts to suppress a new fire in a young, reestablished ponderosa pine forest. This would also complicate the use of prescribed fire in the future.

Figure 1-2. 18 Fire Burn Intensity



## Proposed Action

---

**What:** The Forest Service proposes to address the purpose and need by meeting 3 goals.

1. Recover commercial value.
2. Expedite the establishment and restoration of a dry, forest ponderosa pine forest following a stand replacing fire.
3. Reduce future fuel loadings to lessen the potential effects of future fire behavior potential.

This action includes salvage of commercial timber and fuels reduction on approximately 1,936 acres. Areas identified for salvage are high or moderate intensity burn areas within stands of ponderosa pine.

Reforestation by hand planting ponderosa pine is proposed on the 1,936 acres of commercial timber salvage. Dead trees and down wood would be retained in a mosaic of varying densities across the landscape. Within the 1,874 acre portion of the fire not included in the fire salvage proposal, is an estimated 411 acres of high mortality that will not be replanted under this action in order to provide for high quality wildlife forage.

Commercial logging would utilize modern, ground-based, feller-buncher systems, and designated skid roads to minimize soil disturbance. Only standing dead trees would be salvaged. Fuels reduction would be accomplished by whole tree yarding of salvaged trees. An estimated 3.5 miles of temporary roads would be needed to access commercial salvage areas. All temporary roads would be obliterated following their use. Road densities, as proposed under the roads analysis would meet the target open road density of 1 to 2.5 miles of open road per square mile for deer winter range (LRMP, M7-22, pg. 4-115) when considering the area within the fire perimeter, only.

**Why:** Due to the high intensity of the fire a majority of the area that burned is no longer providing thermal or hiding cover in Deer Habitat (deer winter range), Management Area 7. The burned area is also not meeting its land allocation goals under General Forest, Management Area 8, which emphasizes timber production while providing forage production, visual quality, wildlife habitat and recreational opportunities for public use and enjoyment (see Table 1-1). An estimated 19 million board feet were killed by the fire. With the exception of the 73 acres of roadside salvage none of the economic value has been recovered.

**When:** The project implementation would begin in late 2004. The salvage would be completed by the summer of 2005 and the other resource activities would be completed within 5 years.

**How:** The project would be implemented through a combination of timber sales, service contracts, force account crews and partnerships. No permanent, system roads would be

created. As an outcome of the salvage treatment described above, an estimated 7 million board feet of wood would be commercially removed from 1,936 acres.

The location of the proposed action is shown on map Figure 1-1. The following issues were considered in the development of the proposed action. Where issues cannot be resolved through project design or mitigation, they may be the basis for developing alternatives to the proposed action.

*Soil Productivity/fuel loading:* Maintenance of soil productivity is an important objective in the project area. Although much of the 18 Fire had high mortality of overstory trees, ground level heat intensity (fire severity) was typically not elevated to temperatures capable of altering soil properties and affecting site productivity. Exceptions to this would include localized areas under large logs and adjacent to stumps and tree boles that were consumed during the fire. Impacts from the fire, suppression activities, and past management practices have had an effect on the soil resource, and in some areas soils may be sensitive to additional impacts. In addition, future impacts to soils in the event of a re-burn could be a concern if fuel loadings are allowed to reach high levels.

*Wildlife Habitat:* To provide habitat for woodpeckers and other cavity nesters, adequate dead and dying trees would be retained within the areas proposed for salvage. Large portions of the fire would not be salvaged to provide high quality foraging areas for birds and to reduce sight distances for big game. In the short-term, this will provide an abundance of snags; however, in the long-term, (20 to 30 years), snags will be lacking as the current snags fall over. This would be mitigated by retaining all green trees.

*Insects and Diseases:* Bark beetle and other insect populations increase following a wildfire and have the potential to increase tree mortality in stands within and adjacent to the fire. No salvage in adjacent stands is planned in order to provide additional snag habitat, over time.

*Noxious Weeds:* Potential spread of noxious weeds is a concern across the fire area. Noxious weeds compete with native plant communities and can reduce the diversity of plant and animal species.

*Scenic Quality:* Approximately 22 acres of the 18 Fire are within the Scenic Views management area. Bessie Butte can be seen from numerous spots in Bend. With the exception of hand planting pine trees, no activities are planned on either Bessie or Luna Buttes, or within Scenic Views.

*Access-* No permanent road construction is planned. None of the areas being considered for commercial fiber salvage are within or adjacent to inventoried or uninventoried roadless areas.

*Timber value/reforestation* – The average diameter of the dead ponderosa pine trees is 12 inches. Prompt utilization of the small diameter trees is necessary if they are to be used

for dimension lumber. Shrubs and grass can be expected to resprout vigorously within the fire. To minimize forest restoration costs, salvage operations are planned to begin in 2004 followed by reforestation with hand planted pine beginning in the spring of 2005. Planted trees would likely require both animal damage (tubing or fencing) and vegetation control (slash mat and/or manual release). Approximately 95 percent of the 1,936 acres proposed for salvage and reforestation is within the Deer Habitat management area. The number of trees planted would reflect the levels required to provide the optimum levels of forage, hiding cover and thermal cover for big game.

## Management Direction

---

The alternatives of the project respond to the goals, objectives, standards and guidelines described for the area in:

### **Deschutes NF Land and Resource Management Plan (LRMP) Management Areas**

Deschutes National Forest Land and Resource Management Plan (LRMP) completed in 1990, establishes management areas, and forest-wide resource direction for the 18 Fire Recovery Project area. None of the 18 Fire falls within the Northwest Forest Plan (NWFP). Management Area composition within the project area and goals are described below.

The following describes land management allocations from the Deschutes National Forest Land and Resource Management Plan (Forest Plan), as amended, for the 18 Fire Recovery Project area:

#### **Deer Habitat – Management Area 7**

*Goal:* To manage vegetation to provide optimum habitat conditions on deer winter and transition ranges while providing some domestic livestock forage, wood products, visual quality and recreation opportunities (Forest Plan, pg. 4-113).

**Forest Plan Standard and Guideline M7-3:** Generally, programmed timber harvest is appropriate when required to regenerate new cover stands, maintain tree vigor for resistance to stand-threatening insect damage, or encourage desirable forage in deficient areas. (Forest Plan pg. 4-113)

Timber salvage is proposed within this management allocation.

#### **General Forest – Management Area 8**

*Goal:* To emphasize timber production while providing forage production, visual quality, wildlife habitat and recreational opportunities for public use and enjoyment (Forest Plan, pg. 4-117).

Timber salvage is proposed within this management allocation.

**Scenic Views – Management Area 9**

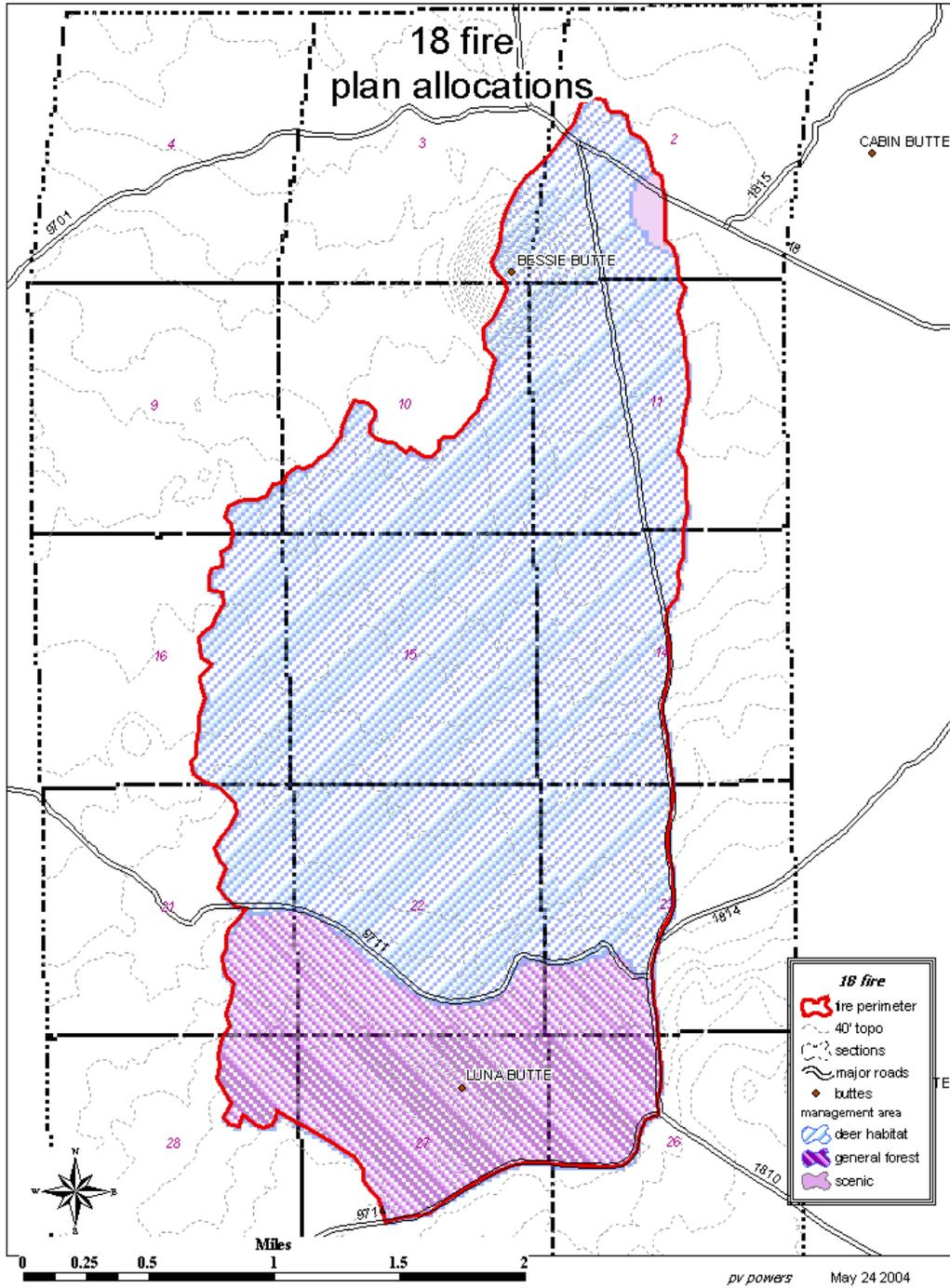
*Goal:* To provide Forest visitors with high quality scenery that represents the natural character of Central Oregon (Forest Plan, pg. 4-121).

In response to public scoping no salvage activity or reforestation is proposed within this management allocation.

**Table 1-1. Salvage Harvest by Management Area**

<b>LRMP Management Area</b>	<b>Acres</b>	<b>Percent of Mgmt. Area Burned</b>	<b>Acres Salvaged Proposed Action Alternative 2</b>	<b>Percent of Area Salvaged</b>
General Forest	901	23%	68	7% of General Forest
Deer Habitat	2,887	76%	1868	65% of Deer Habitat
Scenic Values	22	1%	0	0% of Scenic Values
<b>Total</b>	<b>3,810</b>	<b>100%</b>	<b>1936</b>	<b>51% of burned area</b>

Figure 1-3. 18 Fire LRMP Management Areas.



## Scoping and Public Involvement

---

### Scoping

Scoping and public involvement are ongoing processes used to invite public participation and to obtain input on a particular proposed action. Information received during these processes is used to determine the extent of analysis needed to reach an informed decision. The Council on Environmental Quality regulations (40 CFR 1501.7) was followed to determine the scope of issues and opportunities to be addressed in the environmental analysis and to identify major concerns related to the Proposed Action. Public comment was sought through several means, including those summarized below.

### Individuals and Agencies Contacted

Individuals and agencies contacted include identified stakeholders; elected officials; federal, state, and local agency personnel; press and media in communities affected; and others on the Bend-Fort Rock Ranger District mailing list. Those contacted for scoping and to receive a copy of this FEIS are listed in Appendix A.

In addition, the 18 Fire area was reviewed with Oregon Natural Resources Council (Tim Lillebo, field representative), Blue Mountain Biodiversity (Karen Coulter), Protecting and Restoring Oregon's Wild Lands Project (PROWL, Lisa Blanton), United States Fish and Wildlife (Sandra Ackley), Oregon Department of Fish and Wildlife (Glenn Ardt). The complete record of the public involvement process to date is available for review in the project file.

### Public Notices

Public notices concerning the Proposed Action include the following:

Winter 2003 - Schedule of Projects

November 14, 2003 - Scoping Letter

December 16, 2003 - Notice of Intent to Prepare an EIS, Federal Register

July 2, 2004 – Notice of Availability of DEIS, Federal Register

### Consultation with Affected Tribes

As the result of scoping at a government-to-government level, the Confederated Tribes of the Warm Springs Reservation, Burns Paiute, and Klamath Tribes were informed, but no comments were received on the proposed action.

## Issues

---

- **Key Issues:** Issues used to develop alternatives or specific activities of the action alternatives.

- **Analysis Issues:** Issues addressed in the effects analysis and used to compare alternatives. They are described in detail and analyzed in Chapter 3.
- **Issues not addressed in detail:** Issues or concerns that were either already addressed through alternative design or mitigation, are not affected by the proposed actions, or are beyond the scope of this project.

## Key Issues

The alternatives respond to the following key issues identified during scoping. The key issues are specific to the proposed action and the project area. Indicators for each issue will help to evaluate how each of the alternatives addresses key issues.

**Key Issue 1: Soil Productivity** Salvage harvest and associated activities can potentially have adverse impacts on soil productivity through physical disturbances and adverse changes in organic matter levels. Past management practices, the 18 Fire, and fire suppression activities have affected the soil resource within the project area. The proposed salvage harvest and associated activities may cause cumulative increases in detrimental conditions by increasing compaction and soil displacement, reducing effective ground cover, and increasing the potential for accelerated erosion.

What are the best ways to mitigate these impacts?

The following indicators will be evaluated for each of the alternatives:

1. The extent of detrimental soil conditions within individual activity areas proposed for mechanical treatments.
2. The amount of coarse woody debris (CWD) and surface organic matter that would be retained to provide ground cover protection and a long-term source of nutrients on treated sites.
3. The probable success in project design and implementation of management requirements and mitigation measures that would be applied to minimize adverse impacts to soil productivity.

## Key Issue 2: Wildlife Habitat

What are the effects of the proposed activities on wildlife habitat, specifically effects on deer winter range, snags and coarse woody debris habitat? Effects of the alternatives are a concern for the deer winter range habitat. The current and future levels of snags and CWD habitat is a concern expressed by several commenters. There is a direct connection between the number of trees removed for salvage and those left to provide snag and down log habitat.

The following indicators will be evaluated for each of the alternatives:

1. Amount of acres reforested.

2. Miles of open road density (miles/per/square mile).
3. Snag and down log levels, including display of effects of the alternatives using Decayed Wood Advisor for Managing Snags (snags per acre by diameter class), Partially Dead Trees, and Down Wood for Biodiversity (measured in percent) in Forests of Washington and Oregon, DecAID.

### **Analysis Issues**

Issues or concerns listed below (identified by the IDT or through the scoping process) were identified and have been tracked through the analysis.

#### **Air Quality**

Alternative 2 includes pile burning activities for treating fuels related to the salvage operations. Bend is a Designated Area with a high population and air quality concern and located approximately 3.5 miles north from the 18 Fire area. The City of Bend is closely monitored for smoke intrusion and effects from prescribed fire.

Pile burning would comply with the Clean Air Act and would be coordinated with the Oregon State Department of Environmental Quality and Oregon State Department of Forestry. All burning would be in compliance with State smoke management plans. Landing piles would only be ignited under prescribed conditions.

Effects of the alternative on air quality will be measured by the emissions expected.

#### **Beschta**

The “Beschta Report” formally known as the 1995 “Wildfire and Salvage Logging, Recommendations for Ecologically Sound Post-Fire salvage Management and Other Post-Fire treatments” and the 2004 “Postfire Management on Forested Public Lands of the Western United States” found evidence that post-fire logging results in additional significant damage to the ecosystem and suggests there is no ecological need for immediate human intervention on post-fire landscape. In the interim other conflicting scientific reports and papers have highlighted the controversy regarding the effects of salvage logging after a wildfire. In light of these scientific uncertainties and unknown risks this FEIS was prepared. Scientific research and literature was reviewed and discussed in Chapter 3 and in Appendix G.

#### **Economic and Social**

Consideration must be given to the financial efficiency of the proposed action and alternatives. Some commenters want the Forest Service to salvage fire-killed trees in a timely manner to avoid drastic loss in value. Economic and social analysis focuses on the communities of Central Oregon and their ties to forest management through employment, income, recreation, fuelwood, and sport.

#### **Fire and Fuels**

Comments were received expressing concern for the potential of heavy fuel loading, which may occur as a result of salvage operations or as standing dead trees fall

contributing to the potential intensity of future wildfire. Treatment of fuels resulting from the proposed salvage activity is a connected action included in Alternative 2.

Effects of the alternative on fire and fuels will be measured by displaying estimated tons per acre within 20 and 40 years.

**Insects and Decay**

Comments were received related to damage from insects and disease. Potential for insect and disease related damage and effects on forest trees is addressed in Chapter 3 of the FEIS.

**Noxious Weeds**

Comments were received expressing concern for the effects of the proposed actions on noxious weeds. Design elements aimed at preventing the spread of noxious weeds are incorporated into the action alternatives. The effects of the alternatives on noxious weeds are described in Chapter 3 of the FEIS.

**Wildlife** – In addition to the wildlife key issue, the following items will be analyzed and compared by alternative: Threatened, Endangered, and Sensitive Species; Management Indicator Species; Species of Concern; and Resident and Migratory Landbirds.

**Threatened, Endangered and Sensitive (TES) Species**

Several comments were received regarding the effects of the proposed action on TES species. There are no TES species within the project area. The effects of the proposed salvage and connected actions will review TES species and are described in Chapter 3 of the FEIS.

**Recreation (transportation/roads)**

Several comments were received in response to scoping expressing concern over proposed road management, specifically against any road closures that would reduce access for motorized recreational pursuits.

Road management proposed actions have been identified as a result of an IDT road analysis review for the 18 Fire area. The proposed road management includes actions to implement road strategies identified in the road analysis for existing roads. The road management actions are intended to aid the restoration of the 18 Fire area and are included because they are part of a potential resource enhancement project (KV).

The effects of the alternatives on recreation will be measured by describing changes to the recreation experience.

**Scenic Quality**

There is concern for the effects of the 18 Fire and proposed actions on the scenic quality of the area. Within the 18 Fire Recovery Project area is Scenic View, Management Area 9 (MA-9). The current allocation area within the fire boundary is 22 acres. There are no proposed treatments within MA 9.

The effects of the proposed salvage and connected actions on scenic quality are described for alteration or enhancement of scenery and amount of affected area on short-term scenery within middle and foreground landscapes.

**Range**

Comments were received related to range allotments. There is an inactive, but established grazing allotment subject to periodic livestock grazing within the 18 Fire Recovery Project area, although no grazing has occurred in the allotment since 1990. The 18 Fire Recovery Project area overlaps the Bessie Grazing Allotment. The effect of the proposed salvage and connected actions related to the grazing allotment are described in Chapter 3 of the FEIS.

**Cultural Resources**

Proposed activities will have no effect on cultural resources. All sites are being avoided.

**Issues Not Addressed in Detail**

Issues or concerns that were either already addressed through alternative design or mitigation, are not affected by the proposed actions, or are beyond the scope of this project. These resource areas are not discussed further in this analysis.

**Wilderness/Roadless Characteristics**

There is no designated Wilderness within or adjacent to the project area. The nearest wilderness is the Three Sisters Wilderness, approximately 27 miles west of the project area. There are no Inventoried Roadless Areas or unroaded characteristics within or adjacent to the project area. The nearest Inventoried Roadless Area to the 18 Fire Recovery Project area is the North Paulina Roadless area, 7.25 miles southeast. As previously identified the project area was clearcut harvested in the 1920s and the current open road density is 3.6 miles per square mile.

**Wild and Scenic River/Essential Fish Habitat**

There are no wild and scenic river corridors within or adjacent to the project area. The Deschutes Wild and Scenic River corridor is approximately 7 miles west of the project area. There is no essential fish habitat or potential bull trout habitat within 7 miles of the project area (see also Water Quality below).

**Water Quality**

There would be no flow impacts to the Deschutes Basin, based on the existing condition of no streams within or adjacent to the project area and soils that allow for rapid infiltration of precipitation without the potential of overland flow reaching perennial stream channels.