



United States
Department of
Agriculture

Forest
Service

Southwestern
Region



Draft Environmental Impact Statement for the Rodeo-Chediski Fire Salvage Project

Apache-Sitgreaves and Tonto National
Forests



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Rodeo-Chediski Fire Salvage Project

Draft Environmental Impact Statement

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Abstract: The 2002 Rodeo-Chediski Fire affected approximately 178,000 acres of National Forest System lands within the Apache-Sitgreaves and Tonto National Forests. This Draft Environmental Impact Statement (DEIS) discloses analysis of five alternatives for the recovery of these lands. The Rodeo-Chediski Fire Salvage Project area lies between Show Low and Payson, Arizona near the communities of Linden, Pinedale, Aripine, Heber, Overgaard and Forest Lakes Estates. The alternatives consist of a no action alternative, and 4 action alternatives proposing harvest of merchantable dead trees as sawtimber and products other than lumber (POL). All action alternatives would improve watersheds through road maintenance and contour felling of dead trees.

Alternative 1 – No Action Alternative. No new activities would be initiated at this time.

Alternative 2 – Proposed Action –Harvest on approximately 45,109 acres using ground-based and helicopter yarding. A forest plan amendment would be required.

Alternative 3 –Harvest on approximately 38,533 acres utilizing only ground-based yarding systems on slopes less than 40 percent and avoiding areas with severe soil erosion potential.

Alternative 4 – Agency Preferred Alternative –Harvest on approximately 41,059 acres utilizing only ground-based yarding systems on slopes less than 40 percent, including areas that have been classified as having severe soil erosion potential.

Alternative 5 –Harvest on approximately 42,850 acres utilizing only ground-based yarding systems on slopes less than 40 percent and in areas classified as having severe soil erosion potential.

Reviewers should provide the Forest Service with their comments during the review period of this draft environmental impact statement. This will enable the Forest Service to analyze and respond to the comments at one time and to use information acquired in the preparation of the final environmental impact statement, thus avoiding undue delay in the decision making process. Reviewers have an obligation to structure their participation in the National Environmental Policy Act process so that it is meaningful and alerts the agency to the reviewers' position and contentions. Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 553 (1978). Environmental objections that could have been raised at the draft stage may be waived if not raised until after completion of the final environmental impact statement. City of Angoon v. Hodel (9th Circuit, 1986) and Wisconsin Heritages, Inc. v. Harris, 490 F. Supp. 1334, 1338 (E.D.

Wis. 1980). Comments on the draft environmental impact statement should be specific and should address the adequacy of the statement and the merits of the alternatives discussed (40 CFR 1503.3).

Comments on this DEIS must be received or postmarked within 45 days of the Environmental Protection Agency's publication of the Notice of Availability in the Federal Register.

Send Comments to:

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Date Comments Must Be Received: December 1, 2003

Summary

Introduction

On June 18, 2002, the Rodeo Fire was ignited on the Fort Apache Indian Reservation near Cibecue, Arizona. On June 20th, the Chediski Fire was ignited on Chediski Ridge also on the Fort Apache Indian Reservation. The two fires grew rapidly and merged on June 22nd. By the time the fires were contained on July 7th, the complex had grown to approximately 460,000 acres. Of this acreage, approximately 10,711 acres are on the Pleasant Valley Ranger District of the Tonto National Forest, and 164,440 acres are on the Lakeside and Black Mesa Ranger Districts of the Apache-Sitgreaves National Forests. Almost 8,700 acres of private lands were also burned.

This document is a summary of the Draft Environmental Impact Statement (DEIS) for the Rodeo-Chediski Fire Salvage Project. It provides a brief overview of the proposed action; purpose and need for the project; process used to formulate the alternatives; alternatives developed to respond to public issues; and effects that the proposed alternatives may have on the human environment. The summary conclusion identifies the environmentally preferred and agency preferred alternative.

Proposed Action

In order to respond to existing resource conditions, initiate rehabilitation efforts, and salvage some of the timber resources killed by the Rodeo-Chediski Fire of 2002, the Apache-Sitgreaves and the Tonto National Forests propose conducting a series of salvage operations.

Harvest activities would include salvaging dead, standing trees with merchantable value on approximately 37,180 acres of lands burned at moderate and high severity levels. In areas with slopes less than 40 percent, ground-based yarding systems would be used. On lands with slopes greater than 40 percent, helicopter-yarding systems would be used. Fuelwood, specialty wood products, and other sawtimber sales would be harvested on an additional 7,929 acres of lands. These areas are termed “small sale” areas and are designed to offer smaller quantities of wood products to interested parties. This action would require a site specific non-significant amendment to both Forest Plans to harvest dead trees on slopes over 40 percent by helicopter.

No new permanent road construction is proposed for harvest activities. Road maintenance activities would be made part of the timber sale contracts and would occur prior to or during harvest activities. Approximately 19.9 miles (40 segments) of temporary road would be constructed following Best Management Practices (BMPs) design criteria to provide access to log landing sites. Following unit harvest, all temporary roads would be scarified, obliterated, and reseeded.

Purpose and Need for the Proposed Action

The primary need for this project is to remove dead trees from portions of the burned area while the trees still have economic value. Dead trees in the fire area are deteriorating. As a tree deteriorates, its value as lumber decreases. Depending on the species type, tree size, and other environmental factors, trees can lose their economic value as timber 12 to 18 months after their death. Most trees suitable for commercial harvest—those having 12-inch or larger diameters—lose much of their economic value within 18-24 months of their deaths.

Due to rapid decay rates of trees killed by the fire, trees need to be harvested in a timely manner to recover any economic value from the wood fiber. Salvaging dead trees is one method of providing products to meet the public’s demand for wood products and provide economic opportunity for communities and wood products industries.

Process Used to Formulate Alternatives

Public Involvement Process

During and following the Rodeo-Chediski Fires, the public has remained heavily involved and well informed of the fire-fighting efforts and post-fire burned area emergency rehabilitation (BAER) activities. In addition to media coverage, Incident Command teams assigned to the fires kept the public updated on the fires and its impacts through community meetings and briefings.

The forests initiated and facilitated an open planning process with interested and affected parties. Representatives from interest groups, along with other interested individuals and federal agencies have remained actively involved throughout the planning process. Other outreach and public information efforts provided the public with an opportunity to discuss post-fire treatment needs. These meetings also provided a forum for the public to review and critique the season's fire fighting efforts, public involvement during the wildfire season, and other forest management issues.

The information expressed in comments and at these meetings helped the Forest Service develop long-term management strategies for lands affected by the Rodeo-Chediski Fire. This DEIS is only one part of an integrated effort to manage lands within the fire's boundary. Other management and restoration activities will be addressed under separate analyses in compliance with the NEPA process and are addressed as reasonably foreseeable actions in the cumulative effects analyses disclosed in Chapter 3.

The Forest Service's public participation process for informing the public on proposed activities in the Rodeo-Chediski Fire area included:

- Conducting public field trips through the project area.
- Distributed a scoping letter on August 24, 2002 to notify the public and solicit comments about the proposed project.
- Issuing a Notice of Intent (NOI) to prepare an environmental impact statement in the *Federal Register* on September 26, 2002. The public comment period for the NOI ended on November 15, 2002.
- Submitting news releases and information to the media, generating newspaper articles, editorials, and letters to the editor.
- Creating a website providing links to project information.
- Coordinating volunteer efforts for rehabilitation and disaster relief efforts.
- Developing multimedia presentations for Forest Service staff and the public on the fires, their impacts, and the proposed projects.
- Conducting special tours of the project areas for government officials and other Federal and State agencies.
- Conducting press conferences and media tours for television, radio, and printed media sources.

Issue Development

The Rodeo-Chediski Fire Salvage Interdisciplinary (ID) Team reviewed comments received during the public scoping process to identify issues, determine appropriate analysis procedures, and identify alternatives to the proposed action. Issues are defined as discussion, dispute, or debate about the effects of the proposed action. Non-significant issues are identified as those that are outside of the scope of the project; already decided by law, regulation, Forest Plan, or other higher level decision; (irrelevant to the decision to be made); or conjectural and not supported by scientific or factual evidence. A list of non-significant issues and reasons for their categorization as non-significant can be found in the project record.

The ID Team identified two issues as significant and were used to develop alternatives to the proposed action. The issue statements are followed by measures that provide a means to gauge the effects of each alternative.

Issue #1: Salvage logging may cause erosion, sedimentation, and the accompanying loss of soil nutrients in areas that are sensitive or where accelerated soil erosion is possible. Erosion and increased sediment delivery could lead to a loss of productive soils and a decline in water quality downstream. Measures: Sediment delivery rates, timing of delivery, and percent of ground cover remaining on acres treated.

Issue #2: Salvage logging may reduce habitat or jeopardize the viability of wildlife species that require woody material in the habitat. Measures: Changes in habitat for specific management indicator species, pre- and post-fire changes in average number of snags per acre at a landscape scale, and average amounts of down logs on the forest floor.

In order to minimize developing alternatives that were environmentally, technically or economically unfeasible, the ID Team developed “Design Criteria” to limit the scope of alternatives within known resource constraints, Forest Plan standards, and laws and regulations. These constraints served as a basis for resource protection or enhancement when the ID Team developed action alternatives.

Description of Proposed Alternatives

Three alternatives (in addition to the No Action and Proposed Action alternatives) were designed to reflect the range of issues, resource conditions and the purpose and need of the project. None of the action alternatives address long-term vegetation restoration needs associated with past fire suppression and stand manipulation. Other long-term resource protection needs such as road reconstruction, road closures, culvert replacement, replacement of grazing facilities, and fuel reduction treatment of the forest that burned at low intensity levels or was unburned will be addressed in additional NEPA documents. Action alternatives were designed to meet the short-term need to remove dead trees from portions of the burned area while the trees still have economic value, meet the public’s demand for wood products, and provide economic opportunity for communities and wood products industries.

Alternative 1 – No Action

The “No Action” alternative is required by NEPA and serves as a baseline for projected effects and displays existing resource conditions. Under this alternative, no proposed activities would occur. Some previously authorized forest management activities and projects unaffected by the fire would continue in their development. Natural restoration processes would recover areas impacted by the fires and previous land uses. Roads currently open for motorized vehicle use would remain open.

Summary

This alternative would not preclude Forest management activities identified under previous decisions, nor would it preclude the potential for activities identified under future decisions.

Alternative 2 – Proposed Action

Alternative 2 is the Apache-Sitgreaves and Tonto National Forests' proposed action. This action is designed to maximize harvest volumes for sawtimber while providing sufficient mitigation to minimize impacts to all affected resource areas. It would require a non-significant amendment to the Apache-Sitgreaves and Tonto National Forest Plans to allow timber harvest on slopes over 40 percent.

Alternative 3

Areas proposed for harvest in Alternative 3 were selected based on public and internal concerns over logging in areas with sensitive soils or where accelerated soil erosion is possible. Alternative 3 is also designed to further minimize the risk of salvage activities to wildlife populations in the fire area, especially in the Canyon Creek and Mule Creek drainages that may still contain habitat for Mexican spotted owl populations and critical fisheries. To best address these concerns, Alternative 3 does not include harvest activities on slopes over 40 percent or on soil units that have been classified as having severe soil erosion potential.

In response to public concerns regarding the amount of wildlife habitat retained, an increased retention of snag volume would occur under this alternative compared to Alternative 2. Snags would be left from the largest trees in the harvest area instead of meeting the 18-inch diameter at breast height (dbh) requirements of Alternative 2. Additional snags would be retained in areas adjacent to Protected Activity Centers (PACs) and Post-Fledgling Family Areas (PFAs). Areas proposed for treatments within a quarter-mile of PFAs and PACs would have five of the largest snags and three downed logs left per acre. Diameter limits for oak and juniper species would be identical to Alternative 2 to provide snags and habitat for wildlife species in these woodland areas.

Alternative 3 would not require any site-specific amendments to the Apache-Sitgreaves and Tonto Forest Plans.

Alternative 4

Alternative 4 was developed in response to public concerns over the impacts of management activities on wildlife habitat. Similar to Alternative 3, this alternative does not include harvest activities on steep slopes in the Canyon Creek and Mule Creek drainages in order to reduce impacts to Mexican spotted owl (MSO) populations and critical fisheries. No helicopter yarding would occur under this alternative. Snag and downed log retention standards would be identical to Alternative 3. Logging would be allowed on soils with high erosion potential.

In response to public concerns regarding the amount of wildlife habitat retained, Alternative 4 includes the same snag retention standards as those described in Alternative 3. Diameter limits for oak and juniper species would be identical to Alternative 2 to provide snags and habitat for wildlife species in these woodland areas.

Alternative 4 would not require any site-specific amendments to the Apache-Sitgreaves and Tonto Forest Plans.

Alternative 5

Alternative 5 was developed to provide an alternative that achieves a balance of minimizing management activities on steep slopes in the Canyon Creek and Mule Creek drainages while still

maximizing timber volumes in other areas. Similar to Alternatives 3 and 4, no harvest or helicopter yarding would occur in these drainages in order to reduce impacts to Mexican spotted owl populations and limit soil disturbing activities on steep slopes. On areas with slopes under 40 percent, harvest activities, habitat management, and road work activities would be identical to those described in Alternative 2. This alternative would provide the most timber volume out of Alternatives 3, 4 and 5. Snag and downed woody debris retention standards would be the same as those described in Alternative 2.

Alternative 5 would not require any site-specific amendments to the Apache-Sitgreaves and Tonto Forest Plans.

Mitigation and Monitoring Measures

Where potential impacts to resources are predicted, environmental protection measures would be employed to mitigate the effects of conducting activities. Monitoring would be used to determine whether the objectives of the project were met and if additional action is needed. Implementation monitoring would be used to determine if the goals, objectives, guidelines, and standards of the Forest Plans are achieved. Monitoring provides quality control to project planning and allows the agency to compare the end results to those projected, and apply new knowledge to similar projects in the future.

Summary Comparison of the Activities and the Predicted Environmental Effects of all Alternatives

Introduction

The effects of the alternatives on the human environment vary according to the location and quantity of activities proposed in each alternative. The alternatives can be compared quantitatively and qualitatively by: their activities; how they meet the purpose and need for the project; their response to the issues; and their effects on individual resources.

Comparison of Alternative Activities

Information in the following table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives. The activities provide a baseline for the ability of each alternative to meet the purpose and need of the project, the ability for the alternatives to respond to issues, and the effects of the alternatives on individual resources.

Table 1 - Comparison of activities by alternative

Resource Area / Issue	Alternative 1 No-Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4 Preferred Alternative	Alternative 5
Soils and Watersheds					
Ground Cover Created in Treatment Areas (percent)	0	30	30	30	30
Soil Productivity	Severely Damaged	Enhanced	Enhanced	Enhanced	Enhanced
Erosion Rates	Highest	Slightly Lower	Slightly Lower	Slightly Lower	Slightly Lower
Sediment Transport	No Change	Slight Change	Slight Change	Slight Change	Slight Change
Soil Quality	Not Improved	Improved	Improved	Improved	Improved
Soil Compaction	None	Some	Some	Some	Some
Equivalent Disturbed Area (acres)	None	8,279	7,284	8,116	8,120
Stream Channel Condition	Not Improved	Improved	Improved	Improved	Improved
Post-fire Flooding	Highest Peak Flows	Reduced Peak Flows	Reduced Peak Flows	Reduced Peak Flows	Reduced Peak Flows
Water Quality, 303d Streams	Out of Compliance	Out of Compliance	Out of Compliance	Out of Compliance	Out of Compliance
Watershed Conditions	No Change	Slight Improvement	Slight Improvement	Slight Improvement	Slight Improvement
Sediment Influx	Highest	Slightly Less	Slightly Less	Slightly Less	Slightly Less

Resource Area / Issue	Alternative 1 No-Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4 Preferred Alternative	Alternative 5
Recreation and Visual Resources					
Recreation Use Patterns	Long-term impacts	Short-term impacts	Short-term impacts	Short-term impacts	Short-term impacts
Recreation Opportunities	Limited	Improved	Improved	Improved	Improved
Visual Impacts along highways and high use areas	Long-term impacts to foreground views	Long-term improvement to foreground views	Long-term improvement to foreground views	Long-term improvement to foreground views	Long-term improvement to foreground views
Vegetation					
Harvest Sawtimber on slopes less than 40 % (acres)	0	34,921	30,770	34,156	34,921
Harvest Sawtimber on slopes greater than 40% (acres)	0	2,259	0	0	0
Small Sale area (acres)	0	7,929	7,763	6,903	7,929
Total Salvage Acres	0	45,109	38,533	41,059	42,850
Sawtimber volume	0	84.0 mmbf	48.4 mmbf	68.3 mmbf	84.0 mmbf
Helicopter yarding volume	0	9.8 mmbf	0	0	0

Summary

Resource Area / Issue	Alternative 1 No-Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4 Preferred Alternative	Alternative 5
Small Sale area volume including Specialty Wood Products and Sawtimber	0	11.8 mmbf	6.8 mmbf	7.5 mmbf	11.8 mmbf
Total Sawtimber and Specialty Wood Products Volume	0	105.6 mmbf	55.2 mmbf	75.8 mmbf	95.8 mmbf
Fuelwood Volume	0	9,900 cords	8,700 cords	7,300 cords	9,900 cords
Sensitive Plants	No impact to Blumer's Dock or Eastwood Alum Root	May impact, will not affect viability of Blumer's Dock and Eastwood Alum Root	May impact, will not affect viability of Blumer's Dock and Eastwood Alum Root	May impact, will not affect viability of Blumer's Dock and Eastwood Alum Root	May impact, will not affect viability of Blumer's Dock and Eastwood Alum Root
Wildlife and Habitat					
Threatened and Endangered Species	No noise disturbance to bald eagle and Mexican spotted owl	Most noise disturbance to bald eagle and Mexican spotted owl	Least noise disturbance to bald eagle and Mexican spotted owl	Some noise disturbance to bald eagle and Mexican spotted owl	Some noise disturbance to bald eagle and Mexican spotted owl
Sensitive Species	No noise disturbance to American peregrine falcon and northern goshawk	Most noise disturbance to American peregrine falcon and northern goshawk	Least noise disturbance to American peregrine falcon and northern goshawk	Some noise disturbance to American peregrine falcon and northern goshawk	Some noise disturbance to American peregrine falcon and northern goshawk
Management Indicator Species	No change in habitat or population trend	No change in habitat or population trend	No change in habitat or population trend	No change in habitat or population trend	No change in habitat or population trend

Resource Area / Issue	Alternative 1 No-Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4 Preferred Alternative	Alternative 5
Big Game Habitat	Less habitat diversity, slower forage recovery	More habitat diversity, faster forage recovery	More habitat diversity, faster forage recovery	More habitat diversity, faster forage recovery	More habitat diversity, faster forage recovery
Average Snags/Acre in Treatment Areas	7.6	1.7	1.9	2.1	1.7
Fisheries and Aquatics					
Black Canyon Watershed	No treatment	1,100 acres treated	377 acres treated	1,100 acres treated	1,100 acres treated
Canyon Creek Watershed	No treatment	4,960 acres treated	2,666 acres treated	2,554 acres treated	2,701 acres treated
Heritage Resources					
Impacts to Heritage Sites	Sites not protected, adverse effect on site integrity and significance	Sites protected, no effect on site integrity or significance	Sites protected, no effect on site integrity or significance	Sites protected, no effect on site integrity or significance	Sites protected, no effect on site integrity or significance
Air Quality and Fuels					
Air Quality	No change	No change	No change	No change	No change
Long-term Fuel Loads Remaining	Highest	Less	Slightly Less	Slightly Less	Slightly Less
Activity Fuels Created by Salvage Logging (acres)	0	45,109	38,533	41,059	42,850

Summary

Resource Area / Issue	Alternative 1 No-Action	Alternative 2 Proposed Action	Alternative 3	Alternative 4 Preferred Alternative	Alternative 5
Transportation System					
Existing open roads (Levels 2, 3, and 4) to remain open after use (miles)	0	249	221	223	234
Existing closed roads (Level 1) to be opened and re-closed after use (miles).	0	117	88	100	105
Temporary Roads to be Constructed and Closed after use (miles)	0 mi.	19.9 mi.	14.2 mi.	18.2 mi.	19.0 mi.
Social and Economic Resources					
Cost of Activities:	0	\$2,556,354	\$1,385,154	\$1,819,454	\$2,311,354
Revenue from Sale of Forest Products	0	\$2,366,000	\$1,160,200	\$1,669,800	\$2,091,600
Benefit to Cost Ratio for USFS	0	1.58	1.39	1.57	1.55
Benefit to Cost Ratio for All Partners	0	0.93	0.84	0.92	0.90
Employment Created (Jobs)	0	238	128	171	217

Achieving the Purpose and Need

The following table displays the levels that each alternative achieves in meeting the objectives of the purpose and need. Because each alternative was designed to address various issues, the types and quantity of activities in each alternative provide different levels of meeting the purpose and need.

Table 2 - Comparison by alternative of achieving the purpose and need

Objectives	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Provide Sawtimber Harvest Volume	No—does not provide sawtimber harvest volume	Yes—provides the most harvest volume	Yes—provides the least harvest volume	Yes—provides some harvest volume	Yes—provides some harvest volume
Provide Forest Products Other Than Sawtimber	No—does not provide forest products	Yes—provides the most volume of specialty products	Yes—provides the least volume of specialty products	Yes—provides some volume of specialty products	Yes—provides some volume of specialty products
Capture Value of Sawtimber and Forest Products	No—does not capture the value of sawtimber and forest products	Yes—provides the highest revenue	Yes—provides the least revenue	Yes—provides some revenue	Yes—provides some revenue
Provide Project Related Jobs	No—does not provide project related jobs	Yes—provides the highest number of jobs	Yes—provides the least number of jobs	Yes—provides some jobs	Yes—provides some jobs

Response to Issues and Resource Concerns

Each alternative was designed to respond to issues and resource concerns voiced internally and by the public. Because the effects of the alternatives are resource associated, they are described by resource.

Range of Alternatives

Five alternatives were developed to respond to: public and internal issues; resource conditions; and purpose and need for conducting post burn salvage activities.

Alternative 1 would respond to the public's request for conducting no post burn salvage activities.

Alternative 2 would respond to the public's request for an alternative that is designed to maximize harvest volumes for sawtimber while providing sufficient mitigation to minimize impacts to all affected resource areas.

Summary

Alternative 3 would respond to the public's concerns over logging on areas with steep slopes over 40 percent or on soil units that have been classified as having severe soil erosion potential. In response to the public's concerns regarding the amount of wildlife habitat retained, an increased retention of snag volume would occur under this alternative.

Alternative 4 would respond to the public's concerns over the impacts of management activities on wildlife habitat. An increased retention of snag volume would occur under this alternative. While logging would not occur on slopes over 40 percent, logging would occur on soils with severe erosion potential.

Alternative 5 was developed to provide an alternative that would achieve a balance between minimizing management activities on steep slopes and maximizing timber volumes in other areas. Logging would not occur on slopes over 40 percent. Logging would occur on soils with severe erosion potential.

Soils and Hydrologic Resources

The only areas proposed for salvaging timber in any of the alternatives were those areas that burned at moderate and high severity levels. These areas experienced very high or complete tree mortality, and retained almost no or very little ground cover. Harvesting timber in any of the action alternatives would generate slash from the non-merchantable treetops as well as branches. This material would be left on the ground and lopped to a two-foot height, with no further treatment. In most areas where salvage logging is proposed, this remaining material would be the only effective ground cover present after logging is completed.

Normally skidding or yarding operations have the greatest impacts to soils and watersheds and are mitigated through Best Management Practices (BMPs). The negative impacts of logging operations anticipated by salvage activities proposed in all action alternatives have been accounted for through modeling. The results of runoff modeling for each action alternative show that overall effects are slightly positive which indicates that the positive effects of slash as ground cover overshadow negative effects of logging.

See Table 1 for a summary comparison of effects on soil and hydrologic resources.

Alternative 1 would produce the highest soil erosion of all alternatives considered in detail. No logging slash would be generated to produce ground cover and no dead trees would be felled. Soil erosion would be allowed to continue at maximum potential rates due to lack of ground cover. Thin top soils would be lost at non-sustainable rates of erosion and areas of shallow soils could turn into bedrock outcrops. Loss of topsoil results in the removal of substantial quantities of nutrients, which take centuries to replace through natural processes. In areas of shallow soils, larger exposures of bedrock are anticipated and are not expected to recover for many centuries. Overall, sediment transport through the area's drainage network is expected to be highest in this alternative.

Geology and Minerals

None of the alternatives would impact the geology of the analysis area. The analysis area is not characterized by significant mineralization due to the geology of the area. None of the alternatives affect any active mineral operations nor do they preclude any opportunity for development of future mineral operations. All of the action alternatives propose to apply crushed aggregate surfacing to existing roads. The aggregate would be acquired from commercial sources located on private lands, not from National Forest System lands.

Vegetation

The effects of the Rodeo-Chediski Fire on vegetation eclipse those of any previous vegetation treatments implemented in the analysis area. Regardless of stand condition or successional status prior to the fire, 54 percent of the analysis area subjected to high and moderate burn intensity levels has reverted to an early vegetation structural stage (VSS 1) (grass and forb). Within the remaining 46 percent that burned at lesser intensity levels, effects of previous changes in vegetative composition and structure remain an influence in environmental conditions. While the number and size of dead trees that remain on site would affect forest characteristics such as fuel loading and wildlife habitat quality, it would have no direct effect on the vegetative composition and structure of the future forest whether these trees are harvested or not.

Average volume derived from the vegetation analysis indicates there is approximately 285 million board feet (mmbf) of timber of salvageable timber 12-inches in diameter and larger on the 97,582 acres burned at high and moderate severity levels in the analysis area, with an average density of 3,040 board feet per acre. This estimate includes volume reductions for retaining snags and expected defect predicted to occur thorough the summer of 2003. While it is unrealistic to assume all that the estimated volume would be available for harvest due to resource coordination needs and terrain/access limitations, it does approximate the total volume available and establishes a baseline against which to compare the alternatives. Actual timber volume projected for each alternative is listed in Table 1.

Changes in MSO habitat designations, VSS distributions, and old growth replacement would occur gradually over decades as tree regeneration occurs and forest succession progresses. Alternatives do not differ in these respects as salvage harvest objectives of proposed action alternatives do not include any activities directed at bringing about change in these forest attributes.

Under Alternative 1, snags would be the most abundant of all the alternatives and average 7.1 per acre. Downed logs would be deficient for the next several years but would gradually become abundant over the next 5-10 years as dead trees fall down.

Fire and Fuels

The action alternatives all include management direction to salvage dead timber in the fire area and have similar effects on fuel loading and future fire potential. In the short-term (two years), harvesting of dead trees would increase fuel loads above current post-fire levels. Leaving 12-inch tops from harvest activities would increase fuel loads for fine, medium and large fuels. Woody fuels would not present a hazard until fine herbaceous fuels grow densely enough to act as a carrier for ground or surface fires. Created slash in all alternatives would be lopped or crushed to a two-foot height to greatly reduce this hazard.

Smaller diameter dead trees would be removed for fuelwood and specialty products in areas designated for small sales. Fuel loading would be less in these areas than those designated for commercial sawtimber sales because more potential fuels would be removed. Slash from these treatments would also be lopped to two-foot height or crushed to reduce the fire hazard from activity fuels.

Salvage logging is not expected to reduce short-term fire risk or hazard in moderately to severely burned areas because the fine fuels have already been reduced. In the short-term, salvage logging would not decrease the risk of fire ignitions and spread. Salvage harvest would decrease the future intensity of fires (especially under drought conditions) and resulting soil damage by reducing the number of large dead trees that would fall and increase fuel loading. Anticipated effects of all action alternatives in areas that are unburned and those that burned at low severity

Summary

levels would be the same as in Alternative 1 because no salvage logging would occur in these areas.

Total fuel loading without treatment for the analysis areas was predicted for a time period of 20 years post-fire. Currently, extreme or erratic fire behavior scenarios are mostly non-threatening within the moderate and severely burned areas because most of the ground fuel was consumed during the fire. The large amount of residual fuel loading that will be created on site due to blow-down and fall-down of the standing material over the next few years poses the most immediate concern to future fuel loading and fire behavior.

Air Quality

No prescribed burning activities of any kind are proposed in any of the alternatives considered in detail. Without prescribed burning treatments, there would be no impact to air quality or human health from smoke in the short-term. However, without salvage logging and some mechanical fuel treatment in selected areas, there would be an increase in the potential for future wildfire and smoke. Harvesting activities proposed under all of the action alternatives would produce dust as well as vehicle emissions, although their contribution to air pollution would be insignificant.

In the event of a large wildfire, the amount and dispersal of smoke could not be controlled. The amount of smoke from such a fire would contain large amounts of pollutants that would likely exceed Federal air quality standards for particulate matter. A wildfire would probably produce significant adverse effects to air quality within a large perimeter around the area.

Air quality within the analysis area is excellent. No facilities or activities that impact air quality exist. There are no Class I airsheds within the analysis area. The closest Class I areas are the Sierra Ancha Wilderness 30 air miles south, and Mazatzal Wilderness and Mount Baldy Wilderness, both located 37 air miles to the west and east of the analysis area respectfully. None of these areas would be impacted by activities proposed in this project. There are no non-attainment areas in proximity to the analysis area.

Alternative 1 does not propose to conduct any harvest activities or prescribed burning to reduce current and future heavy fuel loading. There would be no effect on air quality or human health in the short-term. However, in the long-term, this alternative is expected to produce the greatest potential amount of wildfire activity and potentially create the most emissions.

Wildlife

None of the action alternatives would alter existing big game habitat because the existing ratio of forage to cover would not be altered through salvage harvest. The VSS classes in big game habitat would remain the same before and after post-fire salvage logging activities. The action alternatives should allow for faster recovery of forage, especially within those areas that burned at high severity levels, in part because logging slash can provide micro-sites for grass and forb establishment.

By providing greater amounts of forage and browse, early successional vegetation in salvage-logged areas would provide a positive response benefiting big game herbivore species. The action alternatives would provide more habitat diversity than Alternative 1 because 39 to 51 percent (depending on the alternative selected) of areas burned at moderate to high severity levels would be salvage logged, producing more open habitat in a shorter period of time than would leaving all burn areas as they are.

The loss of most large trees to harvest; and some small trees, which would be knocked down during salvage operations or removed in small sale areas; would decrease effective hiding cover while increasing forage growth (grasses, forbs, and shrubs). Forest Plan standards and guidelines

for forage to cover ratios (forage:live tree cover) should be between 60:40 and 70:30. Pre-fire ratios of 18:82 did not meet these guidelines. The forage to cover ratio post-fire is more consistent with Forest Plans standards and guidelines than pre-fire conditions. All live tree cover was destroyed in areas that burned at moderate to high severity levels and the stands reverted to VSS 1 (grass and forb stage). The post-fire forage:cover ratio of 64:36 would remain the same after salvage because only dead trees would be removed.

Table 3 - Comparison of effects of alternatives on threatened, endangered, and sensitive species.

Species	FWS/FS Status and Year	Critical Habitat Present	Determination of Effect by Alternative
MAMMALS (none present or affected)			
BIRDS			
<i>Haliaeetus leucocephalus</i> Bald Eagle	T/SEN 1995	N/A	NO EFFECT (Alt 1, 3, 4, 5) MAY AFFECT, NOT LIKELY TO ADVERSELY AFFECT (ALT. 2).
<i>Strix occidentalis lucida</i> Mexican Spotted Owl	T/SEN 1993	N/A	NO EFFECT (ALT. 1) MAY AFFECT, NOT LIKELY TO ADVERSELY AFFECT (ALTS. 2, 3, 4, 5)
<i>Falco peregrinus anatum</i> American Peregrine Falcon	SEN delisted	N/A	NO IMPACT (ALT. 1) MAY IMPACT INDIVIDUALS OR HABITAT, BUT WILL NOT AFFECT VIABILITY OR LEAD TO TREND TOWARDS FED. LISTING (ALTS. 2, 3, 4, 5)
<i>Accipiter gentilis</i> Northern Goshawk	SEN	N/A	NO IMPACT (ALT. 1) MAY IMPACT INDIVIDUALS OR HABITAT, BUT WILL NOT AFFECT VIABILITY OR LEAD TO TREND TOWARDS FED. LISTING (ALTS. 2, 3, 4, 5)
<i>Buteogallus anthracinus</i> Common Black Hawk	SEN	N/A	No Impact (Treatments are not proposed in suitable habitat –Alts. 1, 3, 4, 5) MAY IMPACT INDIVIDUALS OR HABITAT, BUT WILL NOT AFFECT VIABILITY OR LEAD TO TREND TOWARDS FED. LISTING (ALT. 2)
REPTILES (none present or affected)			
AMPHIBIANS			

Summary

Species	FWS/FS Status and Year	Critical Habitat Present	Determination of Effect by Alternative
<i>Rana chiricahuensis</i> Chiricahua leopard frog	T/SEN 2002	N/A	NO EFFECT (Alt. 1) MAY AFFECT NOT LIKELY TO ADVERSELY AFFECT (Treatments not proposed in habitat plus Mitigations in place to reduce effects – Alts. 2, 3, 4, 5).
<i>Bufo microscaphus microscaphus</i> Southwestern toad	SEN	N/A	No impact (ALT 1.) Alts. 2, 3, 4, 5: Treatments not proposed in habitat plus Mitigations in place to reduce impacts – MAY IMPACT INDIVIDUALS OR HABITAT, BUT WILL NOT AFFECT VIABILITY OR LEAD TO TREND TOWARDS FED. LISTING
<i>Rana pipiens</i> Northern leopard frog	SEN	N/A	No impact (ALT 1.) Alts. 2, 3, 4, 5: Treatments not proposed in habitat plus mitigations in place. MAY IMPACT INDIVIDUALS OR HABITAT, BUT WILL NOT AFFECT VIABILITY OR LEAD TO TREND TOWARDS FED. LISTING
<i>Rana yavapaiensis</i> Lowland Leopard Frog	SEN	N/A	No impact (ALT 1.) Alts. 2, 3, 4, 5: Treatments not proposed in habitat plus Mitigations in place to reduce impacts – MAY IMPACT INDIVIDUALS OR HABITAT, BUT WILL NOT AFFECT VIABILITY OR LEAD TO TREND TOWARDS FED. LISTING
FISHES			
<i>Ptychocheilus lucius</i> Colorado Pikeminnow (squawfish)	E/SEN	N/A	NO EFFECT (no Treatments within habitat ALTS. 1, 3, 4, 5) NOT LIKELY TO JEOPARDIZE (ALT. 2)
<i>Xyrauchen texanus</i> Razorback Sucker	E/SEN	NO	NO EFFECT (ALT. 1, 3, 4, 5) NOT LIKELY TO JEOPARDIZE (Alts 2)
CLAMS (none present or affected)			
SNAILS (none present or affected)			
INSECTS			

Species	FWS/FS Status and Year	Critical Habitat Present	Determination of Effect by Alternative
<i>Cicindela hirticollis corpuscula</i> Hairy-Necked Tiger Beetle	SEN		No impact (Alt. 1) MAY IMPACT INDIVIDUALS OR HABITAT, BUT WILL NOT AFFECT VIABILITY OR LEAD TO TREND TOWARDS FED. LISTING (ALTS. 2, 3, 4, 5)
<i>Cicindela praetextata pallidofemora</i> Tiger Beetle	SEN		No impact (Alt. 1) MAY IMPACT INDIVIDUALS OR HABITAT, BUT WILL NOT AFFECT VIABILITY OR LEAD TO TREND TOWARDS FED. LISTING (ALTS. 2, 3, 4, 5)
<i>Agathon arizonicus</i> Netwing Midge	SEN		No Impact (NOT PRESENT – Alts. 1, 3, 4, 5) MAY IMPACT INDIVIDUALS OR HABITAT, BUT WILL NOT AFFECT VIABILITY OR LEAD TO TREND TOWARDS FED. LISTING (ALT. 2)
Dragonflies			
<i>Libelula nodisticta</i> Hoary Skimmer	SEN		No impact (Alts. 1, 3, 4, 5) MAY IMPACT INDIVIDUALS OR HABITAT, BUT WILL NOT AFFECT VIABILITY OR LEAD TO TREND TOWARDS FED. LISTING (ALT. 2)
BUTTERFLIES			
<i>Callophrys Comstock</i> Comstock's Hairstreak	SEN		No impact (Alt. 1) MAY IMPACT INDIVIDUALS OR HABITAT, BUT WILL NOT AFFECT VIABILITY OR LEAD TO TREND TOWARDS FED. LISTING (ALT. 2, 3, 4, 5)
<i>Agathymus neumoegeni</i> Neumogen's Giant Skipper	SEN		No impact (Alt. 1) MAY IMPACT INDIVIDUALS OR HABITAT, BUT WILL NOT AFFECT VIABILITY OR LEAD TO TREND TOWARDS FED. LISTING (ALT. 2, 3, 4, 5)
<i>Lycaena ferrisi</i> Arizona copper	SEN		No impact (Alt. 1) MAY IMPACT INDIVIDUALS OR HABITAT, BUT WILL NOT AFFECT VIABILITY OR LEAD TO TREND TOWARDS FED. LISTING (ALT. 2, 3, 4, 5)

Species	FWS/FS Status and Year	Critical Habitat Present	Determination of Effect by Alternative
PLANTS			
<i>Rumex orthoneurus</i> Blumer's dock	SEN		No impact (Alt. 1) MAY IMPACT INDIVIDUALS OR HABITAT, BUT WILL NOT AFFECT VIABILITY OR LEAD TO TREND TOWARDS FED. LISTING (ALT. 2, 3, 4, 5)
<i>Heuchera eastwoodiae</i> Eastwood Alum Root	SEN		No impact (Alt. 1) MAY IMPACT INDIVIDUALS OR HABITAT, BUT WILL NOT AFFECT VIABILITY OR LEAD TO TREND TOWARDS FED. LISTING (ALT. 2, 3, 4, 5)

Summarized from appendix D of this document, and the Biological Assessment and Evaluation (BAE) on file in the project record.

Table 4 - Comparison of effects of alternatives on management indicator species.

Species	Cover Type	Status within Action Area of Project and Environmental Consequences	Change/No Change in Habitat/Population Trend by Alternative
MAMMALS			
<i>Antilocapra americana</i> Pronghorn Antelope	PP, PJ, Oak, Grass	Occurs on northern edge of analysis area, in more open grassland habitats. Openings created may create more forage and help increase populations.	ALTS. 1: NO CHANGE – TREATMENTS NOT PLANNED IN PREFERRED HABITAT. ALTS. 2, 3, 4, 5: SMALL SALES WOULD IMPROVE FORAGING HABITAT AFTER 1-3 YEARS
BIRDS			
<i>Accipiter gentiles</i> Northern Goshawk	PP, MC	Breeding areas within analysis area. Analysis area also provides foraging habitat.	ALT. 1: NO CHANGE. ALTS. 2, 3, 4, 5: NO CHANGE TO CURRENT LIVE HABITAT; COULD IMPACT POPULATION TREND BY DISTURBING NESTING PAIRS – MITIGATION IN PLACE TO MINIMIZE WHERE NESTS LOCATED.

Species	Cover Type	Status within Action Area of Project and Environmental Consequences	Change/No Change in Habitat/Population Trend by Alternative
<p><i>Meleagris gallopavo merriami</i> Merriam's Turkey</p>	<p>MC, PP, PJ, Oak</p>	<p>Known to be very common in analysis area before fire. Likely some poults died in fire because they were too young to fly. The action alternatives would not impact the remaining live habitat for this species. The largest impact from all the action alternatives on turkeys will be the openings created. Because turkeys prefer small openings and are more susceptible to predation in large openings, fire had more impact than salvage will.</p>	<p>ALT. 1: NO IMPACT TO CURRENT HABITAT. ALTS. 2, 3, 4, 5: WILL CREATE LARGE OPENINGS SOONER, BUT WILL NOT IMPACT CURRENT HABITAT/POPULATION BECAUSE ACTIONS IN HIGH/MODERATE SEVERITY BURNS.</p>
<p><i>Strix occidentalis lucida</i> Mexican Spotted Owl</p>	<p>MC, PP, PP/Oak</p>	<p>Known breeding areas within analysis area. Treatments proposed in PACs in Alt. 2 only</p>	<p>ALT. 1: NO CHANGE. ALTS. 2: HABITAT DISTURBANCE IN BURNED OVER PACS. POTENTIAL DECREASE IN NUMBERS ATTEMPTING TO NEST IN BURNED PACS. ALTS. 3, 4, 5: NO CHANGE TO HABITAT OR POPULATION TREND. SOME DISTURBANCE FROM VEHICULAR TRAFFIC COULD OCCUR NEAR PACS.</p>
<p><i>Sphyrapicus nuchalis</i> Red-naped sapsucker</p>	<p>MC, AS, PP</p>	<p>Suitable habitat and some records from analysis area. Fairly common in pinyon-juniper, ponderosa pine, and mixed conifer habitats across the forest. Nest success did not differ significantly between unharvested and harvested forest plots (including patch cuts and clear cuts)</p>	<p>ALT. 1: NO CHANGE IN HABITAT OR POPULATION TREND. ALTS. 2, 3, 4, 5: LACK OF DATA ON SALVAGE AND THIS SPECIES. LOGGED FORESTS WERE BENEFICIAL; DO NOT ANTICIPATE CHANGE FROM POST-BURN TREND GIVEN SNAG DENSITIES TO REMAIN.</p>
<p><i>Picoides villosus</i> Hairy Woodpecker</p>	<p>MC, PP, PJ</p>	<p>The species is fairly common throughout the analysis area. More frequently found in cut than in uncut forests; detected most frequently in early post-fire forests. Less abundant and lower nesting success in salvage-logged stands relative to unlogged post-fire forests.</p>	<p>Alt 1: NO CHANGE . Alts. 2, 3, 4, 5: DECREASE IN MAXIMUM POPULATIONS</p>

Species	Cover Type	Status within Action Area of Project and Environmental Consequences	Change/No Change in Habitat/Population Trend by Alternative
<p><i>Contopus sordidulus</i> Western Wood-Pewee</p>	<p>Riparian</p>	<p>Common nesters in PJ/pine, pine, and mixed conifer in Analysis Area. Their dependence on standing dead trees in post-fire habitats makes it likely a potential negative effect could occur from post-fire salvage logging on this species.</p>	<p>ALT. 1: NO CHANGE IN HABITAT OR POPULATION TREND. ALTS. 2, 3, 4, 5: LIKELY DECREASE FROM MAXIMUM POPULATIONS DUE TO SALVAGE. ALTS. 3, 4 LESS IMPACT THAN ALTS. 2, 5.</p>
<p><i>Sitta pygmaea</i> Pygmy Nuthatch</p>	<p>PJ, PP, MC</p>	<p>Common nester and winter resident in analysis area. Their dependence on standing dead trees in post-fire habitats makes it likely a potential negative effect could occur from post-fire salvage logging on this species.</p>	<p>ALT. 1: NO CHANGE IN HABITAT OR POPULATION TREND. ALTS. 2, 3, 4, 5: LIKELY DECREASE FROM MAXIMUM POPULATIONS DUE TO SALVAGE. ALTS. 3, 4 LESS IMPACT THAN ALTS. 2, 5.</p>
<p><i>Sialia mexicana</i> Western Bluebird</p>	<p>PP</p>	<p>Common nester in analysis area. Snag availability in postfire communities is a substantial positive influence on western bluebird activity. Can use lower snag densities than primary cavity nesters. Snags should be greater than 20 inches dbh.</p>	<p>ALT. 1: NO CHANGE. ALTS. 2, 5: CHANGE TO CURRENT SNAG HABITAT COULD DECREASE HABITAT/POPULATION TREND OVER ALT.1, BUT NO CHANGE DETECTED IN HQI ANALYSIS. ALTS. 3, 4: INCREASED SNAG DENSITIES AND LARGER SNAGS COMBINED WITH MORE UNTREATED STANDS SHOULD MAINTAIN POPULATIONS AT OR ABOVE CURRENT LEVELS.</p>

Summarized from appendix E of this document, and the Biological Assessment and Evaluation (BAE) on file in the project record.

Fisheries and Aquatic Resources

All action alternatives propose salvage logging within portions of Black Canyon and Canyon Creek watersheds. Other watersheds do not contain adequate fish or macro invertebrate habitat, or contain extremely limited habitat that would not likely be significantly impacted by any of the action alternatives being analyzed. Alternative 1 would leave the watersheds in their current condition resulting in continued high erosion rates, sediment yields, and loss of soil nutrients; as well as physical and biological changes in stream channels.

The effects of no treatment would be most severe in the Canyon Creek Watershed. Scouring and sedimentation would continue putting both riparian and wet meadow habitats at risk. While debris flows have been minimal thus far because much of the debris in the channels burned up, that

would change as hillside erosion and stream scouring undermine stream banks and trees, causing channel instability. It is highly likely that Canyon Creek and its fishery would be affected well beyond 20+ years.

Black Canyon Watershed is expected to recover more rapidly than the Canyon Creek Watershed because damage is less severe. Under Alternative 1, Black Canyon Lake could become completely filled in with sediment within two to three years requiring dredging. With little or no efforts to stop the flow into the lake, the lake could refill with sediment again after it is dredged.

Alternative 2 would use land based logging to remove trees from 2,701 acres (46percent) of areas burned at moderate to high severity levels within the Canyon Creek Watershed. These areas have less potential for soil loss than the steeper areas. Treetops, limbs and logging slash would be left on the site to provide ground cover and debris to slow water and soil movement down slope. In these areas, the primary source for sediment would be the ephemeral channels and the skid roads. No salvage logging activities would occur within the streamside management zones.

Salvage logging is proposed on approximately 1,100 acres (29percent) of the Black Canyon watershed. This logging would be accomplished using land based logging systems. Approximately 566 acres (15 percent) of the watershed that burned at moderate to high severity levels would not be logged. The areas selected for salvage logging are for the most part in the middle of the watershed, over 1/3 mile from Black Canyon Lake and the Mexican spotted owl PACs nearer to the lake.

Alternative 3 proposes a significant reduction in the amount of salvage logging in Black Canyon watershed as compared to Alternatives 2, 4, or 5. Since the logging is proposed approximately 1.25 miles from Black Canyon Lake, this alternative would not significantly reduce sedimentation into the lake or benefit the fisheries resource.

Alternative 4 does not propose salvage logging on the steep slopes of Canyon Creek watershed and also reduces salvage on the Mogollon Rim by 147 acres when compared to Alternative 2. The reduction in soil loss and stream sedimentation is similar to Alternatives 3 and 5, which is a reduction greater than Alternative 1. Alternative 4 would only marginally benefit Canyon Creek and Mule Creek over post-fire conditions. The anticipated impacts to the watershed and these perennial streams would resemble those predicted under Alternative 1. Alternative 4 proposes salvage logging in the same amount of area within Black Canyon Watershed as Alternative 2, making the potential effects from Alternative 4 the same as Alternative 2.

Heritage Resources

The White Mountain Apache, San Carlos Apache, Tonto Apache, Yavapai-Apache Nation, Yavapai-Prescott Indian Tribe, Pueblo of Zuni, Hopi Tribe, Navajo Nation, and Fort McDowell Indian Community have historic ties and an interest in portions of the Apache-Sitgreaves or Tonto National Forests (or both) and have been consulted concerning this project proposal. Each group has their own history, traditions, and relationship to the land and to the other groups. Traditional use of this area and its resources by these groups date back several generations and for some, many centuries.

Approximately 56,000 acres within the Rodeo-Chediski Fire have been adequately surveyed. A total of approximately 1,643 sites have been identified through record and site atlas searches on the Apache-Sitgreaves National Forests with an additional 45 situated on the Tonto National Forest. It is likely that many more un-inventoried sites are present, as evidenced by sites newly inventoried during Burned Area Emergency Rehabilitation (BAER) activities. All treatment areas proposed in action alternatives will be 100 percent surveyed and consultation with the Arizona State Historic Preservation Officer obtained prior to any ground disturbing activities occurring.

Summary

Mitigation measures will minimize potential impacts to heritage resources by prohibiting the use of mechanized equipment within site boundaries and reducing heavy fuel loads adjacent to site surfaces. No impacts to heritage resources from road maintenance and temporary road construction activities are anticipated. Standard mitigation measures of avoidance of all heritage resources would be applied.

Alternative 1 may have the greatest potential for adverse effects on heritage resources by not reducing accumulated fuel loads and if dead standing trees are allowed to fall and uproot naturally. Without implementing road management and soil and watershed mitigation measures, the risk of erosion and flooding are greatly increased, in addition to increased risk of looting and vandalism due to site visibility.

Scenic and Visual Resources

Under all the action alternatives, many of the salvage-logging units visible from State Highway 260 and Mogollon Rim communities would be treated with commercial saw timber and small sale activities to remove dead trees. Two or three years following these activities, grasses, forbs and shrubs would dominate the understory. Skid trails resulting from tractors and skidders may be apparent for some time after activities have been implemented.

Since no management activities would be implemented under Alternative 1, existing visual conditions would continue. Burned areas would revegetate over time and the forest would fill in the burned areas and harvest openings. In the short-term (less than 10 years), Alternative 1 would result in a less visually diverse landscape than under alternatives proposed for salvage logging treatments. Visual effects along State Highway 260 would continue to be the same as immediately after the fire. Evidence of the fire and BAER treatments would be obvious in the foreground immediately along the highway and in the background on distant ridges. In the long-term, the landscape would recover to its previous forested character unless a reburn occurs and starts this process anew. Past human-related changes to the landscape would remain evident for many years.

Recreation

Selection of any one of the alternatives considered in detail would not change the Recreation Opportunity Spectrum (ROS) classification or acreages within the analysis area.

There are no wilderness or roadless areas within the analysis area.

A segment of Canyon Creek was identified as eligible for potential wild, scenic, recreational river designation in the 1993 Resource Information Report (USDA, 1993). The segment, located within a half-mile wide corridor approximately 5.4 miles in length, begins at Canyon Creek Springs and continues to the boundary of the Fort Apache Reservation. The segment meets eligibility requirements because it is free flowing, free of impoundments and has outstanding remarkable wildlife and ecological values. This segment has not been officially designated as part of the Wild and Scenic Rivers system to date.

Removal of dead trees by helicopter yarding methods would not affect the potential eligibility of this stream as a wild and scenic river. As the vegetation and wildlife return to this area, the outstanding remarkable ecological and wildlife values for which it was nominated will likewise return. Recreational activities occurring in developed recreation sites and along Canyon Creek would be temporarily impacted by noise from equipment and helicopters but will be of short duration.

Ten developed recreation sites were damaged to some degree. No damages occurred from the Fire at Black Canyon Rim Campground, Black Canyon Lake Day Use/Picnic/Boat Ramp and Gentry Lookout Campground. Vegetation in the Canyon Point Campground was back burned

during fire suppression efforts. Lewis Canyon Group Campground received minimal damage to signs and other improvements. A single vault toilet in Valentine Ridge Campground was destroyed. Fire damages to facilities in Canyon Creek, Colcord Ridge and Airplane Flat Campgrounds were minimal. Twenty-three concentrated use areas were also burned over.

All of the burned area was closed to public access during the fire until emergency work was completed under Burned Area Emergency Rehabilitation authorities. Public access is currently restricted by Closure Order #01-377 that allows motorized vehicles to travel on specified roads only. Overnight camping, campfires, smoking and fuelwood cutting are currently prohibited within the fire perimeter.

Table 5 - Comparison summary of recreation activities by alternative

Recreation Use/Activity	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Developed Sites	Visitor safety not improved	Visitor safety improved	Visitor safety improved	Visitor safety improved	Visitor safety improved
Concentrated Use Areas	Visitor safety not improved	Visitor safety improved	Visitor safety improved	Visitor safety improved	Visitor safety improved
Outfitter Guiding Activities	Client safety not improved	Client safety improved	Client safety improved	Client safety improved	Client safety improved
Recreation Events	No change	No change	No change	No change	No change
Hunting/Fishing Opportunities	Long-term impacts	Short-term impacts	Short-term impacts	Short-term impacts	Short-term impacts
Cross Country Travel/OHV Use	Use will decrease in long-term	Use will increase in short-term			

There are over 106 miles of trails within the analysis area including portions of the General Crook Trail, a National Recreation Trail. Approximately 49 miles of these trails are being treated to remove dead hazard trees authorized in a separate Decision Memo signed December 23, 2002.

Recreational activities that occurred before the fire will continue on into the reasonably foreseeable future in areas that were unburned or burned at a low severity level. In areas that burned at moderate and high severity levels, recreation use patterns and activities would be impacted longer by implementing Alternative 1 than any other alternative.

Transportation System

Emergency road repair and stabilization was performed on some of the main roads within the fire area under Burned Area Emergency Rehabilitation authorities. The work consisted of removing culverts, hardening drainage crossings and installing numerous grade dips to handle expected

Summary

increased flows resulting from loss of groundcover. Work was performed on 129 miles of the existing 390 miles of open roads in the area.

Treatments are anticipated to bring the roads into conformance with assigned maintenance levels and meet best management practices (BMPs) to minimize erosion and sedimentation. Deferred maintenance items would be completed based upon priority, with emphasis on health and safety items. The following road maintenance treatments would occur in accordance with post-fire assessment recommendations and deferred maintenance identified in condition surveys.

Table 6 - Summary comparison of road maintenance activities by alternative

Proposed Road Treatment	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Spot Surfacing (miles)	0	130	108	130	130
Spot Pit-run Materials (miles)	0	212	174	189	193
Drainage Structures (miles)	0	319	281	290	293
Turnouts (miles)	0	151	142	136	139
Clearing (miles)	0	145	117	115	124
Dust Abatement (miles)	0	59	30	46	49

Treatments would only occur in high priority areas where needed and not over the entire number of miles indicated by each alternative. Maintenance activities would be commensurate with level of use.

See Table 1 for comparison summary of roads by maintenance level.

Temporary road construction would be necessary to access several areas not having an adequate road system to meet skidding distance requirements. Temporary roads would be constructed to minimal standards to provide access for harvesting equipment and log trucks. Temporary roads would be used to minimize skidding through unburned and lightly burned areas. Temporary roads would be used for short durations, normally less than one season of operation and closed and seeded in accordance with mitigation measures and best management practices.

See Table 1 for comparison summary of miles of temporary road construction.

Alternative 1 would have the greatest potential impact on the transportation system since limited maintenance would be performed to stabilize and rehabilitate Forest system roads. Non-commercial and commercial user conflicts associated with commercial timber haul would not occur with this alternative. Private landowners would continue to use these roads to remove dead trees from their property; however, this traffic is considered to be light and sporadic in nature.

Social and Economic Setting

Business income lost during and following the fire is likely to be in the hundreds of millions of dollars. Forest recovery efforts have offset a portion of these dollars, creating new jobs and

indirectly contributing to the overall economy. Emergency rehabilitation efforts have generated approximately 250 jobs through the investment of over ten million dollars in the economy. The majority of these jobs were created in the forestry and agriculture related industries.

In the event that an action alternative is selected, the Fort Apache Tribally owned sawmill at White River would probably utilize much of the salvaged volume. The majority of these jobs are already in place, but would be supported by this material for the next two years.

See Table 1 for a summary comparison of economic impacts by alternative.

Cost of activities, volumes harvested, net acres treated, revenue from sale of forest products, benefit to cost ratio for all partners and estimated number of jobs are highest in Alternative 2; followed by Alternatives 5, 4 and 3. Benefit to cost ratio for the Forest Service is highest in Alternative 2; followed by Alternatives 4, 5 and 3.

The human health and environmental effects associated with the project are generally considered within acceptable norm for the area. None of the effects were deemed to be significant as identified by NEPA and specified in the CEQ Regulations on Environmental Justice. None of the proposed projects present an environmental justice issue as lands treated were done so based solely upon the severity of burned area, resulting in no disparate impact to any particular population.

Identification of the Agency's Preferred Alternative

The Forest Supervisors from the Apache-Sitgreaves and the Tonto National Forests have identified **Alternative 4** as the agency's preferred alternative (40 CFR 1502.14(e)). Alternative 4 best balances the objective as stated in the purpose and need with consideration to the natural resources found within the analysis area. Alternative 4 is responsive to internal and public scoping issues and concerns, and allows for an expedient implementation of resource recovery efforts from the Rodeo-Chediski Fire including: soils and watershed restoration; future fire protection and fuels reductions; air quality protection and preservation; protection to threatened, endangered, and sensitive species of wildlife whose habitat was significantly altered by the fire; heritage resource protection; scenic and visual resource maintenance and enhancement; forest visitor safety considerations; transportation facilities maintenance; and social and economic resource consideration.