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Record of Decision for the Warm Fire Recovery Project

Kaibab National Forest Coconino County, Arizona



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Contents

Introduction	1
The Warm Fire and Project Background	1
Rehabilitation Efforts in the Warm Fire Area	1
Warm Fire Recovery Project Planning	2
Purpose and Need.....	3
Scope.....	4
The Decision.....	4
Recovering Economic Value from Burned Timber	4
Reforest Burned Conifer Stands	5
Fuel Reduction.....	5
Management Requirements, Mitigation Measures, and Monitoring.....	6
Reasons for My Decision.....	8
Fuel Reduction.....	9
Reforestation.....	12
Recovering Economic Value of Fire from Burned Timber	13
Issues.....	14
Effects from Salvage Harvest	15
Effects on Soils and Water Quality.....	15
Effects to Wildlife and Wildlife Habitat	17
Spread of Nonnative Invasive Plants	17
Alternatives Considered.....	18
Public Involvement.....	20
Legally Required Findings.....	20
Implementation.....	24
Administrative Review or Appeal Opportunities	24
Contact Person.....	25

List of Tables

Table 1. Alternative 2 summary of activities.....	6
Table 2. Warm Fire EIS project design features and implementation monitoring	28

List of Figures

Figure 1. Vicinity map for the Warm Fire Recovery project.....	ii
Figure 2. Proposed activities for alternative 2 for the Warm Fire Recovery project	26
Figure 3. Reforestation activities proposed for the Warm Fire Recovery project	27

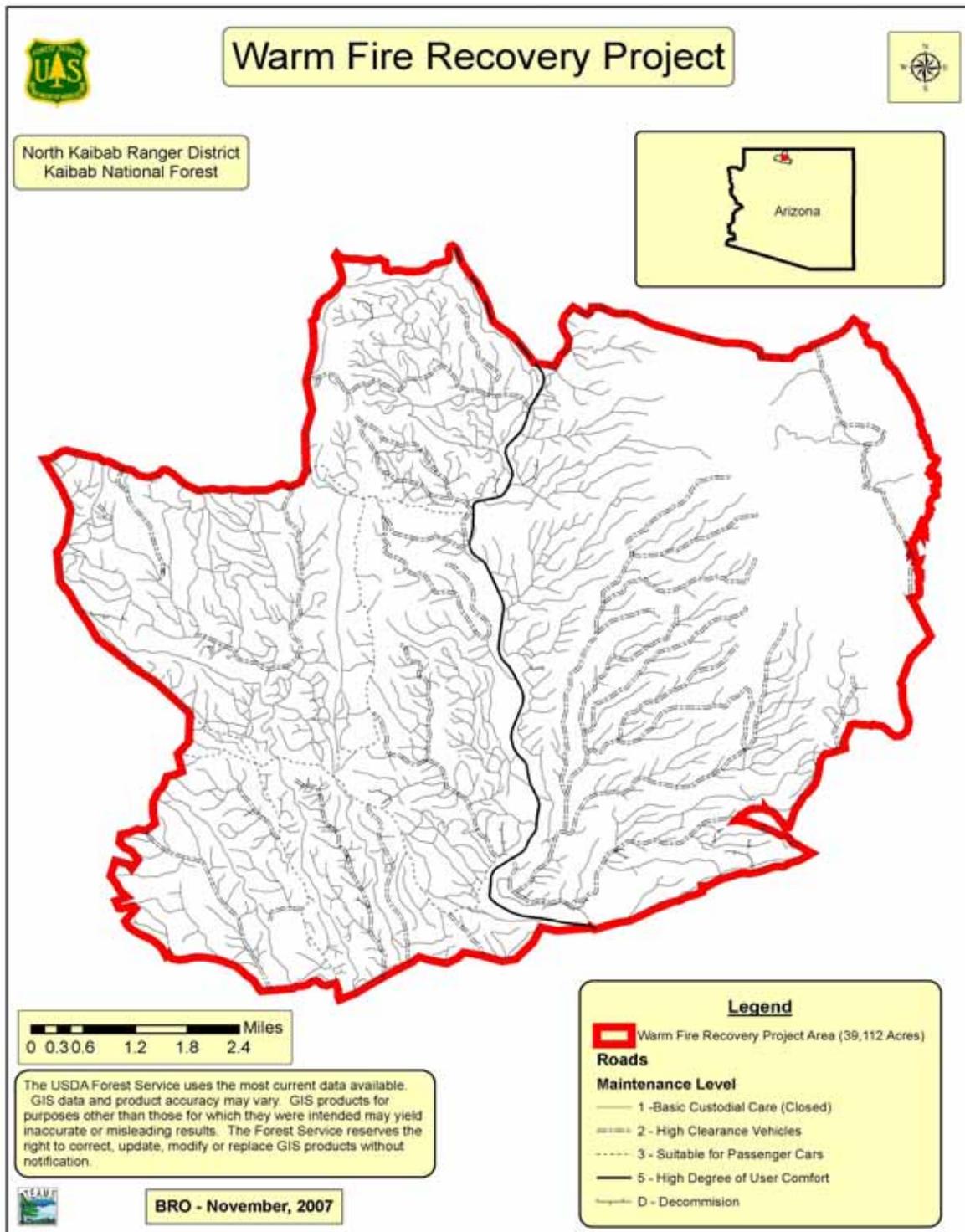


Figure 1. Vicinity map for the Warm Fire Recovery project

Introduction

This record of decision (ROD) documents my decision to implement alternative 2 for the Warm Fire Recovery project and my reasons for the decision. I reached this decision after careful consideration of the alternatives analyzed in the FEIS and comments from the public and other agencies. The responses to public and other agency comments on the draft EIS are in appendix D of the “Appendices to the Final Environmental Impact Statement for the Warm Fire Recovery Project.” The final EIS provides additional analysis, clarification, and updated information based on the draft EIS comments.

The Warm Fire and Project Background

The Warm Fire was started by lightning on June 8, 2006, south of Jacob Lake Campground on the North Kaibab Ranger District. The fire was initially managed for resource benefit, as it met the criteria for wildland fire use and was consistent with the Kaibab National Forest Plan, Kaibab Fire Management Plan, and the Federal Wildland Fire Management Policy. The Warm Fire was managed as wildland fire use for approximately 2 ½ weeks, during which time approximately 19,000 acres burned with the desired results of burning mainly in the understory of stands. On June 25, as strong winds pushed the fire south, it burned rapidly outside the maximum manageable area (MMA). At that point, management of the fire was changed to a wildfire suppression strategy.

Approximately 39,110 acres burned between June 25 and July 4 while the fire was managed under a wildfire suppression strategy. Much of this area burned in the crowns as well as on the ground at high intensity, which resulted in severe fire effects (USDA Forest Service 2007c). Sites that were disturbed during fire suppression were rehabilitated immediately following fire containment.

The project area for the EIS analysis and this decision is the wildfire suppression portion of the Warm Fire. No activities in this project will occur in the wildland fire use area or any areas outside the wildfire suppression area.

Rehabilitation Efforts in the Warm Fire Area

To address watershed and public safety risks that immediately followed the fires, the Forest Service planned and implemented emergency response work in the burned area. The work focused on stabilizing soils, preventing erosion in areas most severely burned, repairing storm damaged roads, and installing warning signs along roads to alert travelers to hazardous snags and potential road washouts from flash flooding. Seeding occurred on approximately 10,000 acres to prevent erosion on the areas most severely burned. Monitoring shows that the rehabilitation efforts have been effective. Native grasses and forbs are responding favorably within the seeded areas and elsewhere within the burned area, and are expected to continue to improve.

The Warm Fire Recovery project is one of many different actions identified, in progress, or completed to promote rehabilitation and recovery of the burned area. Additional restoration and recovery work beyond that done under the emergency program work in the burned area has also been implemented or is in progress (FEIS p. 11). In summary, that work includes removing hazard trees along open roads and trails, road and trail maintenance, noxious weed control, heritage site protection and stabilization, and conifer planting in burned plantations. A more

detailed summary of Warm Fire rehabilitation and recovery work to date is posted on the forest Web site under “Post Fire Recovery” at <http://www.fs.fed.us/r3/kai/projects/warm/>.

Warm Fire Recovery Project Planning

The framework for determining how to manage following the Warm Fire is provided by the Federal laws governing management of the national forest, and the “Kaibab National Forest Land and Resource Management Plan.”

The cornerstone of this framework is the Organic Administration Act of 1897, which states the national forests are established “to improve and protect the forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of the citizens of the United States.” Congress expanded on these purposes in the Multiple Use-Sustained Yield Act (1960) and the National Forest Management Act (1976), which directs the Forest Service to administer the resources of the national forests for multiple use and sustained yields of outdoor recreation, range, timber, watershed, wildlife and fish. Much of the North Kaibab Ranger District, including the Warm Fire area, is in the Grand Canyon Game Preserve, established by Presidential proclamation in 1906. The proclamation states “the Reserve should be set aside for the protection of game animals and be recognized as a breeding place therefore.”

On April 15, 1988, the Forest Service adopted the “Kaibab National Forest Land and Resource Management Plan” (forest plan). The forest plan provides management direction to assure coordination of the various multiple uses and values of the Kaibab National Forest, consistent with the applicable laws established by Congress.

The Kaibab forest plan establishes forest-wide multiple use goals. It also designates areas suitable for timber production, and individual geographic areas with specific standards and guidelines. The forest plan goals most relevant to managing the fires effects include:

- Improve wildlife habitats through expanding knowledge of species requirements, development of habitat quality and diversity, and the identification and protection of key habitats (Forest Plan, p. 18).
- Improve habitats for listed threatened, endangered, or sensitive species of plants and animals and other species as they become threatened or endangered (Forest Plan, p. 18).
- Manage suitable timberlands to provide a sustained level of timber outputs to support local dependent industries (Forest Plan, p. 19).
- Maintain soil productivity and watershed condition (Forest Plan, p. 19).

The forest plan allocates every acre of the Kaibab National Forest into geographic areas (GAs). There are two GAs in the project area. GA 13 covers 92 percent of the project area and is dominated by ponderosa pine and dry, mixed conifer forest types. GA 16 covers 8 percent of the project area and is dominated by pinyon-juniper woodlands, with ponderosa pine stringers at higher elevations and on cooler, moister sites. Much of the forest plan direction for forest and wildlife resources is provided in the context of green forests not burned forests. Specific guidance for GA 13 guiding the Warm Fire Recovery project development includes the following standards and guidelines:

- Implement resource operations and improvements which contribute to achievement of desired conditions and fulfillment of the Forest Service mission (Forest Plan, p. 38).
- In mixed conifer forest types leave at least three snags, five downed logs, and 10 to 15 tons of woody debris per acre. In ponderosa pine forest types leave at least two snags, three downed logs, and 5 to 7 tons of woody debris per acre (Forest Plan p. 30).
- Define, geographically identify, and locate best management practices for the landscape during planning and analysis. Apply best management practices to mitigate adverse effects of activities and maintain site and soil productivity (Forest Plan, p. 42).
- Rehabilitate areas impacted by wildfire (Forest Plan, p. 42).
- Salvage stands, or parts thereof, that are moderately or severely damaged by dwarf mistletoe, insects, fire, or wind throw (Forest Plan, p. 43).

The forest plan provides management direction to assure coordination of the various multiple uses and values of the Kaibab National Forest, consistent with the applicable laws established by Congress. The forest plan does not authorize or approve any site-specific actions or activities. With this record of decision, I am making a project decision that will implement site-specific recovery actions in portions of the area burned by the 2006 Warm Fire. Consistent with the statutory and forest plan framework, a team of Kaibab National Forest resource professionals began evaluating post-fire conditions in September 2006. Their task was to assess the status of the post-fire resources, identify recovery needs, and recommend a program of recovery work beyond that done by the Burned Area Emergency Response (BAER) efforts in the project area. The results of this post-fire assessment are documented in the “Warm Fire Assessment Post-Fire Conditions and Management Considerations” (USDA Forest Service 2007c). Recommendations from this document (FEIS, p. 11) and associated public involvement provided the foundation for the proposed recovery actions analyzed in the final environmental impact statement (FEIS) and this decision.

Purpose and Need

Information from the findings of the post-fire assessment was used to develop the purpose and need for action, based on the management goals, and standards and guidelines of the forest plan.

The needs for the proposed actions are derived from the differences between current post-fire conditions and desired resource conditions. Desired conditions are based on forest plan direction and management objectives described in FEIS chapter 1. The proposed action is designed to move resource conditions closer to the desired conditions.

The purposes of the proposed action, in summary, are to (FEIS, pages 12-16):

- Recover economic value from burned timber;
- Reforest burned conifer stands to move toward desired conditions; and
- Break up fuel continuity in the project area.

Scope

The scope of the project and my decision are limited to activities prescribed to meet the purpose and need within the Warm Wildfire suppression area. Salvage activities are limited to those lands deemed appropriate for timber production in the Kaibab forest plan (GA-13) and are entirely outside of inventoried roadless areas and wilderness. Reforestation activities are limited to the areas identified for salvage and a small portion of the Red Point Roadless Area (see FEIS figure 2) in GA 16, where ponderosa pine seed sources were lost in the fire and where reforestation survival success is reasonably assured.

As the responsible official for this project, I am making site-specific decisions. This is not a general management plan for the area as would be provided in a forest plan. The decisions I am making do not preclude the potential for future decisions to help meet desired conditions in the project area.

The Decision

After careful consideration of the potential environmental, social and economic impacts of the alternatives analyzed in the environmental impact statement and comments from the public and other agencies, it is my decision to implement alternative 2. With this record of decision I am authorizing the following activities to be conducted in portions of the area burned by the 2006 Warm Fire:

- Harvesting fire-killed trees;
- Establishing conifer seedlings;
- Fuel reduction work along certain open roads and trails to meet scenic and recreation objectives; and
- Project design features (management requirements and mitigation measures) and monitoring.

I believe the actions in this decision represent a reasonable and balanced set of fire recovery actions in the Warm Fire. My decision will harvest fire-killed trees and reduce fuels on approximately 9,000 acres (or 23 percent) burned in the Warm Wildfire area, provide for accelerated recovery of forested conditions, and provide economic opportunities. In summary, I believe alternative 2 does the best job of balancing concerns for future severe fires, improving long-term forest conditions, providing for forest user needs and economics, while minimizing short-term impacts to soils, wildlife, and other resources.

Recovering Economic Value from Burned Timber

I have decided to harvest fire-killed trees using stewardship contracts and timber sale contracts on 9,114 acres in the burned area. This will recover a portion of the economic value of the greater than 200 million board feet of timber killed by the fire. The gross volume of timber to be harvested is estimated to be approximately 73 million board feet. Dead trees lose their value rapidly, and it is estimated that about half the product value of the trees has been lost due to deterioration and material defects (rot, checking, wood boring insects, etc.) since 2006. The net commercial volume that is utilizable for products is estimated at approximately 36 million board feet.

Salvage activity will be limited to only dead trees in GA 13, which is designated as suitable for timber production by the forest plan. No salvage harvest will occur in GA 16 or the Red Point Roadless Area.

Approximately 95 miles of existing closed roads will be temporarily opened to allow access for the harvest operation and upon completion of logging activities, those roads will be closed again. My decision addresses the transportation needs for this project, but does not represent a comprehensive travel management plan. District-wide roads analysis, NEPA analysis, and a decision that would designate routes for motorized access and long-term transportation needs on the North Kaibab Ranger District, including the Warm Fire area, are currently scheduled for 2009 and 2010 following direction in the Travel Management Rule. To minimize the potential for additional ground disturbance, my decision will not construct any new roads.

Timber harvest will be accomplished in a manner that provides for resource protection. Please refer to the “Project Design Features and Monitoring Common to All Action Alternatives” section in FEIS chapter 2, pages 34 through 46, which describes the management requirements and mitigation measures to minimize environmental effects.

Reforest Burned Conifer Stands

I have decided to plant conifer trees on a total of 9,978 acres, in areas that would accelerate the return of forested conditions following the fire. These areas have high levels of tree mortality, no significant aspen regeneration response, lack conifer seed sources, and have soil conditions to ensure a reasonable chance of reforestation success. Planting will occur primarily in GA 13 on the same sites where salvage harvest occurs. About 240 acres of planting will occur in GA 16 and 1,095 acres in the Red Point Roadless Area, to begin restoration of forested conditions and the natural integrity of the roadless area. Planting surveys will occur at the stand level and a regeneration prescription will be developed based on current and desired stand conditions, including re-establishing mixed conifer habitat for Mexican spotted owls. Following planting, surveys will be conducted for 3 to 5 years to determine and ensure regeneration success.

Approximately 4,800 acres of previously conifer dominated forest types are determined to have enough aspen present to restock the stand through sprouting and will be managed for aspen. Areas with aspen regeneration will provide for relatively fast tree canopy and restoration of forested conditions.

Fuel Reduction

Fuel reduction objectives will be accomplished in a cost-effective manner that provides for resource protection. Reduced fuel loads will be achieved in part by harvesting a portion of the marketable fire-killed trees. Fire-killed trees will also be retained in harvest units for wildlife snags and coarse woody debris to benefit soil productivity. A minimum of 15 to 20 tons per acre of material will be retained on site post-harvest where available to provide adequate coarse woody debris to benefit soils.

Slash treatments such as “lop and scatter to 18-inch depth” will occur on all salvage logged areas. Additional fuels treatments will occur on approximately 282 acres of salvaged areas to protect future regeneration and move areas toward meeting scenic integrity objectives. These treatments may include a combination of lop and scatter of tops and limbs to 18-inch depth, chipping,

mastication, and/or hand pile or jackpot burning of 50 percent of the 3- to 12-inch material. Treatments along Highway 67 are designed to meet scenic integrity objectives while other treatments along Forest System roads or trails are designed to meet recreation objectives. The combination of these treatments will help accomplish breaking up fuel continuity in the project area.

In support of research to learn more about post-fire management, 25 untreated 10-acre blocks will be established for various research projects within the salvage/planting activity units for comparative studies paired with similar salvage/planting blocks. The scientific studies being considered include effects of post-fire management activities on soils/watershed, weeds, fuels, wildlife, and forest composition/structure. We have initiated discussion with researchers at Rocky Mountain Research Station and Northern Arizona University regarding potential research opportunities, and interest has been expressed in paired studies conducted on fuels, wildlife, soils, plant regeneration, and other resource effects. The actual locations of the untreated blocks will be determined during project layout and implementation in consultation with scientists conducting the research.

For more detailed information on alternative 2, please refer to FEIS, chapter 1, pages 16 to 19. Table 1 below summarizes activities included in my decision.

Table 1. Alternative 2 summary of activities

Activity	Alternative 2
Salvage harvest (acres)	9,114
Fuels treatments (acres) Chipping or masticating 50 percent of the 3- to 12-inch material, or pile burning acres	9,114 283
Approximate gross volume of fire-killed trees removed Commercial volume: Mixed conifer sawtimber Ponderosa pine sawtimber	73.4 MMBF (146,853 CCF) 35.7 MMBF (22,112 CCF) (49,217 CCF)
Plant ponderosa pine (acres)	7,625
Plant mixed conifers (acres)	2,353
Temporarily open closed roads (Maintenance Level 1 roads to be used then closed after use)	94.6 miles

Management Requirements, Mitigation Measures, and Monitoring

With this decision I am adopting the management requirements and mitigation measures specified in the FEIS, pages 34 through 46. While there are many protective requirements that I encourage you to review, I want to highlight the critical mitigation measures I consider key in protecting soils and watersheds.

In order to protect soils and watersheds, my decision requires that all harvest equipment be limited to slopes up to 20 percent, with limited allowance for exceeding that slope up to 100 feet on designated skid trails. This is intended to allow harvest equipment access where terrain is

“benchy” and adjoining areas with 20 percent or less are separated by relatively short, steeper pitches. The commonly accepted approach on the Kaibab and other national forests is that ground-based skidding is generally acceptable on slopes up to 35 to 40 percent. The slope restrictions in my decision are a much more conservative approach, and appropriately so, given the sensitive soil conditions and fire impacts.

Most of the areas to be salvaged had previous logging entries, with the percent of area occupied by pre-existing skid trails and landings ranging from approximately 8 to 12 percent of the activity units. In order to keep additional soil impacts to a minimum, pre-existing skid trails and landings will be used to the greatest extent practical and new skid trails will be limited to 3 percent of the area in activity units. The area impacted by landings and designated skid trails in this project will be limited to 10 percent of the area treated (FEIS, page 36).

The majority of detrimental soil impacts (compaction and displacement) occur on skid trails and landings (Powers 2002) because equipment makes repeated passes on the site. I have decided to ameliorate the compaction on all landings and the most heavily used skid trails after harvest activities have been completed by decompacting them, which involves disking to a depth of 4 inches. Following decompaction, the sites will be seeded with native seed, or sterile nonnative seed, or a mix of both (all certified “weed-seed free”) to minimize erosion risk. Skid trails accessible from open roads will be blocked with slash or other materials to prevent vehicle access.

The salvage will retain many fire-killed trees in the activity units, and the trees left onsite will provide at least 15 to 20 tons per acre of coarse woody debris (CWD, which is material greater than 3 inches in diameter). This level of CWD is based on recommendations by Brown et al. 2003, and is at the high end of their recommended range (5 to 20 tons per acre) in order to provide for increased organic matter benefits to soils. Only trees greater than 14 inches d.b.h. will be harvested and at least five to seven large snags per acre will be retained on mixed conifer sites, with three to five large snags per acre retained elsewhere.

Operations during the “normal operating season” (May 1 to November 15) will be carefully monitored and prohibited whenever soil moisture conditions are such that rutting or detrimental compaction can occur. The same is true outside the normal season. When salvage operations occur during the winter season, guidelines include the presence of 4 to 6 inches of frozen soil, 1 foot of compacted snow, or 24 inches of settled snow to achieve soil protection for ground-based harvesting. These guidelines or a combination of frozen soil and snow cover conditions sufficient to minimize or eliminate soil displacement, compaction, and ground cover disturbance will be required.

The draft EIS included a requirement that any new skid trails would have a slash mat (tops, limbs, branches, and other non-merchantable material with a minimum crushed depth of 6 inches) in order to reduce soil disturbance impacts. Further evaluation of using slash mats occurred between the draft and final EIS and I concluded that their use presented significant operational feasibility problems. Slash mats are most efficiently built using specialized logging equipment called “log forwarders.” This equipment is currently not available in the working circle. Also, slash mats are most effective using green limbs and tops from harvested trees, which provide a cushioning effect that protects the soil. Only brittle limbs and tops from the dead harvested trees would be available, giving the slash mat limited cushioning effect. Using slash mats was, therefore,

dropped as a project design feature; thus the limits for skid trails and soil decompaction, as above described, are now required.

The requirements for noxious weeds specified in the FEIS, pages 39 to 41, include several preventative measures and commits to monitoring for nonnative invasive plants in all activity units for 2 years post treatment.

I am confident that the selected mitigation measures will adequately prevent or minimize adverse effects for the following reasons: the selected mitigation measures are practices we have used successfully in the past; many are State recognized best management practices for protecting water quality. I believe that these design features represent all practicable means to avoid or minimize environmental harm from the selected alternative. I have decided to monitor the implementation of these measures and monitor their effectiveness. I believe, based on the analysis in the FEIS, the cautious project design combined with the required mitigation and monitoring demonstrates that significant environmental harm will be avoided.

Reasons for My Decision

Alternative 2 best achieves the purposes and needs for the project. It recovers more of the economic value of fire-killed trees, and promotes accelerated reforestation in parts of the burned area that are on lands designated by the forest plan as suitable for timber production. It reduces the risk for future wildland fires of undesirable size, intensity, and severity by removing some of the fuels and breaking up fuel continuity in the project area. The numerous management requirements, mitigation measures, and monitoring activities ensure that alternative 2 will achieve the multiple use objectives in a conservative and environmentally sensitive manner. In summary, alternative 2 achieves the purpose and need and multiple-use objectives of the forest plan better than any of the other alternatives.

The Federal laws directing management of the national forests guided my decision. The Multiple Use-Sustained Yield Act and the National Forest Management Act direct the Forest Service to administer the resources of the national forests for multiple use and sustained yield of outdoor recreation, range, timber, watershed, wildlife and fish. The Multiple Use-Sustained Yield Act defines multiple uses as including the “harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land...” Following the direction of these statutes, my decision strives to harmonize and coordinate the management of fuels, timber, range, watershed, wildlife and fish.

In my deliberations leading to this decision, I have carefully considered the alternatives presented in the FEIS and potential environmental, social, and economic effects of the alternatives. I have also seriously considered the suggestions and concerns that the public and other agencies provided in comments on this project.

Following more than 2 years since the fire, a significant reduction in commercial value has occurred. If I decide not to remove the material now, I will not be able to remove it later and reduce fuels in a cost-effective and efficient manner.

It is my desire and obligation to manage the Kaibab National Forest in a way that conserves its priceless resources for future generations. My challenge in making this decision is how to best integrate forest plan management direction and recovery needs following the 2006 Warm Fire,

while assuring the long-term health and productivity of soils, watersheds, wildlife habitat and other resources. My focus in this decision is to find the best possible strategy to manage risks posed by the heavy fuel accumulations that will result from the fire, provide sustainable patterns of forest succession and fire disturbance, maintain soil productivity, restore or maintain properly functioning watersheds, satisfy public needs for wood products, and contribute to a healthy and diverse local economy.

Fuel Reduction

My decision to reduce fuels focuses on managing risk. This includes minimizing the chance that small fires will escape initial attack and become large conflagrations that threaten firefighter safety, travelers along the North Rim Scenic Highway (Arizona Highway 67), and natural resources. I have control of only one factor that affects risk: fuel loads. I have no control over weather or topography. My decision to reduce fuels via salvage harvest in specific areas is proactive management to lessen risk over the long term. It is true that removing large diameter fuels will tend to increase small woody fuels in the short term. I am willing to accept this increased level of fire risk because it is relatively short term compared to no action. In the absence of action, all the fuels both small and large will eventually end up on the forest floor, and many of the small fine fuels from limbs of the fire-killed trees will fall sooner than the tree boles. The small woody fuel risk from salvage harvest would be reduced to some degree by lopping and scattering (FEIS page 221).

Fire and its effects have heavily influenced the vegetation on the Kaibab Plateau for millennia (FEIS pages 201 to 205). Fires and secondary fire effects (i.e. overland erosion, severe soil heating, debris torrents, etc.) can have harmful effects on the land if they impact valuable natural resources or improvements that society values (i.e. timber, water, roads, power lines, etc.). My decision to reduce fuels in the burned area focuses on concerns for future fires where human values are emphasized, particularly areas established by the forest plan as suitable timberlands. My decision is consistent with forest plan direction by making progress toward the plan's desired fuel levels, and doing so by salvaging stands that are moderately or severely damaged by fire.

I am also concerned about the future continuity of heavy surface fuels resulting from the Warm Fire. Reducing large fuels by salvaging the fire-killed trees in portions of the burned area will break up the large expanse of heavy surface fuels that will accumulate over the next several decades. This will allow firefighters to make safer strategic and tactical decisions when fire suppression is determined to be the appropriate management response (FEIS pages 210 to 213). Fire historically played a significant ecological role in the forests of the Kaibab Plateau and that role needs to be maintained in the future. Fuels reduction will make progress toward allowing managers to use prescribed fire to manage fuels in the treated areas in the future (FEIS page 220) without severe soil heating impacts or high risk of escaping control boundaries. The fuels reduction will help by reducing fire behavior and severe fire effects (FEIS page 223; Monsanto and Agee 2008) over the long term. It will also help reduce the risk of loss to the significant reforestation investment that will be made.

I have received comments on this project related to the fuels reduction purpose. The following summarizes those comments:

- There is no scientific evidence that harvest of fire-killed trees is an effective way to reduce fuels, or that reducing fuels reduces the potential for future fires.

- Salvage increases fire risk.
- There is doubt that fuel conditions following the fires will lead to more intense or severe fires in the future.
- I failed to consider the recommendations provided by Beschta et al. (2004) and failed to use sound science in reaching the decision to proactively manage future fuel loads

I have evaluated these comments, reviewed the best available science and analysis of the effects of the alternatives with respect to the purpose and need, including the 2004 publication by Beschta et al. and other opposing science. I am using the following evidence as rationale for reducing fuels:

- Uncharacteristic stand-replacement fires in dry forests can produce uncharacteristic levels of post-fire fuels, including standing dead and down trees. Removing portions of that particular biological legacy may be appropriate as part of an intelligent ecological restoration program, and not simply as salvage (Franklin and Agee 2003).
- Fire-killed trees fall over and contribute to the total fuel loading (Brown et al. 2003). Thousands of acres of continuous fire-killed trees, such as in the Warm Fire, will result in continuous heavy fuel loads over a large area.
- The cool, dry climate on the Kaibab Plateau limits biological decay, which allows accumulation of plant debris (Brown et al. 2003). Decay is unlikely to reduce excessive amounts of coarse woody debris before future events occur.
- Future fire events are reasonably assured. Future fire occurrence probability can be based on 30 years of fire occurrence data for the North Kaibab Ranger District, which determined that on the North Kaibab District, there has been an average annual fire occurrence of 66 fires per year (FEIS page 16). Fire occurrence levels are not expected to diminish and may increase with climate change.

Fire behavior literature shows:

- The greater the amount of available fuel, the greater the fire intensity with higher BTU outputs and greater flame lengths (Rothermel 1983).
- The greater the amount of available fuel, the more surface temperature and heat duration increases (DeBano et al. 1998). Heavy fuel consumption by fires is correlated with severe fire effects to soils and other resources (Neary et al. 2005; Monsanto and Agee 2008).
- Torching, crowning, and spotting, which contribute to large fire growth and crown fires, are greater where large woody fuels have accumulated under a forest canopy (Brown et al. 2003).
- Forest regeneration with excessive fuels from previous fires are susceptible to more severe fires in a few decades (Brown et al. 2003).
- Experience on the Kaibab Plateau shows that fires originating in relatively remote areas can be driven by winds for long distances in a short time (1996 Bridger Knolls Fire). Fires in remote areas can burn into areas of high public use, such as Highway 67, where they threaten public safety (2006 Warm Fire).

- Given the prevailing social attitudes and ongoing population growth in Coconino and Kane Counties, wildland fire suppression efforts will continue where fires pose significant social impacts and resource damage. Firefighting is hazardous work and firefighters have the right to safe assignments. Heavy fuel loads increase resistance to control and contribute to large fire growth (Brown et al. 2003), increasing risks to firefighter safety.
- The primary determinants of fire behavior are fuels, weather, and topography (Agee 1993). Modifying any of these elements will modify fire behavior, but management has no influence on weather or topography. Fire behavior and effects can, however, be modified by fuels management (DeBano et al. 1998).
- Fire modeling shows the difference in future fire behavior with and without salvage activities. The modeling shows that within 5 to 7 years post fire, all of the action alternatives would reduce fireline intensity and severity, as well as resistance to control when compared to no action. Alternative 2 creates the most favorable conditions for future prescribed fire operations. It is best at breaking up fuel continuity across the project analysis area, thereby lessening the opportunity for large wildfire growth (FEIS, chapter 3, “Fire and Fuels” analysis).

In the past, most concerns regarding salvage logging have dealt with short-term issues (Beschta et al. 2004). Long-term ecological effects, such as some of the effects of excessively high levels of coarse woody debris, should be factored into the decisionmaking process. In dry forest types (such as those in the Warm Fire area), there may be some long-term advantages for managers if excessive coarse woody debris loads are reduced early in the post-wildfire period (Monsanto and Agee 2008).

Fire is a natural and integral part of the Kaibab Plateau ecosystem. The ponderosa pine and dry mixed conifer forests on the plateau were shaped for millennia by relatively frequent and low severity fires (Gildar and Fulé 2004; White and VanKat 1993). It is not possible, nor desirable to attempt to “fireproof” the forest through fuel treatments. Instead, I would like to make progress toward fuel levels that are more ecologically appropriate, and allow managers the option to use prescribed fire as a future management tool, as well as give them more options when they are faced with decisions involving public and firefighter safety and protecting resources during a wildland fire.

Salvage operations will occur on the gentler ridgetops with existing road systems. From an operational perspective, these ridges with reduced fuel loads would provide areas for relatively safe and effective management of future fires; this is where suppression and holding efforts would logically occur. The arrangement of treatment units would provide for more effective future fire management, both prescribed burning and fire suppression, due to reduced fuel loading and the reduced fuel continuity.

There is time limited opportunity to reduce fuels in the Warm Fire project area in a practical and cost-effective manner via salvage harvest. In the absence of this, the fuel treatment options that I and future managers will have are very expensive (such as prescribed burning or non-harvest mechanical treatments). In addition to expense, those options would be accompanied by undesirable resource effects such as lethal scorch to vegetation (including planted trees), and severe soil heating effects that would set back recovery in the burned area.

Reforestation

The “Kaibab National Forest Land and Resource Management Plan” includes direction to rehabilitate areas impacted by wildfire and also improve wildlife habitat. I believe the best way to rehabilitate and improve resource conditions over the long term is to plant trees in the near future. In a large area burned by a crown fire such as the Warm Fire, where conifer seed sources were lost over an extensive area, natural conifer regeneration may take decades to centuries (Savage and Mast 2005). My decision focuses the reforestation on lands designated by the forest plan as suitable timberlands that will have salvage harvest activities conducted first. My decision to reduce fuels on suitable timberlands will help provide an added margin of protection for the monetary and time investments in reforestation.

Some portions of the burned area are regenerating naturally with aspen sprouts. I consider the vigorous aspen response on these sites as highly beneficial, given the general decline of aspen in the Southwest (Romme et al. 2001). Many of those stands are in mixed conifer forest type and are designated as critical habitat for Mexican spotted owls. I considered planting those aspen dominated sites with mixed conifers to accelerate recovery of the mixed conifer habitat; however, I have decided not to do so at this time as it would not be a prudent use of limited reforestation funding. Further investments controlling competing vegetation for conifer survival would be required due to strong aspen competition. I am not inclined to treat aspen as “competing vegetation,” given the rapid regeneration to forested conditions and many ecological and social benefits (such as brilliant fall colors) that aspen provide.

Ponderosa pine will be planted across a range of habitats while Douglas-fir will be planted on the more mesic habitats. Both species will be planted only where they were dominant or common historically, and outside of sites where aspen has become established since the fire. I considered planting other species such as white fir (as was suggested by the U.S. Fish and Wildlife Service) but have decided against that practice. White fir is much more prevalent across the plateau compared to its historic presence, and is expected to reoccupy the mixed conifer sites over time without management effort. The frequent, low intensity nature of historic fire disturbances prevalent across the project area favored maintenance of fire tolerant ponderosa pine, aspen and Douglas-fir. Fire exclusion, which began late in the 1800s, led to a dramatic increase in fire-intolerant species, especially white fir (White and VanKat 1993; Fulé et al. 2003; Fulé et al. 2004). I do not believe it is ecologically appropriate to plant white fir in the Warm Fire’s dry mixed conifer sites. The increased ladder and crown fuels created by a historically unprecedented presence of white fir would lead to an ecologically inappropriate change in the fire regime from high frequency/low severity to infrequent/high severity. This condition contributed to the uncharacteristically severe fire effects of the Warm Fire, and I do not wish to re-create them.

About 240 acres will be planted with ponderosa pine seedlings in GA 16. Most of GA 16 is dominated by pinyon-juniper woodlands, with ponderosa pine stringers at higher elevations and on cooler, moister sites. The acres to be planted in my decision are on those cooler, moister sites that were occupied by ponderosa pines, and with soil conditions that provide reasonable assurance of reforestation success.

About 1,095 acres in the Red Point Roadless Area will also be planted with ponderosa pine seedlings. Much of the roadless area is steep, with ridges and drainages extending down the escarpment from the plateau toward House Rock Valley. Similar to the GA 16 sites described above, cooler and moister sites that were stocked with ponderosa pine prior to the fire have been identified where seedlings can be expected to survive. Short-term impacts to solitude and

primitive recreation opportunities will occur in the roadless area during the planting effort. I believe those impacts are more than offset by the long-term benefit of restored forested conditions and will improve the natural ecological integrity of the roadless area, which has been significantly impacted by the fire.

There was less concern expressed by stakeholders for the proposed reforestation activities compared to salvage harvest. Some commenters, however, disagree with the need for widespread planting. They believe that natural plant succession should be allowed to occur, and also do not wish to see stands restocked at high densities or with regular spacing creating unnatural looking rows. I believe that failing to actively restore forested conditions would not comply with the goals and desired conditions established in the forest plan, and it would be unacceptable to wait decades or centuries for a naturally regenerated forest to occur. However, I share the concerns for stands restocked at high densities and with regular spacing. In order to progress toward the forest plan's desired forest structure, seedlings will be planted in groups with irregular spacing between each group and with desired stocking levels ranging from 30 trees per acre to 160 trees per acre (FEIS page 19). That stocking level and distribution will more closely approximate the historic forest structure, will avoid unnatural appearing rows, and is appropriate with the potential effects of climate change.

Some commenters expressed concern that salvage logging will set back recovery by damaging tree seedlings, as found by Donato et al. (2006). In general, there has been a notable lack of successful natural conifer regeneration in the areas identified for salvage. This is supported by my own observations while visiting the burned area, as well as the observations of North Kaibab Ranger District employees who have spent much more time in the Warm Fire area than I have. The lack of natural regeneration is not surprising, given the widespread loss of conifer seed sources in the burned area. There may be areas to be salvaged that are proximate to live trees where conifer seedlings have become established since the fire and some of those seedlings could be damaged by the logging activity. I am willing to accept those effects in order to reduce long-term fuel risks and provide economic benefits. As stated above, the desired stocking level is 30 to 160 trees per acre. When and if natural regeneration occurs, it can often come in at much higher stocking levels. The reforestation to be conducted following harvest activity will provide for adequate conifer stocking at desired levels.

Aspen and New Mexico locust trees are regenerating naturally on portions of the burned area. These species are much more resilient to mechanical and fire disturbance than are conifer seedlings. Unlike conifers, these plants sprout back from their roots following disturbance, just as they have following the fire. I do not believe mechanical disturbance to recovering aspen, locust, and other plants will significantly set back recovery.

Long-term reforestation in this fire-adapted ecosystem is dependent on adequate fuel reduction to reduce the likelihood that future fires will again burn the re-established stands, leaving them again with little or no seed source. Active reforestation will speed the recovery of forested conditions, improve wildlife habitat, reduce noxious weed habitat, and protect soils and watersheds.

Recovering Economic Value of Fire from Burned Timber

I am intentionally discussing this topic following the fuel reduction and reforestation topics, because those two needs are my primary recovery objectives in the burned area. This should not

be interpreted to mean that I believe that economic benefit, prudent use of forest resources, and addressing “who pays?” for recovery activities are unimportant considerations.

My decision to recover some of the value of fire-killed trees in the burned area complies with the forest plan goal to “manage suitable timberlands to provide a sustained level of timber outputs to support local dependent industries.” My decision will help support those businesses and sustain and create jobs (FEIS pages 241 to 242) during this difficult economic time. It also will support the memorandum of understanding between the Forest Service’s Southwestern and Intermountain Regions and the State of Utah for building “the capacity to accomplish restoration projects” and “encourage local employment to benefit the management of national forests and communities of the Central Colorado Plateau and Great Basin.”

Comments received on this project have made it clear from the start that the salvage harvest aspect of the project is very controversial with some stakeholders. It is unfortunate that it has taken so long to complete the analysis and reach this decision, given the loss of product value and need to proceed expeditiously. The added time has been necessary to complete a sufficient and defensible analysis facing anticipated challenges.

Early in the planning for this project it was assumed that trees less than 14 inches d.b.h. would have little to no marketable value by the time planning was completed and implementation begins. That assumption is correct, and the recoverable volume of trees larger than 14 inches has also significantly reduced. Although significant product deterioration occurred, the material identified for harvest still retains value for wood products.

The economic analysis shows that the costs of project planning, field preparation and administration of both the salvage harvest and the reforestation work are less than the anticipated harvest revenue. A significant portion of the cost associated with this decision is attributable to the reforestation costs. Receipts from the sale of fire-killed trees can help fund the reforestation work.

In the absence of using salvage harvest to reduce fuels, the costs of fuel reduction work would be subsidized by funding appropriated by Congress to the Forest Service; in other words, our tax dollars. I do not expect that those appropriations would be sufficient to adequately address the fuels risk over a large portion of the burned area, as costs for treating large fuels manually, mechanically, and/or with prescribed fire are very expensive, and there are many competing demands across the Kaibab National Forest for fuel reduction work. My decision represents a cost-effective approach to achieving the fuel reduction and forest re-establishment purposes.

Regional and local economies will directly and indirectly benefit by the timber harvest and reforestation activities. Timber products provided through timber sales, stewardship contracts, or service contracts contribute to meeting forest plan goals. My decision will help accomplish those goals at reduced taxpayer costs, while protecting soil, water, and wildlife values.

Issues

I have also given serious consideration of the issues during my deliberations.

Effects from Salvage Harvest

The primary concerns expressed for this project focus on salvage harvest. Many voicing those concerns recommend a passive response in the burned area, espousing the management approach and positions stated by Beschta et al. (2004).

Salvage harvest following wildfires is not a new management activity on the Kaibab National Forest or other national forests. There have been several previous fire salvage harvest and reforestation projects on the North Kaibab Ranger District, including the 1996 Bridger Fire salvage and planting.

I asked my staff to monitor and evaluate some previous fire areas—both salvaged and unsalvaged—and document observations. The field observations from monitoring four areas that experienced stand-replacing fire between 1966 and 1996 (USDA Forest Service 2008a) were considered in the FEIS. The conclusions based on site-specific monitoring include:

- Salvage logging after uncharacteristic fires as practiced on the sites visited has not had an observable adverse effect upon site productivity 10 to 40 years later.
- Salvage logging often reduced the amount of coarse woody debris, but not below desired levels. No treatment left coarse woody debris levels higher than either desired or necessary.
- In all cases, forest structure has begun to recover faster with planting of pine trees than without that practice.

I realize these findings will be viewed with skepticism by some who may try to discredit these observations and conclusions because it was not a study performed by research scientists. However, none of the critics of the Warm Fire Recovery project proposal have provided site specific or local evidence showing that significant site quality impairment or other highly undesirable environmental impacts have resulted from similar work done in other burned areas on the Kaibab National Forest, or other national forests in the Southwest.

I recognize that there is some lack of scientific research on post-fire management, as documented by McIver and Star (2000). More complete knowledge from scientific studies would help managers deal with uncertainty and controversy. For that reason, I've committed to allowing the Warm Fire Recovery project to be used to further scientific understanding of fire recovery and salvage harvest effects, as previously described.

Effects on Soils and Water Quality

I share the concerns expressed by many commenters that salvage harvest can compact and displace soils, resulting in decreased productivity and increased erosion potential. Further, removing fire-killed trees can reduce the availability of organic matter and the accompanying benefits. These concerns are particularly relevant given the fire's effects to soils and watersheds, the severe erosion hazard rating on many of the activity units, and impacts from existing roads and past harvest entries.

I agree that if salvage logging is done improperly and without careful controls, the above impacts **can** result. In recognition of those potential effects, my decision provides for protection measures and project design features to protect the soil resource and minimize the harvest impacts. The key

protective measures in my decision include constructing no new roads, retaining ample coarse woody debris, limiting harvest equipment use to relatively flat areas and gentle slopes (up to 20 percent, or a rise of 20 feet over 100 feet horizontal distance), re-using previous skid trails where available, limiting the use and extent of any new skid trails, seeding all disturbed sites, and ameliorating the soil impacts by decompacting all landings and the most heavily used skid trails. All of the project design features and best management practices meet or exceed the forest plan objectives and standards for soil and water quality. While some localized short-term impacts to soils are unavoidable, they are not of a magnitude or duration to substantially alter or degrade existing soil or water quality conditions (FEIS page 118).

Soils in the project area were mapped using methods in the terrestrial ecosystem survey (Brewer et al. 1991) and stratified based on similar slope, climate regime, and vegetation. Erosion hazard ratings were assigned to the soil map units in three categories (slight, moderate, and severe) based on their susceptibility to exceed threshold erosion rates. The soils effects analysis in FEIS Chapter 3 shows that much of the project area includes soils with a severe erosion hazard rating. Management activities, including timber harvest, are not prohibited on soils with a severe erosion hazard rating; however, this rating warrants special measures to ensure that activities will not move activity area soils below their threshold values. The analysis concludes that the required best management practices will minimize impacts and adequately protect soils from erosion. Further, decompacting the landings and most heavily used skid trails will ameliorate sites where detrimental soil compaction exists.

Some commenters raised concerns for the existing road density in the project area. I considered including a road and travel management aspect in this project early in the planning process; however, concluded that would be more efficient as part of the district-wide roads analysis that has recently been initiated and will eventually result in a NEPA analysis and decision designating routes for motorized access pursuant to the Travel Management Rule. That analysis will be conducted in 2009 and 2010 and includes the Warm Fire area.

I believe that my decision will protect the soil and watershed resources. My conclusion is based on the following factors: (1) There are no perennial streams or fish in the project area, only ephemeral channels that have running water during snowmelt or heavy rain events. All the stream channels will have at least a 100-foot buffer on both sides of the channel and frequently the buffer will be greatly in excess of this minimum distance due to the slope limitations for equipment use; (2) The use of conservative soil protection requirements and mitigation measures; (3) The decision will treat only 23 percent of the wildfire area; (4) Adequate coarse woody debris will be retained on harvested sites to provide soil organic matter, providing at least 15 tons per acre which is on the high end of the optimal range recommended by Brown, et al. (2003); (5) Evidence from monitoring and evaluation of past salvage logging that occurred on the Kaibab National Forest; and (6) Proactive monitoring by sale administrators and resource specialists with the authority to stop or modify activities if detrimental impacts are occurring. These conclusions were reached after careful and thorough consideration of the environmental analysis and public comment, including the 2004 paper by Beschta et al. and other literature related to salvage logging (appendix D in the "Appendices to the Final Environmental Impact Statement for the Warm Fire Recovery Project" and as discussed in several resource reports in chapter 3 of the FEIS).

In the long term, fuel reduction will benefit soil and water resources by reducing the potential for larger and more severe fires. This conclusion is supported in the documentation of work done by Brown et al. (2003) and Monsanto and Agee (2008).

Effects to Wildlife and Wildlife Habitat

Some commenters expressed concern that removal of dead trees would adversely impact wildlife species and their habitat by removing fire-killed trees, and by the soil disturbance that could delay habitat recovery.

Consultation with the U.S. Fish and Wildlife Service has concluded that project effects “may affect, but are not likely to adversely affect” Mexican spotted owls (MSO) and their habitat and also California condors. The conclusion for MSO is based primarily on the fact that these birds have never been detected in or near the project area, and the areas of high intensity fire treated in this project do not currently provide functional MSO habitat. Forest restoration activities in my decision will set the course toward the recovery of MSO habitat; although the recovery process will take a century or more to achieve suitable MSO habitat. Condors could visit the area during operations, and their protection is provided for by mitigation measures (FEIS page 43) that require knowing the locations of condors, and specifying what needs to take place if they are in or near the project area.

The effects to seven sensitive species were evaluated in the analysis. The analysis found that for the four species that are known to occur or could occur in the project area, the project would either have no impact (bald eagles and peregrine falcons) or may impact individuals or habitat, but would not likely contribute to a trend toward Federal listing or cause a loss of viability (northern goshawks and Utah mountain king snakes).

The effects to seven management indicator species (MIS) were evaluated in the analysis; northern goshawk, turkey, mule deer, Kaibab squirrel, red squirrel, hairy woodpecker, pygmy nuthatch, and red-naped sapsucker. For each of these species it was determined that this project would not cause measurable changes to forest-wide habitat or population trends.

Old growth habitat has also been analyzed. The trees to be harvested were subjected to lethal scorch by the fire and no longer qualify as old growth habitat. Large snags will be retained in activity units for wildlife benefits. Beneficial effects will result from reforestation and starting the long process toward recovery of old growth habitat.

Spread of Nonnative Invasive Plants

I share the concerns expressed by many commenters that mechanical disturbance can increase the spread of nonnative invasive plant species (NNIS); especially cheat grass from seed introduction potential and soil disturbance. Cheat grass has been detected in portions of the project area, and other NNIS are also known to occur in the vicinity of the project area. Even with no action, the analysis shows that NNIS will continue to increase, as disturbed sites such as burned areas provide highly suitable weed habitat. The analysis concludes that alternative 2 poses the highest risk of the spread of NNIS because it conducts the most salvage treatment. My decision includes requirements that will reduce the risk of weed introduction and spread, and commits to monitoring for NNIS for at least 2 years post-treatment. In addition to the monitoring, I am committed to taking prompt actions to control weeds as they are detected both in activity units

and elsewhere in the burned area, and doing so in compliance with the “FEIS for Integrated Treatment of Noxious and Invasive Weeds on the Coconino, Kaibab, and Prescott National Forests” (USDA Forest Service 2005) and its accompanying “Record of Decision” (USDA Forest Service 2005). The North Kaibab Ranger District has maintained a very proactive weed monitoring and treatment program in recent years that is expected to continue.

Alternatives Considered

I considered four alternatives that were described in chapter 2 and studied in detail in chapter 3 of the FEIS. I also considered several other alternative concepts that were not developed fully and studied in detail (FEIS, page 46). I considered a range of reasonable alternatives. The action alternatives considered in the FEIS examine varying combinations and amounts of recovery activities and were developed to address the significant issues and meet the purpose and need. All of the alternatives, when mitigated, are consistent with the “Kaibab National Forest Land and Resource Management Plan.” A more detailed comparison of these alternatives can be found in chapter 2 of the FEIS (pages 25 to 33).

Alternative 1 is the no action alternative and serves as a baseline for comparison of the effects of all alternatives. Under this alternative there would be no change in the level of current management activities in the project areas. I did not select alternative 1 because it would not meet the purpose and need to recover economic value from burned timber, reforest burned conifer stands, or address long-term fuel concerns. I strongly believe that it is important to reduce fuels and break up their continuity in the burned area, and make progress toward more ecologically appropriate fuel loads that will allow the use of fire in the future. In the absence of fuel reduction via salvage harvest, heavy fuels left by the Warm Fire will continue to accumulate with the attending problems I have previously described. Alternative 1 would not take active measures to reforest burned lands or provide economic benefits. Alternative 1 would avoid some environmental effects, such as impacts to soils and increased noxious weed risk; however, I do not believe avoiding these affects outweigh the benefits of taking actions to reduce fuels, reforest burned stands of timber, and provide economic opportunities.

Alternative 2 is the proposed action and was also identified as the preferred alternative in the draft EIS. I have previously described this alternative and the reasons why I chose to put it into practice.

Alternative 3 requires winter logging for increased soil protection. This alternative was developed to address soil and watershed concerns from the impacts of salvage, and reduces the total number of acres salvaged by dropping stands that are regenerating heavily to aspen. The activity units classified with severe erosion hazard would have skidding operations restricted to over snow or frozen conditions. Ground-based skidding on soils with low to moderate erosion hazard would be restricted to existing roads and designated skid trails, using existing skid trails where possible. Reforestation would be the same as described for the proposed action.

I did not select alternative 3 because of the significantly limited operational period, which would result in very little active recovery progress actually being accomplished. The economic recovery by commercial salvage is limited to the time that the material has commercial value. Following more than 2 years since the fire, a substantial reduction in economic value has occurred. The winter logging requirements in this alternative require snow cover and/or frozen soil conditions sufficient to minimize or eliminate soil disturbance and would be required over the majority of

the area to be harvested. Winter climatic conditions in the project area can be highly variable and can change on a daily or weekly basis; ranging from thawed conditions that would prevent harvest activity to very heavy snow accumulations that would greatly limit operational feasibility. Winter conditions can also vary widely from year to year; some years provide ideal winter logging conditions and others have limited suitable conditions. Even if next winter (2009-2010) had ideal snow levels and frozen soil conditions, it is highly unlikely that enough contractors and equipment could be mobilized to accomplish the harvest in a few months. There will be little, if any, marketable value in the fire-killed trees by the following winter of 2010-2011.

Alternative 4 would not conduct salvage harvest in designated Mexican spotted owl critical habitat. This alternative was developed initially from a suggestion submitted by a U.S. Fish and Wildlife Service representative to consider limiting harvest in MSO habitat by leaving at least 50 percent of standing dead trees greater than 14 inches d.b.h. and leaving all trees greater than 20 inches d.b.h.. This concept follows recommendations found in Beschta et al. (2004). There are feasibility problems with this concept. There would be significant safety risks if people and equipment worked in and among high levels of large snags that would be required to be reserved. Even if they could do so safely, there would be insufficient volume removed on a per acre basis to provide an economically viable project. I opted instead to study in detail an alternative that drops all harvest in designated MSO habitat. I did not select this alternative because the burned stands to be treated no longer provide functional MSO habitat, and I prefer to re-establish mixed conifer habitat on those sites with lower and more sustainable fuel levels. The U.S. Fish and Wildlife Service has concluded that salvage harvest in the areas designated as MSO critical habitat (per alternative 2) may affect but would not likely adversely affect the species or its habitat.

In addition to the alternatives studied in detail, I considered several other alternative suggestions and concepts (FEIS, pages 46 to 48). Generally, those concepts would not meet the purpose and need for action, are duplicative, have feasibility problems, or would cause excessive environmental harm.

One of the alternative suggestions was developed by representatives of various environmental organizations. Their suggestions included a project that would primarily remove fire-killed trees for a width of one to one and a half tree lengths along open roads. I considered this alternative, but opted not to study it in detail because of the high similarity it had to the “Hazard Tree Removal Along Highways and Forest System Roads and Trails in the 2006 Warm Fire” project that was already in progress when their suggestions were provided; the decision was made by the North Kaibab district ranger relatively soon thereafter. The roadside hazard tree project removes trees generally within 100 feet of open roads, which is approximately one tree length. While I appreciate those stakeholders’ time and efforts, I saw no point in studying that alternative in the EIS. Such an alternative, representing the difference between the groups’ suggestion and the North Kaibab district ranger’s project, amounts to salvaging an area covering an additional half-tree length. This would be a “sliver” of area approximately 50 feet wide extending beyond the existing roadside hazard tree project.

I also considered limiting the fuel reduction work to non-harvest methods; prescribed burning in particular. Such a proposal is not ripe for consideration in a site-specific NEPA analysis, as the actions would be at least 5 to 10 years away after many of the snags have fallen. That aside, I would be highly reluctant to re-introduce prescribed fire to consume the large tree boles on a widespread basis given the existing fire impacts. The 2008 study by Monsanto and Agee describes the deleterious soil heating effects associated with smoldering large fuels. I am trying to

avoid a repeated burn on lands impacted by the Warm Fire by much more cost efficient fuel reduction methods. Further, using prescribed fire to accomplish the fuel reduction would cause an unacceptable delay in reforestation work, since burning after planting would waste the reforestation investment.

Public Involvement

Public involvement associated with this project is described in FEIS chapter 1. Public involvement has included opportunities for sharing information in public settings as well as opportunities for interested parties to provide comments via written correspondence.

Consultation and discussions with the Kaibab Paiute Tribe, Hopi Nation, and Navajo Nation have been ongoing during project planning. I am not aware of any significant tribal concerns.

Responses to comments on the draft EIS are found in appendix D (“Appendices to the Final Environmental Impact Statement for the Warm Fire Recovery Project”), along with additional analysis documented in the final EIS in response to comments (see “Appendix B – Literature Review,” in the “Appendices to the Final Environmental Impact Statement for the Warm Fire Recovery Project.” There was a request to extend the 45-day comment period for the draft EIS. In response to that request, provision was made for that commenter to have additional time to complete reviewing the draft EIS and provide comments; although extending the comment period formally (through Federal Register notice) and for all reviewers did not occur. The full request for extension was not granted due to concern for further delays, given product value deterioration.

While some comments I have received have been supportive of this project, the salvage logging proposal has prompted strong statements of opposition from members of the environmental community. That opposition has been expressed in e-mail campaigns during scoping, long letters raising extensive issues both during scoping and draft EIS comments, and through personal contacts both I and my staff have had with critics of this project. Responding to those issues has added significantly to the time necessary to complete the FEIS and my decision. It was clear to me from early on in this project’s development, particularly during a field trip to the Warm Fire area and a public meeting held in Flagstaff, that any decision I make that includes very much salvage harvest at all would be opposed, and that attempting to find common ground through collaboration with those holding such strong beliefs would not be highly productive. I find this to be an unfortunate dilemma; nevertheless, I respect and value the democratic principles embodied in this debate over public land management.

Legally Required Findings

I am required to make certain findings of fact regarding the effects of my decision. Required findings and consistency with laws are described in this section.

In reviewing the EIS and actions involved in alternative 2, I have concluded that my decision is consistent with the “**Kaibab National Forest Land and Resource Management Plan**” and the intent of its goals, standards, and guidelines. The project is designed in conformance with forest plan standards and incorporates appropriate forest plan guidelines for Geographic Areas 13 (Forest Plan pages 36-48) and 16 (Forest Plan pages 66-87).

My decision is consistent with the forest plan goals to “Improve wildlife habitats through expanding knowledge of species requirements, development of habitat quality and diversity, and the identification and protection of key habitats” and “Improve habitats for listed threatened, endangered, or sensitive species of plants and animals and other species as they become threatened or endangered.” Ample habitat for birds and other wildlife that utilize snags will be retained in the burned area. Planting appropriate conifer species to accelerate recovery of forested conditions, and reducing fuels will provide for more sustainable conditions over the long term in this fire-adapted ecosystem. This project will develop and make progress toward improved habitat conditions for the native wildlife species.

My decision is also consistent with the forest plan goal to “Manage suitable timberlands to provide a sustained level of timber outputs to support local dependent industries.” The salvage harvest will help support local dependent industries and provide needed jobs. The reforestation is an appropriate and beneficial activity in management of suitable timberlands.

My decision is consistent with the forest plan goal to “Maintain soil productivity and watershed condition.” The project design features and best management practices would meet or exceed the Kaibab National Forest plan objectives and standards for soil and water quality. The decision has the potential for some localized short-term impacts to soil and water quality, but those impacts would not be of a magnitude and duration to substantially alter or degrade existing soil or water quality conditions (FEIS page 118). Limiting harvest equipment to slopes less than 20 percent, using existing roads and trails for skidding while minimizing the use of new skid trails will decrease detrimental soil disturbance. Decompacting landings and segments of skid trails will ameliorate the disturbance on the most heavily impacted sites. Measures to leave sufficient coarse woody debris address soil organic matter and nutrient recycling (Brown et al. 2003), and will help maintain soil site productivity and reduce potential erosion.

The Kaibab forest plan includes forest-wide direction for management of Mexican spotted owl habitat, northern goshawk habitat and old growth. This direction was incorporated into development of the alternatives. There has been no known use of the area by Mexican spotted owls, but critical habitat was designated prior to the fire. Most stands to be salvaged no longer provide the key canopy cover primary constituent element for MSO habitat. Goshawk direction is incorporated in the project. Snag retention levels were set to provide more than an adequate numbers of snags and vary based on vegetation present prior to the fire. Geographic area (GA) direction was also incorporated, including: Standard No. 2, which calls for the identification of habitat management areas for threatened, endangered or sensitive wildlife species; Standards No. 9 and 10, which provide direction on wildlife analyses for TES species. These standards have been met through project design, alternative development, and the effects analysis.

My decision is consistent with the **National Forest Management Act** of 1976. The National Forest Management Act (NFMA) states “...it is the policy of the Congress that all forested lands in the National Forest System be maintained in appropriate forest cover with species of trees, degree of stocking, rate of growth, and conditions of stand designed to secure the maximum benefits of multiple use sustained yield management in accordance with land management plans.” Taking no action would not meet or move toward meeting NFMA direction for maintaining appropriate forest cover nor, in the long run, meet the “sustained yield management” direction. My decision will provide for needed reforestation and would be consistent with NFMA requirements to maintain forested lands in appropriate forest cover, and comply with related forest plan goals, objectives, standards and guidelines.

NFMA also requires the Secretary of Agriculture to specify “guidelines for land management plans developed to achieve the goals of the program, which provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives.”

All alternatives were developed in compliance with NFMA by assuring consistency with the Kaibab forest plan, as amended. The forest plan contains guidance for the design of vegetation treatments to improve habitats for management indicator species (MIS), including provisions for habitat diversity, old growth, habitat components (i.e. snags and down logs), and a range of vegetation successional stages. The wildlife analysis evaluates the effects to MIS in light of current research, habitat availability, and population data.

My decision will meet and conform to the 1977 **Clean Water Act**, as amended in 1982. This act establishes a non-degradation policy for all federally proposed projects. My decision meets anti-degradation standards agreed to in the Intergovernmental Agreement between the State of Arizona and U.S. Department of Agriculture Forest Service Southwestern Region (1990) through the application of project design features and best management practices. Further, the project is too far away from any 303(d) listed water bodies to have negative effects on a listed stream.

My decision complies with **Executive Orders 11990 (Wetlands Management) and 11998 (Floodplain Management)** as there are no affected flood plains or wetlands within the project area.

My decision and the analysis comply with the **National Environmental Policy Act (NEPA)** of 1969. NEPA establishes the format and content requirements of environmental analysis and documentation. The Forest Service procedures for implementing NEPA are codified in 36 CFR part 220. These establish procedural and content requirements for the environmental analysis and documentation of Federal actions. The Warm Fire Recovery environmental analysis was prepared in compliance with NEPA.

I am required to determine the **Environmentally Preferable Alternative**. The Council on Environmental Quality defines the environmentally preferable alternative as “the alternative that will promote the national environmental policy as expressed in NEPA Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves and enhances historic, cultural, and natural resources. This definition could be generalized to mean the alternative that best balances negative impacts with benefits.

In the short term, alternative 3 is environmentally preferable because it would cause the least short-term impact to soils by requiring winter harvest operations. As previously described, I did not select this alternative because of the time limitations it imposes to accomplishing the project objectives on a very limited area before product value is gone. Taking the long-term view, I consider alternative 2 to be environmentally preferable because the fuel reduction over a larger area provides for increased sustainability of this fire-adapted ecosystem with reduced risk of uncharacteristically severe fires, and reduced soil heating potential (Monsanto and Agee 2008).

My decision complies with the **Endangered Species Act of 1973**, as amended. A biological assessment has been prepared to document possible effects of proposed activities on endangered and threatened species in the Warm Fire Recovery project area. Consultation with United States Fish and Wildlife Service has been completed.

My decision complies with the **Migratory Bird Treaty Act** (Executive Order 13186), which was enacted to ensure Federal agencies protect migratory birds through project design that limits adverse impacts to migratory bird resources, and assures that migratory bird species receive consideration in the decisionmaking process. Potential for unintentional take of migratory birds has been addressed in the wildlife analysis.

My decision is consistent with the intent of the **Grand Canyon Game Preserve**. The Warm Fire Recovery project is located within the Grand Canyon Game Preserve, which was established by proclamation by President Theodore Roosevelt on November 28, 1906, to protect game species and their habitat. The Kaibab forest plan states “Cooperate with the Arizona Game and Fish Department to achieve management goals and objectives specified in the Arizona Wildlife and Fisheries Comprehensive Plan, and in carrying out the cooperative agreement for the management of the Grand Canyon National Game Preserve.” The Forest Service and Arizona Game and Fish Department agreed to allow hunting on lands managed by the district; the management activities in my decision will maintain huntable populations of game animals and continue to provide breeding places for those species.

My decision is consistent with **The National Historic Preservation Act**. The Kaibab National Forest consulted with the Arizona State Historic Preservation Officer on the Warm Fire Recovery EIS project (Nicholas and Betenson 2007). The State Historic Preservation Office (SHPO) concurred with the forest that alternatives proposed in the EIS will have no effect on cultural resource/heritage resource sites. In order to protect heritage resource sites, all sites have been identified and documented using cultural resource survey standards as per the North Kaibab Survey Strategy (Reid and Hanson 2006; Woodward and Reid 2007). The standard survey procedures are designed to identify and document sites visible on the surface of the ground, so in the event that an undocumented site is detected during implementation, activities will cease and an appropriate protection and/or remediation measures taken.

My decision is consistent with the **Clean Air Act**. The selected alternative is designed to meet the National Ambient Air Quality standards through avoidance of practices that degrade air quality below health and visibility standards. Burning would be done only after receiving notification from the Arizona Department of Environmental Quality (ADEQ) that burning can proceed. ADEQ is the regulatory agency for air quality (including smoke) in Arizona.

My decision complies with **Arizona State Forest Worker Safety Codes**. The Arizona Occupational Safety and Health Code for Forest Activities regulations will be met. Salvage activities and snag retention requirements are designed to provide for worker safety by providing for appropriately sized openings to facilitate safe operation of equipment and by clumping large dead trees to be reserved.

My decision is consistent with **Environmental Justice** requirements as provided in Executive Order 12898, which states “Federal agencies make achieving environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health and environmental effects of the programs, policies, and activities on minority populations and low income populations.” My decision will provide economic and job opportunities, potentially benefiting low income populations. There will be no adverse human health or environmental effects to minority or low income populations.

Implementation

The project will be monitored to assure the activities and mitigation measures are implemented on the ground as designed, and achieve the desired results. Monitoring is also intended to catch and address problems whenever possible before or when they occur so corrective actions can be taken. Implementation monitoring requires an adaptive approach to management in order to be effective. Undesirable or unexpected results or conditions identified through monitoring allows the project to be assessed and altered as needed to meet the intent of the management requirement or activity within the desired and predicted outcomes discussed in the EIS.

Potential changes to the authorized project actions discovered during implementation will be subject to interdisciplinary review and my determination regarding the magnitude and significance of any new information or changed circumstances. In determining whether and what kind of further NEPA action is required, I will consider the criteria regarding supplementing an existing environmental impact statement in 40 CFR 1502.9(c), guidance provided in FSH 1909.15, sec. 18, and whether the proposed change is a substantial change to the intent of my decision or the environmental effects.

The Warm Fire Recovery project will not bring about full recovery to the fire area. Future activities such as prescribed burning, additional reforestation, and updating the existing access and travel management plans will likely be needed. Monitoring the project area will enable managers to know what actions need to occur, as well as where and when.

Some field verification to confirm inventory data and determine the feasibility, general design, and location of unit boundaries has occurred. This will continue through project layout. Minor changes are expected during implementation to better meet onsite resource management and protection objectives. Minor adjustments to unit boundaries are also likely during final layout to improve logging system efficiency and to better meet the intent of my decision. Many of these minor changes will not present sufficient potential impacts to require any specific documentation or action to comply with applicable laws. Some minor changes may still require appropriate analysis and documentation to comply with FSH 1909.15, sec. 18.

If no appeals are filed within the 45-day time period, implementation of the decision may occur on, but not before, 5 business days from the close of the appeal filing period. When appeals are filed, implementation may occur on, but not before, the 15th business day following the date of the final appeal disposition.

Administrative Review or Appeal Opportunities

This decision is subject to appeal in accordance with 36 CFR 215. A notice of appeal must be in writing and clearly state that it is a Notice of Appeal being filed in pursuant to 36 CFR 215. Appeals must be filed with (or addressed to)

Appeal Deciding Officer
Southwestern Region
USDA Forest Service
Attn: 1570 Appeals
333 Broadway Blvd., SE
Albuquerque, NM 87102
FAX: (505) 842-3800

It is the responsibility of those who appeal a decision to provide the Regional Forester sufficient written evidence and rationale to show why my decision should be changed or reversed. The written notice of appeal must:

- State that the document is a Notice of Appeal filed pursuant to Title 36 CFR 215;
- List the name, address, and if possible, a telephone number of the appellant;
- Identify the decision document by title and subject, date of the decision, and name and title of the responsible official;
- Identify the specific change(s) in the decision that the appellant seeks or portion of the decision to which the appellant objects;
- State how my decision fails to consider comment previously provided, either before or during the comment period specified in Title 36 CFR 215.6 and, if applicable, how the appellant believes the decision violates law, regulation, or policy.

Pursuant to regulations at 36 CFR 215.10(a), if no appeal is filed, implementation of that portion of the decision not exempt from stay on appeal may occur on, but not before, 5 days after close of the appeal period. If an appeal on that portion of the decision is received, implementation may not occur for 15 days following the date of the appeal disposition (36 CFR 215.10(b)).

The office business hours for those submitting hand delivered appeals are: 8:00 a.m. to 4:30 p.m., Monday through Friday, excluding holidays. Electronic appeals must be submitted in a format such as an e-mail message, plain text (.txt), rich text format (.rtf), Word (.doc), or (.pdf) or other Microsoft Office-compatible formats. In cases where no identifiable name is attached to an electronic message, a verification of identity will be required. A scanned signature is one way to provide verification.

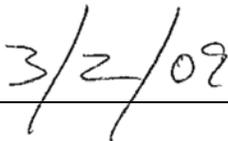
Appeals, including attachments, must be filed within 45 days from the publication date of this notice in the Arizona Daily Sun, the newspaper of record.

Contact Person

The FEIS and supporting documents are available for public review at the Kaibab National Forest, North Kaibab Ranger District office, Fredonia, Arizona. For additional information concerning this decision or the Forest Service appeal process, contact Alvin Brown, Environmental Coordinator, 800 South 6th Street, Williams, AZ 86046, (928) 635-8315.



MICHAEL R. WILLIAMS
Forest Supervisor
Kaibab National Forest


DATE

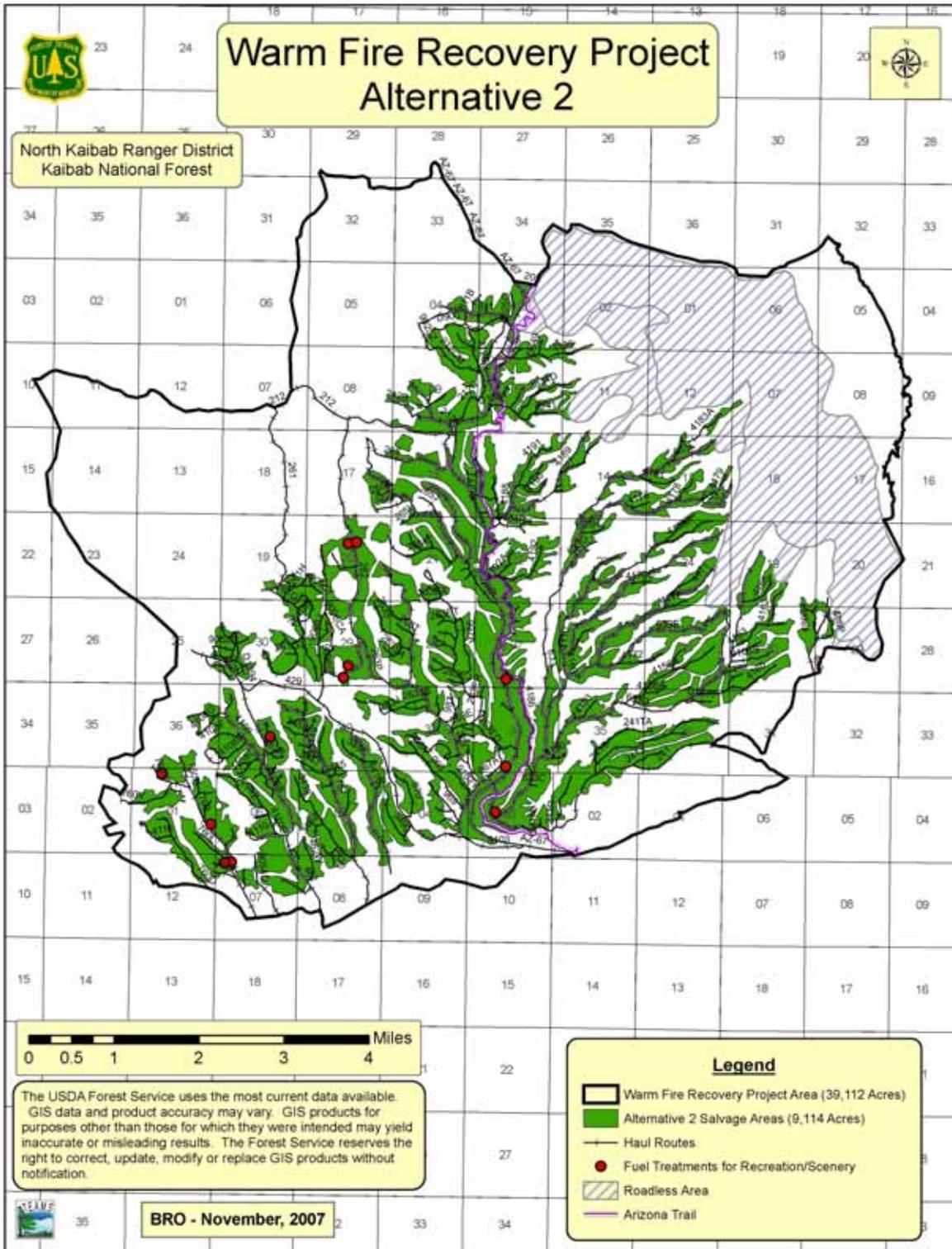


Figure 2. Proposed activities for alternative 2 for the Warm Fire Recovery project

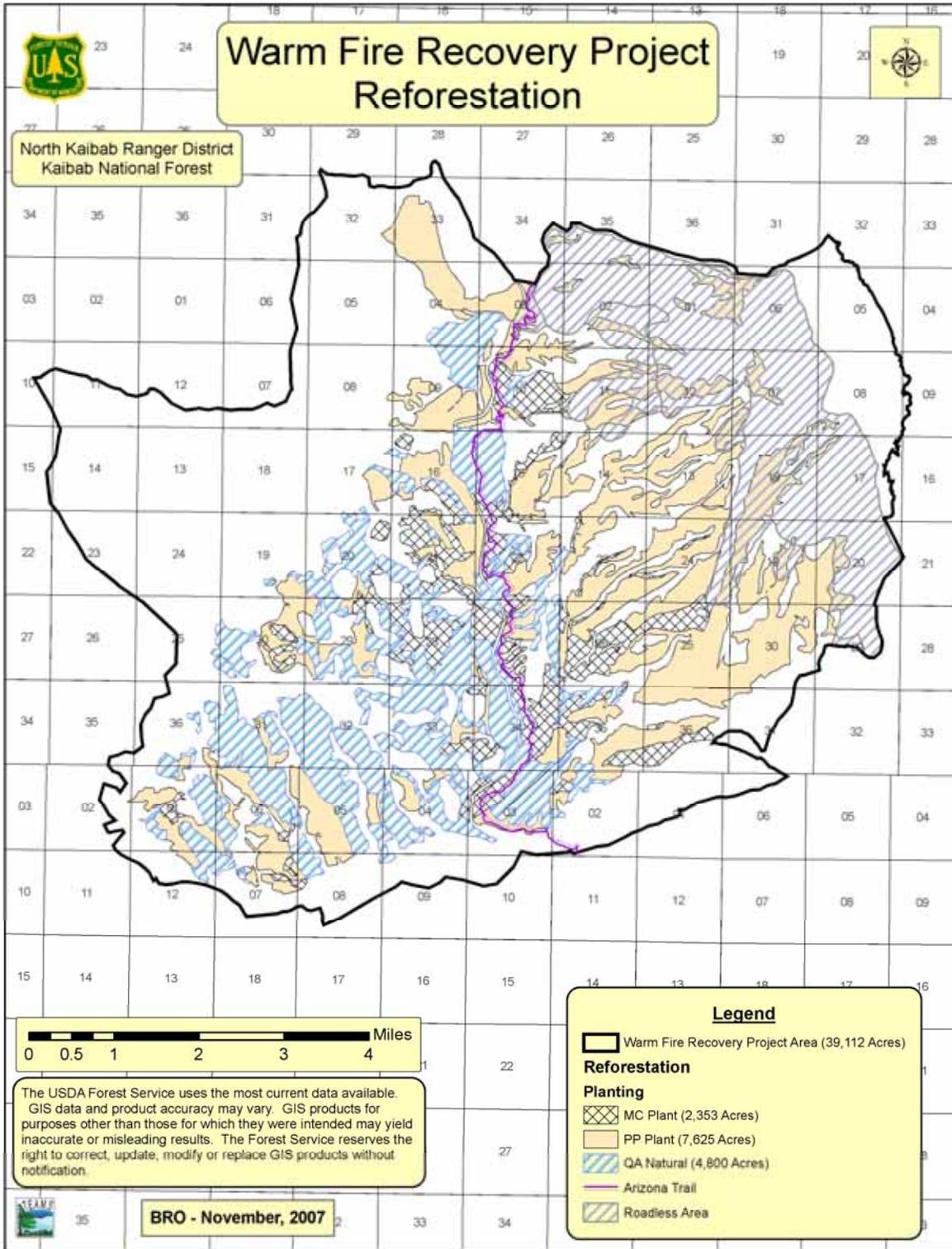


Figure 3. Reforestation activities proposed for the Warm Fire Recovery project

