

# 1.0 PURPOSE OF AND NEED FOR ACTION

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## 1.1 INTRODUCTION

The Forest Service has prepared this Environmental Impact Statement (EIS) to disclose the potential effects of proposed landscape-scale vegetation management and fuels reduction in the Vail Valley and Eagle River Valley. This EIS analyzes the proposed Vail Valley Forest Health (VVFH) Project, which addresses overall forest health on National Forest System (NFS) lands, especially the current mountain pine beetle (MPB) epidemic and the accumulation of hazardous fuels near communities. The analysis in this EIS is intended to provide forest managers with a foundation for the adaptive management of this area, as the MPB epidemic moves across the landscape and conditions change rapidly. This EIS has been prepared in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations.

### 1.1.1 Document Structure

This EIS discloses the direct, indirect, and cumulative environmental impacts and any irreversible or irretrievable commitment of resources that would result from the proposed action or its alternatives. This EIS is prepared according to the format established by Council on Environmental Quality (CEQ) regulations implementing NEPA (Title 40 of the Code of Federal Regulations [CFR], Parts 1500-1508).

- Chapter 1 describes the purpose and need for the proposed action, and discusses how the project relates to the Land and Resource Management Plan (Forest Plan) for the White River National Forest (WRNF), which was revised in 2002 (USFS 2002). This chapter also describes how the proposed project relates to the National Fire Plan, and the 10-Year Comprehensive Strategy and Implementation Plan for reducing wildland fire hazards to communities and the environment. It also identifies the key issues driving the EIS analysis.
- Chapter 2 describes and compares the proposed action, alternatives to the proposed action, and a no-action alternative, and summarizes their environmental effects.
- Chapter 3 describes the physical, biological, and human environments potentially affected by the proposed action and alternatives, and describes the potential effects of the proposed action and alternatives, including the no-action alternative.
- Chapter 4 contains information on consultation and coordination that occurred as part of the project and provides a list of preparers.
- Chapter 5 contains information on the distribution of the EIS.
- Appendices provide supplementary information for Chapters 1 through 3, including references, glossary of terms, abbreviations and acronyms, treatment unit descriptions by alternative, and index.

The interdisciplinary team (IDT) used a systematic approach for analyzing the proposed project and its alternatives, estimating the environmental effects, and preparing this EIS. The process complies with NEPA and the CEQ regulations. Project planning was coordinated with the appropriate federal, state, and local agencies, and local federally recognized tribes. Copies of the EIS may be obtained at the Forest Supervisor's Office in Glenwood Springs or the Holy Cross Ranger District office in Minturn. Additional documentation, including more detailed analyses of project-area resources, is available for public review and may be obtained from the District Ranger in Minturn.

## 1.1.2 Project Area Location and Geographic Boundaries

The project area for the VVFH Project is located in Eagle County, Colorado, along the Interstate 70 (I-70) corridor between Vail Pass and Avon (**Figure 1-1**). The project area contains 57,598 acres of National Forest (NF) administered lands, 13,726 acres of privately owned lands, and 1,081 acres of state-owned lands, however, decisions related to the proposed project are limited to NF administered lands. The project area is located both north and south of I-70, including the wildland urban interface zones for the following communities: Vail, Intermountain, Eagle-Vail, Minturn, Avon, Mountain Star, Wildridge, Beaver Creek, and Arrowhead.

## 1.1.3 Background

The Vail Valley provides a world-class recreational setting that includes the Vail and Beaver Creek ski resorts. The intrinsic beauty of the project area is a valued resource. Any management activity on NFS lands within the valley could impact the quality of views from recreation use areas, residences, and travel routes that access the project area. The local economy is highly dependent on recreation and tourism.

The forested portion of the project area is a lodgepole pine dominated ecosystem with a MPB population that is currently at epidemic levels. In western forests where lodgepole pine is the dominant conifer species, small populations of MPB are always present. Although epidemic MPB populations can be a natural component of lodgepole pine dominated ecosystems, such high levels can kill 50 to 70 percent of the mature lodgepole pine over vast areas.

High mortality in lodgepole pine would change scenic quality, recreational opportunities, and wildlife habitat in the Vail Valley. As the trees begin to die and fall, the ability to maintain acceptable fuel loads within the wildland urban interface would be compromised. Historic fire and forest conditions, MPB activity, hazardous fuels, and aspen conditions all drive the purpose and need for management within the project area. Each is discussed briefly below.

### Historic Fire and Forest Conditions

The interrelationship between fire and forest conditions has influenced the current management situation for forest health and vegetation management in the project area, as described below (Moraga 2004). Fire is especially important in many western forest types; historically, fires regulated tree density, species composition, reduced the amount of dead biomass, maintained clearings, and promoted nutrient cycling (Covington and Moore 1992, Covington and Moore 1994, Covington and Sackett 1984, Covington and Sackett 1988, Fulé et al. 1997, Mast 1993, Swetnam and Betancour 1990).

Lodgepole pine-dominated landscapes are dependent on the natural influence of fire in order to thrive (Anderson 2003). Natural fire frequency in these stands ranges from a few years to more than 200 years. In Colorado, lodgepole pine communities are subject to either a mixed-severity fire regime, where a combination of low, moderate, and high severity fires occur every 25 to 75 years, or stand-replacing fires occur every 100 to 300 years. Mixed-severity fire regimes occur where fine surface fuels and dry climate facilitate lower intensity fires. Stand-replacing fires are more likely to occur where an accumulation of downed woody debris, ladder fuels, and crown fuels exists (Anderson 2003).

**Figure 1-1 Project Area Map**

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MPB activity affects the fire regime in lodgepole pine-dominated stands; it is the most serious insect pest in mature stands, periodically killing most of the large-diameter trees (Anderson 2003). In the absence of fire, periodic MPB outbreaks kill most large, dominant lodgepole pine in 20- to 40-year intervals. Because MPB generally attack large-diameter trees, these infestations result in large accumulations of dead material. Within 5 to 20 years, the increased fuel loading is more conducive to fire spread, which can result in high-intensity fires. Fire potential declines until the MPB-killed trees fall. These logs may then sustain slow-moving fires that create additional stress on live trees, encouraging further MPB attack and repeating the infestation cycle. Fires in MPB-infested lodgepole pine forests are likely to be more severe than in uninfested stands. Without management of MPB or a fire, lodgepole pine will be succeeded by climax species such as subalpine fir, Engleman spruce, and Douglas fir (Anderson 2003).

## **Mountain Pine Beetle Activity**

The MPB attacks pine trees, including lodgepole pine. In attacking pine trees, the beetles introduce a blue stain fungus into the tree's living tissues, interrupting the transport of water and nutrients, which eventually kills the tree. The tree's only defense against beetles is its sap, or resin, which the trees use to "pitch out" attacking beetles. Younger, healthier trees produce more sap, thus are better able to ward off attack. Trees growing in crowded conditions, or ones that are old, diseased, or weather/fire damaged, produce less sap, thus are more readily and successfully attacked by beetles. Under normal conditions, the beetles cause periodic, very low mortality in single trees and small groups that are typically the unhealthiest trees in the stand, providing important snag habitat to dependent wildlife.

MPB epidemics are cyclic. When conditions are favorable, the beetle population increases to epidemic levels. Outbreaks usually begin with drought-dry periods and end with wet periods. The current beetle populations in the project area are responding to the homogenous landscape-level forest conditions and drought conditions that decrease a tree's ability to resist attack. The high density of older, large-diameter lodgepole pine across this landscape provides ideal conditions for rapid spread of MPB.

Favorable conditions for beetle activity include dense stands of lodgepole pine where 20 to 25 percent of the trees have a diameter of 12 inches or larger. This creates a closed canopy environment, which results in an inversion with calm, cool, and shaded air conditions. Beetles under this dense cover are more successful in finding the larger trees to attack and finding each other, resulting in higher reproductive success and larger brood populations.

Once MPB reach epidemic levels and kill many of the largest trees, environmental factors such as below zero temperatures and adequate precipitation tend to reduce MPB populations until the remaining trees grow large enough to sustain another outbreak cycle. An outbreak cycle can occur every 20 to 40 years until the lodgepole pine food source for the beetle becomes exhausted or lodgepole pine is replaced by another species. In most cases a fire event is followed by the regeneration of another lodgepole pine-dominated landscape and another series of beetle outbreaks.

Dense, mature stands of lodgepole pine have little or no defense against attack, and are extremely susceptible when these insects reach epidemic levels. When beetle populations increase, even healthy trees are attacked. There is a 1-year time lag between beetle infestation and tree death. Dead trees that can be counted in an aerial survey would have been attacked and killed by beetles the previous summer.

An estimated 91 percent of the lodgepole pine stands within the project area are more than 80 years old. Young stands created by past harvest activities, primarily clearcutting, account for an estimated 8 percent of the project area. The remaining 1 percent is comprised of one stand that is an estimated 66 years old.

Field inventory data indicate that the oldest lodgepole pine within the project area average 121 to 165 years old. Wildland fires may have moved across the lodgepole pine landscape during dry periods or

drought cycles that existed in the 1830s to 1880s, and created the lodgepole pine landscape that is present today. The majority of the conifer stands in the project area contain lodgepole pine that are 8 inches to 12.9 inches DBH (diameter at breast height, 4.5 feet above the ground). The average age of these trees may represent a period of possible stand replacement events, or wildland fires, that occurred between 1830 and 1880 and killed the majority of overstory trees and initiated lodgepole pine regeneration from the release of seed stored in closed (serotinous) cones that open after a fire.

These mature lodgepole pine stands that average about 180 to 220 square feet of basal area per acre, have diameters that average more than 8 inches DBH, and are below 9,800 feet elevation are at risk for a beetle outbreak. The high density of older, large-diameter lodgepole pine across the landscape provides ideal conditions for rapid spread of MPB. The project area has been experiencing visible MPB activity since 1995. Initially, affected areas occurred most typically in a pattern of scattered, patchy mortality. MPB activity in the project area has increased significantly during the last year. In 2004, some stands are experiencing 50 percent mortality, meaning that 50 percent of the lodgepole pine have been killed by MPB in some communities of trees. The majority of the infestation activity and subsequent mortality has occurred below 9,600 feet in elevation.

Inventories conducted between 1998 and 2000 indicate that the average diameter for beetle infested or killed trees was 11.7 inches during this period, which indicates that the beetles are infesting and killing the larger, dominant trees in the lodgepole landscape. The mortality in the 11 inches and larger DBH trees is reducing the number of trees with crown ratios of 30 percent or more, which are valued as future wildlife trees and seed trees that contain closed cones. These larger trees also are a valuable scenery asset because of their large, full crowns.

Lowering tree densities through the removal of infested, uninfested, and dead trees is a proven means of reducing tree mortality during outbreaks of MPB (Amman 1995, Cole et al. 1983, Mitchell et al 1983, Overhulser and Kanaskie 1990). Tree removal creates more open canopy conditions, which allows increased air movement through the lower portions of trees, and more sunlight to reach the forest floor and initiate convective (rising) movement of warmer air. The increases in air turbulence, under-canopy temperatures, and light create less favorable stand conditions for beetles to attack additional trees. Also, the increased wind turbulence may disperse the pheromones emitted by beetles to concentrate attacks on individual trees. The lower tree densities also allow the remaining trees to gain vigor, produce more resin, and pitch-out attacking beetles.

## **Hazardous Fuels**

Fuel treatments to reduce fire hazard and restore natural disturbance regimes have long been advocated by fire specialists (Weaver 1943). However, these efforts have been implemented inconsistently in western forests, and there are few studies that evaluate the effectiveness of various methods. An exhaustive literature review conducted by Martinson and Omi (2003) revealed just 31 studies since 1955 that evaluated the effectiveness of fuel treatments. Approximately half of these studies were not tested by wildland fire, and in some cases the treatments themselves were based on model simulations. This lack of empirical evidence is addressed in two reports: Pollet and Omi (2002), and Omi and Martinson (2003). These studies, in conjunction with the evaluation of previous research (Martinson and Omi 2002), comprise the most complete dataset of fuel treatment effects on wildland fire severity currently available. Although existing studies do not adequately evaluate the effectiveness of fuel treatments, the trend of results from these sources indicates that fuel treatments have reduced wildland fire severity.

Fuel treatments can address surface fuels through broadcast burning or canopy fuels with mechanical thinning. Although the relative effectiveness of treating surface fuels or canopy fuels alone versus combining treatments cannot be determined, results from individual sites suggest treatment of fuel

profiles in their entirety is more effective (Martinson and Omi 2003). Studies that directly compare prescribed fire with mechanical treatment and pile burning are not known to exist (Omi 2004).

Prescribed burns are generally the most effective means of reducing future fire hazard, eliminating understory trees, stimulating seral herbaceous and shrubby vegetation, creating receptive seedbeds, and transforming nutrients into an available form (Arno and Harrington 1995, Fiedler et al. 1995). Prescribed burns are known to mitigate wildland fire effects (Wagle and Eakle 1979) and can create landscape diversity that would be impossible to replicate by mechanical means alone. The structural diversity created by fire is also the best way to integrate management for varied ecological communities; there is no ecological substitute for burning.

Fuel treatments are not a one-time proposition; they must be integrated into a long-term plan for future treatments (Fiedler et al. 1995). Crown fire resistance achieved through fuel treatment activities will deteriorate over time if maintenance burning or thinning are not continued (Fulé et al. 2001). The duration of treatment efficacy is dependent upon several factors including forest type, site productivity, type of fuel treatments, treatment intensity, and anticipated wildland fire behavior.

## Aspen

The landscape dynamics of aspen and conifer forests are described by Bartos (2001). Aspen is considered a disturbance species perpetuated by fire, disease, or other occurrences. Since European settlement, the natural disturbance regime (usually fire) has been interrupted. Fire suppression has caused the successional replacement of aspen by conifers, which is a natural process. When aspen-dominated landscapes are not functioning properly or are lost, the diverse values provided by aspen are compromised or lost. The decline of aspen in Colorado is estimated to be 49 percent since European settlement. The restoration of aspen is supported by Forest Plan guidance and increased public awareness and concern regarding aspen lands.

A summary of the values contributed by aspen communities and the factors contributing to the decline of aspen throughout the west is presented by Kilpatrick and Abendroth (2001). Aspen communities contribute multiple values including recreation, scenic vistas, water yield, water quality, wood products, habitat and forage for livestock and wildlife, and landscape diversity. Healthy aspen stands also provide natural firebreaks that can reduce fire intensity and severity. Factors contributing to the decline of aspen include fire suppression, livestock and wildlife use, and successional replacement of aspen with conifers.

In the project area, aspen also provide a positive effect on potentially unstable slopes. Aspen have an affinity for wet slopes with poorly drained soils, and tend to occur on many slopes that are unstable and susceptible to movement. The occurrence of aspen on these slopes benefits watershed values by using some of the moisture contained in the soil so less moisture is available to facilitate slippage of the slope. Established aspen communities can reduce potential erosion and sedimentation.

## 1.2 PROPOSED ACTION

A general description of the proposed action is provided in this section. The proposed action is described in detail in Chapter 2; the treatment units are described in detail in **Appendix D**. A variety of techniques would be used to improve stand structure and species diversity, and consequently, forest health in the Vail Valley, while meeting Forest Plan guidance. The removal of a portion of the dead, dying, and high-risk lodgepole pine would manage future MPB risk and help reduce fuel loads. The overall strategy for reducing potential losses from future MPB outbreaks in landscapes with a large mature lodgepole pine component aims at creating a landscape mosaic where age-class, size, stand density, and species distribution do not favor the development of large-scale outbreaks.

Thinning and patch cuts would be used where live lodgepole pine exist. Where lodgepole pine are dead or dying, sanitation and salvage would be used. Aspen communities would be enhanced by patch cuts, removal of conifers, and clearings along the margins of stands to restore the vigor of these communities and improve their function as natural fuelbreaks. Prescribed broadcast burning, mechanical treatments, and pile burning would reduce potential fuel loads. In all, 3,000 acres of NF administered lands would be treated as described below. This acreage estimate may vary by as much as 15 percent as projects included in the Proposed Action are implemented.

- South of the I-70 corridor, the following treatments in lodgepole pine and aspen would affect about 1,400 acres of NF administered lands. An estimated 700 acres of lodgepole pine near Minturn would be thinned, patch cut, sanitized, or salvaged. About 700 acres of aspen in several areas would be enhanced by patch cuts, perimeter treatments, and prescribed burning.
  - A limited number of lodgepole pine stands would be managed to reduce future MPB risk and wildland fuel hazard by increasing structural and species diversity using vegetation treatments. Lodgepole pine stands would be thinned to leave approximately 50 to 70 percent of the basal area. This would open up the stands to increased sun and wind that would disrupt the MPB broods. In areas where the DBH is 10 to 11 inches or greater, small patch cuts would be made to remove the primary MPB host trees.
  - Where mortality of lodgepole pine is high from ongoing MPB activity within treatment units, additional lodgepole pine will be sanitized or salvaged. Up to an estimated 70 percent of the beetle-infested or dead trees would be removed by thinning, sanitation, and salvage in areas of high lodgepole pine mortality and infestation.
  - No commercial timber harvest is proposed in the Meadow Mountain B inventoried roadless area located west of Minturn and adjacent to the Holy Cross Wilderness.
  - Existing National Forest System roads (NFSRs) would be reconstructed to accommodate log hauling associated with lodgepole pine treatment units. Reconstruction activities for NFSRs 733.1, 748.1, and 749.1 would include grading, upgrading, repairing and armoring water bars and dips, and improvement and installation of corrugated metal pipes at drainages.
  - An estimated 11 miles of temporary roads would be constructed to access the lodgepole pine treatment units and decommissioned after treatments are completed. Decommissioning of the temporary roads would involve closure, obliteration, revegetation, visual screening, and drainage structures, as needed, and as specified by the design criteria for the project. No road construction is proposed in the Meadow Mountain B inventoried roadless area. All proposed treatments and activities would follow Forest Plan guidelines for density of open motorized travelways in MAs 5.4 and 5.43.
  - The Stone Creek Trail, Forest Development Trail (FDT) 2349, would be widened to accommodate log hauling and maintenance standards. This trail would be closed for one logging season (spring through fall) during lodgepole pine treatment activities in units crossed by the trail. The trail would be restored after its use for log hauling is completed.

- Aspen within and near selected lodgepole pine stands would be enhanced to provide for forested fuelbreaks. Lodgepole pine would be removed within the aspen patches and for 1 to 2 tree lengths around the patch. Some patch cuts also would occur in aspen.
  - In the Vail Intermountain area, aspen at the wildland urban interface would be enhanced as forested fuelbreaks. Lodgepole pine would be cut within aspen patches and for 1 to 2 tree lengths around the patch. Some patch cuts also would occur in aspen. These proposed treatments are within the Game Creek inventoried roadless area. No road construction is proposed and no log hauling would occur.
  - Decadent aspen would be broadcast burned in one treatment unit to maintain and improve aspen stands and create a forested fuelbreak between conifer stands and the town of Vail. This proposed treatment is partially within the Game Creek inventoried roadless area. No road construction is proposed.
- North of the I-70 corridor, the following treatments would occur. About 1,600 acres of shrublands, grasslands, and aspen would be managed to move them toward their historic range of variability. Mechanical vegetation treatments and prescribed fire would be used to create a mosaic of age and structural classes that would reduce the intensity and severity of wildland fires in the wildland urban interface. No road construction is proposed. Almost all of the proposed treatments would be within inventoried roadless areas (Buffer Mountain, Spraddle Creek B, and Corral Creek) or the Eagles Nest Wilderness. Within the Eagles Nest Wilderness, approximately 500 acres of broadcast burning is proposed and no mechanical treatments are planned.

### **1.3 PURPOSE AND NEED TIERED TO THE FOREST PLAN**

There is a critical need to address overall forest health, especially the current MPB epidemic and the accumulation of hazardous fuels near communities. Adherence to Forest Plan management guidance for the project area limits the scope and intensity of management activities that are possible in this scenic and highly valued recreation setting. However, the potential human and economic impacts of a large stand replacing fire that is difficult to control or extinguish make some action to protect and conserve this setting and its resources imperative.

The purpose and need for the VVFH Project is threefold: 1) implement Forest Plan guidance for forest health and vegetation management across the important recreational setting of the Vail Valley; 2) modify vegetation structure in lodgepole pine to reduce MPB risk and future outbreaks; and 3) reduce the accumulation of hazardous fuels through prescribed fire and mechanical treatments that could decrease the fire hazard and increase the probability of safely defending life and property from wildland fire.

Fire risk, the probability of an ignition occurring as determined from historical fire record data, is not likely to change in lodgepole pine stands within the project area as a result of the VVFH Project. In the Vail Valley, lodgepole pine dominated forests are susceptible to MPB as they age, and renew themselves by stand replacing fires. These lodgepole pine-dominated forests are not outside the HRV and have not missed a fire cycle. In contrast, shrublands in the project area contain hazardous accumulations of fuels and have missed one or more fire cycles due to fire suppression, in combination with other past management practices.

Fire hazard identifies the availability of fuels to sustain a fire, where risk recognizes the likelihood of an ignition. Where high risk occurs with high hazard, the probability of fire with undesirable effects is more likely. Reducing the amount and kind of fuels that are available to burn can mitigate fire hazard. Fire

prevention programs that use law enforcement and engineering can reduce the risk of human-caused wildland fires.

Predicted fire behavior, including the susceptibility to dangerous, costly fires that leap across the crowns (tops) of trees and are difficult to control, considers the physical factors of fuels, weather, and topography. Weather conditions (lightning, drought, and winds) and topography (slope, aspect) are outside of human influence, but fuels are not.

Observations by fire managers regarding recent large, uncontrollable fires have emphasized the importance of several strategies in conserving valued resources. When a fire approaches an area where there is less fuel to burn, it slows down or burns with less intensity. Previously burned areas served as fuelbreaks that slowed the advance of the Hayman fire in 2002. The low amounts of fuels and defensible space around Old Faithful Inn contributed to saving it from the 1988 fires in Yellowstone. While saving specific structures or human lives is not a predicted outcome of the proposed VVFH Project, a reduction in available fuels has been shown to reduce fire hazards. If the predicted fire behavior of future wildland fires can be influenced, even a little, by the use of vegetation treatments, firefighting efforts could be safer, more successful, and more cost effective. If fire hazards are reduced, the potential effects on human lives and developed areas might be reduced, and less acreage might be subjected to a severe burn, which would reduce impacts to watersheds and other resources. Scenic quality is an important asset to tourism; fire hazard reduction may diminish some of the negative impacts from a wildland fire on scenic quality in the Vail Valley.

Vegetation management will not have a noticeable effect on the current MPB epidemic. However, manipulating lodgepole pine stand conditions in roaded areas that are part of the suitable timber land base for the WRNF to create a mosaic of forested ages and a variety of tree densities and sizes, and increasing the aspen component will work toward managing future MPB risk and wildland fuel hazard. The enhancement of aspen stands would provide for a forested fuelbreak and would conserve a key component of the recreation setting in the Vail Valley. The removal of dead, dying, and high-risk trees while they still have some economic value to offset the treatment cost would help reduce future fuel loads.

Much of the shrublands in the Vail Valley are outside or trending outside their historic range of variability. This has resulted in homogenous, over-mature shrublands that pose a risk of higher intensity fires due to the buildup of hazardous fuels. Creating a mosaic of age and structural classes in the shrublands through fuel treatments would reduce the intensity and severity of future wildland fires and associated risks to the communities in the Vail Valley, including higher risk to firefighters, loss of homes, and landslides.

The 2002 revision of the Forest Plan provides strategic, Forest-wide management direction for the next 10 to 15 years. The Forest Plan provides a framework that guides all day-to-day resource management operations on the WRNF, but does not make project-level decisions. The VVFH Project is intended to implement Forest Plan guidance for ecosystem health, biodiversity, and vegetation management across a landscape that encompasses the Vail Valley and Eagle River Valley.

The overall direction for managing the WRNF is established in Forest-wide goals and objectives contained in the Forest Plan, which define the desired conditions for the Forest. Goals describe overall conditions the Forest will strive to meet; however, no direct measurements or time frames are identified. Objectives provide the means to achieve goals in measurable steps, referred to as strategies. Objectives generally are achieved by implementing projects or activities. These goals and objectives will be met while following the Forest-wide and Management Area (MA) standards and guidelines. The following desired conditions represent goals, objectives, and strategies from the Forest Plan that apply directly to the VVFH Project.

**Forest Plan Goal 1 – Ecosystem Health** – Promote ecosystem health and conservation using a collaborative approach to sustain the nation’s forests, grasslands, and watersheds. Work cooperatively with individuals, organizations, local, state, tribal, and other federal agencies to promote ecosystem health and sustainability across landscapes (Objective 1e).

**1. Desired Condition – Watershed Protection:** Improve and protect watershed conditions to provide the water quality and quantity and soil productivity necessary to support ecological functions and intended beneficial uses (Objective 1a).

**Existing Condition:** Historically, the existing NFSRs in the Meadow Mountain/Grouse Creek and Stone and Whiskey Creek geographic areas were used for farming, ranching, ski area operations, and to access timber sales. These roads, NFSRs 733.1, 748.1, and 749.1, are authorized for the administration, protection, and utilization of public lands. They are not open for motorized public use in the summer and are managed as trails. During the winter these roads are open to snowmobiles and non-motorized uses. These roads are designated as local, maintenance level 1 roads.

**Opportunities:** Improve watershed conditions by reducing runoff and soil erosion from existing NFSRs that would be used to access proposed lodgepole pine treatment units.

**Proposed Activity:** NFSRs 733.1, 748.1, and 749.1 would be reconstructed to reduce sedimentation and meet maintenance standards necessary to accommodate log truck loads. Reconstruction activities would include grading, upgrading, repairing and armoring water bars and dips, and improving and installing corrugated metal pipes at drainages.

**2. Desired Condition – Healthy Forests, Shrublands, and Rangelands:** Increase the amount of forest and rangelands restored to or maintained in a healthy condition with reduced risk and damage from fires, insects, disease, and invasive species (Objective 1d). Place high priority on fuel reduction activities at urban/wildland interface areas (Strategy 1d.6). Implement management practices, including prescribed fire, that will move landscapes towards desired vegetation composition and structure as described in the management area description and the Historic Range of Variability (HRV) (Strategy 1d.7). Over the life of the plan, management practices that mimic ecological processes, such as fire, insect and disease, and other disturbances, will operate on forest and grassland landscapes in a manner consistent with desired conditions and management area direction (Strategy 1d.9).

**Existing Condition:** The project area contains a relatively even-aged forest that is dominated by lodgepole pine, a disturbance-dependent species. Lodgepole pine in the project area are undergoing an outbreak of MPB and are at risk for additional insect, disease, and fire disturbances. Aspen communities have declined outside their HRV and are being replaced by conifers. The decline of aspen in Colorado is estimated to be 49 percent since European settlement. Since European settlement, the natural disturbance regime (usually fire) has been interrupted by fire suppression, which has caused the successional replacement of aspen by conifers. Values contributed by aspen, including recreation, scenic vistas, water yield, water quality, wood products, habitat and forage, and landscape diversity, also are declining. Shrublands in the project area are outside their HRV and contain accumulations of hazardous fuels, making most wildland fires at the wildland urban interface difficult to control. There is a continuous influx of urban growth at the forest interface.

**Opportunities:** Reduce the susceptibility of lodgepole pine treatment units to future MPB infestations and reduce the fire hazards to nearby private lands in the long term by increasing species and structural diversity within the project area, and in the short term by reducing fuels in the wildland urban interface. Enhance aspen stands to improve their health and serve as natural fuelbreaks that can reduce fire intensity and severity.

**Proposed Activity:** Increase species and structural diversity through vegetation treatments.

**3. Desired Condition – Viable Populations of Special Status Species:** Provide ecological conditions to sustain viable populations of native and desired nonnative species and to achieve objectives for Management Indicator Species (MIS) and focal species (Objective 1b). Help ensure viability of species of concern for the WRNF through implementation of the Forest Plan and recommendations made in the Species Viability reports (Objective 1c).

**Existing Condition:** Relatively even-aged stands of lodgepole pine lack seed, sapling, and pole size trees that provide diversity of forest structure. This lack of diversity affects both long-term forest health (homogenous forests are more susceptible to insects, disease, and uncontrolled fire spread) and habitat for wildlife (the mid-successional even-age forest has limited understory forage for species such as elk and snowshoe hare). Aspen communities have declined and are being replaced by conifers. Values contributed by aspen, including habitat and forage for wildlife and landscape diversity, also are declining. Shrublands are mature and decadent, which limit foraging and nesting opportunities.

**Opportunities:** Improve forest health, wildlife habitat effectiveness, and fire resiliency by improving biodiversity within the project area through greater species and structural diversity.

Reduce the amount of mature, decadent sagebrush and provide opportunities for new young sagebrush to establish, as well as new grass and forb microhabitats. These habitats, in association with other mature shrub habitats, may provide new foraging and nesting opportunities.

**Proposed Activity:** Increase species and structural diversity through vegetation treatments.

**4. Desired Condition – Canada Lynx:** Land management practices in lynx habitat will consider the information in the broad scale assessments and will address the following objectives: a) use of vegetation and fire management activities to retain or restore denning habitat on landscapes with the highest probability of escaping stand-replacing events; b) use of regeneration harvest, planting, and thinning to develop characteristics suitable for lynx and snowshoe hare habitat; and c) use of prescribed fire to promote regeneration of snowshoe hare habitat (Strategy 1c.6). Within 1 year of plan approval, develop a baseline map of activities that result in snow compaction on the WRNF within lynx habitat. Annually monitor the location and intensity of snow compaction activities. As opportunities arise to review activities that result in snow compaction (special use permit new authorizations or renewals, new project proposals, etc.) ensure that projects allow lynx to maintain the natural competitive advantage in deep snow conditions (Strategy 1c.7).

**Existing Condition:** Several lynx sightings have been reported in the vicinity of the Vail Valley since 1999; however, monitoring data have not produced any evidence of resident lynx in the area. Although more than 15,000 acres of winter habitat exist on NF administered lands within the project area, there is a lack of suitable lodgepole pine stands that provide sufficient down woody debris to support lynx denning. Understory vegetation, such as thickets of young trees in lodgepole pine stands, is non-existent or insufficient to support snowshoe hare, a primary food source, during winter.

**Opportunities:** Regenerate lodgepole pine in patch cuts and stands experiencing high mortality from ongoing MPB epidemic to provide snowshoe hare foraging habitat. High-elevation sagebrush and mountain shrub communities found adjacent to or intermixed with forested communities can provide potentially important alternate prey resources. Reduce the amount of mature, decadent sagebrush and provide opportunities for new young sagebrush to establish, as well as new grass and forb microhabitats.

**Proposed Activity:** Increase species and structural diversity through vegetation treatments.

**5. Desired Condition – Noxious Weeds:** Increase the amount of forest and rangelands restored to or maintained in a healthy condition with reduced risk and damage from fires, insects, disease, and invasive species (Objective 1d). Cooperatively work with federal, state, county agencies and other non-government organizations for control of noxious weeds (Strategy 1d.2). An assessment will be

completed for all proposed projects and activities to determine the risk of introduction and spread of noxious weeds. Appropriate mitigation measures will be implemented (Strategy 1d.3).

**Existing Condition:** Approximately 800 acres within one-half mile of proposed treatment areas are infested with noxious weeds, including yellow toadflax, oxeye daisy, Russian knapweed, diffuse knapweed, and common tansy. Areas near these infestations are particularly vulnerable to colonization. Much of this acreage is located west and south of the junction between I-70 and U.S. 24.

**Opportunities:** Revegetation after surface disturbance, and treatment of known populations can reduce the likelihood of colonization after disturbance.

**Proposed Activity:** Treat known populations of noxious weeds near the proposed project. Reduce the likelihood of colonization after disturbance by revegetation of disturbed areas. Comply with project design criteria for travel near known infestations to avoid the spread of weeds into unaffected sites.

**Forest Plan Goal 2 – Multiple Benefits to People** – Provide a variety of uses, products, and services for present and future generations by managing within the capability of sustainable ecosystems.

**6. Desired Condition – Wilderness and Protected Areas:** Improve the capability of wilderness and protected areas to sustain a desired range of benefits and values. Manage wilderness so that changes in the ecosystem are primarily a consequence of natural forces or within the range of natural variability and succession (Objective 2b). By the end of the plan period, meet Forest Plan desired conditions in pristine (1.11), primitive (1.12), and semi-primitive (1.13) management areas (Strategy 2b.1). Over the life of the plan, minimize the amount and impact of air pollutants produced from land management activities (Strategy 2c.17).

**Existing Condition:** Ecological conditions in portions of the project area within and adjacent to the Eagles Nest Wilderness are outside their HRV. Aspen communities are in decline. Values contributed by aspen, including recreation, scenic vistas, water yield, water quality, habitat and forage, and landscape diversity, also are declining. Shrublands are outside their HRV and contain accumulations of hazardous fuels, making wildland fires in these areas difficult to safely control.

**Opportunities:** Some ecological conditions can be restored to historic levels using prescribed fire. Maintaining aspen communities with prescribed fire will create a forested fuelbreak between conifer stands and the wildland urban interface; this can aid in allowing a natural process (wildland fire) to be a principal force affecting the ecosystem.

**Proposed Activity:** Use prescribed fire to restore ecological conditions and reduce the fire hazards to nearby private lands by reducing fuels in the wildland urban interface.

**7. Desired Condition – National Forests and Rangelands:** Improve the capability of national forests and rangelands to sustain desired uses, values, products, and services (Objective 2c). By the end of the plan period, offer for sale the allowable timber sale quantity (Strategy 2.c.1).

**Existing Condition:** An estimated 7,106 project area acres that are outside inventoried roadless areas are allocated to Management Areas (MAs) 5.4 and 5.43 and are part of the suitable timber land base for the WRNF. Timber harvested from these lands contributes to the allowable sale quantity (ASQ) for the WRNF. A full range of vegetation treatments including timber management and grazing strategies may be applied to these lands (MA 5.4 and MA 5.43 standards). MPB activity has increased significantly in the project area during the last year. Some lodgepole pine stands currently are experiencing 50 percent mortality or more.

**Opportunities:** Lodgepole pine killed by MPB could be provided to local timber industry. The volume of forest products provided would contribute to the ASQ and the removal of trees would reduce fuel loading.

**Proposed Activity:** Dead, dying, and high-risk lodgepole pine would be removed to minimize fuel loading, where all applicable Forest Plan standards can be met, contributing timber to the ASQ. An estimated 7,900 to 20,000 CCF (hundred cubic feet) of timber could be removed by thinning, patch cuts, sanitation, and salvage, as appropriate, based on existing conditions. For comparison, this would represent 3,800 to 9,500 MBF (thousand board feet) of timber. MPB-infested stands would be thinned, patch cut, sanitized, and salvaged, as appropriate, based on existing conditions.

**8. Desired Condition – Wildlife Management:** Over the life of the plan, cooperate with Colorado Division of Wildlife (CDOW) for wildlife and fish population management to support the achievement of desired population objectives through appropriate habitat management (Strategy 2c.15).

**Existing Condition:** CDOW manages big game ungulate herds in the state and has established population objectives. Elk populations are considerably higher than the objectives. The general population for this species across the state is higher than CDOW objectives. The general population trend for this species across the Forest is increasing. When historic CDOW fish data for 19 of the 25 fish-bearing streams within the project area are compared with recent Forest Service inventories, the overall trend appears to be a decline in the number of individual fish among the brook, brown, rainbow, and Colorado River cutthroat trout. Notable exceptions include dramatic increases in the number of brook trout and cuttbow (hybrid) individuals recorded in Red Standstone, Mill, and Stone Creeks.

**Opportunities:** Improve forest health, wildlife habitat effectiveness, and fire resiliency by improving biodiversity within the project area through greater species and structural diversity.

**Proposed Activity:** Increase species and structural diversity through vegetation treatments.

**Forest Plan Goal 3 – Scientific and Technical Assistance –** Develop and use the best scientific information available to deliver technical and community assistance to support ecological, economic, and social sustainability. Increase the effectiveness of scientific, developmental, and technical information delivered (Objective 3a).

**9. Desired Condition – Scientific and Technical Assistance:** Encourage participation of Forest personnel in community and other government projects that involve management of natural resources. Invite state and local government personnel to become more involved in the design and analysis of Forest Service projects that may affect economic and social elements of the community (Strategy 3a.1).

**Existing Condition:** Local governments and other agencies have been involved with the Forest Service for several years in developing the VVFH Project.

**Opportunities:** Other agencies and jurisdictions have valuable information and insights regarding the VVFH Project. For example, the Colorado State Forest Service has been involved in monitoring MPB activity in the Vail Valley for many years. Also, existing landslides in the Dowds Junction and Vail Intermountain areas have been evaluated and monitored by the Colorado Geological Survey over an extended period of time.

**Proposed Activity:** Continue close collaboration with other agencies and jurisdictions development and evaluation of the VVFH Project.

**Forest Plan Goal 4 – Effective Public Service –** Ensure the acquisition and use of an appropriate corporate infrastructure to enable the efficient delivery of a variety of uses.

**10. Desired Condition – Public Safety:** Improve the safety and economy of Forest Service roads, trails, facilities, and operations; provide greater security for the public and employees (Objective 4a).

**Existing Condition:** Existing NFSRs and FDTs are authorized for the administration, protection, and utilization of public lands. Overall, public use of these facilities in the project area is high.

**Opportunities:** Lodgepole pine treatment activities will require access to the treatment units and coordination with public use of affected roads and trails to ensure public safety. Prescribed fires will require coordination with public use of nearby roads and trails to ensure public safety.

**Proposed Activity:** NFSRs 733.1, 748.1, and 749.1 would be reconstructed and the Stone Creek Trail (FDT 2349) would be widened to accommodate maintenance standards and log hauling. The Stone Creek Trail (FDT 2349) would be closed for one logging season (spring through fall) during lodgepole pine treatment activities in units crossed by the trail. The trail would be restored after its use for log hauling is completed. Public information plans, personnel and media contact lists, and smoke management plans are developed as part of the prescribed burn plan.

**Forest Plan Goal 5 – Public Collaboration** – Engage the American public, interested organizations, private landowners, state and local governments, federal agencies, and others in the stewardship of National Forest System (NFS) lands.

**11. Desired Condition – Public Collaboration:** Work cooperatively with individuals and organizations, local, state, tribal, and federal governments to promote ecological, economic, and social health and sustainability across landscapes (Objective 5a). Provide opportunities for local governmental jurisdictions and other interested parties to participate in planning and management of NFS lands, especially where local governmental jurisdictions or other landowners are contiguous to or may be affected by the management of these lands (Strategy 5a.1). Cooperatively work with local governments to address issues of common concern and to the extent possible maintain consistency with locally adopted master plans (Strategy 5a.2). Encourage participation of Forest personnel in community and other government projects that involve management of natural resources. Invite state and local government personnel to become more involved in the design and analysis of Forest Service projects that may affect economic and social elements of the community (Strategy 3a.1).

**Existing Condition:** Local governments, tribal governments, and other agencies have been involved with the Forest Service for several years in developing the VV FH Project. The Ute Indian Tribe and the Southern Ute Indian Tribe were consulted during the planning process and the tribes visited the eligible heritage sites in June and July of 2003.

**Opportunities:** Other agencies and jurisdictions have valuable information and insights regarding the VV FH Project. The proposed project provides the opportunity to locate and protect otherwise unknown heritage resources.

**Proposed Activity:** Continue close collaboration with other agencies and jurisdictions in development and evaluation of the VV FH Project.

**Forest Plan Goal 6 – American Indian Rights and Interests** – Engage tribal governments to work in close coordination with the WRNF and in collaboration with the American public, interested organizations, private landowners, state and local governments, federal agencies and others in the stewardship of NFS lands in order to incorporate tribal resource management values into forest management activities.

**12. Desired Condition – Collaboration with Tribal Governments:** Coordinate and collaborate with tribal governments to increase awareness and knowledge of culturally significant plants, and consider impacts on culturally significant plants in project design and implementation (Objective 6d). Assure that prescribed burn plans, noxious weed control, and other management projects address and consider traditional uses of and traditional management of culturally significant plants (Strategy 6d.1). The Forest Service assesses needs for and supply of lodgepole pine (Strategy 6.d.2). Provide appropriate protection and access to sacred sites, ceremonial sites, and traditional use sites (Objective 6e).

**Existing Condition:** Tribal governments have been involved with the Forest Service in developing the VV FH Project. The Ute Indian Tribe and the Southern Ute Indian Tribe were consulted during the planning process and the tribes visited the eligible heritage sites.

**Opportunities:** The proposed project provides the opportunity to locate and protect otherwise unknown heritage resources, including sacred sites, ceremonial sites, traditional use sites, and culturally significant plants.

**Proposed Activity:** Continue close collaboration with tribal governments during the development and evaluation of the VVFH Project. Heritage sites will be protected during any activity by mitigations such as re-routing roads, covering potentially affected portions of sites with layers of protective material, and avoidance.

## 1.4 LEGAL AND ADMINISTRATIVE FRAMEWORK

### 1.4.1 Forest Service Management Policies and Direction

The enabling authorities for the Forest Service are contained in many laws enacted by Congress and in the regulations and administrative directives that implement these laws. The major laws relevant to this project include the Organic Act (1897, as amended), Weeks Law (1911, as amended), Multiple-Use Sustained-Yield Act (1960), National Environmental Policy Act (1969, as amended), Forest and Rangeland Renewable Resources Planning Act (1974, as amended), and National Forest Management Act (1976). The Healthy Forests Restoration Act (2003) streamlines and expedites administrative procedures for certain hazardous fuel reduction and ecosystem restoration projects. However, the new streamlined procedures do not apply to some of the actions proposed in the VVFH Project.

#### Forest Planning

Forest Plans prepared and revised in accordance with the National Forest Management Act (NFMA) provide the basic framework for the management of National Forests. Within each Forest Plan, management direction for the Forest is established and standards and guidelines for activities are defined. In a manner similar to local government zoning, Forest Plans prescribe a management emphasis for all portions of the Forest. For example, some of the management area prescriptions in the Forest Plan for the WRNF include non-motorized recreation, timber production, livestock grazing, wildlife winter range, and downhill skiing. All uses of the Forest must be consistent with the Forest Plan.

The Revised Forest Plan for the WRNF was approved in 2002, following preparation of an EIS and Record of Decision (ROD). Because no single acre in the Forest can serve all uses at once, the Forest Plan allocates different emphases to different areas of the Forest, based on the land's capabilities. The Forest is divided into eight management area categories with sub-categories under each one for a total of 33 separate management areas (MAs).

Management activities associated with the VVFH Project would be planned within the following MAs: 1.12 emphasizes primitive wilderness; 1.31 emphasizes non-motorized backcountry recreation; 5.4 emphasizes forested flora and fauna habitats; 5.41 emphasizes deer and elk winter range; 5.43 emphasizes elk habitat; 7.1 emphasizes an intermix of lands represented by the interface between the WRNF and other lands, 8.25 emphasizes existing and potential ski areas; and 8.32 emphasizes existing and potential utility corridors (**Figure 1-2**). The proposed action for the VVFH Project is consistent with the programmatic direction and land allocation contained in the Forest Plan.

CEQ regulations (40 CFR 1502.20) direct agencies preparing EISs to avoid repeating decisions and analysis done in broad-level, programmatic NEPA documents, such as Forest Plans and associated EISs. Instead, agencies are instructed to simply reference them in a process called "tiering." For this project, the *Vail Valley Forest Health Project EIS* is tiered to the *White River National Forest Land and Resource Management Plan - 2002 Revision* and its accompanying EIS.

**Figure 1-2 Forest Plan Management Area Map**

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## Healthy Forests

In response to a request by the President, the report *Managing Impacts of Wildfires on Communities and Environment*, known as the National Fire Plan, was prepared by the Secretaries of Agriculture and the Interior in October 2000. This report provides the overall framework for implementing a plan to address fire management and forest health problems, and the strategic framework for reducing hazardous fuels buildup within wildland urban interface communities and other areas. This strategy describes actions that could restore healthy, diverse, and resilient ecological systems to minimize the potential for uncharacteristically intense fires. The Departments of Agriculture and the Interior also prepared *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy* (August 2001) and the *10-Year Strategy Implementation Plan* (May 2002).

The 10-Year Comprehensive Strategy outlines a collaborative framework to facilitate implementation of appropriate proactive and protective measures to reduce the risk of wildland fire to communities and the environment. Meeting the objectives of the strategy requires a coordinated effort across landscapes to restore and maintain the health of fire-prone ecosystems. This strategy recognizes the importance of suppressing fires, especially those near homes and communities. The continuing growth of communities into the forests and rangelands at the wildland urban interface has increased the risk to people, their homes, and water supplies. This approach to implementing the strategy recognizes fire as part of the ecosystem, focuses on hazardous fuels reduction, integrated vegetation management, and firefighting strategies, and allocates and utilizes resources in a cost-effective manner over a long-term basis. In part, the purpose of this long-term strategy is to correct problems associated with the long-term disruption in natural fire cycles. This disruption has increased the risk of severe wildland fires in some ecosystems.

The VVFH Project responds directly to the goals identified in the 10-Year Comprehensive Strategy. It focuses on hazardous fuels reduction in wildland urban interface areas (Goal 2), and restoration of healthy, diverse, and resilient ecological systems (Goal 3). In accordance with the implementation plan, hazardous fuels would be treated to reduce the risk of wildland fire to communities and the environment and vegetative conditions would be modified to increase firefighter and public safety.

## 1.5 DECISION FRAMEWORK

### 1.5.1 Decisions to be Made

This EIS is not a decision document. Its main purpose is to disclose the potential consequences of implementing a proposed action and alternatives to that action. However, the EIS is prepared on the premise that certain decisions must be made and that they will be documented in a Record of Decision (ROD). The ROD will document the selection of an alternative, which could be no action, the proposed action, another action alternative, or a combination of alternatives. Comments on the draft EIS are used to prepare the final EIS and ROD. Accordingly, this EIS focuses on providing analysis sufficient for the Forest Service to make the following decisions:

1. The location and number of acres that will be treated using the following vegetation management activities: thinning, sanitation, salvage, patch clearcutting, stand perimeter thinning and patch cutting; mechanical fuel reduction, broadcast burning, and pile burning.
2. The existing and temporary roads on NFS lands that will be used during project activities, at what level of maintenance the roads will be maintained during and after project activities, and how temporary roads will be closed following project activities.

3. The public and project-related use of the existing Stone Creek Trail (FDT 2349) during project activities, including its potential widening and use for log hauling, which would require closure of the trail for one logging season (spring through fall) and restoration of the trail following its use for log hauling.

The EIS documents the evaluation of only the actions and activities being considered within the project area. This EIS will not be used to revisit previous decisions made in the ROD for the Revised Forest Plan. It will, to the extent appropriate for each resource or discipline, consider the combined (cumulative) effects of the proposed VVFH project and other projects in close proximity to it.

## **1.5.2 Deciding Official**

The Deciding Official for this project is the Forest Supervisor for the White River National Forest in Glenwood Springs, Colorado. The Recommending Official for this project is the District Ranger for the Holy Cross Ranger District in Minturn, Colorado.

## **1.6 PUBLIC INVOLVEMENT**

NEPA requires that the public and other agencies be given the opportunity to be involved in agency decision-making. An important part of this process is scoping. CEQ Regulations refers to scoping as an internal and public involvement process to determine the “scope of the issues to be addressed and for identifying the significant issues related to a proposed action” (40 CFR 1501.7). This section describes the scoping process to date and the issues to be addressed within this EIS.

### **1.6.1 Scoping Summary**

The official scoping period for the VVFH Project was conducted during October and November 2003. A Notice of Intent to Prepare an Environmental Impact Statement was published in the *Federal Register* on October 23, 2003. A legal notice that described the proposed project was published in the *Vail Daily* on October 31, 2003. A scoping letter for the proposed project was mailed to a list of interested and affected parties on October 28, 2003. The scoping letter contained the following information: 1) introduction, background, and location of the proposed project; 2) the purpose of, and need for, the proposed project; 3) the proposed action; 4) the decision to be made; and 5) public involvement. Scoping letters were mailed on November 4 through November 6, 2003 to additional parties identified by the Forest Service after October 28, 2003. A Forest Service newspaper insert that contained information about the proposed project and background information was published with the *Vail Daily* on November 10, 2003. A public open house was held on November 12, 2003 for the purpose of explaining the project and soliciting comments from the public. Comments were requested on the proposed project for a 30-day period ending on November 29, 2003.

Three letters were received offering comments and potential issues for the proposed project. One letter represents the comments and potential issues from three organized groups. The second letter offered comments and potential issues from local government. The third letter offered comments, but no potential issues. Comments were also offered in one e-mail response. In addition, one individual provided written comments at the open house.

### **1.6.2 Other Agency Scoping**

Other government agencies and representatives of residential developments were contacted during the development of this project, including U.S. Fish and Wildlife Service, Environmental Protection Agency,

U.S. Army Corps of Engineers, U.S. Bureau of Land Management, Colorado Division of Wildlife, Colorado State Forest Service, Colorado Division of Water Resources, Colorado Department of Transportation, Colorado Natural Heritage Program, Colorado State Geological Survey, Northwest Colorado Council of Governments, Eagle County, and the following communities: Vail, Intermountain, Eagle-Vail, Minturn, Avon, Mountain Star, Wildridge, Beaver Creek, and Arrowhead.

## 1.7 ISSUES

Issues were identified using two sources: internal Forest Service review and the comments received during external scoping. Not all comments led directly to issue development. For example, comments expressing general support for the project were not used to develop issue statements. Comments taken from letters responding to scoping and the internal Forest Service review were used to develop a concise issue statement for each issue. These comments (or supporting statements) further explain or support the issue statements, and are contained in the scoping summary in the *Project File*. After issues were identified, a procedure to address each issue was developed. Issues identified will be addressed in the following ways: formulation of alternatives; design criteria for alternatives; mitigation measures applied to alternatives; and analysis of alternatives. No issues were found to be beyond the scope of the analysis or not relevant to the project.

Issues were categorized as key or non-key issues. Key issues are those that were used during the formulation of alternatives, whether the alternative formulated was considered in detail or dropped from further analysis. Other (non-key) issues represent substantial concerns; however, these issues are usually addressed within the design criteria of the proposed alternatives, mitigation measures, or tracked through the effects analyses. The issues that resulted from public scoping and internal review by the Forest Service IDT are categorized below as key issues and non-key issues, as determined by the IDT.

### 1.7.1 Key Issues

**Roadless Areas** – Management activities in inventoried roadless areas should be designed to protect roadless area characteristics.

**Windthrow Risk** – Management activities should be designed to minimize windthrow risk.

**Fuels Management and Wildland Fire Hazard** – Management activities should be designed to manage fuel loading to minimize wildland fire hazards. Prescribed burning, especially on steep slopes, should be planned so that it can be done safely and be effective over time. Fuel loading should be considered in designing vegetation treatments.

**Effectiveness of Silvicultural Treatment** – Management activities should be designed to improve forest health in the long term by modifying future mountain pine beetle (MPB risk), treating stands with localized MPB outbreaks, and reducing hazardous fuels in the Vail Valley while meeting Forest Plan standards.

**Recreation/Trails** – Recreation use should be carefully managed in high-use areas that are in close proximity to planned management activities to assure public safety and minimize impacts on recreation use. Widening and hauling on the Stone Creek trail would disrupt use on the trail.

### 1.7.2 Non-Key Issues

**Wilderness** - Management activities in designated wilderness should be designed to preserve natural conditions and/or return the area to a more natural state.

**Scenery Management** – Management activities should be designed to meet scenic integrity objectives while also meeting the forest health objective.

**Air Quality** – Prescribed burns and the associated smoke may affect air quality.

**Slope Stability** – Proposed treatments in and above areas with severe and/or high slope instability could increase the potential for slope failures unless potential effects can be mitigated by avoiding these areas or designing treatments that would lessen the potential for movement to occur.

**Wildlife** – Management activities should be designed to maintain viability of species and in accordance with Forest Plan standards and guidelines and other existing guidance.

**Heritage Resources** – Management activities should be designed to avoid adverse impacts to heritage resources.

**Noxious Weeds** – Management activities should be designed and implemented to minimize the introduction and spread of noxious weeds.

**Roads** – The need for new roads and road improvements should be considered carefully, because roads cause resource impacts.

**Traffic** – Traffic through neighborhoods will temporarily impact residents.

An issue statement, indicators, and procedure to address each issue are provided below, first for key issues, and then for non-key issues.

### **ROADLESS AREAS – Key Issue**

- **Issue Statement:** Management activities in inventoried roadless areas should be designed to protect roadless area characteristics.
- **Indicators:** Effects on characteristics of inventoried roadless areas; acres of treatments in inventoried roadless areas
- **Procedure to Address:** This issue was addressed during the formulation of Alternative D. Design criteria that address roadless issues will be applied to all alternatives, as described in Chapter 2 and Appendix D. The effects of each alternative on roadless area characteristics are analyzed in Chapter 3, and the need for additional mitigation measures will be based on the analysis.

### **WINDTHROW RISK – Key Issue**

- **Issue Statement:** Management actions should be designed to minimize windthrow risk.
- **Indicators:** Effects on retention of snags and woody debris and snag recruitment; effects on ecosystem health; effects on habitat structural stages (HSSs); MPB risk; and change in fuel loading
- **Procedure to Address:** This issue was addressed during the formulation of design criteria and alternatives dropped from further analysis. Design criteria that comply with Forest Plan guidance and sound scientific research and professional judgment would be applied to all alternatives, as described in Chapter 2 and Appendix D. The effects of each alternative on windthrow risk and associated effects are analyzed in Chapter 3, and the need for additional mitigation measures will be based on the analysis.

### **FUELS MANAGEMENT AND WILDLAND FIRE HAZARD – Key Issue**

- **Issue Statement:** Management activities should be designed to manage fuel loading to minimize wildland fire hazard. Prescribed burning, especially on steep slopes, should be planned so that it can be done safely and be effective over time. Fuel loading should be considered in designing vegetation treatments.

- **Indicators:** Change in fuel loading; acres treated by broadcast burns; acres treated by mechanical methods; change in predicted flame length; change in predicted rate of spread; aspen fuelbreaks, measured as acres treated; fuelbreak created at wildland urban interface, in acres
- **Procedure to Address:** This issue was addressed during the formulation of Alternative C. Design criteria that address fuels management and wildland fire hazards and comply with Forest Plan guidance would be applied to all alternatives, as described in Chapter 2 and Appendix D. The effects of each alternative on fuels loading and wildland fire hazards are analyzed in Chapter 3, and mitigation measures will be based on the analysis.

## **EFFECTIVENESS OF SILVICULTURAL TREATMENT – Key Issue**

- **Issue Statement:** Management activities should be designed to improve forest health in the long term. Will the proposed silvicultural treatments be effective in modifying future mountain pine beetle (MPB) risk, treating stands with localized MPB outbreaks, and reducing hazardous fuels in the Vail Valley while meeting Forest Plan standards.
- **Indicators:** Effects on species mix of animals and plants; effects on retention of snags and woody debris and snag recruitment; effects on late successional and old growth components; effects on ecosystem health; change in forested cover types; effects on habitat structural stages (HSSs); aspen enhancement; and MPB risk.
- **Procedure to Address:** This issue was addressed during the formulation of alternatives dropped from further analysis. Design criteria that comply with Forest Plan guidance would be applied to all alternatives, as described in Chapter 2 and Appendix D. The effectiveness of silvicultural treatments included in each alternative, including the effects on threatened ecosystem components, are analyzed in Chapter 3, and the need for additional mitigation measures will be based on the analysis.

## **RECREATION/TRAILS – Key Issue**

- **Issue Statement:** Recreation use should be carefully managed in high use areas that are in close proximity to planned management activities to assure public safety and minimize impacts on recreation use. Widening and hauling on the Stone Creek trail would disrupt use on the trail.
- **Indicators:** Effects on determining factors for Recreation Opportunity Spectrum (ROS) class – remoteness, degree of naturalness, managerial setting (visitor controls), and social setting as the change in ROS, summer or winter, in acres; displacement of recreation activities as miles temporarily closed; effects on recreational use of roads, trails, and other facilities; effects on existing recreation facilities (campgrounds, trailheads, other facilities); effects on recreation special uses.
- **Procedure to Address:** This issue was addressed during the formulation of Alternative C. Design criteria that address recreation use and potential conflicts with management activities would be applied to all alternatives, as described in Chapter 2 and Appendix D. The effects on recreation and trail use are analyzed in Chapter 3, and the need for additional mitigation measures will be based on the analysis.

## **WILDERNESS – Non-Key Issue**

- **Issue Statement:** Management activities in designated wilderness should be designed to preserve natural conditions and/or return the area to a more natural state.
- **Indicators:** Effects on characteristics of designated wildernesses; acres of treatments in designated wilderness areas
- **Procedure to Address:** Design criteria that comply with Forest Plan guidance and address wilderness issues will be applied to all alternatives, as described in Chapter 2 and Appendix D. The effects of each alternative on wilderness values are analyzed in Chapter 3, and the need for additional mitigation measures will be based on the analysis.

## **SCENERY MANAGEMENT – Non-Key Issue**

- **Issue Statement:** Management activities should be designed to meet scenic integrity objectives while also meeting the forest health objective.
- **Indicators:** Effects on existing scenic integrity (ESI), scenic attractiveness (SA), scenic class (SC), and visibility; whether or not scenic integrity objectives (SIOs) are met; intensity of mitigation needed to meet the SIO
- **Procedure to Address:** Design criteria that meet scenic integrity objectives and Forest Plan guidance would be applied to all alternatives, as described in Chapter 2 and Appendix D. The effects of each alternative on scenic integrity are analyzed in Chapter 3, and the need for additional mitigation measures will be based on the analysis.

## **AIR QUALITY – Non-Key Issue**

- **Issue Statement:** Prescribed burns and the associated smoke may affect air quality.
- **Indicators:** Total project-related emissions in tons of fine particles (PM<sub>10</sub> and PM<sub>2.5</sub>) and carbon monoxide
- **Procedure to Address:** Design criteria that comply with Forest Plan guidance and EPA's interim policy would be applied to all alternatives, as described in Chapter 2 and Appendix D. The effects of each alternative on air quality issues identified are analyzed in Chapter 3, and the need for additional mitigation measures will be based on the analysis.

## **SLOPE STABILITY – Non-Key Issue**

- **Issue Statement:** Proposed treatments units in and above areas with severe and/or high slope instability could increase the potential for slope failures unless potential effects can be mitigated by avoiding these areas or designing treatments that would lessen the potential for movement to occur.
- **Indicators:** Soil disturbance during project activities, in acres; effects on areas of slope hazards and existing landslides, treatments in areas of slope hazards, existing landslides, and sensitive soils, in acres; effects on erosion and sedimentation; expected soil erosion from treatment areas in tons per year and tons per acre per year, post-treatment and 20 years later

- **Procedure to Address:** This issue was addressed during the formulation of alternatives considered in detail because it could not be addressed through design criteria alone. Design criteria that address potentially unstable slopes would be applied to all alternatives, as described in Chapter 2 and Appendix D. The effects of each alternative on slope stability are analyzed in Chapter 3, and the need for additional mitigation measures will be based on the analysis.

### **WILDLIFE – Non-Key Issue**

- **Issue Statement:** Management activities should be designed to maintain viability of species and in accordance with Forest Plan standards and guidelines and other existing guidance.
- **Indicators:** Effects on federally listed species, Forest Service sensitive species, Management Indicator Species (MIS), species of concern, and species of viability concern, as applicable, for wildlife and aquatic life.
- **Procedure to Address:** Design criteria that comply with Forest Plan guidance would be applied to all alternatives, as described in Chapter 2 and Appendix D. The effects of each alternative on wildlife issues identified are analyzed in Chapter 3 considering the current sensitive species list. The need for additional mitigation measures will be based on the analysis.

### **HERITAGE RESOURCES – Non-Key Issue**

- **Issue Statement:** Management activities should be designed to avoid adverse impacts to heritage resources.
- **Indicators:** Effects on heritage resources, eligible sites, and unknown sites
- **Procedure to Address:** Design criteria that address the area of potential effect would be applied to all alternatives, as described in Chapter 2 and Appendix D. The effects on heritage resources are analyzed in Chapter 3, and the need for additional mitigation measures will be based on the analysis.

### **NOXIOUS WEEDS – Non Key Issue**

- **Issue Statement:** Management actions should be designed and implemented to minimize the introduction and spread of noxious weeds
- **Indicators:** Effects on areas susceptible to noxious weed infestation; available corridors for seed transport along roads and trails; proximity of treatment areas to known or inventoried populations of noxious weeds, in acres
- **Procedure to Address:** Design criteria that comply with Forest Plan guidance would be applied to all alternatives, as described in Chapter 2 and Appendix D. The effects of noxious weeds are analyzed in Chapter 3, and the need for additional mitigation measures will be based on the analysis.

### **ROADS – Non-Key Issue**

- **Issue Statement:** The need for new roads should be addressed. No new system roads should be built. Roads no longer needed should be obliterated. Forest Plan guidance should be followed.

- **Indicator:** Changes to the road transportation system; density of open travelways
- **Procedure to Address:** Design criteria that comply with Forest Plan guidance would be applied to all alternatives, as described in Chapter 2 and Appendix D. The effects of changes to the road system are analyzed in Chapter 3, and the need for additional mitigation measures will be based on the analysis.

## **TRAFFIC – Non-Key Issue**

- **Issue Statement:** Truck traffic through neighborhoods will temporarily impact residents.
- **Indicator:** Changes to the road transportation system; density of open travelways
- **Procedure to Address:** Design criteria that address traffic concerns would be applied to all alternatives, as described in Chapter 2 and Appendix D. The effects of traffic are analyzed in Chapter 3, and the need for additional mitigation measures will be based on the analysis.

## **1.8 PERMITS, LICENSES, AND OTHER REQUIREMENTS**

All proposed actions would occur entirely on NFS lands. All analysis acres are entirely NFS lands, unless otherwise noted. The proposed VV FH Project can be implemented through standard Forest Service administrative actions. The Forest Service decision would apply only to NFS lands analyzed in the EIS. However, potential effects resulting from implementation of the proposed project on lands and activities administered by other federal, state, and local jurisdictions are also disclosed in this EIS.

Permits and authorizations will need to be obtained during the course of the VV FH Project. Decisions by other jurisdictions to issue or not issue approvals related to this proposal may be aided by the analyses presented in this EIS. **Table 1–1** identifies agencies and permits or approvals that may be required to implement the Proposed Action or an action alternative. This list shows the range of requirements anticipated, along with their associated agencies and regulations, but is not exhaustive. Other permits and approvals may be required, depending on what specific development is authorized and on the regulatory processes in effect at the time of project implementation. While the Forest Service assumes no responsibility for enforcing laws, regulations, or ordinances under the jurisdiction of other governmental agencies, Forest Service contract provisions require that operators abide by the applicable laws and conditions imposed by other jurisdictions.

**Table 1-1 Permits, Approvals, and Consultations that May Be Required for the Vail Valley Forest Health Project**

<b>Agency</b>	<b>Type of Action</b>	<b>Description of Permit or Action</b>
<b>FEDERAL</b>		
U.S. Forest Service	Construction Plan Review	Construction Plans will be reviewed for consistency with Operating Plan standards and with the terms of the ROD.
	Landline Location	Landlines adjacent to proposed treatment areas are posted.
U.S. Army Corps of Engineers (USACE)	USACE 404 Permit	Permit required for the discharge of dredged or fill materials into waters of the United States, including wetlands.
U.S. Environmental Protection Agency (EPA)	Clean Air Act, as amended, 42 U.S.C.A. Section 7410-762 (PL 95-604, PL 95-95)  Federal Water Pollution Control Act, as amended by the Clean Water Act, 33 U.S.C.A. Section 1251-1376 (PL 92-500, PL 95-127)  Safe Drinking Water Act, 452 U.S.C.A. Section 300F-300J (PL 93-523)	Under NEPA, EPA is required to review and comment on major federal actions that have a significant impact on the human environment. EPA's responsibility and role is to provide scoping comments, review EISs, and provide information and appropriate technical assistance during and following the environmental analysis process. Specific environmental legislation for which the EPA is responsible and that would be applicable to the proposal is shown at left. Administrative and enforcement responsibilities have been delegated to the State of Colorado for all three acts.
U.S. Fish and Wildlife Service	Formal and Informal Consultation and Biological Opinion	Protection of threatened and endangered species under the Endangered Species Act.

Agency	Type of Action	Description of Permit or Action
<b>STATE OF COLORADO</b>		
Department of Public Health and Environment (CDPHE) CDPHE - Air Pollution Control Division	Air Emission Permit (CRS 24-7-112)	Ensures that air quality standards are not exceeded. Required for stationary pollution sources. Reviews and permits open burning proposals.
Department of Natural Resources (DNR) - Division of Wildlife (CDOW)  DNR - Colorado Natural Heritage Program  DNR - Water Conservation Board  DNR - Division of Water Resources	-NEPA Participation - USACE Permit Participation  Catalogues and maintains plant information  Floodplain and water supply reviews, including minimum streamflow  Water supply review	Responsible for protection and management of state wildlife and fish resources. Participation in the Section 404 process and review of the EIS.  Provides reviews concerning threatened and endangered plants, including threatened and endangered habitat for plants, animals, aquatic systems, sensitive ecosystems, and other natural features.  Responsible for providing floodplain information and analysis of water supply for mitigation of flood hazards. Also responsible for maintenance of minimum streamflow.  Responsible for determining adequate water supply and cumulative impacts on water supply.
State Historic Preservation Officer	Consult on Section 106 compliance process	Protection of cultural resources.
<b>EAGLE COUNTY</b>		
Road and Bridge Department	Consult on haul roads	Responsible for assigning weight restrictions on county roads.