3.4. FIRE

INTRODUCTION

This project proposes to reduce hazardous fuels at a minimum of two scales:

First, at an individual site scale, the treatment of fuels at this scale is important and is critically needed to address reducing wildland fire intensities. Treatments would reduce the amount and distribution of surface fuels, both living and dead in all size classes, and would break up the vertical and horizontal continuity of fuels that can promote and support large wildland fire growth. On the acres treated, the fuel model would change from a volatile model that supports torching and crowning to a model that would moderate fire behavior and be more likely to restrict a wildland fire to the surface of the forest floor.

Secondly, this project looks at the larger drainage or watershed level. Identifying and locating patterns of treatments in the landscape can mitigate the potential of large to very large wildland fire events moving toward and threatening areas and communities of concern. Considering existing patterns of disturbance along with the strategic placement of proposed activities can help create a pattern that would restrict the potential for wildland fires to become large to very large events that might threaten communities, structures and critical resource areas (Finney, et al, 2001).

AMERICAN RIVER

The focus of these specific treatments is to reduce the amount of hazardous fuels on National Forest lands immediately adjoining private and BLM lands.

The treatment and reduction of hazardous fuels serve several purposes:

Treatments would extend a buffer area that would help protect lands, improvements and structures in and around this portion of the Elk City Township from the threat of wildland fire.

Treatments would break-up the continuity of existing heavy fuel loads both horizontally and vertically that can support high intensity wildland fires that move through surface vegetation and into tree crowns during periods of high fire danger. These periods of high, very high and extreme fire danger typically occur during late July, August, and early September. Conditions have become more volatile by repeated occurrence of drought and increasing levels of insect mortality.

CROOKED RIVER

The focus of these specific treatments is to reduce the amount of hazardous fuel conditions across a mid-slope zone from Orogrande to Highway 14. Proposed fuel treatment units, in combination with previous disturbance, would create an effective pattern that would break up continuity of vegetation (fuel), both horizontally and vertically. This pattern is important at landscape scales to disrupt fuel available to wildland fire and the potential for large wildland fire growth that has become more common over the past decade. Completion of treatments in this project area would also lower wildland fire intensities and treated areas could be utilized to base effective suppression/control operations without compromising firefighter safety.

SCOPE OF THE ANALYSIS

The American and Crooked River project analysis area for fire and fuels includes the entire project area. Fuel models (FM), using Anderson (1982) and Albini (1976), represent the fuel profile within the project area. Fuel models in the project area include FMs 1, 3, 4, 5, 8 and 10. Descriptions of the FMs can be found in Appendix G.

The amount of acres of each component of fire and fuel are used as indicators. Indicators used for analyzing effects on fire include Fire Regime and Risk/Fire Hazard based on fuel model.

REGULATORY FRAMEWORK

The Nez Perce National Forest Plan (1987, pages II-1 through II-8) established goals and objectives for the management of the Forest. Specific Forest Plan goals that apply to fire management in the American and Crooked River project area are:

- Protect resource values through cost effective fire and fuels treatment through the utilization of material and using prescribed fire (page II-2).

The Forest Plan also identifies specific fire management direction in Appendix C: Fire Management Direction. This direction is to ensure that fire use programs are cost effective, compatible with the role of fire in the forest ecosystem and responsive to resource management objectives.

- Prescribe fire to maintain healthy, dynamic ecosystems that meet land management objectives.
- Emphasize fire ecology implications when applying prescribed fire.

Additionally the Forest Plan has identified management areas to distinguish differing management emphases between geographic areas. The Forest Plan gives general guidelines, goals, and standards for fire management within these management areas that can be found throughout Chapter III of the Forest Plan.

The "Healthy Forest Restoration Act of 2003" gives direction to conduct hazardous fuels reduction projects on National Forest System lands. These projects are "aimed at protecting communities, watersheds, and certain other at-risk lands from catastrophic wildfire, to enhance efforts to protect watershed, and address threats to forest and rangeland health, including catastrophic wildfire, across the landscape, and other purposes"(H.R. 1904). Specific direction for hazardous fuel reduction projects is found in Title 1 – Hazardous Fuel Reduction on Federal Land, Section 102 – Authorized hazardous fuel reduction projects. (16 USC 6512).

CONSISTENCY WITH THE FOREST PLAN AND ENVIRONMENTAL LAW

Alternatives B, C, D, and E of the project are consistent with the Forest Plan in its protection of resource values by the utilization of prescribed fire to accomplish fire and fuels treatments that are cost-effective, compatible with the role of fire in forest ecosystems and responsive to resource management objectives.

Alternatives B, C, D, and E of the project are also consistent with the Healthy Forest Restoration Act of 2003 as stated in Title 1 section 102 (a) "Authorized Projects. – As soon as practicable after the date of enactment of this Act, the Secretary shall implement authorized hazardous fuel reduction projects, consistent with the Implementation Plan, on –" (4), "Federal land on which windthrow or blowdown, ice storm damage, the existence of an epidemic of disease or insects, or the presence of such an epidemic on immediately adjacent land and the imminent risk it will spread, poses a significant threat to an ecosystem component, or forest or rangeland resource, on the Federal land or adjacent non-Federal land; and" through the implementation of a hazardous fuel reduction project.

ANALYSIS METHODS

Fuel model (existing and predicted) and fire regime were modeled from the potential and existing vegetation conditions, based on the rule sets of Keane et al, 1998. Potential treatment units are generally comprised of multistoried vegetation or high amounts of standing or down dead material

that would contribute to high intensity wildfire (FM10) and would tend to move toward FM 13 in a short period of time without treatment. Following treatment, these units would be in the low to moderate risk/hazard category (FM 5 and 8).

Existing condition FM's were then compared with what the FM's would look like under all of the Alternatives and are displayed in acres by alternative. A hazard assessment was done and a hazard level rating assigned to the FMs and is also displayed in acres by alternative. The hazard assessment is based on FMs and their associated fire behavior characteristics, in particular fire intensity and severity.

3.4.1. INDICATOR 1 - FIRE REGIME

EXISTING CONDITION

A fire regime reflects the pattern of fire frequency, size, uniformity, and severity within an area. Fire has been a major force shaping landscape patterns and influencing productivity. It affects the composition, structure, and pattern of vegetation on the landscape. Fire as a disturbance process is an integral part of the concept of ecosystem management.

Presettlement fire regimes have been described for the analysis area by their characteristic severity (non-lethal, mixed severity, lethal), and frequencies (very frequent: 5 – 25 years, frequent: 25-75 years, infrequent: 75-150 years, and very infrequent: 150 – 300 years), using field studies, timber stand data, aerial photo interpretation, and scientific literature including Morgan, et al. 1996 and Kapler-Smith and Fischer, 1997). They are modeled using habitat type group(s) and terrain setting.

Table 3.37 displays the presettlement fire regimes within the project area. These fire regimes are displayed on Map 4.

Table 3.37: Fire Regimes acreage in the Project Area

Fire Regime	Acres in American River Project Area	Acres in Crooked River Project Area
Very Frequent, Non-Lethal	99	1150
Frequent, Mixed	0	2109
Infrequent, Mixed	9680	13366
Infrequent to very infrequent, Lethal	5779	6540

After 1930, fire incidence within the project area dropped substantially due to the effectiveness of fire suppression activities (USDA 2003, p. 4-85).

Areas with very frequent and frequent fire regimes missing from 1 to 15 fire occurrences due to increased time between fires. The missed fire occurrences have led to a buildup of fuels and changing of fuel conditions such as; replacement of fire resistant with non fire resistant tree species, and increases in timber stand density and vertical arrangement of fuels. This change in fuel and stand conditions would in turn allow for these stands to be identified as being in Fire Regime Condition Classes 2 and/or 3 (Schmidt et al. 2002) because they are outside of their historic norms for a disturbance pattern. Refer to map 5 for condition class within project area. These changes contribute to increased fire intensity, and fire severity. Fire intensity is defined as the heat released along the leading edge of the fire, and expressed as Btu/lineal foot of fire front/second. Fire severity is a qualitative assessment of the consumption of surface fuel and duff

based on the heat pulse of a fire. Fire severity is also used as an indicator of fire effects on vegetation and soil, and may or may not be closely related to intensity. Higher fire intensity and severity may lead to increased mortality, and decreased effectiveness of suppression actions, resulting in an increased chance of large stand replacement fires in the future.

Areas of infrequent and very infrequent fire regimes are little departed from their pre-settlement fire regimes at the stand scale, but large areas free of disturbance for the last 50 to 80 years may be departed at the landscape scale. The pending increase of surface fuels in the project area as the lodgepole pine killed by the mountain pine beetle fall would be within the historic norm, and the mosaic of mixed and lethal fires that might follow in these areas would also be within the norm. These stands can be classified as being in Condition Class 1, for the most part when considered stand-by-stand, because they are within their central tendency of the historic regime. There may be site-specific variations from this norm, however, and the mountain pine beetle epidemic occurring in the project area is creating a condition where effects from a large fire may not be acceptable due to the local social values and degraded watershed conditions. The Healthy Forest Restoration Act of 2003 provides direction in Section 102 (a) (4) to implement hazardous fuel treatments on Federal land with insect epidemics (16 USC 6512).

ENVIRONMENTAL EFFECTS

ALTERNATIVE A

Under the no action alternative the stands with very frequent and frequent fire return intervals would continue to miss disturbances. This would allow for continued buildup of fuels and changing of fuel conditions, such as stand density and vertical arrangement. These conditions would cause a wildland fire occurring in these stands to burn with increased intensity and severity, decrease the effectiveness of suppression actions and increase chances for detrimental fire effects from a stand replacing event happening.

Areas that have infrequent and very infrequent fire return intervals would continue to proceed as they would naturally. This includes fuel buildup as stands mature and decline from age and outside agents such as beetles. As a result of this buildup, lethal, stand-replacing fires would become more prevalent.

ALTERNATIVES B, C, D AND E

With these alternatives, stands in the very frequent and frequent fire regimes would have some type of disturbance, either mechanical and/or fire, returned to some of them. This would start to bring the treated stands back into their historic fire regime. Bringing these stands back to their historic regime and Condition Class 1 would result in a lower fire hazard, which would lessen the effects caused by a wildland fire.

In the stands that would be treated in the infrequent and very infrequent fire regimes, the disturbance would tend to maintain the stands' normal fire return interval, maintaining the stands in Condition Class 1. For the stands that are not treated under these alternatives the effects would be similar to the effects described under Alternative A.

3.4.2. INDICATOR 2 - FUELS

EXISTING CONDITION

The increased effectiveness of fire suppression in western forests since the 1930's has been followed by a subsequent decrease in large fire occurrences. Without a natural reduction of fuel accumulations by fire, litter has built up, tree density has increased, and fuel continuity has

increased both vertically and horizontally in many areas. This can resulted in increased fire intensity when a fire does occur. This effect is most distinct in fire regimes of non-lethal to moderate severity, where increased fire area is now burned primarily by high severity fires (Agee 1993).

The American and Crooked River project area consists of a variety of fuel conditions, described by fire behavior fuel models (Anderson 1982). Six fuel models are represented in the project area and include 1, 3, 4, 5, 8, & 10. Descriptions of the fuel models can be found in Appendix G. Grass fuel models 1 and 3 occur in the meadows adjacent to the American and Crooked River and recent clearcuts with little regrowth of shrubs or trees. Harvest in the recent past within the American River Township has reduced hazardous fuels extensively close to the community and much of that harvested area is fuel model 1. The flammability of these fuel types is dependant on their stage of growth, with low flammability in the spring and early summer during green up, and increasing in flammability as the growing season continues and they begin to cure out. While rates of spread may be high in these fuel types, the resistance to control is low.

Fuel model 5 represents shrub and saplings fuel types that are present in the area. These fuel types are indicative of past fire disturbances or harvest activities in the project area. Fires in this fuel type area generally not very intense due to the light surface fuel loading and high component of live fuels. Pole stands were assigned to fuel model 5 unless canopy was greater than 70 percent, then they were assigned fuel model 4. Fuel model 4 burns with high fire intensity and is fast spreading involving the foliage and live and dead fine woody material.

Timber fuel models 8 and 10 represent a majority of the project area. Fuel model 8 represents single-story early to mid successional stands with little dead and down material or ladder fuels. Fire spread in this fuel type is low with low intensities and little tree mortality. Only under severe weather conditions involving high temperatures, low humidity, and high winds do the fuels pose fire hazards.

Fuel model 10 represents more decadent, late successional, multistoried stands with ladder fuels and a significant dead and down component. Due to the heavy component of down fuel and presence of ladder fuels, fires in this fuel types have high fire intensities, which can lead to torching and crowning in the overstory along with spotting. With these conditions, fires occurring in this fuel type are generally at the upper limit of control with direct attack by hand.

Decades of fire suppression activity, has led to changes in the spatial distribution of the fuel models in the project area. Stands that were historically fuel model 8 have transitioned to a model 10 due to the lack of low severity fires that has allowed for the accumulation of dead fuels and the establishment of multi-storied stands through regeneration. Wildland fires occurring in these stands under the existing conditions (fuel model 10) will burn with increased intensity and severity than they would have historically. This results in an increased potential for these stands to experience a stand replacing fire. This shift in fuel models is also being compounded by the infestation of mountain pine beetle that the project area is experiencing. As these trees are dying, they are starting to contribute to the dead fuel loading and shifting the fuel models to models 10 and 13. Fuel model 10 would have occurred in areas of infrequent mixed and lethal fire under natural conditions. Fires would have prevented this fuel model from being widespread and common.

In addition to the suppression activities, harvest activities have changed the distribution of fuel models over time. Fuel model 5 has recently become more prevalent over the project area as stands have been harvested and regenerated, but large contiguous areas of fuel model 5 might have occurred under natural fire regimes in the areas of historically infrequent mixed and lethal fire.

ENVIRONMENTAL EFFECTS

Fuels are an integral part of most wild lands. Direct effects of fire result from the characteristics of the heat regime of the fire, which is controlled by the manner in which fuels burn. Managing fuel quantity and arrangement in the landscape can help moderate the heat regime of a fire in areas where it is important to affect burning behavior to limit social, economic, or environmental effects.

ALTERNATIVE A

Under the no action Alternative the fuel loadings, both live and dead, would continue to increase. There would be an increase in fuel model 10 and a subsequent decrease in fuel model 8 as these stands age and change over time. Additionally, with the mountain pine beetle infestation some of these stands will experience high mortality, which would lead to an increase in the dead fuel load making these stands be best represented by fuel model 13. Fuel model 13 is characterized as a continuous layer of slash. Fires burning in this fuel model spread quickly through the fine fuels and build in intensity as the larger fuels start burning. Active flaming is sustained for long periods and can generate a wide variety of firebrands that cause spotting and control problems.

ALTERNATIVES B, C, D AND E

With these Alternatives the fuels conditions in the project area would continue to change from fuel model 8 to fuel models 10 and 13 as the untreated stands age and fuels accumulate, but at a lesser rate than Alternative A. Alternatives B, C, D, and E would reduce the fuel loadings and continuity over the project area, and thus reduce the effects of a large scale wildland fire. This is accomplished by dispersing the treatment units over the project area and modifying the fuel models from fuel models 10 and 13, which result in fires with high intensities and severity, to fuel models 1 and 8, with lower intensities and severities. These areas where the fuels have been modified will help slow fire spread and reduce intensities, which would improve the likelihood of successful fire suppression.

Alternatives B, C, D, and E would help break up horizontal fuel continuity in the landscape and reduce the acreage of fuel models 10 and 13. The effects vary proportionally with the acres treated in each alternative.

Additionally, Alternatives C and D would concentrate a greater amount of treated acres in relative proximity to the north and east edges of the Elk City Township than Alternatives B and E, creating opportunities for more effective and efficient coordination of proposed and possible fuel reduction and defensible space efforts with adjacent landowners and the Bureau of Land Management.

Table 3.38: Treatment Acres

	B	C	D	E
	Acres treated	Acres treated	Acres treated	Acres treated
American	584	721	968	362
Crooked	1499	1546	1971	1319
Total	2083	2267	2939	1681

3.4.3. INDICATOR 3 - RISK/HAZARD

EXISTING CONDITION

Fire risk is the probability of a wildland fire ignition occurring. These occurrences may be from a natural source such as lightning, or from human-caused sources such as smoking, campfires, or industrial. Fire hazard is a rating that can be assigned based on various attributes of a fuel complex. The attributes used may be susceptibility to ignition, the fire behavior and severity it would support, and/or suppression difficulties it represents (Walstad, et al. 1990).

During a period from 1970 through 2003 there have been 86 ignitions within the project area of which 77 have been lightning caused ignitions and 9 human caused. The natural ignitions during this period do not show a strong pattern of localized occurrences within the project area. The human-caused ignitions tend to follow travel routes and would likely increase as visitor use to the area increases (USDA 2003)

Fire hazard for this analysis is based on the fuel models within the project area, and how they relate to a fire's behavior and the resulting fire severity. By using this method the hazard ratings of low, moderate, and high are assigned to fuel models.

The areas described as being fuel models 1, 3, and 8 are classified as being low fire hazard. These fuel models are composed of light fuels, which do not result in high severity fires that do great damage to the resources. They result in little damage to the soil because they burn quickly and do not consume the organic material in the soil or heat the soil significantly. Additionally these fires do minimal damage to the overstory in the stands where they occur. Mortality in fuel model 8 is usually associated with the fire burning in small jackpots of fuels that are uncharacteristic of the fuel model as a whole. Areas of fuel model 8 can transition to more intense crown fires under severe burning conditions. Lastly because of the light fuels present in these fuel types, resistance to fire control is usually low, and under normal conditions these fires are easily controlled.

The areas described as being fuel model 5 are classified as being moderate fire hazard. Fires occurring in this fuel type are more severe than those in the low hazard class. This increased severity is due to the increased mortality of the overstory brush and seedling/saplings that comprise the fuel type, and the increased potential for soil damage due to more removal of organic material caused by longer fire duration.

The high fire hazard areas are those areas classified as being fuel models 4, 10 and 13 . Fires occurring in fuel model 10 and 13 are the most severe due to the heavy fuel loadings. With the higher fuel loading, these fires burn hotter and longer, which increases the damage done to the soil by removing the organic material from the soil. Additionally because of the multistoried stands in fuel model 10 there is an increased potential for fire to transition from a surface fire up into the overstory crowns. This may result in the occurrence of a stand replacing fire event. Lastly, because of the heavy fuel loading the resistance to control for a fire in fuel model 10 and 13 is high. This fact coupled with high fire intensity, creates a condition where the fire is at the upper limits for control by hand-forces, and a small change in weather conditions may result in an escaped fire. Fires occurring in fuel model 4 are fast spreading and burn with higher intensities. Besides flammable foliage, dead woody material in the stands significantly contributes to the fire intensity.

ENVIRONMENTAL EFFECTS

ALTERNATIVE A

The No Action Alternative would not reduce the fire hazard within the project area. If left as is, the fire hazard in the project area would increase as more stands transition from low or moderate fire hazards to high (fuel models 10, & 13).

With a large portion of the project area moving towards fuel models having a high hazard rating, the potential would exist for much of the project area to experience more severe and intense wildfires in the future. Due to higher intensities, these future fires would exhibit higher resistance to control resulting in an increased chance for a large, stand replacing fire event. This could be within the historic norm for much of this landscape, but could threaten structures and investments, as well as firefighter safety.

ALTERNATIVES B,C,D, AND E

These Alternatives would lower, to varying degrees, the acreage of the project area that would be classified as a high fire hazard. This change in the hazard ratings results from the modification of fuel models 10 and 13 towards fuel models 1 and 8 in the treatment units. By modifying the fuels, the hazard of fires occurring in these treatment units would be lowered based on their resulting severities, intensities, and resistance to control.

Additionally, Alternatives C and D would concentrate a greater amount of treated acres closer to the north and east edges of the Elk City Township than Alternatives B and E, creating opportunities for more effective and efficient coordination of proposed and possible fuel reduction and defensible space efforts with adjacent landowners and the Bureau of Land Management.

3.4.4. IRREVERSIBLE OR IRRETRIEVABLE EFFECTS – FIRE REGIME, FUELS, AND RISK/HAZARD

COMMON TO ALL ALTERNATIVES

No irreversible commitments are proposed under any of the alternatives. Tree mortality and loss of other plant life due to wildfire would be irretrievable but not irreversible since these trees and all other plant life could be regenerated over time.

3.4.5. SUMMARY

EXISTING CONDITION

FIRE REGIME

- Fire incidence has dropped substantially since the 1930's, due to the effectiveness of fire suppression.
- Areas with frequent to very frequent fire regimes are missing between 1 to 15 fire occurrences.
- Areas with infrequent and very infrequent fire regimes are little departed from their pre-settlement fire occurrences at the stand scale, but some departure may exist at the broader landscape scale where little disturbance has occurred in the last 50 to 80 years.
- In the areas of infrequent and very infrequent fire regimes, the fire mosaic of mixed and lethal fires that might follow as a result of increasing fuel loads caused by the mountain pine

beetle infestation would be normal for these fire regimes, but could pose risk to structures and investments.

FUELS

- The fuel profile across the project area is represented by 6 fire behavior fuel models.
- Decades of fire suppression and timber harvest have changed the spatial distribution of fuels in the project area.
- Fuel models are transitioning to models that burn with greater fire intensity (heat output, used as indicator for fire behavior) and fire severity (surface fuel and duff consumption, used as an indicator for fire effects on vegetation and soil).

RISK/HAZARD

- The fire ignition occurrence (risk) within the project area is high. Fire risk is the probability of a fire ignition occurring.
- Due to increases in fuel loading resulting from the mountain pine beetle infestation, fuel models are transitioning to models that would result with a higher fire hazard rating.

ENVIRONMENTAL CONSEQUENCES

FIRE REGIME

- Under Alternative A, stands in the frequent and very frequent fire regimes would continue to miss fire disturbances, which would result in fuel buildup, and changes in timber stand composition and structure. The missed disturbances would continue to take those stands farther away from the conditions that would have naturally been seen in those fire regime(s). Stands in the infrequent to and very infrequent fire regimes would continue their successional processes as they would naturally, and would grow increasingly prone to mixed or lethal fire.
- Under Alternatives B, C, D, and E, multiple stands in the frequent and very frequent fire regimes would have some type of disturbance(s), such as mechanical fuel reduction and/or prescribed fire. This would start to bring these stands back into their historic fire regimes. In the infrequent and very infrequent fire regimes, the proposed treatments would maintain the normal fire return interval in the treated stands, and reduce the likelihood of locally severe effects.

FUELS

- Under Alternative A, fuel loadings, both live and dead, would continue to increase. Timber stands and other vegetation, as represented by fuel models, would eventually transition to fuel models that burn with higher intensities and severity. There would be a decrease in the effectiveness of suppression efforts resulting in an increased chance of large, stand replacing fires. There would be a decrease in firefighter and public safety due to fuel conditions that exhibit a high resistance to control.
- Under Alternatives B, C, D, and E, treatments would spatially fragment horizontal fuel continuity and reduce the predicted acreages of fuel models 10 and 13 by varying degrees by alternative. Areas where fuels would be modified would reduce fire intensity and severity, thus contributing to successful suppression activities. Alternatives C and D treat

more acres in close proximity to the Elk City Township, particularly in the American River watershed.

RISK/HAZARD

- Under Alternative A, the fire hazard would increase as more stands transition from low or moderate hazard to high (fuel models 10 and 13). A large percentage of the project area is predicted to eventually transition to high hazard, increasing the potential for fires that burn with higher intensity and severity. This may result in fires that are more difficult to control, and pose more threat to firefighter and public safety, based on the changes to the fuel model(s) and their resulting fire behavior.
- Under Alternatives B, C, D, and E the acreage of the project area that would be rated as high fire hazard is lowered in comparison with Alternative A. Treatments that modify fuel models 10 and 13 towards fuel models 1 and 8 would decrease the potential for fires that burn with higher intensities and severity with a high resistance to control, while increasing firefighter and public safety.
- Alternatives C and D treat more acres in close proximity to the Elk City Township, particularly in the American River watershed.
- Common to all Alternatives is that fire ignition occurrence (risk) levels probably would not change over time. It can be expected that occurrence levels would remain similar to those in the past. Fire hazard in this landscape would remain

CUMULATIVE EFFECTS - FIRE REGIME, FUELS, AND RISK/HAZARD

The cumulative effects of the Alternatives considers past, present and reasonably foreseeable actions. These actions are described earlier in this Chapter. The effects of the past actions are included in the existing condition by indicator. The environmental effects for each indicator discussed in Chapter 2 and Scope of the Analysis earlier in this section, when combined, show the cumulative effects of the Alternatives.

ALTERNATIVE A (NO ACTION ALTERNATIVE)

This Alternative would have no immediate effect on fuel conditions in the project area. However, in the short to long term, fuel loadings, both live and dead, would continue to increase with the result that more of the project area would move toward a higher fire hazard rating. Over time the fuels and associated hazard would continue to accumulate until such time as fire suppression is no longer successful in keeping fires small.

The only active fuels management projects within the project area are the Crooked River Demonstration and Orogrande defensible space projects. The purpose of these treatments is to reduce available vegetation/fuels within 300-500 feet of private and public structures and reduce the threat of losing these structures to wildfire. The size and scope of these treatments are small, designed to protect only the structures themselves, so the treatments would have little effect on the project area.

The BLM is planning to implement two fuels reduction projects (Whiskey South and Eastside Township) within the Elk City Township adjacent to the American and Crooked River project area. The purpose of these projects is to reduce the risk of high intensity wildland fire to life, property and natural resources in the Elk City area. Alternative A provides no temporary road access to the BLM's proposed treatment areas along the eastern and northern boundary of the Elk City Township.

ALTERNATIVES B, C, D, AND E

These Alternatives all provide mechanical and prescribed fire fuel reduction treatments, differing in the amount and location of those treatments and the associated reduction in high fire hazard. The interspersion of treatment areas along with fuel reduction in past harvest and burned areas can reduce the intensity and severity of a fire burning through those areas. Observations of wildland fire growth and behavior among age-mosaics of fuel patterns in the forests of the Sierra Nevada (van Wagtendonk 1995, Parsons and van Wagtendonk 1996) and on fires in the forests of the Northern Rockies (Button, personal observations) support the idea that spatial fragmentation of fuels can cumulatively change fire sizes and behavior. Past harvest and burned areas along with proposed treatments under Alternatives B, C, D, and E would provide anchor points (relatively safe, defensible locations) that facilitate fire suppression activities. Since it is not known exactly where or when a fire may start, having a dispersed pattern of fuel reduction treatment can provide more options for fire suppression by connecting these treatment areas depending on where the fire is, how fast it is spreading, and the amount, type and location of suppression forces (Agee, et al 2000, Finney, et al 1997).

Dispersed treatments rely on the topology of the treatment units as parts of a pattern to reduce spread rates and intensities (Martin et al. 1989, Gill and Bradstock 1998, Finney 2001). Dispersed treatments facilitate all suppression tactics (direct, indirect, and parallel attacks) by slowing overall fire growth and allowing units to be connected by firelines at the time the fires occur. Extensive coverage by a dispersed treatment pattern offers the optimal strategy for multiple fire spread directions and can change fire behavior irrespective of suppression actions.

The BLM is planning to implement two fuels reduction projects (Whiskey South and Eastside Township) within the Elk City Township adjacent to the American and Crooked River project area. The purpose of these projects is to reduce the risk of high intensity wildland fire to life, property and natural resources in the Elk City area. Alternatives C and D provide the most temporary road access to the BLM's proposed treatment areas along the eastern and northern boundary of the Elk City Township. Alternative B provides less temporary road access than Alternatives C and D, and Alternative E provides no temporary road access to the BLM projects.

The weather conditions most amenable to changes in fire behavior from fuel treatments will be those that historically have produced large and severe fires, but are not considered to be worst-case. Fire behavior under the worst conditions is rarely responsive to either treatment or suppression effects.