EDITH-HOLLOWAY BOUNDARY FUELS PROJECT

DECISION MEMO

USDA Forest Service
Helena National Forest
Townsend Ranger District
Broadwater County, Montana

I. INTRODUCTION

The Townsend Ranger District has identified approximately 457 acres of National Forest System lands located in portions of Township 8 North, Range 4 East, Sections 32 and 33, and Township 7 North, Range 4 East, Sections 4, 5, 8 and 9 that are currently at risk for stand-replacement wildfires. These acres are strategically located between the forest boundary and the Holloway Road (#4178) and adjacent to a private in-holding, all within the Ray Creek and North Fork Deep Creek drainages. This risk is attributed to a build-up of ladder fuels (lower branches and understory vegetation), increasing crown bulk densities (the volume of fuel/vegetation in the crown of the tree), and low crown base heights (a shorter distance between the ground and the base of the crown where heavier foliage starts makes it easier for a fire to reach the crown via the ladder fuels). The dense stand structure also increases moisture stress between plants leading to low moisture content in the foliage.

Ground vegetation and smaller trees create ladder fuels as they grow that can allow a ground fire to burn upwards into the tree canopies, becoming a crown fire and causing higher mortality to large expanses of mature trees. It would be more desirable to create conditions where a natural fire could burn in a mosaic pattern with less fire intensity and severity, resulting in reduced threats to both private property and public lands, and their associated resources. A pro-active method to accomplish this would be to treat selected stands of green trees in conjunction with dead and downed fuels using a combination of mechanical treatments and prescribed fire. This would reduce canopy closure and the associated risk of stand-replacement fire, as well as the amount of ground and ladder fuels.

Fuel loadings in the project area currently range from 10 to 25 tons per acre comprised of fine fuels (needles and branches less than 1 inch in diameter) and coarse woody debris (dead wood with a diameter greater than 3 inches). This high buildup within the surface layer is due to the absence of fire within these stands over the past century or more. Records indicate that fire suppression in the area around Townsend was recorded as early as 1889. Successful fire suppression over the past century has drastically affected forest structure and composition due to missed fire intervals. The following effects have impacted stand structure: increased canopy closure, increased ladder fuels and vertical continuity, and greater surface fuel loading than historic conditions (7-10 tons per acre) (Hessburg and Agee 2003; Keane et al. 2002).

The desired condition for the vegetation types in the project area are achieved through reduced ladder fuels, decreased crown bulk densities, and increased crown base heights. Stand densities range from approximately 100 – 200 square feet per acre of basal area. The desired condition for stand density is approximately 70 – 100 square feet per acre of basal area. Also, the area is defined as a Fire Regime 3 – one in which fires would burn with a mixed severity. This in turn equates to a Fire Regime Condition Class of High 2 (FRCC 2 - moderate departure from the historical range of variability) to 3 (FRCC 3 - high departure from the historical range of variability). The desired Fire Regime Condition Class is 1 (FRCC 1 – low departure - which is

considered to be within the natural range of variability). The current stand conditions differ from historic conditions due to the presence of ladder fuels and a closed canopy. Stands with the above described conditions will likely support fires with increased flame lengths, faster rates of spread, and fire intensities higher than what would be expected under natural conditions.

II. PURPOSE AND NEED

I have decided to implement a hazardous fuels reduction project in the Edith Holloway area on the Townsend Ranger District, Helena National Forest. This area is identified as Wildland Urban Interface (WUI) adjacent to, and intermingled with, private lands. There is a need to be pro-active in the treatment of hazardous fuels on National Forest System lands in this area adjacent to private land in order to reduce the threat of stand-replacement fire that could affect both private property and public safety. The Broadwater County Rural Fire District's Community Fire Plan and the Tri-County Fire Working Group's Regional Community Fire Protection Plan both have identified the project area as a priority area for treatment. This project will be in coordination with an overall protection strategy involving Federal, State, and County governments as well as adjacent private landowners.

The purpose of this project is to improve public safety by protecting adjoining and intermingled private lands and property from a stand-replacement wildfire. This will also reduce potential threats to forest resources, including the associated consequences to the ecosystem following a large fire. My decision allows the use of both mechanical and prescribed fire treatments to reduce hazardous fuels. The project reduces the risk of large fires and will return the area to a condition which minimizes uncharacteristically intense fires, thereby reducing the threat to life, property, and resources. This project will create a mosaic of reduced canopy (canopy is the stratum containing the crowns of the tallest vegetation present (living or dead), usually above 20 feet), ladder and ground fuels in an area located primarily between private land boundaries and easily accessible road systems on National Forest System lands.

This project will also reduce firefighter risk by providing more defensible positions for firefighters in the area of the wildland urban interface. Wildland firefighting is an inherently high risk occupation. Wildland urban interface is the area where firefighting resources are more likely to be physically engaged during an ongoing fire emergency due to the higher social and resource values associated with private property. Fire suppression resources need to tactically engage a fire in an environment that is less conducive to high rates of spread and/or crown fire; otherwise risk to firefighting personnel is elevated. The current mix of vegetation and fuels in the project area does not provide this reduced risk environment. As a result of my decision, firefighter and public safety can be improved during ongoing fire suppression operations.

Based upon professional literature (Hessburg and Agee 2003; Keane et al. 2002) and recent large-scale wildfire events in the immediate area in this type of landscape and environment (Maudlow-Toston Fire of 2000), fuel build-up is considered hazardous in this area, especially when considering its' close proximity to private property. The current mix of vegetation, stand density, ladder fuels in conjunction with canopy base height, canopy bulk density, and dead and down material would indicate a high likelihood that a fire in this area could rapidly develop into a stand-replacement wildfire.

In order to accomplish the purpose and need for action, it is necessary to modify the timber stands and ground fuels to levels that would allow fire to emulate more natural conditions when burning through this area. The intent is to identify fuel treatments on National Forest System lands that will be beneficial to both private and public ownerships in the area by creating conditions that, in the event of a wildfire, would allow a fire to burn more slowly and with less intensity as it spread across the landscape, whether the fire originated on public or private land. In the event of a wildfire following these treatments, vegetative conditions would be less likely to produce stand-replacement fire in and adjacent to private property, would have a higher likelihood of control when protecting these lands, and would reduce the risk to firefighters and the public.

Reducing canopy bulk density, surface fuels, and tree canopy density while raising canopy base height are crucial criteria to consider when planning treatments to reduce fire intensity and the risk of crown fire (Graham et al. 1999; Peterson et al. 2003).

III. SCOPING, COLLABORATIVE EFFORTS, AND ISSUES

In August, 2004 a scoping letter concerning this project was sent to approximately 450 people. This initial project proposal encompassed approximately 1500 acres. A two week comment period was provided. In all, 31 responses to the scoping were received. District personnel also personally contacted affected landowners and gathered comments and concerns. Many of the responses indicated a desire to see the Forest Service implement fuel hazard reduction on National Forest System lands to lessen the risk of fire and to compliment the actions that some private landowners had already taken or were planning to undertake on their own property.

On August 10, 2004, members of my staff and I conducted a field review of the project area with adjoining landowners in the project area, the chairperson of the Broadwater County Soil Conservation District, the Lewis & Clark County Emergency and Disaster Relief Coordinator and the Broadwater County Disaster and Emergency Services Coordinator to discuss the hazardous fuels situation on National Forest System lands, collaborative opportunities on adjacent private lands and grant opportunities available in conjunction with fuels treatment opportunities.

During 2005, the project was refocused and redesigned based on 1) comments received from the original scoping letter, 2) the findings of a larger-scale analysis (a watershed-scale assessment) that was driven by public comment (see Rationale for Decision below), and 3) the need to respond in a timely manner to an opportunity for collaboration with private landowners involving the availability of grants to treat their private property

In September, 2005, I sent out a second scoping letter. This letter described the redesigned project which proposed to treat a much smaller area than the original (approximately 450 vs. 1500 acres). The redesigned proposal focused on the need to reduce fuels within an area that, in the interim time period between the two scoping letters, had been designated by the Tri-County Fire Working Group as Wildland Urban Interface and that offered immediate opportunities for collaboration among landowners and the Forest. Twenty five responses to this scoping were received.

Following the September 2005 scoping letter for the redesigned project, and pursuant to the court decision resulting from *Earth Island Institute v. Ruthenbeck*, the Forest Service Washington Office provided direction that projects of this type would be subject to the notice, comment and appeal provisions of 36 CFR Part 215.

As a result of this direction, on November 22, 2005, a letter was sent to scoping letter respondents. This letter informed the respondents that the redesigned project proposal, as described in the second scoping letter of September, 2005, was now available for a 30-day comment period subject to the *Earth Island Institute v. Ruthenbeck* decision. Twenty two responses were received during this comment period.

Collaborative efforts for the project are consistent with the 10 Year Comprehensive Strategy Implementation Plan. The Broadwater County Rural Fire District and the Tri-County Fire Working Group have identified the project area in their Community Wildfire Protection Plans as a priority area for treatment. Work with interested parties will continue as the project progresses during on-the-ground efforts. Adjoining landowners have applied for grants to treat their property and/or have hired private forestry consultants to assist them in planning their fuel reduction strategies in conjunction with treatments on the project area.

Treatment of noxious weeds with herbicides can not be authorized under this categorical exclusion authority, but the Helena National Forest does have an ongoing weeds program and associated NEPA documentation to manage noxious weeds.

IV. DECISION

I have decided to treat approximately 457 acres of National Forest System lands as described below and shown on Figure 1, Decision Map. This treatment of specified National Forest System lands is consistent with the Helena National Forest Land and Resource Management Plan. The primary purpose of my decision is hazardous fuel reduction.

My decision includes approximately 276 acres of mechanical treatment with product recovery, and 181 acres of hand treatments with no product recovery. I have decided to modify one of the mechanical treatment units (a portion of unit 2c) and instead, use hand treatments in this area. This change is discussed in greater detail in Soils and Water under Section IV, Specific Design Criteria and Mitigation for Soils and Water. Mechanical treatment with product recovery will involve machine cutting and product removal, followed by burning (either piles or underburning).

Hand treatments will involve cutting by hand (with a chainsaw) and then burning (either piles or underburning). I have also decided to make three exceptions to underburning adjacent to one private inholding that I will identify later under the soils and water section.

I have decided that no current or managed old growth stands will be treated and have eliminated one unit (1A) from treatment as a result of my decision.

Treatments include thinning forests to irregular densities - with a desired condition of approximately 70-100 basal area. Some areas will be quite open while other areas will be denser. This treatment and its effectiveness are based on the SPLAT (strategically placed landscape area treatments) theory using either a 1:1 or 2:1 ratio of treatment effectiveness. In some areas, juniper and conifers less than ten feet tall will be slashed either by hand or utilizing machinery. In these areas, depending on the density of the slash, fuels will be lopped and scattered followed by underburning. Burning treatments will target the reduction of fine fuels (less than 3 inches in diameter). By reducing stand densities, this project will remove ladder fuels, reduce crown bulk density, raise the effective crown base height, and increase foliar moisture content in the remaining forest, thus changing future fire intensity, duration, and behavior (see Graham, R.T., A.E. Harvey, T.B. Jain, and J.R. Tonn. 1999. "The Effects of Thinning and Similar Stand Treatments on Fire Behavior of Western Forests" in project file).

I have considered the amount of coarse woody material that needs to remain following treatments based on soils, fuels and silvicultural prescriptions, and have determined that post-treatment tons per acre can be met for each of these resources while still meeting the purpose and need of reducing hazardous fuels.

In general this project area is made up of fully stocked mature trees; more open and/or younger stand characteristics are under-represented. These are primarily Douglas fir dominated stands and these treatments will create more open conditions and therefore add a desirable structural component to the landscape. Spacing will be irregular, with both individual trees and clumps of trees retained. Units where lodgepole pine is the dominant species will not be underburned following mechanical treatments, but piles may be burned as necessary to reduce fuel loads. Some specific units where I have concerns about effects to soils will also not be underburned as described later in my decision. Aspen stands will be improved by removing conifer encroachment where possible and feasible in conjunction with hazardous fuel reduction objectives. Due to increased fire resiliency and limited occurrence, and in order to maintain diversity, Ponderosa pine will be favored to remain as overstory when possible (primarily in unit 12).

Existing roads will be used for access. Approximately 0.8 miles of temporary road will be decommissioned once the project is complete. Off-road access will be provided for landings.

Operations will be conducted to minimize any potential impacts to resources (i.e. mechanical operations conducted on dry, frozen or snow packed ground, prescribed fire used when within prescription, flagging of sensitive areas identified as mitigation).

In making my decision I considered the potential for cumulative effects and concluded that cumulative effects will not be significant. My conclusion is based on: review of the Biological Assessments and Evaluations for fish, wildlife and plants, the low risk of environmental impact, the minimal environmental change expected, findings related to extraordinary circumstances (see below), recommended mitigation and on-the-ground review and discussions with District and Forest resource specialists.

I also considered the potential social and environmental consequences of taking no action in lieu of the very real consequences associated with the Maudlow-Toston Fire of 2000 and the subsequent rehabilitation needs on both National Forest and private lands which occurred. Based on this recent experience, the cumulative, long-term effects to public and private ecosystems, resources and property following a large, stand-replacement fire in the area are much greater than the cumulative effects associated with this project.

I reviewed the project record for the project's consistency with Forest Plan Standards and guidelines and found that my decision is consistent with the Forest Plan. This is also affirmed in the specialist reports.

Mitigation measures have been identified in the specialist reports located in the project file. A few examples of mitigation measures include:

- The project will comply with all Streamside Management Zones (SMZ's) regulations and other applicable Best Management Practices for forest practices.
- A new culvert will be installed on an unnamed tributary to the North Fork of Ray Creek on Forest Service Road #1478.
- All road improvements identified will be completed prior to any log hauling.
- A ford on a non-system road in Section 32 that parallels an unnamed tributary to the North Fork of Ray Creek will be closed. If the ford cannot be effectively closed, the non-system road leading to it will be closed.
- Burn units will be rested or deferred from grazing during active growing season use before and following treatment.
- The North Fork of Deep Creek Trailhead (winter recreation site) will be protected from uses associated with vegetation removal, i.e., not used as a landing, equipment parking, etc.
- Snowmobile use will be allowed on roadways during weekends and holidays when winter harvest activities are being conducted.
- All temporary roads will be closed to public use.
- Winter logging will be conducted in areas of past timber harvest in order to meet regional soil guidelines.
- Lynx habitat within treatment unit 6c will be marked on the ground prior to project implementation as a no treatment area.
- Prior to treatment, project area forests will be surveyed for the presence of resident goshawks. If an active nest is located, it will be protected by an untreated buffer zone sufficient to provide for successful nesting and fledging of young, as determined by the District wildlife biologist.

V. RATIONALE FOR DECISION

Beginning in the fall of 2002, I was approached by members of the public and landowners adjacent to the Edith Holloway area concerning the broad extent of whitebark pine stand mortality in that vicinity. This species has been heavily impacted by mountain pine beetle and blister rust. Their concern was based on both perception and reality relating to the potential threat of a large, stand-replacement wildfire occurring in that area. They considered this situation serious in light of the Maudlow-Toston Fire that had burned immediately to the south of this area in 2000. They perceived these dead and dying areas of whitebark pine as a source of fuel to feed a wildfire. The recent Maudlow-Toston Fire had made the local public keenly aware of the results that could occur from a crown fire exhibiting high rates of spread in similar forest types as it had moved rapidly across both private and National Forest System lands as it burned approximately 80,000 acres. The visual presence of these extensive dead and dying whitebark pine stands in their local area became a constant reminder to them of the potential threat to their properties and livelihoods that could result from another large, stand-replacement wildfire. (Insect and Disease surveys conducted in 2005 confirmed their perception of the extent of whitebark pine stands impacted by mountain pine beetle. In some areas, including the area of their greatest concern, nearly 70% of whitebark pine over 5 inches in diameter was killed over a three year period.)

In 2004 I had Forest Service specialists look at the whitebark pine stands in question to determine what options might be examined to treat the extensive mortality in the area. However, it became readily apparent that this fuel hazard in the most heavily affected area in the Edith Holloway vicinity could not be treated successfully using either harvest methods or prescribed fire. The primary issue affecting treatment options was soil stability on steep slopes. As a result, I directed the specialists to identify an alternative fuel hazard reduction program in surrounding, adjacent healthier National Forest stands on stable soils and slopes between adjoining private lands and the affected whitebark pine stands to provide a buffer in the event of a wildfire.

I also considered the adjoining landscapes in my decision. Following the Maudlow-Toston Fire of 2000, and the implementation of the National Fire Plan, it became apparent that there was a need to protect adjacent landowners within the South Belts areas. The Maudlow-Toston Fire (immediately to the south of this project area) created some of these types of buffers through a fire mosaic that, unfortunately, included over 3000 acres of stand-replacement fire on National Forest System lands and additional stand replacement fire on private lands. As a result of these concerns, I directed my staff to examine areas on the South Belts landscape to determine where wildland-urban interface buffers could be created. In identifying fuel hazard reduction projects in the South Belts Area, I have directed my staff to look for locations where buffers could be created to effectively slow the spread of wildfire as well as meet other resources needs.

During the initial scoping process for this project, landscape level cumulative effects were identified as an issue by the public. I listened to these concerns and stopped this analysis process while Forest Service specialists conducted a watershed analysis for the entire South Belts area. One of the outcomes of the South Belts Ecosystem Watershed Analysis was the identification of larger areas of insect and disease outbreaks in the Cabin Gulch drainage immediately to the east of the Edith Holloway project area as well as vegetative stands that appeared to be outside the range of historical variability due to lack of fire on the landscape. This watershed analysis influenced my decision on the size of the project.

As a result of this watershed analysis, I reduced the original acreage of this project by approximately 66% and re-scoped the project with these adjusted boundaries that focused on those National Forest lands that immediately adjoined private lands in the Edith-Holloway area. I also included one private inholding where the landowner was actively pursuing fuels treatments on her property. My intent was to create a project that would be most beneficial in providing a buffer against a stand replacement fire, whether it originated on National Forest System lands or on adjoining private lands. Based on the watershed analysis, it made sense that this modified Edith Holloway project area could serve two purposes: 1) as a wildfire buffer between private land

and the extensive whitebark pine mortality, and: 2) as a wildfire buffer between private land and the Cabin Gulch insect and disease outbreak until a larger, more detailed environmental analysis could be conducted to determine the appropriate treatments in the Cabin Gulch drainage to make it less susceptible to insect, disease and wildfire.

My decision includes the application of MCH (anti-aggregate pheromone for Douglas fir beetle) to protect residual trees if necessary based on monitoring for post- treatment infestations.

This project addresses recommendations from the South Belts Ecosystem Watershed Analysis. The recommendations identified in that analysis include:

- Healthy forest restoration
- Protect boundaries
- Reduce conifer encroachment
- Provide forest products

This project also meets the goals of the 10 Year Comprehensive Strategy (A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment, 2001):

- Improve fire prevention and suppression
- Reduce hazardous fuels
- Restore fire-adapted ecosystems
- Promote community assistance.

This project is well-aligned with the end results of the 10 Year Strategy, which targets enhanced community protection, diminished risk and consequences of severe wildland fires, and healthier watersheds.

VI. SPECIFIC DESIGN CRITERIA AND MITIGATION

The design features of my decision will minimize environmental impacts. Included are regional and Helena N.F. standards, guidelines, and policies designed to address resource management concerns. Following site visits to the project area by each of the interdisciplinary team members, specific mitigation measures were identified. Mitigation measures are documented in the project file. There are many options for mitigation, and the ones I have selected are included as an attachment to this Decision Memo.

Heritage Resources. Cultural resource surveys were completed in 2004. All harvest and fuel reduction units will avoid impacts to known cultural resource sites. Potential Impacts to these sites will be mitigated through unit design, avoidance and monitoring during project implementation.

Soils and Water. Soil and water conservation practices, or best management practices (BMPs), will be applied to all units. Descriptions of the BMPs that will be applied for this project are contained in the soils and hydrology sections of the project file. Application of BMPs will follow the guidance in the Soil and Water Conservation Practices Handbook (Forest Service Handbook 2509.22).

Soil conservation measures to be implemented include:

- In units where there has not been previous timber harvest, ground-based equipment operations will be conducted during "summer conditions" when soils are generally dry or during "winter conditions" when there is at least 4 inches of frozen ground or 6 inches of packed snow.

- In units where there has been previous timber harvest, ground-based equipment operations will be conducted during "winter conditions" when there is at least 4 inches of frozen ground or 6 inches of packed snow.
- Ground-based equipment operations will be limited to slopes less than 35% gradient
- On slopes greater than 35% gradient, hand-falling and lead-end, suspended log yarding operations, such as skyline cable yarding will be used.
- In order to sustain long-term soil nutrient cycling, 5 to 20 tons per acre of coarse woody material (greater than 3-inch diameter) following treatments in warm, dry forest habitat types, and 10-30 tons per acre (where available) in all other forest types will be retained.
- Burn prescriptions will be designed to achieve low fire intensity.

More detailed information regarding these measures can be found in the Soil Resources Specialist Report in the project file. With the exception of 5 treatment units that currently exceed guidelines as described in further detail below, the treatment areas will meet the Region One Soil Quality Guidelines that limit detrimental soil disturbance to 15% or less of the area within treatment units, as well as NFMA (National Forest Management Act) requirements to conserve site productivity.

The project area was examined by the Forest Soils Scientist to determine the presence of any adverse soils effects resulting from previous activities. A number of proposed fuel treatment units have existing soil impacts resulting from past logging, associated road construction and ongoing livestock grazing. Little or no evidence of off-highway vehicle use was observed in the area.

Mitigation in treatment units where livestock grazing occurs will involve deferring grazing prior to and during the active growing season for several years following fuel treatments. My decision includes fuels, range and soils personnel in coordinating a burning schedule that will reduce impacts to grazing permittees.

My decision includes the following changes in treatments to the portions of these units that currently do not meet the regional soils guidelines:

- Unit 2c (S-SW) – Instead of ground-based equipment, hand thinning will be conducted with no underburning to follow. Fuels in surrounding units will be fully treated prior to initiating treatment in these localized areas (S-SW) of Unit 2c. Slash will be lopped and scattered.
- Unit 6a – Hand thinning. Slash piling and burning will be limited to taking place on the surface of old logging roads, skid trails or landing sites only if they are in close proximity to concentrations of slash. Otherwise slash will be lopped and scattered.
- Unit 6c – Hand thinning. This unit is approximately 5 acres. Approximately one acre will be treated with slash lopped and scattered. Approximately 4 acres will remain untreated as it has been identified as potential Canada lynx habitat (refer to the wildlife specialist report in the project file)
- Unit 6d (SE) - Hand thinning. Slash will be piled and burned in the borrow pit of the system road adjacent to the south end of the unit only if concentrations of slash are in close proximity to the road. Otherwise slash will be lopped and scattered.
- Unit 14a – Hand thinning with no underburning. Slash will be lopped and scattered. Fuels in unit 14b will be fully treated prior to initiating treatment in Unit 14a. Soils in Unit 14a are currently at 12% detrimental soil disturbance. Eliminating underburning will allow this unit to meet the regional soil standard guideline of no more than 15% detrimental disturbance.

While protection of private property over the long term through fuel hazard reduction is the over-riding purpose and need for this project, some scattered slash left behind in these units will temporarily increase smaller diameter ground fuels near private lands. Soils in these units

already do not meet R1 guidelines for compaction and these mitigations will not move these soils further away from the standard. However, over the long term, I believe these soils will be improved by creating an environment where existing soils in these units can be left undisturbed, slash left on the ground will contribute to coarse woody material within the acceptable levels per acre to meet both soils and fuels reduction parameters, and trees left on site will have less competition for water and nutrients, allowing them to develop more extensive root systems that will have a positive effect on "decompacting" soils through the physical action of root growth. Over time, this should result in a trend towards a net improvement in soil quality while at the same time reducing the threat of stand-replacement wildfire, a situation which could result in cumulative impacts to these soils.

Existing roads on the National Forest will be used to remove forest products and a variety of road drainage improvements will be completed prior to any log hauling. One of the more important improvements will be the replacement of an existing undersized culvert on FS Road #4178 in Section 32 (T8N R4E) that crosses an unnamed tributary of Ray Creek. Additionally, a ford on a non-system road that borders this same unnamed tributary of Ray Creek in Section 32 (T8N R4E) will be closed to use and rehabilitated. If the closure is not effective, the non-system road will be closed. In the long term, there should be reduced sediment delivery to stream channels within the project area (as compared to current conditions) with implementation of this project. These sediment reduction activities have the potential for slight positive effects to the cutthroat trout fishery in Ray Creek downstream on private land and are detailed in the Biological Evaluation in the project file.

The 0.8 miles of temporary road construction will be re-contoured and re-vegetated once the project has been completed.

For more specifics on road and culvert improvements refer to the Hydrology and Fisheries Specialist Reports and the Fisheries BE in the project file.

Air Resources. The Forest Service will comply with the burning restrictions set forth by the State smoke monitoring unit. Prior to any burning in the project area, the Forest Service will notify the public by posting notices in the Townsend Star newspaper. This project is not located in a class 1 airshed.

Wildlife. Mule Deer and Elk of the North Fork Herd Unit use the project area as summer range. As a result, there may be some temporary disturbance and displacement of deer and elk during summer operations. There will be no effect to deer and elk during winter operations because this area is not designated as winter range.

I was concerned that hiding cover not be reduced below the Forest Plan standard. At several checkpoints throughout the process, I made certain that the hazardous fuel reduction objectives could still be met without reducing hiding cover below this standard in units to be treated. Treated stands will retain the Forest Plan standard of a minimum 40% canopy cover following treatment. In units that will be underburned, mechanical treatments will not reduce canopy closure below 50% in order to leave a 10% margin to account for any mortality of overstory trees caused by underburning. Underburning will be conducted using low intensity fire to assure that the 40% standard is not exceeded.

This area is currently below the Forest Plan standard for open road density; however the project will not create conditions that will move further away from this standard. Temporary roads (0.8 miles) will be obliterated and recontoured once the project is completed and will be closed to public use during the time they are in use.

Although Goshawk habitat is very limited within the project area, Wildlife Biologists conducted surveys in this area. No new nests were located and no observations were made within the project area (May, 2006) and no new nests and only one observation was made in a survey to the

east of the project area (in 2005) in locations most likely to contain Goshawk habitat. In general, the project is promoting large trees and reducing the risk of stand-replacement fire, possibly benefiting goshawk habitat in the future.

Black-backed woodpeckers, if present in the project area, probably occur at low densities. This assumption is based on lack of detections during surveys in the project area in 2006, in Cabin Gulch in 2005 and surveys in the Maudlow-Toston fire area that did not yield many black-backed observations. Research focused in Montana indicates that recent burns are potentially critical to long term survival (Hutto, 1995). Prescribed burning following mechanical treatment could stress or kill some trees large enough to provide habitat for beetles, resulting in some increase in foraging habitat for woodpeckers. Ample foraging and nesting opportunities exist south and east of the project area.

Snags are not common in the area and all existing snags will be retained during mechanical treatment except where there are safety concerns associated with implementation.

Miscellaneous.

Prior to burning slash piles, firewood cutters will be allowed to remove firewood from them. This may delay cleanup of landings adjacent to main roads.

VII. MONITORING

The Helena National Forest has developed a program to monitor Forest Plan implementation. Monitoring is conducted to evaluate the overall progress in implementing the Forest Plan, the assumptions on which the Forest Plan is based, and to provide a feedback loop for determining effectiveness of project and mitigation implementation. In addition, Forest Service representatives will monitor operations to ensure compliance with project design specifications. More specifically;

- The silviculturalist will monitor insect activity in the area immediately prior to and following underburning and, if deemed necessary, coordinate the application of MCH (anti-aggregate pheromone for Douglas fir beetle) to protect the residual trees.
- Vegetation sampling will be implemented within the project area to capture site specific baseline pre-fire conditions, immediate post-fire conditions, and to track trends for approximately 10 years following prescribed fire.
- Limited monitoring for westslope cutthroat trout is planned as this project has low potential to affect fish resources. Monitoring will consist of a visual review of road conditions, erosion control measures implemented and culvert and road/ford closure effectiveness. A fisheries monitoring report will be prepared upon project completion.
- Monitoring will take place prior to project implementation to determine potential Northern goshawk nesting. If nesting is occurring, goshawk nest conservation measures will be implemented by the district wildlife biologist. Active nesting by other raptors will also be monitored and appropriate mitigation put in place as necessary based on the species.
- Range personnel will establish key areas and allowable utilization levels to post burn areas and monitor to ensure they aren't exceeded.
- New weed populations will be monitored and treated through the forest wide noxious weed treatment program.
- The soil scientist will monitor conditions in specific treatment units to determine if mitigation has been appropriate to maintain or improve soil quality based on regional guidelines.

VIII. COMPLIANCE WITH FOREST PLAN AND REASONS FOR CATEGORICALLY EXCLUDING THE PROPOSED ACTION

This decision is consistent with the Helena National Forest Plan, as well as direction provided in the National Fire Plan.

As summarized below, no extraordinary circumstances related to the proposed action exist. Please see the project file for more information.

Steep slopes or highly erosive soils. The Soil Scientist has not identified any areas of steep slopes or highly erosive soils within the project area.

The Helena National Forest Plan directs that appropriate BMPs be incorporated into project plans to facilitate meeting soil quality standards. By successfully implementing the BMP's and mitigation identified in the Soil Resources Specialists Report and additional mitigation I have addressed previously, my decision will comply with Region One Soil Management Guidelines to limit detrimental soil disturbance and NFMA requirements to conserve site productivity.

Therefore, as documented in the project file and with the additional mitigation identified in this document, my decision is consistent with regional soil quality standards.

Threatened/endangered/sensitive species or their critical habitat. My decision does not affect any threatened/endangered/sensitive species or their critical habitat. Biological Assessments and Biological Evaluations have been completed for Threatened and Endangered species as well as Sensitive Species and can be found in the project file.

Canada lynx, a threatened species, has not been found in the project area following three years of hair snare surveys from 2002-2004 in the Big Belt Mountains. However, there are approximately 192 acres of potential lynx habitat within the project area, with approximately 11 acres located in treatment units. Of these, 4 acres in Unit 6c will not be treated, and treatment of the remaining 7 acres in Unit 14a will not convert habitat to an unsuitable condition. Lynx habitat currently in an unsuitable condition remains at 21% within the Lynx Analysis Unit, well within the requirements of the Lynx Conservation Assessment and Strategy. A biological assessment for this species can be found in the project file. The Counterpart Regulations were used for project compliance with the Endangered Species Act to meet consultation requirements for lynx.

No threatened, endangered or sensitive wildlife species are known to inhabit the project area. The Northern Bald Eagle and Grizzly Bear are not present in the project area and the Grey Wolf may only be present in transit through the larger area of the Big Belts. The northern goshawk has limited habitat within the project area and, in adjoining areas with suitable habitat, only one observation was made in 2005. Other species are suspected to inhabit or to move through the project area, and habitat is available for others that are not present. Analysis conducted for these species can be found in the Wildlife Specialists Report and Biological Assessment in the project file.

Westslope cutthroat trout, a sensitive species, are present downstream from the project area in Ray Creek where it flows through private land. A biological evaluation for this species was completed and can be found in the project file. There may be a slightly positive effect to the westslope cutthroat trout fishery in the Ray Creek drainage when the project is completed by reducing sediment delivery as a result of road and culvert improvements. The Inland Native Fish Strategy (INFISH) does not apply because this project is located on the east side of the Continental Divide.

Sensitive plant surveys were conducted during the 2005 growing season. No sensitive plant populations have been found in or adjacent to the project area.

There are no known losses of migratory bird habitat expected from the implementation of this proposal.

Floodplains, wetlands, municipal watersheds, or impaired waters. None of the actions on Forest System lands are within floodplains, wetlands, or municipal watersheds. While none of the streams within the project area are listed as 303d streams in need of a TMDL, both the North Fork of Deep Creek and Holloway Gulch are tributary to Deep Creek which has a TMDL developed for it. The TMDL was from the National Forest boundary to the mouth. In terms of water yield increases, this project and its associated mitigation, when combined with other past, present and reasonably foreseeable future actions will have minimal effects on the drainages within the project area. The amount of water yield increase in these two project area streams will be essentially undetectable because they have been identified as losing reaches (seepage is away from the stream rather than towards it). A complete analysis of cumulative effects to Deep Creek proper is located in the Hydrology Specialist Report in the project file.

By implementing BMP's and mitigation, as outlined in the project description and identified in the soils report and fisheries biological evaluation, beneficial uses of the water should be protected and the project should meet all State and Federal water quality standards and regulations. BMP's include improving road drainage on FS Road #4178, replacing a culvert on an unnamed tributary to the North Fork of Ray Creek on Forest Service Road #1478, and closing and rehabilitating a stream ford (and potentially a non-system road depending on effectiveness of the ford closure) in Section 32 that parallels an unnamed tributary to the North Fork of Ray Creek. These actions, combined with standard BMPs as described in "Water Quality BMP's for Montana Forests" (Logan 2001), should assure that the beneficial uses in Deep Creek proper and it's tributaries within the project area will be protected.

Based on the activities, there is no potential to affect the existing Riparian Management Objectives. Documentation of specialist field reviews and reports are contained in the Project File.

Activities throughout the project area will follow the State Streamside Management Zone Act laws. Activities throughout the project area are not expected to produce any measurable change in streamflow or transport sediment to live streams. With the application of BMP's, the sediment levels on streams throughout the project area are not likely to increase measurably, beneficial uses will be protected, and State water quality laws will be met.

Therefore, the project meets all applicable state and federal water quality laws, and beneficial uses will be protected.

Congressionally designated areas, such as wilderness, wilderness study areas, or National Recreation Areas. The proposed action is not in a congressionally designated area such as wilderness, wilderness study area, or National Recreation Area or in any area under consideration by Congress for wilderness designation.

Inventoried Roadless Areas. The proposed action is located in a roaded area and is not part of an inventoried roadless area.

Research Natural Areas. The proposed action is not located within a Research Natural Area.

Native American religious or cultural sites, archaeological sites, or historic properties or areas. This project will have little direct or indirect effect on heritage resources. Site records search and archaeological surveys of the area have been conducted. There are only a few heritage resources in the project area – impacts to these will be mitigated through unit design and avoidance. This decision is consistent with Forest Plan direction and Section 106 of the NHPA. Consultation with the State Historic Preservation Officer, Tribal Historic Preservations Officers, and the Advisory Council on Historic Preservation has been completed.

Scenery. The project is in a sensitive viewing area from two aspects - from the southern end of Canyon Ferry Lake and from State Road 284, east of Canyon Ferry Lake. All of the treatment units are located in the "background" viewing distance from these two sensitive viewing areas and will retain a Partial Retention background which is consistent with the Forest Plan. The visual effects of this project will not cumulatively impact scenery.

Old Growth. The Helena National Forest Plan states 5% of each third order drainage should be managed for old growth. There are no effects to current or managed old growth with my decision because only one unit, 1A, was identified as old growth (current) and I have decided not to treat this unit.

Environmental Justice. The proposed action has been assessed to determine whether it will disproportionately impact minority or low-income populations, in accordance with Executive Order 12898. No impacts to minority or low-income populations were identified during scoping or effects analysis.

The proposed action is consistent with other Federal, State, and local laws related to the protection of the environment.

Forest Plan. The proposed activity is consistent with the standards, goals, and objectives of Management Areas (MA) T-1 and T-5 as determined in the Helena Forest Plan (USDA, 1986).

Management Area T-1 consists of lands available and suitable for timber management with varying physical and biological environments as determined by soil, slope, aspect, elevation, and climatic forces. The management goals include:

- Provide for healthy timber stands
- Maintain water quality and stream bank stability, and
- Provide for dispersed recreation opportunities, wildlife habitat, and livestock use when consistent with the management goals.

Management Area T-5 consists of suitable timber stands interspersed with natural openings, generally with existing livestock allotments. The management goals include:

- Providing healthy timber stands
- Maintain water quality and streambank stability, and
- Provide for other resources uses that are compatible with the other goals

This decision also complies with the following Management Standards for protection for both MA T-1 and MA T-5 (Forest Plan, III/33 and III/49, respectively):

- Fuel reduction methods for activity-created fuels including burning, removing residue, or rearranging, such as dozer trampling, and
- Prescribed fire with planned ignitions may be used in this management area for the enhancement and maintenance of resources.

The project meets all applicable Forest Plan Forest standards and is consistent with the National Forest Management Act.

Categorical Exclusion. It is my determination that this action may be categorically excluded from documentation in an environmental impact statement or environmental assessment as it is within category 31.2 of the USDA Policies and Procedures Handbook (FSH 1909.15, section 31.2, category 10), which includes, "hazardous fuels reduction activities". This project (1) will not be conducted in wilderness areas or where activities could impair the suitability of wilderness study areas for preservation for wilderness; (2) will not include the use of herbicides or pesticides; (3) will not involve the construction of new permanent roads or other infrastructure; (4) will not include sales of vegetative material that do not have hazardous fuels reduction as their primary purpose; (5) will not exceed 1,000 acres for mechanical hazardous fuels reduction activities and will not exceed 4,500 acres for hazardous fuels reduction activities using fire; (6) will only be conducted in wildland-urban interface or in Condition Classes 2 or 3 in Fire Regime Groups I, II, or III, outside the wildland-urban interface. This project was conducted in a collaborative process with the public as required by Category 10.

This project is similar to over 2500 other projects studied nationwide that were implemented to reduce hazardous fuels. The projects involved in this study ranged in size from less than 1 acre to 90,000 acres when using fire as the treatment method, and from 1 acre to 11,690 acres in size when using mechanical treatment methods (Federal Register. Vol. 68, No. 108, Thursday, June 5, 2003, page 33814). The acres treated by this project are well below the maximum acres specified by category 10 criteria identified in the previous paragraph and well within the parameters of the nationwide study.

Category 10 is a tool to protect adjoining private property in an expedient manner from the threat of wildfire when there are no extraordinary circumstances involved. This is especially important in areas such as Edith Holloway where residents have had recent experience with the threat to their property of stand-replacement wildfire and need some reassurance that efforts are being made to treat hazardous fuels on adjacent National Forest lands in a timely manner. This project will not create adverse effects on (1) threatened and endangered species or their designated critical habitat; (2) wilderness areas; (3) inventoried roadless areas; (4) wetlands; (5) impaired waters or; (6) archaeological, cultural or historic sites (Federal Register. Vol. 68, No. 108, Thursday, June 5, 2003, pages 33814 and 33816).

Proposals under Category 10 are limited to the decision that will be made. No other alternative(s) need be considered.

IX. APPEAL PROVISIONS AND IMPLEMENTATION

This decision is subject to appeal pursuant to 36 CFR 215.7. As stated in 36 CFR 215.11, an appeal may be filed by any person or any non-federal organization or entity that has provided comment or otherwise expressed interest in this proposal by the close of the comment period specified in 36 CFR 215.6. A written appeal must be submitted within 45 days after the date of the notice of this Decision is published in the Independent Record, Helena, Montana.

Appeals are to be submitted to:

USDA Forest Service, Northern Region
Attn: Appeals
PO Box 7669
Missoula, Montana 59807

An appeal must meet content requirements of 36 CFR 215.14. Detailed records of the analysis for this project are available for public review at the Townsend Ranger District Office, 415 South Front Street, Townsend, Mt 59644. For further information on this Decision, contact Dea Nelson, Team Leader, at this same address or by phone at 406-266-3425.

If no appeal is received, implementation of this Decision may occur on, but not before, 5 business days from the close of the appeal filing period. If an appeal is received, implementation may not occur for 15 days following the date of the appeal decision.

Michael L. Cole

MICHAEL L. COLE
District Ranger

May 26, 2006
Date

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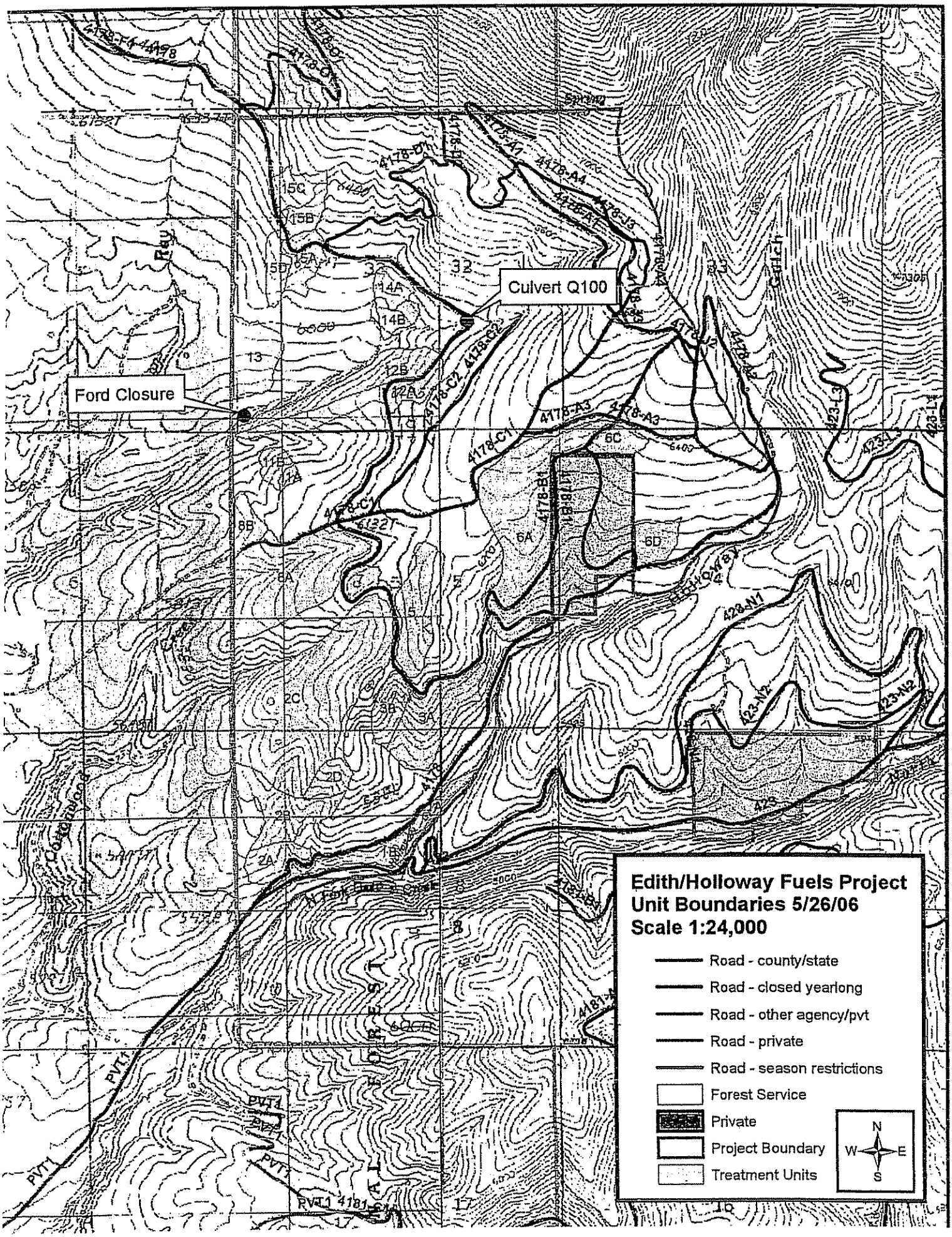
Culvert Q100
Ford Closure
Edith/Holloway Fuels Project
Unit Boundaries 5/26/06
Scale 1:24,000
Road - county/state
Road - closed yearlong
Road - other agency/pvt
Road - private
Road - season restrictions
Forest Service
Private
Project Boundary
Treatment Units
N
W
E
S

Edith-Holloway Boundary Fuels Project
Mitigation and Best Management Practices (BMPs)

Resource	Protective Measure
Fisheries	Streamside management zones (SMZs) will be flagged and marked when a unit with product removal abuts a SMZ.
	A new culvert will be installed on an unnamed tributary to the North Fork of Ray Creek on FS Road #1478. The culvert will be of sufficient size to accommodate 100 year flow events, but need not provide for fish passage as no fish are present in this tributary. Gravel surfacing in conjunction with rolling dips or other road drainage features – on the approach to the culvert - will be in place prior to hauling to ensure risk of sediment delivery to stream channels on FS Road #4178 will be minimal. (see map)
	All road improvements will be completed prior to any log hauling. Road improvements include restoring drainage and removal of ruts on portions of FS Road #4178 used for log hauling, and providing drainage to divert water off of these sections of road to prevent road rutting from occurring.
	A ford on a non-system road in Section 32 that parallels an unnamed tributary to North Fork of Ray Creek will be closed and rehabilitated. If the closure of the ford is not effective, the non-system road leading to it will be closed (see map)
	If dust abatement occurs, only non-petroleum based products will be used.
	Four inches of snow is to be left on roadways during any winter snow plowing operations. Culverts and ditches restricted by snow or ice will be kept open during any snowplow operations to allow drainage. Openings in snow berms will be provided and maintained as required to reduce risk of surface road erosion and reduce risk for delivery of sediment laden water to stream channels. (See Hydrology below, Forestry Practices BMPs)
Fuels/Fire Ecology	Underburning in mechanically treated units will be conducted using low intensity fire to assure that the 40% canopy closure for hiding cover is retained following treatment.
Heritage	Heritage sites.will be flagged prior to implementation and will be monitored during project implementation in order to avoid disturbance. This includes both vegetation removal and burning implementation phases. In all units avoid historic sites.
	Sites for crossing of a historic ditch (required in one unit), will be designated by the Sale Administrator in coordination with the Forest Archaeologist. The crossing will be armored by placing logs in the ditch to reduce impacts.
	Any accidental discoveries of heritage sites will require immediately contacting the Forest Service archaeologist via the FS sale

	administrator or designated representative. Operations will cease in the discovery area until appropriate site management actions are developed and implemented.
Hydrology	The project will comply with all applicable Streamside Management Zones (SMZ) regulations.
	Implement all other applicable BMPs for Forest Practices – see soils mitigations below.
Noxious Weeds	Implement applicable mitigation measures outlined in Forest Service Manual 2080.
	Heavy equipment will be cleaned to be free from weeds prior to coming on the project area.
	Seed, straw, and other materials used for ford rehabilitation, culvert replacement, road decommissioning and erosion control will be certified weed free.
	All disturbed roads, landings, and skid trails will be revegetated with a native mix which is certified weed free.
Range	Pasture and allotment boundary fences will be protected during burning and harvest activities
	Burn units will be rested or deferred from active growing season use before and following treatments. Schedules for treatments/deferrals will be discussed with permittees based on coordination between fire, range and soils personnel.
	Range personnel will establish key areas and allowable utilization levels in post-burn areas.
	Temporary fencing may be needed to protect stands from livestock following treatment, i.e. portable electric fences.
Recreation	No vegetation removal, log handling, such as decking and loading or slash piling will be conducted at the North Fork of Deep Creek Trailhead located at the Forest boundary on Forest Road #423.
	Snowmobile use will be allowed on roadways during weekends and holidays when winter harvest activities are being conducted. This includes the Holloway and the North Fork of Deep Creek roads.
	Fuel treatment activities and log hauling will not be conducted during the first two weeks of the general big game hunting season or on weekends or holidays.
	Prior to burning slash piles adjacent to main roads, the public will be allowed to gather firewood. This may delay cleanup on landings adjacent to main roads. Temporary roads will not be open for firewood cutting.

Scenery	Skyline corridors will be kept to a minimum width (between 12-16 feet)
	Fan sets and the associated large landings will be avoided where visual screening (via trees and or topography) is not available.
	Rub trees located along skyline corridors shall be left to provide for visual screening of the skyline corridors.
	Large piles of trees/slash will be removed as soon as possible after the project is complete (See Recreation mitigation above).
	Approx. 5-10% of the best quality under story (ladder fuels) trees will be left in scattered individuals or clumps across the units to preserve vertical diversity as long as they are located in areas that do not compromise the hazardous fuel reduction objectives.
	Large over story (leave trees) will be randomly distributed. A Basal Area method of leaving trees will be used. The resultant stand should appear more open in some areas and denser in others.
Silviculture	The application of MCH (anti-aggregation pheromone for Douglas-fir beetle) will be used to protect the residual trees (based on monitoring. of insect activity).
	Units where lodgepole pine is the dominant or co-dominant species will not be underburned following mechanical treatments, but pile burning may occur in these units.
	Ponderosa pine will be favored to remain as overstory when possible (primarily in unit 12)
	In units that will be underburned, mechanical treatments will not reduce canopy closure below 50% in order to allow a margin of 10% to account for any mortality of overstory trees caused by underburning.
Soils	For units thinned by tractor operations where there has not been previous timber harvest, operation of ground-based heavy equipment will be conducted under the following seasonal conditions: either during "summer-conditions" when soils are generally dry, or during "winter-conditions" when there is at least 4 inches of frozen ground or 6 inches of packed snow (FSH 2509.22 R-1/R-4 5/88; BMP 13.06 and 14.04).
	For units thinned by tractor operations where there has been previous timber harvest, operation of ground-based heavy equipment will be conducted during "winter-conditions" when there is at least 4 inches of frozen ground or 6 inches of packed snow (FSH 2509.22 R-1/R-4 5/88; BMP 13.06 and 14.04).
	Ground-based heavy equipment operations will be limited to slopes less than 35% gradient (FSH 2509.22 R-1/R-4 5/88; BMP 13.02 and 14.07).
	On slopes greater than 35% gradient, hand-falling and lead-end, suspended log yarding operations, such as skyline cable yarding will be required (FSH 2509.22 R-1/R-4 5/88; BMP 14.09).
	In order to sustain long-term soil nutrient cycling, 5 to 20 tons per acre

	of coarse woody material (greater than 3-inch diameter) will be retained following treatments in warm, dry forest habitat types, and 10-30 tons per acre will be retained in all other forest types (Graham et al. 1994; Brown et al. 2003).
	Soil organic matter losses will be minimized by conducting prescribed burning when the forest floor is moist (Harvey et al. 1994, page 43).
	Burn prescriptions will be designed to retain adequate ground cover that will limit surface erosion rates to comply with Region 1 soil management guidelines of generally less than 1 to 2 tons per acre per year (note ground cover can include plant duff or litter, coarse woody material that is in contact with the ground, basal vegetation, and rocks greater than 2 inch diameter). The amount of ground cover that will be needed varies between about 50 and 70 percent depending on slope gradient and soil surface texture, with greater cover needed on steeper slopes and/or soils with volcanic ash in the surface layer.
	Burn prescriptions will be designed to achieve low fire intensity (FSH 2509.22 R-1/R-4 5/88; BMP 18.02; Harvey et al. 1994, page 43).
	Unit 2c (S-SW) – Instead of ground-based equipment, hand thinning will be conducted with no underburning to follow. Fuels in surrounding units will be fully treated prior to initiating treatment in these localized areas (S-SW) of Unit 2c. Slash will be lopped and scattered.
	Unit 6a – Hand thinning. Slash piling and burning will be limited to taking place on the surface of old logging roads, skid trails or landing sites only if they are in close proximity to concentrations of slash. Otherwise slash will be lopped and scattered.
	Unit 6c – Hand thinning. Approximately one acre will be treated with slash lopped and scattered. Approximately 4 acres will remain untreated as it has been identified as potential Canada lynx habitat (refer to the wildlife mitigation below)
	Unit 6d - Hand thinning. Slash will be piled and burned in the borrow pit of the system road adjacent to the south end of the unit only if concentrations of slash are in close proximity to the road. Otherwise slash will be lopped and scattered.
	Unit 14a – Hand thinning with no underburning. Slash will be lopped and scattered. Fuels in unit 14b will be fully treated prior to initiating treatment in Unit 14a.
Wildlife	Snags are not common in the project area. Where possible, all snags will be retained except where safety concerns exist during implementation.
	Retain snags according to FP Standard HFP, II-21
	In warm/dry stands 5-15 tons per acre down woody debris will be retained; in cool/moist stands 10-30 tons per acre will be retained.
	All temporary roads will be closed to public use during the sale.
	If an active raptor nest is located during project implementation, the area will be protected by an untreated buffer zone sufficient to provide

	for successful nesting and fledging of young as determined by the District wildlife biologist.
	All temporary roads will be decommissioned when the project is completed (obliterated, recontoured and seeded).
	Lynx habitat in unit 6c will be flagged prior to project implementation as a no treatment area.

Monitoring

Resource	Monitoring Elements
Fisheries	Visual review of: road conditions, culvert installation, erosion control measures implemented, closure effectiveness and repair of the ford on the non-system road on the unnamed tributary to Ray Creek drainage.
	Monitoring to ensure that fuel treatment activities in SMZs are implemented as planned.
	Review of SMZ boundaries bordering units with product removal will be evaluated to ensure that SMZ boundaries were recognized. A fish monitoring report will be prepared upon project completion.
Fuels/Fire Ecology	Pre-fire Monitoring: establish photopoints and sample vegetation (cover/frequency, modified Brown's planar intercept, tree data) to determine current conditions.
	Immediate Post-fire Monitoring: Resample photopoints and vegetation plots (frequency and occurrence and presence of weeds and exotic species, fine- and coarse-woody debris consumption and effects to duff and litter, and fire effects and post-fire changes within forested areas.
	Follow-up monitoring: resample at 3, 5, and 10 years following completion of burn, to determine any changes in plant community (such as species occurrence, frequency and cover) determine need for future maintenance burns.
Noxious Weeds	Monitor for success of natural revegetation.
	Monitor and inventory, Post project, all roads and

	disturbed areas affected by the project will be monitored and inventoried for noxious weeds and treated according to the most current Forest noxious weed protocols. Monitoring/inventory and treatment (if needed) is expected to be required for an estimated 5-6 years following completion of all project-related activities.
Range	Key areas and allowable utilization levels will be monitored in post-burn areas to ensure that utilization levels aren't exceeded.
Silviculture	Insect activity will be monitored in the area immediately prior to and following underburning to determine the need for MCH applications.
Soils	Soil conditions in specific treatment units will be monitored to determine if mitigation has been appropriate to maintain or improve soil quality based on regional guidelines.
Wildlife	Active nesting by Northern goshawk and other raptors will be monitored prior to implementation.