

X. HERITAGE RESOURCES

Introduction

This section focuses on heritage resources on National Forest System lands within the Firefighter Project area. The literature search considered heritage resources within the general Hungry Horse/Firefighter area but actual field inventory and effects analysis will focus on the proposed treatment units. Previous inventories in the area have occurred for approximately one-third of the Firefighter proposal. Additional inventories have been completed.

Analysis Area/Information Sources

The Firefighter analysis area includes portions of the drainage area of the South Fork Flathead River (South Fork). The South Fork is the principle watershed in the analysis area with Hungry Horse Creek, Dudley Creek, Fire Creek, and Spring Creek the primary tributaries. Elevations range from a low of 3,560 feet along Hungry Horse Reservoir to a high of 5,576 feet at Firefighter Mountain. Overall, this is an area of moderately steep, forested terrain.

To gather information on heritage resources contained within the boundaries of the Firefighter Project, the Forest Archaeologist conducted a files search and review of Flathead National Forest (FNF) site database and literature sources to identify the location of both known, previously recorded heritage resources on FNF-managed lands, and previous cultural resource inventories within the analysis area. The records review identified one recorded historic site, the remains of the original Firefighter Lookout (24FH139), and no prehistoric properties in the analysis area; it also identified approximately seven inventories, plus the Hungry Horse Archaeological Project Investigations (HHAPI), going back to 1989.

Results of Survey Methodology

A complete inventory to locate and identify significant heritage resources within the project area was completed in September and October of 2007. The inventory located one new historic site (the current lookout, built in 1952) and no prehistoric property within the analysis area. The remains of the original Firefighter lookout (24FH139) were recorded in 1990 and were determined not eligible for listing on the National Register of Historic Places at that time. The 1952 lookout was not recorded or evaluated but is probably eligible for listing on the National Register.

Consultation with the Confederated Salish and Kootenai Tribes (CSKT) was completed on July 12, 2007 (Project File). The CSKT have no concerns regarding this project.

Affected Environment/Existing Condition

During prehistory, the watersheds were used by aboriginal groups as travel routes between the Flathead Valley to the west and the Great Plains to the east. Archaeological sites documenting Native American occupation and use of the South Fork are known, but none was identified in the

analysis area. Native American occupation of the South Fork probably dates to the end of the last glacial period, approximately 10,000 years ago. Historically, the analysis area is part of the traditional homeland of the Kootenai people. The Hellgate Treaty of 1855 gives the Confederated Salish and Kootenai Tribes reserved treaty rights to hunt, fish, and collect native plants on Federal lands in the analysis area.

The Lewis and Clarke Forest Reserve was created on February 22, 1897, and included lands in the South Fork. In 1908, this part of the Lewis and Clarke Reserve became part of the Flathead National Forest. Riverside and Elk Park Ranger Stations were located along the South Fork River. Both were removed prior to the construction of the Hungry Horse Dam and the flooding of the Hungry Horse Reservoir in 1952. The first road into the area was constructed in the 1920s, by the mid-1930s there was an extensive trail network throughout the South Fork. Firefighter Lookout was originally a frame cabin with a cupola constructed in 1923. This structure was replaced in 1952 with the lookout on a 40-foot tower located a short distance to the north of the original.

The Hungry Horse Dam was constructed between 1948 and 1952 and the resulting reservoir flooded the original channel of the South Fork River. The Bureau of Reclamation funded the construction of the East and West Side Reservoir Roads (Forest Roads 38 and 895 respectively) to replace the original road now under the waters of Hungry Horse reservoir. The first recorded logging operations in the analysis area resulted from the clearing of the timber during dam construction.

Environmental Consequences

Alternative 1 (No-Action Alternative)

Direct and Indirect Effects

Implementation of the No-Action Alternative would not affect cultural resources directly or indirectly as there would be no change to the integrity of cultural resources listed on the National Register or eligible for listing on the National Register. This is because there would be no project activities implemented.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Implementation of Alternative 2 would not affect cultural resources directly or indirectly because there would be no change to the integrity of cultural resources listed on the National Register or eligible for listing on the National Register due to implementation of project activities. There would be no project activities proposed within a mile of either the original Firefighter lookout remains or the current Firefighter lookout.

Alternative 3

Direct and Indirect Effects

Implementation of Alternative 3 would not affect cultural resources directly or indirectly because there would be no change to the integrity of cultural resources listed on the National Register or eligible for listing on the National Register due to implementation of project activities. There are no activities proposed within a mile of either the original Firefighter lookout remains or the current Firefighter lookout.

All Alternatives

Cumulative Effects

Past, Present and Reasonably Foreseeable Future Actions

There would be no past, present or reasonably foreseeable future actions that would effect heritage resources listed on the National Register of Historic Places, or eligible for listing on the National Register.

Summary of Cumulative Effects

There would be no cumulative effects to heritage resources listed on the National Register of Historic Places, or that are eligible for listing on the National Register.

Regulatory Framework and Consistency

The Forest Service has obligations under the American Indian Religious Freedom Act (AIRFA) of 1978 to "protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian" [Public Law 95-442]. The CSKT also have reserved treaty rights under the Hellgate Treaty of 1855, including hunting, gathering, and grazing rights.

The Confederated Salish and Kootenai Tribes of Montana have been identified as a tribal group concerned about the management of heritage resources on the Flathead National Forest. The tribes were contacted in the initial planning stages of the Firefighter Project in order to establish lines of communication between the two parties, to advise them on the scope of the undertaking including potential effects, and to make their resource concerns (if any) an official part of the project file.

Besides AIRFA, the USDA Forest Service is also mandated to comply with the National Historic Preservation Act of 1966 (NHPA) [Public Law 89-665]. "Section 106 of the NHPA requires that Federal agencies with direct or indirect jurisdiction over Federal, federally assisted, or federally licensed undertakings afford the Advisory Council on Historic Preservation a reasonable opportunity for comment on such undertakings that affect properties included in or eligible for inclusion in the National Register of Historic Places prior to the agency's approval of any such

undertaking" [36 CFR 800.1]. Historic properties are identified by a cultural resource inventory and are determined as either eligible or not eligible for the National Register. Eligibility is reviewed, and concurrence given, by the Montana State Historical Preservation Office (MtSHPO). Sites that are determined as eligible are then protected in-place, or adverse impacts are mitigated. This process takes place prior to any decisions relative to the project. The Flathead NF participates in the Region One Programmatic Agreement (R1PA) with MtSHPO and the Advisory Council that provides for a more efficient process for conducting cultural resource inventories and meeting Section 106 compliance. Under the R1PA, if there are no eligible properties affected by the undertaking either through project redesign or because there are no properties located within the undertaking, then the undertaking is included in an annual report to MtSHPO and compliance is completed without project consultation. However, if an eligible property is affected by the proposed undertaking, then compliance is completed in the standard way with consultation with MtSHPO.

XI. RECREATION

Introduction

The Firefighter Project area encompasses developed and dispersed recreation sites including developed concession campgrounds, boat launches, non-motorized trails, and groomed snowmobile trails.

Information Sources

Information for this analysis was gathered through observations made during routine maintenance and surveys of recreation facilities. Road and trail mileages reported were obtained from the Flathead National Forest GIS database.

Analysis Area Description

This analysis of the recreational resource will focus on recreational activities specific to National Forest System lands within the Firefighter Project area as described in Chapter 1. The temporal bounds extend from the decision date to a future time in which the situation on the ground is changed due to a subsequent analysis.

Affected Environment/Existing Condition

Recreation

Road Use

Driving for pleasure is one of the most popular recreation activities occurring on the Flathead National Forest. Wheeled motorized access on forest roads provides user access for hiking, firewood gathering, hunting, fishing, camping, huckleberry picking, ATV/motorcycle riding, wildlife viewing, stock use, and just appreciating National Forests from a vehicle.

Recreationists also use closed roads as non-motorized access into the forest for a myriad of activities such as hiking, stock use, huckleberry picking, hunting, wildlife viewing, or just getting out into the woods.

Developed and Dispersed Recreation Areas/Sites

There are only two developed sites within the project area, Riverside Boat Launch and Murray Bay Campground. Murray Bay Campground has two loops, one of which is currently administratively closed (Forest Road 10188A). The Paint Emery Project included a decision to decommission this administratively closed loop road, although it has not yet been implemented. Decommissioning Forest Road 10188A would eliminate the ability to respond to future recreation needs (camping, reservoir access) in the project area.

There are several dispersed undeveloped sites within the project area. Campers, anglers, hunters, and day users enjoy these sites. For the most part, they are located at the end of a road, at or near a road closure device. Forest Roads 11140 and 896 also access some dispersed sites on Emery Creek and Hungry Horse Bay, respectively. The Paint Emery Project included a decision to decommission and/or close these two roads (not yet implemented) thus eliminating the dispersed recreation opportunity at the current locations.

There is one system trail (Ousel Trail 388) within the project area, and one user trail to Great Northern Peak (off Forest Road 1048). A previous project (Paint Emery Project) closed a portion of Forest Road 546, which resulted in an additional 1.5 miles (approximately) of travel on this closed road section to reach the Ousel Trailhead. The District recently (August 2008) extended the Ousel Trailhead further south to Forest Road 1048, near its junction with Forest Road 546 (Map 3-6)

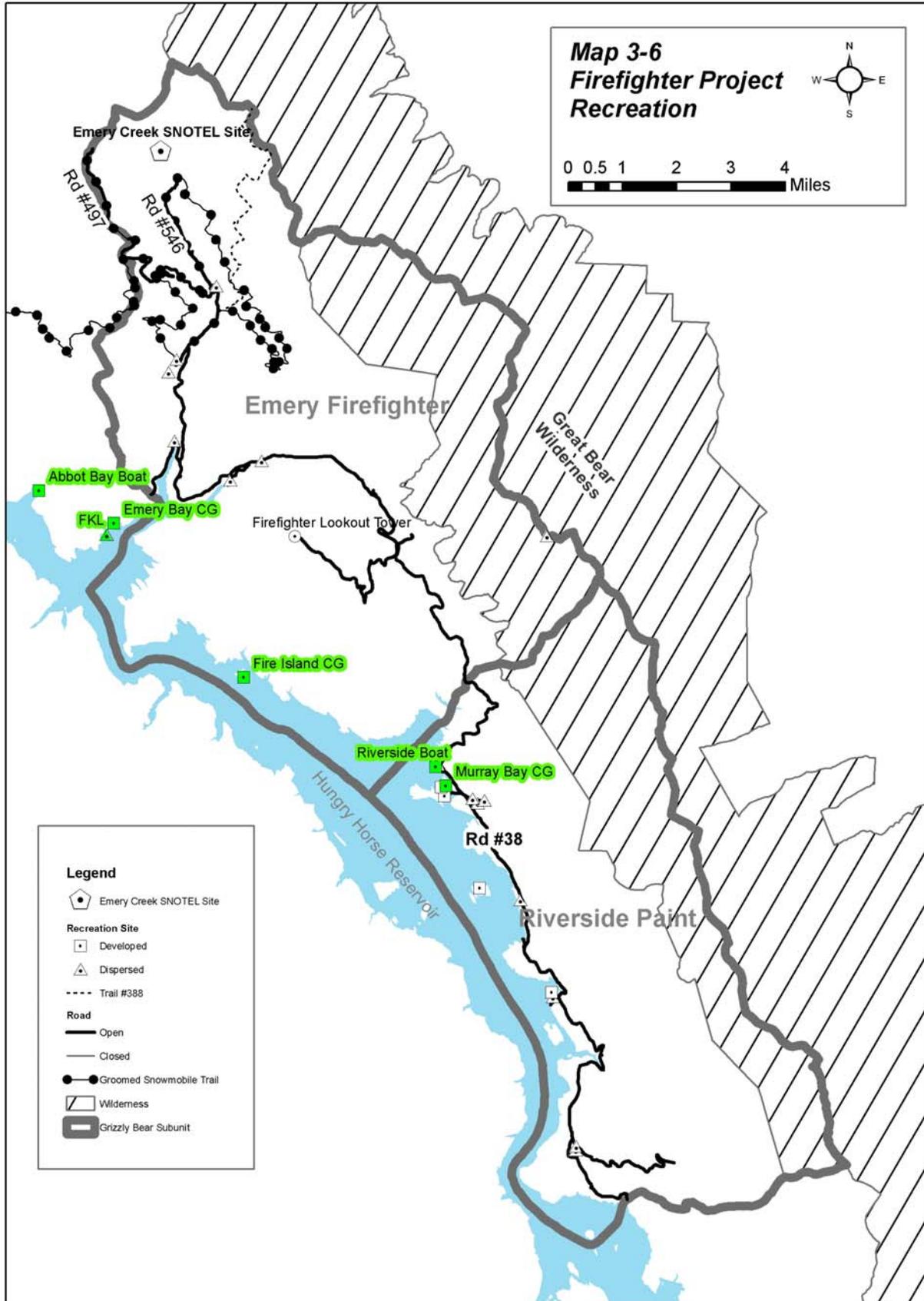
Snowmobile Use

The Flathead National Forest Winter Motorized Recreation Plan Record of Decision was signed November 17, 2006. This plan designates winter-motorized routes and play areas, and open seasons, for snowmobile recreation throughout the Flathead National Forest; these are depicted on the Hungry Horse and Spotted Bear Ranger Districts Over Snow Motor Vehicle Use Map (refer to the Project File). A portion of the project area allows for snowmobiling during the general snowmobile season from December 1 through March 31. Forest Roads 38, 546, 497, and 497A are open yearlong roads and may be used by snowmobiles provided adequate snow cover exists. Forest areas outside of the Coram Experimental Forest, Firefighter Winter Range Area, and the Great Bear Wilderness are available for snowmobiling during the general season.

Approximately 28 miles of roads (Forest Roads 1614, 546, 497A, 1048 and 497) are groomed by a local snowmobile club (the Flathead Snowmobile Association) through a Challenge Cost Share Agreement. These groomed roads are collectively known as the Desert Mountain Winter Trail System. The Paint Emery Project included a decision to decommission 11.5 miles (Forest Roads 1614, 1048, and 1615) of the Desert Mountain groomed winter trail system; it has yet to be fully implemented. Decommissioning actions would remove the stream-aligned culverts within the roadbeds, which would essentially prohibit the grooming of this trail system. Additionally, the removal of the culverts would likely remove the opportunity for any snowmobiling to occur because the culverts reside in deep drainages.

Special Uses

There are four special use authorizations within the project area. One is an authorization for a Snotel site (an automated system designed to collect snowpack and related climatic data) at the end of the Emery Road (Forest Road 546), which was issued to the United States Geologic Service (USGS). A portion of Forest Road 546 was closed during a previous decision, which effectively eliminated the motorized access to the Snotel site; the USGS now reaches it by non-motorized means. Another special use in the same area is an electronic site at the end of Forest Road 546, which is adjacent to the project boundary.



One of the developed sites, Murray Bay Campground is authorized under a Special Use Permit issued to the Forest-wide Campground Concessionaire. He is responsible for the operation and maintenance of the facility from mid-May through September.

The only other special use in the project area is the Flathead Snowmobile Association Challenge Cost Share Agreement described above.

Environmental Consequences

Alternative 1 (No-Action Alternative)

Direct, Indirect, and Cumulative Effects

Alternative 1 proposes no improvement to elk habitat, wildlife security, forest diversity, forest productivity, or to the Douglas-fir test-tree plantation. Additionally, there would be no changes to access management to improve grizzly bear security. Ongoing access changes from a previous decision would continue to be implemented as funding is available.

Alternatives 2 & 3 (Action Alternatives)

Direct and Indirect Effects

Recreation

Tree harvesting and thinning activities, designed to improve elk habitat, and forest diversity and productivity would occur on National Forest System lands near Firefighter Mountain. The vegetation treatments involved in Alternatives 2 and 3 would have little to no effect on recreation resources. However, there would be the potential for increased hunting opportunities because of the improvement to the elk habitat.

Road Use and Dispersed Recreation Sites

The main effect caused by the Action Alternatives to recreational opportunities would be a result of the motorized access management portion of the project (the motorized access strategy would be the same under Alternatives 2 and 3). In general, currently open roads available to wheeled motorized use would not be affected by the access strategy of the Action Alternatives. Most of the access changes would occur on roads currently closed to wheeled motorized use; that is, gated roads would be bermed or bermed roads would be decommissioned. The public would still be able to access these roads by non-motorized means as before, but over time, it may prove more difficult because the roads would become brushed in (due to little or no future maintenance actions) and would be more difficult to walk, bike, or ride horses on these roads.

A few small segments of roads, which would be closed under a previous decision, would remain open to access dispersed camping sites. Forest Roads 11140 and 896 currently access dispersed sites on Emery Creek and Hungry Horse Bay, respectively. The two Action Alternatives would maintain these roads for motorized use to the two dispersed sites, thus maintaining the existing

level of dispersed recreation opportunities. Forest Road 10188A (slated for decommissioning under a previous decision) would also remain on the system as a gated road; it would be an administrative use road within the Murray Bay Campground. This status would allow recreation managers to respond to the demands for future needs (by making more camping areas available) without impacting a new site in the project area.

Approximately 1.3 miles of the currently open Emery Creek Road (Forest Road 546) would be gated yearlong, and one dispersed site would no longer be accessible by wheeled motorized means because of this closure. The new gate location should have a minimal effect on trail users since the new segment of Ousel Trail 388 has been extended further south to Forest Road 1048, near its junction with Forest Road 546. A properly sized turn-around would be constructed at the gate so that users, especially those with stock, can safely turn around and park along the road. Only a few parking spaces are anticipated at this turn-around area. Other recreationists, including hunters, berry pickers, firewood harvesters, etc. would have 1.3 miles less motorized access for their recreational pursuits.

Snowmobile Use

A previous decision would have decommissioned 11.5 miles of the Desert Mountain Winter Trail System roads. As discussed in more detail under Affected Environment above, decommissioning these roads would likely remove the opportunity for any snowmobiling to occur on these roads.

Under both Action Alternatives, the groomed snowmobile trail system would remain intact for snowmobiling. Two currently gated yearlong roads (Forest Roads 1614 and 1048) would be bermed rather than decommissioned as prescribed in the Paint Emery Decision. The berms would be designed to accommodate the grooming equipment and snowmobile travel while prohibiting full size motorized vehicle traffic. Berming these roads, rather than decommissioning them, would preserve a valuable winter recreation experience (grooming and snowmobiling). Forest Roads 1614 and 1048 would continue to be brushed and logged out annually to allow the grooming and snowmobiling activities.

Special Uses

The Snotel site would continue as is, with only non-motorized access to the facilities. Coordination between the Ranger District and the permit holder for administrative motorized access behind the gate to the berm location would continue.

The Action Alternatives should have no effect to the electronic site, and the grooming of the 28-mile trail system on closed roads by the Flathead Snowmobile Association would continue under a Challenge Cost share Agreement.

Maintaining Forest Road 10188A on the system as an administratively closed road would allow the Forest Service to respond to future recreation demands in the project area. The Campground Concessionaire would be positively affected if loop Road 10188a access were developed.

Cumulative Effects

Wheeled motorized closures, in addition to those identified under direct effects, have been occurring as mitigations from other projects in order to provide grizzly bear security habitat. As mentioned under the Affected Environment section above, the Paint Emery Project was the most recent project affecting wheeled motorized use in this area. It is anticipated that as other projects arise in grizzly bear security habitat, additional motorized access closures or restrictions would occur.

The Flathead Valley's local and visiting populations are growing. Their desire for recreation activities such as camping, hunting, fishing, huckleberry picking, firewood gathering, hiking, biking, ATV and motorcycle trails, stock use, floating, etc. is also increasing. The collective effect of restricting wheeled motorized access can result in overlapping recreationists onto the same areas, trails, roads, and campgrounds. The cumulative results are increased maintenance and repairs on the facilities, roads, and trails; providing for health and safety issues; and overall people management. The recreationists would come to camp, ride, hike, and float; recreation managers must foresee these potential bottlenecks and plan accordingly by implementing appropriate resource protection management tools. With increasing public use and diminishing public motorized access (to provide for grizzly bear security habitat), the cumulative effect would be increased regulatory controls on recreation activities. A few examples of these regulations would be; designated dispersed camping areas, solid human waste self-containment requirements, and/or reduced stay limits for camping.

As roads accessing trailheads are closed to wheeled motorized use, trail maintenance costs would increase because more miles (formerly roads) have been added to the trails management program. Use patterns change when the trailhead is moved from the historic location. Since the trail distances increase, the day-use experience may change to overnight; other non-motorized users may no longer be interested in the road as a trail. The access management changes affecting trailhead locations would result in a future assessment of the overall feasibility of the trail system.

The recent access management decisions made for both system roads and trails would be carried forward as the Existing Condition for the upcoming Hungry Horse/Glacier View Ranger Districts Travel Planning process beginning in 2008.

Regulatory Framework and Consistency

Proposed management actions are compatible with management direction in the Flathead National Forest Land and Resources Management Plan.

XII. SCENIC RESOURCES

Introduction

The Firefighter project area is located on the Hungry Horse Ranger District of the Flathead National Forest. The project is generally located between Forest Road 38 (the main east side reservoir road) and the Hungry Horse Reservoir near Firefighter Mountain.

The Hungry Horse Reservoir area is a destination point for outdoor recreation activities and offers a variety of recreation opportunities: driving for pleasure, boating, fishing, camping, hunting, and winter sports. The Hungry Horse Dam Visitor Center receives thousands of visitors each year.

Information Sources

Information used to evaluate the scenery resource was based on site visits by a visuals specialist. Photo viewpoints were used to specifically address effects to scenic resources in areas that have higher levels of sensitivity and visitor use. These viewpoints are described in more detail below.

Analysis Area

The analysis area for the scenic resource is the project area described in Chapter 1. For this analysis, two viewpoints were chosen as a representative range of views in the area; this will be the basis for analysis of the alternatives. The time frame for this analysis spans from the implementation of the activities to a point in the future when grass, shrubs, and small trees are established in areas disturbed by treatments – one to 20 years after treatment (2010 to 2030).

Affected Environment/Existing Condition

Regulatory Framework

The Flathead National Forest scenic resource is managed by direction provided in the Flathead National Forest Plan, 1986 (Forest Plan). The Forest Plan describes the visual quality objectives (VQO) for each management area (MA); MAs affected by proposed activities include 7, 13, 15, and 16

Management Area 7

The VQO for this MA is partial retention, where human activity may be evident but must remain subordinate to the characteristic landscape. According to the Forest Plan, to achieve and/or maintain the partial retention VQO use appropriate mitigation measures as defined by the visual absorption capability of the area (this is an estimate of the relative ability of a landscape to accept management manipulations without significantly affecting its visual character; it is a measure of the relative capability of the area to absorb visual change). This type of analysis was completed (refer to the Project File) and it was determined that the project area had a medium visual absorption capability. A medium visual absorption capability means that regeneration

harvest would utilize individual tree or group selection, seed tree, shelterwood, or clearcut silvicultural systems. Even-aged units shall generally not exceed 15 acres in size.

Management Area 13

The VQO for this MA is modification, where human activity may dominate the characteristic landscape but must utilize naturally established form, line, color, and texture at the same time. It should appear as natural occurrence when viewed in the foreground (0 to ½ mile) or middleground (1/4 to 3-5 miles).

Management Areas 15 and 16

The VQO for these management areas are modification or maximum modification. Modification VQO allows human activity to dominate the characteristic landscape but must, at the same time, utilize naturally established form, line, color, and texture. It should appear as natural occurrence when viewed in the foreground (0 to ½ mile) or middleground (1/4 to 3-5 miles). Maximum modification is where human activities may dominate the characteristic landscape but should appear as a natural occurrence when viewed as background (3-5 miles to infinity).

Existing Condition

Glaciation has been the primary land forming process that has shaped the Firefighter project area. Glaciers overtopped Firefighter Mountain and surrounding ridges, creating their rounded shape. Slopes are generally gentle and range between 20% and 50% slope with some steeper, glaciated breaklands. Elevation in the project area ranges from about 3,600 feet at the shore of Hungry Horse Reservoir, to about 5,600 feet at the top of Firefighter Mountain.

Past timber harvest activity patterns have produced a mixture of light-to-moderate managed areas to other areas that have remained relatively natural. Since the mid-1950s, approximately 13% (1,991 acres) of National Forest System land in the project area has had regeneration harvesting, and 20% (3,136 acres) has had intermediate harvesting. Please see the Existing Condition portion of the Vegetation section for more detail information on past harvesting.

In the last 100 years, nearly 90% of the Firefighter project area has been burned in wildfires. Because of these historical fires, the project area has regenerated to mostly lodgepole pine and western larch. The Firefighter Winter Range Project accomplished prescribed burning on about 200 acres.

The landscape character is of uniform canopy cover with stands of single-storied trees 60 to 80-foot tall. The project area has low to moderate slopes with the Flathead Mountain Range dominating the background view. Past clearcuts and roads are evident. Regeneration is occurring and hard lines between young vegetation and older vegetation are softening.

Most of the Firefighter area is not easily accessed by the public because most roads have yearlong motorized access restrictions. However, the area is popular with hunters and does

receive walk-in use. The road to the lookout provides limited views of the Firefighter area and the upper gate has been closed for the last several years.

Viewpoint Descriptions

A field review of the project area was completed in the fall 2007 and spring 2008. Potential viewpoints were chosen based on the VQO of the units and visibility from high-use recreation sites, which are generally located outside of the project area. The following viewpoints would be used for further analysis on the effects of the proposed management activities to scenery in the area.

- Viewpoint 1 is from the Lid Creek Campground. This campground is located across the Hungry Horse Reservoir from the Firefighter Project area.
- Viewpoint 2 is from the Riverside Boat Launch. This boat launch is located on the same side of the Reservoir as Lid Creek Campground, and is across a small bay from the campground.

Management activities such as timber harvesting can affect forest scenic quality by changing the pre-dominate form, color, line, or texture in a given viewing area. The degree of visibility of these events (i.e., visual impact) depends on the interaction of certain elements to the viewer, such as slope and aspect of the land, surrounding landscape, and frequency and duration of view.

The effect of the Proposed Action to these elements was reviewed and a determination was made on whether the Action Alternatives met the assigned VQO.

Environmental Consequences

No significant issues related to scenery were identified. The following effects indicator was used to focus the scenery analysis and disclose any relevant effects:

- A qualitative assessment of change in scenic quality

Each of the Action Alternatives involves prescriptions and management activities that would result in a change from the existing character of the project area. Activities included in the Action Alternatives should meet the scenery objectives allocated in the Forest Plan.

Alternative 1 (No-Action Alternative)

Direct and Indirect Effects

Due to no removal of vegetation or fuel treatment, the process of forest succession would continue. Alternative 1 would not improve or maintain the general health, resiliency, or sustainability of forest vegetative communities. Fuels would continue to build up from tree mortality and undergrowth, creating a higher risk of high- and mixed-severity fire than the Action Alternatives. In the event of such an occurrence, visual change to the landscape could be dramatic. As fires are part of the historic fire regime, this change would be natural appearing. High-severity fires would create large openings whereas mixed-severity fires generally burn in mosaic patterns across the landscape creating diverse visual landscapes and would help in

“softening” hard lines between harvested and non-harvested lands. Please see Existing Condition in the Fire and Fuels section for more detail information on fire regimes.

Cumulative Effects

Past timber harvest is an apparent part of the viewed landscape due to past vegetation management activities. Cumulative changes to the landscape include changes to the shapes and textures on the landscape

Effects from wildfire suppression would vary with location and size of wildfires. Suppression of small fires would cumulatively contribute indiscernible effects to Scenic Resources within the analysis area; however, the suppression of large fires could have greater effects. It can be reasonably foreseen that stand conditions would be expected to continue to experience increased in-growth in the understory and increasing ground fuel buildups. The effects of wildfire, whether by humans or natural ignition, can be dramatic. This change may be natural in appearance, but fires of large magnitude could create expanses of even-aged stands with little visual diversity that would exist for many decades.

Alternative 2

Direct and Indirect Effects

Tree harvesting would create some changes to views into and within the project area. Tree canopy openings of various sizes resulting from logging may be visible. The proposed treatments would be spread throughout the project area. Structure of the forest would change from dense stands of trees to stands with more openings and fewer trees per acre. Delineation between the dense stands of trees and openings with fewer trees may be noticeable until new vegetation is established. The long-term result of the harvesting would be a variety of age and size structure visible from the roads, trails and the Hungry Horse Reservoir.

Effects from temporary road construction would be in the short-term where soil disturbance is visible; after brush, grass and forbs are established in the disturbed sites, effects would not be noticeable. Temporary roads and historic roads would be rehabilitated following project treatments. Effects from broadcast burning of some of the units would add change to the color and texture of the unit that would be short-term until the flush of ground vegetation occurred.

Partial Retention VQO Units

Three units (Units 5, 8, and 56) were assigned a partial retention VQO where human activity may be evident but must remain subordinate to the characteristic landscape

Unit 5 is visible from Viewpoint 1, and Unit 56 is visible from Viewpoint 2. Fire Island blocks Unit 8 from Viewpoint 1; however, this unit is visible from the Reservoir.

The proposed treatment for Units 5, 8, and 56 would be a regeneration treatment where all or nearly all lodgepole pine would be removed, leaving all larch and Douglas-fir. This would result

in an open stand of larch and Douglas-fir, with 10 – 30 trees per acre. Units 5 and 8 would be broadcast burned after harvest and Douglas-fir, larch, and western whitepine would be planted. Mechanized treatment of slash (primarily excavator piling) would occur in Unit 56, the Unit would then be planted with Douglas-fir, larch, and western whitepine.

By incorporating the design criteria in Chapter 2, the harvest units would be evident but remain subordinate to the characteristic landscape.

Visually Sensitive Units with Modification and Maximum Modification VQOs

Units 2a, 2b, 6, 7, 9b, 9c, 11, 14, 15, 19, 20, 21, 23, 26, 29, 30, and 61, are visually sensitive units because they can be viewed from some of the high-use sites along the Hungry Horse Reservoir. These units were assigned either a modification VQO (human activity may dominate the characteristic landscape, but must, at the same time, utilize naturally established form, line, color and texture), or maximum modification (human activities may dominate the characteristic landscape but should appear as a natural occurrence when viewed as background).

The proposed treatment for Units 6, 7, 14, 15, 20, 23, 26, 29, 30, and 61 would be a seedtree harvest where all or nearly all lodgepole pine is removed, leaving all larch and Douglas-fir. This would result in an open stand, with larch and Douglas-fir between 10 and 30 trees per acre. The units would be broadcast burned after harvest, and Douglas-fir, larch, and western whitepine would be planted.

The proposed treatment for Units 9b, 9c, 11, 19, and 21 would be a shelterwood harvest, removing all the lodgepole pine and leaving most of the larch and Douglas-fir in fair or better condition. This would result in a relatively open stand condition, with residual trees densities of 30 to 60 trees per acre. An underburn would be applied to the area. Conifer seedlings (Douglas-fir, larch, and western whitepine) would be planted in some of the units.

Proposed treatment in Units 2a and 2b would be thinning/shelterwood harvests, removing all the lodgepole pine, and leaving all larch and Douglas-fir in fair or better condition. This would result in a moderately open stand condition with residual tree density of 30 to 80 trees per acre. Mechanized treatment of the slash would occur, typically by excavator piling and natural regeneration would occur.

The treatments for all units would show a change from existing conditions with a reduction in canopy cover. The more trees per acre left, the less deviation from the existing landscape character. By incorporating the design criteria in Chapter 2, the harvest activity would dominate the characteristic landscape but follow naturally established form, line, color, and texture, and appear as a natural occurrence when viewed as background.

Cumulative Effects

Timber harvesting from past sales are still visible and some have started to revegetate. Visibility of some of these features would continue until sufficient time has allowed for timber stands to mature. The landscape would have more deviation from the current condition of a more closed uniform stand of trees.

Cumulative effects of the Proposed Action in addition to past, present, and reasonable foreseeable actions would result in a landscape that has more changes to the shapes and textures on the landscape. Cumulatively, this alternative would introduce more variety, form, and texture to the project area.

Alternative 3

Direct and Indirect Effects

This alternative differs from Alternative 2 in that it dropped several units and changed harvest prescriptions in other units. The change in harvest prescription generally included the retention of more trees. As a result, there would be less noticeable changes in views into and within the project area than described for Alternative 2. There would also be fewer temporary roads built under Alternative 3, and therefore visible effects would be less.

Partial Retention VQO Units

One unit (Unit 56) is assigned a partial retention VQO where human activity may be evident but must remain subordinate to the characteristic landscape. This unit is visible from Viewpoint 2.

The proposed treatment for Unit 56 would be a regeneration treatment where all or nearly all lodgepole pine is removed, leaving all larch and Douglas-fir. This would result in an open stand with larch and Douglas-fir between 10 and 30 trees per acre. Mechanized treatment of slash (primarily excavator piling) would occur; the unit would then be planted with Douglas-fir, larch, and western whitepine.

Visually Sensitive Units with Modification and Maximum Modification VQOs

Units 2a, 2b, 9b, 11, 14, 19, 21, 23, 26, 29, and 30 are visually sensitive units because they can be viewed from some of the high-use sites along the Hungry Horse Reservoir. These units are assigned either a modification VQO (human activity may dominate the characteristic landscape but must, at the same time, utilize naturally established form, line, color and texture), or maximum modification (human activities may dominate the characteristic landscape but should appear as a natural occurrence when viewed as background).

Proposed treatments for Units 9b, 11, 19, 14, 21, 23, 26, 29, and 30 would be a thinning where 60-100 trees per acre would be left, including all larch and Douglas-fir, and many lodgepole pine. This would result in a low-to-moderately open stand. Mechanized treatment of slash (primarily excavator piling) would be done.

The proposed treatments for Units 2a, and 2b would be a thin/shelterwood harvest removing all the lodgepole pine, and leaving all larch and Douglas-fir in fair or better condition. This would result in moderately open stand conditions with residual tree density of 30 to 80 trees per acre. Mechanized treatment of the slash would occur, typically by excavator piling. Natural regeneration would occur.

The treatments for all units would show a change from existing conditions with a reduction in canopy cover. The more trees per acre left, the less deviation from the existing landscape character. By incorporating the design criteria in Chapter 2, the harvest activity would dominate the characteristic landscape but follow naturally established form, line, color, and texture, and appear as a natural occurrence when viewed as background.

Cumulative Effects

Timber harvesting from past sales are still visible and some have started to revegetate. Visibility of some of these features would continue until sufficient time has allowed for timber stands to mature. The landscape would have more deviation from the current condition of a more closed uniform stand of trees.

Cumulative effects of the Proposed Action in addition to past, present and reasonable foreseeable actions would result in a landscape that has more changes to the shapes and textures on the landscape. Cumulatively, this alternative would introduce more variety, form, and texture to the project area.

Regulatory Framework and Consistency

The project would meet Forest Plan standards for scenic resources.

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XIII. AIR QUALITY

Introduction

The primary air quality concerns associated with forest management activities include road dust, and smoke from wildfires and prescribed burning. The main air quality concern associated with the Firefighter Project would be the amount and concentration of particulate matter (PM) produced by proposed prescribed burning. Wood smoke produces particles too small to be seen by the human eye, measuring 10 microns (one micron equals a millionth of a meter) and smaller. Larger particles tend to settle out of the air quickly, and are less likely to affect public health. Particles 10 microns and smaller may be inhaled deep in the lungs, posing a threat to public health and visibility. Particles 2.5 microns and smaller are of the highest concern for potential health effects.

The basic framework for controlling air pollutants in the United States is the 1970 Clean Air Act (CAA), as amended in 1990 and 1999 (42 U.S.C. 7401 et seq.). The CAA was designed to protect and enhance the quality of the Nation's air resources. The CAA encourages reasonable federal, state, and local government actions for pollution prevention. State Implementation Plans (SIP) are developed to implement the provisions of the Clean Air Act. The SIP describes the actions the state takes to achieve and maintain the "national ambient air quality standards" (NAAQS). Under the CAA, the EPA sets standards for air quality to provide both health and visibility protection. Montana has also set standards to help protect air quality.

The EPA has established NAAQS for six criteria pollutants that have been determined harmful to the public and environment; these include carbon monoxide, lead, nitrogen dioxide, sulfur dioxide, ozone, PM_{2.5}, and PM₁₀. The major pollutant of concern in smoke from wildland fire is fine particulate matter, both PM₁₀ and PM_{2.5}. Smoke from prescribed fire must meet the ambient air quality standards for PM₁₀ and PM_{2.5}. In Montana, the state standard for PM₁₀ is the same as the federal NAAQ: 50 µg/m³ (micrograms per cubic meter, which is 1/1,000,000 of a gram per cubic meter) for the annual arithmetic mean, and 150 µg/m³ for the 24-hour average. For PM_{2.5}, no state standard has been established; the federal NAAQ is 15 µg/m³ for the annual arithmetic mean and 35 µg/m³ for the 24-hour average. Fine particulate matter, generally less than 2.5 microns in diameter (PM_{2.5}), is the primary cause of visibility impairment although gases also contribute. Emissions from wildland burning include both gases and particulate matter ranging in size from 0.1 to 2.5 microns, which greatly impacts visibility. For more information or a listing of the NAAQS, please see the Environmental Protection Agency's website at <http://epa.gov/air/criteria.html>, or the table included in the air quality portion of the Firefighter Project File (Project File), Section I.

Information Sources

The evaluation of direct, indirect, and cumulative effects on air quality utilized the most recent and available information and data related to past, present, and reasonably foreseeable events that have occurred or may occur in the air quality analysis area.

Analysis Methods

The Smoke Impacts Spreadsheet (SIS) (Air Quality section, Project File) was used to estimate PM10 and PM2.5 emissions and airborne concentrations downwind of prescribed burning. SIS consists of existing accepted models in a spreadsheet format. SIS utilizes Consume 2.1 for pile burning emissions and CALPUFF 5.5 to model smoke dispersion, as well as FOFEM 5 to estimate material available for burning.

Analysis Area

The Montana Air Quality Bureau divides the State of Montana into ten airsheds. Airshed 2 is the primary analysis area for assessing the influence of the Firefighter Project activities on air quality because it encompasses the effects of any activities undertaken in the project area (as defined by the Montana/Idaho Airshed Group). Airshed 2 comprises Flathead, Lake, Sanders, and the northern portions of Missoula and Powell counties. A map of Airshed 2 is in the Air Quality section of the Project File.

The cumulative air resource analysis is unique in that past impacts to air quality are not usually evident. Individual sources of smoke from other agencies are too numerous and variable to list. Because of the complexity and uncertainty of timing associated with other agencies burning, coordination with the Montana/Idaho State Airshed Group is critical to minimize cumulative air quality impacts within Idaho and Montana. Any future burning would be coordinated through the Airshed Group to mitigate cumulative effects.

Affected Environment/Existing Condition

Meteorology

Smoke dispersion is primarily determined by transport winds and mixing height. Transport winds determine the direction of a smoke plume and the speed at which it travels; mixing height controls the ability of smoke to mix into an air mass. In the spring and summer, solar heating of the earth surface is intense, increasing the amount of warm air contributing to an unstable atmospheric condition. The more unstable the atmosphere, the higher the likely mixing height would be, and the greater the dispersion. During the fall and winter, stable atmospheric conditions prevail as cooler air pools in the valley bottoms. Solar heating is not enough to heat this pooled air, so the stable conditions remain, reducing dispersion until a frontal passage “scours” out the valley air.

Forest Service management prescribed and wildland fire use contributes smoke that may cause short-term deterioration of air quality in the area. Management prescribed fires contribute smoke to the airshed, although prescribed fires tend to produce less smoke than wildfires of equal size since fuel consumption is typically lower in a prescribed burn. On the Flathead National Forest, prescribed burning is generally accomplished when dilution, dispersal, and mixing conditions are considered fair to excellent. Prescribed burning requires approval from the Montana/Idaho Airshed Group and the burn must be implemented within the regulatory framework. This includes daily approval from the Flathead County Air Quality hotline and the Montana/Idaho

Airshed Group. More information on the Montana/Idaho Airshed Group can be found online at www.smokemu.org.

Airshed Characteristics

Fire has been a historical part of the vegetative dynamics in the Northern Rockies, evidenced by the burn mosaics of the surrounding forested lands. Fires continue to be a part of the natural forest ecosystem and produce local short-term impairment of air quality. The 2001, 2003, and 2007 fire seasons are extreme examples of wildland fire smoke effects on air quality.

The air quality of the Flathead River Valley is considered good to excellent throughout most of the year; it meets Montana air quality laws and the CAA.

Air quality can be affected and various amounts of pollutants may result from the following:

- Prescribed burning in the spring and fall by the Flathead National Forest, Glacier National Park, Montana Department of Natural Resources, and timber and land development companies.
- Prescribed burning to the west and south by other National Forests, other agencies, and private companies or citizens.
- Wildland fire use for resource benefit occurring in the summer months in the Flathead National Forest, Bob Marshall Wilderness, Great Bear Wilderness, and Glacier National Park.
- Wildland fires burning upwind to a distance of two-hundred miles, depending on the size of the fire.
- Agricultural field burning in the Flathead Valley and Idaho.
- Weather patterns that help cause degradation when low-pressure systems over Idaho pull suspended pollutants (dust and smoke) from large metropolitan airsheds and farms in Oregon, Washington, and Idaho.

Sensitive Areas

The EPA designates communities that do not meet air quality standards (NAAQs), over a period of time, as “non-attainment areas.” States are then required to develop a plan to control source emissions and ensure future attainment of the standards. The emissions from prescribed fire may be considered as contributing emissions. Three cities in the Flathead Valley are considered sensitive areas because they are non-attainment areas for PM₁₀: Kalispell, Columbia Falls, and Whitefish. Kalispell is considered an area of concern, though not formally designated a non-attainment area for carbon monoxide.

The CAA provides for additional measures “to preserve, protect, and enhance the air quality” in larger National Parks, Wilderness Areas and other areas of special national significance. These areas are designated Class I airsheds. Of particular concern under this requirement is visibility or haze. The Prevention of Significant Deterioration (PSD) provisions of the CAA require measures “to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreation, scenic, or historic value.” Stringent requirements are therefore established

for areas designated as Class I areas (42 U.S.C. 7475 (d)(2)(B)). Designation as a Class I area permits only very small increments of new pollution above existing air pollution levels. There are several Class I airsheds in the vicinity. Glacier National Park is located northeast of the project area, and is the Class I airshed most vulnerable to project activities affecting air quality since prevailing winds often blow from west to east.

A requirement of PSD is that new major stationary sources, or major modifications of existing stationary sources, must first receive a PSD permit from the appropriate air regulatory agency before implementing construction or modification. A stationary source is one that is well defined, such as the smokestack of a coal-fired power plant or smelter. Prescribed burning from the Firefighter Project is not considered a major stationary source and therefore is not subject to the PSD permitting process.

Environmental Consequences

There were no significant issues concerning air quality. The effects indicator used to evaluate the effects of each alternative on smoke production was:

- Particulate matter less than 2.5 microns in diameter

The total amount of PM_{2.5} and the estimated 24-hour concentrations of PM_{2.5} were modeled for all alternatives. PM_{2.5} was chosen because while more than 90 percent of the mass of particulate matter produced by wildland fires is less than 10 microns in diameter, 80-90 percent is less than 2.5 microns in diameter. For this reason, some models only predict PM_{2.5} emissions. These small particles are inhalable and respirable. Respirable suspended particulate matter is that proportion of the total particulate matter that, because of its small size, has an especially long residence time in the atmosphere and penetrates deeply into the lungs. Small smoke particles also scatter visible light and thus reduce visibility (NWCG 2001).

Alternative 1 (No-Action Alternative)

Direct and Indirect Effects

No prescribed burning would occur in this alternative, therefore no prescribed burning smoke emissions would be produced by this alternative.

Alternatives 2 & 3 (Action Alternatives)

Direct and Indirect Effects

Prescribed burning would occur in each of these alternatives, however, the type of materials that would be burned and the amount burned would vary. The amount of prescribed burning is displayed based on the number of acres per burn type. This analysis considered four different categories (Stand Groups) of material to be burned. There is a fifth stand group proposed for treatment; however, there is no burning proposed in Stand Group 5 so only four groups were analyzed. The five Stand Groups identified in this project are briefly reviewed below; refer to the Forest Vegetation section of this Chapter for a thorough description of these forest types.

- Stand Group 1 – Mature lodgepole pine stands, 75-80 years old with high tree densities, in designated elk winter range.
- Stand Group 2 – Mixed-species stands, 75-80 years old, in designated elk winter range.
- Stand Group 3 – Dense, mature lodgepole pine stands, 75-80 years old, outside of designated elk winter range.
- Stand Group 4 – Mixed-species stands (mostly lodgepole pine and larch), 75-80 years old, outside of designated elk winter range.
- Stand Group 5 – Sapling stand, 13-year-old Douglas-fir progeny test-tree plantation.

Prescribed burning would consist of pile burning materials that result from mechanical fuels reduction treatments and broadcast burning following harvest in some units. It is anticipated that all units would have piles to be burned; however, only proposed units in Stand Groups 1, 2, and 3 would have broadcast burning. The acres of burning are displayed in Table 3-49 by Stand Group and burn type (piles only, or piles and broadcast burning).

All burning would occur under conditions designed to ensure adequate smoke dispersal, although the prescribed burning would produce some smoke emissions. The NAAQS PM_{2.5} is 35 µg/m³ for the 24-hour average. Smoke from prescribed burning could cause short-term impacts on recreation and transportation in and near the project area. The size and location of a prescribed burn, and the weather conditions determine how much, and in what direction, smoke travels. Weather and smoke dispersion conditions outlined in the prescribed burn plan should alleviate any adverse smoke effects.

Pile Burning

Pile burning may be used to dispose of slash resulting from harvesting, producing direct smoke emissions. Slash may be totally removed from the treatment area, and under this scenario, there would be no smoke produced from burning of piled materials. However, in order to analyze a worst-case scenario, we assumed all slash would be treated with prescribed fire. We further assumed that all units in Stand Groups 1, 2, 3, and 4 would be whole tree yarded (leaving treetops at the landing) and then machine piled. It is also assumed that there would be landing piles resulting from harvest even within units proposed for broadcast burning; however, more slash material may be left in the units to increase horizontal continuity of fuels allowing for the proposed broadcast burning.

Smoke emissions vary with combustion efficiency and quantity of fuel burned. Machine piles and hand piles tend to produce more smoke than other burns because much of the consumption occurs during the inefficient smoldering phase of combustion. Potentially, pile burning would be conducted over the course of 1-3 years after harvest activities, so impacts would not be concentrated. Areas where fuels have been treated under conditions selected to minimize effects to air quality should be less vulnerable to future intense wildfires, which have unpredictable smoke effects.

SIS model runs included assumptions of the number of landing piles that would be burned. The model projections also assume that poor smoke dispersion would be experienced. These assumptions, combined with the tendency of SIS to model emissions at the high end of the

expected range, means that smoke predictions would likely represent the worst-case for pile burning. Modeling also assumes that transport winds would blow from the south, west, or southwest, and that burning would occur over several days in the fall over a one-year period. Pile burning allows management to control the number of piles burned on any given day.

Broadcast Burning

Broadcast burning of slash and natural fuels would be included in each Action Alternative, although the location and number of acres to be burned would vary. It would be very unlikely that these units would all be burned in one day, or even in one year; however, modeling was done to show all acres being burned in one day to display the worst-case scenario. As in the pile burn modeling, a general worst-case example was assumed to display smoke emissions and dispersion. This included a daytime stability rating of slightly unstable (unstable would be ideal) and a nighttime stability rating of neutral. These stability ratings resulted in poor smoke dispersion assumptions, representing a worst-case scenario.

Table 3-49. Air Quality Emissions for Alternatives 2 & 3

Treatment Category	Number of Units	Acres	Number of Piles	PM 2.5 (tons)	Tons of PM 2.5/Acre
Alternative 2					
Groups 1, 2, 3, & 4 Piles	31	741	37	23.39	0.032
Groups 1, 2, & 3 Broadcast Burn	22	543	--	219.0	0.4
Total	53	1,284	37	242.39	0.432
Alternative 3					
Groups 1, 2, 3, & 4 Piles	18	340	17	10.75	0.032
Group 3 Broadcast Burn	1	7	--	4.46	0.64
Total	19	347	17	15.21	0.672

Conclusions

SIS-CALPUFF was used to model smoke dispersion and concentrations for each alternative. Predicted ground level concentrations of PM_{2.5} emissions dispersed almost completely by midnight the day of ignition for both Action Alternatives. Dispersion models indicate that all areas over 0.5 miles from concentrated burning are well below 35 µg/m³ for the 24-hour average. Refer to the Air Quality section (Section I) of the Project File for concentration graphs. Managers are unlikely to burn that many piles in one day, especially when smoke dispersion conditions are poor. However, if it were to happen, the 24-hour concentration average would not be violated (Refer to section I in the Project File for SIS model printouts).

Modeling indicates that air quality in the Flathead Valley would not be adversely affected in the long-term by the prescribed burning proposed in the Action Alternatives. If an unpredicted wind with an eastern component occurred during burning, the Flathead Valley may experience short-term impacts.

All Alternatives

Cumulative Effects

This section discloses past, present, and reasonably foreseeable effects from federal, state, tribal and private land fire use activities. The cumulative air resource analysis is unique in that past impacts to air quality are not usually evident. However, present and foreseeable effects could include impacts from other prescribed forestry burning, agricultural burning, residential wood combustion, traffic exhaust, fugitive road dust, or point sources of pollution. Individual sources of smoke from other agencies are too numerous and variable to list. Because of the complexity and uncertainty of timing associated with other agencies burning, coordination with the Montana/Idaho State Airshed Group is critical to minimize cumulative air quality impacts within Idaho and Montana.

The cumulative effects area is Airshed 2. Smoke emissions produced by the implementation of the project, road dust, and vehicle emissions could combine with air pollutants from other projects in the area such as other prescribed burning and particulates produced west of the project area. Implementation effects could contribute to the cumulative impact of air pollutants within the Flathead Valley. Prescribed burning would be implemented during good smoke transport and dispersion conditions, and would be accomplished over time; minimizing any adverse effects from prescribed burning smoke emissions.

Prescribed burning, road dust, vehicle emissions, and wildfire could temporarily adversely affect the air quality in the analysis area and surrounding area. The Flathead Valley could be inconvenienced by smoky conditions for short periods during prescribed burning operations, or during the summer wildland fire season. Road dust due to log hauling and normal public traffic would be common in the project area. Dust abatement may be used if needed on haul roads to minimize the effects of road dust.

The cumulative impacts of all private and agency burning are assessed daily during the burning season, through the coordination of the MT/ID Air Quality Bureau. This group also considers other sources of smoke such as wildfires, wildland fire use events and industrial sources. Any prescribed burning in the Firefighter Project area would need to be approved on a daily basis through the MT/ID Air Quality Bureau. The MT/ID State Airshed Group is able to review all prescribed burning proposed in a given area. Based on current and forecasted weather, burns are approved or disapproved based on their cumulative impact on the airshed. This regulatory mechanism helps ensure that the cumulative effects of prescribed burning do not lead to a violation of air quality standards. The USDA Forest Service is an active participant in the MT/ID State Airshed Group.

Wildland fires occurring locally, or anywhere in the northwest and Canada, can affect regional haze in the Flathead Valley. Wildland fires would be anticipated to continue to produce smoke, primarily during the summer months.

The 1990 air quality rules relate to fine particulates (PM_{2.5}), and visibility (regional haze). Additionally, the Environmental Protection Agency (EPA) has issued the Interim Air Quality

Policy on Wildland Fire and Prescribed Fire. The Interim Policy encourages states to develop and certify to EPA smoke management programs to address emissions from prescribed fire and wildland fire use for resource benefits. The operations of the Montana/Idaho State Airshed Group are critical to minimize cumulative air quality impacts within Idaho and Montana. The daily operation of the Airshed Group considers and tries to minimize impacts from prescribed fire, wildland fire and wildland fire use.

Regulatory Framework and Consistency

As designated by law, state air quality rules, and the Flathead Forest Plan, the Flathead National Forest cooperates with the State Air Quality Bureau. The U.S. Forest Service is a member of the Montana/Idaho State Airshed Group. This coordination ensures that during project implementation burning would only occur under conditions that would protect air quality and meet state and national standards.

XIV. ECONOMICS

Introduction

The management of the Flathead National Forest (FNF) has the potential to affect local economies. People are an important part of the ecosystem. Use of resources and recreational visitation to the FNF generates employment and income in the surrounding communities and counties and generates revenues that are returned to the federal treasury.

This section presents concepts used to delineate an affected area and methods used to analyze the economic effects of the project, including project feasibility and financial efficiency.

NEPA requires that consequences to the human environment be analyzed and disclosed, based on issues. NEPA does not require a monetary benefit-cost analysis. If an agency prepares an economic efficiency analysis, then one must be prepared and displayed for all alternatives [40 CFR 1502.23]. The preparation of NEPA documents is also guided by CEQ regulations for implementing NEPA [40 CFR 1500-1508].

OMB Circular A-94 promotes efficient resource use through well-informed decision-making by the Federal Government. It suggests agencies prepare an efficiency analysis as part of project decision-making. It prescribes present net value as the criterion for an efficiency analysis.

The development of timber sale programs and individual timber sales is guided by agency direction found in Forest Service Manual (FSM) 2430. Forest Service Handbook (FSH) 2409.18 guides the financial and, if applicable, economic efficiency analysis for timber sales.

Information Sources

Four measures are appropriate for the economic analysis: project feasibility, financial efficiency, and economic efficiency. These measures are described below, including methodologies and information sources.

Project Feasibility

Project feasibility relies on the Region 1 Transaction Evidence Appraisal (TEA) System. The TEA uses regression analysis of recently sold timber sales to predict bid prices. The most recent appraisal model for the area of interest was used to estimate the stumpage value (expected high bid resulting from the timber sale auction) for the timber project. The estimated stumpage value for each alternative was compared to the base rates (revenues considered essential to cover regeneration plus minimum return to the federal treasury) for that alternative. The project is considered feasible if the estimated stumpage value exceeds the base rates. If the feasibility analysis indicates that the project is not feasible (estimated stumpage value is less than the base rates), the project may need to be supplemented with contributed funds if actual bids do not exceed base rates. There would also be an increased risk that the project would not attract bids.

Financial Efficiency

Financial efficiency considers anticipated costs and revenues that are part of Forest Service monetary transactions. Present net value (PNV) is used as an indicator of financial efficiency and is one tool to be used in conjunction with many other factors in the decision-making process. PNV combines benefits and costs that occur at different times and discounts them into an amount that is equivalent to all economic activity in a single year. A positive PNV indicates that the alternative is financially efficient.

A computer program called Quick-Silver was used to calculate economic criteria such as present net value, benefit/cost ratio, annual equivalent value, and internal rate of return. Projects with multiple investment partners or participants can be analyzed. Printed reports show cash flow details, economic returns, and summaries of costs and benefits that make up project alternatives. These reports are found in the Project File in section S.

Economic Efficiency

Economic efficiency uses the cost and revenue estimates included in the financial analysis and adds other economic costs and benefits that are not part of Forest Service monetary transactions. This analysis considers the quantifiable market and non-market benefits and costs associated with implementing each alternative. As with financial efficiency, a PNV is calculated to determine efficiency. An example of a non-market benefit or cost is an increase or decrease in recreation. A value for recreation visitor use would be derived from local or regional studies. An economic efficiency analysis is not required (FSH 2409.18, 30), and would only be included in this analysis if it was a public issue and there are predicted changes to quantifiable non-market benefits or costs from the project.

Many of the costs and benefits associated with a project are not quantifiable. For example, the benefit to wildlife from habitat improvement or the cost associated with the degradation of visual quality from a project is not quantifiable. Title 40, Code of Federal Regulations for NEPA (40 CFR 1502.23) indicates “For the purposes of complying with the Act, the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are qualitative considerations.”

Management of the FNF is expected to yield positive benefits, but not necessarily financial benefits. Costs for various vegetation, recreation, wildlife, road, and burning activities are based on recent experienced costs and professional estimates. Non-harvest related costs are included in the PNV analysis, but they are not included in appraised timber value.

Analysis Area Description

The analysis area for the efficiency analysis is the project area. All costs and revenues associated with the project decision were included. The time frame for this analysis is from the beginning of implementation of activities to the completion of the project.

Affected Environment/Existing Condition

The Economic Community

The Flathead National Forest includes parts of six Montana counties: Flathead, Lincoln, Lake, Missoula, Powell, and Lewis and Clark. About three-fourths of the area of the FNF and most of the economic effects of FNF programs and projects occur in Flathead County. The FNF has lesser effects in Lake County and only minimal effects in the other four counties.

The Flathead National Forest is an important part of the Northern Continental Divide Ecosystem, which covers most of northwest Montana. This area has substantial economic value on a regional, national, and international scale when recreation and tourism, wildlife, and aesthetic values are considered along with a substantial timber management program. However, it is beyond the scope of this analysis to evaluate markets for all these resources because they have not been identified as substantial economic issues in respect to the Proposed Action. The emphasis is on the economic effects that the Proposed Action and the alternatives would have on the timber industry and economic communities that would be primarily affected.

Timber Industry Trends

Historical Production and Capacity

Historically, annual timber harvest from National Forest System (NFS) land in Montana peaked at greater than 800 million board feet at the end of the 1960s. In the period of 2000 to 2004, the timber harvest dropped to the general vicinity of 100 million board feet per year, slightly greater than 10 percent of the past peak level (USDA Forest Service 2004b).

In 1998, of the 293 million board feet of timber delivered to processing facilities in Flathead County, approximately 38 million board feet, or less than 13 percent, came from National Forest System land (Keegan et al. 2001).

Since 1980, Flathead County has had the largest wood products manufacturing industry of any county in Montana. Since 1976, the county's capacity to process saw timber has varied from a low of 265 million board feet (Scribner rule) at the present to a high of 395 million board feet in 1983. Actual sawtimber processed since 1976 has varied from a low of 185 million board feet in 1982 to a high of 332 million board feet in 1988. Processing facilities utilization capacity has varied from a low of 51 percent in 1982 to a high of 97 percent in 1999. In 2000, the last year for which there are data, utilization capacity was at 94 percent. The plywood industry in Montana is presently at 93 percent of plant capacity. County level information on the plywood industry is generally not available because of data disclosure constraints (Keegan et al. 2001).

The percentage of milling capacity that is actually used or remains available for use affects the demand for logs and is a variable effecting log prices, which in turn, affects the quantity of logs supplied to mills.

Timber Industry Outlook

A global economic downturn in 2008 has caused significant impacts to the timber industry in northwest Montana. The impacts are extensive and include the loss of infrastructure which limits the ability to conduct fuels reduction and vegetation restoration work on national forests.

Total sales value of wood and paper products in Montana in 2008 has dropped approximately \$460 million since 2005 (Morgan and Keegan, 2009).

At the end of 2008, estimated total employment in the wood products industry was about 9,070 workers, down about 9 percent from 9,927 workers in 2007. Lumber production in the state in 2008 was estimated at 710 million board feet, down 10 percent from 2007, and since the peak housing market in 2005 it is down 29 percent (Morgan and Keegan, 2009).

Despite most industry trends pointing downward in 2008, timber harvest from national forest land have risen since 2007. This can be attributed to high demands for “hogfuel” and other “non-sawlog” products since more than half of the reported volume from national forests in Montana is “non-sawlog” material (Morgan and Keegan, 2009).

To relieve pressure from an economic downturn the State of Montana has passed a bill to allow revolving loans to critical timber infrastructure companies. These companies may also get some relief from the Federal economic stimulus bill. Local availability of timber resources will be important as general market conditions improve.

Environmental Consequences

No key issues associated directly to economics were identified, although issues involving the amount of commercial products harvested are closely related. Other issues, such as motorized access and quality of the environment, are somewhat related.

The following effects indicator was used to focus the economic analysis and disclose relevant environmental or social effects:

- Effects on Financial Efficiency

All Alternatives

Direct and Indirect Effects

Financial and Economic Efficiency

The financial efficiency analysis is specific to the commercial harvest and other activities associated with the alternatives (as directed in Forest Service Manual 2400-Timber Management and Guidance, found in the Forest Service Handbook 2409.18). Costs for harvest actions, sale preparation, sale administration, regeneration, prescribed burning, BMPs, weed spraying, road decommissioning etc. are included. All costs, timing, and amounts were developed by the specialists on the project’s interdisciplinary team. The expected revenue for each alternative is

the corresponding predicted high bid from the transaction evidence appraisal equation. The PNV was calculated using Quick-Silver, a program for economic analysis of long-term, on-the-ground resource management projects. A four percent discount rate is used over the six-year project lifespan (2010-2015). For more information on the values or costs, refer to the Project File, section S.

This analysis is not intended to be a comprehensive benefit-cost or PNV analysis incorporating a monetary expression of all known market and non-market benefits and costs generally used when economic efficiency is the sole or primary criterion upon which a decision is made. Many of the values associated with natural resource management are best handled apart from, but in conjunction with, a more limited benefit-cost framework. These values are discussed throughout this document, for each resource area.

Changes to resources like fisheries and wildlife habitat have been measured using changes to habitat conditions and will not be described in financial or economic terms for this project. Refer to the fisheries and wildlife sections of this document. Recreation changes are also apparent in the alternatives through varying levels of decreased motorized recreation opportunities. The recreation section displays these changes and effects. Planning costs were not included in any of the alternatives since they are sunk costs at the point of alternatives selection.

Table 3-50 summarizes the project feasibility and financial efficiency, including the predicted high bid (or estimated stumpage value), total revenue, and PNV for each alternative. Because not all costs of the project are related to the commercial component of the project, two PNVs were calculated. One PNV indicates the financial efficiency of the commercial harvest, including all costs and revenues associated with the harvest and required design criteria (e.g. burning landing piles, sale preparation costs, sale administration costs, planting, BMP costs, etc.). A second PNV includes all costs for each alternative, including other activities that are non-commercial harvest related (e.g. sapling thinning, road decommissioning, etc.). The Forest may use dollars received from timber sale receipts to help fund these other project activities; however, it is more likely that appropriated dollars would be used.

Table 3-50 indicates the Action Alternatives (Alternatives 2 and 3) would be financially inefficient when one considers costs and revenues for all of the proposed activities put together, or when considering revenues and costs from just the commercial harvest and associated activities. Alternative 2 includes higher overall costs than Alternative 3, and ends up being more inefficient from an economic standpoint.

Several factors come into play for these financial inefficiencies. Two higher-level costs stand out for the cause in financial differences between the alternatives: prescribed burning and planting costs. Prescribed burning generally costs more than twice the amount of the mechanized treatment of slash. Alternative 2 proposes 200 more acres of prescribed burning than Alternative 3, because it includes more treatments in designated winter range areas. Within this type of habitat, prescribed burning results in more desirable conditions than mechanized slash treatments because of the additional stimulation and nutrient flush caused by the post-harvest slash-burning activity. Additionally, Alternative 2 proposes more than twice the amount

of planting than Alternative 3 because, as mentioned above, more treated acres would occur in designated winter range habitat. Planting would improve species diversity and provide additional habitat values for foraging and thermal cover habitat. If Alternative 2 included more mechanized slash treatments and less planting (similar to what it is proposed in Alternative 3) then the commercial harvest and associated activities would be financial efficient.

When considering other portions of the project not related to commercial harvests, both alternatives are financial inefficient because there may not be enough revenues from the commercial harvest to offset the costs associated with sapling thinning, road decommissioning, BMPs, etc. Funding for these types of projects may be offset with appropriated dollars.

Table 3-50. Financial Efficiency Summary (2008 dollars)

Category	Measure	Alternative 2	Alternative 3
Commercial Harvest Information	Acres Harvested	741	347
	Total Volume (CCF)	6016	2187
	Predicted High Bid (\$/CCF)	\$43.89	\$6.00
	Total Revenue (\$)	\$284,828.54	\$14,192.76
Commercial Harvest & Required Design Criteria	PNV (\$)	\$-357,447.93	\$-118,694.98
Commercial Harvest, Design Criteria, & Other Planned Activities	PNV (\$)	\$-514,748.05	\$-272,497.20

When evaluating trade-offs, the use of financial efficiency measures is one tool used by the decision maker in making the decision. Many things cannot be quantified, such as effects on wildlife, impacts on local communities, and restoration of watersheds and vegetation. The decision maker considers many factors when making the decision.

Alternatives 2 & 3 (Action Alternatives)

Cumulative Effects

Management of the Flathead National Forest has an impact on the economies of local counties. There are many additional factors that would influence and affect the local economies; changes to industry technologies, management of adjacent National Forests and private lands, economic growth, and international trade.

Ongoing and reasonably foreseeable projects that may affect local economies include the following: Belton Fuels Reduction Project, Blankenship Fuels Reduction Project, Cooney McKay, Blacktail Bill, Beaver Lake, Corduroy, Sharp-Tail, Gregg-Plume, Valley Face, Reid Creek, Cyclone Products, West Logan, Sheppard Creek Salvage, and Johnson Peak projects. These projects are related to commercial harvest activities on the Flathead National Forest.

The jobs and labor income associated with timber harvest, restoration, and reforestation activities in the Action Alternatives, would contribute to the stability of the local economy during the life of the project.

Regulatory Framework and Consistency

The Flathead National Forest Land and Resource Management Plan is to provide a sustained yield of timber products that is cost effective and responsive to the needs of the local economy (USDA Forest Service 1985). The Action Alternatives offer varying levels of commercial harvest and are consistent with being responsive to the needs of the local economy.

Civil Rights and Environmental Justice

Neither of the Action Alternatives would be expected to negatively affect the civil rights of consumers, minority groups, low-income groups, women, or Indian tribes. Subsistence activities would not be disproportionately reduced for any of the identified groups. The Flathead Indian Reservation is 50 miles from the project area. No environmental health hazards are expected to result from implementation of any alternative. Income levels in Flathead County are slightly higher than average for the state of Montana, but 87 percent of the national average (U.S. Department of Commerce 2006), and this project should not disproportionately affect one income group over another (see Project File, section S).

This project is in compliance with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." Environmental justice issues were considered in all steps of the NEPA process including public participation, alternative development, determining the affected environment, project design, and analysis of environmental consequences. At no step were minority, low-income, or tribal populations negatively affected by any of the proposed activities in any of the alternatives.

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