

In the long term, treating hydrologically connected roads helps recover gravel quality slightly over baseline conditions. Therefore, there is some minimal risk to viability for this WCT population in the short term with a long-term trend of maintaining reproductive habitat within the acceptable range of variation (32.7% \pm 9.9%).

Recreation

Introduction

This analysis describes the existing recreation activities, settings and opportunities within the Stonewall Vegetation Project area, and describes the potential effects to recreation from proposed activities. Portions of the Stonewall Project area are within the Bear-Marshall-Scapegoat-Swan and Lincoln Gulch Inventoried Roadless Areas (IRAs). The potential effects to roadless and wilderness characteristics of the IRAs and unroaded lands contiguous to the IRAs are in a separate section beginning on page 641.

Overview of Issues

Comments pertaining to disclosing the effects of project activities on recreation were identified from public scoping as nonsignificant (40 CFR 1501.7), and are addressed by the analyses in this section. Please refer to volume 2, appendix A of this document for a complete listing of the issues and an explanation of how the agency determined their disposition.

Indicators

Indicators are defined to analyze data regarding the potential for impacts of vegetation treatments and prescribed fire on recreation opportunities within the project area, and the impacts of prescribed fire on trail conditions within the project area

- Loss of recreation opportunity, displacement of users, or a change in recreation experience due to vegetation treatments/prescribed fire activities (i.e., temporary closure of areas/visitors avoiding the area during the vegetation treatments/prescribed fire, or changes in scenery following the vegetation treatments/prescribed fire that affect the recreation setting)

§ **Measure: Life of the project**

- Increased trail maintenance needs following prescribed fire (i.e., increased erosion due to runoff or fallen trees)

§ **Measure: Miles of trail affected**

Methodology

An interdisciplinary team meeting and field tour of the proposed project area was attended in Lincoln, Montana, by specialists on September 20-24, 2010.

Analysis was accomplished using ArcMap and relevant Geographic Information System (GIS) data layers from the Helena National Forest, Lincoln Ranger District, including trails, roads, recreation sites, inventoried roadless areas, summer and winter ROS classes, winter use, and management areas. Online visitor information provided by the Helena National Forest and other local organizations provided an overview of the recreation opportunities and trends within the analysis area. A review of existing law, regulation and policy relevant to recreation resources within the project area was completed and are referenced where appropriate.

Spatial and Temporal Context for Effects Analysis

The potential direct and indirect effects to recreation resources were considered within the Stonewall Project area boundary. The direct effects would be short term and temporary, occurring during project implementation. The longer-term indirect effects would relate to ecosystem restoration, changes in visual qualities, and other items within the project area that would influence the recreation setting.

Cumulative Effects Process

Cumulative effects to recreation within the Stonewall Project area boundary would relate to other administrative or Forest management activities occurring within or immediately adjacent to the project area. Cumulative impacts would result if other activities take place during implementation of the Stonewall Vegetation Project or until vegetation growth obscures the visible stumps from the vegetation treatment activities and prescribed fire, approximately 3-5 years. A complete list of past, present and reasonably foreseeable activities is in appendix C.

Affected Environment

Existing Condition

The Forest

Fire suppression and moist growing conditions through much of this century resulted in a loss of open forest conditions and seral species (aspen, ponderosa pine and western larch). This has created a uniform landscape comprised of dense forests susceptible to insect and wildfire mortality (Douglas-fir and lodgepole pine). In addition, a large-scale mountain pine beetle epidemic has killed most of the mature lodgepole pine and ponderosa pine. These conditions are elevating fuel levels, which poses a wildfire threat to nearby homes and communities in the wildland urban interface (WUI).

Recreation

The project area provides access to a variety of recreation opportunities. While hunting and snowmobiling are the predominate recreation activities, other recreation uses include: camping, fishing, driving for pleasure, off highway vehicle (OHV) travel and horseback riding, hiking, firewood gathering, berry picking, cross-country skiing and wildlife viewing. The following recreation facilities are located within the project area: Dry Creek Trailhead, Arrastra Creek Trailhead and Pine Grove dispersed camping area and trailhead. The Lincoln Ranger District receives most recreation use during the fall hunting season. Winter and summer visitation is slightly lower, and spring is the least used period.

The National Visitor Use Monitoring Results from data collected in 2008 indicate that the Helena National Forest serves a mostly local client base with nearly 70 percent of visitor use coming from people who live within 50 miles of the Forest. A majority of this is day use. Approximately 60 percent of Forest visitors listed the following as their main recreation activities on the Forest: hunting, hiking/walking, cross-country skiing, viewing natural features, snowmobiling, and driving for pleasure (USDA Forest Service 2009).

The Lincoln Ranger District issues special Use Permits for special events and commercial outfitters and guides. Several commercial outfitters are authorized to operate within the Bob Marshall Wilderness Complex; these outfitters likely pass through the project area to access the Scapegoat Wilderness area during their operations.

The southern boundary of the Scapegoat Wilderness is approximately 3 miles north of the Stonewall project area. The Scapegoat Wilderness is part of the Bob Marshall Wilderness Complex. It is referred to

as “The Crown Jewel of the National Wilderness Preservation System” and is a very popular place to visit for people from all parts of the country (USDA Forest Service 1986, FEIS Appendix C-29). The Arrastra Creek and Dry Creek trailheads are popular access points for the Scapegoat Wilderness and heavily used during the fall hunting season.

The project area is also within the area known as the Southwest Crown of the Continent. The Crown of the Continent at a landscape level is an area that links the Canadian Rockies with the Greater Yellowstone Ecosystem and the Selway-Bitterroot Wilderness areas to the south.

The Southwestern Crown Collaborative (2010) describes this area as “...one of the most biologically diverse and intact landscapes in the western United States. The Crown has been described as one of the premier mountain regions of the world and contains many of the largest remaining blocks of roadless lands in the contiguous US. The presence of expansive open space in the Southwestern Crown provides an abundance of outdoor recreational opportunities, from hunting and fishing to hiking and snowmobiling. Public access to streams, lakes, and private and public lands is highly valued.”

Roads and Trails

The primary motorized access into the project area is National Forest System Road #4106, Beaver Creek Road. It provides access to the Dry Creek Trailhead, Arrastra Creek Trailhead and Pine Grove dispersed camping area and trailhead, Huckleberry Pass, and serves as an important snowmobile trail. The road is popular with local residents who want to harvest huckleberries and firewood. Additional National Forest System roads that provide motorized access into the project area are Lincoln Gulch Road #626, Lone Point Road #1824, Lincoln Ditch Road #4043, and Park Creek Road #607.

Other access into the project area is on designated National Forest System trails including Dry Creek Trail #483, Porcupine Basin Trail #488, Arrastra Creek Trail #482, Stonewall/Copper Creek Trail #485, Stonewall Mountain Trail #418, and Stonewall Trail #417. The last three trails identified are open to motorized travel. Table 159 displays information for other motorized and nonmotorized trails as well as groomed³⁴ and ungroomed snowmobile trails within the project area. The entire project area is currently open for snowmobile use in the winter.

Table 159. Stonewall Project area trails

Forest Trail Name	Miles within Stonewall Project Area	Trail Type
Stonewall/Copper Creek Trail #485	1.5 miles	Forest System Trail – motorized & nonmotorized
Stonewall Mountain Trail #418	2.5 miles	Forest System Trail – motorized & nonmotorized
Stonewall Trail #417	3 miles	Forest System Trail – motorized & nonmotorized
Snowmobile Trails	Miles within Stonewall Project Area	Trail type (groomed/ungroomed)
Route 2, Beaver-Dry Creek Trail	7 miles	Groomed
Route 1, Sucker Creek Road	1 mile	Groomed
Stonewall Mountain Trail	3 miles	Ungroomed

³⁴ The groomed trails are as indicated on the Lincoln Area Snowmobile Trails Map compiled by the Ponderosa Snow Warriors Snowmobile Club (available in the project record)

Forest Trail Name	Miles within Stonewall Project Area	Trail Type
Trail near Reservoir Lake	1 mile	Ungroomed

The Lincoln Ranger District is currently developing the *Blackfoot Travel Plan (non-winter)* that would designate motorized public access routes on a Motor Vehicle Use Map. The recently completed *Blackfoot-North Divide Winter Travel Plan* provides for a variety of motorized and nonmotorized winter recreational opportunities. The travel plans are being developed in accordance with 36 CFR 212, Subpart B, *Designation of Roads, Trails, and Areas for Motor Vehicle Use*.

Recreation Opportunity Spectrum

The Forest Service uses the Recreation Opportunity Spectrum (ROS) to inventory and describe the range of recreation opportunities available based on the following characteristics of an area: physical (characteristics of the land and facilities), social (interactions and contact with others), and managerial (services and controls provided). The recreational settings are described on a continuum ranging from Primitive to Urban. The Summer ROS classes within the Stonewall Project area include Semi-Primitive Motorized (SPM) and Roded Modified (RM) (figure 99). The Winter ROS classes within the Stonewall project area include Semi-Primitive Motorized (SPM), Roded Natural (RN), and Roded Modified (RM) (figure 100). The Helena Forest Plan includes the following ROS Class definitions:

Semi-Primitive - A classification of recreation opportunity spectrum that characterizes a predominately natural or natural appearing environment of a moderate to large size. Concentration of users is low, but there is often evidence of other area users. The area is managed in such a way that minimum onsite controls and restrictions may be present, but subtle. In areas designated as **Semi-Primitive Motorized**, motorized use may occur on primitive roads and motorized trails.

Roded Natural - A classification of the recreation opportunity spectrum where timber harvest or other surface-use practices are evident. Motorized vehicles are permitted on all parts of the road system (USDA Forest Service 1986).

Roded Modified - A subclass of **Roded Natural** that has typically been defined as areas exhibiting evidence of Forest management activities that are dominant on the landscape (USDA Forest Service 2003).

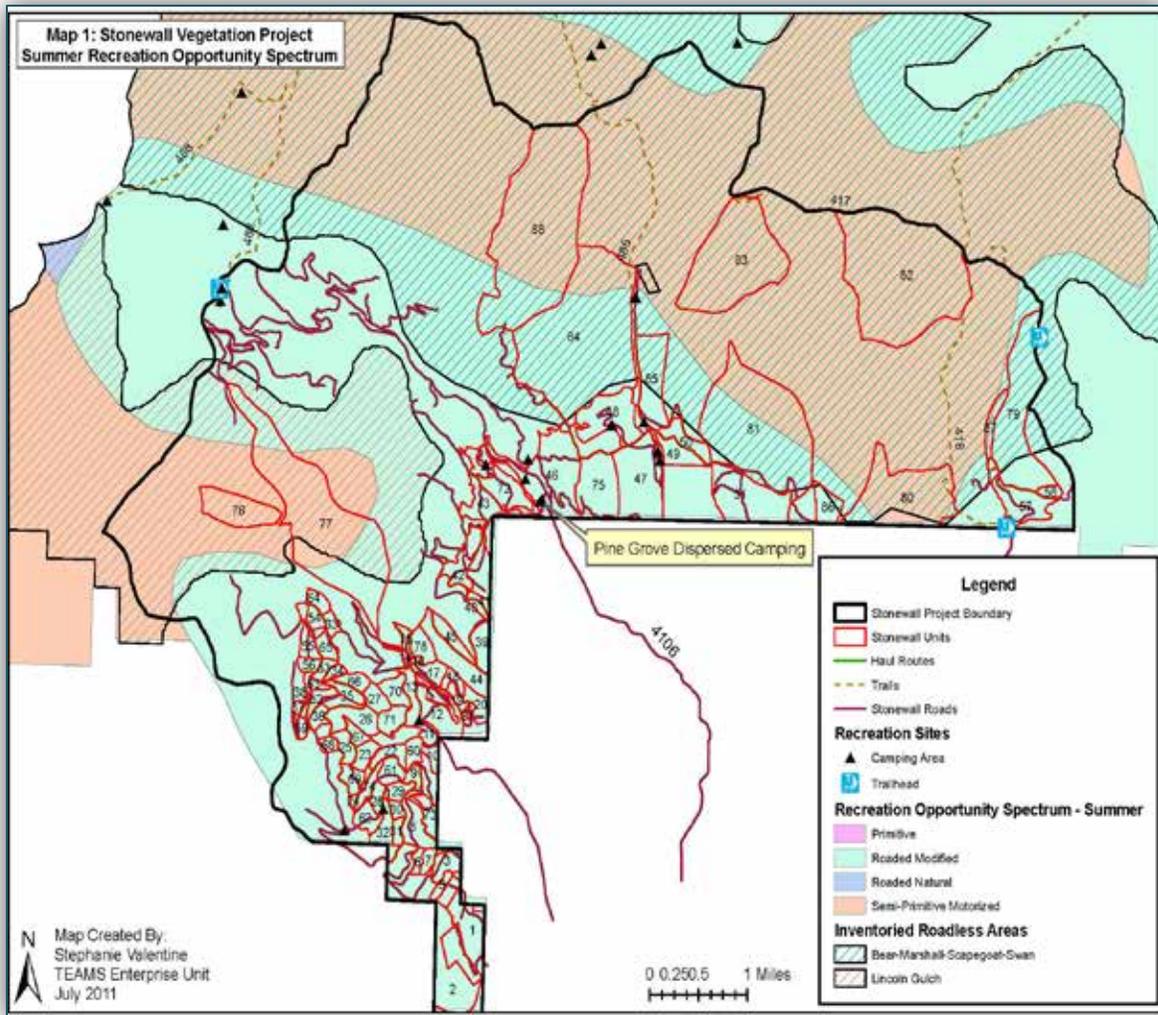


Figure 99. Summer Recreation Opportunity Spectrum

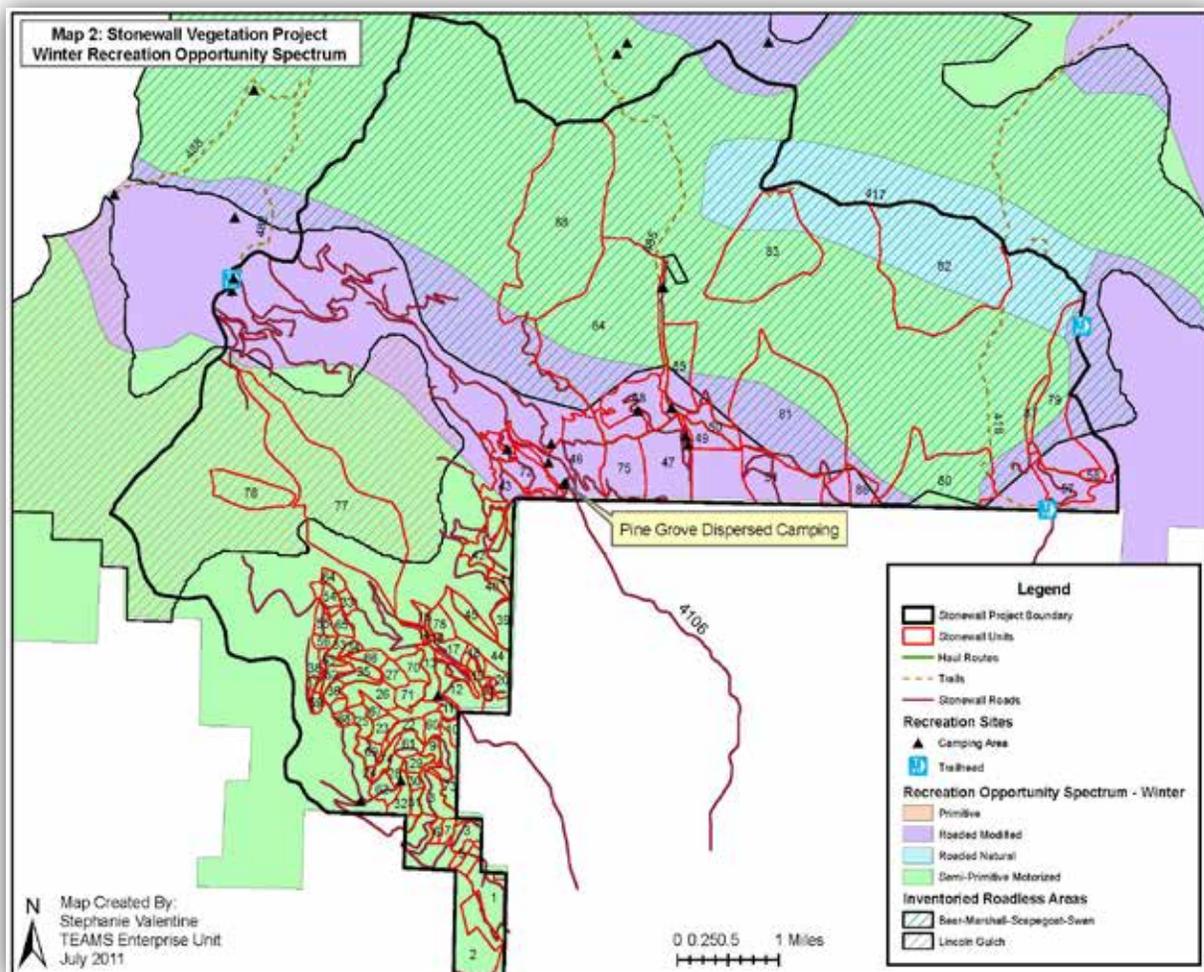


Figure 100. Winter Recreation Opportunity Spectrum

Environmental Consequences

Alternative 1 – No Action

Direct and Indirect Effects

If the no-action alternative is chosen, there would be no direct effects from proposed activities to recreation resources. However, the risk of severe wildfire would remain because the ecosystem restoration and fuel reduction project would not occur. In the long term, this may result in indirect effects to recreation resources, potentially resulting in changes to the recreation setting or scenic quality of the project area. The beetle killed, dead and dying trees would eventually fall to the ground making cross-country foot travel more difficult for hunting and hiking. In the long-term, this may result in displaced users as trees fall across trails and visitors find other places to hunt, hike and walk. The effects to the recreation resource would continue over the next 10 to 15 years as dead trees fall to the ground and vegetation begins to reestablish.

Cumulative Effects

There are no known cumulative effects to recreation resources from alternative 1.

Irreversible and Irretrievable Commitments of Resources

Alternative 1 would have no irreversible and irretrievable commitments of resources relevant to the recreation resources within the project area.

Alternative 2 – Proposed Action

Project Design Features

The Stonewall Vegetation Project has been designed with features that are intended to minimize or avoid potential adverse effects while meeting project objectives. In addition to the proposed action treatments described in this section, design features would be implemented where applicable. A description of the project design features relating to recreation and other resources is displayed in table 9, chapter 2.

The specific design features listed in table 9 pertaining to recreation are REC-1 through REC-8.

This analysis is based on the implementation of all design features. Project design features apply to all action alternatives.

Direct and Indirect Effects

Activities from the proposed vegetation treatments including regeneration harvest, intermediate harvest, precommercial thinning, and prescribed burning may directly affect recreation activities and experience in the project area. The vegetation treatments may require roads built then obliterated, or trail closures, or limited access to the immediate area to protect public safety. In addition, visitors may choose to avoid areas during the harvesting, hauling, or prescribed burning activities. These effects would be both temporary and short term. The project design features listed in table 9 in chapter 2, minimize project activities during hunting season and limit hauling on weekends and holidays (see Rec-1 and Rec-2) and would minimize impacts to the majority of recreational users. Public notification at trailheads, on the Forest website and in the local media would allow adequate notice for those planning trips into the area to adjust their plans (Rec-3). Commercial outfitters operating in the area during project implementation may also be directly affected by limited access or trail closures. The public notification efforts would allow them to adjust their schedules.

The proposed vegetation treatments may indirectly affect the recreation setting within the project area by changing the scenic qualities within the treatment areas. The harvest activities would reduce stand density, and the cut tree stumps would remain visible to visitors passing through the project area. The prescribed burning activities would create blackened areas on the landscape. These effects would be short term.

The long-term benefits of the proposed action, including a more diverse, resilient and sustainable forest ecosystem, and reduction in the risk of negative impacts from severe wildfire or insects and disease, have the potential to indirectly benefit recreation by helping to maintain the settings and opportunities currently valued by the public for recreation within the project area. Studies suggest that less intense fires may have beneficial economic effects on outdoor recreation, whereas intense fires may have detrimental effects (Vaux, Gardner and Mills 1984).

Regeneration Harvest, Intermediate Harvest, Precommercial Thinning

The direct impacts to recreation from the harvest activities would be to the sights and sounds of equipment including chainsaws, feller bunchers, and cable logging equipment within the harvest units, and log truck traffic on the haul routes. Indirect affects to recreation would result from changes to the scenery following the harvest activities

Removal of beetle-killed trees would reduce the amount of standing dead trees that would eventually fall. The harvest activities would reduce safety concerns and make cross-country travel by foot easier for dispersed recreational activities such as hunting and hiking.

The Pine Grove dispersed camping area and trailhead is located within unit 46, which is proposed for intermediate harvest to restore open habitat, leaving a mature forest and the largest trees behind. After treatment, trees would be spaced 20 to 40 feet apart. This would result in short-term effects to recreation opportunities during the harvest activities, but the more open forest conditions would likely enhance opportunities for dispersed camping in the long term. A proposed haul route would also pass through this dispersed camping area. Project design features are in place to minimize impacts to the dispersed camping opportunities. They include prioritizing treatments adjacent to the dispersed camping area to limit the amount of time the area may be closed to the public, not permitting hauling on weekends and holidays, providing public notification of treatment schedules and protecting recreation facilities (See table 9, REC-2, 3, 5, 6, 7 and 8).

Several of the groomed snowmobile routes have been identified as haul routes for the harvest activities. Approximately 3 miles of Route 2 - Beaver-Dry Creek Trail (along Roads 4106 and 607), approximately 4 miles of Route 2A – Beaver Trail (not on Forest System land, along Road 4106) and approximately 4 miles of Route 1 – Sucker Creek Road Trail (along Road 1800, 3 miles, not on Forest System land), would be used as haul routes. Route 2 passes through units 46, 47 and 51 and runs along the borders of units 75, 48, 49, and 50 proposed for intermediate harvest or precommercial thinning. The 1-mile segment of Route 1 on Forest System land is located within unit 57 where the mountain pine beetle has caused high mortality. This unit is proposed for regeneration harvest that would leave behind live trees to provide shelter and seed, and establish a new stand of young trees. The Forest would coordinate with local snowmobile groups to identify alternative routes if winter operations would affect the use of the groomed trails (See table 9, REC-4).

Skid trails left by ground-based harvest and removal methods may open access to areas for off highway vehicles where vegetation previously prevented access. Design features are in place to minimize the appearance of skid trails where they intersect with existing roads and trails to reduce the likelihood of unauthorized motorized use (See table 2, Fuel-3). The ongoing *Blackfoot Travel Plan (non-winter)*, under analysis, and the recently completed *Blackfoot – North Divide Winter Travel Plan*, would designate public motorized access and motorized and nonmotorized recreational opportunities on the Lincoln Ranger District. The Stonewall Vegetation Project proposed action would not change any motorized route designations. A portion of the project area is open to cross-country travel by snowmobiles; the creation of more open forest conditions that would result from implementation of the proposed action could enhance the opportunities for snowmobiling within the project area. The Lincoln Ranger District Helena National Forest Over-The-Snow Motor Vehicle Use Map Valid December 2, 2014 – December 1, 2015, shows the areas open to cross-country travel by snowmobiles areas where snowmobile use is restricted to designated routes, and the groomed and ungroomed snowmobile trails within the Stonewall Project area.

Following the vegetation treatments, opportunities for firewood gathering would be enhanced (see table 9, FUEL-1). Huckleberries may see an increase in regeneration, therefore, picking opportunities may be fewer in the short term following treatments, but enhanced in the long term as plants start to reestablish (see the Wildlife Specialist Report (Reitz 2012) for additional information).

Prescribed Burning

The direct impacts to recreation from the prescribed burning activities during project implementation would be the sights and sounds of people and equipment, including chainsaws and vehicles, and smoke in the air. Smoke in the air during the prescribed burns may have a direct affect to the quality of the

recreation experience within the project area and in the adjacent dispersed camping areas by temporarily reducing air quality and visibility. Coordination with the Montana Airshed Group to ensure compliance with the Clean Air Act would minimize this impact (see table 9 AIR-1 and additional discussion in the Air Quality Report (USDA Forest Service 2015d).

Indirect affects to recreation would result from changes to the scenery following the prescribed burning activities.

There is potential for prescribed fire to affect Forest System trails by causing increased runoff and erosion or debris on the trails. There may be an increased incidence of burnt trees falling across the trails for several years following the prescribed burns. The Stonewall Mountain Trail #418 runs along the eastern boundary of units 80 and 82. The Stonewall Trail #417 runs along the northern boundary of the project area and units 82 and 83. The Stonewall/Copper Creek Trail #485 runs along the western boundary of unit 85 and passes through the eastern edge of unit 84. All of these units are proposed for prescribed burning activities. The designated National Forest System trails on the Lincoln Ranger District receive regular maintenance. Specific trail maintenance requirements would be addressed as needed based on trail conditions.

The proposed prescribed fire activity would include construction of hand fire lines. The fire lines may open access for OHVs where vegetation previously prevented access. Design features are in place to minimize the appearance of fire lines where they intersect with existing trails to reduce the likelihood of unauthorized use (see table 9, FUEL-3). The recently completed Blackfoot winter and the ongoing analysis of the Blackfoot summer travel plans, discussed previously, when completed would guide motorized access on the Lincoln Ranger District. The proposed action would not change any motorized route or area designations.

Recreation Opportunity Spectrum

A majority of the proposed treatment units fall within the summer and winter ROS classes of Roaded Modified, while the only treatment proposed within the Semi-Primitive Motorized ROS class is hand slashing of small diameter trees and prescribed fire. The proposed harvest and prescribed burning activities, including the short-term disturbance, would be consistent with Roaded Natural and Roaded Modified ROS classes where timber harvest or other surface use practices are evident. The proposed hand slashing of small diameter trees and prescribed fire would maintain a predominately natural or natural appearing environment and would be consistent with Semi-Primitive Motorized ROS class (see page 5). There are no anticipated long-term effects on recreation opportunities or settings for the Stonewall Project area under alternative 2. Table 160 that follows shows the units and treatments proposed with potential impacts to specific recreation resources:

Table 160. Alternative 2 – proposed treatments and potentially impacted recreation resources

Unit Number	Alternative 2 – Proposed Action Treatment Description	Potentially Impacted Recreation Resource
46	Description Group 1 - Intermediate Harvest to Promote Mature Open Forests; Prescribed Fire - Underburn	Pine Grove Dispersed Camping & groomed snowmobile route (2)
47	Description Group 1 - Intermediate Harvest to Promote Mature Open Forests; Prescribed Fire - Underburn	Groomed snowmobile route (2)
48	Description Group 2 - Intermediate Harvest to Thin Young Forests; Underburn	Groomed snowmobile route (2)
49	Description Group 2 - Intermediate Harvest to Thin Young Forests; Underburn or slash treatment along private	Groomed snowmobile route (2)

Unit Number	Alternative 2 – Proposed Action Treatment Description	Potentially Impacted Recreation Resource
50	Description Group 2 - Intermediate Harvest to Thin Young Forests; No fuels treatment	Groomed snowmobile route (2)
51	Description Group 2 - Intermediate Harvest to Thin Young Forests; Underburn or slash treatment along private	Groomed snowmobile route (2)
57	Description Group 3 - Regeneration Harvest in Areas of High Mortality Retaining Seed and Shelter Trees; Jackpot Burn	Groomed snowmobile route (1), adjacent to trailhead #418, Stonewall Mountain Trail
75	Description Group 2 - Intermediate Harvest to Thin Young Forests; Underburn	Groomed snowmobile route (2)
80	Description Group 7 - Mixed Severity Fire to Create Mortality Patches up to 5, 10, or 20 Acres	Trail #418, Stonewall Mountain Trail
82	Description Group 8 - Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Trail #417 - Stonewall Trail , #418 - Stonewall Mountain Trail
83	Description Group 8 - Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Trail #417 - Stonewall Trail
84	Description Group 8 - Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Trail #485 - Stonewall/Copper Creek Trail
85	Description Group 6 - Low Severity Prescribed Fire to Create Mortality Patches 5 to 10 Acres	Trail #485 - Stonewall/Copper Creek Trail

Irreversible and Irretrievable Commitment of Resources

In alternative 2, proposed action, there would be no irreversible and irretrievable commitment of resources relevant to the recreation resources within the project area.

Alternative 3

The activities proposed in alternative 3 differ from those of alternative 2 - proposed action, relevant to the analysis of recreation resources. The relevant changes include fewer units proposed for intermediate harvest and fewer units proposed for prescribed fire and hand slashing of small diameter trees within inventoried roadless areas (IRAs). Alternative 3 has no activities planned within the Lincoln Gulch IRA or in the unroaded area contiguous to this IRA. In addition, alternative 3 proposes fewer units for treatment in the Bear-Marshall-Scapegoat-Swan IRA.

The relevant unit changes in alternative 3 are as follows:

Units 46 and 47 change from intermediate harvest with underburn treatments in Group 1 for alternative 2, to units 46a and 47a in a new group, Group 10 for alternative 3. Treatments would be designed in a mosaic pattern to maintain cover and forage for wildlife while promoting ponderosa pine and aspen, and reducing ladder fuels. Portions of the stand would be thinned to reduce understory competition from around large ponderosa pine trees, thin heavily stocked groups of trees on sites historically dominated by ponderosa pine, and remove conifer competition from within and around quaking aspen.

Units 49 and 75 proposed for intermediate harvest are removed. Units 76 and 77 proposed for prescribed fire are removed from the Lincoln Gulch IRA and the unroaded area contiguous to the IRA. The mixed severity prescribed fire proposed for unit 80 changes to unit 80a, jackpot burn. Units 81 and 86 proposed for mixed severity prescribed fire are removed from the Bear-Marshall-Scapegoat-Swan IRA and the unroaded area contiguous to the IRA.

Direct and Indirect Effects

Regeneration Harvests, Intermediate Harvests, Precommercial Thinning

The Pine Grove dispersed camping area and trailhead is located within unit 46a proposed for intermediate harvest with jackpot burning in alternative 3. There would be short-term impacts to recreation opportunities during these activities, but the more open forest conditions would likely enhance opportunities for dispersed camping in the long term. A proposed haul route would also pass through this dispersed camping area. Project design features are in place to minimize impacts to the dispersed camping opportunities. They include prioritizing treatments adjacent to the dispersed camping area to limit the amount of time the area may be closed to the public, not permitting hauling on weekends, providing public notification of treatment schedules and protecting recreation facilities (see table 9, REC-2, 3, 5, 6, 7 and 8).

Several of the groomed snowmobile routes have been identified as haul routes for the harvest activities. Approximately 3 miles of Route 2 - Beaver-Dry Creek Trail (along Roads 4106 and 607), approximately 4 miles of Route 2A – Beaver Trail (not on Forest System land, along Road 4106) and approximately 4 miles of Route 1 – Sucker Creek Road Trail (along Road 1800, 3 miles, not on Forest System land), would be used as haul routes. Route 2 passes through units 46a, 47a and 51 and runs along the borders of units 48, and 50 proposed for intermediate harvest or precommercial thinning. Alternative 3 would have slightly less potential to impact Route 2, since two of the units proposed for treatment (75 and 49) were removed from consideration in this alternative. The 1-mile segment of Route 1 on Forest System land is located within unit 57 where the mountain pine beetle has caused high mortality. This unit, proposed for regeneration harvest, would leave behind live trees to provide shelter and seed to establish a new stand of young trees. The Forest would coordinate with local snowmobile groups to identify alternative routes if winter operations would affect the use of the groomed trails (See table 9, REC-4).

Prescribed Burning

Alternative 3 proposes fewer acres of prescribed burning; therefore, the potential impacts of noise from people and equipment would be less than those described in alternative 2. Smoke in the air during the prescribed burns may have a direct affect to the quality of the recreation experience within the project area and in the adjacent dispersed camping areas by temporarily reducing air quality and visibility. Coordination with the Montana Airshed Group to ensure compliance with the Clean Air Act would minimize this affect (see table 9, AIR-1 and additional discussion in the Air Quality section).

Indirect affects to recreation would result from changes to the scenery following the prescribed burning activities, but fewer changes can be expected in this alternative compared to alternative 2 because fewer acres are proposed for treatment.

There is potential for prescribed fire to affect Forest System trails by causing increased runoff and erosion or debris on the trails. There may be an increased incidence of burnt trees falling across the trails for several years following the prescribed burns. The Stonewall Mountain Trail #418 runs along the eastern boundary of units 80a and 82. The Stonewall Trail #417 runs along the northern boundary of the project area and units 82 and 83. The Stonewall/Copper Creek Trail #485 runs along the western boundary of unit 85 and passes through the eastern edge of unit 84. All of these units are proposed for prescribed burning activities. The designated National Forest System trails on the Lincoln Ranger District receive regular maintenance. Specific trail maintenance requirements would be addressed as needed based on trail conditions.

Recreation Opportunity Spectrum

A majority of the proposed treatment units fall within the summer and winter Recreation Opportunity Spectrum classes of Roaded Modified, while the only treatment proposed within the Semi-Primitive Motorized ROS class is hand slashing of small diameter trees and prescribed fire. The proposed harvest and prescribed burning activities, including the short-term disturbance, would be consistent with Roaded Natural and Roaded Modified ROS classes where timber harvest or other surface-use practices are evident. The proposed hand slashing of small diameter trees and prescribed fire would maintain a predominately natural or natural appearing environment and would be consistent with Semi-Primitive Motorized ROS class (p.5). There are no anticipated long-term effects on recreation opportunities or settings for the Stonewall Project area under alternative 3.

Table 161 that follows shows the units and treatments proposed with potential impacts to specific recreation resources:

Table 161. Alternative 3 – proposed treatment and potentially impacted recreation resources

Unit Number	Alternative 3 –Treatment Description	Potentially Impacted Recreation Resource
46a	Description Group 10 – Intermediate Harvest – Improvement Cut; Jackpot burn, Handpiling, Burn Piles	Pine Grove Dispersed Camping & groomed snowmobile route (2)
47a	Description Group 10 - Intermediate Harvest to Thin Young Forests; Low Severity Prescribed Fire	Groomed snowmobile route (2)
48	Description Group 2 - Intermediate Harvest to Thin Young Forests; Underburn	Groomed snowmobile route (2)
50	Description Group 2 - Intermediate Harvest to Thin Young Forests; No fuels treatment	Groomed snowmobile route (2)
51	Description Group 2 - Intermediate Harvest to Thin Young Forests; Underburn or slash treatment along private	Groomed snowmobile route (2)
57	Description Group 3 - Regeneration Harvest in Areas of High Mortality Retaining Seed and Shelter Trees; Jackpot Burn	Groomed snowmobile route (1), adjacent to trailhead #418 - Stonewall Mountain Trail
80a	Description Group 9 - Low Severity Prescribed Fire	Trail #418 - Stonewall Mountain Trail
82	Description Group 8 - Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Trail #417 - Stonewall Trail, #418 - Stonewall Mountain Trail
83	Description Group 8 - Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Trail #417 - Stonewall Trail
84	Description Group 8 - Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Trail #485 - Stonewall/Copper Creek Trail
85	Description Group 6 - Low Severity Prescribed Fire to Create Mortality Patches 5 to 10 Acres	Trail #485 - Stonewall/Copper Creek Trail

Irreversible and Irretrievable Commitments of Resources

In alternative 3, there would be no irreversible and irretrievable commitment of resources relevant to the recreation resources within the project area.

Cumulative Effects Common to All Action Alternatives

Cumulative effects to recreation within the Stonewall Project area boundary would relate to other administrative or Forest management activities occurring within or immediately adjacent to the project area. Cumulative impacts would result if other activities take place during implementation of the

Stonewall Vegetation project or until vegetation growth obscures the visible stumps from the vegetation treatment activities and prescribed fire, approximately 3-5 years.

The effects of past actions within the Stonewall Project area are incorporated into the description of the existing condition. The present and reasonably foreseeable future actions within the project area have been reviewed for potential cumulative effects when the direct or indirect effects of the alternatives are added to them. The projects occurring within the spatial and temporal boundaries described in this analysis for recreation resources cumulative effects analysis are considered here.

Since there would be no direct or indirect effect to the ROS classes, there would be no cumulative effects to the ROS classes within the project area.

Recreational activities such as hunting, camping, hiking, OHV travel on primitive roads, and snowmobiling and cross-country skiing in the winter would continue within the analysis area. Other ongoing and reasonably foreseeable activities that would be occurring within the analysis area include hazard tree removal, weed treatments, road and trail maintenance, commercial guided recreation and special events, firewood cutting and continued use of grazing allotments. All of these activities, when added to the activities proposed in the Stonewall Vegetation Project have the potential to cumulatively affect the recreation experience within the project area. The primary impacts would be due to the increased presence of people, vehicles and associated noise that would directly affect the ability of recreational visitors to enjoy their desired experience, and may lead to the short-term displacement of visitors who choose to avoid the area during implementation of the various activities.

The longer-term impacts of ongoing and reasonably foreseeable activities, such as hazard tree removal and weed treatments, when added to the activities proposed in the Stonewall Vegetation project, have the potential to cumulatively impact the recreation setting by causing changes to the scenic qualities within the project area and creating a setting where resource modifications and utilization practices are evident, but harmonize with the natural environment as indicated in a Roaded Natural ROS setting (p.5). Most of these effects would be beneficial because they would increase the resiliency of forest conditions, and reduce the risk of potential negative impacts from severe wildfire, therefore, maintaining the recreation settings currently valued by the public.

A complete list of past, present and reasonably foreseeable future activities in the project area is in appendix C.

Summary of Effects of All Alternatives

Alternative 1, no action would have no direct or cumulative effects to recreation resources. The purpose and need for the Stonewall Vegetation Project “...*improving the mix of vegetation and structure across the landscape so that it is diverse, resilient, and sustainable to wildfire and insects; modifying fire behavior to enhance community protection while creating conditions that allow the reestablishment of fire as a natural process on the landscape; enhancing and restoring aspen, western larch and ponderosa pine species and habitats; utilizing the economic value of trees through removal; and integrating restoration with socioeconomic considerations*” would not be addressed. Potential long-term indirect effects to recreation resources would be due to the ongoing risk of severe wildfire that could lead to changes in the recreation settings, visual qualities and naturalness within the roadless expanse.

Alternative 2, proposed action would have short-term direct effects to recreation resources during project implementation such as limited access to specific areas and increased presence of people and noise within the project area. Project design features are in place to limit potential affects (table 9). The proposed treatments would address the purpose and need for the Stonewall Vegetation Project, resulting in a more diverse, resilient and sustainable Forest ecosystem with reduction in risk of negative impacts from severe

wildfire. The long-term indirect effects to recreation would be generally beneficial and help to maintain the existing recreation settings and scenic qualities within the project area.

Cumulative effects to recreation resources would generally be short term, occurring during project implementation, and would relate to an increased presence of people, vehicles and the associated noise that may affect the recreation experience. Longer-term cumulative effects would potentially impact the Pine Grove dispersed camping area, such as ongoing hazard tree removal, weed treatments, and ongoing maintenance and use of the site, in addition to the actions proposed in the Stonewall Vegetation Project. These effects would remain until vegetation growth obscures the visible stumps from the vegetation treatment activities, approximately 3-5 years, but would remain consistent with Roaded Natural ROS class (p.5).

The effects of alternative 3 relative to recreation resources would be similar to those described for alternative 2, but the impacts would occur on fewer acres. There would be no effects to the Lincoln Gulch IRA and fewer acres treated within the Bear-Marshall-Scapegoat-Swan IRA (see the Inventoried Roadless Area Report (Valentine 2015a) for additional analysis).

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

The proposed alternatives are consistent with the following:

- Helena National Forest Plan 1986, Recreation Standards for Management Areas: M-1, T-1, T-2, T-3, T-4, and W-1.

Forest Service Manual (FSM) 2300 – Recreation, Wilderness and Related Resource Management, guides management of recreation and wilderness resources on National Forest System lands.

Inventoried Roadless Areas

Introduction

This analysis describes the existing condition in portions of the Bear-Marshall-Scapegoat-Swan (BMSS) and Lincoln Gulch Inventoried Roadless Areas (IRAs) that are within the Stonewall Vegetation Project area. In addition, this roadless analysis describes the potential effects from the proposed activities identified in the alternatives of the Stonewall Project to the roadless area characteristics and wilderness attributes of the Inventoried Roadless Areas, as well as the unroaded lands contiguous to them. Additional detailed information is contained in the Inventoried Roadless Area report (Valentine 2015a), incorporated by reference.

Overview of Issues Addressed

During the public scoping process, five comments were received regarding IRAs. The comments were identified as nonsignificant (40 CFR 1501.7). Specific responses to the comments and explanations of how the comments were addressed either in the analysis or through project design features, are included in this DEIS in Appendix A – Public Involvement.

The following issue is relevant to the roadless resources within the analysis area and is addressed by the analysis in this section:

- Prescribed fire activities may affect roadless area characteristics within the project area.

Indicators

Indicators are defined to analyze data regarding the potential for impacts to the roadless resource from project activities that may affect roadless characteristics and wilderness attributes. Impacts to the roadless area characteristics as described in 36 CFR 294.11 – Roadless Area Conservation, Final Rule and wilderness attributes of roadless areas as described in Forest Service Handbook (FSH) 1909.12 (72.1) – Wilderness Evaluation.

Measure: Acres affected and duration of the impact

Roadless Analysis Background and Direction

Classification of roadless areas began with the Roadless Area Review and Evaluation (RARE) study in 1973 and the subsequent RARE II study in 1978. The 1983 Helena Forest Plan included evaluation of 23 roadless areas (USDA Forest Service 1986c, FEIS ROD). This met the direction in 36 CFR 219.17 regarding evaluation of roadless areas, and was in compliance with a 1982 decision of the Ninth Circuit Court that found RARE II study to be inadequate. As a result of this evaluation, the Forest Plan provides management direction for 79,200 acres of undeveloped area outside of Wilderness to remain undeveloped, and the remaining 203,900 acres of undeveloped areas were assigned to other resource management goals (USDA Forest Service 1986b, c). The two IRAs within the Stonewall Project area (Bear-Marshall-Scapegoat-Swan and Lincoln Gulch) were among those areas assigned to other resource management goals, as described in the Affected Environment section of this section.

On Jan 12, 2001, the Roadless Area Conservation Rule was published (36 CFR 294); the rule became effective on March 13, 2001. The 2001 rule prohibited road construction, road reconstruction and timber cutting, sale and removal in inventoried roadless areas with some exceptions. On July 13, 2003, the 2001 Roadless Rule was enjoined by U.S. District Court Judge Brimmer in Wyoming, after which the Forest Service established Interim Directives for the management of roadless areas.

In May 2005, the 2005 State Petitions Rule was established, which allowed governors to petition for individual, state-specific rules to manage IRAs in national forests and grasslands in their states. In October 2006, Judge Laporte (Northern District Court of California) set aside the State Petitions Rule and reinstated the 2001 Roadless Rule (*California ex rel. Lockyer v USDA*). In December 2008, the Court limited its injunction to states within the Ninth Circuit and New Mexico (excluding Idaho). In August 2009, the 9th Circuit Court of Appeals affirmed the Northern District Court of California's opinions.

On Jan 12, 2007, the state of Wyoming again challenged the 2001 Roadless rule in Wyoming. On August 12, 2008 in the District Court of Wyoming, Judge Brimmer issued a ruling enjoining the 2001 Roadless Rule for the second time (*Wyoming v. USDA*). This opinion was appealed to the 10th Circuit Court of appeals.

On May 28, 2009, Secretary of Agriculture Tom Vilsack issued Memorandum 1042-154, which reserves “to the Secretary the authority to approve or disapprove road construction or reconstruction and the cutting, sale, or removal of timber in those areas identified in the set of inventoried roadless area maps contained in Forest Service Roadless Area Conservation, Final Environmental Impact Statement, Volume 2, dated November 2000.” The Secretary's Memorandum 1042-154 is intended to assure careful evaluation of actions in inventoried roadless areas while long-term roadless policy is developed and relevant court cases move forward.

On August 3, 2009, the Forest Service received re-delegation of authority from the Secretary to authorize

- ◆ Approval of any necessary timber cutting or removal or any road construction/reconstruction in emergency situations involving wildfire suppression, search and rescue operations, or other imminent threats to public health or safety in Inventoried Roadless Areas. The local line officer is delegated authority to make these decisions.
- ◆ Approval of any timber cutting, sale, or removal in inventoried roadless areas incidental to the implementation of an existing special use authorization. Road construction/ reconstruction are not authorized through this re-delegation without further project-specific review. The local line officer is delegated authority to make these decisions.

On October 16, 2009, the Secretary re-delegated authority to the Forest Service for the cutting, sale, or removal of generally small diameter timber when needed for one of the following purposes:

- ◆ To improve threatened, endangered, or sensitive species habitat
 - a. To maintain or restore the characteristics of ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildfire effects within the range of variability that would be expected to occur under natural disturbance regimes of the current climatic period
 - b. For administrative and personal use, as provided for in Title 36, Code of Federal Regulations 223, where personal use includes activities such as Christmas trees and firewood cutting and where administrative use includes providing materials for activities such as construction of trails, footbridges, and fences

On May 28, 2010 and again on May 30, 2011, Secretary Thomas J. Vilsack renewed his reservation of final decision authority over certain forest management and road construction projects in inventoried roadless areas. The new Secretary's Memorandum 1042-155 and 1042-156 include the same re-delegations of authority to the Forest Service as described above.

On October 21, 2011, the United States Court of Appeals for the Tenth Circuit decided *Wyoming v. USDA* and found the Forest Service's adoption of the 2001 Roadless Area Conservation Rule (Roadless Rule) does not violate Federal law. The Tenth Circuit ordered the District of Wyoming Court to vacate its earlier ruling and lift its nationwide injunction of the Roadless Rule. Pending action by the District Court to vacate the permanent injunction, the Forest Service continued to follow the direction in the letter dated August 18, 2008 signed by the Deputy Chief for NFS (see Holtrop 2008) and the direction provided in the Secretary's Memo 1042-156, described in Pena (2011).

On March 2, 2012, Judge Brimmer (Wyoming) lifted his injunction on the 2001 Roadless Rule. Lifting the injunction paves the way for implementation of the 2001 Roadless Rule nationwide, and in Region 1 (except for Idaho) provides much needed consistency regarding the management of Inventoried Roadless Areas.

On May 30, 2012, the Secretary's Memorandum 1042-156 requiring review and approval of certain activities in Roadless Areas expired. In order to provide a smooth transition, the Chief is requiring review of certain activities (see Chiefs Letter dated May 31, 2012, and the associated attachments describing the Review Process, and Talking Points. Some activities will require review by the Chief and others by the Regional Forester. In Region 1, the Regional Forester review process has been delegated to Deputy Regional Forester Jane Cottrell, per the Regional Forester's letter dated June 8, 2012.

The Chief's letter dated May 31, 2012 implements the following process for review of certain activities in Roadless Areas:

Except as noted below, the Chief will review all projects involving road construction or reconstruction and the cutting, sale, or removal of timber in those areas identified in the set of inventoried roadless area maps contained in the Forest Service Roadless Area Conservation, Final Environmental Impact Statement Volume 2 dated November 2000.

Regional Foresters will review the following activities:

- a. Any necessary timber cutting or removal or any road construction or road reconstruction in emergency situations involving wildfire suppression, search and rescue operations, or other imminent threats to public health and safety in inventoried roadless areas.
- b. Timber cutting, sale, or removal in inventoried roadless areas incidental to the implementation of an existing special use authorization. Road construction or road reconstruction is not authorized through this re-delegation without further project-specific review.
- c. The cutting, sale, or removal of generally small diameter timber when needed for one of the following purposes:
 - 1) To improve threatened, endangered, proposed, or sensitive species habitat;
 - 2) To maintain or restore the characteristics of ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildfire effects within the range of variability that would be expected to occur under natural disturbance regimes of the current climatic period; or,
 - 3) For the administrative and personal use, as provided for in 36 CFR 223, where personal use includes activities such as Christmas tree and firewood cutting and where administrative use includes providing materials for activities such as construction of trails, footbridges, and fences.

The activities proposed within the Stonewall project fall within the activities requiring Regional Forester review, as explained in c. 2, above. To fulfill this requirement, a briefing paper was prepared for the Regional Forester dated November 30, 2009 that included a project description and maps. On February 13, 2012, the Regional Roadless Coordinator reviewed and commented on the Draft Roadless Resource Specialist Report. Additional discussion regarding compliance with the 2001 roadless rule is included in the “Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans” section.

Methodology

An interdisciplinary team meeting and field tour of the proposed project area was attended in Lincoln, Montana by specialists on September 20-24, 2010.

Analysis was accomplished using ArcMap and relevant Geographic Information System (GIS) data layers from the Helena National Forest, Lincoln Ranger District, including trails, roads, recreation sites, inventoried roadless areas, summer and winter ROS classes, winter use, and management areas. On-line visitor information provided by the Helena National Forest and other local organizations was used as an overview of the roadless values and wilderness attributes within the analysis area. A review of existing law, regulation and policy relevant to roadless resources within the project area was conducted and relevant section of the Forest Plan and Forest Service Handbooks are referenced.

Roadless Analysis Methodology

The purpose of the analysis on the roadless resource is to disclose potential effects to roadless area characteristics and wilderness attributes from the Stonewall Project proposed activities, and determine if, or to what extent these effects might influence future consideration for wilderness recommendations. This analysis focuses on the potential effects of project activities on roadless characteristics as defined in 36

CFR 294.11 – Roadless Area Conservation, Final Rule and wilderness attributes as defined in the Forest Service Handbook (FSH) 1909.12 (72.1).

Roadless area characteristics, as defined in 36 CFR 294.11 – Roadless Area Conservation, Final Rule and evaluated in this analysis include the following:

- ◆ High quality or undisturbed soil, water, and air
- ◆ Sources of public drinking water
- ◆ Diversity of plants and animal communities
- ◆ Habitat for threatened, endangered, proposed, candidate, and sensitive species, and for those species dependent on large, undisturbed areas of land
- ◆ Primitive, semi-primitive nonmotorized and semi-primitive motorized classes of dispersed recreation
- ◆ Reference landscapes
- ◆ Natural appearing landscapes with high scenic quality
- ◆ Traditional cultural properties and sacred sites
- ◆ Other locally identified unique characteristics

Wilderness attributes, as defined at FSH 1909.12 (72.1) and evaluated in this analysis include the following:

Natural – The extent to which long-term ecological processes are intact and operating

Undeveloped – The degree to which the impacts documented in natural integrity are apparent to most visitors

Outstanding opportunities for solitude or primitive unconfined recreation – Solitude is a personal, subjective value defined as the isolation from sights, sounds, and presence of others and from developments and evidence of humans. Primitive recreation is characterized by meeting nature on its own terms, without comfort and convenience of facilities.

Special features and values – Unique ecological, geographical, scenic, and historical features of an area

Manageability – The ability to manage an area for wilderness consideration and maintain wilderness attributes

The following table shows the crosswalk between the wilderness attributes identified in Forest Service Handbook 1909.12 and the 1964 Wilderness Act; and the roadless area characteristics defined in the 2001 Roadless Area Conservation Rule (36 CFR 294.11).

Table 162. Wilderness attributes and roadless area characteristics crosswalk

Wilderness Attributes	Roadless Area Characteristics
<p style="text-align: center;">Natural</p> <p>Ecological systems are substantially free from the effects of modern civilization and generally appear to have been affected primarily by forces of nature</p>	<p>High quality or undisturbed soil, water, and air; Sources of public drinking water: Diversity of plant and animal communities; Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land; Reference landscapes</p>
<p style="text-align: center;">Undeveloped</p> <p>Degree to which the area is without permanent improvements or human habitation</p>	<p>Natural appearing landscapes with high scenic quality</p>
<p style="text-align: center;">Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation</p> <p>Solitude: opportunity to experience isolation from the sights, sounds, and presence of others from the developments and evidence of humans</p> <p>Primitive and unconfined recreation: opportunity to experience isolation from the evidence of humans, to feel a part of nature, to have a vastness of scale, and a degree of challenge and risk while using outdoor skills</p>	<p>Primitive, semi-primitive non-motorized and semi-primitive motorized classes of dispersed recreation</p>
<p style="text-align: center;">Special Features and Values</p> <p>Capability of the area to provide other values such as those with geologic, scientific, educational, scenic, historical, or cultural significance</p>	<p>Traditional cultural properties and sacred sites; and Other locally identified unique characteristics.</p>
<p style="text-align: center;">Manageability</p> <p>The ability of the Forest Service to manage an area to meet size criteria and the elements of wilderness</p>	<p style="text-align: center;">No criteria</p>

Spatial and Temporal Context for Effects Analysis

The potential direct and indirect effects to roadless resources were considered within the Stonewall Project Area boundary. The direct effects would be short term and temporary, occurring during project implementation. The long-term indirect effects would be related to ecosystem restoration, changes in visual qualities, and other items within the project area that would influence several of the areas roadless characteristics.

Cumulative Effects Process

Cumulative effects to roadless resources were considered within the entire 848,097-acre Bear-Marshall-Scapegoat-Swan IRA that is managed by the Helena, Flathead, Lolo, and Lewis and Clark National Forests, the entire 8,247-acre Lincoln Gulch IRA that is managed by the Helena National Forest and unroaded lands contiguous to these IRAs. Potential cumulative effects to roadless resources would be related to other activities occurring within the roadless expanse that have the potential to impact roadless area characteristics or wilderness attributes. Cumulative impacts to roadless resources would result if other activities take place during implementation of the Stonewall Vegetation project, or until vegetation

growth obscures the visible stumps from the hand slashing of small diameter trees and hand firelines, approximately 3-5 years.

Connected Actions, Past, Present, and Foreseeable Activities Relevant to Cumulative Effects Analysis

The effects of past actions within the Stonewall Project area are incorporated into the description of the existing conditions. A list of past, present and foreseeable actions relevant to the cumulative effects analysis for roadless resources within the Stonewall analysis area is in volume 2, appendix C. Actions that overlap the roadless areas include:

Helena National Forest, Lincoln Ranger District:

- Helena National Forest Roadside Hazard Tree Removal (completed within the Stonewall project boundary, ongoing within the Bear-Marshall-Scapegoat-Swan IRA)
- Blackfoot Travel Plan (non-winter)
- Alice Creek Wildlife Enhancement Project
- Dry Creek Prescribed Fire
- Southwest Crown Weed Treatments (ongoing)
- Grazing Allotments (ongoing)

Flathead National Forest, Spotted Bear Ranger District:

- Soldier Addition II EA
- Spotted Bear River Project

Lewis and Clark National Forest, Rocky Mountain Ranger District:

- Benchmark Fuels EA
- Rocky Mountain Ranger District Travel Plan EIS, Badger Two Medicine Area
- Rocky Mountain Ranger District Travel Plan EIS, Birch Creek South Area

Lolo National Forest

- Dick Creek Fuels
- Swan Face Prescribed Burn

Affected Environment

Existing Condition

Fire suppression and moist growing conditions through much of this century resulted in a loss of open forest conditions and seral species (aspen, ponderosa pine and western larch). This has created a uniform landscape comprised of dense forests susceptible to insect and wildfire mortality (Douglas-fir and lodgepole pine). In addition, a large-scale mountain pine beetle epidemic has killed most of the mature lodgepole pine and ponderosa pine. These conditions are elevating fuel levels, which poses a wildfire threat to nearby homes and communities in the wildland urban interface (WUI).

Inventoried Roadless Areas

The Stonewall Vegetation Project boundary encompasses portions of two IRAs, the Bear-Marshall-Scapegoat-Swan IRA (#A1485) and the Lincoln Gulch IRA (#1601). The portion of the BMSS IRA managed by the Lincoln Ranger District of the Helena National Forest is 51,339 acres in size and the project area overlaps with 12,235 acres. The Lincoln Gulch IRA is 8,247 acres in size and the project area overlaps with 3,193 acres (table 163 and figure 101).

Table 163. Inventoried Roadless Area Acreage

Name of IRA	Total Acres in IRA*	Total Acres in IRA managed by the Lincoln Ranger District	Acres of IRA within the Stonewall Project Boundary	Percent of total IRA acres within the Stonewall Project Boundary
Bear-Marshall-Scapegoat-Swan	848,097	*51,339	12,235	1.4
Lincoln Gulch	8,247	8,247	3,193	38.7
Totals	856,344	59,586	15,428	1.8

*Portion of the Bear-Marshall-Scapegoat-Swan IRA managed by the Helena National Forest, Lincoln Ranger District. Total acreage of the Bear-Marshall-Scapegoat-Swan IRA managed by the Flathead, Helena, Lolo and Lewis and Clark National Forests is 866,330 acres (USDA Forest Service 1986, FEIS Appendix C-3).

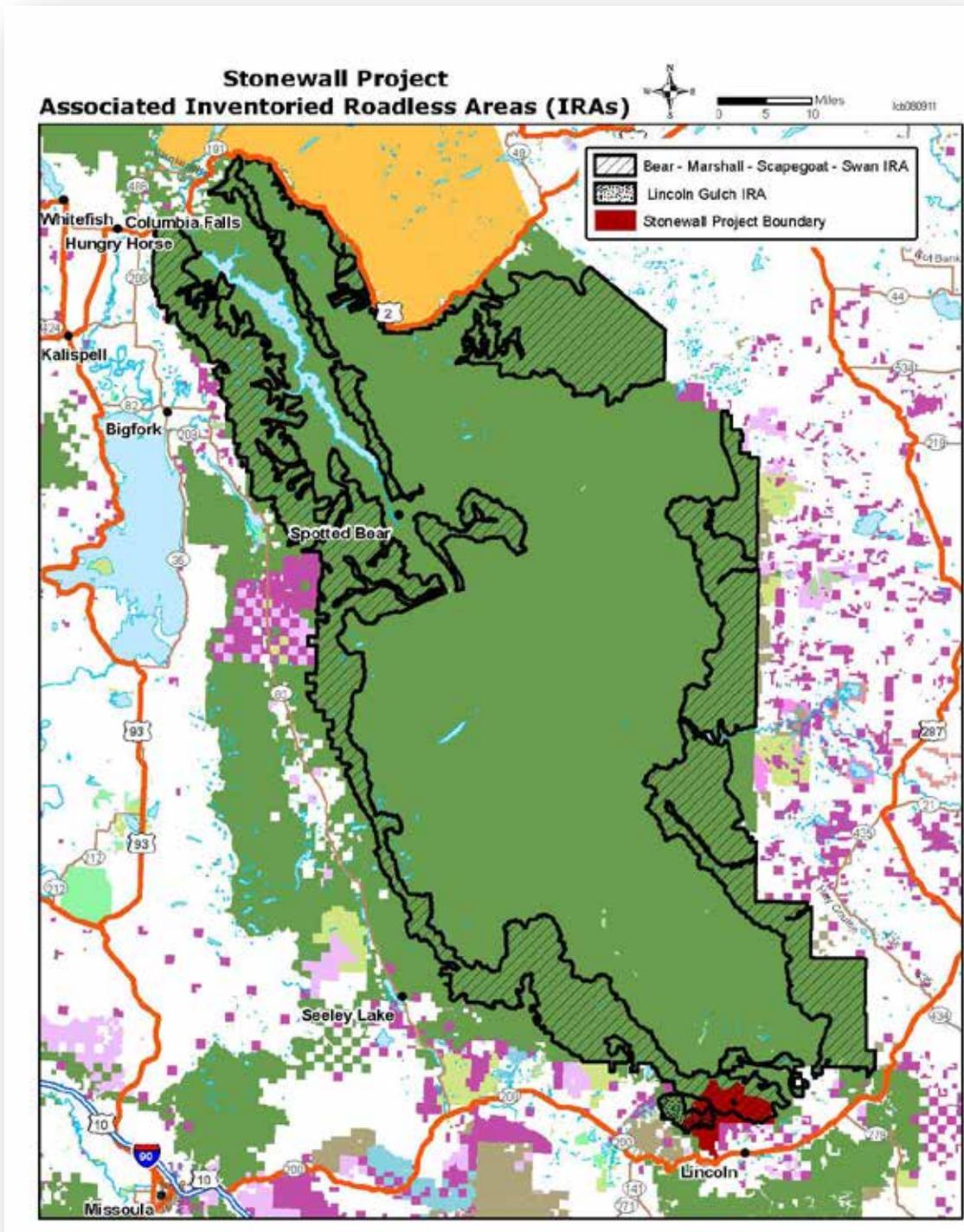


Figure 101. Associated inventoried roadless areas

The Helena National Forest Plan established Forestwide multiple-use goals, objectives, and management area requirements as well as management area prescriptions. Roadless areas are well distributed throughout the Forest and managed to provide semi-primitive recreation opportunities (USDA Forest Service 1986a). The analysis of roadless lands, documented in Appendix C of the FEIS for the Forest Plan, described each roadless area, the resources and values considered, the range of alternative land uses studied, and the effects of management under each alternative (USDA Forest Service 1986b). As a result of the analysis, some roadless areas were recommended for inclusion in the National Wilderness Preservation System and others were assigned various nonwilderness prescriptions. The portion of the BMSS IRA that is within the project area is assigned primarily to Management Area (MA) M1 and W1 with small areas of T1, T3, and T4 along the southern edge of the IRA. The portion of the Lincoln Gulch IRA that is within the project area is assigned primarily to MA T3 with small areas of W1, T1, T2, and M1 (figure 102).

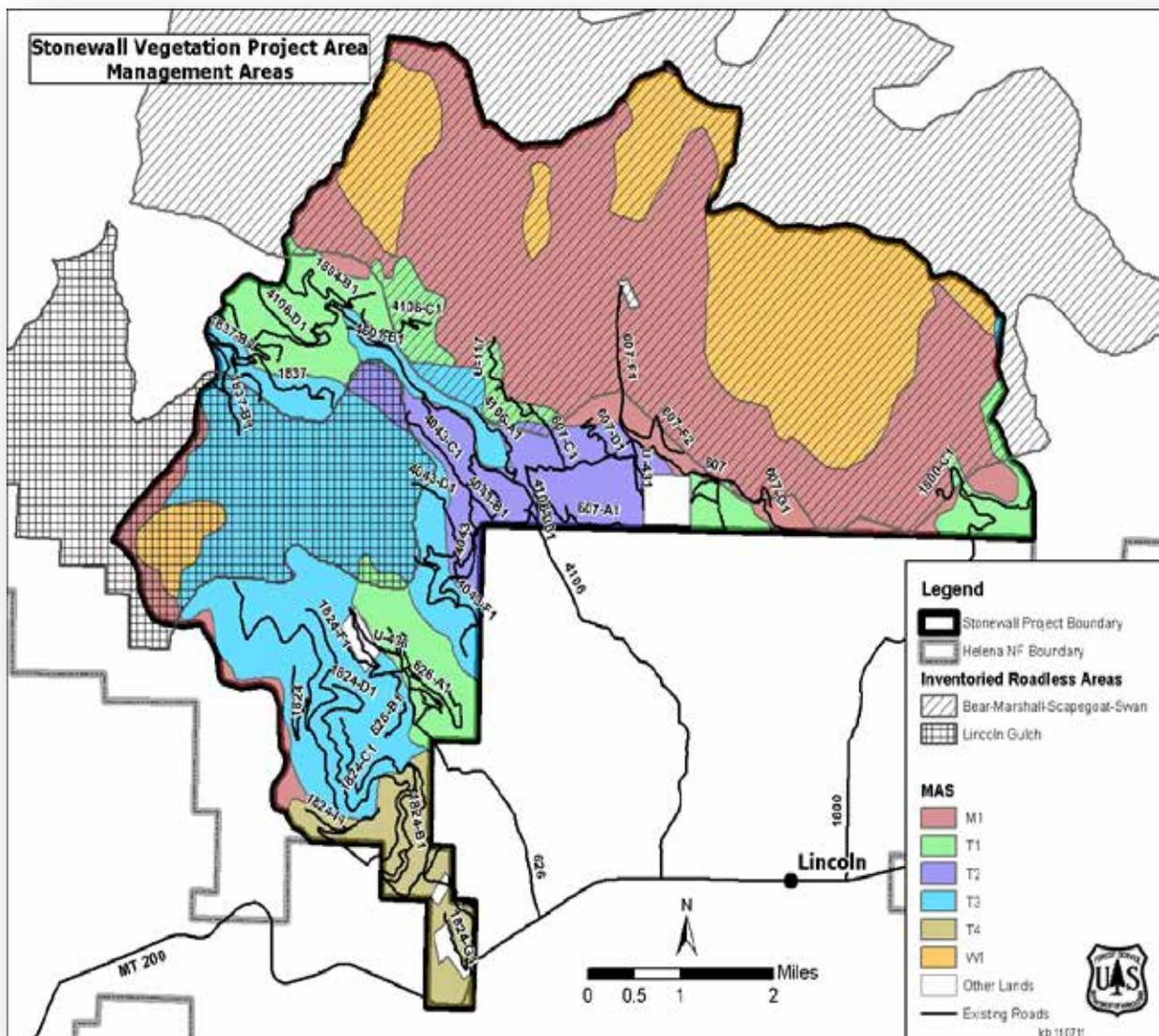


Figure 102. Management areas in the inventoried roadless areas

Bear-Marshall-Scapegoat-Swan IRA

The Bear-Marshall-Scapegoat-Swan Inventoried Roadless Area is located in the Northern Continental Divide Ecosystem. This roadless area surrounds the Bob Marshall, Great Bear and Scapegoat wilderness areas. It also contains portions of the Swan Mountain Range north of the Bob Marshall Wilderness.

The Flathead, Helena, Lolo and Lewis and Clark National Forests manage this large roadless area, which provides habitat for many wildlife species including, grizzly bear and black bear, cougar, lynx, fisher, marten, elk, whitetail deer and mule deer, wolf, moose, mountain goat, and bighorn sheep. The higher elevations provide important summer range habitat for big game species.

The Bear-Marshall-Scapegoat-Swan Inventoried Roadless Area is especially important to many members of the public because of its proximity to other wilderness areas, providing the opportunities for expansive hiking backpacking, hunting, cross-country skiing and equestrian travel. Livestock grazing, motorized recreation, timber harvesting, and oil and gas development represent other uses (USDA Forest Service 1986b, FEIS Appendix C3 – C5). Access to the Scapegoat Wilderness from the south requires travel through the Stonewall portion of this roadless area.

Roadless Area Characteristics

The roadless area encompasses 12 different locations; the Stonewall Mountain area, managed by the Lincoln Ranger District, is located along the southern boundary of the Scapegoat Wilderness. Most of the area west of Stonewall Mountain and Copper Creek is very steep and rocky. The area east of Stonewall Mountain to Copper Creek is steep and well-timbered on north facing slopes. It contains open growing stands of timber with small grassland parks on south and west facing slopes. Elevations range from 4,900 feet in the Blackfoot Valley to 9,411 feet on Red Mountain

Snowmobilers use the Stonewall Mountain Trail to travel to the Upper Copper Creek Basin and use the Alice Creek/ Lewis and Clark Pass area. Most of the drainage bottoms have access trails with the Reservoir Lake Trail in Arrastra Creek receiving the most use (USDA Forest Service 1986b, FEIS Appendix C10-C-11).

Wilderness Attributes

Following is a list of the specific Wilderness Attributes defined in Forest Service Handbook (FSH) 1909.12 (72.1) – Wilderness Evaluation. The Roadless Area Characteristics defined in 36 CFR 294.11 – Roadless Area Conservation, Final Rule are also incorporated into the following descriptions: Wilderness Attributes and Roadless Area Characteristics Crosswalk in the Roadless Analysis Methodology section.

The descriptive paragraphs that follow are from the analysis of roadless lands conducted by the Helena National Forest in 1986 during development of the Forest Plan. Following those paragraphs are descriptions of activities and changes that have occurred since the Forest Plan was developed.

Natural – The extent to which long-term ecological processes are intact and operating

Most of the plant and animal species that existed in this roadless area when the Lewis and Clark Expedition passed south of here nearly 200 years ago are still present. Most mammal species present then are still present now; however, some are considered threatened or endangered. The integrity of the fisheries has been altered by the stocking of grayling and rainbow trout, however, many miles of unaltered cutthroat streams remain. Some invasive plant species, such as spotted knapweed, leafy spurge, thistle, and clover have been introduced accidentally into the area through livestock use. These species are mainly along the trails. Off-trail, the plant community has changed little except for successional changes

and those brought about by naturally occurring fires. To the untrained eye, the natural appearance of this area is high (USDA Forest Service 1986b, FEIS Appendix C-11).

Fire suppression and moist growing conditions through much of this century resulted in a loss of open forest conditions and seral species (aspen, ponderosa pine and western larch). This has created a uniform landscape comprised of dense forests susceptible to insect and wildfire mortality (Douglas-fir and lodgepole pine). In addition, a large-scale mountain pine beetle epidemic has killed most of the mature lodgepole pine and ponderosa pine.

These vegetative changes have impacted fish and wildlife habitat, and spotted knapweed is present within the IRA, however, the IRA generally continues to provide high quality soil, water and air; diversity of plant and animal communities; and habitat for threatened, endangered, proposed, candidate, and sensitive species, and for those species dependent on large, undisturbed areas of land. See additional discussion of the roadless resources in volume 2, appendix D of this DEIS, Stonewall Roadless Characteristics Worksheet and in specific resource sections.

Undeveloped – The degree to which development and uses are apparent to most visitors

Human activities in some areas are evident, although most impacts are concentrated along road corridors and the exterior boundaries. In other areas, the only disruptions are trails, which access the adjacent Wilderness areas (USDA Forest Service 1986b, FEIS Appendix C-11). There is some evidence of non-energy mineral mining exploration that occurred in the Cotter Basin, Copper Camp, Alice Creek and Stonewall Creek areas. Most of this activity lies on the fringes of the area. There are old roads associated with these activities and evidence of past earth moving activities is present. Some clearcuts are in the Alice Creek, Beaver Creek, and Arrastra Creek Drainages, along the edge of the roadless area. Silver King Lookout is the only Forest Service maintained structure in the area. One special use cabin is located in the Alice Creek drainage, as well as fences used for controlling livestock. Seismic exploration has occurred here in recent years (USDA Forest Service 1986b, FEIS Appendix C-21).

Since the 1986 analysis of roadless lands, The Helena National Forest, consistent with Forest Plan direction, has continued harvest and fuels activities within the Bear-Marshall-Scapegoat-Swan IRA, as shown in table 164 that follows. These activities have contributed to some evidence of human access within the IRA; however, the IRA has generally retains the undeveloped characteristics described above.

Table 164. Past harvest and fuel activities since 1986 in the portion of the Bear-Marshall-Scapegoat-Swan IRA managed by the Helena National Forest

Activity	Acres within IRA
Prescribed Burning	5,869
Wildfire	433
Fuels Treatment (yarding, rearranging, piling)	1,587
Thinning (hazardous fuels reduction)	1,551
Range Improvement	871
Timber Harvest (stand clearcut, shelterwood establishment cut, single tree selection cut, sanitation salvage, precommercial thin)	271
Reforestation Needs Created by Fire	1,203
Reforestation/Planting/Regeneration activities	1,657
TOTAL	13,309

*Data from "SWCumEffectsPastHarFuActivitiesIRAs_080911.xlsx" Acres rounded for display

Outstanding opportunities for solitude or primitive unconfined recreation – Solitude is a personal, subjective value defined as the isolation from sights, sounds, and presence of others and from developments and evidence of humans. Primitive recreation is characterized by meeting nature on its own terms, without comfort and convenience of facilities.

In general, the BMSS IRA possesses high opportunities for solitude because of its size and the influence of the adjacent Bob Marshall, Great Bear and Scapegoat wilderness areas. Much of it contains highly dissected topography that easily screens people from one another in a short distance. Some portions are influenced by adjacent roads and other developments.

The Stonewall area possesses very high opportunities for solitude. Screening of the more developed areas occurs over most of the area. Sounds of vehicles, chainsaws, and logging activity are screened from most of the area due to the topography and lay of the terrain.

The area offers high opportunities for primitive recreation. A variety of topography challenges the visitor with its high mountaintops and steep valleys. The large size of the area offers the opportunity to get away from the man-influenced environment and experience excellent primitive recreation activities such as fishing, camping, hunting, backpacking, hiking, and horseback riding. People nationwide are attracted by the outstanding hunting and backcountry experiences here and in the adjacent wildernesses (USDA Forest Service 1986b, FEIS Appendix C11-12).

The Stonewall area offers a variety of topographic features to challenge the visitor. The high peaks, steep slopes, flat valley bottoms, and numerous streams, offer a different primitive recreation experience to visitors (USDA Forest Service 1986b, FEIS Appendix C-21).

Recreational activities such as hunting, camping, hiking, off-highway vehicle (OHV) travel on primitive roads, and snowmobiling and cross-country skiing in the winter continue to be the primary recreation activities occurring within the IRA. Recreational use of the area has increased over time along with the corresponding increase in population and popularity of outdoor recreational activities. Implementation of various forest management activities and the associated increased presence of people, vehicles and associated noise over the years may have temporarily affected the opportunities for solitude and primitive and unconfined recreation.

The IRA continues to provide outstanding opportunities for solitude and primitive recreation. The area has become highly valued due to its proximity to the Bob Marshall Wilderness Complex, and its location within the Southwest Crown of the Continent, an area that links the Canadian Rockies with the Greater Yellowstone Ecosystem and the Selway-Bitterroot Wilderness areas to the south.

Special features and values – Unique ecological, geographical, scenic, and historical features of an area

The Stonewall area is also noted for other features. Red Mountain is the highest peak from Lincoln to Glacier National Park, rising 9,411 feet above sea level. It is one of the few sites in the United States where limber pine and whitebark pine grow together.

The Red Mountain Research Natural Area (RNA) is located approximately 3 miles north of the Stonewall Project area.

The Lewis and Clark Trail passes up Alice Creek over Lewis and Clark Pass. This is of historical interest to many Forest users.

The area also supports a small herd of Rocky Mountain goats near Red Mountain (USDA Forest Service 1986b, FEIS Appendix C-22).

Manageability – The ability to manage an area for wilderness consideration and maintain wilderness attributes.

Because this area surrounds the Bob Marshall, Great Bear and Scapegoat Wilderness Complex, it consists of several long, narrow segments that are usually separated by road corridors. The boundary along the adjacent wilderness areas are usually well defined by high ridges and major topographic features. Other boundaries parallel existing roads or land survey lines which are sometimes difficult to identify (USDA Forest Service 1986b, FEIS Appendix C-12).

The Stonewall area is large enough and the topography is such that any person visiting the area would gain the feeling that they are in a natural area free from human activities and development. The high peaks afford the viewer with vistas of part of the Scapegoat Wilderness mountain ranges and many of the major drainages in the district. Some distant roads and timber harvesting areas can be seen from these high points (USDA Forest Service 1986b, FEIS Appendix C21).

Lincoln Gulch IRA – Roadless Area Characteristics and Wilderness Attributes

The Lincoln Gulch IRA is located approximately 6 miles northwest of Lincoln, MT. The area includes the Ward Creek, Arrastra Creek, and Lincoln Gulch drainages. The terrain is characterized by very steep and timbered slopes. Arrastra Creek, the major drainage, runs northeast to southwest and roughly divides the area in half. The elevation ranges from 4,800 feet on the west side near Patterson Prairie to 7,432 feet on the summit of Black Mountain. The steep terrain confines most use to ridgetops and stream bottoms (USDA Forest Service 1986b, FEIS Appendix C-55).

Wildlife species include elk, mule deer, whitetail deer, black bear, cougar, grizzly bear, wolverine, lynx, bobcat, coyote, other furbearers, numerous grouse species, and several nongame animals and birds. Deer and elk winter range is located along the southwest boundary (USDA Forest Service 1986b, FEIS Appendix C-55).

Recreation use of the area revolves around big game hunting. There are no lakes or major attractions, such as high mountain peaks, to attract large numbers of recreationists (USDA Forest Service 1986b, FEIS Appendix C-55).

Natural – The extent to which long-term ecological processes are intact and operating

Most of the area has had little human influence. The naturalness of the area is similar to that described above for the Bear-Marshall-Scapegoat-Swan IRA, with the exception of trail related impacts, since there are no trails within the Lincoln Gulch IRA.

Undeveloped – The degree to which development and uses are apparent to most visitors

The only disturbance within the area has been from scattered mining activity. The mining activity includes a ditch used for placer mining, which winds through the eastern finger of the area and terminates just south of the area at the old Lincoln Town site. The ditch was built at the turn of the century and has since been reclaimed by nature (USDA Forest Service 1986b, FEIS Appendix C-56).

There are several clearcuts adjacent to the area in the Lincoln Gulch and Beaver Creek drainages. An old logging road, which is no longer drivable, follows the bottom of Arrastra Creek about 200 yards into the area (USDA Forest Service 1986b, FEIS Appendix C-56).

Based on a recent review of management activities implemented by the Helena National Forest, no harvest or fuels activities have been conducted within the Lincoln Gulch IRA. Ongoing activities in the area include noxious weed treatments and livestock grazing. The area remains undeveloped.

Outstanding opportunities for solitude or primitive unconfined recreation – Solitude is a personal, subjective value defined as the isolation from sights, sounds, and presence of others and from developments and evidence of humans. Primitive recreation is characterized by meeting nature on its own terms, without comfort and convenience of facilities.

Even though this area is relatively small, it has a very high opportunity for solitude, due to rugged terrain that secludes the visitor from most outside disturbance. Occasional sounds of motorized vehicles or chainsaws can be heard. These sounds are associated with mining, logging, and hunting. The mining and logging would affect the area from spring breakup in May until early winter. Human activity is well dispersed throughout the area because there are no major attractions such as lakes to draw recreation use (USDA Forest Service 1986b, FEIS Appendix C-56).

This area provides excellent primitive recreation opportunities. Because of the heavy timber and lack of trails, there is no motorized access into the area. Hunting and hiking are the main recreation uses. Horseback riding is limited due to topography and vegetative cover. The Lone-Point-Black Mountain ridge provides most of the horseback riding opportunity in this area (USDA Forest Service 1986b, FEIS Appendix C-56).

Hunting and hiking continue to be the primary recreation activities within the IRA. Recreational use of the area has increased over time along with the corresponding increase in population and popularity of outdoor recreational activities. Very few Forest management activities have been implemented and the IRA continues to provide outstanding opportunities for solitude and primitive recreation.

Special features and values – Unique ecological, geographical, scenic, and historical features of an area.

Elk are abundant within this area and it has historically been a productive and primitive hunting area. Lincoln Gulch provides a large big game security area and the rugged terrain gives a hunter a unique challenge (USDA Forest Service 1986b, FEIS Appendix C-57).

Manageability – The ability to manage an area for wilderness consideration and maintain wilderness attributes.

The entire area is on National Forest System land. There are presently no grazing permits or developments in the area. Conflicts might arise between wilderness use and mining or oil and gas exploration (USDA Forest Service 1986b, FEIS Appendix C-57).

Other Unroaded Areas

Geographical Information System (GIS) information was used to assess the Stonewall Project area to determine the extent of other unroaded areas located outside of the inventoried roadless areas. A majority of the project area outside of the IRAs is within 1/8- mile of existing roads. Unroaded areas exist adjacent to the southern boundary of the Lincoln Gulch IRA (two areas approximately 400-600 acres in size, intersected by unit 77), adjacent to the southern boundary of the Bear-Marshall-Scapegoat-Swan IRA (several areas approximately 80-200 acres in size, intersected by units 79 and 86), and adjacent to the Forest boundary along the southern boundary of the project area (an area approximately 300 acres in size, intersected by units 46, 47, and 75). The unroaded lands adjacent to the IRAs have similar roadless characteristics and wilderness attributes as those described above and are considered in this analysis. The

small area along the southern project boundary does not meet the inventory criteria in FSH 1909.12 71.1 and is not considered further in this analysis (USDA Forest Service 2010a).

Environmental Consequences

Alternative 1 – No Action Alternative

Direct and Indirect Effects

If the no action alternative is chosen, the proposed regeneration harvests, intermediate harvests, precommercial thinning and prescribed burning would not be implemented within the project area. There would be no direct effects from proposed activities to roadless resources.

However, there would be a chance of an indirect effect under alternative 1, as the ecosystem restoration and fuel reduction project would not occur, and the risk of severe wildfire would remain. In the long term, this may result in indirect effects to roadless resources potentially resulting in changes to the recreation setting or scenic quality of the project area.

An effect to wilderness attributes from taking no action would be to Naturalness (the extent to which long-term ecological processes are intact and operating). Fire would not be reintroduced into this fire-adapted ecosystem, fire suppression efforts would continue and the risk of large, severe wildfires would remain. This may detract from the characteristic of “naturalness” throughout the area, since conditions would not allow the reestablishment of fire as a natural process on the landscape.

Cumulative Effects

There are no known cumulative effects to roadless resources from the no action alternative.

Irreversible and Irrecoverable Commitments of Resources

In the no action alternative, there would be no irreversible and irretrievable commitments of resources relevant to the roadless resources within the project area.

Alternative 2 – Proposed Action

Under alternative 2, 8,562 acres are proposed for treatment. The proposed actions, outside of the IRAs, include using both commercial and noncommercial treatments to achieve the desired condition. These actions would include: regeneration harvests, intermediate harvests, precommercial thinnings, and prescribed burning. Implementing the proposed action could include the use of chainsaws, feller bunchers, and cable logging equipment. Approximately 2.5 miles of road would be built for project use then obliterated immediately following timber removal. Post treatment activities would include underburning, site preparation burning, jackpot burning, hand piling/ burning, tree planting, and monitoring of natural regeneration.

The only action proposed within the two IRAs (BMSS and Lincoln Gulch) is prescribed fire and the associated hand slashing of small diameter trees. Commercial harvest and road construction would not occur in the two roadless areas.

Project Design Features

The Stonewall Vegetation Project has been designed with features that are intended to minimize or avoid potential adverse effects while meeting project objectives. In addition to the proposed action treatments described in this section, design features would be implemented where applicable. A description of the project design features is displayed in table 9, chapter 2. The FUEL-3 project design feature is relevant to

minimizing unauthorized motorized use associated with proposed activities within roadless areas. This analysis is based on the implementation of all design features. Project design features apply to all action alternatives.

Direct and Indirect Effects – Roadless Resources

The activities proposed within the IRAs include construction of fire-lines, hand slashing of small diameter trees and prescribed fire.

Table 165 shows the units and treatments proposed within the roadless expanse:

Table 165. Alternative 2 - Proposed treatment within inventoried roadless areas

Unit Number	Alternative 2 – Proposed Action – Treatment Description	Roadless Area
76	123 acres, Description Group 6 – Low Severity Prescribed Fire to Create Mortality Patches 5 to 10 Acres	Lincoln Gulch IRA
77	541 acres, Description Group 8 – Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Lincoln Gulch IRA and unroaded lands contiguous to the IRA
79	257 acres, Description Group 8 – Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Bear-Marshall-Scapegoat-Swan IRA and unroaded lands contiguous to the IRA
80	280 acres, Description Group 7 – Mixed Severity Fire to Create Mortality Patches up to 5, 10, or 20 Acres	Bear-Marshall-Scapegoat-Swan IRA, Trail #418
81	607 acres, Description Group 8 – Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Bear-Marshall-Scapegoat-Swan IRA
82	776 acres, Description Group 8 – Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Bear-Marshall-Scapegoat-Swan IRA, Trail #417,418
83	457 acres, Description Group 8 – Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Bear-Marshall-Scapegoat-Swan IRA, Trail #417
84	806 acres, Description Group 8 – Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Bear-Marshall-Scapegoat-Swan IRA, Trail #485
85	87 acres, Description Group 6 – Low Severity Prescribed Fire to Create Mortality Patches 5 to 10 Acres	Bear-Marshall-Scapegoat-Swan IRA, Trail #485
86	10 acres, Description Group 7 – Mixed Severity Fire to Create Mortality Patches up to 5, 10, or 20 Acres	Bear-Marshall-Scapegoat-Swan IRA and unroaded lands contiguous to the IRA
87	36 acres, Description Group 7 –	Bear-Marshall-Scapegoat-Swan

Unit Number	Alternative 2 – Proposed Action – Treatment Description	Roadless Area
	Mixed Severity Fire to Create Mortality Patches up to 5, 10, or 20 Acres	IRA
88	865 acres, Description Group 8 – Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Bear-Marshall-Scapegoat-Swan IRA

Effects to Roadless Area Characteristics and Wilderness Attributes for IRAs and Contiguous Unroaded Lands

Roadless Areas: The Bear-Marshall-Scapegoat-Swan Inventoried Roadless Area (IRA) is 848,097 acres and managed by the Helena, Lewis and Clark, Lolo and Flathead National Forests. The portion of the Bear-Marshall-Scapegoat-Swan IRA managed by the Lincoln Ranger District of the Helena National Forest covers 51,339 acres, and the Stonewall Vegetation Project area overlaps with 12,235 acres. The Lincoln Gulch IRA covers 8,247 acres, and the Stonewall Vegetation Project area overlaps with 3,193 acres.

Natural – Reintroducing fire into this fire adapted ecosystem would begin reversing the trends caused from past fire suppression and reduce the risk of large, severe wildfires. This would enhance the characteristic of “naturalness” throughout the area, by establishing forest characteristics that would have been more typical of this area if fire had been allowed to play its natural role in landscape processes.

Management-ignited prescribed fire, however, is a form of “modern human control or manipulation” and would to some extent affect the “untrammeled” and natural character within the roadless areas. There is disagreement about whether the effects of additional management actions such as prescribed fire (i.e., trammeling) to correct the effects of previous management actions such as the suppression of natural fire (i.e., trammeling) is appropriate (Yung, undated).

The proposed action would enhance or help to maintain the roadless resources including high quality soil, water and air; diversity of plant and animal communities; and habitat for threatened, endangered, proposed, candidate, and sensitive species, and for those species dependent on large, undisturbed areas of land.

Undeveloped – There would be little evidence that the fires were initiated as a management tool versus natural ignition. The fire hand lines would create a linear disturbance within the roadless area. Stumps from the hand slashing of small diameter trees may remain visible for several seasons following the prescribed fire, which may detract from the undeveloped character for visitors traveling through the roadless area. There are also concerns that the hand lines could encourage unauthorized motorized use. Design features are in place to obliterate fire handlines adjacent to or that intersect existing roads and trails to reduce the potential for unauthorized motorized use (see project design feature: FUEL-3). Blackened trees from the prescribed burning would be noticeable; however, fire is a natural process and should not affect the roadless integrity.

The proposed prescribed fire would help ensure the forest maintains a visual appearance characteristic of a wildfire within its natural regime as opposed to an unnaturally intense wildfire, thereby enhancing or helping to maintain the roadless characteristic of natural appearing landscapes with high scenic integrity. The creation of openings in the forest from low and mixed severity prescribed fire ranging from 5 to 75 acres in size would create a visually appealing mosaic in the landscape, enhancing the overall existing landscape character.

Outstanding opportunities for solitude or primitive unconfined recreation – There may be short-term effects to “solitude” within the project area during project implementation due to the presence of Forest personnel managing the prescribed fire and noise associated with the use of chainsaws for the hand slashing of small diameter trees. The proposed activities would not affect opportunities for “primitive and unconfined type of recreation.” See additional discussion of the roadless resources in Attachment 1: Stonewall Roadless Characteristics Worksheet.

Special features and values – The proposed action would not affect the special features or values of the BMSS IRA because there are no special features within the Stonewall project area. The proposed action would maintain the productive and primitive Elk hunting opportunities within the Lincoln Gulch IRA for approximately 15-20 years and enhance these opportunities in the long term. Hand lines within sites could alter historic and prehistoric sites.

Manageability – Overall, the effects to wilderness character within the IRAs would be minor and short term. The proposed action would not affect the suitability of the area for designation as Wilderness pursuant to the Wilderness Act of 1964.

Table D-1 in volume 2, appendix D displays effects to roadless characteristics.

Irreversible and Irrecoverable Commitments of Resources

In alternative 2, proposed action, there would be no irreversible and irretrievable commitments of resources relevant to the roadless resources within the project area.

Alternative 3

The actions proposed in alternative 3 differ from those of alternative 2 - proposed action, relevant to the analysis of roadless resources. The relevant changes include fewer units proposed for prescribed fire and hand slashing of small diameter trees within the IRAs. Alternative 3 has no activities planned within the Lincoln Gulch IRA or in the unroaded lands contiguous to this IRA and proposes fewer units for treatment in the BMSS IRA.

The relevant unit changes in alternative 3 are:

Units 76 and 77 proposed for prescribed fire are removed from the Lincoln Gulch IRA and the unroaded lands contiguous to the IRA. The mixed severity prescribed fire proposed for unit 80 is changed to unit 80a, Jackpot burn; and units 81 and 86 of mixed severity prescribed fire are removed from the Bear-Marshall-Scapegoat-Swan IRA and the unroaded lands contiguous to the IRA.

Direct and Indirect Effects

Alternative 3 proposes construction of fire handlines, hand slashing of small diameter trees and prescribed fire within the Bear-Marshall-Scapegoat-Swan IRA and unroaded lands contiguous to the IRA. There are no actions proposed within the Lincoln Gulch IRA or the unroaded lands contiguous to the IRA in alternative 3. Table 166 shows the units and treatments proposed within the roadless expanse.

Table 166. Alternative 3 - proposed treatment within inventoried roadless areas

Unit Number	Alternative 3 – Treatment Description	Roadless Area
79	257 acres, Description Group 8 – Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Bear-Marshall-Scapegoat-Swan IRA and unroaded area contiguous to the IRA
80a	280 acres, Description Group 9 – Low Severity Prescribed Fire	Bear-Marshall-Scapegoat-Swan IRA, Trail #418
82	776 acres, Description Group 8 – Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Bear-Marshall-Scapegoat-Swan IRA, Trail #417,418
83	457 acres, Description Group 8 – Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Bear-Marshall-Scapegoat-Swan IRA, Trail #417
84	806 acres, Description Group 8 – Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Bear-Marshall-Scapegoat-Swan IRA, Trail #485
85	87 acres, Description Group 6 – Low Severity Prescribed Fire to Create Mortality Patches 5 to 10 Acres	Bear-Marshall-Scapegoat-Swan IRA, Trail #485
87	36 acres, Description Group 7 – Mixed Severity Fire to Create Mortality Patches up to 5, 10, or 20 Acres	Bear-Marshall-Scapegoat-Swan IRA
88	865 acres, Description Group 8 – Mixed Severity Fire to Create Mortality Patches up to 30 or 75 Acres	Bear-Marshall-Scapegoat-Swan IRA

Effects to Roadless Area Characteristics and Wilderness Attributes for IRAs and Contiguous Unroaded Lands

Alternative 3 does not propose any treatment within the Lincoln Gulch IRA or unroaded lands contiguous to the IRA, therefore, the impacts would be the same as described in alternative 1- no action.

The impacts from alternative 3 on the BMSS IRA and unroaded lands contiguous to the IRA would be the same as described in alternative 2, proposed action, but would occur on fewer acres due to the elimination of the mixed severity prescribed fire in units 81 and 86.

Irreversible and Irretrievable Commitments of Resources

In alternative 3, there would be no irreversible and irretrievable commitments of resources relevant to the roadless resources within the project area.

Cumulative Effects Common to All Action Alternatives

Cumulative effects to roadless resources were considered within the entire 848,097-acre BMSS IRA that is managed by the Helena, Flathead, Lolo, and Lewis and Clark National Forests, the entire 8,247- acre Lincoln Gulch IRA and the unroaded lands contiguous to the IRAs. Potential cumulative effects to roadless resources are related to other activities occurring within the roadless expanse that have the potential to impact roadless area characteristics or wilderness attributes. Cumulative impacts to roadless resources would result if other activities take place during implementation of the Stonewall Vegetation project, or until vegetation growth obscures the visible stumps from the hand slashing of small diameter trees and hand firelines, approximately 3-5 years.

Past harvest and fuel activities (1954-2010) have been conducted on approximately 76,671 acres across the 848,097-acre BMSS IRA that is managed by four National Forests (37,288 on the Flathead NF;

13,888 on the Helena NF; 17,767 on the Lewis and Clark NF; and, 6,029 on the Lolo NF), or 8.6 percent of the total IRA acreage (see volume 2, appendix C, table C-6).

Recreational activities such as hunting, camping, hiking, off-highway vehicle (OHV) travel on primitive roads, and snowmobiling and cross-country skiing in the winter would continue within the analysis area. Other ongoing and reasonably foreseeable activities that would be occurring within the analysis area include hazard tree removal, weed treatments, trail maintenance, commercial guided recreation, and ongoing use of grazing allotments. All of these activities, when added to the activities proposed in the Stonewall Vegetation Project have the potential to cumulatively affect the roadless values and wilderness attributes within the analysis area. The primary effects would be due to the increased presence of people, vehicles and associated noise that would directly affect solitude and opportunities for primitive and unconfined recreation.

The long-term impacts of other ongoing and reasonably foreseeable activities, such as noxious weed treatment and hazard tree removal, when added to the activities proposed in the Stonewall Vegetation Project, have the potential to cumulatively impact the natural and undeveloped characteristics by causing changes to the scenic qualities within the project area and creating a setting where “resource modifications and utilization practices are evident, but harmonize with the natural environment” as indicated in a Roaded Natural ROS setting. Most of these effects would be beneficial because they would increase the resiliency of forest conditions and reduce the risk of potential negative impacts from severe wildfire, therefore, maintaining the roadless and wilderness qualities that are currently valued by the public. A list of past, present and foreseeable actions relevant to the cumulative effects analysis for roadless resources within the Stonewall analysis area is in volume 2, appendix C, table C-7.

Summary of Effects for All Alternatives

Alternative 1, no action would have no direct or cumulative effects to roadless resources. The purpose and need for the Stonewall Vegetation Project “... *improving the mix of vegetation and structure across the landscape so that it is diverse, resilient, and sustainable to wildfire and insects; modifying fire behavior to enhance community protection while creating conditions that allow the reestablishment of fire as a natural process on the landscape; enhancing and restoring aspen, western larch and ponderosa pine species and habitats; utilizing the economic value of trees through removal; and integrating restoration with socioeconomic considerations*” would not be addressed. Potential long-term indirect effects to roadless resources would be due to the ongoing risk of severe wildfire that could lead to changes in the recreation settings, visual qualities and naturalness within the roadless expanse.

In alternative 2, prescribed fire is proposed within IRAs to promote ecological restoration of a mix of vegetation composition and structure across the landscape. Prescribed fire is proposed on 4,182 acres (about 0.5 percent) within the Bear Marshall Scapegoat Swan IRA and on 664 acres (about 7.8 percent) within the Lincoln Gulch IRA. The proposed action would have short-term direct impacts to roadless resources during project implementation such as increased presence of people and noise within the project area. Project design features are in place to limit potential effects. The proposed treatments would address the purpose and need for the Stonewall Vegetation Project, resulting in a more diverse, resilient and sustainable forest ecosystem with a reduction in risk of negative impacts from severe wildfire. The long-term indirect effects from alternative 2 to roadless resources would be generally beneficial and help to maintain the existing recreation settings and scenic qualities within the project area.

Impacts would be stable or improving for a majority of roadless area characteristics and wilderness attributes with short-term impacts to the undeveloped character from the hand slashing of small diameter trees and construction of hand fire lines, short-term impacts to solitude during project implementation, and potential adverse effects to cultural resources.

Cumulative effects to roadless resources would generally be short term and related to an increased presence of people, vehicles and the associated noise that may affect solitude.

In alternative 3, prescribed fire is proposed within the Bear Marshall Scapegoat Swan IRA to promote ecological restoration of a mix of vegetation composition and structure across the landscape. Prescribed fire is proposed on 3,565 acres (about 0.4 percent) within the Bear Marshall Scapegoat Swan IRA. The Lincoln Gulch IRA would not be treated. The effects of alternative 3 relative to roadless resources would be similar to those described for alternative 2, but the impacts would occur on fewer acres. There would be no impacts to the Lincoln Gulch IRA and fewer acres treated within the BMSS IRA.

The alternative comparison summary in chapter 2 provides a comparison of effects from project activities by alternative for roadless resources.

Cumulatively there may be short-term impacts to solitude and undeveloped character with long-term benefits to naturalness throughout the IRA. Additional management activities within the IRA including travel planning, weed treatments and livestock grazing would also occur. These activities are compatible with the management of roadless resources and may cumulatively represent short-term impacts to solitude throughout the IRA due to the presence of people.

Compliance with Forest Plan and Other Relevant Laws, Regulations, Policies and Plans

The proposed alternatives are consistent with the following:

- ◆ Helena National Forest Plan 1986, Management Goals for Management Areas: M-1, T-1, T-2, T-3, T-4, and W-1.
- ◆ Forest Service Handbook (FSH) 1909.12 (72.1) – Wilderness Evaluation, that provides definitions for the wilderness attributes of Inventoried Roadless Areas.
- ◆ 36 CFR 294.11 – Roadless Area Conservation, Final Rule and related Secretary’s Memorandum 1042-155 and 1042-156.
- ◆ Forest Service Manual (FSM) 2300 – Recreation, Wilderness and Related Resource Management, guides management of recreation and wilderness resources on National Forest System lands.

As of March 2, 2012, the 2001 Roadless Rule is in full effect after Judge Brimmer (Wyoming) lifted his injunction on the Rule (see the “Roadless Analysis Background and Direction” section in the Inventoried Roadless Area section), The Stonewall project complies with the 2001 Roadless rule, as follows:

- d. The cutting, sale, or removal of generally small diameter timber is needed for one of the following purposes and would maintain or improve one or more of the roadless area characteristics as defined in § 294.11. To maintain or restore the characteristics of ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildfire effects, within the range of variability that would be expected to occur under natural disturbance regimes of the current climatic period (36 CFR 294.13(b)(1)(ii)).
- e. The cutting, sale, or removal of timber is incidental to the implementation of a management activity not otherwise prohibited by this subpart (36 CFR 294.13(b)(2)).

The cutting of generally small diameter timber is needed to implement the proposed prescribed fire treatments. Consistent with 36 CFR 294.13(b)(1)(ii), prescribed fire is proposed within the Inventoried Roadless Areas (IRA) to promote ecological restoration of a mix of vegetation composition and structure across the landscape. The proposed actions would enhance or help to maintain the roadless characteristics, as defined in 36 CFR 294.11, including high quality soil, water and air; diversity of plant and animal communities; and habitat for threatened, endangered, proposed, candidate, and sensitive species, and for

those species dependent on large, undisturbed areas of land, and natural appearing landscapes with high scenic quality.

Consistent with 36 CFR 294.13 (b)(2), the cutting of generally small diameter timber is incidental to the implementation of the proposed prescribed fire, a management activity that is not otherwise prohibited by the Roadless Rule.

Scenery

Introduction

The Forest Plan uses Visual Quality Objectives (VQOs) when setting objectives to manage the viewed landscape. The VQOs were determined using the Visual Management System (VMS) framework found in Agricultural Handbook (AH) 462, “National Forest Landscape Management Volume 2, Chapter 1, The Visual Management System”. Components of VMS used when analyzing effects from management activity on the visual resource are discussed in the Methodology section of this analysis. All VMS components referred to in this analysis are defined in the Glossary section. The Visuals Report (Bonnett 2012) was completed to determine compliance with the direction found in the Forest Plan and Other Relevant Laws, Regulations, Policies and Plans.

Overview of Issues Addressed

Comments pertaining to disclosing the effects of project activities on the visual resource were identified from public scoping as nonsignificant (40 CFR 1501.7), and are addressed by the analyses in this section. Please refer to appendix A of the draft environmental impact statement for a complete listing of the issues and an explanation of how the agency determined their disposition.

Indicators

Indicators are defined to analyze data regarding the potential for impacts to scenery from project activities.

- A landscape analyses should be completed to show the changes that would occur from the proposed actions. What are the visual impacts?
 - ◆ **Measure:** Effects to visual resources analyzed and VQO forest plan compliance disclosed.
- A feathering of Timber harvest along the existing straight line harvested areas would benefit the existing visual condition. Property lines adjoining private inholdings, state and BLM lands should be considered for this type of timber harvest also.
 - ◆ **Measure:** Design features incorporated to reduce the appearance of lines in units adjoining private inholdings, state and BLM lands to meet the visual quality objectives.

The public also submitted comments to consider effects of activities on the Continental Divide National Scenic Trail (CDNST) corridor. The CDNST lies outside the project area and no activities are proposed within a 5-mile distance of the CDNST. Additional comments from the public included the visual benefits of dead trees verses clearcuts as a personal preference and that smoke from burning reduces visibility and diminishes the appreciation for scenic vistas. Assumptions for viewing preferences were based on information in Forest Service handbooks and considered in this analysis. Smoke, reducing visibility within a viewshed, is short term, lasting only the duration of the burn. Therefore, the effect is considered minimal.

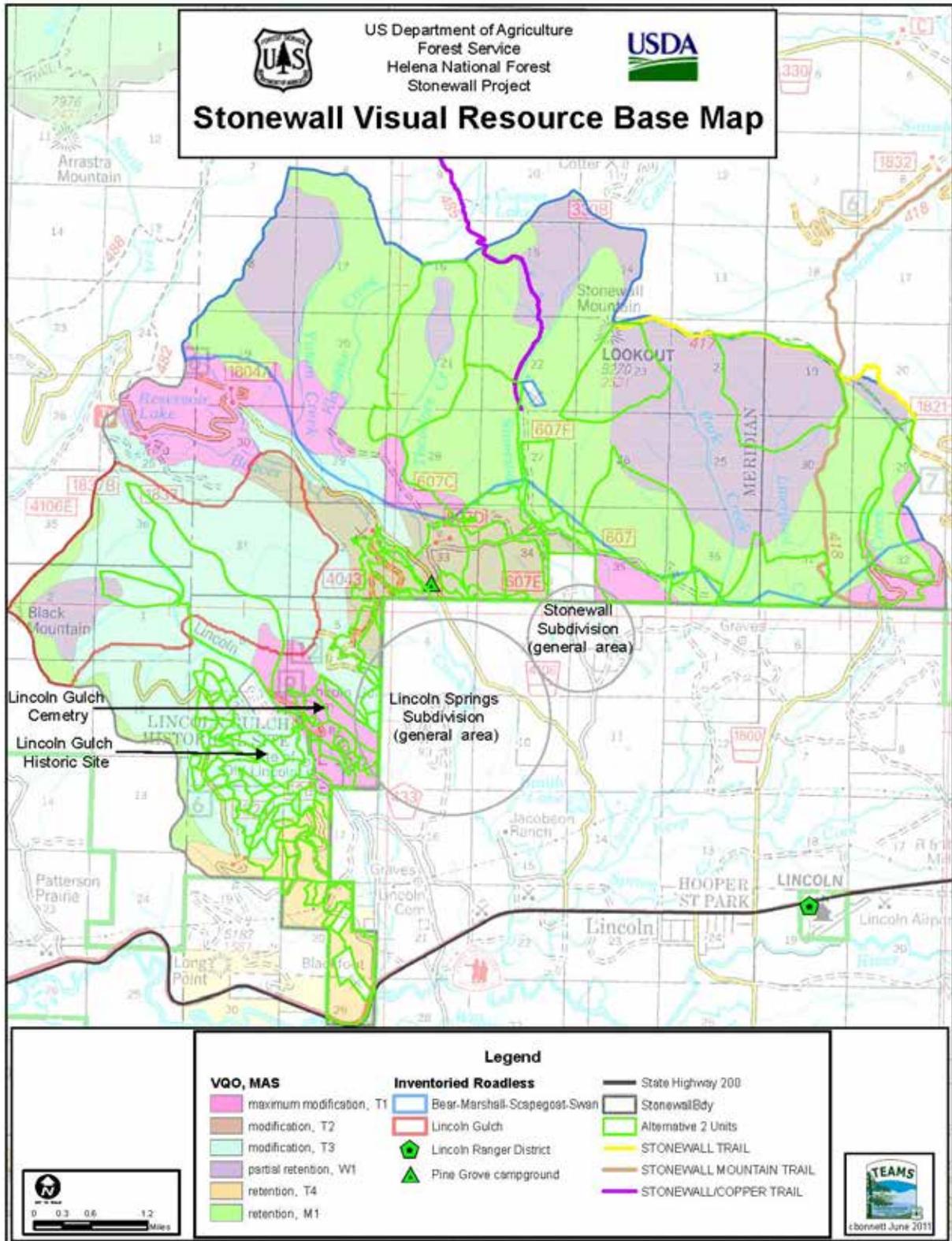


Figure 103. Stonewall Project visual resource

Methodology

The Forest used the Visual Management System (VMS) framework to develop their Visual Quality Objectives (VQOs). The VQOs are used as standards and guidelines when managing the visual resource. The VQO refers to “degree of acceptable alteration of the characteristic landscape” (USDA Forest Service 1974, p. 46). Acceptable alteration is analyzed qualitatively using “degree of alteration” and “duration of impact” components from the “Visual Management System” (USDA Forest Service 1974, p. 28 and 30). In addition, degree of acceptable alteration is determined through the use of other agency handbooks, and professional experience and judgment based on expected outcomes of similar activities elsewhere on the Forest. The current insect conditions (mountain pine beetle epidemic and high levels of western spruce budworm) found in the project area allow the opportunity for the rehabilitation management goal to be used when managing the visual resource (USDA Forest Service 1974, p. 28 and 40). A detailed description of the method used when evaluating the visual resource to disclose effects and determine Forest Plan compliance follows. This methodology was developed under consultation with and approved by the Forest landscape architect.

Seen area was determined per Forest Plan direction. The Forest Plan and information from the Forest landscape architect were used to identify sensitive travel routes, use areas, and water bodies used when determining seen area. The term sensitive area is used throughout this document when referring to sensitive travel routes, use areas, and water bodies. Forest Geographical Information System (GIS) layers and the Helena National Forest America’s Great Outdoors Montana 2006 map were used to locate these sensitive areas on a map used for field reconnaissance. All sensitive areas considered when determining seen area are listed in table 167.

ArcMap GIS was used to display distance zones (foreground, middleground, and background) from sensitive areas when determining seen area. Distance zones of foreground, middleground, and background, are defined in the Glossary section. In addition, views from private lands were considered when determining project seen area. When evaluating effects the most restrictive distance was assigned to a unit if the unit was viewed in more than one distance zone. Table 167 also shows the expected viewed distance zones and seen areas from the sensitive areas. Also, topographic relief displayed on field maps was used to assist in determining seen area during field reconnaissance. Views of the project area were photo documented and are displayed in this section.

The Forest Plan adopted VQO acres for the project area were determined using the Forest VQO GIS layer in conjunction with addition direction per management area found in the Forest Plan. These VQOs are shown on figure 103. GIS analysis was used to determine VQO acres viewed within the project seen area.

Effects from management activities are disclosed. Anticipated changes in the unit’s attributes (basic vegetation patterns, rock formations, and water forms) elements (line, form, color, and texture) were considered when determining direct and indirect effects of viewed management activity (USDA Forest Service 1974, p. 8). This information was then used to determine Forest Plan VQO compliance. Cumulative effects were described in terms of changes in the characteristic landscape attributes (basic vegetation patterns, rock formations, and water forms). Existing viewed disturbances were documented to be used in the appropriate sections in the Affected Environment and Environmental Consequences sections of this analysis. Viewed management activities were analyzed to determine Forest Plan compliance. Distance zones were used when describing the viewed landscape being evaluated (USDA Forest Service 1974, p. 7). Management area direction listed under the Forest Plan and Other Relevant Laws, Regulations, Policies and Plans section was considered for compliance.

Whether the activity stayed within the “degree of alteration” and “duration of impact” acceptable range for the VQO from the perspective of the casual forest visitor was determined (USDA Forest Service 1974,

p. 28 through 32). The acceptable “degree of alteration” for a VQO was determined by comparing expected visual contrast with the surrounding natural landscape (USDA Forest Service 1974, p. 28). The “duration of impact” was determined from estimating the length of time a management activity is expected to be visually evident to the casual Forest visitor (USDA Forest Service 1974, p. 30). Design features were developed to reduce impacts to an acceptable level if it was determined the impacts would not allow the VQO to be met in the short term. Design features were developed to decrease the time the disturbance would be viewed in the landscape and to assure Forest Plan compliance. If the short-term timeframe was not initially met upon implementation of an activity but it was possible to implement a design feature within that same short-term timeframe that allowed the VQO to be met in the long-term time frame then the VQO was considered met. This decision was based on the use of “should” in VMS when describing duration of impact for each VQO (USDA Forest Service 1974, p. 30, 32, 34, and 36) and (USDA Forest Service 1986, p. II/14).

In units where the proposed activity is expected to restore an undesirable visual impact to a desired visual quality, the rehabilitation goal was used (USDA Forest Service 1974, p. 28). With the rehabilitation goal, VQO compliance was determined by first projecting the final outcome of the implementation of the design feature. Then a determination was made as to whether this expected outcome would achieve the assigned VQO. If the design feature applied allowed the disturbance to be minimized to an acceptable level for the VQO within the long-term timeframe of 20 years, then compliance was achieved (USDA Forest Service 1986, p. II/14). Design features were also developed to allow the VQO to be met in the shortest timeframe allowing the desired visual quality to be achieved in the case where the rehabilitation goal is used (USDA Forest Service 1974, p. 40). If design features could not be designed and implemented within the VQO “duration of impact” short-term timeframe, then the VQO would be considered not met (USDA Forest Service 1974, p. 30).

In determining design features the following were considered:

- Professional Experience
- Agriculture Handbook (AH) Numbers 434, 608, 462, 559, and 483 for technical guidance.
- Forest specialists input
- “Northern Region Scenic Resource Mitigation Menu & Design Considerations for Vegetation Treatments” dated March 12, 2009 (unpublished document)

The inventory roadless areas (IRAs) scenic attribute is analyzed in the Inventory Roadless Area Report (Valentine 2015a). This section analyzes the VQOs of these areas where management activity is proposed.

Indicators

The viewed VQO assigned through the Forest Plan within seen areas provided the primary qualitative analysis indicator when determining direct and indirect effects. Consideration of an activity’s “duration of impact” and “degree of alteration” within the viewed VQO also provided qualitative analysis indicators. The degree of acceptable alteration (“degree of alteration” and “duration of impact”) for each VQO was determined considering natural disturbances found in the characteristic landscape (USDA Forest Service 1974, p. 27-28). The size of a management activity is compared to the size of similar natural activities expected in the landscape. Activities mimicking natural disturbances or simulating vegetation patterns found or expected to be found in the landscape are said to be viewed similarly to their natural counterparts by the casual forest visitor. “Duration of impact is discussed in more detail in the Temporal Boundaries section of this report. Changes in the characteristic landscape attributes, when considering past, present, and reasonably foreseeable activities (natural or manmade) within all seen areas, provided the qualitative analysis indicator when determining cumulative effects.

Viewed VQO acres within distances of sensitive areas affected by management activities were determined in order to provide additional quantitative analysis indicators for alternative comparisons (USDA Forest Service 1974, p. 7).

Spatial Boundaries

Views extending beyond the project analysis area from sensitive areas were determined. In addition, views into the project area from sensitive areas and lands of other ownership (i.e., private lands) were determined. All sensitive areas used for this analysis are listed in Table 167. When assessing direct and indirect effects, the viewed units within the seen area, as determined from the sensitive areas show on figure 103, were considered the spatial boundary. When assessing cumulative effects all viewed lands within the seen area from sensitive areas listed in table 167 (including sensitive areas listed in the table notes) were considered the spatial boundary.

Temporal Boundaries

The temporal boundary used varied from “immediate upon project completion” up to 5 years (short term) and up to 20 years (long term) when analyzing effects from an activity. The short-term timeframes were determined by reviewing the VQO information provided below. The criteria below was considered short term when determining if the “duration of impact” was met for each VQO upon implementation of a management activity.

- Retention – “Reduction in line, form, color, and texture contrast should be accomplished during operation or immediate upon project completion” (USDA Forest Service 1974, p. 30).
- Partial Retention – “Reduction in line, form, color and texture should be accomplished as soon after project completion as possible or at a minimum within the first year” (USDA Forest Service 1974, p. 32).
- Modification – “Reduction in line, form, color, and texture should be accomplished in the first year or at a minimum should meet existing regional guideline” (USDA Forest Service 1974, p. 34).
- Maximum Modification – “Reduction of contrast should be accomplished in five years” (USDA Forest Service 1974, p. 36).
- Rehabilitation – the VMS does not define a timeframe for duration of impact.

In addition, the following concepts were taken into consideration when compliance with both the “degree of alteration” and “duration of impact” criteria per VQO was determined:

- “Each landscape unit has its individual capacity to accept alteration without losing its inherent visual character” (USDA Forest Service 1974, p. 4).
- “Visual impact of management activities increase as the viewer’s line of sight tends to become perpendicular to the slope upon which the management activity is to take place” (USDA Forest Service 1974, p. 4).
- Each objective describes a degree of acceptable alteration of the natural landscape based upon the importance of aesthetics (USDA Forest Service 1974, p. 28).
- Whether or not the disturbance from management activity is consistent with the natural disturbances viewed in the landscape is also considered when determining if a VQO was met (USDA Forest Service 1974, p. 30).

- “Generally, considerable change can take place in the positive or natural appearing elements even under Retention VQO if the change achieves desirable variety and follows the principles of landscape design, such as proper scale and arrangement of these elements” (USDA Forest Service 1980, p. 7).

Incomplete and Unavailable Information

The locations of existing and new landings were not available.

Assumptions

An entire unit was considered viewed if any portion of the unit was viewed from a sensitive area. It was assumed private property adjacent to the project area provided foreground views to the project area. The most revealing distance zone was assigned to the unit if that unit was viewed from multiple distance zones. The most restrictive VQO was assigned to a unit if more than one VQO existed for that unit. Effects to the most restrictive VQO (assigned through Forest Plan direction) from the most revealing distance zone were determined for viewed units. This allowed the greatest potential impact viewed in the landscape to be disclosed.

Design features necessary to meet the most restrictive VQO from the most revealing distance zone were developed. It was assumed a design feature that decreased viewed effects to a VQO from the most revealing distance zone would also decrease the effects viewed from other lesser revealing distance zones. If a design feature was needed to meet a VQO in a viewed unit, it was assumed the design feature would be applied across the entire unit depending on topography and shape of that unit. Existing visual condition of the landscape described in the Affected Environment section and the Affected Environment section in the vegetation section (Amell and Klug 2015) was considered in the determination of whether cumulative effects may have adverse impacts on the characteristic landscape’s attributes. When determining if there would be adverse impacts upon analyzing cumulative effects it was assumed that design features would be implemented.

The rehabilitation goal was used where it was determined proposed activities would not immediately achieve the assigned VQO due to the existence of one of the following scenarios:

- ◆ A disturbance (natural or manmade) dominated the unit
- ◆ The proposed activity allowed the desired future condition defined in the Silviculture section to be achieved sooner than with no action
- ◆ The current existing condition hindered the desired future condition of the landscape to be met in the short term

Dead trees from insect infestations were considered obtrusive elements. It was assumed a landscape with less visible dead trees is a visually desired landscape. These assumptions are based on Forest Service handbook guidance, which states natural disturbances are considered alterations to the characteristic landscape and the characteristic landscape is defined as what visually represents the basic vegetative patterns, landforms, rock formation and water forms viewed (USDA Forest Service 1980, p. 55 and USDA Forest Service 1974, p.7). This assumption differs from some public comments received on personal preferences of viewing aesthetics.

It was assumed existing and new landings may be viewed in units with proposed activities. Specific landing location information was not available. It is assumed that no catastrophic fires or additional fires would occur when analyzing effects for the no action alternative. Beetle caused mortality exists on approximately 40 percent of the existing mature lodgepole pine stands in the project area and is expected to increase.

Affected Environment

Components of the Visual Management System (VMS) used to describe the existing condition of the project area are *characteristic landscape* (vegetative patterns, landforms, rock formations, and water forms) within *distance zones* viewed from primary and secondary travel routes, use areas and water bodies (USDA Forest Service, 1974, p. 7 and p. 18). This description includes management activity (USDA Forest Service 1974, p.8). All travel routes, use areas, and water bodies listed in Appendix B of the Forest plan, identified in the *Stone Dry Vegetation Treatment NFMA Report for Scenery and Recreation September 30, 2009* (USDA Forest Service 2009), incorporated by reference, and additional areas identified by the Forest landscape architect were taken into consideration when determining the existing condition for the project area. Additional affected environment information considered in this analysis can be found in the vegetation section (Amell and Klug 2015).

Existing Condition

Character Type

“The mountains in the Columbia Rockies subregion (character type) are generally rounded and subdued where they have been severely glaciated. Valley floor elevations are about 2,000 feet above sea level and ridgetops range from about 7,000 to over 10,000 feet. Glaciers, permanent snowfields, and craggy topography are outstanding features. Vegetation is moderately varied, with some natural openings. This subregion (character type) contains sagebrush, grasslands, and ancient cedar groves. It is an area of high gradient streams and outstanding high mountain lakes. Hot springs are uncommon, but do occur. Portions of this subregion (character type) have been heavily impacted by past logging and mining practices; large portions are relatively untouched, roadless, and rugged. Natural fire processes are part of this landscape. The landscape character type of the project area is classified as Columbia Rockies” (USDA Forest Service 1980a, Visual Character Types & Variety Class Descriptions, R1 80-11, p.39).

Seen Area Identification

Figure 104 displays visual resource photo points that identify places within the project area where the photos depicted in figure 105 thru figure 114 were taken. It also shows the proposed units for alternative 2, boundaries for inventoried roadless areas and contains information for recreation.

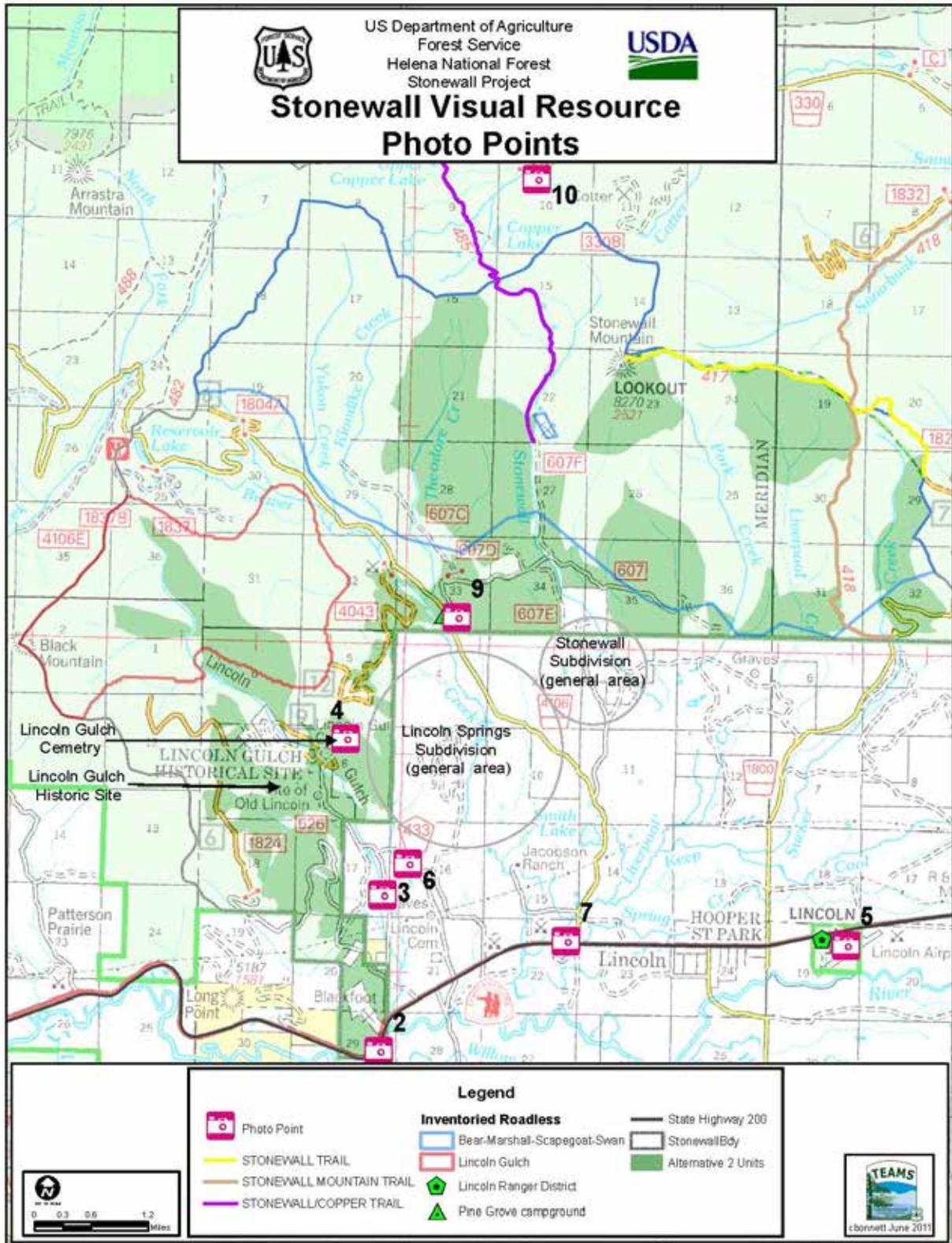


Figure 104. Stonewall Visual Resource Photo Points Map

Mortality caused by beetles exists on approximately 40 percent of the existing, mature lodgepole pine stands in the project area and is expected to increase. These beetle-killed trees, which can be viewed in figure 105, figure 107, and figure 110, negatively impact the landscape. Large portions of the project area can currently be described as a contiguous fuel-bed, with heavy accumulations of dead and down timber.



Figure 105. Photo Point 1-View looking northwest from Forest Route 1040 towards the project area (Approximately 5 miles east of Lincoln, near the Aspen Grove Campground. This is approximately 4 miles southeast of the project area, not displayed in figure 56)



Figure 106. Photo Point 2-View looking north from State Highway 200 into unit 2



Figure 107. Photo Point 3-View north down Forest Route 626



Figure 108. Photo Point 4-View northeast into the project area from Lincoln Gulch cemetery



Figure 109. Photo Point 5-View North from the Lincoln District Office. Due to topography, distance, and vegetative screening, the project area is not seen from the Lincoln District Office.



Figure 110. Photo Point 6-View northwest on County Route 433 into the project area



Figure 111. Photo Point 7-View west down State Highway 200 with the project area in the middleground



Figure 112. Photo Point 10-View south from Forest Route 330 towards Bear-Marshall-Scapegoat-Swan IRA. Due to topography, the project area is not seen from Forest Route 330.



Figure 113. Photo Point 8-View looking southwest from Forest road 330 of Snowbank Lake



Figure 114. Photo Point 9-View within Pine Grove campground

Northeast of the project area, not displayed in figure 56. There are no views from the lake into the project units due to the surrounding topography.

Seen areas for direct and indirect effects along with cumulative effects spatial boundaries were identified during field visits. Sensitive areas used were determined through a combination of areas listed in Management Areas R-1, R-2, areas listed in Appendix B of the Forest Plan and areas listed on page 2 and 6 of the *Stone Dry Vegetation Treatment NFMA Report for Scenery and Recreation September 30, 2009*. Additional sensitive areas given by the Forest landscape architect were also used in seen area determination. Table 167 lists the viewed distance zones into the project area determined from sensitive areas. This total seen area was used for cumulative effects purposes.

The following sensitive areas did not provide views into the Stonewall project area, but were considered for total seen area determination for cumulative effects purposes: Forest System Road 330 (Forest Plan Appendix B), Copper Creek and Aspen Grove Campgrounds (R-2 and Appendix B), Lincoln Ranger Station (Forest Plan Appendix B) figure 6, Continental Divide Trail (Forest Plan), Snowbank Lake (Forest Plan Appendix B), Indian Meadows (R-1 and Forest Plan Appendix B), Silver King Mountain (R-1 and Forest Plan Appendix B), Scapegoat Wilderness (Forest Plan), Stonewall Subdivision (USDA Forest Service 2009).

Table 167. Distance zones viewed into the project area from travel routes, use areas, and water bodies from sensitive areas

Sensitive Areas (Travel Route, Use Area, or Water Body)	Foreground Views	Middleground Views	Background Views	Management Direction
State Highway 200	X	X	N/A	Appendix B of the Forest Plan
Lincoln Gulch IRA (#1601)	X	N/A	N/A	Forest Plan
Bear-Marshall-Scapegoat-Swan IRA (#A1485)	X	N/A	N/A	Forest Plan
Lincoln Springs Subdivision	N/A	X	N/A	USDA FS, 2009
Lincoln Gulch Cemetery	X	N/A	N/A	USDA FS, 2009
Lincoln Gulch Historic Site	X	N/A	N/A	USDA FS, 2009

Sensitive Areas (Travel Route, Use Area, or Water Body)	Foreground Views	Middleground Views	Background Views	Management Direction
Pine Grove Campground	X	N/A	N/A	USDA FS, 2009
Stonewall/Copper Trail	X	N/A	N/A	USDA FS, 1974
Stonewall Trail	X	N/A	N/A	USDA FS, 1974
Stonewall Mountain Trail	X	N/A	N/A	USDA FS, 1974

Distance zone information from table 167 along with topography information was used to determine seen areas and viewed units in the field. Viewed units for the proposed action are shown in figure 115 and listed in table 168. All units listed are treated as completely viewed when determining VQO acres for compliance.

Table 168. Proposed action viewed units and their VQO from travel routes, use areas, and water bodies

Travel Route, Use Area, or Water Body	Foreground View Unit/ (VQO)	Middleground Viewed Unit/(VQO)
State Highway 200	1/(R), 2/(R)	*3/(R), *5/(R), *8/(R), *10/(R), *73/(R) 39/(PR), 40/(PR), 41/(PR), 20/(PR), 44/(PR)
Lincoln Gulch IRA (#1601)	76/(PR), 77/(M)	N/A
Bear-Marshall-Scapegoat-Swan IRA (#A1485)	79/(R), 87/(R), 80/(R), 82/(R), 81/(R), 85/(R), 83/(R), 84/(R), 88/(R),	N/A
Lincoln Springs Subdivision	N/A	39/(M), 40/(M), 41/(PR), 20/(PR), 44/(PR)
Lincoln Gulch Cemetery	16/(MM), 17/(MM), 78/MM	N/A
Lincoln Gulch Historic Site	13/(M)	N/A
Pine Grove Campground	46/M	N/A
Stonewall/Copper Trail	84/(R)	N/A
Stonewall Trail	82/(R)	N/A
Stonewall Mountain Trail	82/(R), 80/(R)	N/A

Note: No units are expected to be viewed in the background that are not viewed in the foreground or middleground from the sensitive areas listed in table 3. The VQOs for units were determined using a combination of the Forest VQO map and Forest Plan information (USDA Forest Service 1986), Appendix B, p. B/2. R= retention, PR=partial retention, M=modification, MM=max modification.

*The VQO for units 3, 5, 8, 10, and 73 are Retention based on the Forest VQO map which assigned a higher VQO to these areas when compared to using the matrix found in appendix B of the Forest Plan.

Environmental Consequences

Environmental effects for each alternative were considered in detail and described from the expected perspective of the casual Forest visitor (USDA Forest Service 1974, p. 30). Effects from management activities were described using dominant elements (line, form, color, and texture) viewed within distance zones (foreground, middleground, and background) from a travel route, use area, or water body (USDA Forest Service 1974, p. 7 and p. 8). The degree of acceptable alteration (“degree of alteration” and “duration of impact”) for each VQO was determined considering natural disturbances found in the characteristic landscape (USDA Forest Service 1974, p. 27, and p. 28). The size of a management activity is compared to the size of similar natural activities expected in the landscape. Activities mimicking

natural disturbances or simulating vegetation patterns found or expected to be found in the landscape are said to be viewed similarly to their natural counterparts by the casual forest visitor. All previous information was used when determining acceptable duration of impact and degree of alteration for all effects sections under all alternatives. In addition the “rehabilitation goal” was used, as described in the Methodology section of the Visual Report (Bonnett 2012) based on the criteria in the VMS and direction found in the Forest Plan.

See the Stonewall Vegetation Project Visual Report (Bonnett 2012), incorporated by reference, for more detailed descriptions of effects.

Alternative 1 – No Action

There would be an increase in line, form, and color from viewing beetle infested trees as these trees lose their foliage in the short term. Effects of dead trees in the viewshed are added black lines in the landscape from the dead trees. Loss of these trees would equate to a decrease in the forest canopy followed by an increase in ground texture intermixed with the surrounding, remaining forest canopy leading to various size openings in the long-term. These effects would be noticeable in the foreground and middleground from sensitive areas by the casual forest visitor in the short and long term. Figure 105 shows dead trees in the middleground of the project seen area. Down woody material would increase as dead trees fall, increasing ground fuel density. The increase in fuel density would increase the potential for these areas to experience more intense forest fires.

There would be no vegetation treatments or fuel treatments implemented for alternative 1. There would be no construction of landings or roads built then obliterated in the project area.

Direct and Indirect Effects

There would be no direct or indirect effects for alternative 1 because no project activities are proposed.

Cumulative Effects

There would be no cumulative effects because no project activities are proposed under this alternative.

Conclusion

There are no direct or indirect effects from project activities. Effects from no action, previously described, could lead to an altered viewed landscape in the foreground and middleground views from sensitive areas. These dead trees would provide an altered landscape expected to be viewed as part of a natural disturbance by the casual forest visitor. However, dead trees could be considered undesirable elements in the landscape by some viewers. It could take 20 years or more before areas with beetle mortality fill in with new vegetation, allowing these areas to blend back into the landscape.

Visual quality objectives would be met since no management activity is proposed under this alternative and changes would be from ecological processes. The viewed vegetation patterns found in the characteristic landscape could undergo a change when effects from all infested trees viewed in the total seen area are considered. This alternative is in compliance with Forest Plan, policy, laws and regulations.

Alternative 2 – Proposed Action

The proposed action includes using both commercial and noncommercial treatments to address the purpose and need, and move the project area towards the desired condition. These actions would include: regeneration harvest, intermediate harvest, and prescribed fire. The proposed action includes using prescribed fire and treating slash in inventoried roadless areas (Bear Marshall Scapegoat Swan and Lincoln Gulch). There would be approximately 2.6 miles of roads built then obliterated immediately

following timber removal under this alternative. In addition, there would be approximately 45.6 miles of road that would be maintained for use. Commercial harvest and road work would not occur in the two inventoried roadless areas. Implementing the proposed action could include the use of chainsaws, feller bunchers, skidders, and cable logging equipment. Post treatment activities would include underburning, site preparation burning, jackpot burning, hand piling/burning, treeplanting, and monitoring of natural vegetation. Treatment descriptions Groups 1 through 8 apply to alternative 2. Treatment descriptions for each group can be found in chapter 2.

Table 169 lists activities included in the proposed action. Treatments, prescription, and logging systems are defined in the silvicultural report (Amell and Klug 2015). Viewed effects to the visual resource from proposed activities are disclosed. Effects to the viewed landscape (figure 115) were assessed to determine Forest Plan compliance. The visual quality objectives for this project include acres in retention, partial retention, modification, and max modification. The viewed units and their VQOs are listed in table 169. Table 170 shows the total VQO acres proposed for treatments for this alternative within foreground and middleground distances zones.

Project Design Features

The Stonewall Vegetation Project has been designed with features that are intended to minimize or avoid potential adverse effects while meeting project objectives. In addition to the proposed action treatments described in this section, design features would be implemented where applicable. A description of the project design features relating to scenery and other resources is displayed in table 9, chapter 2.

The specific design features listed in table 9 pertaining to scenery/visual are VIS-1 through VIS-13, This analysis is based on the implementation of all design features. Project design features apply to all action alternatives.

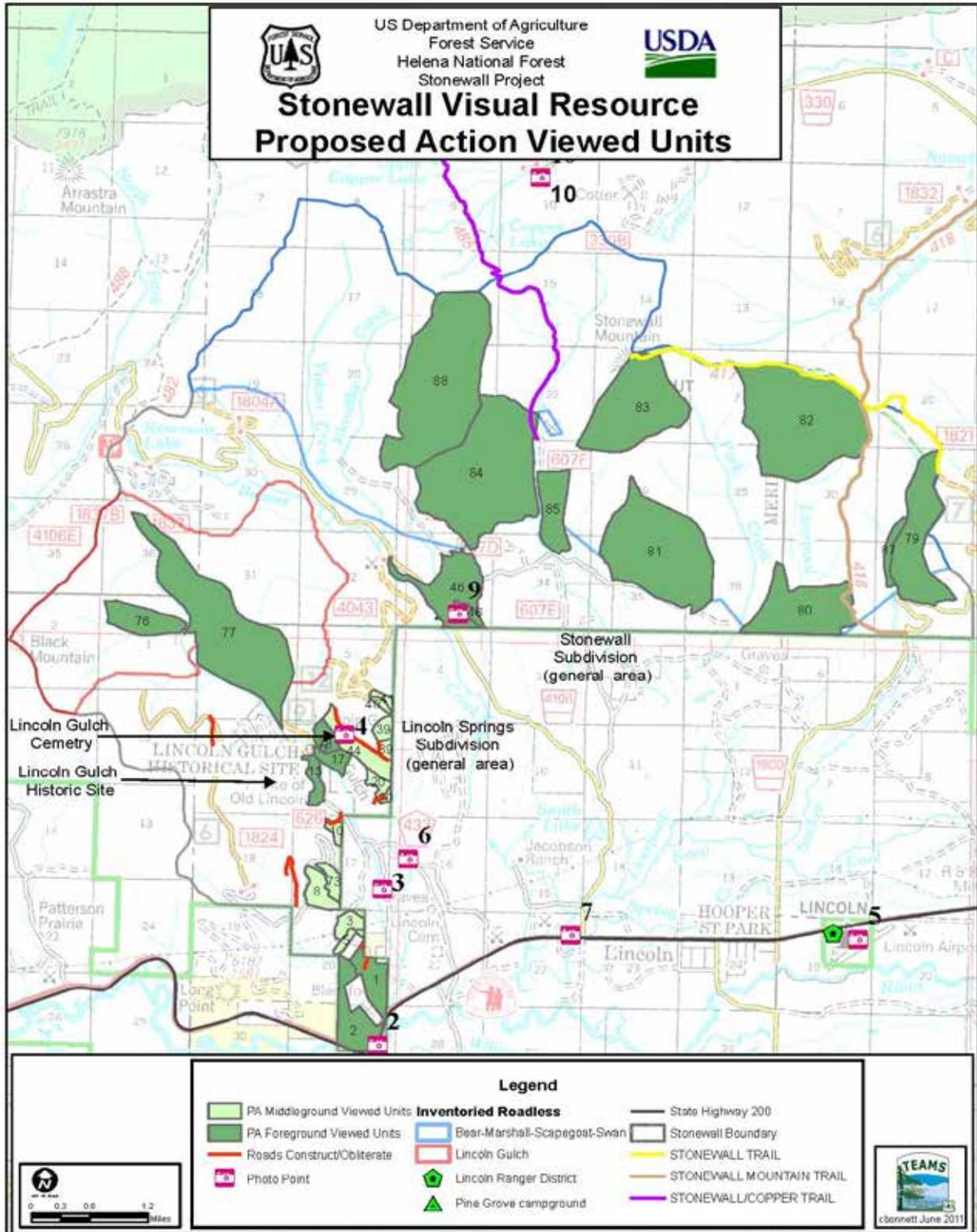


Figure 115. Stonewall visual resource proposed action viewed units

Table 169. Viewed treatment units with proposed vegetation treatment, prescriptions, logging systems, distance zone, and VQO for the alternatives 2 and 3

Treatment	Prescription	Unit	*DZ/VQO	Logging System	Alt 2 Acres	Alt 3 Acres
Intermediate Harvest	Improvement Cut, Underburn	44	MG/PR	skyline	97	
Intermediate Harvest	Improvement Cut, Underburn	46	FG/M	tractor	251	
Intermediate Harvest	Intermediate thin patches	46a	FG/M	tractor		223
Intermediate Harvest	Improvement Cut, Underburn	8	MG/R	skyline	62	62
Intermediate Harvest	Precommercial Thin, Underburn	46b	FG/M	tractor		27
Intermediate Harvest	Precommercial Thin	73	MG/R	HAND	33	33
Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	16	FG/MM	HAND	3	3
Intermediate Harvest	Precommercial Thin, Handpiling, Burn Piles	3	MG/R	tractor	37	37
Intermediate Harvest	Sanitation, Slashing, Handpiling, Burn Piles	5	MG/R	tractor	18	18
Prescribed Fire	Low Severity Fire, Openings <5 acres	2	FG/R	HAND	146	146
Prescribed Fire	Low Severity Fire, Openings <5 acres	78	FG/MM	HAND	38	38
Prescribed Fire	Low Severity Fire, Openings <5 acres	85	FG/R	HAND	143	143
Prescribed Fire	Low-intensity and severity underburning	17a	FS/MM	HAND		38
Prescribed Fire	Low-intensity and severity underburning	20a	MG/PR	HAND		24
Prescribed Fire	Low-intensity and severity underburning	44a	MG/PR	HAND		97
Prescribed Fire	Jackpot burn or pile and burn	46a	FG/M	HAND		223
Prescribed Fire	Jackpot burn or pile and burn	80a	FG/R	HAND		326
Prescribed Fire	Low Severity Fire, Openings <10 acres	76	FG/PR	HAND	123	
Prescribed Fire	Mixed Severity Fire, Openings <20 acres	80	FG/R	HAND	326	
Prescribed Fire	Mixed Severity Fire, Openings <30 acres	77	FG/M	HAND	709	
Prescribed Fire	Mixed Severity Fire, Openings <30 acres	79	FG/R	HAND	337	337
Prescribed Fire	Mixed Severity Fire, Openings <30 acres	81	FG/R	HAND	629	
Prescribed Fire	Mixed Severity Fire, Openings <30 acres	84	FG/R	HAND	831	831
Prescribed Fire	Mixed Severity Fire, Openings <30 acres	88	FG/R	HAND	865	865
Prescribed Fire	Mixed Severity Fire, Openings <5 acres	87	FG/R	HAND	36	36
Prescribed Fire	Mixed Severity Fire, Openings <75 acres	82	FG/R	HAND	776	776

Treatment	Prescription	Unit	*DZ/VQO	Logging System	Alt 2 Acres	Alt 3 Acres
Prescribed Fire	Mixed Severity Fire, Openings <75 acres	83	FG/R	HAND	457	457
Regeneration Harvest	Clearcut with Reserves, Jackpot Burn	17	FG/MM	tractor	38	
Regeneration Harvest	Clearcut with Reserves, Underburn	10	MG/PR	tractor	18	18
Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	13	FG/M	tractor	41	41
Regeneration Harvest	Seedtree with Reserves, Jackpot Burn	20	MG/PR	tractor	32	
Regeneration Harvest	Seedtree with Reserves, Underburn	39	MG/PR	skyline	42	26
Regeneration Harvest	Seedtree with Reserves, Underburn	40	MG/PR	tractor	11	11
Regeneration Harvest	Shelterwood (Group) with Reserves, Site Prep Burn	1	FG/R	tractor	96	96
Regeneration Harvest	Shelterwood (Group) with Reserves, Underburn	41	MG/PR	skyline	12	12
Grand Total					6,206	4,720

*DZ=Distance Zone, FG=Foreground, MG=Middleground, R=Retention, PR=Partial Retention, M=Modification, MM=Maximum Modification. Not all actions in a unit listed above are viewed.

Table 170. Distance zone viewed VQO acres for alternatives 2 and 3

Distance Zone*	VQO	Alt 2 Acres	Alt 3 Acres
Foreground	MM	78	78
Foreground	M	1,000	291
Foreground	PR	126	3
Foreground	R	4,634	4,004
Middleground	MM		
Middleground	M	16	
Middleground	PR	196	1898
Middleground	R	151	151

R=Retention, PR=Partial Retention, M=Modification, MM=Maximum Modification

Direct and Indirect Effects

Proposed activities in treatment units expected to be viewed are displayed in table 169. Units viewed in the background were also viewed in the middle ground and foreground. Not all activities listed under each viewed unit are expected to be viewed as described further for each activity. Viewed effects from management actions are discussed below. Acres for viewed units listed in table 169 are not repeated throughout this section. Sensitive areas are listed in table 168 and are not repeated throughout this section. The discussion that follows addresses effects from proposed activities, determines compliance, and discusses design features necessary for compliance.

Harvest Treatments

Foreground

Marked trees for retention and unit boundaries may be visible in foreground areas. No degree of alteration is expected from this activity. The duration of impact could be more than five years until the marking paint fades. Implementing VIS-10 and VIS-11 would decrease the possibility of painted trees being viewed in the landscape allowing both M and MM to be met.

Upon completion, intermediate thinning, a more open forest at the ground plane and in the mid to upper canopy is expected to be viewed throughout these units. Remaining canopy cover would be less when compared to canopy cover prior to implementation. These effects are expected to last more than 20 years but would not dominate the landscape. Thinning activities would appear similar to other areas found in the landscape that are naturally established over time. The impact from thinning is not expected to be noticeable by the casual forest visitor. Intermediate thinning activities would be considered within the degree of acceptable alteration for both M and MM.

Regeneration treatments (clear cutting, seed tree and shelterwood treatments) would create openings or more open canopy areas in the landscape. These openings and areas of open canopy are not expected to be continuous because the reserve tree technique would be utilized. Clearcut units would be less than 40 acres allowing the openings to mimic other similar size openings occurring naturally in the surrounding landscape. Creating openings could leave a wall of vegetation causing an edge effect that could be noticed by the casual forest visitor as an unnatural activity. When considering the size of the openings, the degree of alteration for MM is expected to be met. If an edge effect is created the duration of impact could last over 20 years. Implementation of design feature VIS-1 which allows the edge effect to be blended and appear natural in the landscape would allow MM to be met.

Middleground

Improvement cuts, precommercial thinning, and sanitation cuts are not expected to be viewed in the middleground from sensitive areas. No viewed effects from sensitive areas are expected upon implementation of these activities in this distance zone.

Regeneration treatments viewed in the middleground would have effects similar to the ones previously described for foreground views. However, these effects would be less visible smaller size leaving for even smaller clearcut areas. Clearcut areas would also be broken up by reserve trees. The degree of alteration would be met even in PR. Implementing design feature VIS-1 would eliminate the edge effect also allowing the duration of impact for PR to be met.

Prescribe fire (Low Severity and Mixed Severity) and Underburning

Foreground

Effects expected to be viewed in the foreground are fire line boundaries and burned ground vegetation with some small pockets of tree mortality with the low and mixed severity burn units and burned vegetation leaving some areas with little tree mortality with underburning. Fire line boundaries could add artificial lines. These boundary lines could look unnatural if straight lines and other geometric patterns are used during unit layout. The line/geometric effect could last more than a year until vegetation begins to grow and blend the unnatural lines into the landscape. The effects from the fire on the ground vegetation and tree mortality is not expected to be discernible as a management activity by the casual forest visitor when compared to effects from other natural fires found in the landscape.

When considering the line effect, the degree of alteration based on the size of the activity in these units would be met for R, MM, and PR. Implementing Vis12/Fuel2 would eliminate artificial lines allowing the duration of impact to be met for all VQOs. This design feature would allow the fire line to look more like a natural fire occurrence.

Handpiling and burning of the piles would add unnatural forms and texture to the landscape that would be viewed. These piles would be burned prior to the completion of the project allowing this effect to meet the duration of impact for M and MM.

Upon handpile and jackpot burning, small pockets of tree mortality in close proximity to the burn piles and charred branches may be viewed from the implementation of this activity. The small pockets of dead trees are not expected to dominate the landscape and can be viewed as part of a natural disturbance. This effect is considered within the degree of acceptable alteration and duration of impact for both M and MM.

Charred branches left over from the burning of piles are expected to be viewed in the landscape. Within five years new vegetation would have grown in, eliminating the possibility to view the burnt vegetation. The degree of alteration for both M and MM would be met. The duration of impact for MM would be met. The duration of impact for M would be met with the implementation of VIS-9 and S/WS/F-12.

Burn activities would temporarily add smoke into the air obstructing foreground and middleground views from sensitive areas. This effect is short term and would subside upon completion of the burning activity. At which point M and MM would be met.

Middleground

The prescribed fire is not expected to be viewed in the middleground from sensitive areas. Therefore, no viewed effects are expected from prescribed fire activities for this distance zone for any unit.

After underburning is completed the effects from the activity is not expected to be viewed in the middleground due to the distance the proposed activity would be from sensitive areas and the canopy cover of these units. No viewed effects in the landscape from this activity are anticipated.

Hand piling and burning of the piles are not expected to be viewed from sensitive areas because of the existing overstory in these units, distance to the units from sensitive area, and the undulating topography of the landscape between the sensitive areas and the units. Slashing is not expected to contribute to viewed effects in the landscape.

Transportation

There would be approximately 2.6 miles of road built then obliterated immediately following timber removal under this alternative shown in figure 115. In addition, there would be approximately 45.6 miles of road that would be maintained for use under this alternative.

The road construction work associated with this alternative would not be viewed in the foreground or middleground due to the distance the proposed activity would be from sensitive areas (figure 115). Therefore, there would be no viewed effects from this activity in the landscape.

Cumulative Effects

The characteristic landscape is expected to continue to perpetuate. Management activity viewed disturbances would increase when considering all viewed units proposed for treatment. However, with the project design features the VQOs would be met. Units where dead trees would be removed would

ultimately look similar to the end result of the natural decay cycle. This alternative would decrease the length of time the dead trees are viewed in the landscape.

Compliance with Forest Plan and Other Regulations

Activities for the Stonewall Vegetation Project, when implemented with project design features and mitigation measures (chapter 2, table 9), would be in compliance with the Forest Plan for the Helena National Forest (USDA Forest Service 1984) and National and Regional policies, standards, and guidelines in the Forest Service Manuals and Handbooks and the Northern Regional Guide. See the Visuals Report (Bonnet 2012) for more details.

Alternative 3

Alternative 3 includes the same types of treatments and prescriptions as alternative 2 along with Groups 9 and 10 treatments. A complete description of each activity can be found in chapter 2. All effects to the visual resource from proposed activities are disclosed. Effects to the viewed landscape were used to determine Forest Plan compliance. The visual quality objectives for alternative 3 are retention, partial retention, modification, and maximum modification. Figure 116 displays the viewed units and their VQOs.

The viewed units and their VQOs are shown in table 169. Table 170 shows the total VQO acres proposed for treatments for this alternative within foreground and middleground distances zones.

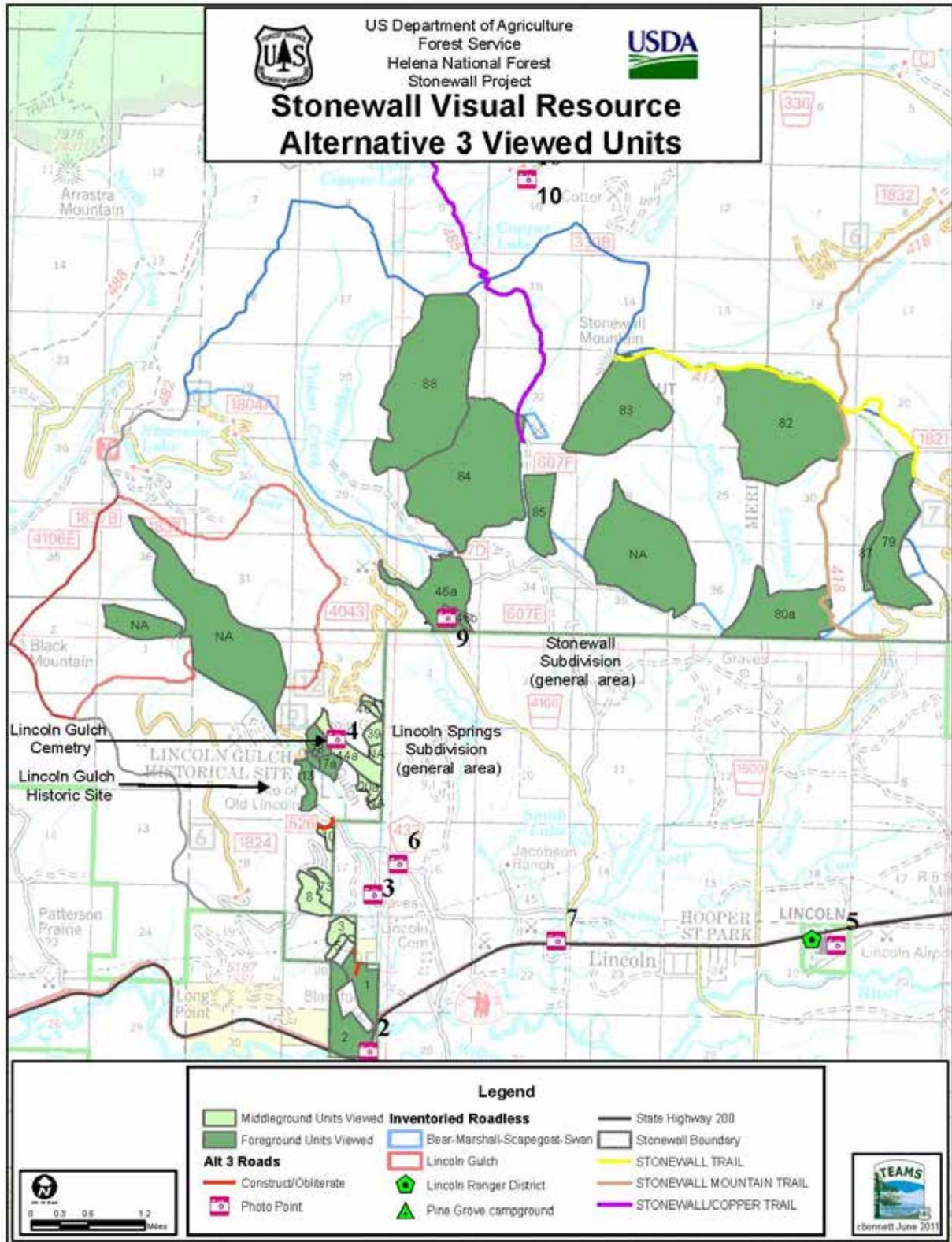


Figure 116. Stonewall visual resource alternative 3 viewed units

Direct and Indirect Effects

All units expected to be viewed and acres of proposed activities for these units are displayed in table 168. Not all activities listed under each viewed unit are expected to be viewed as described further for each activity. Viewed effects from management actions are discussed below. Acres for viewed units listed are not repeated throughout this section. Sensitive areas listed in table 167 are not repeated throughout this section. The discussion that follows addresses effects from proposed activities, determines compliance, and lists design features necessary for compliance.

Harvest Treatments

Foreground

Marked trees for retention and unit boundaries may be visible in foreground areas. No degree of alteration is expected from this activity. The duration of impact could be more than five years until the marking paint fades. Implementing VIS-10 and VIS-11 would decrease the possibility of painted trees being viewed in the landscape allowing both M and MM to be met.

Upon completion, intermediate thinning, a more open forest at the ground plane and in the mid to upper canopy is expected to be viewed throughout these units. Remaining canopy cover would be less when compared to canopy cover prior to implementation. These effects are expected to last more than 20 years but would not dominate the landscape. Thinning activities would appear similar to other areas found in the landscape that are naturally established over time. The impact from thinning is not expected to be noticeable by the casual forest visitor. Intermediate thinning activities would be considered within the degree of acceptable alteration for both M and MM. In foreground areas, when compared to alternative 2, fewer acres are proposed for intermediate thinning treatments in alternative 3.

Regeneration treatments (clear cutting, seed tree and shelterwood treatments) would create openings or more open canopy areas in the landscape. These openings and areas of open canopy are not expected to be continuous because the reserve tree technique would be utilized. Clearcut units would be less than 40 acres allowing the openings to mimic other similar size openings occurring naturally in the surrounding landscape. Creating openings could leave a wall of vegetation causing an edge effect that could be noticed by the casual forest visitor as an unnatural activity. When considering the size of the openings, the degree of alteration for MM is expected to be met. If an edge effect is created the duration of impact could last over 20 years. Implementation of design feature VIS-1 which allows the edge effect to be blended and appear natural in the landscape would allow MM to be met. In foreground areas, when compared to alternative 2, fewer acres are proposed for regeneration harvest in alternative 3.

Middleground

Improvement cuts, precommercial thinning, and sanitation cuts are not expected to be viewed in the middleground from sensitive areas. No viewed effects from sensitive areas are expected upon implementation of these activities in this distance zone. In middleground areas, when compared to alternative 2, fewer acres are proposed for improvement cut in alternative 3.

Regeneration treatments viewed in the middleground would have effects similar to the ones previously described for foreground views. However, these effects would be less visible smaller size leaving for even smaller clearcut areas. Clearcut areas would also be broken up by reserve trees. The degree of alteration would be met even in PR. Implementing design feature VIS-1 would eliminate the edge effect also allowing the duration of impact for PR to be met. In middleground areas, when compared to alternative 2, fewer acres are proposed for regeneration treatments than in alternative 3.

Prescribe fire (Low Severity and Mixed Severity) and Underburning

Foreground

Effects expected to be viewed in the foreground are fire line boundaries and burned ground vegetation with some small pockets of tree mortality with the low and mixed severity burn units and burned vegetation leaving some areas with little tree mortality with underburning. Fire line boundaries could add artificial lines. These boundary lines could look unnatural if straight lines and other geometric patterns are used during unit layout. The line/geometric effect could last more than a year until vegetation begins to grow and blend the unnatural lines into the landscape. The effects from the fire on the ground vegetation and tree mortality is not expected to be discernible as a management activity by the casual forest visitor when compared to effects from other natural fires found in the landscape.

When considering the line effect, the degree of alteration based on the size of the activity in these units would be met for R, MM, and PR. Implementing Vis12/Fuel2 would eliminate artificial lines allowing the duration of impact to be met for all VQOs. This design feature would allow the fire line to look more like a natural fire occurrence. In foreground areas, 326 acres less in the mix severity prescription in alternative 3 when compared to alternative 2.

Handpiling and burning of the piles would add unnatural forms and texture to the landscape that would be viewed. These piles would be burned prior to the completion of the project allowing this effect to meet the duration of impact for M and MM.

Upon handpile and jackpot burning, small pockets of tree mortality in close proximity to the burn piles and charred branches may be viewed from the implementation of this activity. The small pockets of dead trees are not expected to dominate the landscape and can be viewed as part of a natural disturbance. This effect is considered within the degree of acceptable alteration and duration of impact for both M and MM.

Charred branches left over from the burning of piles are expected to be viewed in the landscape. Within five years new vegetation would have grown in, eliminating the possibility to view the burnt vegetation. The degree of alteration for both M and MM would be met. The duration of impact for MM would be met. The duration of impact for M would be met with the implementation of VIS-9 and S/WS/F-12.

Burn activities would temporarily add smoke into the air obstructing foreground and middleground views from sensitive areas. This effect is short term and would subside upon completion of the burning activity. At which point M and MM would be met.

Middleground

The prescribed fire is not expected to be viewed in the middleground from sensitive areas. Therefore, no viewed effects are expected from prescribed fire activities for this distance zone for any unit.

After underburning is completed the effects from the activity is not expected to be viewed in the middleground due to the distance the proposed activity would be from sensitive areas and the canopy cover of these units. No viewed effects in the landscape from this activity are anticipated.

Handpiling and burning of the piles are not expected to be viewed from sensitive areas because of the existing overstory in these units, distance to the units from sensitive area, and the undulating topography of the landscape between the sensitive areas and the units. Slashing is not expected to contribute to viewed effects in the landscape.

Proposed underburning increases in overall amount of underburning in middleground for alternative 3 when compared to alternative 2; however, alternative 3 has fewer acres proposed for jackpot burning, when compared to alternative 2.

Slashing is not expected to be viewed in any distance zone from any sensitive areas. Therefore, there would be no viewed effects from this activity in the landscape.

Transportation

There would be 0.4 miles of road constructed for use and then obliterated under this alternative. In addition, there would be approximately 43.8 miles of road that would be maintained for use under this alternative.

The road construction work associated with this alternative would not be viewed in the foreground or middleground due to the distance the proposed activity would be from sensitive areas. Therefore, there would be no viewed effects from this activity in the landscape.

Cumulative Effects

The characteristic landscape is expected to continue to perpetuate. Management activity viewed disturbances would increase when considering all viewed units proposed for treatment. However, with the project design features the VQOs would be met. Units where dead trees would be removed would ultimately look similar to the end result of the natural decay cycle. This alternative would decrease the length of time the dead trees are viewed in the landscape. Cumulative effects for this alternative are expected to be similar to alternative 2, with fewer acres impacted by alternative 3.

Compliance with the Forest Plan and other Regulations

Activities for the Stonewall Vegetation Project, when implemented with project design features and mitigation measures (chapter 2, table 9), would be in compliance with the Forest Plan for the Helena National Forest (USDA Forest Service 1984) and National and Regional policies, standards, and guidelines in the Forest Service Manuals and Handbooks and the Northern Regional Guide. See the Visuals Report (Bonnet 2012) for more details.

Conclusions

The action alternatives would be in compliance with the Forest Plan and other regulations with the implementation of the visual design features. Both action alternatives would allow the VQOs to be met.

Cultural Resources

Introduction

This analysis addresses the existing cultural resources within the Stonewall Vegetation Project area and the potential effects to these resources from the proposed project. The Stonewall Vegetation Project area has yielded evidence of prehistoric and historic activity. The term “cultural resource” refers to an object or definite location of human activity, occupation, or use identifiable through field survey, historical documentation, or oral evidence (FSM 2360). Cultural resources are prehistoric, historic, archaeological, or architectural sites, structures, places, or objects and traditional cultural properties (FSM 2360).

In this analysis, cultural resources include the entire spectrum of resources for which the Heritage Program is responsible for from artifacts to cultural landscapes without regard to eligibility for listing in the National Register of Historic Places (FSM 2360). The cultural and historic context of the Stonewall Project area is examined and cultural resources in the plan area are identified. Existing information is

used to assess the condition of these resources, including historic resources in the project area identified as eligible or listed in the National Register of Historic Places and designated traditional cultural properties. Trends that affect these resources are also assessed.

Like much of the HNF, the project area was extensively prospected and mined from the 1860s to the 1940s. The area of potential effects (APE) is covered with scattered prospect pits and trenches, ditches, adits, and related industrial features. In some cases, the treatments proposed for the Stonewall Project would have little adverse effect and require minimal or no mitigation work. For example, running prescribed fire atop scattered prospect pits (dirt piles) or water ditches, and hand-treating fuels in the area, would not cause an adverse effect. The only caution is those ruins that contain wood components that are fragile or flammable, such as historic mine structures.

The results from this analysis dictate what actions will be taken regarding cultural resources, and will serve as the starting point for subsequent cultural resource management decisions associated with this project.

Overview of Issues

The Forest Plan requires the integration of cultural resources in project planning and forest management. Compliance inventory, evaluation of site significance and project effect, consultation with the Montana State Historic Preservation Office and Tribal Historic Preservation Offices, and implementation of mitigation treatment plans for project affected cultural resources would comply with the NHPA and its implementing regulations in 36 CFR 800, as well as Helena National Forest Plan (USDA Forest Service 1986) standards and guidelines.

As currently designed, the project has the potential to adversely affect the integrity of several cultural resources within the APE. Mitigation/protection measures will need SHPO consultation before clearance. It is recommended that Mitigation/protection measures are present in the ROD and agreed upon before a NEPA decision is signed.

Assumptions

The project has supported logging, mining, recreation and utility development during the last 150 years. These activities and particularly the ground disturbance associated with them, have exposed, and in some cases caused damaged to cultural resources. However, it is difficult to quantify the effects of these past actions on cultural resources in the Stonewall project area.

Since the late 1970s, cultural resource inventories have preceded all ground-disturbing Forest Service undertakings in the Stonewall project area including vegetation treatments, restoration, and recreation development. The majority of the cultural resources described in this analysis were discovered as a result of these compliance inventories. In fact, many archaeological sites were found because they were exposed in old road or trail beds and because of mining activities. In most cases, project boundaries and treatments would be reconfigured to avoid impacting significant cultural resources so the effect of these actions on cultural resources would be relatively minor. Ongoing forest activities would continue to have an effect on cultural resources. All forest actions require NHPA and consultation; therefore the effects on cultural resources would be mitigated through project redesign and/or avoidance. Future actions in the analysis area focus on public safety and environmental health and include fire and watershed restoration, hazardous fuels reduction, abandoned mine reclamation, and minor recreation developments, and mineral operations. In all likelihood, the effects of these projects on cultural resources can be mitigated through project re-design and avoidance. Therefore, the current trend for cultural resources is consistent with the Helena National Forest Plan standards and goals.

Design Criteria/Mitigation

The potential adverse effects of the proposed activities could be mitigated through the implementation of mitigation-protection measures, resulting in a no adverse effect finding. Final cultural resource protection measures will need to be consulted on with the SHPO prior to ground disturbance associated with this project. Protection measures include, but are not limited to the following:

- ◆ Exclude the affected cultural resource(s) from treatment unit boundaries (avoidance).
- ◆ Protect the affected cultural resource(s) through use of alternative treatment methods, such as conducting treatment during the winter, over frozen ground and snow.
- ◆ Protect the affected historic ditches by limiting crossing of mechanical equipment and armoring the crossing with logs, soil or other materials to protect the berms.
- ◆ Mitigate adverse impacts to the site(s) through historical and archaeological data recovery.

Mitigation measures to reduce cultural resource impacts caused by temporary road construction need to be developed especially when located near or crossing historic ditches and any road associated with the Old Lincoln Townsite.

Information Used

NHPA Section 106 cultural resource inventory for the Stonewall proposed treatment units were conducted during the 2014 field season. Inventories conformed to the Forest Site Identification Strategy and Heritage Program Survey Protocols and will be reported to the Montana SHPO utilizing standard reporting format. A Stratified Inventory Strategy was used; therefore not all units were inventoried due to ground visibility conditions and slope constraints.

Cultural resource information is somewhat complete for the Stonewall project analysis. For the purpose of this NEPA analysis, it is assumed that existing HNF heritage program data collected from 1979 to 2014 is sufficient to analyze cultural resource density, distribution patterns, and the general range of project effects. Cultural resource site and inventory records are contained in Infra, GIS and hard copy records at the HNF Supervisors Office. Background context for the project area are available in various archaeological and historical documents pertinent to the Stonewall project area (i.e. Beck 1989; Knight 1989).

For purpose of this analysis, the cumulative effects project area boundary is used as the general “heritage analysis area” where contextual research and background record checks provide the information on the existence of or potential for, the occurrence of cultural resources. Within this broader analysis area, a site specific “area of potential effect” (APE) is intensively analyzed under NHPA Section 106 review process. The APE includes treatment units, landings, road construction, and a buffer zone of 50 feet beyond these areas. Where a cultural resource site is partially located within the APE, the effects analysis must be expanded to encompass the entire site (including a buffer). The exception is linear features (such as historic ditches), where the majority of the feature is well outside of the project area. Only the portion of the linear feature that is within the APE was addressed for the Stonewall proposal.

Methodology

Key indicators for heritage resource analysis are generally the list of sites that are eligible for or included in the National Register of Historic Places, or those that have not been evaluated. Those that have been evaluated and found “not eligible” (insignificant) will not have mitigation-protection measure applied.

Other factors for the effects analysis include the potential for the occurrence of cultural resources in areas that have not previously been surveyed, the types of known sites present in the area, and the types of treatments proposed.

Information from historic maps, the heritage resource database, and from surveys done in the project area identifies specific locations of historic sites in and near proposed impact areas. According to criteria outlined in 36 CFR 60.4, some sites have been determined to be historically insignificant. Others are not yet evaluated and therefore are considered to be significant and eligible to be listed in the National Register. Analysis started by considering all known sites for an indication of site types, densities, and potential settings applicable to the study area. Analysis also compared the number of known, potentially eligible sites, or in the case of linear sites, miles of affected segments, to impacts expected to result from activities proposed. They are discussed specifically below.

The following questions are addressed to determine effects on cultural resources in the Stonewall project area:

1. Are the cultural resources evaluated for eligibility for inclusion in the National Register of Historic Places (NRHP)?
2. If the cultural resources are evaluated, are they eligible for inclusion in the NRHP?
3. Will eligible cultural resources be damaged or adversely affected?
4. Will cultural resources that are otherwise ineligible for inclusion in the NRHP, but have value determined by the forest to merit protection, be adversely affected by the proposed project.
5. Will cultural resources be protected and adverse actions mitigated?

Affected Environment

Cultural Resource Context

The prehistory and history of the upper Blackfoot River Valley and analysis area are discussed in various historical records (i.e., Beck 1989; UBVHS 1994), cultural resources overviews (i.e., Knight 1989; Scott 2001) and agency heritage compliance inventory reports (i.e., Brumley et al. 1998; Davis and Godin 2003) and are not restated in detail here. As summarized by Davis (2003) for the adjacent Snow Talon fire Salvage project:

“People have inhabited the upper Blackfoot River Valley for millennia. American Indian groups once occupied, seasonally used or traveled through this large river valley and the adjacent foothills and mountain ranges. Today, the Salish (Flathead) in particular attach great cultural significance to the ancient campsites, hunting and plant food gathering places, tool stone quarries and paint pigment sources, vision questing sites and old trails found throughout the upper Blackfoot River Valley.

The Euro-American settlement of the upper Blackfoot River Valley mirrors that of Montana in general. The Lewis and Clark Expedition of 1804-1806 gave way to fur trapping and trading, then early military expeditions and railroad route explorations. A gold strike in Abe Lincoln Gulch near present day Lincoln brought permanent settlement. Nearby placer mining in Jefferson Creek Nevada Creek, and Washington Creeks attracted more people who eventually established small communities what were supported by mining, farming, ranching and logging. Early in the 20th Century, federal administration of mountain forests and surrounding lands, and increased public participation in outdoor recreation, added other dimensions to the rural life way. This natural resource and tourist oriented economy still characterizes the sparsely populated upper Blackfoot River Valley .”

Existing Condition

The Helena National Forest provided the most up-to-date GIS layers with previous cultural resource inventories and site locations. The Helena National Forest provided the previous site forms and cultural resource inventories performed within the Stonewall Project area. Twenty percent of the Stonewall Project area has been previously surveyed for cultural resources. There have been 23 previous surveys totaling 4,732 acres within the Stonewall Project boundary. The surveys were performed for timber sales, land exchanges, mining claims, and roads projects.

Previous Inventories

The previous cultural resource inventories conducted in the Stonewall Project area yielded nine known cultural resources within the project boundary. Seven sites are located within the APE (in a treatment unit) and two are within the greater project area. These include six historic and three prehistoric cultural resource sites. According to previous cultural resource reports and site forms, two sites are recommended Eligible for the National Register of Historic Places (NRHP), four sites are unevaluated, and three sites are considered ineligible.

Table 171. Previously recorded cultural resources within the Stonewall Vegetation Project boundary

Trinomials	NRHP Status	Site Type	Description	Location
24LC0244/24PW062	Eligible	Historic	Lincoln Ditch	In APE
24LC0421	Not Eligible	Historic	Ditch	In Boundary
24LC0425	Unevaluated	Prehistoric	Lithic Scatter	In Boundary
24LC0467	Eligible	Historic	Old Lincoln Townsite	In APE
24LC0840	Not Eligible	Prehistoric	Lithic Scatter	In APE
24LC1114	Unevaluated	Historic	Kid Kurry Cabin	In APE
24LC1191/24PW0622	Unevaluated	Historic	Lincoln Mining District	In APE
24LC1274	Unevaluated	Historic	Lincoln Arrastra	In APE
24LC1289	Not Eligible	Prehistoric	The Big Blackfoot Site	In APE

In 1983 Helena National Forest proposed a timber harvest in the Lincoln Gulch area TS (1983-04-02) from timber units 0.25 mile west and northwest of the Old Lincoln Townsite (24LC467). Ninety acres of the exclusion zone around the townsite was reviewed with no adverse effect. No additional sites or features were identified.

In 2002 the HNF proposed the Lincoln Springs Fuels Reduction (2002-04-24) project to reduce fuel accumulation in the vicinity of the Old Lincoln Townsite, the Big Blackfoot Mine (24LC828), a lithic scatter (24LC840), the Arrastra site (24LC1274) and the Lincoln Mining District (24LC1191/24PW622). The survey resulted in the identification of additional features just outside of the Old Lincoln Townsite.

In 2005 The Frisbee LEX project (2002-04-24) inventoried 140 acres for a land exchange proposal in Lincoln Gulch. Several previously recorded sites were within the APE and were revisited (24LC828, 24LC840, and 24LC1274), but no new sites were reported.

New Sites Recorded

The 2014 Stonewall Vegetation project (R201301120039B) inventory resulted in the identification of 14 new sites (Table 2), three isolated finds (IF1-3), one updated site (24LC467), and two addendums adding new features and segments to previously recorded sites (24LC244/24PW062 & 24LC1191/24PW622).

Table 172. New sites from inventory of the Stonewall Vegetation project

Trinomials	NRHP Status	Site Type	Description	Location
24LC2300	Eligible	Prehistoric CMT's	Two scarred Ponderosas.	In APE
24LC2301	Not Eligible	Ditch	Long NW-SE trending ditch.	In APE
24LC2302	Eligible	Prehistoric CMT	One scarred Ponderosa .	In APE
24LC2303	Unevaluated	Historic Foundations	Cabin foundations.	In Boundary
24LC2304	Unevaluated	Winchester Cabin	Homestead foundations.	In APE
24LC2305	Not Eligible	Historic Ditch	Ditch with two branches & a can scatter.	In APE
24LC2306	Unevaluated	Historic Complex	A two acre mining area.	In APE
24LC2307	Unevaluated	Historic Ditch	N-S running ditch traversing several units.	In APE
24LC2308	Not Eligible	Cement Wall	Cement diversion & headgate.	In APE
24LC2309	Eligible	Prehistoric CMT	One scarred Ponderosa.	In APE
24LC2310	Eligible	Kosta Cabin	Homestead foundations.	In APE
24LC2311	Unevaluated	Ditch	N-S running ditch.	In APE
24LC2312	Not Eligible	Ditch	Ditch with flowing water.	In APE
24LC2313	Eligible	Prehistoric CMT	One scarred Ponderosa.	In APE

Environmental Consequences

Analysis and Field Methods

Effects to cultural resources were analyzed based on potential damage or adverse effects to all cultural sites within the project boundary. Sources of information examined as part of the background research included the current Heritage GIS layers, reports documenting previous archaeological studies within the project boundary, previous site forms, GLO maps within the APE, and archival documentation of forest service cabins and special use permits through the Lincoln Ranger District office. Research was also performed at the Montana Historical Society in Helena, Montana, and interviews were conducted with members of the Lincoln Historical Society in Lincoln, Montana.

The pedestrian survey of the APE began on June 15 and continued through November 5, 2014. Twenty-eight percent (1,850 acres) of the proposed unit acreage (6,563 acres) was inventoried based upon the

Stonewall (EIS) for phased NHPA compliance (36 CFR 800.4) and the Heritage Survey Implementation Plan. The survey was prioritized, firstly, by high probability areas for site potential, and secondly by pre-implementation units, and thirdly by accessibility of slope and vegetation thickness. The remaining 72 percent of the APE remains un-surveyed due to slopes in excess of 40 percent (low probability) which also included heavy layers of impenetrable downfall and/or extremely thick new growth trees and vegetation resulting from previous timber harvests.

New site data and features were collected with a hand held Juno SB (Trimble unit) preloaded with units shape files and land status boundaries. Survey consisted of pedestrian transects 33-66 feet wide, completed across the unit on a consistent azimuth that insured 100 percent coverage. Visibility was generally poor due to a thick understory of vegetation and duff in combination with layers of dead mature trees crisscrossing the landscape. The steep slopes at the base of Stonewall Mountain between Stonewall Creek and Beaver Creek were the least surveyed in the project due to extreme slope and vegetation constraints. This area does have potential for mining features due to its proximity to Stonewall Creek and strong association to the first mining operations in the area. This area would benefit from post-implementation survey and/or monitoring during treatment activities.

Incomplete and Unavailable Information

The majority of the project area (72%) was not surveyed for cultural resources due to slopes above forty degrees, or very thick new growth vegetation and heavy layers of downfall. There is a good likelihood that sites exist in those areas, because they are in proximity to Stonewall Creek and Theodore Creek used historically by placer miners.

Effects Common to All Alternatives

Cultural resources are non-renewable resources. Continued natural weathering and deterioration cannot be avoided. Regardless of the alternative selected environmental factors, such as wildfires, erosion, snow load, and weather exposure contribute to the deterioration of various types of cultural sites located within the project boundary.

In the Stonewall Project, APE 23 cultural resources have been identified during project-level inventories. Of those cultural resources, seven have been determined eligible for listing in the National Register of Historic Places and are listed in table 171 and table 172. The remaining cultural resources are unevaluated and will be treated as eligible until an official determination can be made.

Effects Common to All Action Alternatives

Positive effects of the action alternatives to heritage resources include an opportunity for the Forest to monitor eligible cultural resources, a reduction in fuel loading, and the management of control lines to reduce the risk of wildfire. These actions all help in protecting the cultural resources of the Helena National Forest.

The most well-known eligible property within the APE is the Old Lincoln Townsite (24LC0467). The Lincoln Gulch was settled by miners in August, 1865. By May 1867, there was a community of 400 men that included a bakery, butcher shop, store, and two saloons. A toll road to Blackfoot City was completed in 1868 and mining activity boomed between 1869 and 1870. By 1873 there were only 60 people left in Lincoln Gulch. The area had produced \$7 million in gold. Between 1904 and 1926 various companies placer mined Lincoln Gulch and disturbed initial evidence of early mining activity. In 1931 Lincoln Metal Co. installed draglines in Liverpool Creek. World War II shut down the gold mines but Lincoln Gulch dragline remained open until 1947. The Lincoln Gulch Gold Rush community and cemetery were withdrawn from mineral entry in the 1970s.

Alternative 1 – No Action

Under the no-action alternative, none of the elements of the proposed action would occur in the Stonewall Vegetation Project area.

Direct Effects and Indirect Effects

Under alternative 1, no new direct or indirect effects would occur. Cultural resources would continue to be vulnerable to the effects of fuel loading within the project area, increasing the risk of wildfire. Cultural resources would continue to naturally deteriorate over time. Cultural resources would continue to be threatened by natural processes (wildfire, erosion) and recreational activities that bring people in contact with cultural sites.

Fire has a negative effect on cultural resources due to high temperatures, an inability to control the effects, and because resource inventories cannot be conducted in advance. Fire suppression activities such as bulldozer-created control lines, hand lines, and fire retardant drops all have the potential to destroy or damage cultural resources. In addition, wildfires cause erosion through vegetation loss resulting in resource deterioration. Vegetation loss may also inadvertently lead to increases in vandalism and looting of cultural sites. The high temperatures of wildfires cause rapid surface weathering of features and artifacts, accelerating loss.

Irreversible and Irrecoverable Commitments

Removal or disturbance of previously identified or unidentified cultural resources would result in irreversible and irretrievable loss of data. However, there would be no irreversible or irretrievable effects to cultural resources from the Stonewall Project because no actions associated with this project would occur.

Cumulative Effects

This alternative is the existing condition and does not improve cultural resource protection in the Stonewall area. If the no-action alternative is selected then cultural resources within the project area would not be evaluated for the National Register of Historic Places, nominated to the register (if eligible) and managed in such a way as to prevent adverse effects.

Prehistoric and historic properties are a non-renewable resource. They represent a resource base that cannot be replenished. In this sense, all effects are cumulative and work to reduce the archaeological/historical record.

Summary of Effects

The no-action alternative would have an undesired effect on cultural resources. Most significant of these is the increased risk of damage to cultural resources from catastrophic wildfires resulting in artifact damage, wooden structure and feature loss, and loss of site integrity through erosion.

Alternative 2 – Proposed Action

The Helena National Forest proposes to reduce an over-abundance of fuels in the project area near communities and improve the mix of vegetation composition and structure across the landscape that is diverse, resilient, and sustainable to wildfire and insects. Proposed treatments for alternative 2 include regeneration harvest, intermediate harvest, precommercial thinning, and prescribed burning on approximately 6,475 acres. All of these actions have the potential to adversely affect cultural resources if mitigation measures are not implemented.

Under alternative 2 a total of 3,295 acres (60 units) have been review and cleared under the NHPA Section 106 process. However, 26 units totaling 1,767 acres still need some level of Section 106 review before implementation of this project. Of these 1,767 acres, 825 acres (22 units) are proposed for mechanical timber harvest.

Approximately 29 units, or 1,251 acres, would need post implementation review for cultural resources under our stratified inventory strategy.

Project Design Features

The Stonewall Vegetation Project has been designed with features that are intended to minimize or avoid potential adverse effects while meeting project objectives. In addition to the proposed action treatments described in this section, design features would be implemented where applicable. Table 173 displays how each archaeology design feature would apply for Eligible sites.

A description of the project design features relating to cultural resources and other resources is displayed in table 9, chapter 2. The specific design features listed in table 9 pertaining to archaeological cultural resources are ARCH-1 ARCH-2, and ARCH-3.

This analysis is based on the implementation of all design features. Project design features apply to all action alternatives. If project design features are followed, then it is recommended that the project be allowed to proceed as a *no adverse effect* activity.

Table 173. Project design features required for Eligible sites located in the APE under the action alternatives

Trinomial	Site Type	Treatment	Mitigation Measure
24LC0244/24PW062	Historic	Regeneration Harvest	Create a 30m buffer around site with flagging tape for avoidance. No mechanical thinning within buffered boundaries. Directionally fell trees away from site. Do not pile burn on site. Hand control line as necessary to prevent burn over site.
24LC0467	Historic	Intermediate and Regeneration Harvest and Prescribed Fire	Create a 30m buffer around site with flagging tape for avoidance. No mechanical thinning within buffered boundaries. Directionally fell trees away from site. Do not pile burn on site. Hand control line as necessary to prevent burn over site.
24LC1114	Historic	Intermediate Harvest	Create a 30m buffer around site with flagging tape for avoidance. No mechanical thinning within buffered boundaries. Directionally fell trees away from site. Do not pile burn on site. Hand control line as necessary to prevent burn over site.
24LC1191/24PW0622	Historic – Lincoln Ditch	All treatments	Mechanical equipment crossings need to be approved by Heritage staff prior to implementation. Ditch crossings need to be limited to as few as possible. Ditch crossing methods will need to be approved by Heritage Staff and will require consultation.

Trinomial	Site Type	Treatment	Mitigation Measure
24LC1274	Historic	Regeneration Harvest	Create a 30m buffer around site with flagging tape for avoidance. No mechanical thinning within buffered boundaries. Directionally fell trees away from site. Do not pile burn on site. Hand control line as necessary to prevent burn over site.
24LC2300	Prehistoric	Regeneration Harvest	Create a 30m buffer around site with flagging tape for avoidance. No mechanical thinning within buffered boundaries. Directionally fell trees away from site. Do not pile burn on site. Hand control line as necessary to prevent burn over site.
24LC2302	Prehistoric	Intermediate Harvest	Create a 30m buffer around site with flagging tape for avoidance. No mechanical thinning within buffered boundaries. Directionally fell trees away from site. Do not pile burn on site. Hand control line as necessary to prevent burn over site.
24LC2304	Historic	Intermediate Harvest	Create a 30m buffer around site with flagging tape for avoidance. No mechanical thinning within buffered boundaries. Directionally fell trees away from site. Do not pile burn on site. Hand control line as necessary to prevent burn over site.
24LC2306	Historic	Intermediate Harvest	Create a 30m buffer around site with flagging tape for avoidance. No mechanical thinning within buffered boundaries. Directionally fell trees away from site. Do not pile burn on site. Hand control line as necessary to prevent burn over site.
24LC2307	Historic	Intermediate Harvest	Create a 30m buffer around site with flagging tape for avoidance. No mechanical thinning within buffered boundaries. Directionally fell trees away from site. Do not pile burn on site. Hand control line as necessary to prevent burn over site.
24LC2309	Prehistoric	Intermediate Harvest	Create a 30m buffer around site with flagging tape for avoidance. No mechanical thinning within buffered boundaries. Directionally fell trees away from site. Do not pile burn on site. Hand control line as necessary to prevent burn over site.
24LC2310	Historic	Intermediate Harvest	Create a 30m buffer around site with flagging tape for avoidance. No mechanical thinning within buffered boundaries. Directionally fell trees away from site. Do not pile burn on site. Hand control line as necessary to prevent burn over site.

Trinomial	Site Type	Treatment	Mitigation Measure
24LC2311	Historic	Intermediate Harvest	Create a 30m buffer around site with flagging tape for avoidance. No mechanical thinning within buffered boundaries. Directionally fell trees away from site. Do not pile burn on site. Hand control line as necessary to prevent burn over site.
24LC2312	Historic	Intermediate Harvest	Create a 30m buffer around site with flagging tape for avoidance. No mechanical thinning within buffered boundaries. Directionally fell trees away from site. Do not pile burn on site. Hand control line as necessary to prevent burn over site.
24LC2313	Prehistoric	Intermediate Harvest	Create a 30m buffer around site with flagging tape for avoidance. No mechanical thinning within buffered boundaries. Directionally fell trees away from site. Do not pile burn on site. Hand control line as necessary to prevent burn over site.

Direct Effects and Indirect Effects

Under alternative 2 new direct effects would likely occur without mitigation measures. Direct effects to cultural resources are those that physically alter, damage, or destroy all or part of a resource; alter characteristics of the surrounding environment that contribute to the resource's significance; introduce visual or audible elements out of character with the property or that alters its setting; or resource neglect to the extent that it deteriorates or is destroyed (USDA Forest Service 2005: III-411). The proposed action has the potential to directly affect the cultural resources within the proposed project area. Several potential impacts to cultural resources were identified including: thinning projects, the construction of roads built then obliterated, and burn treatments. Direct effects of tree thinning and road construction activities are mostly through ground disturbance caused by ground machinery disturbance, road grading, felling trees, and skidding logs or trees. Felled trees can also damage or destroy features and historic structures. Burn treatments have the potential to adversely affect cultural resources by burning historic structures and damaging or destroying artifacts and features within archaeological sites. For this reason, the mitigation-protections measures need to be followed to avoid an adverse effect to cultural resources.

Indirect effects under the current proposal are related primarily to reducing the risk of wildfires in the project area. Adverse effects to cultural resources tend to be greater in wildfire situations because of high temperatures, an inability to control the effects, and because resource inventories cannot be conducted in advance (USDA Forest Service 2005: III-413). In addition, wildfires cause erosion through vegetation-cover loss, resulting in resource deterioration. Vegetation-cover loss may also inadvertently lead to increases in vandalism and looting of cultural sites. The high temperatures of wildfires cause rapid surface weathering of features and artifacts, accelerating loss.

Alternative 3

The Stonewall Project proposes to reduce an over-abundance of fuels in the project area near communities and improve the mix of vegetation composition and structure across the landscape that is diverse, resilient, and sustainable to wildfire and insects. Proposed treatments for alternative 3 include regeneration harvest, intermediate harvest, precommercial thinning, and prescribed fire on approximately

6,562 acres. All of these actions have the potential to adversely affect cultural resources if mitigation measures are not implemented. Positive effects of the proposed action to heritage resources include an opportunity for the Forest to monitor eligible cultural sites, a reduction in fuel load, and the management of control lines to reduce the risk of wildfire. These actions all help in protecting the cultural resources of the Helena National Forest.

Under alternative 3 a total of 3,295 acres (60 units) have been review and cleared under the NHPA Section 106 process. However, 12 units totaling 1,168 acres still need some level of Section 106 review before implementation of this project. Of these 1,168 acres, 226 acres (8 units) are proposed for mechanical timber harvest.

Approximately 25 units, or 2,069 acres, would need post-implementation review for cultural resources under our stratified inventory strategy.

Design Features and Mitigation Measures

Same as alternative 2.

Direct Effects and Indirect Effects

Same as alternative 2.

Other Relevant Mandatory Disclosures

As undertakings develop, the Forest is required to comply with the Section 106 process or follow protocol as established with the State Historic Preservation Office.

Conclusions

In summary, the action alternatives 2 and 3 could have both negative and positive impacts on cultural resources within the project area. There would be **no adverse effect** if the proposed project design features and mitigation measures are followed. The negative effects are the possibility unknown cultural resources caused by ground disturbance from the use of heavy machinery, log and tree removal, road construction, and the heat damage to resources from prescribed fires. The loss of vegetation can indirectly lead to vandalism to cultural resources because of the increased visibility. The mitigation measures described in table 9 would mitigate adverse effects to cultural resources within the project area. Positive effects include the reduction of fuels that could result in fire damaged cultural resources and increased erosion of archaeological sites.

Economics

Introduction

The management of the natural resources on the Helena National Forest (HNF) has the potential to affect local economies. People and economies are an important part of the ecosystem. Use of resources and recreational visits to the National Forests generate employment and income in the surrounding communities and counties, and generate revenues returned to the Federal Treasury or used to fund additional on-the-ground activities to accomplish resource management objectives.

This section delineates the affected area, assesses potential environmental justice impacts, and outlines methods and results of analyzing the economic effects of the Stonewall Vegetation Management Project, including the project feasibility, financial efficiency, and economic impacts. Project feasibility and

financial efficiency relate to the costs and revenues of doing the action. Economic impacts relate to how the action affects the local economy in the surrounding area.

Methodology

The economic measures used for this analysis are project feasibility, financial efficiency, economic impacts, and environmental justice. These measures, including methodologies, are described below.

Project Feasibility

Project feasibility is used to determine if a project is feasible, that is, will it sell, given current market conditions. The determination of feasibility relies on a residual value (stumpage = revenues - costs) feasibility analysis that uses local delivered log prices and stump to mill costs to determine if a project is feasible. The appraised stumpage rate from this analysis is compared to the base rate (revenues considered essential to cover regeneration plus minimum return to the Federal treasury). The project is considered to be feasible if the appraised stumpage rate exceeds the base rates. If the feasibility analysis indicates that the project is not feasible, the project may need to be modified. A project that is not feasible indicates an increased risk that the project may not attract bids and may not be implemented.

Financial Efficiency

Financial efficiency provides information relevant to the future financial position of the program if the project is implemented. 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 presents 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, including all activities is financially efficient. Financial efficiency analysis is not intended to be a comprehensive analysis that incorporates monetary expressions of all known market and nonmarket benefits and costs. Many of the values associated with natural resource management are best handled apart from, but in conjunction with, a more limited financial efficiency framework. These nonmarket benefits and costs associated with the project are discussed throughout the various resource sections of this document.

Costs for restoration activities are based on recent experienced costs and professional estimates. Activity costs not related to the timber sale are included in the PNV analysis, but they are not included in appraised timber value. Two PNV's are calculated, one that includes all costs associated with each alternative and one which includes only those costs that are necessary to facilitate the removal of timber.

Economic Impacts (Jobs and Labor Income)

Economic impacts are used to evaluate potential direct, indirect, and cumulative effects on the economy. Economic impacts are estimated using input-output analysis. Input-output analysis is a means of examining relationships within an economy, both between businesses and between businesses and final consumers. It captures all monetary market transactions for consumption in a given time period. The resulting mathematical representation allows one to examine the effect of a change in one or several economic activities on an entire economy, all else constant. This examination is called impact analysis. The IMPLAN modeling system (MIG 2003) allows the user to build regional economic models of one or more counties for a particular year. The model for this analysis used the 2009 IMPLAN data. IMPLAN translates changes in final demand for goods and services into resulting changes in economic effects, such as labor income and employment of the affected area's economy.

The economic impact effects are measured by estimating the direct jobs and labor income generated by (1) the processing of the timber volume from the project, and (2) Forest Service expenditures for contracted restoration activities included as part of the proposed treatments. The direct employment and labor income benefits employees and their families and, therefore, directly affects the local economy. Additional indirect and induced multiplier effects (ripple effects) are generated by the direct activities. Indirect effects are felt by the producers of materials used by the directly affected industries. Induced effects occur when employees of the directly and indirectly affected industries spend the wages they receive. Together the direct and multiplier effects comprise the total economic impacts to the local economy.

Data used to estimate the direct effects from the timber harvest and processing were provided by the University of Montana's Bureau of Business and Economic Research (BBER) (Morgan et al. 2007). This national data is broken into multi-state regions and is considered more accurate than that which is available from IMPLAN. The Northern Rockies BBER Region (Montana and Idaho) is used for this analysis. The BBER data represents the results of mill censuses that correlate production, employment, and labor income. The economic impact area for this analysis consists of Lewis & Clark, Broadwater and Powell Counties, Montana. Potential limitations of these estimates are the time-lag in IMPLAN data and the data intensive nature of the input-output model. Significant changes in economic sectors since the latest data for IMPLAN have been adjusted using information from the University of Montana's BBER.

Environmental Justice

As stated in Executive Order 12898, it is required that all federal actions consider the potential of disproportionate effects on minority and low-income populations in the local region. The principals of environmental justice require agencies to address the equity and fairness implications associated with federal land management actions. The Council on Environmental Quality (CEQ) (1997) provides the following definitions in order to provide guidance with the compliance of environmental justice requirements:

“Minority population: Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis...”

“Low-income population: Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect.”

Spatial and Temporal Context for Effects Analysis

The analysis area for the efficiency analysis is the project area (figure 117). The temporal scope of the analysis is the duration of the proposed activities. The project is expected to be accomplished over a 10-year period with the harvest activity occurring primarily in the first 4 years.

Timber management activities within the project area have the potential to impact the economic conditions of local communities and counties. To estimate the potential effect on jobs and income, a zone of influence (or economic impact area) was delineated. The impact area was chosen based on commuting data suggesting a functioning economy and where the timber is likely to be processed (log flows) (Meti Corp 2010). This analysis suggested that Lewis & Clark, Powell and Broadwater Counties were the appropriate counties to include in the economic impact analysis area (figure 117).

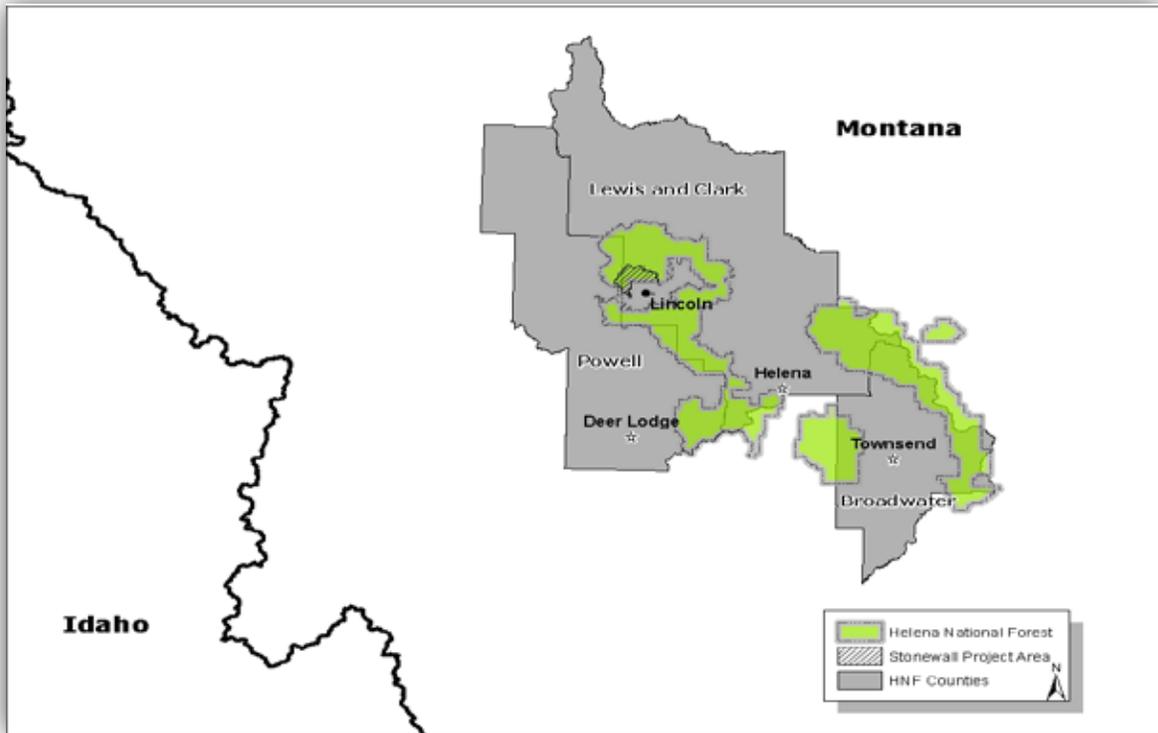


Figure 117. Economic impact area

Affected Environment

The Stonewall Vegetation Project is located on the Lincoln Ranger District of the Helena National Forest and includes portions of both Lewis & Clark and Powell Counties, Montana. Broadwater County and Powell County are likely destinations for the majority of the sawlog material as a result of the project. Since these are the three counties that would be most affected by the project in terms of social and economic effects, the Affected Environment section focuses on these three counties.

Population and Demographic Change

According to the U.S. Census Bureau, the population of Lewis & Clark County grew by 30.2 percent between 1990 and 2009. Powell County grew 6.8 percent while the population of Broadwater County grew by 44.0 percent over the same period (table 174). Population growth in both Lewis & Clark and Broadwater County outpaced the growth observed in the State and Nation. The average state density is 6.8 persons per square mile (US Census Bureau 2010). The analysis area contains one of Western Montana's least densely populated counties, Powell County, with 3.0 persons per square mile. Lewis and Clark County has a density of 18.3 persons per square mile, while Broadwater County has a density of 4.7 persons per square mile.

Table 174. Estimated Population Change 1990 to 2009

COMMUNITY	1990	2000	2009	PERCENT CHANGE
Lewis & Clark County Population	47,586	55,878	61,942	30.2 Increase
Powell County Population	6,640	7,7178	7,089	6.8 Increase
Broadwater County Population	3,328	4,366	4,793	44.0 Increase
State of Montana Population	800,204	903,293	974,989	21.8 Increase

Source: U.S. Census Bureau, 2009 Population Estimates, 2000 Census, 1990 Census

The racial composition of the population in the State of Montana and the analysis area in 2000 is shown in table 175. The overwhelming majority of the population across the state and within Lewis & Clark, Powell and Broadwater Counties is white. The total population of all races other than white was less than 10 percent at both the county and state level.

Table 175. Racial Composition of 2000 Population

	MONTANA	BROADWATER COUNTY, MT	LEWIS AND CLARK COUNTY, MT	POWELL COUNTY, MT	U.S.
Total Population	902,195	4,385	55,716	7,180	281,421,906
Hispanic or Latino (of any race)	18,081	58	843	140	35,305,818
Not Hispanic or Latino	884,114	4,327	54,873	7,040	246,116,088
White alone	807,823	4,214	52,571	6,568	194,552,774
Black or African American alone	2,534	12	104	35	33,947,837
American Indian alone	54,426	50	1,078	244	2,068,883
Asian alone	4,569	5	282	31	10,123,169
Native Hawaiian & Oth.Pacific Is.	425	3	26	0	353,509
Some other race	569	1	16	10	467,770
Two or more races	13,768	42	796	152	4,602,146
Percent of Total					
Hispanic or Latino (of any race)	2.0%	1.3%	1.5%	1.9%	12.5%
Not Hispanic or Latino	98.0%	98.7%	98.5%	98.1%	87.5%
White alone	89.5%	96.1%	94.4%	91.5%	69.1%
Black or African American alone	0.3%	0.3%	0.2%	0.5%	12.1%
American Indian alone	6.0%	1.1%	1.9%	3.4%	0.7%
Asian alone	0.5%	0.1%	0.5%	0.4%	3.6%
Native Hawaiian & Oth.Pacific Is.	0.0%	0.1%	0.0%	0.0%	0.1%
Some other race	0.1%	0.0%	0.0%	0.1%	0.2%
Two or more races	1.5%	1.0%	1.4%	2.1%	1.6%

Employment and Economic Well-Being

From 1970 to 2009, total employment for full- and part-time jobs increased by 121 percent in Broadwater County (from 1,067 to 2,354), Lewis & Clark County employment grew by 162 percent (from 17,317 to 45,758) and Powell County grew by 42 percent (from 2,576 to 3,666)(USDC 2011). The State of Montana saw an increase in total employment of 108 percent, over this same period. State employment

growth was largely due to increases in service and professional sector employment (including retail trade, health and social services, transportation, utilities, finance, education, etc.). These sectors represent approximately 61 percent of employment in both counties. By contrast in the three-county impact area, the mining and fossil fuels sector decreased by 17.1 percent between 1990 and 2000.

From 1990 to 2009, average annual unemployment rates in the three counties followed similar patterns as the state and national level, falling to a low of 2.4 percent in September 2007 and rising in response to the economic downturn to a high of 6.7 percent in January 2010. The highest unemployment observed in the three counties was in Powell County, with a rate of 11.0 percent in January 2011 (US Department of Labor 2011). Lewis and Clark County also peaked in January 2011 with an unemployment rate of 6.2 percent while at the same time Broadwater County checked in at 9.6 percent. Lewis & Clark County has the highest rate of government labor force of the three-county region, which explains the lower unemployment rate during this period, since government employment tends to be more secure.

Per capita income is considered one of the most important measures of economic well-being. However, this measure can be misleading. Per capita income is total personal income divided by population. Because total personal income includes non-labor income sources (dividends, interest, rent and transfer payments), it is possible for per capita income to be relatively high due to the presence of retirees and people with investment income. And because per capita income is calculated using total population and not the labor force as in average earnings per job, it is possible for per capita income to be relatively low when there are a disproportionate number of children and/or elderly people in the population. From 1970 to 2009 all three counties saw increases in per capita income. Broadwater County saw the greatest increase in per capita income of the three county region with a 70 percent increase (adjusted for inflation to 2010\$) from \$17,752 to \$30,203. Lewis & Clark County saw a 65 percent increase (adjusted for inflation to 2010\$) from \$23,939 to \$39,407 while Powell County saw a 49 percent increase from \$16,748 to \$25,033.

Unlike per capita income, which is affected by nonlabor income, average earnings per job are indicators of the quality of local employment. Higher average earnings per job indicate that there are relatively more high-wage occupations. From 1970 to 2009, Lewis & Clark County saw an 11 percent increase in average earnings (adjusted for inflation to 2010\$) from \$38,824 to \$43,140. Powell County saw a 1 percent decrease (adjusted for inflation to 2010\$) from \$31,501 to \$31,277 while Broadwater County also experienced a 1 percent decrease (adjusted for inflation to 2010\$) from \$29,243 to \$28,854. There are a number of reasons why average earnings per job may decline. These include: (1) more part-time or seasonal workers entering the workforce; (2) a rise in low-wage industries, such as tourism-related sectors; (3) a decline of high-wage industries, such as manufacturing; (4) more lower-paid workers entering the workforce; (5) the presence of a university with increasing enrollment of relatively low-wage students; (6) an influx of workers with low education levels that are paid less; (7) the in-migration of semi-retired workers who work part-time or seasonally; and (8) an influx of people who move to an area for quality of life rather than profit-maximizing reasons.

National and regional trends in industry sectors influence the ability of communities to adapt to changing circumstances. Employment in extractive industries such as timber and mining, as well as in ranching and agriculture, are declining in western Montana. Projections indicate continued declines in employment in these areas. The differences between today's national forest timber sale program and the program that was in place a decade or so ago has changed. However, the role that timber production from NFS lands plays in national and regional economies through logging and related activities has existed for a considerable time, and is integral to local communities and individuals directly employed by them. In Montana the sale of timber from National Forest lands has declined substantially in the last 30 years from a high of 481 million board feet in 1983 to a low of 66 million board feet in 2003, mainly due to increased litigation and

changing market structures. Since the low in 2003, trends have been positive. In 2010, 185 million board feet of timber was sold from National Forest lands in Montana. On the HNF during the same period, the sale of timber has been more erratic with a high of 23 million board feet of timber sold (due to a Mountain Pine Beetle outbreak) in 2010 and a low of 1 million board feet in 1999. The most consistent period was during the 1980s decade when all years saw between 10 and 17 million board feet sold annually. See the Vegetation section for a detail of volume sold in Region One, Montana, Idaho, and the Helena National Forest for the last 30 years. Figure 118 that follows shows a chart graph displaying the same information.

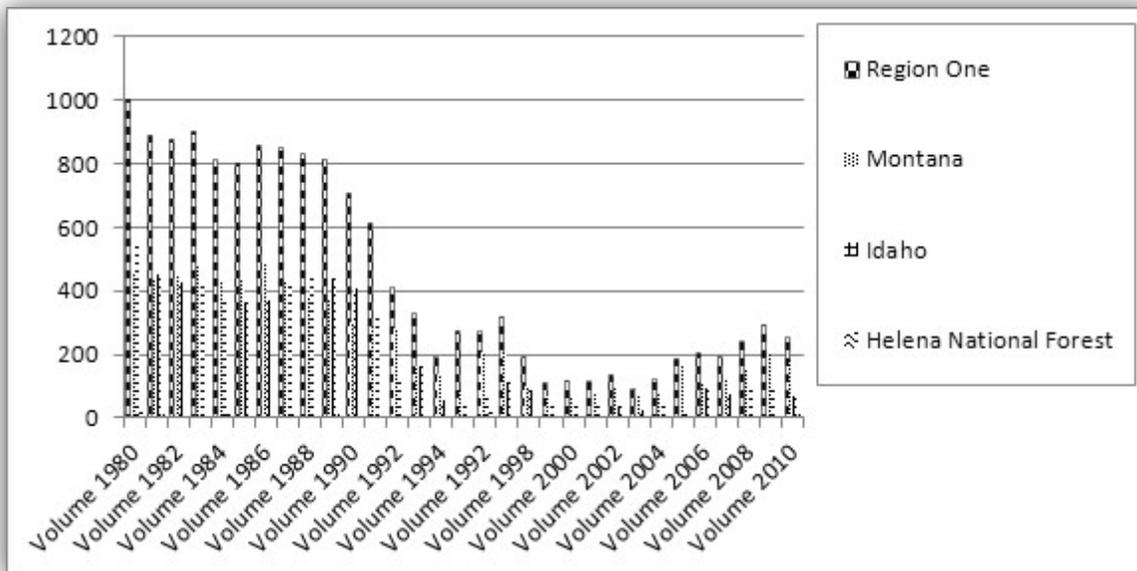


Figure 118. Volume display for R1, Montana, Idaho and HNF from 1980-2010

The Helena National Forest is a major employer and landholder in Montana’s capital city and the surrounding communities. Consequently, Forest Service budget reductions and policies impact employment opportunities throughout the region. There have been changes in the forest timber sale program over the past 30 years as objectives have changed and timber harvest levels have declined. The most likely destination of timber from the Stonewall Vegetation Project is Sun Mountain Lumber in Powell County or RY Timber in Broadwater County. The percentage of manufacturing jobs (including forest products) in Powell County in 2000 was 10.7 percent and 17.3 percent in Broadwater County compared with only 3.2 percent in Lewis & Clark County, which does not have a major timber processing facility. There are several small wood processing facilities in the Lincoln Valley that may be a destination for some of the timber products associated with this project.

Alternative 1 – No Action

The no-action alternative would not harvest timber, implement BMPs on haul routes, return fire to the landscape or implement any of the proposed activities, and therefore, incurs no financial costs. Alternative 1 would produce no revenue and have no effects on jobs or income. It would also fail to meet the Helena National Forest Plan for management area T, which emphasizes timber production while protecting other resources.

Alternatives 2 and 3

Project Feasibility

The estimation of project feasibility was based on the Region 1 Sale Feasibility Model, which is a residual value timber appraisal approach. This method takes into account logging system, timber species and quality, volume removed per acre, lumber market trends, costs for slash treatment, and the cost of specified roads, roads built then obliterated, and road maintenance and results in an accurate timber appraisal and is referred to as stumpage. The appraised stumpage rate from the feasibility analysis is compared to base rates (revenues considered essential to cover regeneration plus minimum return to the federal treasury), which in this case is the minimum rate of \$3.00/CCF (hundreds of cubic feet). The appraised stumpage rate and base rates for each alternative are displayed in table 176. For each of the action alternatives, the appraised stumpage rate is greater than the base rate, indicating that each of the alternatives is feasible (highly likely to sell).

Conclusions

Alternative 2 has the highest appraised stumpage rate (\$6.31/CCF) and, therefore, would likely generate the most revenue. Alternative 3 has a lower appraised stumpage rate (\$3.36/CCF), which is nearing the base rate (\$3.00/CCF), however it is still likely to sell given current market conditions.

Estimates of timber value are based on current fair market values of timber. Timber markets have fluctuated in the past 5 years, dropping significantly during the 2008 recession, and then rebounding slightly in subsequent years. Current markets have not returned to their pre-2008 levels; however Forest Service timber sales have continued to sell during these challenging markets. A major factor that influences the value of the timber particularly in the Stonewall Project area is the quality of the dead and dying lodgepole pine (LP). A significant percentage of the volume in this project comes from dead and dying LP, the mortality a result of the mountain pine beetle outbreak that began in 2008 and continues today. Following mortality LP retains its value as a sawlog product for a time. As the tree begins to deteriorate that value as a sawlog diminishes, however the tree may still be viable for other less valuable products. Any delay in implementation could negatively affect the feasibility of this timber and jeopardize the purpose and need of this Decision by rendering the project economically infeasible.

Table 176. Project Feasibility and Financial Efficiency Summary (2011 dollars)

Category	Measure	Alternative 1 (No Action)	Alternative 2	Alternative 3
Timber Harvest Information	Acres Harvested	0	1,969	1,074
	Volume Harvested (CCF)	0	22,022	14,299
	Base Rates (\$/CCF)	\$0	\$3.00	\$3.00
	Appraised Stumpage Rate (\$/CCF)	\$0	\$6.31	\$3.36
	Predicted High Bid (\$/CCF)	\$0	\$11.96	\$9.01
	Total Revenue (Thousands of \$)	\$0	\$241	\$119
Timber Harvest & Required Design Criteria	PNV (Thousands of \$)	\$0	\$178	\$68

Category	Measure	Alternative 1 (No Action)	Alternative 2	Alternative 3
Timber Harvest & All Other Planned Non- timber Activities	PNV (Thousands of \$)	\$0	-\$1,231	-\$1,096

Financial Efficiency

The financial efficiency analysis is specific to the timber harvest and restoration 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 sale preparation, sale administration, regeneration, and restoration activities are included. All costs, timing, and amounts were developed by the specialists on the project's interdisciplinary team. If exact costs were not known, the maximum of the cost range was used to produce the most conservative PNV result. The expected revenue for each alternative is the corresponding predicted high bid from the sale feasibility analysis. The predicted high bid is used for the expected revenue (rather than the appraised stumpage rate) since the predicted high bid is the best estimate of the high bid resulting from the timber sale auction. The PNV was calculated using a 4 percent real discount rate over the 10-year project lifespan (2013-2022). For more information on the values or costs, see the project file.

This analysis is not intended to be a comprehensive benefit-cost or PNV analysis that incorporates a monetary expression of all known market and nonmarket benefits and costs that are 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. An example of this is the difficulty in capturing the benefits in monetary terms of prescribed fire on wildlife habitat. These benefits are discussed qualitatively throughout the EIS document, within each resource section.

Table 176 summarizes the project feasibility and financial efficiency, including the base rates, appraised stumpage rate, predicted high bid, total revenue, and PNV for each alternative. Because all costs of the project are not related to the timber sale, two PNVs were calculated. One PNV indicates the financial efficiency of the timber sale, including all costs and revenues associated with the timber harvest and required design criteria. The required design criteria, as used here, include cost allowances for purchaser required work such as road maintenance and purchaser deposits to fund Forest Service work such as brush disposal. For a more detailed view of timber sale related costs, see the Economics project file.

The second PNV includes all costs for each action alternative, including activities that could be funded by the Forest Service, KV or potential Stewardship revenues. The costs used in the PNV calculations can be found in table 177 which displays those activity expenditures associated with each alternative, but not included in the appraisal. Sale preparation costs of \$13.50/CCF, sale administration costs of \$4.50 per CCF, and regeneration exam costs of \$15.00 per acre are excluded from table 6. The cost of sale preparation, sale administration and regeneration exams for alternative 2 is \$439,956. The cost of sale preparation, sale administration and regeneration exams for alternative 3 is \$298,692.

Stewardship Opportunities

An integrated resource timber contract (IRTC) or stewardship contract as it is more commonly referred to enables the Forest Service to trade goods for services. The Forest Service exchanges timber for an equal value of environmentally beneficial work. Common types of projects included in Stewardship Contracts include weed spraying, road decommissioning, culvert replacement, precommercial thinning, slashing, etc. The starting point for the available revenue is the estimated stumpage value from the sale feasibility

analysis minus an allowance for essential regeneration costs. This value is then adjusted downward by 25 percent to account for potential underrun. This stumpage value estimate is applied since it is a conservative value of the timber sale. The 25 percent adjustment provides a cushion to the available revenue estimate to account for potential factors such as the cruise volume being overestimated or degradation of dead material.

No determination has been made as to whether to use a stewardship contract to implement the Stonewall Vegetation Project. Some factors that would determine the use of a stewardship contract include the value of the timber at the time of contract, the availability of needed projects in the area and the level of degradation of the dead lodgepole pine that makes up a large percentage of the sawlog volume in the project. The estimated available revenue after the aforementioned adjustment ranges from approximately \$104,069 in alternative 2 to \$36,011 in alternative 3. Both alternatives have a high likelihood of selling and producing positive revenue available for stewardship activities. Alternative 2 proposes more acres of harvest, more volume harvested, has higher potential revenue and therefore would generate greater available revenue for stewardship activities.

Conclusions

Table 176 that displays project feasibility and financial efficiency indicates that both action alternatives are financially inefficient (negative PNV) when including all activities associated with the analysis. Table 176 also indicates that both action alternatives are feasible when considering only timber harvest and the required design criteria. Alternative 2 has the highest PNV for the timber harvest and required design criteria at positive \$178 thousand, and negative \$1.2 million when considering all analysis activities. For alternative 3, the PNV for the timber harvest and required design criteria is positive \$68 thousand, and negative \$1.1 million for all decision activities. The no-action alternative has no costs or revenues associated with it.

A reduction of financial PNV in any alternative as compared to the most efficient solution is a component of the economic trade-off, or opportunity cost, of achieving that alternative. The no-action alternative would not harvest timber or take other restorative actions and, therefore, incur no costs. As indicated earlier, many of the values associated with natural resource management are nonmarket benefits. These benefits should be considered in conjunction with the financial efficiency information presented here. These nonmarket values are discussed in the various resource sections found in this document.

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

Table 177. Activity Expenditures by Alternative (not included in appraisal)

Activity	Alternative 1	Alternative 2	Alternative 3
Sale preparation	\$0	\$297,297	\$193,036
Sale administration	\$0	\$99,099	\$64,345
Weed Spraying- connected to harvest	\$0	\$18,000	\$18,000
Weed Spraying- not connected to harvest	\$0	\$31,600	\$31,600
Weed Monitoring	\$0	\$3,333	\$3,333
Planting	\$0	\$493,884	\$473,688
Silvicultural exams	\$0	\$58,575	\$43,650
Precommercial Thinning	\$0	\$405,256	\$294,276
Noncommercial thinning/slashing	\$0	\$5,750	\$5,750

Activity	Alternative 1	Alternative 2	Alternative 3
Hand piling and burning of nonactivity fuels- Jackpot	\$0	\$14,600	\$11,900
Post-Harvest Burn	\$0	\$303,875	\$259,000
Prescribed burning	\$0	\$409,725	\$296,550

Economic Impact Effects

The analysis calculated the jobs and labor income associated with the processing of the timber products harvested, and all other activities in the Decision, such as prescribed fire, noncommercial fuel reduction, post-harvest diversity planting, and precommercial thinning. Timber products harvested and the nontimber activities would have direct, indirect, and induced effects on local jobs and labor income. In order to estimate jobs and labor income associated with timber harvest, levels were proportionately broken out by product type (table 178). In order to estimate jobs and labor income associated with reforestation and restoration activities, expenditures for these activities were developed by the resource specialists. Only the expenditures associated with the contracted activities are included in the impact analysis.

Table 178. Proportion of Timber Harvest by Product Type

Product Type	Alternative 2	Alternative 3
Sawmills	70	70
Log Homes	5	5
Post & Poles	5	5
Pulp	20	20

Table 179 displays the direct, indirect and induced, and total estimates for employment (part and full-time) and labor income that may be attributed to each alternative. Since the expenditures occur over time, the estimated impacts of jobs and labor income would be spread out over the life of the project. It is important to note that these may not be new jobs or income, but rather jobs and income that are supported by this project. These impacts are shown both in total (over the life of the project) and on an annual basis. It is anticipated that the timber harvest would occur over a 4-year period.

Table 179. Economic Impacts (Employment and Labor Income), Total and Annual (\$2011)

Proposed Activities	Alternatives				
	Alternative 2		Alternative 3		No Action
	Total	Annual	Total	Annual	
Non-timber Activities					
Part and Full Time Jobs Contributed*					
Direct	29	3	25	3	0
Indirect and Induced	8	1	7	1	0
Total	36	4	31	3	0
Labor Income Contributed** (\$M2011)					
Direct	\$855	\$95	\$737	\$82	\$0
Indirect and Induced	\$236	\$26	\$204	\$23	\$0

Proposed Activities	Alternatives				
	Alternative 2		Alternative 3		No Action
	Total	Annual	Total	Annual	
Total	\$1,091	\$121	\$941	\$105	\$0
Timber Harvest Activities					
Part and Full Time Jobs Contributed					
Direct	71	18	46	11	0
Indirect and Induced	63	16	41	10	0
Total	134	34	87	22	0
Labor Income Contributed (\$M2011)					
Direct	\$3,445	\$861	\$2,237	\$559	\$0
Indirect and Induced	\$3,190	\$797	\$2,071	\$518	\$0
Total	\$6,635	\$1,659	\$4,308	\$1,077	\$0
All Activities					
Part and Full Time Jobs Contributed					
Direct	100	21	71	14	0
Indirect and Induced	71	17	48	11	0
Total	171	38	118	25	0
Labor Income Contributed (\$M2011)					
Direct	\$4,301	\$956	\$2,974	\$641	\$0
Indirect and Induced	\$3,425	\$824	\$2,275	\$540	\$0
Total	\$7,726	\$1,780	\$5,249	\$1,182	\$0

* Employment is the total full and part-time wage, salaried, and self-employed jobs in the region.

**Labor income includes the wages, salaries and benefits of workers who are paid by employers and income paid to proprietors.

Conclusions

The no-action alternative would not change jobs or income because there are no proposed project activities associated with this alternative.

Alternative 2 proposes harvest of 22,022 hundred cubic feet (Ccf) of timber products and could result in a total of 171 jobs and labor income at \$7.7 million over the life of the project. On an annual basis, this would amount to approximately 38 jobs per year over a period of 10 years. Annual effects are greatest with this alternative since it has the most timber harvest. If the harvest takes longer than anticipated, the total impacts would remain the same, but the annual contributions would be reduced. Approximately 134 direct, indirect and induced jobs and \$6.6 million of labor income are associated with the proposed timber harvest activities, with the rest associated with restoration activities.

Alternative 3 proposes harvest of 14,299 Ccf of timber products could result in a total of 118 jobs and \$5.2 million in total labor income over the life of the project. On an annual basis, this would amount to approximately 25 jobs per year over a period of 10 years, and \$1.2 million annually in total labor income. Approximately 87 direct, indirect and induced jobs and \$4.3 million of labor income would be associated with the timber harvest activities, with the rest associated with restoration activities.

Environmental Justice

According to the CEQ's Environmental Justice Guidelines for NEPA (1997), "minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis." Table 175 shows that the total share of all minority populations represented less than 10 percent of the population in the state and the analysis area in 2000. Thus, the U.S. Census data suggest minority populations within the analysis area do not meet the CEQ's Environmental Justice criterion.

Guidance from CEQ on identifying low-income populations states that "...agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (e.g., migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect." Low-income populations are defined, based on the 2000 Census standard, as persons living below the poverty level (based on total income of \$17,604 for a family household of four). Persistent poverty status requires a county to have experienced an individual poverty rate in excess of 20 percent for several Census years. In 2000, 10.8 percent of the population in Broadwater County, 12.6 percent of the population in Powell County and 10.9 percent of the population in Lewis & Clark County were living below the poverty level. Based on these data, the characteristic of persistent poverty is not present in the analysis area.

Conclusions

Table 178 predicts more employment and labor income opportunities would be created by alternatives 2 and 3. Implementation of any of the action alternatives would not likely adversely affect minority or low-income populations. Implementation of the no-action alternative maintains the status quo and provides no additional employment or income in the economic impact area.

The Executive Order also directs agencies to consider patterns of subsistence hunting and fishing when an action proposed by an agency has the potential to affect fish or wildlife. There are no Native American Reservations or designated Native American hunting grounds located in or near the analysis area. None of the alternatives restrict or alter opportunities for subsistence hunting and fishing by Native American tribes. Tribes holding treaty rights for hunting and fishing on the Helena National Forest are included on the project mailing list and have the opportunity to provide comments on this project.

Other Disclosures

This DEIS fulfills the requirements for environmental analysis found in NEPA and in the Council on Environmental Quality implementing regulations at 40 CFR, Parts 1500-1508. NEPA at 40 CFR 1502.25(a) directs, "to the fullest extent possible, agencies shall prepare draft environmental impacts statement concurrently with and integrated with... other environmental review laws and executive orders."

The action alternatives would be located entirely on national forest system lands. The action alternatives are not in conflict with planning objectives for County or local tribes.

Short-term Uses and Long-term Productivity

NEPA requires consideration of "the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity" (40 CFR 1502.16). As declared by the Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

Short-term uses, and their effects, are those that occur within the first few years of project implementation. Long-term productivity refers to the capability of the land and resources to continue producing goods and services long after the project has been implemented. Under the Multiple-Use Sustained-Yield Act and the National Forest Management Act, all renewable resources are to be managed in such a way that they are available for future generations. The harvesting and use of standing timber can be considered a short-term use of a renewable resource. As a renewable resource, trees can be reestablished and grown again if the long-term productivity of the land is maintained. This long-term productivity is maintained through the application of the project design features described in chapter 2, in particular those applying to the soil and water resources.

Under alternatives 2 and 3, openings would be created in regeneration cutting units in the short term, but well-stocked vigorous stands would be established for the long term as a result of post-harvest reforestation and stand tending. Alternatives 2 and 3 would provide timber products, in decreasing yields, to benefit consumers in the short term. With alternatives 2 and 3 harvest units there would be a short-term increase in fuel hazard in the period between harvesting and activity fuel treatment. This would be accompanied by a long-term increase in stand vigor, a reduction in fuel hazard, and a corresponding decrease in the risk of stand-replacing fire occurring within the harvest units. There would also be a 3- to 5-year increase in fuel hazard from post-harvest treatments and a corresponding increase in stand vigor as discussed in the Fire and Fuels section of this chapter.

Big game security habitat under the action alternatives would be reduced, causing short-term habitat degradation. If an action alternative is selected, a site-specific forest plan amendment would be required for Forest Plan standards 3 and 4a (FP pgs. II/17-18). The treatments would allow the development of healthy, more vigorous stands that are more sustainable for those habitat values in the long term. These effects are discussed in the Commonly Hunted Species section of this chapter.

Unavoidable Adverse Effects

Implementation of any action alternative could cause some adverse environmental effects that cannot be effectively mitigated or avoided. Unavoidable adverse effects often result from managing the land for one resource at the expense of the use or condition of other resources. Some adverse effects are short term and necessary to achieve long-term beneficial effects. Many adverse effects can be reduced, mitigated, or avoided by limiting the extent or duration of effects. The interdisciplinary procedure used to identify specific harvest units and roads was designed to eliminate or lessen the significant adverse consequences to resource protection standards of the Helena National Forest Plan. The application of project design features was intended to further limit the extent, severity, and duration of potential effects. Such measures are discussed throughout this chapter. Regardless of the use of these measures, some adverse effects would occur.

Irreversible and Irretrievable Commitments of Resources

Irreversible commitments are decisions affecting non-renewable resources such as soils, wetlands, cultural resources, or the extinction of a species. Such commitments are considered irreversible because the resource has deteriorated to the point that renewal can occur only over a long period of time or at a great expense, or because the resource has been destroyed or removed. No irreversible commitments of resources were identified.

Irretrievable commitments are those that are lost for a period of time such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line right-of-way of road. These are opportunities that are forgone for the period of time that the resource can't be used. For the action alternatives, there are irretrievable commitments of the growth of forest vegetation from the creation of new landings and new skid trails. This loss is not irreversible. Upon project completion landings,

necessary for logging operations, have a low probability of maintaining long-term soil productivity. The type of vegetation growing on these sites will likely be grass and brush. The amount of landings is small and skid trails are expected to recover and are expected to show little to no adverse effects.

Required Permits

At this time it is uncertain whether this project would require a National Pollution Discharge Elimination System (NPDES) permit, due to several factors.

In *Northwest Environmental Defense Center v. Brown*, 640 F.3d 1063 (9th Cir. 2011) (“NEDC”), the Ninth Circuit Court of Appeals held that stormwater runoff associated with two logging roads that flows into systems of ditches, culverts, and channels before being discharged into forest streams and rivers is a point source discharge for which a National Pollutant Discharge Elimination System (NPDES) permit is required. The Court of Appeals then remanded to the district court for further proceedings consistent with its opinion. The State of Oregon and other parties filed petitions for certiorari with the U.S. Supreme Court to review the Ninth Circuit’s decision. The United States was not a party to litigation.

NEDC v. Brown involved a citizen suit; thus any available relief on remand would be limited to addressing the violation in question and is only binding on the involved parties. Because the USDA Forest Service was not a party, the Ninth Circuit's decision did not impose any affirmative duties on it. However the case has implications for federal land management agencies.

In response to *NEDC v. Brown*, EPA issued a formal notice on March 23, 2012 in the Federal Register (77 FR 30473) indicating its intent to expeditiously propose revisions to its Phase I stormwater regulations (40 C.F.R. §122.26) to specify that stormwater discharges from logging roads are not stormwater discharges “associated with industrial activity.” The notice also states that EPA intends to further study and seek public comment on alternative approaches for addressing stormwater discharges from forest roads.

Additionally, following the Ninth Circuit's decision, Congress took legislative action suspending any potential permitting requirement imposed by the decision:

From the date of enactment of this Act until September 30, 2012, the Administrator of the Environmental Protection Agency shall not require a permit under section 402 of the Federal Water Pollution Control Act (33 U.S.C. 1342), nor shall the Administrator directly or indirectly require any State to require a permit, for discharges of stormwater runoff from roads, the construction, use, or maintenance of which are associated with silvicultural activities.

Consolidated Appropriations Act, 2012, § 429, Pub. L. No. 112-74, 125 Stat. 786, 1046-1047 (Dec. 23, 2011).

Thus, until September 30, 2012, no NPDES permits are required for stormwater discharges from roads associated with silvicultural activities.

Permanent legislation is also pending in both the U.S. Senate and the House of Representatives that would amend Section 402 of Clean Water Act to exempt stormwater discharges resulting from silvicultural activities from NPDES permit requirements.

Due to these factors, it is uncertain at this time whether any NPDES permitting requirements apply, or would apply in the future to stormwater discharges from logging roads. Should it be determined that an NPDES permit is required for this project, the Forest Service will comply with any applicable NPDES permitting requirements.

On March 20, 2013, the United States Supreme Court reversed the Ninth Circuit and held runoff from most logging roads is not storm water runoff related to industrial facilities and so not subject to the Clean Water Act's requirement for a NPDES permit (Decker v. NEDC). The Supreme Court gave deference to the Environmental Protection Agency's (EPA) interpretation of its own regulation, the Industrial Stormwater rule, of the Clean Water Act. In a regulation promulgated just prior to the ruling in this case, the EPA found its regulation's references to facilities, establishments, manufacturing, processing and an industrial plant mean the regulation extends only to traditional industrial buildings, such as factories and associated sites. Most logging roads are not associated with such sites unless they are directly related to raw materials storage areas and sites for the processing of raw materials, such as sawmills. The Court found deference warranted here because the EPA's interpretation of its regulation was consistent with its earlier regulations. (U.S. S. Ct.).

Roads associated with timber harvest are not considered by the EPA to produce pollutant discharges that require point-source discharge permits because they do not come from industrial sources nor do they result from manufacturing, processing, or raw materials storage areas at an industrial plant. 40 CFR §122.26(b)(14).