

Chapter 2

Alternatives Considered

Introduction

This chapter describes and compares the alternatives considered for the Porter Mount Management Project. The alternatives for the Porter Mount Management Project were developed from the issues identified by the ID Team, the public, and other agencies. The ID Team grouped the alternatives into one of two categories depending upon how they met the Purpose and Need for the project and their feasibility. These categories are “alternatives considered in detail” and “alternatives not considered in detail.” Rationale is given for those alternatives not studied in detail.

This chapter also includes a description and map(s) of the alternatives considered, activities common to all alternatives, and a comparison of these alternatives focusing on the significant issues. This comparison of alternatives provides a basis for choice among the options for the decision maker and the public (40 CFR 1502.14).

Public Involvement and the Scoping Process

The CEQ defines scoping as:

“... an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action” (40 CFR 1501.7)

Among other things, the scoping process is used to invite public participation, to help identify public issues, and to obtain public comment during the EA process. Scoping should begin early and continue until a decision is made. To date, the public has been invited to participate in the following ways.

Public Mailing

On June 4, 2007, an information flyer explaining the Porter Mount Management Project was mailed out (Project File Exhibit B-4). This mailer, along with a proposed action map, went to approximately 130 individuals, other agencies, and groups.

Public Notice

In addition, a Request for Comments was published in the June 10, 2007, issue of The Daily Inter Lake, the newspaper of record. The Porter Mount Management Project also appeared in the January 1, 2007, April 1, 2007, and June 1, 2007, editions of the USDA Forest Service’s Schedule of Proposed Actions (SOPA).

The Swan Lake Ranger District received 17 letters or electronic responses from the public.

Issues

The ID Team reviewed and compiled a list of potential issues based upon comments from the public, organizations, and government agencies. These issues were then evaluated against the following criteria to determine the appropriate methodology for resolution:

- Is the issue relevant to, and within the scope of the purpose and need, the decisions being made, and does it pertain directly to the Proposed Action?

- Is the issue already decided by law, regulation, or existing plans, or not supported by scientific or factual evidence?
- Could the issue be resolved through design and location of activities in the Proposed Action or mitigated by avoiding the impact by not taking action, minimizing the impact by limiting the action, rectifying the impact by rehabilitation, reducing the impact by maintenance, or compensating for the impact by replacement?

Issues representing an unresolved conflict with the Proposed Action have been brought forward as “Major Issues” and were used to help formulate the alternatives to the Proposed Action. Project File Exhibit D-2 provides a detailed description of the issues identified during the scoping process and describes how those issues were accounted for during the analysis process.

Key Issues Used For Alternative Development

Internal and external comments revealed issues representing unresolved conflict with the Proposed Action (Alternative B). The following major issue was used to develop an alternative to the Proposed Action.

Resource Concerns Associated with Temporary Road Construction and the Size and Location of Regeneration Harvest Openings

Temporary Road Construction - There was a concern that the amount of temporary road construction could impact the wildlife, fish, and visual resources. Temporary road construction through old growth habitat would allow potential access by firewood cutters and remove standing snags. There was also a concern that some segments proposed for temporary road construction would present difficulty in reclaiming as they were located on steep slopes and seen from Highway 2. Some temporary road locations presented concerns due to them being located near ridges which could affect security for lynx and big game species as many species use these high ridge areas as travel corridors. Proposed temporary road construction across one creek in the area also posed a concern due to the possibility of increased risk of sediment flowing into the creek and affecting spawning habitat for brook trout.

Openings - There was a concern expressed that the large regeneration harvest openings could have impacts on wildlife species and the visuals resource. Some harvest units greater than 40 acres in size are proposed for treatment adjacent to old growth stands which would create an edge influence and interior habitat would be reduced. Edge created would also narrow the connection between different old growth patches. Larger blocks of old growth provide interior habitat and connectivity for old growth associated species. Many of these species are sensitive to the fragmentation caused by regeneration harvest. Some openings larger than 40 acres in size also presented visual concerns due to the amount of past activity seen from Highway 2 and Rogers Lake.

Other Concerns Evaluated

The team evaluated other concerns that helped frame the scope of the analysis during the scoping process. These concerns were not considered major issues because they were resolved through project design and, therefore, were not used to develop alternatives analyzed in detail. These concerns are addressed within the effects analysis by resource in Chapter 3 of this document.

Noxious Weeds: Treatment of noxious weeds was expressed as a concern during the Proposed Action Scoping (Project File Exhibits C-8, C-9, C-16, C-17). Design Criteria are included in this project to treat noxious weeds, including herbicide treatment of roads within the sale areas, and a requirement that all off-road logging and construction equipment to be washed before being transported to the project area. All treatment units and roads used for the project would be monitored for presence of noxious weeds after completion of timber sales. The Noxious and Invasive Weed Control Environmental Assessment (March 2001) authorizes herbicide treatment.

Threatened, Endangered, and Sensitive (TES) Wildlife, Fish and Plant Species: Commenter expressed concern over how the proposed action would affect TES species including the grizzly bear, Canada lynx, fisher, black-backed woodpecker, etc. (Project File Exhibits C-15, C-17). Design Criteria are included in this project to protect TES habitat and species.

Water Quality/Fisheries: Concerns about water quality and fisheries (grayling) were expressed by several commenter (Project File Exhibits C-13, C-14, C-16). Design Criteria are included in this project to protect water quality and fisheries habitat. Also, Best Management Practices would be applied on **61.46 miles** of road in the Proposed Action and **63.20 miles** of road in Alternative C.

Wildlife Security: Wildlife security was expressed as a concern during the Proposed Action Scoping (Project File Exhibits C-8 and C-13). Design Criteria are included in this project to provide for wildlife security needs.

Social: Several commenter expressed concerns about increased traffic, hours of operation of logging operations, solitude, and visuals (Project File Exhibits C-7, C-9, and C-13).

Range of Alternatives

Section 102(2)(3) of the NEPA states that all Federal agencies shall “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflict concerning alternative uses of available resources.”

An environmental assessment must be prepared on any action at any time in order to assist agency planning and decision making.

The range of alternatives may extend beyond the limits set by Forest Plan goals and objectives under NEPA; however, the NFMA requires that the Selected Alternative fully comply with the Forest Plan unless the plan is amended in accordance with 36 CFR 219.10(f).

The range of alternatives presented in this chapter was determined by evaluating public and internal comments and the Purpose and Need for this project. This project is intended to maintain or create resource conditions that are within the range of natural (historical) variability (HRV) – conditions which might be expected to occur under natural disturbance and succession regimes. By moving toward this condition, we can be more assured that the forest and ecosystem remains in a healthy and sustainable condition over time. The vulnerability of the forest to possible severe and undesirable effects of fire, insects, disease or other unforeseen events would be reduced, creating a forest that is more resilient in the face of inevitable change and future uncertainties, providing for flexibility and a wide variety of possible future resource and management needs.

Other influences included Forest Plan goals, objectives, existing and desired conditions, standards and guidelines; Federal laws, regulations, and policies; and economic viability. Within these parameters, the alternatives developed by the ID Team display a reasonable range of outputs, treatments, costs, management requirements, design criteria, and effects on resources.

In addition to the alternatives considered in detail, the ID Team examined other alternatives during the analysis process. Although these alternatives contributed to a reasonable range, they were eliminated from further consideration for the reasons listed below.

Alternatives Not Considered in Detail

This section discusses two alternatives that were considered, but not given detailed study. These alternatives were initially proposed to address issues identified during the public scoping and ID Team process, but were not considered further for the reasons explained in the following narrative.

Management Actions only in the Community Protection Zone: One organization suggested that we only treat fuels in forest stands within several hundred yards of homes, an approach advocated in a recent paper on the subject of community protection from wildland fire (Nowicki 2002) (Project File Exhibit

C-17). The suggestion to limit the project to treatments within a few tens of meters to less than 400 meters from homes was not considered in detail for the following reasons:

- Treating only near individual home sites on a limited basis does not fully meet the intent of breaking up fuel continuity generally within the project area to allow firefighters to more safely, tactically, and strategically address a fire in the interface area. Such an alternative would limit the ability of fire fighting efforts to more effectively and safely fight a fire in the area as a whole.
- Such an approach would leave significant areas of fuel buildup and dense canopies with ladder fuels within the Wildland Urban Interface area. As described above, leaving such stand conditions untreated would limit options that firefighters would have for safely stopping a moving fire within the interface area, and would leave many areas where crown fire potential could have been reduced within the urban interface untreated. Bypassing the opportunity to treat such areas would not be consistent with the purpose of the project.
- Research has determined that treatments intended to reduce fuels around communities at risk, rather than individual structures, need to go beyond the home ignition zone (Graham, 2004). While individual home-by-home treatments can help reduce the risk of loss of individual homes, relying solely on such treatments would forego strategic opportunities for controlling fires within this Wildland Urban Interface area.
- Limiting treatments to a smaller area immediately adjacent to homes or structures would only allow for a small subset of the interface area to be treated in the Project Area. In addition, it would not meet the broader purpose of the proposal in treating fuels in the Wildland Urban Interface area.
- The proposed fuel reduction treatments are consistent with management actions recommended in the Flathead County Community Wildfire Fuels Reduction and Mitigation Plan (2005) for defensible space around individual homes, reduction of fuels at the neighborhood or subdivision level, and the thinning and biomass removal in the landscape adjacent to WUI to help limit wildfire intensity and rate of spread (Project File Exhibit Q-12).
- An alternative limited to treatment solely within close proximity to homes also would not meet the Purpose and Need to improve and/or maintain the general forest, resiliency and sustainability of stands within the project area. Such an alternative would focus solely on fuel reduction in the immediate vicinity of homes. The Purpose and Need of this project is not limited solely to fuel reduction. This alternative would not address broader forest health and stand conditions, which are an intrinsic part of the purpose and need of this project.

Watershed Restoration Alternative: One organization suggested the Forest Service should include an alternative that removes or fixes all roads with design flaws, are contributing to soil and watershed problems, or are not needed to foreseeable management activities (Project File Exhibit C-17). Also included in the alternative was to bring all streams in the project area up to Road Management Objectives (RMOs). This alternative would be beyond the scope of the project; however, the Proposed Action includes application of BMPs on **61.46 miles** of Forest Development Roads (FDR).

Alternatives Considered In Detail

Alternative A – No Action

This alternative represents the existing condition in the Porter Mount Management Project Area. Under this alternative, none of the activities proposed for the Porter Mount Management Project would occur. No vegetative treatments, fuel reduction activities, temporary road and access management, ecosystem burning, or other activities associated with the Proposed Action would occur at this time. Ongoing activities such as recreation, public firewood gathering, fire suppression, and normal road maintenance would continue. Activities identified in Chapter 3 as current and foreseeable actions would occur.

Activities Common to the Action Alternatives

A. Vegetation Management

Commercial Thinning: The existing mature tree canopy closure in the project area ranges from 0 to 100 percent with an average closure of 70 to 90+ percent. Within areas to be commercially thinned, the resulting stands would have 40 to 60 percent canopy closure (average 50 percent) within the ground-based and cable units. The target leave basal area would range between 70 to 100 square feet per acre, depending on the species and site. Generally, all dominant and most co-dominant crown classes would be retained, while some co-dominant and generally all intermediate and suppressed crown classes would be removed. The purpose of this treatment is to enlarge the growing space condition of desirable trees, by reducing excessive tree competition for limited site resources, thereby modifying site conditions for improved tree crown and cone development, sustained vigor and growth, and overall forest health. This treatment simulates a low to moderate-severity, mixed-lethal burn. The vast majority of these stands are unmanaged. Some have had past treatment entries. Understory or jackpot burning would be implemented as a secondary fuels treatment to cycle nutrients and restore fire as an ecological process. This treatment is proposed for **546 acres** in Alternative B and **561 acres** in Alternative C.

Seed Tree Harvest: The existing western larch and ponderosa pine would be retained to provide for seed sources and long term structure. Approximately 5 to 15 large reserve trees favoring western larch would be designated to remain on site through this rotation. The majority of the Douglas-fir, and all of the lodgepole, would be removed to facilitate regeneration of western larch and ponderosa pine. The majority of trees to be removed are in the co-dominant or intermediate canopy. This treatment is similar to a stand replacement fire regime. Mechanical treatments and prescribed fire would be used to reduce fuels, recycle nutrients, and restore fire as an ecological process. This treatment ranges from **410 acres** in Alternative B to **349 acres** in Alternative C.

Salvage Harvest: The existing mature tree canopy would be reduced from the existing average of 70 to 80 percent canopy closure to approximately 50 to 60 percent canopy closure, removing trees primarily in the intermediate and co-dominant canopy. Lodgepole pine and some Douglas-fir would be removed to reduce stand density and fuel loadings. Mechanical treatments to reduce fuels would be implemented on **66 acres** in all action alternatives.

Sanitation: The existing overstory of Douglas-fir in some stands is heavily infested with mistletoe. Infested and high risk trees would be removed and overall stand density would be reduced. Residual species composition would favor non-susceptible trees and canopy closure following treatment would average 50 percent across the stand as a whole. Treatments are proposed on **63 acres** in all action alternatives.

Sanitation with Pre-Commercial Thinning: The existing scattered overstory of Douglas-fir is heavily infested with mistletoe and would be removed. The remaining stand is comprised of a mixture of western larch, Douglas-fir, and lodgepole pine, primarily sapling and pole-sized trees. Understory trees would be pre-commercially thinned to reduce densities, remove mistletoe infested trees, and reduce fuels. Treatments are proposed on **13 acres** in all action alternatives.

Clearcut with Reserve Trees: The majority of trees would be removed in this treatment, retaining any western larch or ponderosa pine that is present. These stands are primarily lodgepole pine and Douglas-fir, with little species or structural diversity. This treatment is similar to a stand replacement fire regime. Mechanical treatments and prescribed fire would be used to reduce fuels, recycle nutrients, and restore fire as an ecological process. Treatments are proposed on **323 acres** in Alternative B and **277 acres** in Alternative C.

Thin from Below – Non-Commercial: Trees to be removed would be lodgepole pine, between 2 to 6 inches in diameter. Removal would be primarily by hand cutting with chainsaws, and hand removal. No commercial treatments are feasible. These stands are very densely stocked and suppressed, and would not respond to pre-commercial thinning. Treatments are proposed on **13 acres** in Alternative B and **8 acres** in Alternative C.

B. Fuels Management

Ecosystem Burning: This treatment is proposed in stands composed of Douglas-fir, larch, ponderosa pine, and lodgepole pine with mid-elevation shrub and grass fields. The use of prescribed fire in this area would help to reduce natural fuel buildups, reduce wildfire suppression costs, and maintain a healthy, vigorous ecosystem.

The proposed burns are designed to replicate the role of natural fire (moderately frequent/low intensity fires), in a controlled manner by:

- Slowing the spread of invasive species into these stands and increasing vigor of resulting stands;
- Removing above ground stems of decadent shrubs and stimulating the root crowns to produce new, vigorous growth;
- Reducing understory stocking of conifer seedlings and saplings;
- Promoting the growth of native grasses and forbs;
- Increasing snag availability for birds and small mammals;
- Reducing natural fuel buildup;
- Reducing ladder fuels to reduce crown fire potential;
- Perpetuating larger diameter ponderosa pine, Douglas-fir, and larch.

Ecosystem Burning is proposed on **128 acres** in all action alternatives.

C. Road Management

Road Maintenance – Best Management Practices (BMPs): This is the ongoing upkeep of a road necessary to meet the approved Road Management Objectives (RMOs). The present focus of RMOs is to meet the current BMPs for each road. BMPs required under Timber Sale Contracts must be completed before timber is hauled.

The objectives of road maintenance are to reduce the concentration of sub-surface and surface water runoff, minimize road surface erosion, filter ditch water before entering streams, and decrease the risk of culvert failures during peak runoff events. Maintenance work could include culvert installation, replacement of existing culverts with larger culverts, installation of drainage dips and surface water deflectors, placement of rip-rap to armor drainage structures, aggregate surface replacement, aggregate placement to reinforce wet surface areas, ditch construction and cleaning where needed, and surface blading to restore drainage efficiency of the road surface. These actions would bring the roads up to current BMP standards, better accommodate traffic and reduce deferred maintenance needs. Application of BMPs is proposed on **61.46 miles** in Alternative B and **63.20 miles** in Alternative C. Alternative C has slightly more BMP miles than Alternative B due to helicopter yarding to Road 1646 with haul on that road and Road 9675. These roads are not used in Alternative B.

Temporary Road: Temporary roads would be constructed to the minimum standards necessary for log hauling on from Forest Development Roads. Temporary road surface width would be limited to truck bunk width plus 4 feet. Temporary roads would be reclaimed following their use using drain dips, outsloping, scarifying, seeding, and recontouring. Temporary road construction is proposed for **4.74 miles** under Alternative B and **0.86 miles** under Alternative C.

Designated Skid Road: Skid roads would be constructed for forwarding logs with a tractor from the felled location to a landing, where they are loaded on trucks and hauled away. In some instances, it may be necessary to have a designated skid road outside of the unit boundary a short distance to a nearby landing location adjacent to the haul route. Skid roads would be reclaimed following their use using drain dips, outsloping, scarifying, seeding, and recontouring. All action alternatives proposed **0.15 miles** of designated skid roads.

D. Special Requirements

The Proposed Action includes harvest openings greater than 40 acres. If these large openings are proposed in the preferred alternative in the Porter Mount Project EA, a 60-day public review period will be provided. Approval by the Regional Forester for exceeding the 40-acre opening limitation for regeneration harvest would be required prior to signing the Decision Notice.

Resource Enhancement Projects

Resource enhancement projects identified during project design are shown in the table below. These projects were identified to improve other resource values within the project area. Please refer to Map 2-1 at the end of this chapter for a display of the project locations.

Several sources of funding exist for resource enhancement projects. Many items have the potential to be funded with Knutson-Vandenberg (KV) funds, while other items would be funded with congressionally approved funds or Stewardship dollars. Implementation would be based on annual budgets and program direction. These projects are not necessary to mitigate impacts of the proposed action, but are specific resource enhancements within the project area that would be beneficial to a variety of resources. If funding were not available, the improvements from these projects would not be accomplished.

**TABLE 2-1.
RESOURCE ENHANCEMENT PROJECTS**

Ground Location	Enhancement Project
FDR #5380, FDR #5381, FDR #5371, and FDR #5376. All within "Homestead Creek," tributary to Upper Mount Creek.	Complete BMP improvements on these roads (or portions of roads) that are not on a haul route. Keep road on system, but if existing culvert is causing resource damage, remove the culvert. These actions would help reduce impacts to sensitive cutthroat trout population downstream.
FDR #10501, Section 2, below private land.	Replace culvert at risk of failure due to increased flows flowing primarily from private lands upslope.
Shrub Planting in Units 20, 21, 23, 24, 31, 43, and 47	140 acres of shrub planting to improve wildlife habitat

Design Criteria

Table 2-13 located at the end of this chapter describes the Design Criteria applied to this project to protect resources.

Monitoring

Monitoring and evaluation compares the end results being achieved to those projected in the Forest Plan. Monitoring is conducted on a sample basis to evaluate the overall progress in implementing the Forest Plan, the assumptions on which the Forest Plan is based, and to provide a feedback loop for determining effectiveness of project and mitigation implementation (USDA Forest Service, 1987a). For this project, monitoring and evaluation would be conducted as described in Appendix A. Those monitoring components not specifically discussed in this appendix tier to the monitoring described in the Forest Plan.

Activities Specific to the Action Alternatives

Features unique to each alternative are described below. Maps displaying each alternative are found at the end of this chapter (Maps 2-2 through 2-3).

ALTERNATIVE B – PROPOSED ACTION (Map 2-2)

Intent: Alternative B was developed to respond to the Purpose and Need for the Porter Mount Management Project.

The Proposed Action focuses on improving forest health and reducing hazardous fuel buildup in the Porter Mount Management Project Area by using various vegetative treatments, both commercial and non-commercial. Features associated with this alternative include the following:

- A total of about **1,434 acres** would receive treatments that would remove commercial and non-commercial products.
- One Clearcut with Reserve Trees Unit (Unit 31) would create an opening larger than 40 acres; four Seed Tree Units (Units 3, 17, 26, and 51) would create four openings slightly over 40 acres. Regional Forester approval of these openings over 40 acres would be required before making a final decision.
- Ecosystem Burning is proposed on **128 acres**.
- This alternative treats **1171 acres** in the WUI.
- Approximately **0.15 miles** of designated skid road construction is proposed.
- BMPs would be applied on about **61.46 miles** of haul roads as required for the Timber Sale Contract.
- An estimated **4.74 miles** of temporary road would be constructed to access harvest units as shown below in Table 2-2.

**TABLE 2-2.
 TEMPORARY ROADS NEEDED FOR ALTERNATIVE B**

Unit	Access Needs	Miles
2	Access via new NFS temporary road beginning from FDR 5373	1.47
6	Access via new NFS temporary road beginning from FDR 1645	0.15
7	Access via new NFS temporary road beginning from FDR 2983	0.20
8	Access via new NFS temporary road beginning from FDR 1645	0.30
10	Access via new NFS temporary road beginning from FDR 10703	0.35
31	Access via new NFS temporary road beginning from FDR 9510	1.45
33	Access via new NFS temporary road beginning from FDR 9510	0.31
36	Access via new NFS temporary road beginning from FDR 2987	0.22
40	Access via new NFS temporary road beginning from FDR 5370	0.29
TOTAL		4.74

**TABLE 2-3.
SKID ROUTES NEEDED FOR ALTERNATIVE B**

Unit	Access Needs	Miles
16	Access via skid road beginning from FDR 9669	0.07
44	Access via skid road beginning from FDR 2987	0.04
51	Access via skid road beginning from FDR 5370	0.04
TOTAL		0.15

Alternative B timber harvest and associated activities are summarized in the table below.

**TABLE 2-4.
SUMMARY OF PROPOSED TREATMENT ACTIVITIES FOR ALTERNATIVE B**

Commercial Harvest Treatments	
Commercial Thin	546 acres
Seed tree	410 acres
Salvage	66 acres
Sanitation	63 acres
Sanitation with Pre-Commercial Thin	13 acres
Clearcut with Reserve Trees	323 acres
Thin from Below – Non-Commercial	13 acres
Regeneration Harvest Openings greater than 40 acres	5 openings
Total Vegetation Treatment Acres	1434 acres
Fuels Management	
Ecosystem Burning	128 acres
Total Acres of All Treatments	1562 acres
Logging System	
Skyline	488 acres
Tractor	689 acres
Tractor/Skyline	199 acres
Tractor/Helicopter	26 acres
Skyline/Helicopter	19 acres
Helicopter	0 acres
Hand	13 acres
Total Acres of Logging Systems	1434 acres
Fuels Treatment	
Excavator Piling/Chipping	724 acres
Excavator Piling/Yard Tops/Lop and Scatter	30 acres
Lop and Scatter	13 acres
Underburn	532 acres
Yard Tops/Lop and Scatter	135 acres
Total Acres of Fuel Treatment	1434 acres
Acres of Treatment within WUI	1171 acres
Road Management	
Temporary Road Construction	4.74 miles
Designated Skid Road Construction	0.15 miles
Best Management Practices	61.46 miles

**TABLE 2-5.
 PROPOSED TREATMENT ACTIVITIES FOR ALTERNATIVE B**

Unit No.	Unit Acres	Alternative B Treatment	Logging System	Hazardous (Fuels) Reduction	Forest Plan MA Direction
1	128	Ecosystem Burn	N/A	Underburn by hand or aerial ignition	MA 9
2	28	Commercial Thin	Skyline	Excavator Piling/Chipping	MA 9
2	87	Commercial Thin	Tractor	Excavator Piling/Chipping	MA 9
2	39	Commercial Thin	Tractor/Skyline	Excavator Piling/Chipping	MA 9
3	77	Seed Tree	Skyline	Underburn	MA 15
4	7	Salvage	Skyline	Yard Tops/Lop and Scatter	MA 15
4	10	Salvage	Tractor	Yard Tops/Lop and Scatter	MA 15
5	16	Seed Tree	Tractor	Underburn	MA 15
6	10	Clearcut with Reserve Trees	Skyline	Underburn	MA 15
7	7	Commercial Thin	Skyline/Helicopter	Underburn	MA 15
7	12	Commercial Thin	Skyline/Helicopter	Underburn	MA 15
8	14	Clearcut with Reserve Trees	Skyline	Underburn	MA 15
9	18	Clearcut with Reserve Trees	Tractor/Skyline	Excavator Piling/Chipping	MA 15
10	17	Clearcut with Reserve Trees	Skyline	Underburn	MA 15
11	8	Seed Tree	Tractor	Excavator Piling/Chipping	MA 15
12	4	Seed Tree	Tractor	Excavator Piling/Chipping	MA 15
12	25	Seed Tree	Skyline	Underburn	MA 15
13	25	Commercial Thin	Skyline	Yard Tops/Lop and Scatter	MA 15
14	13	Seed Tree	Skyline	Underburn	MA 15
15	51	Commercial Thin	Tractor	Excavator Piling/Chipping	MA 9
15	30	Commercial Thin	Tractor/Skyline	Excavator Piling/Yard Tops/Lop and Scatter	MA 9
16	7	Seed Tree	Tractor	Excavator Piling/Chipping	MA 15
17	52	Seed Tree	Tractor	Excavator Piling/Chipping	MA 15
17	15	Seed Tree	Skyline	Underburn	MA 15
18	4	Commercial Thin	Tractor	Excavator Piling/Chipping	MA 15
18	11	Commercial Thin	Skyline	Yard Tops/Lop and Scatter	MA 15
19	7	Thin From Below - Non-Commercial	Hand	Lop and Scatter	MA 15
20	34	Clearcut with Reserve Trees	Tractor	Excavator Piling/Chipping	MA 15
21	22	Clearcut with Reserve Trees	Skyline	Yard Tops/Lop and Scatter	MA 15
22	6	Thin From Below - Non-Commercial	Hand	Lop and Scatter	MA 15
23	8	Seed Tree	Skyline	Underburn	MA 15
24	4	Seed Tree	Skyline	Underburn	MA 15
25	13	Salvage	Tractor	Excavator Piling/Chipping	MA 15
26	34	Seed Tree	Tractor	Excavator Piling/Chipping	MA 15
26	7	Seed Tree	Tractor	Underburn	MA 15
27	12	Seed Tree	Tractor	Excavator Piling/Chipping	MA 15
28	11	Clearcut with Reserve Trees	Tractor	Excavator Piling/Chipping	MA 15
29	26	Salvage	Tractor	Excavator Piling/Chipping	MA 15
30	2	Commercial Thin	Skyline	Yard Tops/Lop and Scatter	MA 15
31	63	Clearcut with Reserve Trees	Skyline	Underburn	MA 15
31	23	Clearcut with Reserve Trees	Tractor	Underburn	MA 15

**TABLE 2-5.
PROPOSED TREATMENT ACTIVITIES FOR ALTERNATIVE B**

Unit No.	Unit Acres	Alternative B Treatment	Logging System	Hazardous (Fuels) Reduction	Forest Plan MA Direction
32	7	Commercial Thin	Tractor/Skyline	Underburn	MA 15
32	24	Commercial Thin	Skyline	Yard Tops/Lop and Scatter	MA 9
33	31	Clearcut with Reserve Trees	Skyline	Underburn	MA 15
34	40	Seed Tree	Tractor/Skyline	Underburn	MA 15
35	10	Salvage	Tractor	Excavator Piling/Chipping	MA 15
36	26	Commercial Thin	Tractor	Excavator Piling/Chipping	MA 9
36	9	Commercial Thin	Tractor/Skyline	Excavator Piling/Chipping	MA 9
37	9	Seed Tree	Tractor	Excavator Piling/Chipping	MA 15
38	18	Commercial Thin	Tractor/Skyline	Excavator Piling/Chipping	MA 15
39	26	Commercial Thin	Tractor/Helicopter	Excavator Piling/Chipping	MA 15
40	20	Seed Tree	Tractor	Underburn	MA 15
41	24	Commercial Thin	Tractor/Skyline	Excavator Piling/Chipping	MA 15
42	31	Clearcut with Reserve Trees	Skyline	Underburn	MA 15
43	13	Sanitation w/Pre-Commercial Thin	Tractor	Excavator Piling/Chipping	MA 15
44	19	Clearcut with Reserve Trees	Tractor	Underburn	MA 15
44	14	Clearcut with Reserve Trees	Tractor/Skyline	Underburn	MA 15
45	27	Commercial Thin	Skyline	Excavator Piling/Chipping	MA 15
46	23	Commercial Thin	Skyline	Yard tops/Lop and Scatter	MA 15
47	16	Clearcut with Reserve Trees	Tractor	Excavator Piling/Chipping	MA 15
48	55	Commercial Thin	Tractor	Excavator Piling/Chipping	MA 15
49	6	Commercial Thin	Skyline	Yard Tops/Lop and Scatter	MA 15
50	5	Commercial Thin	Skyline	Yard Tops/Lop and Scatter	MA 15
51	59	Seed Tree	Tractor	Underburn	MA 15
52	63	Sanitation	Tractor	Excavator Piling/Chipping	MA 9

**ALTERNATIVE C
(Map 2-3)**

Intent: Alternative C was developed to address Issue #2, Resource Concerns associated with Temporary Road Construction and the size and location of Regeneration Harvest Openings.

This alternative was developed based upon concerns that the amount of temporary road construction could impact the wildlife, fish, and visual resources. This alternative was also developed based on the concern that large regeneration harvest openings could have impacts on wildlife species and the visuals resource. Features associated with this alternative include the following:

- A total of about **1337 acres** would receive treatments that would remove commercial and non-commercial products.
- No regeneration harvest units would create openings larger than 40 acres.
- Ecosystem Burning is proposed on **128 acres**.
- This alternative treats **1123 acres** in the WUI.
- Approximately **0.15 miles** of designated skid road construction is proposed.

- BMPs would be applied on about **63.20 miles** of haul roads as required for the Timber Sale Contract.
- An estimated **0.86 miles** of temporary road would be constructed to access harvest units as shown below in Table 2-6.

**TABLE 2-6.
 TEMPORARY ROADS NEEDED FOR ALTERNATIVE C**

Unit	Access Needs	Miles
10	Access via new NFS temporary road beginning from FDR 10703	0.35
36	Access via new NFS temporary road beginning from FDR 2987	0.22
40	Access via new NFS temporary road beginning from FDR 5370	0.29
TOTAL		0.86

**TABLE 2-7.
 SKID ROADS NEEDED FOR ALTERNATIVE C**

Unit	Access Needs	Miles
16	Access via skid road beginning from FDR 9669	0.07
44	Access via skid road beginning from FDR 2987	0.04
51	Access via skid road beginning from FDR 5370	0.04
TOTAL		0.15

Alternative C timber harvest and associated activities are summarized in the table below.

**TABLE 2-8.
 SUMMARY OF PROPOSED TREATMENT ACTIVITIES FOR ALTERNATIVE C**

Commercial Harvest Treatments	
Commercial Thin	561 acres
Seed Tree	349 acres
Salvage	66 acres
Sanitation	63 acres
Sanitation with Pre-Commercial Thin	13 acres
Clearcut with Reserve Trees	277 acres
Thin from Below – Non-Commercial	8 acres
Regeneration Harvest Openings greater than 40 acres	0 openings
Total Vegetation Treatment Acres	1337 acres
Fuels Management	
Ecosystem Burning	128 acres
Total Acres of All Treatments	1465 acres
Logging System	
Skyline	332 acres
Tractor	543 acres
Tractor/Skyline	160 acres
Tractor/Helicopter	26 acres
Skyline/Helicopter	46 acres

**TABLE 2-8.
SUMMARY OF PROPOSED TREATMENT ACTIVITIES FOR ALTERNATIVE C**

Helicopter	222 acres
Hand	8 acres
Total Acres of Logging Systems	1337 acres
Fuels Treatment	
Excavator Piling/Chipping	673 acres
Excavator Piling/Yard Tops/Lop and Scatter	30 acres
Lop and Scatter	8 acres
Underburn	452 acres
Yard Tops/Lop and Scatter	174 acres
Total Acres of Fuel Treatment	1337 acres
Acres of Treatment within WUI	1123 acres
Road Management	
Temporary Road Construction	0.86 miles
Designated Skid Road Construction	0.15 miles
Best Management Practices	63.20 miles

**TABLE 2-9.
PROPOSED TREATMENT ACTIVITIES FOR ALTERNATIVE C**

Unit No.	Unit Acres	Alternative C Treatment	Logging System	Hazardous Fuels Reduction	Forest Plan MA Direction
1	128	Ecosystem Burn	N/A	Underburn by hand or aerial ignition	MA 9
2	69	Commercial Thin	Helicopter	Excavator Piling/Chipping	MA 9
2	46	Commercial Thin	Skyline/Helicopter	Excavator Piling/Chipping	MA 9
2	39	Commercial Thin	Helicopter	Yard Tops/Lop and Scatter	MA 9
3	40	Seed Tree	Skyline	Underburn	MA 15
4	10	Salvage	Tractor	Yard Tops/Lop and Scatter	MA 15
4	7	Salvage	Skyline	Yard Tops/Lop and Scatter	MA 15
5	16	Seed Tree	Tractor	Underburn	MA 15
6	10	Clearcut with Reserve Trees	Helicopter	Underburn	MA 15
7	19	Commercial Thin	Helicopter	Underburn	MA 15
8	14	Clearcut with Reserve Trees	Helicopter	Underburn	MA 15
9	18	Clearcut with Reserve Trees	Tractor/Skyline	Excavator Piling/Chipping	MA 15
10	17	Clearcut with Reserve Trees	Skyline	Underburn	MA 15
11	8	Seed Tree	Tractor	Excavator Piling/Chipping	MA 15
12	25	Seed Tree	Skyline	Underburn	MA 15
12	4	Seed Tree	Tractor	Excavator Piling/Chipping	MA 15
13	25	Commercial Thin	Skyline	Yard Tops/Lop and Scatter	MA 15
14	13	Seed Tree	Skyline	Underburn	MA 15
15	51	Commercial Thin	Tractor	Excavator Piling/Chipping	MA-9
15	30	Commercial Thin	Tractor/Skyline	Excavator Piling/Yard Tops/Lop and Scatter	MA-9
16	7	Seed Tree	Tractor	Excavator Piling/Chipping	MA 15
17	40	Seed Tree	Tractor	Excavator Piling/Chipping	MA 15
18	4	Commercial Thin	Skyline	Excavator Piling/Chipping	MA 15
18	11	Commercial Thin	Skyline	Yard Tops/Lop and Scatter	MA 15

**TABLE 2-9.
 PROPOSED TREATMENT ACTIVITIES FOR ALTERNATIVE C**

Unit No.	Unit Acres	Alternative C Treatment	Logging System	Hazardous Fuels Reduction	Forest Plan MA Direction
19	2	Thin From Below - Non-Commercial	Hand	Lop & Scatter	MA 15
20	34	Clearcut with Reserve Trees	Tractor	Excavator Piling/Chipping	MA 15
21	22	Clearcut with Reserve Trees	Skyline	Yard Tops/Lop and Scatter	MA 15
22	6	Thin From Below - Non-Commercial	Hand	Lop & Scatter	MA 15
23	8	Seed Tree	Skyline	Underburn	MA 15
24	4	Seed Tree	Skyline	Underburn	MA 15
25	13	Salvage	Tractor	Excavator Piling/Chipping	MA 15
26	34	Seed Tree	Tractor	Excavator Piling/Chipping	MA 15
26	6	Seed Tree	Tractor	Underburn	MA 15
27	12	Seed Tree	Tractor	Excavator Piling/Chipping	MA 15
28	11	Clearcut with Reserve Trees	Tractor	Excavator Piling/Chipping	MA 15
29	26	Salvage	Tractor	Excavator Piling/Chipping	MA 15
30	2	Commercial Thin	Skyline	Yard Tops/Lop and Scatter	MA 15
31	40	Clearcut with Reserve Trees	Helicopter	Underburn	MA 15
32	24	Commercial Thin	Skyline	Yard Tops/Lop and Scatter	MA 9
32	7	Commercial Thin	Tractor/Skyline	Underburn	MA 15
33	31	Clearcut with Reserve Trees	Helicopter	Underburn	MA 15
34	40	Seed Tree	Tractor/Skyline	Underburn	MA 15
35	10	Salvage	Tractor	Excavator Piling/Chipping	MA 15
36	9	Commercial Thin	Tractor/Skyline	Excavator Piling/Chipping	MA 9
36	26	Commercial Thin	Tractor	Excavator Piling/Chipping	MA 9
37	9	Seed Tree	Tractor	Excavator Piling/Chipping	MA 15
38	18	Commercial Thin	Tractor/Skyline	Excavator Piling/Chipping	MA 15
39	26	Commercial Thin	Tractor/Helicopter	Excavator Piling/Chipping	MA 15
40	20	Seed Tree	Tractor	Underburn	MA 15
41	24	Commercial Thin	Tractor/Skyline	Excavator Piling/Chipping	MA 15
42	31	Clearcut with Reserve Trees	Skyline	Underburn	MA 15
43	13	Sanitation with Pre-Commercial Thin	Tractor	Excavator Piling/Chipping	MA 15
44	19	Clearcut with Reserve Trees	Tractor	Underburn	MA 15
44	14	Clearcut with Reserve Trees	Tractor/Skyline	Underburn	MA 15
45	27	Commercial Thin	Skyline	Excavator Piling/Chipping	MA 15
46	23	Commercial Thin	Skyline	Yard Tops/Lop and Scatter	MA 15
47	16	Clearcut with Reserve Trees	Tractor	Excavator Piling/Chipping	MA 15
48	55	Commercial Thin	Tractor	Excavator Piling/Chipping	MA 15
49	6	Commercial Thin	Skyline	Yard Tops/Lop and Scatter	MA 15
50	5	Commercial Thin	Skyline	Yard Tops/Lop and Scatter	MA 15
51	40	Seed Tree	Tractor	Underburn	MA 15
52	63	Sanitation	Tractor	Excavator Piling/Chipping	MA 9
53	15	Commercial Thin	Skyline	Underburn	MA 15
54	24	Seed Tree	Skyline	Underburn	MA 15

Comparison of Alternatives

This section provides a comparison of the alternatives in terms of:

- How the alternatives meet the Purpose and Need for the proposal;
- How the alternatives respond to the key issues;
- The potential environmental consequences associated with the implementation of the alternatives.

(Some activities are listed more than once because they meet more than one Purpose and Need).

**TABLE 2-10
COMPARISON OF ALTERNATIVES – HOW THEY RESPOND TO THE PURPOSE AND NEED**

Purpose and Need Statement	Alt. A	Alt. B	Alt. C
Forest Health			
To restore and maintain Forest Vegetation Health (restore historical tree species composition, structure, and pattern) (Indicator: Acres treated – Commercial Thinning, Seed Tree, Salvage, Sanitation, Sanitation with Pre-Commercial Thinning, Clearcut with Reserve Trees, Thin from Below – Non-Commercial)	0	1434	1337
Reduce the growing risk for insects and chronic disease infestations (Indicator: Hand Planting)	0	601	540
Hazardous Fuels Reduction			
Reduce the associated risk of high-severity landscape wildfire risk within the Wildland Urban Interface as identified in the Flathead County Community Wildfire Fuels Reduction and Mitigation Plan (Indicator - Acres within WUI).	0	1171	1123
Increase the probability of stopping wildfires on NFS lands before they burn onto private lands.	No	Yes	Yes
Provide Wood Products for Local Economies			
Timber Harvest Acres	0	1434	1337
Timber Harvest Volume (MMBF)	0	8634	8041

**TABLE 2 - 11
COMPARISON OF ALTERNATIVES AND HOW THEY RESPOND TO THE KEY ISSUES**

Indicator	Alt. A	Alt. B	Alt. C
Resource Concerns with Temporary Road Construction and Harvest Openings over 40 Acres affecting Wildlife, Fish, and Scenery Resources.			
<u>Indicators:</u>			
Miles of Temporary Road Construction	0	4.74	0.86
Regeneration Harvest Openings over 40 acres	0	5	0

COMPARISON OF ENVIRONMENTAL EFFECTS

**TABLE 2 - 12
 COMPARISON OF ENVIRONMENTAL EFFECTS BY ALTERNATIVE**

ENVIRONMENTAL CONSEQUENCE	Alt. A	Alt. B	Alt. C
Soils – Meets Soil & Water Standards			
Detrimental soil disturbance resulting from alternative implementation (Indicator: Units exceeding 15% detrimental soil disturbance)	0	0	0
Meets Forest Service Regional Soil Quality (Indicator: Does or does not meet standard)	Yes	Yes	Yes
Hydrology			
Road Maintenance to meet BMPs (Indicator: Miles of existing roads brought to BMP standards)	0	61.46	63.20
Fisheries – T&E and Sensitive Species			
Bull Trout (Indicator: BA Determination)	--	"No Effect"	
Cutthroat Trout (Indicator: BE Determination)		"May impact individuals or habitat, but will not likely result in a trend toward federal listing or reduced viability for the population or species"	
Protect and improve fisheries habitat (Indicator: Does the alternative improve fisheries habitat?)	No	Yes	Yes
Wildlife – T&E Species			
Grizzly Bear (Indicator: BA Determination)	--	"No Effect"	
Gray Wolf (Indicator: BA Determination)	--	"No Effect"	
Canada Lynx (Indicator: BA Determination)	--	"May effect – not likely to adversely affect"	
Bald Eagle (Indicator: BA Determination)	--	"No Effect"	
Wildlife – Sensitive Species			
Bald eagle, black-backed woodpecker, fisher, northern goshawk, Townsend's big-eared bat, boreal toad (Indicator: BA Determination)	"No impact"	"May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or loss of viability to the population or species"	
Common loon, harlequin duck, northern bog lemming, northern leopard frog, peregrine falcon, wolverine (Indicator: BA Determination)		Unlikely habitat; not affected by this project.	
Old Growth Habitat			
Acres of old growth forest treated	0	0	0
Snag and Down Woody Dependent Species			
Meets Forest Plan standards for snag and large woody debris retention (Indicator: Does or does not meet)	Meets	Meets	Meets
Wildlife – Commonly Hunted Big Game			
Meets Forest Plan direction for winter habitat	Yes	Yes	Yes
Acres of wildlife habitat improved through Ecosystem Burning	0	128	128

**TABLE 2 - 12
COMPARISON OF ENVIRONMENTAL EFFECTS BY ALTERNATIVE**

ENVIRONMENTAL CONSEQUENCE	Alt. A	Alt. B	Alt. C
Acres of winter range treated	0	357	357
Forest Vegetation			
Regeneration Harvest Openings Greater than 40 Acres (Units 31, 3, 17, 26, and 51)	0	5	0
Stand composition changed towards greater percentage of ponderosa pine and western larch	No	Yes	Yes
Forest structure changed from multi-storied mixed species stands to two-storied, more open grown stands.	No	Yes	Yes
Reduce forest fuels buildup adjacent to public and private lands (Indicator - Acres of treatment within WUI).	0	1171	1123
Reduce forest fuels buildup adjacent to public and private lands (Indicator: Acres of treatment outside of WUI)	0	391	342
Level of Risk of Noxious Weed Establishment and Spread	No additional risk above current level	Some risk – highest number of acres treated	Some risk due of acres treated
Recreation			
Visual Resource – meets Forest Plan VQOs	Yes	Yes	Yes
Restricts existing recreation opportunities	No	No	No
Heritage Resource			
Number of sites affected	0	0	0
Social and Economic			
Direct Employment	0	70	65
Total Jobs (Direct and Indirect)	0	164	153
Products			
Sawlogs (MBF)	0	8634	8049

Management Requirements and Design Criteria

The measures identified in the following table serve to further reduce impacts to the specific resources identified. Most are considered Design Criteria and are included in all action alternatives.

Several abbreviations are used in the responsibility section of Table 2 - 13. The following explains those abbreviations:

DR	District Ranger	BT	Botanist
SA	Sale Administrator	TMC	Timber Marking Crew
SP	Sale Prep	NWM	Noxious Weed Manager
WB	Wildlife Biologist	LEO	Law Enforcement Officer
FMO	Fire Management Officer	IDT	Interdisciplinary Team Members
ENG	Engineer	ARCH	Archaeologist
SILV	Silviculturist	HYD	Hydrologist
DRC	District Road Coordinator	TP	Timber Sale Purchaser
RF	Resource Forester	RA	Range Administrator
FAFMO	Fuels Assistant Fire Management Officer	SS	Soils Scientist
FISH	Fisheries Biologist		

**TABLE 2 - 13
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
Public Safety	Contracts will require the contractor to clearly post signs warning the public of nearby activities and truck hauling traffic associated with the treatments.	SA, DRM	Pre & post - sale, during harvest activities
Public Safety	The District Assistant Fire Management Officer (Fuels) or designated liaison will notify nearby landowners prior to fuel reduction activities commencing on NFS lands that are adjacent to their properties.	FAFMO	Pre - sale, during harvest activities
Special Use Permits	All permitted improvements, including power and phone service lines and water transmission lines (authorized by special use permits) will be clearly marked and protected during project implementation.	SA, TMC, IF, FMO, SP, RF	Pre & post - sale
Maintain soil quality within the Ecosystem Burn	Ecosystem Burn Unit #1 will be ignited when burning conditions would maintain soil erosion and nutrient levels within the range of historic burns.	SS, FAFMO	Prior to implementation

**TABLE 2 - 13
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
Soil Productivity	All mechanized units would be logged using designated skid trails. Equipment may occasionally leave the trails to access trees or accomplish other activities.	SA, SP, SS	Pre & post sale During harvest activities
Soil Productivity	Logging may occur in any season (subject to applicable timing restrictions required for other resources). In all seasons except winter, skid trails must be spaced on average of 120 feet apart in Units 16, 20, 31, 40, 47, and 48. The goal is to reduce adverse soil impact and to limit such impact to less than 15 percent of the harvest area, which includes detrimental soil disturbance from skid trails, temporary roads, and landings associated with either past activities or proposed activities. Units 25 and 36 should be logged under winter conditions only to avoid impacts of additional skid trails.	SA, SP, SS	Pre & post - sale, during harvest activities
Soil Productivity	Monitor soil moisture conditions prior to allowing equipment to begin operations in summer and monitor snow and temperature conditions prior to winter logging. This monitoring must be documented in the Timber Sale Daily Report.	SA	Pre - sale & during harvest activities
Soil Productivity	Reuse all existing roads and skid trails to the extent feasible unless doing so would adversely affect soil, water or other resources. Reusing existing roads and trails would reduce the amount of additional soil disturbance (cumulative effects). If roads or trails cannot be reused, their extent must be considered when laying out additional skid trails.	SA, SP, SS	Pre & post - sale, during harvest activities
Soil Productivity	Winter logging must occur when there is enough settled snow and/or frozen ground to protect the soil from detrimental disturbance. If equipment does not mix soil into the snow or cause muddy water to bleed into the snow then conditions are right for winter logging.	SA, TP, SS,	During harvest activities
Soil Productivity	All mechanical fuel reduction would be accomplished with excavators and/or low ground pressure chipping machinery. Excavators will, to the extent feasible, remain on skid trails. If chipping is implemented, excavators with mounted chipping heads would be used exclusively.	SA, TP, SS	During harvest activities
Soil Productivity	Fuel reduction/slash disposal will be delayed for one wet season after the material has been piled in Units 9, 11, part of 12, 16, 17, 20, part of 26, 27, 28, 37, and 47	SA, FMO, SS	Post - harvest

**TABLE 2 - 13
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
<p>Soil Productivity</p>	<p>If monitoring results indicate that detrimental soil disturbances for a given treatment unit exceed or equal 15 percent, then all or a portion of the following actions will be used to begin the restoration of soil quality. Restoration would occur on sites with a high amount of detrimentally disturbed ground such as designated skid trails and landings:</p> <ul style="list-style-type: none"> ▪ Scarify heavily used skid trails and landings with the teeth on an excavator bucket to a depth of 2 to 4 inches. ▪ Plant Montana - Certified Weed Free native grasses on the scarified soils as recommended by the Forest Botanist. This process will add organic matter to the soil and mulch to the surface. ▪ Plant native shrubs where needed to augment natural vegetation and scarification. <p>The site conditions will be used to determine which of the above mitigations will be used. These mitigations do not result in instant restoration of detrimentally disturbed soils; rather they begin the restoration process.</p> <ul style="list-style-type: none"> ▪ All temporary roads constructed for this project that utilize existing road templates will be reclaimed by removing any installed culverts or temporary bridges, by placing large woody material on the template (where that material is available), and by seeding exposed soils with the native plant mix as specified by the Forest Botanist. In addition, all newly constructed temporary roads will be reclaimed after use, as soon as logistically practicable. The reclaiming of new temporary roads will include re - contouring the entire road template to natural ground contour, and to the extent feasible, placing the top soil back on the soil surface. 	<p>SA, SS</p>	<p>During harvest activities, post - sale</p>
<p>Ensure implementation changes meet Design intent</p>	<p>Consult project Silviculturist where treatment deviations are required during contract execution, as a result of changed conditions that materially affect the intended treatment as described in the site-specific silvicultural prescription. As needed, the silvicultural prescription will be modified and re-approved by a certified Silviculturist.</p>	<p>SP, SILV</p>	<p>Prior to contract preparation</p>

**TABLE 2 - 13
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
Leave Tree Projection	All reasonable care should be taken by the Contractor to avoid damage to the root, bole, and crown of trees reserved from cutting. No more than 5 percent of the trees designated to be left and protected should be damaged beyond recovery by the Contractor's operations. Any tree damaged beyond recovery, i.e., will die within 1 year as a result of damage, will be removed or otherwise treated by the Contractor as instructed by the Forest Service.	SA/HI, TP	During activity
Retain Hardwoods	Retain and protect all hardwood species to minimize damage and protect this scarce resource.	TMC, SA/HI, TP	Sale preparation, contract preparation, during activity
Control Spread of Noxious Weeds	Seed landings, temporary roads, and roadsides with soil disturbance with a Montana-Certified grass ground cover (seed mix of native plants and non-native annual will be specified by the Forest Botanist), as soon as practicable after disturbance to provide for site projection until native species are established. During construction of temporary roads, the topsoil (A Horizon) will be left to the side and replaced on the temporary road when use of the temporary road is no longer needed for the project. Seeding of temporary roads will occur after topsoil is replaced.	SA, TP, DRC	Pre- & Post-Sale & during harvest activities
Control Spread of Noxious Weeds	Power scrub or steam clean all off-road logging and construction equipment associated with sale activities and temporary road construction on the undercarriage and chassis before transport to the project area. This cleaning shall remove all soil, plant parts, seeds, vegetative matter, or other debris that could contain or hold seeds. All subsequent move-ins of equipment to the project area shall be treated in the same manner as the initial move in. "Off-road equipment" includes all logging and construction machinery, except for log trucks, chip vans, service vehicles, water trucks, pickup trucks, cars, and similar vehicles.	SA, TP	Pre-harvest

**TABLE 2 - 13
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
Reduce the Potential for Spread of Noxious Weeds	Where trees are present along Forest Development Road #5373 (adjacent to Units 2 and 3), a 50-foot leave tree buffer would be established along the road. This buffer would help continue to insulate the rocky outcrops and grasslands from potential new weed establishment after implementation. Ground-based equipment would avoid these areas when practical during implementation. In addition, lop and scattering with underburning or chipping would be used to reduce fuels within these stands. Concentrated pile burning would not occur within these stands or over the rock outcrops and grassland openings. These measures would not eliminate all weed seeds from establishing within these unique habitats, but would only reduce the potential for establishment and spread.	TMC, SA, TP	Pre-harvest
Preserve TES Plant Populations and Their Habitats	Avoid all wetlands with all ground-disturbing activities, including lakes, ponds, marshes, fens, and streams. Establish buffers around wetlands – 150 feet for areas greater than 1 acre and 50 feet for areas less than 1 acre. Buffers should begin where facultative wetland plants end.	SP, SA, BT	Prior to implementation, during harvest activities
Compliance with Montana Streamside Management Zone Law (SMZ)	Ensure that all activities are in full compliance with Montana SMZ regulations	SA, ENG	Throughout the duration of all activities
Implementation of Best Management Practices (BMPs)	Ensure that all activities are implemented in full compliance with Montana Best Management Practices. Reshape existing drainage features if needed.	SA, SP, ENG, FAFMA	Throughout the duration of all activities
Ensure correct INFISH Riparian Buffers are applied on the ground	Avoid all activity within 150 feet of perennial streams and 100 feet of intermittent streams. (There are no fish-bearing streams on NFS lands.) If any wetlands are found, avoid all activity within 50 feet of wetlands less than 1 acre and 150 feet of wetlands greater than 1 acre.	SP, SA	During unit layout and during harvest activities
Protect water quality at stream crossing for temporary road accessing Unit 2	Carefully locate and design stream crossing before temporary road is built. Install only during dry channel conditions. Ensure timely removal and rehabilitation of site when the harvest activities are complete.	ENG, DRC, FISH or HYD	During assembly of sale contract package

**TABLE 2 - 13
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
Protect water quality by ensuring insufficient road culverts are replaced with correct structures	Inventory all existing road/stream crossings. Replace any culvert that constricts bank full width more than 50 percent or has substantial outlet drop or is showing signs of excessive rust or failure. Install new culverts at Q100 flows and bank full widths. Prioritize funding for perennial streams first, then intermittent, then ephemeral draws. Additionally, install new ditch relief pipes if any existing pipes show evidence of collecting too much water.	ENG, DRC, FISH or HYD	During assembly of sale contract package
Coarse Woody Debris Retention	In the Clearcut with Reserve Trees, Seed Tree, Commercial Thin, Sanitation, and Salvage Units, the minimum retention for down woody material would be, where available, 15 pieces average per acre, 9 to 20 inches diameter and 10 pieces average per acre greater than 20 inches diameter. This amount of down woody material equates to 50 to 10 tons per acre. Generally, down woody material to be left would be further than 150 feet from private land boundaries.	SILV, SA, TP, SP	Pre & Post - Sale, during harvest activities
Snag Retention	At a minimum, in the Clearcut with Reserve Trees, Seed Tree, Commercial Thin, Sanitation, and Salvage Units, 6 snags average per acre that are 12 to 20 inches DBH would be left. If existing snag densities are below these densities, substitute live trees would be left where possible. All snags greater than 20 inches DBH would be left, where available. All standing dead cull western larch, ponderosa pine, and Douglas-fir trees 15 inches DBH or greater may be retained and all hardwood trees would be designated to be left. Generally, the snags to be left would be further than 150 feet from open roads and private land boundaries, and well distributed. Snags that pose a safety hazard to the Contractors operation would be removed.	SILV, SA, SP, TP	Pre & post - sale, during harvest activities
Protect Northern Goshawk	In order to protect a northern goshawk pair and young from disturbance during the breeding season, no ground disturbing activities will be conducted April 15 through August 15 in Units 40, 41, 42, 43, 44, 45, 46, 49, and 50. These units are adjacent to a goshawk nesting area.	SA, TP	During Harvest Activities
Decrease Disturbance to Bald Eagle Nest Site	In order to decrease the chance of disturbance at an existing bald eagle nest site, ground disturbing activities would not occur in Unit 15 from February 1 through July 15.	SA, TP	During Harvest Activities

**TABLE 2 - 13
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
Protect Threatened, Endangered, or Sensitive Species	The contract will include provisions to cease activity or otherwise protect populations and individuals of threatened, endangered, or sensitive species. This allows for modification of the project should an unforeseen issue(s) be identified during operations. Standard contractual requirements used in all contracts provide for modification or termination of the contract to avoid impacts and protect TES habitat.	SP, SA, WB	During assembly of sale contract package
Snag Retention	Public access will be restricted on roads normally closed to use and on temporary roads.	SA, TP	During Harvest Activities
Snag Retention	All temporary roads constructed on NFS lands would be reclaimed after use. Snags that are cut down during temporary road construction would be left on the ground.	SA, TP	During Road Construction and Post-Harvest
Meet Forest Plan Winter Range Standards	Vegetative treatments located in areas designated as MA-9 (white-tailed deer winter range) would be designed to meet Forest Plan standards for MA-9. The MA- 9 standards include "achieving at least 50% of the area in winter thermal cover." Thermal cover in the Porter Mount Area consists of stands with evergreen coniferous trees with an average minimum height of 60 feet and a minimum crown canopy greater than 50%.	SP, TMC, WB	Pre-Harvest
Maintain Habitat Security	Vegetation would be retained around berms and gates, where needed, to maintain closure effectiveness.	SA, TP	Post Harvest
Maintain Habitat Security	If berms are removed for access to treatment units, temporary gates would be installed. Berms would be reinstalled when fuel reduction activities are complete.	SA, TP	During Harvest and Post Harvest

**TABLE 2 - 13
MANAGEMENT REQUIREMENTS AND DESIGN CRITERIA**

OBJECTIVE	TASK	RESPONSIBILITY	DUE DATE
Protect Heritage Resources	Modify contractual requirements to provide for protection of Heritage Resources and modify the contract to avoid impacts to Heritage Resource if cultural resources are discovered during ground disturbing activities.	SA, ARCH, SP	Pre and Post Sale, during harvest activities
Preserve Scenery Resources	For Units 2, 15, 32, 36, and 52 layout of the unit boundaries would be undulated and feathered so straight lines are minimized. Units would be designed to blend with the characteristic landscape.	SP, SA, SILV,	Pre-Sale
Preserve Scenery Resources	In Unit 2, where feasible and in conjunction with soil Design Criteria, mulch or cover exposed mineral soil with slash following operations. Cable corridors would be evaluated post-harvest to determine the need to use slash in Unit 2 to visually break up vertical lines created by cable corridors.	SA	Post-harvest
Preserve Scenery Resources	In Unit 12, feather north boundary line by removing 50 percent canopy at the boundary line on a gradient to 90+ percent canopy removal in the interior of the unit.	SA, SP	Pre-Sale
Preserve Scenery Resources	In Unit 21, feather north and south boundary lines by removing 50 percent canopy at the north and south boundary lines on a gradient to 90+ percent canopy removal in the interior of the unit.	SA, SP	Pre-Sale
Preserve Scenery Resources	In Units 15, 32, and 36 reduce distance between skyline corridors (such as frequency, 60 foot distance between corridors as opposed to 150 foot) to increase control of skyline cable to better ensure protection of residual stand. Corridor width should be considered during implementation to reduce corridor stripes in visually sensitive areas.	SA, SP	Pre-harvest and during harvest activities

This page intentionally left blank