

# Design Features and Mitigation Measures

## Appendix 2

### Design Features and Mitigation Measures

The Grizzly Vegetation and Transportation Management decision includes the following design features and mitigation measures to protect resources.

#### GRIZZLY DESIGN FEATURES AND MITIGATION MEASURES

**Trails and Roads:** Timber Sale Standard Provision BT6.22, Protection of Improvements, will be included in any timber sale contract. It will require the purchaser to protect specified improvements, such as trails, roads and fences identified on the sale area map.

**Inventoried Roadless Areas:** Harvest units are located outside Inventoried Roadless Areas. There are two prescribed burn units within the Grizzly Peak IRA (Units G and H). Trails are designated as non-motorized to maintain management objectives and protect grizzly bear habitat.

##### Site Specific Feature to Protect Roadless Area Characteristics: :

- Within prescribed burn units G and H, slashing of small trees is prohibited. Burning in the fall is preferred to emulate natural fire conditions and to gain the maximum benefit to the area. Fire will be allowed to creep within the riparian area.

**Water Quality and Fisheries:** Harvest, burning and road work activities will be designed to meet objectives in the Soil and Water Conservation Practices Handbook 2509.22 (USDA Forest Service, 1988), which comply with Montana State water quality regulations. Montana State Best Management Practices (BMPs) will be applied to this project. These BMPs are incorporated into the road package of the timber sale contract. BMP implementation is monitored by the timber sale administrators and the engineering representatives. Monitoring results are included in the annual Forest Plan Monitoring and Evaluation Reports.

Reconditioning of existing roads needed for hauling will be held to the minimum necessary to protect and maintain the road surface and drainage structures, and provide for public safety. Scarification of ditches and catch basins will be done only where necessary to provide for adequate function and will be seeded after work is completed. Blading of native road surfaces will only be done where necessary for haul or adequate drainage. More extensive road work will be implemented where work will benefit the watershed condition.

Culvert removals and replacements in live streams, will be reviewed and permitted by the State of Montana. The amount of sediment input as a result of culvert removals will be minimized by dewatering the streams while the culverts are being replaced.

Timber harvest, road maintenance and BMP work, landing construction, and prescribed burning will meet Kootenai Forest Plan standards and guidelines. Riparian Habitat Conservation Areas (RHCAs) include all intermittent and perennial streams, wetlands, and landslide prone areas. All alternatives will implement the default RHCA widths specified by the Kootenai Forest Plan. RHCAs will be identified on the sale area map in the timber sale contract. No timber harvest will occur in RHCAs designated along streams or wetlands. If springs and small streams are found within cutting units during layout, RHCA widths will be implemented, and all dead and live trees within the RHCA will be retained. A spill control prevention plan will be required by the timber sale contract for helicopter fuel storage.

##### Site Specific Features to Protect Water Quality and Fisheries: :

- Best Management Practices (DEIS Appendix D) will be implemented on all haul roads. Implementation of BMPs on roads accessing Units 17, 18, 20, 32, 33, 34, 36, 36a, 37, 40, 42, 43, and 47 (Roads 902, 8021, 8021B, 6084, 6084A, and 6084C) will be required prior to the timber haul because of drainage and related water quality issues. All other road systems with BMP work identified will complete BMP work by the end of the timber sale contract. See ROD Appendix 1 for prioritization for BMP work by road.

##### Soils:

Detrimental disturbance will be minimized by limiting the total area dedicated to skid trails, temporary roads, and landings. Existing disturbed areas will be reused to the extent possible. In all units, excavated skid trails, temporary roads and landings used for harvest activities will be scarified at least 6-12", and recontoured if possible. The depth of scarification will be based on the depth of the volcanic ash layer. The rehabilitated sites will be seeded and fertilized, and covered with well-distributed slash. Rehabilitation activities will be limited to dry soil conditions, normally July 15 – September 15, unless otherwise approved by the soils specialist.

Slash will be used instead of waterbars to control runoff on skid trails wherever it is feasible and effective.

The timber sale contract will require removal of non-sawlog material to the landing using provisions C2.2 and C2.11 to reduce ground disturbance associated with grapple piling. In all grapple pile units, live vegetation removal will be minimized during piling operations by removing only activity-created fuels and existing down dead material that exceeds desired fuel loading. In order to minimize soil compaction, the size class of excavator will be specified in the timber sale and slash disposal contracts. Grousers (cleats on the tracks) are recommended for excavators. To avoid excessive soil disturbance, excavators and feller bunchers will generally not be operated on sustained slopes greater than 40%. Excavators will not be operated when soil moisture conditions will result in rutting.

Long-term soil productivity and small mammal habitat will be protected by providing for recommended levels of coarse woody debris (CWD) on site (Graham, et al. 1994). Silvicultural and burning prescriptions will be developed to retain sufficient levels of coarse woody debris on site after harvest and where slash disposal occurs (see Appendix Table 2-1). These prescriptions are written for every individual treatment area and may actually emphasize CWD levels at more definitive levels within the range described below, to fit site-specific conditions. CWD should be left scattered across the unit, not concentrated. This material originates from unutilized portions of designated trees, cull materials, broken tops, existing down logs, etc.

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### Unit Specific Features to Protect Soils:

- See Table 2-1 in this appendix for coarse woody debris requirements. Piece size should exceed 7" in diameter and the preference is for larger material where possible.
- Harvest and slash treatment systems have been determined for each unit by the IDT (SWCP 13.02, 14.07). Proposed changes during implementation to more impactful equipment or methods will be reviewed and documented by the IDT.
- Soil conditions in Units 1, 2, 3, 18 and 20 will be monitored between the harvest and fuels treatment to determine if mitigation and restoration work is needed in order to make sure the final unit conditions do not exceed 15% detrimental disturbance. As necessary to meet the 15% guideline, skid trails used to harvest Units 1, 2, 3, 18, and 20 will be scarified 6-12 inches, as specified by the soils specialist. The rehabilitated sites will be seeded and fertilized, and covered with well-distributed slash. Such activities are committed to and will be funded using BD, Stewardship Retained Receipts, or other sources. Rehabilitation activities will be limited to dry soil conditions, normally July 15 – September 15, unless otherwise approved by the soils specialist.
- Units 1, 2, 3, 4, 11, 12a, 13, 13a, 17, 18, 20, and 32 will be restricted to winter harvest (skidding only on frozen ground-C6.4#) to minimize soil impacts. If winter operations are agreed to in any other units, frozen ground will also be required.
- Unit 40 will require a restricted operating season restricted to the driest time of year (August 1 to September 15), and leave islands (Special Treatment Areas) would be delineated on the ground to protect wet areas.

**Old Growth Habitat:** Stands classified as effective or replacement old growth, both designated and undesignated, will not be affected by any proposed activities. All harvest units are designed to be at least 300 feet from any old growth stand, in order to eliminate the potential for edge effects created by removing tree canopy. Roads through old growth opened for timber harvest activities will restrict public access, minimizing the potential for snag loss from firewood harvesting. No proposed temporary roads are within or adjacent to old growth.

**Endangered, Threatened, Proposed and Sensitive Plants and Wildlife:** Legal and biological requirements for the conservation of Endangered, Threatened, Proposed and Sensitive plants and animals will be met. These species have been identified in cooperation with other agencies such as the USFWS and MDFWP. If any of these plant or animal species are located prior to or during implementation of any management activities, the activity will be altered so that proper protection measures could be taken. Timber sale contract clause B6.25, Protection of Habitat of Endangered Species, will be included in any subsequent timber sale contract.

The maintenance of landscape-level connectivity and minimization of fragmentation was incorporated into the design of all action alternatives. All alternatives will maintain RHCA's along all streams, and will avoid creation of barriers to the movement of species expected to use such areas.

### Site Specific Feature to Provide for Grizzly Bear Habitat:

- Units 1, 2, 3, 4, 11, 12a, 13, 13a, 17, 18, 20, and 32 will be restricted to the non-bear year (12/1-3/31).
- Access management activities as displayed in Appendix 3 will be implemented to ensure grizzly bear standards are met.
- During the approximately eight weeks during July and August expected for implementation of the decommissioning activities on the 6132 road system (Upper Burnt Creek area), no other activities may occur in BMU 11 to ensure that adequate displacement habitat is available. Outside the period in which implementation of the upper Burnt Creek decommissioning occurs, but during the same bear year, no harvest or other decommissioning would occur, but other project activities such as precommercial thinning or burning may occur.
- Activities will avoid the spring bear use period (4/1-6/15).
- Fall burning is desirable for burn units G, H, and I to promote huckleberry production, increase vegetation response, and coincide with natural ecosystem functions. The helicopter burn units G and H in BMU 11 core will last no more than 2 days.
- Seeding for erosion control and watershed improvements along open roads will use a seed mix that does not contain clover.

**Site Specific Feature to Provide for Big Game Winter Use:** Timing of activities in Units 44, 45, 45a, 49, and 50 would avoid the winter use period (December 1 – April 30). Harvest of Grizzly Project Units 17, 18, and 20 would only occur after Grizzly Project Units 11, 12a, 13 and 13a to insure that displacement areas containing winter forage for big game is available.

**Site-Specific Feature to Provide Connectivity:** Movement corridors are provided for in all activity areas. The opening resulting from harvest of Units 45, 45a, 49, 50a, and 50 includes retention islands to provide 600 feet to cover.

**Site Specific Feature to Provide for Snags:** All existing snags will be retained unless they present a safety hazard; these felled snags will be left in all tractor units, and in skyline units they may be removed if it is agreed they present a safety hazard to operations. If less than 6 snags per acre are available, live trees will be retained to meet the minimum of 6 per acre, with the exception of Units 55, 55a-g which will be managed for retention of a minimum of 4 snags per acre due to adjacency to open road. Species preference for live retention trees is western larch, ponderosa pine, western white pine, Douglas-fir with a minimum diameter of greater than 10 inches. Trees with apparent cavities, stem decay, or other defects will be selected as replacement snags where possible.

**Fire/Air Quality:** Burning prescriptions will be prepared for fuel reduction activities, and reviewed by the IDT. These prescriptions will determine the limits of weather conditions and fuel moistures to control fire intensity. The State of Montana Stream Management Zone (SMZ) Law prohibits broadcast burning in SMZs. During prescribed burning, no ignition will take place in an RHCA, but fire will be allowed to creep within the riparian area. In order to reduce the risk of wildfire starting from timber sale activity when conditions warrant, purchaser operations would be suspended by order of the Regional Forester or Forest Supervisor.

All burning operations will be scheduled in accordance with the Memorandum of Understanding for air quality protection between the State

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of Montana Air Quality Bureau and the Forest Service, which allows burning only when adequate smoke dispersal will occur (see DEIS Chapter 3, Air Quality section for additional features). Depending on market conditions, the timber sale will attempt to maximize utilization of non-saw material, and chipping of landing piles to avoid the need for pile burning. Excavator piles will be kept at 15 feet or less in diameter and 10 feet in height, and will be burned during the fall or winter when soil moisture is high. This will reduce the intensity and duration of heat near the soil surface, and reduce the risk of potential soil damage from burning. Excavator operators will be directed to minimize soil damage. Special care will be taken to avoid wet areas, RHCAs, and excessively steep or rocky slopes.

**Noxious Weeds:** Measures will be taken to reduce the risk of noxious weed introduction and spraying will comply with the April 2007 KNF Invasive Plant Management Record of Decision. 1) Prior to and after harvest operations, roads with current access for boom truck or ATV will be treated by the District weeds crew. 2) Purchaser will be required to treat with herbicide all roads prior to reconstruction activities. If this is not feasible due to vegetation in the roadway, purchaser will spray cutslopes and fillslopes following reconstruction. 3) Timber sale contracts will contain Special Provision C6.351, which requires all off-road vehicles associated with harvest operations to be cleaned and inspected prior to entering the sale area. These actions will also be applied to equipment used in fuels reduction activities. Designated points of entry will be identified by the Forest Service for accessing units from weed infested roads where weeds could be spread into the units. 4) Burning prescriptions will be prepared for fuel reduction activities. These prescriptions will determine the limits of weather conditions and fuel moistures to control fire intensity for protection of soil and native plants. 5) Reconditioning of existing roads needed for hauling will be held to the minimum necessary to protect and maintain the road surface and drainage structures, and provide for public safety. Scarification of ditches and catch basins will be done only where necessary to provide for adequate function. Blading of native road surfaces will only be done where necessary for hauling or adequate drainage. 6) Landings will be scarified and reseeded following use. 7) Where access is available, roads to be decommissioned will be treated with herbicide prior to activities, and seeded with weed-free seed mix following activities.

**Cultural Resources:** Cultural resource surveys for this project have been completed. The action alternatives were designed to protect known cultural sites, provide for protection of sites discovered during implementation, and protect treaty rights. These concerns will be addressed through ongoing consultation with tribal representatives. Timber Sale Contract Special Provision B6.24#, Protection of Cultural Resources, will be included in any timber sale contract. It specifies that the Forest Service may modify or cancel the contract to protect cultural resources, regardless of when they were identified.

**Scenic Resources:** In all units adjacent to open roads, skid trails and cable corridors will be located to minimize visual impacts and minimize impacts to understory vegetation.

**Unit Specific Feature to Protect Scenic Values:** Where possible to minimize visual impacts, landings and skid trails will be placed off Road 472, or rehabilitated after activity, and advanced tree regeneration protected. In Unit 60, to keep the harvesting visually subordinate to the surrounding characteristic landscape, leave trees (non-lodgepole type species and any advanced regeneration) will be left in the first 100 feet near Rd. 472.

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TABLE 2-1. HARVEST UNIT DESIGN FEATURES

Alt. 2a Unit	Coarse Woody Debris Tons/acre Prescription Where Available*	Harvest during Denning Season (12/1-3/31) and Frozen Ground	Avoid Spring Period (4/1-6/15) to Protect Grizzly Bears	Avoid Big Game Winter Use Period (12/1 – 4/30)	Rehab Skid Trails during Dry Period (7/15-9/15) if Required to Meet Standards	Harvest during Dry Period (8/1-9/15)	Harvest only after Completion of Units 11, 12a, 13, and 13a for Big Game Displacement
1	15-32	X	X		X		
2	15-32	X	X		X		
3	15-32	X	X		X		
4	15-32	X	X				
10	15-32		X				
11	15-32	X	X				
12a	15-32	X	X				
13	15-32	X	X				
13a	15-32	X	X				
17	10-15	X	X				X
18	15-32	X	X		X		X
20	10-15	X	X		X		X
32	15-32	X	X				
33	15-32		X				
34	10-15		X				
36	15-32		X				
36a	15-32		X				
37			X				
40	15-32		X			X	
42			X				
43	10-15		X				
44	15-32		X	X			
45	15-32		X	X			
45a	15-32		X	X			
46	15-32		X				
47			X				
49	15-32		X	X			
50	15-32		X	X			
55a			X				
55b			X				
55c			X				
55d			X				
55e			X				
55f			X				
55g	15-32		X				
57			X				
57a			X				
60	15-32		X				

\*Includes all regeneration harvest units and intermediate harvest in wet habitat types (Units 17, 20, 34, and 43).