

CHECKLIST ENVIRONMENTAL ASSESSMENT

PROJECT NAME:	CROWN BUTTE TIMBER SALE
PROPOSED IMPLEMENTATION DATE:	JULY 1, 2006
PROONENT:	DNRC – HELENA UNIT, 8001 NORTH MONTANA AVE., HELENA, MONTANA 59602
LOCATION:	SECTION 16, T16N, R6E
COUNTY:	CASCADE COUNTY, MONTANA

I. TYPE AND PURPOSE OF ACTION

A. TYPE OF ACTION: CROWN BUTTE TIMBER SALE

The Montana Department of Natural Resources and Conservation (DNRC) is proposing a timber sale/pre-commercial thin near Monarch, Montana in Cascade County. Under this harvest alternative, the DNRC plans to cut approximately 1400 MBF of sawlog material from 262-acres. Noxious weed control and/or monitoring shall continue five years after harvesting has been completed.

The proposed action would be implemented as early as July 1, 2006. Access to harvest/pre-commercial thin units would be through private property, utilizing mostly existing trails. Trail reconstruction would be minimal, as rough forest products would be forwarded to a centralized landing area near Forest Service Road 67. A "Commercial Road Use Permit" would need to be obtained from the Forest Service to haul sawlog material approximately six miles down this graveled road. The road length would coincide with "Temporary Right-of-Way Deed" that has been granted to the State of Montana by the private landowner, ending October 15, 2008.

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B. PURPOSE OF ACTION:

**LEGISLATIVE ENVIRONMENTAL
POLICY OFFICE**

- **Enabling Act:**

By the Enabling Act approved February 22, 1889, the Congress of the United States granted to the State of Montana, for common school support, sections sixteen and thirty-six in every township within the state. Some of these sections had been homesteaded, some were within the boundaries of Indian reservations, and yet others had been otherwise disposed of before passage of the Enabling Act. To make up for this loss, and in lieu thereof, other lands were selected by the State of Montana. The Enabling Act and subsequent acts also granted acreage for other educational and state institutions, in addition to the common schools.

- **Distribution of Revenues:**

Each section of state trust land is assigned to a specific trust with distribution of revenue being handled in accordance to criteria outlined for that trust. The three types of trusts in the State of Montana are as follows:

1. **Common School Trust:**

The distribution of revenue generated from common school trust land is distributed yearly to the state Guarantee Account for use by the public schools of the state.

2. **Trusts Other Than the Common School Trust:**

Revenue generated from of the remaining distributable receipts goes directly to the trust recipient. Included in "other" trusts are:

- The University of Montana

- Montana State University - Morrill Grant
- Montana State University - Second Grant
- Montana Tech of The University of Montana
- State Normal School (Montana State University-Billings and Western Montana College of The University of Montana)
- School for the Deaf and Blind
- State Reform School (Pine Hills)
- Veterans Home

3. Public Buildings:

Distribution of revenues on public buildings trust land goes to the Department of Administration.

• **Trust Land Management / Distribution of revenue:**

The lands involved in this proposed project are held by the State of Montana in trust for the support of specific beneficiary as described above (Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X, Section 11). The lands included in this proposal are part of the Common School Trust. The Board of Land Commissioners and the DNRC are required by law to administer these trust lands to produce the largest measures of reasonable and legitimate return over the long run for these beneficiary institutions (Section 77-1-202, MCA). On May 30th, 1996, the Department released the "Record of Decision" on the State Forest Lands Management Plan (SFLMP). The Board of Land Commissioners approved the SFLMP's implementation on June 17, 1996. The SFLMP outlines DNRC's philosophy for management of state forested Trust Lands.

The Department shall manage lands involved in the project according to the philosophy in SFLMP, which states the following:

Our premise is that the best way to produce long-term income for the trust is to manage intensively for the healthy and biologically diverse forest. Our understanding is that a diverse forest is a dynamic forest that will produce the most reliable and highest long-term revenue stream. In the foreseeable future, timber management will continue to be the DNRC's primary source of revenue and primary tool for achieving biodiversity objectives.¹

• **Goals and Objectives:**

In order to meet the goals of the management philosophy adopted through programmatic review in the SFLMP, the Department has set the following specific project objectives:

- *Improve forest health and vigor while maintaining shade-intolerant ponderosa pine on the landscape.*
- *Opportunity to generate revenue for the State Trust.*

1. IMPROVE FOREST HEALTH AND VIGOR WHILE MAINTAINING SHADE-INTOLERANT PONDEROSA PINE ON THE LANDSCAPE:

GENERAL INFORMATION:

A formative process in the development of forest stands is disturbance that kills trees, making way for new ones. The characteristics of these stands are determined by the kind, frequency, and magnitude of disturbance that have affected the site in the past. Climax communities are a result of a long series of small light disturbances, while seral/pioneer stages are the product of intensive, sometimes stand replacing events. Fire in the past has played a significant role in the natural disturbance of many forest tree-species. They have developed adaptations to fire such as closed-

¹ "State Forest Land Management Plan, Final Environmental Impact Statement, Record of Decision", Montana Department Of Natural Resources And Conservation, May 30, 1996, p. ROD-1, ROD-2.

cones, hard-coated seeds that are capable of surviving for long periods on the forest floor, and light-seeded species that thrive on seedbeds of bare mineral soil exposed by fire.

Tree species that are true pioneers form all or part of the main canopy almost from the time of their establishment. Those that are rather tolerant to shade are likely to become established simultaneously and remain underneath until the death of the pioneers.²

The successional aspects of ponderosa pine can be expressed in terms of its successional role, which may range from pioneer to climax, depending on site condition. On more favorable sites ponderosa pine encounters sever competition with other tree species and must establish opportunistically when disturbance reduces competition and creates a seedbed. In conditions such as this, ponderosa pine is usually seral to Douglas-fir.³ Ponderosa pine has sufficient fire-resistant bark to withstand burning at intervals throughout most of its life cycle and thrives only as a result of periodic fires. Occasional surface fires have been beneficial to the maintenance of this species in original forest because they arrested natural succession, exposed favorable seedbeds, and prevented more destructive fires. Regeneration of Douglas-fir after fire comes from seeds already present on remnant trees or from those subsequently produced by trees that happen to survive because of their size or location.⁴

CURRENT STAND CONDITION:

The proposed harvest area consists of a stratified mixture of ponderosa pine and Douglas-fir in various stages of development from seedling/sapling and pole classes to maturity.

Ponderosa pine seedlings/saplings continue to encroach on grass openings and other areas of natural disturbance. Full sunlight reaching the ground has created favorable growing conditions, resulting in a stand that is overstocked.

Ponderosa pine dominates the pole-size diameter class and is well-stocked. Overcrowding in this stand could result in keen competition for the available water, light, and soil nutrients. Live-crown development could slow as the overstory canopy continues to close-in on itself.

The most apparent stratified mixture of tree species in this area are in stands of mature ponderosa pine and Douglas-fir. Although these stands are dominated by ponderosa pine, a component of Douglas-fir, which has penetrated to the top of the main canopy, can be found as well. Mixed stands develop most often when a tree species having the most rapid rate of juvenile growth in height out gains the slower growing species, which lag even further behind due to lack of sunlight. If the slower growing species are not sufficiently tolerant to shade and competition, only random individuals would occupy the main canopy and a nearly pure stand of faster growing species would remain. However, if the slower growing species were sufficiently tolerant to shade, they would persist as a lower story beneath the main canopy.⁵

The description of mixed stand development explains how shade tolerance plays a role in the establishment of different tree species at relatively the same point in time, say after a catastrophic event such as a stand replacing wildfire. The fact that both shade intolerant ponderosa pine and shade intermediate Douglas-fir occupy the main canopy may be the result of a near stand replacing wildfire event that killed a large portion of the original stand but left a few scattered Douglas-fir throughout. Exposed soil conditions that come about as a result, would have provided conditions favorable to the regeneration of pine underneath the fir.

² Smith, David M., *"The Practice of Silviculture"*, Seventh Edition, published by John Wiley & Sons, 1962, p.535

³ Baumgartner, David M., *"Ponderosa Pine The Species And Its Management"*, Symposium Proceedings, September 29- October 1, 1987, Spokane, Washington, USA, p. 73

⁴ Smith, David M., *"The Practice of Silviculture"*, Seventh Edition, published by John Wiley & Sons, 1962, p. 327, 328

⁵ Smith, David M., *"The Practice of Silviculture"*, Seventh Edition, published by John Wiley & Sons, 1962, p.533

Openings in the canopy have produced gaps that are stocked with poor-quality Douglas-fir seedlings and saplings. With current trends toward aggressive wildfire suppression the composition of this stand could shift more readily towards Douglas-fir in lieu of major natural disturbances due to this species intermediate tolerance to shade.

SILVICULTURAL PRESCRIPTION:

Varying even-aged silvicultural systems would be employed on the proposed harvest unit to mimic the occasional low-intensity surface fires that are beneficial to the maintenance of ponderosa pine. Whenever possible, Douglas-fir would be removed from the site in an attempt to maintain healthy and vigorously growing ponderosa pine on the landscape.

Seedlings/Saplings:

A pre-commercial "release" cutting would be applied to seedling/sapling sized trees four-inch in diameter or less. It is intended to release desirable trees from competition, reducing the overall density of the stand, and give the young remaining trees more room to grow. Implementation of this pre-commercial release cutting would be an added cost to the logging contractor, most likely being reflected in the bid stumpage price. Added stand benefits such as increased usable wood products in the future, decreased susceptibility to insects and disease attacks, and increased forage production would outweigh the initial cost investment.

Pre-commercial release cut is most beneficial and cost-effective early in stand development, when trees are 10 to 20 feet in height and 2 to 4 inches in diameter. At this stage, they're relatively easy and inexpensive to cut, the slash load is low, and the trees left respond quickly with increased growth.

Shade-intolerant species such as ponderosa pine need wider spacing for maximum growth. In addition, droughty conditions that are typical of pine sites warrant wider spacing as well. Spacing for optimal wood production in trees of this size, diameter, and species would be approximately 13' x 13'. Meeting this spacing objective would leave about 260 trees per acre, more than enough to prevent ingrowth and sunscald. This spacing would also provide adequate distance between residual trees to allow for the use of a mechanical system. This would reduce cost compared to conventional hand methods, increase productivity, and add more acres to the project

Residual tree selection would be based on the following criteria:

1. Are in a dominant or codominant position
2. Have at least 30 percent of their total height in crown
3. Have small branches, straight boles, and little taper
4. Lack broken, forked, or damaged tops
5. Have few or no disease problems

In addition trees that are suppressed, poorly formed, sickly, dominant heavy-limbed "wolf" trees, or those competing with selected leave trees would also be removed.⁶

Pole-Sized Stands:

By definition pole-sized stands are groups of young, relatively even-aged trees that are between 4" and 8" in diameter at breast height.⁷ In addition, stand densities are usually very high resulting in a "closed canopy". This leaves minimal growing space for further crown development in the canopy of dominant and codominant trees. Subordinate trees have lost crown surface and are no longer capable of adequately responding to release.

⁶ Emmingham, W.H., Oester, P.T., "Using Precommercial Thinning To Enhance Woodland Productivity", Oregon State University Extension Service, April 1997, Available on line at: <http://eesc.orst.edu/agcomwebfile/edmat/html/EC/EC1189/EC1189.html>

⁷ Wickman, Allen, "The Forest Management Digest", 6th Edition, Minnesota Forestry Association, p.438

An even-aged silvicultural system that would remove trees from the middle and upper portions of the crown and diameter range would be applied in this stand. "Crown thinning" would modify and guide development in dominant and co-dominant trees, allow for the expansion of crowns and root systems, and increase the overall health and vigor of this stand.

In crown thinning, trees would be removed from the upper crown classes in order to open up the canopy to favor the development of the most promising trees of the same class. Most of the trees that would be cut are from the codominant class, but any intermediate or dominant tree that is interfering with the development of a potential crop tree would also be removed. Trees to be favored would be chosen (if possible) from dominants and when necessary, from codominants.⁸

The question of whether individual dominant or codominant tree are favored would be settled according to the relative potential of adjacent trees. If the choice lies between a promising codominant and mediocre dominant, the codominant would be favored. A situation of this kind occurs most often where the codominant has a straighter, smoother bole, and smaller branches than the dominant. Where all trees are of good health, form, and species, codominants interfering with the growth of dominants would be removed, on the premise that position in the crown canopy is the best index of past and future vigor.

Theoretically, overtopped and intermediate trees that do not interfere with the crop trees are not cut in crown thinning. In practice however, there is little reason to leave such trees if they can be harvested profitably and their continued presence adds value neither to themselves nor to the stand as a whole.⁹

Crown thinning would be applied to the upper crown classes uniformly throughout this stand. It would provide a generous, but not unlimited number of the most promising crop trees a chance of being released.

It would not be practicable however, to free the crowns of the crop trees on all four sides, as this would seriously reduce the stocking in these stands. Therefore, if large holes are inevitable, the strongest competitors of the crop trees would be cut and the rest left to be taken out in subsequent thinnings.¹⁰ Basal area objectives of between 60 ft² and 80 ft² per acre would most likely provide stand conditions that meet this objective.

Mature Stands:

A seed-tree silvicultural method would be carried out in this stand, removing a good portion of the trees in one cutting, while retaining a small number (15 ft² to 25 ft² basal area/acre) throughout to provide seed. This even-aged regeneration method would be most favorable for the development of ponderosa pine, which requires sufficient sunlight to grow. Douglas-fir would be a primary target for removal when practicable, to reduce competition and slow the natural succession.

To maximize natural regeneration, the germination of seed as well as early seedling survival depends primarily on adequate site preparation to scarify and expose bare mineral soil. Mechanical harvesting equipment operating during the summer would create more than enough soil disturbance to provide for adequate pine regeneration. In addition, Douglas-fir regeneration that has become established as a result of small openings in the canopy would be eliminated through the use of a mechanical slash-busting system. This aggressive approach would effectively eliminate Douglas-fir in these areas, scarifying the soil in the process.

INDICATOR:

Indicators of increased growth and yield can be obtained through monitoring the radial growth by measuring the width of the last ten rings from increment borings.

⁸ Smith, David M., "The Practice of Silviculture", Seventh Edition, published by John Wiley & Sons, 1962, p. 70

⁹ Smith, David M., "The Practice of Silviculture", Seventh Edition, published by John Wiley & Sons, 1962, p. 71, p. 72

¹⁰ Smith, David M., "The Practice of Silviculture", Seventh Edition, published by John Wiley & Sons, 1962, p. 76

2. OPPORTUNITY TO GENERATE REVENUE FOR THE STATE TRUST.

Harvesting approximately 1400 MBF of Douglas-fir and Ponderosa Pine sawtimber would generate a net positive return to the State Trust.

INDICATOR:

Stumpage receipts to the DNRC in dollars.

II. PROJECT DEVELOPMENT

1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS OR INDIVIDUALS CONTACTED:

Provide a brief chronology of the scoping and ongoing involvement for this project.

1.1 HISTORY OF PLANNING PROCESS:

A scoping letter was sent out January 12, 2006 to interested parties on the DNRC, Helena Unit "Timber Sale Scoping List". The "Initial Proposal" letter briefly outlined project needs and objectives as well as existing landscape conditions.

Adjacent landowners also received the same scoping letter. They were identified using GIS Metadata obtained through the Montana Cadastral Mapping Project. This public-private sector partnership creates, maintains, and disseminates a digital GIS land ownership (cadastral) map database of the entire state. In addition, current land-use information on State Trust property was obtained from the DNRC Trust Lands Management System.

A legal notice was published in the *Great Falls Tribune* on January 20th, January 27th, and February 3rd 2006. Comments were to be directed to the DNRC Helena Unit office by February 15, 2006.

1.2 ISSUES STUDIED IN DETAIL:

The DNRC received a written comment from Cory Loecker, Wildlife Biologist, Montana Fish Wildlife and Parks. Concerns focused on big game habitat, access routes, and Species of Special Concern and are on file at the DNRC, Helena Unit Office.¹¹

2. OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS NEEDED:

2.1 SMOKE MONITORING UNIT:

In 1978, federal, state, local government agencies, and the forest products industry formed the Montana State Airshed Group. Their purpose was to manage and limit the impacts of smoke generated from necessary prescribed burning. In 1990, agencies and companies in North Idaho joined the Montana group on an operational basis to accomplish the same purposes. Agencies and companies from southern Idaho joined the group in 1999.

¹¹ Letter, Cory Loecker, Wildlife Biologist, Montana Fish Wildlife and Parks, February 6, 2006

Accumulation of smoke from controlled burning is limited through scientific monitoring of weather conditions and formal coordination of burns. Members submit a list of planned burns to the Monitoring Unit in Missoula, Montana. For each planned burn, information is provided describing the type of burn to be conducted, the number of acres, as well as the location and elevation at each site. Burns are reported by "Airshed", which are geographical areas with similar topography and weather patterns. The program coordinator and a meteorologist provide timely restriction messages for airsheds with planned burning.¹²

Slash generated from the timber harvest would be piled, burned, trampled and/or scattered to reduce wildfire risk, adhering to state standards, which are as follows:

"General Standard" as defined by Administrative Rule-36.11.222, Number 4, which states: "Slash must be reduced such that a fire starting under conditions similar to a standard day, as defined by the department's HRA Manual, would burn with a flame length of four feet or less, as calculated by the fire science BEHAVE model, or other fire behavior model selected by the department".

Slash that accumulates in excess to the nutrient cycling and course woody debris requirements would be piled and burned and burned at the landing area by the DNRC, Helena Unit Fire Crew after submitting a request and receiving approval to burn from the Smoke Monitoring Unit.

2.2 TEMPORARY RIGHT-OF-WAY DEED / FOREST SERVICE COMMERCIAL ROAD USE PERMIT:

2.2.1 TEMPORARY RIGHT-OF-WAY DEED:

There is no legal public access to State Trust lands in Section 16, Township 16 North, Range 6 East. As a result, the adjacent private landowner has granted a Temporary-Right-Of-Way Deed to the DNRC. This deed not only permits use of a forwarder trail (9,293' x 20') but a log decking and truck loading area that is 0.5 acres in size. Termination of this deed is October 15, 2008 or when the proposed timber sale is completed, which ever comes first.

2.2.2 FOREST SERVICE COMMERCIAL ROAD USE PERMIT:

Logging Creek Road (F.S. Road 67) would be used for approximately 6.72 miles and is maintained by the Lewis & Clark National Forest. The logging contractor would be responsible for obtaining proper Forest Service permits and paying any associated fees or bonds. Costs would most likely be based on the amount of rough forest product being transported over this road and is currently estimated at \$11.50/MBF.

3. ALTERNATIVES CONSIDERED:

3.1 INTRODUCTION:

Alternatives including the proposed action are the heart of this "Checklist Environmental Assessment". The purpose of this section is to describe the alternatives, comparing them in terms of environmental impacts and achieved objectives. Alternatives were determined through scoping, identifying the issues of concern, input from Interdisciplinary Team (IDT) specialists, and guidance from resource management standards set forth in the "SFLMP" and "Administrative Rules"¹³.

3.2 DESCRIPTION OF ALTERNATIVES:

¹² "Smoke Monitoring Unit", Montana/Idaho State Airshed Group. Available at: <http://www.smokemu.org>

¹³ DNRC, *Administrative Rules of Montana [ARM] 36.11.401 through 450*, DNRC Trust Land Management Division, Forest Management Bureau. Missoula, Montana. 2003, 87p.

This section describes the activities of the No Action Alternative and all other Action Alternatives.

3.2.1 ALTERNATIVE A: DEFERRED HARVEST (NO ACTION)

3.2.1.1 PRINCIPLE ACTIONS: ALTERNATIVE A

Timber harvesting would be deferred until a later entry. However, ongoing State Trust Land permitted, licensed, and approved activities would continue as follows:

- **Livestock Grazing** - existing Forest Grazing License #3072748 would continue in the project area contributing \$373.20 (60 AUM's x \$6.22) annually to the State Trust.
- **Fire Suppression** - human and natural caused fires would be suppressed by volunteer fire departments, and other government agencies.
- **Hunting** - deer, elk, bear, other big game hunting, as well as upland game bird hunting would continue according to the rules and regulations set forth by Montana Department of Fish, Wildlife & Parks. Beginning in 2004, purchase of a conservation license will also authorize use of accessible trust lands for hunting and fishing.
- **Public Vehicle Access** - existing motorized access privileges, as well as limitations, would remain the same. Currently this section is not accessible to unauthorized motorized use, as existing roads are either obstructed or gated.
- **Hiking and Other Recreational Uses** - persons having a valid State Trust Land Recreational Use Permit are welcome to hike, pick chokecherries, or perform other outdoor activities on this acreage.

3.2.1.2 PRESENT RELEVANT ACTION NOT PART OF THE PROPOSED ACTION:

Current land uses as described above would continue on property owned by the State of Montana. Timber harvesting on adjacent lands would most likely continue, as they are actively involved in forest management. No current timber management activity is taking place on BLM or U.S. Forest Service lands close to the project area.

3.2.1.3 REASONABLY FORESEEABLE RELEVANT ACTIONS NOT PART OF THE PROPOSED PROJECT:

U.S. Forest Service, BLM, and Private ownership would undoubtedly experience timber-harvesting activities during the next several decades.

3.2.2 ALTERNATIVE B: CROWN BUTTE TIMBER HARVEST:

3.2.2.1 PRINCIPLE ACTIONS: ALTERNATIVE B

If Alternative B were selected for implementation, the following actions would occur:

- The proposed harvest would cut approximately 1400 MBF of Douglas-fir and Ponderosa Pine sawtimber, generating a net positive return to the State Trust. Logging methods used would be ground based equipment due to gentle slope grades within the proposed harvest unit.

- The following even-aged silvicultural systems would be employed to maintain shade intolerant ponderosa pine on the landscape:
 - Pre-commercial release cuttings
 - Intermediate crown thinning
 - Seed-tree harvest
- Douglas-fir would be a primary target for removal when practicable, to reduce competition and slow the natural succession.
- Mechanical "slash busting" equipment would be used to thin seedling/sapling stands, improving health and vigor as well as increasing future growth potential. This would reduce cost compared to conventional hand methods, increase productivity, and add more acres to the project.
- Rough forest products would be transported a distance of approximately 1.76 miles on mostly existing trail to a small landing area next to Logging Creek Road. A rubber tired forwarder would be used for this purpose, minimizing impacts to the landscape.
- Contractor would be required to obtain a Commercial Road Use Permit from the Lewis & Clark National Forest for use of approximately 6 miles of Forest Service road.
- Post-harvest weed management would consist of monitoring for noxious weeds for a minimum of five years following timber harvesting. Spot weed spraying would then be done if necessary. Prior to coming into the project area, harvesting equipment would be required to be clean of noxious and nuisance weeds.

III. IMPACTS ON THE PHYSICAL ENVIRONMENT

- *RESOURCES potentially impacted are listed on the form, followed by common issues that would be considered.*
- *Explain POTENTIAL IMPACTS AND MITIGATIONS following each resource heading.*
- *Enter "NONE" if no impacts are identified or the resource is not present.*

4. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE:

Consider the presence of fragile, compactable or unstable soils. Identify unusual geologic features. Specify any special reclamation considerations. Identify any cumulative impacts to soils.

4.1 SOILS – EXISTING CONDITIONS:

The proposed project area is located on mountain footslopes and uplands with gentle to moderately steep stony loams and silty clay loams formed in alluvium and in material weathered from limestone. Most of the proposed harvest area is located on Whitore soils. These soils are silty clay loams that occur on moderate to moderately steep foot slopes and uplands. Erosion hazard on slopes up to 30% is low, and moderate for slopes 30-40%.

Most of the nonforested areas and sites undergoing forest encroachment within the proposed harvest area are located on Hanson-Sheege soils. These soil types consists of deep well-drained soils formed in alluvium and occupying alluvial fans and foot slopes at elevations between 4,500 and 5,500 feet. Erosion hazards are low to moderate for these soils.

The landscape surrounding the proposed harvest area also includes numerous limestone rock

outcrops and ledges. These areas occur on steeper slopes ranging from 35 to 75% and present higher erosion risk. No harvest activities are planned in these areas.

Timber harvest can affect soil productivity through displacement, erosion and compaction of the most productive surface layers of soil. This occurs largely through the use of ground based harvesting and skidding equipment, which can cause low to high levels of soil disturbance. However, existing detrimental soil effects within the proposed project area are limited to localized areas of heavy livestock concentration due to watering or salting. Soils at these sites have been compacted due to livestock trampling. These sites occupy a negligible amount of the project area (estimated at less than 0.1%) and are not resulting in substantial levels of soil impact. No other sites with observable levels of soil erosion, displacement or compaction were noted during the field review. Detrimental soil effects from historic timber harvest and/or other land management activities within the project area are either limited in extent or degree, or not apparent due to natural recovery over time. No areas of marginal slope stability or mass wasting were identified within the proposed project area.

4.2 IMPLEMENTATION OF ACTION ALTERNATIVE - IMPACTS TO SOILS:

Under the proposed action alternative soil impacts (erosion, compaction and displacement) would be minimized by implementing BMP's and the following recommended mitigation measures: including limiting the slope range of tractor operations, limiting season of use, and minimizing ground disturbance to levels needed for silvicultural prescriptions.

Surface drainage on the existing forwarder trail would be added to reduce erosion risk from that presently occurring. All harvest activities would comply with BMP's. Based on these mitigation measures the risk of substantial levels of impact occurring to soils within the project area is expected to be low (see Water Quality section for more discussion of erosion risk and mitigation measures). Results of monitoring of comparable DNRC harvest sites show that the level of total soil impacts due to compaction, displacement and erosion ranged from 5.6 to 10% of harvest area (DNRC 2004). Detrimental soil impacts are considered substantive when they exceed 20 percent of a harvest area (DNRC 1996).

4.3 RECOMMENDED SOIL MITIGATION MEASURES:

- * Limit equipment operations to periods when soils are relatively dry, (less than 20%) frozen or snow covered to minimize soil compaction and rutting, and maintain drainage features. Check soil moisture conditions prior to equipment start-up. Some moister conditions are accepted on harvest units where tractors remain on designated trails and timber will be winched to trails.
- * Develop and implement a general skidding plan prior to equipment operations. Designated skid trails may be required on complex terrain and ephemeral draw crossings. Tractor skidding will be limited to slopes 40% or less.
- * Mark and maintain equipment restriction zones (ERZs) on localized moist sites, draws and short steep slopes within harvest units.
- * Slash Disposal- Limit scarification to 30% of units where regeneration desired. Avoid tractor piling on wet sites or slopes over 35%. Retain 5-10 tons/acre large woody debris for nutrient cycling and long-term soil productivity.¹⁴

¹⁴ D. Spanjer and G. Frank, "Soils, Watershed and Fisheries Report Crown Butte Timber Sale E.A." Resource Management Bureau, Montana DNRC, April 18, 2006, p.8

5. WATER QUALITY, QUANTITY AND DISTRIBUTION:

Identify important surface or groundwater resources. Consider the potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality. Identify cumulative effects to water resources.

5.1 WATERSHEDS - AFFECTED ENVIRONMENT:

The proposed timber sale involves a single parcel of State ownership (Section 16, T16N, R6E) located within the Dick's Gulch watershed and the watershed of an unnamed tributary to Belt Creek. These watersheds drain a combined area of approximately 2093 acres. The proposed harvest units are actually drained by several ephemeral draws that are tributary to both Dick's Gulch and the unnamed tributary of Belt Creek. All drainage features within the proposed harvest area are ephemeral draws with no defined stream channels. Belt Creek is located approximately 0.75 miles down slope of the proposed project area.

The road access to the proposed sale area will utilize an existing State highway, and existing Cascade County and U.S. Forest Service road systems. The harvested logs will be forwarded approximately 1.75 miles from the harvest area to a landing located on private property just off a Forest Service road. The forwarder route will utilize approximately 1.54 miles of existing trail on State land, 1.75 miles of existing trail on Private land, and require 0.75 miles of new trail construction on private land. The forwarder trail construction is proposed in order to connect the existing trail on state land to the existing trail located on private property. The new forward trail construction is located in the unnamed tributary to Belt Creek. The existing forwarder trail on private land is partially located in the Belt Creek watershed and Logging Creek watershed. The proposed forwarder trail construction will require installation of 2 temporary crossing on moderately deep and well-defined ephemeral draws.

The Belt Creek Drainage, which includes Dick's Gulch and the unnamed tributary, is classified B-1 in the Montana Surface Water Quality Standards. The B-1 classification is for multiple use waters suitable for domestic use after conventional treatment, growth and propagation of cold-water fisheries, associated aquatic life and wildlife, and agricultural and industrial uses. Among other criteria for B-1 waters, no increases are allowed above naturally occurring concentration of sediment, which will harm or prove detrimental to fish or wildlife. Naturally occurring includes conditions or materials present from runoff on developed land where all reasonable land, soil and water conservation practices have been applied. Reasonable practices include methods, measures or practices that protect present and reasonably anticipated beneficial uses. The State has adopted Forestry Best Management Practices through its Nonpoint Source Management Plan as the principle means of controlling nonpoint source pollution from silvicultural activities.

Existing beneficial uses in Dick's Gulch immediately downstream of proposed harvest area include water rights for recreation, agriculture and industrial uses. Other sensitive downstream beneficial uses in Belt Creek include aquatic life support, cold-water fisheries and drinking water supply.

Neither Dick's Gulch nor the unnamed tributary to Belt Creek are listed as a water quality limited waterbodies on the 1996 or 2004 versions of Montana's 303(d) list (MTDEQ 1996, 2004). However, Belt Creek, directly downstream of the project area, is listed as a water quality limited waterbody in the 1996 and 2004 versions of Montana's 303(d) list. The 303(d) list are compiled by the Montana Department of Environmental Quality (MTDEQ) as required by the Montana Water Quality Act (MCA 75-5-701 through 705) and Section 303(d) of the Federal Clean Water Act, and the Environment Protection Agency (EPA) Water Quality Planning and Management Regulations (40 CFR, Part 130). Under these laws, the State is required to identify water bodies that do not fully meet water quality standards; or where beneficial uses are threatened or impaired.

State and Federal laws also require that these listed water bodies be targeted for Total Maximum Daily Load (TMDL) development. The TMDL process is used to determine the total allowable amount of pollutants in a water body. Each contributing source is allocated a portion of the allowable limit. These allocations are designed to achieve water quality standards or to fully support all beneficial uses. A TMDL has been scheduled but still remains to be completed. Under Montana Law (MCA 75-5-703(10)(c)), new or expanded nonpoint source activities affecting a listed water body may commence and continue provided they are conducted in accordance with reasonable land, soil and water conservation practices.

5.2 WATER QUALITY - EXISTING CONDITIONS:

Road construction, agriculture, livestock grazing historic placer mining, wildfire and fire suppression activities have all occurred in the affected watersheds throughout the recent or historical past. Existing direct, indirect and cumulative impacts to water quality and associated beneficial uses appear to be primarily related to agriculture and livestock grazing in the Belt Creek watershed. Presently, there are no known direct, indirect and cumulative impacts to water quality in the Dick's Gulch or the unnamed tributary to Belt Creek. Belt Creek is considered an impaired stream because its agricultural and industrial beneficial uses have been determined by DEQ to only be partially supported (MTDEQ 2004). The probable causes of this impairment have been identified as bank erosion and siltation. The probable sources of impairment have been identified as agriculture, crop and grazing related sources (MT DEQ 2004). It is unlikely that Dick's Gulch or the unnamed tributary draining the DNRC project area are contributing to downstream water quality impacts in Belt Creek. Both watersheds are drained by are ephemeral draw features that rarely convey concentrated surface runoff or rarely have direct discharge to Belt Creek.

A coarse filter approach was used to determine existing conditions and to evaluate the potential for cumulative watershed impacts due to increases in water yield. Recent aerial photographs were utilized to estimate the percentage of drainage area forested and the extent of the existing timber harvests in each watershed analysis area. The analysis also included field evaluations conducted to: 1) Determine the existing stream channel and riparian conditions, 2) identify potential in-channel sources of sediment, and 3) verify harvest information obtained from air photos.

The results of the coarse filter analysis indicate there is a low risk of detrimental increases in water yield, or magnitude and duration of peak flows due to existing timber harvest and road construction in both the Dick's Gulch and unnamed tributary drainage. Existing cumulative watershed effects are unlikely in the watershed of Dick's Gulch and unnamed tributary due to the following reasons: 1) The project area is located in a landscape that receives relative low levels of precipitation and subsequent runoff. 2) Little if any of the forested area has been harvested in the recent past. 3) Dick's Gulch and the unnamed tributary are ephemeral draws with very little evidence of flow except during large runoff events 4) Field inventories of stream channel conditions on State land in the watershed determined that there was no evidence of channel instability due to increases in the magnitude or duration of peak flows.

Detailed stream and drainage feature inventories and sediment source surveys were completed within the project area and on the State section by a DNRC hydrologist. The purpose of these surveys was to identify and inventory all existing and potential sources of channel instability, erosion and sediment delivery to streams occurring on State land. The stability of the ephemeral draw bottoms in Dick's Gulch and the unnamed tributary were classified as stable. No substantial sources of fine sediment delivery were identified within the State section. No road sources or upland sources of direct sediment delivery or areas with high potential risk of deliver were noted within the proposed project area. Portions of the existing trail on private land contain segments of sustained steep grades (15-30%) that are located within the bottom of a broad draw-swale feature. However, no evidence of recent erosion or historic severe erosion was noted at these sites.

5.3 FISHERIES - EXISTING CONDITIONS:

Both Dick's Gulch and the unnamed tributary do not support fisheries. The Montana Department of Fish, Wildlife and Parks completed fisheries surveys in Belt Creek during 2001(MFISH 2006). These surveys determined the presence of native species such as goldeye, mottled sculpin, mountain whitefish, and westslope cutthroat trout as well as non-native species such as brook trout, brown trout, rainbow trout and carp. Belt Creek is located approximately 0.75 miles down slope of the proposed project area.

5.4 IMPLEMENTATION OF ACTION ALTERNATIVE:

5.4.1 Water Quantity (Water Yield):

A coarse filter approach was used to evaluate the potential for cumulative watershed impacts due to increased water yield, or magnitude and duration of peak flows resulting from the proposed action. Additional information collected during field surveys were also integrated into this analysis. Cumulative impacts due to water yield increases in Dick's Gulch and unnamed tributary are not anticipated to result from the actions proposed under the action alternative.

The levels of potential increase in offsite water yield resulting from the proposed harvest and temporary forwarder trail construction are expected to be negligible. This is due to the low levels existing harvest, physiographic location of the proposed harvest stands, harvest stand composition and structure, and the relatively dry nature of the state section.

The affected watersheds receive relatively low amounts of precipitation and subsequently produces relatively low amounts of runoff per unit area.

The forested areas on the State section primarily consist of relatively dry ponderosa pine and Douglas fir cover types. These cover types were subject to frequent low intensity wildfire events prior to modern day settlement. Decades of fire suppression have resulted in higher stand stocking levels (density of trees), higher overall basal area and an increase in the total amount of forested area due to range encroachment than would be expected under natural conditions.

The harvest prescription includes mostly pre-commercial, commercial thinning and seed tree harvest that will result in a considerable amount of basal area and canopy cover within the residual stand. The amount of total forest area and stocking following harvest is expected to be similar to natural conditions.

There is low risk of detrimental impacts due to cumulative watershed effects associated with increased water yield, or magnitude and duration of peak flows resulting from the proposed action alternative.

5.4.2 WATER QUALITY:

Land management activities such as forwarder trail construction, installation of temporary draw crossing, road maintenance and use, and timber harvest can potentially increase levels of fine sediment delivery to streams if not properly located, designed, maintained and mitigated. The primary risks to water quality that are associated with the proposed timber sale are roads and constructed trails, especially when located along or crossing stream and/or ephemeral draws. Risk of erosion and sediment delivery are highest when roads are located in areas with inadequate buffering between streams and other drainage features, on erosive soils, or on steep and/or unstable slopes. A lack of periodic maintenance, inadequate surface drainage features, and use during wet periods or conditions may also contribute to higher risk.

All existing roads and trails, and the proposed forwarder and skid trail locations within the timber sale area have been reviewed in the field by a DNRC hydrologist. The existing road/trail and proposed trail locations were evaluated to determine both existing and potential risk of erosion and sources of sediment delivery to streams. There are no stream crossings within the proposed project area. The existing road and forwarder trail are located on soils with low to moderate risk of

erosion and there is very low risk of actual sediment delivery to Dick's Gulch, the unnamed tributary, Belt Creek and Logging Creek.

Portions of the existing trail contain segments of sustained steep grades (15-30%) that are located within the bottom of a broad draw-swale feature. While no evidence of recent erosion or historic severe erosion was noted, these segments of trail are more susceptible to erosion during and following forwarder use. Additional surface drainage features will be added to reduce the risk of erosion. Regardless of these risks, this segment of road is well-buffered from Logging Creek and there is very little risk of sediment delivery occurring from this segment of road. There is a series of large pastures located between this site and the stream.

The proposed segment of forwarder trail construction includes two temporary ephemeral draw crossings. These crossing will be constructed using temporary installations of polyethylene pipe. After the proposed use, the pipes and fill material would be removed from the drainage features. The forwarder trail including the crossing sites would be stabilized and re-vegetated after use.

Application of BMPs, site-specific design and mitigation measures are expected to reduce erosion and potential sediment delivery associated with the proposed temporary forwarder trail construction to an acceptable level as defined under the Montana Water Quality Standards. Acceptable levels are defined as those conditions occurring where all reasonable land, soil, and water conservation practices have been applied. The risk of even short-term sediment delivery resulting from construction and use of the forwarder trail and all other harvest activities trails is very low. No impacts to water quality and downstream beneficial uses in Dick's Gulch, unnamed tributary, Belt Creek and Logging Creek are anticipated.

Approximately 1.75 miles of existing jeep trail would be utilized and improved to standard that complies with minimum BMPs. These improvements are expected to result in reduced risk of erosion and decreased potential for sediment delivery when compared to current conditions.

All proposed harvest areas have also been reviewed and evaluated in the field by a DNRC hydrologist. Selection of appropriate harvest and yarding systems, operating seasons, limiting equipment operations to suitable slopes or designated trails and appropriate ground conditions, and implementation of appropriate BMPs and mitigation measures will be used to reduce the risk and severity of soil erosion and potential sediment delivery to streams and ephemeral drainage features.

Equipment restriction zones will be designed to effectively buffer draws and other ephemeral drainage features from harvest and skidding activities. Skid trails may utilize designated crossing of several ephemeral draws and swales located within and between harvest units. These crossings will be spaced 200 to 300 feet apart and use would be restricted to use during dry conditions. Any ground disturbance within the draw bottoms would be stabilized and grass seeded. No sediment delivery to streams is expected to result from timber harvest and skidding operations.

5.4.3 FISHERIES:

No direct, indirect or cumulative impacts to fish populations or fish habitat are expected to result from the proposed action alternative. There are no streams supporting fish located within the immediate project area. The risk of impacts to down slope fish populations and habitat in Belt Creek is low due to the lack of direct delivery of concentrated surface flow from the proposed harvest areas to streams supporting fish. Activities carried out in ephemeral drainage features will utilize BMPs, equipment restriction zones, and designated draw crossings to prevent excessive levels of soil disturbance. Therefore, even ephemeral delivery of sediment is not expected to occur down slope of the proposed harvest activities (see section addressing Water Quality for additional discussion on risk of sediment delivery).¹⁵

¹⁵ D. Spanjer and G. Frank, "Soils, Watershed and Fisheries Report Crown Butte Timber Sale E.A." Resource Management Bureau, Montana DNRC, April 18, 2006, p.8

6. AIR QUALITY:

What pollutants or particulate would be produced? Identify air quality regulations or zones (e.g. Class I air shed) the project would influence. Identify cumulative effects to air quality.

6.1 AIR QUALITY:

Air quality may be affected by burning slash that would accumulate as a result of the implementation of this proposed timber harvest. An ample amount of logging slash would remain on site however to provide for erosion control, nutrient recycling, and coarse woody debris.

6.1.1 MONTANA / IDAHO AIRSHED GROUP:

The DNRC, a member of the Montana / Idaho Airshed Group, is required to:

- Minimize or prevent the accumulation of smoke in Montana to such degree as is necessary to protect state and federal ambient air quality standards when prescribed burning is necessary for the conduct of accepted forest practices such as hazard reduction, regeneration and wildlife habitat improvement. The development of alternative methods shall be encouraged when such methods are practical.¹⁶
- Submit a plan and receive approval to burn the slash that would accumulate as a result of this project.

7. VEGETATION COVER, QUANTITY AND QUALITY:

What changes would the action cause to vegetative communities? Consider rare plants or cover types that would be affected. Identify cumulative effects to vegetation.

7.1 RARE PLANTS AND WEEDS:

Montana Natural Heritage Program was consulted to identify threatened, endangered, or sensitive plant species. No such plant species exist within the proposed harvest area.

7.2 VEGETATIVE COVER TYPE CHANGES:

The overall vegetative community of the surrounding ecosystem should not be adversely impacted due to the relatively small scope of this project.

7.3 VEGETATIVE ANALYSIS:

Montana Natural Resources Information System (NRIS), which is a clearinghouse for GIS databases and provides services to groups or individuals needing access to GIS technology, was used to determine vegetative cover types, timber harvest areas, and ownership.

7.3.1 VEGETATIVE ANALYSIS STUDY AREA:

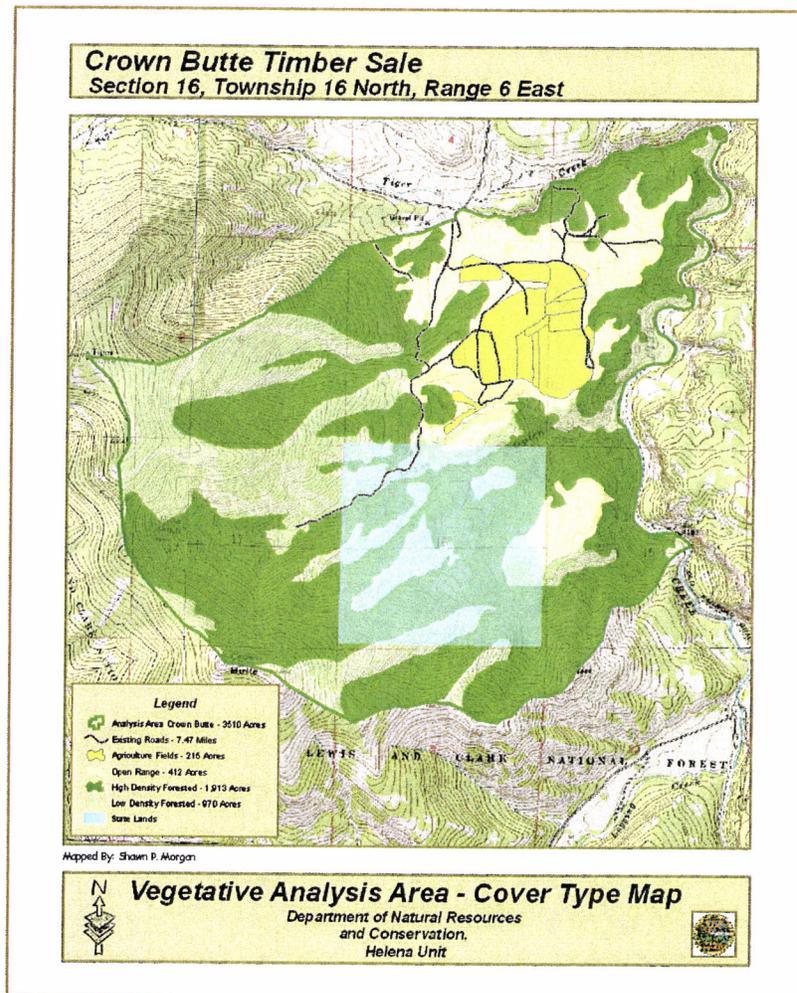
The study area is approximately 3,510 acres and follows the rough description listed below: Starting in the northeast corner where Tiger Creek drainage spills into Belt Creek, travel south along the larger Belt Creek waterway for approximately 3.0 miles then turn southwest and head uphill. Going westerly for this point almost 2.75 miles and staying along the mostly open ridge top, Crown Butte

¹⁶ "Smoke Monitoring Unit", Montana/Idaho State Airshed Group. Available at: <http://www.smokemu.org>

summit can be found. Staying on top of the ridge again and moving northwesterly 1.79 miles through forested ground Tiger Butte is reached. Leaving northeast down a finger-ridge approximately 2.03 miles Evans – Riceville Road is reached. Going mostly east along this graveled road near Tiger Creek for a distance of 1.35 miles you close in on the starting point.

7.3.2 COVER TYPES:

Air photo and topographic map coverage was evaluated in Arc GIS to determine vegetative status in the analysis area. The area was broken into four cover type categories and digitized to determine acres.



Open rangelands encompass nearly 412 acres, or 12% of the study area with native grass being utilized by cattle for grazing. Agricultural fields make up nearly 6% of the land base in the analysis area, or about 215 acres. Forested areas have been broken into either “high-density” or “low-density”. High-density forested land is approximately 1,913 acres or 54% of the study area, while low-density forested land would be close to 970 acres or 28% of the land base.

The 262-acre, Crown Butte Timber Sale would reduce the polesized and sawtimber high-density forested acres within the Analysis area by approximately 7.4%. A good portion of the proposed silvicultural methods that are being recommended for the Crown Butte Timber Sale are aimed at reducing overstocked stands to more appropriate basal area levels. The proposed project would not adversely impact, or alter greatly the current vegetative cover types within the analysis area.

7.4 OLD GROWTH:

Information pertaining to old growth was derived from the following source: P. Green, J. Joy, D. Sirucek, A. Zack, B. Naumann, "Old-Growth Forest Types of The Northern Region", USDA Forest Service, Northern Region, April, 1992, 43 p.

7.4.1 OLD GROWTH DEFINITION:

There is no single all-inclusive definition of old growth, as characteristics vary by region, forest type, and local conditions. However, a generic definition of an old growth forest would be an ecosystem that is distinguished by old trees and related structural attributes. It would encompass the later stages of stand development that typically differ from earlier stages in characteristics such as tree age, tree size, number of large trees per acre and basal area. In addition, attributes such as decadence, dead trees, the number of canopy layers and canopy gaps are important but more difficult to describe because of high variability.

7.4.2 OLD GROWTH DETERMINATION FOR PROPOSED PROJECT:

Trees within the proposed Crown Butte Timber Sale area do not meet the minimum age or diameter characteristics for East Side Montana, Old Growth Type Code 4, and therefore has been eliminated from further study.

8. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS:

Consider substantial habitat values and use of the area by wildlife, birds or fish. Identify cumulative effects to fish and wildlife.

8.1 FISH:

The proposed timber harvest would have no adverse effect on fish habitat, as there is no water within the sale area.

8.2 BIRDS:

Large sawlog-class ponderosa pine as well as a few Douglas-fir would remain after the timber harvest to provide nesting trees and for future snag recruitment. Implementation of the proposed alternative would have minimal, if any, effect on avian species.

8.3 ANIMALS:

A variety of animals utilize the diverse habitat of the Belt Creek watershed basin including: deer, black bears, small mammals, mule deer, and elk, among others. No direct or cumulative adverse effects are anticipated from the implementation of the proposed timber sale.

9. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:

Consider any federally listed threatened or endangered species or habitat identified in the project area. Determine effects to wetlands. Consider Sensitive Species or Species of special concern. Identify cumulative effects to these species and their habitat.

9.1 ISSUES ELIMINATED FROM FURTHER STUDY:

Montana Natural Heritage Program was contacted to provide threatened, endangered, and sensitive species information for the project area. Westslope Cutthroat Trout as well as Canadian Lynx have been identified as either sensitive or threatened. It is anticipated that harvesting activities would not adversely impact either identified species, as required habitat is not found within the project area.

Threatened, endangered, and sensitive species as outlined in the "Montana Administrative Rules" have been eliminated from further study for the following reasons:

9.1.1 BALD EAGLE:

Some potential transient use may occur but is not anticipated. Adverse impacts to the Bald Eagle or its habitat are not expected.

9.1.2 GRAY WOLF:

Potential transient use by the gray wolf may occur within the proposed timber sale area. If den sites become established within the sale area, "Administrative Rules" and contractual requirements are in place to protect this species.

9.1.3 GRIZZLY BEAR:

The project area is not within Grizzly Bear recovery or occupied zones. Transient use may occur due to the roaming nature of this species and its wide range of habitats requirements. Adverse impacts to this species are not expected.

9.1.4 LYNX:

Suitable Canadian Lynx habitat is not found within the proposed project area. Adverse impacts to this species are not expected.

9.1.5 FLAMMULATED OWL:

This species prefers seral ponderosa pine stands or secondarily Douglas-fir timber types where historical fire regimes occurred on the landscape. Favored stands are usually found on warm, dry slopes with basal areas of 35 to 80 ft.²/acre. Proposed harvest area characteristics at present do not match the favored habitat requirements of the Flammulated Owl. Conflicts to this species are not expected.

9.1.6 BLACK-BACKED WOODPECKER:

As there have been no wildfires or areas of natural mortality of great magnitude within the past few years, adverse impacts to the Black-Backed Woodpeckers are not anticipated.

9.1.7 PILEATED WOODPECKER:

Large diameter ponderosa pine, western larch, and black cottonwood are used for nesting cavities by the Pileated Woodpecker. These species are not presently found in the harvest area, however if nesting sites become established, "Administrative Rules" and contractual requirements are in place to protect this species. Conflicts with this woodpecker are not expected.

9.1.8 FISHER:

Suitable Fisher habitat is not found within the project area.

9.1.9 NORTHERN BOG LEMMING:

The project area contains no suitable Lemming habitat.

9.1.10 PEREGRINE FALCON:

Nest sites or habitat suitable for the Peregrine Falcon are not found within the project area, therefore, negative effects are not expected.

10. HISTORICAL AND ARCHAEOLOGICAL SITES:

Identify and determine effects to historical, archaeological or paleontological resources.

A search of the statewide cultural resources database and the DNRC's in-house files for the above referenced project areas has been conducted. No cultural resources have been identified within the proposed project area. Because of the degree of slope throughout this parcel, archaeological investigative fieldwork prior to commencement of timber harvest activities is not recommend nor applicable.¹⁷

11. AESTHETICS:

Determine if the project is located on a prominent topographic feature, or may be visible from populated or scenic areas. What level of noise, light or visual change would be produced? Identify cumulative effects to aesthetics.

11.1 LOCAL EFFECTS TO AESTHETICS:

The location of the proposed Crown Butte Timber Sale is somewhat isolated, accessed only through private property. Because the scope and nature of this project is somewhat small, long lasting negative visual effect are not expected. The existing landform is rolling with the harvest unit being located at various slope intervals on the mountainside.

The harvest units will be irregular in shape and size and will be approximately 262 acres. Slated for cutting are disease/damaged dominant and codominant as well as suppressed and intermediate Douglas-fir and ponderosa pine. Residual Douglas-fir and ponderosa pine should most likely be large in diameter and at spacing that most resembles an intermediate thin or seed-tree harvest.

¹⁷ Patrick Rennie, "e-mail", Montana DNRC Archaeologist, February 23, 2006, 1p.

12. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:

Determine the amount of limited resources the project would require. Identify other activities nearby that the project would affect. Identify cumulative effects to environmental resources.

Demands on land, water, air or energy are not expected to increase in intensity as a result of timber harvesting on State Trust Lands.

13. OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA:

List other studies, plans or projects on this tract. Determine cumulative impacts likely to occur as a result of current private, state or federal actions in the analysis area, and from future proposed state actions in the analysis area that are under MEPA review (scoped) or permitting review by any state agency.

13.1 DNRC PLANS/CURRENT PROJECTS:

State tract includes active Forest Grazing License producing 60 AUM's annually. This activity would remain unchanged under both alternatives. Implementation of the action alternative would initiate a noxious weed management program by the DNRC. This spot spaying would concentrate on noxious and nuisance weeds, controlling them before and after timber harvesting.

<p>IV. IMPACTS ON THE HUMAN POPULATION</p>

- | |
|---|
| <ul style="list-style-type: none">• <i>RESOURCES</i> potentially impacted are listed on the form, followed by common issues that would be considered.• Explain <i>POTENTIAL IMPACTS AND MITIGATIONS</i> following each resource heading.• Enter "NONE" if no impacts are identified or the resource is not present. |
|---|

14. HUMAN HEALTH AND SAFETY:

Identify any health and safety risks posed by the project.

No significant change is expected from the implementation of the project.

15. INDUSTRIAL, COMMERCIAL AND AGRICULTURE ACTIVITIES AND PRODUCTION:

Identify how the project would add to or alter these activities.

No significant change is expected from the implementation of the project.

16. QUANTITY AND DISTRIBUTION OF EMPLOYMENT:

Estimate the number of jobs the project would create, move or eliminate. Identify cumulative effects to the employment market.

People are currently employed in the wood products industry in this region of Montana. No measurable cumulative impacts are expected on employment from the execution of this alternative action due to the relatively small DNRC timber sale program.

17. LOCAL AND STATE TAX BASE AND TAX REVENUES:

Estimate tax revenue the project would create or eliminate. Identify cumulative effects to taxes and revenue.

People are currently paying taxes on monies generated from the wood products industry in this region of Montana. No measurable cumulative impacts are expected on tax revenues from the execution of this alternative action due to the relatively small DNRC timber sale program.

18. DEMAND FOR GOVERNMENT SERVICES:

Estimate increases in traffic and changes to traffic patterns. What changes would be needed to fire protection, police, schools, etc.? Identify cumulative effects of this and other projects on government services

There should be no measurable cumulative impacts related to demand for government services due to the relatively small DNRC timber sale program, short term impacts to traffic, possible temporary addition of a few people to the area, and the lack of other timber sales on adjacent lands.

19. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:

List State, County, City, USFS, BLM, Tribal, and other zoning or management plans, and identify how they would affect this project.

Refer to Section 1: "Type and Purpose of Action", Part-B, "Purpose of Action", of this document for reference to the "State Forest Land Management Plan".

20. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES:

Identify any wilderness or recreational areas nearby or access routes through this tract. Determine the effects of the project on recreational potential within the tract. Identify cumulative effects to recreational and wilderness activities.

20.1 LOCAL EFFECTS TO RECREATIONAL OPPORTUNITIES:

Persons having a valid State Trust Land Recreational Use Permit are welcome to hike or perform other approved outdoor activities. Beginning in 2004, purchase of a conservation license will authorize use of accessible Trust Lands for hunting and fishing. Implementation of the proposed alternative should have minimal effect on recreational opportunities.

21. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:

Estimate population changes and additional housing the project would require. Identify cumulative effects to population and housing.

There will be no measurable, cumulative impacts related to population and housing due to the relatively small nature of the DNRC timber sale program. Personnel required to execute this project are currently employed in this region of Montana.

22. SOCIAL STRUCTURES AND MORES:

Identify potential disruption of native or traditional lifestyles or communities.

Not Applicable.

23. CULTURAL UNIQUENESS AND DIVERSITY:

How would the action affect any unique quality of the area?

Not Applicable.

24. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:

Estimate the return to the trust. Include appropriate economic analysis. Identify potential future uses for the analysis area other than existing management. Identify cumulative economic and social effects likely to occur as a result of the proposed action.

24.1 ECONOMIC COST/RETURN ASSOCIATED WITH PROJECT:

The action being proposed not only takes into consideration silvicultural and biological characteristics of managing this forested stand, but the economic viability of implementing such a project.

Due to the high cost associated with access agreements, harvesting/forwarder requirements, and timber stand improvements needs, it is anticipated that the financial return to the Common Schools Trust would be approximately:

- 1400 MBF x \$80.00 - \$100.00/MBF = \$112,000.00 to \$140,000

This estimate is based on current stumpage value and is intended for relative comparison of alternatives. It is not intended to be used as an absolute estimate of return.

24.2 FUTURE MANAGEMENT OPTIONS:

Implementation of this project would increase the managed forest base on State Trust Lands. This would most likely result in the production of a healthier forested stand that would bring in additional revenue to the Trust.

24.3 CURRENT ACTIVITIES:

Grazing of State Trust Lands in this area currently brings in \$373.20 per year. Some revenue percentage from the General Recreational Use License as well as the newly adopted Conservation License may also be attributed to this tract, although this revenue probably is quite small.

No negative, cumulative economic or social effects are anticipated as a result of the proposed action.

EA CHECKLIST PREPARED BY:	NAME:	Shawn P. Morgan	DATE:	04/07/2006
	TITLE:	Helena Unit Forester		

V. FINDING

25. ALTERNATIVE SELECTED:

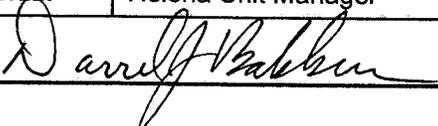
I have selected the harvest action alternative. Management actions including commercial even aged regeneration harvesting, intermediate thinning, and pre-commercial thinning will produce income to the school trust, restore healthy forest stand conditions in the currently overstocked areas, and increase the future income generating capacity of the land by favoring increased tree growth in thinned areas.

26. SIGNIFICANCE OF POTENTIAL IMPACTS:

This analysis reviewed the potential for all anticipated natural and human environmental effects from the proposed action. Standard procedures, compliance with Forestry Best Management Practices, and our Forest Management Administrative Rules, and specific design constraints result in no anticipated significant direct or cumulative adverse effects from this proposal.

27. NEED FOR FURTHER ENVIRONMENTAL ANALYSIS:

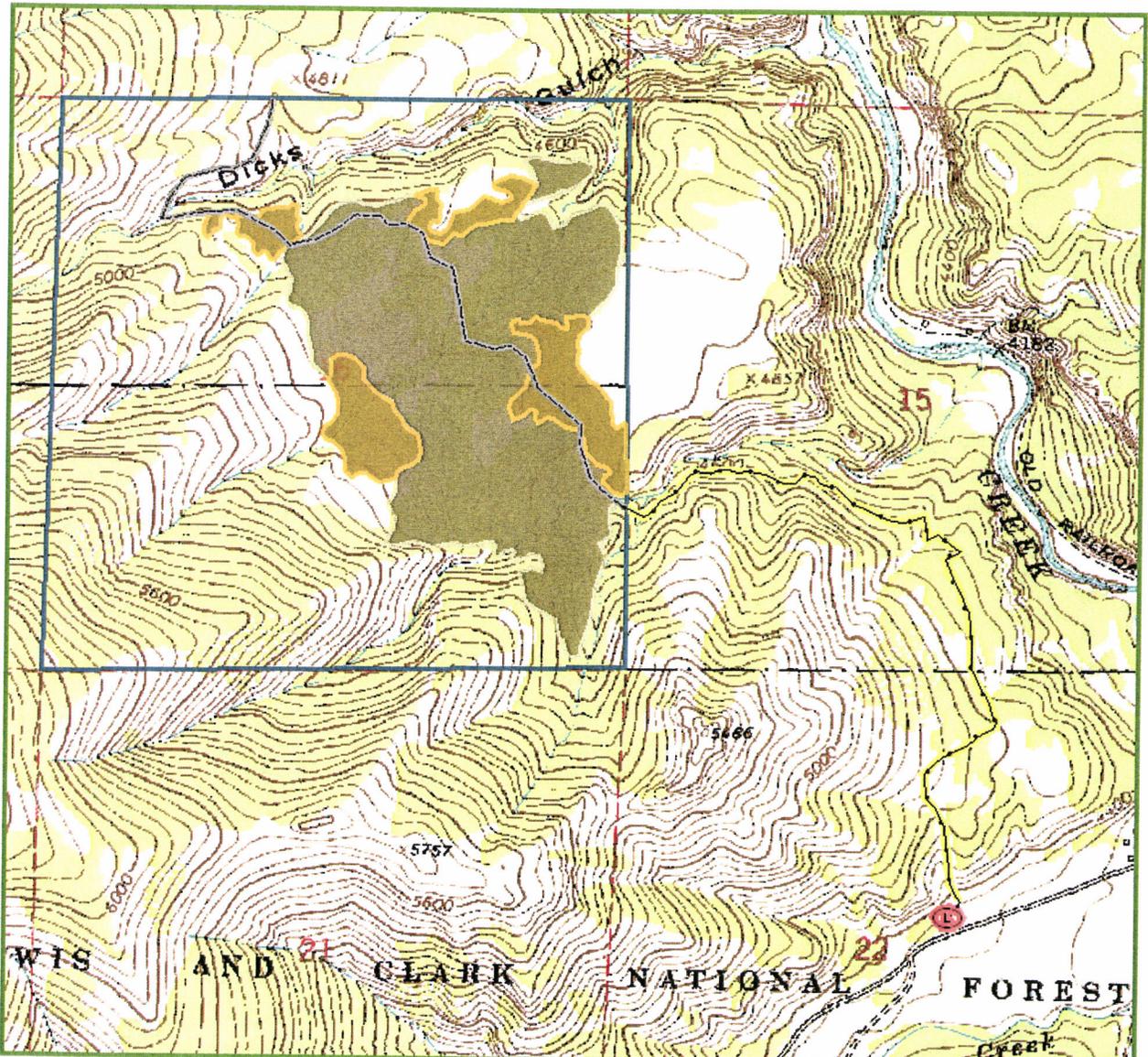
EIS More Detailed EA No Further Analysis

EA CHECKLIST APPROVED BY:	NAME:	D.J. Bakken		
	TITLE:	Helena Unit Manager		
SIGNATURE:			DATE:	4/28/2006

CROWN BUTTE Timber Sale



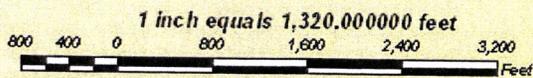
Section 16, Township 16 North, Range 6 East



Mapped By: SHawn P. Morgan

Timber Harvest / Pre-Commercial Thin Map

Department of Natural Resources
and Conservation,
Helena Unit



LEGEND

- Landing Area
- Forward Trail / Private - 1.76 Miles
- Existing Trail / State - 1.54 Miles
- Crown Butte Project Area
- Prescription
 - Commercial Timber Harvest - 165 acres
 - Pre-Commercial Harvest - 43 acres
 - State Ownership