

Squirrel Tail Timber Sale Environmental Assessment

Montana Department of Natural Resources and Conservation

Southwestern Land Office
Clearwater Unit



SQUIRREL TAIL TIMBER SALE ENVIRONMENTAL ASSESSMENT

TABLE OF CONTENTS

Checklist EA:		12 Pages
Attachment A:	Maps	3 Pages
Attachment B:	Wildlife Analysis	4 Pages
Attachment C:	Soils & Hydrology Analysis	3 Pages

CHECKLIST ENVIRONMENTAL ASSESSMENT

Project Name:	Squirrel Tail Timber Sale
Proposed Implementation Date:	August, 2010- May 2011
Proponent:	Montana DNRC, Clearwater Unit
Location:	S1/2 E1/2 Sec 16 T14N R14W
County:	Missoula

I. TYPE AND PURPOSE OF ACTION

The Clearwater Unit is proposing to harvest an estimated 651 mbf of timber from approximately 127 acres. The proposed harvest area is located 3 miles south of Clearwater Junction (Attachment A and Attachment A-1). Ponderosa pine and Douglas-fir would be removed during harvest operations. Mountain pine beetle (*Dendroctonus ponderosae*) is currently infesting all diameter classes of ponderosa pine throughout the sale area. Trees that are and will likely be infested and ponderosa pine and Douglas-fir that contain high amounts of defect (crotch, sweep, forked tops, etc.) would be removed. This would leave a residual stand of healthy well formed trees. Pre-commercial thinning activities may also take place to treat patches of overstocked trees in the understory (Attachment A-2). Specific objectives of the project are to capture value of dead and dying trees, prevent future value loss, reduce crown density and improve overall stand characteristics within the project area.

The lands involved in this proposed project are held by the State of Montana in trust for the Common Schools. (Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X, Section 11). The Board of Land Commissioners and the DNRC are required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run for the beneficiary institutions (Section 77-1-202, MCA).

II. PROJECT DEVELOPMENT

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

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

The proposed limited access timber sale was initially scoped in May of 2011. Adjacent landowners, members of the public and conservation groups were sent scoping notices. Notices were also posted at the Clearwater Unit main office. All scoping procedures were done in accordance with limited access timber sale provisions located within MCA 77-5-201. Consistent with limited access timber sales a contractor has already been selected by the DNRC.

DNRC specialists were consulted, including: Mike McGrath, Wildlife Biologist; Jeff Collins, Hydrologist and Patrick Rennie, Archeologist.

Recommendations from adjacent landowners, FWP and DNRC specialists were incorporated into the action alternative.

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

Fish Wildlife and Parks (FWP) conservation easement land steward Grant Bronk was consulted to ensure compliance with the conservation easement in section 16. FWP biologists Jay Kolbe and Kristi Dubious were also consulted during pre-harvest planning.

3. ALTERNATIVES CONSIDERED:

No Action Alternative A: The proposed harvest would not occur at this time. Current land use activities would continue. No road improvements would be made on existing roads. Ponderosa pine mortality would continue across the area and the trust would recover no value from the dying trees. Douglas-fir and surviving ponderosa pine would continue to exist in a closed canopy situation. This would limit available resources to the surviving trees. The overstocked understory would continue to stagnate until a form of natural disturbance reduced the stocking levels. This would result in a continuous decline in the overall stand appearance as well as growth.

Action Alternative B: Under this alternative the DNRC would continue current uses, as well as harvest dead and dying ponderosa pine that are infested with mountain pine beetle. Douglas-fir and ponderosa pine with poor growth characteristics will also be harvested to reduce overall crown density. Leave trees would be left according to their overall vigor and form characteristics. Road improvements would be made to make existing roads safe for logging truck passage. BMPs would be implemented where needed to improve drainage and function of current roads. Pre-commercial thinning would take place to reduce stocking in clumps of advanced regeneration.

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

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.

No unstable slopes or especially unique geology features are present. Above the river terrace there are areas of exposed bedrock on short steep slopes and common surface boulders that limit skid trail locations and would be tough on equipment tires. Two primary soils in the project area are Totelake gravelly and extremely stony loams on and adjacent to the alluvial terrace above the Blackfoot River and Winkler gravelly loams on the forested upland sites. All of these soils are well drained and tend to be droughty with a long season of use. No high erosion potential soils were identified and there are minimal effects of disturbance from historic use.

A localized sandy soil occurs along the access road on the rangeland site and is rutting if operated on when wet. Ground based skidding would be limited to slopes less than 45%. A small area of short steep slopes that are rocky may be harvested by directional felling or winching to limit ground disturbance. Previous selection harvest was mainly on moderate slopes and skid trails have revegetated with no apparent BMP departures or cumulative effects. The harvest of overstocked trees would improve tree spacing and should reduce competition for limited soil moisture and nutrients and improve growth of retained trees. Planned ground skidding operations are expected to have low risk of direct, in-direct and cumulative impacts based on implementing BMP's and mitigation measures. Mitigations include season of use limits, and retaining a portion of woody debris for nutrient cycling and moisture retention, while providing of hazardous fuel reduction and prompt revegetation as needed to protect soil resources.

For the complete version of the soils analysis refer to attachment C.

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.

The proposed salvage sale is located in SW ¼ Sec 16 T14N R14W which includes a segment of the Blackfoot River that is classified as B-1 in the Montana Water Quality Standards. This segment of the Blackfoot River has been identified as an impaired water body in Montana's 2008 305(b) Report, because the stream only partially

supports aquatic life and cold water fisheries and no other beneficial uses are listed as impaired. The impairment is inferred as minor to moderate based on macro invertebrate sampling. The probable causes of impairment are flow alteration from diversions and streambank modifications.

The proposed project has very low risk of direct, indirect or cumulative effects to water quality based on the following considerations. The salvage, thinning and improvement harvest is small scale project of about 127 acres mainly on gentle to moderate slopes and well drained soils. No streams occur within the harvest units and no SMZ harvest is proposed within 132 ft. of the Blackfoot River consistent with conservation easement requirements and all snags and stream recruitable trees for large woody debris would be retained in the riparian zone. No sites with high erosion risk were identified that would be affected. The project is not in a Municipal watershed. No SMZ's or fish bearing streams would be affected and no water quality impacts were observed from the proposed existing access roads. Skid trails would be stabilized by slashing and installing drainage where needed to prevent erosion. All disturbed roads and landings would be stabilized and grass seeded where needed to control erosion.

The harvest of mainly dead, dying and beetle infested pine and thinning of Douglas-fir is not expected to have a measurable influence on: water quality, the amount or timing of runoff (water yield), or stream stability from the proposed project area when compared to the effects anticipated under no action. In summary, the proposed harvest operations presents low risk of direct, indirect and cumulative impacts based on implementing BMP's, Forest Management Rules and mitigation measures.

For the complete version of the hydrologists analysis refer to attachment C.

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.

The DNRC is a member of the Montana/Idaho Airshed Group which was formed to minimize or prevent smoke impacts while using fire to accomplish land management objectives and/or fuel hazard reduction (Montana/Idaho Airshed Group 2006). The Group determines the delineation of airsheds and impact zones throughout Idaho and Montana. Airsheds describe those geographical areas that have similar atmospheric conditions, while impact zones describe any area in Montana or Idaho that the Group deems smoke sensitive and/or having an existing air quality problem (Montana/Idaho Airshed Group 2006).

The project area is located within Montana Airshed 3B which encompasses portions of Missoula and Powell Counties. Currently, this Airshed does not contain any impact zones. The harvest area is located approximately 3 miles south of Clearwater junction and is bordered by non-industrial private landowners on all sides.

No Action

Under the No Action Alternative, no slash piles would be burned within the project area. Thus, there would be no effects to air quality within the local vicinity and throughout Airshed 3B from this project. Slash burning activities would continue to take place on adjacent non-industrial private ownerships.

Action

Under the Action Alternative, slash piles consisting of tree limbs and tops and other vegetative debris would be created throughout the project area during harvesting. These slash piles would ultimately be burned after harvesting operations have been completed. Burning would introduce particulate matter into the local airshed, temporarily affecting local air quality. Over 70% of emissions emitted from prescribed burning is less than 2.5 microns (National Ambient Air Quality PM 2.5). High, short-term levels of PM 2.5 may be hazardous. Within the typical column of biomass burning, the chemical toxics are: Formaldehyde, Acrolein, Acetaldehyde, 1,4 Butadiene, and Polycyclic Organic Matter.

Burning within the project area would be short in duration and would be conducted when conditions favored good to excellent ventilation and smoke dispersion as determined by the Montana Department of Environmental Quality and the Montana/Idaho Airshed Group. Prior to burning a "Prescribed Fire Burn Plan" would be done for the area. The DNRC, as a member of the Montana/Idaho Airshed Group, would burn only on approved days. Thus, direct and indirect effects to air quality due to slash pile burning associated with the proposed action would be minimal.

Burning that may occur on adjacent properties in combination with the proposed action could potentially increase cumulative effects to the local airshed and the Class I Areas. Thus, cumulative effects to air quality due to slash pile burning associated with the proposed action would also be expected to be minimal.

Cumulative effects to air quality would not exceed the levels defined by State of Montana Cooperative Smoke Management Plan (1988) and managed by the Montana Airshed Group. Prescribed burning by other nearby airshed cooperators (for example BLM, USFS, etc.) would have potential to affect air quality. All cooperators currently operate under the same Airshed Group guidelines. The State, as a member, would burn only on approved days. This should decrease the likelihood of additive cumulative effects.

Harvesting and log hauling could create dust which may affect local air quality. Harvesting operations would be short in duration. Thus, direct, indirect, and cumulative effects to air quality due to harvesting and hauling associated with the proposed action would be minimal.

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.

EXISTING CONDITION

Rare plants and weeds

The noxious weeds Spotted Knapweed, houndstongue and thistle species occur in this area.

Two rare plants were identified within the Montana Natural Heritage Program. Deer Indian paint brush (*Castilleja cervina*) and Howell's Gumweed (*Grindelia howellii*) could potentially exist. Information gathered from the Montana Natural Heritage Program indicates that Howell's Gumweed prefers marshy areas as well as open meadows. Deer Indian paintbrush plants also can be found in meadows. Neither species has been observed within the sale area. **Standard Vegetative Community**

Low elevation ponderosa pine stands dominate the project area (approximately 86% of the sale area has a ponderosa pine cover type). The only exceptions are draws and other heavily shaded areas such as north aspects. These areas (approximately 14% of the total sale area) have a mix of Douglas-fir and scattered ponderosa pine. Based on DNRC modeling of desired future conditions Douglas-fir is over-represented by 14%. DNRC modeling suggests that 100% of the sale area be a ponderosa pine cover type. With fire suppression activities the Douglas-fir have been able to encroach in a historically ponderosa pine dominated forest. Douglas-fir regeneration can be found throughout the sale area where only ponderosa pine grew in the past.

At the larger scale, DNRC lands managed by the Clearwater Unit are approximately 85% forested, mostly in the ponderosa pine and western larch/Douglas-fir cover types. Compared to the desired future condition at this scale, Douglas-fir, subalpine fir, and mixed-conifer cover types are slightly over-represented while ponderosa pine and western larch/Douglas-fir are slightly under-represented. Overall, however, about 84% of these lands do have a cover type that matches the desired future condition. This area falls within climatic section 332B, which was historically about 79% forested. Within the climatic section, the historically dominant cover type was lodgepole pine, followed by Douglas-fir and ponderosa pine on lower slopes (Losensky, 1997).

All ponderosa pine stands within the project area currently have a high susceptibility and risk of mountain pine beetle damage, based on the age, stand density and existing mountain pine beetle presence. Mountain pine beetles in this area exist in scattered patches, each year these patches are increasing in size. This is affecting all diameter classes of ponderosa pine and is now impacting a large percentage of the overall ponderosa pine population in the area.

Stand structure characterizes stand development, disturbance and how a stand may continue to develop. Stand structure is classified as single-storied, two-storied, or multi-storied if there are one, two, or three main canopy layers. Single storied stands cover approximately 83% of the proposed harvest area. The remaining stands are two storied, or have two layers.

Douglas-fir and ponderosa pine within the project area vary greatly in overall quality and vigor. Patches of well formed vigorous trees can be found across the landscape. In addition to this there are many trees with high amounts of defect. Generally this occurs in the form of forked tops, multiple tops, crook and sweep. These trees lack the desirable qualities essential in producing quality trees into the future.

The DNRC has adopted old-growth definitions based on Green et al. (1992). Based on Stand Level Inventory age data and field reconnaissance no stands in the project area contain enough trees of sufficient size and age (trees in the project area range from 70-90 years of age) to meet the definition of old growth based on Green et al. (1992).

No Action Alternative A:

No large scale timber harvest would occur at this time. No road improvements would be made on existing roads. Ponderosa pine mortality would continue across the area and the Trust would recover no value from the dying trees. The increased fuel loading within these stands could become a concern as these trees die. With the existing rate of infestation and the likelihood that dead trees will be blown down, openings would occur within the stands regardless of harvest. Existing records show that pine beetle activity has always occurred in this area to some extent. Over time, natural conifer regeneration would probably establish in most areas. This would most likely be in the form of Douglas-fir and not the desired species for the area. The adjacent landowners would continue to treat their pine beetle outbreaks and be unsettled about the fuel loading occurring on trust lands. Douglas-fir and surviving ponderosa pine would continue to exist in a closed canopy situation. This will limit available resources to the trees that survive the beetle outbreak. The overstocked understory would continue to stagnate until a form of natural disturbance reduced the stocking levels. This would result in a continuous decline in the overall stand appearance as well as growth.

Action Alternative B:

Under this alternative the DNRC would continue current uses, as well as harvest dead and dying ponderosa pine that are infested with mountain pine beetle.

To prevent introduction of new weeds, off-road equipment would be cleaned prior to entry into harvest areas. Newly disturbed roads and landings would be seeded to grass to reduce the spread of weeds. Noxious weed spread would not be greatly increased by this action or cause cumulative impacts to vegetation based on the mitigation measures. The landings would be prioritized for herbicide treatment following the sale to reduce existing weeds.

If either species of rare plants indicated by the MNHP database [Deer Indian paint brush (*Castilleja cervina*) and Howell's Gumweed (*Grindelia howellii*)] is identified during the course of the operations, measures would be put in place to avoid or minimize impacts resulting from harvest activities.

Douglas-fir and ponderosa pine with poor growth characteristics would also be harvested to reduce overall crown density. Leave trees would be left according to their overall vigor and form characteristics. Because this area has been in a closed canopy situation for an extended period of time individual trees would be selected based on their ability to withstand a sudden change in their immediate environment. Windthrow is a valid concern when opening up a stand so an individual tree selection harvest prescription was selected. With this prescription, trees would be marked in a way that simulates natural disturbances in the forest. In areas with smaller diameter trees present clumps would be left, conversely in areas with open grown larger diameter pine the spacing was widened. Leave trees would be selected based on their form; trees high in defect would be harvested. The only exceptions are wildlife trees. The objective of this harvest is to reduce the number of beetle infested trees as well as trees of poor quality without opening up the stand too much which would most certainly result in windthrow to the residual stand. This would allow the stand to become established and capitalize on

the excess water and nutrients that would result from opening up the canopy. Pre-commercial thinning would also take place to reduce stocking in clumps of advanced regeneration. Currently patches of ponderosa pine and Douglas fir 10-15 feet tall exist in patches stocked between 500 and 1,000 trees/ acre. With that level of stocking very little growth is occurring in any of the trees within these clumps.

In accordance with ARM 36.11.410 and ARM 36.11.414 the majority of fine slash foliage and approximately 5 to 15 tons of coarse woody debris would be scattered on the forest floor in the harvest unit. This would increase the intensity and reduce the ability to control ground fires for approximately three years. In areas with few leave trees the risk of a catastrophic crown fires would decrease.

The occurrence of natural regeneration would be monitored following harvest activities. Currently Douglas-fir fill in all natural openings in the area. However if insufficient amounts of regeneration occur planting would take place. Ponderosa pine would be planted in order to adhere to the objective of ponderosa pine as the species in the desired future stand.

The proposed action would be expected to result in low to moderate direct, indirect, and cumulative effects upon the vegetative community.

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.

Fisheries-The Blackfoot River flows through this DNRC project section. MTFWP MFISH waterbody report identifies the Blackfoot River as supporting rare Bull trout, Westslope Cutthroat Trout, Brook Trout and other minor species. No road or harvest activities are planned within 132 feet or more of the river, which is consistent with applicable conservation easements. The 132 ft. wide no treatment zone is wider than an SMZ or RMZ designation, and the riparian area and there would be no effects to stream shading, water temperature, large woody debris, nutrients or channel stability associated with the proposed action. No new stream crossings are proposed, and no sediment sources from existing roads were identified along the timber haul route. No streams supporting fish or stream segments with connectivity to down slope fisheries occur within the proposed harvest units or haul route and no fish bearing streams would be affected. There is very low risk of direct, in-direct or cumulative effects to fish habitat or aquatic life with the proposed action.

Bald Eagle (*Haliaeetus leucocephalus*)-The project area is located along the Blackfoot River, and < 2 miles from a bald eagle territory. Through provisions contained within the parcel's conservation easement, as well as mitigations for elk winter range that would retain higher levels of trees post-harvest, there would likely be low potential for effects for this species from the proposed harvest.

Flammulated Owl (*Otus flammeolus*)- Both No Action and the proposed action would have similar effects to flammulated owls due to the mountain pine beetle infestation within the project area's ponderosa pine. However, the proposed action may benefit this species because it would scarify the soil, preparing it for forest regeneration, which would return the site to suitable habitat sooner than under a No Action alternative. As a result, there would likely be a low potential for effects beyond what is expected under the No Action alternative.

Pileated Woodpecker (*Dryocopus pileatus*)- Both No Action and the proposed action would have similar effects to pileated woodpeckers due to the mountain pine beetle infestation within the project area's ponderosa pine. However, the No Action alternative might benefit this species because it would retain higher levels of snags and feeder logs. Nevertheless, under both alternatives the habitat suitability would likely suffer due to reduced canopy closure: either due to timber harvest or mountain pine beetle induced mortality. As a result, there would likely be a low potential for effects beyond what is expected under the No Action alternative.

Harlequin Duck (*Histrionicus histrionicus*)- Due to measures within the conservation easement to protect the riparian area, no impact is likely to occur to this species.

Elk (*Cervus elaphus*), White-tailed Deer (*Odocoileus virginianus*) & Mule Deer (*Odocoileus hemimonus*)- Within the approximately 127 acres of harvest units, approximately 45% - 55% of the canopy cover would be removed, unless they occur within several buffers or protection areas. In an elk winter range buffer, approximately 30% - 40% of the canopy cover would be harvested, unless there is beetle activity (which would have a greater level of harvest). Within two chains of the high water mark, no harvest activities would occur.

The winter range area, and winter range buffer are designed to: 1) utilize an escarpment to reduce wind penetration; 2) provide a higher tree retention to slow winter winds, and thus, body heat loss; and 3) utilize numerous boulders for winter bedding grounds, as they may shield bedding animals from winter winds. As a result, there would likely be low to moderate risk of direct, indirect, or cumulative effects as a result of the proposed action.

Great Horned Owl (*Bubo virginianus*)- A great horned owl nest was discovered in a ponderosa pine snag adjacent to a large meadow within the project area on 3 June 2010. Prior to this discovery, 2 fledgling owls had been observed nearby (A. Helena, MT DNRC, personal communication, 2 June 2010). This species is widely distributed throughout North America, utilizes a wide range of habitats and nesting sites, and is tolerant of disturbance. Under the conservation easement, cutting or disturbing any trees or other vegetation within 660 feet of the nest during the nesting season (January 15 through August 15) would be prohibited. Further, the easement prohibits the removal of any crown trees or other over-story vegetation, including the nesting trees themselves within 330 feet of any active or inactive raptor nest, currently known or later identified, at any time, provided, however, that during the non-nesting season, diseased trees may be cut and removed to abate infestation. With these protective measures, there would likely be low risk of effects to these individuals and the species from the proposed action.

For the complete version of the wildlife analysis refer to attachment B & attachment C for the fisheries analysis.

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.

Fisheries-The Blackfoot River flows through this DNRC project section. MTFWP MFISH waterbody report identifies the Blackfoot River as supporting rare Bull trout, Westslope Cutthroat Trout, Brook Trout and other minor species. No road or harvest activities are planned within 132 feet or more of the river, which is consistent with applicable conservation easements. The 132 ft. wide no treatment zone is wider than an SMZ or RMZ designation, and the riparian area and there would be no effects to stream shading, water temperature, large woody debris, nutrients or channel stability associated with the proposed action. No new stream crossings are proposed, and no sediment sources from existing roads were identified along the timber haul route. No streams supporting fish or stream segments with connectivity to down slope fisheries occur within the proposed harvest units or haul route and no fish bearing streams would be affected. There is very low risk of direct, in-direct or cumulative effects to fish habitat or aquatic life with the proposed action.

Bald Eagle (*Haliaeetus leucocephalus*)-The project area is located along the Blackfoot River, and < 2 miles from a bald eagle territory. Through provisions contained within the parcel's conservation easement, as well as mitigations for elk winter range that would retain higher levels of trees post-harvest, there would likely be low potential for effects for this species from the proposed harvest.

Flammulated Owl (*Otus flammeolus*)- Both No Action and the proposed action would have similar effects to flammulated owls due to the mountain pine beetle infestation within the project area's ponderosa pine. However, the proposed action may benefit this species because it would scarify the soil, preparing it for forest regeneration, which would return the site to suitable habitat sooner than under a No Action alternative. As a result, there would likely be a low potential for effects beyond what is expected under the No Action alternative.

Pileated Woodpecker (*Dryocopus pileatus*)- Both No Action and the proposed action would have similar effects to pileated woodpeckers due to the mountain pine beetle infestation within the project area's ponderosa pine. However, the No Action alternative might benefit this species because it would retain higher levels of snags and feeder logs. Nevertheless, under both alternatives the habitat suitability would likely suffer due to reduced canopy closure: either due to timber harvest or mountain pine beetle induced mortality. As a result, there would likely be a low potential for effects beyond what is expected under the No Action alternative.

For the complete version of the wildlife analysis refer to attachment B & attachment C for the fisheries analysis.

10. HISTORICAL AND ARCHAEOLOGICAL SITES:

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

Based on the lack of previously identified cultural resources, DRNC Archaeologist Patrick Rennie did not recommend additional investigative work. If any archaeological sites are found, they would be protected. No direct, indirect, or cumulative effects to cultural resources are expected as a result of the proposed action.

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.

Any change to the scenery in the area from these alternatives would be in addition to past timber harvests, road building, power line easements and grazing within the project area. This analysis includes all past and present effects.

No Action

Under the no action alternative ponderosa pine infested with mountain pine beetle would die. Initially this would result in scattered patches of red-needled trees. In the following years the trees would lose their needles, some would fall to the forest floor layering the material in a jack-straw fashion. Without harvest the residual stand would be ponderosa pine and Douglas-fir with forked tops, crook, sweep and other defects. These trees would exist in a predominantly closed canopy situation with the only openings being littered with dead trees. The adjacent landowners have already voiced their disdain for this type of visual appearance. Because this is a land locked section and given the way the topography exists the general public cannot see this section from any vantage points.

Action

Post harvest would leave the area with a more park-like appearance. Dead and dying beetle infested ponderosa pine would be removed as well as small ponderosa pine that are susceptible and of poor quality.

Throughout the proposed sale area slash from the harvest would be noticeable yet temporary. Generally slash disappears from the site within five years, and is often covered by other vegetation within three years. The tops and limbs from one tree out of every four would be left in the woods to serve as a source of nutrients to the remaining stand. This slash would be lopped to a height not exceeding 18" from the ground. All other trees would be skid whole to landings leaving only scattered limbs on the forest floor. The leave tree marking in the area would be done in such a way to emulate natural forest growth. Trees would be left based on quality characteristics, not spacing requirements. This would result in scattered clumps blended with openly spaced trees of all diameter classes. Snag requirements would be met and most often exceeded on a per acre basis so scattered "character" trees can also be observed throughout the stand. Following treatment the stand would exhibit an almost park like appearance in most areas with a quality overstory being present.

Harvest systems and activities would be ground-based and would be completed late summer-winter. The skidding equipment and log trucks may cause temporary dust clouds that would quickly disperse and would only occur during harvest. The proposed harvest would most likely occur during the general "work week".

Direct, indirect, and cumulative effects to aesthetics due to harvesting and hauling associated with the proposed action would be an improvement from the current conditions.

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.

No impacts are likely to occur under either alternative.

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.

The following timber permits have been completed in this area:

Pitch Tube Baby: Section 16 T14N R14W. Adjacent, located across the Blackfoot river.
Stabilization 1: Sections 2 & 10 T14N R14W, Adjacent, located to the north and northeast.
Stabilization 2: Section 10 T14N R14W, located to the northeast.

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

14. HUMAN HEALTH AND SAFETY:

Identify any health and safety risks posed by the project.

This project would mitigate current concerns of fire danger and elevated populations of mountain pine beetles from the adjacent landowner. Concerns have been raised by two adjacent landowners that this stand is "falling apart" and mountain pine beetles are thriving in the section and then coming onto the adjacent landowners section. With that concern is also a concern of increased dead and dying trees which results in a higher fuel loading. This could potentially increase fire activity if one were to start in the area.

Log truck traffic would increase slightly on area roads for the duration of the permits associated with the proposed action. Signs at appropriate locations on county roads and access roads would be used to warn motorists and local residents.

15. INDUSTRIAL, COMMERCIAL AND AGRICULTURE ACTIVITIES AND PRODUCTION:

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

The proposed action would lead to a small, temporary increase in industrial activity during implementation. The proposed action would include timber harvesting and log hauling.

A grazing lease currently exists on the parcel and is utilized in June-July. The harvest would occur after that time frame and would be finished before that time next year. Post harvest the forest floor would receive more sunlight which could potentially increase forage for game as well as domestic animals within the harvest area.

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.

A few short time jobs would be created for the duration of the proposed action.

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.

The proposed action has only indirect, limited implications for tax collections.

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

Aside from contract administration, the impact on government services should be minimal due to the temporary nature of the proposed action.

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.

The DNRC operates under the State Forest Land Management Plan (SFLMP, DNRC 1996) and Administrative Rules for Forest Management (ARM 36.11.401 through 450, DNRC 2003). The SFLMP established the agency's philosophy for management of forested trust lands. The Administrative Rules provide specific guidance for implementing forest management projects

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.

The section is surrounded by private property, access is limited and the area receives little use by the general public. People recreating on the Blackfoot river would have access into the parcel but no activities are planned for two chains (132 feet) from the high water mark. Therefore this project would have little effect on recreational and wilderness activities.

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.

NONE: The project would have no direct implications for density and distribution of population and housing

22. SOCIAL STRUCTURES AND MORES:

Identify potential disruption of native or traditional lifestyles or communities.

No measurable impacts related to social structures and mores would be expected.

23. CULTURAL UNIQUENESS AND DIVERSITY:

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

No measurable impacts related to cultural uniqueness and diversity would be expected under either alternative.

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.

No Action Alternative A: An existing grazing lease would continue to generate approximately \$464.12/year. No road improvements would be made on existing roads. Ponderosa pine mortality would continue across the area and the trust would recover no value from the dying trees.

Action Alternative B: An existing grazing lease would continue to generate approximately \$464.12/year in addition the proposed project would return approximately \$80,864.00 to the Common Schools Trust. This estimate uses an estimated stumpage rate of \$19.00 per ton (estimated stumpage based on recent timber sales

with similar characteristics). Additionally, the proposed action would contribute approximately \$20,386.24 to the forest improvement fund. This rate is based on a \$4.79/ ton forest improvement fee.

EA Checklist Prepared By:	Name: Amy Helena	Date: 7/27/10
	Title: Management Forester	

V. FINDING

25. ALTERNATIVE SELECTED:

Action Alternative

26. SIGNIFICANCE OF POTENTIAL IMPACTS:

This Environmental Analysis has been completed for the Squirrel Tail Timber Sale. After a thorough review of the EA, project file, response and discussions with Department and other specialists, discussions with neighboring landowners, Department policies, standards and guidelines, and the State Land Management Rules, I have taken the decision to choose the action alternative. I believe that this EA has described a good approximation what this project would accomplish.

Salvage dead and dying timber before it loses its economic value, and improve stand health and vigor of the stand by thinning the remaining portions of the stand. It will also pre-commercially thinned to reduce stocking of some regenerated portions of the parcel. This is explained in This is explained in EA part 3 *Alternatives Considered* , EA part 15 *Industrial, Commercial, and Agriculture Activities and Production*, EA part 24 *Other Appropriate Social and Economic Issues*, and is required by law in MCA 77-5-207 -Salvage timber program.

This project will reduce the susceptibility of residual trees to epidemic insect infestations and outbreaks, and improve the availability of necessary nutrients, water, and sunlight that may be limited in this stand. This is explained in EA part 7 *Vegetation Cover, Quantity, and Quality*.

Given agreements and discussions with internal specialists and with Montana DFWP biologists and easement land stewards, all concerns regarding fish and wildlife will be met.

This is a limited access and the DNRC may not have the opportunity to treat this land again.

27. NEED FOR FURTHER ENVIRONMENTAL ANALYSIS:

EIS

More Detailed EA

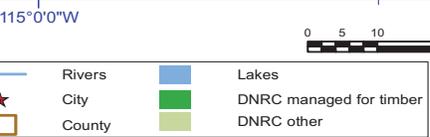
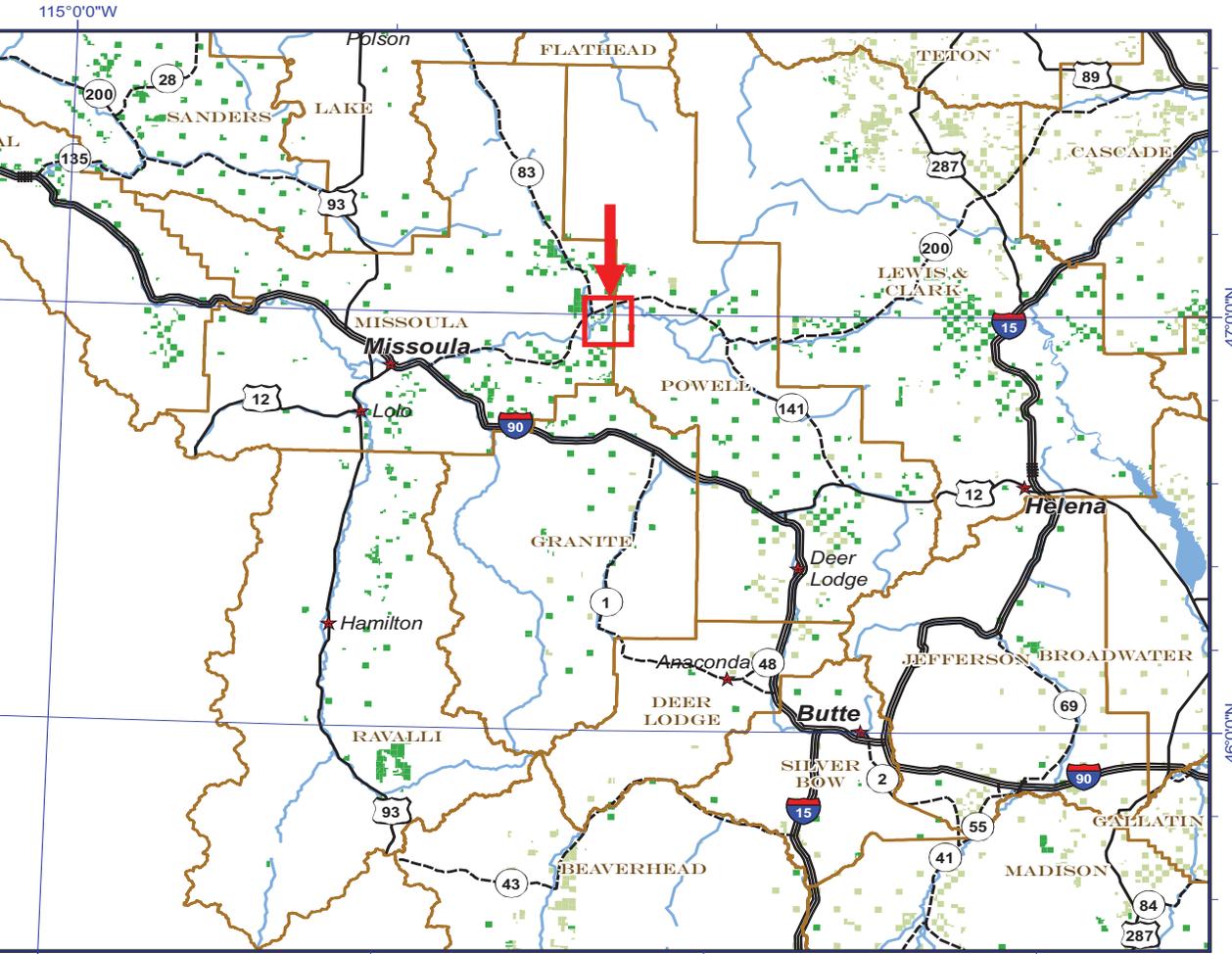
No Further Analysis

EA Checklist Approved By:	Name: Craig V. Nelson
	Title: Supervisory Forester, Clearwater Unit, Montana DNRC
Signature: /s/ Craig V. Nelson	Date: 8/5/10

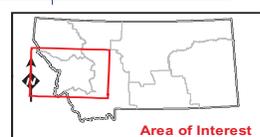
Attachment A

Maps

lap



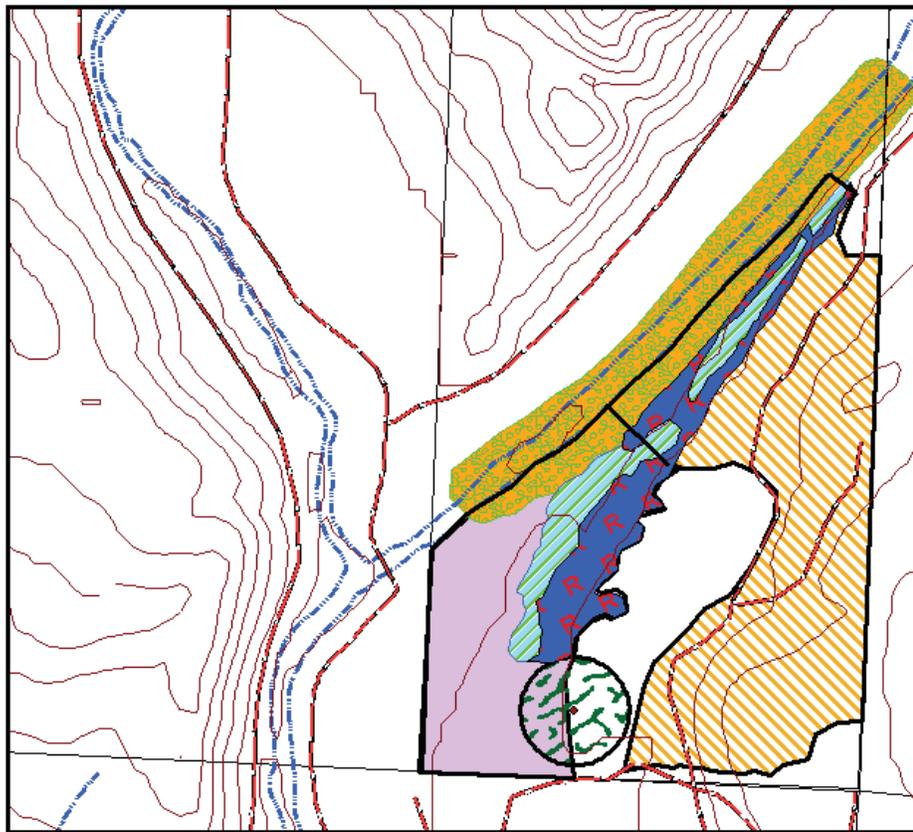
21 February 2007
 Montana DNRC
 Technical Services Section/dr



Squirrel Tail Harvest Map



Squirrel Tail
Sec 16 T14N R14W
DNRC-CLEARWATER UNIT



0 0.125 0.25 0.5 0.75 1 Miles

Units 1 & 2: Leave all trees with a horizontal yellow stripe painted around the bole of the tree and/or a yellow "W" painted on the tree. Leave all boundary trees unless otherwise noted by the forest officer.
SMZ: There are no trees marked to cut in the SMZ. The SMZ is identified by Orange SMZ ribbon and orange 3 dots.

Elk winter Range: Only remove beetle hit ponderosa pine. Elk winter range area is identified with blue and orange ribbon.

Elk Winter Range Buffer: Remove all trees with an orange horizontal stripe painted around the bole of the tree. The buffer is the area between the Winter Range and the edge of the bench. The boundary along the bench is flagged with orange and white candy stripe flagging.

Owl Nest Buffer: The owl nest buffer is identified with yellow and black checker flag combined with red flagging. Within this area only harvest trees with an orange stripe painted around the bole of the tree.

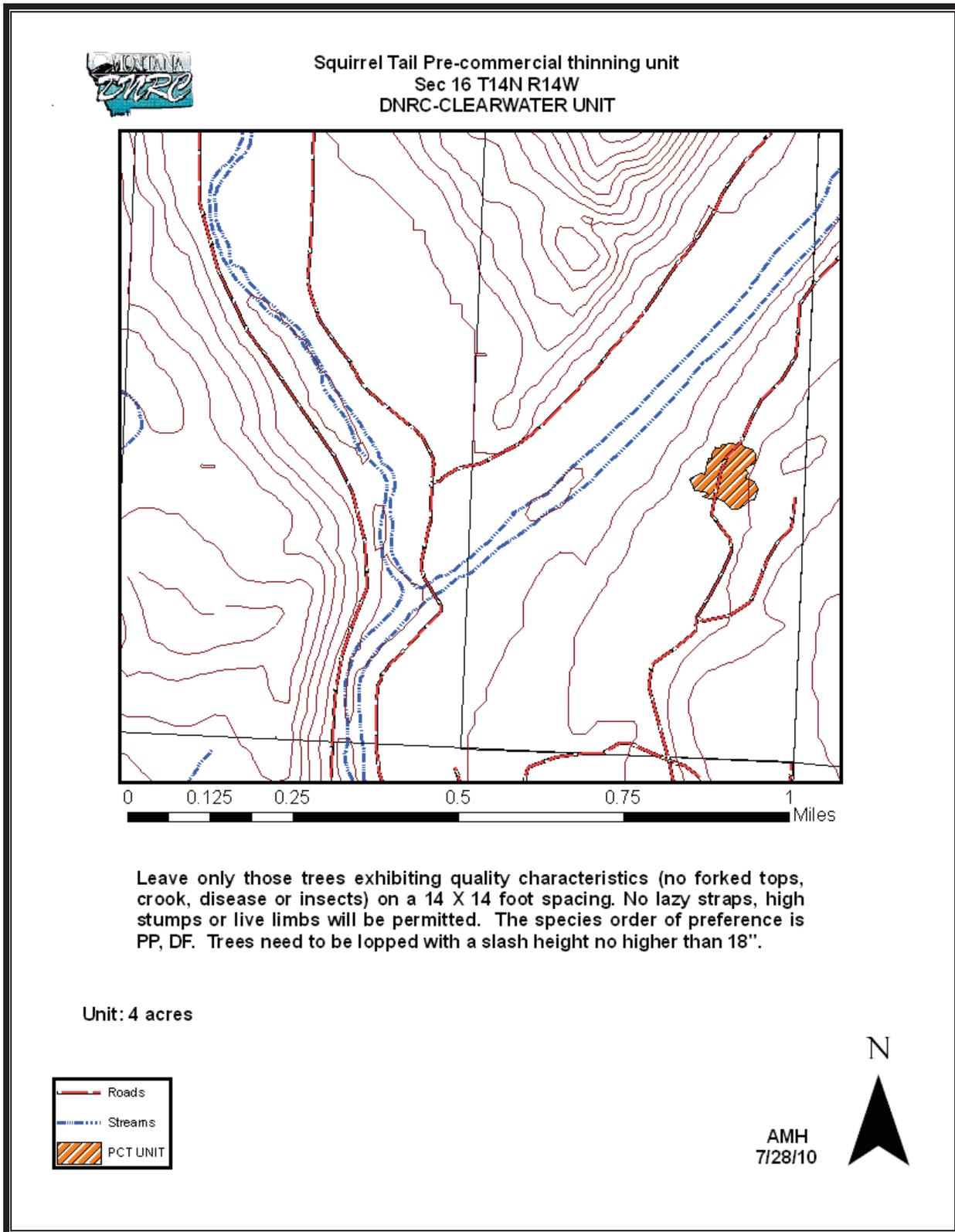
Owl's Nest	Winter Range Buffer	Harvest Unit
Roads	Owl's Nest Buffer	Unit Number
Streams	Winter Range	1
No Harvest Zone		2

Unit 1: 45 acres
Unit 2: 82 acres

AMH
7/28/10



Squirrel Tail Pre-commercial thinning Map



Attachment B

Wildlife Analysis

CHECKLIST ENVIRONMENTAL ASSESSMENT
For
Endangered, Threatened and Sensitive Species

Threatened and Endangered Species	[Y/N] Potential Impacts and Mitigation Measures N = Not Present or No Impact is Likely to Occur Y = Impacts May Occur L = Low Potential for Effects
Lynx (<i>Felis lynx</i>), Federally threatened.	[N] Based on current SLI database information, lynx habitat is not present on the parcel. Thus, there would likely be low potential for effects.
Grizzly Bear (<i>Ursus arctos</i>), Federally threatened.	[L] The project area does not have motorized public access, and there would not be an increase in open road density. Thus, there would likely be low potential for effects.
DNRC Sensitive Species	[Y/N] Potential Impacts and Mitigation Measures N = Not Present or No Impact is Likely to Occur Y = Impacts May Occur L = Low Potential for Effects
Gray Wolf (<i>Canis lupus</i>)	[L] The project area does not have motorized public access, and there would not be an increase in open road density. Thus, there would likely be low potential for effects.
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	[L] The project area is located along the Blackfoot River, and < 2 miles from a bald eagle territory. Through provisions contained within the parcel's conservation easement, as well as mitigations for elk winter range that would retain higher levels of trees post-harvest, there would likely be low potential for effects for this species from the proposed harvest.
Flammulated Owl (<i>Otus flammeolus</i>)	[L] Both No Action and the proposed action would have similar effects to flammulated owls due to the mountain pine beetle infestation within the project area's ponderosa pine. However, the proposed action may benefit this species because it would scarify the soil, preparing it for forest regeneration, which would return the site to suitable habitat sooner than under a No Action alternative. As a result, there would likely be a low potential for effects beyond what is expected under the No Action alternative.
Peregrine Falcon (<i>Falco peregrinus</i>)	[N] Not present.
Black-backed Woodpecker (<i>Picoides arcticus</i>)	[N] Not present.

Pileated Woodpecker (<i>Dryocopus pileatus</i>)	[L] Both No Action and the proposed action would have similar effects to pileated woodpeckers due to the mountain pine beetle infestation within the project area's ponderosa pine. However, the No Action alternative might benefit this species because it would retain higher levels of snags and feeder logs. Nevertheless, under both alternatives the habitat suitability would likely suffer due to reduced canopy closure: either due to timber harvest or mountain pine beetle induced mortality. As a result, there would likely be a low potential for effects beyond what is expected under the No Action alternative.
Fisher (<i>Martes pennanti</i>)	[N] Not present.
Coeur d'Alene Salamander (<i>Plethodon idahoensis</i>)	[N] Not present.
Northern Bog Lemming (<i>Synaptomys borealis</i>)	[N] Not present.
Other Sensitive Species Considered	[Y/N] Potential Impacts and Mitigation Measures N = Not Present or No Impact is Likely to Occur Y = Impacts May Occur L = Low Potential for Effects
Common Loon (<i>Gavia immer</i>)	[N] Not present.
Harlequin Duck (<i>Histrionicus histrionicus</i>)	[N] Due to measures within the conservation easement to protect the riparian area, no impact is likely to occur to this species.
Columbian Sharp-tailed Grouse (<i>Tympanuchus phasianellus columbianus</i>)	[N] Not present.
Mountain Plover (<i>Charadrius montanus</i>)	[N] Not present.
Townsend's Big-eared Bat (<i>Corynorhinus townsendii</i>)	[N] Not present.

Big Game Species	[Y/N] Potential Impacts and Mitigation Measures N = Not Present or No Impact is Likely to Occur Y = Impacts May Occur L = Low Potential for Effects
Elk (<i>Cervus elaphus</i>)	[Y] Within the approximately 127 acres of harvest units, approximately 45% - 55% of the canopy cover would be removed, unless they occur within several buffers or protection areas. In an elk winter range buffer, approximately 30% - 40% of the canopy cover would be harvested, unless there is beetle activity (which would have a greater level of harvest). Within two chains of the high water mark, no harvest activities would occur. The winter range area, and winter range buffer are designed to: 1) utilize an escarpment to reduce wind penetration; 2) provide a higher tree retention to slow winter winds, and thus, body heat loss; and 3) utilize numerous boulders for winter bedding grounds, as they may shield bedding animals from winter winds. As a result, there would likely be low to moderate risk of direct, indirect, or cumulative effects as a result of the proposed action.
White-tailed Deer (<i>Odocoileus virginianus</i>)	[Y] Within the approximately 127 acres of harvest units, approximately 45% - 55% of the canopy cover would be removed, unless they occur within several buffers or protection areas. In an elk winter range buffer, approximately 30% - 40% of the canopy cover would be harvested, unless there is beetle activity (which would have a greater level of harvest). Within two chains of the high water mark, no harvest activities would occur. The winter range area, and winter range buffer are designed to: 1) utilize an escarpment to reduce wind penetration; 2) provide a higher tree retention to slow winter winds, and thus, body heat loss; and 3) utilize numerous boulders for winter bedding grounds, as they may shield bedding animals from winter winds. As a result, there would likely be low to moderate risk of direct, indirect, or cumulative effects as a result of the proposed action.
Mule Deer (<i>Odocoileus hemimonus</i>)	[Y] Within the approximately 127 acres of harvest units, approximately 45% - 55% of the canopy cover would be removed, unless they occur within several buffers or protection areas. In an elk winter range buffer, approximately 30% - 40% of the canopy cover would be harvested, unless there is beetle activity (which would have a greater level of harvest). Within two chains of the high water mark, no harvest activities would occur. The winter range area, and winter range buffer are designed to: 1) utilize an escarpment to reduce wind penetration; 2) provide a higher tree retention to slow winter winds, and thus, body heat loss; and 3) utilize numerous boulders for winter bedding grounds, as they may shield bedding animals from winter winds. As a result, there would likely be low to moderate risk of direct, indirect, or cumulative effects as a result of the proposed action.
Big Game Species	[Y/N] Potential Impacts and Mitigation Measures N = Not Present or No Impact is Likely to Occur Y = Impacts May Occur L = Low Potential for Effects

<p>Great Horned Owl (<i>Bubo virginianus</i>)</p>	<p>[L] A great horned owl nest was discovered in a ponderosa pine snag adjacent to a large meadow within the project area on 3 June 2010. Prior to this discovery, 2 fledgling owls had been observed nearby (A. Helena, MT DNRC, personal communication, 2 June 2010). This species is widely distributed throughout North America, utilizes a wide range of habitats and nesting sites, and is tolerant of disturbance. Under the conservation easement, cutting or disturbing any trees or other vegetation within 660 feet of the nest during the nesting season (January 15 through August 15) would be prohibited. Further, the easement prohibits the removal of any crown trees or other over-story vegetation, including the nesting trees themselves within 330 feet of any active or inactive raptor nest, currently known or later identified, at any time, provided, however, that during the non-nesting season, diseased trees may be cut and removed to abate infestation. With these protective measures, there would likely be low risk of effects to these individuals and the species from the proposed action.</p>
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Attachment C
Soils & Hydrology
Analysis

July 20, 2010

To: Amy Helena, Craig Nelson; Clearwater Unit,
Jon Hayes: Silviculturist, Southwestern Land Office

From: Jeff Collins

Re: Squirrel-tail Limited Access Sale, Section 16, T14N, R14W Soils, hydro and watershed report

Type and Purpose of Action: Salvage of dead and dying Ponderosa Pine from mountain Pine beetle, and thinning of Douglas-fir to improve tree spacing and growth similar to thinning and management operations on the North side of the river. There is a riparian conservation easement that restricts activity to 120 feet chains from the high water mark of the Blackfoot River and no operations are planned in the riparian/SMZ. Plan is to use existing roads with short temporary spur roads to landing sites.

Standard BMP's and Forest Management Rules would be applied. This small scale project is on mainly moderate slope. A narrow unit of short steep slopes of 40-60% occurs on rocky slopes located south and outside of the riparian corridor. This project has low risk of direct, indirect or cumulative effects to soils, water quality or fish resources. The following items were considered.

III. IMPACTS ON THE PHYSICAL ENVIRONMENT

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.

No unstable slopes or especially unique geology features are present. Above the river terrace there are areas of exposed bedrock on short steep slopes and common surface boulders that limit skid trail locations and would be tough on equipment tires. Two primary soils in the project area are Totelake gravelly and extremely stony loams on and adjacent to the alluvial terrace above the Blackfoot River and Winkler gravelly loams on the forested upland sites. All of these soils are well drained and tend to be droughty with a long season of use. No high erosion potential soils were identified and there are minimal effects of disturbance from historic use.

A localized sandy soil occurs along the access road on the rangeland site and is rutting if operated on when wet. Ground based skidding will be limited to slopes less than 45%. A small area of short steep slopes that are rocky may be harvested by directional felling or winching to limit ground disturbance. Previous selection harvest was mainly on moderate slopes and skid trails have revegetated with no apparent BMP departures or cumulative effects. The harvest of overstocked trees will improve tree spacing and should reduce competition for limited soil moisture and nutrients and improve growth of retained trees. Planned ground skidding operations should have low risk of direct, in-direct and cumulative impacts based on implementing BMP's and mitigation measures. Mitigations include season of use limits, and retaining a portion of woody debris for nutrient cycling and moisture retention, while providing of hazardous fuel reduction and prompt revegetation as needed to protect soil resources.

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.

The proposed salvage sale is located in SW ¼ Sec 16 T14N R14W which includes a segment of the Blackfoot River that is classified as B-1 in the Montana Water Quality Standards. This segment of the Blackfoot River has been identified as an impaired water body in Montana's 2008 305(b) Report, because the stream only partially

supports aquatic life and cold water fisheries and no other beneficial uses are listed as impaired. The impairment is inferred as minor to moderate based on macro invertebrate sampling. The probable causes of impairment are flow alteration from diversions and streambank modifications.

The proposed project has very low risk of direct, indirect or cumulative effects to water quality based on the following considerations. The salvage, thinning and improvement harvest is small scale project of about 127 acres mainly on gentle to moderate slopes and well drained soils. No streams occur within the harvest units and no SMZ harvest is proposed within 120 ft. of the Blackfoot River consistent with conservation easement requirements and all snags and stream recruitable trees for large woody debris would be retained in the riparian zone. No sites with high erosion risk were identified that would be affected. The project is not in a Municipal watershed. No SMZ's or fish bearing streams would be affected and no water quality impacts were observed from the proposed existing access roads. Skid trails would be stabilized by slashing and installing drainage where needed to prevent erosion. All disturbed roads and landings would be stabilized and grass seeded where needed to control erosion.

The harvest of mainly dead, dying and beetle infested pine and thinning of Douglas fir is not expected to have a measurable influence on: water quality, the amount or timing of runoff (water yield), or stream stability from the proposed project area when compared to the effects anticipated under no action. . In summary, the proposed harvest operations presents low risk of direct, in-direct and cumulative impacts based on implementing BMP's, Forest Management Rules and mitigation measures.

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.

Rare plants and Noxious Weeds Analysis:

No rare plants have been identified in the project area. The noxious weeds Spotted knapweed and thistle occur in this area. To prevent introduction of new weeds, off-road equipment will be cleaned prior to entry into harvest areas. Newly disturbed roads and landings will be seeded to grass to reduce the spread of weeds. Noxious weed spread would not be greatly increased by this action or cause cumulative impacts to vegetation based on the mitigation measures. The landings would be prioritized for herbicide treatment following the sale to reduce existing weeds.

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.

The Blackfoot River flows through this DNRC project section. MTFWP MFISH waterbody report identifies the Blackfoot River as supporting rare Bull trout, Westslope Cutthroat Trout, Brook Trout and other minor species. No road or harvest activities are planned within 120 feet or more of the river, which is consistent with applicable conservation easements. The 120 ft. wide no treatment zone is wider than an SMZ or RMZ designation, and the riparian area and there would be no effects to stream shading, water temperature, large woody debris, nutrients or channel stability associated with the proposed action. No new stream crossings are proposed, and no sediment sources from existing roads were identified along the timber haul route. No streams supporting fish or stream segments with connectivity to down slope fisheries occur within the proposed harvest units or haul route and no fish bearing streams would be affected. There is very low risk of direct, in-direct or cumulative effects to fish habitat or aquatic life with the proposed action.

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

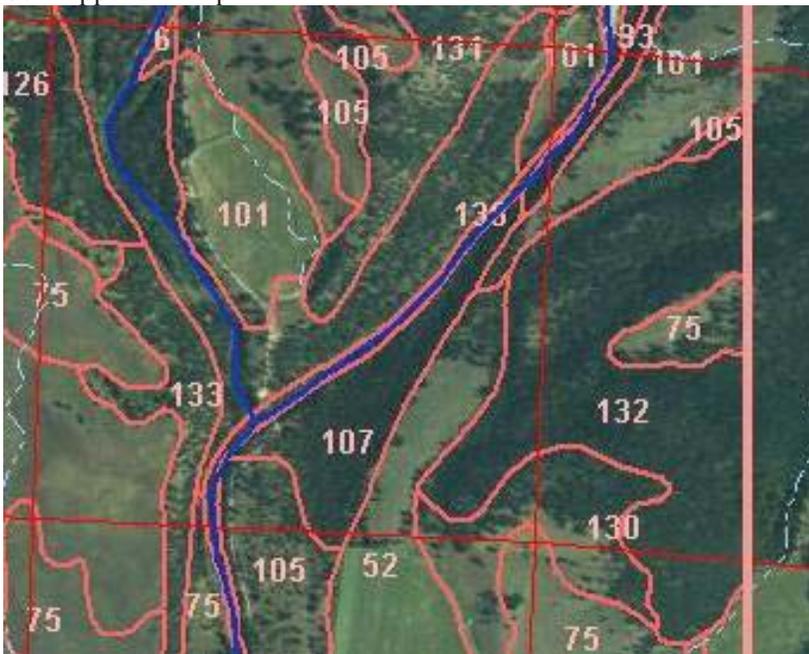
Consider any federally listed threatened or endangered species or habitat identified in the project area.

Determine effects to wetlands. Consider Sensitive Species or Species of special concern. Identify cumulative effects to these species and their habitat.

Bull trout present but uncommon. Habitat very well suited for this species Site/Reach Name: Below Monture Cr. Confluence Site/Reach Condition: Minor-moderate impairment. Comments:

Bull Trout is a threatened fish species and Westslope Cutthroat trout is a sensitive fish species that inhabits the Blackfoot River. No harvest or road activities are planned within 120 feet of the Blackfoot River and there would be no proposed project related impacts to stream channel stability, sedimentation or habitat components of connectivity, large woody debris or water temperature. There is very low risk of direct, in-direct or cumulative effects to threatened or sensitive fish or aquatic life with the proposed action as outlined in the hydrology and aquatic life sections.

Soil Appendix map



Map Unit	Mapping Unit Name	Mapping Unit Type
52	Hanaker silt loam, 0 to 6 percent slopes	Range
105	Totelake gravelly loam, 2 to 8 percent slopes	Forest River Terrace
107	Totelake extremely stony loam, 2 to 8 percent slopes	Forest River Terrace
132	Winkler gravelly loam, cool, 8 to 30 percent slopes	Forest Uplands
131	Winkler very gravelly sandy loam, 30 to 60 percent slopes	Consociation



MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

CLEARWATER UNIT
BOX 48455 SPERRY GRADE ROAD
GREENOUGH, MT.
59823-9635

(406) 244-5857

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