

Environmental Analysis

For the

Echo Lake Jumpstart Fuels Reduction Project

Prepared By

Kalispell Unit, Northwestern Land Office

Montana Department of Natural Resources and Conservation

February 2010

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CHECKLIST ENVIRONMENTAL ASSESSMENT

Project Name:	Echo Lake Jumpstart Fuels Reduction Project
Proposed Implementation Date:	June 2010
Proponent:	Department of Natural Resources and Conservation, Northwestern Land Office, Kalispell Unit
Location:	Section 5, Township 27N, Range 19W;
County:	Flathead

I. TYPE AND PURPOSE OF ACTION

The Kalispell Unit, Montana Department of Natural Resources and Conservation (DNRC) is proposing the Echo Lake Jumpstart Fuels Reduction Project. The project area is located approximately 5 miles northeast of downtown Bigfork, Montana within Section 5, T27N, R19W (see Location Map in Attachment I). The acreage of state land involved in the project is held by the State in trust for the support of specific beneficiary institutions (*Enabling Act, 1889; 1972 Montana Constitution, Article X, Section 11*). s. 5 – School of Mines.

Under the proposed action, approximately 100 thousand board feet would be harvested from approximately 45 acres. Estimated revenue of \$15,000 would be generated for the beneficiary. Specific objectives of this project are to maintain and improve forest health, reduce fuel loading, and increase forest productivity beneficial to future trust actions. If the Action Alternative is selected, activities could begin in June 2010.

Project Purpose and Need:

- 1) Reduce the potential for wildland crown fires by treating forest fuels.
- 2) Implement silvicultural treatments to improve forest health and vigor.
- 3) Sell forest products from trust lands within the project area to generate revenue for various trusts to produce the largest measure of reasonable and legitimate return over the long run for specific beneficiary institutions (*Section 77-1-202, Montana Codes Annotated (MCA)*).

Evaluations for road management and silvicultural treatments would also consider and incorporate: 1) aesthetics; 2) non-motorized recreational uses; and 3) control/containment of present weed infestations.

II. PROJECT DEVELOPMENT

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

On 8/24/09, the DNRC sent scoping letters to adjacent landowners and other known interested parties and organizations. One letter was received and offered support of the project as proposed. Hydrological, soils, wildlife and vegetative issues were identified by DNRC specialists and field foresters for both the No Action and the Action Alternative.

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

No other governmental agencies have jurisdiction and no permits are needed.

3. ALTERNATIVES CONSIDERED:

No Action Alternative: Under the No Action Alternative, no activity would be undertaken. No timber would be harvested and fuels reduction work would not occur. The No Action alternative would likely result in decreased growth rates and increased fuel loading within the timber stands. This alternative would not produce revenue for the Trust Beneficiary. Effects of the No Action Alternative are further described in the Resource Analyses in Attachment 2.

Action Alternative: Under the Action Alternative, DNRC would harvest up to 100 thousand board feet from approximately 45 acres. Timber would be harvested using tractor logging with conventional, mechanical or cut-to-length operations and would be focused on the removal of suppressed and intermediate trees or those trees infected or susceptible to insect and disease mortality.

Issues surrounding this proposed action have either been resolved or mitigated through project design or would be included as specific contractual requirements of this project. Recommendations to minimize direct, indirect and cumulative effects have been incorporated in the project design (Attachment II, Resource Analyses; Attachment III, Prescriptions; Attachment IV, Mitigations).

III. IMPACTS ON THE PHYSICAL ENVIRONMENT

4. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE:

Harvest activities would comply with Best Management Practices (BMP's) and would use existing roads and segments of existing skid trails where feasible. Mitigations include: limiting equipment operations to minimize soil compaction and rutting, planning appropriate skid trails, limiting skidding to slopes less than 40% and less than 20% of the harvest unit acreage, limiting disturbance and scarification, and retaining adequate amounts of large woody debris and fine litter following harvest. Thus, direct, indirect, and cumulative effects to the soil resource would be minimal.

Please refer to Attachment 2, Soils Analysis for a more detailed analysis, and Attachment 4, Mitigations for a more detailed description of mitigations.

5. WATER QUALITY, QUANTITY AND DISTRIBUTION:

The project area is adjacent to Echo Lake. The project area is located on landscape with broken topography.

Harvest activities would use existing roads and segments of existing skid trails where feasible, would require DNRC approved drainage features on skid trails, and would comply with BMPs and all laws pertaining to Streamside Management Zones (SMZs). Due to the lack of streams within the state parcels, well-drained soil conditions, the project design and compliance with applicable regulations and rules, direct, indirect, and cumulative effects to the water resource would be minimal.

Please refer to Attachment II, Water Resources Analysis for a more detailed analysis, and Attachment IV, Mitigations for a description of mitigations.

6. AIR QUALITY:

The project is located in Montana State Airshed 2 and within the Kalispell Impact Zone. Under the Action Alternative, potential post-harvest burning of logging slash would produce some particulate matter. Impacts are expected to be minor and temporary with slash burning to be conducted when conditions favor good smoke dispersion. All burning would be conducted during times of adequate ventilation and within the existing rules and regulations. The DNRC will make all attempts to utilize logging slash.

7. VEGETATIVE COVER, QUANTITY AND QUALITY:

Logging activities have occurred within the project area since the 1920's. Stands in the harvest unit are well stocked with average tree age around 100 years. No old growth stands as defined by Green et al. (1992) are present in the project area. The predominant appropriate cover type is western larch / Douglas-fir. Noxious weeds, primarily spotted knapweed, are present along existing roads. No sensitive plants listed by the Montana Natural Heritage Program were identified in the project area.

Under the Action Alternative, timber harvest would occur on approximately 45 acres and would be focused on the removal of suppressed trees and those infected or susceptible to insect and disease mortality. These changes would move stands in the project area toward desired future conditions. Occurrence of noxious weeds may increase.

Recommendations to minimize direct, indirect and cumulative effects have been incorporated into the project design (Attachment 1; Attachment 2, Vegetation Analysis; Attachment 3, Prescriptions; Attachment 4, Mitigations). Measures to minimize noxious weeds, insects and disease are included in the project design (Attachment 4, Mitigations).

8. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS:

Surface water, Echo Lake and pot hole lakes, are present within the project area. No harvest activities will take place within the SMZ. Thus direct, indirect, and cumulative effects to aquatic life and habitats would be minimal.

For all other resources related to this heading, please refer to Attachment 2, Wildlife Analysis for a detailed analysis and Attachment 4, Mitigations for a detailed description of mitigations.

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

Please refer to Attachment 2 Wildlife Analysis for a more detailed analysis and Attachment 4, Mitigations, for a more detailed description of mitigations.

10. HISTORICAL AND ARCHAEOLOGICAL SITES:

No historical or archaeological sites have been identified within the project area.

11. AESTHETICS:

Portions of the project area will be visible from Echo Lake and Labrant Road (County Road). It may also be visible from adjacent landowners and state lease lots. Openings in the canopy from skid trails and changes in tree cover density may be seen. The selective harvest prescriptions and broken topography should minimize any visual impacts. Prescriptions are designed to lessen the risk of crown fires and mimic historical stand conditions. Project implementation should not have an adverse visual impact in the area (Attachment 4, Mitigation).

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

No impacts are likely to occur under either alternative.

13. OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA:

No other documents are known

IV. IMPACTS ON THE HUMAN POPULATION

14. HUMAN HEALTH AND SAFETY:

Human health would not be impacted by the proposed timber sale or associated activity. There is no unusual safety considerations associated with the proposed timber sale.

15. INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION:

Timber harvest would provide continuing industrial production in the Flathead Valley.

16. QUANTITY AND DISTRIBUTION OF EMPLOYMENT:

People are currently employed in the wood products industry in the region. Due to the relatively small size of the timber sale program, there would be no measurable cumulative impact from this proposed action.

17. LOCAL AND STATE TAX BASE AND TAX REVENUES:

People are currently paying taxes from the wood products industry in the region. Due to the relatively small size of the timber sale, there would be no measurable cumulative impact from this proposed action on tax revenues.

18. DEMAND FOR GOVERNMENT SERVICES:

Log trucks hauling to the purchasing mill would result in temporary increased traffic on Labrant Road County Road, State Hwy 35 and State Hwy 2. This increase is a normal contributor to the activities of the local community and industrial base, and they cannot be considered a new or increased source of demand.

19. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:

On June 17, 1996, the Land Board approved the SFLMP. The SFLMP provides the philosophy adopted by DNRC through programmatic review (DNRC, 1996). The DNRC will manage the lands in this project according to this philosophy, which states:

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

On March 13, 2003, the DNRC adopted Rules (Administrative Rules of Montana [ARM] 36.11.401 through 450). These Rules provide DNRC personnel with consistent policy, direction, and guidance for the management of forested trust lands. Together, the SFLMP and Rules define the programmatic framework for this project.

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

Implementation of the proposed project will not displace any current uses of the area. Use is expected to remain the same or increase following this project.

21. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:

There would be no measurable cumulative impacts related to population and housing due to the relatively small size of this project, and the fact that people are already employed in this occupation in the region.

22. SOCIAL STRUCTURES AND MORES:

No impacts related to social structures and mores would be expected under either alternative.

23. CULTURAL UNIQUENESS AND DIVERSITY:

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

24. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:

Costs, revenues and estimates of return are estimates intended for relative comparison of alternatives. They are not intended to be used as absolute estimates of return. The estimated stumpage is based on comparable sales analysis. This method compares recent sales to find a market value for stumpage. These sales have similar species, quality, average diameter, product mix, terrain, date of sale, distance from mills, road building and logging systems, or anything that could affect to buyer's willingness to pay for. The Action Alternative would generate an estimated return to the school trust of \$15,000. The No Action alternative would not generate any return to the trust.

EA Checklist Prepared By:	Name: Pete Seigmund & Dave Jones Date: February 2010 Title: Foresters
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V. FINDING

25. ALTERNATIVE SELECTED:

Upon review of the Checklist EA and attachments I find the Action Alternative as proposed meets the intent of the project objectives as stated in section I, Type and Purpose of Action. It complies with all pertinent environmental laws, DNRC State Forest Land Management Plan, and a consensus of professional opinion on limits of acceptable environmental impact. The No Action Alternative does not meet the project objectives. For these reasons I have selected the Action Alternative for implementation on this project.

26. SIGNIFICANCE OF POTENTIAL IMPACTS:

After a review of the scoping documents, Department policies, standards, guidelines, and the State Forest Land Management Plan (SFLMP), I find all the identified resource management concerns have been fully addressed in this Checklist EA and its attachments. Specific mitigation measures for each resource concern are listed in Attachment IV. The action alternative provides for income to the school trust and promotes the development of a healthy, biologically diverse, and productive forest. It also provides the opportunity to improve reduce fuel loading and crown fire potential near homes and private property. I find there will be no significant impacts to the human environment as a result of implementing the action alternative. Specific project design features and various resource management specialist recommendations have been implemented to ensure that this project will fall within the limits of acceptable environmental change and result in no significant impacts.

27. NEED FOR FURTHER ENVIRONMENTAL ANALYSIS:

EIS

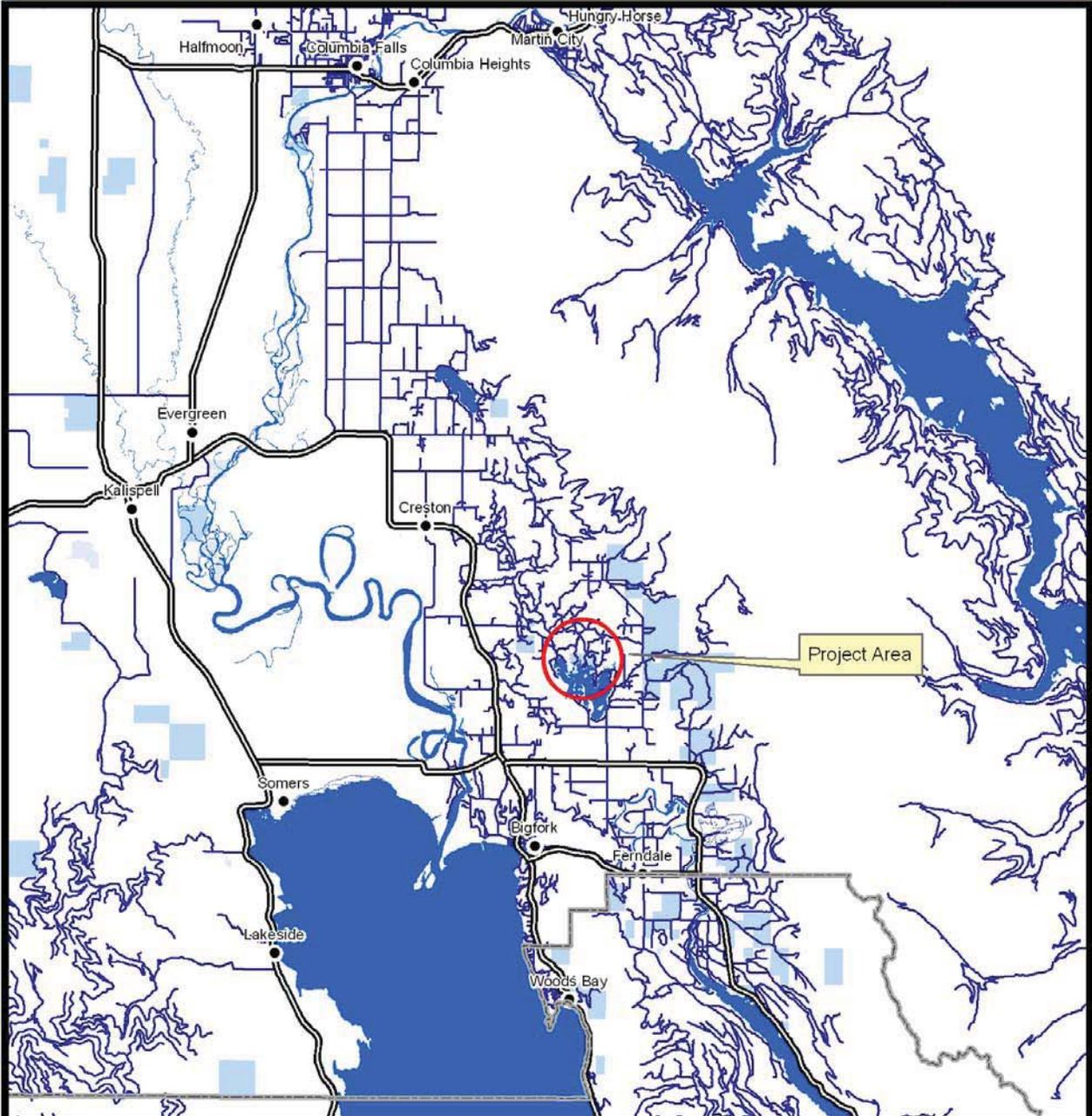
More Detailed EA

No Further Analysis

EA Checklist Approved By:	Name: Greg Poncin
	Title: Kalispell Unit Resource Program Manager
Signature: Greg Poncin	
Date: 04/14/2010	

Attachment I: MAPS
Vicinity Map
&
Project Area Maps

Echo Lake Jumpstart 2 Location Map



Legend

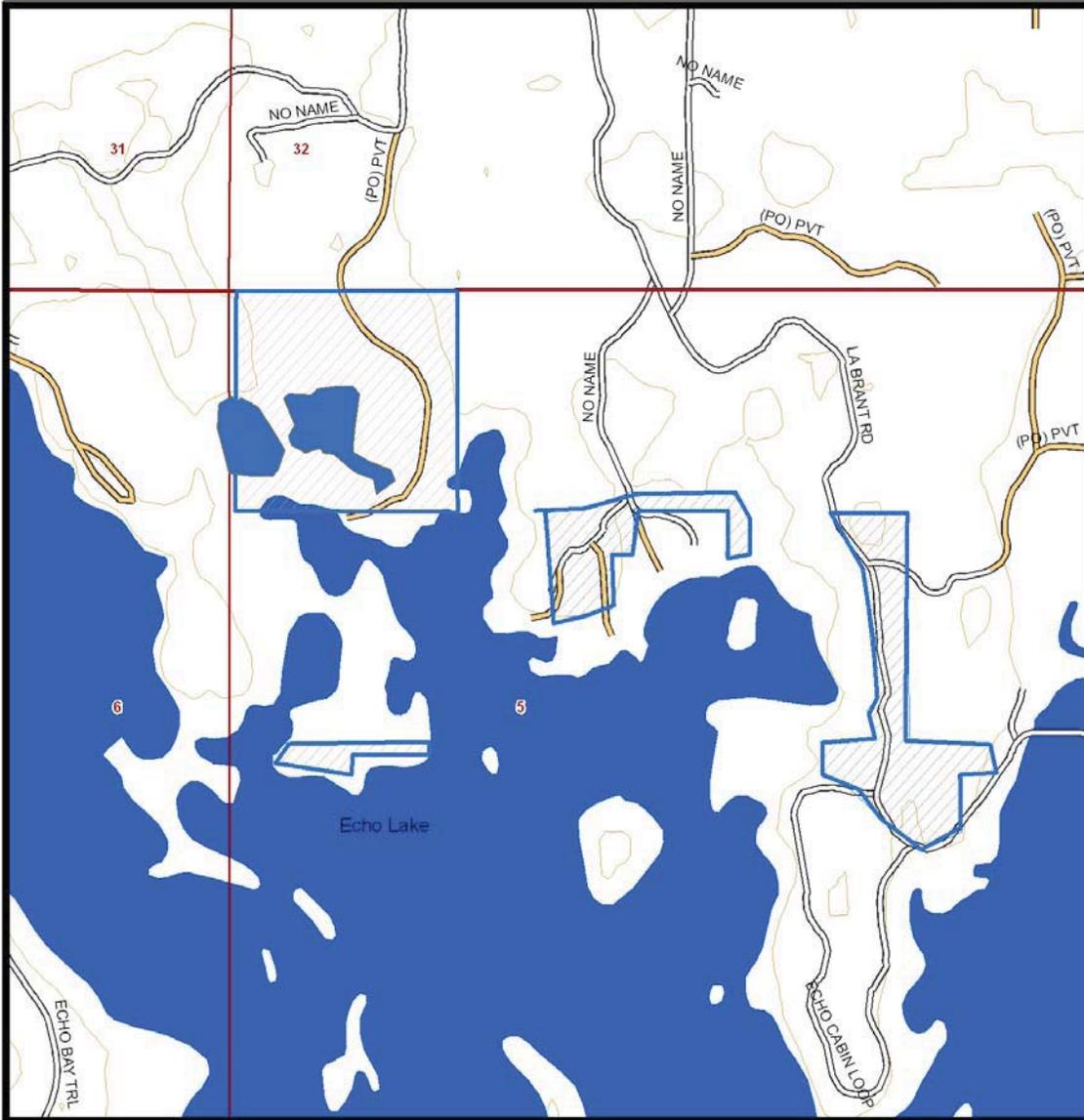
- Project Area 
- Highway 
- Road 
- MT DNRC Ownership 

Montana DNRC
Northwestern Land Office

0 7,300 14,600 21,900 29,200
Feet



Echo Lake Jumpstart 2 Harvest Map Section 5 T27N R19W



Legend

- Harvest Unit
- Contour
- Lake
- Road

Montana DNRC
Northwestern Land Office



Attachment II

Resource Analyses: Existing Conditions & Direct, Indirect and Cumulative Effects

Vegetation Analysis

Water Resources Analysis

Soils Analysis

Wildlife Analysis

Vegetation Analysis

EXISTING CONDITIONS & ENVIRONMENTAL EFFECTS

Introduction

This section identifies and describes those resources that may be affected by the proposed action and describes the environmental effects on the resources. The section is organized by general resource categories and their associated issues. The descriptions of the existing conditions found in this section can be used as a baseline for comparison with the Action Alternative.

Cumulative effects from current management and foreseeable future State actions are discussed. These include other active timber sales, those in the planning stage, ongoing maintenance, and other uses of the areas being analyzed. Direct, indirect and cumulative effects on the resources being analyzed were considered.

General description of the area

The proposed Echo Lake Jumpstart Project area is located approximately 5 miles northeast of Bigfork, Montana in Section 5 T27N R19W and approximately 45 acres of State Trust Lands. The project share property boundaries with numerous private landowners. Several other analysis areas were delineated to assess direct, indirect and cumulative effects of the alternatives considered. More specific details about these are contained under each corresponding resource heading.

Vegetation

The vegetation section describes present conditions and components of the forest as well as the anticipated effects of both the No Action and the Action Alternatives.

Current stand conditions are viewed as a fire hazard and at risk of a large, catastrophic fire if ignition occurs.

- Exclusion of fire from the site may continue to change stand compositions and age classes from what would have historically occurred in the area
- Insects and disease may affect timber productivity and value.
- Timber harvesting and associated activities may increase noxious weeds in the project area.

These issues can be evaluated by analyzing the anticipated changes in current forest conditions in the project area, in conjunction with the extent and location of silvicultural treatments.

Analysis Methods

Administrative Rules of Montana (ARM 36.11.404) direct DNRC to take a coarse filter approach to favor an appropriate mix of stand structures and compositions on state lands, referred to as a desired future condition. The following characteristics: forest composition, age class distribution, cover type and structure, are used to describe current forest and stand conditions in comparison to the estimated natural forest characteristics for Montana prior to extensive influences from fire suppression, logging, and development. This analysis will compare the desired stand conditions that DNRC believes to be appropriate for the site with current stand conditions.

Sensitive Plant Analysis Methods –

The Montana Natural Heritage Program (MNHP) database was consulted by DNRC for information regarding occurrence of plant species of special concern and the potential for sensitive plants and their habitats within the project area

Noxious Weed Analysis Methods –

During field reconnaissance, DNRC personnel assessed road conditions, road locations, various susceptible timber stands, stream conditions, and generally evaluated noxious weed occurrence, extent and location.

Analysis Area

Forest/Timber Analysis Area –

This analysis area includes 3 geographic scales for assessing potential direct, indirect and cumulative effects on forest cover type, species composition, the distribution of age classes, structural stages, and fragmentation.

- Climatic Section M333B - **Lower Flathead Valley (Losensky 1997) Scale** was used in this analysis for comparing historic conditions related to the distribution of forest cover types and age classes, to current conditions within the project area. The Lower Flathead Valley geographic area includes Flathead Lake west to the Montana border, from the Canadian border south to Missoula, MT (Losensky 1997).
- The **DNRC Kalispell Landscape Scale** includes all scattered forested trust land parcels, administered by the Kalispell Unit for DNRC. This geographic area is a subset of the above Lower Flathead Valley Climatic Section and includes school trust lands in the vicinity of Whitefish, MT south to Arlee, MT and school trust lands in the vicinity of Bigfork, MT west to the Thompson Chain of Lakes. Current and appropriate conditions related to forest cover types and age class distribution were analyzed on this scale.
- The **Echo Lake Jumpstart 2 sale** includes trust lands within the project area and more specifically those stands proposed for harvesting under each alternative. This scale was used to analyze expected changes in current forest conditions of the project area.

Existing Conditions

General Forest Vegetation Information –

The existing vegetative types, more specifically forest habitat types and cover types within the Kalispell Landscape and the project areas reflect the varied influences of site factors, fire regimes or disturbance patterns, and past management activities.

Site conditions vary depending upon the physiographic and climatic factors associated with geographic locations. Soil types, slope aspect and position, length of growing season, and moisture availability influence the type, growth and development of forest vegetation. These site factors are considered in the forest habitat classifications (Pfister et al. 1977), used to generally describe forest vegetation, forest stand development, and relative forest productivity associated with the given site and climatic factors.

Most of the Echo Lake project area occurs on glacial till derived soils. Soils are generally silty or loamy with coarse rock fragments or cobbles. Slopes are gentle to moderate, rarely exceeding 40%, and aspects that are not flat are generally westerly. (Refer to soils section for more detail.)

Stand History/Past Management –

Echo Lake: The majority of the project area was first harvested in the early to mid 1940's for railroad ties and sawtimber. . These first harvests removed the majority of large diameter western larch and Douglas-fir. Smaller timber and Christmas tree permits occurred in the 1950's and 1960's.

Active fire suppression starting in the 1930's has limited the extent of wildfires to small acreages, generally less than ¼ acre in size.

Adjacent Lands Echo Lake: The Echo parcel is surrounded by numerous private land owners. Most adjacent lands are residential homesites and contain smaller tracts (20 acres or less). Until the late 80's or mid 1990's these lands were traditionally larger, agricultural tracts. Grains, hay, pasture, and Christmas tree farms occupied most of the cleared acreages with strips or patches of mature to immature forest of similar composition to the Echo Lake project area. Starting in the late 80's parcel size has decreased, as tracts are sold for residential use. Most of the Christmas tree farms have been converted to fields or yards and numerous forest patches have been thinned, salvaged, or converted to wooded homesites. The trust land adjacent Echo Lake shore line is managed for approximately 40 lease lots and public recreation access to Echo Lake.

Forest Habitat Types

The Echo Lake project area approximately 90% of the area is occupied by forest habitat types in the *Abies grandis*(grand fir) series indicating the influence of warm and moist climatic conditions.

These habitat types are often occupied with a mixture of species. Major species include *Pseudotsuga menziesii* (Douglas-fir), *Larix occidentalis* (western larch), *Pinus ponderosa* (ponderosa pine), *Picea engelmannii* (engelmann spruce), and *Pinus contorta* (lodgepole pine). Timber productivity ranges from moderate to very high for these habitat types, with higher productivity generally found in stands dominated by seral species. Partial cutting practices often lead to dominance by grand fir, whereas even-aged management is more favorable for seral species (Pfister, et al, 1977)

Fire Regimes –

Fire regimes for the Kalispell landscape are variable, given the broad and scattered nature of trust lands, but are predominantly within the moderate severity fire regime. As a whole, the forest exists as a mosaic of differing age and size classes that have developed from different human activities, fire frequencies and intensities in relation to other site factors such as aspect, elevation, weather, stand structure, and fuel loadings. Areas of frequent fire have produced WL/DF, PP, and DF cover types. In low severity fire regimes, fires occur frequently and create relatively smaller patches of open-grown forest. Historically, these low severity regimes maintained stand conditions that were resistant to stand replacement fires, by regularly consuming forest fuels, killing small trees, and pruning boles of small trees. As fire intervals become longer and management activities occur less frequently, more shade tolerant tree species begin to develop in the understory and stands tend to be multi-storied, with varied patch sizes. These characteristics

reflect a moderate to low severity fire regime. High severity fire regimes are characterized by large patch sizes and stand replacement fires, but often include low severity fires that act as a thinning agent, or create small openings where clumps of trees die where small crown fires erupt.

A mosaic of even and multi-aged patches is present in the project area. The majority of the project area would be classified in a moderate to mixed severity fire regime. Fire intervals are considered to be frequent, 50 years or less. Most of the project area has evidence of past fire activity. Forest stands shaped by frequent to mixed severity fires typically have an abundance of seral species in the overstory. This area represents moist grand fir, habitat types and only occurs west of the Continental Divide in Montana, in locations influenced by maritime climate (Arno, 1980). Most of the project area has evidence of past fire activity. Forest stands initiated with infrequent stand replacement fires typically have some representation of seral species in the overstory, but most stands have progressed long enough without disturbance that understories are sparse or have thickets of sapling to small sawlog sized trees of predominantly grand fir or Douglas- fir. Improvement cuts or shelterwood cuts are proposed for stands that are younger or multi-aged and have a more diverse species mix

Distribution of Old-Growth Stands –

As per the Land Board's decision in February, 2001, the DNRC adopted definitions for old growth by forest habitat groups, based on minimum number and size of large trees per acre and age of those trees as noted in *Old-Growth Forest Types of the Northern Region* (Green et. Al. 1992). The DNRC approach to old-growth management (and forest management in general) is further clarified in (ARM 36.11.401 to 36.11.450). Field verification of older stands modeled in the coarse filter analysis of SLI data for the project area identified no stands within the project area meeting the DNRC's old growth definition.

Stand Structure and Development –

Stand structure and patch size indicates a characteristic of stand development and disturbance and how a stand may continue to develop. Stand structure is classified as single-storied, two-storied, or multi-storied. Patch size for this project is estimated from stand sizes and provides further insight into the severity of a disturbance as it relates to dominant tree canopies.

Single-storied stands are most often associated with stand replacement events, such as severe fires or regeneration harvests including clearcutting or seedtree cutting. Stands are fairly simple in vertical structure and are often even aged. Regeneration harvests, such as a seedtree or shelterwood that retain 10% or more of the upper crown canopy and has a seedling/sapling understory are considered 2-storied stands. Two-storied stands have simple vertical structure and are frequently even aged, although at least two age classes are generally present. The multi-storied condition arises when a stand has progressed through time and succession to the point that shade-tolerant species are encroaching into a shade-intolerant overstory. Three or more age classes may be present in these stands and vertical structure can be complex. These stands often experience a long interval between disturbances. Stand size refers to openings created by disturbances and provides insight regarding the severity of a disturbance event regarding tree mortality. Larger patch sizes are generally associated with moderate and high severity fire regimes or regeneration harvests. Smaller sizes are attributed to low or moderate severity fire regimes, and harvest treatments that retain larger proportions of the overstory.

Over 80 % of the project area and Kalispell Landscape consists of stands with multi-storied structures. The various tree canopy levels may be patchy in nature or well distributed and several

age classes are usually present. Single or two-storied, even aged structures occur in the project acreage and are largely represented by the younger age classes.

Timber Productivity and Value –

Insects: Since the summer of 2000, various species of bark beetles have been responsible for increased tree mortality in the Flathead Valley. In the Echo Lake area, Fir Engraver (*Scolytus ventralis*) bark beetles have been active. Any other factors that stress trees and cause a reduction in tree vigor will make them more susceptible to attack. Since the year 2000, western Montana has experienced some of the hottest and driest summers on record. This has led to an increase in droughty conditions which further weakened and stressed large numbers of trees.

Tree Vigor: Radial growth rates are good to moderate in the younger (less than 120 years). Radial growth is static or declining in the 120 plus age class. Stand age and low vigor is also making many of the stands in the project area more susceptible to bark beetle attacks. Timber productivity within the project area is noticeably diminished by stem decay associated with *Echinodontium tinctorium* (Indian Paint Fungus) in mostly grand fir.

Sensitive Plants –

A review of the records from the MNHP for the project indicated Beck Water Marigold, by the USFS, of species of special concern identified within T27N R19W area. Field reconnaissance indicated no unique or sensitive plants within the project area.

Noxious Weeds –

Invasions of noxious weeds are generally restricted to old logging roads and trails in less recently logged areas. Areas logged in the last few decades, however, have invasions spreading from the well established weed populations in the roads into adjacent openings. Native plant species may not re-colonize these areas. Several factors increase the likelihood of continued weed encroachment in the project area. They are: persistent and increasing usage of the area for recreation and an increase in the overall population of the surrounding area.

Environmental Effects

Forest Age Class & Cover Type Distribution –

No Action Alternative – Direct and Indirect Effects

Under the No Action Alternative, natural processes would continue to have a direct influence on these forest characteristics. In the absence of wildfires, the effects of current insect infestation-induced mortality will continue to influence both short and long term age class distribution and cover type representation.

Openings created in the canopy from bark beetle mortality are not expected to resemble natural fire effects. Openings are likely to be smaller and many may continue to be stocked with younger pole-sized trees. Without duff reduction and soil exposure, the regeneration of openings is expected to favor shade tolerant species over seral species. The lack of regeneration under denser canopies or the predominance of Douglas-fir in numerous understories would perpetuate the trend of increasing DF and mixed conifers (MC) cover types over much of the project area. Without disturbance, the older age classes from 100

years up would continue to dominate the area and the 0-39 and 40 to 99 age classes would continue to decline, as several 70 to 80 year old stands move into the next age class without replacement.

No Action Alternative – Cumulative Effects

Under the No Action Alternative, there would likely be a decline in acreage in WL/DF cover types. WL composition will continue to decrease leading to a shift from WL/DF to DF or MC cover types. Across the landscape, fire suppression, insect and disease occurrence, and increasing human use may influence cover type and age class distribution to an unknown degree. In the absence of stand disturbance variability of age class and cover type distribution would decline.

Action Alternative – Direct and Indirect Effects

As a result of harvesting, WL/DF cover types would persist within the harvest units. Dominant tree composition would begin to move toward historic conditions. By removing shade tolerant species (mostly grand fir) and retaining seral species PP, WL/DF cover types would persist for a longer time. The average age of some treated stands would decrease, although some stands would remain in the same age class after harvest, depending on the extent of overstory tree removal.

This alternative would harvest approximately 45 acres. Improvement cutting and commercial thinning would occur in combination on all acres. The prescriptions would favor the retention of western larch, ponderosa pine (trace), and western white pine (trace). Healthy Douglas-fir would also be retained to help achieve desired stocking levels but larch and pine would be favored over Douglas-fir. The reduction in Douglas-fir would increase the proportion of other species in the overstory resulting in a change in composition. The improvement cut areas would remove some of the older, decadent trees as well as trees with insect and disease problems. Tree spacing will be more variable in the improvement cut areas with some small openings possibly being created.

The Action Alternative would treat approximately 45 acres of the Echo Lake project area. This project is not expected to have any big change to age class distribution in the project area. The Action Alternative would result in a small decrease in the acreage for the MC cover type and small increase in acreage of the WL/DF cover type. This alternative would eventually increase the proportion of the Kalispell Landscape in the youngest age classes.

Action Alternative – Cumulative Effects

The Action Alternative would result in minor changes in cover types. Across the landscape, fire suppression, insect and disease occurrence, and increasing human use may influence cover type and age class distribution to an unknown degree.

Distribution of Old-Growth Stands –

No Action Alternative – Direct, Indirect, and Cumulative Effects

No old growth stands are present within the project area. Under the No Action Alternative, stands would continue to develop under the influence of suppressed wildfire activity and other natural disturbances such as insect and disease activity. Maintenance of old-growth characteristics and defining criteria will be dependent on the persistence and the rate of mortality. If droughty conditions continue in this area, it is expected that the live trees will continue to die resulting in a younger stand or an old stand of smaller trees in the near future.

Action Alternative – Direct, Indirect, and Cumulative Effects

Under the Action Alternative, effects to old growth would be similar to the No Action Alternative. Commercial thinning and improvement cutting would improve the growth and vigor of residual trees and help stands to develop old-growth characteristics sooner on the 45 acres.

Stand Structure and Development –

No Action Alternative – Direct and Indirect Effects

Stand structure and development could continue to change as a result of damaging agents. Older stands (100 years +) are experiencing noticeable reductions in live tree canopy closure due to insect and disease caused mortality. The mosaic pattern of multi-aged and multi-storied or small even-aged patches are likely to persist with this type of disturbance, resembling the unstable conditions and stand development often associated with late succession forests. More shade tolerant species would increase in all canopy levels continuing to replace or inhibit growth of seral species, as dense small diameter trees develop in the understory. Area coverage of forest in early succession stages, especially in larger patch sizes would continue to decrease. Forest fuels, both ground and vertical would continue to build up in stand areas where mortality is occurring, increasing the potential for severe, less controllable fires that may result in large scale stand replacement fires.

No Action Alternative – Cumulative Effects

Forest succession and fire suppression would continue. Conditions favoring the establishment of shade tolerant species in canopy gaps, the slow growth of seedlings and saplings under closed canopies or the hindrance of tree establishment under closed canopies, and increasing fuel loadings would continue.

Action Alternative – Direct and Indirect Effects

Under the Action Alternative, commercial thinning and improvement cutting proposed for 45 acres would maintain current stand ages and structures, although canopy closure and forest fuels would be reduced. Commercial thinning would maintain some of the mid- and lower-canopy, favoring seral species and vigorous trees. These treatments would resemble low severity fires and act as a thinning agent, killing the less fire resistant species and releasing the more fire resistant trees, such as western larch. After slash disposal treatments are completed more fire resistant stand conditions and structures would be maintained for several decades.

Overstory tree canopy closure would be reduced on all harvested acres, temporarily reducing the percentage of closed canopy stands in the project area.

Action Alternative – Cumulative Effects

The area covered by single or two-storied stand structures across the Kalispell Landscape would remain the same.

Timber Productivity and Value –

No Action Alternative – Direct and Indirect Effects

Due to the effects of insects and disease the commercial value of sawlogs would continue to decline. Non-sawlog or pulp values are generally less than that received for sawlogs, and the value of this timber trust asset would continue to decline. Growth rates of individual trees in denser, older stands would remain static or continue to decline and opportunities for establishment of replacement trees would be

limited to small openings favoring shade tolerant trees. Development of larger diameter commercially valuable western larch as a persistent component in the overstory of older stands would be hindered. Loss of dead and dying trees along both open and closed roads would continue to occur from activities associated with firewood gathering and maintenance of powerline corridors and public right-of-way easements. The request for small-scale salvage permits would likely increase.

No Action Alternative – Cumulative Effects

Without silvicultural treatments or wildfires to control tree densities, reduce losses to insects or disease, and recover mortality or initiate new stands, the trend towards increasing acreage on the Kalispell Unit covered by older, slower growing stands that are more susceptible to beetle infestations, stem decays, or wildfires would continue.

Action Alternative – Direct and Indirect Effects

Silvicultural treatments to be applied under the Action Alternative would remove both live and dead trees, some of which are affected by insects or diseases. Healthy and vigorous trees of all species would be favored for retention where they occur. Snags and snag recruits in quantities meeting DNRC requirements would be left. Larger diameter snags and cull trees, especially shade intolerant species, if not infected with dwarf mistletoe would be favored for potential snag recruits and snag retention. Due to the removal of low vigor or diseased trees stand health would improve. Between-tree competition would be reduced allowing residual trees to maintain or increase current growth rates. The bark beetle hazard for the treated stands will decrease due to a decrease in stocking, removal of a good number of the larger diameter, decadent trees, and by freeing up more available water, sunlight, and nutrients for residual trees.

Commercial thinning and improvement cutting (intermediate harvests) would remove fewer trees, producing less fuel loadings than regeneration harvests. Slash reduction will mainly include piling areas of concentration of slash skidding and burning of landing piles the ensuing fall. Some small diameter slash will be placed on skid trails for erosion control and nutrient cycling. Residual trees would adequately stock these units with healthy and vigorous trees.

Silvicultural treatments would be applied to about 45 acres, under the Action Alternative. The effects for the various types of cuts as described above would occur on the treated acres. Timber productivity on the treated acres would increase or be maintained at a level closer to the site potential, improving the future opportunities for generating revenue for the trust with the use of the timber resource.

Action Alternative – Cumulative Effects

The percentage of forested land that is producing timber closer to the site potential would increase slightly on the Kalispell Unit. The acres of forest stands that are less susceptible to beetle infestations, stem decays, or wildfires would increase. Higher potential for greater long-term revenue from the timber resource is expected.

Sensitive Plants –

No Action Alternative – Direct and Indirect Effects

A review of the records from the MNHP for the project indicated Beck Water Marigold, by the USFS, of species of special concern identified within T27N R19W area. No plant species of special concern identified within the project area. Field reconnaissance also indicated no unique or sensitive plants within the project area.

No Action Alternative – Cumulative Effects

Cumulative effects to the distribution or viability of sensitive plants populations are not expected under No Action Alternative.

Action Alternative – Direct and Indirect Effects

Since no sensitive plants are present within the project area, the Action Alternative would not have any direct or indirect effects to sensitive plants.

Action Alternative – Cumulative Effects

Since no sensitive plants are present within the project area, the Action Alternative would not have any cumulative effects to sensitive plants.

Noxious Weeds –

No Action Alternative – Direct and Indirect Effects

Weed seed would continue to be spread or be introduced throughout the project area from recreational use, residential development and use adjacent to state land or within, and commercial and non-commercial use. Herbicide treatment along open, public roads and enhancement of road closures would continue as funding and unit priorities allow. Containment of weed infestation areas or a reduction of weed infested acres may be realized.

No Action Alternative – Cumulative Effects

Cumulatively the potential spread of weed seeds and increases in areas where weed populations could start is possible under the No Action Alternative, across the Kalispell Landscape, as well. With adoption of ARM 36.11.445 and implementation of Cooperative Noxious Weed Agreements with Flathead, Lake, and Lincoln counties, a more aggressive approach to identification and treatment of noxious weeds has occurred than in the past. This ongoing treatment of noxious weeds should limit large increases in noxious weed spread and may reduce the number of acres infested in the future.

Action Alternative – Direct and Indirect Effects

Under the Action Alternative, harvesting would occur on approximately 45 acres. Acreage within harvest units are at higher risk of incurring weed establishment within the units due to soil disturbances that may occur from skidding, landing, and heavy equipment use for scarifying or fuels reduction treatments. Logging disturbance would increase the potential for further establishment of noxious weeds with the exposure of mineral soil. Applying integrated weed management techniques within the sale design would reduce the occurrences and spread of weeds. Grass seeding disturbed roads and landings and spot spraying new weed infestations would reduce or prevent establishment of additional populations. Trampling slash in skid trails and closing additional roads would limit the potential for soil disturbance within these routes during or after logging, reducing the potential for weed establishment. Treating existing weed populations along or within roads with herbicide spray would reduce current weed populations, or contain the area of infestation. This project would also likely use cut to length harvesting which would limit the exposure of mineral soil and deter new weed infestations.

Action Alternative – Cumulative Effects

In combination with other management activities and recreational use of the Kalispell Landscape, the action alternative would increase the risk of further encroachment of forested sites by noxious weeds. The

potential risk would be limited with the use of prevention measures implemented under County Weed plans in addition to the site-specific mitigation measures for the Lion Mountain project. Actual treatments would likely be applied to a more extensive area under the Action Alternative, and have a greater potential for reducing current weed populations within the project area, thereby reducing the noxious weed affected area within the Kalispell Landscape.

References

- Forestry Best Management Practices.
- DNRC, 1996. State Forest Management Plan. Montana DNRC, Forest management Bureau. Missoula, MT.
- Green, P., J. Joy, D. Sirucek, W. Hann, A. Zack, and B. Naumann. 1992. Oldgrowth forest types of the Northern Region. USDA Forest Service, Northern region. Missoula, Montana.
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WATER AND SOIL RESOURCES ANALYSIS

To: Dave Jones, Project Leader

From: Tony Nelson

Date: March 19, 2010

Subject: Echo Lake Plus Jump Start Project

The proposed salvage harvest of diseased or dead trees on the Kalispell Unit would occur in section 5, T27N, R19W. The total area of harvest is approximately 45 acres and would yield an estimated 100 mbf of saw logs, approximately 1,215 tons of pulp and approximately 620 tons of biomass removal. All work would be completed under dry, frozen and/or snow covered ground conditions.

<i>Issue</i>	<i>Assessment</i>
High erosion risk soils?	<i>The inventoried landtype in the project area is listed as Wn by Soil Survey of Upper Flathead Valley Area, Montana (MT617). This is <u>not</u> considered as a highly erosive soil. Frozen or dry conditions will limit the risk of compaction.</i>
Federally listed threatened and endangered aquatic species or critical habitat for threatened and endangered aquatic species as designated by the USFWS?	<i>The project is on a dry slope above the Echo Lake near Bigfork, Montana. All of the proposed selective harvesting would be located at least 50 feet from the ordinary high water mark of Echo Lake. No federally listed threatened and endangered aquatic species inhabit Echo Lake or its tributaries, and Echo Lake is not designated as critical habitat for federally listed threatened and endangered aquatic species. Because the salvage harvest units are located at least 50 feet from surface water on gentle topography and the scale of the project is small, only a very low risk of impacts would exist.</i>
Within a municipal watershed?	<i>No municipal water supply is found within 3 miles of the project.</i>
SMZ of fish bearing streams or lakes...?	<i>Portions of the proposed harvesting would take place near Echo Lake and its SMZ. All proposed ground-based activity would ensure that machinery remains a minimum of 50 feet from the edge of the ordinary high water mark, and would follow all provisions of Montana's SMZ Law. The designated haul route from the harvest units to MT Highway 35 uses a county standard road that has no stream crossings.</i>
Cumulative effects? Adapted from ARM	<i>Due to the small scale of this project in relation to the watershed size and the selective nature of the proposed activity, the risk of additional cumulative impacts would be very low and likely immeasurable. Therefore, cumulative impacts would remain acceptable for this watershed.</i>

Conclusion:

Due to the small scope of the project, selective nature of the harvesting, set-backs from surface water bodies, and the gentle to level topography, impacts to watershed, soils and fisheries are not expected to be measurable. Impacts to soil physical properties (compaction, displacement) are expected to be less than 15% of the harvested area provided soils are dry, frozen or snow-covered and skid trails are spaced such that 20% or less of the area is trafficked by equipment. No streams or draws are found within the proposed project area, so sediment delivery is not an issue with this project.

WILDLIFE ANALYSIS

Katie Mally, Wildlife Biologist

8/13/2009

Echo Lake 2 -wildlife comments

The proposed Echo Lake Jump Start project would occur in section 5, T27N, R19W. Approximately 45 acres of grand fir with a smaller component of Douglas-fir, larch, and Engelmann spruce would be harvested.

The following table shows how each Threatened species, Endangered species, sensitive species, or big game was either reviewed with anticipated effects of the proposal or dismissed because suitable habitat does not occur within the project area or proposed activities would not affect their required habitat components.

STATUS	SPECIES	DETERMINATION – BASIS
Endangered Species	Gray wolf Habitat: ample big game pops., security from human activity	The proposed project area is approximately 13 air miles away from the Firefighter Wolf pack. Big game species are the primary prey for wolves, and negligible effects to big game would be anticipated. No wolf den or rendezvous sites are known to occur in the vicinity; standard contract stipulations would address the potential of these habitat attributes occurring in the vicinity. Due to the negligible changes in big game use, lack of known habitat attributes, and inclusion of mitigation clauses in the contract, negligible direct, indirect, or cumulative effects to wolves would be anticipated.
Threatened Species	Canada lynx Habitat: SF hab. types, dense sapling, old forest, deep snow zone	No lynx habitats occur in the project area. Additionally, the project area is generally outside of the elevations where lynx are located in Montana. Thus, no direct, indirect, or cumulative effects would be anticipated to lynx.
	Grizzly bear Habitat: recovery areas, security from human activity	The proposed project area is within “occupied habitat” as mapped by grizzly bear researchers and managers to address increased sightings and encounters of grizzly bears in habitats outside of recovery zones (T. Wittinger, Unpub. Interagency Map). Topography, roadside vegetation, and group retention would be used to maintain 100 feet of visual screening on open roads where practicable. Due to the low elevation and high human densities within or near the project area little grizzly bear use would be anticipated. Negligible direct, indirect, or cumulative effect to grizzly bears would be anticipated.
Sensitive species	Bald eagle Habitat: late-successional forest <1 mile from open water	The proposed project area approximately one mile from the nearest known bald eagle nest site and is within the home range of this territory. Use of the project area by the pair would not be expected due to the density of human developments and prevalence of human activity in the area. Given the distance from the nest, habitats present, and proximity to human developments, negligible direct, indirect, or cumulative effects to bald eagles would be anticipated.
	Black-backed woodpecker Habitat: mature to old burned or beetle-infested forest	No recently (less than 5 years) burned areas are in the project area. Thus, no direct, indirect or cumulative effects would be expected.

	<p>Coeur d'Alene salamander</p> <p>Habitat: waterfall spray zones, talus near cascading streams</p>	No moist talus or streamside talus habitat occurs in the project area. Thus, no direct, indirect, or cumulative effects would be expected.
	<p>Columbian sharp-tailed grouse</p> <p>Habitat: grassland, shrubland, riparian, agriculture</p>	No suitable grassland communities occur in the project area. Thus, no direct, indirect, or cumulative effects would be expected.
	<p>Common loon</p> <p>Habitat: cold mountain lakes, nest in emergent vegetation</p>	No suitable lake habitats occur in or near the project area. Thus no direct, indirect, or cumulative effects would be expected.
	<p>Fisher</p> <p>Habitat: dense mature to old forest <6,000 ft. elev. and riparian</p>	Marginal upland grand fir habitats exist within the project area. These areas that could be suitable fisher travel habitats, but is not expected to receive extensive use for foraging or resting given the surrounding landscape. No harvesting would occur in any riparian areas. Given the habitats present, the limited area, the proximity to human developments, and the surrounding landscape, negligible direct, indirect, or cumulative effects would be anticipated.
	<p>Flammulated owl</p> <p>Habitat: late-successional ponderosa pine and Doug.-fir forest</p>	No suitable flammulated owl habitats exist within the project area. Thus no direct, indirect, or cumulative effects would be expected.
	<p>Harlequin duck</p> <p>Habitat: white-water streams, boulder and cobble substrates</p>	No suitable high gradient streams occur in the project area. Thus, no direct, indirect, or cumulative effects would be expected.
	<p>Northern bog lemming</p> <p>Habitat: sphagnum meadows, bogs, fens with thick moss mats</p>	No suitable sphagnum bogs or fens occur in the project area. Thus, no direct, indirect, or cumulative effects would be expected.
	<p>Peregrine Falcon</p> <p>Habitat: cliff features near open foraging areas and/or wetlands</p>	No potential habitat is expected in the project area. Thus, no direct, indirect, or cumulative effects would be expected.
	<p>Pileated woodpecker</p> <p>Habitat: late-successional ponderosa pine and larch-fir forest</p>	No suitable pileated woodpecker habitats exist within the project area. Thus no direct, indirect, or cumulative effects would be expected.
	<p>Townsend's big-eared bat</p> <p>Habitat: caves, caverns, old mines</p>	DNRC is unaware of any mines or caves in the project area or close vicinity that would be suitable for use by Townsend's big-eared bats. Thus, no direct, indirect, or cumulative effects would be anticipated.
Big Game Species	Elk	Approximately 67 acres within the proposed project area were identified as white-tailed deer winter range. Year-round use by deer, elk, and moose is possible. Reductions in thermal cover and snow intercept would be anticipated with the proposed harvesting. Overall the negligible effects to winter range quality would have little or no effect on big game populations using the larger winter range. No elk security cover exists in the project area. No appreciable changes in human access or elk security would be expected. Hiding cover would be reduced in the project area. Overall negligible direct, indirect, or cumulative effects to big game would be anticipated.
	Moose	
	Mule Deer	
	White-tailed Deer	

General Wildlife:

The proposed harvesting would alter existing habitats. Species using reasonably closed canopy stands of grand fir would see a reduction in habitats, while species relying on more open stands would see a slight increase in available habitats. Snags would be retained across the unit to meet ARM 36.11.411. Overall, given the size of the area, and the expected changes to habitats, negligible direct, indirect, or cumulative effects would be anticipated.

Attachment III: Prescriptions

Description of existing stand/unit:

The stands within the permit area are multi-storied and well stocked in the upper canopy levels. Average stand age is 100 years. Average tree diameter is approximately 14 inches. Species composition: 50% grand fir, 30% Douglas-fir, 10% western larch, and 10% ponderosa pine, spruce/lodgepole. Radial growth rates are static or declining. Western larch is generally healthy but there have been low to moderate levels of bark beetle infestation in the Douglas-fir. Mortality has occurred in the Grand fir and Douglas fir within the last 15 years due to bark beetle infestations.

Treatment Objectives: Fuels Reduction/Commercial Thin/Improvement Cut

1. Reduce fuel loadings to mitigate the potential for crown fires next to private property by removing suppressed and intermediate trees. Provide open air space for the best WL, DF, and PP in the stand.
2. Sanitize stand by removing trees infected with insects or disease.
3. Protect soil and site productivity by: minimizing soil displacement, compaction, and erosion during logging; and retaining logging slash on site for woody debris recruitment and nutrient cycling of foliage and fine fuels.

Harvest Method: Commercial thin to approximately 20 feet between stems. Favor retention of western larch and ponderosa pine. Remove trees infected with dwarf mistletoe, insects, or stem rots. Remove suppressed and intermediate trees and favor the healthy dominants. Future snag recruits in the form of large diameter western larch can be developed with the commercial thinning of the healthy and vigorous larch component, as these trees are provided with growing space. Snags, in the 18 inch plus diameter class will be retained, although few exist.

Hazard Reduction & Site Preparation: The *purchaser will be required* to treat slash resulting from logging and felling non-merchantable material that is damaged by logging. Slash treatment must meet requirements of fire hazard reduction law and in this case includes “high standard” along private property boundaries and open roads. Slash treatment will include piling landings and decking areas, lopping and scattering or trampling non-merchantable material in skid trails or temporary roads, whole tree skidding, and spot piling heavy concentrations. State shall burn piles resulting from Purchaser’s hazard reduction and site preparation work Leave Tree Criteria:

1. Crop Trees: live WL, PP, and DF exhibiting good form, vigor, wind firmness and health. Crop trees should be selected mostly from the dominant and co-dominant trees. Tree spacing should use an average of 20 feet between boles.
2. High quality wildlife snags. Retain high quality snags when present, or those in the 18 plus inch diameter class.
3. Snag Recruitment Trees: If trees in the 20 plus inch diameter class exist and are not infected with insects it can be retained.

Attachment 4

Mitigations

Mitigation Measures for Action Alternative

The following mitigations would be required under the action alternative:

Vegetation

- Grass seed new and disturbed roads and landings; spot spray new weed infestations
- Washing logging equipment prior to use.
- Trample slash in skid trails
- Treating existing weed populations along or within roads with herbicide spray.

Water Resources and Soils

- Upgrade roads to incorporate Forestry Best Management Practices (BMPs)
- Limit timber harvest activities to time when ground is frozen or soil moisture is below 20%
- Apply all applicable Forestry Best Management Practices

Wildlife

- Maintain a minimum of 2 snags and 2 snag recruitment trees over 21 inches dbh per acre, on average, for all harvest units. If unavailable, retain the next largest size class. Additional snag resources could be retained within the harvest units.
- Retain 10-15 tons CWD post harvest.
- Prohibit contractors from carrying firearms on restricted roads.
- If a wolf den or rendezvous site were identified, operations would be suspended within 1 mile or 0.5 mile, respectively.
- Protect submerchable trees, brush, some cull material and non-commercial trees would occur in select areas that have potential for high levels of human activity to provide visual screening cover for big game species.
- Cease all operations if a threatened or endangered species is encountered. Consult a DNRC biologist and develop additional mitigations that are consistent with the administrative rules for managing Threatened and Endangered Species (ARM 36.11.428 through 36.11.435).
- Close skid trails opened with proposed activities to reduce the potential for unauthorized motor vehicle use.
- Manage for snags, snag recruits, and coarse woody debris according to ARM 36.11.411 through 36.11.414, particularly favoring western larch and ponderosa pine.

**Attachment 5
Preparers and Consultants**

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