Rudge Projects

Environmental Assessment Checklist

Clearwater Unit
Southwest Land Office
Montana Department of Natural Resources and Conservation
March 2024

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Project Name: Rudge Projects
Proposed Implementation Date: June 2024
Proponent: Clearwater, Southwest Land Office, Montana DNRC
County: Missoula

Type and Purpose of Action

Description of Proposed Action:

The Clearwater Unit of the Montana Department of Natural Resources and Conservation (DNRC) is proposing the Rudge Projects. The project is located approximately ½ mile south and 1 mile southeast of Clearwater Junction in Greenough, Montana *(refer to Attachment A for project maps)* and includes the following sections:

Beneficiary	Legal Description	Total Acres	Treated Acres
Common Schools	**SW4 NW4 Section 10, T14N-R14W**	**40**	**21**
Public Buildings	**N2 NE4 Section 10, T14N-R14W**	**80**	**68**
MSU 2nd Grant			
MSU Morrill			
Eastern College-MSU/Western College-U of M			
Montana Tech			
University of Montana			
School for the Deaf and Blind			
Pine Hills School	**SE4 Section 4 & W2 Section 2, T14N-R14W**	**480**	**254**
Veterans Home			
Public Land Trust			
Acquired Land			

Objectives of the project include:

- Contribute to the DNRC's annual target of timber harvest volume (sustained yield) as mandated by state law (*77-5-221, MCA*).
- Generate revenue for the trust beneficiaries (Common Schools, Pine Hills School and Public Buildings).
- Improve timber stand growth and productivity through commercial harvest and pre-commercial thinning.
- Shift stands toward more historic conditions using silvicultural treatments.
- Minimize the risk of Douglas-fir bark beetle spread by reducing stand density and altering species composition through silvicultural treatments.
- Minimize the risk of stand-replacing wildfire by reducing fuel loading and stand density.

- Improve forest road infrastructure for future management.

Proposed activities include:

Action	Quantity
Proposed Harvest Activities	# Acres
Individual tree selection	305
Sanitation	38
Total Treatment Acres	**343**
Proposed Forest Improvement Treatment	# Acres
Pre-commercial thinning	400
Site preparation/scarification	*As needed*
Planting	*As needed*
Prescribed Burning	*As needed*
Proposed Road Activities	# Miles
New permanent road construction	0.1*
New temporary road construction	0.76
Road maintenance	7
Road reclaimed	0.1
Other Activities	

**another 0.75 miles of new construction has been previously analyzed for in the Clearwater Junction Reciprocal Access Agreement (2016); environmental analysis cited on page 34.*

Duration of Activities:	5 years
Implementation Period:	June 16 – March 31

The lands involved in this proposed project are held in trust by the State of Montana. (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*).

The DNRC would manage lands involved in this project in accordance with:

- The State Forest Land Management Plan (DNRC 1996),
- Administrative Rules for Forest Management (ARM 36.11.401 through 471),
- The Montana DNRC Forested State Trust Lands Habitat Conservation Plan (HCP) (DNRC 2010)
- and all other applicable state and federal laws.

Project Development

SCOPING:

- DATE:
  - July/August 2023
- PUBLIC SCOPED:
  - The scoping notice was posted on the DNRC Website for 30 days: https://dnrc.mt.gov/News/scoping-notices
  - The initial scoping notice with maps was sent to landowners within ½ mile radius of the project area and anyone on the Statewide Scoping List at the time.
- AGENCIES SCOPED:
  - Montana Fish, Wildlife & Parks (MTFWP)
  - Bureau of Land Management (BLM)
  - Tribal Nations
- COMMENTS RECEIVED:
  - How many: One comment was received from MTFWP
  - Concerns: MTFWP's letter commented on the importance of this area to certain ungulate and large carnivore species and encouraged working with their wildlife biologists on developing treatments that will retain or improve habitat needs for these animals.
  - Results: The project leader worked closely with the DNRC staff wildlife biologist to develop appropriate treatments.

DNRC specialists were consulted, including:

- Project Leader: **Melissa Laskos**
- Archeologist: **Patrick Rennie**
- Wildlife Biologist**: Garrett Schairer**
- Hydrologist & Soil Scientist: **Andrea Stanley**
- Fisheries Biologist: **Mike Anderson**
- MEPA Planner: **Emilia Grzesik**

Internal and external issues and concerns were incorporated into project planning and design and will be implemented in associated contracts.

OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS NEEDED: *(Conservation Easements, Army Corps of Engineers, road use permits, etc.)*

- **United States Fish & Wildlife Service-** DNRC is managing the habitats of threatened and endangered species on this project by implementing the Montana DNRC Forested Trust Lands HCP and the associated Incidental Take Permit that was issued by the United States Fish & Wildlife Service (USFWS) in February of 2012 under Section 10 of the Endangered Species Act. The HCP identifies specific conservation strategies for managing the habitats of grizzly bear, Canada lynx, and three fish species: bull trout, westslope cutthroat trout, and Columbia redband trout. This project complies with the HCP. The HCP can be found at https://dnrc.mt.gov/TrustLand/about/planning-and-reports.

- **Montana Department of Environmental Quality (DEQ)-** DNRC is classified as a major open burner by DEQ and is issued a permit from DEQ to conduct burning activities on state lands managed by DNRC. As a major open-burning permit holder, DNRC agrees to comply with the limitations and conditions of the permit.

- **Montana/Idaho Airshed Group-** 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 2010). As a member, DNRC must submit a list of planned burns to the Airshed Group's Smoke Monitoring Unit describing the type of burn to be conducted, the size of the burn in acres, the estimated fuel loading in tons/acre, and the location and elevation of each burn site. The Smoke Monitoring Unit provides timely restriction messages by airshed. DNRC is required to abide by those restrictions and burn only when granted approval by the Smoke Monitoring Unit when forecasted conditions are conducive to good smoke dispersion.

ALTERNATIVES CONSIDERED:

No-Action Alternative:

- The proposed harvest, road maintenance, and forest improvement work would not occur.
- No revenue would be generated for the Common Schools, Pine Hills School or Public Buildings Trusts at this time.
- Douglas-fir bark beetle may continue to spread, causing potentially significant mortality in these Douglas-fir dominated stands.
- Overstocked stand conditions would not be treated and may impact growth and vigor of existing stands and the ability of seral species to naturally regenerate.
- Associated fire conditions and fuel hazards would continue within this Wildland Urban Interface (WUI) area.
- Weed management would likely still occur on a smaller scale due to existing grazing agreements.
- Other uses such as grazing, recreation, fire suppression, requests for permits and ongoing management requests may still occur.

Action Alternative:

- Forest management would occur, including commercial timber harvest, pre-commercial thinning, site-prep, planting and prescribed burning.
- Revenue would be generated for the Common Schools, Pine Hills School and Public Buildings Trusts.
- Commercial harvest of 343 acres would produce an estimated 1.5 million board feet of volume to contribute to the DNRC's sustained yield, as mandated by state statute 77-5-222. Timber harvest would utilize both ground-based and cable harvest methods.
- Stand stocking levels would be reduced and could show a decrease in mortality caused by insects and disease.
- Fuel conditions would be improved and risk of fire spreading by way of these parcels would be decreased.

- A mix of uneven-aged and intermediate forest management strategies would be applied across the harvested units to promote healthy and biologically diverse forests and move the stands toward the DNRC's Desired Future Condition.
- Weed management, road maintenance and road construction would occur.
- Other uses such as grazing, recreation, fire suppression, requests for permits and ongoing management requests may still occur.

Impacts on the Physical Environment

Evaluation of the impacts on the No-Action and Action Alternatives including **direct, secondary, and cumulative** impacts on the Physical Environment.

VEGETATION:

Stand History/Past Management:
The parcels listed under this project proposal were acquired by the State in the late 1800's (1889 to 1901). Montana State Trust Lands are working lands. These lands are held in trust for the perpetual yield of revenues to support Montana's public education institutions. The federal government granted these lands to the state under the Enabling Act at the time of Montana's statehood in 1889.

The first recorded timber harvest conducted by the State on the proposed project parcels occurred in the year 1950 and removed approximately 2.5 million board feet across all three project sections. Two more timber sales in 1956 removed another 1.1 million board feet from sections 2 and 10. Since then, there have been a series of smaller re-entries (removal of less than 300 thousand board feet) mainly to address insect outbreaks such as western or mountain pine beetle and Douglas-fir bark beetle. The most recent entry was the Red Sunset Timber Permit and associated letter permits in 2022 which addressed a Douglas-fir bark beetle outbreak, salvaging 187 Mbf from 57 acres across all three project sections. For a complete list of past DNRC projects associated with these parcels, see OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA on page 34. Given the history of the area, it is likely that timber harvest also occurred prior to these lands being granted to the State.

The bulk of human disturbance in the region's forests began in the 1880's with the arrival of the Northern Pacific Railroad. This area falls within the Bitterroot-Blackfoot climatic section M332B, which was historically 79% forested (Losensky, 1997). This climatic section experienced some of the earliest impacts by man's activities, especially in the ponderosa pine habitat types (Losensky, 1997) which represent a significant component of the proposed project area. By the 1890's, major portions of the most accessible merchantable timber in the Clark Fork and Bitterroot valleys had been logged and by the 1930's, nearly 22% of the entire climatic section M332B had been logged (Losensky, 1997). Comprised of generally mild topography and located close to the Blackfoot River – a major conduit for transporting logs at the time – it would not be surprising if the parcels under this analysis were amongst those heavily logged areas. Old stumps can be found throughout the project area and core samples taken on live trees indicate at least one cohort of trees is in the 149+ year old range.

Prior to the arrival of European settlers in the mid-1800s, fire was the primary disturbance agent on the landscape. Much of the proposed project area is classified as Fire Group Four or Six (Fisher and Bradley 1987). These two different fire groups contribute to a mixed-severity fire regime across the gross project area.

Fire Group Four was shaped by frequent low-severity ground fires occurring every 5 to 25 years. Fire played an important role in preparing seedbeds in the grass-dominated understories of ponderosa pine stands (Fisher and Bradley, 1987).

Fire Group Six contained historically heavier fuel loads and dense stand conditions, contributing to higher severity fires at longer intervals – a mean fire interval of 42 years and a mean fire-free interval of 15.8 years (Fisher and Bradley, 1987). Fire's role as a seedbed-preparing agent in this group was less important and was more so an agent in controlling density and species composition (Fisher and Bradley, 1987).

Under both fire regimes, however, in the absence of fire for prolonged periods, Douglas-fir regeneration would establish, creating ladder fuels. Increased fuel loads from accumulated downfall (i.e. from insect and disease damage, snow damage, blowdown and natural thinning) would also occur, creating hazardous conditions suitable for stand-replacing wildfires (Fisher and Bradley, 1987).

Vegetation Existing Conditions:

The proposed project lies in an upland area between the Blackfoot River and Blanchard Flats. Elevation ranges from 3,840 feet in the northern portion of sections 2 and 4 to 4,700 feet in section 10 where it overlooks the Blackfoot River. North aspects predominate, but all aspects occur in limited areas. Slopes vary from 0 to 70 percent with occasional rocky cliffs, but the majority is less than 30 percent.

The project area is bordered by private land on all sides and most of this private land is under a conservation easement held by The Nature Conservancy. The DNRC parcels have active forest grazing licenses that permit the lessees to graze livestock from mid-June to mid-October. Commercial guided horseback trail rides also occur on the proposed parcels under a Land-Use-License.

The DNRC parcels within sections 2, 4 and 10 are dominated by Douglas-fir habitat types and are composed of Douglas-fir, ponderosa pine and western larch/Douglas-fir stands. The forested tracts within the proposed project area were historically dominated by mature ponderosa pine stands (65%) and western larch/Douglas-fir stands of varying age classes (34%) (Losensky, 1997). While the existing stands are fairly similar to historic conditions in regard to species representation, most of the existing stands are later in successional stage due to the absence of wildfire, and therefore contain a higher component of Douglas-fir than in the seral stages more commonly present prior to human settlement.

Vegetative Community:

Harvest Unit	Habitat Group	Fire Regime	Current Cover Type	Age Class (years)	DFC	RX	Acres
1*	Moderately warm and dry (westside)	Low to mixed	Western larch/Douglas-fir (51%), ponderosa pine (33%), Douglas-fir (16%)	100-149	Western larch/Douglas-fir (61%), Ponderosa pine (39%),	Individual Tree Selection	216
2*	Moderately warm and dry (westside)	Mixed	Douglas-fir (92%), ponderosa pine (8%)	100-149	Ponderosa pine (100%)	Individual Tree Selection	68
3*	Moderately warm and dry (westside)	Mixed	Ponderosa pine (52%), western larch/Douglas-fir (48%)	100-149	Ponderosa pine (100%)	Individual Tree Selection	21
4*	Moderately warm and dry (westside)	Mixed	Douglas-fir (66%), ponderosa pine (26%), western larch/Douglas-fir (8%)	100-149	Ponderosa pine (100%)	Sanitation	38

**refer to Attachment A-2 for designation of proposed harvest units*

Unit 1 can be described as having three stand types. At the lower elevations to the north, sagebrush steppe transitions to ponderosa pine woodland. This first stand type (approx. 33% of the unit) is dominated by ponderosa pine, containing many large diameter trees (greater than 21 inches DBH) and a grassy understory. A portion of this stand has dense ponderosa pine regeneration, currently displaying clumps of 1,000+ TPA in the 2 to 6 inch size class, but other portions of this area contain little to no regeneration. Dense overstory conditions, competition from grasses and the absence of low intensity ground fire may be contributing to a lack of natural establishment of seedlings in this stand.

The higher elevation portions of Unit 1 to the south are dominated by Douglas-fir, the second stand type (approx. 16% of the unit). Regeneration is not present and there are pockets of Douglas-fir bark beetle infestations taking a toll on the overstory. Root disease and poor site conditions in general may be contributing to deterioration of the Douglas-fir, causing the weakened fir to be more prone to attacks from bark beetle.

The other portions of Unit 1 that are not strictly ponderosa pine or Douglas-fir are a mix of western larch, Douglas-fir and scattered ponderosa pine of varying age classes, making for a multi-storied stand, the third stand type (approx. 51% of the unit). There are areas with many large diameter western larch and Douglas-fir in the overstory which include age ranges of 90 to 149+ years, but there are also pockets of young stands less than 90 years old growing vigorously. Natural regeneration within this stand type is scattered: some areas contain quality advanced natural regeneration of either western larch or Douglas-fir, but other areas have poor quality Douglas-fir regeneration ravaged by western spruce budworm and ungulate browse or no regeneration at all.

Unit 2 is primarily Douglas-fir with some large ponderosa pine throughout. There are a few western larch individuals along the western boundary, but western larch is generally absent from this unit. Natural regeneration is scarce; where it exists, it is in the advanced stage but lacking vigor due to suppressed conditions. Roughly 30 acres of this unit was recently logged with a heavy sanitation/salvage treatment to address Douglas-fir bark beetle.

Unit 3 can be split into two timber types: west of Cahoon's Draw is a mix of western larch and Douglas-fir with scattered ponderosa pine individuals while east of the draw is primarily

ponderosa pine and Douglas-fir. Regeneration is minimal throughout the entire unit, likely due to competition from grasses. Where it exists in the advanced stage, quality is poor due to suppressed conditions. Coarse woody debris is lacking in this unit, likely due to past post-harvest cleanup and treatment to increase grass production for grazing.

Unit 4 is characterized by a multi-story stand dominated by Douglas-fir. Large diameter overstory trees are scattered throughout with a dense understory of Douglas-fir advanced regeneration and small saw timber approximately 5-15 inches DBH. A transition to ponderosa pine occurs at the base of the steep slopes to the north while the prominent draws in the unit are dominated by western larch. The Douglas-fir population lacks vigor, likely due to shallow soils on this rocky face as well as suppressed conditions and possible root rot. A recent bark beetle outbreak has caused significant mortality in the Douglas-fir which were salvaged under several timber permits in 2022, but some beetle-infested trees on the steep slopes remain and threaten continual spread in the upcoming spring.

Old Growth:
The DNRC uses the minimum criteria outlined in Green et al. (1992) to identify potential old growth stands. The DNRC's Stand Level Inventory (SLI) did not identify any old growth stands within the project area and old growth verification cruises have not been conducted on any of the harvest units proposed under this assessment. However, walk-through's have identified areas that may contain enough large diameter trees to potentially qualify for old growth. These stands would need to meet the criteria for Westside Type 1 Old Growth (Green et al, 1992) which requires:

- 8 trees per acre (TPA) ≥21 inches DBH
- 60 square feet BAA (basal area per acre)
- Average stand age of 170 years

Field reconnaissance conducted in 2024 verified that most of Units 2, 3 and 4 do not contain enough large trees per acre to qualify as potential old growth stands.

Unit 1 would be the most likely candidate for old growth based on large trees per acre alone. The minimum criteria is not displayed throughout the entire unit, however a significant percentage of the unit may presently have enough large trees per acre to proceed with further verification. Core samples were taken periodically to identify age and there appears to be two prominent age classes: 90-100 years and 155-170 years in trees that are the same size, so tree diameter alone cannot predict old growth status in this area.

Fire Hazard/Fuels:
The project area was identified as moderate to very high Wildfire Hazard Potential (WHP) by the USDA Forest Service, Fire Modeling Institute. The WHP webpage states:

> *"On its own, WHP is not an explicit map of wildfire threat or risk. Its primary purpose is to highlight places where vegetation treatments may be needed to reduce the intensity of future wildfires. It is one of several factors used to prioritize limited fuel treatment resources. WHP is a tool for long-term strategic planning, but it is not a forecast or wildfire outlook for any particular season, as it does not include any information on current or forecasted weather or fuel moisture conditions."*

There are several occupied dwellings nearby, the closest being within 0.03 miles of a proposed harvest unit boundary. Proximity to residences increases the project area to a higher priority for fuel management.

Units 1 and 2 display dense overstory conditions and moderate threat from ladder fuels. Advanced regeneration typically exists in clumps and the understory consists of dense grasses and light brush. Lack of low intensity fire activity has contributed to a dense underlayer of dead grasses, increasing the likelihood of ground fire spreading through these units. Partially decomposed downed woody debris from early timber harvests and other deadfall are present in moderate amounts (10 to 15 tons per acre). This creates opportunities for fires to "smolder undetected until conditions become favorable for fire spread" (Fisher and Bradley, 1987).

Unit 3 is more of a two-story stand on mellow slopes with very little regeneration and a significant grass component in the understory. Ladder fuels and rotten logs aren't as prevalent.

Unit 4 is a dense multi-storied stand on steep slopes. Accumulated deadfall is also present from recent mortality as well as residual logging slash. Threat of wildfire, especially crown fire, is moderate to high in this unit.

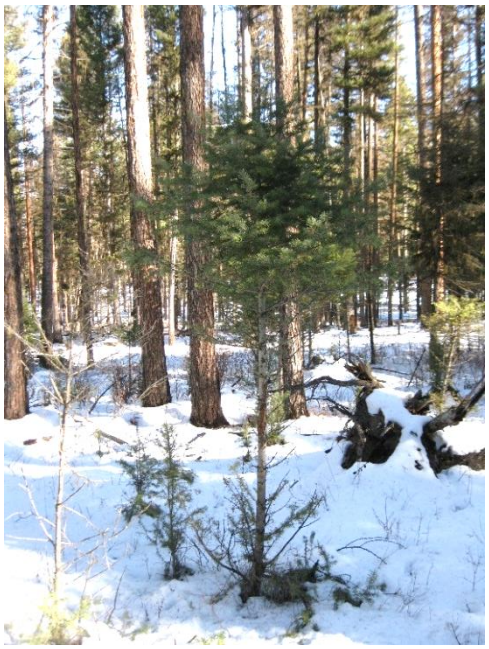
Insects, Diseases and Pests:
Douglas-fir bark beetle (*Dendroctonus pseudotsugae*) is the primary insect affecting the project stands currently. Recent efforts were made to salvage affected trees across all project sections, but brood trees may have gone undetected or were otherwise inaccessible due to terrain, contributing to continued spread of the insect.

Western spruce budworm (*Choristoneura occidentalis*) is present, especially in the areas dominated by Douglas-fir, but it is not a major disturbance agent within the project area.

Comandra blister rust (*Cronartium comandrae*) is present and primarily affecting large ponderosa pine trees as seen by the many dead tops throughout the project area.

Root disease is prevalent and likely contributing to the deterioration of the Douglas-fir stands in the project area. Recent timber harvests revealed significant amounts of heart rot in the butt logs of the fir, indicating that Schweinitzii root rot (*Phaeolus schweinitzii*) and/or Armillaria root disease (*Armillaria ostoyae*) is likely present. With the presence of heart rot has come a contingency of ants, as can be noticed across the project area, especially in Unit 1. Ant damage in the bottom few feet of the trees is prevalent.

The project area is heavily affected by ungulate activity. In many places where natural regeneration exists, the lower portions of the crowns have been browsed, scraped or rubbed, leaving no live branches below about four feet, as can be seen in the photos below.



Sensitive/Rare Plants:
The Montana Natural Heritage Program (MNHP) website identified one species of concern within a mile of the project area, Howell's Gumweed (*Grindelia howellii*). Howell's Gumweed is known to have limited distributions across portions of western Montana (Missoula and Powell counties) and Idaho (Benewah County). In some areas the population is well established, however it was not observed specifically within the project area.

The Montana Natural Heritage Program states on their website:

> *In Montana, Grindelia howellii is known from over 100 mapped occurrences. However, most populations are small and many occur on roadsides or other similarly disturbed habitat. This habitat preference in conjunction with the short-lived nature of the species means occurrences may drift from place to place or from year to year and as a result many occurrences may be ephemeral. These attributes make determination of population numbers as well as the number of extant populations at any given time difficult to assess. Invasive weeds are a threat to many occurrences, as the habitat occupied by* G. howellii *is also favorable for many weedy species. Application of herbicides to control these weeds, especially along roadsides may also have a direct, negative impact.*

Noxious Weeds:
Weeds identified in the project area include spotted knapweed (*Centaurea maculosa*), hound's tongue (*Cynoglossum officinale L*), Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), oxeye daisy (*Leucanthemum vulgare*) and common mullein (*Verbascum thapsus L*.). These weeds can be found along roadways and old landings as well as dispersed throughout some old harvest units. An isolated patch of leafy spurge (*Euphorbia esula*) was identified within the project area as well.

Introduction and continual spread of noxious weeds in this area likely comes from past timber harvest activities and hauling, recreational use such as horseback riding, and grazing of wildlife and livestock.

Issues and Concerns: *The following issue statements were developed during scoping regarding the effects of the proposed action to vegetation.*

- Shade tolerant tree species will continue to out-compete seral species, removing stands from their historic cover type and species distribution.
- Tree mortality from insects and disease is above acceptable levels.
- Recently harvested stands are not regenerating at suitable levels due to competition with grasses and shrubs.
- Some young stands are currently overstocked.
- Forest management activities may adversely affect Old Growth stands.
- Timber harvest and road building may result in the introduction of new weeds or increased spread of noxious weeds.
- Proposed project activities could negatively impact populations of threatened, endangered, or sensitive plant species.
- The proposed project could negatively impact the habitats of threatened, endangered, or sensitive animal species.

Environmental Effects:

No-Action Alternative – Direct, Indirect, and Cumulative Effects:
The No-Action alternative would not change the current existing conditions within the proposed project area. The proposed management activities—including commercial harvest, pre-commercial thinning, site-prep, planting, prescribed burning, road maintenance and road construction—would not occur. Weed management may still occur under this alternative. These stands would remain at overstocked levels and at greater susceptibility to insects and disease. The Douglas-fir bark beetle outbreak in these stands may continue to spread. Concerns regarding overstocked conditions and fire danger in the Wildland Urban Interface (WUI) would continue and fuel conditions would not be addressed in this area. As a result, there would be low risk of direct, indirect, and cumulative impacts to the vegetative community under the No-Action alternative.

Action Alternative – Direct, Indirect, and Cumulative Effects:
This proposal includes commercial timber harvest under multiple sales and permits removing an estimated 1.5 million board feet of timber from approximately 343 acres. Pre-commercial thinning would also occur under the proposed action alternative on up to 400 acres. The DNRC would try to address the concerns within the Existing Conditions on these acres by using various treatments. Treatment type would vary based on stand conditions and would include the following management strategies:

Individual Tree Selection
Units 1, 2 and 3 would implement this prescription. This harvest method would create multiple size and age classes within the stand. Residual trees may exist as individuals or small clumps (2 to 5 trees) and openings of up to ⅓ acre may be created to provide space for natural

regeneration. Occasional large groups of trees (≤1/10 acre) would be left, primarily in Douglas-fir dominated stands where spaced thinning would not benefit the trees. These large groups would preferably be left adjacent to newly created openings.

Health and vigor of trees would dictate spacing during harvest – emphasis would be made on creating small openings where tree quality is poor, whereas healthy, vigorous trees would be left as individuals and small clumps. Seral species (western larch and ponderosa pine) would be favored as leave trees, but vigorously growing Douglas-fir would also be retained. The objective of this treatment would be to:

- remove stagnant and dying Douglas-fir
- remove overstocked trees of all species in order to improve growing conditions for the residual trees
- create crown openings around mature western larch and ponderosa pine to encourage establishment of natural regeneration

Spacing would be variable based on existing conditions, but on average this harvest method would target 25 to 65 residual trees per acre (42 to 26 foot spacing) and 40 to 60 square feet of basal area per acre (BAA). With adequate site preparation, the goal would be for natural regeneration to establish post-harvest, however it may be necessary to interplant in these units.

To meet old growth objectives, where present, 10 TPA ≥ 17 inches DBH would be left. This would ensure recruitment of old growth acres for the future. Leaving an additional 2 TPA would provide for flexibility to achieve the minimum criteria of 8 TPA ≥ 21 inches DBH in the event of mortality. Selecting trees that are greater than 17 inches DBH – not just trees that are already ≥ 21 inches – would allow for the best quality trees to be retained. Given that many of the large diameter trees are only 100 years old, by the time they reach 21 inches DBH they will be closer to the minimum old growth age of 170 years (assuming growth rates of approximately 1 to 2 inches diameter per 10 years at this site). These areas would also target 40-60 ft^2 BAA to meet the old growth basal area requirements, again assuming that by the time the stand reaches the minimum age criteria, basal area would have increased with maturity of the stand. Old growth verification cruises would be conducted post-harvest to confirm status and update the DNRC's stand-level inventory.

Sanitation

Unit 4 would implement this prescription. The primary objective of this prescription would be to reduce the risk of further Douglas-fir bark beetle spread by improving growing conditions for the residual fir and transitioning species composition away from Douglas-fir by favoring seral species where applicable. The secondary objective would be to promote a new age class by thinning the overstory and leaving a natural seed source for establishment of regeneration. The two objectives are not mutually exclusive; the secondary objective would be the preferred result of the primary objective.

Recent dead Douglas-fir and any existing beetle brood trees would be removed. Stand spacing would be increased to approximately 25 to 42 foot spacing (70 to 25 TPA). The stand would be reduced to a targeted basal area of 60ft^2 per acre. Openings would be created around quality ponderosa pine and western larch overstory trees to provide space and sunlight for regeneration. Healthy advanced regeneration would remain where possible.

Pre-Commercial Thinning

Pre-commercial thinning is defined as removing small trees not for monetary benefit but to reduce stand stocking, release limited resources (water, light and nutrients) and improve growth of residual trees. It can also be used to direct the species composition of a stand towards the Desired Future Condition by favoring seral species (western larch and ponderosa pine) over other species where possible. Pre-commercial thinning has also been proven to decrease the loss of deterioration through mortality and poor growth over a longer time-period, especially on poor sites. Smaller trees (less than 6" diameter at breast height) are the target of this silvicultural prescription. This treatment often follows commercial harvest treatment when quality natural regeneration is present. Typical spacing for pre-commercial thinning in this area ranges between 10 and 15 feet between trees (436 to 194 trees per acre). Fuels treatment after the thinning would be done using either limbing and slashing of felled trees to a level less than 18" from the ground level, mastication, or hand piling and burning.

Up to 400 acres would be targeted for pre-commercial thinning under the action alternative. This acreage includes all proposed harvest units as well as some adjacent young stands within the gross project area.

Planting

It is recognized that tree planting may occur under the action alternative in amounts undetermined at this time. It is estimated that tree planting is currently needed on approximately 55 acres but could be needed on additional acres following harvest. The areas targeted for planting are sites that either:

1. have not established suitable levels of regeneration following past harvests;
2. are regenerating to Douglas-fir rather than the appropriate DFC species, or;
3. have limiting qualities that make natural regeneration difficult to establish, such as pine grass (*Calamagrostis rubescens*) or other herbaceous competition.

Site preparation (i.e. dispersed skidding, prescribed burning, dozer scarification, herbicide, etc.) may occur ahead of planting to encourage the best possible results.

Site Preparation

Site preparation is necessary for seral species like western larch and ponderosa pine to regenerate naturally. These trees require exposed mineral soil for successful germination and establishment of their seeds. Site preparation is also necessary when certain competing vegetation, such as pine grass, inhibits the successful establishment of tree seedlings. The root systems of many grasses can be so dense that it prevents tree seedlings establishing their own root systems.

Site preparation can be achieved through dispersed skidding during harvest operations, unit pile burning, equipment scarification, herbicide application or prescribed broadcast or jackpot burning. It is evident that site prep would be necessary in several stands within the project area. Some stands that were harvested over 10 years ago have not regenerated and are dominated by grasses, shrubs and weeds.

Application of herbicide would be the favorable option in units designated for planting of ponderosa pine and Douglas-fir. These species hold up well in chemically treated areas.

However, western larch does not tolerate herbicide as well and in areas where western larch is planted or natural regeneration is desired, mechanical site prep would be the best option.

Prescribed Fire

Prescribed fire may occur for the purposes of site preparation or fuel hazard mitigation. It may occur as burning of unit piles or landing piles, jackpot burning, or broadcast burning. If jackpot or broadcast methods are used, fire line construction would occur around the perimeter of the planned burn area prior to the burn. Pile burning is the most likely method to occur, but jackpot and broadcast burning would be beneficial in some portions of the project area.

Road Construction, Maintenance and Closure

This proposal plans to use existing road systems within the project area for various forest management purposes. A short segment of road would be newly constructed in Unit 1 to replace an existing segment of road that is very steep and difficult for log trucks to ascend.

New road construction would also take place in sections 2 and 3 on both State and private land, however this road was previously analyzed for in the Clearwater Junction RAA Environmental Assessment Checklist (2016).

It is estimated that temporary road segments may need to be constructed in order to access the proposed harvest units. These roads are typically two-track roads requiring minimal earthwork or excavation and designed for minimal use. Temporary roads would be closed within 1 year following completion of all management activities utilizing the road. To be considered “closed”, the road prism itself may remain but water bars and/or other barriers would be installed to prohibit access to motorized vehicles.

The proposed actions would be expected to result in low direct, indirect and cumulative impacts on forest vegetation beyond those projected for the No-Action alternative.

Vegetation	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Current Cover/DFCs	**X**				**X**				**X**					**1**
Age Class	**X**				**X**				**X**					**1**
Old Growth	**X**				**X**				**X**					**2**
Fire/Fuels		**X**				**X**			**X**	**X**				**3**
Insects/Disease		**X**				**X**				**X**				**4**
Rare Plants	**X**				**X**				**X**					**5**
Noxious Weeds	**X**				**X**				**X**					**6**
Action														
Current Cover/DFCs		**X**			**X**				**X**				**Y**	**1**
Age Class		**X**			**X**				**X**				**Y**	**1**
Old Growth		**X**			**X**				**X**				**Y**	**2**
Fire/Fuels		**X**				**X**				**X**			**Y**	**3**

Vegetation	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Insects/Disease		**X**				**X**				**X**			**Y**	**4**
Rare Plants		**X**			**X**				**X**				**Y**	**5**
Noxious Weeds		**X**				**X**			**X**				**Y**	**6**

Comments:

1. Given the previously mentioned existing environmental conditions, it is possible that a change will come to the current cover type, whether by way of natural succession, wildfire, or the proposed action.

2. See *Old Growth* section in Existing Conditions (page 8) and fourth paragraph of *Individual Tree Selection* proposed harvest treatment (page 12).

3. Given the previously mentioned existing fire hazard and fuels conditions, it is possible that existing fuels could contribute to a large wildfire in the project area. This potential wildfire could burn at an intensity that would change fuel conditions and hazards post-fire. Similarly, the proposed action would also have a direct effect on fuels and fire hazards by reducing the availability of fuels that would contribute to a catastrophic wildfire.

4. A Douglas-fir bark beetle outbreak is impacting portions of the project area. Under the no-action alternative, the beetle may continue to spread. Under the action alternative, harvest would remove the affected trees, preventing the spread of beetle to a much larger area.

3-methylcyclohex-2-en-1-one – better known as MCH – is an anti-aggregation pheromone that can be applied via small packets stapled to trees in the forest. These packets can aid in preventing the spread of Douglas-fir bark beetle on a small scale and short-term basis. MCH is highly effective in the immediate area where it is applied but would require 1-3 annual applications during an outbreak and, while there is no evidence to suggest that the beetles will “move” to adjacent stands, pheromone application in one location cannot prevent the spread of beetle in other non-treated vulnerable stands in the cumulative area (Ross et al, 2015). MCH packets were used in the project area as an extra measure of prevention following the 2022 salvage harvests. Harvest of brood trees is a sustainable and feasible method of preventing the spread of the beetle by removing the overwintering beetle larvae from the stand.

The other insects/diseases mentioned in the existing conditions would persist under either alternative, but they can be kept in check by implementing the action alternative, manipulating conditions such as stand density and species competition to reduce the effects of such disturbances.

5. See *Sensitive/Rare Plants* section of Existing Conditions (page 10).

6. Timber harvest or other mechanized activities could potentially introduce or spread noxious weeds, but mitigation measures would be utilized.

Vegetation Mitigations: ***The analysis and levels of effects to vegetation resources are based on implementation of the following mitigation measures.***

- Favor ponderosa pine and western larch leave trees in harvest units and pre-commercial thinning units to shift species represented toward the Desired Future Condition (DFC) of that area.

- Plant a combination of ponderosa pine, western larch, and Douglas-fir in planting units where natural regeneration is difficult to achieve. This will also ensure the establishment of DFC species.

- Use site preparation methods to ensure success of natural and planted regeneration.

- Harvest prescriptions would emulate natural disturbance historically present on the landscape.

- Use MCH in high priority or especially vulnerable areas to help deter Douglas-fir bark beetle activity.

- Retain the minimum TPA required to meet Old Growth criteria where applicable to promote recruitment of Old Growth stands.

- Healthy, vigorous advanced regeneration exhibiting good form would be protected during harvest activities.

- Logging equipment would be washed before entering the sale area to limit introduction of noxious weeds.

- Grass seed would be planted on newly disturbed road surfaces to expedite grass establishment, thereby limiting the resources available for weeds to become established.

- Herbicide would be applied to spot infestations of weeds along roadways and landings.

- Slash produced during harvest would be piled and burned post-harvest to reduce fuel loading. In addition, any slash that remains in the woods would be scattered, limbed and slashed to a depth of no more than 18 inches.

- Snags, snag recruits and course woody debris will be managed according to ARM 36.11.411 through 36.11.414. Clumps of existing snags could be maintained where they exist to offset areas without sufficient snag presence. Course woody debris retention would emphasize retention of downed logs 15-inches diameter and larger.

Vegetation References:

Fischer, William C.; Bradley, Anne F. *Fire ecology of western Montana forest habitat types*. General Technical Report INT-223. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station; 1987. 95 p.

Green, P., J. Joy, D. Sirucek, W. Hann, A. Zack, and B. Naumann. 1992. *Old-growth forest types of the Northern Region.* R-1 SES. Unpublished report on file at US Forest Service, Northern Region, Missoula, MT.

Gruell, G.E., 1983. *Fire and vegetative trends in the northern Rockies: interpretations from 1871-1982 photographs.* U.S. Department of Agriculture, Forest Service, General Technical Report INT-158. 117 pp.

Losensky, B. John, *Historical Vegetation of Montana*. Montana DNRC February 1997. Missoula, MT.

Montana Plant Species of Concern Report. *Montana Natural Heritage Program*. Retrieved on 12/11/2023, from mtnhp.org/SpeciesOfConcern/?AorP=p

MT DNRC, Environmental Assessments of the past DNRC timber sales including: Red Sunset Timber Permits (2022), Clearwater Junction Reciprocal Access Agreement Environmental Assessment Checklist (2016), Rudge Match Timber Permit (2011), HOLY Beetles Timber Permit (2009); Clearwater Unit, Southwestern Land Office.

Pfister, R.D., B.L. Kovalchik, S.F. Arno, and R.C. Presby. 1977. *Forest habitat types of Montana.* U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station, Ogden, Utah.

Ross, D.W., Gibson, K., Daterman, G.E. 2015. *Using MCH to Protect Trees and Stands from Douglas-fir Beetle Infestation*. U.S. Department of Agriculture, Forest Service Forest Health Technology Enterprise Team, Morgantown, WV.

Smith, D.M., B.C. Larson, M.J. Kelty, P.M.S. Ashton. 1977. *The practice of silviculture, applied forest ecology. 9th edition.* John Wiley & Sons, Inc. 537 pp.

"Wildfire Hazard Potential." *U.S. Department of Agriculture, Forest Service, Missoula Fire Sciences Laboratory*, *Rocky Mountain Research Station,* www.firelab.org/project/wildfire-hazard-potential. Accessed 1 Feb. 2024.

SOIL DISTURBANCE AND PRODUCTIVITY:

Soil Disturbance and Productivity Existing Conditions:

The project is located in the northern Garnet Range on mainly north facing hillslopes with slopes ranging from mild (<5%) to steep (>50%). No unique or sensitive geologic features or unstable slopes have been identified within the project area. Soils within the proposed harvest units include Winkler, Trapps, Lubrecht, and Half Moon gravelly and silt loams. High erosion risk is not present in the existing condition. The proposed action would moderately increase risk of soil disturbance, erosion, nutrient cycling, and soil productivity due to the operation of ground-based equipment within the harvest areas. However, these risks are expected to be short in duration and would be moderate to low with the application of Montana Forest BMPs and the implementation of the mitigations listed below.

Soil Disturbance and Productivity	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Physical Disturbance (Compaction and Displacement)	**X**				**X**				**X**				**N/A**	**1**
Erosion	**X**				**X**				**X**				**N/A**	**1**
Nutrient Cycling	**X**				**X**				**X**				**N/A**	**1**
Slope Stability	**X**				**X**				**X**				**N/A**	**1**
Soil Productivity	**X**				**X**				**X**				**N/A**	**1**
Action														
Physical Disturbance (Compaction and Displacement)			**X**			**X**			**X**				**Y**	**2, 3, 4, 5, 6**
Erosion		**X**				**X**			**X**				**Y**	**2, 3, 5, 6**
Nutrient Cycling		**X**				**X**			**X**				**Y**	**4, 5, 6, 7**
Slope Stability	**X**				**X**				**X**				**N/A**	**8**
Soil Productivity		**X**				**X**			**X**				**Y**	**4, 5, 6, 7**

Comments:

1. Implementation of the no-action alternative would result in no new soil resource impacts in the project area. Soil resource conditions would remain similar to those currently at the site.

2. Proposed harvest systems include ground-based and cable yarding. Soil and vegetation disturbance from harvest activities may result in temporary increased risk of erosion.

3. Soil disturbance and erosion risk increases with slope and slopes in project area exceed 45% in some places. Portions of the state ownership within project parcels would not be treated with equipment due to landscape conditions (i.e., rock outcrops and steep slopes) making the areas inaccessible (i.e., southern half of SW ¼ NW ¼ of Section 10, T14N-R14W).

4. Direct impacts by physical disturbance would likely occur by the proposed ground-based yarding. The net observable soil impact within harvest units treated with ground-based yarding system(s) are expected to be less than 13.2% of the project area and would be minimized by use of existing roads and skid trails. Areas yarded with cable system(s) would have a lower rate of observable soil disturbance (approx. 6.2% of the area). These disturbance rate estimates are based off previous soil disturbance monitoring of timber sales completed by the DNRC (DNRC, 2011).

5. 0.75 miles of road would be constructed in and near the project area with implementation of this proposed harvest project – however its environmental risk was analyzed previously in an Environmental Assessment (EA) completed for the DNRC's Clearwater Junction Reciprocal Access Agreement (2016). The new road construction analyzed in this EA is for approximately 0.1 miles in Section 2, T14N-R14W; and approximately 0.76 miles of temporary road may be needed to access harvest units.

6. Applicable state plans, rules, and practices have guided project planning and would be implemented during project activities, including the Montana Code Annotated (specifically Title 77, Chapter 5), the Administrative Rules of Montana (specifically Rule Chapter 36.11), the Montana Forest Best Management Practices, the DNRC Trust Lands Habitat Conservation Plan, and the State Forest Land Management Plan.

7. According to Graham et al. (1994), a minimum of 4.5 and up to 9 tons/acre of coarse woody debris (CWD) would be a desired post-harvest condition to maintain forest productivity for this forest habitat type. The action alternative would include increasing or maintaining CWD concentrations per mitigation described below.

8. Unstable slopes were not observed on site. The project is anticipated to have no risk to slope stability.

9. Site preparation by mechanical scarification, jackpot burning, or prescribed burning may occur in the project area. These activities would be directed by the Forest Officer and are not anticipated to cause detrimental disturbance to project area soils. Areas with these types of slight disturbances can be quickly revegetated by tree seedlings and native vegetation (per State Forest Land Management Plan). See the mechanical scarification mitigations described below.

Soil Mitigations:

- BMP's would be implemented on all roads and within the units. Lopped and scattered slash would be left in the units to mitigate erosion risks and retain nutrients on-site.

- Ground-based logging equipment (tractors, skidders, and mechanical harvesters) would be limited to slopes less than 45% unless not causing excessive disturbance.

- The Contractor and Sale Administrator should agree to a general skidding plan prior to equipment operations. Skid trails would be mitigated concurrent with harvesting and yarding operations with water bars and/or slash.

- The properties of the soils in the proposed harvest units make limiting harvest operations to dry or frozen conditions critical for preserving soil productivity. To prevent soil compaction ground-based mechanical felling and yarding would be restricted to one or more of the following conditions:

    - Soil moisture content at 4-inch depth less than 20% oven-dry weight.
    - Minimum frost depth of 4 inches.
    - Minimum snow depth of 18 inches of loose snow or 12 inches packed snow.

- A minimum of 4.5 tons/acre and up to 9 tons/acre, of coarse and fine woody debris would be left on site (or return-skidded from landings) to meet the concentration for the DF/PHMA habitat type recommended by Graham et al (1994). Existing CWD on site would remain undisturbed as much as possible.

- If mechanical scarification is used to encourage seedling establishment:
    - Ensure low-moisture soil conditions (less than 20% oven-dry weight).
    - Ensure equipment is washed and inspected for imported dirt, plant parts, and noxious weed seeds prior to entering the project area.

- Limit the combination of disturbance and scarification to 30 to 40 percent of the harvested units or other designated areas. Consider disturbance incurred during skidding operations to, at least, partially provide scarification for regeneration.
- No dozer piling on slopes over 35 percent; no excavator piling on slopes over 40 percent, unless the operation can be completed without causing excessive erosion.
- Consider lopping and scattering or jackpot burning on the steeper slopes.
- Activities are guided with the objective of removing surface duff and minor amounts of topsoil, and not exposing more mineral soil than is necessary for obtaining desired seedling recruitment.

Soil References:

DNRC, 2011. DNRC compiled soils monitoring report on timber harvest projects, 2006-2010, 1st Edition. Department of Natural Resources and Conservation, Forest Management Bureau, Missoula, MT.

Graham, R.T., Harvey, A.E., Jorgensen, M.F., Jain, T.B., and Page-Dumrose, D.S., 1994, Managing Course Woody Debris in Forests of the Rocky Mountains. U.S., Forest Service Research Paper INT-RP-477. Intermountain Research Station. 16p.

WATER QUALITY AND QUANTITY:

Water Quality and Quantity Existing Conditions:

The project is located in the Blackfoot River watershed. No surface water features are located within 500 feet of the proposed harvest areas. Isolated wetlands occur near proposed harvest units but are excluded from proposed harvest and equipment operations.

Water Quality & Quantity	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Water Quality	**X**				**X**				**X**				**N/A**	**1**
Water Quantity	**X**				**X**				**X**				**N/A**	**1**
Action														
Water Quality	**X**					**X**				**X**			**Y**	**1,2**
Water Quantity		**X**				**X**				**X**			**Y**	**1**

Comments:

1. No foreseeable direct, indirect, or cumulative effects to water resources are anticipated with an action or no action alternative due to the distance and scale of the proposed project activities. The factors considered in making this conclusion are listed below:
- Waterbodies are not located within the project area.
- The harvest and thinning areas total to approximately 400 acres and the Blackfoot watershed area upstream of the project area is greater than 1,000 square miles. A detectable change in water yield in the Blackfoot River would not be possible.

2. Applicable state plans, rules, and practices have guided project planning and would be implemented during project activities, including the Montana Code Annotated (specifically Title 77, Chapter 5), the Administrative Rules of Montana (specifically Rule Chapter 36.11), the Montana Forest Best Management Practices, the DNRC Trust Lands Habitat Conservation Plan, and the State Forest Land Management Plan.

Water Quality & Quantity Mitigations:

No project-specific mitigations necessary. The existing low risk of secondary and cumulative effects would be further reduced by application of applicable state plans, rules, and practices listed above.

FISHERIES:

No foreseeable direct, indirect, or cumulative effects to fisheries resources are anticipated with an action or no action alternative due to the distance and scale of the proposed project activities. The factors considered in making this conclusion are listed below:

- Fishbearing waterbodies are not located within or adjacent to the project area.
- The project is located in the Blackfoot River watershed which does support fish. However, proposed harvest areas, and forest haul roads would be located greater than 500 feet from the river and its tributaries.
- The harvest and thinning areas total to approximately 400 acres and the Blackfoot River watershed area upstream of the project area is greater than 1,000 square miles.

No further analysis or mitigation is necessary for fisheries resources for this project because the resource is not present.

WILDLIFE:

Evaluation of the impacts of the No-Action and Action Alternatives including **direct, indirect, and cumulative** effects on Wildlife.

Wildlife Existing Conditions: The project area is a mix of forested ponderosa pine, Douglas-fir, and Douglas-fir/western larch stands; there are also non-forested types dominated by grasses and shrubs in portions of the project area. The project area contains habitat for a diverse array of wildlife that rely on the upland coniferous forests of western Montana. The forested habitats in the project area may contribute linkage habitats between the Rattlesnake and the Garnet mountains ranges. Grizzly bears likely use the vicinity of the project area during the non-denning period. Little or no use of the project area by wolverine would be anticipated. There are 2 known bald eagle nests in the vicinity of the project area: the Sperry Grade bald eagle territory has a couple of known nests, with the nearest nest located approximately 2.0 mi northeast of the project area; and the Clearwater Junction bald eagle territory with the closest and most recently used nest approximately 1.9 miles northwest of the project area. Potential habitat exists for fisher, flammulated owls, and pileated woodpeckers in the project area. Potential fringed myotis foraging habitats may exist in the project area; some potential hoary bat roosting habitats could exist in the project area. Big game summer range as well as white-tailed

deer, mule deer, and elk winter ranges exists in the project area. Habitats in the project area contribute to big game security habitats in the vicinity.

No-Action Alternative: No potential for disturbance to wildlife would be anticipated. No timber management activities would be conducted, thus no appreciable changes to existing habitats would occur. Continued maturation could improve grizzly bear, fisher, pileated woodpecker habitats, and big game winter and summer range attributes, but could reduce habitat quality for flammulated owls and big game forage attributes over the long term. Generally, negligible direct, indirect, or cumulative effects to wildlife would occur.

Action Alternative (see Wildlife table below):
In general, habitats for those species adapted to more-open forest conditions similar to areas that historically experienced low-intensity underburns would increase in the project area. No changes in legal motorized public access would occur in the project area. Negligible changes in connectivity between the Rattlesnake and Garnet ranges would be anticipated. Contract stipulations would minimize the presence of human-related attractants for the duration of the proposed activities.

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Threatened and Endangered Species														
Grizzly bear *(Ursus arctos)* Habitat: Recovery areas, security from human activity		**X**				**X**				**X**			**Y**	**1**
Canada lynx (*Felix lynx)* Habitat: Subalpine fir habitat types, dense sapling, old forest, deep snow zone	**X**				**X**				**X**					**2**
Yellow-Billed Cuckoo (*Coccyzus americanus*) Habitat: Deciduous forest stands of 25 acres or more with dense understories and in Montana these areas are generally found in large river bottoms	**X**				**X**				**X**					**2**
Wolverine *(Gulo gulo)* Habitat: Alpine tundra and high-		**X**				**X**				**X**				**3**

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
elevation boreal forests that maintain deep persistent snow into late spring														
Sensitive Species														
Bald eagle *(Haliaeetus leucocephalus)* Habitat: Late-successional forest within 1 mile of open water		**X**				**X**				**X**			**Y**	**4**
Black-backed woodpecker *(Picoides arcticus)* Habitat: Mature to old burned or beetle-infested forest	**X**				**X**				**X**					**2**
Common loon *(Gavia immer)* Habitat: Cold mountain lakes, nest in emergent vegetation	**X**				**X**				**X**					**2**
Fisher *(Martes pennanti)* Habitat: Dense mature to old forest less than 6,000 feet in elevation and riparian		**X**				**X**				**X**				**5**
Flammulated owl *(Otus flammeolus)* Habitat: Late-successional ponderosa pine and Douglas-fir forest		**X**				**X**				**X**			**Y**	**6**
Fringed myotis (*Myotis thysanodes*) Habitat: low elevation ponderosa pine, Douglas-fir and riparian forest with diverse roost sites including outcrops, caves, mines		**X**				**X**				**X**			**Y**	**7**

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Hoary bat (*Lasiurus cinereus*) Habitat: coniferous and deciduous forests and roost on foliage in trees, under bark, in snags, bridges		**X**				**X**				**X**			**Y**	**8**
Peregrine falcon *(Falco peregrinus)* Habitat: Cliff features near open foraging areas and/or wetlands	**X**				**X**				**X**					**2**
Pileated woodpecker *(Dryocopus pileatus)* Habitat: Late-successional ponderosa pine and larch-fir forest			**X**				**X**				**X**		**Y**	**9**
Townsend's big-eared bat *(Plecotus townsendii)* Habitat: Caves, caverns, old mines	**X**				**X**				**X**					**2**
Big Game Species														
Elk			**X**				**X**			**X**			**Y**	**10, 11**
Whitetail Deer			**X**				**X**			**X**			**Y**	**10, 11**
Mule Deer			**X**				**X**			**X**			**Y**	**10, 11**
Bighorn Sheep	**X**				**X**				**X**					**2**
Other														

Comments:

W-1: The project area is 10 miles southwest of the Northern Continental Divide Ecosystem grizzly bear recovery area, and within 'occupied' grizzly bear habitat as mapped by grizzly bear researchers and managers to address increased sightings and encounters of grizzly bears in habitats outside of recovery zones (Wittinger et al. 2002). Individual animals likely use the project area throughout the non-denning period; FWP data indicates the area is used by grizzly bears extensively and that riparian areas likely provide bedding cover and larger landscape connectivity. Approximately 393 acres (64%) of the project area appear to have sufficient cover to potentially serve as hiding cover. The project area contains no open roads, but open habitats as well as numerous forms of human disturbance exist that likely reduces overall usefulness of the project area for grizzly bears. Proposed activities associated with the Balding Bear Project

on DNRC-managed lands could affect grizzly bears and/or alter grizzly bear habitats in the cumulative effects analysis area.

Grizzly bears could be affected directly through increased road traffic, noise, and human activity, and indirectly by altering the amount of hiding cover and forage resources in the project area. Proposed activities could occur during the denning period or the non-denning period but would avoid the spring period (April 1-June 15) when grizzly bears are more sensitive to human disturbance. Proposed activities conducted in the denning period would not be expected to disturb grizzly bears; some disturbance to grizzly bears would be possible with proposed activities that may occur during the non-denning period. Overall, the proposed activities would occur in areas where grizzly bear use would be anticipated, thus potential for disturbance and displacement of grizzly bears would be anticipated.

Approximately 0.1 mile of new permanent road and 0.76 miles of temporary roads would be constructed with the proposed activities. No changes in open road density or motorized public access would be anticipated. Negligible changes to non-motorized public access could occur, thus no appreciable changes in contact between humans and grizzly bears would occur. Hiding cover would be reduced on most of the 307 acres (78%) of hiding cover proposed to receive treatments, some potential hiding cover could persist depending on the density of trees retained. Meanwhile, proposed activities in habitats that are not presently providing hiding cover (34 acres) would slow the development of those attributes into the future. Some hiding cover in the form of brush, shrubs, and sub-merchantable trees would persist in several of the units, albeit at a reduced level from the existing condition; additional reductions in grizzly bear hiding cover would occur with the proposed pre-commercial thinning. Hiding cover would increase through time as young trees and shrub regeneration proceeds over the next 5 to 10 years. Generally, reductions in hiding cover would occur on the edge of the area contributing to the larger blocks of potential security habitats that extend beyond the project area. Although hiding cover would be reduced on roughly 304 acres that are distant enough from the existing open roads, no appreciable changes to security habitat would occur given the small area that would be altered, the location of those changes, and the lack of changes in open roads in the project area. Any unnatural bear foods or attractants (such as garbage) would be kept in a bear resistant manner. Any added risk to grizzly bears associated with unnatural bear foods or attractants would be minimal. Continued use of the project area and cumulative effects analysis area by grizzly bears would be anticipated at levels similar to present.

W-2: The project area is either out of the range of the normal distribution for this species or suitable habitat is not present. Thus, no direct, indirect, or cumulative effects would be anticipated.

W-3: Generally wolverines are found in sparsely inhabited remote areas near treeline characterized by cool to cold temperatures year-round and rather deep and persistent snow well into the spring (Copeland et al. 2010). The availability and distribution of food is likely the primary factor in the large home range sizes of wolverines (Banci 1994). The project area is generally below the elevations where wolverines tend to be located. No areas of potentially deep persistent spring snow occur in the vicinity. Individual animals could occasionally use lands in the project area while dispersing or possibly foraging, and they could be displaced by project-related disturbance if they are in the area during proposed activities. However, given their large home range sizes (~150 sq. mi. -- Hornocker and Hash 1981) and the manner in which they use a broad range of forested and non-forested habitats, the proposed activities and alterations of forest vegetation on the project area would have negligible influence on wolverines.

W-4: The project area is partially within the home ranges associated with the Clearwater Junction (159 acres) and Sperry Grade (156 acres) bald eagle territories. Proposed activities could occur when soils are dry, frozen, or snow covered and would not occur between April 1 and June 15. Thus, the proposed activities could occur during the very early- (Feb 1- Mar 31) or later- (June 16-Aug 15) portions of the bald eagle nesting season, or the non-nesting (August 16-February 1) season. Minor disturbance to bald eagles could occur for any activities that could be conducted during the nesting period. Conversely, no disturbance to bald eagles would be anticipated should those activities be conducted during the non-nesting period. Minor reductions in the availability of large snags or emergent trees in the project area that could be used as nest or perch trees in the home range could occur; any reductions would only occur in a small portion of the home range, which would be additive to past and ongoing activities within the home range. No changes to human access to the home range would occur, thereby limiting potential for introducing additional human disturbance to the territory. No appreciable changes to bald eagle habitats would be anticipated from the proposed pre-commercial thinning.

W-5: Roughly 113 acres (18%) of potential upland fisher habitats exist in Douglas-fir/western larch and western larch stands in the project area. Generally, habitats in the project area and cumulative effects analysis area are somewhat disconnected and interspersed with some drier and/or more open habitats than generally used by fisher, thus extensive use by fisher would not be anticipated. Observations of fishers in the vicinity within the last 30 years are lacking and recent research suggests that fishers are largely absent east of the wet forests along the Montana-Idaho border (Montana Natural Heritage Program 2023, Krohner et al. 2022). Human disturbance, developments, existing matrix of unsuitable types, and ongoing timber management in the vicinity have likely further limited fisher use of the project area and cumulative effects analysis area. Proposed activities associated with the Balding Bear Project on DNRC-managed lands could affect fisher and/or alter fisher habitats in the cumulative effects analysis area. Proposed activities could introduce more, short-duration disturbance in the upland habitats. Alterations to roughly 83 acres (73%) of potential upland habitats would occur, but activities would avoid riparian habitats commonly used by fisher. Proposed treatments in upland habitats would reduce canopy closure and resultant stands would likely be too open to be used by fisher. No changes in open roads would be anticipated; trapping pressure and the potential for fisher mortality would not change. Reductions in upland habitats would further reduce the amount of suitable upland fisher habitats in the cumulative effects analysis area. Proposed pre-commercial thinning in fisher habitats could improve future fisher habitats by decreasing the time until those stands provide structural attributes needed by fisher.

W-6: Roughly 511 acres (83%) of potential flammulated owl habitats exist in the project area in dry ponderosa pine, Douglas-fir, Douglas-fir/western larch, and western larch stands. There are an additional 628 acres of potential flammulated owl habitats on stands dominated by dry Douglas-fir and ponderosa pine on DNRC-managed lands within the cumulative effects analysis area. Some suitable habitats likely exist on a portion of the 3,328 acres (53% of non-DNRC-managed lands) of open and closed forested habitats on other ownerships in the cumulative effects analysis area; however, portions of these forested areas are not likely preferred flammulated owl habitat types. Elsewhere in the cumulative effects analysis area, some of the forested habitats have been harvested in the recent past, potentially improving flammulated owl habitat by creating foraging areas and reversing a portion of the Douglas-fir encroachment and opening up stands of ponderosa pine; however, retention of large ponderosa pine and/or Douglas-fir was not necessarily a consideration in some of these harvest units, thereby minimizing the benefits to flammulated owls. Proposed activities associated with the Balding Bear Project on DNRC-managed lands could affect flammulated owls and/or alter flammulated owl habitats in the cumulative effects analysis area.

Flammulated owls can be tolerant of human disturbance (McCallum 1994), however the elevated disturbance levels associated with proposed activities could negatively affect flammulated owls should activities occur when flammulated owls are present. Proposed activities could overlap the nestling and fledgling periods, which has the potential to disturb nesting flammulated owls. Since some snags and large trees would be retained, loss of nest trees would be expected to be minimal. Proposed activities on 340 acres of potential flammulated owl habitats (67% of the habitats in the project area) would open the canopy while favoring ponderosa pine, western larch, and Douglas-fir. The proposed treatments would reduce canopy closure and improve foraging habitats. Negligible changes to flammulated owl foraging habitats would be anticipated with the proposed pre-commercial thinning. The more open stand conditions, the retention of fire adapted tree species, and the maintenance of existing snags would move the project area toward historical conditions, which is preferred flammulated owl habitat. Disturbance in flammulated owl habitats would occur on a small portion of the cumulative effects analysis area and could be additive to ongoing activities in the area. Proposed activities would increase the amount of the cumulative effects analysis area that has been recently harvested, which would add to the amounts of foraging habitats available, but possibly at the expense of losing snags and large trees important for nesting. Overall, no change in the amount of potential flammulated owl habitats would occur on DNRC-managed lands or any other ownerships; a slight improvement in habitat quality at the cumulative-effects analysis level could be realized with this alternative and the more historic conditions likely after proposed activities.

W-7: Fringed Myotis are year-round residents of Montana that use a variety of habitats, including deserts, shrublands, sagebrush-grasslands, and forested habitats. They overwinter in caves, mines, crevices, or human structures. Fringed myotis forage near the ground or near vegetation. No known caves, mines, crevices, or other structures used for roosting occur in the project area or immediate vicinity. Fringed myotis have been documented in the vicinity of the project area, and since suitable habitat exists, use by fringed myotis is possible. Proposed activities could disturb fringed myotis should they be in the area during proposed activities. Changes in vegetation structural attributes could change overall prey availability, but considerable foraging habitats would persist in the project and cumulative effects analysis areas. Overall, negligible changes to fringed myotis use of the project area or cumulative effects analysis areas would be anticipated.

W-8: Hoary bats are summer residents (June-September) across a variety of forested habitats in Montana. Hoary bats frequently forage over water sources near forested habitats. Hoary bats are generally thought to roost alone, primarily in trees, but will also use caves, other nests, and human structures. Some use of the project area by Hoary bats would be possible given the varied habitats present and the proximity to the Blackfoot River. Individual trees and snags in the existing forested habitats could be used for roosting. No known caves or other structures used for roosting occur in the project area or immediate vicinity. Hoary bats have been documented in the vicinity of the project area. Proposed activities could disturb hoary bats should they be in the area during proposed activities. Loss of potential roosting habitats could occur, but considerable amounts of trees would persist in the project and cumulative effects analysis areas. No changes in foraging habitats would be anticipated. Overall, negligible changes to hoary bat use of the project area or cumulative effects analysis areas would be anticipated.

W-9: Roughly 321 acres (52%) of pileated woodpecker nesting habitat exist in the project area; another 104 acres (17%) of potential foraging habitats exist in the project area. In the cumulative effects analysis area, roughly 286 acres (45%) of additional pileated woodpecker

habitats exist on DNRC-managed lands dominated by Douglas-fir and ponderosa pine. There are roughly 229 acres (36%) of additional potential feeding habitats on DNRC managed lands within the cumulative effects analysis area. Some suitable habitats likely exist on a portion of the 1,846 acres of forested habitats on other ownerships in the cumulative effects analysis area (29% of non-DNRC lands). Much of the 4,494 acres (71%) of shrubs, herbaceous areas, poorly stocked forested stands, and recently harvested stands on other ownerships in the cumulative effects analysis area is likely too open to be useful to pileated woodpeckers. Proposed activities associated with the Balding Bear Project on DNRC-managed lands could affect pileated woodpeckers and/or alter pileated woodpecker habitats in the cumulative effects analysis area.

Pileated woodpeckers can be tolerant of human activities (Bull and Jackson 1995), but might be temporarily displaced by any proposed activities that could occur during the nesting period. Roughly 254 acres (79%) of the potential nesting habitat along with 74 acres (71%) of potential foraging habitats would be harvested. Most of these stands proposed for treatment would be temporarily unsuitable for pileated woodpeckers due to the openness of the stands following proposed treatments, but some use could occur depending on the density of trees retained. Overall quality of these potential pileated woodpecker habitats would be reduced for 20-40 years. Elements of the forest structure important for nesting pileated woodpeckers, including snags, coarse woody debris, numerous leave trees, and snag recruits would be retained in the proposed harvest areas. No appreciable changes to pileated woodpecker habitats would be anticipated with the proposed pre-commercial thinning. Since pileated woodpecker density is positively correlated with the amount of dead and/or dying wood in a stand (McClelland 1979), pileated woodpecker densities in the project area would be expected to be reduced on 340 acres proposed for treatment. In the cumulative effects analysis area, the reduction in quality on 254 acres of potential nesting habitats and 74 acres of foraging habitats would further reduce available habitats and reduce the overall quality of the cumulative effects analysis area for pileated woodpeckers. Overall, a reduction in the quality of pileated woodpecker habitats in the cumulative effects analysis area would be anticipated, but continued use would be expected.

W-10: White-tailed deer (617 acres, 100%), mule deer (429 acres, 70%), and elk (436 acres, 71%) winter ranges exist in the project area. Approximately 425 acres of the project area (69%) appear to have sufficient canopy closure to be providing snow intercept and thermal cover attributes for big game. FWP data show that elk primarily use the area during the winter months while white-tailed deer generally use the area year-round and mule deer tend to use the vicinity during seasonal migrations between summer and winter ranges. Evidence of non-winter use by deer and elk was noted during field visits. Within the cumulative-effects analysis area, big game species are fairly common and winter range for deer and elk are fairly widespread in the lower elevation areas along the Blackfoot River. Roughly 19,221 acres (48%) of white-tailed deer, 18,182 acres (46%) of mule deer, 18,493 acres (46%) of elk, and 31,247 (78%) of moose winter ranges exist in the cumulative effects analysis area. There are roughly 9,602 acres (75%) of stands dominated by Douglas-fir, Douglas-fir/western larch, mixed conifers, and ponderosa pine on DNRC-managed lands in the cumulative effects analysis area that appear to be providing snow intercept and thermal cover attributes for big game; approximately 12,609 acres (47%) of forested habitats on other ownerships in the cumulative effects analysis area appear to have sufficient canopy closure to provide thermal cover and snow intercept for big game, however portions of these habitats may be too high in elevation to be suitable for winter thermal cover. Human disturbance within the winter range is associated with residential development, agricultural activities, recreational snowmobile use, commercial timber management, and several roads. Proposed activities associated with the Balding Bear project on DNRC-managed lands in the cumulative effects analysis area could disturb big game and/or alter big game habitats in the cumulative effects analysis area.

Proposed activities could occur during the winter or non-winter periods. Some potential for disturbance to wintering big game could occur with any activities that may occur during the winter period; any potential winter disturbance would likely have the greatest effect on the wintering elk population in the vicinity. Proposed activities conducted during the non-winter period would not disturb wintering big game but could disturb big game species using the project area during the non-winter period, however given the time of the year, the general use patterns, and the availability of other habitats in the vicinity, the potential effect to big game would be minor. Proposed activities would occur on roughly 340 acres (55%) of white-tailed deer winter range, 283 acres (66%) of mule deer winter range, and 272 acres (62%) of elk winter range; proposed activities would reduce canopy closure and potential winter use by big game on roughly 328 acres (77%) that likely have attributes facilitating considerable winter use by big game. Many of these stands where thermal cover and snow intercept would be reduced occur on northerly aspects and/or near the ridge tops where reductions could be more energetically taxing to big game when in use, but would avoid the southerly aspects that typically don't hold as much snow. Following proposed activities, canopy densities in these stands providing snow intercept and thermal cover would be reduced, reducing habitat quality for wintering big game. Pockets of cover would persist in the project area that likely would provide thermal cover and snow intercept capacity for big game as well as opportunities to move through the area in areas of reduced snow loads. Within the proposed units, increases in forage production could benefit big game in the short-term. In general, it could take 30 to 50 years for the stands in the proposed units to regenerate and attain a size capable of providing thermal cover for big game. Proposed pre-commercial thinning would not appreciably alter winter range attributes but could shorten the time before some of these stands provide these attributes to big game in the future. Potential disturbance to wintering big game would be additive in the cumulative effects analysis area to other forms of disturbance, including timber management, numerous open roads, and a variety of human developments and human recreation. Further reductions in thermal cover and snow intercept would be additive to losses from recent timber management, residential land clearing, and other disturbances in the cumulative effects analysis area. Continued use of the larger winter ranges would be anticipated at levels similar to present levels following proposed treatments.

W-11: The project area is within the Blackfoot Block Management area, which facilitates non-motorized public access to roughly 46,417 acres of otherwise landlocked parcels for the purpose of recreational hunting. There are numerous access points to the BMA, including a couple in the vicinity of the project area as well as the Blackfoot River corridor that combined likely facilitates non-motorized access to the project area. Hiding cover is somewhat limited in portions of the project area due to past timber management, grazing activity, wildlife foraging, as well as the natural openness of some of the habitats in the project area; similarly hiding cover is moderate in the cumulative effects analysis area, with many of these same limiting factors influencing big game hiding cover. There are no open roads in the project area. Non-motorized access to the project area exists given land ownership patterns in the vicinity, the 2.6 miles of restricted roads (2.7 mi./sq. mi., simple linear calculation) in the project area, the Blackfoot River corridor, and the inclusion in the larger Block Management Area previously identified. Portions of the project area do not contain big game security habitats due to the proximity to open roads, however roughly 339 acres (55% of project area) are distant enough and contain sufficient cover to be able to contribute to a larger block of potential security habitat that extends beyond the project area. In the cumulative effects analysis area, access for recreational hunting is relatively high, with many open roads (at least 33 miles, 0.53 miles/sq. mile) that facilitate access and numerous restricted roads (at least 217 miles; 3.5 miles/sq. mile) that could be used for non-motorized use. Within the cumulative effects analysis area, 1 patch (25,328 acres; 37%) of potential security habitat exists. Furthermore, this patch extends beyond the cumulative

effects analysis area and contributes to a larger block of potential security habitats in the vicinity. However, FWP data indicate that elk use the vicinity very little during the general hunting season, not for the lack of elk security cover, but rather due to the established seasonal patterns in the local elk herd. Proposed activities associated with the Balding Bear project on DNRC-managed lands in the cumulative effects analysis area could disturb big game and/or alter big game habitats in the cumulative effects analysis area.

Tree density within proposed units would be reduced on approximately 340 acres, including roughly 248 acres (73%) of forested stands in the project area contributing to potential big game security habitat. Overall hiding cover would be reduced within the proposed units but could improve as trees and shrubs become reestablished in the openings over the next 10-20 years. The retention of structure within proposed units and unharvested areas between the various units, including riparian habitats would reduce the potential effects of the hiding cover reductions. Additionally, the spread-out nature of the project area with considerable private ownership intermixed reduces the effects of hiding cover reductions. Some increases in sight distance in the project area would be anticipated; these increases in sight distances could increase big game vulnerability to hunting mortality as hunters would be able to detect big game at longer distances in proposed units. Increases in forage production in proposed units could benefit big game in the short-term. No changes in open roads or motorized access for the general public would occur. During all phases of the project, any roads opened with project activities would be restricted to the public and closed after the completion of project activities. Minor increases in non-motorized access would occur with the proposed construction of up to 0.1 miles of new permanent road and 0.76 miles of temporary roads. Numerous contract stipulations would minimize the effect on the existing big game security habitat by prohibiting contractors from carrying firearms while conducting contract operations and prohibiting contractors from accessing restricted areas for other purposes, such as hunting. Proposed pre-commercial thinning could further reduce hiding cover quality for big game, but cover would be expected to persist in proposed units and in un-treated portions of the project area. Alterations of cover could reduce the quality of big game security habitat in a small portion of the cumulative effects analysis area and would be additive to past reductions in the cumulative effects analysis area. No changes in public, motorized access or non-motorized access would be expected, which would not affect big game vulnerability in the cumulative effects analysis area. Hiding cover on a small amount (248 acres) of potential big game security habitats would be altered. Overall minor effects to big game security habitats would be expected given the small amount of area that would be altered, the location of those changes, the lack of changes in open roads in the project area, and the levels of use by big game in the vicinity; big game security habitats would persist in the cumulative effects. Negligible effects to big game survival would be anticipated.

Wildlife Mitigations:

- A DNRC biologist will be consulted if a threatened or endangered species is encountered to determine if additional mitigations that are consistent with the administrative rules for managing threatened and endangered species (ARM 36.11.428 through 36.11.443) are needed.
- Motorized public access will be restricted at all times on restricted roads that are opened for harvesting activities; signs will be used during active periods and a physical closure (gate, barriers, equipment, etc.) will be used during inactive periods (nights, weekends, etc.). These roads and skid trails would be reclosed to reduce the potential for unauthorized motor vehicle use.

- Minimize potential for disturbance to grizzly bears and numerous avian species by restricting activities between April 1 and June 15.
- Snags, snag recruits, and coarse woody debris will be managed according to ARM 36.11.411 through 36.11.413, particularly favoring western larch and ponderosa pine. Clumps of existing snags could be maintained where they exist to offset areas without sufficient snags. Coarse woody debris retention would emphasize retention of downed logs of 15-inch diameter or larger.
- Contractors and purchasers conducting contract operations will be prohibited from carrying firearms while on duty.
- Food, garbage, and other attractants will be stored in a bear-resistant manner.
- Should a raptor nest be identified in or near project activities, activities will cease and a DNRC biologist will be contacted. Site-specific measures will be developed and implemented to protect the nest and birds prior to re-starting activities.
- Provide connectivity for fisher and a host of other species by maintaining corridors of unharvested and/or lighter harvested areas along riparian areas, ridge tops, and saddles.

Wildlife References:

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Wittinger, W.T. 2002. Grizzly bear distribution outside of recovery zones. Unpublished memorandum on file at USDA Forest Service, Region 1. Missoula, Montana.2pp.

AIR QUALITY:

Air Quality	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Smoke	**X**				**X**				**X**					
Dust	**X**				**X**				**X**					
Action														
Smoke		**X**			**X**				**X**				**Y**	**1**
Dust		**X**			**X**				**X**				**Y**	**2**

Comments:

1. Slash consisting of tree limbs and tops and other vegetative debris would be piled throughout the project area during harvesting. Slash 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 are 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.

The project area is located within Montana Airshed 3B which encompasses portions of Missoula County and Powell County and includes the Seeley Lake and Missoula impact zones. The project area does not lie within either impact zone.

2. Dust may be produced by hauling if it occurs during dry periods. Mitigation (i.e. water or dust abatement) is possible but would likely not be used as hauling would occur on forest roads that are all closed to the public.

Air Quality Mitigations:

Burning within the project area would be short in duration and would be conducted when conditions favor good to excellent ventilation and smoke dispersion as determined by the Montana Department of Environmental Quality and the Montana/Idaho Airshed Group. The DNRC, as a member of the Montana/Idaho Airshed Group, would burn only on approved days.

ARCHAEOLOGICAL SITES / AESTHETICS / DEMANDS ON ENVIRONMENTAL RESOURCES:

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Historical or Archaeological Sites	**X**				**X**				**X**					**1**
Aesthetics		**X**				**X**				**X**			**Y**	**2, 3**
Demands on Environmental Resources of Land, Water, or Energy	**X**				**X**				**X**					
Action														
Historical or Archaeological Sites	**X**				**X**				**X**					**1**
Aesthetics		**X**				**X**				**X**			**Y**	**2, 3**
Demands on Environmental Resources of Land, Water, or Energy	**X**				**X**				**X**					**4**

Comments:

1. The tribes were scoped but none identified a specific cultural resource concern. A Class III intensity level cultural and paleontological resources inventory was conducted of the area of potential effect on State School Trust Land. Despite a detailed examination, no cultural or fossil resources were identified and no additional archaeological or paleontological investigative work is recommended. The proposed project will have *No Effec*t to *Antiquities* as defined under the Montana State Antiquities Act. A formal report of findings has been prepared and is on file with the DNRC and the Montana State Historic Preservation Officer.

However, if previously unknown cultural or paleontological materials are identified during project related activities, all work will cease until a professional assessment of such resources can be made.

2. A Douglas-fir bark beetle outbreak is impacting portions of the project area. The red crowns of trees already killed by the beetle are visible from Highway 200 and Highway 83 which are directly north of the project area. Under the no-action alternative, the beetle may continue to spread and tree canopies may turn red, and subsequentially lose all their needles, on a much larger scale. Under the action alternative, harvest would remove the affected trees, producing an immediate visual change by reducing the total canopy, but preventing the spread of beetle to a much larger area.

3. Aesthetics would be consistent with resource management. Any change to the scenery in the area from these alternatives would be in addition to past activity within the project area. This analysis includes all past and present effects. Signs of management, such as varying tree densities and road prisms, are already visible across the cumulative landscape.

4. Demands on environmental resources are consistent with resource management and limited public and residential use.

Mitigations:

- Use topography, openings and other changes on the ground to make harvest units less visibly obtrusive. Varying densities and using “clumpy” spacing reduces changes to the scenic integrity of the site.

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.*

- L-15,389 Red Face Letter Permit (2022) - section 4
- L-15,386 Cougar Canyon Letter Permit (2022) - section 10
- T-15,377 Red Sunset Timber Permit (2022) - sections 2 and 10
- Clearwater Junction Reciprocal Access Agreement Environmental Assessment Checklist (2016)
- T-15,188 Rudge Match Timber Permit (2011) - sections 2 and 4
- L-15,162 Ed Abbott Logging Letter Permit (2010) - section 10
- T-15,126 HOLY Beetles Timber Permit (2005) - section 2
- T-15,025 R3 Timber Permit (2005) - section 2
- T-13,977 Rudge Ridge Timber Permit (2004) - section 2
- T-13,958 Stabilization #2 Timber Permit (2004) - section 10
- T-13,848 Stabilization #1 Timber Permit (2003) - sections 2 and 10
- TS#0920 (1976) - section 2
- TS#8834A (1956) - section 2
- TS#0687 (1956) - section 10
- TS#0567 (1950) - sections 2, 4 and 10

Impacts on the Human Population

Evaluation of the impacts on the proposed action including **direct, secondary, and cumulative** impacts on the Human Population.

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Health and Human Safety	**X**				**X**				**X**					
Industrial, Commercial and Agricultural Activities and Production	**X**				**X**				**X**					

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Quantity and Distribution of Employment	**X**				**X**				**X**					
Local Tax Base and Tax Revenues	**X**				**X**				**X**					
Demand for Government Services	**X**				**X**				**X**					
Access To and Quality of Recreational and Wilderness Activities	**X**				**X**				**X**					
Density and Distribution of population and housing	**X**				**X**				**X**					
Social Structures and Mores	**X**				**X**				**X**					
Cultural Uniqueness and Diversity	**X**				**X**				**X**					
Action														
Health and Human Safety	**X**				**X**				**X**					
Industrial, Commercial and Agricultural Activities and Production	**X**				**X**				**X**					
Quantity and Distribution of Employment		**X**				**X**				**X**			**N/A**	**1**
Local Tax Base and Tax Revenues	**X**				**X**				**X**					
Demand for Government Services	**X**				**X**				**X**					
Access To and Quality of Recreational and Wilderness Activities	**X**				**X**				**X**					
Density and Distribution of population and housing	**X**				**X**				**X**					
Social Structures and Mores	**X**				**X**				**X**					
Cultural Uniqueness and Diversity	**X**				**X**				**X**					

Comments:

1. According to the Montana Bureau of Business and Economic Research, a general rule of thumb is that for every million board feet of sawtimber harvested in Montana, ten person-years of employment occur in the forest products industry. This harvest is viewed as a

continuation of a sustained yield and as such would not create any new jobs but rather sustain approximately 15 person-years of employment in the forest products industry. A few short-term jobs would also be created/sustained by issuing pre-commercial thinning, planting and site-prep contracts following harvest. Additionally, local businesses, such as hotels, grocery stores, and gas stations would likely receive additional revenues from personnel working on the proposed project. This would be a positive impact to quantity and distribution of employment in the area and therefore mitigation would not be necessary.

Mitigations: N/A

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.*

- None

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, terms of sale, or anything that could affect a buyer's willingness to pay.

No-Action: The No-Action alternative would not generate any return to the trust at this time.

Action: The timber harvest would generate additional revenue for the Common Schools, Pine Hills School, and Public Buildings Trusts. The estimated return to the Trust for the proposed harvest is $180,000.00 based on an estimated harvest of 1.5 million board feet (9,000 tons) and an overall stumpage value of $20.00 per ton. 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.

References

DNRC 1996. State forest land management plan: final environmental impact statement (and appendixes). Montana Department of Natural Resources and Conservation, Forest Management Bureau, Missoula, Montana.

DNRC. 2010. Montana Department of Natural Resources and Conservation Forested State Trust Lands Habitat Conservation Plan: Final EIS, Volume II, Forest Management Bureau, Missoula, Montana.

Does the proposed action involve potential risks or adverse effects that are uncertain but extremely harmful if they were to occur?

No.

Does the proposed action have impacts that are individually minor, but cumulatively significant or potentially significant?

No.

Environmental Assessment Checklist Prepared By:

Name: Melissa Laskos
Title: Management Forester
Date: February 26, 2024

Finding

Alternative Selected

After thorough review of the Rudge Projects Environmental Assessment (EA), project file, and public scoping, and, all applicable rules and plans, and laws, I have taken the decision to select the Action Alternative.

The Action Alternative meets the intent of the project objectives as stated in *Type and Purpose of Action* listed on page 1 of the EA. Specifically, the proposed project is expected to:

1) Contribute the DNRC's annual target of timber harvest volume as mandated by state law (77-5-221 MCA). The predicted project sawlog volume is to be around 1.5 million board feet.
2) Will generate revenue for the Trust Beneficiaries: Pine Hills School, Common Schools, and Public Buildings. Estimates are around $180,000.00 of revenue. An estimated $32,500.00 for Forest Improvement projects will also be received.
3) These projects are designed to improve stand growth and productivity.
4) Stands within this project area are expected to shift toward historic conditions after the prescribed treatments have been accomplished.
5) Douglas-fir bark beetle spread is expected to decrease after the various treatments have been completed.
6) The risk of stand-replacing wildfire is expected to decrease after the fuel levels and stand density are treated.
6) Forest road infrastructure will be improved for future management.

Significance of Potential Impacts

The EA addressed the identifiable potential resource issues through proposed mitigation measures which incorporate all applicable rules, plans, guidelines, and laws.

This approach resulted in a project in which potential effects to several resources were expected to be negligible, minimal, minor, or low. These resources will not be discussed in further detail, specifically:

<u>*Standard Vegetative Community*</u> – Direct, indirect, and cumulative effects are expected to be low. These effects reflect mitigations and harvest plans designed to benefit forest conditions

through promotion of increased stand health and diversity, decreased fuel loading, and a movement towards historic/desired future conditions including potential old growth stands. Concerns regarding stands not regenerating after harvest is also covered within "*Planting*" on page 13 of the EA. Other areas, such as the pinegrass and Douglas-fir/ninebark stands may also be treated with herbicide.

Aesthetics – Direct effects for this project are expected to be low. The planning and layout of harvest units within the viewshed of the neighborhood and highway 200 will be prepared using aesthetic concerns as a guide.

Weeds – Direct, indirect, and cumulative effects are expected to be low. However, this doesn't differ from the No-Action Alternative effects. The Action Alternative would provide for more weed spraying than the No-Action Alternative. It also provides mitigations through equipment cleaning and grass seeding.

Soils – Direct, indirect, and cumulative effects are expected to be low. Proposed mitigations along with contract administration are expected to control potential soil disturbance and avoid excessive impacts.

Water Resources – Direct, indirect, and cumulative effects to sediment are expected to be low. No surface water is located on the project area.

Pileated woodpecker - There is a moderate risk of direct, indirect, and cumulative effects on Pileated woodpeckers. Mitigations, found on page 28 (W-9), states that there will be a reduction of quality habitat. Although it is likely to occur, it was also stated that use would continue. This is also stating losses from a future DNRC timber sale that has not been analyzed at this time.

Big Game – There is a moderate risk of adverse direct or indirect effects. Human disturbance within the winter range is associated with residential development, agricultural activities, recreational snowmobile use, commercial timber management, and several roads. Wintering habitat is expected to be decreased, especially on northerly aspects after harvest and near ridge tops but could be lessened if pockets of trees are left to provide access and reduce snow loads. In many cases the harvest will reduce potential security cover. Within areas within the timber harvest and pre-commercial thinning small pockets can help with the effects on security cover. Given the project being located within the Blackfoot Block Management, both the closed roads and the general distance to the public help mitigate for part of these concerns. This also states losses from a future DNRC timber sale that has not been analyzed at this time.

Given the expected effects, rationale, mitigations, and overall project benefits, no significant impacts are expected with the selection of the Action Alternative.

Need for Further Environmental Analysis

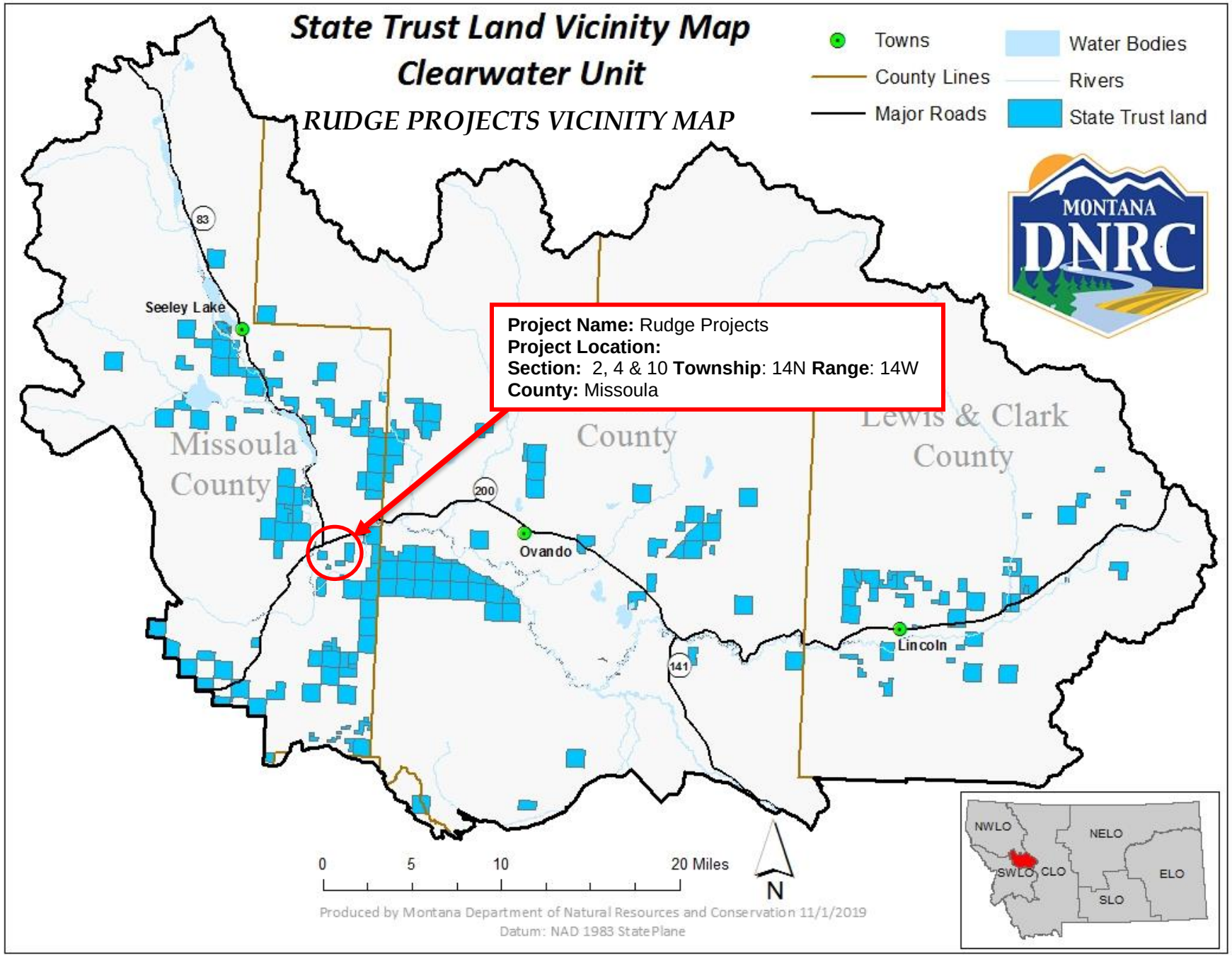
☐	EIS	☐	More Detailed EA	☒	No Further Analysis

Environmental Assessment Checklist Approved By:

Name: Craig V. Nelson
Title: Clearwater Unit Forester Management Supervisor
Date: February 28, 2024
Signature: /s/ Craig V. Nelson

Attachment A - Maps

A-1: Timber Sale Vicinity Map

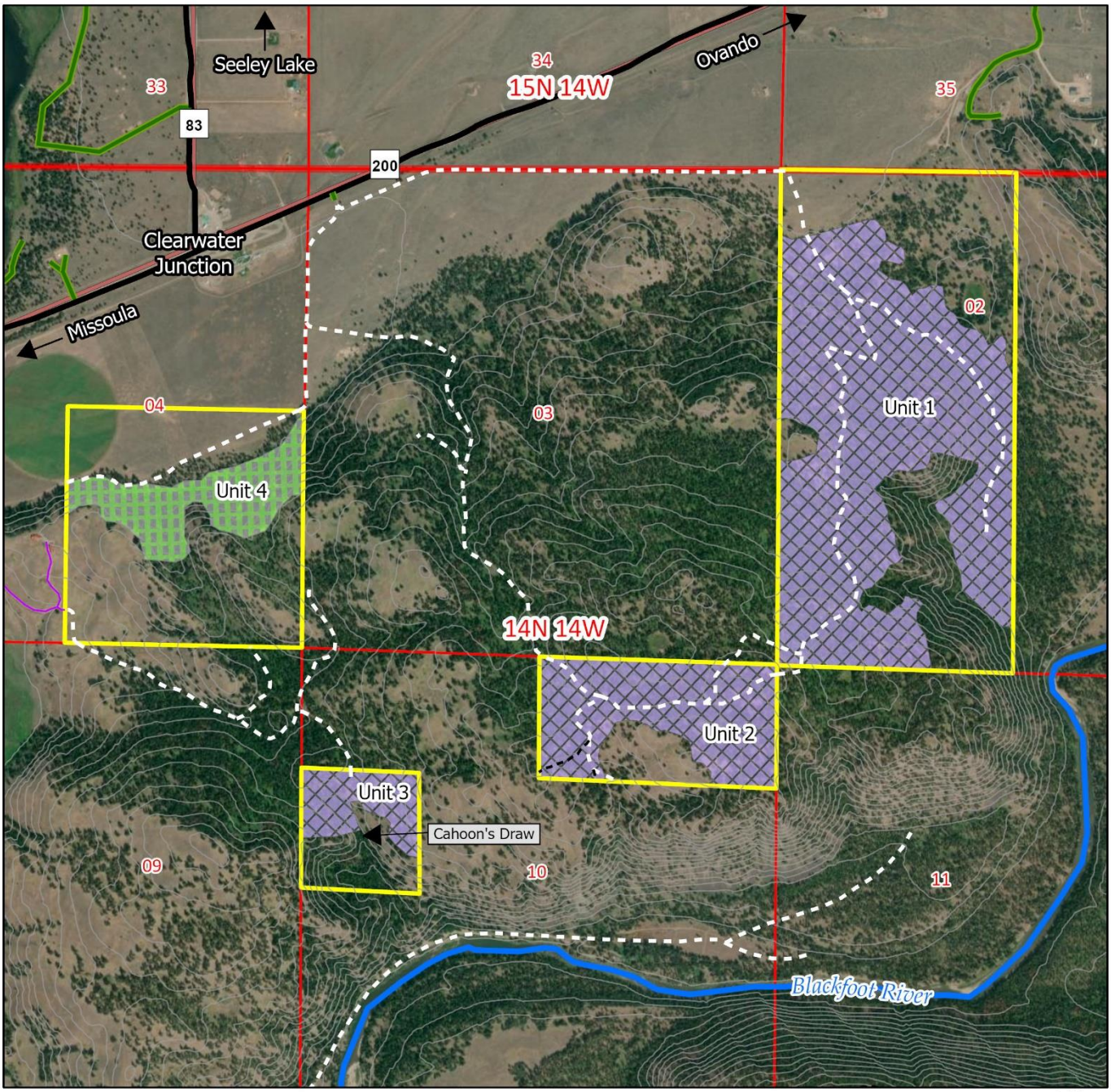


A-2: Timber Sale Harvest Units

Rudge Projects

Proposed Harvest Units and Prescriptions

Sections 2, 4 & 10 T14N R14W



Project Area
PLSS Township
PLSS First Division

Harvest Prescriptions
Individual Tree Selection
Sanitation

40 ft Contours
Highway
Open/Public Roads
Restricted Class A
Abandoned or Reclaimed
Pvt Access or Admin Site

Miles
0 0.5

MONTANA DNRC

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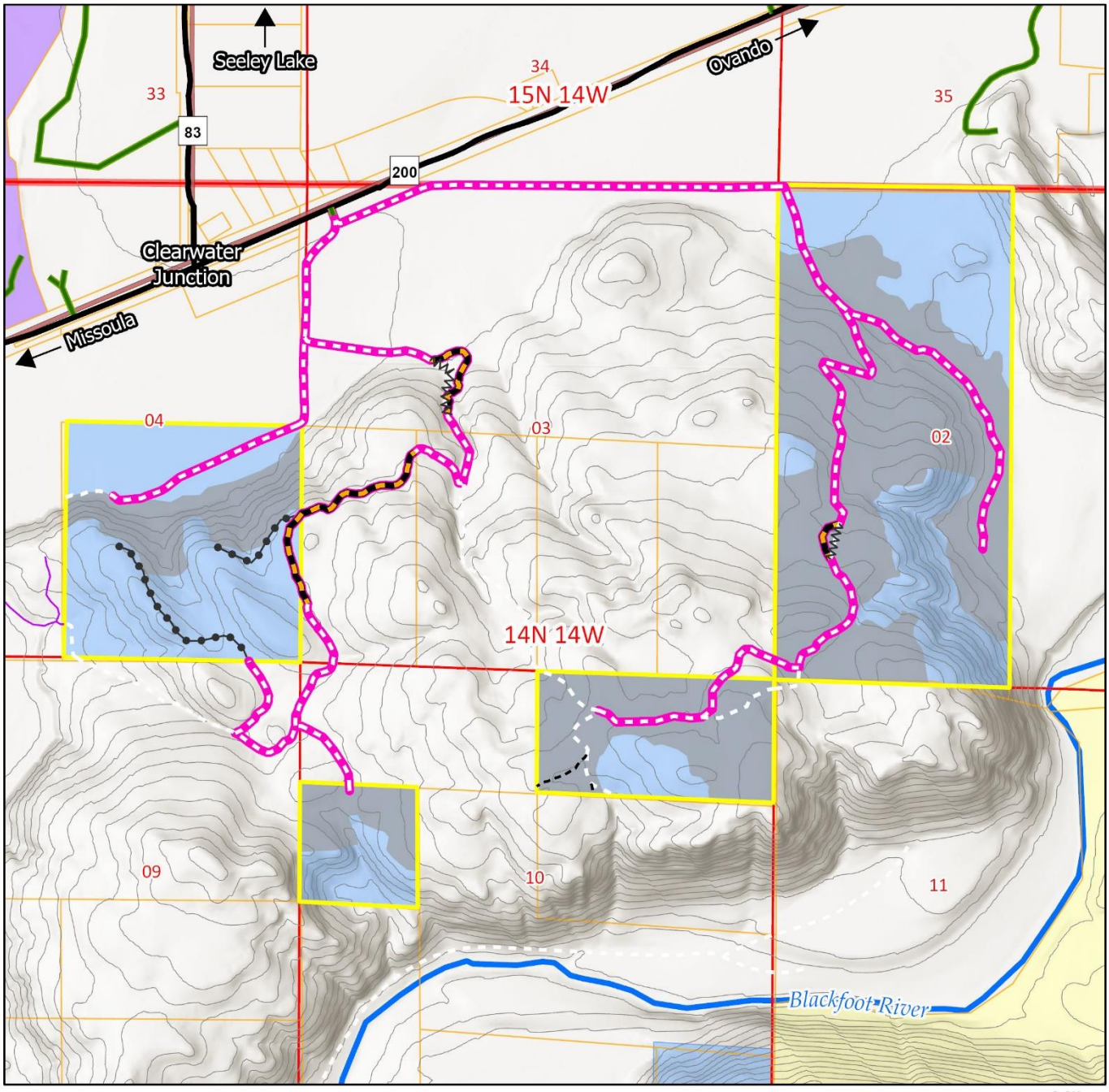
A-3: Timber Sale Roads

Rudge Projects

Land Ownership, Proposed Road Construction and Haul Route

Sections 2, 4 & 10 T14N R14W



Project Area
Harvest Units
New Construction
Reclaim
Temporary
Haul Route

40 ft Contours
Highway
Open/Public Roads
Restricted Class A
Abandoned or Reclaimed
Pvt Access or Admin Site

PLSS Township
PLSS First Division
Cadastral Parcels
DNRC Trust Lands
Montana Fish, Wildlife, and Parks
US Bureau of Land Management

Miles
0 0.5

N
W E
S

M. Laskos
Feb 2024