

BALDING BEAR PROJECTS

ENVIRONMENTAL ASSESSMENT



CLEARWATER UNIT

SOUTHWEST LAND OFFICE

MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

MARCH 2025

Environmental Assessment Checklist

Project Name: Balding Bear Projects

Proposed Implementation Date: July 2025

Proponent: Clearwater Unit, 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 Balding Bear Projects. The project is located Bear Creek / Blackfoot River area (refer to **Attachments A-1 through A-7**). and includes the following sections:

Beneficiary	Legal Description	Total Acres	Treated Acres
Common Schools	Secs. 13 and 24 T14N R14W	1,270 ac.	503 ac.
Public Buildings	Sec. 14 T14N R14W	640 ac.	542 ac.
MSU 2 nd 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			
Veterans Home			
Public Land Trust			
Acquired Land			

Objectives of this project include:

- Maximize revenue over the long-term for trust accounts from the timber resources and provide a sufficient amount of sawlog volume to contribute to the DNRC's sustained yield as mandated by State Statute 77-5-222, MCA.
- Manage the identified parcels intensively for healthy and biologically diverse forests to provide long-term income for the Trusts.
- Bring stands closer to historic conditions.
- Improve access and BMP compliance with new construction and road maintenance activities.
- Improve stand growth and vigor and reduce the threat of future losses to fire, insects, and disease.
- Manage understory vegetation within sale area to promote regeneration.

- Decrease visual impacts to the aesthetics of the area when viewed from areas around this sale.

Proposed activities include:

Action	Quantity
Proposed Harvest Activities	# Acres
Clearcut	-
Seed Tree	-
Shelterwood	349 acres
Individual Tree Selection	193 acres
Old Growth Maintenance/Restoration	-
Commercial Thinning	244 acres
Salvage (Sanitation)	259 acres
Total Treatment Acres	1,045 acres
Proposed Forest Improvement Treatment	# Acres
Pre-commercial Thinning	1,477 acres
Prescribed burning (piles)	450 acres
Prescribed burning (broadcast)	70 acres
Excavator brush piling	200 acres
Planting	70 acres
Proposed Road Activities	# Miles
New permanent road construction	7.5 miles (2.5 miles in N. Chamberlain C.E.)
Road maintenance	17.7 miles
Road reconstruction (gravel placement, etc.)	3.0 miles
Road abandoned	3.9 miles (1.9 miles in N. Chamberlain C.E.)
Other Activities	
Aerial Herbicide Application	70 acres
Duration of Activities:	Estimated 5 years
Implementation Period:	June-March

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:
 - March 2019
- PUBLIC SCOPED:
 - The scoping notice was posted on the DNRC Website: <http://dnrc.mt.gov/public-interest/public-notice>
 - The Scoping Letter was posted within the *Pathfinder* (April 4, 7, and 9, 2019 editions) and the *Missoulian* (March 29 – April 5, 2019).
 - It was posted at the Rovero's in Seeley Lake, MT., Stoney's Quick Stop at the Clearwater Junction, MT., and the Ovando Post Office.
 - 65 individuals, agencies, and other organizations that have expressed interest in DNRC's management activities. It was also posted on the DNRC website.
- AGENCIES SCOPED:
 - Montana Department of Fish, Wildlife, and Parks (DFWP)
 - United States Bureau of Land Management, Missoula Field Office
- COMMENTS RECEIVED:
 - How many: 5 (Blackfeet Tribe; Ft. Belknap Tribe, Northern Cheyenne Tribe; Montana Department of Fish, Wildlife, and Parks; and Weyerhaeuser Company)

INTERDISCIPLINARY TEAM (ID):

- Project Leader: **Craig V. Nelson**
- Archeologist: **Patrick Rennie**
- Wildlife Biologist: **Garrett Schairer**
- Hydrologist, Fishery, & 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 <http://dnrc.mt.gov/divisions/trust/forest-management/hcp>.
- **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.
- **Montana Department of Fish, Wildlife and Parks (DFWP)-** A conservation easement is in place for portions of the project area. The conservation easement land steward was consulted to ensure compliance with the easement; FWP biologists were also consulted. A management plan for North Chamberlain was developed in 2010 and DNRC will follow commitments outlined in the management plan.

This easement was granted by Montana Department of Fish, Wildlife & Parks to the Montana DNRC. The purpose of the easement is "to preserve, and protect, in perpetuity the conservation values of the land". It later states "to perpetuate the Land as forest land; to ensure the opportunity for forestry activities permitted hereunder; and to provide that any commercial production of forest products is conducted in accordance with the Standards for Forest Management." A further purpose of this easement is to "grant...the right of access...for public recreational use, including hunting" and "to prevent the Land... from being converted or diverted to any use prohibited by provisions of this Easement..." It is also states, "allow the continuation of such forest management in accordance with the Standards..."

A Stream Protection Act Permit (124 Permit) is required from DFWP for activities that may affect the natural shape and form of a stream's channel, banks, or tributaries. Such activities include:

- **This project area includes several replacements of existing CMP's, removal of several existing crossings, installations of new crossings and maintenance of existing CMP's. These are described in the "Hydrology" portion.**

ALTERNATIVES CONSIDERED:

No-Action Alternative:

- The proposed harvest and road building would not occur.
- Stands would remain at overstocked levels and are currently under possible insect and disease threats including: Douglas-fir bark beetle (*Dendroctonus pseudotsugae*), spruce budworm (*Choristoneura occidentalis*), Douglas-fir tussock moth (*Orgyia pseudotsugata*), dwarf-mistletoe (*Arceuthobium spp.*), laminated root rot (*Armillaria spp.*), and brown cubical rot (*Phellinus weirii*).

- Stream crossings and road systems, often designed in the 1950's and by previous landowners, would not be changed and necessary requirements for DNRC use would not be met.
- Concerns regarding overstocked stands and associated fire danger would continue.
- All pre-commercial stands would continue to grow with decreased vigor and would show more death of trees within the stand.
- No money would be received by Public Buildings or the Common School Trust funds from activities of this project.
- These stands would not be directed toward Desired Future Condition.

Action Alternative

- This proposal includes timber harvest on approximately 1,045 acres removing an estimated 5.0 MMBF.
- Stands would have stocking levels reduced and could show a decrease in losses due to insect, disease, and overstocking.
- Stands would be managed to allow natural regeneration through prescribed burning, herbicide treatment of some brush competitors, and brush piling of brush competition.
- Stream crossings and road systems would be changed to improve locations and necessary requirements would be met on DNRC land in this project.
- Treatments would assist DNRC in addressing the risk of large fire growth, and it would be lessened across DNRC and neighbors' lands in this area.
- Pre-commercial thinning would also occur under this EA on a proposed 1,477 acres with a plan to increase vigor and reduce overstocking and death.
- Money would be received by the two School Trusts (Common School, and Public Buildings).
- These stands would be directed toward Desired Future Condition.

Impacts on the Physical Environment

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

VEGETATION:

Concern was expressed that:

- The present timber stand species mixes do not meet our desired future conditions.
- Tree mortality from insects, diseases, and present risks is above acceptable levels.
- Shade tolerant species would continue to out compete seral species-removing stands from their historic cover type and species distribution.
- Brush populations are interfering with the ability to get regeneration.
- Young stands are currently overstocked.
- Forest management activities may adversely affect Old Growth stands.
- Concern was expressed that forest fuel loadings in areas are at a moderate to high levels. The proposed stands would be treated in a fashion to help produce fuel breaks for potential wildfire.
- There is a concern that forest management activities may result in introduction of new weeds or increased spread of noxious weeds from the proposed forest management activities.

- There is concern the proposed project could negatively impact populations of threatened, endangered, or sensitive plant species.

Noxious Weeds Existing Condition

Noxious weeds occurring in the project parcels are mainly a combination of knapweed (*Centaurea maculosa*), houndstongue (*Cynoglossum officinale* L) and spot infestations of St. Johnswort (*Hypericum perforatum*), Dalmatian toadflax (*Linaria dalmatica*), and small locations of orange hawkweed (*Hieracium aurantiacum*). Weeds were found along roadsides and access haul routes within project sections and on adjacent lands. Some areas within the forested areas also have weed populations. These are on areas with horseback trail use, wildlife grazing, former timber harvest activities, recreational uses, and soil disturbance from fire. These are most likely the reasons for the existing rate of spread of noxious weeds and the potential future spread and introduction of noxious weeds.

Moist sites with well-established surface vegetation provide a competitive vegetative advantage over noxious weed establishment. Reseeding of some roadcuts followed by roadside, spot herbicide treatments and release of bio-control insects have been made on noxious weeds on portions of the project sections and this has helped reduced the spread of noxious weeds. DNRC has completed considerable herbicide treatments and revegetation on forest management projects for the last 20 years, coupled with weed treatments by the Plum Creek Timber Company, The Nature Conservancy, and private neighbors on system roads or portions of the parcels included. Yet weeds continue to spread by wind, animals, and vehicles. Weed management treatments on adjacent ownerships in the area generally include herbicide treatments and bio-control measures.

Rare Plants Existing Condition

Within the project area, three rare vascular plants are found within the project area. One occurrence was a historical collection of Deer Indian Paintbrush (*Castilleja cervine*) from 1901 and is unlikely to be found at this time. In riparian areas, rivers, lakes, or sloughs another species were mentioned; Beck Water-marigold (*Bidens beckii*). The one exception to these categories is Howell's Gumweed (*Grindelia howellii*).

This is a sensitive plant that has limited distribution across portions of western Montana (Powell and Missoula Counties) and Idaho (Benewah County). In some areas, the populations are well established. This gumweed responds like a pioneer species and requires disturbance for an effective germination substrate.

The Montana Natural Heritage Program stated 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...*

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."

Standard Vegetative Community Existing Condition

Stand History/Past Management

This area falls within Climatic Section 332B. Climatic Section 332B was historically 79% forested (Losensky, 1997). 332B includes valley bottoms as well as high elevations in the

Bitterroot and Blackfoot region. The project area ranges in elevation from 4,200'-5,300'. These areas were historically dominated by large, mature ponderosa pine and western larch / Douglas-fir stands. Fire played a large role in shaping these stands. Throughout the sale area there is evidence of both infrequent stand replacing fires and light ground fires. Evidence (fire scars on 200+ year old western larch, ponderosa pine, and Douglas-fir trees and stumps from previous harvests) found during field reconnaissance indicates that these fires burned in the 1800's through today. It is certainly believable that this fire occurrence proceeded that date.

Fire has shaped these stands prior to the arriving of European settlers. Since then, much of this area has been treated by timber harvesting. Harvest has occurred in this area since the late 1880's. Previous treatments were not necessarily done with the same ideals as they are currently. As a result, some stands regenerated to a different tree species than the expected appropriate condition.

All parcels with the exemption of section 14 T14N R14W within this project area were owned by other landowners. These were primarily owned by forest industry companies. Plum Creek Timber Company was the last industry owner. Obviously, these tracts were treated with different objectives than they are currently. After a land sale to The Nature Conservancy, a Conservation Easement was then sold to the Montana Department of Fish, Wildlife, and Parks. Shortly afterward, the land was sold to the Montana Department of Natural Resources with the previous Conservation Easement included within this sale.

Harvest has occurred on all parcels but we do not have all accurate records of industry harvest on the tracts above. Our records show harvest treatments in section 14 T14N R14W dating back to 1955. That harvest removed 7.6 million board feet (mmbf). Most recently DNRC harvested in this section was in 2004 with the Lost Bear Timber Sale. This harvest removed 2.25 mmbf. of sawlog.

Previous owners of sections 13 and 24 T14N R14W, as stated before, were forest industry companies. Harvest was generally done to remove higher quality trees or standard even-aged prescriptions with the removal of the "seed trees". This is different than the standard DNRC prescriptions (requiring snag requirements being left on site for the long-term). Stumps of western larch that were harvested years ago are occasionally 4-5 feet in diameter. Much of the area is quality, high productivity land.

The current stand condition in the project area is a result of past timber management and wildfire activity and/or suppression. Current cover types differ from the desired future condition (DFC). See table V-1 for current project area cover types as well as the DFC for the project area.

Table V-1 – Current and appropriate cover type for the Balding Bear Projects Area.

Cover Type	Current Acres	Current Percent of Project Area	Desired Future Condition (DFC)	
			Acres	Percent
Douglas-fir	1,021.8	53.2%	7	0.4%
Ponderosa pine	121.2	6.3%	460	24%
Western larch/Douglas-fir	732	38.1%	1,453	75.6%
Non-stocked	45	2.4%	-	-
Total:	1,920	100%	1,920	100%

Please note; rounding was used in the above table to achieve the given acreages within the sections in this sale.

Using the DNRC's Stand Level Inventory, further information was captured as well. Most of the stands within the sale area show the increase of Douglas-fir. This is generally a response of fire prevention. As fires are controlled, trees such as Douglas-fir regenerate, often at a more successful rate than trees such as ponderosa pine. This can easily be seen above with the current acres, and percentage, of the Douglas-fir cover type. This is also found within the dramatic reduction of the ponderosa pine cover type.

Previous logging practices also caused some of these changes as well. Harvest practices of the late 1800's targeted the best quality trees (straight, fewer limbs, and often the largest stems). This was done using crosscut saws. As one can understand, the fewer cuts necessary, means less work. These trees were primarily seral species.

By the late 1940's, most harvesting operations used chainsaws to perform the severing of the trees on the site. This also included a change in the silvicultural practices that were used. Often seed tree or light shelterwood harvests were used. The overstory that was reserved to produce regeneration was harvested after regeneration occurred. The removal of these trees has reduced the larger component of stems on the site, this obviously affects the amount of "old growth" areas that occur. This regeneration often included Douglas-fir. The mindset regarding stocking was to include the maximum number of "spaced" trees per acre. We now realize that in some cases, this can often rob the site of needed nutrients and water.

Within the proposed sale there are two distinct areas. These have been described before, section 14 T14N R14W (original State parcel) and sections 13 and 24 T14N R14W (the Chamberlain purchase and formerly timber industry ground). These stands have changed from descriptions within the Lozensky historical study given previous treatments by the owners.

Within section 14, there were two larger timber sales. Generally, the largest trees were left. The years between these entries silvicultural practices were minimal at best (planting, thinning, site preparation, etc.). An average overstory diameter of in this section is around 18 inches. An average overstory height is 90 feet. The typical volume per acre is around 6 mbf. (thousand board feet). An estimated total overstory trees per acre is 23. Spacing of these trees is approximately 45 feet between stems. Basal area per acre averages 40.71 square feet. Within the SLI (Stand Level Inventory), it is stated the average timber stand has eight trees per acre over the diameter of 17 inches. It also states that the stands average five trees over 21 inches. Understory tree populations are generally Douglas-fir with a stocking of 200 trees per acre with

a spacing averaging 14.5 feet between trees. Simply stated, the forest canopy is generally large trees, open spaced, with a clumpy Douglas-fir understory.

Stands within the sections 13 and 24 show the past of being owned by forest industry companies. These stands show a past of timber removal in a much more rapid rate than the DNRC section 14. The harvest within these sections generally removed the best quality overstory trees. This was often done using traditional even-aged practices. For example, a seed tree or shelterwood harvest that regenerated well would then have the seed trees removed. There also were stands where these quality trees were removed without any follow up treatment. In some cases, this was done several times on the same stands. Some changes in trees harvested were according to species requested by mills (preferring ponderosa pine over Douglas-fir). In other cases, they were simply meeting a volume target, generally with the largest trees being harvested.

Within this type included in the proposed sale, the average diameter of 12 inches. Average heights were shown to be 55 feet. The volume per acre over the area has been revealed to be 3.0 mbf. (thousand board feet) per acre. An estimated overstory trees per acre in section 13 is around 40, while it is near 97 trees in section 24. Spacing between overstory trees is approximately ranges between 33 feet in section 13 and 21 feet in section 24. Basal area per acre in section 13 would be 37 square feet while it would be 63 square feet in section 24. Within the SLI, it is stated the average timber stand has less than one tree per acre in both the diameter class of 17 inches and the 21 inches. Understory tree populations are generally trending to a large change to Douglas-fir. The SLI, done prior to the DNRC purchase, no estimate of trees per acre is made. Most stands are noted to have "moderate stocking". The definition for this rating is that the crown closure would be between 40-69%. An estimate of the stocking could be 300 trees per acre. An estimate of the spacing would be 13 feet between understory trees. These sections forest canopy is generally smaller overstory trees, moderately stocked, with a heavier Douglas-fir understory.

The DNRC must meet the requirements of Montana Best Management Plans (BMP's) and Streamside Management Zones (SMZ's), but other requirements including the: Montana State Forest Land Management Plan (SFLMP), the Montana DNRC Forested Trust Lands Habitat Conservation Plan (HCP) – *very similar to the following Conservation Easement*, and the North Chamberlain Conservation Easement.

The treatment of pre-commercial thinning is defined as removing small trees not for monetary benefit but to reduce stand stocking, release of limited nutrients (water, light, and nutrients), and improve growth of desired trees. It has also proven to decrease the loss of deterioration through death 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 harvest treatment when quality regeneration is present.

Fire Hazard and Fuels Existing Condition

On sections within the Chamberlain purchase (sections 13 and 24 T14N R14W), the previous owners continued to remove trees of different species and sizes as time went on. Currently, these stands also show a change to Douglas-fir and away from ponderosa pine and western larch, as they have been removed.

A large majority of the stands in the general sale area have shown this change showing Douglas-fir as the most prominent species. This extreme increase of Douglas-fir (from 0.4% historical to 53% currently) bolsters the current "loss" of nearly 40% of Douglas-fir / western

larch. Ponderosa pine stands also saw a large change from 24% of the acres (460 acres) to around 6% currently.

This vegetation change has altered the amount of available fuel for wildland fires. The current Douglas-fir stands are overstocked with a large increase in available ladder fuels. This may increase the likelihood of stand replacement fires. Recent fire occurrence in the project area is minimal, with the latest large fire in the immediate area was the East Fork Chamberlain Creek fire (1,220 acres) around 30 years ago. This fire was 4 miles southeast of the project area. Several smaller fires have also occurred in the general area.

The Bureau of Land Management have recently harvested in areas to the southeast of the project area. Some of this was burned as well.

Insects and Disease Existing Condition

Currently, forest pests that target Douglas-fir are at higher amounts. The existing stocking of these stands and the subsequent layers of vegetation have allowed local populations to increase in growth. This has decreased the health and vigor for those stands. Species such as spruce budworm (*Choristoneura occidentalis*) and recently Douglas-fir tussock moth (*Orgyia pseudotsugata*) were affecting stands currently. Spruce budworm has been around the current level within the area for the last decade. Douglas-fir tussock moth has been found in the sale area, but given recent epidemics within the Missoula area, lower Blackfoot River area, and the Condon area, this is of a concern. Within section 14, a population of Douglas-fir bark beetle (*Dendroctonus pseudotsugae*) is increasing in size but is still endemic in size. Generally, this species targets older, larger trees. In the sale area, these are primarily found within section 14.

Ninebark Management Existing Condition

Earlier in this document, a change within the existing stand vegetation was described. Effects of this change from fire suppression is obvious in all sections of this project area. Currently there are large stands of ninebark (*Physocarpus malvaceus*) under overstory stands resulting from prescriptions (minimal brush control and accelerated brush growth) of the two past timber sales (1955 and 2004). Habitat types within the three sections of the project show that 613 acres produce ninebark at very high levels through the development of the stand levels.

Ninebark, or mallow ninebark, is a long-lived native shrub found in the northern Rocky Mountains. It is a low to medium shrub that averages between 2-10 feet in height. It grows in a highly branched and broad spreading fashion. Leaves are wide, often over 3 inches across. After stands have been established it can be extremely dense. As the stand ages, older stems occur and continue to stand within the live stems for many years. Stands like this can block seeding of the overstory trees. With the described form above, in some cases it may overtop existing conifer regeneration. This may easily block valuable sunlight needed by the regeneration, and the competition formed by the ninebark begins to use the water that is needed by the tree. Roots are shallow and perennating. Up to 11% of the seed produced can still be found in the upper soil profile for several years.

Historically, fires would have affected the area in 16 to 25 year intervals. Portions of project areas stands have heavy ninebark stands including a large amount of dead ninebark stems. Stems are occasionally 8 to 10 feet in height, and there are minimal seedlings that have become established.

Old Growth Existing Condition

Old Growth is identified and analyzed using criteria outlined in Green et al. and this information was placed in the Montana DNRC SLI. A search of the project area was done, and it was queried to identify potential Old Growth and Old Growth stands. None of the stands inventoried have been determined as Old Growth. Some stands, after removal of the Douglas-fir understory, could be old-growth recruitment stands for ponderosa pine.

Table V-2 –Old Growth in project area

Stand ID	SLI Old Growth Status	Habitat Type	Acres of Old Growth
N/A	N/A	N/A	N/A
TOTAL	-	-	N/A

Noxious Weeds

No-Action Alternative: Direct, Indirect, and Cumulative Effects

With no action, noxious weeds will continue to spread along roads and may increase on the drier site habitats. Limited weed control efforts on access roads across multiple ownerships in the area, increases the potential for windblown seed. Following disturbance events such as fires, or grazing, the establishment and spread of noxious weeds can be more prevalent than in undisturbed areas. DNRC would continue to treat selected sites on DNRC roads based on priorities and funding availability, but the levels of weed control treatments would be lower than with the action alternative. If new invader species within the area are discovered, they would have highest priority for management. On state land parcels other users would be required to continue weed control efforts consistent with their use.

Cumulative effects of noxious weeds within the project areas are moderate. Weeds have spread across ownerships over time and are prone to more dispersal along open roads. Weeds also have spread by multiple uses from wind, fire, traffic, forest management, wildlife and grazing animals. As tree density and ground cover vegetation increase, weeds are reduced through vegetative competition.

Action Alternative: Direct, Indirect, and Cumulative Effects

Implementation of the action alternative may involve ground-disturbing activities that have the potential to introduce or spread noxious weeds in susceptible habitat types. For the action alternative, an Integrated Weed Management (IWM) approach was considered for treatment of existing and prevention of potential noxious weeds. For this project: prevention, revegetation and weed control measures on existing roads and for spot outbreaks are considered the most effective weed management treatments. Prevention measures would require cleaning of off-road equipment. Roadsides would be sprayed and weed control and revegetation would slow noxious weed spread and reduce weed density and occurrence compared to no-action. There would be a similar or potential slight increase in weed infestation with harvest units due to soil disturbance (refer to soil section) and reduction of tree canopy. The silvicultural prescriptions are designed to control disturbance and scarification to goals need for sustained forest growth. Noxious weeds control efforts and promote rapid revegetation and emphasize treatment of any new noxious weeds found.

Herbicide application would be completed on segments of DNRC roads along the haul route, to reduce weed spread along roads and promote desired vegetation for weed competition and to reduce sedimentation. Herbicide would be applied according to labeled directions, laws and rules, and would be applied with adequate buffers to prevent herbicide runoff to surface water resources. Implementation of IWM measures listed in the mitigations are expected to reduce

existing weeds, limit the possible spread of weeds, and improve current conditions, to promote existing native vegetation. More weed control would occur compared to the no-action alternative and grass and competitive vegetation would increase along roads.

Overall cumulative effects of increased noxious weeds within the project area, are expected to be moderate, based on herbicide treatments of existing weeds along roads and implementing prevention measures to reduce new weeds, by cleaning equipment and planting grass on roads to compete against weeds, and the continued weed control of grazing users. The combined efforts of weed control across ownerships continues to improve through cooperative efforts with the Missoula County Weed District and local weed control interest groups including the Clearwater Resource Council and Blackfoot Challenge.

Rare Plants

No-Action Alternative – Direct, Indirect, and Cumulative Effects

The No-Action alternative would not change the existing conditions available for Howell's gumweed populations present within the proposed area. No disturbance would occur as part of the no action. As a result, there would be no risk of direct, indirect, and cumulative effects to Howell's gumweed given the No-Action Alternative.

Action Alternative – Direct, Indirect, Cumulative Effects

If a population of a rare plant is found, disturbance would be limited. One possible species of concern was a historical collection of Deer Indian Paintbrush from 1901. It is unlikely to be found.

In riparian areas, rivers, lakes, or sloughs only one species, Beck Water-marigold was mentioned. These areas would not be influenced by the Action Alternative given; their location, the HCP, and Montana Best Management Practices. As a result, there would be low risk of direct, indirect, and cumulative effects.

Based upon the fact that Howell's gumweed is often found in disturbed areas, the gumweed population should remain the same or would slightly increase if plants establish on reclaimed road sites. Some individual plants would likely be killed if present during timber harvest. Core populations would be protected and potentially enhanced through the ground disturbance nearby. If a population is found, mitigations would be put in place during herbicide application to protect the plants.

Given the limited area that Howell's gumweed inhabits and the protective measures that would be taken, there is likely not be any adverse cumulative effects that would occur. There may be an increase in the gumweed population as disturbance would cause an increase in adequate germination substrates. As a result, there would be low risk of direct, indirect, and cumulative effects.

Standard Vegetative Community

No-Action Alternative – Direct, Indirect, and Cumulative Effects

The No-Action alternative would not change the current existing conditions within the proposed area. The proposed harvest, road building and closures, and pre-commercial thinning would not occur. These stands would remain at overstocked levels.

Changes to the historical conditions would not be changed at this time. One could assume that these changes would take a long period of time. The likelihood of stand replacement fires

would increase. Depending on the size and complexity of the wildfire, and the effect on overstory trees, these stands may also take a long period to return to pre-settlement conditions.

As a result, there would be low risk of direct, indirect, and cumulative impacts to the vegetative community given the No-Action alternative.

Action Alternative – Direct, Indirect, and Cumulative Effects

This proposal includes timber harvest under on approximately 1,045 acres removing an estimated 5.0 million board feet. Pre-commercial thinning would also occur under this EA on a proposed 500 acres (some harvest and other additional acres). The DNRC would try to address the concerns within the Existing Conditions on these acres by using the following silvicultural treatments. In many situations under this project, treatment may change from shelterwood to commercial thin several times within a harvest unit. This is a result of past treatment.

At minimum, two snags and two snag recruitments per acre are left, often in groups if possible. These snags and snag recruitments may be found in the following harvest prescriptions.

Shelterwood: Shelterwood harvest is a traditional prescription that is a “regenerative” harvest. This is designed to produce regeneration of a preferred tree species that has been chosen and has been left as a “shelter” above the regeneration. This overstory stand is later removed (within regulations of the landowner). These stands within the project area are generally higher percentage of Douglas-fir and may not have an understory that could be managed after harvest. Generally, these areas are in pockets.

Spacing after harvest is predicted to be variable and would be based upon the individual tree characteristics. However, it would range between 54 feet between trees (15 trees per acre) and 35 feet between trees (35 trees per acre) with an average of 25 trees per acre. A target residual basal area per acre is proposed to be around 30-40 square feet of and a resulting volume harvested of 2.5-6 thousand board feet per acre. The reduction of the overstory and treatment of the existing pole size and understory trees generally causes a stand to produce regeneration of the remaining overstory. The reduction of the total Douglas-fir number of the overstory, and a percentage increase of other species (ponderosa pine and western larch) would promote a stand closer to pre-settlement times. The proposed stand density would make limited resources (light, water, and nutrients) more plentiful for the residual overstory trees and potential regeneration. These changes would continue the progression toward the DNRC appropriate condition.

Fuel management after harvest would include landing piles, machine piles, and potentially broadcast burning within the harvest unit.

Within a portion of the shelterwood prescription units, an herbicide treatment would be planned to reduce the ninebark population (either ground or aerially). This should allow an increase in regeneration. The broadcast burning and excavator piling would also be used to reduce this population and be used as a site-preparation for regeneration as well. In other locations, excavator piling to remove the plants and roots is proposed.

Commercial Thinning: Commercial thinning is an intermediate treatment. Although regeneration can occur after the commercial thin, it is not a main goal of the harvest. It is also among younger stands and improves growth compared to a natural stand. This

is due to the harvest as opposed to natural stand etiolation. Thereby, it shows continued growth without the “stall” often seen as biological stand progress.

This is a harvest treatment that is designed to improve growth of the residual stand, enhance stand vigor, make variances with species composition within the stand, enhance tree and stand quality, and reduces the stand density. This is done prior to a future regeneration harvest. The general prescription for this sale is based upon promotion of seral species and reduction of standing stems density to release resources for tree growth.

Spacing after harvest would range on this project from 35 feet between trees (35 trees per acre) to 20 feet between trees (109 trees per acre). A target basal area per acre would range between 35-50 square feet and a resulting volume harvested of 2-3 thousand board feet per acre. As this is former industry ground, the changes can be quite abrupt over a short area. This is because of given previous silvicultural treatments.

Fuel management after harvest would include landing piles and machine piles within the harvest unit.

Individual Tree Selection: Individual Tree Selection (Selection) is a method of uneven-aged harvest. This simply means a harvest method leading to establishment and management of several size and age classes at the same time.

In many cases, it may look like the proceeding mentioned shelterwood harvest. However, the difference often shows itself after future harvest with regards to the overstory remaining after harvest.

General spacing can vary but the average applications averaging 22 trees per acre to 65 trees per acre. The typical application would look at leaving 40 to 80 square feet of basal area. During the harvest preparation, regeneration and saplings are not considered for management. Although it is a treatment that favors ponderosa pine, Douglas-fir and western larch are also left in the management strategy.

Fuel management after harvest would include landing piles and machine piles within the harvest unit or scattered and broadcast burned as needed.

Sanitation Salvage: This silvicultural prescription is designed to “cull” through the overstory left after previous harvest. These trees, and their condition, are a result of treatment within the past several years. These overstory trees were not merchantable in size during this previous entry. Also, given the poor quality of these trees, they were not “slashed” after harvest (higher immediate cost may not have been acceptable of the previous landowner). This treatment also promotes the existing understory. This removal and/or thinning of the poor overstory releases limited sunlight, water, and nutrients.

It is extremely difficult to make a decent hypothesis regarding overstory average diameter, spacing, and resulting volume per acre after treatment. This treatment is often spotty and variable.

Fuel management after harvest would include landing piles and machine piles within the harvest unit or scattered and broadcast burned as needed.

Pre-Commercial Thinning: Given the presence of spruce budworm, stands treated with pre-commercial thinning would undoubtedly have larger openings and greater spacing than is usual. A typical spacing of pre-commercial thinning in this area ranges between 15 feet between trees (194 trees per acre) and 12 feet between trees (302 trees per acre).

Fuels treatment after the pre-commercial usually is done by slashing of the felled trees to a level less than 18" from the ground level or hand piled and burned in the future.

Fuel loading concerns would vary according to the pre-harvest stand. In accordance with ARM 36.11.410 and ARM 36.11.414 the majority of fine slash foliage and approximately 5 to 10 tons of coarse woody debris would be left scattered on the forest floor in all harvest units. This would increase the intensity and reduce the ability to control ground fires in all harvest units for approximately three years. In stands that have numerous leave trees following harvest this could result in ground fires killing trees and an increased risk of crown fires. In areas with few leave trees the risk of a catastrophic crown fires would decrease.

Some of these pre-commercial thinning units were identified under the West Chamberlain PCT checklist EA (2018). It became obvious to the DNRC that many stands also would need further overstory actions. Similarly, if there are PCT projects that may need further border changes given wildlife, fisheries, hydrological, or soil concerns, the need for another document or Categorical Exclusion (CATEX) would be done.

Given the following factors:

- Post treatment, the overall stand health and vigor would be improved in the residual overstory.
- Shade tolerant species would be removed, this would favor seral species.
- Pre-commercial thinned areas would promote seral trees, increase growth, and increased vigor within the young age classes.

Road Construction, Maintenance, and Closure: This project plans to use roads within the area for all silvicultural uses and increase uses for fire suppression needs. Prior to this Environmental Assessment, work has been done on the existing transportation system. Recently, the DNRC contracted maintenance work, changes to the road layout, rock preparation, and rock placement on the Gary C. Moon (GCM) mainhaul. Portions of the current system are proposed to be abandoned (i.e. poor location, poor grade, SMZ concerns) while others are suggested to be constructed (i.e. better access, lower grades, less concerns over roadside erosion and deposition). Further road rocking (from the Bear Pit), changes to road layout (to meet "lowboy" standards with a wider radius on tight corners), changes to drainage features (fish and stream concerns). All roads that would be part of these proposed actions would be addressed by the forester, the soils scientist, the hydrologist, fisheries biologist, and potentially the wildlife biologist. Roads proposed for use under this assessment are behind locked travel gates.

As very limited road work was done under the Lost Bear Timber Sale, most of the road construction was done in this section under the original sale in the mid 1950's. Given the differences in road standards and locations, this often explains the road that is

identified for abandonment or reclamation within section 14. Several segments of road within this section would be changed by removing inadequate drainage features (often in poor crossing areas), removal of steep roads in poor locations, and the eventual repair or reclamation of a road slump located in the northeast corner of the section. This location is in a steep portion and is heading down a tributary of Bear Creek. It is a segment of road that is also used by the Bureau of Land Management. As such, it would require DNRC and BLM investigating the further use and changes with road systems to access the BLM land on the north side of the slump. This would be done under a separate project and would have further information. It may be done a future environmental document.

Road design and location often met the previous owners' needs. Although some locations have been improved to meet Montana Best Management Practices, the North Chamberlain Conservation Easement, and the Montana DNRC Forested Trust Lands Habitat Conservation Plan.

The proposed action would be expected to result in moderate effects on direct impacts however no effects on indirect and cumulative impacts on forest vegetation for the Action alternative.

Fire Hazard and Fuels

No-Action Alternative – Direct, Indirect, and Cumulative Effects

Fire conditions would not be lessened in this area. All pre-commercial stands would continue to grow with decreased vigor and would show more death within the stand. As described before, the project may continue its current course. Stands may continue to grow away from the historical vegetation levels. Fuels and fire hazard may increase. This may continue until a disturbance, natural or anthropogenic, changes the stand in the future. As a result, there would be moderate risk of direct, indirect, and low cumulative impacts to the proposed project area given the No-Action alternative.

Action Alternative – Direct, Indirect, and Cumulative Effects

The Action Alternative would change the forest stands and road systems, resulting in a change from the existing course. Wildland fuel would be changed in its current position (vertical and tight spaced) if the Action Alternative to a horizontal direction (for pile burning, decaying, or prescribed under burning) and the spacing would be increased under timber harvest (and sale cleanup) and pre-commercial thinning. As written within the silvicultural treatments under **Standard Vegetation Community** prior in the document, the fuel management is described. As a result, there would be low risk of direct impacts, moderate indirect impacts, and low cumulative impacts to the proposed project area given the Action alternative. Although, decreasing fuel conditions and fire hazard within the project area may lower the direct effects, the indirect effects would remain moderate. The conditions listed above still exist in areas not included in the project area.

Insects and Disease

No-Action Alternative – Direct, Indirect, and Cumulative Effects

Conditions within the project area that increases establishments of insect and disease would not be lessened in this project area. All stands would continue to grow with decreased vigor and would show more death within the stand. As described before, this project area may continue the current course. Stands may continue to grow away from the historical vegetation levels.

Douglas-fir bark beetle (*Dendroctonus pseudotsugae*), spruce budworm (*Choristoneura occidentalis*), Douglas-fir tussock moth (*Orgyia pseudotsugata*), dwarf-mistletoe (*Arceuthobium spp.*), laminated root rot (*Armillaria spp.*), brown cubical rot (*Phellinus weirii*), and several stem rot populations would continue.

As described before, the project may continue the current course. Stands would likely continue to grow away from the historical vegetation levels. As a result, there would be moderate risk of direct, indirect, and low cumulative impacts to the proposed project area given the No-Action alternative.

Action Alternative – Direct, Indirect, and Cumulative Effects

Within this proposed project area, populations of aforementioned; bark beetles, budworms, tussock moth, dwarf-mistletoe, and rots would be affected by the vegetative prescriptions. A main portion within these prescriptions is that they are designed to increase spacing of stems. Prescriptions also remove of the infectious diseases in the area and prevents it from being passed to the regeneration.

As a result, there would be low risk of direct, indirect, and cumulative impacts to the proposed project area given the No-Action alternative.

Ninebark Management

No-Action Alternative – Direct, Indirect, and Cumulative Effects

The No-Action alternative would not change the current existing conditions within the proposed area. Stands of ninebark (*Physocarpus malvaceus*), would continue to regenerate the shrub until a large fire would occur. Herbicide planned for application for control would not take place as part of this proposed project. As a result, there would be moderate to direct impacts, but low risk of indirect, and cumulative impacts to the proposed project area given the No-Action alternative.

Action Alternative – Direct, Indirect, and Cumulative Effects

This project would propose the use of herbicide to control unwanted vegetation. This would include noxious weed treatments and ground or aerially applied herbicide for control of ninebark.

Including what was stated above in Noxious Weeds, the treatments would generally follow standard instructions found within the timber sale contract. This often requires the sale purchaser to use herbicides such as Tordon (picloram), Escort (metsulfuron methyl), or 2,4-D.

Within portions of the shelterwood prescription, approximately 70 acres are proposed to be sprayed after a prescribed burn. Several herbicides have been looked at: Arsenal (imazapyr), Accord (glyphosate), Escort XT(metsulfuron methyl), 2,4-D, and Oust Extra (sulfometuron and metsulfuron). Regarding how the herbicide effects on the plants, is the way these are separated. Some are foliar (through the leaves) and others affect plant life through the root system. Given the General Technical Report by Boyd (1985), several herbicides would likely work. Discussions with Wilbur-Ellis (a regional Agribusiness and specialty chemical company) were also had. Potential chemicals were suggested by them and are included above.

The timing of the herbicide application would be following the proposed harvest. It is projected that a prescribed burn would be done to remove harvest fuels and consume a portion of the ninebark plants. Ninebark resprouts after the fire. The proposed herbicide treatment would be during the next spring. Application could be either ground based or aerially, possibly using

drone aircraft. The planned intent is to reduce the ninebark population further with the herbicide treatment. We then could anticipate planting within a year or two. Given the abovementioned report by Boyd, this application was prior to drone use. As can be understood, it is a much more direct release than vehicle or standard aerial. By planning the proposed planting so far into the future, it should allow enough time for the herbicide's persistence to be neutralized. Thereby, there should be no effect on the planted seedlings.

All herbicide applications would be done by Montana Department of Agriculture licensed individuals. These applications would follow label directions (also approved by the Montana Department of Agricultural). All other laws, such as the Montana Streamside Management Zone law, would be followed as well. All normally used access point would require notification be posted to warn potential recreators should this activity occur. All lease holders would also be notified of this proposed action if it takes place.

On other acres withing the proposed project, excavator piling would take place. This would involve pulling the vegetative clumps from the ground using the excavator. These masses of root wads and above ground vegetation would be shaken by equipment to remove a majority of the soil within the root wad. These would then be piled and crushed by the excavator with other ninebark plants. This would be burned at later. This action would allow the site to be treated to accept seeds from remaining trees left on site, often western larch. If sufficient regeneration is not seen in the future, this would require planting.

As a result of the planned Action Alternative, the overall direct, indirect, and cumulative effects within the project area, are expected to be low to moderate.

Old Growth

No-Action Alternative and Action– Direct, Indirect, and Cumulative Effects

As stated earlier, there isn't any Old Growth concerns at this time. As the overall direct, indirect, and cumulative effects within the project area, are expected to be no.

Vegetation	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<i>No-Action</i>														
Noxious Weeds		X				X					X			1
Rare Plants	X				X				X					
Standard Vegetation		X				X				X			Y	2
Fire Hazard / Fuels			X				X			X			Y	3
Insects/Disease			X				X			X			Y	4
Ninebark Mgmt.			X			X				X				
Old Growth	X				X				X					
<i>Action</i>														
Noxious Weeds			X			X					X		Y	1
Rare Plants		X				X				X			Y	
Standard Vegetation			X			X				X			Y	2
Fire Hazard / Fuels		X					X			X			Y	3
Insects/Disease		X				X				X			Y	4
Ninebark Mgmt.		X				X				X			Y	5
Old Growth	X				X				X					

Vegetation Comments:

1. Weed conditions are slightly higher in the Action Alternative, but the project would provide the ability to immediately treat weed increases.
2. Given the previously mentioned existing environmental conditions, it is likely that a change would come to the current cover type given vegetative conditions and potential wildfire or the proposed action.
3. Given the previously mentioned fire hazard and fuels segment, it is likely that the existing fuels could help create a large fire within the project area. This potential wildfire could burn at an intensity that would change fuel conditions and fire hazards. Similarly, the proposed actions also would have a direct effect on the fire hazard and fuels.
4. Please see the previous portions that describe the conditions.
5. Site preparation by either ground or aerial herbicide application is planned to occur in the project area. These activities would be directed by the Forest Officer and risk to vegetative resources would depend on type of herbicide (see text), timing of application, location and extent of application, and method of application. These risks are assumed to be moderated to low when used according to label recommendations and safety precautions; and applied under the supervision of a licensed and insured applicator.

Recommended Mitigation Measures for Vegetation

- Favor western larch and ponderosa pine in harvest areas and pre-commercial thinnings to shift species represented toward the accepted Desired Future Condition.
- Plant western larch and ponderosa pine in planting blocks to shift species represented toward the accepted Desired Future Condition.
- Harvests should emulate natural disturbance historically present on the landscape.
- Wash equipment prior to harvest to limit weed seed dispersal.
- Spray weeds along roadsides to limit spread of existing weed, while preventing weed spraying within Howell's gumweed populations.
- Plant grass on newly disturbed road surfaces to limit the resources available for weeds to become established.
- Follow label directions on all herbicide labels and ensure applicator and their company applies in a recommended manner.
- Ensure that all vegetative site preparation measures are done correctly and that soil is open for natural regeneration and ninebark plant is removed.

Recommended Mitigations and Adjustments of Treatments for the Benefit of Other Resources

- Snags, snag recruits, and coarse woody debris will be managed according to *ARM* 36.11.411 through 36.11.414, 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.
- Generally no harvest would occur near within 130 feet of the active creeks within the sale area.

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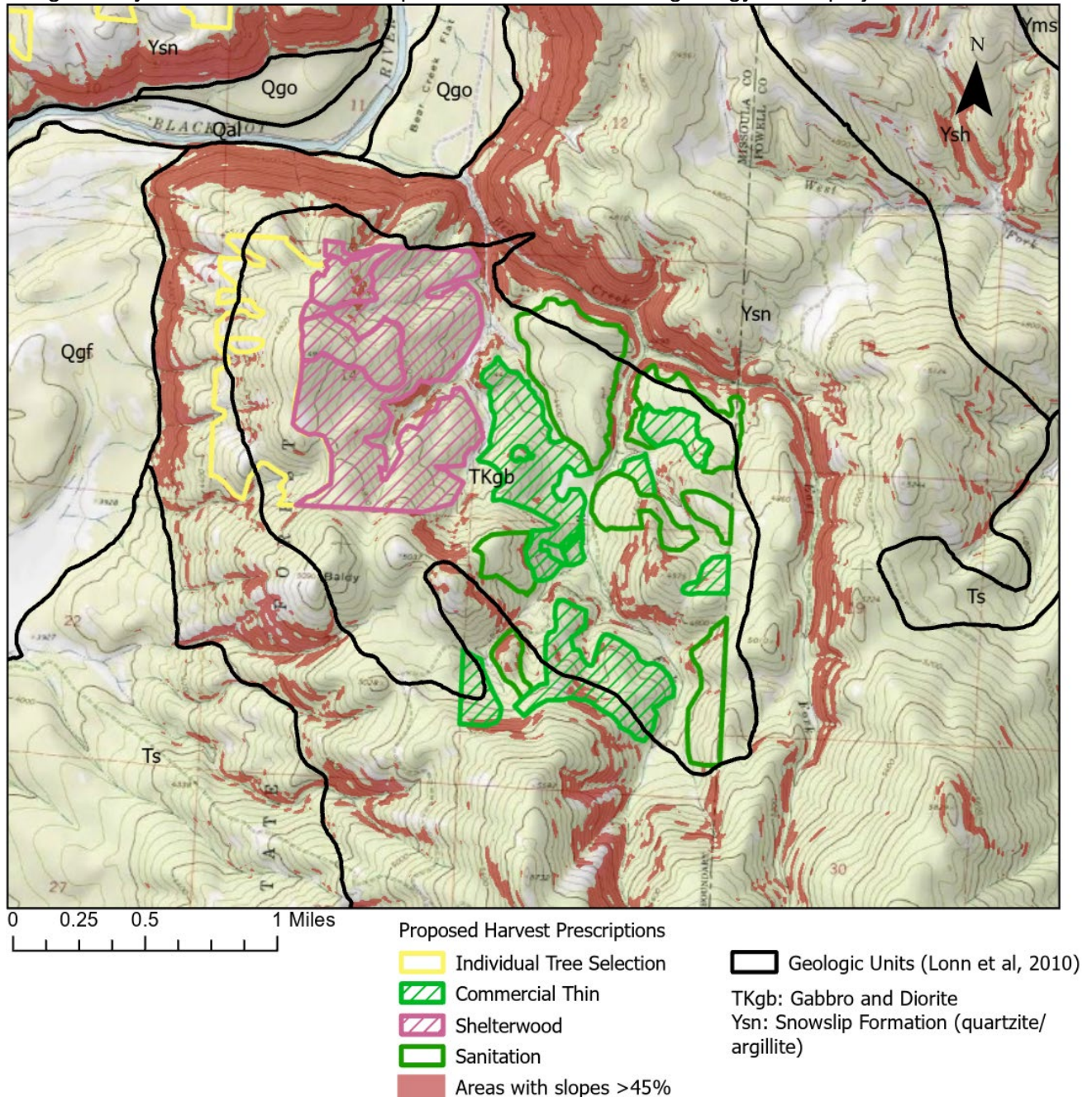
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SOIL DISTURBANCE AND PRODUCTIVITY:

Soil Disturbance and Productivity Existing Conditions:

Geology

The project is located in the northern foothills of the Garnet Range and on the southern flank of the Blackfoot River Valley. The majority of the underlying geology within proposed harvest areas are Tertiary and Cretaceous Granodiorite and Gabbro. Mesoproterozoic quartzite and red/green argillite and green siltite rocks occur in the margins of the proposed project area. No especially unique or unstable geology observed in the project area. Slopes within proposed harvest areas are generally less than 45%. The map below summarizes the geology of the project area.



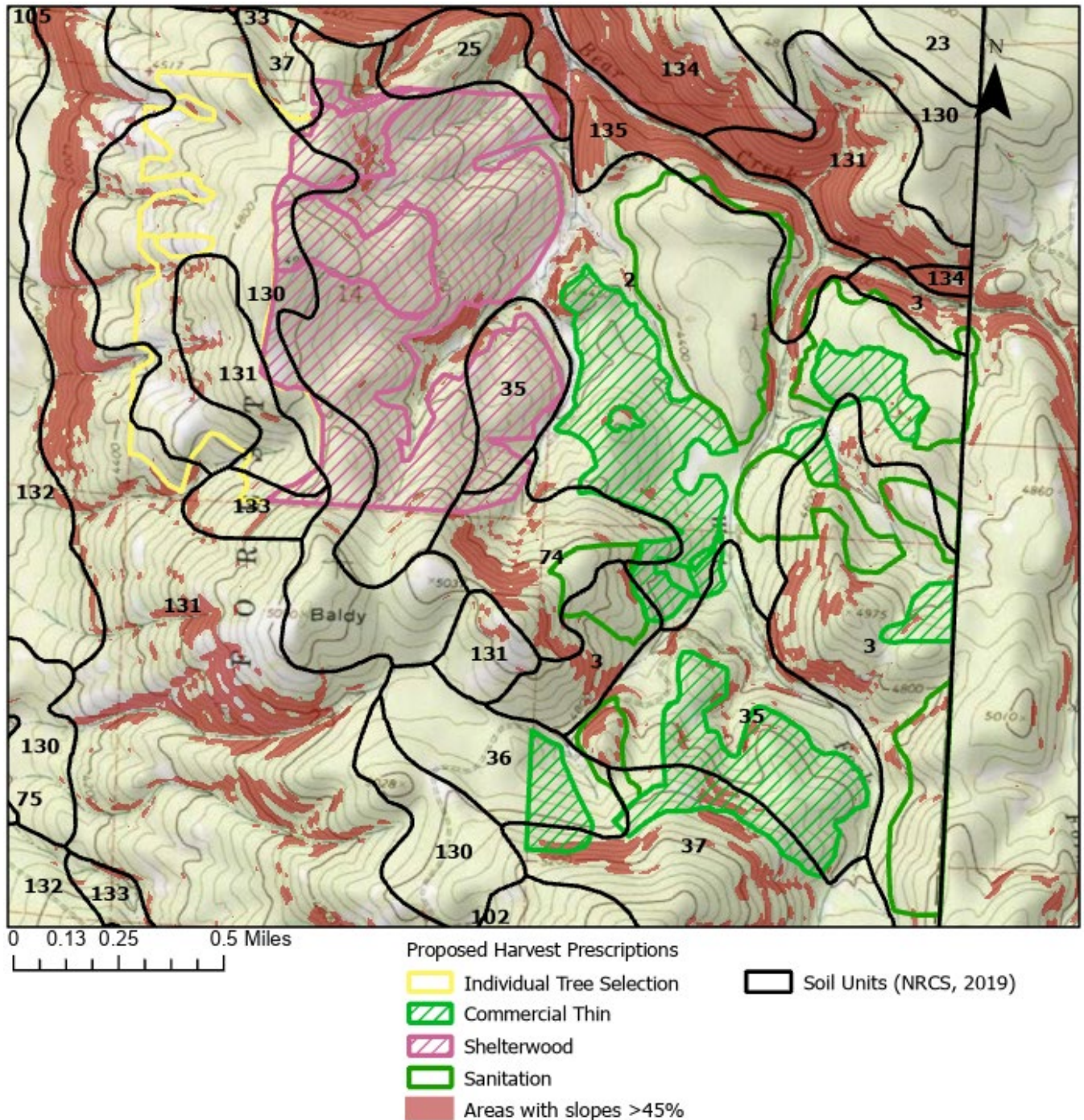
Soils

Section 14 – Soils in east-facing slopes and the area of proposed shelterwood harvest are Ambrant gravelly sandy loams (2) and Elkner-Ovando complex soils (35).

Soils in the west-facing slopes in the proposed individual tree selection harvest are Winkler very gravelly sandy loams (130).

Section 13 – Soils in proposed harvest areas are again Ambrant gravelly sandy loams (2) and Ambrant-Rochester soils (3).

Section 24 – Soils on the north aspects are Elkner-Ovando complex soils (35) and Evaro gravelly loam (37). Ambrant-Rochester soils (3) occur in the other harvest areas.



(130) The Winkler series sandy loam topsoils over very gravelly sandy loam sunbsoils, are well drained and droughty. These soils have an early and long season of operability and are well suited for ground-based harvest equipment operations on slopes up to 45%. Primary soil concern is potential displacement of the shallow surface soils during skidding and slash disposal. Erosivity is moderate to low and material quality is good for road construction.

(2, 3, 35) The Ambrant, Ovando, and Elkner gravelly sandy loams derived from igneous rocks such as gabbro and diorite. Topsoils are typically 4-6 inches loam with some intermittent volcanic ash surface (mainly on the north aspects). These are some of the highest productivity soils within the proposed project area. These soils are more erosive than the Winkler soils and are subject to displacement from equipment operations. Main concerns are rutting, displacement, and erosion, especially on slopes over 40%. The complex terrain associated with the underlying geology form numerous small ridges and draws that limit skid trail locations. Bedrock outcrops and areas of shallow soils above bedrock will limit operability in some areas and increase soil vulnerability to disturbance.

(37) The Evaro gravelly loams occurring in the southern and north-facing slopes of the project area are derived from sedimentary rocks (argillite and quartzite). These soils are also highly productive and have a large component of volcanic ash in the surface layer. These soils have a shorter season of operability and are much more vulnerable to rutting and erosion compared to the Winkler soil series occurring in the western portion of the project area. Bedrock outcrops and areas of shallow soils above bedrock will limit operability in some areas and increase soil vulnerability to disturbance.

Disturbance History

The majority of the project area (except for Section 14 of 14N 14W) is on historic industrial timber ground acquired by the DNRC in 2010. Disturbances from historic management include existing road network with several poorly located roads adjacent to streams at draw bottoms. The property acquisition includes a Conservation Easement (CE; FWP, 2010).

The last harvest entry completed by the DNRC on Section 14 of 14N 14W, was approximately 20 years ago with the "Lost Bear" Timber Sale (2004-2007). The sale involved a ground-based commercial thin of most of the section.

No grazing licenses or leases exist or are anticipated in the future for the project area. Livestock grazing is prohibited for areas within the CE (Sections 13 and 24 of 14N 14W) see B-14 on page 9 of the CE). Livestock grazing is not prohibited in Section 14. Evidence of recent grazing not observed within the project area.

No recent fire activity has occurred in the project area recently.

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											Y	2, 3, 4, 7
Erosion		X											Y	2, 3, 7
Nutrient Cycling		X											Y	3, 5, 7
Slope Stability	X												N/A	6
Soil Productivity		X											Y	2, 3, 5, 7

Soil 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. The proposed harvest system would be ground-based. Soil and vegetation disturbance from harvest activities may result in temporary increased risk of erosion. Soil disturbance and erosion risk increases with slope. Slopes in proposed harvest areas are generally mild (less than 45%). The majority of the soils within proposed harvest areas include a large component of non-renewable volcanic ash that contributes significantly to soil productivity. The sensitivity of these soils will warrant soil moisture monitoring outside of frozen, over-snow, or dry-summer-season operations.
3. 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. Additionally, the North Chamberlain Conservation Easement (similar to HCP) would apply to Sections 13 and 24 of 14N 14W of the project area.
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. This disturbance rate estimate is

based off previous soil disturbance monitoring of timber sales completed by the DNRC (DNRC, 2011).

5. According to Graham et al. (1994), a minimum of 7 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.
6. Unstable slopes were not observed on site. The project is anticipated to have no risk to slope stability.
7. 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.
8. Site preparation by herbicide application may occur in the project area. These activities would be directed by the Forest Officer and risk to soil resources would depend on type of herbicide, timing of application, location and extent of application, and method of application. These risks are assumed to be moderated to low when used according to label recommendations and safety precautions; and applied under the supervision of a licensed and insured applicator.

Soil Mitigations:

- BMP's would be implemented on all roads and within the units and along the haul route. A portion of 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. Disturbance tolerances is lower in the majority of the northern and eastern aspects of the project area, moisture retention will also be more prolonged in the late spring and early summer in these areas.
- The Contractor and Sale Administrator should agree to a general skidding plan prior to equipment operations. Skid trails would be mitigated as needed and 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.

- For nutrient retention, minimum of 7 tons/acre of coarse and fine woody debris would be left on site (or return-skidded from landings). Existing CWD on site would remain undisturbed as much as possible.
- If site preparation by prescribed burning is used to encourage seedling establishment, guide activities 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.
- 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.
- If herbicide is used for site preparation ensure the herbicide used is for intended use (site preparation, tree plantings, weed control, etc.), and label recommendations and safety precautions are followed. Complete all herbicide application under the supervision of a licensed and insured applicator. Maintain record of herbicide quantities, label requirements, and application conditions in project file to allow for post-monitoring and/or follow-up.

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.
- Lonn, J.D., McDonald, C., Sears, J.W., and Smith, L.N., 2010, Geologic Map of the Missoula East 30' x 60' Quadrangle, Western Montana. Montana Bureau of Mines and Geology Open File MBMG 593, Plates 1 and 2.
https://www.mbmq.mtech.edu/mbmqcat/public/ListCitation.asp?pub_id=31350#gs.tab=0
- NRCS, 2019, Soil Survey of the Missoula County Area, Montana. Version 10.
- 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 proposed harvest area is in the Bear Creek watershed, which is tributary to the Blackfoot River. Several streams and discontinuous intermittent and ephemeral streams occur within and near the project area. Section 14 has no streams except for a Class 2, perennial stream that drains east towards an unnamed tributary of Bear Creek but has no surface connection. An unnamed perennial tributary to Bear Creek is located along the boundary of Section 13 and 14. The West Fork of Bear Creek initiates above (and south of) Section 24 and drains north through Section 13.

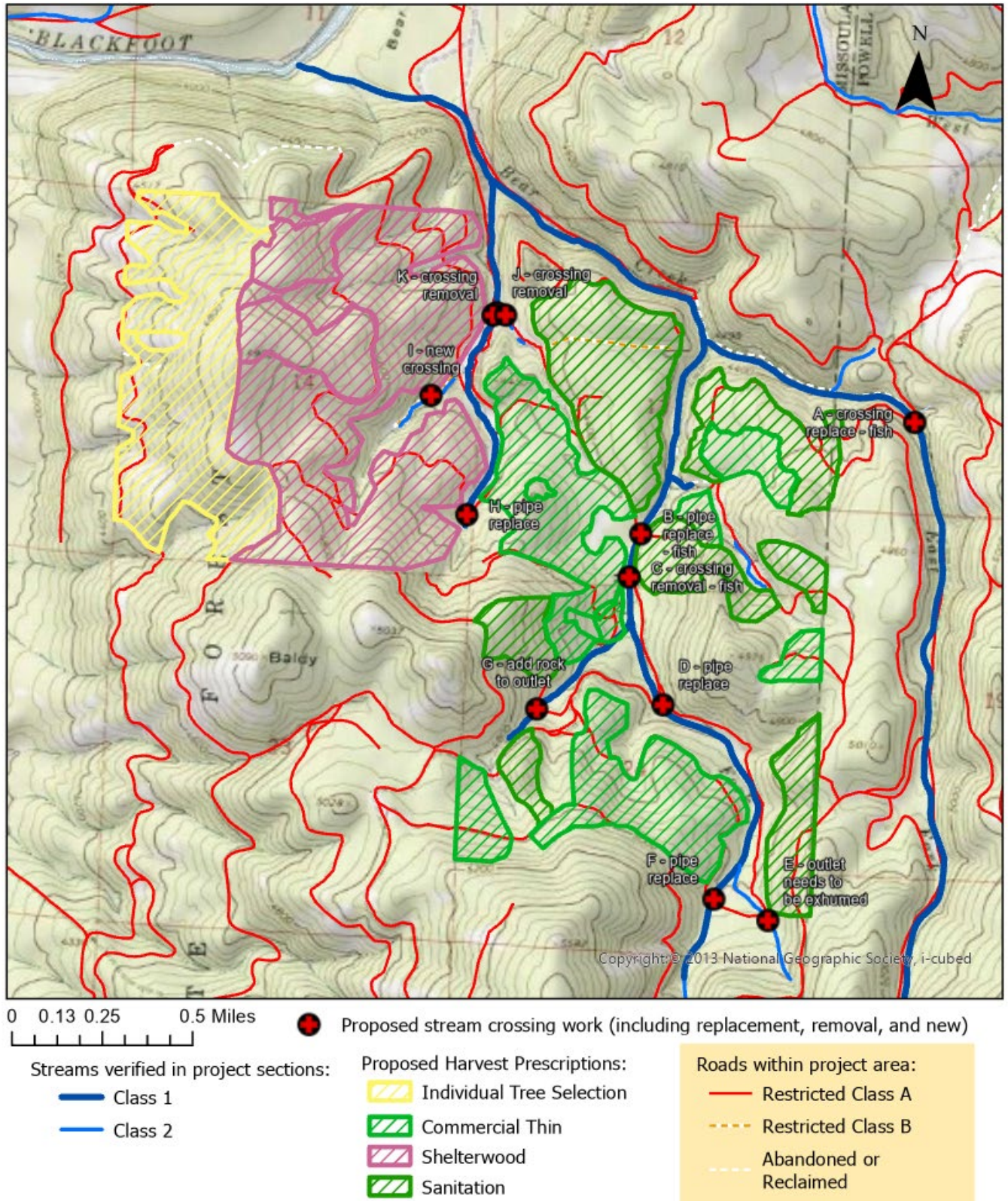
Although signs of historic disturbances including existing and historic forest road alignments adjacent to streams at the bottom of draws, the existing channel conditions are good with banks well vegetated and stable. The existing road system within the project area include stream crossings that do not meet DNRC's standards for capacity, grade, and/or fish passage.

Bear Creek is not listed as water quality impaired on the Montana 303(d) list. Existing beneficial uses include cold water fisheries, irrigation, and livestock watering. Bear Creek is classified as B-1 in the Montana Surface Water Quality Standards and is therefore considered suitable for domestic use after conventional treatment, as well as recreation, swimming, and bathing. Another criteria for this classification is no increases are allowed above naturally occurring concentrations of sediment that would create a nuisance or render the waters harmful, detrimental or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish, or other wildlife.

The proposed haul route crosses the West Fork of Chamberlain Creek, follows Chamberlain Creek, and crosses the East Fork approximately 2,000 feet upstream of where it joins with Chamberlain Creek. The route is appropriately distanced from the creek due to road relocation work completed along Chamberlain Creek approximately 15 years ago. The haul route crossing over West Fork Chamberlain Creek in Section 17 14N 13W would require sediment control due to the crossing structure being too short for the road width.

Table of proposed stream crossing work needed to meet HCP commitments, Montana Forestry Best Management Practices, and/or DNRC forest management. Label IDs correspond with map on next page.

Crossing label ID	Location	Existing condition	Proposed work
A	East Fork Bear Creek	Undersized and off-grade culvert on Class 1 (fish) stream.	Replace with crossing that would meet fish passage requirements at same location.
B	West Fork Bear Creek (fish occupied)	Undersized culvert on Class 1 (fish) stream.	Replace with crossing that would meet fish passage requirements at same location.
C	West Fork Bear Creek (fish occupied)	Culvert on Class 1 (fish) stream does not meet fish passage requirements	Remove road crossing and reclaim area.
D	West Fork Bear Creek (upstream of fish occupancy)	Undersized and off-grade culvert on Class 1 stream.	Replace with larger pipe that would meet fish passage requirements at same location
E	Unnamed tributary to W.F. Bear Creek	Culvert on intermittent Class 2 stream. Pipe appropriately sized and on grade. Outlet assumed buried in side-casted material.	Exhume and armor pipe outlet.
F	West Fork Bear Creek (upstream of fish occupancy)	Undersized and off-grade culvert on Class 1 stream.	Replace with larger pipe that would meet hydrologic requirements and at appropriate grade.
G	Unnamed tributary to W.F. Bear Creek	Pipe appropriately sized on Class 1 stream. Scour at outlet.	Add armor at outlet to return channel grade to elevation of pipe outlet.
H	Unnamed tributary to Bear Creek	Culvert too short and off grade at initiation of spring-fed Class 1 stream.	Replace with longer pipe at appropriate grade.
I	Isolated perennial stream	No existing crossing. Single channel class 1 stream. No fish.	Install culvert crossing associated with new road location.
J	Unnamed tributary to Bear Creek	Steel casing allowing for cross drainage of swale draining towards tributary.	Remove road crossing and reclaim area.
K	Unnamed tributary to Bear Creek	Steel casing allowing for cross drainage of swale draining towards tributary.	Remove road crossing and reclaim area.



Map of field-verified stream locations and existing roads; and proposed harvest areas and stream crossing work. Proposed stream crossing work described in table on previous page.

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			Y	1
Water Quantity	X				X				X				N/A	1
Action														
Water Quality		X				X				X			Y	2, 3, 4,
Water Quantity		X			X				X				N/A	5

Water Quality & Quantity Comments:

1. With no action, no timber harvesting or related activities would occur. Water quality conditions would likely persist similar to its current condition. With selection of this alternative, the DNRC would need to come up with another project within the near future to meet fish passage and sediment risk issues in Westslope Cutthroat Trout streams as required by the HCP.
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 (BMPs), the DNRC Trust Lands Habitat Conservation Plan (HCP), and the State Forest Land Management Plan. The North Chamberlain Conservation Easement would also apply to our forestry and road work activities; however the commitments are similar to the HCP and Forestry BMPs.
3. Proposed harvest areas would remain outside Class 1 SMZs and would meet retention requirements (50% merchantable) in RMZs.
4. The haul route crossing over West Fork Chamberlain Creek in Section 17 14N 13W would require sediment control and/or road travel way narrowing due to the crossing structure being too short for the road width. Replacing the crossing could also be an alternative, however this option may cause greater disturbances.
5. Changes to stream flow hydrology (water quantity or water flow) are not expected to be detectable with the Action Alternative within Bear Creek. Proposed harvest areas would affect approximately 20% of the watershed, and within those areas, vegetation will remain even with proposed prescribed burning. Studies correlating vegetation harvest and treatment with streamflow yield have suggested approximately 15-20% of the watershed vegetation must be removed to have a measurable increase in water yield in similar mountain environments (Stednick, 1996; and Bosch and Hewlett, 1982). Post-harvest we expect at least 85% of vegetation within the watershed to remain when combined with retained vegetation and non-treatment areas. Therefore, streamflow change is not expected to be observable or present a risk to water and riparian resources.

Water Quality & Quantity Mitigations:

- Implement sediment control BMPs at stream crossings during hauling operations and during work within or near streams. Options for sediment control include slash filter windrow; or temporary control, such as straw or wood waddles, and/or silt fence. Remove temporary control BMPs and stabilize captured sediment (i.e., by shaping or grass seeding) at the conclusion of hauling operations.
- If prescribed burning is applied to the project area if excavated perimeter line (excavation or hand line) is installed, include water bars in initial excavation work as needed.

Water Quality & Quantity References:

Bosch, J.M. and J.D. Hewlett. 1982. A review of catchment experiments to determine the effect of vegetation changes on water yield and evapotranspiration. J. Hydrology, 55: 3-23.

Stednick, J.D. 1996. Monitoring the effects of timber harvest on annual water yield. J. Hydrology 176:79-95.

FISHERIES RESOURCES ASSESSMENT

The following assessment will disclose anticipated effects to fisheries resources within the Balding Bear project area.

Assessment Areas

Assessment areas for direct, indirect and cumulative effects will be used to evaluate the existing and potential impacts to fisheries resources associated with the proposed project. The assessment areas were chosen due to inclusion of (1) the watershed of known or potential fish-bearing streams and (2) the proposed harvest units and haul routes that could have foreseeable, measurable, or detectable impacts to those fisheries resources.

The assessment area for the Balding Bear Projects are found in Figure F-1, and include;

- Bear Creek-Blackfoot River: 170102030910
- Chamberlain Creek: 170102030907

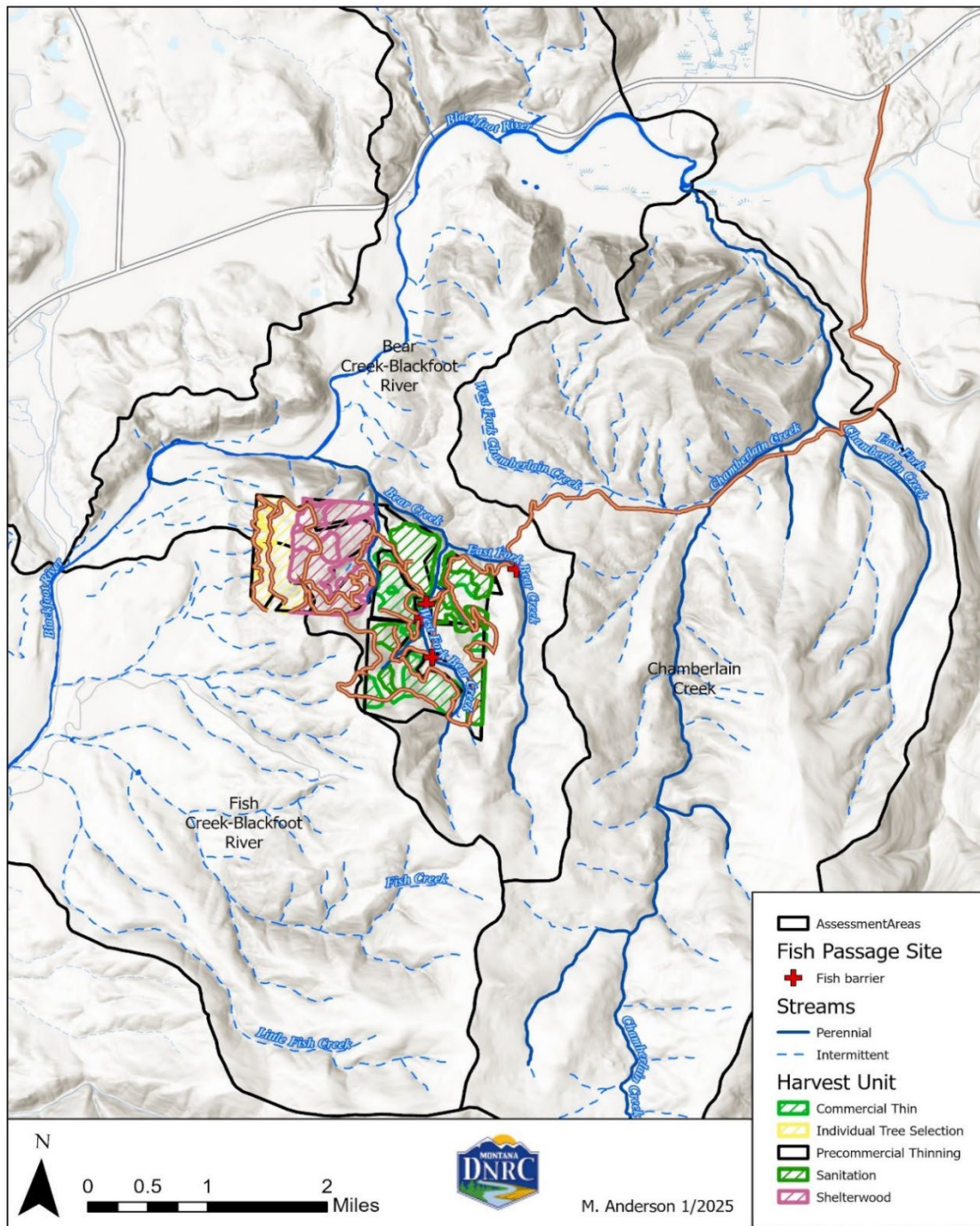
Portions of the proposed actions occur within the Fish Creek-Blackfoot River (170102031203) 6th code watershed, however no fish-bearing streams are present on DNRC-owned lands in the watershed and all harvest units or project roads are greater than 1.0 mile from the nearest fish-bearing waterbody. As such, project activities are unlikely to have foreseeable, measurable, or detectable impacts to fisheries resources, and the assessment area was eliminated from further analysis.

Assessment Methods

Assessment methods are a function of the types and quality of data available for analysis, which varies among the different assessment areas. The best available data for both populations and habitats will be presented for the assessment areas. In order to adequately address the issues raised, the existing conditions and foreseeable environmental effects to fisheries in the assessment area will be explored using the following outline of issues and sub-issues. Sedimentation will be addressed through an assessment of effects to channel forms.

- Fisheries Habitat – Connectivity
- Fisheries Habitat – Channel Forms
 - Fisheries Habitat – Sediment
 - Fisheries Habitat – Flow Regimes
 - Fisheries Habitat – Woody Debris
- Fisheries Habitat – Cumulative Effects

Figure F1 – Balding Bear Project Area-Fisheries Resources



F1. Positive impacts to fisheries resources will also be described, if applicable, using information on impact extent and duration.

Table F1 – Descriptions of foreseeable adverse impacts.

Impact Description	Probability of Impact	Severity of Impact	Duration of Impact
Negligible	The resource impact is not expected to be detectable or measureable	The impact is not expected to be detrimental to the resource	Not applicable
Low	The resource impact is expected to be detectable or measureable	The impact is not expected to be detrimental to the resource	Short- or long-term
Moderate	The resource impact is expected to be detectable or measureable	The impact is expected to be moderately detrimental to the resource	Short- or long-term
High	The resource impact is expected to be detectable or measureable	The impact is expected to be highly detrimental to the resource	Short- or long-term

Cumulative impacts are those collective impacts on the human environment of the proposed action when considered in conjunction with other past, present, and future actions related to the proposed action by location or generic type (75-1-220, MCA). The potential cumulative impacts to fisheries resources in the assessment area(s) are determined by assessing the collective anticipated direct and indirect impacts, other related existing actions, and future actions affecting the fisheries resources.

Issues

For the purposes of this environmental assessment, issues will be considered actual or perceived effects, risks, or hazards as a result of the proposed alternatives. Issues, in respect to this environmental assessment, are not specifically defined by either the Montana Environmental Policy Act or the Council on Environmental Quality.

Fisheries resource issues raised publicly include: None

Fisheries resource issues raised internally include: the proposed actions may affect fisheries habitat features, including channel form and connectivity.

Regulatory Framework

Westslope cutthroat trout are listed as S2 Montana Animal Species of Concern. Species classified as S2 are considered to be at risk due to very limited and/or potentially declining population numbers, range, and/or habitat, making the species vulnerable to global extinction or extirpation in the state (Montana Fish, Wildlife and Parks, Montana Natural Heritage Program, and Montana Chapter American Fisheries Society Rankings). DNRC has also identified Westslope cutthroat trout as sensitive species (ARM 36.11.436).

DNRC is a cooperator and signatory to the following relevant agreements: Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout and Yellowstone Cutthroat Trout in Montana (2007), which contain land management conservation strategies or action items utilized by DNRC as decision-making tools.

Fisheries-specific forest management ARMs (36.11.425 and 36.11.427), the SMZ Law and rules, Montana DNRC Forested State Trust Lands Habitat Conservation Plan (HCP), and other site-specific prescriptions would be implemented as part of any action alternative.

All waterbodies contained in the fisheries analysis area(s) are classified as B-1 in the Montana Surface Water Quality Standards (ARM 17.30.608[b][i]). The B-1 classification is for multiple beneficial-use waters, including the growth and propagation of cold-water fisheries and associated aquatic life. Among other criteria for B-1 waters, a 1-degree Fahrenheit maximum increase above naturally occurring water temperature is allowed within the range of 32 to 66 degrees Fahrenheit (0 to 18.9 degrees Celsius), and no increases are allowed above naturally occurring concentrations of sediment or suspended sediment that will harm or prove detrimental to fish or wildlife. In regard to sediment, naturally occurring includes conditions or materials present from runoff or percolation from developed land where all reasonable land, soil, and water conservation practices have been applied (ARM 17.30.603[19]). Reasonable practices include methods, measures, or practices that protect present and reasonably anticipated beneficial uses (ARM 17.30.603[24]). The State has adopted BMPs through its Nonpoint Source Management Plan as the principle means of controlling nonpoint source pollution from silvicultural activities.

North Chamberlain Conservation Easement, 2010, defined riparian management zone and timber harvest buffers along classified streams in the project area (DNRC 2010)

Existing Conditions and Environmental Effects
Bear Creek-Blackfoot River Assessment Area

Proposed activities that may affect fisheries resources in the assessment area are:

- Upland timber harvest
- Forest road utilization for timber hauling and equipment transportation;
- Forest road construction, reclamation and maintenance;
- Road-stream crossing structure removal and associated stream restoration.

The fisheries resource variables potentially affected by the proposed actions are channel forms, sediment, flow regime, and connectivity.

Existing Conditions

Fish-bearing waterbodies in the project area include; mainstem Blackfoot River, Bear Creek, and West Fork Bear Creek. Native and non-native species present in the Assessment Area are found in Table F-2. Westslope cutthroat trout (WCT; *Oncorhynchus clarkii lewisii*) are the only fish species known to be present on DNRC-owned lands in the Assessment Area.

Existing impacts to fisheries connectivity include: four road-stream crossings that are known to affect Westslope cutthroat habitat connectivity. Connectivity within the project area is impaired due to existing crossings at river mile (RM) 2.1 on Bear Creek, and RMs 0.5, 0.7, and 1.1 on West Fork Bear Creek. These crossings are an existing significant adverse high impact to the native fish populations in Bear and West Fork Bear creeks.

Bear and West Fork Bear creeks are B-4/B-5 streams (Rosgen 1994), with average bankfull widths ranging from 2 to 8 feet in the project area. Qualitative evaluation of stream habitat conditions indicated stable streambanks with localized areas of deposition and scour indicative of naturally occurring conditions. As indicated by the presence of multiple size classes of WCT in both Bear Creek and West Fork Bear Creek, spawning, rearing, and overwintering habitat are currently supporting all life stages (see Project File). Riparian vegetation is largely comprised of deciduous red-osier dogwood (*Cornus sericea*) and thin-leaf alder (*Alnus incana*), and mixed

conifer reflective of adjacent upland timber stands. Minimal riparian disturbance was observed outside existing road prisms constructed during previous timber sales. Large woody debris and interspersed boulders are the primary pool forming features in both streams and are within the expected range of historic conditions. Existing levels of stream shading are high, and subsequent effects on stream temperature are within the expected range of conditions for these stream types. Based on the existing conditions described for physical and thermal stream habitat conditions, there is a low existing impact to fisheries habitat due to roads in the riparian areas.

Table F-2- Fisheries populations present in the Balding Bear Projects Assessment Area.

Assessment Area	Waterbody	Species	Origin	Occupied River Miles	
				Assessment Area	DNRC Ownership
Bear Creek-Blackfoot River	Bear Creek	Westslope cutthroat trout	Native	4.8	4.8
	West Fork Bear Creek	Westslope cutthroat trout	Native	2.8	2.8
	Blackfoot River	Bull trout	Native	9.1	0.0
		Westslope cutthroat trout		9.1	0.0
		Mountain whitefish		9.1	0.0
		Northern pikeminnow		9.1	0.0
		Longnose dace		9.1	0.0
		Longnose sucker		9.1	0.0
		Largescale sucker		9.1	0.0
		Rocky Mountain sculpin		9.1	0.0
		Eastern brook trout	Introduced	9.1	0.0
		Rainbow trout		9.1	0.0
		Brown trout		9.1	0.0
Chamberlain Creek	West Fork Chamberlain	Westslope cutthroat trout	Native	2.6	2.6
	East Fork Chamberlain	Westslope cutthroat trout	Native	4.1	2.2
	Chamberlain Creek	Bull trout	Native	4.4	3.1
		Westslope cutthroat trout		10.8	3.1
		Mountain whitefish		2.7	1.4
		Longnose sucker		2.7	1.4
		Rocky Mountain sculpin		3.0	1.7
		Mottled sculpin		2.1	0.8
		Eastern brook trout	Introduced	6.7	3.1
		Brown trout		4.4	3.1

Road-stream crossings and roads adjacent to stream channels (both perennial and intermittent stream channels) may be major sources of existing direct and indirect effects to the sediment component of fisheries habitats. Twelve road-stream crossings occur on intermittent or perennial streams in the assessment area, 33 percent currently meet Forestry BMPs. The length of all roads within 300 feet of all streams is 25.8 miles. While the precise level and extent of impact from each individual road-stream crossing or adjacent road is unknown, the expected existing direct and indirect impact to sediment from road sources is moderate in the assessment area.

Flow regime components include total annual water yield and peak seasonal flow timing, duration and magnitude. In addition to the physical geography of a watershed, this variable is also greatly affected by both nature disturbances and land management activities. The Water Resources analysis indicates that the existing condition in the assessment area is expected to be within the historic range of variability.

Riparian zone vegetation heavily influences the delivery and in-channel frequency of woody debris, a major component of channel forms. The riparian zone is also a major regulator (shading) of stream temperature, since direct solar radiation is an important driver of stream thermal regimes, especially during peak seasonal periods. Riparian vegetation within 120 feet of perennial streams is the primary influence on these two fisheries resource variables.

Riparian management zones in the project area were defined under the North Chamberlain Conservation Easement. The estimated area within 120 feet of perennial streams that has been affected by all roads and past land management activities is 15.5 acres (6.9 percent of the total RMZ acreage in the watershed). Riparian timber stands in the Assessment Area are well-stocked, with 98 percent of the stands within 120 feet being sawtimber. There is a low existing impact on riparian zone vegetation, while the level of impact from each affected riparian zone is unknown, due to the presence of previous riparian zone harvest and roads in the riparian zone, the expected existing direct and indirect impact to both woody debris and stream shade is low in the assessment area, there is no existing impact on stream temperature.

Other existing impacts to fisheries resources in all of the analysis areas include: high impacts to native fish species through displacement, disease, and hybridization by nonnative species; road-stream crossings that likely affect habitat connectivity; recreational fishing pressures. Past potential effects from forest management activities performed on all land ownerships are included in the assessment of existing direct and indirect effects. The combination of direct and indirect effects and other existing impacts are expected to have an existing moderate cumulative impact to fisheries resources in the assessment area.

Environmental Effects

No Action Alternative: Direct, Indirect, and Cumulative Effects

As a result of implementing the No-Action Alternative, no additional direct or indirect effects to fisheries resources would be expected to occur within the assessment area beyond those described in the Existing Conditions. Consequently, foreseeable cumulative impacts to fisheries resources are expected to be similar to those described in Existing Conditions.

Future-related actions considered part of cumulative impacts include other forest management practices; continued high impacts to native fish species by nonnative species; a stable to declining number of road-stream crossings that affect habitat connectivity. Open, public roads that intersect the analysis areas will continue to be utilized year-round for forest management, recreation and other purposes.

Action Alternative: Direct, Indirect, and Cumulative Effects

The proposed actions and affected fisheries resources in all analysis areas are broadly described in the Type and Purpose of Action. Project-specific BMPs and road maintenance would be applied to all segments of the haul routes through both Assessment Areas (see Water Resources analysis). All impact descriptions are short-term unless otherwise noted.

Increased truck traffic can accelerate the mobilization and erosion of roadbed material at road-stream crossings and roads located adjacent to streams. However, through the implementation of project-specific BMPs and road maintenance, the associated road sites would be expected to deliver most mobilized sediment away from the stream and road prism and filter eroded material through roadside vegetation. Eight road-stream crossings intersect the haul route in the assessment area, which is 75 percent of all road-stream crossings across the assessment area. The length of roads that would be used within 300 feet of all streams is 5.9 (23 percent). Although project-specific BMPs and road maintenance would be expected to substantially offset the risk of increased sediment delivery due to project-specific vehicle traffic, a low risk of low impact to sediment are expected in the assessment area.

Additionally, a moderate risk of moderate short-term impacts to fisheries resources would occur from 1.2 miles of road construction within 300 feet of a perennial channel. A positive impact would occur where approximately 1.5 miles of road would be removed within the same zone.

Viewed as a whole, the reduction of road miles within 300 feet of a stream and removal of associated stream crossings would result in a high likelihood of short-term moderate impacts to sediment during replacement or removal of crossings and a long-term positive impact to sediment delivery, resulting in a reduction in cumulative effect of sediment from the existing moderate level to a low impact.

Upland harvest on sites with risk of erosion may mobilize material that could be delivered to adjacent stream channels; however, the Water Resources analysis indicates that the anticipated impacts from this action are low. This assessment takes into consideration the implementation of the SMZ Law and Rules and supplemental ARMs for Forest Management on high risk of erosion sites. As described in the Water Resources analysis, the levels of proposed timber harvest is not expected to lead to measureable increases in water yield or consequent changes in flow regime.

Riparian harvest is not proposed within 120 feet of perennial streams in the Assessment Area. As such, there would be no additional risk of impact to stream shade, stream temperature, or large woody debris outside of those described in the Existing Conditions.

As part of the consideration of cumulative effects, all direct, indirect and other related impacts described in the Existing Conditions and Environmental Effects for the No-Action Alternative would be expected to continue. Additionally, moderate short-term negative, and long-term positive direct and indirect impacts may occur to channel forms. Considering all of these impacts collectively, low cumulative impacts to fisheries resources are expected in the assessment area, a reduction over the existing condition due to improvements in the road system resulting in improved connectivity and reduced sediment delivery in the Assessment Area.

Chamberlain Creek Assessment Area **Existing Conditions**

Proposed activities that may affect fisheries resources in the assessment area are:

- Forest road utilization for timber hauling and equipment transportation.

Timber hauling impacts would be isolated to the lower mile of stream habitat in West Fork Chamberlain Creek, the lower 0.2 miles of East Fork Chamberlain Creek and the lower 3.8 miles of Chamberlain Creek. Fisheries resources potentially affected by the proposed actions are channel form and sediment.

Fish-bearing waterbodies in the project area include; mainstem, West Fork, and East Fork of Chamberlain creeks. Native and non-native species present in the Assessment Area are found in Table F-2.

West Fork and East Fork Chamberlain creeks are B-3/B-4 type streams with bankfull width ranging from 3 to 6 feet in the project area. Chamberlain Creek is a B-3 type stream with bankfull widths ranging from 6 to 20 feet in the project area. Spawning, rearing, and overwintering habitat are currently supporting all life stages of native fish in the Assessment Area. Thermal conditions in the watershed were monitored from 2017 to 2023, and noted conditions near optimal growth and well below the thermal tolerance of both Westslope cutthroat and Bull trout (Selong et al. 2001, Bear et al. 2007, see project file). No existing impacts to fisheries connectivity are present in the Assessment Area.

Road-stream crossings and roads adjacent to stream channels (both perennial and intermittent stream channels) may be major sources of existing direct and indirect effects to the sediment component of fisheries habitats. Twenty-five road-stream crossings occur on intermittent or perennial streams in the assessment area, 64 percent currently meet Forestry BMPs. The length of all roads within 300 feet of all streams is 44.5 miles. While the precise level and extent of impact from each individual road-stream crossing or adjacent road is unknown, the expected existing direct and indirect impact to sediment from road sources is moderate in the assessment area.

Other existing impacts to fisheries resources in all of the analysis areas include: high impacts to native fish species through displacement, disease, and hybridization by nonnative species; road-stream crossings that likely affect habitat connectivity; recreational fishing pressures. Past potential effects from forest management activities performed on all land ownerships are included in the assessment of existing direct and indirect effects. The combination of direct and indirect effects and other existing impacts are expected to have an existing moderate cumulative impact to fisheries resources in the assessment area.

Environmental Effects

No Action Alternative: Direct, Indirect, and Cumulative Effects

As a result of implementing the No-Action Alternative, no additional direct or indirect effects to fisheries resources would be expected to occur within the assessment area beyond those described in the Existing Conditions. Consequently, foreseeable cumulative impacts to fisheries resources are expected to be similar to those described in Existing Conditions.

Future-related actions considered part of cumulative impacts include other forest management practices; continued high impacts to native fish species by nonnative species; a stable to declining number of road-stream crossings that affect habitat connectivity. Open, public roads that intersect the analysis areas will continue to be utilized year-round for forest management, recreation and other purposes.

Action Alternative: Direct, Indirect, and Cumulative Effects

The proposed actions and affected fisheries resources in all analysis areas are broadly described in the Type and Purpose of Action. Project-specific BMPs and road maintenance would be applied to all segments of the haul routes through both Assessment Areas (see Water Resources analysis). All impact descriptions are short-term unless otherwise noted.

Increased truck traffic can accelerate the mobilization and erosion of roadbed material at road-stream crossings and roads located adjacent to streams. However, through the implementation of project-specific BMPs and road maintenance, the associated road sites would be expected to deliver most mobilized sediment away from the stream and road prism and filter eroded material through roadside vegetation. Four road-stream crossings intersect the haul route in the assessment area, which is 16 percent of all road-stream crossings across the assessment area. The length of roads that would be used within 300 feet of all streams is 1.9 (4 percent). Although project-specific BMPs and road maintenance would be expected to substantially offset the risk of increased sediment delivery due to project-specific vehicle traffic, a low risk of low impact to sediment are expected in the assessment area.

No other potential impacts from the proposed actions would occur in this Assessment Area. While implementation of Forestry BMPs is expected to minimize existing sediment sources, the proportion of roads utilized in the watershed for this project would be unlikely to result in measurable improvement.

Fisheries	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Sediment			X				X				X		Y	F-1
Flow Regimes	X				X				X				N/A	
Woody Debris		X			X				X				N/A	F-2
Stream Shading		X				X				X			N	F-2
Stream Temperature	X				X				X				N/A	
Connectivity				X				X				X	Y	F-3
Populations			X				X				X		N	F-4
Action														
Sediment			X			X				X			Y	F-5
Flow Regimes		X			X				X				Y	
Woody Debris	X				X				X				N/A	F-2
Stream Shading	X				X					X			Y	F-2
Stream Temperature	X				X				X				NA	
Connectivity	X				X				X				Y	F-3
Populations			X				X				X		Y	F-4

Fisheries Comments:

F-1: Sediment delivery would continue to occur, however corrective action timelines identified in the HCP (DNRC 2012) would be met in the project area. Delayed implementation of corrective actions would result in no change to the existing risk or impact of sediment delivery on fisheries habitat.

F-2: Existing levels of large woody debris and stream shade have been impacted by road prisms in the riparian area. The reduction in shade is unlikely to be sufficient to elevate stream temperature, and would be expected to increase in time as abandoned riparian roads become revegetated. Increases in shade would occur locally and have a low risk of low positive cumulative effects on fisheries habitat. No riparian timber harvest is proposed under the Action Alternative, as such no additional risk of impact to large woody debris, stream shade, or stream temperature would occur.

F-3: Fisheries connectivity is currently significantly altered in Bear and West Fork Bear creeks. Implementation of corrective action would occur either on timelines identified in the HCP (DNRC 2012) if the No-Action Alternative is selected or on an accelerated timeline under selection of the Action Alternative. Existing high direct, indirect, and cumulative effects to connectivity would be reduced to no effect through replacement or removal of the four crossings currently affecting populations in Bear and West Fork Bear creeks. This improved connectivity would result in a significant positive impact on local populations of Westslope cutthroat trout.

F-4: The existing moderate direct, indirect, and cumulative effects on fish populations is a result of the presence of non-native species in the Blackfoot River. No introduction, suppression, or removal of non-native or native species are proposed under the Action Alternative, as such similar effects are expected under selection of either Alternative.

F-5: Sediment reduction through implementation of corrective actions at known sediment delivery sites, existing road-stream crossings not currently meeting Forestry BMPs, and abandonment of existing riparian roads is expected to result in an improvement over the existing condition. Short-term introduction of sediment is likely to occur during implementation of corrective actions, however a long-term reduction in sediment delivery would be expected as road-stream crossings are appropriately sized and installed on stream gradient.

Fisheries Mitigations

Fisheries related resource mitigations that would be implemented with the proposed Action Alternative include:

- Applying all applicable Forestry BMPs (including the SMZ Law and Rules) and Forest Management Administrative Rules for fisheries, soils, and wetland riparian management zones (ARMs 36.11.425 and 36.11.426)
- Apply timing restrictions for replacement and removal of perennial stream crossings on fish-bearing waters to minimize potential impacts during spawning and early rearing.

Fisheries References

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- DNRC. 2010. Standards for Forest Management, North Chamberlain Conservation Easement. 13pp. Helena, MT.
- DNRC. 2012. Montana Department of Natural Resources and Conservation Forested State Trust Lands Habitat Conservation Plan: Final EIS, Volume II, Forest Management Bureau, Missoula, Montana.
- Selong, J. H., T. E. McMahon, A. V. Zale, and F. T. Barrows. 2001. Effect of temperature on growth and survival of Bull trout with application of an improved method for determining thermal tolerance in fishes. Transactions of the American Fisheries Society. 130: 1026–1037.

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 Douglas-fir, Douglas-fir/western larch, and ponderosa pine stands. The majority of the stands in the project area have been harvested in the past, including harvesting by previous industrial timber owners, and the resultant stands are a mixture of relatively open stands lacking regeneration and stands that are densely regenerated. Grizzly bears likely use the vicinity of the project area during the non-denning period. There are roughly 567 acres of suitable Canada lynx habitats in the project area, which includes 533 acres of winter foraging habitats and 34 acres of summer foraging habitats. Potential habitat exists for fisher, flammulated owls, and pileated woodpeckers in the project area. Potential fringed myotis foraging habitats and hoary bat roosting habitats may exist in the project area. Big game summer range as well as white-tailed deer, mule deer, elk, and

moose winter ranges exist in the project area. Habitats in the project area contribute to big game security habitats in the vicinity.

No Action Alternative: Direct, Indirect, and Cumulative Effects:

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, Canada lynx, 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: Direct, Indirect, and Cumulative Effects (see Wildlife table below):

Up to 1,042 acres of forested habitats, including 653 acres (58%) of existing mature Douglas-fir, Douglas-fir/western larch, and ponderosa pine stands with reasonably closed canopies would be commercially harvested. In general, habitats for those species adapted to more-open stands of Douglas-fir, Douglas-fir/western larch, and ponderosa pine similar to areas that historically experienced frequent, low-intensity, under burns and somewhat less frequent mixed-severity burns would increase in the project area. Conversely habitats for wildlife species that prefer somewhat dense, mature Douglas-fir, Douglas fir/western larch, and ponderosa pine stands would be reduced. Across proposed units, reductions in canopy cover would be anticipated, but proposed prescriptions would retain some large trees, which could continue to provide habitats for a variety of wildlife species that rely on larger Douglas-fir, western larch, and ponderosa pine. Reductions in visual screening would occur with proposed activities. Prescriptions would retain at least 2 large snags and 2 large recruitment trees per acre (both >21 inches dbh where they exist, otherwise next largest size class available) and where sufficient snags are not available additional large leave trees would be retained to meet this requirement. Proposed pre-commercial thinning could reduce some horizontal cover; proposed herbicide application and prescribed fire would further reduce horizontal cover, coarse woody debris, and possibly snags while also creating potential new snags from reserved live trees. Alterations in vegetation structure in the area proposed to receive herbicide application and prescribed fire could alter overall use of the unit in the near term by a variety of wildlife species, but activities would mimic historic fire regimes that those species evolved with through time. In the near-term, horizontal cover should increase in this unit as trees and shrubs become reestablished. Short-term increases in disturbance potential associated with proposed road construction and use, timber management, site preparation, and pre-commercial thinning, but overall, a negligible increase in potential human disturbance would be anticipated following proposed treatments. No changes in legal motorized public access would occur in the project area. 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

Balding Bear Projects
Montana Department of Natural Resources and Conservation

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Canada lynx (<i>Felix lynx</i>) Habitat: Subalpine fir habitat types, dense sapling, old forest, deep snow zone		X				X				X			Y	2
Yellow-Billed Cuckoo (<i>Coccyzus americanus</i>) 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					3
Wolverine (<i>Gulo gulo</i>) Habitat: Alpine tundra and high-elevation boreal forests that maintain deep persistent snow into late spring		X				X				X				4
Sensitive Species														
Bald eagle (<i>Haliaeetus leucocephalus</i>) Habitat: Late-successional forest within 1 mile of open water	X				X				X					3
Black-backed woodpecker (<i>Picoides arcticus</i>) Habitat: Mature to old burned or beetle-infested forest	X				X				X					3
Common loon (<i>Gavia immer</i>) Habitat: Cold mountain lakes, nest in emergent vegetation	X				X				X					3
Fisher (<i>Martes pennanti</i>)		X				X				X				5

Balding Bear Projects
Montana Department of Natural Resources and Conservation

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Habitat: Dense mature to old forest less than 6,000 feet in elevation and riparian														
Flammulated owl <i>(Otus flammeolus)</i> Habitat: Late-successional ponderosa pine and Douglas-fir forest		X				X				X			Y	6
Fringed myotis <i>(Myotis thysanodes)</i> Habitat: low elevation ponderosa pine, Douglas-fir and riparian forest with diverse roost sites including outcrops, caves, mines		X				X				X			Y	7
Hoary bat <i>(Lasiurus cinereus)</i> Habitat: coniferous and deciduous forests and roost on foliage in trees, under bark, in snags, bridges		X				X				X			Y	8
Peregrine falcon <i>(Falco peregrinus)</i> Habitat: Cliff features near open foraging areas and/or wetlands	X				X				X					3
Pileated woodpecker <i>(Dryocopus pileatus)</i> Habitat: Late-successional ponderosa pine and larch-fir forest			X				X				X		Y	9
Townsend's big-eared bat <i>(Plecotus townsendii)</i> Habitat: Caves, caverns, old mines	X				X				X					3
Big Game Species														

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
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					3
Other														

Wildlife Comments:

W-1 The project area is 11 miles southwest of the Northern Continental Divide Ecosystem grizzly bear recovery area and in '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 and that riparian areas likely provide bedding cover and larger landscape connectivity. Approximately 1,695 acres (81%) of the project area appear to have sufficient cover to potentially serve as hiding cover for grizzly bears. The project area contains no open roads; no grizzly bear security habitats (≥ 0.3 miles from roads receiving motorized use and $\geq 2,500$ acres in size) exist solely within the project area, but habitats in the project area contribute to a block of potential security cover that extends beyond the project area. Within the cumulative effects analysis area, there are approximately 16 miles of open roads (0.31 miles/square mile, simple linear calculation) that could facilitate human-bear interactions and reduce the effectiveness of those areas for grizzly bears. Furthermore, there are a couple of open roads just outside of the cumulative effects analysis area that are affecting grizzly bear habitats and overall grizzly bear security cover in the vicinity. Approximately 26,744 acres (81%) in the cumulative effects analysis area are distant enough from open roads and in blocks large enough to be useful for grizzly bears to be considered grizzly bear security habitats. While some of the areas (7,861 acres; 29%) in the block appear to lack adequate cover to hide a grizzly bear due to past management and/or natural openness of the stands, given the distance from open roads and the topography in the vicinity, it would likely contribute to overall security habitats or at least not detract from the overall functionality of the block of security habitat. Ongoing timber management in the cumulative effects analysis area could be adding disturbance to grizzly bears and/or altering existing habitats, including ongoing activities associated with the Chamberlain Wales Projects on US Bureau of Land Management lands in the vicinity that could affect 4,978 acres of grizzly bear cover.

Grizzly bears could be affected directly through increased road traffic, noise, and human activity associated with proposed activities, 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 7.5 miles of new, permanent, restricted roads would be constructed with the proposed activities and 3.6 miles of restricted roads would be abandoned yielding a net

increase of 3.9 miles of restricted roads. No changes in open road density or motorized public access would be anticipated. Minor changes to non-motorized public access could occur with the addition restricted roads which could lead to a negligible increase in potential contact between humans and grizzly bears. Hiding cover would be reduced on most of the 911 acres (54%) of hiding cover proposed to receive treatments, some potential hiding cover could persist depending on the density of trees retained, especially in the areas proposed for commercial thinning. Meanwhile, proposed activities in habitats that are not presently providing hiding cover (293 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, herbicide application, and prescribed burning. Proposed herbicide application and prescribed burning could increase forage resources in the mid-term after a relatively short period of reduced foraging resources as trees, shrubs, and grasses regenerate following proposed activities. Overall, hiding cover would increase through time across all proposed units as young trees and shrubs regenerate over the next 5 to 10 years. Generally, reductions in hiding cover would occur in a centralized portion of the area contributing to the larger block of potential security habitats in the vicinity. Although hiding cover would be reduced on roughly 911 acres that are distant enough from the existing open roads, minor reductions 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 ranges from approximately 4,080 to 5,520 feet in elevation and is dominated by Douglas-fir, Douglas-fir/western larch, and ponderosa pine sawtimber stands along with some younger stands of similar species composition. Approximately 576 acres (28%) of lynx habitat occur in the project area, which includes 533 acres (26%) of winter foraging, 34 acres (2%) summer foraging, and 9 acres (<1%) temporary non-lynx habitats. Collectively the majority of the project area (72%) does not contain suitable types for Canada lynx. Past timber management has altered connectivity in the project area; existing lynx habitats are partially connected, but unsuitable types are intermixed with those suitable habitats. Generally, due to the large amount of unsuitable habitats and the limited amounts of suitable habitats that are only partially connected, overall limited use by Canada lynx of the project area would be anticipated.

Most DNRC-managed lands in the cumulative effects analysis area (8,052 acres, 74%) does not contain suitable habitats for Canada lynx, but roughly 2,758 acres (26%) of DNRC-managed lands could be suitable for lynx. These include roughly 1,546 acres (56% of lynx habitats) of winter lynx foraging habitats, 733 acres (27% of lynx habitats) of other suitable habitats, 169 acres (6% of lynx habitats) of summer foraging habitats, and 310 acres (11% of lynx habitats) of temporary non-suitable habitats. On other ownerships in the cumulative effects analysis area, there are roughly 13,727 acres (56% of non-DNRC lands) of forested stands with a reasonably closed canopy. Similar to the project area, a relatively large proportion of these areas would not likely be suitable for lynx, but a portion of those stands would likely be suitable lynx habitats and may include some winter foraging habitats. Additionally, some summer foraging habitats likely exists on a portion of the 6,992 acres (29% of non-DNRC lands) of sparsely stocked and young forest stands on other ownerships depending on the species composition in those stands; no lynx habitats likely exist on the 3,758 acres (15% of non-DNRC lands) of shrubs, herbaceous, water, and non-forested types on other ownerships in the cumulative effects analysis area. Connectivity of lynx habitats within the cumulative effects analysis area is somewhat limited due

to ownership, past timber management, human developments, agricultural fields, the existing mixture of suitable habitats with warmer, drier habitats, and the natural openness of certain habitats in the cumulative effects analysis area. Ongoing timber management in the cumulative effects analysis area could be disturbing Canada lynx and/or altering existing habitats, including ongoing activities associated with the Chamberlain Wales Projects on US Bureau of Land Management lands in the vicinity that could affect up to 3,714 acres of Canada lynx habitats. Roughly 83.3% of habitats on DNRC-managed lands administered by the Southwestern Land Office under the HCP and outside of the Lynx Management Areas are in suitable lynx habitat categories and 16.6% are in the temporary non-suitable habitat category. These habitats are dominated winter foraging habitats (46%), followed by other suitable (24%), with lesser amounts of temporary non-suitable (17%) and summer foraging (14%) habitats.

Most of the proposed activities would not occur in mapped lynx habitats (847 acres; 81% of proposed units) and would not be expected to appreciably affect lynx. Approximately 195 acres (37%) of proposed commercial harvesting would occur in potential winter foraging habitats, and proposed activities would likely convert these habitats into temporary non-suitable habitats. The retention of patches of advanced regeneration of shade-tolerant trees, such as sub-alpine fir and Engelmann spruce in foraging habitats, would break-up sight distances, provide horizontal cover, and provide forest structural attributes preferred by snowshoe hares and lynx. Coarse woody debris would be retained (emphasizing retention of some logs 15 inches dbh and larger) to provide some horizontal cover and security structure for lynx. In the short-term, slight shifts in lynx use of a portion of the project area could occur. Similarly, the proposed pre-commercial thinning (1,027 acres; 76% of proposed units) would largely occur outside of Canada lynx habitats; proposed precommercial thinning in Canada lynx habitats (301 acres of summer and winter foraging and 5 acres of temporary non-suitable habitats) would alter stand densities and could further alter connectivity. Approximately 174 acres proposed for pre-commercial thinning would occur after commercial timber management and would likely move those areas into the temporary non-suitable lynx class. Additionally, the remaining 127 acres of lynx habitats proposed for pre-commercial thinning would not receive commercial treatments and may retain sufficient canopy to be considered other suitable habitats or may move into the temporary non-suitable lynx habitat class depending on the quality and composition of the retained crop trees; for this analysis, it is assumed those stands won't have sufficient trees to be considered other suitable habitats and those 127 acres would also move into temporary non-lynx habitats. Mitigations in all proposed pre-commercial thinning units would retain small shade tolerant trees (such as grand-fir, sub-alpine fir, and Engelmann spruce) where possible to provide potential habitat structure for snowshoe hares by increasing the levels of horizontal cover and accelerating the development of multi-storied stands. The proposed herbicide application and prescribed fire unit would not occur in potential lynx habitats and would not be expected to appreciably affect Canada lynx. Following proposed treatments, roughly 331 acres (57%) of potential lynx habitats in the project area would be in temporary non-suitable habitats while 215 acres (37%) would still be in winter foraging habitats and 30 acres (5%) would be in summer foraging habitats. Generally, these reductions in winter foraging habitats could have minor effects on Canada lynx in the project area given the limited habitats affected and the landscape matrix within which they are found. Collectively, proposed activities would further reduce forested connectivity in the area but would largely occur outside of potential lynx habitats; some potential connectivity would be retained along West Fork Bear Creek as well as some other smaller riparian areas and through unharvested patches between harvested units in the project area.

Within the cumulative-effects analysis area, roughly 321 acres of lynx habitats on DNRC-managed lands (12% of DNRC-managed Canada lynx habitats) would be modified, with most of these acres being converted to temporary non-suitable habitats. The reductions in winter

foraging (318 acres) and summer foraging habitats (4 acres) on a small portion of the cumulative effects analysis area would have negligible effects on the quality of the lynx habitats in the larger cumulative effects analysis area. In the near-term, slight increases in the amounts of summer foraging habitats available in a small portion of the cumulative effects analysis area could occur as stands regenerate. Anticipated reductions in lynx habitats would be additive to past losses from timber harvesting and any ongoing modifications in the cumulative-effects analysis area. Likewise, increases in temporary non-suitable lynx habitats would be additive to habitats that have been recently converted due to timber harvesting and other forms of human disturbance. No appreciable changes to the suitable lynx habitats on other ownerships would be anticipated. Forest connectivity would be reduced in the project area, but these reductions in connectivity would have negligible effects on overall connectivity in the cumulative effects analysis area. Connectivity of suitable lynx habitats along RMZs and associated riparian habitats would partially persist and overall negligible changes to connectivity across the cumulative effects analysis area would be anticipated. Following proposed treatments, approximately 82.5% of habitats on all DNRC-managed lands administered by the Southwestern Land Office outside of the Lynx Management Areas are in suitable lynx habitat categories.

W-3 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-4 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-5 Roughly 643 acres (31%) of potential upland fisher habitats and 72 acres (3%) of potential riparian fisher habitats exist in the project area. Additionally, roughly 25 upland acres (1%) and 9 riparian acres (<1%) exist in the project area in preferred cover types that currently lack structural attributes necessary to be suitable for fisher. Generally, habitats in the project area and the cumulative effects analysis area are somewhat disconnected and of lower quality for fisher. 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 2024, Krohner et al. 2022). Human disturbance, developments, existing matrix of unsuitable types, and ongoing timber management in the vicinity have likely limited fisher use of the project area and cumulative effects analysis area. Within the cumulative effects analysis area, ongoing activities associated with the Rudge Ridge Timber sale on DNRC-managed lands (83 acres of potential upland fisher habitats) and activities associated with the Chamberlain-Wales Projects on US Bureau of Land Management lands would continue altering fisher habitats and/or potentially disturbing individual fisher. Proposed activities could introduce short-duration disturbance in the upland habitats. Alterations to roughly 328 acres (51%) of potential upland habitats would occur, but activities would avoid riparian habitats commonly used by fisher. Proposed treatments would reduce

canopy closure and resultant stands would likely be too open to be used by fisher and those acres would not be suitable for fisher for 60-120 years. No changes in fisher habitats would be anticipated with the proposed pre-commercial thinning; pre-commercially thinned stands could develop into suitable fisher habitats sooner due to the proposed thinning. Proposed herbicide application and prescribed burning would avoid fisher types, thus would not be expected to affect fisher. No changes in open roads would occur; little or no change in trapping pressure and the potential for fisher mortality would be anticipated. Reductions in upland habitats would further reduce the amount of suitable upland fisher habitats in the cumulative effects analysis area, but collectively no appreciable changes in fisher use of the cumulative effects analysis area would be anticipated.

W-6 Roughly 1,505 acres (72%) of potential flammulated owl habitats exist in the project area in dry Douglas-fir, Douglas-fir/western larch, and ponderosa pine stands. There are roughly 1,933 acres (70%) of potential flammulated owl habitats on dry Douglas-fir, Douglas-fir/western larch, and ponderosa pine stands on DNRC-managed lands within the cumulative effects analysis area. Some suitable habitats likely exist on a portion of the 4,683 acres (91% of non-DNRC-managed lands) of open and closed forested habitats on other ownerships in the cumulative effects analysis area; however, like the project area, 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. Within the cumulative effects analysis area, ongoing activities associated with the Rudge Ridge Timber sale on DNRC-managed lands (340 acres of flammulated owl habitats) and activities associated with the Chamberlain-Wales Projects on US Bureau of Land Management lands would continue altering flammulated owl habitats and potentially influencing individual flammulated owls.

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 847 acres of potential flammulated owl habitats (56% 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. Proposed herbicide application and prescribed fire could further reduce foraging habitats in the near term but could also recruit additional snags and future foraging habitats. 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 altered, 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 on the Blackfoot River. Proposed activities could disturb fringed myotis should they be in the area. 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, no appreciable 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 and numerous other smaller streams and wetlands. 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 not been documented in the vicinity of the project area. Proposed activities could disturb hoary bats should they be in the area. 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, no appreciable changes to hoary bat use of the project area or cumulative effects analysis areas would be anticipated.

W-9 Roughly 847 acres (41%) of pileated woodpecker nesting habitat exist in the project area; and roughly 964 acres (46%) of potential foraging habitats exist in the project area. In the cumulative effects analysis area, another 415 acres (15%) of pileated woodpecker habitats exist on DNRC-managed lands dominated by Douglas-fir, Douglas-fir/western larch, and ponderosa pine. An additional 1,710 acres (62%) of potential feeding habitats exist on DNRC managed lands within the cumulative effects analysis area. Some suitable habitats likely exist on a portion of the 3,498 acres of forested habitats on other ownerships in the cumulative effects analysis area (68% of non-DNRC lands). Much of the 1,646 acres (32%) 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. Within the cumulative effects analysis area, ongoing activities associated with the Rudge Ridge Timber sale on DNRC-managed lands (328 acres of pileated woodpecker habitats) and activities associated with the Chamberlain-Wales Projects on US Bureau of Land Management lands (4,308 acres of pileated woodpecker habitats) are altering pileated woodpecker habitats and potentially influencing individual pileated woodpeckers.

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 623 acres (74%) of the potential nesting habitat along with 758 acres (79%) of potential foraging habitats would be altered. 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 40-70 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. Additional snags could be recruited within the area proposed for prescribed burning following commercial treatments and herbicide application. 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 all acres proposed for treatment. In the cumulative effects analysis area, the reduction in quality on 623 acres of potential nesting habitats and 758 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 (824 acres, 43%), mule deer (1,245 acres, 64%), elk (141 acres, 7%), and moose (1,938 acres, 100%) winter ranges exist in the project area. Approximately 1,781 acres of the project area (86%) appear to have sufficient canopy closure to be providing snow intercept and thermal cover attributes for big game. Wintering big game use of the project area would likely be limited to early or late winters when snow loads are less and/or during years of lower snow loading based on the elevations, topography, and existing levels of thermal cover in the area. 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, Elk Creek, Cap Wallace Creek, and Chamberlain Creek. Roughly 14,754 acres (45%) of white-tailed deer, 15,613 acres (48%) of mule deer, 13,062 acres (40%) of elk, and 30,631 (93%) of moose winter ranges exist in the cumulative effects analysis area. There are roughly 7,870 acres (73%) 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 14,150 acres (58%) 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 open roads. Within the cumulative effects analysis area, ongoing activities associated with the Chamberlain-Wales Projects on US Bureau of Land Management lands could continue disturbing wintering big game and/or altering big game winter range attributes.

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 507 acres (62%) of white-tailed deer winter range, 797 acres (64%) of mule deer winter range, 117 acres (83%) of elk winter range, and 1,174 acres (61%) of moose winter range; proposed activities would reduce canopy closure and potential winter use by big game on roughly 1,015 acres (57%) 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 many of 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. Proposed herbicide application and prescribed burning could alter foraging resources and set back the development of future thermal cover for an additional 10-20 years, but this stand is only marginally providing thermal cover due to the existing overstory stocking and the heavy brush component preventing regeneration. Overall future thermal cover attributes could be improved through the removal of the brush component that could allow timbered stands to again become established. 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 relatively abundant in the project area but past timber management, grazing activity, as well as the natural openness of some of the habitats in the project area have lessened the effectiveness of some of these habitats to be used for hiding cover. 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 for recreational hunting is fairly good given the land ownership patterns in the vicinity, the 22 miles of restricted roads (7.3 mi./sq. mi., simple linear calculation) in the project area, and the inclusion in the larger Block Management Area previously identified. The project area is distant enough and contain sufficient cover 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 16 miles, 0.3 miles/sq. mile) that facilitate access and numerous restricted roads (at least 212 miles; 4.1 miles/sq. mile) that could be used for non-motorized use. Within the cumulative effects analysis area, 1 patch (25,342 acres; 77%) 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. Within the cumulative effects analysis area, ongoing activities associated with the Chamberlain-Wales Projects on US Bureau of Land Management lands could continue disturbing big game and/or altering big game hiding cover or security habitats.

Tree density within proposed units would be reduced on approximately 1,409 acres, including roughly 1,236 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. 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. Proposed herbicide application and prescribed fire would have negligible effects on hiding cover in the near term, but could reintroduce additional cover in the future as trees become reestablished. Overall increases in sight distance in the project area would be anticipated which 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 and would partially offset losses of foraging resources from the herbicide application and prescribed fire. 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 7.5 miles of permanent road but would be partially offset by the abandonment of 3.6 miles of existing 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. 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 (1,236 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, and the lack of changes in open roads in the project area; 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.
- 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.
- Minimize potential for disturbance to grizzly bears and numerous avian species by restricting activities between April 1 and June 15.

- 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.
- Retention of patches of advanced regeneration of shade-tolerant trees in mapped Canada lynx habitats would break-up sight distances, provide horizontal cover, and provide forest structural attributes preferred by snowshoe hares and lynx.

In pre-commercial thinning units, retain small shade tolerant trees (such as grand-fir sub-alpine fir, and spruce to provide potential habitat structure for snowshoe hares by increasing the levels of horizontal cover and accelerating the development of multi-storied stands.

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:

Issues and Concerns- The following issue statements were developed during scoping regarding the effects of the proposed action to air quality:

- Smoke will be produced during pile burning.
- Smoke will be produced when performing a broadcast burning.
- Smoke may adversely affect the Ovando, Clearwater Junction, and Greenough areas.
- Dust will be produced during harvesting and hauling activities.

Existing Conditions

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

The project area is located within Montana Airshed 3b, which encompasses portions of Missoula County. Currently, this Airshed does contain the Seeley Lake impact zone.

Recommended Mitigation Measures for Air Quality- The analysis and levels of effects to air quality are based on implementation of the following mitigation measures:

- Only burn on days approved by the Montana/Idaho Airshed group, Missoula County, and DEQ.
- Conduct test burn to verify good dispersal.
- Dust abatement may be used as necessary.

SLASH BURNING

No Action Alternative: Direct, Indirect, and Cumulative Effects

No slash would be burned within the project area. Other burning by other individuals may occur within the airshed. Thus, there would be no effects to air quality within the local vicinity and throughout Airshed 3B from project-related activities but there may be minimal impacts from other uses.

Action Alternative: Direct and Indirect Effects

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.

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.

Both pile and broadcast burning is addressed by the above agencies and groups. Given the differences between standard pile burning (both landing or mechanical piles in the woods) and

the broadcast method, there is a larger concern with broadcast burning. Generally, pile burning can be done when humidities are higher and risk of fire spread is minimal. This said, changes in weather can occur allowing fire spread conditions can change. With a broadcast burn, it is done during a condition with the humidities are lower and allows the fire to move through the fuel level. Given this change in conditions between the two types of prescribed burning, broadcast burning has a larger amount of concern.

Broadcast burning is the closest approximation to natural wildfire. Western Montana forests developed because of natural wildfire. A larger "burn plan" is created for the broadcast burns as opposed to pile burning. Within the DNRC, the larger burn plan is approved by several individuals that are not involved with the general projects described in this EA. The general "overhead" of a prescribed burn is much more regimented as opposed to pile burning.

Thus, direct and indirect effects to air quality due to slash burning associated with the proposed action would be minimal for pile burning and moderate for broadcast burning.

Cumulative Effects

Cumulative effects to air quality would not exceed the levels defined by State of Montana Cooperative Smoke Management Plan (1988) and managed by the Montana/Idaho Airshed Group. Prescribed burning by other nearby airshed cooperators (for example the U.S. Forest Service) would have potential to affect air quality. All cooperators currently operate under the same Airshed Group guidelines. The State, as a member, would burn only on approved days. This should decrease the likelihood of additive cumulative effects. Thus, cumulative effects to air quality due to slash burning associated with the proposed action would also be expected to be minimal.

DUST

No Action Alternative: Direct, Indirect, and Cumulative Effects

No dust related to harvesting operations would be generated within the project area. Other dust-generating activities such as recreation may occur. Thus, there is not expected to be dust-related effects to air quality within the local vicinity and throughout Airshed 3B. However, there may be minimal impacts from other uses.

Action Alternative: Direct, Indirect, and Cumulative Effects

Harvesting operations would be short in duration. Dust may be created from log hauling on portions of native surface roads during summer and fall months.

Thus, direct, indirect, and cumulative effects to air quality due to harvesting and hauling associated with the proposed action would be minimal.

Air Quality	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<i>No-Action</i>														
Smoke	X				X				X					
Dust	X				X				X					
<i>Action</i>														
Smoke		X				X				X				
Smoke broadcast			X				X			X				
Dust		X				X				X				

ARCHAEOLOGICAL SITES / AESTHETICS / DEMANDS ON ENVIRONMENTAL RESOURCES:

HISTORICAL AND ARCHEOLOGICAL SITES:

The tribes were scoped but none identified a specific cultural resource concern. A Class I (literature review) level review was conducted by the DNRC staff archaeologist for the Area of Potential Effect (APE). This entailed inspection of project maps, DNRC's sites/site leads database, land use records, General Land Office Survey Plats, and control cards. The Class I search revealed that no cultural or paleontological resources have been identified in the APE. No additional archaeological investigative work will be conducted in response to this proposed development. 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.

Issues and Concerns- No issue statements were developed during scoping regarding the effects of the proposed action to archeological sites.

No Action Alternative: Direct, Indirect, and Cumulative Effects

No impacts are expected, and low direct, indirect, or cumulative effects are expected on these sites.

Action Alternative: Direct, Indirect, and Cumulative Effects

Under the proposed action alternative, if any historical or archaeological sites are discovered during the course of the project they would be protected and a DNRC archaeologist would be notified immediately.

Therefore, the proposed action alternative would not be expected to have any direct, indirect, or cumulative effect on historical or archaeological resources.

AESTHETICS:

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.

Issues and Concerns- The following issue statements were developed during scoping regarding the effects of the proposed action to aesthetics:

- There are concerns that the proposed projects and roadbuilding would impact the aesthetics of the area. This would include areas near Highway 200 between Greenough and Sperry Grade, and Highway 83 from Clearwater Junction to Elbow Lake.

Existing Conditions

The landscapes in the greater area are influenced by glaciation (such as Seeley Lake or areas near Ovando, Montana) with steep glaciated peaks and lower rolling ridges; or have been carved and formed by the Blackfoot and Clearwater Rivers. The landscape within the project area is mountainous with deep canyons formed by the streams that still occupy the bottom areas. These rivers are located near this proposed project. Benches created by the streams,

are traditionally moderately to heavily timbered. Any changes within the area from these alternatives would be in addition to past harvests, road building, and other uses within the area.

Recommended Mitigation Measures for Aesthetics- The analysis and levels of effects to aesthetics are based on implementation of the following mitigation measures.

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

No Action Alternative Direct, Indirect, and Cumulative Effects

The risk of direct effects would be expected to be low. Over time, tree growth would be expected to fill in current, naturally occurring openings. Due to the long period of time involved, this effect would be expected to be low. The risk of indirect effects would be expected to be insignificant.

Past forest management activity on surrounding lands, would contribute to the cumulative visual effects to project area landscape. The risk of cumulative effects would be expected to be low as disturbances from past forest management activities have mostly revegetated. A minimal amount of cumulative effects would be expected from the continued increase in vegetative growth due to the long period of time involved.

Action Alternative: Direct, Indirect, and Cumulative Effects

The proposed timber harvest would be partially visible from Highway 83 and Highway 200. It is assumed that it would appear to be “an extension” of other harvest units from the past. Some of the areas of harvest would be blocked from long distance viewing due to topographic changes or potentially flatter land that would be harvested. An experienced observer or someone who resides in the area would notice the changes to the other stands, mostly this would occur due to the decrease in stand density.

Where possible, much of the proposed cutting would be light to moderate in intensity, especially from a distant observation spot. As many of the largest trees would be left, and a random, natural spacing would be used, it would be easier to decrease contrast in form, line, color, and texture between treated and untreated stands. Silvicultural treatments would borrow extensively from the natural grassy openings and only slightly affect the texture of the seen areas. Likewise, silvicultural treatments would decrease the hard edge that occurs when comparing DNRC harvest from former industry ground within the same area.

Harvest units would be less dense than the existing stands. As hillsides become steeper, it becomes easier to notice changes in the vegetation. The plan for these proposed harvest units is to work with topographical features, openings on the hillside, and to make unit boundaries that aren’t constant straight lines. This area would show moderate visual impacts in the short-term. Other areas would likely see low to moderate impacts to the aesthetics.

Any change to the scenery in the area from these alternatives would be in addition to past timber harvests, road building, and vegetation management (grazing, pre-commercial thinning, etc.) within the project area. This analysis includes all past and present effects. Generally, slash disappears from the site within five years, and is often covered by other vegetation within three years. Due to slash and the initial color contrasts of the slash and limited road improvement work, there would be an expected short-term impact. Cumulative effects would be

expected to be low given the revegetation of the older harvests nearby, and the time-period of the proposed actions.

DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR, AND ENERGY

There would be no measurable direct, indirect, and cumulative impacts related to environmental resources of land, water, air, and energy due to the relatively small size of this project.

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		
<i>No-Action</i>														
Historical or Archaeological Sites	X				X				X					
Aesthetics	X				X				X					
Demands on Environmental Resources of Land, Water, or Energy	X				X				X					
<i>Action</i>														
Historical or Archaeological Sites	X				X				X					
Aesthetics		X				X				X				
Demands on Environmental Resources of Land, Water, or Energy	X				X				X					

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.*

- State Forest Land Management Plan, DNRC 1996, sets the strategy that guides DNRC management decisions statewide.
- North Chamberlain Conservation Easement and associated management plan, July 2010.
- USFWS and DNRC 2010. Montana Department of Natural Resources and Conservation 'Forested Trust Lands Habitat Conservation Plan, Final Environmental Impact Statement, Volumes I and II (HCP). U.S. Department of Interior, Fish and Wildlife Service, Region 6, Denver, Colorado, and Montana Department of Natural Resources and Conservation, Missoula, MT. September 2010.

Impacts on the Human Population

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

LOG HAULING TRAFFIC

Issues and Concerns- The following issue statements were developed during scoping regarding the effects of the proposed action to log hauling traffic:

- There will be increased public travel on weekends.
- Trucks will drive fast.

Existing Conditions

Log hauling traffic is common in the project area.

Recommended Mitigation Measures for Log Hauling Traffic- The analysis and levels of effects of log hauling traffic is based on implementation of the following mitigation measures:

- Log hauling would take place typically from during the general “work week”.
- Signs would be posted making the public aware of log hauling traffic in the area.
- If necessary, a slower speed limit may be imposed in the timber harvest contract.

No Action Alternative: Direct, Indirect, and Cumulative Effects

No increase in log truck traffic would occur. Other log truck traffic would still be present due to the project area’s proximity to Highway 200. Thus, there may be minimal impacts to traffic from other users.

Action Alternative: Direct, Indirect, and Cumulative Effects

Log truck traffic in the area would increase for the duration of the timber sale. However, signs would be posted indicating that log truck traffic is present in the area. If necessary, a slower speed limit may be imposed in the timber harvest contract.

Based on the mitigation measures direct, indirect, and cumulative effects of log hauling on human health and safety would be low.

RECREATION (including access to and quality of recreational and wilderness activities):

Issues and Concerns- The following issue statement was developed during scoping regarding the effects of the proposed action to recreation:

There are concerns that the proposed projects and roadbuilding would impact recreation.

Existing Conditions

The area is used for hiking, hunting, cross-country skiing, snowmobiling and general recreating. Currently, Chamberlain Creek Road is open to section 17, Township 14 North, Range 13 West, for public travel. This is approximately 2 miles east of the project area. All roads leading to the proposed project area are closed to motorized use (including electric bicycles at this time) and used only for administrative purposes.

No Action and Action Alternatives: Direct, Indirect, and Cumulative Effects

There would be no change in road closure status and the selection of either alternative would not affect the ability of people to recreate on this parcel.

The DNRC has added crushed rock surface to main access roads to the east of the Chamberlain Creek Road gate described above. This has been accomplished to Bear Creek Pit (in section 18, Township 14 North, Range 13 West) and would be continued on roads closed for

administrative use only under this project. This would increase season of use for future management.

Therefore, there would be no measurable direct, indirect, or cumulative impacts on recreation from this proposed action.

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					
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			Y	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					

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		
Density and Distribution of population and housing	X				X				X					
Social Structures and Mores	X				X				X					
Cultural Uniqueness and Diversity	X				X				X					

Comment Number 1: Quantity and Distribution of Employment Impact

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 40 person-years of employment in the forest products industry. A few short-term jobs would also be created/sustained by issuing pre-commercial thinning and planting 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 low impact to quantity and distribution of employment in the area.

Mitigations: This impact would be a positive and mitigations would not be necessary.

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 Alternative – Direct, Indirect, and Cumulative Effects

The No Action Alternative would not generate any return to the trust at this time.

Action Alternative – Direct, Indirect, and Cumulative Effects

The timber harvest would generate additional revenue for the Common School and Public Buildings Trusts. The estimated return to the trust for the proposed harvest is \$556,875.00 based on an estimated harvest of 5.0 MMBF (million board feet) (estimated as 37,125 tons) and an overall stumpage value of \$15.00 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.
- Hayes, Steven W.; Morgan, Todd A.; 2017. The Forest Products Industry in Montana, Part 2: Industry Sectors, Capacity and Outputs. Forest Industry Brief No. 4. Missoula, MT: University of Montana, Bureau of Business and Economic Research

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: Craig V. Nelson

Title: Clearwater Unit, Forest Management Supervisor

Date: March 10, 2025

Finding

Alternative Selected

Following a review of the document as well as the corresponding Department policies and rules, the Action Alternative has been selected because it meets the intent of the project objectives outlined in Section I – Type and Purpose of Action. This includes but is not limited to the objectives to improve stand growth and vigor and reduce the threat of future losses to fire, insects, and disease; to bring the stands closer to historic conditions; improve access and BMP compliance with new construction and road maintenance activities; and to maximize revenue over the long-term for trust accounts from the timber resources and provide a sufficient amount of sawlog volume to contribute to the DNRC's sustained yield.

Significance of Potential Impacts

I find that the Action Alternative will not have significant impacts for the following reasons:

- The Action Alternative is in compliance with the existing laws, rules, policies, and standards applicable to this type of proposed action.
- Appropriate mitigations have been proposed to minimize potential impacts to resources such as fisheries and wildlife; water quality and quantity; soils; air quality; and vegetation.

Need for Further Environmental Analysis

☐

EIS

☐

More Detailed EA

☒

No Further Analysis

Environmental Assessment Checklist Approved By:

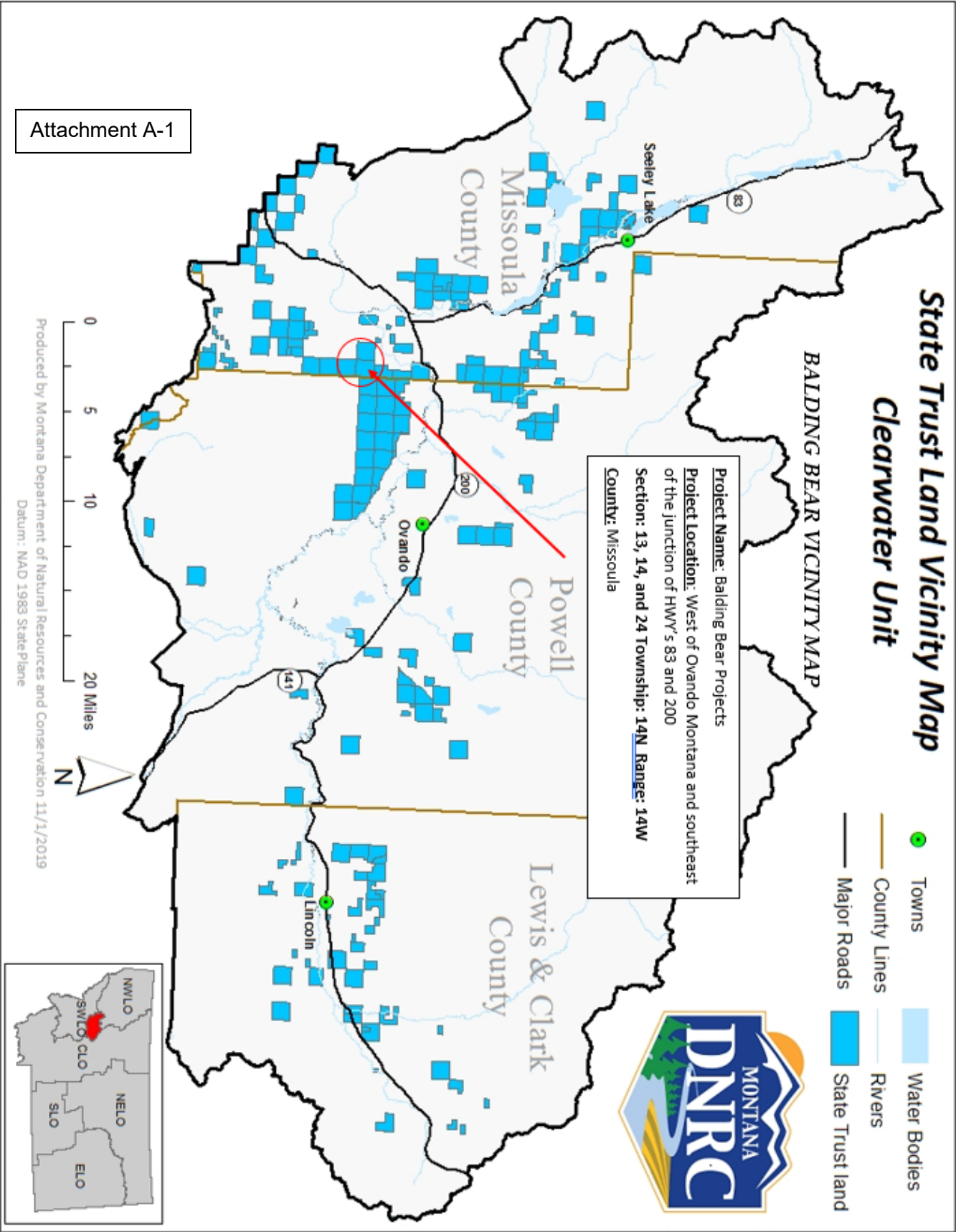
Name: Kristen Baker-Dickinson

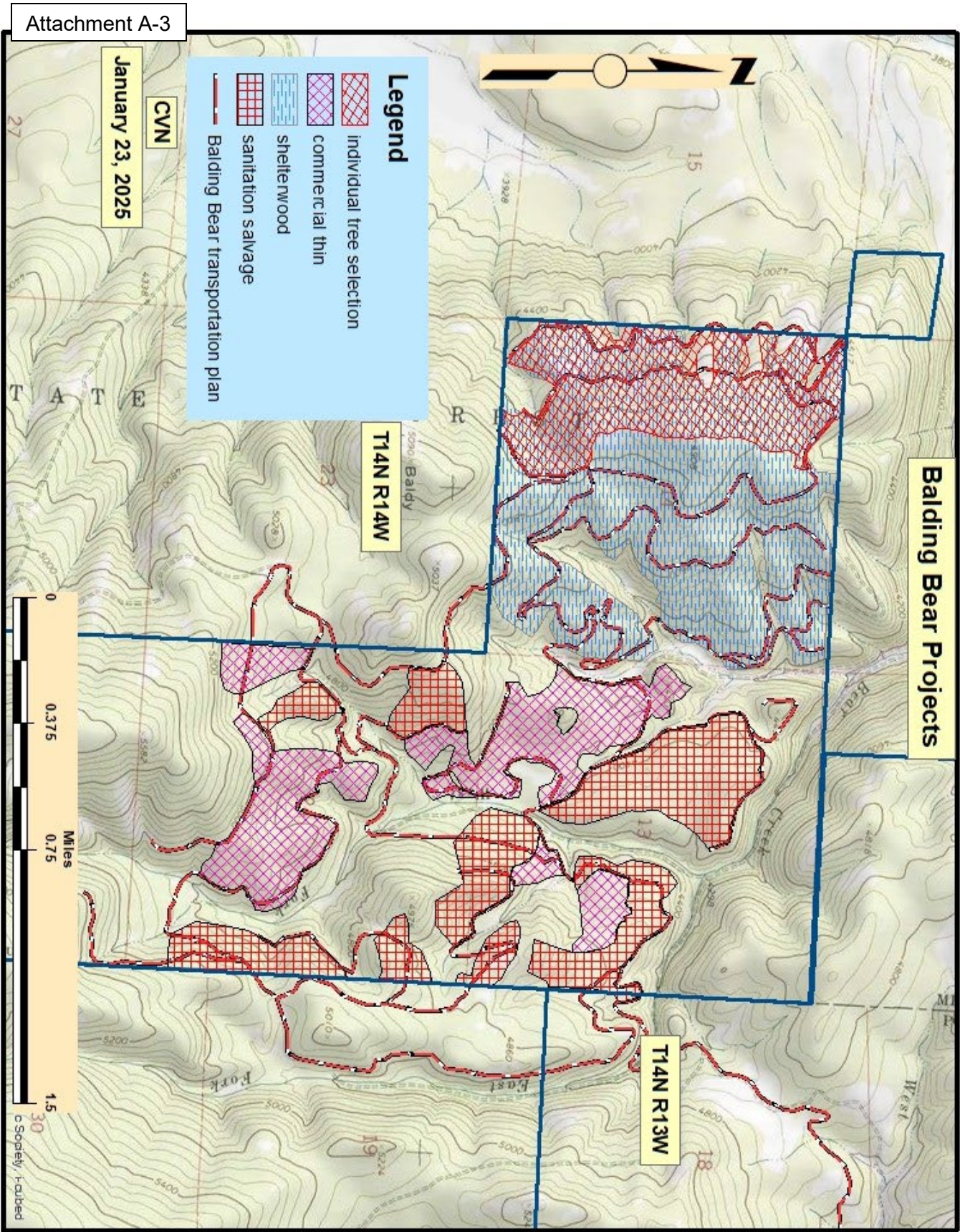
Title: Clearwater Unit Manager

Date: March 17, 2025

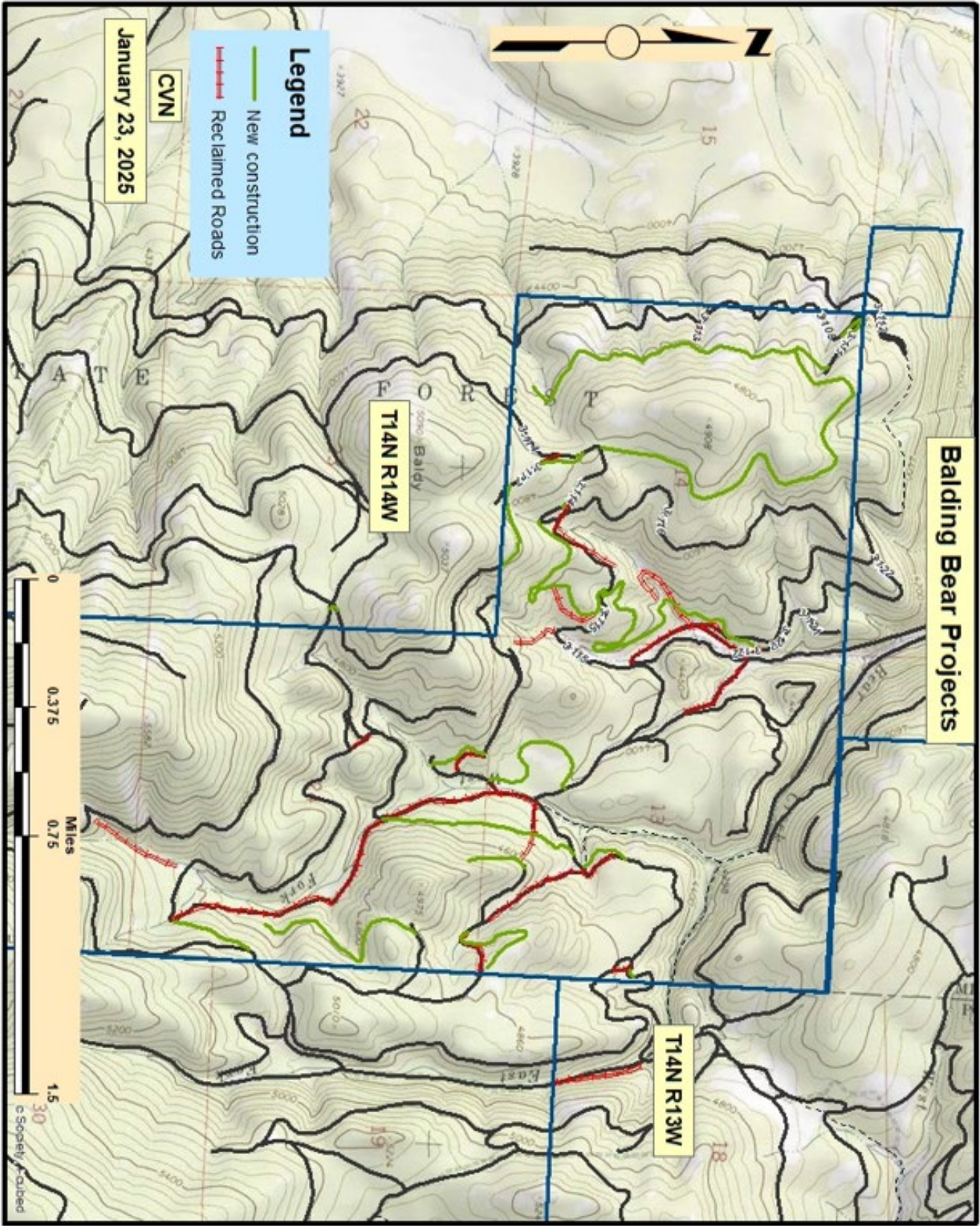
Signature: /s/K. Baker-Dickinson

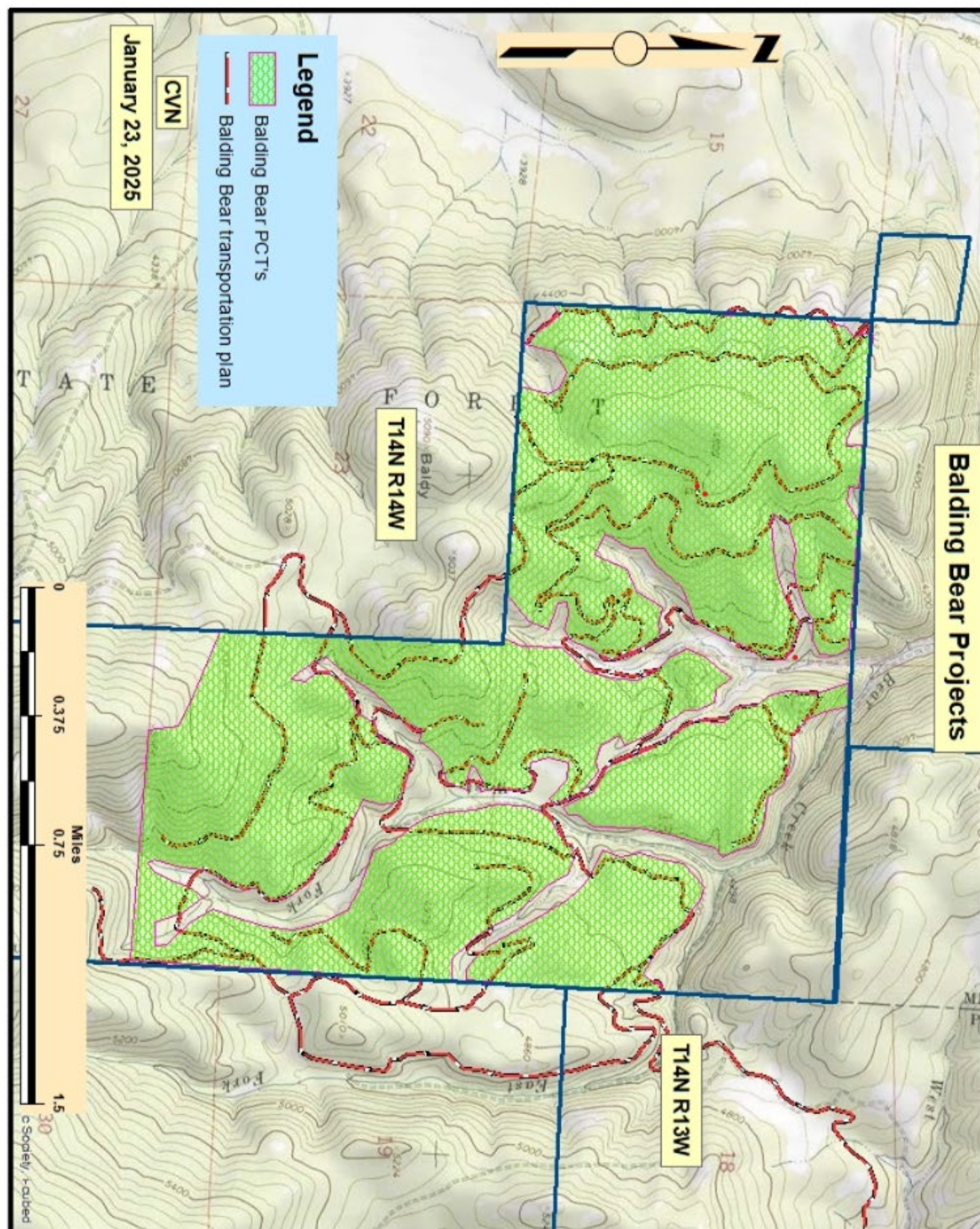
Attachment A-1



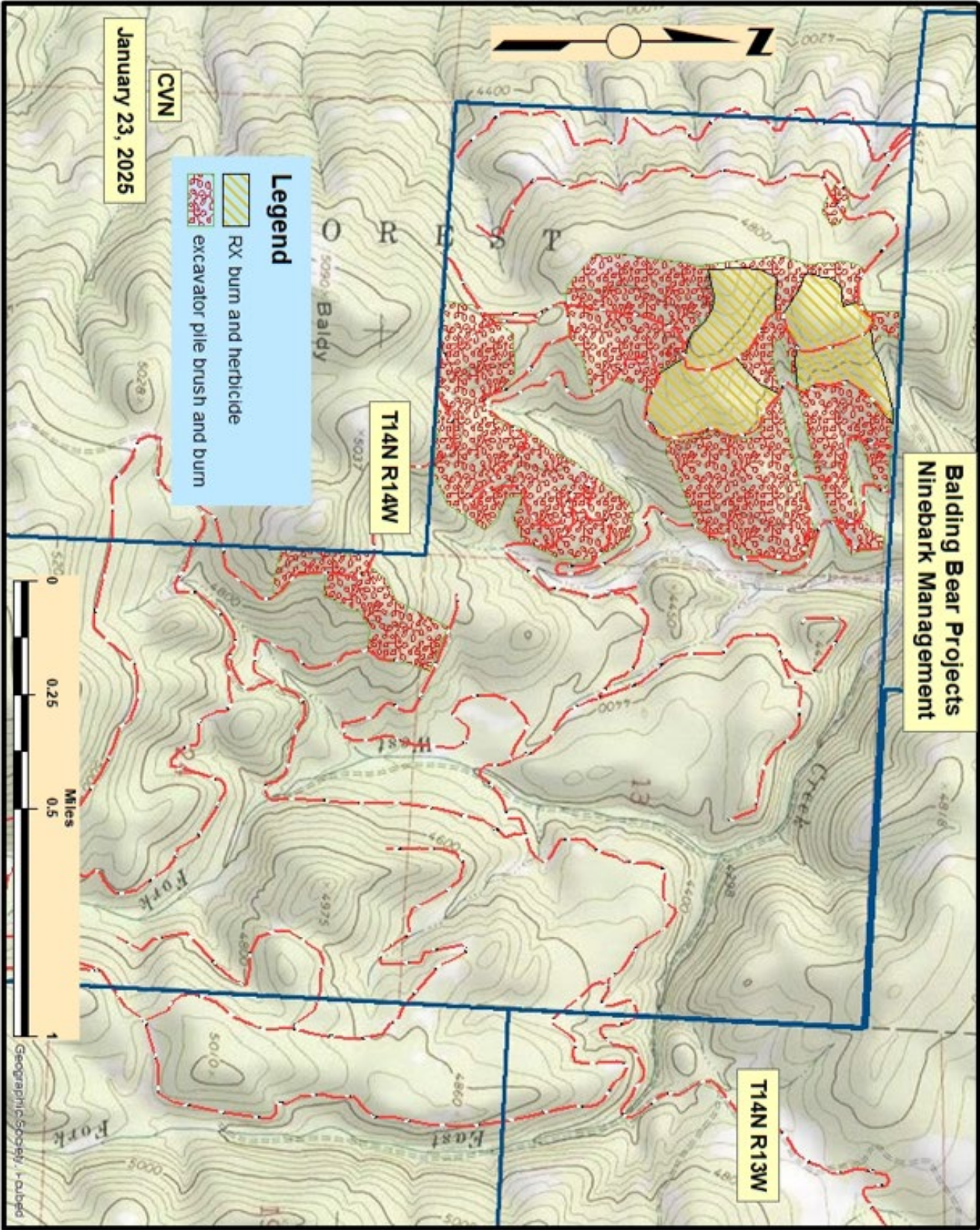


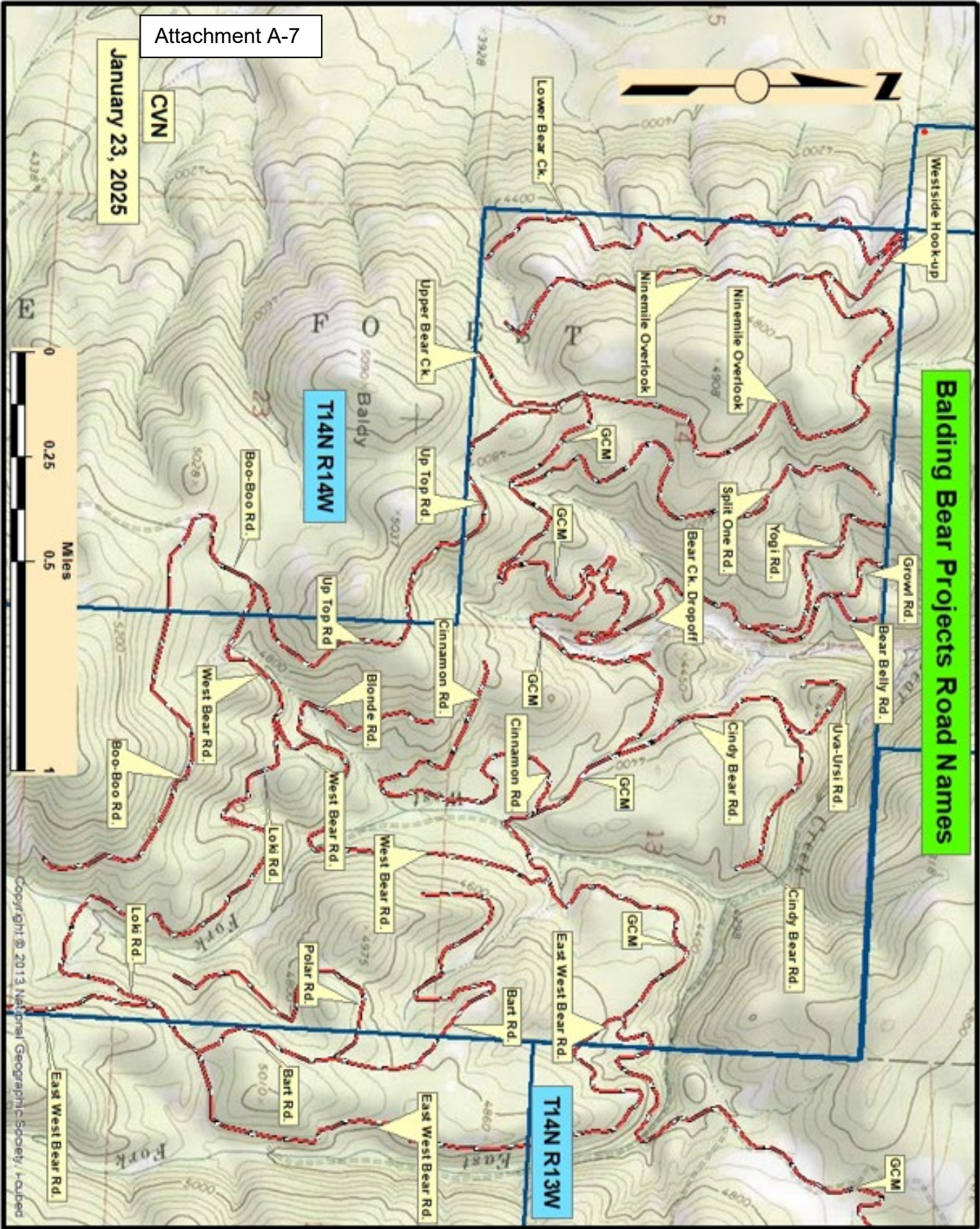
Attachment A-4





Attachment A-6





Attachment B-1

Project Update
Balding Bear Timber Sale

The Montana Department of Natural Resources and Conservation, Clearwater Unit, is proposing to harvest timber on the following state-owned parcels:

Section 14 T14N R14W — Public Buildings
Sections 13, 24, and 25 T14N R14W - Common Schools

The primary objective of this proposal is to produce funds for the above-mentioned Trusts. This project will contribute to the DNRC's planned sustained yield. Planned timber harvest prescriptions would be shelterwood, commercial thinning – selection, and sanitation salvage. The State would also use this as an opportunity to remove dying, stagnant, diseased, and overstocked trees. Many of the stands in the area are in a condition resulting from fire suppression and past logging practices. The resulting stands of small diameter saw log and regeneration are primarily Douglas-fir and other shade tolerant or short-lived trees such as lodgepole pine. Traditionally the area was primarily dominated by ponderosa pine and western larch stands. The treatments will favor seral tree species and change stand characteristics resulting from management by preceding owners.

The proposed harvest is in accordance with State Statute 77-1-202 and would contribute to the DNRC's sustained yield as mandated by state statute 77-5-222.

The proposed harvest would take place under a timber sale and small timber permits if needed. The proposal may harvest approximately 2 million board feet from approximately 1,500 acres. Additional management activities including noxious weed management, pre-commercial thinning, land surveying, planting, and prescribed burning (pile burning) may occur. This project may require 6.5 miles of new road construction that would replace up to 4.5 miles of road located in poor locations or wetland areas and adjacent to stream channels that would be closed. Roads used for this sale will be maintained and / or improved to meet Best Management Practices or DNRC guidelines. The proposed action would likely be implemented in the late summer of 2020 and possibly be completed by 2025.

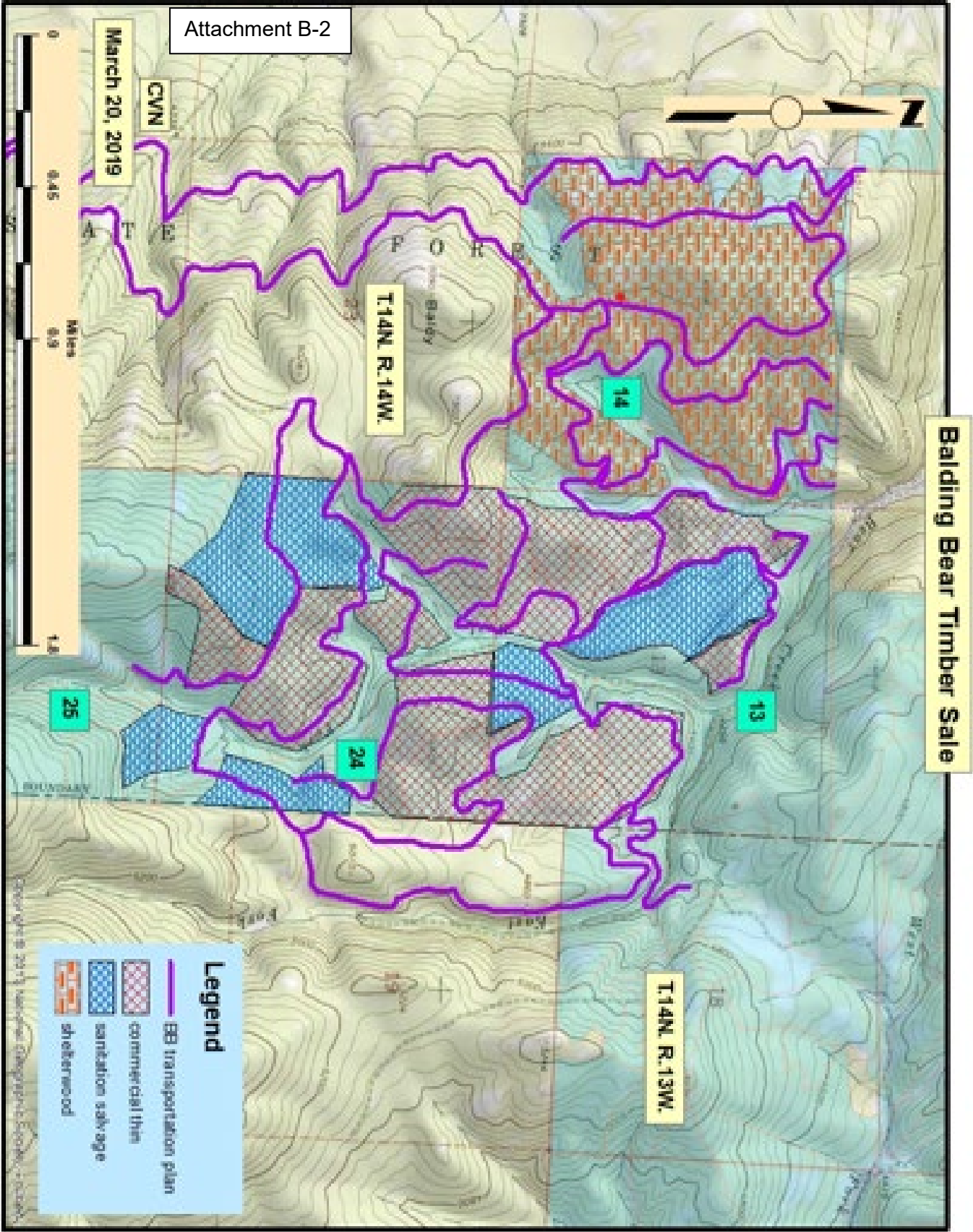
The DNRC is in the scoping phase of the project environmental assessment so all volumes and acreages are preliminary estimates. In preparation for this project, specialists such as wildlife biologists, hydrologists, soil scientists, and archeologists will be consulted. Neighboring landowners will also be asked for their input.

The Montana DNRC invites comments and suggestions concerning this proposal from all interested parties. Please respond by **April 29, 2019** to:

Department of Natural Resources and Conservation
Attn: Craig V. Nelson
Clearwater State Forest
48455 S. Sperry Grade Rd.
Greenough, MT 59823

or: email: crnelson@mt.gov

or: (406) 244-2386





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