Environmental Assessment Checklist

Project Name: Upper Willow Timber Permit
Proposed Implementation Date: January 2025
Proponent: Anaconda Unit, Southwest Land Office, Montana DNRC
County: Granite

Type and Purpose of Action

Description of Proposed Action:

The Anaconda Unit of the Montana Department of Natural Resources and Conservation (DNRC) is considering sale of the Upper Willow Timber Permit. The project is located approximately 15 miles northwest of Philipsburg, Montana (refer to Attachments vicinity map A-**1** and project map A-**2**) and includes the following sections:

Beneficiary	Legal Description	Total Acres	Treated Acres
Common Schools	**Sections 5, 8 and 17; T8N, R15W**	**1,586**	**176.3**
Public Buildings			
MSU 2nd Grant			
MSU Morrill			
Eastern College-MSU/Western College-U of M			
Montana Tech			
University of Montana			
School for the Deaf and Blind			
Pine Hills School			
Veterans Home			
Public Land Trust			
Acquired Land			

Objectives of the project include:

- Generate revenue for the Common Schools Trust.
- Improve forest growth and resiliency.
- Replace a bridge at Bear Creek to reduce risk of failure and provide reliable crossing infrastructure for ongoing land management, improved fire suppression access, and ditch maintenance.
- Remove a bridge at Beaver Creek to reduce risk of failure.

Proposed activities include:

Action	Quantity
Proposed Harvest Activities	# Acres
Clearcut	176.3
Seed Tree	
Shelterwood	
Selection	
Old Growth Maintenance/Restoration	
Commercial Thinning	
Salvage	
Total Treatment Acres	**176.3**
Proposed Forest Improvement Treatment	# Acres
Pre-commercial Thinning	
Site preparation/scarification	
Planting	
Proposed Road Activities	# Miles
New permanent road construction	
New temporary road construction	1.4
Road maintenance	2.7
Road reconstruction	
Road abandoned	
Road reclaimed	
Other Activities	
Replace bridge at Bear Creek	1
Remove bridge at Beaver Creek	1

Duration of Activities:	1/1/2025– 10/1/2025
Implementation Period:	1/1/2025 – 10/1/2025

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: November 20 through December 4, 2024.
- PUBLIC SCOPED:
  - Notice posted on the DNRC website: https://dnrc.mt.gov/News/scoping-notices.
  - Notice mailed to adjacent landowners and statewide timber scoping list.
- AGENCIES SCOPED:
  - United States Forest Service (USFS) Pintler Ranger District notified of using a road with easement.
  - Montana Tribal Agencies
  - Montana Department of Fish, Wildlife & Parks (FWP)
- COMMENTS RECEIVED:
  - How many: Two
  - Concerns:
    - The ditch owner within Units 2 and 3 advised the DNRC that the ditch in Unit 3 runs water year around. Crossing ditch with equipment ok, but requested the ditches be protected with either a span or pipe and log structure.
    - USFS Pintler Range District Range requests we protect the USFS road that DNRC would use for access. For example, protect the road surface from gouging during snow plowing.
  - Results (how concerns addressed):
    - Temporary ditch crossings would be used for harvest and yarding access. Ditch crossings would protect ditch infrastructure and would not impede ditch flow (if present).
    - Snow plowing and purchaser advised to avoid scraping, gouging, or grading the USFS access road with the objective of protecting the existing road grade and imported rock surfacing.

DNRC specialists were consulted, including: DNRC Hydrologist/Soil Scientist, Andrea Stanley; DNRC Wildlife Biologist, Garrett Schairer; DNRC Fisheries Biologist, Mike Anderson; DNRC Silviculturist, Tim Spoelma; DNRC Archaeologist, Patrick Rennie.

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

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

- **United States Fish & Wildlife Service-** DNRC is managing the habitats of threatened and endangered species on this project by implementing the Montana DNRC Forested Trust Lands HCP and the associated Incidental Take Permit that was issued by the United States Fish & Wildlife Service (USFWS) in February of 2012 under Section 10 of the Endangered Species Act. The HCP identifies specific conservation strategies for managing the habitats of grizzly bear, Canada lynx, and three fish species: bull trout,

westslope cutthroat trout, and Columbia redband trout. This project complies with the HCP. The HCP can be found at https://dnrc.mt.gov/TrustLand/about/planning-and-reports.

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

  A Short-term Exemption from Montana's Surface Water Quality Standards (318 Authorization) may also be required from DEQ if activities such as replacing a bridge on a stream would introduce sediment above natural levels into streams.

- **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 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:
  - Removal and replacement of bridges on Beaver and Bear Creeks.

ALTERNATIVES CONSIDERED:

No-Action Alternative: The no action alternative would not treat any acres and existing conditions would persist. The bridge maintenance and removal work would not occur with this alternative, corrective actions addressing sediment delivery would be completed on timelines identified within the HCP (DNRC 2012).

Action Alternative: The action alternative would treat 176.3 acres of stagnated lodgepole pine through clearcut harvest. The propose yarding could include up to 1.4 miles of temporary road. The action alternative also includes removal of a bridge crossing at Beaver Creek, and replacement of a bridge crossing (including abutments) on Bear Creek.

Impacts on the Physical Environment

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

VEGETATION:

Several harvests have occurred in the state-owned parcels where this permit is also being conducted, such as Willow's End and the Phoenix sale.

The existing stands that are part of this permit consist of majority mature lodgepole, as well as some Douglas-fir and a very small amount of Englemann spruce in unit 4. Stocking charts mark these stands as over-stocked, indicating the threat of stagnation, increased fire risk and reduced vigor, making these stands particularly susceptible to insects and diseases. These stands are primarily a single age class, with the present trees being approximately 80 to 100 years old. The average number of trees per acre for the entire permit area is 195, the quadratic mean diameter is 7.9 and there are roughly 60 trees per MBF.

Vegetation Existing Conditions:

Harvest Unit	Habitat Group	Fire Regime	Current Cover Type	Age Class (years)	DFC	RX	Acres
1	Cool and moderately dry (westside)	Mixed-to-Stand Replacing	Lodgepole Pine	40-99	Lodgepole Pine	Clear Cutting	38.14
2	Cool and moderately dry (westside)	Mixed-to-Stand Replacing	Lodgepole Pine	40-99	Lodgepole Pine	Clear Cutting	20.22
3	Moderately warm and dry (westside)	Mixed-to-Stand Replacing	Lodgepole Pine	40-99	Lodgepole Pine	Clear Cutting	54.44
4	Cool and moderately dry (westside)	Mixed-to-Stand Replacing	Lodgepole Pine	40-99	Lodgepole Pine	Clear Cutting	63.48

Fire Hazard/Fuels: The area has experienced a high level of mortality from a Mountain Pine Beetle infestation within the last 10 years. Most of the dead trees have fallen over creating an abnormally high ground fuel loading. This could contribute to a fire of greater intensity should one occur. There have been several fires (2007, 2015, 2017) that have burned adjacent lands but were mostly suppressed prior to burning on State owned lands. The project area is not immediately adjacent to any urban or residential areas.

Insects and Diseases: Mountain Pine Beetle mortality over the past 10 years has been significant in the area but has run its course. The only remaining sign of mountain pine beetle are residual snags. It is estimated that within the project area- the vast majority of which are in adjacent stands- over 50% of sawlog diameter trees are in various stages of blowdown or decay.

Sensitive/Rare Plants: The Montana Natural Heritage Program has identified two vascular plants of concerns that may occur in the project area or nearby: Candystick (Allotropa virgata) and whitebark pine.

Whitebark pine, a federally listed threatened species under the Endangered Species Act, is present in the project area. Any previously unknown whitebark pine stands will be reported according to ARM 36.11.428(3). Forest management activities can be beneficial for whitebark pine and aid in its recovery; however, no whitebark pine will be commercially harvested under this project and individual whitebark pine trees that may be encountered in the project area- particularly in unit four where a DNRC conducted SLI (stand level inventory) detected whitebark pine in an adjacent stand- will be protected to the greatest possible extent during activities associated with this project.

Noxious Weeds: Spotted knapweed, Canada thistle and Houndstongue are present in moderate infestations.

Old growth: There has been no old growth identified within the proposed project area by the State of Montana's Stand Level Inventory (SLI).

Environmental Effects:

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

The No-Action alternative would not change the current existing conditions within the proposed project area. The proposed management activities—including commercial harvest, pre-commercial harvest, site preparation, planting, weed management, road maintenance, and road abandonment—would not occur. These stands would remain at overstocked levels and at a greater susceptibility to insects, disease, or catastrophic fire.

Concerns of potential hazardous forest fuel loading would not be treated. Stands would continue to grow with decreased vigor and would show increased mortality. As a result, there would be low to moderate risk of direct impacts, and low to no impacts in the secondary and cumulative impacts to the vegetative community.

Rare plants and noxious weeds would be unaffected. Treatment of noxious weeds would likely occur under another project if necessary.

Action Alternative: Direct, Indirect, and Cumulative Effects

This proposal is one commercial timber harvest under one permit of approximately 176.3 acres, removing an estimated 439 thousand board feet. Additional timber permits may occur as necessary in the future within section 17, township 8N, range 15W. The silvicultural prescription will consist of clearcutting the proposed project area of all lodgepole but leaving all Douglas-fir and Englemann spruce.

Clearcut with reserves.

Clearcutting is an even aged management technique that mimics a disturbance event such as fire, that completely removes a stand, resetting it to an early successional state. This is often a good prescription for stands experiencing heavy amounts of insects and disease, monocultures, or generally unhealthy overstocked stands that would not benefit from release or commercial thinning.

Areas where stands have been clearcut may benefit from planting as a means of promoting regeneration and discouraging noxious weeds from gaining a foothold. To aid in trees from outside the harvest area assisting with regeneration, if operating outside of winter conditions, contractors would be instructed to scarify the ground, by means of standard harvesting practices associated with ground-based mechanized harvests.

Fuel treatment after the clear cut would include piling any residual slash left on the ground, then returning to burn said slash piles when appropriate. State CWD (coarse woody debris) standards would still be adhered to.

A minimum of two snags and/or two snag recruits will be left per acre for wildlife and regeneration purposes.

Vegetation	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Current Cover/DFCs	**X**				**X**				**X**					**1**
Age Class	**X**				**X**				**X**					**1**
Old Growth	**X**				**X**				**X**					**1**
Fire/Fuels	**X**				**X**				**X**					**1**
Insects/Disease	**X**				**X**				**X**					**1**
Rare Plants	**X**				**X**				**X**					**1**
Noxious Weeds	**X**				**X**				**X**					**1**
Action														
Current Cover/DFCs	**X**				**X**				**X**				**N**	**2**
Age Class			**X**			**X**				**X**			**N**	**3**
Old Growth	**X**					**X**				**X**			**N/A**	**4**
Fire/Fuels				**X**			**X**			**X**			**Y**	**5**
Insects/Disease		**X**				**X**				**X**			**Y**	**6**
Rare Plants	**X**				**X**				**X**				**Y**	**7**
Noxious Weeds		**X**				**X**				**X**			**Y**	**8**

Comments:

1. Implementation of the no-action alternative would result in no new vegetation resource impacts in the project area. Vegetation resource conditions would remain similar to those described in the existing conditions

2. Under the action alternative, the current cover of the proposed harvest units would not change and lodgepole pine would remain the cover type.
3. The overall age structure of the proposed harvest units will become much younger with the removal of the present lodgepole. The remaining Douglas-fir, Englemann spruce and regenerating lodgepole will provide a multistoried age structure to the harvest units.
4. There is no old growth present in the proposed harvest units.
5. The fuel reduction that would occur as a result of the proposed harvest would reduce existing wildfire risk. The dominant species, lodgepole would be significantly reduced, and the remaining Douglas-fir and Englemann spruce would be well-spaced, to further mitigate remaining fire risk. A portion of existing ground fuels and the majority of slash generated by the project would be piled and burned. At least 10 tons/acre of coarse woody debris would be retained and is not considered a significant fuel source.
6. There is not a significant presence of insects or disease in the proposed harvest units. The release of resources by harvest activities will provide additional nutrients to the residual trees to help bolster their defenses against insects and disease, should any appear.
7. Candystick and whitebark pine are present in the project area, however neither species have been observed in the proposed harvest units. They will be protected if discovered in harvest areas.
8. Several noxious weeds occur in the project and nearby areas, including Spotted knapweed, Canada thistle, and Houndstongue. Equipment cleaning, inspection, and post-harvest spraying would occur as needed. Sale administration would include weed monitoring. Winter harvest would reduce the risk of weed seed spread and introductions.

Recommended Mitigation Measures for Vegetation:

- Favor all species that are not lodgepole pine, should any be present. No cutting whitebark pine.
- Harvest prescriptions would emulate natural disturbance historically present on the landscape.
- Logging equipment would be washed before entering the sale area to limit noxious weed introduction.
- Grass seed would be planted on newly disturbed road surfaces to expedite grass establishment, thereby limiting the resources available for weeds to become established.
- Herbicide would be applied to spot infestations of weeds along roadways and landings, but spraying would be avoided in any locations where sensitive plant species are detected.
- Slash produced during harvest would be piled and burned post-harvest to reduce fuel loading. In addition, any slash that remains in the woods would be scattered, limbed and slashed to a depth of no more than 18 inches.
- Snags, snag recruits and coarse woody debris would be managed according to ARM 36.11.411 through 36.11.414. Clumps of existing snags could be maintained where they exist to offset areas without sufficient snag presence. Course woody debris retention would emphasize retention of downed logs 15-inches diameter and larger.

SOIL DISTURBANCE AND PRODUCTIVITY:

Soil Disturbance and Productivity Existing Conditions:

The project is located in one of the eastern ranges of the Saphire Mountains, on moderate slopes with glacial outwash and residual soils weathered from sandstone and argillites. Tertiary valley deposits of silty clay loam texture occur in the swales, draw bottoms, and foot slopes. There are no unusual or unique geologic features in the project area. Slopes are generally mild and stable. Rock outcrops are rare.

Soils in the proposed harvest areas are gravelly loams (Worock and Elve) and Danaher-Loberg-Elve soils formed from sediments derived from igneous and sedimentary rocks.

Unit 1 – Worock gravelly loam (15-35% slopes): Derived from colluvium and/or residuum weathered from igneous rock. Gravelly loam to depth of 17 inches, then becomes very gravelly clay loam.

Units 2 and 4 – Elve gravelly loam (4-15% slopes): Derived from quartzite alluvium. Gravelly loam to depth of 9 inches, then becomes very gravelly loam.

Unit 3 – Danaher-Loberg-Elve (8-15% slopes): Derived from clayey colluvium from igneous rock. Gravelly sandy loam to depth of 18 inches, then becomes loam and gravelly clay.

Topographically, these soils are gently sloped and are well suited for ground-based equipment operations. Some of these soils have shallow gravelly loam topsoil over finer textured gravelly clay loam subsoils (i.e., unit 3) where the main soil concern are potential rutting, compaction, and displacement. These soils and all other units would have operations limited to frozen or dry conditions.

Existing concentrations of coarse woody debris on the forest floor exceed 10 tons/acre based on visual estimates. The photo below is taken within proposed Unit 3.

Photo of Unit 3 (August 8, 2024).

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

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		
Nutrient Cycling		**X**				**X**				**X**			**Y**	**4, 5, 6**
Slope Stability	**X**				**X**				**X**				**Y**	**7**
Soil Productivity		**X**				**X**				**X**			**Y**	**4, 5, 6, 8**

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.

3. Soil disturbance and erosion risk increases with slope. Slopes in proposed harvest areas are generally mild (less than 45%). Therefore, risk for excessive soil disturbance and erosion are low.

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. 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.

6. According to Graham et al. (1994), a minimum of 10 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.

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

Soil Mitigations:

- BMP's would be implemented on all roads and within the units. 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.

- 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 10 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.

Soil References:

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

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

WATER QUALITY AND QUANTITY:

Water Quality and Quantity Existing Conditions:

The project area is located in the Upper Willow Creek watershed. Proposed harvest areas are greater than 600 feet from the main channel of Upper Willow Creek. The aquatic habitat quality of Upper Willow Creek has been identified as impaired due to alternation of streamside vegetative covers, low flow alterations, and physical substrate habitat alterations (Montana DEQ, 2013). Causes to the degradation include historic eradication of beaver, historic logging, grazing, and mining. Existing road infrastructure also impinges on the floodplain in some areas (Montana DEQ, 2013). DNRC Trust Lands does not own land immediately adjacent to Upper Willow Creek.

Two perennial fish-bearing streams, Bear Creek and Beaver Creek, occur within and near the project area that feed into Upper Willow Creek. No additional streams within or adjacent to the project area are listed as impaired.

Bear Creek is adjacent to proposed harvest areas and a DNRC-owned bridge crossing of the creek will be used for movement of harvesting equipment and wood hauling. Field observations indicate the riparian functions of the creek are functioning well with shaded and vegetated banks. However, the existing crossing has abutment support instability and the deck is too short for the desired span of the stream and associated fill support. Erosion below the abutment supports has caused shifting and the bridge is no longer suitable for trucks and presents a sediment risk if the crossing were to fail.

Beaver Creek is north of the proposed harvest areas and a DNRC-owned bridge crossing of the creek is in a similar condition as Bear Creek with risk of crossing failure if not repaired or removed. The channel of Beaver Creek has formed a natural split approximately 200 feet upstream of the crossing site and the resulting left-side-channel runs into the road-fill barrier north of the bridge crossing. The backed-up water then runs down the left abutment fillslope before rejoining with the main channel. This flow has caused scour and erosion of the fill material and is a sediment delivery point to the Bull trout stream. Although this bridge is beyond the proposed harvest area and is not on the haul route, repair of this bridge is included in this analysis because DNRC staff see an imminent need to repair this site and the repair work would occur in conjunction with the repair work needed at the Bear Creek bridge.

Proposed activities near surface waters in project area:

Road Maintenance and Abandonment:

Road maintenance would occur on all existing roads within the project area. This includes 12.8 miles of existing mainlines, arterials, and spur roads. Any illegal access roads would be closed and abandoned upon detection. Temporary spur roads would be used in each harvest units to limit areas of repeat skidding and to shorten skidding distances. These temporary roads would be constructed to the minimum necessary standard and will be reclaimed following use with slash and the addition of water bars where needed. Temporary roads would also be used to minimize the number of temporary ditch crossings in units 2 and 3.

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, 4**
Water Quantity	**X**				**X**					**X**			**N/A**	**3**

Comments:

1. With no action, no timber harvesting would occur. Selection of the no-action alternative may delay implementation of corrective actions to reduce sediment delivery (i.e., the proposed bridge work on Bear and Beaver Creeks). DNRC would still be obligated to

implement corrective actions on timelines identified in the HCP (DNRC, 2012). Specifically, the HCP commits to correcting high risk sediment delivery sites within bull trout watersheds by 2027. Therefore, with the no-action alternative for proposed harvesting, existing water quality conditions are likely to persist in the short term but would improve within a few years.

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

3. Changes to steam flow hydrology (water quantity or water flow) are expected to not be detectible with the Action Alternative within Bear and Beaver Creeks. The proposed project includes harvest areas that would affect approximately 7% of the Bear watershed and 0% of the Beaver Creek watershed. Harvest prescriptions would include retention of all vegetation along streams (within RMZ) and retention of submerchantable trees and shrubs on the landscape. Studies correlating vegetation harvest and treatment with streamflow yield have suggested approximately 15-20% of the watershed vegetation must be harvested 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 93% of vegetation within the watershed to remain when combined with non-treatment areas. Therefore, streamflow change is not expected to be observable. The potential change in streamflow to the smaller tributaries is not expected to result in a significant risk to water and riparian resources.

4. The proposed project includes the removal of a bridge crossing at Beaver Creek, and the replacement of a bridge crossing on Bear Creek. The objective of the work at Beaver Creek is to improve stream and riparian functions and habitat and reduce the risk of a crossing failure. The objective of the work at Bear Creek is to improve stream and riparian functions and restore the reliability of the crossing for proposed harvest activities and ongoing land-management including fire suppression. The work at both crossing would cause short-duration sedimentation. These adverse effects would be minimized by timing efficient work, season, limiting disturbance, and use of temporary erosion and sediment control BMPs. The longer-term net effect would be an improvement of local water quality conditions and reduced risk of crossing failures. No streamflow interruptions are anticipated because all work would occur outside of the stream channel.

Water Quality & Quantity Mitigations:

1. Implement sediment control BMPs at stream crossings during hauling operations. Options for sediment control include slash filter windrow, 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.

2. Proposed harvest areas would exclude the SMZ and RMZ of all area streams. The observed 100-year site index tree height is less than 80 feet, therefore the RMZ width will be 80 feet.

3. Irrigation ditch infrastructure occur in Units 2 and 3. Temporary ditch crossings would be used for harvest and yarding access. Ditch crossings would protect ditch infrastructure and capacity and would not impede ditch flow (if present). Crossing locations would be selected and agreed upon by the purchaser/operators and the Forest Officer. Locations would be selected with the objective of minimizing the number of crossing and at stable locations that would be robust to crossing with installed protections (i.e., core logs and pipe as needed).

    - The ditch in Unit 2 would not be subject to SMZ law because flows within this section of ditch do not return to any other bodies of water.

    - The ditch in Unit 3 would be subject to SMZ law as an "other body of water," which limits equipment operation with 50 feet of the ditch, with the exception for at designated crossing locations.

Water 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.

Montana DEQ. 2013. Rock Creek Watershed Total Maximum Daily Loads and Water Quality Improvement Plans. Helena, MT: Montana Dept. of Environmental Quality. https://deq.mt.gov/Files/Water/WQPB/CWAIC/TMDL/C02-TMDL-02a.pdf

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

FISHERIES:

Fisheries Existing Conditions: Fisheries populations present in the project area are included in Table F-1 (MFISH 2024). Bear and Beaver creeks are the only fish-bearing streams in the immediate project area. Both streams were formerly connected to Upper Willow Creek, however following development of irrigation diversion structures on both Bear and Beaver creeks are no longer functionally connected tributaries. Fisheries habitat in Beaver Creek is marginal to poor downstream from the diversion structure near the existing bridge crossing, the majority of instream flow is captured and transferred to Bear Creek. Upstream from the diversion, instream habitat is in functional condition with suitable spawning, rearing and overwinter habitat. Similar conditions were also noted in Bear Creek, with increased scour and instream habitat disturbance from the point where Beaver Creek discharge is captured in the Bear Creek channel. The increase in discharge has altered sediment transport capacity and impacted instream habitat. Upstream from the ditch confluence, habitat conditions are largely functional and stable. Currently the majority of channel and streambank disturbance in Bear Creek is due to livestock grazing. Riparian management zones (RMZ) along Bear and Beaver creeks are well

stocked, with previous timber harvest leaving unmanaged buffers adjacent to both streams. Large woody debris are within the expected range of conditions for the stream types (Rosgen 1994; DNRC 2022). Thermal regimes in both streams indicate suitable conditions for both Bull trout and Westslope cutthroat trout (DNRC 2017).

Table F-1: Fisheries populations present in the Upper Willow Creek

Watershed	Stream	Species	Native	Occupied River Miles
Upper Willow Creek 170102021102	Bear Creek	Bull trout	Y	1.0
		Westslope cutthroat trout	Y	2.6
		Eastern brook trout	N	1.5
	Beaver Creek	Bull trout	Y	2.3
		Westslope cutthroat trout	Y	2.3
		Longnose sucker	Y	1.0
		Eastern brook trout	N	2.3
		Brown trout	N	1.0

No-Action: No direct or indirect impacts would occur to affected fish species or affected fisheries resources beyond those described in Fisheries Existing Conditions. Cumulative effects (other related past and present factors; other future, related actions; and any impacts described in Fisheries Existing Conditions) would continue to occur.

Action Alternative (see Fisheries table below):

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	F-2
Woody Debris	X				X				X					
Stream Shading	X				X				X					
Stream Temperature	X				X				X					
Connectivity				X				X				X	N	F-3
Populations				X				X				X	N	F-4
Action														
Sediment		X				X				X			Y	F-1
Flow Regimes			X				X				X		N	F-2
Woody Debris	X				X				X					
Stream Shading	X				X				X					
Stream Temperature	X				X				X					
Connectivity				X				X				X	N	F-3
Populations				X				X				X	N	F-4

Fisheries Comments:

F-1: Existing sediment delivery sites on perennial waterbodies in the project area would be addressed under timelines identified in the HCP (DNRC 2012). Selection of the No-Action Alternative may delay implementation of corrective actions developed to address sediment delivery. This would result in continued moderate risk of moderate impacts to fisheries habitat until corrective actions were taken. Selection of the Action Alternative would result in application of corrective actions on an accelerated timeframe and a result in a long-term reduction in sediment delivery compared to the No-Action Alternative. Implementation of the Action Alternative would result in short-term increases in sediment and turbidity during crossing removal or replacement, but through application of Forestry BMPs during construction and installation would be expected to reduce long-term risk of sediment delivery from the existing levels to a very low risk of low impact to fisheries habitat. Remediation of the two bridge crossings would provide direct and indirect benefit to fisheries resources in the project area.

F-2: Existing flow regimes in Beaver and Bear creeks have been significantly altered by irrigation diversions and subsequent dewatering of historic channels. Beaver Creek is largely captured by a diversion, often dewatering the lower 0.5 miles of stream impacting both seasonal connectivity as well as local reach population distribution and abundance. Discharge from Beaver Creek is conveyed to Bear Creek through the irrigation ditch, resulting in significantly higher discharge in this reach than was present historically. Bear Creek is also largely captured by a diversion and delivered to a hayfield outside of the project area. Water rights associated with the diversions and ditches on Beaver and Bear creeks are outside of the scope of this project. The impact to flow regime given the periodic dewatering of reaches downstream from the diversion structures, as well as the increased discharge in Bear Creek resulting from the conveyance of Beaver Creek in the ditch system are expected to have moderate risk of moderate levels of negative impact on fisheries resources. Selection of either the No-Action or Action Alternative would be expected to have similar risk of impacts.

F-3: Fisheries connectivity is currently negatively impacted by the existing irrigation infrastructure in the project area. No stream crossings currently preclude fisheries populations from accessing all habitat on DNRC managed lands. Both irrigation diversion structures capture the majority of discharge, resulting in intermittent reaches and rare downstream connection with Upper Willow Creek. No corrective actions are proposed under either the No-Action or Action Alternative, as such existing high levels of impact on fisheries connectivity would be expected to continue under selection of either Alternative.

F-4: Fisheries populations have been significantly impacted in the project area through the introduction of non-native species resulting in competition, displacement, and possible hybridization with native Bull trout and Westslope cutthroat trout. No introduction, suppression, or removal of non-native species is proposed under the Action Alternative. Selection of either the No-Action or Action Alternative would be expected to have similar risk of impact on fisheries populations in the project area. None of the proposed corrective actions included in the Action Alternative would be expected to have a measurable or detectable impact on fisheries populations.

Fisheries Mitigations

- 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)
- Applying all applicable Habitat Conservation Plan Aquatic Conservation Strategies
- Implement work timing restrictions for any instream work associated with bridge replacement or removal to minimize potential impacts to native species. Refer to the SPA124 permit from MFWP for specific work periods.

Fisheries References

Rosgen. D. L. 1994. A classification of natural rivers. Catena. 22: 169-199.

DNRC. 2012. Montana Department of Natural Resources and Conservation, Forested State Trust Lands, Habitat Conservation Plan. Missoula, MT.

DNRC. 2017. Stream temperature monitoring on Forested State Trust Lands: 2001 – 2016. Montana DNRC, Forest Management Bureau. Missoula, MT. 84 pp.

DNRC. 2022. Montana Department of Natural Resources and Conservation Forested State Trust Lands Habitat Conservation Plan 10-year monitoring report. Montana DNRC, Forest Management Bureau. Missoula, MT. 31pp.

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 lodgepole pine, Douglas-fir, and mixed conifers stands, younger seedling/sapling stands of the same suite of species, and non-stocked stands that have not sufficiently regenerated following past disturbances. The project area contains habitat for a diverse array of wildlife that rely on the upland coniferous forests and young forests/non-stocked areas of western Montana. Some use of the vicinity by grizzly bears is possible during the non-denning period. There are roughly 1,444 acres (90%) of Canada lynx habitats in the project area, which includes 75 acres (5%) of winter foraging habitats, 242 acres (17%) of 'other suitable' habitats, 321 acres (22%) of summer foraging habitats, and 806 acres (56%) of temporary non-suitable lynx habitats. Little or no use of the project area by wolverine would be anticipated. Potential habitat exists for fisher and flammulated owls in the project area. Potential fringed myotis and Townsend's big-eared bat foraging habitats may exist in the project area; some potential hoary bat roosting habitats could exist in the project area. Big game summer range exists in the project area. Hiding cover for big game species exist in the project area and the project area likely receives a fair amount of recreational hunting pressure; potential big game security habitats exist in the project area that may contribute to security habitats in the cumulative effects analysis area.

No-Action: No potential for disturbance to wildlife would be anticipated. No timber management or associated activities would be conducted, thus no appreciable changes to existing habitats would occur. Continued maturation could improve grizzly bear, Canada lynx, and fisher habitats,

as well as big game summer range attributes, but could reduce Canada lynx summer foraging habitats, flammulated owl habitat quality, and big game forage attributes over the long term. No changes to large diameter trees or snags would occur in the project area. No appreciable changes to riparian habitats would be anticipated. Generally, negligible direct, indirect, or cumulative effects to wildlife would occur.

Action Alternative (see Wildlife table below):
Roughly 176.3 acres of forested habitats, including 2 acres (4%) of existing mature mixed conifer stands with reasonably closed canopies would be commercially harvested. In general, habitats for those species adapted to open stands of lodgepole pine and mixed conifer stands similar to areas that historically experienced low frequency, high intensity, stand replacement burns would increase in the project area. Conversely habitats for wildlife species that prefer somewhat dense, mature lodgepole pine and mixed conifer stands would be reduced. Across proposed units, reductions in canopy cover would be anticipated, but proposed prescriptions would retain a few large trees, which could continue to provide habitats for a variety of wildlife species that rely on larger lodgepole pine and mixed conifers. Reductions in visual screening would occur. 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. Losses of snags and large trees would be additive to reductions in snags and large trees with any ongoing timber management activities in the vicinity. Short-term increases in disturbance potential associated with proposed road construction and use, timber management, and site preparation would be anticipated, 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				**Secondary**				**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**
Lynx (*Felis lynx*) Habitat: mosaics--dense sapling and old forest >5,000 ft. elev.		**X**				**X**				**X**			**Y**	**2**
Yellow-billed cuckoo (*Coccyzus americanus*) Habitat: open cottonwood riparian forest with dense brush understories (Missoula and Ravalli counties)	**X**				**X**				**X**					**3**
Wolverine *(Gulo gulo)* Habitat: Alpine tundra and high-elevation boreal forests that maintain deep persistent snow into late spring		**X**				**X**				**X**			**Y**	**4**

Sensitive Species														
Bald eagle *(Haliaeetus leucocephalus)* Habitat: Late-successional forest within 1 mile of open water	X				X				X					3
Black-backed woodpecker *(Picoides arcticus)* Habitat: Mature to old burned or beetle-infested forest	X				X				X					3
Fisher *(Martes pennanti)* Habitat: Dense mature to old forest less than 6,000 feet in elevation and riparian		X				X				X			Y	5
Flammulated owl *(Otus flammeolus)* Habitat: Late-successional ponderosa pine and Douglas-fir forest	X					X				X			Y	6
Fringed myotis (*Myotis thysanodes*)Habitat: low elevation ponderosa pine, Douglas-fir and riparian forest with diverse roost sites including outcrops, caves, mines		X				X				X			Y	7
Hoary bat (*Lasiurus cinereus*)Habitat: coniferous and deciduous forests and roost on foliage in trees, under bark, in snags, bridges		X				X				X			Y	8
Peregrine falcon *(Falco peregrinus)* Habitat: Cliff features near open foraging areas and/or wetlands	X				X				X					3
Pileated woodpecker *(Dryocopus pileatus)* Habitat: Late-successional ponderosa pine and larch-fir forest	X				X				X					3
Townsend's big-eared bat (*Plecotus townsendii*) Habitat: caves, caverns, old mines		X				X				X			Y	9
Big Game Species														
Elk		X				X				X			Y	10
Whitetail		X				X				X			Y	10
Mule Deer		X				X				X			Y	10
Bighorn Sheep	X				X				X					3
Other														

COMMENTS:

W-1 The project area is 28 miles south of the Northern Continental Divide Ecosystem grizzly bear recovery area, and 26 miles southwest of `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 could use the project area throughout the non-denning period. Approximately 705 acres (44%) of the project area appear to have sufficient cover to potentially serve as hiding cover for grizzly bears; regeneration in past harvest units in the project area is somewhat mixed with 30-50% of those older harvest units starting to develop hiding cover for grizzly bears. No open roads exist in the project area but proximity to open roads in the vicinity affects grizzly bear security habitats in the project area. Recent tree mortality, subsequent harvesting, along with numerous other forms of human disturbance have reduced the overall effectiveness of the project area for grizzly bears. No grizzly bear security habitats (≥ 0.3 miles from roads receiving motorized use and ≥2,500 acres in size) exist solely within the project area, but habitats in the project area contribute to potential security habitats that extend beyond the project area. Within the cumulative effects analysis area, there are approximately 48 miles of open roads (0.8 mi./sq. mi., simple linear calculation) that could facilitate human-bear interactions and reduce the effectiveness of those areas for grizzly bears. Approximately 26,219 acres (70%) are distant enough from open roads and in blocks large enough to be useful for grizzly bears to be considered grizzly bear security habitats. Ongoing timber management in the cumulative effects analysis area could be adding disturbance to grizzly bears and/or altering existing habitats.
Grizzly bears could be affected directly through increased road traffic, noise, and human activity, and indirectly by altering the amount of hiding cover and forage resources in the project area. Proposed activities could occur during the denning period or the non-denning period. 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 somewhat limited grizzly bear use would be anticipated, thus potential for disturbance and displacement of grizzly bears would be expected to have minor effects on grizzly bears. No new permanent road construction would occur, but 1.4 miles of temporary roads would be constructed with the proposed activities. Overall, no changes in open road density or motorized public access would be anticipated. Negligible changes to non-motorized public access could occur, thus no appreciable changes in contact between humans and grizzly bears would be expected. Hiding cover would be reduced on most of the 175 acres (100%) of hiding cover proposed to receive treatments. Rather limited hiding cover in the form of brush, shrubs, and sub-merchantable trees would persist in some of the units, albeit at a reduced level from the existing condition. Despite reductions in hiding cover in the near term, hiding cover would increase through time across all proposed units as young trees and shrubs regenerate over the next 5 to 10 years; hiding cover continues to develop elsewhere in the project area where past harvesting altered hiding cover. Roughly 176 acres within 1 potential block of grizzly bear security habitats would be commercially harvested, which would reduce hiding cover attributes in a small portion of the area contributing to the larger block of potential security habitats in the vicinity. Overall, a minor reduction in 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 5,480 to 6,160 feet in elevation and is dominated by lodgepole pine. Approximately 1,444 acres (90%) of lynx habitat occur in the project area, which includes 75 acres (5%) of winter foraging habitats, 321 acres (22%) of

summer foraging habitats, 242 acres (17%) of other suitable habitats, and 806 acres (56%) of temporary non-suitable lynx habitats. Thus, roughly 44% of the project area is suitable for Canada lynx. Past timber management has altered connectivity in the project area; existing lynx habitats are partially connected, but some unsuitable types are intermixed with those suitable habitats. Generally, due to the large amounts of unsuitable/temporary non-suitable 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.

Another 22 acres (4%) of Canada lynx winter foraging habitats, 52 acres (9%) of other suitable habitats, and 257 acres (46%) of temporary non-suitable habitats exist on DNRC-managed lands in the cumulative effects analysis area. These habitats are intermixed with 234 acres (41%) of unsuitable types on DNRC-managed lands. On other ownerships, there are roughly 10,431 acres (30% of non-DNRC lands) of forested stands with a reasonably closed canopy across the cumulative effects analysis area; a portion of those stands would likely be suitable lynx habitats and probably include some winter foraging and other suitable lynx habitats. Additionally, summer foraging habitats likely exists on a portion of the 18,238 acres (52% of non-DNRC lands) of sparsely stocked and young forest stands on other ownerships; no lynx habitats likely exist on the 6,250 acres (18% of non-DNRC lands) of shrubs, herbaceous, water, recently burned habitats, 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, recent wildfires, the existing mixture of suitable 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. 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.

Approximately 126 acres of proposed harvesting would occur in mapped lynx habitats, which includes 92 acres (73%) of other suitable lynx habitats, 32 acres (25%) of summer foraging habitats, and 2 acres (2%) of winter foraging habitats. Proposed activities would convert existing habitats (126 acres; 9%) to temporary non-suitable habitats; overall roughly 932 acres (65%) would be in temporary non-suitable habitats following proposed treatments. Generally, these reductions in winter foraging, other suitable habitats, and summer foraging habitats would have minor effects on Canada lynx in the project area given the limited habitats affected, the landscape matrix within which they are found, and the overall expected use of the landscape by Canada lynx. The retention of patches of advanced regeneration of shade-tolerant trees, such as grand-fir, sub-alpine fir, and Engelmann spruce in winter 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, shifts in lynx use of a portion of the project area could occur, but extensive use would not be anticipated. Proposed activities would further reduce forested connectivity in the area.

Within the cumulative-effects analysis area, roughly 1,189 acres of lynx habitats (59%) on DNRC-managed lands would be in temporary non-suitable habitats following proposed activities. The reductions in other suitable habitats, summer foraging, and winter foraging habitats 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, increases in the amounts of summer foraging habitats available in the cumulative effects analysis area would occur as regeneration occurs across all ownerships. 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, tree mortality, and other forms of human disturbance. No further 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 not appreciably alter connectivity in the cumulative effects analysis area. Following proposed treatments, approximately 83.0% 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 tree line 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). Some areas of potentially deep persistent spring snow occur in the vicinity but occur outside of the project area. 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 49 acres (3%) of potential upland fisher habitats and 7 acres (<1%) of potential riparian fisher habitats exist in mixed conifer stands in the project area. Another 102 acres (7%) of preferred cover types in the uplands and 7 acres (<1%) of preferred cover types in riparian areas exist in the project area that currently lack structural attributes necessary to be suitable for fisher. Conversely, roughly 1,342 acres (90%) in the uplands and 89 acres (86%) in the riparian areas are in unsuitable types for fisher, thus the limited habitats in the project area are in a matrix of largely unsuitable habitats. Generally, habitats in the project area and cumulative effects analysis area are somewhat disconnected and interspersed with considerable unsuitable habitats for fisher, thus extensive use by fisher would not be anticipated. Observations of fishers in the vicinity within the last 30 years are lacking and recent research suggests that fishers are largely absent east of the wet forests along the Montana-Idaho border (Montana Natural Heritage Program 2024, Krohner et al. 2022). Proposed activities could introduce short-duration disturbance in the upland habitats. Alterations to 2 acres (4%) 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 would not be suitable for fisher for 60-120 years. 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 project area and cumulative effects analysis area, but collectively no appreciable changes in fisher use of the cumulative project area or effects analysis area would be anticipated.

W-6 Roughly 154 acres (10% of the project area) of potential flammulated owl habitats exist in the project area in Douglas-fir and lodgepole pine stands. As such, the project area is likely on

the edge of flammulated owl range. There are an additional 166 acres (33%) of potential flammulated owl habitats on stands dominated by Douglas-fir and lodgepole pine on DNRC-managed lands within the cumulative effects analysis area. Some suitable habitats likely exist on a portion of the 2,240 acres (29% of non-DNRC-managed lands) of open and closed forested habitats on other ownerships in the cumulative effects analysis area; however, portions of these forested areas are not likely preferred flammulated owl habitat types. Elsewhere in the cumulative effects analysis area, some of the forested habitats have burned and/or 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. Ongoing timber management in the cumulative effects analysis area could be adding disturbance to flammulated owls and/or altering existing habitats.
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. Although some snags and snag recruits would be retained per *ARM 36.11.411* through *36.11.414*, lodgepole pine are not preferred nesting substrates for flammulated owls. Proposed activities on 50 acres of potential flammulated owl habitats (32% of existing habitats) would largely remove the existing canopy and potentially improving future foraging habitats. While the more open stand conditions would be representative of historic conditions, the project area would continue to exist near the upper elevational range for flammulated owls and changes to existing habitats would have negligible effects on flammulated owls given the habitats present. Disturbance in flammulated owl habitats would occur on a small portion of the cumulative effects analysis area and could be additive to ongoing activities in the area. Proposed activities would increase the amount of the cumulative effects analysis area that has been recently harvested, which would add to the amounts of potential 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 negligible change 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. Fringed myotis have not been documented in the vicinity, but since suitable habitat exists, some use by fringed myotis is possible. Ongoing timber management in the cumulative effects analysis area could be disturbing fringed myotis and/or altering existing habitats. Proposed activities could disturb fringed myotis should they be in the area during proposed activities. Changes in vegetation structural attributes could change overall prey availability, but considerable foraging habitats would persist in the project and cumulative effects analysis areas. Overall, negligible changes to fringed myotis use of the project area or cumulative effects analysis areas would be anticipated.

W-8 Hoary bats are summer residents (June-September) across a variety of forested habitats in Montana. Hoary bats frequently forage over water sources near forested habitats. Hoary bats are generally thought to roost alone, primarily in trees, but will use 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 Upper Willow Creek and numerous other smaller

streams and riparian areas. 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. Hoary bats have been documented to the south of the project area along Upper Willow Creek. Ongoing timber management in the cumulative effects analysis area could be disturbing hoary bats and/or altering existing habitats. Proposed activities could disturb hoary bats should they be in the area during proposed activities, but disturbance generally outside of the summer months would not be expected to disturb hoary bats. Loss of potential roosting habitats could occur, but considerable amounts of trees would persist in the project and cumulative effects analysis areas. No changes in foraging habitats would be anticipated. Overall, negligible changes to hoary bat use of the project area or cumulative effects analysis areas would be anticipated.

W-9 Townsend's big eared bats are year-round residents in Montana that are closely associated with caves, caverns, old mines. Townsend's big-eared bats feed on various nocturnal flying insects near the foliage of trees and shrubs. Townsend's big-eared bats have not been documented in the vicinity, but some use of the project area by Townsend's big-eared bats would be possible given the varied habitats. Trees and shrubs in the project area could be used for foraging. No known caves, caverns, or other structures potentially used for roosting are known to occur in the project area. Ongoing timber management in the cumulative effects analysis area could be disturbing Townsend's big eared bats and/or altering existing habitats. Proposed activities could disturb Townsend's big-eared bats should they be in the area during proposed activities. Loss of potential foraging habitats could occur, but considerable numbers of trees would persist in the project and cumulative effects analysis areas. No changes in roosting habitats would be anticipated. Overall, negligible changes to Townsend's big-eared bats use of the project area or cumulative effects analysis areas would be anticipated.

W-10 The project area is adjacent to USFS and BLM lands in close proximity to Phillipsburg, thus decent public access for recreational hunting exists. Hiding cover (705 acres; 44%) is somewhat limited due to tree mortality, past timber management, and recent wildfires; similarly hiding cover is moderate in the cumulative effects analysis area due to many of these same factors. The project area does not contain open roads. Non-motorized access to the project area is moderately high with access from adjacent public lands and the 8.6 miles of restricted roads (3.5 mi./sq. mi., simple linear calculation) in the project area. Roughly 537 acres of the project area have adequate cover and are distant enough from open roads to be considered big game security habitats, but many of these are small stringers of habitats that offer connectivity to larger patches outside of the project area; regeneration in past harvest units in the project area is somewhat mixed with 30-50% of those older harvest units starting to develop big game hiding cover which could start contributing to big game security habitats in the near future. Potential security habitats in the project area contributes 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 moderate, with numerous open roads (48 miles, 0.8 mi./sq. mi.) that facilitate access and numerous restricted roads (54 miles; 0.9 mi./sq. mi.) that could be used for non-motorized use. Within the cumulative effects analysis area, at least 2 patches (minimum of 11,582 acres; 31%) of potential security habitat exist. Both patches along with another patch that is only 1,682 acres in the analysis area) extends beyond the cumulative effects analysis area and contributes to a larger block of potential security habitats in the vicinity. Hiding cover across these patches continues to improve as trees regenerate following past disturbances. Ongoing timber management in the cumulative effects analysis area could be disturbing big game security habitats and/or altering existing habitats.
Tree density within proposed units would be reduced on approximately 176 acres, including roughly 175 acres (25%) of forested stands in the project area that likely have adequate hiding

cover for big game. Hiding cover would 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 some riparian habitats would reduce the potential effects of the hiding cover reductions. Some increases in sight distance in the project area would be anticipated; these increases in sight distances could increase big game vulnerability to hunting mortality as hunters would be able to detect big game at longer distances in proposed units. Increases in forage production in proposed units could benefit big game in the short-term, but the benefit would be largely limited as there are considerable amounts of these conditions in the project area and cumulative effects analysis area currently. 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. No appreciable changes in non-motorized access would occur with the proposed activities. 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. Collectively, hiding cover on up to 153 acres of big game security habitats (28%) in the project area would be removed, which would temporarily reduce the quality of the existing security habitats in the cumulative effects analysis area. No changes in public, motorized access and negligible changes in non-motorized access would be expected. Negligible effects to big game vulnerability would be anticipated in the cumulative effects analysis area because minor changes to hiding cover would occur, no changes to motorized human access and negligible changes to non-motorized access would occur, and some reductions in hiding cover in a small portion of 1 of the larger blocks of big game security habitats would occur.

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 36.11.435) 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 *36.11.414*, 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.
- 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.

- Provide connectivity by maintaining corridors of unharvested and/or lighter harvested areas along riparian areas, ridge tops, and saddles.

WILDLIFE REFERENCES

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Hornocker, M. and H. Hash. 1981. Ecology of the wolverine in northwestern Montana. Journal of Wildlife Management 44(3):1286-1301.

Krohner, J. M., Lukacs, P. M., Inman, R., Sauder, J. D., Gude, J. A., Mosby, C., Coltrane, J. A., Mowry, R. A. and J. J. Millspaugh. 2022. Finding fishers: determining fisher occupancy in the Northern Rocky Mountains. The Journal of Wildlife Management, 86(2): 1-20.

McCallum, D. A. 1994. Review of technical knowledge: flammulated owls. Pages 14-46 *in* G. D. Hayward and J. Verner, tech eds. Flammulated, boreal, and great gray owls in the United States: a technical conservation assessment. USDA Forest Service Gen. Tech. Rep. RM-253. Fort Collins, Colorado.

Montana Natural Heritage Program. Environmental Summary Report for Latitude 46.39371 to 46.52111 and Longitude -113.44000 to -113.56255. Retrieved on 11/20/2024.

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

AIR QUALITY:

Air Quality	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
No-Action														
Smoke	**X**				**X**				**X**				**N/A**	**1**
Dust	**X**				**X**				**X**				**N/A**	**1**
Action														
Smoke		**X**			**X**					**X**			**Y**	**2**
Dust		**X**			**X**					**X**			**Y**	**3**

Comments:

1. With no action, no timber harvesting would occur. Existing air quality conditions would likely continue.

2. 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. The project area is located within Montana Airshed 5.

3. Dust may be produced by truck hauling if it occurs during dry periods. Mitigation (i.e. dust abatement) is possible but would likely not be used as hauling would occur on forest roads that are not used for residential purposes. County roads are maintained by the county and appear to include dust control treatments. Limiting truck speed near residences can help with controlling dust.

Air Quality Mitigations:

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

- If necessary, a slower speed limit may be imposed in the timber harvest contract.

ARCHAEOLOGICAL SITES / AESTHETICS / DEMANDS ON ENVIRONMENTAL RESOURCES:

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

Comments:

1. 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 results revealed that the state-owned portions of sections 5, 8, and 17 (T8N R15W) were inventoried in 1986 and no cultural resources were identified.

   Proposed timber harvest activities are expected to have *No Effect* to *Antiquities*. 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.

2. Change to the scenery in the area from the proposed project would be in addition to past timber harvests, road building, vegetation management (grazing, pre-commercial thinning, etc.) and fire activity within the project area. Due to slash and the initial color contrasts of the slash and limited road building, there is an expected short-term impact. Given the treatments proposed and the open nature of surrounding areas (as a result of past management activities and natural grassy openings), a moderate risk of an increase in cumulative visual effects to the landscape would be expected.

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.*

- Phoenix Timber Sale Environmental Impact Statement (2003).
- Willows End Salvage Environmental Assessment (2010).

Impacts on the Human Population

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

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

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

Comments:

1. This harvest is viewed as a continuation of a sustained yield and as such would not create any new jobs but rather assists in sustaining employment in the forest products industry.

Locally Adopted Environmental Plans and Goals: *List State, County, City, USFS, BLM, Tribal, and other zoning or management plans, and identify how they would affect this project.*

None

Other Appropriate Social and Economic Circumstances:

Costs, revenues and estimates of return are estimates intended for relative comparison of alternatives. They are not intended to be used as absolute estimates of return. The estimated stumpage is based on comparable sales analysis. This method compares recent sales to find a market value for stumpage. These sales have similar species, quality, average diameter, product mix, terrain, date of sale, distance from mills, road building and logging systems, terms of sale, or anything that could affect a buyer's willingness to pay.

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

Action: The timber harvest would generate additional revenue for the **Common School Trust**. The estimated return to the trust for the proposed harvest is approximately $24,000 based on an estimated harvest of **439,000 board feet** and an overall stumpage value of $8 per ton for sawlogs and $3 per ton for non-saw product. Costs, revenues, and estimates of return are estimates intended for relative comparison of alternatives, they are not intended to be used as absolute estimates of return.

References

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

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

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

No

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

No

Environmental Assessment Checklist Prepared By:

Name and Title: Andrea Stanley, Hydrologist; and Jacob Lee, Forester
Date: January 2025

Finding

Alternative Selected
The action alternative is the selected alternative.

Significance of Potential Impacts
No significant or un-acceptable impacts are anticipated with implementation of the action alternative.

Need for Further Environmental Analysis

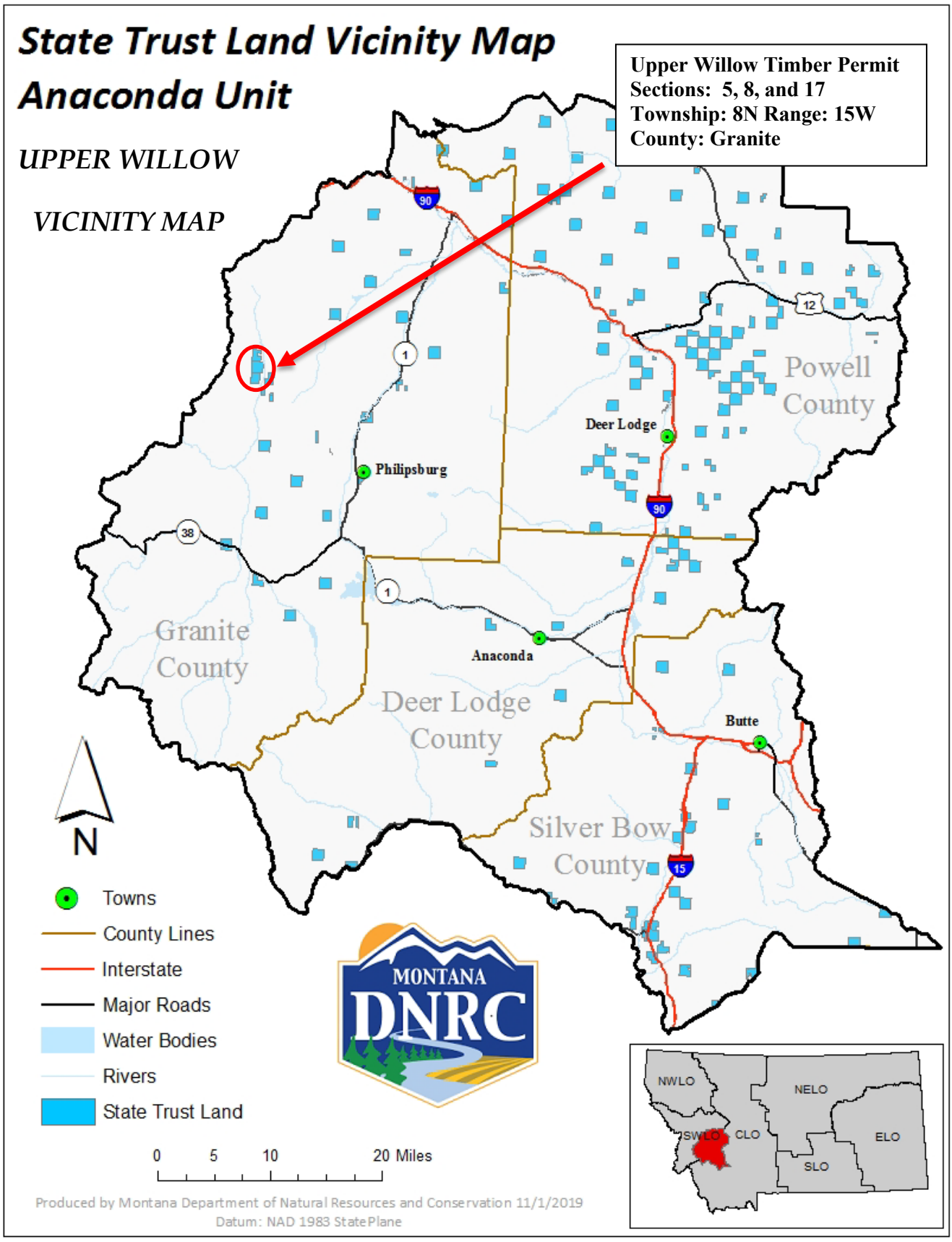
[ ]	EIS	[ ]	More Detailed EA	[X]	No Further Analysis

Environmental Assessment Checklist Approved By:

Name: Craig Hansen
Title: Anaconda Unit Manager
Date: January 21, 2025
Signature: /s/ Craig Hansen

Attachment A - Maps

A-1: Timber Sale Vicinity Map



A-2: Timber Sale Harvest Units