Buffalo Bill

Timber Sale

Environmental Assessment

Checklist

Plains Unit

Northwest Land Office

Montana Department of Natural Resources and Conservation

January 2024

Buffalo Bill
Timber Sale
Environmental Assessment Checklist
Table of Contents

MEMORANDUM

To: Joe Buchanan, Management Forester

From: David Olsen, Plains Unit Resource Program Manager

Date: May 15, 2023

RE: Buffalo Bill Timber Sale Objectives

Primary Objective

The primary objective of the Buffalo Bill Timber Sale is to generate income for the Public Buildings (PB) and Common Schools (CS) Trusts. The parcels involved in this proposed project are Sections 20, 22 and 28, T21N, R26W. The project would provide an estimated 3.5 MMBF of merchantable timber applied toward meeting the FY 2024 Northwestern Land Office timber sale volume target.

Secondary Objectives

Minimize losses in timber quality and available volume resulting from deteriorating stand conditions in the defined project area as well as the surrounding forested land.

Promote the continued presence and/or reestablishment of historically appropriate timber types on Trust Land included in this project.

Reduce fire hazard and associated risks of loss to the State of Montana and privately-owned land in the area.

Management Directives

In planning and preparing this project, requirements and specified actions as designated in the DNRC HCP shall be addressed, management direction from the State Forest Land Management Plan and Administrative Rules shall be followed, and all applicable Streamside Management Zones rules and regulations will be met. Montana Best Management Practices will be applied in all instances.

Environmental Assessment Checklist

Project Name: Buffalo Bill
Proposed Implementation Date: June 2024
Proponent: Plains Unit, Northwest Land Office, Montana DNRC
County: Sanders

Type and Purpose of Action

Description of Proposed Action:

The Plains Unit of the Montana Department of Natural Resources and Conservation (DNRC) is proposing the Buffalo Bill Timber Sale. The project is located approximately 5 miles North of Plains, MT (refer to Attachments vicinity map **A-1** and project maps **A-2, A-3, and A-4**) and includes the following sections:

Beneficiary	Legal Description	Total Acres	Treated Acres
Common Schools	**T21N R26W S20**	**80.2**	**51.5**
Public Buildings	**T21N R26W S28**	**480**	**448.2**
Common Schools	**T21N R26W S22**	**160**	**0.5**
School for the Deaf and Blind			

Objectives of the project include:

- Move stands toward desired future conditions
- Emulate natural disturbance regimes
- Promote/establish regeneration
- Enhance stand growth and vigor
- Address insect and disease issues
- Reduce fuel loading/fire hazard
- Capture value of dead/dying timber
- Generate revenue for the trust beneficiaries

Proposed activities include:

Action	Quantity
Proposed Harvest Activities	# Acres
Clearcut	
Seed Tree	
Shelterwood	355.1
Selection	93.9
Old Growth Maintenance/Restoration	50.7

Action	Quantity
Commercial Thinning	
Salvage	
Total Treatment Acres	**500.2**
Proposed Forest Improvement Treatment	# Acres
Pre-commercial Thinning	
Site preparation/scarification	**410**
Planting	**0**
Proposed Road Activities	# Miles
New permanent road construction	4.0
New temporary road construction	
Road maintenance	13.8
Road reconstruction	
Road abandoned	
Road reclaimed	
Other Activities	

Duration of Activities:	8 Years
Implementation Period:	June 2024- June 2032

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:
  - May 2, 2023
- PUBLIC SCOPED:
  - The scoping notice was posted on the DNRC Website: http://dnrc.mt.gov/public-interest/public-notices , and letters sent to adjacent landowners.
  - Adjacent landowners, statewide scoping list, user groups

- AGENCIES SCOPED:
    - FWP, USFS, IFG, Sanders County Weed Control, TRL, Plains/Thompson Falls Fire Ranger District, Land Management Chair – MCAFS, Montana Environmental Information Center, Montana Audubon, MSU – Bozeman, Montana Farm Bureau Federation and Montana tribal organizations.

- COMMENTS RECEIVED:
    - How many: 0
    - Concerns: 0
    - Results:
        - No Comments Received

DNRC specialists were consulted, including: Tony Nelson (Hydrologist), Justin Cooper (Wildlife Biologist), Patrick Rennie (Archaeologist)

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.

ALTERNATIVES CONSIDERED:

No-Action Alternative: Under this alternative, no timber would be harvested and therefore no revenue would be generated from the project area for the Common Schools or Public Buildings Trusts. Forest health would decline due to bark beetle and dwarf mistletoe while fuel loading would increase thus increasing fire danger. Trust would continue to lose stumpage value within the stand.

Action Alternative: This commercial timber harvest would take place using ground-based and cable yarding methods on 500.2 acres to remove between 3.7 and 4.4 million board feet of timber, generating revenue for the Common Schools and Public Buildings Trusts. Forest health would improve by reducing the possibility of insect and disease activity while fuel loading would decrease thus decreasing fire danger. Timber sale design would promote and reestablish timber types historically found in these areas.

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:

Vegetation Existing Conditions:

Harvest Unit	Habitat Group	Fire Regime	Current Cover Type	Age Class (years)	DFC	RX	Acres
1 28-1T	Moderately warm and dry (westside)	Low	Ponderosa Pine	40-99	Ponderosa Pine	Individual/Select Tree Harvest	43.6
2 28-2T	Moderately warm and dry (westside)	Low-to-mixed	Ponderosa Pine	100-149	Ponderosa Pine	Shelterwood Harvest	56.0
3 28-3T	Moderately warm and dry (westside)	Low-to-mixed	Ponderosa Pine	100-149	Ponderosa Pine	Individual/Select Tree Harvest	25.9

4 28-4T	Moderately warm and dry (westside)	Low-to-mixed	Ponderosa Pine	40-99	Ponderosa Pine	Shelterwood Harvest	90.1
5 28-5T	Moderately warm and dry (westside)	Low-to-mixed	Ponderosa Pine	100-149	Ponderosa Pine	Shelterwood Harvest	76.2
6 28-6T	Moderately warm and dry (westside)	Low-to-mixed	Western Larch/Douglas Fir	40-99	Ponderosa Pine	Individual/Select Tree Harvest	12.4
7 28-7T	Moderately warm and dry (westside)	Low-to-mixed	Mixed Conifer	40-99	Ponderosa Pine	Individual/Select Tree Harvest	12.0
8 28-8T	Moderately warm and dry (westside)	Low-to-mixed	Ponderosa Pine	40-99	Ponderosa Pine	Shelterwood Harvest	43.1
9 OG Unit -1T	Moderately warm and dry (westside)	Low-to-mixed	Ponderosa Pine	40-99	Ponderosa Pine	Old Growth Restoration	50.7
10 28-1L	Moderately warm and dry (westside)	Low-to-mixed	Mixed Conifer	40-99	Ponderosa Pine	Shelterwood Harvest	38.2
11 20-1L	Moderately cool and moist (westside)	Low-to-mixed	Western Larch/Douglas Fir	100-149	Western Larch/Douglas Fir	Shelterwood Harvest	51.5

Fire Hazard/Fuels: Mistletoe and insect infestations have led to an abundance of dead-standing and downed timber that poses hazardous fuels conditions. The current arrangement and volume of ground fuels and dead-standing timber increases probability of high fire intensity. The project area is not within the wildland-urban interface.

Insects and Diseases: Dwarf mistletoe (*Arceuthobium laricis & Arceuthobium douglasii*) in Western larch & Douglas fir, signs of Douglas-fir beetle (*Dendroctonus pseudotsugae*) and Pine engraver beetles (*Ips pini*) in Douglas fir and Ponderosa pine occur as secondary infestations from trees affected by dwarf mistletoe.

Sensitive/Rare Plants: No plant species of concern identified by the MNHP in the project area.

Noxious Weeds: Spotted knapweed (*Centaurea stoebe*) was identified in the project area.

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			N	
Age Class	X				X				X					
Old Growth	X					X				X			N	
Fire/Fuels		X					X			X			N	
Insects/Disease			X				X				X		N	
Rare Plants	X				X				X					
Noxious Weeds		X				X				X			N	
Action														
Current Cover/DFCs			X			X				X			Y	V-1
Age Class			X			X				X			N	
Old Growth			X			X				X			Y	V-1
Fire/Fuels		X				X				X			Y	V-1
Insects/Disease			X			X				X			Y	V-1
Rare Plants	X				X				X					
Noxious Weeds		X				X				X			Y	V-1

Comments: **V-1; See vegetations mitigations.**

Vegetation Mitigations:

- Trees would be harvested based on the designated silvicultural prescription in each harvest unit to move towards the stands desired future conditions.
- The silvicultural prescription would help mitigate the effect of dwarf mistletoe by preferencing Ponderosa pine and Western larch. The Douglas fir and Western larch affected by dwarf mistletoe would be removed to mitigate the spread of the disease.
- To minimize the potential for the spread of noxious weed, off-road equipment would be cleaned and inspected as required in the timber sale contract to avoid seed migration. Roadsides would be sprayed post-harvest.
- The silvicultural prescription will retain old growth found within the sale.

SOIL DISTURBANCE AND PRODUCTIVITY:

Soil Disturbance and Productivity Existing Conditions: The proposed project area has approximately 1.5 miles of low to moderate standard existing road. Timber harvesting activities in the proposed project area began in the 1920s. The most recent timber sale in the project area was completed in 1949 in section 28 of the proposed project area, and various permits removed timber through 1982. Existing skid trails from prior entries are ameliorating due to root penetration and frost action and impacts from past entries are abating, though still identifiable

on the ground. The roads and skid trails are not an existing source of erosion or sediment delivery.

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**					
Erosion	**X**				**X**				**X**					
Nutrient Cycling	**X**				**X**				**X**					
Slope Stability	**X**				**X**				**X**					
Soil Productivity	**X**				**X**				**X**					
Action														
Physical Disturbance (Compaction and Displacement)		**X**				**X**				**X**			**Y**	**S-1**
Erosion		**X**				**X**				**X**			**Y**	**S-2**
Nutrient Cycling		**X**				**X**				**X**			**Y**	**S-3**
Slope Stability	**X**				**X**				**X**					
Soil Productivity		**X**				**X**				**X**			**Y**	**S-4**

Comments:

S-1: Based on DNRC soil monitoring on similar soils with a similar harvest intensity, approximately 11.4% of harvested area may be in an impacted condition (DNRC, 2006). This level is below the range analyzed for in the *EXPECTED FUTURE CONDITIONS* section of the *SFLMP*, and well within the 20-percent impacted area established as a level of concern in the *SFLMP (DNRC 1996)*. This level translates to a low risk of low direct, secondary and cumulative impacts to soil physical disturbance.

S-2: Low impacts to soil erosion are possible due to exposure of bare soil during felling and yarding operations and road construction activities. Risk of erosion would be mitigated by implementing all applicable BMPs to harvesting and road building activities.

S-3: Based on research by Graham, et. al. (1994), habitat types found in the project area should have 12-24 tons/acre of coarse woody debris for nutrient cycling. Logging residue left on the ground as mitigation would have a positive effect on nutrient cycling and improve the project area over the current condition.

S-4: Soil productivity would be impacted by temporary road construction and the use of ground-based machinery to yard timber. As stated in comment **S-1**, levels of ground disturbance are expected to be less than 11.4% with roads included, which is well below the range analyzed for in the EXPECTED FUTURE CONDITIONS section of the SFLMP, and well within the 20-percent impacted area established as a level of concern in the SFLMP (DNRC 1996). This level translates to a low risk of low direct, secondary and cumulative impacts to soil productivity.

Soil Mitigations:

- Operate ground-based equipment only during periods of dry, frozen, or snow-covered conditions.
- Space skid trails a minimum of 60 feet apart to minimize areas impacted by ground-based equipment. Soil types in the proposed project area are prone do impacts from soil displacement.
- Use existing skid trails if they are in suitable locations to minimize potential for cumulative impacts to soil physical disturbance.
- Leave approximately 12-24 tons of woody material 3-inches in diameter or greater on the ground for nutrient cycling.

WATER QUALITY AND QUANTITY:

Buffalo Bill Creek flows through the northern portion of section 20 parcel in the proposed project area. No stream channels were identified in section 28 of the proposed project area. Overland flow may occur in broad ephemeral draws during extreme runoff events, but no evidence of this was identified during field reconnaissance.

Water Quality and Quantity Existing Conditions: Buffalo Bill Creek is a stable, perennial class 1 stream. It has a cobble/gravel bed composition, and its bed and banks show no evidence of lateral or vertical erosion. Section 28 of the proposed project area has a network of well-defined ephemeral draws. None of these draws shows evidence of a scoured bed or definable bank sufficient to meet the definition of a stream. No active erosion was observed in any of these ephemeral draws.

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**					
Water Quantity	**X**				**X**				**X**					
Action														
Water Quality		**X**				**X**				**X**			**Y**	**WQ-1**
Water Quantity		**X**				**X**				**X**			**Y**	**WQ-2**

Comments:

WQ-1: All requirements found in ARM 36.11.301-313, and ARM 36.11.421-427 would be implemented, where applicable. In addition, all applicable forest management BMPs would be implemented. These measures would minimize any potential risk of sediment delivery to a stream or draw and leave a low risk of direct, secondary or cumulative impacts to water quality. All applicable BMPs, SMZ rules and HCP commitments would be implemented in order to minimize the risk of impacts to water quality.

WQ-2: There is a low risk of any proposed activities leading to increases in water quantity sufficient to destabilize any project area stream channel due to the size of the watershed relative to the proposed harvesting, the stable nature of the stream channels within the proposed project area and the well-drained nature of the soils in the project area

Water Quality & Quantity Mitigations:

- Minimize use of ground-based equipment in swale and draw bottoms to avoid concentration of runoff.

FISHERIES:

Fisheries Existing Conditions:
Buffalo Bill Creek flows through the northern portion of section 20 of the proposed project area. The following table displays the existing conditions for fisheries in the proposed project area:

Species		Occupied River Miles		Artificial Passage Barriers
		Watershed*	Project Area	
Native	Westslope cutthroat trout	2.2	0	0
Non-Native	Eastern brook trout	4.4	0.5	0
	Rainbow trout	2.2	0	0

*Weeksville Creek HUC12: 170102130507

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					
Flow Regimes	X				X				X					
Woody Debris	X				X				X					
Stream Shading	X				X				X					
Stream Temperature	X				X				X					
Connectivity	X				X				X					
Populations	X				X				X					
Action														

Fisheries	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Sediment		**X**				**X**				**X**			**Y**	**F-1**
Flow Regimes	**X**				**X**				**X**					
Woody Debris	**X**				**X**				**X**					
Stream Shading	**X**				**X**				**X**					
Stream Temperature	**X**				**X**				**X**					
Connectivity	**X**				**X**				**X**					
Populations		**X**				**X**				**X**			**Y**	**F-2**

Comments:
F-1: All requirements found in ARM 36.11.301-313, and ARM 36.11.421-427 would be implemented, where applicable. In addition, all applicable forest management BMPs would be implemented. These measures would minimize any potential risk of sediment delivery to a fish-bearing stream and leave a low risk of direct, secondary or cumulative impacts to water quality and fish habitat.

F-2: Provided the measures listed in F-1and the mitigation measures listed in the water quality portion of this analysis are followed, there is a very low risk of adverse direct, secondary or cumulative impacts to fish populations as a result of the proposed project.

Fisheries Mitigations:

- All proposed harvesting activities would take place outside of the established 84-foot riparian management zone to ensure woody debris, stream shading and stream temperature values are maintained.

WILDLIFE:

Wildlife Existing Conditions: The Project Area consists of three DNRC-managed parcels totaling 720 acres. These parcels are included in DNRC's Habitat Conservation Plan (*USFWS and DNRC 2010*). The Project Area is comprised of habitat conditions that favor native wildlife species associated with old-growth forest and mature forest types with a variety of canopy closure levels. Slope, aspect, and soils influence forest composition and structure in the Project Area, with south- and west-facing slopes containing more open mature forest stands consisting of higher proportions of ponderosa pine and Douglas fir. The Project Area contains 483 acres of mature forest stands (trees ≥9" dbh with ≥40% canopy closure). Of these acres, 51 acres are considered old-growth forest using Green et al. (1992) standards. Insects and disease are active within the Project Area, reducing live tree abundance and canopy closure in some patches. Intensively managed industrial timberlands surround Project Area parcels in most places, limiting mature forest on adjacent ownerships. Approximately 5.7 miles of roads are

present within the Project Area, all of which are restricted from public motorized use. Restricted roads receive occasional motorized use for resource and fire-management purposes. Public non-motorized use is likely low in these parcels except during the hunting season, when it likely increases to moderate levels. Cumulative effects analysis areas incorporate lands near the Project Area and include a 7,653-acre area for animals with smaller home ranges like pileated woodpeckers and a 34,581-acre area for animals that travel across larger areas such as Canada lynx, fisher, and big game. Additional information on cumulative effects analysis areas and analysis methods are available upon request. Overall, habitat conditions within the Project Area are more favorable for wildlife species preferring well-developed mature forest.

No-Action Alternative: None of the proposed activities would occur. In the short-term, forest insects and disease will likely continue to kill some mature trees. An increase in stand-replacement wildfire risk would be anticipated. In the long-term, habitat suitability for mature forest-associated species would remain similar or decrease slightly compared to current conditions.

Action Alternative (see Wildlife table below):

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**	**WI-1**
Lynx (*Felis lynx*) Habitat: SF hab.types, dense sapling, old forest, deep snow zone		**X**				**X**				**X**			**Y**	**WI-2**
Yellow-billed cuckoo (*Coccyzus americanus*) Habitat: open cottonwood riparian forest with dense brush understories (Lake and Flathead counties)	**X**				**X**				**X**					**WI-3**
Wolverine (*Gulo gulo*) Habitat: high elevation areas that retain high snow levels in late spring	**X**				**X**				**X**					**WI-3**
Sensitive Species														
Bald eagle *(Haliaeetus leucocephalus)*	**X**				**X**				**X**					**WI-3**

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Habitat: Late-successional forest within 1 mile of open water														
Black-backed woodpecker *(Picoides arcticus)* Habitat: Mature to old burned or beetle-infested forest	**X**				**X**				**X**					**WI-3**
Common loon *(Gavia immer)* Habitat: Cold mountain lakes, nest in emergent vegetation	**X**				**X**				**X**					**WI-3**
Fisher *(Martes pennanti)* Habitat: Dense mature to old forest less than 6,000 feet in elevation and riparian			**X**				**X**			**X**			**Y**	**WI-4**
Flammulated owl *(Otus flammeolus)* Habitat: Late-successional ponderosa pine and Douglas-fir forest		**X**				**X**				**X**			**Y**	**WI-5**
Peregrine falcon *(Falco peregrinus)* Habitat: Cliff features near open foraging areas and/or wetlands	**X**				**X**				**X**					**WI-3**
Pileated woodpecker *(Dryocopus pileatus)* Habitat: Late-successional ponderosa pine and larch-fir forest				**X**				**X**			**X**		**Y**	**WI-6**
Fringed myotis (*Myotis thysanodes*) Habitat: low elevation ponderosa pine,	**X**				**X**				**X**					**WI-3**

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Douglas-fir and riparian forest with diverse roost sites including outcrops, caves, mines														
Hoary bat (*Lasiurus cinereus*) Habitat: coniferous and deciduous forests and roost on foliage in trees, under bark, in snags, bridges			**X**				**X**			**X**			**Y**	**WI-7**
Townsend's big-eared bat *(Plecotus townsendii)* Habitat: Caves, caverns, old mines	**X**				**X**				**X**					**WI-3**
Big Game Species														
Elk				**X**				**X**			**X**		**Y**	**WI-8**
Whitetail				**X**				**X**			**X**		**Y**	**WI-8**
Mule Deer			**X**				**X**			**X**			**Y**	**WI-8**
Other														
Mature Forest				**X**				**X**				**X**	**Y**	**WI-9**
Old-growth Forest			**X**				**X**			**X**			**Y**	**WI-9**

Comments:

WI-1. Grizzly Bear – The project area is not within non-recovery occupied habitat or a recovery zone (*Wittinger 2002*). Nearby recovery zone habitat (1.2 miles away from the Project Area) is associated with the Cabinet-Yaak Ecosystem (CYE), which contains very low densities of grizzly bears (*Kasworm et al. 2020*). While occasional presence of a grizzly bear in the parcel is possible, appreciable use by grizzly bears would not be expected due to the distance from occupied grizzly bear habitat. As grizzly bears continue to expand their range outside of recovery zones, bears could occasionally travel through the parcel during their long-range movements, but appreciable changes to potential movement patterns would not be anticipated under the Action Alternative.

WI-2. Canada Lynx – Approximately 181 acres of suitable lynx habitat (49.2% of existing suitable habitat in the Project Area) would be altered by the proposed Action Alternative. Of these acres, 167 acres (45.2% of suitable Lynx Habitat) would be treated with harvest prescriptions that would not retain enough conifer cover to continue providing suitable lynx habitat immediately post-harvest. The remaining 14 acres would receive treatments that would reduce some suitable habitat attributes but would continue to provide suitable lynx habitat overall, albeit in small areas disconnected from other suitable lynx habitat. To ensure that forest structural attributes preferred by lynx and lynx prey (snowshoe hares) remain following harvest, patches of advanced regeneration and shade-tolerant trees would be retained within portions of

suitable lynx habitat. Additionally, 12 to 24 tons/acre of coarse woody debris would be retained in accordance with DNRC Forest Management Rules (*ARM 36.11.414*) and retention of large, downed logs ≥15-inch diameter would be emphasized. Lynx habitat connectivity within the Project Area is currently low due to small, irregularly shaped patches, interspersed unsuitable habitat types, tree mortality, and adjacent lands with past timber harvest. The proposed Action Alternative would not appreciably reduce lynx habitat connectivity. Suitable lynx habitat would remain unharvested on 30 acres of section 28 to maintain suitable habitat connectivity across a primary ridge and several small drainages adjacent to an additional 160 acres of suitable lynx habitat within the Project Area. This unharvested area would remain connected to a larger block of suitable lynx habitat on DNRC lands to the east. Any lynx that might be using the area could temporarily be displaced from the Project Area for up to four years by the proposed activities; however, appreciable use of the area under current existing conditions would not be expected due to surrounding unsuitable habitat/forest types, past harvesting, and lack of any lynx observations within the surrounding area (MNHP 2023). The small amount of suitable habitat retained in the Project Area would remain connected to suitable habitat in the surrounding 34,581-acre large cumulative effects analysis area (Large CEAA). Like the Project area, the Large CEAA has low habitat suitability and poor connectivity for lynx in the vicinity of the Project Area due to similar factors. Therefore, the likelihood of appreciable use of the CEAA by Canada lynx is low. The Action Alternative would reduce potentially suitable lynx habitat within the Large CEAA from 16.3% to 15.9%. Abundance and connectivity of suitable lynx habitat would remain greatest in higher elevation USDA Forest Service (USFS) lands in western portions of the CEAA. Disturbance/displacement and lynx habitat alteration by the proposed DNRC activities would be additive to forest management projects on lands within the larger CEAA, including 439 acres of timber harvest on nearby DNRC lands within the last 8 years.

WI-3. This species was evaluated, and it was determined that the Project Area lies outside of the normal distribution for the species, and/or suitable habitat was not found to be present.

WI-4. Fisher – Approximately 208 acres of suitable fisher habitat would be affected by the proposed activities (83.4% of fisher habitat available in the Project Area). All 208 acres would be treated with harvest prescriptions causing these stands to become unsuitable for fisher use post-harvest due to low amounts of mature conifer cover. Along Buffalo Bill Creek, 12 acres of suitable riparian habitat would not be harvested and should remain well connected to other suitable riparian habitat for fishers. To reduce some adverse effects on fishers, at least 2 large snags and 2 large snag recruitment trees per acre (>21 inches dbh) would be retained (*ARM 36.11.411*). These snags are important habitat features that provide resting and denning sites for fishers (Olson et al. 2014). Approximately 4.0 miles of new permanent road would be built, increasing the risk of trapping mortality. However, these roads would be restricted by gates and berms, limiting use by the public to non-motorized access. Some connectivity would remain across the Project area within two areas. First, 30 acres of unharvested habitat that forms a corridor across a primary ridge and several small adjacent drainages, would maintain suitable habitat connectivity between the Project Area and suitable habitat to the east. Second, an unharvested riparian area along Buffalo Bill Creek would also maintain connectivity to adjacent riparian habitat. Overall, given the lack of fisher observations (MNHP 2023) and interspersed unsuitable forest types, which are avoided by fishers (Olson et al. 2014), the likelihood of fishers using the Project Area or Large CEAA is low. Should any fishers be present within the Large CEAA, habitat alteration and potential disturbance under the Action Alternative would be additive to forest management projects on lands within the larger CEAA, including 439 acres of timber harvest on nearby DNRC lands within the last 8 years. However, considering the relatively small amount of potential fisher habitat harvested at the scale of the Large CEAA

(3.4% of potentially suitable fisher habitat), and absence of fisher observations (Krohner 2022, MNHP 2023), low effects to fishers in the larger CEAA would be expected.

WI-5. Flammulated Owls – The proposed timber harvest would affect approximately 331 acres (90.6% of potential habitat in the Project Area) of preferred flammulated owl cover types. All of these acres are currently too densely forested to be considered suitable for flammulated owl use. Approximately 271 acres of preferred flammulated owl cover types would undergo harvest treatments that would improve habitat suitability by creating more open forest structure with mature leave trees while preserving large snags and patches of submerchantable trees. Treatment on 60 acres of preferred flammulated owl cover types would create conditions considered too open for flammulated owls and would not be considered suitable habitat after harvest. Suitable flammulated owl habitat would likely persist on 287 acres (39.9% of the Project Area) with an overall improvement in habitat conditions. All treatments would reduce tree density within the stand and would favor seral species, which would create more open forest stand conditions potentially beneficial to flammulated owls in the long term. To retain potential nesting trees for flammulated owls, at least 2 large snags and 2 large snag recruitment trees per acre (>21 inches dbh) would be retained (*ARM 36.11.411*). If harvesting occurred during the summer or early fall period, flammulated owls could be temporarily displaced by the proposed activities. Within the 7,653 -acre small cumulative effects analysis area (hereafter Small CEAA), an estimated 3,396 acres of forest stands (44.4% of the Small CEAA) could be potentially suitable for flammulated owls; however, snags available for nesting are likely limited in some areas due to differing snag conservation philosophies on surrounding private ownerships.

WI-6. Pileated Woodpecker – The proposed activities would affect 186 acres of suitable pileated woodpecker habitat (93.8% of habitat available in the Project Area). All of these acres would be treated with harvest prescriptions causing these stands to become unsuitable for pileated woodpecker use post-harvest. Approximately 12 acres (5.9%) of suitable pileated habitat would remain within the Project Area post-harvest. The Project Area would likely not be able to support breeding pileated woodpeckers if they are currently present due to interspersed unsuitable habitat types, tree mortality, and adjacent lands with past timber harvest. To decrease potential adverse effects on pileated woodpeckers, at least 2 large snags and 2 large snag recruitment trees per acre (>21 inches dbh, or largest size class available) would be retained and all snags cut for safety reasons would be left in the harvest unit (*ARM 36.11.411*). Additionally, 12 to 24 tons/acre of downed wood would be retained, with an emphasis on logs >15” diameter. Habitat availability within the Small CEAA is limited due to past timber harvesting on surrounding private lands; however, 526 acres (6.9% of the Small CEAA) would remain as suitable and connected habitat, primarily on DNRC lands. Habitat alterations due to the proposed action would be additive to recent forest management projects on adjacent lands.

WI-7. Hoary bat – The proposed activities would affect approximately 419 acres of potential hoary bat roosting habitat (86.9% of potential habitat within the Project Area). Because hoary bats typically roost in trees and snags, they could be temporarily disturbed by timber harvesting. Potential disturbance would only be expected from June through September, when hoary bats are in Montana. After the conclusion of activities, continued use of harvested areas by hoary bats would be anticipated. At least 2 large snags and 2 large snag recruitment trees per acre (>21 inches dbh, or largest size class available) would be retained and could provide roosting habitat. Should any hoary bats be present within the Project Area, habitat alteration and potential disturbance would be additive to any activities occurring or planned on surrounding lands within the Large CEAA. Hoary bats are considered common and widespread throughout Montana, but wind energy and diseases such as white-nosed syndrome pose threats to their population (Bachen et al 2020).

WI-8. Big Game – The Project Area provides 720 acres (100% of the Project Area) of winter range habitat for white-tailed deer and elk and summer range for mule deer (*DFWP 2008*). Timber harvesting would affect 451 acres of thermal cover and snow intercept (93.2% of available thermal cover), mostly on south and west facing slopes, and an additional 47 acres of marginal thermal cover (91.5% of total thermal cover available in the Project Area). All these acres would be treated with harvest prescriptions that would reduce mature canopy cover to 15-25%; reducing the capacity of these stands to provide thermal cover and snow intercept during more severe winter conditions. Some marginal thermal cover/snow intercept would remain on approximately 33 acres within the Project Area post-harvest.

Approximately 482 acres of hiding cover (66.9% of the Project Area) would be altered by harvesting. Harvest prescriptions on 426 of these acres (64.4% of cover available) would likely remove hiding cover. The remaining 56 acres would receive treatments that retain enough large and submerchantable trees to maintain hiding cover, albeit at a reduced quality. Broken topography, irregular property boundaries, and retention of patches containing submerchantable trees would limit sight distances in much of the Project Area. No open roads exist within the Project Area; however, 2.6 miles of restricted roads do exist. New permanent restricted roads totaling 4.0 miles would be built under the Action Alternative. Additionally, 1.1 mile of existing restricted roads within the Project Area would be used as part of the haul route. Thus, security for big game would decrease along 5.1 miles of restricted road within the Project Area during the duration of proposed activities under the Action Alternative.

Impacts to hiding cover and thermal cover/snow intercept under the Action Alternative would be additive to any ongoing vegetation management projects on lands within the larger 34,581-acre surrounding area (Large CEAA). Hiding cover would remain relatively abundant within the Large CEAA (65.4%); however, high-quality thermal cover/snow intercept would continue to be limited and disconnected (18.2% of the CEAA) on big game winter range due to past timber management. Increased disturbance and reduced security along the haul route, totaling 17.8 miles of restricted roads, would also be expected throughout the Large CEAA. Patterns of big game use and movement would likely change within the Project Area, especially for white-tailed deer and elk using the Project Area for winter habitat. Overall, measurable big game population changes at the scale of the Large CEAA would be minor as a result of the Action Alternative.

WI-9. Mature Forest/Old-growth Forest – The Project Area contains 483 acres (67.1% of the Project Area) of mature forest. The proposed action would harvest approximately 419 acres of mature forest (86.9% of mature forest within the Project Area) with a reasonably closed canopy (≥40% canopy closure). In total, prescriptions on all acres would reduce live tree densities and mature overstory canopy cover to 15-25%. Of these acres, 51 acres would receive an old-growth restoration treatment (100% of old-growth within the Project Area), which would retain old-growth status based on basal area and age; however, it would reduce canopy closure below 40% and remove it from mature forest. Total crown closure in some areas could still meet or exceed 40% with the retention of submerchantable and regenerating conifers in the understory. At the same time, habitat suitability for species utilizing younger stands and open forest with widely scattered mature trees would increase. However, insects and disease will likely continue to affect mature trees and canopy closure in some areas, although the proposed management treatments would help slow their progression. Approximately 63 acres (8.8% of the Project Area) of mature forest would remain in the Project Area. Connectivity of mature forest would be reduced, as larger patches in the Project Area would be removed by harvest activities. The Project Area is currently comprised of two large, isolated fragments of mature forest nested within the Small CEAA, separated from other stands of mature forest due to past forest management on commercial lands. Proposed harvesting would alter approximately 40.1% of

existing mature forest within the Small CEAA, reducing the size of the largest patch (395 acres) and third largest patch (65 acres) of mature forest within the Small CEAA to approximately 27 acres and 14 acres respectively. Only one large mature forest patch (≥80 acres) would remain in the Small CEAA, approximately 369 acres in size (4.8% of the Small CEAA). The remaining 258 acres of mature forest within the CEAA would persist as small, isolated patches scattered throughout the Small CEAA with poor connectivity. An east-west corridor, containing mature forest, will remain unharvested through the Project Area and remain connected with other regenerating stands outside of DNRC lands within the Small CEAA, improving connectivity of mature forest in the long term as regenerating stands grow larger. The abundance and location of old-growth forest outside of the Project Area is generally unknown, but the intensity of harvesting within the Small CEAA would leave very little old-growth forest, if any. Forest management projects on DNRC and commercial lands have removed mature forest and continue to alter mature forest stands within the Small CEAA; the proposed action would be additive to these changes at the broader spatial scale. After the proposed action, mature forest abundance would remain relatively low (8.2% of the Small CEAA) and patchy through much of the Small CEAA.

Wildlife Mitigations:

- If a threatened or endangered species is encountered, consult a DNRC biologist immediately. Similarly, if undocumented nesting raptors or wolf dens are encountered within ½ mile of the Project Area, contact a DNRC biologist.
- Contractors will adhere to food storage and sanitation requirements as described in the timber sale contract. Ensure that all attractants such as food, garbage, and petroleum products are stored in a bear-resistant manner.
- Prohibit contractors and purchasers conducting contract operations from carrying firearms while on duty as per *ARM 36.11.444(2)*.
- Effectively close restricted roads and skid trials in the Project Area via a combination of gates, kelly humps, rocks, and stumps. Maintain public motorized restrictions on restricted and temporary roads during and after harvest activities.
- Within commercial harvest units, retain patches of advanced regeneration trees per *ARM 36.11.428(4)(f)*.
- Retain at least 2 snags and 2 snag recruits per acre >21 inches dbh or the next available size class, particularly favoring ponderosa pine, western larch, and Douglas-fir for retention. If snags are cut for safety concerns, they must be left in the harvest unit.
- Retain 12-24 tons/acre of coarse-woody debris and emphasize retention of 15-inch diameter downed logs, aiming for at least one 20-foot-long section per acre (*USFWS and DNRC 2010*).

Literature:

Bachen, D.A., A. McEwan, B. Burkholder, S. Blum, and B. Maxell. 2020. Accounts of Bat Species Found in Montana. Report to Montana Department of Environmental Quality. Montana Natural Heritage Program, Helena, Montana. 58 p.

DFWP. 2008. Maps of moose, elk, mule deer, and white-tailed deer distribution in Montana. *In* Individual GIS data layers. Available online at: https://gis-mtfwp.opendata.arcgis.com/

Green, P., J. Joy, D. Sirucek, W. Hann, A. Zack, and B. Naumann. 1992. Old Growth Forest Types of the Northern Region. R-1 SES. USDA Forest Service, Northern Region, Missoula MT 60pp.

Kasworm, W. F., T. G. Radandt, J. E. Teisberg, T. Vent, A. Welander, M. Proctor, H. Cooley, and J. Fortin-Noreus. 2020. Cabinet-Yaak grizzly bear recovery area 2019 research and monitoring progress report. U.S. Fish and Wildlife Service, Missoula, Montana. 105 pp.

Krohner, J. M. 2020. Finding fishers: determining the distribution of a rare forest mesocarnivore in the Northern Rocky Mountains. M.S. Thesis, University of Montana, Missoula, MT. 81 pp.

Montana Natural Heritage Program (MTNHP). 2023. Environmental Summary Report. for Latitude 47.48100 to 47.66630 and Longitude -114.84087 to -115.05046. Retrieved on October 23, 2023, from http://mtnhp.org/MapViewer.

Olson, L. E., J. D. Sauder, N. M. Albrecht, R. S. Vinkey, S. A. Cushman, and M. K. Schwartz. 2014. Modeling the effects of dispersal and patch size on predicted fisher (*Pekania [Martes] pennanti*) distribution in the U.S. Rocky Mountains. Biological Conservation 169:89-98.

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., U.S. Department of Interior, Fish and Wildlife Service, Region 6, Denver, Colorado and Montana Department of Natural Resources and Conservation, Missoula, MT.

Wittinger, W. 2002. Grizzly bear distribution outside of recovery zones. Unpublished memorandum. Report on file at Unpublished memorandum on file at USDA Forest Service, Region 1, Missoula, MT.

AIR QUALITY:

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

Comments:

AQ-1 The proposed project is located in Montana State Airshed 2 as designated by the Montana/Idaho Airshed Group. Particulate matter may be introduced into the Airshed from the burning of logging slash. All burning would be conducted following the rules, regulations, and procedures of the DNRC major open burning permit and the Montana/Idaho Airshed Group operations guide. Impacts are expected to be minor and temporary as all slash burning would be conducted burning on days with good to excellent dispersion when smoke would not be expected to impair visibility. Therefore, direct, indirect, and cumulative effects to air quality are expected to be minimal.

AQ-2 Under the action alternative, truck traffic would produce more dust than the no action alternative.

Air Quality Mitigations:

- Only burn on days approved by the Montana/Idaho Airshed group and DEQ.
- Keep truck speeds down to reduce road dust.

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**					
Aesthetics	**X**				**X**				**X**					
Demands on Environmental Resources of Land, Water, or Energy	**X**				**X**				**X**					
Action														
Historical or Archaeological Sites	**X**				**X**				**X**				**Y**	**H-1**
Aesthetics	**X**				**X**				**X**					
Demands on Environmental Resources of Land, Water, or Energy	**X**				**X**				**X**					

Comments:
No comments.

Mitigations:
H-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 no paleontological or cultural resources have been identified in the APE. Proposed silvicultural treatment 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.

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.*

- Section 28 had small Thinning/Timber sales in 1927 &1949 with volumes of 1.8 and 2.5 mbf
- Section 20 had a timber sale in 1982 with a volume of .027 mbf
- West Lynch TS EA (2002), Jones Berger TS EA (2015), Upper Lynch Mtoe TS EA (2013) and Lynch Creek Gorge Salvage Permit EA (2020)

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**					
Quantity and Distribution of Employment	**X**				**X**				**X**					
Local Tax Base and Tax Revenues	**X**				**X**				**X**					
Demand for Government Services	**X**				**X**				**X**					
Access To and Quality of Recreational and Wilderness Activities	**X**				**X**				**X**					
Density and Distribution of population and housing	**X**				**X**				**X**					
Social Structures and Mores	**X**				**X**				**X**					
Cultural Uniqueness and Diversity	**X**				**X**				**X**					
Action														
Health and Human Safety	**X**				**X**				**X**					
Industrial, Commercial and Agricultural Activities and Production	**X**				**X**				**X**					
Quantity and Distribution of Employment		**X**				**X**				**X**			**N**	**Q-1**
Local Tax Base and Tax Revenues	**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		
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:

Q-1 According to the Montana Bureau of Business and Economic Research a general rule of thumb is that for every million board feet of sawtimber harvested in Montana, ten person years of employment occur in the forest products industry. This harvest is viewed as a continuation of a sustained yield and as such would not create any new jobs but rather sustain approximately 8 person years of employment in the forest products industry. A few short-term jobs would also be created/sustained by issuing 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.

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

- None

Other Appropriate Social and Economic Circumstances:

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

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

Action: The timber harvest would generate additional revenue for the Common Schools and Public Buildings Trusts. The estimated return to the trust for the proposed harvest is $421,815 based on an estimated harvest of 4.1 million board feet (28,121 tons) and an overall stumpage value of $20 per ton. Costs, revenues, and estimates of return are estimates intended for relative comparison of alternatives, they are not intended to be used as absolute estimates of return.

References

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

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

Does the proposed action involve potential risks or adverse effects that are uncertain but extremely harmful if they were to occur?
No

Does the proposed action have impacts that are individually minor, but cumulatively significant or potentially significant?
No

Environmental Assessment Checklist Prepared By:

Name: Joe Buchanan
Title: Management Forester
Date: January 2, 2024

Finding

Alternative Selected
I select the Action Alternative for implementation.

Significance of Potential Impacts
No significant impacts were identified.

Need for Further Environmental Analysis

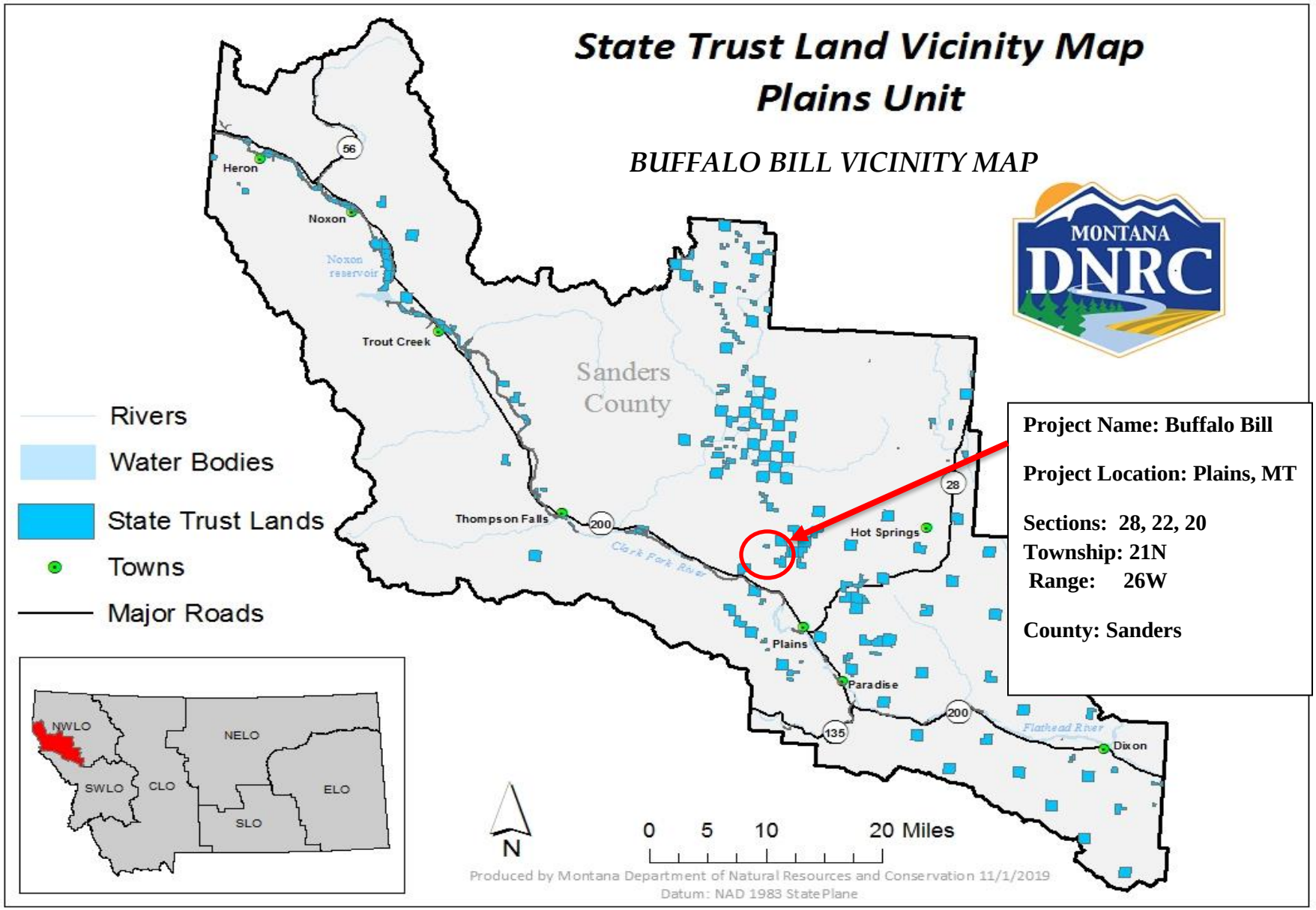
☐	EIS	☐	More Detailed EA	☒	No Further Analysis

Environmental Assessment Checklist Approved By:

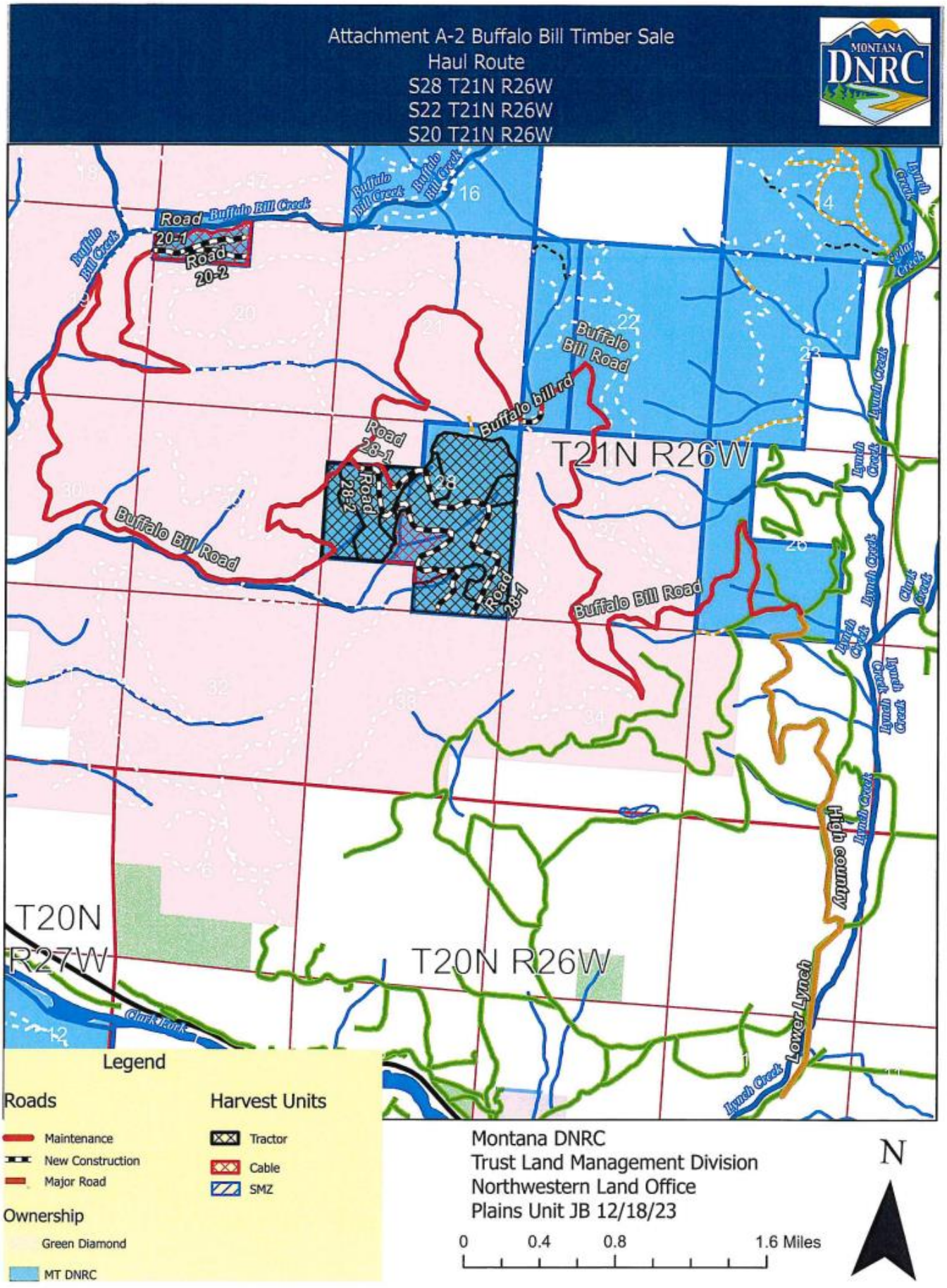
Name: David M. Olsen
Title: Plains Unit Program Manager
Date: January 19, 2024
Signature: *David M Olsen*

Attachment A - Maps

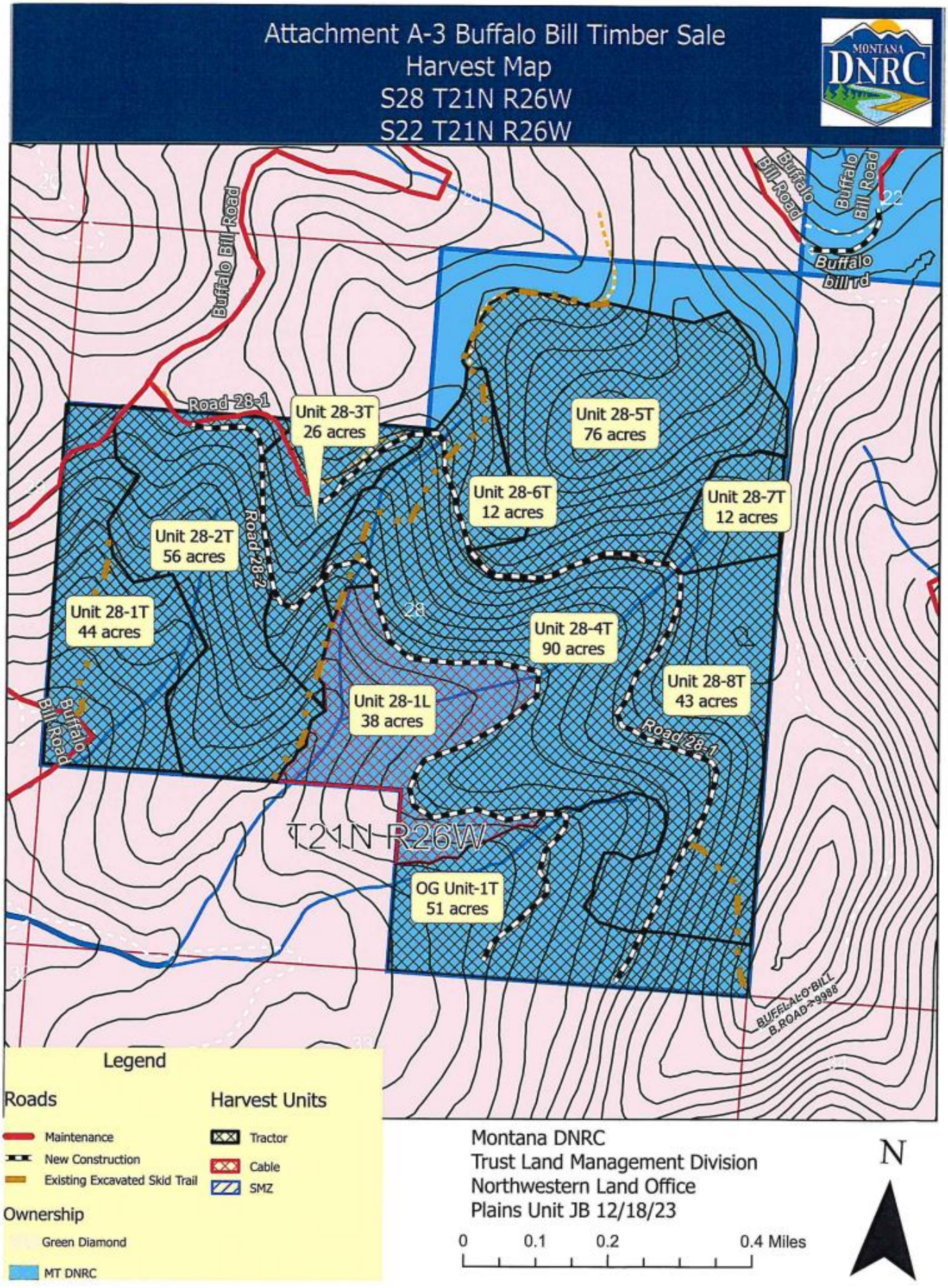
A-1: Timber Sale Vicinity Map



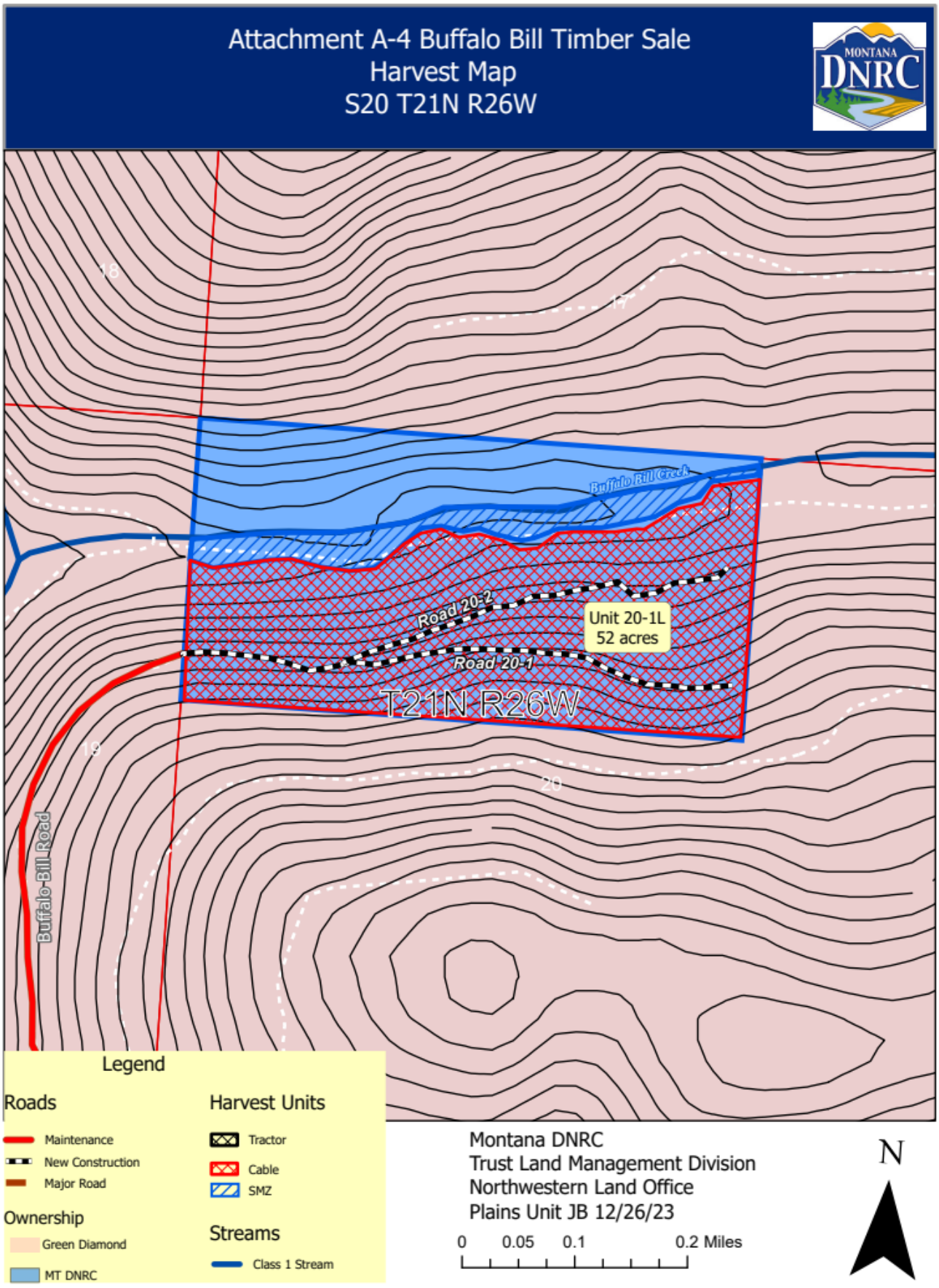
A-2: Haul Route



A-3: Harvest Units



Attachment A-4: Harvest Units



Attachment B- Prescriptions

SILVICULTURAL PRESCRIPTION

SALE/PROJECT NAME: Buffalo Bill		**DATE:** 12/20/2023
CUTTING / TREATMENT UNIT NUMBER(s): Unit 20-1L		**ACRES:** 52
LOCATION (TRS): T21N R26W S20		**EST. HARVEST VOLUME:** 267 MBF
WATERSHED: Weeksville Creek	**AGE CLASS:** 100-149	**ELEVATION:** 3400-3700
HABITAT TYPE GROUP(s): 9--Moderately Cool & Moist (west)		**ASPECT:** North
CURRENT COVER TYPE: Western Larch/Douglas-fir		**SLOPE (%):** 51-60%
DESIRED COVER TYPE: Western Larch/Douglas-fir		**PREPARED BY:** Joe Buchanan

STAND DESCRIPTION
(Describe current conditions in the stand, including some or all of the following items: forest type/species composition, age class, stand structure, stocking, basal area, total standing volume, presence and species of regeneration, fire regime, fuels/fire hazard, forest health issues, growth rate/vigor, past management)

TREATMENT OBJECTIVES	**TARGET STAND CONDITIONS**
☑ Move stands toward desired future conditions	Remove unhealthy trees, as well as those with poor vigor and to promote long term forest health, growth and vitality. Move this unit toward the desired future condition of Western Larch/Douglas Fir. Retention and spacing of desirable species and scarify the site sufficiently to make an available seed bed to promote natural regeneration of Ponderosa Pine, Western Larch and Douglas Fir.
☑ Emulate natural disturbance regimes	
☑ Promote/establish regeneration	
☑ Enhance stand growth and vigor	
☑ Address insect and disease issues	
☑ Reduce fuel loading/fire hazard	
☑ Capture value of dead/dying timber	
☑ Generate revenue for the trust beneficiaries	
☐ Other: (specify)	

PRESCRIBED TREATMENT			
Even-Aged Methods	**Uneven-Aged Methods**	**Intermediate Treatments**	**Salvage Treatments**
☐ Clearcutting	☐ Individual Tree Selection	☐ Overstory Removal	☐ Fire Salvage
☐ Seed Tree	☐ Group Selection	☐ Commercial Thinning	☐ Insect / Disease Salvage
☑ Shelterwood	☐ Old Growth Maintenance	☐ Sanitation	☐ Weather/Blowdown Salvage
☐ check if with reserves	☐ Old Growth Restoration	☐ Precommercial Thinning	☐ Other Salvage

HARVEST IMPLEMENTATION GUIDELINES				
Marking System:	☐ Cut Tree	☐ Leave Tree	☑ Sample Mark / Designate x Description	☐ Species Designation
Number/Spacing/Size of Leave Trees:	**11-12 TPA, 45 ft**			
Species Preference:	**PP, WL, DF**			
Characteristics of cut or leave trees:	**Leave based on preference, avoid mistletoe in DF & WL**			
Number of Snags/Snag Recruits:	**2 Snags/2 snag recruits >21dbh**			
Additional Information:				

HARVEST METHOD				
Yarding: ☐ Tractor	☑ Skyline	☐ Combination	☐ Excaline	☐ Other: (specify)
Ground conditions:	☑ Dry	☑ Frozen	☑ Snow	☐ Other: (specify)
Seasonal restrictions:	☐ Summer	☐ Winter	☐ Dates: (specify)	
Equipment types/restrictions: (rubber tires, tracks, cut-to-length, etc.)				
Skid trail location/spacing:75 ft				
Additional Information:				

HAZARD REDUCTION / SLASH TREATMENT				
Slash disposal:	☑ Pile & burn (landings)	☐ Pile & burn (in-woods)	☐ Broadcast burn	☐ Jackpot burn
	☐ Masticate/Chip	☐ Lop & Scatter	☐ Hand Pile	☐ Other: (specify)
Nutrient Retention: Coarse woody debris (tons/ac): 12-24			☐ Return skid coarse/fine material	
Additional Information:				

SITE PREPARATION				
Method:	☑ Timber Sale/Dispersed Skidding	☐ Dozer	☐ Excavator	☐ Broadcast Burn
	☐ Slash unwanted regeneration	☐ Chemical/Herbicide	☐ Other: (specify)	
Target % scarification:				
Additional Information:				

REGENERATION				
Type of Regeneration:	☑ Natural	☐ Planted	☐ Existing Advance	
Fill in below if planting:				
Estimated Number of Seedlings to Plant:				
Species:	☐ White Pine	☐ Western Larch	☐ Ponderosa Pine	☐ Douglas-fir
	☐ Spruce	☐ Lodgepole Pine	☐ Other: (specify)	
Additional Information:				

ANTICIPATED FUTURE TREATMENTS
List approximate dates of post-harvest treatments, including: Slash disposal/hazard reduction:6/1/2029 Site preparation:6/1/2031 Planting: Regeneration survey:6/1/2034

Silvicultural Prescription

SALE/PROJECT NAME: Buffalo Bill	**DATE:** 12/20/2023
CUTTING / TREATMENT UNIT NUMBER(s): Unit 28-1L	**ACRES:** 38
LOCATION (TRS): T21N R26W S28	**EST. HARVEST VOLUME:** 262 MBF
WATERSHED: Weeksville Creek **AGE CLASS:** 40-99	**ELEVATION:** 3800-4000
HABITAT TYPE GROUP(s): 4--Moderately Warm & Dry (west)	**ASPECT:** Southwest
CURRENT COVER TYPE: Mixed Conifer	**SLOPE (%):** 41-50%
DESIRED COVER TYPE: Ponderosa Pine	**PREPARED BY:** Joe Buchanan

STAND DESCRIPTION
The forest type for this unit is Mixed Conifer and comprises of Douglas Fir, Grand Fir, Western Larch and Ponderosa Pine. Entire stand is well stocked while saw timber is medium stocked. Stand structure is multi storied with regeneration of Ponderosa Pine, Douglas Fir, Grand Fir and Western Larch. Forest health issues are mistletoe and bark beetle.

TREATMENT OBJECTIVES	**TARGET STAND CONDITIONS**
☑ Move stands toward desired future conditions	Remove unhealthy trees, as well as those with poor vigor and to promote long term forest health, growth and vitality. Move this unit toward the desired future condition of Ponderosa Pine. Retention and spacing of desirable species and scarify the site sufficiently to make an available seed bed to promote natural regeneration of Ponderosa Pine, Western Larch and Douglas Fir.
☑ Emulate natural disturbance regimes	
☑ Promote/establish regeneration	
☑ Enhance stand growth and vigor	
☑ Address insect and disease issues	
☑ Reduce fuel loading/fire hazard	
☑ Capture value of dead/dying timber	
☑ Generate revenue for the trust beneficiaries	
☐ Other: (specify)	

PRESCRIBED TREATMENT			
Even-Aged Methods	**Uneven-Aged Methods**	**Intermediate Treatments**	**Salvage Treatments**
☐ Clearcutting	☐ Individual Tree Selection	☐ Overstory Removal	☐ Fire Salvage
☐ Seed Tree	☐ Group Selection	☐ Commercial Thinning	☐ Insect / Disease Salvage
☑ Shelterwood	☐ Old Growth Maintenance	☐ Sanitation	☐ Weather/Blowdown Salvage
☐ check if with reserves	☐ Old Growth Restoration	☐ Precommercial Thinning	☐ Other Salvage

HARVEST IMPLEMENTATION GUIDELINES					
Marking System:	☐ Cut Tree	☐ Leave Tree	☑ Sample Mark / Designate x Description	☐ Species Designation	
Number/Spacing/Size of Leave Trees:	**11-12 TPA, 45 ft**				
Species Preference:	**PP, WL, DF**				
Characteristics of cut or leave trees:	**Leave based on preference, avoid mistletoe in DF & WL**				
Number of Snags/Snag Recruits:	**2 Snags/2 snag recruits >21dbh**				
Additional Information:					

HARVEST METHOD				
Yarding: ☐ Tractor	☑ Skyline	☐ Combination	☐ Excaline	☐ Other: (specify)
Ground conditions:	☑ Dry	☑ Frozen	☑ Snow	☐ Other: (specify)
Seasonal restrictions:	☐ Summer	☐ Winter	☐ Dates: (specify)	
Equipment types/restrictions: (rubber tires, tracks, cut-to-length, etc.)				
Skid trail location/spacing:75 ft				
Additional Information:				

HAZARD REDUCTION / SLASH TREATMENT				
Slash disposal:	☑ Pile & burn (landings)	☐ Pile & burn (in-woods)	☐ Broadcast burn	☐ Jackpot burn
	☐ Masticate/Chip	☐ Lop & Scatter	☐ Hand Pile	☐ Other: (specify)
Nutrient Retention: Coarse woody debris (tons/ac): 12-24			☐ Return skid coarse/fine material	
Additional Information:				

SITE PREPARATION				
Method:	☑ Timber Sale/Dispersed Skidding	☐ Dozer	☐ Excavator	☐ Broadcast Burn
	☐ Slash unwanted regeneration	☐ Chemical/Herbicide	☐ Other: (specify)	
Target % scarification:				
Additional Information:				

REGENERATION				
Type of Regeneration:	☑ Natural	☐ Planted	☐ Existing Advance	
Fill in below if planting:				
Estimated Number of Seedlings to Plant:				
Species:	☐ White Pine	☐ Western Larch	☐ Ponderosa Pine	☐ Douglas-fir
	☐ Spruce	☐ Lodgepole Pine	☐ Other: (specify)	
Additional Information:				

ANTICIPATED FUTURE TREATMENTS
List approximate dates of post-harvest treatments, including: Slash disposal/hazard reduction:6/1/2029 Site preparation:6/1/2031 Planting: Regeneration survey:6/1/2034

Silvicutural Prescription

SALE/PROJECT NAME: Buffalo Bill	**DATE:** 12/20/2023
CUTTING / TREATMENT UNIT NUMBER(s): OG Unit-1T	**ACRES:** 51
LOCATION (TRS): T21N R26W S28	**EST. HARVEST VOLUME:** 486 MBF
WATERSHED: Weeksville Creek **AGE CLASS:** 40-99	**ELEVATION:** 3800-4400
HABITAT TYPE GROUP(s): 4--Moderately Warm & Dry (west)	**ASPECT:** West
CURRENT COVER TYPE: Ponderosa Pine	**SLOPE (%):** 21-30%
DESIRED COVER TYPE: Ponderosa Pine	**PREPARED BY:** Joe Buchanan

STAND DESCRIPTION
The forest type for this unit is Ponderosa Pine and comprises of Douglas Fir, Ponderosa Pine and Western Larch. Entire stand is well stocked while saw timber is medium stocked. Stand structure is multi storied with regeneration of Ponderosa Pine, Douglas Fir, Grand Fir and Western Larch. Forest health issues are mistletoe, bark beetle and pine engraver.

TREATMENT OBJECTIVES	**TARGET STAND CONDITIONS**
☑ Move stands toward desired future conditions	Remove unhealthy trees, as well as those with poor vigor and to promote long term forest health, growth and vitality. Move this unit toward the desired future condition of Ponderosa Pine while retaining and restoring old growth within the unit. Retention and spacing of desirable species and scarify the site sufficiently to make an available seed bed to promote natural regeneration of Ponderosa Pine and Western Larch.
☑ Emulate natural disturbance regimes	
☑ Promote/establish regeneration	
☑ Enhance stand growth and vigor	
☑ Address insect and disease issues	
☑ Reduce fuel loading/fire hazard	
☑ Capture value of dead/dying timber	
☑ Generate revenue for the trust beneficiaries	
☐ Other: (specify)	

PRESCRIBED TREATMENT			
Even-Aged Methods	**Uneven-Aged Methods**	**Intermediate Treatments**	**Salvage Treatments**
☐ Clearcutting	☐ Individual Tree Selection	☐ Overstory Removal	☐ Fire Salvage
☐ Seed Tree	☐ Group Selection	☐ Commercial Thinning	☐ Insect / Disease Salvage
☐ Shelterwood	☐ Old Growth Maintenance	☐ Sanitation	☐ Weather/Blowdown Salvage
☐ check if with reserves	☑ Old Growth Restoration	☐ Precommercial Thinning	☐ Other Salvage

HARVEST IMPLEMENTATION GUIDELINES				
Marking System:	☐ Cut Tree	☑ Leave Tree	☑ Sample Mark / Designate x Description	☐ Species Designation
Number/Spacing/Size of Leave Trees:	**retain 60 BA, retain most trees >21" dbh favoring Ponderosa Pine and Western Larch. 12 TPA**			
Species Preference:	**PP, WL, DF**			
Characteristics of cut or leave trees:	**Leave based on preference and dbh >21 dbh , avoid mistletoe in DF & WL**			
Number of Snags/Snag Recruits:	**2 Snags/2 snag recruits >21dbh**			
Additional Information:				

HARVEST METHOD				
Yarding:	☑ Tractor	☐ Skyline	☐ Combination	☐ Excaline	☐ Other: (specify)
Ground conditions:	☑ Dry	☑ Frozen	☑ Snow	☐ Other: (specify)	
Seasonal restrictions:	☐ Summer	☐ Winter	☐ Dates: (specify)		
Equipment types/restrictions: (rubber tires, tracks, cut-to-length, etc.)				
Skid trail location/spacing:60 ft				
Additional Information:				

HAZARD REDUCTION / SLASH TREATMENT				
Slash disposal:	☑ Pile & burn (landings)	☐ Pile & burn (in-woods)	☐ Broadcast burn	☐ Jackpot burn
	☐ Masticate/Chip	☐ Lop & Scatter	☐ Hand Pile	☐ Other: (specify)
Nutrient Retention: Coarse woody debris (tons/ac): 12-24			☐ Return skid coarse/fine material	
Additional Information:				

SITE PREPARATION				
Method:	☑ Timber Sale/Dispersed Skidding	☐ Dozer	☐ Excavator	☐ Broadcast Burn
	☐ Slash unwanted regeneration	☐ Chemical/Herbicide	☐ Other: (specify)	
Target % scarification:35%				
Additional Information:				

REGENERATION				
Type of Regeneration:	☑ Natural	☐ Planted	☐ Existing Advance	
Fill in below if planting:				
Estimated Number of Seedlings to Plant:				
Species:	☐ White Pine	☐ Western Larch	☐ Ponderosa Pine	☐ Douglas-fir
	☐ Spruce	☐ Lodgepole Pine	☐ Other: (specify)	
Additional Information:				

ANTICIPATED FUTURE TREATMENTS
List approximate dates of post-harvest treatments, including: Slash disposal/hazard reduction:6/1/2029 Site preparation:6/1/2031 Planting: Regeneration survey:6/1/2034

SILVICULTURAL PRESCRIPTION

SALE/PROJECT NAME: Buffalo Bill	**DATE:** 12/20/2023
CUTTING / TREATMENT UNIT NUMBER(s): Units 28-2T,28-4T, 28-5T, 28-8T	**ACRES:** 265
LOCATION (TRS): T21N R26W S28	**EST. HARVEST VOLUME:** 2,278 MBF
WATERSHED: Weeksville Creek **AGE CLASS:** 40-99	**ELEVATION:** 3800-4400
HABITAT TYPE GROUP(s): 4--Moderately Warm & Dry (west)	**ASPECT:** Southwest
CURRENT COVER TYPE: Ponderosa Pine	**SLOPE (%):** 31-40%
DESIRED COVER TYPE: Ponderosa Pine	**PREPARED BY:** Joe Buchanan

STAND DESCRIPTION
The forest type for this unit is Ponderosa Pine and comprises of Ponderosa pine, Douglas Fir and Western Larch. Entire stand is well stocked while saw timber is medium stocked. Stand structure is multi storied with regeneration of Ponderosa pine, Douglas fir and Western larch. Forest health issues are mistletoe, bark beetle and pine engraver.

TREATMENT OBJECTIVES	TARGET STAND CONDITIONS
☑ Move stands toward desired future conditions	Remove unhealthy trees, as well as those with poor vigor and to promote long term forest health, growth and vitality. Move this unit toward the desired future condition of Ponderosa Pine. Retention and spacing of desirable species and scarify the site sufficiently to make an available seed bed to promote natural regeneration of Ponderosa Pine..
☑ Emulate natural disturbance regimes	
☑ Promote/establish regeneration	
☑ Enhance stand growth and vigor	
☑ Address insect and disease issues	
☑ Reduce fuel loading/fire hazard	
☑ Capture value of dead/dying timber	
☑ Generate revenue for the trust beneficiaries	
☐ Other: (specify)	

PRESCRIBED TREATMENT			
Even-Aged Methods	**Uneven-Aged Methods**	**Intermediate Treatments**	**Salvage Treatments**
☐ Clearcutting	☐ Individual Tree Selection	☐ Overstory Removal	☐ Fire Salvage
☐ Seed Tree	☐ Group Selection	☐ Commercial Thinning	☐ Insect / Disease Salvage
☑ Shelterwood	☐ Old Growth Maintenance	☐ Sanitation	☐ Weather/Blowdown Salvage
☐ check if with reserves	☐ Old Growth Restoration	☐ Precommercial Thinning	☐ Other Salvage

HARVEST IMPLEMENTATION GUIDELINES				
Marking System:	☐ Cut Tree	☑ Leave Tree	☑ Sample Mark / Designate x Description	☐ Species Designation
Number/Spacing/Size of Leave Trees:	**45 ft spacing**			
Species Preference:	**PP, WL, DF**			
Characteristics of cut or leave trees:	**avoid mistletoe in DF & WL**			
Number of Snags/Snag Recruits:	**2 Snags/2 snag recruits >21dbh**			
Additional Information:				

HARVEST METHOD				
Yarding:	☑ Tractor	☐ Skyline	☐ Combination	☐ Excaline	☐ Other: (specify)
Ground conditions:	☑ Dry	☑ Frozen	☑ Snow	☐ Other: (specify)	
Seasonal restrictions:	☐ Summer	☐ Winter	☐ Dates: (specify)		
Equipment types/restrictions: (rubber tires, tracks, cut-to-length, etc.)					
Skid trail location/spacing:60 ft					

Additional Information:

HAZARD REDUCTION / SLASH TREATMENT				
Slash disposal:	☑ Pile & burn (landings)	☐ Pile & burn (in-woods)	☐ Broadcast burn	☐ Jackpot burn
	☐ Masticate/Chip	☐ Lop & Scatter	☐ Hand Pile	☐ Other: (specify)
Nutrient Retention: Coarse woody debris (tons/ac): 12-24			☐ Return skid coarse/fine material	
Additional Information:				

SITE PREPARATION				
Method:	☑ Timber Sale/Dispersed Skidding	☐ Dozer	☐ Excavator	☐ Broadcast Burn
	☐ Slash unwanted regeneration	☐ Chemical/Herbicide	☐ Other: (specify)	
Target % scarification:35%				
Additional Information:				

REGENERATION				
Type of Regeneration:	☑ Natural	☐ Planted	☐ Existing Advance	
Fill in below if planting:				
Estimated Number of Seedlings to Plant:				
Species:	☐ White Pine	☐ Western Larch	☐ Ponderosa Pine	☐ Douglas-fir
	☐ Spruce	☐ Lodgepole Pine	☐ Other: (specify)	
Additional Information:				

ANTICIPATED FUTURE TREATMENTS
List approximate dates of post-harvest treatments, including: Slash disposal/hazard reduction:6/1/2029 Site preparation:6/1/2031 Planting: Regeneration survey:6/1/2034

SILVICULTURAL PRESCRIPTION

SALE/PROJECT NAME: Buffalo Bill	**DATE:** 12/20/2023
CUTTING / TREATMENT UNIT NUMBER(s): Units 28-1T & 28-3T	**ACRES:** 70
LOCATION (TRS): T21N R26W S28	**EST. HARVEST VOLUME:** 555 MBF
WATERSHED: Weeksville Creek **AGE CLASS:** 100-149	**ELEVATION:** 3800-4200
HABITAT TYPE GROUP(s): 4--Moderately Warm & Dry (west)	**ASPECT:** Southwest
CURRENT COVER TYPE: Ponderosa Pine	**SLOPE (%):** 31-40%
DESIRED COVER TYPE: Ponderosa Pine	**PREPARED BY:** Joe Buchanan

STAND DESCRIPTION
The forest type for this unit is Ponderosa Pine and composes of Ponderosa Pine, Douglas Fir and Western Larch. Age class is 100-149 years old and is well stocked for the entire stand and medium stocked for saw timber. The stand structure is multi-storied and regeneration of PP, DF and WL is present. Forest health issues are dwarf mistletoe in DF and WL. Stands have good to average vigor.

TREATMENT OBJECTIVES	**TARGET STAND CONDITIONS**
☑ Move stands toward desired future conditions	Remove unhealthy trees, as well as those with poor vigor and to promote long term forest health. Move this unit toward the desired future condition of Ponderosa Pine. Retention of all trees >21'' with a 60 BA preferencing Ponderosa Pine, Western Larch and Douglas Fir .
☑ Emulate natural disturbance regimes	
☑ Promote/establish regeneration	
☑ Enhance stand growth and vigor	
☑ Address insect and disease issues	
☑ Reduce fuel loading/fire hazard	
☑ Capture value of dead/dying timber	
☑ Generate revenue for the trust beneficiaries	
☐ Other: (specify)	

PRESCRIBED TREATMENT			
Even-Aged Methods	**Uneven-Aged Methods**	**Intermediate Treatments**	**Salvage Treatments**
☐ Clearcutting	☑ Individual Tree Selection	☐ Overstory Removal	☐ Fire Salvage
☐ Seed Tree	☐ Group Selection	☐ Commercial Thinning	☐ Insect / Disease Salvage
☐ Shelterwood	☐ Old Growth Maintenance	☐ Sanitation	☐ Weather/Blowdown Salvage
☐ check if with reserves	☐ Old Growth Restoration	☐ Precommercial Thinning	☐ Other Salvage

HARVEST IMPLEMENTATION GUIDELINES				
Marking System:	☐ Cut Tree	☑ Leave Tree	☑ Sample Mark / Designate x Description	☐ Species Designation
Number/Spacing/Size of Leave Trees:	**retain all trees >21'' dbh, retain 60 BA, 40-45 ft spacing**			
Species Preference:	**PP, WL, DF**			
Characteristics of cut or leave trees:	**avoid mistletoe in DF & WL**			
Number of Snags/Snag Recruits:	**2 Snags/2 snag recruits >21dbh**			
Additional Information:				

HARVEST METHOD				
Yarding:	☑ Tractor	☐ Skyline	☐ Combination	☐ Excaline	☐ Other: (specify)
Ground conditions:	☑ Dry	☑ Frozen	☑ Snow	☐ Other: (specify)	
Seasonal restrictions:	☐ Summer	☐ Winter	☐ Dates: (specify)		
Equipment types/restrictions: (rubber tires, tracks, cut-to-length, etc.)				
Skid trail location/spacing:60 ft				
Additional Information:				

HAZARD REDUCTION / SLASH TREATMENT				
Slash disposal:	☑ Pile & burn (landings)	☐ Pile & burn (in-woods)	☐ Broadcast burn	☐ Jackpot burn
	☐ Masticate/Chip	☐ Lop & Scatter	☐ Hand Pile	☐ Other: (specify)
Nutrient Retention: Coarse woody debris (tons/ac): 12-24			☐ Return skid coarse/fine material	
Additional Information:				

SITE PREPARATION				
Method:	☑ Timber Sale/Dispersed Skidding	☐ Dozer	☐ Excavator	☐ Broadcast Burn
	☐ Slash unwanted regeneration	☐ Chemical/Herbicide	☐ Other: (specify)	
Target % scarification:35%				
Additional Information:				

REGENERATION				
Type of Regeneration:	☑ Natural	☐ Planted	☐ Existing Advance	
Fill in below if planting:				
Estimated Number of Seedlings to Plant:				
Species:	☐ White Pine	☐ Western Larch	☐ Ponderosa Pine	☐ Douglas-fir
	☐ Spruce	☐ Lodgepole Pine	☐ Other: (specify)	
Additional Information:				

ANTICIPATED FUTURE TREATMENTS
List approximate dates of post-harvest treatments, including: Slash disposal/hazard reduction:6/1/2029 Site preparation:6/1/2031 Planting: Regeneration survey:6/1/2034

SILVICULTURAL PRESCRIPTION

SALE/PROJECT NAME: Buffalo Bill	**DATE:** 12/20/2023
CUTTING / TREATMENT UNIT NUMBER(s): Units 28-6T & 28-7T	**ACRES:** 24
LOCATION (TRS): T21N R26W S28	**EST. HARVEST VOLUME:** 214 MBF
WATERSHED: Weeksville Creek **AGE CLASS:** 100-149	**ELEVATION:** 4000-4200
HABITAT TYPE GROUP(s): 4--Moderately Warm & Dry (west)	**ASPECT:** Southwest
CURRENT COVER TYPE: Western Larch/Douglas-fir	**SLOPE (%):** 31-40%
DESIRED COVER TYPE: Ponderosa Pine	**PREPARED BY:** Joe Buchanan

STAND DESCRIPTION
The forest type for this unit is Western Larch/Douglas Fir and comprises of Douglas Fir, Western Larch, Grand Fir and Ponderosa Pine. Entire stand is well stocked while saw timber is well stocked. Stand structure is multi storied with regeneration of Ponderosa Pine, Douglas Fir, Grand Fir and Western Larch. Forest health issues are mistletoe, bark beetle and pine engraver.

TREATMENT OBJECTIVES	**TARGET STAND CONDITIONS**
☑ Move stands toward desired future conditions	Remove unhealthy trees, as well as those with poor vigor and to promote long term forest health, growth and vitality. Move this unit toward the desired future condition of Ponderosa Pine. Retention and spacing of desirable species and scarify the site sufficiently to make an available seed bed to promote natural regeneration of Ponderosa Pine and Western Larch.
☑ Emulate natural disturbance regimes	
☑ Promote/establish regeneration	
☑ Enhance stand growth and vigor	
☑ Address insect and disease issues	
☑ Reduce fuel loading/fire hazard	
☑ Capture value of dead/dying timber	
☑ Generate revenue for the trust beneficiaries	
☐ Other: (specify)	

PRESCRIBED TREATMENT			
Even-Aged Methods	**Uneven-Aged Methods**	**Intermediate Treatments**	**Salvage Treatments**
☐ Clearcutting	☑ Individual Tree Selection	☐ Overstory Removal	☐ Fire Salvage
☐ Seed Tree	☐ Group Selection	☐ Commercial Thinning	☐ Insect / Disease Salvage
☐ Shelterwood	☐ Old Growth Maintenance	☐ Sanitation	☐ Weather/Blowdown Salvage
☐ check if with reserves	☐ Old Growth Restoration	☐ Precommercial Thinning	☐ Other Salvage

HARVEST IMPLEMENTATION GUIDELINES				
Marking System:	☐ Cut Tree	☑ Leave Tree	☑ Sample Mark / Designate x Description	☐ Species Designation
Number/Spacing/Size of Leave Trees:	**retain all trees >21" dbh, retain 60 BA, 40-45 ft spacing**			
Species Preference:	**PP, WL, DF**			
Characteristics of cut or leave trees:	**avoid mistletoe in DF & WL**			
Number of Snags/Snag Recruits:	**2 Snags/2 snag recruits >21dbh**			
Additional Information:				

HARVEST METHOD				
Yarding:	☑ Tractor	☐ Skyline	☐ Combination	☐ Excaline	☐ Other: (specify)
Ground conditions:	☑ Dry	☑ Frozen	☑ Snow	☐ Other: (specify)	
Seasonal restrictions:	☐ Summer	☐ Winter	☐ Dates: (specify)		
Equipment types/restrictions: (rubber tires, tracks, cut-to-length, etc.)					
Skid trail location/spacing:60 ft					
Additional Information:					

HAZARD REDUCTION / SLASH TREATMENT				
Slash disposal:	☑ Pile & burn (landings)	☐ Pile & burn (in-woods)	☐ Broadcast burn	☐ Jackpot burn
	☐ Masticate/Chip	☐ Lop & Scatter	☐ Hand Pile	☐ Other: (specify)
Nutrient Retention: Coarse woody debris (tons/ac): 12-24			☐ Return skid coarse/fine material	
Additional Information:				

SITE PREPARATION				
Method:	☑ Timber Sale/Dispersed Skidding	☐ Dozer	☐ Excavator	☐ Broadcast Burn
	☐ Slash unwanted regeneration	☐ Chemical/Herbicide	☐ Other: (specify)	
Target % scarification:35%				
Additional Information:				

REGENERATION				
Type of Regeneration:	☑ Natural	☐ Planted	☐ Existing Advance	
Fill in below if planting:				
Estimated Number of Seedlings to Plant:				
Species:	☐ White Pine	☐ Western Larch	☐ Ponderosa Pine	☐ Douglas-fir
	☐ Spruce	☐ Lodgepole Pine	☐ Other: (specify)	
Additional Information:				

ANTICIPATED FUTURE TREATMENTS
List approximate dates of post-harvest treatments, including: Slash disposal/hazard reduction:6/1/2029 Site preparation:6/1/2031 Planting: Regeneration survey:6/1/2034