SOUTH OF BLANCHARD PROJECTS

ENVIRONMENTAL ASSESSMENT

CLEARWATER UNIT

SOUTHWEST LAND OFFICE

MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

MARCH 2020

Environmental Assessment Checklist

Project Name: South of Blanchard
Proposed Implementation Date: June 2020
Proponent: Clearwater Unit, Southwest Land Office, Montana DNRC
County: Missoula

Type and Purpose of Action

Description of Proposed Action:

The Clearwater Unit of the Montana Department of Natural Resources and Conservation (DNRC) is proposing the South of Blanchard Projects. The project is located Blanchard Creek area (refer to Attachments vicinity map Attachment A-**1** and project map A-**2**) and includes the following sections:

Beneficiary	Legal Description	Total Acres	Treated Acres
Common Schools	Secs. 30, 31, 32 T15N R14W, Sec. 36 T15N T15W	2,322 ac.	446 ac.
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	Sec. 6 T14N R14W	307 ac.	4 ac.
Veterans Home			
Public Land Trust			
Acquired Land			

Objectives of this project include:

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

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

Proposed activities include:

Action	Quantity
Proposed Harvest Activities	# Acres
Shelterwood	229
Commercial Thinning	164
Total Treatment Acres	
Proposed Forest Improvement Treatment	# Acres
Pre-commercial Thinning	450
Proposed Road Activities	# Miles
New permanent road construction	1
Road maintenance	10
Road reconstruction	1
Road abandoned	0.75
Other Activities	
Prescribed burning (piles)	200
Duration of Activities:	Estimated 5 years
Implementation Period:	June-March

The lands involved in this proposed project are held in trust by the State of Montana. (Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X, Section 11). The Board of Land Commissioners and the DNRC are required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run for the beneficiary institutions (Section 77-1-202, MCA).

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

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

Project Development

SCOPING:

- DATE:
  - October 2019
- PUBLIC SCOPED:
  - The scoping notice was posted on the DNRC Website: http://dnrc.mt.gov/public-interest/public-notices
  - The Scoping Letter was posted within the *Pathfinder* (October 17 and 24, 2019 editions).

  - It was posted at the Rovero's in Seeley Lake, MT., Stoney's Quick Stop at the Clearwater Junction, MT., and at the Clearwater Unit Office.
  - It was mailed to those listed in ***ATTACHMENT B.***
- AGENCIES SCOPED:
  - Montana Department of Fish, Wildlife, and Parks (DFWP)
  - United States Forest Service, Seeley Lake Ranger District
- COMMENTS RECEIVED:
  - How many: 4 (Weyerhaeuser; Northern Cheyenne Tribe; Montana Department of Fish, Wildlife, and Parks; and Leslie Pringle)
  - Concerns: Leslie Pringle: Maintenance as needed on Blanchard Creek Road
  - Results (how were concerns addressed): Inserting repair and blading language within the timber sale contract for Blanchard Creek Road.

INTERDISCIPLINARY TEAM (ID):

- Project Leader: Craig V. Nelson
- Archeologist: Patrick Rennie
- Wildlife Biologist: Garrett Schairer
- Hydrologist, Fishery, & Soil Scientist: Andrea Stanley
- Fisheries Biologist: Mike Anderson

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 2006). The Group determines the delineation of airsheds and impact zones throughout Idaho and Montana. Airsheds describe those geographical areas that have similar atmospheric conditions, while impact zones describe any area in Montana or Idaho that the Group deems smoke sensitive and/or having an existing air quality problem (Montana/Idaho Airshed Group 2006). As a member of the Airshed Group,

DNRC agrees to burn only on days approved for good smoke dispersion as determined by the Smoke Management Unit.

- **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 addressing an undersized culvert:
    - The proposed work would occur when the side channel crossing is seasonally dry and no longer has surface water within the proposed construction area. Work would occur in the summer or fall following completion of timber harvest hauling proposed south of Blanchard Creek in Section 31 of T15N R14W, Section 36 of T15N R15W, and Section 6 of T14N R14W.

    - The purpose of the project is to address scour and erosion issues associated with an existing undersized culvert crossing at an unnamed side channel of Blanchard Creek. The proposed work will have the benefit of increasing the hydraulic capacity of the existing crossing which consists of a culvert that has been overwhelmed during recent peak flow events, causing scour of the channel downstream of the culvert and erosion of the road prism.

ALTERNATIVES CONSIDERED:

No-Action Alternative:

- The proposed harvest, road building and closures, and pre-commercial thinning would not occur.
- Stands would remain at overstocked levels and are currently under possible insect and disease threats including Douglas-fir bark beetle (*Dendroctonus pseudotsugae*) and spruce budworm (*Choristoneura occidentalis*).
- Road systems would not be changed to improve locations and reduce unregulated use on DNRC land.
- Concerns regarding overstocked stands and associated fire danger would continue.
- All pre-commercial stands would continue to grow with decreased vigor and would show more death within the stand.
- No money would be received by School Trust funds from activities of this project.
- These stands would not be directed toward Desired Future Condition.

Action Alternative

- This proposal includes timber harvest under several sales on approximately 400 acres removing an estimated 1.0 MMBF.
- Stands would have stocking levels reduced and could show a decrease in losses due to insect and disease.
- Road systems would be changed to improve locations and reduce unregulated use on DNRC land.
- Treatments would assist DNRC in addressing the risk of fire growth, and it would be lessened across DNRC lands in this area.
- Pre-commercial thinning would also occur under this EA on a proposed 450 acres with a plan to increase vigor and reduce overstocking and death.
- Money would be received by the two School Trusts (Common School, and Pine Hills Permanent).
- These stands would be directed toward Desired Future Condition.

Impacts on the Physical Environment

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

VEGETATION:

Concern was expressed that:

- The present timber stand species mixes do not meet our desired future conditions.
- Tree mortality from insects, diseases, and present risks is above acceptable levels.
- Shade tolerant species would continue to out compete seral species-removing stands from their historic cover type and species distribution.
- Young stands are currently overstocked.
- Forest management activities may adversely affect Old Growth stands.
- Concern was expressed that forest fuel loadings in areas that haven't been harvested in 30+ years are at a moderate to high levels. The proposed stands will be treated in a fashion to help produce fuel breaks for potential wildfire.
- There is a concern that forest management activities may result in introduction of new weeds or increased spread of noxious weeds from the proposed forest management activities.
- There is concern the proposed project could negatively impact populations of threatened, endangered, or sensitive plant species.

Noxious Weeds Existing Conditions: Noxious weeds occurring in the project parcels are mainly a combination of knapweed (*Centaurea maculosa*), houndstongue (*Cynoglossum officinale L*) and spot infestations of St. Johnswort (*Hypericum perforatum)*. Knapweed was found along roadsides as well as in some forested portions of the project area. Houndstongue was found mostly along roadsides along the access haul routes within project sections and on adjacent lands. Road use, livestock and wildlife grazing, timber harvest activities, recreational uses, and soil disturbance from fire are most likely the reasons for the existing rate of spread of noxious weeds and the potential future spread and introduction of noxious weeds. Weeds continue to spread by wind, animals and vehicles. Weed management treatments on adjacent ownerships in the area varies from no-action to combinations of revegetation, herbicide treatments and bio-control measures.

Rare Plants Existing Conditions: Within the project area, four rare vascular plants are found within the project area. One species is a historical observation and the others are aquatic. The one exception to these categories is Howell's Gumweed (*Grindelia howellii).*

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

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

Three of the parcels (sections 30, 31, and 32 T15N R14W) within this project area were owned by Champion International Corporation until 1989 when it was included within a land trade. Obviously, these tracts were treated with different objectives than they are currently. Several DNRC sales have occurred on all parcels but we do not have accurate records of industry harvest on the tracts above. Changes in forest cover types can be found in Attachment C.

NOXIOUS WEEDS

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

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

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

Action Alternative: Direct, Indirect, and Cumulative Effects

Implementation of the action alternative will involve ground-disturbing activities that have the potential to introduce or spread noxious weeds in susceptible habitat types. For the action alternative, an Integrated Weed Management (IWM) approach was considered for treatment of existing and prevention of potential noxious weeds. For this project: prevention, revegetation and weed control measures on existing roads and for spot outbreaks are considered the most effective weed management treatments. Noxious weeds control efforts will promote rapid revegetation and emphasize treatment of any new noxious weeds found.

Herbicide application would be completed on segments of DNRC roads along the haul route, to reduce weed spread along roads and promote desired vegetation for weed competition and to reduce sedimentation.

Overall direct, indirect, and cumulative effects of increased noxious weeds within the project area, are expected to be moderate much like the No-Action Alternative. The combined efforts of weed control across ownerships continues to improve through cooperative efforts.

RARE PLANTS

No Action Alternative – Direct, Indirect, and Cumulative Effects

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

Action Alternative – Direct, Indirect, Cumulative Effects
If a population of a rare plant is found, disturbance would be limited. As a result, there would be low risk of direct, indirect, and cumulative effects.

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

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

STANDARD VEGETATIVE COMMUNITY
No Action Alternative – Direct, Indirect, and Cumulative Effects
The No Action alternative would not change the current existing conditions within the proposed area. The proposed harvest, road building and closures, and pre-commercial thinning would not occur. These stands would remain at overstocked levels and are they are currently under the possible insect and disease threat of Douglas-fir bark beetle (*Dendroctonus pseudotsugae*) and spruce budworm (*Choristoneura occidentalis*). Concerns regarding overstocked stands and fire danger from them would continue. Fire conditions would not be lessened in this area. All pre-commercial stands would continue to grow with decreased vigor and would show more death within the stand. As a result, there would be low to moderate risk of direct, indirect, and cumulative impacts to the vegetative community given the No Action alternative.

Action Alternative – Direct, Indirect, and Cumulative Effects
This proposal includes timber harvest under on approximately 400 acres removing an estimated 1.0 million board feet. Pre-commercial thinning will also occur under this EA on a proposed 450 acres. The DNRC would try to address the concerns within the Existing Conditions on these acres by using the silvicultural treatments found within the Vegetative Analysis. In many situations under this project, treatment may change from shelterwood to commercial thin several times within a harvest unit. This is a result of past treatment of previous owners.

At minimum, two snags and two snag recruitments per acre will be left. Some of these trees will be left in groups if possible on the stand level. These snags and snag recruitments may be found in the following harvest prescriptions.

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

Recommended Mitigation Measures for Vegetation
- Favor western larch and ponderosa pine in harvest areas and pre-commercial thinnings to shift species represented toward the accepted Desired Future Condition.
- Plant western larch and ponderosa pine in planting blocks to shift species represented toward the accepted Desired Future Condition.
- Harvests should emulate natural disturbance historically present on the landscape.
- Wash equipment prior to harvest to limit weed seed dispersal.

- Spray weeds along roadsides to limit spread of existing weed, while preventing weed spraying within Howell's gumweed populations.
- Plant grass on newly disturbed road surfaces to limit the resources available for weeds to become established.

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

- Snags, snag recruits, and coarse woody debris will be managed according to *ARM 36.11.411* through *36.11.414*, particularly favoring western larch and ponderosa pine. Clumps of existing snags could be maintained where they exist to offset areas without sufficient snags. Coarse woody debris retention would emphasize retention of downed logs of 15-inch diameter or larger.
- No harvest would occur near within 130 feet of the Blanchard Creek.

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														
Noxious Weeds			X				X				X		Y	1
Rare Plants		X				X				X				
Vegetative		⊖	⊖			⊖	⊖			⊖	⊖			
Old Growth	X				X				X				N/A	
Action														
Noxious Weeds			X				X				X		Y	1
Rare Plants		X				X				X				
Vegetative		⊖	⊖			⊖	⊖			⊖	⊖			
Old Growth	X				X				X				N/A	

Vegetation Mitigations: 1- Continued weed management (herbicide spraying, insect releases, etc.) and prompt grass seeding should continue to keep levels at Moderate levels.

Comments: Weed conditions are slightly higher in the Action Alternative, but the project will provide the ability to immediately treat weed increases.

SOIL DISTURBANCE AND PRODUCTIVITY:

Timber harvest, road construction/maintenance, and vegetation management can alter factors that influence short-term and long-term soil health and productivity. Soil productivity must be maintained to sustain ecological resilience and productivity which in turn will maintain long-term return to state trust beneficiaries**.**

Soil resources may be adversely affected by implementation of the project. Issues include the following:

- erosion
- physical disturbance (compaction and displacement)
- nutrient cycling and soil productivity
- slope stability

Soil Disturbance and Productivity Existing Conditions:

Geology

The project area is in the Jocko Range foothills west of the Clearwater River and its confluence with the Blackfoot River. Project area elevations range from 4,000 to 4,800 feet above mean

sea level. Bedrock within the project area is upper Belt rocks including quartzites and other sedimentary rocks. Slopes within the proposed harvest areas range from 0 to 45% with some steeper areas approaching 60%. Slopes are stable with no indicators of slope instability or recent failure within proposed harvest areas.

Soils
The project area is located in Missoula County and soils were mapped with the Missoula County Area Soil Survey (NRCS 2019). Much of the proposed harvest areas are on north-facing slopes or on convex slopes where shading from the sun occurs for longer periods and therefore energy-limited with longer periods of moisture retention in the soils. Soils are mainly high rock content, well drained soils derived from bedrock residuum, cobbly outwash, and glacial tills. These soils are well drained, with low to moderate erosion, compaction, and displacement potential. Areas with slopes over 45% have an increased potential for displacement and erosion.

ENVIRONMENTAL EFFECTS
No Action Alternative: Direct, Secondary, and Cumulative Effects
Implementation of the no-action alternative would result in no soil resource impacts in the project area. Soil resource conditions would remain similar to those described in the existing conditions sections of this environmental assessment.

Action Alternative: Direct, Secondary, and Cumulative Effects
The project involves timber harvest (390 acres), new road construction (1.2 miles), road abandonment (0.3 miles), and road reclamation (0.2 miles).

Physical Disturbance *(compaction and displacement)*: Risk of detrimental soil disturbance would remain low if the mitigations listed in the following section are implemented.

Erosion: Risk of unacceptable adverse direct, indirect, or cumulative impacts would be low.

Nutrient Cycling and Soil Productivity: the risk of measurable adverse direct, secondary, or cumulative impacts to nutrient cycling would be low.

Slope Stability: Slopes in the project area are considered stable with low to no vulnerability to mass wasting should the proposed project be implemented.

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	X				X				X					
Erosion	X				X				X					
Nutrient Cycling	X				X				X					
Slope Stability	X				X				X					
Soil Productivity	X				X				X					

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		
Action														
Physical Disturbance	⊖	⊖			⊖	⊖			⊖	⊖				
Erosion		X				X				X				
Nutrient Cycling		X				X				X				
Slope Stability		X				X				X				
Soil Productivity		X				X				X				

Soils mitigations:

Below is a list of additional mitigations that would be included in any implementation of the Action Alternative in order to reduce the potential impacts of the project on soil resources. These mitigations are assumed in this soils resource analysis. Some mitigations are project-specific, and others are general common practice or are commitments made by the DNRC such as the State Plan and the HCP that are simply emphasized here as essential for mitigating potential impacts.

- 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 each individual sale the logger and the Forest Officer would agree to a general hauling, landing, and skidding plan prior to equipment operations to meet the following objectives:
  - Limit trails to existing skid trail disturbances as much as possible to minimize new disturbances.
  - Limit ground-based equipment operations on slopes greater than 45%, except for short pitches with caution to limit soil disturbance.
- Slash would be distributed within harvest units, including large (≥3-inch diameter) and fine material (such as branches and leafy material), to maintain or achieve the amount of course woody material appropriate to the dominant habitat type within the project area:
  - Douglas-fir/ninebark (DF/PHMA) is **4.5 to 9 tons per acre** (Graham et al., 1994)
- Skid trails and landings would be treated with slash, water bars, and/or grass seed to reduce the risk of the concentration and impede overland flow and consequent erosion, to reduce soil detachment by raindrop impact, discourage the recruitment and establishment of weeds on disturbed soils. These treatments would include existing unauthorized motorized trails to discourage continued or expanded soil disturbances to the area as a result of unauthorized motorized access. Roads accessing the project area would be gated to also prevent unauthorized access.
- Scarification by dispersed skidding would be limited to the following conditions:
  - Slopes less than 40%
  - Cumulative area of direct disturbance, when combined with ground-based yarding disturbances, would not exceed 40%.
  - Where there is an identified need for mineral soil exposure for germination of desired species (such as western larch).
  - Scarification depths not to exceed those necessary to achieve exposure of mineral soil and not more.

- During new road construction, newly disturbed soils on road cuts and fills would be promptly reseeded to reduce erosion/sediment from roads.
- Harvest operations and road conditions would be monitored as part of the on-going project operations and repairs would be made as needed, including erosion control, culvert cleaning and re-vegetation.

WATER QUALITY, QUANTITY, and FISHERIES: *(COMPLETE REPORT CAN BE FOUND IN ATTACHMENT E)*

Timber harvest, road construction/maintenance, and vegetation management can alter local water resources and fish habitat including altering how water, sediment, and nutrients are stored, consumed, transported, and released (yield) from the managed landscape, or with direct effects to stream temperature or large woody debris recruitment to the channel as a result of timber harvest adjacent to streams. Water and fisheries resource issues evaluated for this project are listed below:

- Hillslope hydrology and water yield
- Erosion and sedimentation
- Stream temperature and large woody debris recruitment

Direct, secondary, and cumulative effects to fish populations and habitat. Most of the project area is located within the Blanchard Creek watershed which supports West Slope Cutthroat Trout.

No water or fish-resource related comments were received during scoping of the project.

Water Quality, Quantity, and Fisheries Existing Conditions:

The project area is mainly located within the Blanchard Creek watershed with minor amounts of harvest area within the neighboring Lost Horse Creek and Woodchuck Canyon watersheds. Due to the limited proposed harvest and haul routing in these neighboring watersheds, this analysis is limited to the Blanchard Creek watershed. The Blanchard Creek watershed is 27 square miles of which approximately 350 acres is proposed for harvest with the proposed project. Blanchard Creek joins with the Clearwater River a mile downstream of the project area.

This assessment begins with a characterization and evaluation of the existing conditions within the assessment areas. This informs both potential site sensitivities to impacts to water and fish resources, and the likely condition that would persist under the No Action Alternative.

To evaluate the potential water and fish resource effects of the Action and No Action Alternatives within the assessment areas we consider impacts typical to timber harvest, associated infrastructure and activities including road and landing construction, vegetation/fuels management including slash treatment, and weed management.

The project area is mainly located within the lower (southeastern) portion of the Blanchard Creek watershed. Most of the watershed upstream of the project area is former industrial timber ground currently owned by Montana Checkerboard, LLC.

Project harvest units are located north and south of Blanchard Creek and the North Fork Blanchard Creek. However, proposed harvest unit boundaries remain outside the RMZ of these streams.

Fish habitat and fish populations can be affected in three primary ways by timber harvesting through the following:

1) introduction of fine sediment to spawning habitat as a result of road construction and use, and ground-based equipment operation,
2) stream temperature can increase if trees that provide shade to a stream are removed or if channel morphology is changed due to an increase in sediment coming from roads or harvest areas,
3) large woody debris in streams can be reduced if trees are removed that had the potential to be recruited into the stream.

Blanchard Creek and the North Fork Blanchard Creek are the only water bodies near the project area identified as containing fish resources. Similar to water quality and yield analysis results described above, the risk of direct effects to fish resources identified in these creeks is low because of the distance of proposed activities including timber harvest and road construction would have from the creek. The exception being the proposed crossing replacement on a side channel of Blanchard Creek. Over the long term, the proposed crossing improvement will reduce risks to fisheries resources by reducing the risk of failure and erosion at the existing crossing. Short term impacts will be mitigated by timing the work when the side channel is seasonally dry and by application of construction BMPs that would reduce the risk of erosion and sedimentation.

No Action Alternative: Direct, Secondary, and Cumulative Effects- Water Quality
Under this alternative, no timber harvesting or related activities would occur. Water Quality would continue as described in the existing conditions.

No Action Alternative: Direct and Secondary - Water Quality
No increased risk of increases or reductions in annual water yield would result from this alternative.

Cumulative
No measurable change in water yield would be associated with this alternative.

Action Alternative- Direct and Secondary- Water Quality
The proposed project would have a very low risk of direct effects to stream channel form, temperature, or large woody debris recruitment because harvest activities would be located outside of the RMZ or SMZ of Blanchard Creek and its tributaries. Similarly, proposed road construction would be greater than 300 feet from Blanchard Creek and over 200 feet from non-fish bearing tributaries. These distances along with implementation of Administrative Rules for Forest Management, the DNRC Habitat Conservation Plan, and applicable BMPS would minimize the risk of sediment delivery to draws and streams from proposed road and temporary trail construction.

Existing roads would have minor drainage improvements and BMP upgrades implemented under this alternative to maintain a low risk of sediment delivery to streams. Minor drainage improvements include reshaping drain dips and cleaning ditches.

The project includes a crossing replacement at an existing culvert crossing that is undersized and off grade causing scour and erosion issues. The proposed replacement would be in improved ford and will have the benefits of increasing the hydraulic capacity of the crossing reducing the risk of flood flows overtopping the road surface. This work would improve the existing condition of water quality risk.

Cumulative
Cumulative risk to water quality as a result of the project would be low. The risk of sediment delivery to Blanchard Creek increase with the project due to temporary in-channel work associated with the side channel crossing replacement and timber hauling. Proposed improvements to existing roads and BMP application would reduce long-term cumulative increase in sediment delivery.

Action Alternative: Direct and Secondary- Water Quantity
No measurable direct or indirect impacts to water yield in Blanchard Creek is anticipated as a result of the proposed project for the following reasons:

- Local evapotranspiration and precipitation interception rates would decrease in the short term with the removal of vegetation associated with the timber harvest. However, the increased water availability is expected to increase growth of remaining trees and vegetation, and the establishment of new trees following the harvest are expected to gradually increase water consumption with growth.
- Studies correlating vegetation harvest and treatment with streamflow yield have suggested approximately 15-20% of the watershed cover must be harvested to have a measurable increase in water yield in similar mountain environments (Stednick, 1996; and Bosch and Hewlett, 1982). As is described Table W-1, less than 3% of the watershed area would be harvested with this project when combined with other harvests documented for the area. Therefore, a detectable change in water yield is very unlikely.

Cumulative
The cumulative risk of water yield is low due to the limited extent of the proposed harvest.

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				
Water Quantity		X				X				X				

Action Alternative: Direct, Secondary, and Cumulative- Fisheries
Fish habitat and fish populations can be affected in three primary ways by timber harvesting through the following: 1) introduction of fine sediment to spawning habitat as a result of road construction and use, and ground-based equipment operation, 2) stream temperature can increase if trees that provide shade to a stream are removed or if channel morphology is changed due to an increase in sediment coming from roads or harvest areas, 3) large woody debris in streams can be reduced if trees are removed that had the potential to be recruited into the stream.

Blanchard Creek and the North Fork Blanchard Creek are the only water bodies near the project area identified as containing fish resources. Similar to water quality and yield analysis results described above, the risk of direct effects to fish resources identified in these creeks is low because of the distance of proposed activities including timber harvest and road construction would have from the creek. The exception being the proposed crossing replacement on a side channel of Blanchard Creek. Over the long term, the proposed crossing improvement will reduce risks to fisheries resources by reducing the risk of failure and erosion at the existing crossing. Short term impacts will be mitigated by timing the work when the side channel is seasonally dry and by application of construction BMPs that would reduce the risk of erosion and sedimentation.

The risk of secondary or indirect effects to fish resources would be associated with the low risk of slope stability identified in the preceding soils analysis. Risk of adverse secondary effects to fish habitat from the action alternative are expected to be minimized by implementation of all applicable BMPs, SMZ rules, and HCP commitments.

There is a low risk of cumulative effects to fish habitat from the proposed project. As is reported in the above section, there is no risk of direct impacts, and a low risk of indirect impacts within the Blanchard Creek watershed due to sediment delivery.

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

Water Quality, Quantity, and Fisheries Mitigations:
Hydrologic and fisheries resource mitigations that would be implemented with the proposed Action Alternative include:

- Applicable state plans, rules, and practices have guided project planning and would be implemented during project activities, including the Montana Habitat Conservation Plan (HCP), 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 Montana Streamside Management Zone (SMZ) Law, and the State Forest Land Management Plan.

- Harvest boundaries, road construction, and all other project activities would not cross the RMZ boundary for Blanchard Creek, North Fork Blanchard Creek, or other Class 1 streams in the project areas (if applicable). Harvest operations, road construction, and all other project activities would be excluded from SMZ boundaries of Class 2 or 3 streams within the project area.
- Soil protection and mitigation measures listed in the soils analysis of this EA also protect water quality by avoiding and minimizing sedimentation risk. This includes, but not limited to road drainage BMPs, CWD retention, and grass-seeding of disturbed areas such as skid trails, landings, and road prisms.
- All new road construction would be behind public access closures. The Forest Officer and/or DNRC Hydrologist would routinely inspect road closures, such as gates, barriers, and earth berms during project implementation.

WILDLIFE: *(COMPLETE WILDLIFE REPORT CAN BE FOUND IN ATTACHMENT F)*

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

- Proposed activities could alter mature forested habitats and/or landscape connectivity, which could affect species that rely on these mature forested habitats, and/or alter connectivity and the ability of wildlife requiring corridors to move through the landscape.
- Proposed activities could alter cover, reduce secure areas, and increase access, which could affect grizzly bears by displacing them from important habitats and/or increasing risk to bears of human-caused mortality.
- Proposed activities could negatively affect bald eagles by reducing nesting and perching structures and/or disturbing nesting bald eagles
- Proposed activities could reduce the amount and/or quality of fisher habitats, which could alter fisher use of the area.
- Proposed activities may alter flammulated owl habitat by reducing canopy closure and increasing tree spacing, while potentially removing snags needed by flammulated owls for nesting.
- Proposed activities could displace gray wolves from important habitats, particularly denning and rendezvous sites, and/or alter prey availability.
- Proposed activities could reduce suitable nesting and foraging habitat for pileated woodpeckers, which could alter pileated woodpecker use of the area.
- Proposed activities could remove forest cover on big game winter range, which could reduce the carrying capacity of the winter range
- Proposed activities could remove big game security cover, which could affect hunter opportunity and local quality of recreational hunting.

ENVIRONMENTAL EFFECTS- MATURE FORESTED HABITATS AND LANDSCAPE CONNECTIVITY

No Action Alternative – Direct, Indirect, and Cumulative Effects

No changes in wildlife use would be expected. Thus, no direct or indirect effects to mature forested habitats and landscape connectivity would be expected since: 1) no further changes to existing stands would occur; 2) no changes to human developments, motorized access, or visual screening would occur, and 3) no alterations to existing corridors would be anticipated.

Action Alternative – Direct and Indirect Effects

Some changes in visual screening would occur within individual units, but the combination of irregular-shaped units, topography, un-harvested patches throughout the project area, and distance from open roads would minimize the effects of the reductions in visual screening. Thus, a minor risk of adverse direct and indirect effects to mature forested habitats and landscape connectivity would be expected since: 1) proposed activities could reduce forested cover in a portion of the project area (18%), but corridors would be retained; 2) increased human developments in the form of restricted roads, could concentrate human activity, but no changes in human-related attractants would occur; 3) no changes to legal motorized public access would occur, but increases in non-motorized access could facilitate increased human use of the project area; and 4) visual screening in portions of the project area would be reduced, but some visual screening would be retained across the project area.

Action Alternative – Cumulative Effects

No changes in the presence of human-related attractants would occur. No changes to legal motorized public access to the cumulative effects analysis area would occur. Minor reductions in visual screening in a small portion of the cumulative effects analysis area would be anticipated. Thus, a minor risk of adverse cumulative effects to mature forested habitats and landscape connectivity would be expected since: 1) proposed activities could reduce forested cover in a small portion of the cumulative effects analysis area, but corridors would exist; 2) minor increases in human developments that could concentrate human activities would occur, but no changes in human-related attractants would occur; 3) no changes to motorized public access would occur; and 4) visual screening in a small portion of the cumulative effects analysis area would be reduced, but considerable visual screening would persist across the cumulative effects analysis area.

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													*See below*	
Grizzly bear *(Ursus arctos)* Habitat: Recovery areas, security from human activity		X				X				X				
Sensitive Species													*See below*	
Bald eagle *(Haliaeetus leucocephalus)* Habitat: Late-successional forest within 1 mile of open water		X				X				X				
Fisher *(Martes pennanti)* Habitat: Dense mature to old forest less than 6,000 feet in elevation and riparian		X				X				X				
Flammulated owl		X				X				X				

Wildlife	Impact												Can Impact be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
(Otus flammeolus) Habitat: Late-successional ponderosa pine and Douglas-fir forest														
Gray Wolf *(Canis lupus)* Habitat: Ample big game populations, security from human activities		X				X				X				
Pileated woodpecker *(Dryocopus pileatus)* Habitat: Late-successional ponderosa pine and larch-fir forest		X				X				X				
Big Game Species													*See below*	
Winter Range		X				X				X				
Security		X				X				X				

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

- 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.
- Minimize potential for disturbance to grizzly bears and numerous avian species by restricting activities between April 1 and June 15.
- 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.
- Provide connectivity for fisher, Canada lynx, and a host of other species by maintaining corridors of unharvested and/or lighter harvested areas along riparian areas, ridge tops, and saddles.

AIR QUALITY:

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

- Smoke will be produced during pile burning.
- Smoke may adversely affect the Blanchard Creek and the Clearwater Junction Area.
- Dust will be produced during harvesting and hauling activities.

Existing Conditions

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

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

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

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

SLASH BURNING

No Action Alternative: Direct, Indirect, and Cumulative Effects

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

Action Alternative: Direct and Indirect Effects

Slash consisting of tree limbs and tops and other vegetative debris would be piled throughout the project area during harvesting. Slash would ultimately be burned after harvesting operations have been completed. Burning would introduce particulate matter into the local airshed, temporarily affecting local air quality. Over 70% of emissions emitted from prescribed burning are less than 2.5 microns (National Ambient Air Quality PM 2.5). High, short-term levels of PM 2.5 may be hazardous. Within the typical column of biomass burning, the chemical toxics are: Formaldehyde, Acrolein, Acetaldehyde, 1, 4 Butadiene, and Polycyclic Organic Matter.

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

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

Cumulative Effects

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

DUST

No Action Alternative: Direct, Indirect, and Cumulative Effects

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

Action Alternative: Direct, Indirect, and Cumulative Effects

Harvesting operations would be short in duration. Dust may be created from log hauling on portions of native surface roads during summer and fall months. Contract clauses would provide for the use of dust abatement or require trucks to reduce speed if necessary to reduce dust near any affected residences.

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

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

ARCHAEOLOGICAL SITES / AESTHETICS / DEMANDS ON ENVIRONMENTAL RESOURCES:

HISTORICAL AND ARCHEOLOGICAL SITES*:*

The tribes were scoped but none identified a specific cultural resource concern. A Class I (literature review) level review was conducted by the DNRC staff archaeologist for the area of potential effect (APE). This entailed inspection of project maps, DNRC's sites/site leads database, land use records, General Land Office Survey Plats, and control cards. The Class I search revealed that no cultural or paleontological resources have been identified in the APE. No additional archaeological investigative work will be conducted in response to this proposed development. However, if previously unknown cultural or paleontological materials are identified during project related activities, all work will cease until a professional assessment of such resources can be made.

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

No Action Alternative: Direct, Indirect, and Cumulative Effects
No impacts are expected, and low direct, indirect, or cumulative effects are expected on these sites.

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

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

AESTHETICS
Any change to the scenery in the area from these alternatives would be in addition to past activity within the project area. This analysis includes all past and present effects.

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

- There are concerns that the proposed projects and roadbuilding would impact the aesthetics of the area, especially south of Seeley Lake, Montana.

Existing Conditions
The landscapes in the greater area are influenced by glaciation (such as Seeley Lake or areas near Ovando, Montana) with steep glaciated peaks and lower rolling ridges; or have been carved and formed by the Blackfoot and Clearwater Rivers. The landscape within the project area is mountainous with deep canyons formed by the streams that still occupy the bottom areas. The Clearwater River is located near this proposed project. Benches created by the the streams, are traditionally moderately to heavily timbered. A primary road system, Blanchard Creek Road is present. Any changes within the area from these alternatives would be in addition to past harvests, road building, and other uses within the area.

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

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

No Action Alternative Direct, Indirect, and Cumulative Effects
The risk of direct effects would be expected to be low. Over time, tree growth would be expected to fill in current, naturally occurring openings. Due to the long period of time involved, this effect would be expected to be low. The risk of indirect effects would be expected to be insignificant.

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

Action Alternative: Direct, Indirect, and Cumulative Effects

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

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

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

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

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

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

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

OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA: *List other studies, plans or projects on this tract. Determine cumulative impacts likely to occur as a result of current private, state or federal actions in the analysis area, and from future proposed state actions in the analysis area that are under MEPA review (scoped) or permitting review by any state agency.*

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

Impacts on the Human Population

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

LOG HAULING TRAFFIC

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

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

Existing Conditions

Log hauling traffic is common in the project area.

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

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

No Action Alternative: Direct, Indirect, and Cumulative Effects
No increase in log truck traffic would occur. Other log truck traffic would still be present due to the project area's proximity to Highway 200. Thus, there may be minimal impacts to traffic from other users.

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

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

RECREATION (including access to and quality of recreational and wilderness activities):
Issues and Concerns- The following issue statement was developed during scoping regarding the effects of the proposed action to recreation:

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

Existing Conditions
The area is used for hiking, hunting, cross-country skiing, snowmobiling and general recreating. Currently, Blanchard Creek Road is open for public travel, all other toads through the area are closed to motorized use and used only for administrative purposes.

No Action and Action Alternatives: Direct, Indirect, and Cumulative Effects
There would be no change in road closure status and the selection of either alternative would not affect the ability of people to recreate on this parcel.

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

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

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
Density and Distribution of population and housing	X				X				X					
Social Structures and Mores	X				X				X					
Cultural Uniqueness and Diversity	X				X				X					
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			YES	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					

Comment Number 1: Quantity and Distribution of Employment Impact
According to the Montana Bureau of Business and Economic Research, a general rule of thumb is that for every million board feet of sawtimber harvested in Montana, ten person-years of employment occur in the forest products industry.

This harvest is viewed as a continuation of a sustained yield and as such would not create any new jobs but rather sustain approximately 40 person-years of employment in the forest products industry. A few short-term jobs would also be created/sustained by issuing pre-commercial thinning and planting contracts following harvest. Additionally, local businesses, such as hotels, grocery stores, and gas stations would likely receive additional revenues from personnel working on the proposed project. This would be a positive low impact to quantity and distribution of employment in the area.

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

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

- None

Other Appropriate Social and Economic Circumstances:

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

No Action Alternative – Direct, Indirect, and Cumulative Effects

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

Action Alternative – Direct, Indirect, and Cumulative Effects

The timber harvest would generate additional revenue for the Common School and Pine Hills Permanent Trusts. The estimated return to the trust for the proposed harvest is $144,000.00 based on an estimated harvest of 1.0 MMBF (million board feet) (estimated as 8,000 tons) and an overall stumpage value of $18.00 per ton. Costs, revenues, and estimates of return are estimates intended for relative comparison of alternatives, they are not intended to be used as absolute estimates of return.

Mills in Montana need 437 MMBF (million board feet) per year to maintain current production levels and industry infrastructure. Currently the sustained yield and target harvest from Trust Lands is 56.9 MMBF which is a 16% contribution to Montana's mills sustainable yearly total. This project would provide approximately 1 MMBF of timber towards the sustained yield target thus helping sustain current mill capacity.

References

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

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

Hayes, Steven W.; Morgan, Todd A.; 2017. The Forest Products Industry in Montana, Part 2: Industry Sectors, Capacity and Outputs. Forest Industry Brief No. 4. Missoula, MT: University of Montana, Bureau of Business and Economic Research

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

No

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

No

Environmental Assessment Checklist Prepared By:

Name: Craig V. Nelson
Title: Clearwater Unit, Forest Management Supervisor
Date: March 10, 2020

Finding

Alternative Selected

Following a review of the document as well as the corresponding Department policies and rules, the Action Alternative has been selected because it meets the intent of the project objectives outlined in Section I – Type and Purpose of Action. This includes but is not limited to the objectives to improve stand growth and vigor and reduce the threat of future losses to fire, insects, and disease as well as to bring the stands closer to historic conditions and provide a sufficient amount of sawlog volume to contribute to the DNRC's sustained yield.

Significance of Potential Impacts

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

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

Need for Further Environmental Analysis

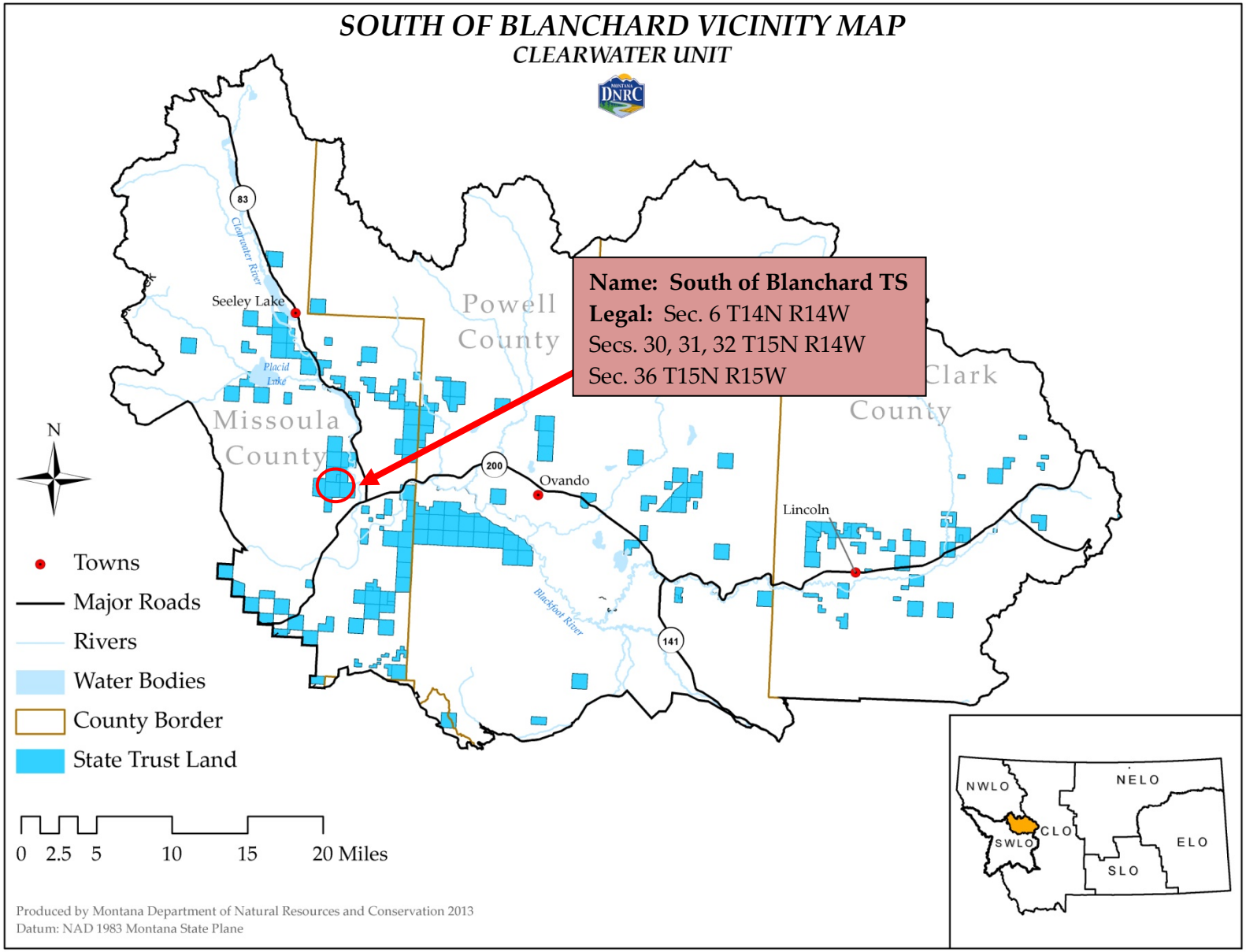
☐	EIS	☐	More Detailed EA	☒	No Further Analysis

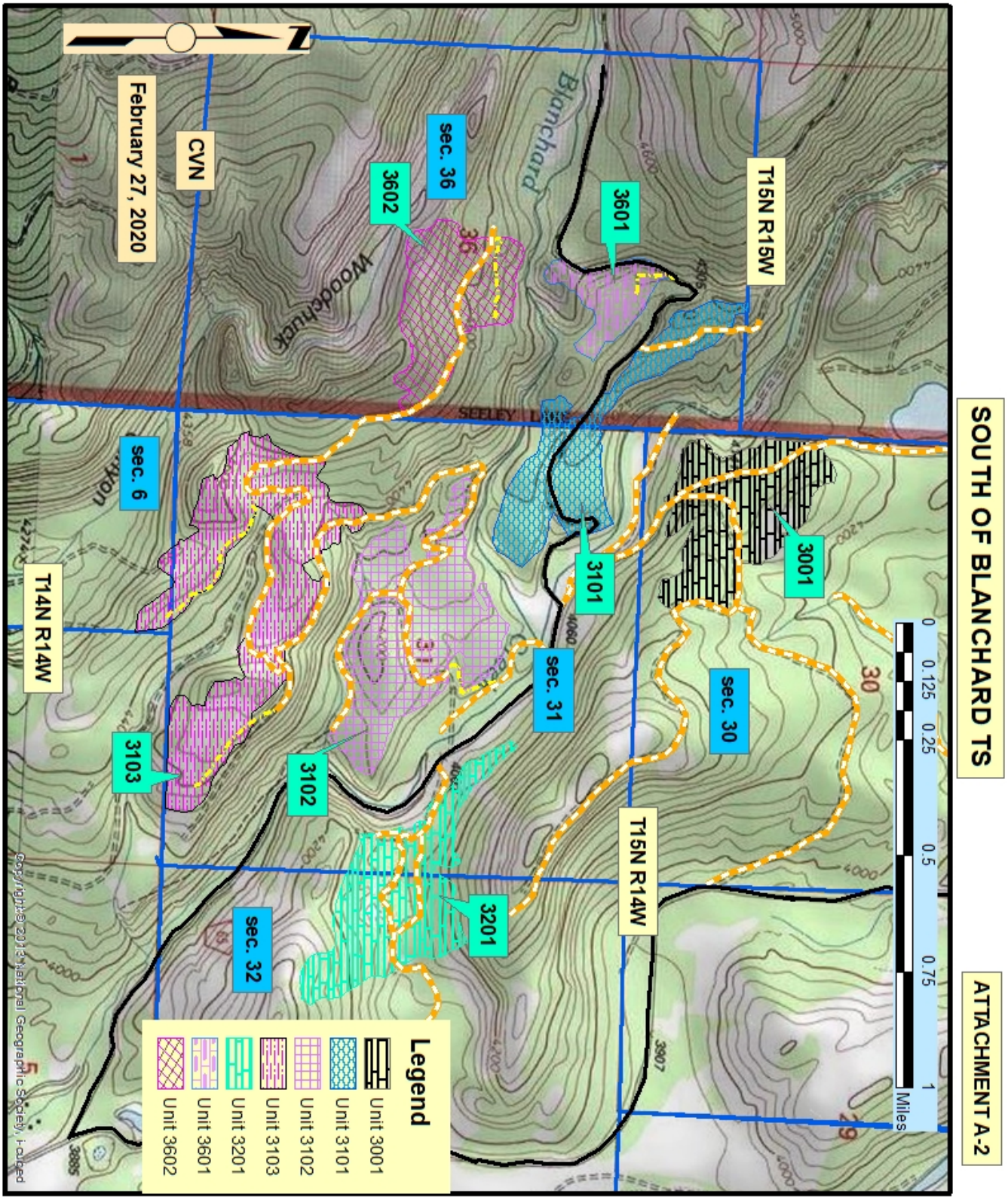
Environmental Assessment Checklist Approved By:

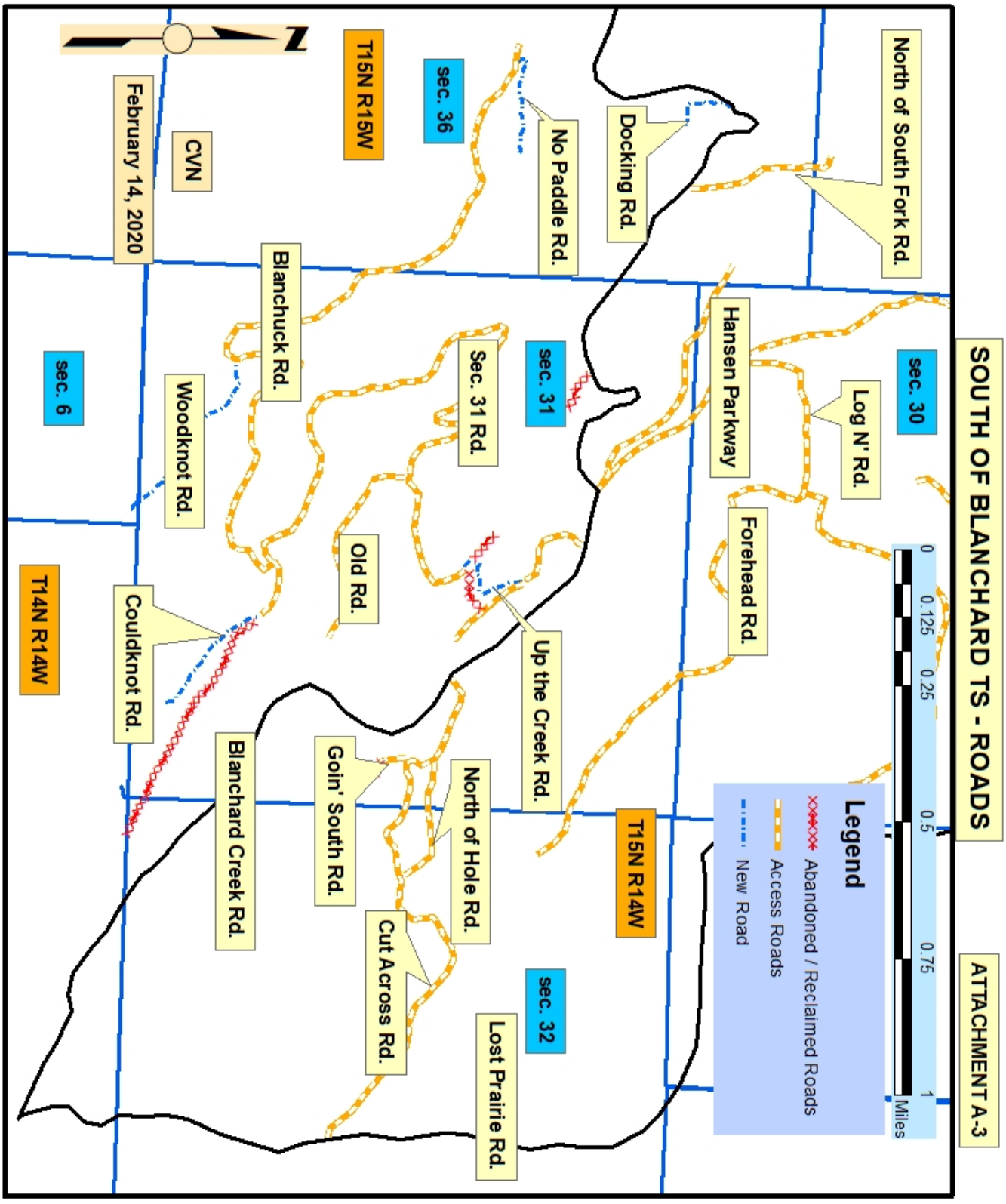
Name: Kristen Baker-Dickinson
Title: Clearwater Unit Manager
Date: March 11, 2020
Signature: /s/ *K. Baker-Dickinson*

Attachment A- Maps

A-1: Timber Sale Vicinity Map




SOUTH OF BLANCHARD TS
ATTACHMENT A-2
February 27, 2020
CVN
T15N R15W
T15N R14W
T14N R14W
sec. 36
sec. 31
sec. 30
sec. 6
sec. 32
3001
3101
3201
3102
3103
3601
3602
Blanchard
Woodchuck
SEELEY
0
0.125
0.25
0.5
0.75
1
Miles
Legend
Unit 3001
Unit 3101
Unit 3201
Unit 3102
Unit 3103
Unit 3601
Unit 3602


SOUTH OF BLANCHARD TS - ROADS
ATTACHMENT A-3
February 14, 2020
CVN
T15N R15W
sec. 36
sec. 30
sec. 31
sec. 6
T14N R14W
T15N R14W
sec. 32
North of South Fork Rd.
Docking Rd.
No Paddle Rd.
Log N' Rd.
Hansen Parkway
Forehead Rd.
Sec. 31 Rd.
Blanchuck Rd.
Woodknot Rd.
Old Rd.
Up the Creek Rd.
Couldknot Rd.
Blanchard Creek Rd.
Goin' South Rd.
North of Hole Rd.
Cut Across Rd.
Lost Prairie Rd.
Legend
Abandoned / Reclaimed Roads
Access Roads
New Road
0
0.125
0.25
0.5
0.75
1
Miles

Attachment B- Scoping and Responses

Project Update*
South of Blanchard Timber Sale

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

Section 6 T14N R14W –- Pine Hills
Sections 30, 31, and 32 T15N R14W - Common Schools
Section 36 T15N R15W – Common Schools

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

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

The proposed harvest would take place under a timber sale and small timber permits if needed. The proposal may harvest approximately 1 million board feet from approximately 700 acres. Additional management activities including noxious weed management, pre-commercial thinning, planting, and prescribed burning (pile burning) may occur. This project may require 1 mile of new road construction that would replace 0.75 of existing road located in poor locations or wetland areas and adjacent to stream channels that would be closed. Roads used for this sale will be maintained and / or improved to meet Best Management Practices or DNRC guidelines and would exist behind gates or closures. The proposed action would likely be implemented in the late summer of 2020 and possibly be completed by 2024.

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

The Montana DNRC invites comments and suggestions concerning this proposal from all interested parties. Please respond by **November 15, 2019** to:

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

or: email: **crnelson@mt.gov**

or: **(406) 244-2386**

* *Original Scoping Notice had an incorrect Legal Description. This was sent out immediately after that discovery.*

Northern Cheyenne Tribal Historic Preservation

14 E. Medicine Lodge Drive | P.O Box 128| Lame Deer, MT. 59043
Ph: (406) 477- 4838/ 4839/ 8113/ 8114

CONSULTATION REQUEST

CONSULTING AGENCY
South Western Land Office - Clearwater Unit.

ADDRESS
48455 S. Sperry Grade RD.

CITY/STATE/ZIP
Greenough, MT. 59823

PHONE
(406) 244-2386

FAX

E-MAIL
crnelson@mt.gov

AGENCY CONTACT
Craig V. Nelson

PROJECT CONTACT

PREPARED BY:
Gary LaFranier

PROJECT TYPE	Harvest Timber Pine Hills, Common Schools.
FEDERAL AGENCY	Department of Natural Resources and Conservation
STATE / COUNTY	Montana/ Blanchard

CORRESPONDENCE	
DATE RECEIVED	10/15/2019
REVIEW PERIOD	30-DAY
DEADLINE	11/15/2019

DOCUMENTATION RECEIVED	
MAPS	YES
SURVEY	N/A
TRIBAL SURVEY	N/A

DETERMINATION	
FINDING	NO EFFECT
COMMENT	Your undertaking may proceed as planned

ADDITIONAL COMMENTS

T. 14N, R. 14W, Sec. 6 Pine Hills, T. 15N, R. 14W, Sec. 30, 31 ,32 Common schools, T. 15N, R. 15W, Sec. 36. Common Schools.

Teanna Limpy
Tribal Historic Preservation Officer
11/13/2019
DATE

LITTLEWOLF AND MORNING STAR- Out of Defeat and exile they led us back to Montana and won our Cheyenne Homeland that we will keep forever

Weyerhaeuser

October 22, 2019

Craig Nelson
DNRC-Clearwater Unit
48455 S. Sperry Grade Road
Greenough, MT 59823

Dear Mr. Nelson,

This letter is in support of the South of Blanchard Timber Sale Proposal. The project description outlined in your Public Notice describes the need for the project and the methods to achieve the desired future condition. Fuels reduction, forest health improvement, insect and disease management, and the sale of forest products are critical for school trust lands. Please also consider the costs and benefits of temporary versus permanent road construction in order to maximize the return to school trusts while still protecting natural resources.

Weyerhaeuser operates three manufacturing facilities located in Northwest Montana and employs approximately 525 people. Wood fiber from Department of Natural Resource and Conservation projects is an important source of raw material for our operations. Specifically, the opportunity to purchase logs and pulpwood produced from the South of Blanchard Timber Sale is significant to our fiber supply to help sustain our manufacturing businesses.

Weyerhaeuser hopes that any decision made regarding the implementation of this project will consider its importance to our employees and their respective communities.

Thank you for your consideration.

Sincerely,

Jared Richardson, CF
Regional Raw Material Manager

CONVERSATION WITH LESLIE PRINGLE

Given the note from Brad French (Friday, January 3, 2020), I responded with a phone call on January 7, 2020.

Call went from 11:43 AM – 12:27 PM. We discussed the ideas behind the timber sale and the maintenance / use of Blanchard Creek Road.

I forwarded a current timber sale map (November 20, 2019) and a scoping letter to XXXXXXXXst@blackfoot.net .

RESPONSE FROM MONTANA DEPARTMENT OF FISH, WILDLIFE, AND PARKS

Hi Craig,

- South of Blanchard; we don't have any comments for this proposal.
- Balding Bear; we will have comments on this one. Has any info changed since the info you originally provided us in March? And schedule-wise, I'd hope by January 2—would that work for you?

And thank you for checking back with us on these,

Sharon Rose

ATTACHMENT C: VEGETATION

South of Blanchard Projects– Vegetation Analysis

Analysis Prepared By:

Name: Craig Nelson- Forest Vegetation & Noxious Weeds
Title: Forest Management Supervisor, Clearwater Unit, Montana DNRC

Introduction

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

Issues

Concern was expressed that:

- The present timber stand species mixes do not meet our desired future conditions.
- Tree mortality from insects, diseases, and present risks is above acceptable levels.
- Shade tolerant species would continue to out compete seral species-removing stands from their historic cover type and species distribution.
- Young stands are currently overstocked.
- Forest management activities may adversely affect Old Growth stands.
- Concern was expressed that forest fuel loadings in areas that haven't been harvested in 30+ years are at a moderate to high levels. The proposed stands will be treated in a fashion to help produce fuel breaks for potential wildfire.
- There is a concern that forest management activities may result in introduction of new weeds or increased spread of noxious weeds from the proposed forest management activities.
- There is concern the proposed project could negatively impact populations of threatened, endangered, or sensitive plant species.

Regulatory Framework

The following plans, rules, and practices have guided the planning of these projects and/or will be implemented during project activities:

State Forest Land Management Plan
DNRC developed the SFLMP to "provide field personnel with consistent policy, direction, and guidance for the management of state forested lands" (DNRC 1996: Executive Summary). The SFLMP provides the philosophical basis, technical rationale, and direction for DNRC's forest management program. The SFLMP is premised on the philosophy that the best way to produce long-term income for the trust beneficiaries is to manage intensively for healthy and biologically diverse forests. In the foreseeable future, timber management will continue to be the primary source of revenue and primary tool for achieving biodiversity objectives on DNRC forested state trust lands.

DNRC Forest Management Rules
DNRC Forest Management Rules (*ARM 36.11.401 through 456*) are the specific legal resource management standards and measures under which DNRC implements the SFLMP and subsequently its forest management program. The Forest Management Rules were adopted in March 2003 and provide the legal framework for DNRC project-level decisions and provide field personnel with consistent policy and direction for managing forested state trust lands. Project design considerations and mitigations developed for this project must comply with applicable Forest Management Rules.

Montana Best Management Practices (BMPs) for Forestry
Montana BMPs consist of forest stewardship practices that reduce forest management impacts to water quality and forest soils. The implementation of BMPs by DNRC is required under *ARM 36.11.422*. Key forestry BMP elements include: streamside management; road design and planning; timber harvesting and site preparation; stream crossing design and installation; winter logging; and hazardous substances storage, handling, and application.

Montana DNRC Forested Trust Lands Habitat Conservation Plan (HCP)
DNRC is managing the habitats of threatened and endangered species on this project by implementing the Montana DNRC Forested Trust Lands Habitat Conservation Plan (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.

Analysis Areas

Direct and Secondary Effects Analysis Area

The proposed treatment areas – 450 acres (harvest and pre-commercial thinning areas)

Cumulative Effects Analysis Area
The proposed project area – 2,629 acres

Existing Conditions

Noxious Weeds
Noxious weeds occurring in the project parcels are mainly a combination of knapweed (*Centaurea maculosa*), houndstongue (*Cynoglossum officinale L*) and spot infestations of St. Johnswort (*Hypericum perforatum)*. Knapweed was found along roadsides as well as in some forested portions of the project area. Houndstongue was found mostly along roadsides along the access haul routes within project sections and on adjacent lands. Road use, livestock and wildlife grazing, timber harvest activities, recreational uses, and soil disturbance from fire are most likely the reasons for the existing rate of spread of noxious weeds and the potential future spread and introduction of noxious weeds. Moist sites with well-established surface vegetation provide a competitive advantage over noxious weed establishment. Reseeding of some roadcuts followed by roadside, spot herbicide treatments and release of bio-control insects have been made on noxious weeds on portions of all of the project sections and this has helped reduced the spread of noxious weeds. DNRC has completed considerable herbicide treatments and revegetation on forest management projects for the last 20 years,

coupled with weed treatments by the Plum Creek Timber Company, The Nature Conservancy, and grazing lessees on system roads or portion of the parcels included. Yet weeds continue to spread by wind, animals and vehicles. Weed management treatments on adjacent ownerships in the area varies from no-action to combinations of revegetation, herbicide treatments and bio-control measures.

Rare Plants

Within the project area, four rare vascular plants are found within the project area. One occurrence was a historical collection of Deer Indian Paintbrush (*Castilleja cervine*)

from 1901 and is unlikely to be found. In riparian areas, rivers, lakes, or sloughs two other species were mentioned; Beck Water-marigold (*Bidens beckii*) and Pygmy Water-lily (*Nymphaea leibergii*). The one exception to these categories is Howell's Gumweed (*Grindelia howellii).*

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

The Montana Natural Heritage Program stated on their website: *"In Montana, Grindelia howellii is known from over 100 mapped occurrences. However, most populations are small and many occur on roadsides or other similarly disturbed habitat. This habitat preference in conjunction with the short-lived nature of the species means occurrences may drift from place to place or from year to year and as a result many occurrences may be ephemeral…*
Invasive weeds are a threat to many occurrences, as the habitat occupied by G. howellii is also favorable for many weedy species. Application of herbicides to control these weeds, especially along roadsides may also have a direct, negative impact."

Standard Vegetative Community

- **Stand History/Past Management**
  This area falls within Climatic Section 332B. Climatic Section 332B was historically 79% forested (Losensky, 1997). 332B includes valley bottoms as well as high elevations in the Bitterrroot and Blackfoot region. The project area ranges in elevation from 4,000'-4,800'. These areas were historically dominated by large, mature ponderosa pine and western larch / Douglas-fir stands. Fire played a large role in shaping these stands. Throughout the sale area there is evidence of both infrequent stand replacing fires and light ground fires. Evidence (fire scars on 200+ year old western larch, ponderosa pine, and Douglas-fir trees and stumps from previous harvests) found during field reconnaissance indicates that these fires burned in the 1800s through today. It is certainly believable that this fire occurrence proceeded that date.

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

  Three of the parcels (sections 30, 31, and 32 T15N R14W) within this project area were owned by Champion International Corporation until 1989 when it was included within a land trade. Obviously, these tracts were treated with different objectives than they are currently.

Several DNRC sales have occurred on all parcels but we do not have accurate records of industry harvest on the tracts above. Our records show harvest treatments in section 6 T14N R14W dating back to 1938. Most recently DNRC harvested in 2010 with the harvest of primarily lodgepole pine affected under by mountain pine beetle using the Bugchuck Timber Sale. Section 36 T15N R15W harvests began in 1941 with the most recent harvest with the Winterkill Timber Permit during 2019. Although this permit met the immediate need harvesting trees damaged during the winter of 2017- 2018, it exposed other needs that could not be easily treated under the DNRC timber permit program. Sections 30, 31, and 32 T15N R14W have seen DNRC entry with the Clearwater River Timber Sales beginning in 1999. Many small timber permits have also been employed within this larger project area over the past with varying volumes.

- **Current stand conditions (species composition, size, density, insects and disease, forest age class and distribution, etc.)**
  The current stand condition in the project area is a result of past timber management and wildfire activity and/or suppression. Current cover types differ from the desired future condition (DFC). See table V-1 for current project area cover types as well as the DFC for the project area.

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

Cover Type	Current Acres	Current Percent of Project Area	Desired Future Condition (DFC)	
			Acres	Percent
Douglas-fir	1,431	54.5%	99	3.5%
Lodgepole pine	46	1.5%	30	1%
Ponderosa pine	597	23%	2,144	82%
Western larch/Douglas-fir	460	17.5%	261	10%
Non-forest	89	3%	95	3.5%
Other (hardwood)	6	0.5%	N/A	N/A
Total:	***2,629***	***100%***	***2,629***	***100%***

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

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

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

By the late 1940's, most harvesting operations used chainsaws to perform the severing of the trees on the site. This also included a change in the silvicultural practices that were used. Often seed tree or shelterwood harvests were used. The overstory that was reserved to produce regeneration was

harvested after regeneration occurred. The removal of these trees has reduced the larger component of stems on the site, this obviously affects the amount of "old growth" areas that occur. This regeneration often included Douglas-fir. The general mindset was to include the maximum number of spaced trees per acre. We now realize that that can often rob the site of needed nutrients and water. On some of the parcels (sections 30, 31, and 32 T15N R15W), the previous owners continued to remove trees of different species and sizes as time went on. Currently, these stands also show a change to Douglas-fir and away from ponderosa pine and western larch, as they have been removed.

A large majority of the stands in the general sale area have shown this change showing Douglas-fir as the most prominent species. This contrasts to the current "loss" of 60% of ponderosa pine stands to primarily Douglas-fir and Douglas-fir / western larch. This has changed the amount of available fuel for wildland fires. Currently, forest pests that target Douglas-fir are at higher amounts. These stands have allowed local populations to increase in growth. This has decreased the health and vigor for those stands.

Stands within the area have average diameters of 12 inches. Average heights were shown to be between 60-65 feet. The volume per acre over the area has been revealed to be 6 mbf. (thousand board feet) per acre. The existing basal area is 60-200 square feet with an average of 88 square feet. The average trees per acre is around 100. The "smallest" results were shown to result in zero in all of the categories, while the "largest" individual totals were tabulated as 34 inches at breast height, 100 feet tall, and the volume of 17 mbf. per acre.

Old Growth

Old Growth is identified and analyzed using criteria outlined in Green et al. and this information was placed in the Montana DNRC Stand Level Inventory. A search of the Stand Level Inventory of the project area was accomplished and it was queried to identify potential Old Growth and Old Growth stands. None of the stands inventoried have been determined as Old Growth.

Table V-2 –Old Growth in project area

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

Environmental Effects

Noxious Weeds

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

With no action, noxious weeds will continue to spread along roads and may increase on the drier site habitats. Limited weed control efforts on access roads across multiple ownerships in the area, increases the potential for windblown seed. Following disturbance events such as fires, or grazing, the establishment and spread of noxious weeds can be more prevalent than in undisturbed areas. DNRC would continue to treat selected sites on DNRC roads based on priorities and funding availability, but the levels of weed control treatments would be lower than with the action alternative. Given the above conditions, it is viable to say that existing conditions and

the no-action alternative have moderate direct and indirect effects. If new invader species within the area are discovered, they would have highest priority for management. On state land parcels the grazing licensees would be required to continue weed control efforts consistent with their use.

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

Action Alternative: Direct, Indirect, and Cumulative Effects

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

Herbicide application would be completed on segments of DNRC roads along the haul route, to reduce weed spread along roads and promote desired vegetation for weed competition and to reduce sedimentation. Herbicide would be applied according to labeled directions, laws and rules, and would be applied with adequate buffers to prevent herbicide runoff to surface water resources. Implementation of IWM measures listed in the mitigations are expected to reduce existing weeds, limit the possible spread of weeds, and improve current conditions, to promote existing native vegetation. More weed control would occur compared to the no-action alternative and grass and competitive vegetation would increase along roads.

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

Rare Plants

No Action Alternative – Direct, Indirect, and Cumulative Effects

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

Action Alternative – Direct, Indirect, Cumulative Effects

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

In riparian areas, rivers, lakes, or sloughs two other species were mentioned; Beck Water-marigold, and Pygmy Water-lily. As these are found within the areas above, these will not be influenced by the Action Alternative given; their location, the HCP, and Montana Best Management Practices. As a result, there would be low risk of direct, indirect, and cumulative effects.

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

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

Standard Vegetative Community
No Action Alternative – Direct, Indirect, and Cumulative Effects

The No Action alternative would not change the current existing conditions within the proposed area. The proposed harvest, road building and closures, and pre-commercial thinning would not occur. These stands would remain at overstocked levels and are they are currently under the possible insect and disease threat of Douglas-fir bark beetle (*Dendroctonus pseudotsugae*) and spruce budworm (*Choristoneura occidentalis*). Concerns regarding overstocked stands and fire danger from them would continue. Fire conditions would not be lessened in this area. All pre-commercial stands would continue to grow with decreased vigor and would show more death within the stand. As a result, there would be low to moderate risk of direct, indirect, and cumulative impacts to the vegetative community given the No Action alternative.

Action Alternative – Direct, Indirect, and Cumulative Effects

This proposal includes timber harvest under on approximately 400 acres removing an estimated 1.0 million board feet. Pre-commercial thinning will also occur under this EA on a proposed 450 acres. The DNRC would try to address the concerns within the Existing Conditions on these acres by using the following silvicultural treatments. In many situations under this project, treatment may change from shelterwood to commercial thin several times within a harvest unit. This is a result of past treatment.

At minimum, two snags and two snag recruitments per acre will be left. Some of these trees will be left in groups if possible on the stand level. These snags and snag recruitments may be found in the following harvest prescriptions.

Shelterwood: Shelterwood harvest is a traditional prescription that is a "regenerative" harvest. This is designed to produce regeneration of a preferred tree species that has been chosen and has be left as a "shelter" above the regeneration. This overstory stand is later removed (within regulations of the landowner). These stands within the project area are generally higher percentage of Douglas-fir and

may not have an understory that could be managed after harvest. Generally, these areas are in pockets.

Spacing after harvest is predicted to be variable and would be based upon the individual tree characteristics. However, it would range between 27 feet between trees (60 trees per acre) and 47 feet between trees (20 trees per acre). A target residual basal area per acre is proposed to be around 20-55 square feet of and a resulting volume harvested of 3-5 thousand board feet per acre. The reduction of the overstory and treatment of the existing pole size and understory trees generally causes a stand to produce regeneration of the remaining overstory. The reduction of the total Douglas-fir number of the overstory, and a percentage increase of other species (ponderosa pine and western larch) would promote a stand closer to pre-settlement times. The proposed stand density would make limited resources (light, water, and nutrients) more plentiful for the residual overstory trees and potential regeneration. These changes would continue the progression toward the DNRC appropriate condition.

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

Commercial Thinning: Commercial thinning is an intermediate treatment. Although regeneration does occur after the commercial thin, it is not a main goal of the harvest. It is also among younger stands and improves growth compared to a natural stand. This is due to the harvest as opposed to natural stand etiolation. Thereby, it shows continued growth without the “stall” often seen as biological stand progress.

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

Spacing after harvest would range on this project from 25 feet between trees (70 trees per acre) to 27 feet between trees (60 trees per acre). A target basal area per acre would range between 35-65 square feet and a resulting volume harvested of 2.5-6 thousand board feet per acre.

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

Pre-Commercial Thinning: The treatment of pre-commercial thinning is defined as removing small trees not for monetary benefit but to reduce stand stocking, release of limited nutrients (water, light, and nutrients), and improve growth of desired trees. It has also proven to decrease the loss of deterioration through death and poor growth over a longer time-period, especially on poor sites. Smaller trees (less than 6” diameter at breast height) are the target of this silvicultural prescription. This treatment often follows harvest treatment when quality regeneration is present.

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

Fuels treatment after the pre-commercial will be done using slashing of felled trees to a level less than 18” from the ground level or hand piled and burned in the future.

Road Construction, Maintenance, and Closure: This project plans to use roads within the area for all silvicultural uses. Some of the transportation is proposed to be abandoned (i.e. poor location, poor grade, SMZ concerns) while others are suggested to be constructed (i.e. better access, lower grades, less concerns over roadside erosion and deposition). All roads that would be part of these proposed actions would be addressed by the forester, the soils scientist, the hydrologist, and potentially the wildlife biologist. Primarily, roads proposed for use under this EA are behind locked travel gates.

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

Given the following factors:

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

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

Old Growth

No Action Alternative – Direct, Indirect, and Cumulative Effects

The No Action alternative would not change the existing conditions available within the proposed area. No disturbance would occur as part of the no action alternative. It is a likelihood that given a longer time period, old growth acres would increase. At the same instance, the stands that occur currently would be at larger risk for wildfire. As a result, there would be low risk of direct, indirect, and cumulative effects to old growth given the No-Action Alternative.

Action Alternative – Direct, Indirect, and Cumulative Effects

After a search of the Stand Level Inventory system, 47 acres of Old Growth exist within the project area (as defined by Green et. al.), of that, no acres of Old Growth currently exist within the treatment area. As a result, the proposed action would be expected to result in low direct, indirect, and cumulative impacts on Old Growth beyond those projected for the no action alternative.

Vegetation Mitigations

- Favor western larch and ponderosa pine in harvest areas and pre-commercial thinnings to shift species represented toward the accepted Desired Future Condition.
- Plant western larch and ponderosa pine in planting blocks to shift species represented toward the accepted Desired Future Condition.
- Harvests should emulate natural disturbance historically present on the landscape.
- Wash equipment prior to harvest to limit weed seed dispersal.

- Spray weeds along roadsides to limit spread of existing weed, while preventing weed spraying within Howell's gumweed populations.
- Plant grass on newly disturbed road surfaces to limit the resources available for weeds to become established.

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

- Snags, snag recruits, and coarse woody debris will be managed according to *ARM 36.11.411* through *36.11.414*, particularly favoring western larch and ponderosa pine. Clumps of existing snags could be maintained where they exist to offset areas without sufficient snags. Coarse woody debris retention would emphasize retention of downed logs of 15-inch diameter or larger.
- No harvest would occur near within 130 feet of the Blanchard Creek.

VEGETATION REFERENCES

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ATTACHMENT D: SOIL ANALYSIS

South Blanchard Timber Sale Project – Soils Analysis

Analysis Prepared By:
Name: Andrea Stanley
Title: Hydrologist/Soils Scientist, Montana DNRC

Introduction

The following analysis will disclose anticipated effects to soil resources within the South Blanchard Timber Sale Project area. Direct, secondary, and cumulative effects to soil resources of both the No-Action and Action alternatives are analyzed.

Issues

Timber harvest, road construction/maintenance, and vegetation management can alter factors that influence short-term and long-term soil health and productivity. Soil productivity must be maintained to sustain ecological resilience and productivity which in turn will maintain long-term return to state trust beneficiaries.

Soil resources may be adversely affected by implementation of the project. Issues include the following:

- erosion
- physical disturbance (compaction and displacement)
- nutrient cycling and soil productivity
- slope stability

Comments received during project scoping did not raise issues related to soil resources.

Evaluating for the above issues will address issues known to be associated with activities similar to those of the proposed project. These issues listed above are discussed in greater detail below:

Erosion

Water and/or wind erosion of soils is a natural process that can be accelerated by activities that:

- remove cover materials that protect the soils from erosion such as vegetation, woody debris, and duff.
- increase surface flow by reducing infiltration capacity, concentrating runoff, and/or reduced vegetative interception and/or transpiration.

Accelerated erosion generally equates to soil losses that exceed what would occur naturally and losses that exceed the natural regeneration of soil. Soil erosion can have secondary effects including sedimentation of surface waters. Analysis of road erosion and drainage issues is in the following water quality section because of the propensity of road erosion and drainage issues to effect water quality. Hillslope, including skid trail, erosion is analyzed in this section.

Types of erosion include sheet, rill, and gulley erosion. Site sensitivity to erosion accelerated by site activities are governed by existing site conditions such as soil composition (minerology and grain size distribution), slope, and past management practices such as effective use best management practices (BMPs).

Physical disturbance (compaction and displacement)

Soil compaction may occur when equipment or other materials moves or is placed on soils. It is a process in which soil bulk density is increased and macroporosity is decreased, which results in a platy, massive soil structure in more severe cases. Associated is a decrease in infiltration rate, permeability, and soil aeration. Soils with less bearing strength are more susceptible to compaction. Soils with courser textures (i.e., higher sand or gravel component) tend to have a greater bearing strength than fine silt and clay-based soils. Soils with moisture are also much more vulnerable to compaction of a dry state.

Soil displacement is a process in which soil is displaced mechanically by the movement of equipment or other materials over soils. Soil displacement can reduce the amount of soil nutrients and moisture capacity available to plants and may expose less fertile subsoils and mineral soils. Soil displacement can increase potential for runoff and erosion.

Nutrient cycling and Soil productivity

Soil nutrient availability and natural replenishment by the breakdown of organic matter and rock weathering are essential to forest productivity and sustainability.

Coarse (CWD) and fine (FWD) woody debris provides many necessary functions to sustain soil productivity and includes site moisture retention, soil temperature modification, soil protection, nutrient cycling as well as providing a long-term supply of soil wood which is paramount to soil microbial activity (Harmon et al. 1986). Amounts of CWD and FWD are quantified by tons/acre which is calculated from transects as described in the Analysis Methods section. These values can vary within a project area and are dependent on factors such as those that influence moisture and decay rates and factors that affect tree and limb mortality. Forest management activities have the potential to modify both amounts and trends of recruitable material and in turn the long-term productivity of the soil.

Slope stability

Slope stability is the ability of material on a slope to remain in equilibrium (stable) and therefore represents some balance between driving forces (shear stress) and resisting forces (shear strength). Many variables, both natural and/or anthropogenic, may affect either driving or resisting forces. Factors that govern shear strength are the internal friction of the slope (determined by factors associated with the composition of the material on the slope such as grain size and shape, the presence of plane surfaces, moisture, and minerology). Activities that increase shear stress are removal of lateral support (e.g., erosion and road cuts) and increased moisture associated with reduced vegetation (interception and transpiration).

The risk of slope instability on state lands is small because the area subject to instability occurs in localized areas in less than six percent of all lands (State Plan, DNRC 1996). Slopes over 65% are considered the highest risk of instability because 65% is the normal angle of repose and stability for most landscape materials. These areas often have shallow soil mantles with exposed bedrock that are stable (DNRC, 1996). Based on observation and professional judgment, road construction and recent fire on slopes greater than 45% are the areas on state land that warrant an analysis for slope stability.

Regulatory Framework

The following plans, rules, and practices have guided project planning and would be implemented during project activities:

- The Montana Department of Natural Resources and Conservation (DNRC) Forested Trust Lands Habitat Conservation Plan (HCP; USFWS and DNRC 2010)

- The Montana Code Annotated, specifically Title 77, Chapter 5.
- The Administrative Rules of Montana, specifically Rule Chapter 36.11
- The Montana Forestry Best Management Practices (Voluntary, but considered as management requirement for State Lands)
- The Montana Streamside Management Zone Law
- The State Forest Land Management Plan (DNRC, 1996)

Analysis Areas

The South Blanchard project harvest areas total approximately 390 acres. The analysis area for direct, and indirect effects to soil physical properties, nutrient cycling, and site productivity is the 390 acres proposed for harvest plus areas proposed for new road construction. The effects of the road construction and drainage would have on water resources is assessed in the water resources section of this EA.

Cumulative soil effects are defined in MEPA as the collective impacts on the human environment when considered in conjunction with other past, present, and future actions related the proposed action by location and generic type. Cumulative impact analysis includes a review of all known state and nonstate activities that have occurred, are occurring, or may occur that have impacted or may impact the same resource as the proposed action.

Cumulative soil resource effects are analyzed here at the project area scale (390 acres). Temporally, cumulative effects to soils resource are analyzed to include known past activities that have occurred, current management, and anticipated future activities and management within the project area.

Analysis Methods

This assessment begins with a characterization and evaluation of the existing conditions within the assessment areas. This informs both potential site sensitivities to soil impacts (e.g., steep and unstable slopes) and also the likely condition that would persist under the No Action Alternative (e.g., existing disturbance areas). Below is a list of the data and analysis methods used for characterizing existing conditions:

- On-site observations including observations on geology, soils, slopes, and vegetation
- published geologic maps and reports
- topographic data and maps
- Natural Resources Conservation Service soil survey data
- Past and current DRNC land and forest management data
- DNRC grazing license data

To evaluate the potential environmental effects of the Action and No Action Alternatives within the assessment areas we consider impacts typical to timber harvest, associated infrastructure and activities including road construction, temporary trail construction, skid trails, landings, vegetation/fuels management including slash treatment, weed management, and seeding/planting including soil prep such as scarification by dispersed skidding.

Existing Conditions

Geology
The project area is in the Jocko Range foothills west of the Clearwater River and its confluence with the Blackfoot River. Project area elevations range from 4,000 to 4,800 feet above mean sea level. Bedrock within the project area is upper Belt rocks including quartzites and other sedimentary rocks. Slopes within the proposed harvest areas range from 0 to 45% with some steeper areas approaching 60%. Slopes are stable with no indicators of slope instability or recent failure within proposed harvest areas.

Soils
The project area is located in Missoula County and soils were mapped with the Missoula County Area Soil Survey (NRCS 2019). A list of soil map units and descriptions within the direct analysis area are listed in Table S-1. Table S-1 also lists soil properties relevant to risk associated with the soil properties within the top 18 inches of soil unit profiles. This risk assessment accounts for the top 18 inches only because this upper soil layer is the most vulnerable to the effects or erosion, displacement, and compaction. Past research has found that compaction depth, although variable, is generally the most severe in the first few inches and negligible beyond 18 inches (Adams and Froehlich, 1981). Also listed within Table S-1 are the proposed project activities.

Much of the proposed harvest areas are on north-facing slopes or on convex slopes where shading from the sun occurs for longer periods and therefore energy-limited with longer periods of moisture retention in the soils.

Soils are mainly high rock content, well drained soils derived from bedrock residuum, cobbly outwash, and glacial tills. These soils are well drained, with low to moderate erosion, compaction, and displacement potential. Areas with slopes over 45% have an increased potential for displacement and erosion.

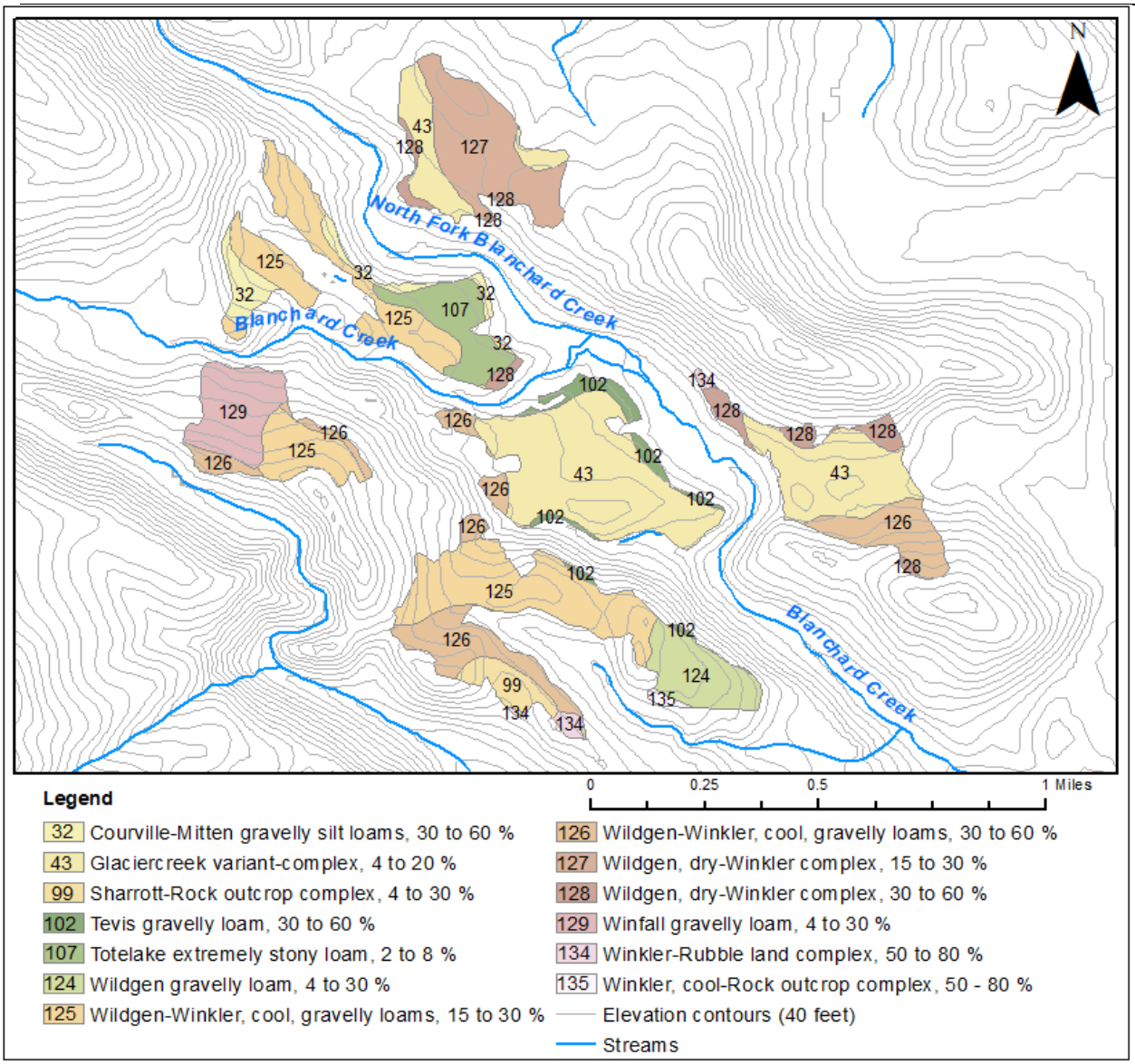

Figure S-3: Soils within the project area. Soil units labeled by Soil Map Unit assigned in the Missoula County Area Soil Survey (NRCS 2019).

Table S-1: Soil properties within project area. Soil units, descriptions, AASHTO classification, hydrologic soil group, percent rock fragments, and erosion factor (Kw) from soil unit mapping and descriptions provided by the NRCS (2019). Descriptions of information contained in each column are explained on the following page in Table S-2.

Soil Map Unit	Portion of direct analysis area (%)	Slopes (%)	Aspect	Soil Unit Description; & Parent Material	Hydrologic soil group	AASHTO classification; & interpretation	Rock fragments (%)	K_w	Timber Harvest	Road construction	Yarding method
A	B	C		D	E	F	G	H	I	J	K
				NRCS soil data summary					Proposed activities		
32	3	30-60	N	Courville-Mitten gravelly silt loams	B	A-4	0-15	.20 to .24	Shelterwood	N	Tractor
43	29	4-20	N	Glaciercreek variant-Glaciercreek complex	A/B	A-4	0-15	.20 to .28	Shelterwood & commercial thin	Y	Tractor
99	2	4-30	N	Sharrott-Rock outcrop complex	D	A-4	0-15	0.17	Commercial thin and seed tree	N	Tractor
102	2	30-60	N	Tevis gravelly loam	B	A-4	0-10	0.15	Shelterwood	Y	Tractor
107	5	2-8	N	Totelake extremely stony loam	B	A-4	10-25	0.05	Shelterwood & commercial thin	N	Tractor
124	5	4-30	E	Wildfen gravelly loam	B	A-4	0-15	0.10	Commercial thin and seed tree	Y	Tractor
125	23	15-30	N	Wildgen-Winkler, cool, gravelly loams	B/A	A-4	0-15	.10 to .15	Shelterwood & commercial thin	Y	Tractor
126	12	30-60	N	Wildgen-Winkler, cool, gravelly loams	B/A	A-4	0-15	.10 to .17	Shelterwood & commercial thin	Y	Tractor
127	9	15-30	S	Wildgen, dry-Winkler complex	B/A	A-4 (A-1)	0-15	.05 to .10	Shelterwood	N	Tractor
128	3	30-60	S	Wildgen, dry-Winkler complex	B/A	A-4 (A-1)	0-15	.05 to .10	Shelterwood & commercial thin	N	Tractor
129	6	4-30	N	Winfall gravelly loam	B	A-2 (A-4)	0-5	0.2	Shelterwood & commercial thin	Y	Tractor
134	1	50-80	S	Winkler-Rubble land complex	A	A-1	0-10	0.05	Shelterwood & commercial thin	N	Tractor
135	<1	50-80	S	Winkler, cool-Rock outcrop complex	A	A-4	0-5	0.15	Shelterwood & commercial thin	N	Tractor

Table S-2: Column definitions for Table S-1.

S-1 table column and label		Definition or explanation
A	**Soil Map Unit**	Soil map unit symbol assigned by NRCS.
B	**Slopes (%)**	Slopes occurring within the map unit within the direct analysis area determined from NRCS description or topographic measurements using digital map.
D	**Soil Unit Description; & Parent Material**	Soil unit description and parent material described by NRCS soil survey.
E	**Hydrologic soil group**	Based on estimates of runoff potential published by NRCS. Hydrologic soil group is components >20% of the soils. Dominant group type listed first. For example if a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for the most common class occurring in the area and the second is for the less common.
		Group A. Soils have a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.
		Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

		Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.
		Group D: Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.
F	**AASHTO classification; & interpretation**	The AASHTO system classifies soils according to particle-size distribution, liquid limit, and plasticity index, which are properties that are relevant to soil performance in roadway construction and maintenance. The classification system has seven groups from A-1 to A-7. Soils in group A-1 are coarse grained and soils in group A-7 are fine grained.
G	**Rock fragments (%)**	Percent rock fragments is the range of representative values reported in the top 18 inches.
H	**K_w**	Kw values from Powell County soil survey (NRCS 2017) and indicate the erodibility of the whole soil. The estimates provided by the NRCS are modified by the NRCS to account for the presence of rock fragments which, if present, decrease the erodibility of the soil unit.
I	**Timber Harvest**	Description of proposed project activities occurring in the soil unit occurring in the direct analysis area.
J	**Road construction**	
K	**Yarding method**	

Current and past disturbances (Current site use and site History)
Current and past disturbances in the project area include timber harvest, grazing, and recreational use. Known specifics on these past and current disturbances are listed below.

- Past timber sales that overlap with the analysis area are listed below. The amount of overlap is variable and does not include unit 3103.
  - Clearwater River #2 (Salvage Harvest – sold 2000)
  - Clearwater River #3 (Improvement Cut – sold 2003)
  - Bugchuck Salvage (Salvage Harvest – sold 2008)
  - Winterkill (Other Salvage – sold 2018)
- Recreational use of the project area includes hunting, hiking, and camping. Unpermitted use has included on and off-road ATV travel.
- Noxious weeds occurring within the project and surrounding areas include spotted knapweed.
- The project area is located within several active DNRC Trust Lands grazing licenses that allow for grazing between June 1 and September 30, each year. Grazing leases include riparian fencing with managed riparian grazing along Blanchard and North Fork Blanchard Creeks.
- No recent or documented fire activity.

Environmental Effects

No Action Alternative: Direct, Secondary, and Cumulative Effects
Implementation of the no-action alternative would result in no soil resource impacts in the project area. Soil resource conditions would remain similar to those described in the existing conditions sections of this environmental assessment.

Action Alternative: Direct, Secondary, and Cumulative Effects
The project involves timber harvest (390 acres), new road construction (1.2 miles), road abandonment (0.3 miles), and road reclamation (0.2 miles).

Slope Stability
Proposed road construction is on slopes less than 45%. Slopes in the project area are considered stable with low to no vulnerability to mass wasting should the proposed project be implemented. Project design includes road construction and improving road drainage on existing roads which would reduce the risk of slope and fill wasting. Most wheeled and tracked equipment operations would occur on slopes ≤45%.

Physical Disturbance (Compaction and Displacement)
Ground-based yarding is the only soil compaction risk associated with the project (outside of roaded areas). The most important way soil compaction can be avoided is to not operate when soils are wet. As is described in the existing conditions section of this analysis, a lot of the project area is north-facing and therefore energy-limited with longer periods of moisture retention in the soils during the shoulder seasons that could constrain yarding and hauling timeframes (see moisture thresholds set in the following mitigation section). The sustained colder temperatures in the winder may also enable extended over-the-snow operations. Risk of detrimental soil disturbance would remain low if the mitigations listed in the following section are implemented.

The extent of detrimental soil disturbance from ground-based yarding (by compaction and displacement) is expected to be similar to what is reported from monitoring similar past operations (13.2 percent, DNRC, 2011). The 490 acres proposed for harvest would be harvested with ground-based equipment. Most of the roads needed for the project area already constructed. The 1.2 miles of new road proposed includes rerouting some existing road or road construction within or bordering proposed harvest units.

The total detrimental soil disturbance estimated from project implementation is 56 acres or 14% of the direct analysis area (490 acres). See Table S-3 for a summary of the calculations used for the impact estimate.

Table S-3 – Detrimental Soil Disturbance for the Action Alternative

Area of analysis	Total area (acres)	Disturbance rate (%)	Affected area (acres)
Proposed road construction (permanent)	4.0 acres*	100%	4.0
Harvest units with ground-based yarding	390 acres	13.2	52
Total detrimental disturbance in direct analysis area is 56 acres or 14%			

*Calculated using road length, average slope of road alignments, and Six Rivers Tables for horizontal clearing for road construction.

There is a risk that existing unauthorized motorized use may continue or expand with the construction of new roads and vegetation removal associated with the project. This risk is mitigated with planned replacement or improvement of existing locked gate closures, and with the mitigation listed in the following section.

Erosion
Hillslope erosion would potentially result from road construction, harvest of trees, yarding, and skid trail development associated with the project. The magnitude, area, and duration of erosion and other adverse impacts such as compaction and displacement would be lowered by BMPs and mitigations (refer to the following Mitigations Section of this analysis). Therefore, the risk of unacceptable adverse direct, indirect, or cumulative impacts would be low.

Nutrient Cycling and Soil Productivity
Direct, Secondary, and Cumulative
Course woody debris would be left on-site in volumes recommended to help maintain or improve soil moisture and forest productivity. The dominant habitat types within the project area is Douglas-fir/ninebark (DF/PHMA), this habitat type would have an optimal CWD concentration ranging between 4.5 and 9 tons per acre (Graham et al., 1994). Tree limbs/tops would be left on site in amounts that are feasible and meet the optimal CWD concentrations listed here and in the mitigation section at the end of this analysis. It is expected that the concentrations of CWD in the harvest areas would increase with the project over the existing condition. Fine debris removal would be also minimized as much as practicable. Given these measures and the mitigation

described below, the risk of measurable adverse direct, secondary, or cumulative impacts to nutrient cycling would be low.

Cumulative Effects

Cumulative effects as defined in the analysis area section require multiple entries into a harvest unit for an impact to be cumulative. Under the action alternative, areas previously harvested are proposed for reentry. Cumulative effects would be controlled by limiting the area of adverse soil impacts to less than 15 percent of the harvest units (as recommended by the State Forest Land Management Plan, DNRC 1996) through implementation of Best Management Practices (BMPs), skid trail planning, and limiting operations to dry or frozen conditions (see mitigation listed in the following section). Future harvesting opportunities would likely use the same road system, skid trails, and landing sites to reduce additional cumulative effects. Due to these mitigation measures, the cumulative effects from compaction, erosion, and displacement would be low.

Mitigations

Below is a list of additional mitigations that would be included in any implementation of the Action Alternative in order to reduce the potential impacts of the project on soil resources. These mitigations are assumed in this soils resource analysis. Some mitigations are project-specific, and others are general common practice or are commitments made by the DNRC such as the State Plan and the HCP that are simply emphasized here as essential for mitigating potential impacts.

- 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 each individual sale the logger and the Forest Officer would agree to a general hauling, landing, and skidding plan prior to equipment operations to meet the following objectives:
    - Limit trails to existing skid trail disturbances as much as possible to minimize new disturbances.
    - Limit ground-based equipment operations on slopes greater than 45%, except for short pitches with caution to limit soil disturbance.
- Slash would be distributed within harvest units, including large (≥3-inch diameter) and fine material (such as branches and leafy material), to maintain or achieve the amount of course woody material appropriate to the dominant habitat type within the project area:
    - Douglas-fir/ninebark (DF/PHMA) is **4.5 to 9 tons per acre** (Graham et al., 1994)
- Skid trails and landings would be treated with slash, water bars, and/or grass seed to reduce the risk of the concentration and impede overland flow and consequent erosion, to reduce soil detachment by raindrop impact, discourage the recruitment and establishment of weeds on disturbed soils. These treatments would include existing unauthorized motorized trails to discourage continued or expanded soil disturbances to the area as a result of unauthorized motorized access. Roads accessing the project area would be gated to also prevent unauthorized access.
- Scarification by dispersed skidding would be limited to the following conditions:
    - Slopes less than 40%
    - Cumulative area of direct disturbance, when combined with ground-based yarding disturbances, would not exceed 40%.
    - Where there is an identified need for mineral soil exposure for germination of desired species (such as western larch).

    - Scarification depths not to exceed those necessary to achieve exposure of mineral soil and not more.
- During new road construction, newly disturbed soils on road cuts and fills would be promptly reseeded to reduce erosion/sediment from roads.
- Harvest operations and road conditions would be monitored as part of the on-going project operations and repairs would be made as needed, including erosion control, culvert cleaning and re-vegetation.

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ATTACHMENT E: WATERSHED AND FISHERIES

South Blanchard Timber Sale Project – Water and Fisheries

Resources Analysis

Analysis Prepared By:
Name: Andrea Stanley
Title: Hydrologist/Soil Scientist, Montana DNRC

Introduction

The following analysis will disclose anticipated effects of the South Blanchard Timber Sale Project to water and fishery resources. This analysis is combined for water and fisheries resources. Direct, secondary, and cumulative effects to water and fisheries resources of both the No-Action and Action alternatives will be analyzed.

Issues and Measurement Criteria

Timber harvest, road construction/maintenance, and vegetation management can alter local water resources and fish habitat including altering how water, sediment, and nutrients are stored, consumed, transported, and released (yield) from the managed landscape, or with direct effects to stream temperature or large woody debris recruitment to the channel as a result of timber harvest adjacent to streams. Water and fisheries resource issues evaluated for this project are listed below:

- Hillslope hydrology and water yield
- Erosion and sedimentation
- Stream temperature and large woody debris recruitment
- Direct, secondary, and cumulative effects to fish populations and habitat. Most of the project area is located within the Blanchard Creek watershed which supports West Slope Cutthroat Trout.

No water or fish-resource related comments were received during scoping of the project

This analysis of risk is an evaluation of the probability of a potentially detectible effect and whether the anticipated effect(s) present a low, moderate, or high potential risk to water and fish resources.

Regulatory Framework

The following plans, rules, and practices have guided project planning and would be implemented during project activities:

- The Montana Department of Natural Resources and Conservation (DNRC) Forested Trust Lands Habitat Conservation Plan (HCP; USFWS and DNRC 2010)
- The Montana Code Annotated, specifically Title 77, Chapter 5.
- The Administrative Rules of Montana, specifically Rule Chapter 36.11
- The Montana Forestry Best Management Practices (Voluntary, but considered as management requirement for State Lands)
- The Montana Streamside Management Zone Law

- The State Forest Land Management Plan (DNRC, 1996)
- The Stream Protection Act (SPA)

Analysis Areas

The project area is mainly located within the Blanchard Creek watershed with minor amounts of harvest area within the neighboring Lost Horse Creek and Woodchuck Canyon watersheds. Due to the limited proposed harvest and haul routing in these neighboring watersheds, this analysis is limited to the Blanchard Creek watershed. The Blanchard Creek watershed is 27 square miles of which approximately 350 acres is proposed for harvest with the proposed project. Blanchard Creek joins with the Clearwater River a mile downstream of the project area.

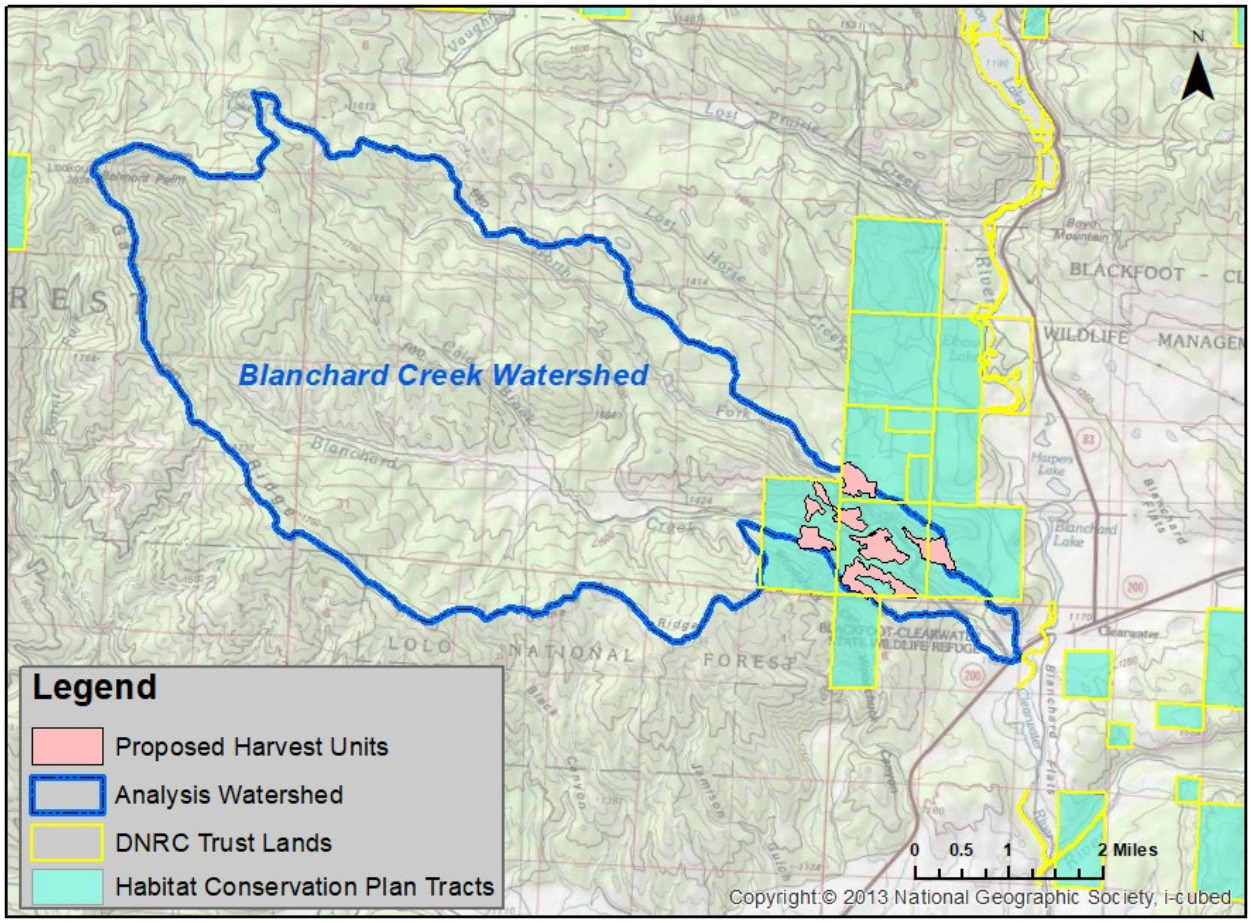

Figure W-1: Water resources analysis area, proposed harvest areas, and areas included in the DNRC Forested Trust Lands Habitat Conservation Plan.

Analysis Methods

This assessment begins with a characterization and evaluation of the existing conditions within the assessment areas. This informs both potential site sensitivities to impacts to water and fish resources, and the likely condition that would persist under the No Action Alternative. Below is a list of the data and analysis methods used for characterizing existing conditions:

- On-site observations, stream channel conditions, observations on geology, soils, and slopes
- The Blackfoot River Watershed Restoration Plan – A Water Quality Addendum to the Blackfoot Subbasin Plan. Prepared by the Blackfoot Challenge (2014).
- The Middle Blackfoot-Nevada Creek Total Maximum Daily Loads and Water Quality Improvement Plan – Sediment, Nutrient, Trace Metal and Temperature TMDLs. Prepared by the Montana DEQ (2008).
- Recent and historic aerial imagery
- DNRC grazing license data

To evaluate the potential water and fish resource effects of the Action and No Action Alternatives within the assessment areas we consider impacts typical to timber harvest, associated infrastructure and activities including road and landing construction, vegetation/fuels management including slash treatment, and weed management.

Existing Conditions

The project area is mainly located within the lower (southeastern) portion of the Blanchard Creek watershed. Most of the watershed upstream of the project area is former industrial timber ground currently owned by Montana Checkerboard, LLC.

Project harvest units are located north and south of Blanchard Creek and the North Fork Blanchard Creek. However, proposed harvest unit boundaries remain outside the RMZ of these streams.

Blanchard Creek, from the North Fork to mouth (Clearwater River) is Category 4A, Use Class B-1, and is listed as impaired for not fully supporting aquatic life due to alterations in stream-side vegetative covers, flow regime modification, and sedimentation/siltation. The sources of these impairments have been identified as agriculture, grazing in riparian zones, road runoff, and water diversions (DEQ, 2018). Other streams have not been identified within the harvest units except for two Class 2 streams identified south of unit 3101 and 3102 (see Figure W-2).

Table W-1 below summarizes the geography and properties of the analysis watershed. As well as timber harvest on DNRC Trust Lands within the past 20 years.

Table W-1: Physical Attributes of Watershed Analysis Areas

Physical Attribute	Watershed Analysis Area
	Blanchard Creek HUC
Watershed area (acres)	17,419
Mean precipitation (inches)	29
Relief (feet)	2810
Geology	Quartzite of the upper Belt rocks and transported alluvium along the valley bottoms.
Fisheries	Westslope Cutthroat Trout (FWP, 2020)
Existing road density (mi/mi^2)	4.29

Proposed new, permanent road (miles)	1.2
Proposed abandoned or reclaimed road (miles	abandon: 0.3 mi reclaim: 0.2 mi
Proposed road density (mi/mi^2)	4.31
Land ownership	DNRC 7% Federal 1% Private 92%
Recent, Planned, or Proposed Harvest in watershed (acres)	350 acres or 2.0% (S. Blanchard sale - proposed) 110 acres or 0.6% (Winterkill – completed 2019) 18 acres or 0.1% (Clearwater River #3 – completed 2005) 48 acres or 0.3% (Clearwater River #2 – completed 2005) 84 acres or 0.5% (Bugchuck Salvage – completed 2010) Note that some of these harvest areas are overlapped due to repeat entry with a different prescription or objective. Therefore, the total area affected by the above-listed harvest areas is 470 acres (2.7% of the Blanchard Creek watershed area), which is less than the sum of these areas.

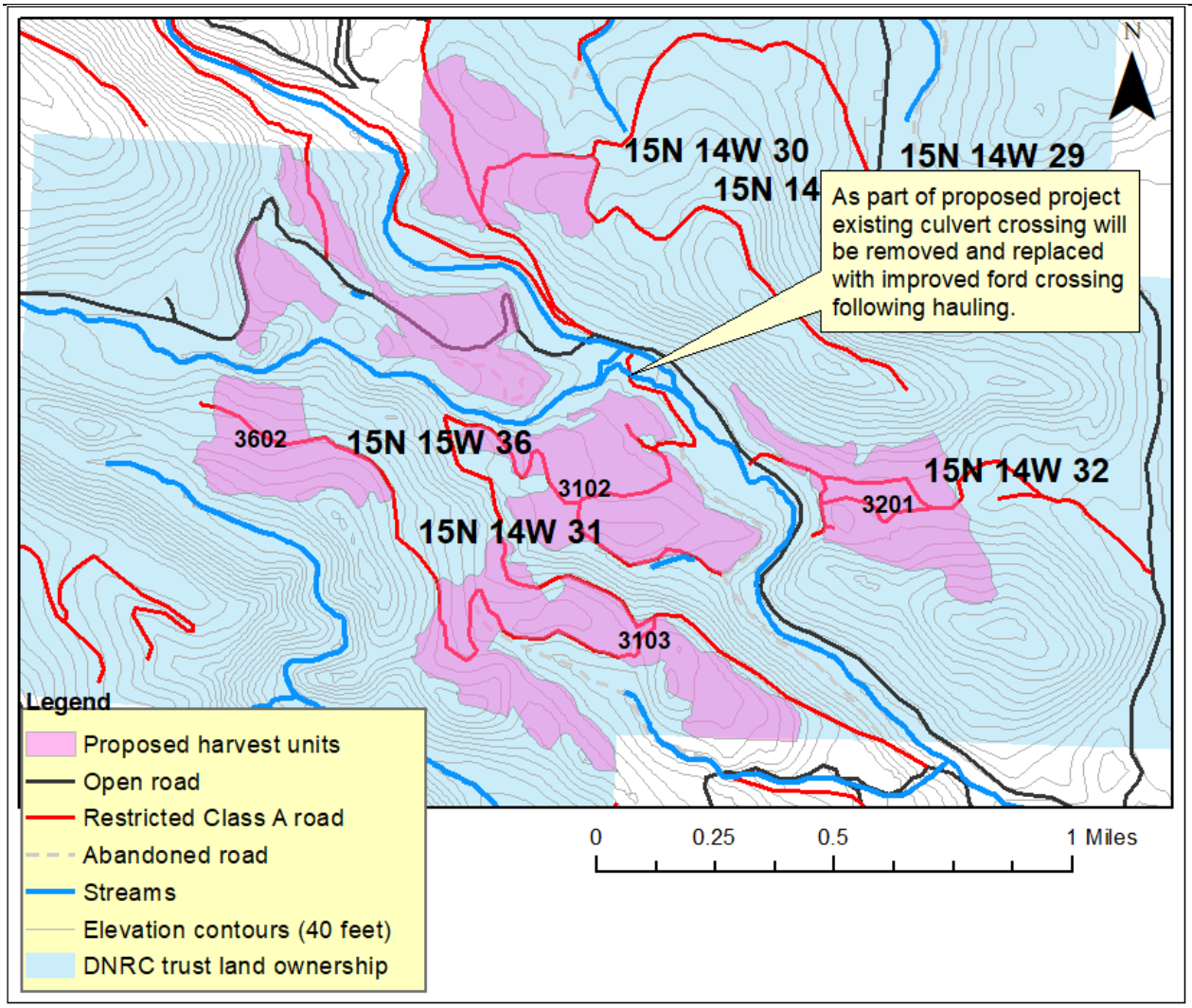

Figure W-2: Proposed harvest units and identified streams. Roads shown are existing roads. Proposed new road construction does not include new stream crossings.

Environmental Effects

No Action Alternative: Direct, Secondary, and Cumulative Effects

Water Quality

Under this alternative, no timber harvesting or related activities would occur. Water Quality would continue as described in the existing conditions.

Water Quantity

Direct and Secondary

No increased risk of increases or reductions in annual water yield would result from this alternative.

Cumulative

No measurable change in water yield would be associated with this alternative.

Fisheries Resources
Fish populations and habitat would be expected to remain the same as the existing condition with this alternative.

Action Alternative: Direct, Secondary, and Cumulative Effects
Water Quality
Direct and Secondary
The proposed project would have a very low risk of direct effects to stream channel form, temperature, or large woody debris recruitment because harvest activities would be located outside of the RMZ or SMZ of Blanchard Creek and its tributaries. Similarly, proposed road construction would be greater than 300 feet from Blanchard Creek and over 200 feet from non-fish bearing tributaries. These distances along with implementation of Administrative Rules for Forest Management, the DNRC Habitat Conservation Plan, and applicable BMPS would minimize the risk of sediment delivery to draws and streams from proposed road and temporary trail construction.

Existing roads would have minor drainage improvements and BMP upgrades implemented under this alternative to maintain a low risk of sediment delivery to streams. Minor drainage improvements include reshaping drain dips and cleaning ditches.

The project includes a crossing replacement at an existing culvert crossing that is undersized and off grade causing scour and erosion issues. The proposed replacement would be in improved ford and will have the benefits of increasing the hydraulic capacity of the crossing reducing the risk of flood flows overtopping the road surface. This work would improve the existing condition of water quality risk.

Cumulative
Cumulative risk to water quality as a result of the project would be low. The risk of sediment delivery to Blanchard Creek increase with the project due to temporary in-channel work associated with the side channel crossing replacement and timber hauling. Proposed improvements to existing roads and BMP application would reduce long-term cumulative increase in sediment delivery.

Water Quantity
Direct and Secondary
No measurable direct or indirect impacts to water yield in Blanchard Creek is anticipated as a result of the proposed project for the following reasons:

- Local evapotranspiration and precipitation interception rates would decrease in the short term with the removal of vegetation associated with the timber harvest. However, the increased water availability is expected to increase growth of remaining trees and vegetation, and the establishment of new trees following the harvest are expected to gradually increase water consumption with growth.
- Studies correlating vegetation harvest and treatment with streamflow yield have suggested approximately 15-20% of the watershed cover must be harvested to have a measurable increase in water yield in similar mountain environments (Stednick, 1996; and Bosch and Hewlett, 1982). As is described Table W-1, less than 3% of the watershed area would be harvested with this project when combined with other harvests documented for the area. Therefore, a detectable change in water yield is very unlikely.

Cumulative
The cumulative risk of water yield is low due to the limited extent of the proposed harvest.

Fisheries Resources

Fish habitat and fish populations can be affected in three primary ways by timber harvesting through the following: 1) introduction of fine sediment to spawning habitat as a result of road construction and use, and ground-based equipment operation, 2) stream temperature can increase if trees that provide shade to a stream are removed or if channel morphology is changed due to an increase in sediment coming from roads or harvest areas, 3) large woody debris in streams can be reduced if trees are removed that had the potential to be recruited into the stream.

Blanchard Creek and the North Fork Blanchard Creek are the only water bodies near the project area identified as containing fish resources. Similar to water quality and yield analysis results described above, the risk of direct effects to fish resources identified in these creeks is low because of the distance of proposed activities including timber harvest and road construction would have from the creek. The exception being the proposed crossing replacement on a side channel of Blanchard Creek. Over the long term, the proposed crossing improvement will reduce risks to fisheries resources by reducing the risk of failure and erosion at the existing crossing. Short term impacts will be mitigated by timing the work when the side channel is seasonally dry and by application of construction BMPs that would reduce the risk of erosion and sedimentation.

The risk of secondary or indirect effects to fish resources would be associated with the low risk of slope stability identified in the preceding soils analysis. Risk of adverse secondary effects to fish habitat from the action alternative are expected to be minimized by implementation of all applicable BMPs, SMZ rules, and HCP commitments.

There is a low risk of cumulative effects to fish habitat from the proposed project. As is reported in the above section, there is no risk of direct impacts, and a low risk of indirect impacts within the Blanchard Creek watershed due to sediment delivery.

Water and Fisheries Resources Mitigations

Hydrologic and fisheries resource mitigations that would be implemented with the proposed Action Alternative include:

- Applicable state plans, rules, and practices have guided project planning and would be implemented during project activities, including the Montana Habitat Conservation Plan (HCP), 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 Montana Streamside Management Zone (SMZ) Law, and the State Forest Land Management Plan.
- Harvest boundaries, road construction, and all other project activities would not cross the RMZ boundary for Blanchard Creek, North Fork Blanchard Creek, or other Class 1 streams in the project areas (if applicable). Harvest operations, road construction, and all other project activities would be excluded from SMZ boundaries of Class 2 or 3 streams within the project area.
- Soil protection and mitigation measures listed in the soils analysis of this EA also protect water quality by avoiding and minimizing sedimentation risk. This includes, but not limited to road drainage BMPs, CWD retention, and grass-seeding of disturbed areas such as skid trails, landings, and road prisms.
- All new road construction would be behind public access closures. The Forest Officer and/or DNRC Hydrologist would routinely inspect road closures, such as gates, barriers, and earth berms during project implementation.

Water and Fisheries Resources References

Blackfoot Challenge, 2014, Blackfoot River Watershed Restoration Plan – A Water Quality Addendum to the Blackfoot Subbasin Plan. Prepared by: Blackfoot Challenge, Ovando, MT.

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. 2008. Middle Blackfoot-Nevada Creek Total Maximum Daily Loads and Water Quality Improvement Plan – Sediment, Nutrient, Trace Metal and Temperature TMDLs.

Montana DEQ. 2018. Final 2018 Water Quality Integrated Report. Helena, MT: Montana Dept. of Environmental Quality. https://deq.mt.gov/Water/Resources/report

Montana FWP. Queried 2020. Fisheries Information System. https://myfwp.mt.gov/fishMT/reports/surveyreport

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

ATTACHMENT F WILDLIFE

South Blanchard – Wildlife Analysis

Analysis Prepared By:

Name: Garrett Schairer

Title: Wildlife Biologist, Montana DNRC

Introduction

The following sections disclose the anticipated direct, indirect, and cumulative effects to wildlife resources from the proposed action in the project area and cumulative-effects analysis areas described for each resource category. Past and ongoing activities on all ownerships, as well as planned future agency actions, have been taken into account in each cumulative-effects analysis for each resource topic.

Issues

Proposed activities could alter mature forested habitats and/or landscape connectivity, which could affect species that rely on these mature forested habitats, and/or alter connectivity and the ability of wildlife requiring corridors to move through the landscape.

Proposed activities could alter cover, reduce secure areas, and increase access, which could affect grizzly bears by displacing them from important habitats and/or increasing risk to bears of human-caused mortality.

Proposed activities could negatively affect bald eagles by reducing nesting and perching structures and/or disturbing nesting bald eagles

Proposed activities could reduce the amount and/or quality of fisher habitats, which could alter fisher use of the area.

Proposed activities may alter flammulated owl habitat by reducing canopy closure and increasing tree spacing, while potentially removing snags needed by flammulated owls for nesting.

Proposed activities could displace gray wolves from important habitats, particularly denning and rendezvous sites, and/or alter prey availability.

Proposed activities could reduce suitable nesting and foraging habitat for pileated woodpeckers, which could alter pileated woodpecker use of the area.

Proposed activities could remove forest cover on big game winter range, which could reduce the carrying capacity of the winter range

Proposed activities could remove big game security cover, which could affect hunter opportunity and local quality of recreational hunting.

Regulatory Framework

Various legal documents dictate or recommend management direction for terrestrial wildlife species and their habitats on state trust lands. The documents most pertinent to this project include DNRC Forest Management Rules, DNRC Forested Trust Lands Final Environmental Impact Statement and Habitat Conservation Plan (USFWS and DNRC 2010), the Endangered Species Act, the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act.

Analysis Areas

The discussions of existing conditions and environmental effects within each subsection pertain to land areas of 2 different scales. The first scale of analysis is the Project Area (2,654 acres), which includes DNRC-managed lands in sections 30, 31, and 32 in T15N, R14W, section 36 in T15N, R15W, and section 6 in T14N, R14W where activities are being proposed. The second scale is the cumulative-effects analysis area, which refers to a broader surrounding landscape useful for assessing cumulative effects to wildlife and habitat. For this proposed project, two distinct cumulative-effects analysis areas were identified. The first cumulative effects analysis area includes the project area and those lands within 1 mile of the project area (11,702 acres). This area includes 4,259 acres (36%) that are managed by DNRC, 4,465 acres (38%) that are managed by The Nature Conservancy (TNC), 1,304 acres (11%) that are managed by Montana Fish, Wildlife, and Parks (FWP), and 1,674 acres (14%) that are privately owned. The second cumulative effects analysis area is approximately 33,095 acres and includes the area north of Highway 200, and bounded between the Clearwater River, Lost Prairie Creek, Spook Lake, Belmont Peak, Game Ridge, Jamison Creek, and back to the Blackfoot River. This cumulative-effects analysis area contains sizeable areas managed by TNC (26,751 acres, 81%) with smaller amounts managed by DNRC (4,706 acres, 14%), private ownership (865 acres, 3%), Montana FWP (420 acres, 1%), US Forest Service (335 acres, 1%), and Montana Department of Transportation (18 acres, <1%).

Analysis Methods

Analysis methods are based on DNRC State Forest Land Management Rules, which are designed to promote biodiversity. The primary basis for this analysis includes information obtained by: field visits, review of scientific literature, Montana Natural Heritage Program (MNHP) data queries, DNRC Stand Level Inventory (SLI) data analysis, aerial photograph analysis, United States Forest Service Vegetation Mapping Project (VMAP) data, and consultation with other professionals.

In the fine-filter analysis, individual species of concern are evaluated. These species include wildlife species federally listed under the Endangered Species Act, species listed as sensitive by DNRC, and species managed as big game by the Montana Dept. of Fish Wildlife and Parks (DFWP).

Coarse Filter Wildlife Analysis

Issue

Proposed activities could alter mature forested habitats and/or landscape connectivity, which could affect species that rely on these mature forested habitats, and/or alter connectivity and the ability of wildlife requiring corridors to move through the landscape.

Introduction

A variety of wildlife species rely on mature to old stands for some or all life requirements. Mature forests, generally characterized by abundant large diameter trees and dense canopy cover, play an important role in providing food, shelter, breeding sites, resting areas, and/or travel corridors for certain animals. Wildlife use of older, mature forests is species-specific; some species use this habitat exclusively, other species only temporarily or seasonally, and some species avoid mature forests altogether. Several species known to be strongly associated with mature and old forests include American marten (*Martes americana*), northern goshawk (*Accipter gentilis*), and winter wrens (*Troglodytes troglodytes*).

Forested landscapes in the western United States were historically shaped by natural disturbance events; primarily wildfire, blowdown, and pest outbreaks. Resulting broad landscape patterns were a mosaic of forest patches varying in age, composition and development. Timber harvest, like stand-replacement fire and blowdown, is a disturbance event that can create open, non-forested patches that over time develop into young, conifer forests. Patch size, age, shape, abundance, and distance to similar patches (connectivity) can be factors influencing wildlife use. The way through which patch characteristics influence wildlife use and distribution are dependent upon the particular species and its habitat requirements. Temporary non-forested openings, patches, and forest edges created by timber harvest and associated roads may be avoided by certain wildlife species adapted to mature, well-stocked forest. In contrast, other wildlife species flourish in early seral habitats created by disturbance. Connectivity under historical fire regimes within forest types found in the vicinity of the project area was likely relatively high as fire differentially burned various habitats across the landscape (Fischer and Bradley 1987).

Analysis Area

Direct and indirect effects were analyzed for activities conducted in the 2,654-acre project area. Cumulative effects were analyzed on a 33,095-acre area described above in the Analysis Areas portion of this analysis. This scale of analysis would be large enough to support a diversity of species that use mature forested habitats and/or require connected forested habitats.

Affected Environment

The project area currently contains approximately 1,059 acres (40% of project area) of mature stands (100-plus years in age) of Douglas-fir, ponderosa pine, Douglas-fir/western larch, and western larch stands that have a reasonably closed canopy. Currently, forested areas cover most of the project area, facilitating some use by those species requiring connected-forested conditions and/or forested-interior habitats. Ongoing tree mortality within the project area is altering existing forested cover, forested-interior habitats, and landscape connectivity.

Roughly 1,815 acres of mature stands of Douglas-fir, ponderosa pine, Douglas-fir/western larch, western larch, and mixed conifer exist on DNRC-managed lands within the cumulative effects analysis area. A portion of the 14,488 acres (44% non-DNRC lands) of forested habitats and some of the 7,220 acres (22% non-DNRC lands) of moderately stocked forested stands on other ownerships in the cumulative effects analysis area are likely also providing habitat for those species requiring mature, forested habitats and/or forested connectivity. Conversely, much of the 11,489 acres (35% of non-DNRC lands) of shrubs, herbaceous areas, poorly stocked forested stands, and recently harvested stands on other ownerships in the cumulative effects analysis area is likely too open to be useful for these species requiring forested habitats. Ongoing tree mortality within the cumulative effects analysis area is altering existing forested cover, forested-interior habitats, and landscape connectivity. Past timber management, human developments, roads, and the natural openness of certain

habitats in the cumulative effects analysis area has influenced landscape-level connectivity in the cumulative effects analysis area.

Environmental Effects- Mature Forested Habitats and Landscape Connectivity

No Action Alternative: Direct and Indirect Effects

No appreciable changes to existing stands would be anticipated. Stands providing forested cover that may be functioning as corridors, including riparian areas, saddles, and ridgelines, would not be altered. Continued tree mortality would further alter existing forested cover, forested-interior habitats, and landscape connectivity. No changes in human developments, motorized access, or visual screening would occur. No changes in wildlife use would be expected. Thus, no direct or indirect effects to mature forested habitats and landscape connectivity would be expected since: 1) no further changes to existing stands would occur; 2) no changes to human developments, motorized access, or visual screening would occur, and 3) no alterations to existing corridors would be anticipated.

No Action Alternative: Cumulative Effects

No appreciable changes to existing stands would be anticipated. Stands providing forested cover that may be functioning as corridors, including riparian areas, saddles, and ridgelines, would not be altered. Ongoing tree mortality within the cumulative effects analysis area is altering existing forested cover, forested-interior habitats, and landscape connectivity. Past harvesting has reduced the amount of mature, forested habitats in a portion of the cumulative effects analysis area; however, continued successional advances across the cumulative effects analysis area are moving stands toward mature forests. This alternative would not alter the amount of mature forested stands in the cumulative-effects analysis area. No changes in human developments, motorized access, or visual screening would occur. No changes in wildlife use would be expected. Thus, no cumulative effects to mature forested habitats and landscape connectivity would be expected since: 1) no further changes to existing stands would occur; 2) no changes to human developments, motorized access, or visual screening would occur; and 3) no alterations to existing corridors would be anticipated.

Action Alternative: Direct and Indirect Effects

Approximately 193 acres (18%) of existing mature Douglas-fir and ponderosa pine stands with a reasonably closed canopy would be harvested. In general, habitats for those species adapted to more-open forest conditions would increase in the project area, meanwhile habitats for wildlife species that prefer dense, mature forest conditions would be reduced in the project area. Although proposed harvesting and thinning on 390 acres (15% of the project area) would create more open stands that may be less suitable for wildlife species that use mature stands to move through the landscape, corridors, particularly along riparian features, would be retained. Any pre-commercial thinning would improve the development of future mature forested stands in those areas proposed for treatment. No changes in legal motorized public access would occur in the project area. Additionally, the only permanent human development constructed would be roughly 1.2 miles of new, restricted roads; however, these new roads could increase non-motorized human activity in the project area beyond the proposed timber management activities. Contract stipulations would minimize the presence of human-related attractants for the duration of the proposed activities. Some changes in visual screening would occur within individual units, but the combination of irregular-shaped units, topography, un-harvested patches throughout the project area, and distance from open roads would minimize the effects of the reductions in visual screening. Thus, a minor risk of adverse direct and indirect effects to mature forested habitats and landscape connectivity would be expected since: 1) proposed activities could reduce forested cover in a

portion of the project area (18%), but corridors would be retained; 2) increased human developments in the form of restricted roads, could concentrate human activity, but no changes in human-related attractants would occur; 3) no changes to legal motorized public access would occur, but increases in non-motorized access could facilitate increased human use of the project area; and 4) visual screening in portions of the project area would be reduced, but some visual screening would be retained across the project area.

Action Alternative: Cumulative Effects

Modifications to mature, forested habitats associated with this alternative would be additive to losses associated with past harvesting activities in the cumulative effects analysis area. Across the cumulative effects analysis area, a variety of stands are providing for wildlife movements. Minor increases in human developments would occur with the proposed construction of roughly 1.2 miles of new, restricted roads. No changes in the presence of human-related attractants would occur. No changes to legal motorized public access to the cumulative effects analysis area would occur. Minor reductions in visual screening in a small portion of the cumulative effects analysis area would be anticipated. Thus, a minor risk of adverse cumulative effects to mature forested habitats and landscape connectivity would be expected since: 1) proposed activities could reduce forested cover in a small portion of the cumulative effects analysis area, but corridors would exist; 2) minor increases in human developments that could concentrate human activities would occur, but no changes in human-related attractants would occur; 3) no changes to motorized public access would occur; and 4) visual screening in a small portion of the cumulative effects analysis area would be reduced, but considerable visual screening would persist across the cumulative effects analysis area.

Fine Filter Wildlife Analysis

In the fine-filter analysis, individual species of concern are evaluated. These species include those listed as threatened or endangered under the Endangered Species Act of 1973, species listed as sensitive by DNRC, and animals managed as big game by Montana DFWP. Table WI-1 – Fine Filter provides an analysis of the anticipated effects for each species.

Table WI-1 –Anticipated Effects of the South Blanchard Project on wildlife species

Species/Habitat	**Potential for Impacts and Rationale** [Y/N] Potential Impacts and Mitigation Measures N = Not Present or No Impact is Likely to Occur Y = Impacts May Occur (Explain Below) L = Low Potential for Effects
Threatened and Endangered Species	
Grizzly bear *(Ursus arctos)* Habitat: Recovery areas, security from human activity	[Y] Detailed analysis provided below.
Canada lynx (*Felix lynx)* Habitat: Subalpine fir habitat types, dense sapling, old forest, deep snow zone	[N] No suitable habitats are in the project area. Thus, no direct, indirect, or cumulative effects to Canada lynx would be expected to occur as a result of either alternative.

Yellow-Billed Cuckoo (*Coccyzus americanus)* Habitat: Deciduous forest stands of 25 acres or more with dense understories and in Montana these areas are generally found in large river bottoms	[N] No suitable deciduous riparian habitats are in the project area. Thus, no direct, indirect, or cumulative effects to yellow-billed cuckoos would be expected to occur as a result of either alternative.
Sensitive Species	
Bald eagle *(Haliaeetus leucocephalus)* Habitat: Late-successional forest less than 1 mile from open water	[Y] Detailed analysis provided below.
Black-backed woodpecker *(Picoides arcticus)* Habitat: Mature to old burned or beetle-infested forest	[N] No preferred, recently (less than 5 years) burned areas are in the project area. Thus, no direct, indirect, or cumulative effects to black-backed woodpeckers would be expected to occur as a result of either alternative.
Coeur d'Alene salamander *(Plethodon idahoensis)* Habitat: Waterfall spray zones, talus near cascading streams	[N] No moist talus or streamside talus habitat occurs in the project area. Thus, no direct, indirect, or cumulative effects to Coeur d'Alene salamanders would be expected to occur as a result of either alternative.
Columbian sharp-tailed grouse *(Tympanuchus Phasianellus columbianus)* Habitat: Grassland, shrubland, riparian, agriculture	[N] No suitable grassland communities occur in the project area. Thus, no direct, indirect, or cumulative effects to Columbian sharp-tailed grouse would be expected to occur as a result of either alternative.
Common loon *(Gavia immer)* Habitat: Cold mountain lakes, nest in emergent vegetation	[N] No suitable lakes occur in the project area. Thus no direct, indirect, or cumulative effects to common loons would be expected under either alternative.
Fisher *(Pekania pennanti)* Habitat: Dense mature to old forest less than 6,000 feet in elevation and riparian	[Y] Detailed analysis provided below.
Flammulated owl *(Otus flammeolus)*	[Y] Detailed analysis provided below.

Habitat: Late-successional ponderosa pine and Douglas-fir forest	
Gray Wolf *(Canis lupus)* Habitat: Ample big game populations, security from human activities	[Y] Detailed analysis provided below.
Harlequin duck *(Histrionicus histrionicus)* Habitat: White-water streams, boulder and cobble substrates	[N] No suitable high-gradient stream or river habitats occur in the project area. No direct, indirect or cumulative effects to harlequin ducks would be expected to occur as a result of either alternative.
Mountain plover (*Charadrius montanus*) Habitat: short-grass prairie, alkaline flats, prairie dog towns	[N] No prairie dog colonies or other shortgrass prairie habitats occur in the project area. Thus, no direct, indirect, or cumulative effects to mountain plovers would be anticipated to occur as a result of either alternative.
Northern bog lemming *(Synaptomys borealis)* Habitat: Sphagnum meadows, bogs, fens with thick moss mats	[N] No suitable sphagnum bogs or fens occur in the project area. Thus, no direct, indirect, or cumulative effects to northern bog lemmings would be expected to occur as a result of either alternative.
Peregrine falcon *(Falco peregrinus)* Habitat: Cliff features near open foraging areas and/or wetlands	[N] No preferred cliffs or suitable rock outcrops suitable for use by peregrine falcons occur on, or within 1 mile of the proposed project area. Thus, no direct, indirect, or cumulative effects to peregrine falcons would be anticipated as a result of either alternative.
Pileated woodpecker *(Dryocopus pileatus)* Habitat: Late-successional ponderosa pine and larch-fir forest	[Y] Detailed analysis provided below.
Townsend's big-eared bat *(Plecotus townsendii)* Habitat: Caves, caverns, old mines	[N] No suitable caves or mine tunnels are known to occur in the project area or vicinity. Thus, no direct, indirect or cumulative effects to Townsend's big-eared bats would be anticipated as a result of either alternative.

Wolverine *(Gulo gulo)* Habitat: Alpine tundra and high-elevation boreal and coniferous forests that maintain deep persistent snow into late spring	[N] Generally wolverines are found in sparsely inhabited remote areas near treeline characterized by cool to cold temperatures year round and rather deep and persistent snow well into the spring (Copeland et al. 2010). The availability and distribution of food is likely the primary factor in the large home range sizes of wolverines (Banci 1994). The project area is generally below the elevations where wolverines tend to be located. No areas of deep persistent spring snow occur in 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 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. Thus, minimal direct, indirect or cumulative effects to wolverines would be anticipated.
Big Game Species	
Elk	[Y] Big game winter range exists in the project area. Potential big game security habitat exists in the project area - Detailed analyses provided below.
Moose	
Mule Deer	
White-tailed Deer	

Threatened and Endangered Species

GRIZZLY BEAR

Issue

Proposed activities could alter cover, reduce secure areas, and increase access, which could affect grizzly bears by displacing them from important habitats and/or increasing risk to bears of human-caused mortality.

Introduction

Grizzly bears are native generalist omnivores that use a diversity of habitats found in western Montana. Preferred grizzly bear habitats are meadows, riparian zones, avalanche chutes, subalpine forests, and big game winter ranges, all of which provide seasonal food sources. The search for food drives grizzly bear movements, with bears moving from low elevations in spring to higher elevations through the summer and early fall, as fruits ripen throughout the year. Primary threats to grizzly bears are related to human-bear conflicts, habituation to unnatural foods near high-risk areas, and long-term habitat loss associated with human development (Mace and Waller 1997). Forest-management activities may affect grizzly bears by altering cover and/or by increasing human access into secure areas by creating roads (Mace et al. 1997). These actions could lead to the displacement of grizzly bears from preferred areas and/or result in an increased risk of human-caused mortality by bringing humans and bears closer together and/or making bears more detectable, which can increase the risk of bears being illegally shot. Displacing bears from preferred areas may increase their energetic costs, which may, in turn, lower their ability to survive and/or reproduce successfully.

Analysis Area

Direct and indirect effects were analyzed for activities conducted in the 2,654-acre project area. Cumulative effects were analyzed on a 33,095-acre area described above in the Analysis Areas portion of this analysis. This area approximates the home range size of a female grizzly bear.

Existing Environment

The project area is 10 miles south of the Northern Continental Divide Ecosystem grizzly bear recovery area, and within `occupied' grizzly bear habitat as mapped by grizzly bear researchers and managers to address increased sightings and encounters of grizzly bears in habitats outside of recovery zones (Wittinger et al. 2002). However, grizzly bears are increasingly being documented south of the recovery zone. Grizzly bears have been documented in the project area in the past and continued use of the project area is likely. Grizzly bears generally use different habitats relative to season, but the combination of habitat attributes in the project area supports grizzly bears throughout the non-denning period.

Managing human access is a major factor in management for grizzly bear habitat. There is a fairly high amount of open roads (5.6 miles; 1.4 mi./sq. mi., simple linear calculation) in the project area. Extensive non-motorized access to the project area exists given the presence and location of the open roads, the level of access to higher terrain, and the 13 miles of restricted roads in the project area. Open road densities are relatively high in the cumulative effects analysis area (1.03 mi./sq. mi., simple linear calculation); the potential for disturbance to grizzly bears in the cumulative effects analysis area is also fairly high given this level of access. Hiding cover exists on roughly 251 acres (9%) in the project area. 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 1 pocket (roughly 1,005 acres; 38% of project area) of habitat in the project area contributes to a larger, 20,476-acre block of potential security cover that extends beyond the project area.

Within the cumulative effects analysis area, roughly 718 acres of grizzly bear hiding cover exists on DNRC-managed lands. Grizzly bear hiding cover is likely present on some of the 10,739 acres (38% of non-DNRC lands) of forested stands across the cumulative effects analysis area on other ownerships. Within the cumulative effects analysis area, hiding cover is largely absent from the 3,133 acres (11% of non-DNRC lands) of shrubs, herbaceous, and non-forested habitats and is likely somewhat limited on the other 14,654 acres (51% of non-DNRC lands) of sparsely stocked and young forest habitats in the cumulative effects analysis area. While no grizzly bear security habitats exist solely in the project area, portions of the project area contribute to a 20,476-acre (62%) block of potential grizzly bear security habitat; this block of potential grizzly bear security habitats looks to extend beyond the boundaries of the cumulative effects analysis area as well. Timber harvesting and human development that has occurred in the cumulative effects analysis area likely altered grizzly bear habitats and/or human disturbance levels.

Environmental Effects- Grizzly Bears

No Action Alternative: Direct and Indirect Effects

No direct or indirect effects to grizzly bears would be anticipated since: 1) no further disturbance or displacement would be expected, 2) no further changes in hiding cover would occur, 3) security habitat would not be altered, 4) no changes in long-term open-road density would be anticipated, and 5) no changes in availability of unnatural bear foods or attractants would occur.

No Action Alternative: Cumulative Effects

No appreciable changes to existing habitats would be anticipated; advances in succession within those recently harvested stands could improve hiding cover and potentially foraging habitats for grizzly bears. Thus, no further adverse cumulative effects to grizzly bears would be anticipated since: 1) no further changes in human disturbance levels would be expected; 2) no changes to open road density would occur; 3) no further

modifications to hiding cover would occur; 4) no changes to security habitat would be expected; and 5) no changes in availability of unnatural bear foods or attractants would occur.

Action Alternative: Direct and Indirect Effects

This alternative might affect grizzly bears 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. Activities in grizzly bear habitats reduce grizzly bear security, possibly resulting in increased stress and/or energy expenditure to endure the disturbance or to move from the area. These potential disturbances would only be present during proposed operations; therefore, the season of disturbance is important in addressing effects to grizzly bears. Proposed harvesting could occur during the denning period or the non-denning period, but would avoid the spring period (April 1-June 15) when grizzly bears are more sensitive to human disturbance. Proposed activities conducted in the denning period would not be expected to disturb grizzly bears; some disturbance to grizzly bears would be possible with proposed activities that may occur during the non-denning period. Grizzly bears would be expected to still use the area during the remaining portion of the non-denning period (June 16 - November 15) after the spring closure, but would be able to access considerable other habitats in the vicinity, which would limit potential disturbance to bears. Overall, the proposed activities would occur in areas where moderate levels of grizzly bear use would be anticipated, but would occur during a time period when habitat availability would not be limited, thus minor potential for disturbance and displacement of grizzly bears would be anticipated.

About 1.2 miles of new, restricted roads would be constructed with the proposed activities. No changes in open road density or motorized public access would be anticipated. Negligible changes to non-motorized public access could occur, thus no appreciable changes in contact between humans and grizzly bears would occur. Hiding cover, defined as vegetation that will hide 90 percent of a grizzly bear at a distance of 200 feet, would be reduced on most of the 16 acres (6%) of hiding cover proposed to receive treatments. Meanwhile, proposed activities in habitats that are not presently providing hiding cover (374 acres) would slow the development of those attributes into the future. Some hiding cover in the form of brush, shrubs, and sub-merchantable trees would persist in several of the units, albeit at a reduced level from the existing condition; hiding cover would increase through time as young trees and shrub regeneration proceeds over the next 5 to 10 years. Generally, proposed activities would avoid potential grizzly bear security habitats in the project area since most activities are within 0.3 miles of open roads, but proposed activities could alter vegetative cover on roughly 133 acres (13%) of forested habitats on the edge of the area contributing to the larger block of potential security habitats that extend beyond the project area, including roughly 8 acres identified as currently providing hiding cover for bears. Although hiding cover would be reduced, no appreciable changes to security habitat would occur given the small area that would be altered, the location of those changes, and the lack of changes in open roads in the project area. Any unnatural bear foods or attractants (such as garbage) would be kept in a bear resistant manner. Any added risk to grizzly bears associated with unnatural bear foods or attractants would be minimal. Thus, a minor risk of adverse direct or indirect effects to grizzly bears would be anticipated since: 1) minor disturbance and displacement would be possible; 2) hiding cover would be reduced in a portion of the project area, but would remain in portions of the project area, and would be expected to recover in the short-term; 3) habitats in potential security habitat would be modified, but no changes in the availability of security habitats would occur; 4) no changes to long-term open road density would be anticipated; and 5) negligible increases in the availability of unnatural bear foods or attractants would be anticipated.

Action Alternative: Cumulative Effects

The increased use of road systems during the proposed project could temporarily increase human disturbance to grizzly bears within a portion of the cumulative effects analysis area. Collectively, short-term (2-4 years)

increases in human disturbance would be anticipated in a portion of the cumulative effects analysis area. Continued use of the cumulative effects analysis area by grizzly bears would be anticipated at levels similar to present. Hiding cover would be reduced on roughly 16 acres with the proposed treatments; proposed activities in areas not providing hiding cover would slow the development of those attributes into the future in a small portion of the cumulative effects analysis area. No further changes to the hiding cover on other ownerships would be anticipated. Reductions in hiding cover would be additive to the reductions from past timber harvesting, ongoing harvesting, as well as more permanent land-cover changes in the cumulative effects analysis area. Changes in hiding cover could concentrate grizzly bear use, but would not be expected to alter level of use of the cumulative effects analysis area. Early successional stages of vegetation occurring in harvest units could provide additional foraging opportunities for grizzly bears. Quality of grizzly bear security habitat would be reduced in short-term, but would persist through time. No changes in long-term open-road density would be anticipated; a slight increase in non-motorized access to a small portion of the cumulative effects analysis area could occur with the proposed construction of roughly 1.2 miles of new, restricted roads. Vegetative cover on a small amount (133 acres; <1%) of potential grizzly bear security habitats would be altered, but given the prescriptions, some level of cover would persist following proposed treatments. Overall negligible effects to the existing grizzly bear security habitats would be expected given the small amount of area that would be altered, the location of those changes on the landscape, and the lack of changes in open roads in the project area; considerable grizzly bear security habitats (61-62%) would persist in the cumulative effects. Thus, a minor risk of adverse cumulative effects to grizzly bears would be anticipated since: 1) increases in human disturbance levels in the short-term could occur in a small portion of the cumulative effects analysis area; 2) hiding cover would be removed in the short-term on 16 acres and impeded on another 374 acres in the cumulative effects analysis area; 3) no changes in long-term open road density would occur, 4) quality of security habitats would be reduced on a minor amount of existing habitats, but would persist into the future; and 5) negligible increases in the availability of unnatural bear foods or attractants would be anticipated.

Sensitive Species

BALD EAGLE

Issue

Proposed activities could negatively affect bald eagles by reducing nesting and perching structures and/or disturbing nesting bald eagles

Introduction

Bald eagles are diurnal raptors associated with significant bodies of water, such as rivers, lakes, and coastal zones. The bald eagle diet consists primarily of fish and waterfowl, but includes carrion, mammals, and items taken from other birds of prey. In Montana, bald eagles begin the breeding process with courtship behavior and nest building in early February; the young fledge by approximately mid-August, ending the breeding process. Preferred nest-stand characteristics include large emergent trees that are within sight distances of lakes and rivers and screened from disturbance by vegetation.

Analysis Area

Direct and indirect effects were analyzed for activities conducted in the 2,654-acre project area. Cumulative effects were analyzed on the home ranges associated with the last known nests of the Clearwater Junction bald eagle territory. This scale includes enough area for a nesting pair of bald eagles.

Existing Environment

Most of the project area has been within the home range associated with the Clearwater Junction bald eagle territory in the past. In the recent past, the nest associated with this territory was destroyed and to date a new nest hasn't been located, but eagles continue to be present in the vicinity and nesting is likely. Bald eagles usually nest within 1 mile of the shoreline of larger waterbodies and roughly 877 acres of the project area are within 1 mile of the Clearwater River. The aquatic habitats associated with the Clearwater Junction territory include Clearwater River, Blackfoot River, Blanchard Lake, Harpers Lake, Elbow Lake, Blanchard Creek, Lost Horse Creek, Lost Prairie Creek, and numerous smaller streams, ponds, and wetlands. Aquatic and terrestrial prey species are fairly common in the home range. The terrestrial habitat incorporated by the territory is a coniferous/deciduous mixture along the lakeshores and riparian areas, with coniferous forests and grasslands in the upland areas. Within the home range, black cottonwood is the deciduous tree of primary importance to bald eagles, while large emergent conifers also provide important nesting, roosting, and perching habitats.

Human disturbance, including a variety of human developments and houses, timber harvesting, agricultural activities, and various forms of recreation are potential sources of disturbance to the nesting territory. Numerous large emergent trees are available across portions of the home range, but logging and other human developments in the last 100 years has likely reduced some of these attributes while others have experienced mortality and are declining in quality.

Environmental Effects-Bald Eagle

No Action Alternative: Direct and Indirect Effects

No direct or indirect effects to bald eagles would be anticipated since: 1) no changes to human disturbance levels would occur; and 2) no changes in the availability of large, emergent trees suitable for perching or nesting would be expected.

No Action Alternative: Cumulative Effects

No cumulative effects to bald eagles would be anticipated since: 1) no changes to human disturbance levels would occur; and 2) no changes in the availability of large, emergent trees would be expected.

Action Alternative: Direct and Indirect Effects

No activities would occur in the nest area or primary use areas associated with the last known nest in the bald eagle territory. Proposed harvesting on 390 acres would occur in the home range associated with the bald eagle territory. Proposed activities could occur when soils are dry, frozen, or snow covered and would not occur between April 1 and June 15. Thus, the proposed activities could occur during the very early- (Feb 1-Mar 31) or later- (June 16-Aug 15) portions of the bald eagle nesting season, or the non-nesting (August 16-February 1) season. Minor disturbance to bald eagles could occur for any activities that could be conducted during the nesting period in the home range. Conversely, no disturbance to bald eagles would be anticipated should those activities be conducted during the non-nesting period. None of the proposed units would be visible from the last known nest location, and approximately 69 acres (18%) within proposed units would be visible from some point on the Clearwater River. Additionally, roughly 34 acres in unit 3201 would be the only activities that would occur within 1 mile of the Clearwater River. Proposed activities would not be expected to disturb eagles on the Clearwater River given the distance from the river, the presence of multiple landforms and ridges that are providing screening between the proposed activities and any nests and/or aquatic environments, and the inclusion of seasonal restrictions prohibiting activities during a sizable portion of the

nesting season. Minor reductions in the availability of large snags or emergent trees that could be used as nest or perch trees could occur in the home range. No changes to human access to the home range would occur, thereby limiting potential for introducing additional human disturbance to the territory. Thus, a negligible risk of direct and indirect effects to bald eagles would be anticipated since: 1) disturbance could be slightly elevated within the home range during operations, should they occur during the nesting period; 2) no appreciable change in human access within the project area would occur; and 3) minor reductions in the availability of large, emergent trees could occur in the home range.

Action Alternative: Cumulative Effects

Nesting bald eagles in this home range would continue to experience varying levels of disturbance. Any potential disturbance and/or noise from the proposed activities would be additive to any of these other forms of disturbance, however no changes in bald eagle behavior would be anticipated. Given the distance from the Clearwater River and the presence of multiple landforms and ridges that screen the proposed units from the river, potential disturbance to eagles on the river would not be anticipated. Negligible reductions in emergent trees or snags could occur on a small portion of the home range. Thus, a negligible risk of cumulative effects to bald eagles would be anticipated since: 1) disturbance would be slightly elevated within the territory during proposed activities; 2) no changes in human access within the territory would occur; and 3) negligible changes in the availability of large, emergent trees would be expected.

FISHER

Issue

Proposed activities could reduce the amount and/or quality of fisher habitats, which could alter fisher use of the area.

Introduction

Fishers are a mid-sized forest carnivore whose prey includes small mammals such as voles, squirrels, snowshoe hares, and porcupines, as well as birds (Powell and Zielinski 1994). They also take advantage of carrion and seasonally available fruits and berries (Foresman 2012). Fishers use a variety of successional stages, but are disproportionately found in stands with dense canopies (Powell 1982, Johnson 1984, Jones 1991, Heinemeyer and Jones 1994) and avoid openings or young forested stands (Buskirk and Powell 1994, Weir and Corbould 2010). However, some use of openings may occur for short hunting forays or if sufficient overhead cover (shrubs or saplings) is present. Fishers appear to be highly selective of stands that contain resting and denning sites and tend to use areas within 150 feet of water (Jones 1991). Resting and denning sites are found in cavities of live trees and snags, downed logs, brush piles, mistletoe brooms, squirrel and raptor nests, and holes in the ground. Forest-management considerations for fisher involve providing for resting and denning habitats near riparian areas while maintaining travel corridors.

Analysis Area

Direct and indirect effects were analyzed for activities conducted in the 2,654-acre project area. Cumulative effects were analyzed on the 33,095-acre cumulative effects analysis area described above in the Analysis Areas portion of this analysis. This scale includes enough area to approximate overlapping home ranges of male and female fishers (Heinemeyer and Jones 1994).

Existing Environment

There are approximately 316 acres (12%) of potential upland fisher habitats and 15 acres (<1%) of potential riparian habitats in the project area. Additionally, there are 79 acres (3%) of upland preferred habitats and another 11 acres (<1%) of preferred habitats in riparian areas that presently lack structural attributes that would facilitate use by fisher. Existing habitats are partially connected throughout the cumulative effects analysis area, but considerable timber management in the past has likely reduced overall suitability for fisher in the cumulative effects analysis area; connectivity along riparian features throughout the cumulative effects analysis area is reasonably intact. Within the cumulative effects analysis area, there are roughly 30,818 acres that would be classified as upland (more than 100 ft from Class 1 and more than 50 feet from Class 2 streams) and 1,752 acres that would be classified as riparian that are associated with the 114 miles of streams in the cumulative effects analysis area. On DNRC-managed lands in the cumulative effects analysis area, limited potential riparian habitats exist, and roughly 23 acres of potential riparian fisher habitats are providing structural habitat attributes that would facilitate use by fisher of the 34 acres of suitable covertypes (68%) in the analysis area. Potential fisher habitats likely exist on a portion of the 10,681 acres (38% of non-DNRC lands) of forested stands that are below 6,000 feet in elevation across the cumulative effects analysis area, including roughly 924 acres that are in close proximity to streams in the cumulative effects analysis area. Within the cumulative effects analysis area, fisher habitats are largely absent from the 3,090 acres (11% of non-DNRC lands below 6,000 feet in elevation) of shrubs, herbaceous, and non-forested habitats and is likely fairly limited on the other 1,420 acres (51% of non-DNRC lands below 6,000 feet in elevation) of sparsely stocked and young forest habitats in the cumulative effects analysis area. Ongoing timber management in the cumulative effects analysis area could continue to alter potential fisher habitats.

Environmental Effects-Fisher

No Action Alternative: Direct and Indirect Effects

No direct and indirect effects to fishers would be anticipated since: 1) no changes to existing habitats would be anticipated; 2) landscape connectivity would not be further altered; 3) no appreciable changes to snags, snag recruits, and coarse woody debris levels would be anticipated; and 4) no changes to public access or the potential for trapping mortality would be anticipated.

No Action Alternative: Cumulative Effects

No further cumulative effects to fishers would be anticipated since: 1) no further changes to existing habitats on DNRC-managed lands would occur; 2) any landscape connectivity afforded by the stands on DNRC-managed lands would not change appreciably; 3) no changes to snags, snag recruits, or coarse woody debris levels would be expected; and 4) no changes to public access or the potential for trapping mortality would be anticipated.

Action Alternative: Direct and Indirect Effects

No riparian habitats within 100 feet of class 1 streams or 50 feet of class 2 streams would be altered with the proposed activities. Approximately 8 of the 316 acres (3%) of upland fisher habitats in the project area would receive treatments that would reduce canopy closure and would likely be too open to be used by fisher; however portions of these acres are proposed to receive a commercial thin treatment, which could retain sufficient canopy closure to facilitate some limited use by fishers following proposed treatments. Any proposed thinning in fisher habitats would improve future fisher habitats by decreasing the time until those stands provide structural attributes needed by fisher. No changes in open roads would be anticipated; a slight increase in non-motorized access could occur with the proposed construction of 1.2 miles of new, restricted road. Trapping pressure and the potential for fisher mortality could remain similar to present levels. Minor reductions in

landscape connectivity could occur with the proposed activities, but activities would avoid riparian areas commonly used by fisher. Thus, a minor risk of adverse direct and indirect effects to fisher would be anticipated since: 1) harvesting would avoid riparian areas, but would modify a small amount of upland fisher habitats; 2) minor reductions in landscape connectivity would occur, but those areas associated with riparian areas would remain unaffected; 3) harvesting would reduce snags and snag-recruitment trees while increasing coarse woody debris levels; however, some of these resources would be retained; and 4) no changes in legal motorized human-access levels would be anticipated.

Action Alternative: Cumulative Effects

Since no riparian habitats associated with Class 1 or 2 streams would be modified, no changes in the amount of the preferred riparian fisher cover types meeting structural requirements for fishers at the cumulative-effects analysis area would occur. Reductions in upland habitats on DNRC-managed lands (8 acres) would negligibly further reduce the amount of suitable upland fisher habitats in the cumulative effects analysis area. These reductions would be additive to the losses associated with past timber harvesting in the cumulative-effects analysis area. No appreciable changes to landscape connectivity would be anticipated, and activities would avoid riparian areas commonly used by fisher. No changes in legal, motorized public access would occur and negligible changes in non-motorized access behind existing closures would occur. Overall, no appreciable changes in human disturbance and potential trapping mortality would be anticipated. Thus, a minor risk of adverse cumulative effects to fisher would be anticipated since: 1) harvesting would modify some upland fisher habitats, but upland habitats would persist; 2) no appreciable changes in landscape connectivity would be anticipated and connectivity in riparian areas would not be altered; 3) harvesting in a relatively small portion of the cumulative-effects analysis area would partially reduce snags and snag recruits, while increasing the coarse woody debris levels, largely in the smaller-sized pieces; and 4) no changes to legal, motorized public access would occur.

FLAMMULATED OWLS

Issue

Proposed activities may alter flammulated owl habitat by reducing canopy closure and increasing tree spacing, while potentially removing snags needed by flammulated owls for nesting.

Introduction

Flammulated owls are tiny, migratory, insectivorous forest owls that inhabit old, open stands of warm-dry ponderosa pine and cool-dry Douglas-fir forests in the western United States and are secondary cavity nesters. In Montana, flammulated owls appear to initiate nesting later than most of the other owl species; they generally initiate nesting in May, and nestlings usually fledge during August. In general, preferred habitats have open to moderate canopy closure (30-50 percent) with at least 2 canopy layers, and are often near small clearings. They usually nest in cavities excavated by pileated woodpeckers or northern flickers in 12-25" dbh ponderosa pine, Douglas-fir, or aspen. Without disturbance, Douglas-fir encroach upon ponderosa pine stands resulting in increased stand density and decreased habitat quality for flammulated owls. Periodic, low-intensity underburns can increase habitat suitability and sustainability by reducing the density of understory seedlings and saplings, stimulating shrub growth, and by protecting large dominant trees from ladder fuels and competition with other mature trees.

Analysis Area

Direct and indirect effects were analyzed for activities conducted in the 2,654-acre project area. Cumulative effects were analyzed on the 11,702-acre cumulative effects analysis area described above in the Analysis Areas portion. This area includes enough area to support several pairs of flammulated owls (McCallum 1994).

Existing Environment

There are approximately 2,246 acres (85% of the project area) of potential flammulated owl habitats in dry Douglas-fir, ponderosa pine, and Douglas-fir/western larch stands across the project area. There are roughly 3,626 acres of potential flammulated owl habitats on dry Douglas-fir, ponderosa pine, and Douglas-fir/western larch stands on DNRC-managed lands within the cumulative effects analysis area. Some suitable habitats likely exist on a portion of the 1,747 acres (23% of non-DNRC-managed lands) of open and closed forested habitats on other ownerships in the cumulative effects analysis area; however, like the project area, portions of these forested areas are not likely preferred flammulated owl habitat types. Elsewhere in the cumulative effects analysis area, some of the forested habitats have been harvested in the recent past, potentially improving flammulated owl habitat by creating foraging areas and reversing a portion of the Douglas-fir encroachment and opening up stands of ponderosa pine; however retention of large ponderosa pine and/or Douglas-fir was not necessarily a consideration in some of these harvest units, thereby minimizing the benefits to flammulated owls. Modern fire suppression has allowed Douglas-fir in-growth to create denser stands of ponderosa pine and Douglas-fir in portions of the cumulative effects analysis area, which has reduced habitat quality for flammulated owls.

Environmental Effects-Flammulated Owl

No Action Alternative: Direct and Indirect Effects

Existing flammulated owl habitats in the project area would persist. Thus, a negligible risk of adverse direct and indirect effects to flammulated owls would be anticipated since: 1) no disturbance to flammulated owls would be anticipated; and 2) no changes to potential nesting habitats would be anticipated.

No Action Alternative: Cumulative Effects

Existing flammulated owl habitats would persist. Thus, a negligible risk of adverse cumulative effects to flammulated owls would be anticipated since: 1) no disturbance to flammulated owls would be anticipated; and 2) no changes to potential nesting habitats would be anticipated.

Action Alternative: Direct and Indirect Effects

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 would not occur between April 1 and June 15, but could overlap the nestling and fledgling periods after June 15. Since some snags and large trees would be retained, loss of nest trees would be expected to be minimal. Proposed activities on 353 acres of potential flammulated owl habitats (16% of the habitats in the project area) would open the canopy while favoring ponderosa pine, western larch, and Douglas-fir. The proposed treatments would reduce canopy closure, which would allow more sunlight to reach the forest floor, which could stimulate grass and shrub growth, providing habitat for moths and other flying insects that provide food for flammulated owls. Elements of the forest structure important for nesting flammulated owls, including snags, coarse woody debris, numerous leave trees, and snag recruits would be retained in the proposed units. The more open stand conditions, the retention of fire adapted tree species, and the maintenance of limited existing snags would move the project area toward

historical conditions, which is preferred flammulated owl habitat. The proposed pre-commercial thinning of ponderosa pine and Douglas-fir types could improve flammulated owl foraging habitats, while contributing to an increased representation of ponderosa pine in the future in those stands, which would improve potential flammulated owl habitat quality. Thus, a minor risk of adverse direct and indirect effects would be expected to flammulated owls since: 1) the potential exists to disturb flammulated owls; 2) proposed thinning could lessen the duration before these affected stands are again suitable for flammulated owl use; and 3) harvesting would open denser stands up while retaining elements of forest structure used for foraging and nesting by flammulated owl, improving overall flammulated owl habitat conditions in the project area.

Action Alternative: Cumulative Effects

Disturbance in flammulated owl habitats would be possible on a small portion of the cumulative effects analysis area and could be additive to ongoing activities in the cumulative effects analysis area. Proposed harvesting would increase the amount of the cumulative effects analysis area that has been recently harvested, which would add to the amount of foraging habitats available, but possibly at the expense of losing snags and large trees important for nesting. Overall no change in the amount of potential flammulated owl habitats would exist on DNRC-managed lands or any other ownerships; a slight improvement in habitat quality at the cumulative-effects analysis level could be realized with this alternative and the more historic conditions likely after proposed activities. Thus, a negligible risk of adverse cumulative effects to flammulated owls would be expected since: 1) harvesting could disturb flammulated owls in a small portion of the cumulative effects analysis area should activities occur during the period when flammulated owls are in the vicinity; and 2) harvesting would improve the quality and sustainability of flammulated owl habitat on a portion of the cumulative effects analysis area by making this area more representative of historic conditions.

GRAY WOLF

Issue

Proposed activities could displace gray wolves from important habitats, particularly denning and rendezvous sites, and/or alter prey availability.

Introduction

Wolves are a wide-ranging, mobile species that occupy a wide variety of habitats that possess adequate prey and minimal human disturbance, especially at den and/or rendezvous sites. Wolves are opportunistic carnivores that frequently take vulnerable prey (including young individuals, older individuals, and individuals in poor condition). In general, wolf densities are positively correlated to prey densities (Fuller et al. 1992, Oakleaf et al. 2006). In Montana, wolves prey primarily on white-tailed deer and elk (Kunkel et al. 1999, Arjo et al. 2002). Thus, reductions in big game populations and/or winter range productivity could indirectly be detrimental to wolf populations.

Wolves typically den during late April in areas with gentle terrain near a water source (valley bottoms), close to meadows or other openings, and near big game wintering areas. When the pups are 8 to 10 weeks old, wolves leave the den site and start leaving their pups at rendezvous sites while hunting. These sites are used throughout the summer and into the fall. Disturbance at den or rendezvous sites could result in avoidance of these areas by the adults or force the adults to move the pups to a less adequate site. In both situations, the risk of pup mortality increases.

Analysis Area

Direct and indirect effects were analyzed for activities conducted in the 2,654-acre project area. Cumulative effects were analyzed on the 33,095-acre area described above in the Analysis Areas portion of this analysis. This scale includes enough area to support at least 1 pack of wolves.

Existing Environment

The suspected Blanchard Creek wolf pack is thought to be in the vicinity of the project area. Several landscape features commonly associated with denning and rendezvous sites occur in the project area, such as areas with gentle terrain near a water source (valley bottoms), areas that are close to big game winter ranges, and areas that are close to meadows or other openings. No known den or rendezvous sites occur in the project area, but some use of the project area by wolves could occur for breeding, hunting, or other life requirements. Big game species exist in the project area much of the non-winter period. Winter range for white-tailed deer (2,364 acres; 89%), mule deer (1,796 acres; 68%), and elk (1,898 acres; 72%) exists in the project area. Approximately 1,670 acres of the project area (63%) appear to be providing snow intercept and thermal cover attributes for big game.

Within the cumulative-effects analysis area, big game species are fairly common and winter range for deer and elk are fairly widespread in the lower elevation areas. Roughly 8,072 acres (24%) of white-tailed deer, 10,501 acres (32%) of mule deer, and 15,372 acres (46%) of elk winter ranges exist in the cumulative effects analysis area; approximately 14,488 acres (44%) of forested habitats in the cumulative effects analysis area appears to have sufficient canopy closure to provide thermal cover and snow intercept for big game. Numerous landscape features commonly associated with denning and rendezvous sites, including meadows and other openings near water, close to big game winter range, and in gentle terrain, occur in the cumulative-effects analysis area. In the cumulative effects analysis area, access for recreational hunting is relatively high, with several open roads (at least 53 miles, 1.03 miles/sq. mile) that facilitate access and numerous restricted roads (at least 188 miles; 3.6 miles/sq. mile) that could be used for non-motorized use. Past timber management and human developments have altered big game and wolf habitats in the cumulative effects analysis area.

Environmental Effects-Gray Wolf

No Action Alternative: Direct and Indirect Effects

Negligible direct and indirect effects would be expected to gray wolves since: 1) no changes in human disturbance levels would occur; and 2) no appreciable changes to prey availability would occur.

No Action Alternative: Cumulative Effects

White-tailed deer, mule deer, and elk winter ranges would not be further affected and substantive changes in big game populations, distribution, or habitat use would be not anticipated. Levels of human disturbance would be expected to remain similar to present levels. Past harvesting and any ongoing harvesting may cause shifts in big game use and, subsequently, gray wolf use, of the cumulative-effects analysis area; however, no further changes would be anticipated that would alter levels of gray wolf use of the cumulative-effects analysis area. Thus, no further cumulative effects to gray wolves would be expected since: 1) no changes in human disturbance levels would occur, particularly near known wolf den and/or rendezvous sites; and 2) no changes to prey availability would occur.

Action Alternative: Direct and Indirect Effects

Wolves using the area could be disturbed by harvesting activities and are most sensitive at den and rendezvous sites, which are not known to occur in the project area or within 1 mile of the project area. If a den

or rendezvous site were identified within 1 mile of the project area, a DNRC biologist would be consulted to determine if additional mitigations would be necessary. Seasonal operations constraints would restrict activities between April 1 and June 15. These seasonal constraints would limit potential disturbance at any potential den sites and rendezvous sites in the vicinity. No changes in legal, motorized public access would occur. After proposed activities, human disturbance levels would likely revert to pre-harvest levels. Wolf use of the project area for denning and rendezvous sites would likely revert to pre-harvest levels following proposed activities. Reductions in hiding cover could expose gray wolves and/or their prey to increased mortality potential. In the short-term, the proposed harvesting could lead to slight shifts in big game use, which could lead to a shift in wolf use of the project area. Proposed harvesting activities on approximately 390 acres (15% of the project area) would alter canopy closure, summer big game habitat, and big game winter range habitat. The modifications to summer range could alter some big game use of the project area, and subsequently could alter the use of the project area by wolves. Proposed activities would occur on roughly 390 acres (16%) of white-tailed deer winter range, 343 acres (19%) of mule deer winter range, and 384 acres (20%) of elk winter range; proposed activities would reduce canopy closure and potential winter use by big game on roughly 319 acres (19%) that likely have attributes facilitating considerable winter use by big game. Collectively, reductions in big game winter range habitats could redistribute big game, but would not be expected to appreciably alter wolf prey abundance. Thus, a low risk of direct and indirect effects would be expected to gray wolves since: 1) minor increases in human disturbance levels would occur, with no increases near known wolf den and/or rendezvous sites anticipated; and 2) changes to big game summer habitats and winter range could alter big game use of the project area, but would not appreciably alter prey availability.

Action Alternative: Cumulative Effects

Disturbance to gray wolves in a portion of the cumulative effects analysis area would be possible, but would only occur for the short-period of time that activities would be occurring. No changes in legal, motorized human access would be anticipated; minor increases in non-motorized access would be possible with the proposed construction of 1.2 miles of restricted, permanent road. Proposed activities would occur on roughly 390 acres (5%) of white-tailed deer winter range, 343 acres (3%) of mule deer winter range, and 384 acres (2%) of elk winter range; proposed activities would reduce canopy closure and potential winter use by big game on roughly 319 acres (2%) that likely have attributes facilitating considerable winter use by big game. These reductions in big game winter range would occur in a small portion of the cumulative effects analysis area; winter big game survival would not be expected to change appreciably. Similarly, these reductions in cover in a small portion of the cumulative effects analysis area may cause slight changes in use by deer, elk, and moose; however, no appreciable changes in use within the cumulative-effects analysis area would be expected. These reductions in cover would be additive to losses from past timber-harvesting activities. No substantive change in wolf use of the cumulative-effects analysis area would be expected; wolves could continue to use the area in the long-term. Thus, a low risk of cumulative effects to gray wolves would be expected since: 1) elevated human disturbance levels would be short-lived and negligible changes to long-term disturbance levels would be anticipated with no increases near known wolf den and/or rendezvous sites; and 2) modifications to big game summer range and winter range could alter big game distributions, but no appreciable changes to wolf prey availability would be anticipated.

PILEATED WOODPECKERS

Issue

Proposed activities could reduce suitable nesting and foraging habitat for pileated woodpeckers, which could alter pileated woodpecker use of the area.

Introduction

The pileated woodpecker is one of the largest woodpeckers in North America and excavates the largest cavities of any woodpecker. Preferred nest trees are large diameter western larch, ponderosa pine, cottonwood, and quaking aspen trees and snags, usually 20 inches dbh and larger. Pileated woodpeckers primarily eat carpenter ants, which inhabit large downed logs, stumps, and snags. Aney and McClelland (1985) described pileated nesting habitat as "...stands of 50 to 100 contiguous acres, generally below 5,000 feet in elevation with basal areas of 100 to 125 square feet per acre and a relatively closed canopy." The feeding and nesting habitat requirements, including large snags or decayed trees for nesting and downed wood for feeding, closely tie these woodpeckers to mature forests with late-successional characteristics. The density of pileated woodpeckers is positively correlated with the amount of dead and/or dying wood in stands (McClelland 1979).

Analysis Area

Direct and indirect effects were analyzed for activities conducted in the project area (2,654 acres). Cumulative effects were analyzed on the 11,702-acre cumulative effects analysis area described above in the Analysis Areas portion of this analysis. This scale includes enough area to support several pairs of pileated woodpeckers (Bull and Jackson 1995).

Existing Environment

Pileated woodpeckers have been documented near the project area in the past. In the project area, potential pileated woodpecker nesting habitat exists on approximately 940 acres (35% of the project area). These habitats are dominated by Douglas-fir, ponderosa pine, and Douglas-fir/western larch stands. Additionally, 1,639 acres (62% of the project area) of sawtimber stands, dominated by Douglas-fir, ponderosa pine, and Douglas-fir/western larch exist in the project area, which may be potentially suitable foraging habitats. In the cumulative effects analysis area, roughly 1,351 acres (33%) of pileated woodpecker habitats exist on DNRC-managed lands dominated by Douglas-fir, ponderosa pine, and Douglas-fir/western larch. An additional 2,471 acres (60%) of potential feeding habitats exist on DNRC managed lands within the cumulative effects analysis area. Some suitable habitats likely exist on a portion of the 1,747 acres of forested habitats on other ownerships in the cumulative effects analysis area (23% of non-DNRC lands). Much of the 5,868 acres (77%) of shrubs, herbaceous areas, poorly stocked forested stands, and recently harvested stands on other ownerships in the cumulative effects analysis area is likely too open to be useful to pileated woodpeckers. Across the cumulative effects analysis area, ongoing tree mortality is reducing forested cover while increasing the amount of dead wood resources available for pileated woodpeckers.

Environmental Effects-Pileated Woodpecker

No Action Alternative: Direct and Indirect Effects

A negligible risk of adverse direct and indirect effects to pileated woodpeckers would be expected since: 1) no harvesting would occur; 2) no further changes in the amount of continuously forested habitats would be anticipated; 3) no appreciable changes to existing pileated woodpecker habitats would be anticipated; and 4) long-term, succession-related declines in the abundance of shade-intolerant tree species, which are valuable to pileated woodpeckers, would be anticipated.

No Action Alternative: Cumulative Effects

No disturbance of pileated woodpeckers would occur. Continued use of the cumulative-effects analysis area by pileated woodpeckers would be expected at similar levels as presently occurring. Thus, a negligible risk of adverse cumulative effects to pileated woodpeckers would be expected since: 1) no further changes to existing habitats would occur; 2) no further changes to the amount of continuously forested habitats available for pileated woodpeckers would be anticipated; and 3) long-term, succession-related changes in the abundance of shade-intolerant tree species, which are valuable to pileated woodpeckers, would occur.

Action Alternative: Direct and Indirect Effects

Pileated woodpeckers can to be tolerant of human activities (Bull and Jackson 1995), but might be temporarily displaced by any proposed activities that could occur during the nesting period. Proposed activities would not occur between April 1 and June 15, which would prevent potential disturbance during the early nesting season, but activities could disturb pileated woodpeckers should they occur during the later parts of the nesting season. Harvesting would reduce forested habitats for pileated woodpeckers in the project area. Roughly 189 acres (20%) of the potential nesting habitat along with 193 acres (12%) of potential foraging habitats would be harvested. Some of the stands proposed for commercial thinning treatments could be dense enough to receive some use by pileated woodpeckers for foraging following proposed treatments, but most of these stands would be temporarily unsuitable for pileated woodpeckers due to the openness of the stands following proposed treatments. Quality of these potential pileated woodpecker habitats would be reduced for 20-40 years, depending on the density of trees retained. Elements of the forest structure important for nesting pileated woodpeckers, including snags, coarse woody debris, numerous leave trees, and snag recruits would be retained in the proposed harvest areas. Since pileated woodpecker density is positively correlated with the amount of dead and/or dying wood in a stand (McClelland 1979), pileated woodpecker densities in the project area would be expected to be reduced on 390 acres. The silvicultural prescriptions would retain healthy ponderosa pine, western larch, and Douglas-fir while promoting the growth and/or regeneration of many of these same species, which would benefit pileated woodpeckers in the future by providing nesting, roosting, and foraging habitats. Any proposed pre-commercial thinning could improve potential pileated woodpecker habitat quality into the future. Thus, a minor risk of adverse direct and indirect effects to pileated woodpeckers would be anticipated since: 1) harvesting would reduce the amount of continuous-forested habitats available; 2) potential nesting habitats and foraging habitats would be removed; 3) snags and snag recruits would be removed; however, mitigation measures to retain some snags and snag recruits would be included, and 4) proposed treatments would promote seral species in the project area.

Action Alternative: Cumulative Effects

Reductions in pileated woodpecker habitat quality and the amount of continuously forested habitats available for pileated woodpeckers would occur. On DNRC-managed lands in the cumulative effects analysis area, roughly 1,162 acres (86%) of pileated woodpecker nesting and 2,278 acres (92%) of foraging habitats would not be altered. Snags, coarse woody debris, and potential nesting trees would be retained in the project area; however, future recruitment of these attributes may be reduced in a portion of the area by the proposed activities. Modifications to pileated woodpecker habitats under this alternative would be additive to habitat losses associated with past harvesting; continued use of the cumulative effects analysis area would be anticipated, but likely at a slightly reduced level. Continued maturation of stands across the cumulative-effects analysis area would provide future pileated woodpecker habitats. Thus, a minor risk of adverse cumulative effects to pileated woodpeckers would be anticipated since: 1) harvesting would further alter the amount of continuous forested habitats available in the cumulative-effects analysis area; 2) potential nesting and foraging habitats would be modified, but some habitats would persist in the cumulative-effects analysis area; 3) snags

and snag recruits would be removed; however, mitigation measures would retain some of these attributes; and 4) proposed treatments would promote seral species in a portion of the cumulative effects analysis area.

BIG GAME

BIG GAME WINTER RANGE

Issue

Proposed activities could remove forest cover on big game winter range, which could reduce the carrying capacity of the winter range

Introduction

Winter ranges enable big game survival by minimizing the effects of severe winter weather conditions. Winter ranges tend to be relatively small areas that support large numbers of big game, which are widely distributed during the remainder of the year. These winter ranges have adequate midstory and overstory to reduce wind velocity and intercept snow. The effect is that temperatures are moderated and snow depths are lowered, which enables big game movement and access to forage with less energy expenditure than in areas with deeper snow and colder temperatures. Snow depths differentially affect big game; white-tailed deer are most affected, followed by mule deer, elk, and then moose. Thus, removing cover that is important for wintering big game through forest management activities can increase their energy expenditures and stress in winter, but may increase forage production for use on summer range. Reductions in cover could ultimately result in a reduction in winter range carrying capacity and subsequent increases in winter mortality within local big game herds.

Analysis Area

Direct and indirect effects were analyzed for activities conducted in the 2,654-acre project area. Cumulative effects were analyzed on the combined winter ranges in the 33,095-acre cumulative effects analysis area described above in the Analysis Areas portion of this analysis. This scale includes enough area to support a couple hundred elk.

Existing Environment

Montana Department of Fish, Wildlife, and Parks identified white-tailed deer mule deer (2,364 acres; 89%), mule deer (1,796 acres; 68%), and elk (1,898 acres; 72%) winter range in the project area. These winter ranges are part of larger winter ranges in the area. Mature Douglas-fir, with lesser amounts of ponderosa pine and Douglas-fir/western larch, in the project area are providing attributes facilitating use by wintering big game. Approximately 1,670 acres of the project area (63%) appear to be providing snow intercept and thermal cover attributes for big game. Evidence of non-winter use by deer and elk was noted during field visits.

Within the cumulative-effects analysis area, big game species are fairly common and winter range for deer and elk are fairly widespread in the lower elevation areas. Roughly 8,072 acres (24%) of white-tailed deer, 10,501 acres (32%) of mule deer, and 15,372 acres (46%) of elk winter ranges exist in the cumulative effects analysis area; approximately 14,488 acres (44%) of forested habitats in the cumulative effects analysis area appears to have sufficient canopy closure to provide thermal cover and snow intercept for big game. In the recent past, timber harvesting in the cumulative effects analysis area has reduced thermal cover and snow intercept; ongoing timber management across the winter range could continue altering these attributes while potentially

disturbing wintering big game. Portions of the cumulative effects analysis area are in non-forested, herbaceous, or shrub types, which would not be expected to provide thermal cover or snow intercept in the future. Human disturbance within the winter range is associated with residential development, agricultural activities, recreational snowmobile use, commercial timber management, and several roads.

Environmental Effects-Big Game Winter Range

No Action Alternative: Direct and Indirect Effects

No direct or indirect effects to big game winter range would be anticipated since: 1) no further changes in the amount of mature-forested habitats in the winter range would be anticipated; 2) no further changes in thermal cover and snow intercept would be anticipated; and 3) human disturbance levels would not change.

No Action Alternative: Cumulative Effects

Continued winter use of the larger winter range would be expected. No further changes in thermal cover and snow intercept would be anticipated. Human disturbance levels would be anticipated to continue at current levels. No appreciable changes to big game distribution or habitat use would be anticipated. Thus, no cumulative effects to big game winter range would be expected since: 1) no further changes in the amount of mature-forested habitats in the winter range would be anticipated; 2) no further changes in thermal cover and snow intercept would occur; and 3) human disturbance levels would not change

Action Alternative: Direct and Indirect Effects

Proposed activities could occur in the winter, and disturbance created by mechanized logging equipment and trucks could temporarily displace big game animals during periods of operation for 3 to 5 years. However, winter logging provides felled tree tops, limbs, and slash piles that could concentrate feeding deer during nighttime and quiet periods when logging operations are shut down. Increasing short-term forage availability in this manner may partially offset some of the effects associated with temporary displacement caused by logging disturbance. There would be short-term added risk of disturbance and displacement of wintering animals that could result in moderate adverse effects associated with logging operations, short term road construction, and road use in the project area. However, no long-term effect to winter range carrying capacity or factors that would create long-term displacement or reduced numbers of big game would be anticipated.

Proposed activities would occur on roughly 390 acres (16%) of white-tailed deer winter range, 343 acres (19%) of mule deer winter range, and 384 acres (20%) of elk winter range; proposed activities would reduce canopy closure and potential winter use by big game on roughly 319 acres (19%) that likely have attributes facilitating considerable winter use by big game. Following proposed activities, canopy densities in these stands providing snow intercept and thermal cover would be reduced, reducing habitat quality for wintering big game. In general, it could take 30 to 50 years for these stands to regenerate and attain a size capable of providing thermal cover for big game. Proposed activities would not prevent big game movement through the project area appreciably in winter and could stimulate browse production in the units. Any pre-commercial thinning would not appreciably alter winter range attributes, but could shorten the time before some of these stands provide these attributes to big game in the future. Thus, a minor risk of adverse direct or indirect effects to big game winter range would be anticipated since: 1) the relatively short-term that logging activities could create disturbance in this area; 2) harvesting would alter a relatively small amount of the stands that are providing thermal cover and snow intercept habitats for big game species; and 3) portions of winter ranges for white-tailed deer, mule deer, and elk would be altered.

Action Alternative: Cumulative Effects

Disturbance and displacement associated with this alternative could be additive to any other disturbances that may be affecting wintering big game in the vicinity. Similarly, any harvesting that may be occurring in the cumulative effects analysis area could continue altering big game winter range and/or disturbing big game. Proposed activities would occur on roughly 390 acres (5%) of white-tailed deer winter range, 343 acres (3%) of mule deer winter range, and 384 acres (2%) of elk winter range; proposed activities would reduce canopy closure and potential winter use by big game on roughly 319 acres (2%) that likely have attributes facilitating considerable winter use by big game. Modifications to thermal cover and snow intercept in the project area could further alter the amount of the larger winter range providing these attributes for big game. Continued use of the larger winter range would be expected. Thus, a minor risk of adverse cumulative effects to big game would be anticipated since: 1) the relatively short-term that logging activities would create disturbance in a small portion of the cumulative effects analysis area; 2) a small percentage of the larger winter range would be altered; 3) availability of lower-quality cover in the vicinity that provides some opportunity for big game should they be displaced.

BIG GAME SECURITY HABITAT

Issue

Proposed activities could remove big game security cover, which could affect hunter opportunity and local quality of recreational hunting.

Introduction

Timber harvesting can increase vulnerability of big game animals by changing the size, structure, juxtaposition, and accessibility of areas that provide security during hunting season (Hillis et al. 1991). As visibility and accessibility increase within forested landscapes, moose, elk and deer have a greater probability of being observed and, subsequently, harvested by hunters, or they may become displaced or reduced in numbers due to lowered effective carrying capacity of the local habitat. Reduced cover attributable to logging and roads can also influence the effective use of habitat for big game species. Big game security habitat are nonlinear blocks of hiding cover that are more than 0.5 mile from open roads and are a minimum of 250 acres in size. For the purpose of this analysis, cover was considered generically as big game cover for deer, elk, and moose. Because elk are highly social, wide-ranging species, providing for their cover needs helps ensure that habitat needs for other ungulates, such as deer and moose are met as well. Because of their smaller size and behavioral differences, mule deer and white-tailed deer are able to use smaller cover patches more effectively for escape and security. Moose are a solitary, wide-ranging species capable of effectively using relatively small cover patches, and the hunting season for moose is heavily regulated, greatly reducing risk of overharvest by humans. Therefore, for this analysis it is assumed that if available security cover would provide for the needs of elk, it would also generally be adequate to meet the needs of moose, mule deer, and white-tailed deer.

Analysis Area

Direct and indirect effects were considered at the scale of the project area (2,654 acres). Cumulative effects were analyzed on the 33,095-acre area described above in the Analysis Areas portion of this analysis. This scale includes enough area to support hundreds of elk.

Existing Environment

Hiding cover is rather abundant in the project area. There is a fairly high amount (5.6 miles; 1.4 mi./sq. mi.) of open roads in the project area. Extensive non-motorized access to the project area exists given the presence of the open roads, relative gentle terrain, and the 13 miles of restricted roads in the project area. A portion of the project area does not contain big game security habitats due to the proximity to open roads, however roughly 513 acres (19% of project area) are distant enough and contain sufficient cover to be able to contribute to larger blocks of potential security habitat that extend beyond the project area.

Hiding cover varies within the cumulative effects analysis area with the recent modifications from timber management and other human activities, but the combination of topography, distance from open roads, and the presence of vegetation likely provides adequate cover for elk during the hunting season in the cumulative effects analysis area. In the cumulative effects analysis area, access for recreational hunting is relatively high, with several open roads (at least 53 miles, 1.03 miles/sq. mile) that facilitate access and numerous restricted roads (at least 188 miles; 3.6 miles/sq. mile) that could be used for non-motorized use. Within the cumulative effects analysis area, 2 patches (total of 15,847 acres; 48%) of potential security habitat exist. Both of these patches extend beyond the cumulative effects analysis area and contribute to larger blocks of potential security habitats.

Environmental Effects-Big Game Security Habitat

No Action Alternative: Direct and Indirect Effects

No forest management activities would occur in the project area. No risk of adverse direct or indirect effects to security habitat for moose, elk, mule deer, and white-tailed deer would be expected since: 1) no changes in existing security habitat would be anticipated and continued maturation of forest cover would improve big game security habitat; 2) the level of public access to the project area would not change; and 3) no appreciable changes to big game survival would be anticipated.

No Action Alternative: Cumulative Effects

No further changes in big game security habitat would be anticipated. Past harvesting has altered big game security habitat and allowed increased human access and any ongoing alterations in the cumulative effects analysis area could continue to alter big game security habitats. Continued maturation in previously harvested stands in the cumulative-effects analysis area would improve hiding cover in those areas. No other changes in disturbance to big game and potential mortality due to hunting would be anticipated. Thus, no adverse cumulative effects to big game security habitat would be anticipated since: 1) no further reductions in big game security habitat would occur and moderate levels of security habitat and hiding cover would persist within the cumulative-effects analysis area; 2) no changes in open roads, motorized access, or public access would occur; and 3) no appreciable changes to big game survival would be anticipated.

Action Alternative: Direct and Indirect Effects

Tree density within proposed units would be reduced on approximately 390 acres, including roughly 35 acres (7% of existing security cover) of forested stands in the project area contributing to big game security habitat. Hiding cover would be reduced within the proposed units, but 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 riparian habitats would reduce the potential effects of the hiding cover reductions. Some increases in sight distance would be anticipated. Any pre-commercial thinning would also increase sight distances while altering hiding cover. These increases in sight distance could increase elk vulnerability to hunting mortality as hunters would be able to detect elk at longer distances

within units. Increases in forage production in proposed units could benefit big game in the short-term. No changes in open roads or motorized access for the general public would occur. During all phases of the project, any roads opened with project activities would be restricted to the public and closed after the completion of project activities. Slight increases in non-motorized access would occur with the proposed construction of approximately 1.2 miles of new, restricted roads. Numerous contract stipulations would minimize the effect on the existing big game security habitat by prohibiting contractors from carrying firearms while conducting contract operations and prohibiting contractors from accessing restricted areas for other purposes, such as hunting. Collectively, a minor risk of adverse direct and indirect effects to big game security habitat would be anticipated since: 1) reductions to existing hiding cover would reduce the quality of the big game security habitat in the project area; 2) no changes in open roads, motorized access, or non-motorized access for the general public would be anticipated that could alter hunter access; and 3) negligible changes in big game survival would be anticipated.

Action Alternative: Cumulative Effects

Alterations of cover could reduce the quality of big game security habitat in a small portion of the cumulative effects analysis area and would be additive to past reductions in the cumulative effects analysis area. Continued maturation across the cumulative-effects analysis area would improve hiding cover and big game security habitat. No changes in public, motorized access or non-motorized access would be expected, which would not affect big game vulnerability in the cumulative effects analysis area. Hiding cover on a small amount (35 acres; <1%) of potential big game security habitats would be altered, but given the prescriptions, some level of cover would persist following proposed treatments. Overall negligible effects to big game security habitats would be expected given the small amount of area that would be altered, the location of those changes, and the lack of changes in open roads in the project area; considerable big game security habitats (48%) would persist in the cumulative effects. Negligible effects to big game survival would be anticipated. Thus, a minor risk of adverse cumulative effects to big game security habitat would be anticipated since: 1) quality of hiding cover in a small portion of the cumulative effects analysis area would be reduced, which would reduce the quality of the big game security habitat, but security habitat and hiding cover would persist in the cumulative-effects analysis area; 2) no changes in open roads, motorized access , or non-motorized access for the general public would be expected that would alter hunter access; and 3) negligible changes in big game survival would be anticipated.

Wildlife Mitigations

- A DNRC biologist will be consulted if a threatened or endangered species is encountered to determine if additional mitigations that are consistent with the administrative rules for managing threatened and endangered species (ARM 36.11.428 through 36.11.435) are needed.
- Minimize potential for disturbance to grizzly bears and numerous avian species by restricting activities between April 1 and June 15.
- 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.
- Provide connectivity for fisher, Canada lynx, and a host of other species by maintaining corridors of unharvested and/or lighter harvested areas along riparian areas, ridge tops, and saddles.

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