

## Environmental Assessment Checklist

**Project Name: S-curve Mastication PCT**  
**Proposed Implementation Date: 2021-2022**  
**Proponent: Missoula Unit, Southwest Land Office, Montana DNRC**  
**County: Missoula**

### Type and Purpose of Action

#### Description of Proposed Action:

The Missoula Unit of the Montana Department of Natural Resources and Conservation (DNRC) is proposing the S-curve Bull Pine Mastication PCT (pre-commercial thin) Project. The project is located approximately 6 aerial miles SW of Missoula, Montana. (refer to Attachments vicinity map A-1 and project map A-2) and includes the following sections:

Beneficiary	Legal Description	Total Acres	Treated Acres
Common Schools	Section 16 T12N R20W	640	44
Public Buildings			
MSU 2 <sup>nd</sup> Grant			
MSU Morrill			
Eastern College-MSU/Western College-U of M			
Montana Tech			
University of Montana			
School for the Deaf and Blind			
Pine Hills School			
Veterans Home			
Public Land Trust			
Acquired Land			

Objectives of the project include:

- Improve stand vigor and health; thereby increasing the residual trees natural resistance to bark beetle infestation

Proposed activities include:

Action	Quantity
<b>Proposed Harvest Activities</b>	<b># Acres</b>
Clearcut	
Seed Tree	
Shelterwood	

Action		Quantity
Selection		
Commercial Thinning		5
Salvage		
<b>Total Treatment Acres</b>		<b>5</b>
<b>Proposed Forest Improvement Treatment</b>		<b># Acres</b>
Pre-commercial Thinning		<b>39</b>
Planting		
<b>Proposed Road Activities</b>		<b># Miles</b>
New permanent road construction		
New temporary road construction		
Road maintenance		
Road reconstruction		
Road abandoned		
Road reclaimed		
<b>Other Activities</b>		

<b>Duration of Activities:</b>	3 months
<b>Implementation Period:</b>	Summer/fall 2021-2022

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)

## Project Development

### SCOPING:

DNRC specialists were consulted, including: Andrea Stanley-Hydrologist and Soil Scientist, Garrett Schairer-Wildlife Biologist, and Patrick Rennie-Archeologist.

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.

## **ALTERNATIVES CONSIDERED:**

### **No-Action Alternative:**

The proposed pre-commercial thinning would not occur. The stands would remain at overstocked levels with low production rates, increasing the chance of pine beetle infestation.

### **Action Alternative**

The proposed 44 acre unit would be mechanically thinned to an approximate 14' spacing in <10" DBH size classes. Residual trees >10" DBH would have all advanced regeneration removed under the canopy dripline. Preferred leave trees would be PP (ponderosa pine). Residual stand densities after post-treatment would be 200-225 trees per acre (TPA). Approximately 500 TPA would be removed. The stand is currently overstocked and post-treatment spacing would support more optimum conifer growth and health. All slash would be masticated (chipped) to a height less than 18 inches. The option to recover some value from the cut trees (in the form of pulp) would be evaluated at the time of implementation.

## Impacts on the Physical Environment

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

### VEGETATION:

#### **Vegetation Existing Conditions:**

The proposed project area is located approximately 6 aerial miles southwest of Missoula, Montana. It comprises approximately 44 acres of suppressed 1-10 inch DBH ponderosa pine averaging 10-40' tall. Average slopes range from 0-50%, primarily on a southern aspect. At the time of visit, there was no beetle activity observed within the stand; however, tree heights, crown ratios, and overall phenotypical traits suggest a severely suppressed stand. DNRC stand level inventory indicates the following stand attributes, habitat type - PSME/FESC and age class - 10-99 years-old. The proposed unit boundaries do not include the stand in its entirety. Unit boundary layout would exclude areas of the stand inaccessible to mechanical mastication.

Vegetation	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<b>No-Action</b>														
Noxious Weeds		X				x				X				
Rare Plants	X				X				x					
Vegetative community		X				X				X			N/A	2
Old Growth	X				x				X					
<b>Action</b>														
Noxious Weeds		x				x				X			yes	1
Rare Plants	X				X				X					
Vegetative community	X				X				X					
Old Growth	X				X				x					

#### ***Comments:***

- Existing weeds, mainly knapweed and houndstongue are common in the Missoula valley, especially along roads and disturbed areas. Increased activity in the project areas, as well as a more open canopy, can lead to an increased risk of noxious weeds.
- Competition among conifers would be reduced, allowing the remaining stands to capture more water, sunlight and nutrients, thereby having a positive direct, secondary and cumulative impact.

#### ***Vegetation Mitigations:***

- DNRC systematically completes roadside spraying, yet noxious weeds continue to occur. Weeds are spread by disturbance, equipment operations, animals and wind. Project areas

would be monitored for noxious weeds after implementation and herbicide may be applied when and if needed.

## SOIL DISTURBANCE AND PRODUCTIVITY:

### Soil Disturbance and Productivity Existing Conditions:

The proposed project area is located in the Grave Creek Range northwest of Lolo, Montana. The terrain is moderate to very steep mountain slopes. The majority of the project area occurs on a flat mountain top and ridge bench with elevations dropping steeply towards Warden Creek to the south and Deadman Gulch to the north. Then underlying geology is tilted beds of the Snowslip Formation composed of green and red argillite, siltite, and quartzite (Lewis, 1998). Elevations range between 4,300 and 4,550 feet. Rock outcrops occur along ridges, roadcuts and occasionally in shallow-soil mid-slope areas. No unstable or unique geologic sites have been identified in the project area.

Repp very gravelly loam soils (map units 90 and 91) occur within the project area and are well drained (NRCS, 2019) with moderate erosion risk on mild slopes and high risk on slopes over 40%. Displacement and compaction hazard as similarly moderate to high depending on slope (with risk increasing to high on slopes over 40%).

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		
<b>No-Action</b>														
Physical Disturbance (Compaction and Displacement)	X				X				X					
Erosion	X				X				X					
Nutrient Cycling	X				X				X					
Slope Stability	X				X				X					
Soil Productivity	X				X				X					
<b>Action</b>														
Physical Disturbance (Compaction and Displacement)			X								X		yes	1
Erosion			X								X		yes	1
Nutrient Cycling		X			X					X			yes	2
Slope Stability	X				X				X					
Soil Productivity		X			X					X			yes	2

### **Comments:**

1. Soils within the project area would be protected from physical disturbance and erosion by the application of mitigation measures listed below including limiting operations to dry or frozen soil conditions and exclusion of yarding/skidding operations to shallow slopes.

2. Nutrient cycling and soil productivity would be maintained and protected by the retention of biomass to the site by mastication and the limiting of soil disturbance and erosion.

**Soil Mitigations:**

- To prevent soil compaction ground-based mechanical felling and yarding will 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.
- Ground-based equipment would be operated on slopes 0 to 45% except for short stretches and will avoid crossing or running up and down topographic draws.
- A portion of CWD would be retained and well-distributed in harvest and skidding areas by mastication and as large limbs. This will increase available nutrients from decomposing organic matter, protect soil resources from wind and water erosion, increase localized soil moisture retention, and would moderate localized soil temperatures. At the completion of harvesting, an average concentration of 5 tons/acre of fine and course woody debris would be well distributed within harvest, skidding, and landing areas.

**References**

Lewis, R.S., 1998, Preliminary Geologic Map of the Montana Part of Missoula West 30' X 60' Quadrangle. Compiled and Mapped by Reed S. Lewis. Montana Bureau of Mines and Geology Open File Report MBMG 37.

NRCS (National Resource Conservation Service), 2019, Soil Survey of the Missoula County Area, Montana. Version 17, Sept 16, 2019.

**WATER QUALITY AND QUANTITY:**

**Water Quality and Quantity Existing Conditions:**

The proposed project area is located in the Deadman Gulch and Worden Creek watersheds. Both of these watersheds are tributary to the Bitterroot River. The project area does not include any classified streams and is located at least several hundred feet from any classified streams.

The road network accessing the project area is located within the Deadman Gulch watershed. Approximately 4.5 miles of existing road is owned/maintained by the DNRC. The majority of the roads planned for use meet BMP standards aimed at protecting water quality. The condition of existing roads is expected to be maintained during and after project implementation.

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		
<b>No-Action</b>														
Water Quality		X				x				X				

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		
Water Quantity		X				X				X				
Action														
Water Quality		X				X				X			yes	1, 2
Water Quantity		x				X				X			no	3

**Comments:**

1. The distance between the project and the nearest surface waters, combined with soil mitigation measures listed earlier in this analysis, result in a low risk of a direct effect of the project on water quality.
2. Existing road BMPs will be maintained during and after project implementation. Limited hauling (less than 10 trips) is not expected to have an effect on the road system. Appropriate repairs will be completed if road or road BMP degradation occurs.
3. The project has a low potential to increase runoff from decreased interception and transpiration from removed or masticated vegetation. The project involves a small area of the existing watershed and any potential change would not be measurable.

**Water Quality & Quantity Mitigations:**

- The Montana Administrative Rules for Forest Management; Watershed Management and watershed RMS would be implemented. BMP's and SMZ's would be implemented. Unit boundaries were all buffered to exclude the SMZ's.

**FISHERIES:**

**Fisheries Existing Conditions:**

The project area is not located near streams and due to its intermittent and/or ephemeral flows, Deadmans Gulch where the existing project road network is located, is assumed not to support fish.

Fisheries	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<i>Action</i>														
Sediment		X			X					X			yes	1
Flow Regimes		X			X					X			no	2
Woody Debris	X				X				X					
Stream Shading	X				X				X					
Stream Temperature	X				X				X					
Connectivity	X				X				X					
Populations	X				X				X					

Fisheries	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<b>No-Action</b>														
Sediment		X			X					X			yes	1
Flow Regimes		X			X					X			no	2
Woody Debris	X				X				X					
Stream Shading	X				X				X					
Stream Temperature	X				X				X					
Connectivity	X				X				X					
Populations	X				X				X					

**Comments:**

1. No fisheries streams occur within the proposed units. Existing roads would meet BMPs.
2. The project has a low potential to increase runoff from decreased interception and transpiration from removed or masticated vegetation. The project involves a small area of the existing watershed and any potential change would not be measurable.

**Fisheries Mitigations:**

- BMP's would be implemented on all DNRC-managed roads accessing the project area and within the unit. Slash or chips created during the thinning process would be left in the unit.

**WILDLIFE:**

**Existing Conditions:** The project area contains a variety of ponderosa pine stands. Grizzly bears have been documented in the vicinity of the project area in the past; the project area is outside of the grizzly bear recovery zone and the 'non-recovery occupied habitat' as mapped by grizzly bear researchers and managers to address increased sightings and encounters of grizzly bears in habitats outside of recovery zones. Potential habitat exists in the project area for flammulated owls. Gray wolves have been in the vicinity, but use of the project area has not been documented. Elk, white-tailed deer, and mule deer winter ranges exists in the project area; considerable summer use by deer and elk likely occurs. Portions of the project area likely contributes to a larger block of big game security habitat in the vicinity.

**No-Action:** Existing stands would continue to mature in a fairly dense condition. Stand growth and maturation would continue at relatively slow speeds, which would delay usefulness of these stands longer into the future for a variety of wildlife that use larger diameter forested conditions. No further potential for disturbance to any wildlife species would be anticipated. Continued wildlife use at levels similar to present conditions would be anticipated.

**Action Alternative (see Wildlife table below):**

Wildlife	Impact								Can Impact be Mitigated?	Comment Number
	Direct and Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High		
Threatened and Endangered Species										



Wildlife	Impact								Can Impact be Mitigated?	Comment Number
	Direct and Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High		
<b>Grizzly bear</b> ( <i>Ursus arctos</i> ) Habitat: Recovery areas, security from human activity		X				X			Y	1
<b>Canada lynx</b> ( <i>Felix lynx</i> ) Habitat: Subalpine fir habitat types, dense sapling, old forest, deep snow zone	X				X					2
<b>Yellow-Billed Cuckoo</b> ( <i>Coccyzus americanus</i> ) Habitat: Deciduous forest stands of 25 acres or more with dense understories and in Montana these areas are generally found in large river bottoms	X				X					2
<b>Sensitive Species</b>										
<b>Bald eagle</b> ( <i>Haliaeetus leucocephalus</i> ) Habitat: Late- successional forest more than 1 mile from open water	X				X					2
<b>Black-backed woodpecker</b> ( <i>Picoides arcticus</i> ) Habitat: Mature to old burned or beetle-infested forest	X				X					2
<b>Coeur d'Alene salamander</b> ( <i>Plethodon idahoensis</i> ) Habitat: Waterfall spray zones, talus near cascading streams	X				X					2
<b>Columbian sharp- tailed grouse</b>	X				X					2

Wildlife	Impact								Can Impact be Mitigated?	Comment Number
	Direct and Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High		
( <i>Tympanuchus Phasianellus columbianus</i> ) Habitat: Grassland, shrubland, riparian, agriculture										
<b>Common loon</b> ( <i>Gavia immer</i> ) Habitat: Cold mountain lakes, nest in emergent vegetation	X				X					2
<b>Fisher</b> ( <i>Martes pennanti</i> ) Habitat: Dense mature to old forest less than 6,000 feet in elevation and riparian	X				X					2
<b>Flammulated owl</b> ( <i>Otus flammeolus</i> ) Habitat: Late- successional ponderosa pine and Douglas-fir forest		X				X			Y	3
<b>Gray Wolf</b> ( <i>Canis lupus</i> ) Habitat: Ample big game populations, security from human activities		X				X			Y	4
<b>Harlequin duck</b> ( <i>Histrionicus histrionicus</i> ) Habitat: White- water streams, boulder and cobble substrates	X				X					2
<b>Northern bog lemming</b> ( <i>Synaptomys borealis</i> ) Habitat: Sphagnum meadows, bogs, fens with thick moss mats	X				X					2
<b>Mountain plover</b>	X				X					2

Wildlife	Impact								Can Impact be Mitigated?	Comment Number
	Direct and Indirect				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High		
( <i>Charadrius montanus</i> ) Habitat: short-grass prairie & prairie dog towns										
<b>Peregrine falcon</b> ( <i>Falco peregrinus</i> ) Habitat: Cliff features near open foraging areas and/or wetlands	X				X					2
<b>Pileated woodpecker</b> ( <i>Dryocopus pileatus</i> ) Habitat: Late-successional ponderosa pine and larch-fir forest	X				X					2
<b>Townsend's big-eared bat</b> ( <i>Plecotus townsendii</i> ) Habitat: Caves, caverns, old mines	X				X					2
<b>Wolverine</b> ( <i>Gulo gulo</i> ) Habitat: Alpine tundra, and boreal and mountain forests, persistent spring snow	X				X					2
<b>Big Game Species</b>										
<b>Elk</b>		X				X			Y	5
<b>Whitetail</b>		X				X			Y	5
<b>Mule Deer</b>		X				X			Y	5
<b>Bighorn Sheep</b>	X				X					
<b>Other</b>										

**Comments:**

1. The project area is outside of the grizzly bear recovery zone and the 'non-recovery occupied habitat' as mapped by grizzly bear researchers and managers to address increased sightings and encounters of grizzly bears in habitats outside of recovery zones. Occasional use by grizzly bears could occur as bears continue moving out of the recovery zone to the north of the project area and grizzly bears have been documented in the vicinity in the past. Activities would occur during the non-denning period, thus disturbance to grizzly bears could occur. Negligible changes to grizzly bear habitats would occur. No changes to open road

densities, security habitats, or human–related food, garbage, or other unnatural grizzly bear attractants would occur.

2. The project area is either out of the range of the normal distribution for this species or suitable habitat is not present. Thus, no direct, indirect, or cumulative effects would be anticipated.
3. Roughly 44 acres of flammulated owl habitats would be thinned, which would further open the canopy while favoring ponderosa pine and Douglas-fir. The more open stand conditions, the retention of fire adapted tree species, and the maintenance of snags would move the proposed project area toward historical conditions, which is preferred flammulated owl habitat. Proposed activities could occur during the flammulated owl nesting season, which could introduce some disturbance of nesting owls, but proposed activities would not affect nesting structures.
4. Gray wolves are in the vicinity and could be using the project area for hunting, breeding, or other life requirements. Proposed activities could occur during the spring when wolves are most sensitive at den or rendezvous sites, but mitigations would be included that would limit potential disturbance should a den or rendezvous site were identified within 1 mile of proposed activities. Deer and elk winter range exist in the project area (see comment 5). Minor changes to existing thermal cover on these winter range areas would be anticipated, but no appreciable change in big game use would be anticipated, thus limited effects to wolf prey species would be anticipated.
5. Elk and deer likely use the project area much of the non-winter period. Approximately 44 acres of white-tailed deer winter range exists in the proposed thinning units. Minor reductions to the thermal cover attributes in these stands would be anticipated with the proposed activities. Negligible changes to security habitat would occur, but no changes to open roads or motorized human access would occur.

***Wildlife Mitigations:***

- A DNRC biologist will be consulted if a threatened or endangered species is encountered to determine if additional mitigations that are consistent with the administrative rules for managing threatened and endangered species (ARM 36.11.428 through 36.11.435) are needed.
- Motorized public access will be restricted at all times on restricted roads that are opened for proposed activities.
- Contractors and purchasers conducting contract operations would be prohibited from carrying firearms while on duty.
- Food, garbage, and other attractants would be stored in a bear-resistant manner.

### AIR QUALITY:

Air Quality	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<b>No-Action</b>														
Smoke	x				x				x					
Dust	x				x				X					
<b>Action</b>														
Smoke	x				x				X					
Dust		x				x				x			Yes	1

**Comments:**

1. Increased road traffic from contractor(s) commuting to thinning units may increase dust.

**Air Quality Mitigations:**

- Dust from thinning operations will be monitored.

### ARCHAEOLOGICAL SITES / AESTHETICS / DEMANDS ON ENVIRONMENTAL RESOURCES:

Will Alternative result in potential impacts to:	Impact												Can Impact Be Mitigated?	Comment Number
	Direct				Secondary				Cumulative					
	No	Low	Mod	High	No	Low	Mod	High	No	Low	Mod	High		
<b>No-Action</b>														
Historical or Archaeological Sites	x				x				x					
Aesthetics		x				x				x			N/A	2
Demands on Environmental Resources of Land, Water, or Energy	x				x				x					
<b>Action</b>														
Historical or Archaeological Sites	x				x				x					1
Aesthetics		x				x				x			Yes	3
Demands on Environmental Resources of Land, Water, or Energy	x				x				x					

**Comments:**

1. A Class I (literature review) level review was conducted by the DNRC staff archaeologist for the area of potential effect (APE). This entailed inspection of project maps, DNRC's sites/site leads database, land use records, General Land Office Survey Plats, and control cards. The

Class I search revealed that no cultural or paleontological resources have been identified in the APE. Because historic logging has occurred in or near the APE, because the Holocene age soils in the APE are thin, and because the local geology is not likely to produce caves, rock shelters, or sources of tool stone, no additional archaeological investigative work will be conducted in response to this proposed development. However, if previously unknown cultural or paleontological materials are identified during project related activities, all work will cease until a professional assessment of such resources can be made.

2. No-Action in an overstocked, nearly homogenous stand may result in an insect or disease infestation that would cause high amounts of mortality. Many perceive stand replacing mortality aesthetically unpleasing, especially in the first few years when needle discoloration is apparent from long sight distances.

3. Slash and masticated chips generated from the project may have an “unnatural” appearance for 1-2 years post-treatment.

**Mitigations:**

3. Post-treatment, slash and chips within the units will settle and decompose. The post-treatment prescription has been designed to visually mimic the disturbance that would have occurred naturally during a low-intensity fire.

**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.*

- Deadman Gulch Timber Sale Environmental Assessment March 2003 MSO Unit

## Impacts on the Human Population

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

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

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

**Comments:**

1. The project size is of a scale that would not have a large effect on local employment; however, it may provide a private contractor with 1-3 months of employment for his/herself and his/her employees.

**Mitigations:**

N/A

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

- N/A

**Other Appropriate Social and Economic Circumstances:**

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

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

**Action:** The proposed mastication project would initially generate cost to the Trust; however, this would be an investment in increased productivity for the stand. This increased productivity should result in increased volume, available for harvest at an earlier date. Direct Costs associated with this project are estimated to be \$25,500. This figure is achieved by multiplying the estimated number of acres (30), by the estimated cost per acre (\$850). This cost estimate is assumed using the costs associated with previous SWLO projects. The assumed cost should be recovered, by a net increase in growth, thus lessening rotation between harvests by up to thirty years

**References**

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

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

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

NO

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

NO



**Environmental Assessment Checklist Prepared By:**

**Name: Scott Allen**  
**Title: Management Forester**  
**Date: September 3, 2019**

**Finding**

**Alternative Selected**

Action Alternative

**Significance of Potential Impacts**

- A. The Action Alternative meets the specific Objectives of the Proposed Action as described on page 1 of the EA. The Action Alternative is likely to produce an economic return to the Common Schools Trust in the long run, while providing a mechanism whereby the existing timber stands would be moved towards conditions more like those which existed historically.
- B. The analysis of identified issues did not disclose any reason compelling the DNRC to not implement this pre-commercial thinning project.
- C. The Action Alternative includes mitigation activities to address environmental concerns identified during the project analysis.

**Need for Further Environmental Analysis**

☐

EIS

☐

More Detailed EA

☒

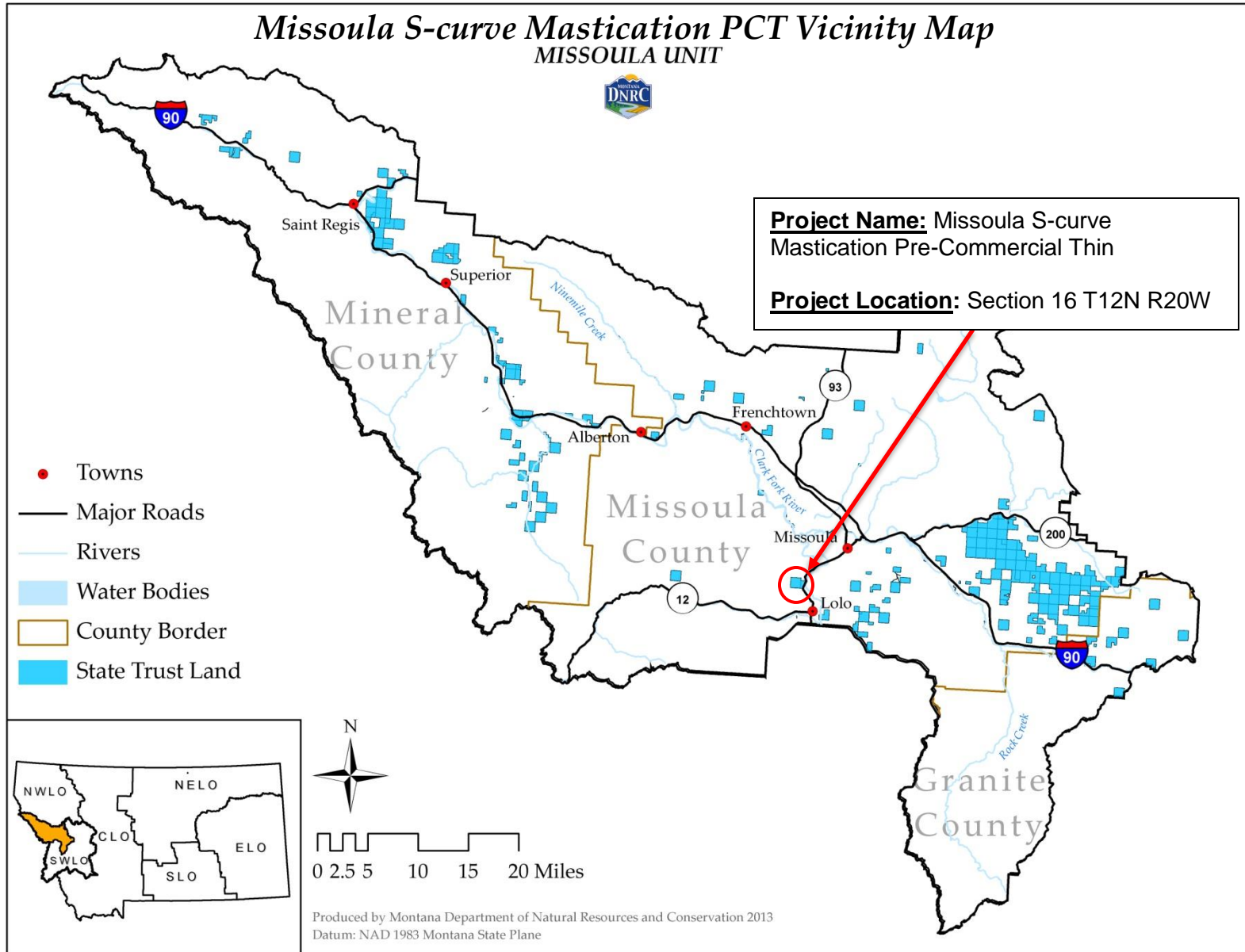
No Further Analysis

**Environmental Assessment Checklist Approved By:**

**Name: Amy Helena**  
**Title: Forest Management Supervisor**  
**Date: 12/18/2019**  
**Signature: /s/ Amy Helena**

## **Attachment A- Maps**

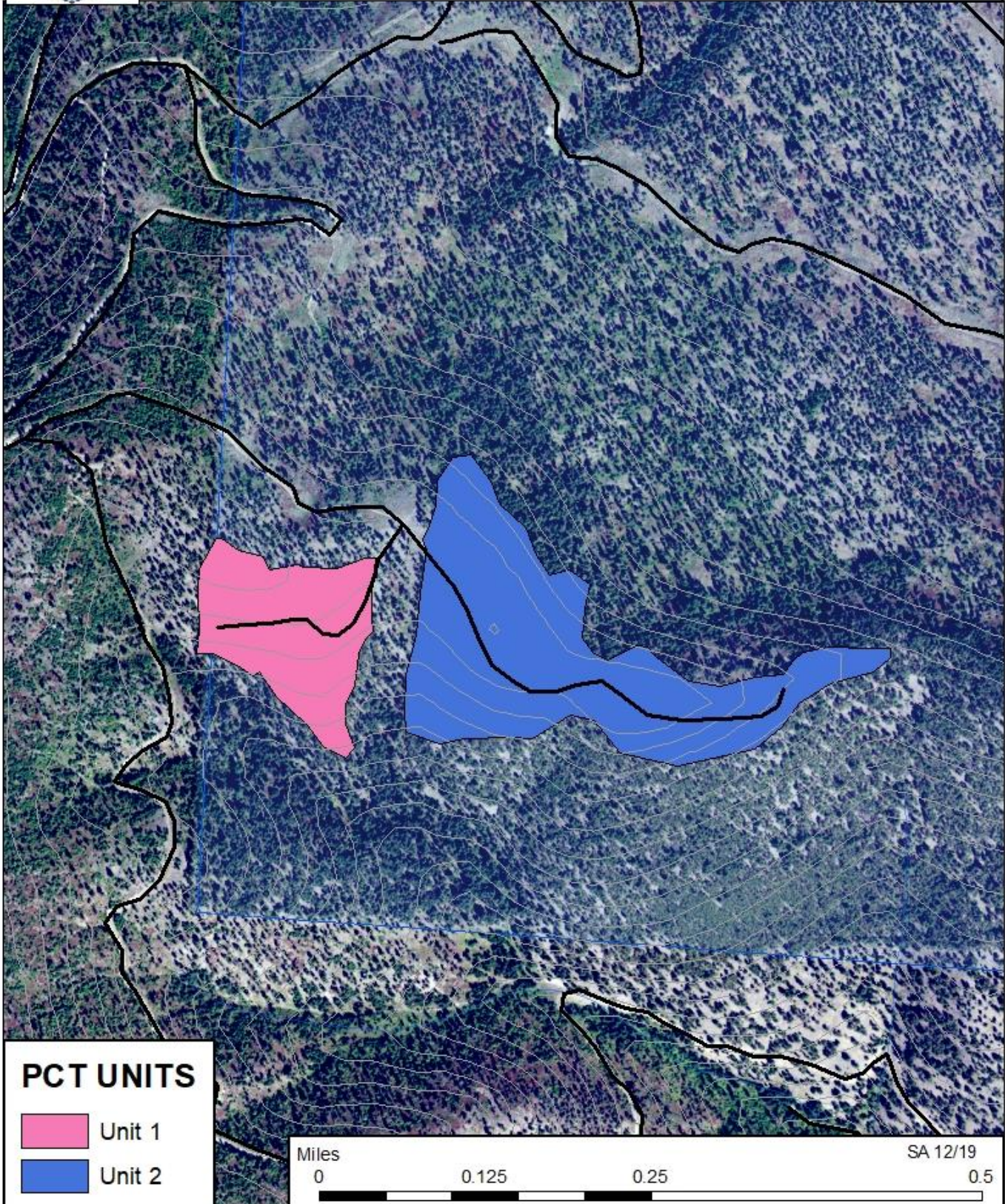
A-1: Timber Sale Vicinity Map







## Missoula S-curve bull pine mitigation



### PCT UNITS

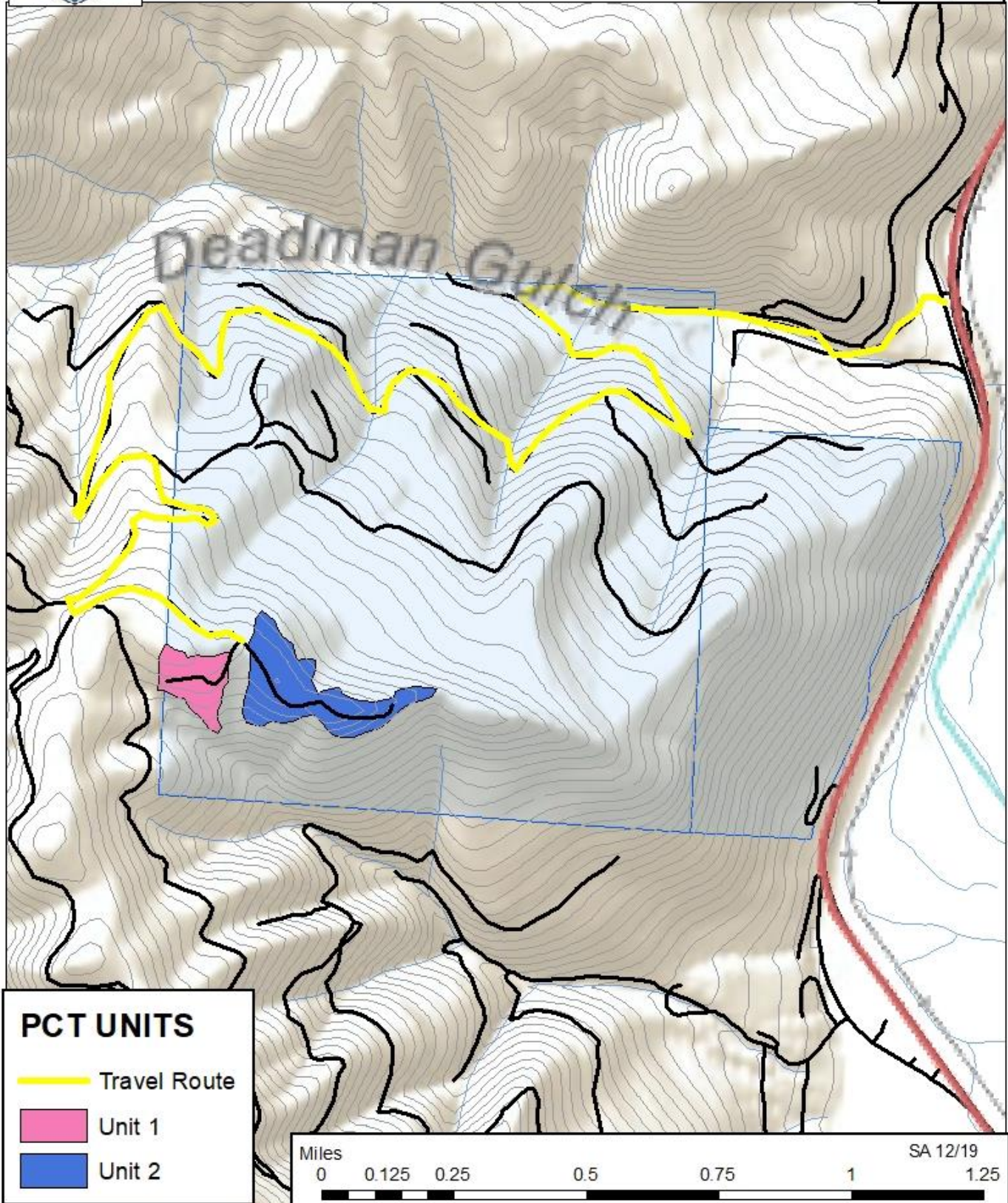
-  Unit 1
-  Unit 2

Miles 0 0.125 0.25 0.5 SA 12/19





## Missoula S-curves Travel Map



### PCT UNITS

-  Travel Route
-  Unit 1
-  Unit 2

Miles  
0 0.125 0.25 0.5 0.75 1 1.25

SA 12/19