

Missouri Thin
Logging Feasibility Report

Alsea Watershed
Central Coast Ranger District
Siuslaw National Forest

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Summary

Missouri Thin is comprised of 12 units. Current trees per acre range between 140 and 350 (TPA); based on stand-exam data. After thinning the units will have areas consisting of 50 to 75 TPA. Stand exam information was used for estimated volumes. The total sale acreage is estimated at 288; total volume is estimated at 5,634 MBF or 10,348 CCF. The project area is located in Sec. 11, 14, 15, 23, 24, T. 14 S., R. 9 W.; Lincoln County, Oregon.

Douglas-fir is the dominant species in all the units. As much as is feasible, hardwoods will not be felled in the units. No Pacific yew was observed during stand exams and logging systems analyses; if any Pacific yew is found during operations, none will be felled. Minimum DBH for trees to be harvested is 7 inches. Trees less than 7 inches will be protected where practical.

GIS was used to calculate the length for most roads and the acres for the units. A string box was used to determine the length for temporary roads (see Table 1.).

System roads 3415, 3415117, 3412, 3310, and 3310120 will generally require roadside brushing, grading, and additional rock.

Table 1. Estimated quantities for landings, tailtrees, intermediate supports and deadman anchors

*G = guylines anchor; T = tailhold anchor (cat tractor on existing landing is recommended)

Unit	Temporary Road Reopening (Feet)	New Temporary Road Building (Feet)	Number of Landings	Number of Tailtrees	Number of Intermediate Supports	Number of Special Anchors (G/T)*
1	0	0	5	15	0	none
2	0	0	7	17	0	none
3	1,510	165	9	36	4	none
4	0	0	6	17	4	none
5	0	0	6	29	2	none
6	2,300	372	11	50	1	none
8	0	0	2	4	0	none
9	580	0	3	9	2	none
10	3,864	625	14	23	0	none
11	1,130	0	9	12	2	none
12	220	85	3	7	0	Eq 2, G
13	1,355	0	3	16	2	none
Total	10,959	1,247	78	235	17	Eq 2, G

Resource Management Objectives

The stand prescriptions, unit layout, and logging and transportation plans will be designed to meet the following resource objectives:

- Speed the development of late-successional forest characteristics in managed stands by thinning these heavily stocked stands to maintain stand health, promote tree growth, and enhance stand diversity.
- Manage riparian reserves consistent with the Northwest Forest Plan's Aquatic Conservation Strategy.
- Protect water quality and fish habitat in all streams.
- Minimize soil disturbance during all phases of harvest activity.
- Protect T&E wildlife species by limiting operating seasons.

Timber Characteristics

Refer to the cruise data for information about timber characteristics.

Recommended Logging Systems

A. Logging System Requirements

The following requirements are designed to meet the resource management objectives stated in section I.

- Except during lateral yarding, the skyline must be capable of keeping the leading end of logs suspended above the ground during inhaul.
- Where yarding occurs across streams, the skyline system must be capable of keeping the entire length of logs fully suspended above streams during inhaul.
- Where the skyline passes through stream buffers, skyline corridors will be spaced so that no more than 20% of the existing canopy in the buffers will be removed in a given 1,000 foot reach of stream.
- Minimum skyline corridor spacing shall be 120 feet and maximum corridor width shall not exceed twelve (12) feet.
- Ground-based yarding shall be limited to slopes of 35 percent or less and use designated skid trails. All designated skid trails must be approved by the sale administrator.

B. Acceptable Yarding Equipment

The skyline system should be capable of transporting logs for a horizontal distance of up to 1,400 feet. A rigging length of up to 2,100 feet will be necessary to reach tailholds.

The skyline system must: (1), be capable of meeting the log suspension requirements stated above; (2), be capable of lateral yarding; and (3), be capable of being rigged in a multi-span configuration (units 3, 4, 5, 6, 9, 11 and 13).

The carriage must be capable of maintaining a fixed position on the skyline, while lateral yarding up to 120 feet on either side of the skyline, and it must be capable of passing support jacks where intermediate supports are used.

Ground-based equipment must be able to provide suspension of the leading end of logs during skidding (units 3, 10, and 11).

C. Logging System Specifications

Table 3 shows the specifications of the logging systems that were used in the analysis for this project. These systems are recommended because they are available, capable of meeting the resource management objectives and logging system requirements, reduce the number of intermediate supports needed, and are capable of doing the job economically.

Table 3. Recommended logging system specifications

Yarder	Madill 6150, SPCM
Tower height	50 feet
Skyline diameter/length/type	0.875 inches/2,000 feet/Swaged
Mainline diameter/length/type	0.625 inches/2,300 feet/Swaged
Haulback diameter/length/type	0.5 inches/4,300 feet/Swaged
Strawline diameter/length/type	N/A
Carriage	Eagle Eaglet; 1,200 pounds

Other equipment—Hardware for rigging tailtrees (2 sets) and intermediate supports (3 sets); crawler tractor for landing clearing; equipment for a guyline and tailhold anchors; a Yoader or Modified Loader; ground-based equipment for yarding logs on designated slopes of 30 percent or less; and a loader/shovel.

Logging Plan Narrative

This section discusses the logging and transportation plans for each unit (See Unit Summary Sheets).

A. General Information

- All unit boundaries are marked with blue-paper or aluminum tags and yellow ribbon.
- All landings are marked with aluminum tags, and solid blue and solid white ribbon.
- Minor clearing is required for some landings.
- Landings are located to minimize yarding over buffered streams and headwalls.

- All roads and landings will be reviewed on the ground by a District hydrologist and the Forest transportation planner for the timber-sale appraisal and contract.
- Log hauling will be limited to the **dry season on most temporary roads** because of the cost associated with the quantity of rock needed.
- There are a few streams and associated headwalls that exist within the units. These areas will be buffered and excluded from the units. Buffer boundaries will be marked on the ground to protect slope stability and water quality. Full-log suspension is required over streams and headwalls.
- Skyline landings generally use fan-shape and parallel settings, with most turnroads using single-span configurations. Tailholding on opposing slopes is emphasized, where opportunities exist, to reduce the need for tailtrees and intermediate supports.
- Where yarding will occur over streams, some areas may lack the deflection necessary to obtain full suspension of logs during whole-tree yarding; therefore, shorter log lengths will be required over these areas.
- Most of the units will require some loader/shovel logging along the roadway or on designated skid trails.

Skyline Profile Data and Payload Analyses (see Appendix A)

Profile and skyline payload analyses were conducted with SkylineXL_2. Adequate tree sizes are available for tailtrees and intermediate supports, using a rigging height of up to 40 feet (most profile analyses figured tailtrees and intermediate supports at a height of 30 feet), and a skyline diameters of 0.75 or 0.875 inches. Adequate payloads equate to three average logs or two long logs (whole-tree length, measured from the stump cut to a 5" top).

Equipment Access and Haul Route

The sale location and probable equipment access and haul routes are displayed on the vicinity map in the timber sale contract. No access or haul route problems are anticipated. The forest transportation planner has verified the following haul routes.

Log haul for unit 1, 2, 3, 4, part of unit 5 and part of 6 is planed to haul north on the 3415 to Hwy 34.

Log haul for part of unit 5 and 6 and all of 8 is planed to haul south on the 3415 to the 3412 and east to Hwy 34.

Log haul for unit 9, 10, and 11 is planed to haul east on the 3412 to Hwy 34.

Log haul for unit 12 and 13 is planed to haul north on the 3310 to the 3412 and then east to Hwy 34.

Appendix A

SkylineXL and Profile Data

Appendix B

Appraiser Information

Watershed— Alsea Watershed

Environmental Assessment- The East Alsea Landscape Management Project EA (May 2011) covers the sale area.

Survey monuments—see unit summary sheets and logging map.

Dump sites— none

Appendix C

Logging Plan Overlays for Aerial Photos

Unit	Temporary Road Reopening (Feet)	New Temporary Road Building (Feet)	Number of Landings	Number of Tailtrees	Number of Intermediate Supports	Number of Special Anchors (G/T)*
1	0	0	5	15	0	none
2	0	0	7	17	0	none
3	1,510	165	9	36	4	none
4	0	0	6	17	4	none
5	0	0	6	29	2	none
6	2,300	372	11	50	1	none
8	0	0	2	4	0	none
9	580	0	3	9	2	none
10	3,864	625	14	23	0	none
11	1,130	0	9	12	2	none
12	220	85	3	7	0	Eq 2, G
13	1,355	0	3	16	2	none
Total	10,959	1,247	78	235	17	Eq 2, G

Missouri Thin Unit Summary Sheet

Central Coast Ranger District

General Information

Unit # : 3 **Stand # :** 504275
Legal Location: Sec. 11, T. 14 S., R. 9 W., W.M. **Acres:** 56
Photo Number: 689-99 **Year of Origin:** 1979
Unit Designation: DxD **Residual TPA Post Harvest:** 50/70
Recon by/Date: Casey Hawes

Volume Information

Source of volume estimate: Stand Exam **Estimated Volume:** 13/12 MBF/acre

Special Considerations

	Yes		No			Yes		No	
Power Lines				x	Fences	x			
Invasive/Sensitive Plants				x	Heritage Sites				x
Dump Sites				x	Meadows				x
Survey Monuments				x	Water Systems				x
Improvements				x	Other				x

Road and Landing Information

Landing	Road Type	Road Length	Road Status		Landing	Road Type	Road Length	Road Status
A	non-system	410 ft	Existing					
B	non-system	165 ft	New					
C	non-system	305 ft	Existing					
D	non-system	245 ft	Existing					
E	3415		Existing					
F	non-system	130 ft	Existing					
G	non-system	420 ft	Existing					
H	3415		Existing					
I	3415117		Existing					

Notes

Fence- Some research plots in stand that have fence around the plot. These plots/ do not require any protection.

Three temporary roads are located in this unit. There is one temporary road to landing A. The second temporary road is to landings B, C, and D is 715 feet in total length. The third temporary road is to landings F and G is 550 feet in total length. See above for distance between landings.

The second and third temporary roads listed above are aligned to haul south, however it is closer to highway 34 to haul north on the 3415 road. Log trucks hauling off of these temporary roads can haul south to the junction of the 3415 and 3415117 roads and turnaround to haul north on the 3415 to highway 34.

Note to Presale- Two acres of Meadows planned to be created in this unit. Place meadow in Phellinus pocket.

Waste material on temporary roads and landings C and G will need to be leveled when opening for harvest operations.

Missouri Thin Unit Summary Sheet

Central Coast Ranger District

General Information

Unit # : 4 **Stand # :** 504286
Legal Location: Sec. 11, T. 14 S., R. 9 W., W.M. **Acres:** 29
Photo Number: 608-99 **Year of Origin:** 1981
Unit Designation: DxD **Residual TPA Post Harvest:** 75
Recon by/Date: Casey Hawes

Volume Information

Source of volume estimate: Stand Exam **Estimated Volume:** 11.5

Special Considerations

	Yes		No			Yes		No	
Power Lines				x	Fences				x
Invasive/Sensitive Plants	x				Heritage Sites				x
Dump Sites				x	Meadows				x
Survey Monuments				x	Water Systems				x
Improvements				x	Other				x

Road and Landing Information

Landing	Road Type	Road Length	Road Status		Landing	Road Type	Road Length	Road Status
A	3415		Existing					
B	3415		Existing					
C	3415		Existing					
D	3415		Existing					
E	3415		Existing					
F	3415		Existing					

Notes

Invasive Species- English Holly present in stand.

Note to Presale- 2 Acres of Gaps planned for this unit.

Missouri Thin Unit Summary Sheet

Central Coast Ranger District

General Information

Unit # : 6 **Stand # :** 504312
Legal Location: Sec. 11,14, and 15, T. 14 S., R. 9 W., W.M. **Acres:** 54
Photo Number: 507-123 **Year of Origin:** 1959
Unit Designation: DxD **Residual TPA Post Harvest:** 50
Recon by/Date: Casey Hawes

Volume Information

Source of volume estimate: Stand Exam **Estimated Volume:** 15.5 MBF/acre

Special Considerations

	Yes		No			Yes		No	
Power Lines				x	Fences				x
Invasive/Sensitive Plants				x	Heritage Sites				x
Dump Sites				x	Meadows				x
Survey Monuments				x	Water Systems				x
Improvements				x	Other				x

Road and Landing Information

Landing	Road Type	Road Length	Road Status		Landing	Road Type	Road Length	Road Status
A	non-system	145 ft	Existing		K	non-system	225	Existing
B	non-system	890 ft	Both					
C	non-system	107 ft	Existing					
D	non-system	610 ft	Existing					
E	non-system	260 ft	Existing					
F	non-system	315 ft	Existing					
G	3415		Existing					
H	3415		Existing					
I	3415		Existing					
J	non-system	120 ft	New					

Notes

The total temporary road length in unit 6 is 2672 feet. See above for individual temporary road length and distances between landings.

The temporary road to landing B and C consists of 252 feet of new construction and 745 feet of existing temporary road. There is a section of road 20-23% favorable haul. Appraise for truck assist.

There are a few landings that will require new construction.

Missouri Thin Unit Summary Sheet

Central Coast Ranger District

General Information

Unit # : 10 **Stand # :** 504355
Legal Location: Sec. 14, T. 14 S., R. 9 W., W.M. **Acres:** 33
Photo Number: 507-122 **Year of Origin:** 1974
Unit Designation: DxD **Residual TPA Post Harvest:** 55
Recon by/Date: Casey Hawes

Volume Information

Source of volume estimate: Stand Exam **Estimated Volume:** 13 MBF/acre

Special Considerations

	Yes	No		Yes	No
Power Lines		x	Fences		x
Invasive/Sensitive Plants		x	Heritage Sites		x
Dump Sites		x	Meadows		x
Survey Monuments		x	Water Systems		x
Improvements		x	Other		x

Road and Landing Information

Landing	Road Type	Road Length	Road Status		Landing	Road Type	Road Length	Road Status
A	non-system	627 ft	Existing		K	non-system	570 ft	Existing
B	non-system	375 ft	New		L	non-system	385 ft	Existing
C	non-system	205 ft	Existing		M	non-system	80 ft	Existing
D	non-system	325 ft	Existing		N	3412		Existing
E	non-system	530 ft	Existing		O	3412		Existing
F	non-system	87 ft	Existing		P	3412		Existing
H	non-system	1135 ft	Both					
J	non-system	170 ft	New					

Notes

Note to Presale- 3 Acres of Meadow planned for this unit.

The total temporary road length for Unit 10 is 4489 feet. See above for distance between landings or road junctions.

The temporary road to landing H has 80 feet of new construction and 1055 feet of existing road.

Logging Systems Information							Unit #	10
Landing	Logging System Type	Guyline Anchor Trees	Multiple Guy Anchors	Special Anchors	Intermediate Supports	Tailtrees	Logging Profiles Run and Azimuth/Length	
A	Y	none	No	none	none	none	No	
B	Y, GB	none	No	none	none	3 TT, 30 ft	No	
C	GB	none	No	none	none	none	No	
D	GB	none	No	none	none	none	No	
E	Y, GB	none	No	none	none	1 TT, 30 ft	No	
F	Y	none	No	none	none	3 TT, 30 ft	No	
H	GB	none	No	none	none	none	No	
J	Y	none	No	none	none	1 TT, 30 ft	No	
K	Y	none	No	none	none	1 TT, 30 ft	No	
L	Y	none	No	none	none	4 TT, 30 ft	No	
M	Y	none	No	none	none	2 TT, 30 ft	No	
N	Y, GB	none	No	none	none	4 TT, 30 ft	No	
O	GB	none	No	none	none	none	No	
P	Y	none	No	none	none	4 TT, 30 ft	No	

Key: Logging System abbreviations are Skyline (S), Ground-Based (GB), Yoader (Y), Helicopter (H), or a combination of logging systems for each landing. Guyline anchor trees abbreviations are P for plantation, M for mature, and B for both. Special anchor abbreviations are Equipment (Eq), Deadmen (D), Earth (E), guyline (G) anchor, and tailhold (T). Abbreviations for intermediate supports (IS) and tailtree (TT).

Unit Totals and Averages

Average Yarding Distance:	<u>300</u>	Average Net Pound per Payload:	<u>3500</u>
Average Mainline Tension:	<u>4000</u>	Average Slope:	<u>40</u>
Maximum Tagline Needed:	<u>none</u>	Total Number of Corridors:	<u>26</u>
Maximum Yarding Distance:	<u>650</u>	Total Number of Landings:	<u>14</u>

Notes

Shovel yarding recommended along temporary roads and between road switchbacks.

Ground-based Harvesting= tractor log using existing skid trails when possible. Favorable and adverse skidding required, ranging from 10-30 percent slope. Endlining required between skid trails up to 100 feet.

Average skidding distance = 200 feet

External skidding distance = 450 feet

Ground-based acres = 12 acres

Missouri Thin Unit Summary Sheet

Central Coast Ranger District

General Information

Unit # : 13 **Stand # :** 502044
Legal Location: Sec. 24, T. 14 S., R. 9 W., W.M. **Acres:** 11
Photo Number: 507-120 **Year of Origin:** 1977
Unit Designation: DxD **Residual TPA Post Harvest:** 75
Recon by/Date: Casey Hawes

Volume Information

Source of volume estimate: Stand Exam **Estimated Volume:** 12 MBF/acre

Special Considerations

	Yes	No		Yes	No
Power Lines		x	Fences		x
Invasive/Sensitive Plants		x	Heritage Sites		x
Dump Sites		x	Meadows		x
Survey Monuments	x		Water Systems		x
Improvements		x	Other		x

Road and Landing Information

Landing	Road Type	Road Length	Road Status		Landing	Road Type	Road Length	Road Status
A	non-system	290 ft	Existing					
B	non-system	365 ft	Existing					
C	non-system	440 ft	Existing					

Notes

Note to Presale- Five acres of Meadows planned to be created in this unit.

There is a private property boundary along the east edge of this harvest unit. The boundary is marked with carsonite post. A survey monument is located along the property line (W 1/16, Sec. 24, T14S, R9W, W. M.).

There is one main temporary road that accesses the harvest unit. It is 260 feet from the 3310120 to the fork in the temporary road. See above for distance from the fork to each landing. This temporary road includes a 150 to 200 foot section of 20-25 percent favorable haul. An assist vehicle will be needed to meet Oregon OSHA standards.

