

**Pinnacle Thin**  
**Logging Feasibility Report**

East Alsea Land Management Project EA

Central Coast Ranger District

Siuslaw National Forest

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## Summary

Pinnacle Thin is comprised of 11 thinning units. Current trees per acre range between 150 and 400 (TPA); based on stand-exam data. After thinning the units will have areas consisting of 45 to 75 TPA. Stand exam information was used for estimated volumes. The total sale acreage is estimated at 301; total volume is estimated at 3,659 MBF or 7037 CCF. The project area is located in T. 14 S., R. 9 W. Sections 7, 8, 9, 10, 11, 15.

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 3417, 3417111, 3417114 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	3	14	3	0
2	1316	555	13	20	4	Eq. 1, G
3	0	0	4	6	3	Eq. 2, G
3a	0	0	*	0	0	0
4	1033	0	11	29	10	Eq. 2, G
5	587	0	2	15	0	0
5a	*	0	*	7	0	0
6	0	0	1	7	0	Eq. 1, G
7	0	0	2	7	0	0
8	1575	0	5	10	2	Eq. 1, G
9	1313	0	6	18	2	0
Total	5,824	555	47	126	24	Eq. 7, G

**Note:** Unit 3a is a ground-based that uses the same landings as Unit 3

Unit 5a uses the same landing as Unit 5 as well as the same temp spur. These specifications are reflected in Unit 5 shown in the table above.

## 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 1,700 feet. A rigging length of up to 2,100 feet might 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 1,2,3,4,8,9).

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 in some instances, 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 2, 3a, 4, 8, 9).

### 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 guylines 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 yellow plastic 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\_14. 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 20 and 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 all the units in this timber sale are planned to haul south out on the 3417 and 3412 to county road 807 (Five Rivers road), west to HWY 34 (Alsea HWY), east to Philomath.

# **Appendix A**

## **SkylineXL and Profile Data**

# Appendix B

## Appraiser Information

**Watershed**—Cow Creek, Minotti Creek, and Alsea River Watersheds

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

**Survey monuments**—see unit summary sheets and logging map.

# **Appendix C**

## **Logging Plan Overlays for Aerial Photos**







Logging Systems Information							Unit #	2
Landing	Logging System Type	Guyline Anchor Trees	Multiple Guy Anchors	Special Anchors	Intermediate Supports	Tailtrees	Logging Profiles Run and Azimuth/Length	
A	Y	P	No	Eq1, G	none	1TT, 30	No	
B	Y, GB	P	No	none	none	1TT, 20	No	
C	GB	none	No	none	none	none	No	
D	Y, GB	P	No	none	none	1TT, 30	No	
E	Y, GB	P	No	none	none	1TT, 10	No	
F	GB	none	No	none	none	none	No	
G	Y	M	No	none	none	4TT, 10, 15	No	
H	Y	M	No	none	1IS; 30	4TT; 2,30,35	No	
I	S	P	No	none	3IS; 15, 20	4TT; 20,30	No	
J	Y	P	No	none	none	4TT; 10,20,30	No	
K	GB	none	No	none	none	none	No	
L	GB	none	No	none	none	none	No	
M	GB	none	No	none	none	none	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>330</u>	Average Net Pound per Payload:	<u>4500</u>
Average Mainline Tension:	<u>3500</u>	Average Slope:	<u>40</u>
Maximum Tagline Needed:	<u>none</u>	Total Number of Corridors:	<u>22</u>
Maximum Yarding Distance:	<u>1070</u>	Total Number of Landings:	<u>13</u>

**Notes**

Profiles were completed using GIS and LIDAR data \*\*  
 Ground-based Harvesting= tractor log using existing skid trails when possible. Favorable and adverse skidding, ranging from 10-30 percent slope. Endlining required between skid trails up to 75 feet.  
 Average skidding distance = 110 feet  
 External skidding distance = 900 feet  
 Ground-based acres = 31 acres \*\*  
 Areas deferred from unit as compared to planned are mostly due to timber stocking having areas with little conifer volume. \*\*  
 I recommend using a mix of yoder, skyline, and ground-based/shovel logging systems in this unit. Most landings have shorter spans ~ 600' or less making a yoder sets a viable option but some will require a yarder capable of yarding over 1000'. Most landings I recommend using a radial setting, with landings A, B, and D one skyline corridor was analyzed from these landings.











Logging Systems Information							Unit #	4
Landing	Logging System Type	Guyline Anchor Trees	Multiple Guy Anchors	Special Anchors	Intermediate Supports	Tailtrees	Logging Profiles Run and Azimuth/Length	
A	GB	NA	No	NA	NA	NA	No	
B	GB	NA	No	NA	NA	NA	No	
C	Y, GB	P	No	none	none	4TT; 20	No	
D	S	P	No	none	none	2TT; 20	No	
E	S	P	No	none	1IS; 20	4TT; 20,30	No	
F	S, GB	B	No	Eq. 1, G	2IS; 20	3TT; 30,40	No	
G	S, GB	P	No	none	3IS; 20, 40	4TT; 10,20,40	No	
H	S	P	No	none	none	2TT; 10,20	No	
I	Y	M	No	none	none	4TT; 20	No	
J	S	P	No	none	1IS; 20	2 TT; 30	No	
K	S	M	No	Eq. 1, G	3IS; 20, 30	4 TT; 20, 30	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>425</u>	Average Net Pound per Payload:	<u>5000</u>
Average Mainline Tension:	<u>5200</u>	Average Slope:	<u>45</u>
Maximum Tagline Needed:	<u>none</u>	Total Number of Corridors:	<u>32</u>
Maximum Yarding Distance:	<u>1600</u>	Total Number of Landings:	<u>11</u>

**Notes**

Profiles were completed using GIS and LIDAR data \*\*  
 Ground-based Harvesting= tractor/shovel log using existing skid trails when possible. Favorable and adverse skidding, ranging from 10-35 percent slope. Endlining required between skid trails up to 75 feet.  
 Average skidding distance = 110 feet  
 External skidding distance = 800 feet  
 Ground-based acres = 16 acres  
 \*\* There are  
 areas planned as "tip and winch" in which directional felling towards the road or landings and using a ground based piece of equipment and endlining or reaching with a shovel to reach the volume. There are small areas in the unit that a GB piece of equipment could be utilized but was not planned for.























