



Timber Sale Appraisal
Old Norse
Sale FG-341-2017-24-

District: Forest Grove

Date: October 07, 2016

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$2,471,752.65	\$0.00	\$2,471,752.65
		Project Work:	\$0.00
		Advertised Value:	\$2,471,752.65



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Timber Description

Location: Portions of Section 13, T3N, R6W, W.M., Tillamook County, Oregon and Section 18, T3N, R5W, W.M., Washington County, Oregon.

Stand Stocking: 20%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	20	0	98

Volume by Grade	2S	3S	4S	Total
Douglas - Fir	4,551	1,217	177	5,945
Total	4,551	1,217	177	5,945

Comments: Pond Values Used: 3rd Quarter Calendar Year 2016.

Western Hemlock and Other Conifers Stumpage Price = Pond Value minus Logging Cost:
 $\$252.21/\text{MBF} = \$450/\text{MBF} - \$197.79/\text{MBF}$

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost:
 $\$952.21/\text{MBF} = \$1,150/\text{MBF} - \$197.79/\text{MBF}$

Red Alder and Other Hardwoods Stumpage Price = Pond Value minus Logging Cost:
 $\$427.21/\text{MBF} = \$625/\text{MBF} - \$197.79/\text{MBF}$

SCALING COST ALLOWANCE = \$5.00/MBF

BRANDING AND PAINTING COST ALLOWANCE = \$2.00/MBF

FUEL COST ALLOWANCE = \$3.00/Gallon

HAULING COST ALLOWANCE
Hauling costs equivalent to \$780 daily truck cost.

Other Costs (with Profit & Risk to be added):
Construct Operator's Spur: 10 sta. @ \$200/sta. = \$2,000
TOTAL Other Costs (with Profit & Risk to be added) = \$2,000

Other Costs (No Profit & Risk added):
Block/Waterbar Roads/Skid Trails: 5 hrs x \$150/hour = \$750
Pile Landing Slash and Sort Firewood: 20 hrs x \$150/hour = \$3,000
Mechanical Site-Prep: 40 acres @ \$150/acre = \$6,000
Equipment Cleaning: 3 pieces x \$1,000/piece = \$3,000
TOTAL Other Costs (No Profit & Risk added) = \$12,750

ROAD MAINTENANCE

Move-in: \$4,000
General Road Maintenance: 5.6 miles x \$1,200/mile = \$6,720
TOTAL Road Maintenance: \$10,720/5,945 MBF = \$1.80/MBF



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Logging Conditions

Combination#: 1	Douglas - Fir	95.00%
Logging System:	Shovel	Process: Stroke Delimber
yarding distance:	Short (400 ft)	downhill yarding: No
tree size:	Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF	
loads / day:	7	bd. ft / load: 4600
cost / mbf:	\$98.51	
machines:	Stroke Delimber (B)	

Combination#: 2	Douglas - Fir	5.00%
Logging System:	Cable: Small Tower <=40	Process: Stroke Delimber
yarding distance:	Short (400 ft)	downhill yarding: No
tree size:	Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF	
loads / day:	7	bd. ft / load: 4600
cost / mbf:	\$173.91	
machines:	Log Loader (A) Stroke Delimber (A) Tower Yarder (Small)	



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Logging Costs

Operating Seasons: 1.00	Profit Risk: 10%
Project Costs: \$0.00	Other Costs (P/R): \$2,000.00
Slash Disposal: \$0.00	Other Costs: \$12,750.00

Miles of Road

Road Maintenance: \$1.80

Dirt	Rock (Contractor)	Rock (State)	Paved
0.0	0.0	0.0	0.0

Hauling Costs

Species	\$ / MBF	Trips/Day	MBF / Load
Douglas - Fir	\$0.00	3.0	4.0



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Logging Costs Breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling / Brand & Paint	Other	Total
Douglas - Fir									
\$102.28	\$1.84	\$0.74	\$66.30	\$0.34	\$17.15	\$0.00	\$7.00	\$2.14	\$197.79

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$613.56	\$415.77	\$0.00



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Summary

Amortized

Specie	MBF	Value	Total
Douglas - Fir	0	\$0.00	\$0.00

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	5,945	\$415.77	\$2,471,752.65

Gross Timber Sale Value

Recovery: \$2,471,752.65

Prepared By: Kenton Burns

Phone: 503-359-7477

TIMBER SALE SUMMARY
Old Norse
Contract No. 341-17-24

1. **Location:** Portion of Section 13, T3N, R6W, W.M., Tillamook County, Oregon. Portion of Section 18, T3N, R5W, W.M., Washington County, Oregon.
2. **Type of Sale:** The Timber Sale Area is a 116 acre Modified Clearcut in a stand of 70 year old Douglas-fir. The timber will be sold on a recovery basis at a sealed bid auction.
3. **Revenue Distribution:** 100% BOF, 12% Washington County, 88% Tillamook County. Tax Code 56-1.
4. **Sale Acreage:** Acres are net of stream buffers and road prisms. Acreage was determined using ESRI ArcMap GIS software.
5. **Cruise:** The Timber Sale was cruised by ODF Cruisers in June of 2016. For more information see Cruise Report.
6. **Timber Description:** The Timber Sale Area consists of a well-stocked 70 year old Douglas-fir stand with minor amounts of western hemlock, western redcedar, true firs, and hardwoods. The stand has an average of 255 ft² of basal area (all species), an average Douglas-fir DBH of 20 inches, and an estimated average net Douglas-fir volume of approximately 52 MBF per acre.

7. **Volume Summary**

AREA 1: PC-M (116 ACRES)

SPECIES		2 SAW	3 SAW	4 SAW	TOTAL
Douglas-fir	Cruise Volume	4,644	1,242	181	6,067
	Hidden D&B (2%)	(93)	(25)	(4)	(121)
	NET TOTAL	4,551	1,217	177	5,945
	% of Total	77	20	3	

8. **Topography and Logging Method:** Slopes within the sale areas range from 5% to 60%, average about 25%, and are southern in aspect. The timber sale is 95% ground-based yarding and 5% cable yarding. The maximum cable corridor length is 700 feet and the average is about 500 feet. The average horizontal skid trail length is approximately 450 feet and the maximum is approximately 600 feet.
9. **Access:** All access to the Timber Sale Area is on surfaced all-weather roads. From Forest Grove, travel north on Highway 47 through Banks then merge onto Highway 26

westbound and continue for approximately 11 ½ miles to the Timber Road. Turn left and proceed south on the Timber Road .7 miles to the Lousignont Road. Turn right and continue west on Lousignont Road for 2 miles. Continue right on North Lousignont Road for 2 miles to the north Portion of the Timber Sale Area.

10. Projects: None

CRUISE REPORT
Old Norse
341-17-24

1. LOCATION: Portion of Section 13, T3N R6W, W.M., Tillamook County, Oregon and Portion of Section 18, T3N, R5W, W.M., Washington County, Oregon.

2. CRUISE DESIGN:

Pre-cruise evaluation indicated that the stand's average DBH is approximately 20 inches and its Coefficient of Variation is about 50%. For sales of this size and approximate value, ODF cruise standards require a Sampling Error of 9% at a 68% confidence level, and a minimum sample size of 100 graded trees. The cruise design chosen for this sale is a variable radius sample plot using a 40 BAF prism and employing a combination of count and measure plots at a ratio of 1 measured plot to 1 count plot.

3. SAMPLING METHOD:

The Timber Sale Area was cruised in June, 2016. The Timber Sale Area was sampled with 20 variable radius grade plots and 20 variable radius count plots using a 40 BAF prism. Plots were laid out on a 5 chain x 6 chain grid. Plots falling on or near existing roads or no-harvest areas were offset 1 chain.

4. CRUISE RESULTS

121 trees were measured and graded producing a cumulative Sampling Error of 8% on the Basal Area and 8.9% on the Board Foot Volume.

5. TREE MEASUREMENT AND GRADING:

All sample trees were measured and graded following Columbia River Log Scale grade rules and favored 40 foot segments.

a) **Height Standards:**

Total tree heights were measured to the nearest foot. Bole heights were calculated to a six inch top.

b) **Diameter Standards:** Diameters were measured outside bark at breast height to the nearest inch.

c) **Form Factors** were measured for each grade tree using a form point of 16 feet.

5. DATA PROCESSING

a) **Volumes and Statistics,** Cruise estimates and sampling statistics, were derived from Super Ace 2008 cruise software.

b) **Deductions:** Two percent of the volume was subtracted from the computed volumes to account for hidden defect and breakage.

6. Cruisers: The sale was cruised by ODF cruisers Kenton Burns and Mark Savage.

Prepared by: Kenton Burns

Reviewed by: Eric Foucht

TC PSTATS		PROJECT STATISTICS							PAGE	1	
		PROJECT OLDNORSE							DATE	6/27/2016	
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt	
03N	06	13	00A1	00MC		116.00	32	204	S	W	
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL			32	204	6.4						
CRUISE			20	125	6.3	13,305	.9				
DBH COUNT											
REFOREST											
COUNT			12	76	6.3						
BLANKS											
100 %											
STAND SUMMARY											
SAMPLE TREES			TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUG FIR-T			121	112.8	20.2	117	55.7	250.0	53,268	52,302	11,453
WHEMLOCK-L			3	1.5	21.5	144	0.8	3.8	972	972	201
NOB FIR-L			1	.4	25.0	145	0.3	1.3	242	231	60
TOTAL			125	114.7	20.2	118	56.8	255.0	54,482	53,505	11,715
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL	68.1	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
DOUG FIR-T			67.2	6.1	780	831	882				
WHEMLOCK-L			28.5	19.7	554	690	826				
NOB FIR-L											
TOTAL			66.6	6.0	777	826	875	177	44	20	
CL	68.1	COEFF	SAMPLE TREES - CF					# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
DOUG FIR-T			62.4	5.7	169	179	189				
WHEMLOCK-L			30.9	21.4	113	144	174				
NOB FIR-L											
TOTAL			61.8	5.5	168	178	188	153	38	17	
CL	68.1	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
DOUG FIR-T			54.9	9.7	102	113	124				
WHEMLOCK-L			326.1	57.6	1	1	2				
NOB FIR-L			565.7	99.9	0	0	1				
TOTAL			52.1	9.2	104	115	125	108	27	12	
CL	68.1	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
DOUG FIR-T			45.1	8.0	230	250	270				
WHEMLOCK-L			315.9	55.8	2	4	6				
NOB FIR-L			565.7	99.9	0	1	2				
TOTAL			41.5	7.3	236	255	274	69	17	8	
CL	68.1	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
DOUG FIR-T			50.2	8.9	47,667	52,302	56,936				
WHEMLOCK-L			316.3	55.9	429	972	1,515				
NOB FIR-L			565.7	99.9	0	231	462				
TOTAL			46.6	8.2	49,097	53,505	57,912	87	22	10	
CL	68.1	COEFF	NET CUFT FT/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
DOUG FIR-T			49.0	8.7	10,462	11,453	12,445				
WHEMLOCK-L			316.0	55.8	89	201	314				

TC PSTATS				PROJECT STATISTICS				PAGE 2	
				PROJECT OLDNORSE				DATE 6/27/2016	
TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
03N	06	13	00A1	00MC	116.00	32	204	S	W
CL	68.1	COEFF	NET CUFT FT/ACRE				# OF PLOTS REQ.	INF. POP.	
SD: 1.00		VAR.	S.E.%	LOW	AVG	HIGH	5	10	15
NOB FIR-L		565.7	99.9	0	60	121			
TOTAL		45.4	8.0	10,776	11,715	12,654	82	21	9

TC		PSTNDSUM		Stand Table Summary										Page		1	
														Date:		6/27/2016	
T03N R06W S13 Ty00MC 116.00				Project						OLDNORSE				Time:		11:21:51AM	
				Acres						116.00				Grown Year:			
S Spec T	Sample		Tot		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Net		Totals	Tons	Cunits	MBF		
	DBH	Trees	FF 16'	Av Ht				Net Cu.Ft.	Net Bd.Ft.	Tons/ Acre	Cu.Ft. Acre					Bd.Ft. Acre	
DF	9	3	87	80	14.030	6.20	14.03	9.4	46.7	3.76	132	655	436	153	76		
DF	10	3	85	75	11.364	6.20	11.36	11.4	46.7	3.68	129	530	427	150	62		
DF	11	2	91	94	6.261	4.13	12.52	9.7	45.0	3.48	122	564	404	142	65		
DF	12	2	77	88	5.261	4.13	7.89	14.3	50.0	3.21	113	395	373	131	46		
DF	13	2	88	118	4.483	4.13	8.97	17.8	82.5	4.55	160	740	528	185	86		
DF	14	1	86	105	1.933	2.07	3.87	17.2	75.0	1.89	66	290	220	77	34		
DF	15	1	80	64	1.684	2.07	1.68	29.9	70.0	1.43	50	118	166	58	14		
DF	16	4	89	131	5.919	8.26	16.28	22.2	98.2	10.31	362	1,598	1,195	419	185		
DF	18	7	89	126	8.184	14.46	23.38	27.0	115.0	17.97	631	2,689	2,085	731	312		
DF	19	7	87	128	7.345	14.46	20.99	30.7	129.0	18.37	645	2,707	2,131	748	314		
DF	20	5	88	121	4.735	10.33	13.26	31.6	134.3	11.94	419	1,780	1,385	486	207		
DF	21	5	86	128	4.295	10.33	12.88	35.6	154.7	13.08	459	1,993	1,517	532	231		
DF	22	3	86	144	2.348	6.20	7.04	42.9	192.2	8.61	302	1,354	998	350	157		
DF	23	5	85	131	3.580	10.33	10.74	43.9	189.3	13.45	472	2,034	1,560	547	236		
DF	24	5	86	143	3.288	10.33	9.86	51.9	232.0	14.58	512	2,289	1,691	593	265		
DF	25	5	89	153	3.031	10.33	9.70	57.3	287.5	15.85	556	2,788	1,838	645	323		
DF	26	6	86	153	3.362	12.40	10.65	60.9	285.8	18.48	648	3,043	2,144	752	353		
DF	27	3	82	123	1.559	6.20	4.16	63.2	247.5	7.49	263	1,029	868	305	119		
DF	28	10	85	154	4.832	20.66	15.46	67.6	328.7	29.77	1,045	5,083	3,453	1,212	590		
DF	29	7	86	154	3.153	14.46	10.81	71.8	361.3	22.11	776	3,905	2,565	900	453		
DF	30	6	83	145	2.525	12.40	7.58	80.9	376.1	17.46	613	2,850	2,025	711	331		
DF	31	6	84	154	2.365	12.40	7.88	81.5	382.0	18.32	643	3,012	2,125	746	349		
DF	32	6	83	143	2.220	12.40	6.66	90.0	431.7	17.08	599	2,874	1,981	695	333		
DF	33	5	84	157	1.739	10.33	5.57	97.0	479.4	15.38	540	2,668	1,785	626	309		
DF	34	3	80	150	.983	6.20	3.28	92.7	396.0	8.65	304	1,298	1,004	352	151		
DF	35	1	74	161	.309	2.07	.93	109.2	456.7	2.89	101	424	335	118	49		
DF	36	3	76	146	.877	6.20	2.92	101.0	391.0	8.41	295	1,143	976	342	133		
DF	38	3	84	149	.787	6.20	2.89	102.2	509.1	8.40	295	1,469	975	342	170		
DF	42	1	80	138	.215	2.07	.64	149.3	730.0	2.74	96	470	318	112	55		
DF	48	1	82	154	.164	2.07	.49	219.1	1036.7	3.08	108	511	357	125	59		
DF	Totals	121	86	117	112.834	250.00	264.38	43.3	197.8	326.42	11,453	52,302	37,865	13,286	6,067		
WH	19	1	88	150	.635	1.25	2.54	26.4	127.5	2.15	67	324	249	78	38		
WH	21	1	95	142	.520	1.25	1.56	44.3	220.0	2.21	69	343	256	80	40		
WH	26	1	87	136	.339	1.25	1.02	64.1	300.0	2.09	65	305	242	76	35		
WH	Totals	3	90	144	1.494	3.75	5.12	39.4	190.0	6.44	201	972	747	234	113		
NF	25	1	80	145	.367	1.25	1.10	55.0	210.0	1.45	60	231	168	70	27		
NF	Totals	1	80	145	.367	1.25	1.10	55.0	210.0	1.45	60	231	168	70	27		
Totals		125	86	118	114.694	255.00	270.59	43.3	197.7	334.32	11,715	53,505	38,781	13,590	6,207		

Log Stock Table - MBF

Page 1
 Date 6/27/2016
 Time 11:21:54AM

T03N R06W S13 Ty00MC 116.00

Project: OLDNORSE
 Acres 116.00

S T Spp	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spe	Net Volume by Scaling Diameter in Inches												
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+	
DF		2M	16	18	25.0	13	.2							13						
DF		2M	24	37	13.3	32	.5						12		20					
DF		2M	36	8		8	.1					8								
DF		2M	40	4,683	2.0	4,591	75.7					532	916	1458	1340	314		32		
DF		3M	20	2		2	.0				2									
DF		3M	24	2		2	.0				2									
DF		3M	32	21		21	.4			18		3								
DF		3M	34	19		19	.3			16	3									
DF		3M	36	68		68	1.1			65	3									
DF		3M	38	18		18	.3			18										
DF		3M	40	1,119		1,112	18.3			260	405	413	34							
DF		4M	12	13		13	.2			12	1									
DF		4M	14	33		33	.5			33										
DF		4M	16	4		4	.1			4										
DF		4M	18	11		11	.2			9	1									
DF		4M	20	36		36	.6			26	10									
DF		4M	22	10		10	.2			8	2									
DF		4M	24	5		5	.1			5										
DF		4M	26	15		15	.2			15										
DF		4M	28	5		5	.1			5										
DF		4M	30	24	18.3	20	.3			20										
DF		4M	32	26		26	.4			26										
DF		4M	36	3		3	.0			3										
DF		Totals		6,179	1.8	6,067	97.8			544	429	416	586	916	1471	1360	314	32		
WH		2M	40	36		36	32.1					12		24						
WH		3M	30	31		31	27.4					11		20						
WH		3M	31	5		5	4.6				5									
WH		3M	32	1		1	1.3		1											
WH		3M	36	4		4	3.2			4										
WH		3M	38	22		22	19.9							22						
WH		3M	40	13		13	11.5		2				11							
WH		Totals		113		113	1.8		3	4	5		23	31	47					
NF		2M	40	26	5.0	24	90.5					9		16						
NF		3M	40	3		3	9.5			3										
NF		Totals		28	4.5	27	.4			3		9		16						

TC PLOGSTVB

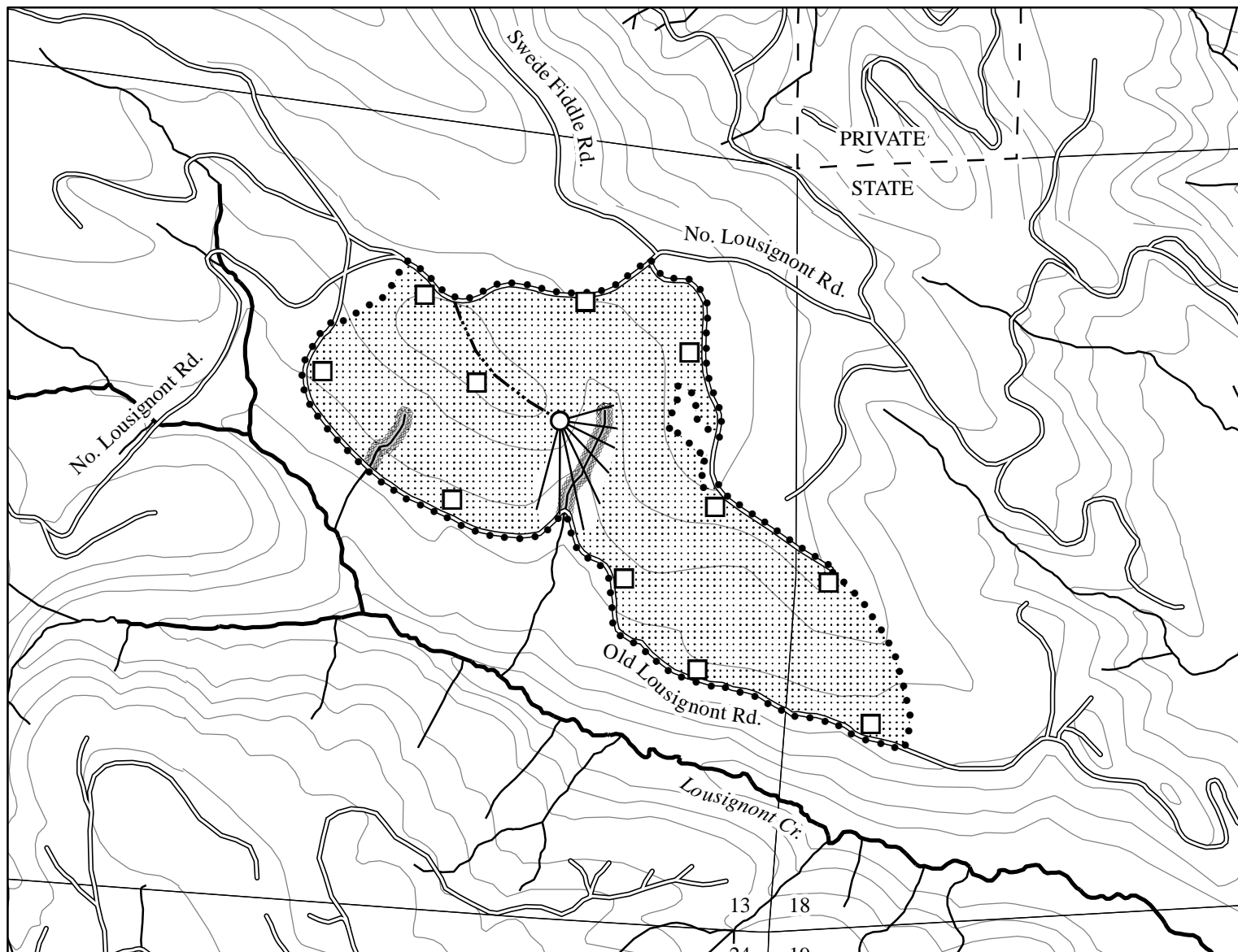
Log Stock Table - MBF

T03N R06W S13 Ty00MC 116.00

Project: OLDNORSE
Acres 116.00Page 2
Date 6/27/2016
Time 11:21:54AM

Spp	S T	So Gr rt de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches											
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
Total		All Species		6,320	1.8	6,207	100.0		3	550	434	416	618	947	1533	1360	314		32

TC		PSPCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																	
<div>T03N R06W S13 Ty00MC116.00</div>				Project: OLDNORSE														Page 1			
				Acres 116.00														Date 6/27/2016			
																		Time 11:21:53AM			
S Spp	So T	Gr rt	ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre
									Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf	
					4-5	6-11	12-16		17+	12-20	21-30	31-35	36-99								
DF		CU															13	16		0.00	2.5
DF		2M		76	2.1	40,910	40,035	4,644			43	57	0	1		99	40	16	426	2.23	94.0
DF		3M		21	.5	10,763	10,709	1,242		97	3		0	0	3	96	39	8	98	0.64	109.5
DF		4M		3	2.4	1,595	1,557	181		100			54	30	14	2	20	6	26	0.35	60.8
DF Totals				98	1.8	53,268	52,302	6,067		23	33	44	2	1	1	96	35	11	196	1.24	266.9
WH		2M		32		312	312	36			100					100	40	14	300	1.44	1.0
WH		3M		68		660	660	77	4	11	55	29		40	9	51	34	10	162	1.03	4.1
WH Totals				2		972	972	113	3	8	70	20		27	6	67	35	11	190	1.13	5.1
NF		2M		90	5.0	220	209	24			100					100	40	14	285	1.82	.7
NF		3M		10		22	22	3		100						100	40	6	60	0.49	.4
NF Totals				0	4.5	242	231	27		10	90					100	40	11	210	1.37	1.1
Totals					1.8	54,482	53,505	6,207	0	23	34	43	2	2	1	95	35	11	196	1.24	273.1



LOGGING PLAN

Legend

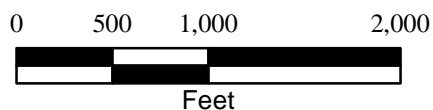
- Timber Sale Boundary
- Roads
- Non-Project Road Construction
- Type F Stream
- Type N Stream
- Stream Buffer
- Stream Buffer Boundary
- Cable Landing
- Tractor Landing
- ↖ Cable Yarding Area
- Tractor Yarding Area
- ODF Ownership Boundary
- Sections
- 80 Foot Contour Band

FOR TIMBER SALE CONTRACT # 341-17-24
 OLD NORSE
 PORTIONS OF SECTION 13, T3N R6W, W.M.,
 TILLAMOOK COUNTY, OREGON
 & SECTION 18, T3N, R5W, W.M.
 WASHINGTON COUNTY, OREGON.

Forest Grove District GIS
 July, 2016

This product is for informational use and may not be
 suitable for legal, engineering, or surveying purposes.

1:12,000
 1 inch = 1,000 feet



APPROXIMATE NET ACRES

TRACTOR	110
CABLE	6
TOTAL	116