



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal  
Grasslands Thinning  
Sale 341-08-45

District: Astoria

Date: May 30, 2007

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**Cost Summary**

	<b>Conifer</b>	<b>Hardwood</b>	<b>Total</b>
<b>Gross Timber Sales Value</b>	\$659,225.92	\$0.00	\$659,225.92
		<b>Project Work:</b>	\$(47,078.00)
		<b>Advertised Value:</b>	\$612,147.92



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**Timber Description**

Location: Portions of Sections 10, 11, 14, 15, and 22 of T5N, R6W, W.M., Clatsop County, Oregon.

Stand Stocking: 40%

SpecieName	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	15	0	97

Volume by Grade	2S	3S	4S	Total
Douglas - Fir	473	1,773	450	2,696
Total	473	1,773	450	2,696

**Comments:** Pond Values Used: 1st Quarter Calendar Year 2007 + Local Pond Values.

Log Markets: Mist, Claskanie, Tillamook, Forest Grove.

Western Hemlock & Other Conifers Stumpage Price = Pond Value minus Logging Cost  
\$100/MBF = \$410/MBF - \$310/MBF

Western Red Cedar Stumpage Price = Pond Value minus Logging Cost  
\$840/MBF = \$1,150/MBF - \$310/MBF

Red Alder Stumpage Price = Pond Value minus Logging Cost  
\$380/MBF = \$690/MBF - \$310/MBF

**HAULING**

Hauling costs equivalent to \$700 daily truck cost.

Other Costs (Profit and Risk to be added):

100% Branding and Painting: \$1MBF x 2,696 = \$2,696

TOTAL Other Costs (Profit and Risk to be added) = \$2,696

OTHER COSTS (No Profit and Risk added):

Excavator Slash Piling: 12.5 hrs x \$120/hr = \$1,500

Excavator move-in: 1 move in x \$945/move in = \$945

TOTAL Other Costs (No Profit and Risk added) = \$2,445



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**Logging Conditions**

<b>Combination#:</b> 1	Douglas - Fir	31.00%
<b>Yarding Distance:</b>	Short (400 ft)	<b>Downhill Yarding:</b> No
<b>Logging System:</b>	Cable: Small Tower <=40	<b>Process:</b> Manual Delimiting
<b>Tree Size:</b>	Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF	
<b>Loads / Day:</b>	3.0	<b>Bd. Ft / Load:</b> 3,300
<b>Cost / MBF:</b>	\$272.83	
<b>Machines:</b>	Log Loader (A) Tower Yarder (Small)	
<b>Combination#:</b> 2	Douglas - Fir	69.00%
<b>Yarding Distance:</b>	Short (400 ft)	<b>Downhill Yarding:</b> No
<b>Logging System:</b>	Cut To Length	<b>Process:</b> Harvester Head Delimiting
<b>Tree Size:</b>	Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF	
<b>Loads / Day:</b>	5.0	<b>Bd. Ft / Load:</b> 3,300
<b>Cost / MBF:</b>	\$158.83	
<b>Machines:</b>	Harvester Forwarder	



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**Logging Costs**

Operating Seasons:	3.00	Profit Risk:	14.00%
Project Costs:	\$47,078.00	Other Costs (P/R):	\$2,696.00
Slash Disposal:	\$0.00	Other Costs:	\$2,445.00

**Miles of Road**

Road Maintenance: \$5.70

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

**Hauling Costs**

Species	\$ / MBF	Trips/Day	MBF / Load
Douglas - Fir	\$62.00	3.0	3.3

**Local Pond Values**

Date	Specie	Grade	Value
5/30/07	Douglas - Fir	2S	\$555.00
5/30/07	Douglas - Fir	3S	\$555.00
5/30/07	Douglas - Fir	4S	\$555.00



Timber Sale Appraisal  
 Grasslands Thinning  
 Sale 341-08-45

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District: Astoria

Date: May 30, 2007

**Logging Costs Breakdown**

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling	Other	Total
<b>Douglas - Fir</b>									
\$194.17	\$5.87	\$4.88	\$63.88	\$1.00	\$37.77	\$0.00	\$2.00	\$0.91	\$310.48

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$555.00	\$244.52	\$0.00



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Sale 341-08-45

District: Astoria

Date: May 30, 2007

**Summary**

**Amortized**

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

**Unamortized**

Specie	MBF	Value	Total
Douglas - Fir	2,696	\$244.52	\$659,225.92

**Gross Timber Sale Value**

Recovery: \$659,225.92

Prepared by: Lanny Freeman

Phone: 503-325-5451

**Road Maintenance Cost Summary**

**Sale:** Grasslands Thinning  
**Date:** 06-Mar-07  
**By:** L. Freeman

**MBF:** 2,696  
**\$/MBF:** \$5.70

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost	Production Rates		
							Miles/day	Distance(miles)	Days
Progressive Operations 1st Entry	Grader 14G	\$570	1	24	\$84	\$2,016	Production Rates		
	Dump Truck 12CY x 2	\$119	2	16	\$59	\$1,888	Grader	2.5	7.6
	FE Loader C966	\$570	1	8	\$79	\$632			3.0
Final Road Maintenance	Grader 14G	\$570	1	40	\$84	\$3,360	Production Rates		
	Dump Truck 12CY x 2	\$119	2	16	\$59	\$1,888	Grader	1.5	7.6
	FE Loader C966	\$570	1	8	\$79	\$632	Vibratory Roller*	1.5	7.6
	Vibratory Roller	\$570	1	40	\$79	\$3,160			
	Water Truck 2,500 gallon Labor	\$139	1	24	\$70	\$1,680			
				6	\$18	\$108			
<b>Total</b>									<b>\$15,364</b>

\*Final Road Maintenance Only

**SUMMARY OF ALL PROJECT COSTS**

**SALE NAME:** Grasslands Thinning

**NEW CONSTRUCTION:**

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 1	1A-1B, 1C-1D, 1E-1F, 1G-1H,	121+10	\$32,766
	1I-1J, 1K-1L, 1M-1N, 1O-1P,		
	1Q-1R, 1S-1T, 1U-1V, & 2A-2B.		
	<b>TOTALS</b>		<b>\$32,766</b>

**ROAD IMPROVEMENT:**

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 1	I1-I2	96+00	\$8,486
	<b>TOTALS</b>		<b>\$8,486</b>

	<u>Cost</u>
Project Work Road Maintenance	\$840
	<b>\$840</b>

**MOVE IN:**

	<u>Equipment</u>	<u>Cost</u>
	Dozer (D8)	\$1,030
	Dump Trucks (12 cy x 3)	\$357
	Dump Trucks (20 cy x 2)	\$280
	F E Loader (C966)	\$570
	Grader (14G)	\$570
	Rubber Tire Skidder (C518)	\$525
	Vibratory Roller	\$570
	Water Truck (2,500 gallon)	\$139
	Excavator (C325)	\$945
	<b>TOTAL</b>	<b>\$4,986</b>

**GRAND TOTAL** **\$47,078**

Compiled By: L. Freeman

Date: 03/06/2007

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x:\Jewell Unit\timbersales\2007\Grasslands\_Thinning\Projects\Summary of Construction\_grasslands\_thinning.xls





**SUMMARY OF CONSTRUCTION COSTS**

SALE NAME: Grasslands Thinning (Field Design) NEW CONSTRUCTION: 62.20 STATIONS 1.18 MILES

ROAD: 1C-1D (9+30), 1E-1F (1+25), 1G-1H (3+60), 1I-1J (9+50), 1K-1L (2+60), IMPROVEMENT: STATIONS 0.00 MILES

1M-1N (1+50), 1O-1P (1+40), 1Q-1R (0+90), 1S-1T (1+60), 1U-1V (3+25), 2A-2B (28+30)

Method	Acres/amount	X	Rate	=	Cost
Scatter Outside of RW	5.5	X	\$980.00	=	\$5,390.00
<b>SUB TOTAL FOR CLEARING &amp; GRUBBING</b>					<b>\$5,390</b>

Material	Sta/amount	X	Rate	=	Cost
Common (Drift Earth up to 200') \$\$/sta.	32.20	X	\$139.00	=	\$4,475.80
Balanced construction \$\$/sta.	30.00	X	\$89.00	=	\$2,670.00
Landing Construction \$\$/landing	12	X	\$285.00	=	\$3,420.00
1B, 1D, 1F, 1H, 1J, 1L, 1N, 1P, 1R, 1T, 1V, and 2B.					
<b>SUB TOTAL FOR EXCAVATION</b>					<b>\$10,566</b>

Location	Dia/type	Lineal ft.	Rate	No. bands	Cost
					\$0.00
<b>SUB TOTAL FOR CULVERT MATERIALS &amp; INSTALLATION</b>					<b>\$0</b>

Other/miscellaneous: Culvert markers: Quantity Rate Cost \$0.00

Subtotal \$15,956

**Project No. 1 New Road Construction**      **SUMMARY OF CONSTRUCTION COSTS**

SALE NAME: Grasslands Thinning      NEW CONSTRUCTION: 121.10 STATIONS      2.29 MILES  
 ROAD: 1A-1B (58.90), 1C-1D (9.30), 1E-1F (1.25), 1G-1H (3.60), 1I-1J (8.50), 1K-1L (2.60), 1M-1N (1.50), 1O-1P (1.40), 1Q-1R (90), 1S-1T (1.60), 1U-1V (3.25), and 2A-2B (28.30)      0.00 STATIONS      0.00 MILES

Subgrade prep:	Description	Stations/amount	Rate/sta/amt	Cost
Grade, 16' Outslope		58.90	\$13.45	\$792.21
Subgrade Compaction		121.10	\$14.80	\$1,792.28
Grade, 14' Outslope		62.20	\$13.45	\$836.59
Waterbar		121.10	\$11.70	\$1,416.87

ROAD SEGMENT	1A to 1B	POINT TO POINT	Sta. to Sta.	TOTAL VOLUME	Rate/ Sta./ amt.	Cost
Application	Depth of Rock (inches)	1A to 1B Volume (CY)	Number of stations	(CY)		
Base Rock	8	43 station	0.50	22	\$6.91	\$152
Junctions	N/A	20 junction	1	22	\$6.91	\$152
Total Rock for Road Segment: 44      \$304						

ROAD SEGMENT	1C to 1D	POINT TO POINT	Sta. to Sta.	TOTAL VOLUME	Rate/ Sta./ amt.	Cost
Application	Depth of Rock (inches)	1C to 1D Volume (CY)	Number of stations	(CY)		
Base Rock	8	43 station	0.50	22	\$6.91	\$149
Junctions	N/A	20 junction	1	22	\$6.91	\$152
Total Rock for Road Segment: 44      \$301						

ROAD SEGMENT	2A to 2B	POINT TO POINT	Sta. to Sta.	TOTAL VOLUME	Rate/ Sta./ amt.	Cost
Application	Depth of Rock (inches)	2A to 2B Volume (CY)	Number of stations	(CY)		
Base Rock	8	43 station	0.50	22	\$6.91	\$149
Junctions	N/A	20 junction	1	22	\$6.91	\$152
Total Rock for Road Segment: 44      \$301						

Processing:	Description	No. sta	Rate/sta	Cost
Water, Process & Compact Crushed Rock:		1.50	\$41.40	\$62
Process traction rock		1.50	\$41.40	\$62
<b>SUBTOTAL FOR SURFACING</b>				<b>\$5,867</b>

<b>SPECIAL PROJECTS</b>		
<b>SUB TOTAL FOR SPECIAL PROJECTS</b>		<b>\$0</b>
<b>GRAND TOTAL</b>		<b>\$32,766</b>

Compiled By: L. Freeman      Date: 03/02/2007

**Project No. 1 Road Improvement**

**SUMMARY OF CONSTRUCTION COSTS**

SALE NAME: Grasslands Thinning NEW CONSTRUCTION: 0.00 STATIONS 0.00 MILES  
 ROAD: 11-12 (96+00) IMPROVEMENT: 96.00 STATIONS 1.82 MILES

SURFACING		Subgrade prep:		Description		Stations/ amount	x	Rate/ sta/amt	Cost
		Grade, Shape and Ditch				96.00	x	\$18.20	\$1,747.20
ROAD SEGMENT	11 to 12	POINT TO POINT 11 to 12	Sta. to Sta. 0+00 to 96+00	Depth of Rock (inches)	Volume (CY) per	Number of	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location							
Subgrade Levelling	4"-0" Crushed	N/A		N/A			360	\$6.91	\$2,488
Turnouts	4"-0" Crushed	N/A		N/A	10	Turnouts	40	\$6.91	\$276
Total Rock for Road Segment:				11 to 12			400		\$2,764
<b>SUB TOTAL FOR SURFACING</b>		Processing:		Description		No.sta	Rate/sta	Cost	
		Water, Process & Compact Crushed Rock:				96.00	\$41.40	\$3,974	
<b>SPECIAL PROJECTS</b>		Description							
<b>SUB TOTAL FOR SPECIAL PROJECTS</b>									\$0
<b>GRAND TOTAL</b>									<b>\$8,486</b>

Compiled By: L. Freeman

Date: 03/02/2007



**Road Maintenance after completion of Projects**

**Sale:** Grasslands Thinning  
**Date:** 06-Mar-07  
**By:** J. Long

Type	Equipment/Rationale	Hours	Rate	Cost
Project Work Road Maintenance for Haul Route	Grader 14G	10	\$84	\$840
<b>Total</b>				<b>\$840</b>

Miles/day	Distance(miles)	Days
7.3	7.3	1.0

Production Rates  
 Grader  
 (light grading)

**Road Maintenance Cost Summary**

Sale: Grasslands Thinning  
 Date: 06-Mar-07  
 By: L. Freeman

MBF: 2,696  
 \$\$/MBF: \$5.70

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost	Production Rates			
							Production Rates	Miles/day	Distance(miles)	Days
Progressive Operations 1st Entry	Grader 14G	\$570	1	24	\$84	\$2,016	Grader	2.5	7.6	3.0
	Dump Truck 12CY x 2	\$119	2	16	\$59	\$1,888				
	FE Loader C966	\$570	1	8	\$79	\$632				
Final Road Maintenance	Grader 14G	\$570	1	40	\$84	\$3,360	Grader	1.5	7.6	5.1
	Dump Truck 12CY x 2	\$119	2	16	\$59	\$1,888				
	FE Loader C966	\$570	1	8	\$79	\$632	Vibratory Roller*	1.5	7.6	5.1
	Vibratory Roller	\$570	1	40	\$79	\$3,160				
	Water Truck 2,500 gallon Labor	\$139	1	24	\$70	\$1,680				
<b>Total</b>										\$15,364

\*Final Road Maintenance Only

**TIMBER CRUISE REPORT**  
**GRASSLANDS THINNING**  
**FY 2007**

1. **Sale Area Location:** Areas 1, 2, 3(R/W), A, B, C, D, and E are located in Portions of Sections 10, 11, 14, 15 and 22, T5N, R6W; W.M., Clatsop County, Oregon.

2. **Fund Distribution:** BOF 100%  
 Tax Code 8-01 (100%)

3. **Sale Acreage by Area:**

Area	Treatment	Gross Acres	Existing R/W	New R/W	GTRA	Non-Thinnable	Stream Buffer	Net Acres	Survey Method
1	Partial Cut	240	7	8	0	15	0	210	GIS
2	Partial Cut	135	7	2	0	5	0	121	GIS
3 R/W	Right-of-way	N/A	0	0	0	0	0	10	GIS
A	Group Selection	0.5	0	0	0	0	0	0.5	GIS
B	Group Selection	1.0	0	0	0	0	0	1	GIS
C	Group Selection	1.5	0	0	0	0	0	1.5	GIS
D	Group Selection	1.5	0	0	0	0	0	1.5	GIS
E	Group Selection	0.5	0	0	0	0	0	0.5	GIS
<b>TOTALS</b>		<b>380</b>	<b>14</b>	<b>10</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>346</b>	

4. **Cruisers and Cruise Dates:** Areas 1, 2, A, B, C, D, and E were cruised by Peter Stone, Jasen McCoy, and David Wolfram in January, 2007.

5. **Cruise Method and Computation:**

Areas 1 and 2 are both "auto-mark" thinning units (SDI 25), and were variable plot cruised using a 40 BAF. These plots are located on a 4 by 9 chain grid, with every fourth plot measured and graded. A total of 97 plots were sampled, with 25 measured and graded plots, and 72 count plots. All species other than Douglas-fir are reserve species, and were recorded as "leave" trees. Two or three of the biggest and best trees per plot including all trees over 20 inches DBH were recorded as "leave" trees to meet a target residual basal area of 100 ft<sup>2</sup>/acre. Hardwoods do not count towards the residual basal area.

Areas A, B, C, D, and E are Group Selection units within Areas 1 and 2 ranging in size from 0.5 to 1.5 acres, and were variable plot cruised using a 40 BAF. A total of 5 plots (one plot per acre) were sampled with every plot measured and graded.

Area 3 R/W The Right-of-Way volume was calculated by multiplying the R/W acreage and the average volume per acre from the plots in Areas 1 and 2. In-sale right of way totals 10 acres.

All cruisers used Corvallis MicroTechnology (CMT) and/or Allegro data collectors, and were downloaded to the Atterbury Super A.C.E. program in District for computing. See the attached Cruise Design for more details on the cruise method. The cruise calculations were processed in the Astoria district office.

AREA	CRUISE	TRACT	TYPE
1 and 2	05N06W SEC 15	A12	Take
3 R/W	05N06W SEC 15	A12	R/W
A, B, C, D, and E	05N06W SEC 15	GS	Take

6. **Timber Description:** Areas 1 and 2 are "auto-mark" thinning units, approximately 35 years old, consisting mostly of planted Douglas-fir stands. Pockets of low stocked, non-thinnable types are scattered throughout both areas. The larger non-thinnable types have been mapped out and were not included in the cruise or net acres. Areas 1 and 2 will be thinned to an SDI of 25, removing approximately 88 trees per acre and 7.2 MBF/acre (net). There is a diameter limit in which no trees 20" DBH or larger may be cut. There is a considerable amount of defect – forks and crooks – in the stand. The average conifer "take" tree size is 14.5 inches DBH and 41 feet to a merchantable top (6 inches d.i.b.). The average conifer "leave" tree size is 21.3 inches DBH and 62 feet to a merchantable top (6 inches d.i.b.).



## TIMBER CRUISE REPORT GRASSLANDS THINNING

Areas A, B, C, D, and E are Group Selection units, approximately 35 years old, consisting of planted Douglas-fir stands, and are located in Area 1. The Douglas-fir averages 16.5 inches DBH, with an average height of 47 feet to a merchantable top (6 inches d.i.b.). The average volume per acre to be harvested (net) is 16.5 MBF. All Douglas-fir trees over 8 inches DBH within the group selection units will be removed.

Area 3 R/W is similar to the timber description mentioned above for all Areas. The average volume (net) is approximately 22 MBF/acre.

### 7. Statistical Analysis and Stand Summary: (See "Statistics" - Type Reports, attached)

Statistics for Stand B.F. volumes

Area	Estimated CV	Target SE%	Actual CV	Actual SE%
1 and 2 (PC)	40%	6%	34.3%	*3.5%
A, B, C, D and E (GS)	30%	12%	34.8%	17.3%
Total combined SE	--	--	--	**6.72%

\* Statistics for the thinning units (Areas 1 and 2) is for the current stand (Take and leave trees combined).

\*\* Statistics were combined for the total sale SE for Areas 1, 2, A, B, C, D, and E


### 8. Volumes by Species and Log Grade: (See "Species, Sort, Grade - Type and Project Reports, attached, for individual sale areas and combined sale areas.)

Volumes by Species and Grade for All Sale Areas: (MBF) Volumes do not include "in-growth."

Species	DBH	Net Vol.	2 Saw	3Saw	4 Saw	% D & B	% Sale
Douglas-fir	14.5"	2,696	473	1,773	450	2.1	100
<b>TOTALS</b>		<b>2,696</b>	<b>473</b>	<b>1,773</b>	<b>450</b>		

### 9. Approvals:

Prepared by: Peter Stone Date: March 05, 2007

Unit Forester Approval:  Date: 3/9/07

### 10. Attachments:

Cruise Designs - 4 pages  
Cruise Maps - 1 page  
Volume Reports - 5 pages  
Combined SE% - 1 page  
Statistics Reports - 5 pages  
Stand Tables - 1 page  
Log Stock Tables - 2 pages

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T05N R06W S15 TTAKE	T05N R06W S15 TTAKE																		
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:12.5%;">Twp</td> <td style="width:12.5%;">Rge</td> <td style="width:12.5%;">Sec</td> <td style="width:12.5%;">Tract</td> <td style="width:12.5%;">Type</td> <td style="width:12.5%;">Acres</td> <td style="width:12.5%;">Plots</td> <td style="width:12.5%;">Sample Trees</td> <td style="width:12.5%;">CuFt</td> </tr> <tr> <td>05N</td> <td>06W</td> <td>15</td> <td>A12</td> <td>TAKE</td> <td>331.00</td> <td></td> <td></td> <td>1</td> </tr> </table>	Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	05N	06W	15	A12	TAKE	331.00			1	BdFt W
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt											
05N	06W	15	A12	TAKE	331.00			1											

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf		
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
D		DO	CU														9		0.00	2.4	
D		DO	2S	12	6.0	980	922	305		59	41			13	87		31	133	1.23	7.0	
D		DO	3S	70	1.3	5,089	5,024	1,663		97	3			4	63	34	34	77	0.73	65.4	
D		DO	4S	18	2.9	1,321	1,283	425		100				27	49	17	6	23	29	0.51	44.0
<b>D</b>		<b>Totals</b>		100	2.2	7,390	7,228	2,393		93	7			5	13	58	25	29	61	0.69	118.7
<b>Type</b>		<b>Totals</b>			2.2	7,390	7,228	2,393		93	7			5	13	58	25	29	61	0.69	118.7

T05N R06W S15 TLEAV T05N R06W S15 TLEAV  
 Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt BdFt  
 05N 06W 15 A12 LEAV 331.00 1 W

Spp	S T	So rt	Gr ad	%	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
									Def%	Gross	Net	Log Scale Dia.				Log Length					Ln Ft
					4-5	6-11	12-16					17+	12-20	21-30	31-35	36-99					
DL		DO	CU													17		0.00	2.0		
DL		DO	2S	78	.7	11,409	11,332	3,751		5	39	56		1	1	65	32	34	349	2.30	32.5
DL		DO	3S	18	1.1	2,674	2,644	875		85	15			5	5	61	29	33	86	0.91	30.6
DL		DO	4S	4	2.9	553	537	178		100				24	63	13		23	30	0.56	17.7
<b>DL</b>	<b>Totals</b>			100	.8	14,636	14,513	4,804		23	33	44		3	4	63	30	31	175	1.43	82.8
<b>Type Totals</b>					.8	14,636	14,513	4,804		23	33	44		3	4	63	30	31	175	1.43	82.8

T05N R06W S15 TTAKE T05N R06W S15 TTAKE  
 Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt BdFt  
 05N 06W 15 GS TAKE 5.00 i W

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf		
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
D		DO	CU																	0.00	4.5
D		DO	2S	48	1.0	8,096	8,018	40	9	76	14			54	46	35	214	1.59			37.5
D		DO	3S	42	1.2	7,012	6,925	35	86	14		3	15	47	35	32	70	0.77			99.6
D		DO	4S	10		1,510	1,510	8	100			21	27	52		25	34	0.52			43.9
<b>D</b>	<b>Totals</b>			100	1.0	16,618	16,453	82	50	43	7	3	9	51	37	30	89	0.91			185.5
<b>Type Totals</b>					1.0	16,618	16,453	82	50	43	7	3	9	51	37	30	89	0.91			185.5

T05N R06W S15 TR/W										T05N R06W S15 TR/W										
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt											
05N	06W	15	A12	R/W	10.00			1	W											
Spp	S	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log			Logs Per /Acre
					Net	Gross	Net		Log Scale Dia.				Log Length				Ln	Bd	CF/	
Tr	ad	BdFt	Def%				Net MBF	4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	Ft	Lf		
D	DO	CU														13		0.00	4.4	
D	DO	2S	57	1.1	12,893	12,756	128	8	39	53		1	2	67	30	33	314	2.14	40.6	
D	DO	3S	34	1.2	7,633	7,539	75	93	7			2	4	62	32	34	80	0.79	94.1	
D	DO	4S	9	2.9	1,833	1,780	18	100				26	53	16	4	23	29	0.52	60.4	
<b>D</b>	<b>Totals</b>		100	1.3	22,359	22,076	221	45	25	30		4	7	61	28	30	111	1.03	199.5	
<b>Type</b>	<b>Totals</b>			1.3	22,359	22,076	221	45	25	30		4	7	61	28	30	111	1.03	199.5	

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT	DEMO	DATE 3/5/2007				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
05N	06W	15	A12	00PC	331.00	97	514	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL	97	514	5.3							
CRUISE	25	133	5.3	43,191			.3			
DBH COUNT										
REFOREST										
COUNT	72	381	5.3							
BLANKS										
100 %										
<b>STAND SUMMARY</b>										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUGLEAV	71	42.7	21.3	62		106.0	14,636	14,513	3,675	3,675
DOUG FIR	61	87.5	14.5	41		100.6	7,390	7,228	2,418	2,415
SNAG	1	.3	42.0	32		2.9				
<b>TOTAL</b>	<b>133</b>	<b>130.5</b>	<b>17.2</b>	<b>48</b>		<b>209.5</b>	<b>22,026</b>	<b>21,741</b>	<b>6,093</b>	<b>6,090</b>
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		
DOUGLEAV	105.4	12.5	538	615	691					
DOUG FIR	60.3	7.7	86	93	100					
SNAG										
<b>TOTAL</b>	<b>145.9</b>	<b>12.6</b>	<b>324</b>	<b>371</b>	<b>418</b>	<b>850</b>	<b>212</b>	<b>94</b>		
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV	37.1	3.8	41	43	44					
DOUG FIR	61.8	6.3	82	88	93					
SNAG	360.4	36.6	0	0	0					
<b>TOTAL</b>	<b>40.6</b>	<b>4.1</b>	<b>125</b>	<b>130</b>	<b>136</b>	<b>66</b>	<b>16</b>	<b>7</b>		
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV	35.3	3.6	102	106	110					
DOUG FIR	62.1	6.3	94	101	107					
SNAG	360.4	36.6	2	3	4					
<b>TOTAL</b>	<b>29.5</b>	<b>3.0</b>	<b>203</b>	<b>209</b>	<b>216</b>	<b>35</b>	<b>9</b>	<b>4</b>		
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV	48.8	4.9	13,795	14,513	15,231					
DOUG FIR	67.1	6.8	6,736	7,228	7,720					
SNAG										
<b>TOTAL</b>	<b>34.3</b>	<b>3.5</b>	<b>20,985</b>	<b>21,741</b>	<b>22,497</b>	<b>47</b>	<b>12</b>	<b>5</b>		

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT	DEMO			DATE	3/5/2007		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
05N	06W	15	A12	TAKE	331.00	97	244	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL	97	244	2.5								
CRUISE	23	61	2.7	28,967							
DBH COUNT											
REFOREST											
COUNT	64	183	2.9								
BLANKS	10										
100 %											
<b>STAND SUMMARY</b>											
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
DOUG FIR	61	87.5	14.5	41		100.6	7,390	7,228	2,418	2,415	
TOTAL	61	87.5	14.5	41		100.6	7,390	7,228	2,418	2,415	
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	60.3	7.7	86	93	100						
TOTAL	60.3	7.7	86	93	100	145	36	16			
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	61.8	6.3	82	88	93						
TOTAL	61.8	6.3	82	88	93	152	38	17			
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	62.1	6.3	94	101	107						
TOTAL	62.1	6.3	94	101	107	154	38	17			
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	67.1	6.8	6,736	7,228	7,720						
TOTAL	67.1	6.8	6,736	7,228	7,720	180	45	20			



TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	DEMO			DATE	3/5/2007	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
05N	06W	15	GS	TAKE	5.00	5	23	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL	5	23	4.6	623		3.7				
CRUISE	5	23	4.6							
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR	23	124.6	16.5	47		184.0	16,618	16,453	5,124	5,124
TOTAL	23	124.6	16.5	47		184.0	16,618	16,453	5,124	5,124
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	88.3	18.8	144	177	211					
TOTAL	88.3	18.8	144	177	211	326	81	36		
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	32.4	16.1	105	125	145					
TOTAL	32.4	16.1	105	125	145	52	13	6		
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	19.4	9.7	166	184	202					
TOTAL	19.4	9.7	166	184	202	19	5	2		
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	34.8	17.3	13,611	16,453	19,295					
TOTAL	34.8	17.3	13,611	16,453	19,295	60	15	7		

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	DEMO			DATE	3/5/2007	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
05N	06W	15	A12	R/W	10.00	97	507	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL	97	507	5.2							
CRUISE	25	132	5.3	1,278			10.3			
DBH COUNT										
REFOREST										
COUNT	72	375	5.2							
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR	132	127.8	17.2	49		206.6	22,359	22,076	6,148	6,145
TOTAL	132	127.8	17.2	49		206.6	22,359	22,076	6,148	6,145
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	145.1	12.6	326	374	421					
TOTAL	145.1	12.6	326	374	421	840	210	93		
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	34.0	3.4	123	128	132					
TOTAL	34.0	3.4	123	128	132	46	12	5		
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	29.9	3.0	200	207	213					
TOTAL	29.9	3.0	200	207	213	36	9	4		
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	36.5	3.7	21,259	22,076	22,893					
TOTAL	36.5	3.7	21,259	22,076	22,893	53	13	6		

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	DEMO			DATE	3/5/2007	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
05N	06W	15	A12	LEAV	331.00	97	270	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL	97	270	2.8							
CRUISE	25	72	2.9	14,168		.5				
DBH COUNT										
REFOREST										
COUNT	72	198	2.8							
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUGLEAV	71	42.7	21.3	62		106.0	14,636	14,513	3,675	3,675
SNAG	1	.1	42.0	32		1.2				
<b>TOTAL</b>	<b>72</b>	<b>42.8</b>	<b>21.4</b>	<b>62</b>		<b>107.2</b>	<b>14,636</b>	<b>14,513</b>	<b>3,675</b>	<b>3,675</b>
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		
DOUGLEAV	105.4	12.5	538	615	691					
SNAG										
<b>TOTAL</b>	<b>106.8</b>	<b>12.6</b>	<b>530</b>	<b>606</b>	<b>682</b>	<b>455</b>	<b>114</b>	<b>51</b>		
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV	37.1	3.8	41	43	44					
SNAG	562.7	57.1	0	0	0					
<b>TOTAL</b>	<b>37.1</b>	<b>3.8</b>	<b>41</b>	<b>43</b>	<b>44</b>	<b>55</b>	<b>14</b>	<b>6</b>		
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV	35.3	3.6	102	106	110					
SNAG	562.7	57.1	1	1	2					
<b>TOTAL</b>	<b>35.1</b>	<b>3.6</b>	<b>103</b>	<b>107</b>	<b>111</b>	<b>49</b>	<b>12</b>	<b>5</b>		
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV	48.8	4.9	13,795	14,513	15,231					
SNAG										
<b>TOTAL</b>	<b>48.8</b>	<b>4.9</b>	<b>13,795</b>	<b>14,513</b>	<b>15,231</b>	<b>95</b>	<b>24</b>	<b>11</b>		

**Stand Table Summary**

Project **DEMO**

**T05N R06W S15 TLEAV**

**T05N R06W S15 TLEA**

Twp Rge Sec Tract  
**05N 06W 15 A12**

Type Acres Plots Sample Trees  
**LEAV 331.00**

Page: **1**  
 Date: **03/05/200**  
 Time: **3:08:21PM**

S SpC	T	Sample		Av		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Net Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals		
		DBH	Trees	FF 16'	Ht Tot				Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF
DL		14	1	89	58	1.396	1.49	1.40	24.0	60.0	34	84		111	28	
DL		15	1	82	56	1.216	1.49	1.22	27.0	60.0	33	73		109	24	
DL		16	5	86	65	5.345	7.46	9.62	21.6	73.3	207	706		686	234	
DL		17	6	85	70	5.682	8.96	9.47	26.3	87.0	249	824		824	273	
DL		18	6	86	75	5.068	8.96	9.29	29.1	91.8	270	853		895	282	
DL		19	7	86	65	5.307	10.45	9.10	30.8	89.2	280	811		926	268	
DL		20	8	86	79	5.474	11.94	10.26	37.3	118.7	383	1,218		1,268	403	
DL		21	7	88	82	4.344	10.45	9.31	36.9	132.7	344	1,235		1,138	409	
DL		22	2	89	104	1.131	2.99	2.26	56.0	220.0	127	498		419	165	
DL		23	1	86	89	.517	1.49	1.03	50.5	170.0	52	176		173	58	
DL		24	1	87	103	.475	1.49	.95	64.5	240.0	61	228		203	75	
DL		25	2	88	84	.876	2.99	1.75	56.5	212.5	99	372		328	123	
DL		26	1	91	95	.405	1.49	.81	73.0	315.0	59	255		196	84	
DL		28	3	85	101	1.047	4.48	2.79	63.8	285.0	178	796		589	263	
DL		29	1	87	109	.325	1.49	.98	65.7	313.3	64	306		212	101	
DL		30	1	89	129	.304	1.49	.91	79.3	390.0	72	356		240	118	
DL		31	1	86	125	.285	1.49	.85	80.0	386.7	68	330		226	109	
DL		32	3	87	111	.802	4.48	1.87	93.0	464.3	174	869		576	288	
DL		33	1	94	103	.251	1.49	.50	120.0	565.0	60	284		200	94	
DL		34	1	86	125	.237	1.49	.71	97.7	446.7	69	317		230	105	
DL		36	2	89	118	.422	2.99	1.06	123.6	618.0	131	653		432	216	
DL		37	3	89	119	.600	4.48	1.60	129.1	671.3	207	1,074		684	355	
DL		38	3	87	119	.569	4.48	1.52	133.4	670.0	202	1,016		669	336	
DL		40	1	86	125	.171	1.49	.51	136.7	693.3	70	356		232	118	
DL		43	2	86	113	.296	2.99	.74	172.4	820.0	128	607		422	201	
DL		46	1	83	92	.129	1.49	.39	137.3	563.3	53	219		176	72	
DL	Totals		71	86	79	42.674	105.98	80.90	45.4	179.4	3,675	14,513		12,164	4,804	
SNL		42	1	60	37	.129	1.24									
SNL	Totals		1	60	37	.129	1.24									
Totals			72	86	78	42.803	107.22	80.90	45.4	179.4	3675	14,513		12,164	4,804	



Log Stock Table - MBF

T05N R06W S15 TyR/W	10.00
T05N R06W S15 TyTAKE	331.00
T05N R06W S15 TyTAKE	5.00

Project: DEMO  
Acres 346.00

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+	
D		DO	4S	24		12	.5				12									
D		DO	4S	25		25	.9				25									
D		DO	4S	26		42	1.6				42									
D		DO	4S	27		19	.7				19									
D		DO	4S	29		2	.1				2									
D		DO	4S	30		17	.6				17									
D		DO	4S	31	8.3	38	1.3				35									
D		DO	4S	32		45	1.7				45									
D		DO	4S	35		1	.0				1									
D		DO	4S	36		27	1.0				27									
D		Totals				2,753	2.1	2,696	100.0			1277	180	901	233	17	31	26	29	2
Total		All Species				2,753	2.1	2,696	100.0			1277	180	901	233	17	31	26	29	2

**CRUISE DESIGN  
ASTORIA DISTRICT**

**Sale Name:** Grasslands Thinning **Area(s)** 1 & 2

**Harvest Type:** (PC) "Automark Thinning"

**Approx. Cruise Acres:** 313 **Estimated CV%** 40 Net BF/Acre **SE% Objective** 6 Net BF/Acre

**Planned Sale Volume:** 1,900 MBF **Estimated Sale Area Value/Acre:** \$1,500/Ac  
(Area 1 and 2) (6 MBF/Ac)

**A. Cruise Goals:** (a) Grade minimum 125 conifer:  
(b) Sample 77 cruise plots (1 grade:3 count); (c) Other goals (X Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes.

**B. Cruise Design:**

**1. Plot Cruises:** BAF 40 (Full point; Half point) (circle one)  
Cruise Line Direction(s) AZ= 360° (North/South)  
Cruise Line Spacing 9 (chains)  
Cruise Plot Spacing 4 (chains)  
Grade/Count Ratio 1/3

Basal Area leave target 90 -110 sq. ft. Cruiser needs to select 2-3 leave trees per plot. Mark Leave trees with an "L" using yellow paint on graded plots only. Cruise all take and leave trees. If a cruise line ends up paralleling in a buffer or a road offset by 1 chain and continue. All cedar are leave trees and count towards the leave tree basal area. Alder will not count towards the leave tree BA. Grade alder as camprun-sawlogs (30 net BF minimum).

**C. Tree Measurements:**

- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 10" for hardwoods. Record dbh to nearest  $\frac{1}{2}$ " for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.
- 2. Bole Length:** Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.
- 3. Top Cruise Diameter (TCD):** Minimum top outside bark is 7" for both conifers and hardwoods or 40 of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for trees > 18" dbh.
- 4. Form Factors:** (1) Measure or estimate a 16' form factor for every conifer tree measured/graded; OR (2) Measure a minimum of 20 form factors for each major

conifer species on the cruise area, and use these to calculate average FF for the species on the cruise. Hardwood form factors are a Standard 87.

5. **Tree Segments:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12'; for hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each merchantable segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree.
6. **Species, Sort, and Grade Codes:**
  - A. **Species:** Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DL, HL, CL, etc.)
  - B. **Sort:** Use code "1" (Domestic).
  - C. **Grade:** A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; 0 = Cull, R = Camprun (Hardwoods)
7. **Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally results in higher breakage percentages than gentler topography, and hemlock generally breaks more than D-fir and spruce.
8. **Standard Field Procedures: Plot Type Cruises:** Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at inter-visible points, not to exceed 100' apart. On "measure/grade" plots write the tree number and/or tree diameter on at least the first measured tree (clockwise from the line direction) in yellow paint. All trees on the plot may be marked this way, if the cruiser chooses.
9. **Cruising Equipment:** Relaskop, Rangefinder, Logger's Tape (with dbh on back), Biltmore Stick, Compass, Cruise Cards in Tatum OR Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging, Yellow Paint.
10. **Attachments:** A. Cruise Map (showing cruise unit boundaries, roads, streams, approx. acres/unit, cruise lines and plot locations, legal description and section lines, BAF or plot size, measure/count plot ratio, north arrow, and scale.

Cruise Design by: Peter Stone  
Approved by: Jon Long 12-14-06  
Date: 12/04/06



**CRUISE DESIGN  
ASTORIA DISTRICT**

**Sale Name:** Grasslands Thinning **Area(s)** A, B, C, D, E

**Harvest Type:** (GS) Group Selection

**Approx. Cruise Acres:** 5 **Estimated CV%** 16 Net BF/Acre **SE% Objective** 7 Net BF/Acre

**Planned Sale Volume:** 50 MBF **Estimated Sale Area Value/Acre:** \$2,500/Ac  
(Group Selection) (10 MBF/Ac)

**A. Cruise Goals:** (a) Grade minimum 25 conifer:  
(b) Sample 5 cruise plots (5 grade:0 count); (c) Other goals (     Determine "automark"  
thinning standards; X Determine log grades for sale value; X Determine snag  
and leave tree species and sizes.

**B. Cruise Design:**

**1. Plot Cruises:** BAF 40 (Full point; Half point) (circle one)  
Cruise Line Direction(s) Map Measure  
Cruise Line Spacing 0 (chains)  
Cruise Plot Spacing 0 (chains)  
Grade/Count Ratio Grade All

**C. Tree Measurements:**

- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 10" for hardwoods.  
Record dbh to nearest 1/2" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.
- 2. Bole Length:** Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.
- 3. Top Cruise Diameter (TCD):** Minimum top outside bark is 7" for both conifers and hardwoods or 40 % of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for trees > 18" dbh.
- 4. Form Factors:** (1) Measure or estimate a 16' form factor for every conifer tree measured/graded; OR (2) Measure a minimum of 20 form factors for each major conifer species on the cruise area, and use these to calculate average FF for the species on the cruise. Hardwood form factors are a Standard 87.

5. **Tree Segments:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12'; for hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each merchantable segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree.
6. **Species, Sort, and Grade Codes:**
- A. **Species:** Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western redcedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DL, HL, CL, etc.)
- B. **Sort:** Use code "1" (Domestic).
- C. **Grade:** A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; 0 = Cull; R = Camprun (Hardwoods)
7. **Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally results in higher breakage percentages than gentler topography, and hemlock generally breaks more than D-fir and spruce.
8. **Standard Field Procedures: Plot Type Cruises:** Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at inter-visible points, not to exceed 100' apart. On "measure/grade" plots write the tree number and/or tree diameter on at least the first measured tree (clockwise from the line direction) in yellow paint. All trees on the plot may be marked this way, if the cruiser chooses.
9. **Cruising Equipment:** Relaskop, Rangefinder, Logger's Tape (with dbh on back), Biltmore Stick, Compass, Cruise Cards in Tatum OR Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging, Yellow Paint.
10. **Attachments:** A. Cruise Map (showing cruise unit boundaries, roads, streams, approx. acres/unit, cruise lines and plot locations, legal description and section lines, BAF or plot size, measure/count plot ratio, north arrow, and scale.

Cruise Design by: Peter Stone  
 Approved by: Jon Long 12-14-06  
 Date: 12/04/06

**Cruise Map**  
 Grasslands Thinning  
 of Timber Sale Contract No. 341-08-45  
 Portions of Sections 10, 11, 14, 15, and 22  
 of T5N, R6W, W.M.  
 Clatsop County, Oregon



**Approximate Net Acreage**

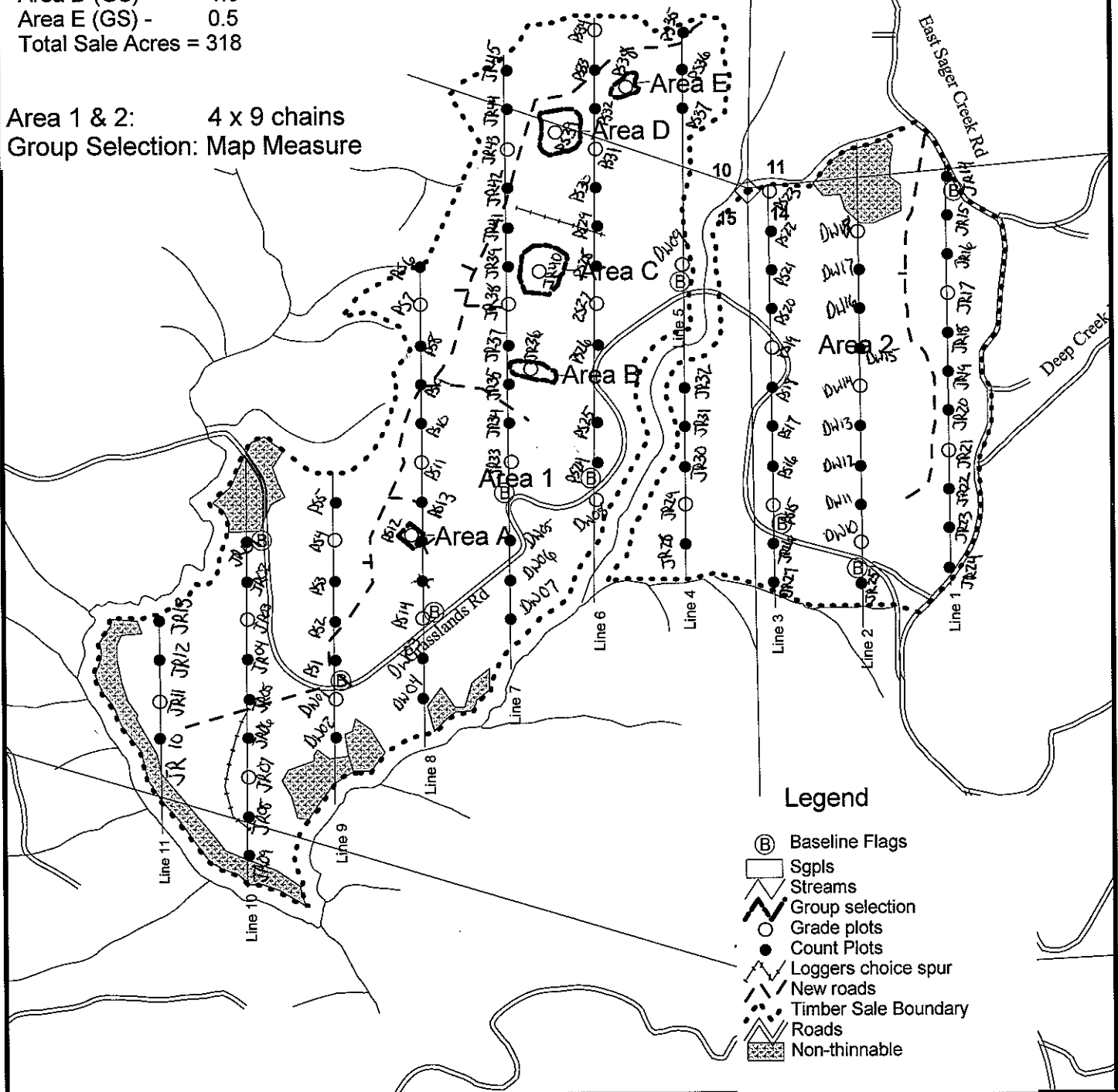
Area 1 (PC) -	200
Area 2 (PC) -	113
Area A (GS) -	0.5
Area B (GS) -	1
Area C (GS) -	1.5
Area D (GS) -	1.5
Area E (GS) -	0.5
<b>Total Sale Acres =</b>	<b>318</b>

Approximate Scale = 1":1000'

0 500 1000 Feet



Area 1 & 2: 4 x 9 chains  
 Group Selection: Map Measure



**Legend**

- (B) Baseline Flags
- Sgpls
- ~ Streams
- - - Group selection
- Grade plots
- Count Plots
- ⚡ Loggers choice spur
- ⋯ New roads
- - - Timber Sale Boundary
- Roads
- ▨ Non-thinnable

# Logging Plan

Grasslands Thinning  
of Timber Sale Contract No. 341-08-45  
Portions of Sections 10, 11, 14, 15, and 22  
of T5N, R6W, W.M.  
Clatsop County, Oregon

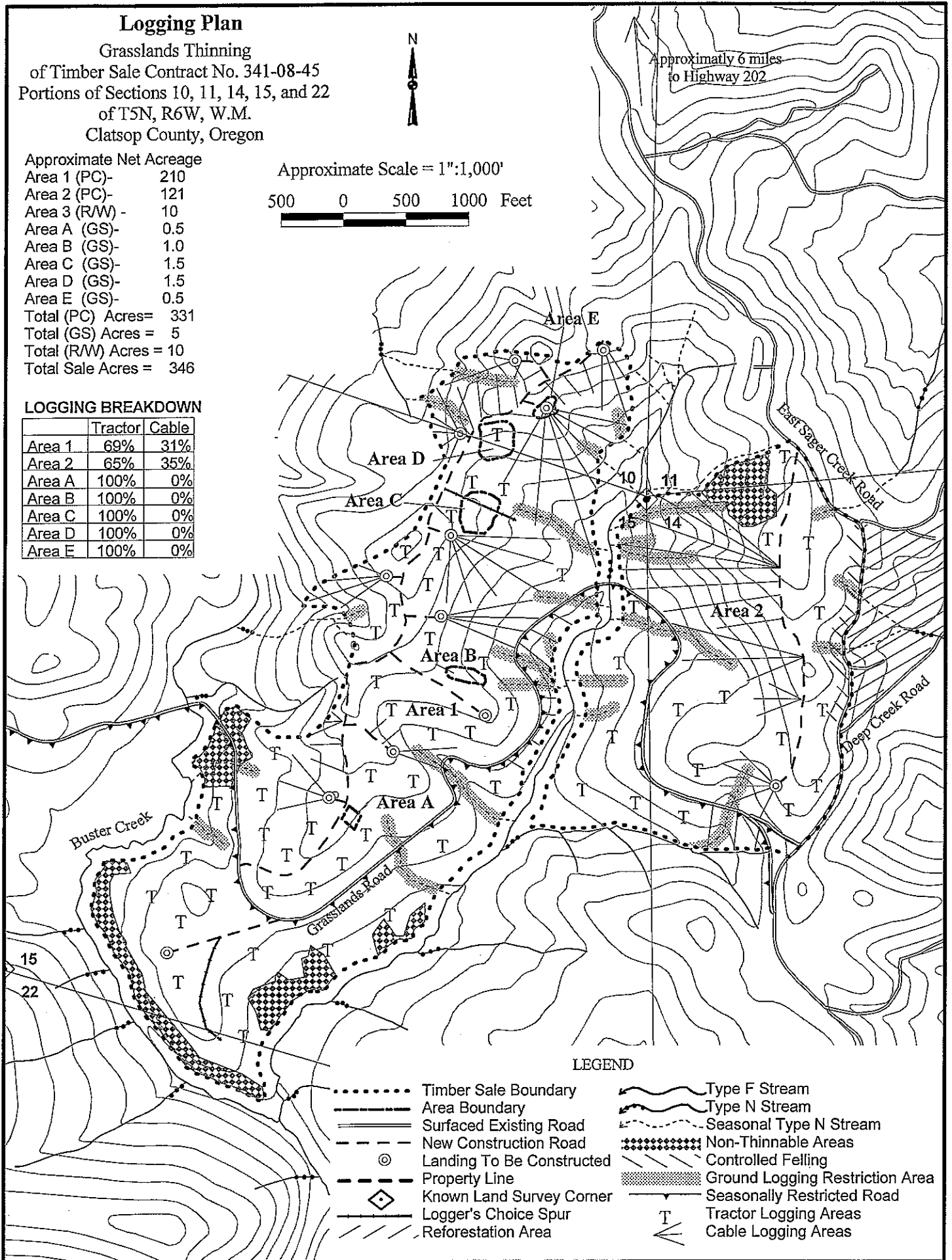
Approximate Net Acreage  
Area 1 (PC)- 210  
Area 2 (PC)- 121  
Area 3 (R/W) - 10  
Area A (GS)- 0.5  
Area B (GS)- 1.0  
Area C (GS)- 1.5  
Area D (GS)- 1.5  
Area E (GS)- 0.5  
Total (PC) Acres= 331  
Total (GS) Acres = 5  
Total (R/W) Acres = 10  
Total Sale Acres = 346

Approximate Scale = 1":1,000'

500 0 500 1000 Feet

## LOGGING BREAKDOWN

	Tractor	Cable
Area 1	69%	31%
Area 2	65%	35%
Area A	100%	0%
Area B	100%	0%
Area C	100%	0%
Area D	100%	0%
Area E	100%	0%



## LEGEND

- ..... Timber Sale Boundary
- Area Boundary
- ===== Surfaced Existing Road
- New Construction Road
- ⊙ Landing To Be Constructed
- Property Line
- ◇ Known Land Survey Corner
- Logger's Choice Spur
- //// Reforestation Area
- ~~~~~ Type F Stream
- ~~~~~ Type N Stream
- Seasonal Type N Stream
- ▣ Non-Thinnable Areas
- ▨ Controlled Felling
- ▩ Ground Logging Restriction Area
- Seasonally Restricted Road
- T Tractor Logging Areas
- C Cable Logging Areas