



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Backbreak Combination
Sale 341-14-42

District: Astoria

Date: January 15, 2014

cost summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$332,977.50	\$104,217.62	\$437,195.12
		Project Work:	\$(83,988.00)
		Advertised Value:	\$353,207.12



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timber description

Location: Portions of Sections 1, 2, 11, and 12, T8N, R7W and Section 13, T8N, R8W, W.M., Clatsop County, Oregon.

Stand Stocking: 60%

SpecieName	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	12	0	97
Western Hemlock / Fir	15	0	92
Sitka Spruce	14	0	92
Red Cedar	15	0	90
Alder (Red)	11	0	95
Maple	11	0	90

Volume by Grade	10" - 11"	12"+	2S	3S	4S	6" - 7"	8" - 9"	Camprun	Total
Douglas - Fir	0	0	100	284	54	0	0	0	438
Western Hemlock / Fir	0	0	402	351	71	0	0	0	824
Sitka Spruce	0	0	1	5	39	0	0	0	45
Red Cedar	0	0	1	0	0	0	0	0	1
Alder (Red)	22	93	0	0	0	194	29	0	338
Maple	0	0	0	0	0	0	0	20	20
Total	22	93	504	640	164	194	29	20	1,666



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comments: Pond Values Use: 4th Quarter Calendar Year 2013 + Local Pond Values.

Expected log markets: Warrenton, OR, Tillamook, OR, Mist, OR, Garibaldi, OR, Forest Grove, OR, Longview, WA, Chehalis, WA.

SCALING COST ALLOWANCE = \$5.00/MBF

FUEL COST ALLOWANCE = \$4.00/GALLON

HAULING COST ALLOWANCE

Hauling costs equivalent to \$780 daily truck cost.

Other Costs (with Profit & Risk to be added):

Additional Logging Costs:

Branding and Painting: \$1 per MBF X 1,666 MBF = \$1,666

Slash & Landing Piling (includes move-in and pile materials) = \$3,537

Additional Move of Log Loader: 2 X \$1,290 = \$2,580, Yoader 1 X \$1,406 = \$1,406, and Tracked Skidder 2 X \$778 = \$1,556.

Total Additional Move-in = \$5,542

TOTAL Other Costs (with Profit & Risk to be added) = \$10,745

Other Costs (No Profit & Risk added):

Machine Washing for Invasive Weeds = \$3,000.

TOTAL Other Costs (No Profit & Risk added) = \$3,000



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logging conditions

combination#: 1	Douglas - Fir	10.00%	
	Western Hemlock / Fir	10.00%	
	Sitka Spruce	10.00%	
	Red Cedar	10.00%	
	Alder (Red)	10.00%	
	Maple	10.00%	
yarding distance:	Medium (800 ft)	downhill yarding:	No
logging system:	Shovel	Process:	Feller Buncher
tree size:	Mature Private Forest / Regen Cut (250 Bft/tree), 6-11 logs/MBF		
loads / day:	6.0	bd. ft / load:	4,000
cost / mbf:	\$59.94		
machines:	Feller Buncher w/ Delimber		
combination#: 2	Douglas - Fir	68.00%	
	Western Hemlock / Fir	68.00%	
	Sitka Spruce	68.00%	
	Red Cedar	68.00%	
	Alder (Red)	68.00%	
	Maple	68.00%	
yarding distance:	Medium (800 ft)	downhill yarding:	No
logging system:	Track Skidder	Process:	Manual Falling/Delimbing
tree size:	Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF		
loads / day:	8.0	bd. ft / load:	3,700
cost / mbf:	\$116.23		
machines:	Log Loader (B) Track Skidder		
combination#: 3	Douglas - Fir	22.00%	
	Western Hemlock / Fir	22.00%	
	Sitka Spruce	22.00%	
	Red Cedar	22.00%	
	Alder (Red)	22.00%	
	Maple	22.00%	
yarding distance:	Medium (800 ft)	downhill yarding:	No
logging system:	Cable: Small Tower <=40	Process:	Manual Falling/Delimbing
tree size:	Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF		
loads / day:	5.0	bd. ft / load:	3,700
cost / mbf:	\$146.00		
machines:	Log Loader (A) Tower Yarder (Small)		



"STEWARDSHIP IN FORESTRY"

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logging costs

Operating Seasons:	2.00	Profit Risk:	12.00%
Project Costs:	\$83,988.00	Other Costs (P/R):	\$10,745.00
Slash Disposal:	\$0.00	Other Costs:	\$3,000.00

Miles of Road

Road Maintenance: \$8.61

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	2.0	4.0
Western Hemlock / Fir	\$0.00	3.0	4.0
Sitka Spruce	\$0.00	2.0	4.0
Red Cedar	\$0.00	2.0	4.0
Alder (Red)	\$0.00	2.0	3.7
Maple	\$0.00	2.0	3.5



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Local Pond Values

Date	Specie	Grade	Value
1/15/14	Douglas - Fir	2S	\$600.00
1/15/14	Douglas - Fir	3S	\$555.00
1/15/14	Douglas - Fir	4S	\$540.00
1/15/14	Western Hemlock / Fir	2S	\$475.00
1/15/14	Western Hemlock / Fir	3S	\$455.00
1/15/14	Western Hemlock / Fir	4S	\$450.00
1/15/14	Sitka Spruce	2S	\$475.00
1/15/14	Sitka Spruce	3S	\$455.00
1/15/14	Sitka Spruce	4S	\$450.00
1/15/14	Alder (Red)	8" - 9"	\$625.00
1/15/14	Alder (Red)	10" - 11"	\$660.00
1/15/14	Alder (Red)	12"+	\$690.00
1/15/14	Alder (Red)	6" - 7"	\$500.00
1/15/14	Maple	Camprun	\$400.00



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logging costs breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling	Other	Total
Douglas - Fir									
\$117.15	\$8.87	\$5.26	\$89.66	\$6.45	\$27.29	\$0.00	\$5.00	\$1.80	\$261.48
Western Hemlock / Fir									
\$117.15	\$9.30	\$5.26	\$62.68	\$6.45	\$24.10	\$0.00	\$5.00	\$1.80	\$231.74
Sitka Spruce									
\$117.15	\$9.30	\$5.26	\$94.01	\$6.45	\$27.86	\$0.00	\$5.00	\$1.80	\$266.83
Red Cedar									
\$117.15	\$9.47	\$5.26	\$95.76	\$6.45	\$28.09	\$0.00	\$5.00	\$1.80	\$268.98
Alder (Red)									
\$117.15	\$9.04	\$5.26	\$98.82	\$6.45	\$28.41	\$0.00	\$5.00	\$1.80	\$271.93
Maple									
\$117.15	\$9.47	\$5.26	\$109.44	\$6.45	\$29.73	\$0.00	\$5.00	\$1.80	\$284.30

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$563.42	\$301.94	\$0.00
Western Hemlock / Fir	\$0.00	\$464.33	\$232.59	\$0.00
Sitka Spruce	\$0.00	\$451.11	\$184.28	\$0.00
Red Cedar	\$0.00	\$1,050.00	\$781.02	\$0.00
Alder (Red)	\$0.00	\$573.42	\$301.49	\$0.00
Maple	\$0.00	\$400.00	\$115.70	\$0.00



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summary

Amortized

Specie	MBF	Value	Total
Douglas - Fir	0	\$0.00	\$0.00
Western Hemlock / Fir	0	\$0.00	\$0.00
Sitka Spruce	0	\$0.00	\$0.00
Red Cedar	0	\$0.00	\$0.00
Alder (Red)	0	\$0.00	\$0.00
Maple	0	\$0.00	\$0.00

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	438	\$301.94	\$132,249.72
Western Hemlock / Fir	824	\$232.59	\$191,654.16
Sitka Spruce	45	\$184.28	\$8,292.60
Red Cedar	1	\$781.02	\$781.02
Alder (Red)	338	\$301.49	\$101,903.62
Maple	20	\$115.70	\$2,314.00

Gross Timber Sale Value

Recovery: \$437,195.12

Prepared by: John Tillotson

Phone: 503-325-5451

Vegetation Type/Zone	Vegetation Type/Zone Code	Production Rate (hr/ac)	Estimated Piles/Acre
Doug-fir	A	1.0	3.0
Hemlock/Fir	B	1.5	4.5
Hemlock/Spruce	C	2.0	6.0
Hemlock	D	2.0	6.0
Conifer/Hardwood	E	1.5	4.5
Whole Tree Yarding	F	0.5	0.5

Sale Area	Harvest Type	Veg Type/Zone	Ground Based Yarding Acres	Estimated Piling Hours/Area	Cost/Hour	Total Cost/Area
1	MC	A	18.0	18	\$129.00	\$2,322.00
					In-unit Piling	Sub Total = \$2,322.00
Sale Area	Number of Landings to be Piled	Cost/Landing Pile	Total Cost/Area	Number of In-Unit Piles	Material Cost/Pile	Total Cost/Area
1	0	\$220.00	\$0.00	54	\$5.00	\$270.00
*Cost includes separating firewood					Materials	Sub Total = \$270.00
					Landing Piling	Sub Total = \$0.00
Move-In Allowance	Number of Move-In's	Total Move-In Allowance				
\$945.00	1	\$945.00			Move-In	Sub Total = \$945.00
Grand Total =						\$3,537.00

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Backbreak Combination

ROAD CONSTRUCTION:

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 1	2A-2B, 2C-2D, 2E-2F	25.10	\$39,223
	TOTALS	25.10	\$39,223
	Miles	0.5	

ROAD IMPROVEMENT:

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 2	I1-I2, I2-I3, I3-I4, I5-I6, I7-I8, I8-I9, I10-I11, I12-I13, I14-I15	352.20	\$28,966
	TOTALS	352.20	\$28,966
	Miles	6.7	

SPECIAL PROJECTS:

	<u>Description</u>	<u>Cost</u>
Project No. 3	Fill Vacating and Culvert Removal V1	\$1,840
	Project Road Maintenance	\$3,720
	TOTAL	\$5,560

MOVE IN:

<u>Equipment</u>	<u>Cost</u>
Excavator (C330) X 2	\$2,812
Excavator (C315)	\$805
D-8 Cat	\$1,406
Large Grader (14G) X2	\$1,556
Front End Loader (C966)	\$778
10-12 cy highway dump truck X 5	\$815
20 cy highway dump trucks w/pup X 2	\$382
Water Truck (2,500 gal.)	\$190
Vibratory Roller	\$778
Rubber Tire Skidder (C518)	\$717
TOTAL	\$10,239

GRAND TOTAL **\$83,988.00**

Compiled By: W.Lawrence **FL**

Date: 11/05/2013

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Backbreak Combination
ROAD: 2A-2B, 2C-2D, 2E-2F
POINTS:

NEW CONSTRUCTION: 25.10 STATIONS
IMPROVEMENT: STATIONS

0.48 MILES
 MILES

CLEARING & GRUBBING

Method	Amount(acres)	x	Rate	=	Cost
Scatter	\$/ac 2.0	x	\$1,337.00	=	\$2,674.00

SUB TOTAL FOR CLEARING & GRUBBING

\$2,674

EXCAVATION

Material	Amount(hrs.)	x	Rate	=	Cost
2A-2B					
Drift Earth up to 200'	\$/sta 9.70	x	\$190.00	=	\$1,843.00
Landing Constructon	\$/ldg 2.0	x	\$389.00	=	\$778.00
End-haul excavation	\$/cy 700.0	x	\$4.00	=	\$2,800.00
2C-2D					
Drift Earth up to 200'	\$/sta 6.5	x	\$190.00	=	\$1,235.00
Landing Constructon	\$/ldg 2.0	x	\$389.00	=	\$778.00
2E-2F					
Drift Earth up to 200'	\$/sta 8.9	x	\$190.00	=	\$1,691.00
Landing Constructon	\$/ldg 1.0	x	\$389.00	=	\$389.00

SUB TOTAL FOR EXCAVATION

\$9,514

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
2A-2B									
0+00	18" CPP	30	\$19.53	\$585.90					
2C-2D									
0+00	18" CPP	40	\$19.53	\$781.20					

Other/miscellaneous:	Description	Quantity	Rate	Cost
	Fill Compaction (C518 hrs)	8.00	\$92.00	\$736.00
	Old growth stump removal and other Misc. (C330 hrs)	8.00	\$155.00	\$1,240.00
Culvert stakes & markers:	Fiberglass Culvert Markers	2	\$20.00	\$40.00

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION

\$3,383

Subtotal of Clearing, Exc., Culv.

\$15,571

Subgrade prep:	Description	Stations/ amount	x	Rate/ sta/amt	Cost
	Grade, Shape and Ditch 16' (2A-2B, 2C-2D, 2E-2F)(25.10 Sta.)	25.10	x	\$24.83	\$623.23
	Subgrade Compaction	25.10	x	\$20.19	\$506.77

ROAD SEGMENT		2A-2B		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A-2B Volume (CY) per		0+00 - 9+70 Number of				
Base Rock	4"-0" crushed	0+00-9+70	10	station	63	stations	9.7	611	\$6.53	\$3,990
Landings	6"-0" pit-run	5+90, 9+20	N/A	landing	80	landings	2	160	\$8.73	\$1,397
Junctions	4"-0" crushed	0+00	10	junction	44	junctions	1	44	\$6.53	\$287
Junctions	1 1/2"-0" crushed	0+00	3	junction	22	junctions	1	22	\$6.53	\$144
Traction Rock	1 1/2"-0" crushed	0+00-1+20, 2+00-3+05, 4+00-5+50, 8+00-8+70	2	station	13	stations	4.5	58	\$6.53	\$378
Turnarounds	4"-0" crushed	4+20	10	TA	17	TA's	1	17	\$6.53	\$111
Culvert Bedding/Backfill	1 1/2"-0" crushed	0+00	N/A	culvert	22	culverts	1	22	\$6.53	\$144
Subgrade Reinforcement	6"-0" pit-run	0+00-9+70	N/A	load	11	loads	10	110	\$8.73	\$960
Total Rock for Road Segment:								1,044		

\$7,411

ROAD SEGMENT		2C-2D		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	2C-2D Volume (CY) per		0+00 - 6+50 Number of				
Base Rock	4"-0" crushed	0+00-6+50	10	station	63	stations	6.5	410	\$6.53	\$2,674
Curve Widening	4"-0" crushed	0+35-1+35	10	curve	39	curves	1	39	\$6.53	\$255
Curve Widening	1 1/2"-0" crushed	0+35-1+35	2	curve	8	curves	1	8	\$6.53	\$52
Landings	6"-0" pit-run	3+50, 6+10	N/A	landing	80	landings	2	160	\$8.73	\$1,397
Junctions	4"-0" crushed	0+00	10	junction	44	junctions	1	44	\$6.53	\$287
Junctions	1 1/2"-0" crushed	0+00	3	junction	22	junctions	1	22	\$6.53	\$144
Traction Rock	1 1/2"-0" crushed	0+00-2+75, 3+50-5+60	2	station	13	stations	5	65	\$6.53	\$424
Turnarounds	4"-0" crushed	2+30	10	TA	17	TA's	1	17	\$6.53	\$111
Culvert Bedding/Backfill	1 1/2"-0" crushed	0+00	N/A	culvert	22	culverts	1	22	\$6.53	\$144
Subgrade Reinforcement	6"-0" pit-run	0+00-6+50	N/A	load	11	loads	7	77	\$8.73	\$672
Total Rock for Road Segment:								864		

\$6,160

ROAD SEGMENT		2E-2F		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	2E-2F Volume (CY) per		0+00 - 8+90 Number of				
Base Rock	4"-0" crushed	0+00-8+90	10	station	63	stations	8.9	561	\$6.53	\$3,661
Landings	6"-0" pit-run	8+25	N/A	landing	80	landings	1	80	\$8.73	\$698
Junctions	4"-0" crushed	0+00	10	junction	44	junctions	1	44	\$6.53	\$287
Traction Rock	1 1/2"-0" crushed	6+00-7+50	2	station	13	stations	1.5	20	\$6.53	\$127
Turnarounds	4"-0" crushed	6+00	10	TA	17	TA's	1	17	\$6.53	\$111
Subgrade Reinforcement	6"-0" pit-run	0+00-8+90	N/A	load	11	loads	9	99	\$8.73	\$864
Total Rock for Road Segment:								820		

\$5,750

Processing:	Description	No.sta	Rate/sta	Cost
	Water, Process & Compact: (Crushed rock surfacing)	25.10	\$56.48	\$1,418
SUB TOTAL FOR SURFACING				
	6"-0"pr	4"-0"	1 1/2"-0"	Total
	686	1,803	238	2,728

\$21,868.40

SPECIAL PROJECTS	
Description	Cost
Develop pit-run (\$2.60 per C.Y.)	\$1,783.60
SUB TOTAL FOR SPECIAL PROJECTS	

\$1,783.60

Subtotal of Surfacing & Spec. Proj.		\$23,652
Subtotal of Clearing, Exc., Culv.		\$15,571
GRAND TOTAL		\$39,223.10

Compiled By: Andrew Arvin / Will Lawrence
 Date: 11/05/2013

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Backbreak Combination
 ROAD: I1-I2, I2-I3, I3-I4, I5-I6, I7-I8, I8-I9, I10-I11,
 POINTS: I12-I13, I14-I15

NEW CONSTRUCTION: STATIONS
 IMPROVEMENT: 352.20 STATIONS

MILES
 6.67 MILES

Method	Amount(hrs.)	x	Rate	=	Cost
		x		=	
SUB TOTAL FOR CLEARING & GRUBBING					

Material	Amount(hrs.)	x	Rate	=	Cost
I2-I3					
10+25, remove CMP, curve widening					
Excavator (C315)	8.0	x	\$101.00	=	\$808.00
Labor	2.0	x	\$40.00	=	\$80.00
32+10, culvert dissipator					
Excavator (C315)	1.0	x	\$101.00	=	\$101.00
I3-I4					
6+50, culvert dissipator					
Excavator (C315)	1.0	x	\$101.00	=	\$101.00
24+80, improve landing					
Excavator (C315)	2.0	x	\$101.00	=	\$202.00
I8-I9					
8+25, improve turnout					
Excavator (C315)	1.0	x	\$101.00	=	\$101.00
18+75, improve landing					
Excavator (C315)	2.0	x	\$101.00	=	\$202.00
I10-I11					
8+95, improve junction					
Excavator (C315)	1.0	x	\$101.00	=	\$101.00
50+55, improve landing					
Excavator (C315)	2.0	x	\$101.00	=	\$202.00
Labor	1.0	x	\$40.00	=	\$40.00
I12-I13					
7+85, improve landing					
Excavator (C315)	2.0	x	\$101.00	=	\$202.00
Labor	1.0	x	\$40.00	=	\$40.00
I14-I15					
0+30, remove/rebuild waterbar					
Excavator (C315)	1.0	x	\$101.00	=	\$101.00
SUB TOTAL FOR EXCAVATION					\$2,281

CULVERT MATERIALS AND INSTALLATION									
Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
I2-I3									
9+70	18" CPP	40	\$19.53	\$781.20					
36+50	18" CPP	40	\$19.53	\$781.20					
Other/miscellaneous:									
Description					Quantity		Rate		Cost
I1-I2									
spot grading (14G)(Hrs.)					10.00		\$100.00		\$1,000.00
I2-I3									
spot grading (14G)(Hrs.)					15.00		\$100.00		\$1,500.00
9+70, slope maint. (C315)(Hrs.)					1.00		\$101.00		\$101.00
10+25, mulch exposed soil (straw bales)					1.00		\$10.73		\$10.73
I5-I6									
spot grading (14G)(Hrs.)					15.00		\$100.00		\$1,500.00
I8-I9									
9+10, repair culvert inlet (Labor)(Hrs.)					1.00		\$40.00		\$40.00
I10-I11									
0+00 to 4+70, spot grading (14G)(Hrs.)					2.00		\$100.00		\$200.00
26+40, repair culvert inlet (Labor)(Hrs.)					1.00		\$40.00		\$40.00
Culvert stakes & markers:									
Fiberglass Culvert Markers									
					I2-I3	8	\$20.00	\$160.00	
					I3-I4	3	\$20.00	\$60.00	
					I5-I6	3	\$20.00	\$60.00	
					I7-I8	1	\$20.00	\$20.00	
					I8-I9	1	\$20.00	\$20.00	
					I10-I11	1	\$20.00	\$20.00	
SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION									
Subtotal of Clearing, Exc., Culv.									
\$8,575.									
\$6,294.									

Subgrade prep:		Description		Stations/ amount		x		Rate/ sta/amt		Cost	
		Grade, Shape and Ditch 16' (I3-I4, I7-I8, I8-I9, I10-I11(45.85 Sta.), I12-I13, I14-I15)		109.85		x		\$24.83		\$2,727.58	
		Subgrade Compaction (I3-I4(16.0Sta.), I8-I9,)		34.75		x		\$20.19		\$701.60	

ROAD SEGMENT I1-I2				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1-I2 Volume (CY) per	I1-I2 Number of	0+00 - 89+00				
Subgrade Leveling	1 1/2"-0" crushed	I1-I2	N/A	load	11	loads	8	88	\$6.53	\$575
Total Rock for Road Segment:				I1-I2				88		

\$575

ROAD SEGMENT I2-I3				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I2-I3 Volume (CY) per	I2-I3 Number of	0+00 - 54+20				
Subgrade Leveling	1 1/2"-0" crushed	I2-I3	N/A	load	11	loads	23	253	\$6.53	\$1,652
Culvert Bedding/Backfill	1 1/2"-0" crushed	9+70, 36+50	N/A	culvert	22	culverts	2	44	\$6.53	\$287
Additional Culvert Bedding/Backfill	1 1/2"-0" crushed	36+50	N/A	load	11	loads	3	33	\$6.53	\$215
Fill Reconstruction	1 1/2"-0" crushed	10+25	N/A	load	11	loads	2	22	\$6.53	\$144
Curve Widening fill	6"-0" pit-run	10+25	N/A	load	11	loads	8	88	\$8.73	\$768
Curve Widening Surfacing	1 1/2"-0" crushed	10+25	N/A	load	11	loads	2	22	\$6.53	\$144
Culvert Dissipator Rock	24"-6" riprap	32+10	N/A	load	11	loads	1	11	\$11.95	\$131
Total Rock for Road Segment:				I2-I3				473		

\$3,342

ROAD SEGMENT I3-I4				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I3-I4 Volume (CY) per	I3-I4 Number of	0+00 - 24+80				
Surfacing	3/4"-0" crushed	0+00 - 16+00	2	station	13	stations	16	208	\$6.53	\$1,358
Turnout	3/4"-0" crushed	1+50, 12+30	2	TO	11	TO's	2	22	\$6.53	\$144
Culvert Dissipator Rock	24"-6" riprap	6+60	N/A	load	11	loads	2	22	\$11.95	\$263
Subgrade Leveling	4"-0" crushed	16+00 - 24+80	N/A	load	11	loads	4	44	\$6.53	\$287
Landing Improvement	6"-0" pit-run	24+80	N/A	load	11	loads	2	22	\$8.73	\$192
Total Rock for Road Segment:				I3-I4				318		

\$2,244

ROAD SEGMENT I5-I6				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I5-I6 Volume (CY) per	I5-I6 Number of	0+00 - 94+40				
Subgrade Leveling	1 1/2"-0" crushed	I5-I6	N/A	load	11	loads	18	198	\$6.53	\$1,293
Landing Improvement	6"-0" pit-run	33+50	N/A	load	11	loads	2	22	\$8.73	\$192
Total Rock for Road Segment:				I5-I6				220		

\$1,485

ROAD SEGMENT I8-I9				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I8-I9 Volume (CY) per	I8-I9 Number of	0+00 - 18+75				
Surfacing	1 1/2"-0" crushed	0+00 - 18+75	2	station	13	stations	19	244	\$6.53	\$1,592
Subgrade Leveling	1 1/2"-0" crushed	I8-I9	N/A	load	11	loads	3	33	\$6.53	\$215
Curve Widening Improvement	1 1/2"-0" crushed	6+10	N/A	load	11	loads	2	22	\$6.53	\$144
Turnout Improvement	4"-0" crushed	8+25	N/A	load	11	loads	2	22	\$6.53	\$144
Turnout	1 1/2"-0" crushed	8+25	N/A	load	11	loads	1	11	\$6.53	\$72
Turnaround	1 1/2"-0" crushed	16+00	N/A	load	11	loads	1	11	\$6.53	\$72
Landing Improvement	6"-0" pit-run	18+75	N/A	load	11	loads	2	22	\$8.73	\$192
Total Rock for Road Segment:				I8-I9				365		

\$2,430

ROAD SEGMENT I10-I11				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I10-I11 Volume (CY) per	I10-I11 Number of	0+00 - 50+55				
Subgrade Leveling	1 1/2"-0" crushed	0+00 - 4+70	N/A	load	11	loads	4	44	\$6.53	\$287
Subgrade Leveling	1 1/2"-0" crushed	4+70 - 8+95	N/A	load	11	loads	3	33	\$6.53	\$215
Subgrade Leveling	4"-0" crushed	8+95 - 50+55	N/A	load	11	loads	22	242	\$6.53	\$1,580
Turnout Improvement	1 1/2"-0" crushed	8+95	N/A	load	11	loads	2	22	\$6.53	\$144
Landing Improvement	6"-0" pit-run	50+55	N/A	load	11	loads	4	44	\$8.73	\$384
Total Rock for Road Segment:				I10-I11				385		

\$2,611

ROAD SEGMENT I12-I13				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I12-I13 Volume (CY) per	I12-I13 Number of	0+00 - 7+85				
Subgrade Leveling	4"-0" crushed	I12-I13	N/A	load	11	loads	7	77	\$6.53	\$503
Landing Improvement	6"-0" pit-run	7+85	N/A	load	11	loads	4	44	\$8.73	\$384
Total Rock for Road Segment:				I12-I13				121		

\$887

Processing:		Description		No.sta		Rate/sta		Cost	
		Water, Process & Compact: (I3-I4(16.0Sta.), I7-I8, I8-I9,)		43.35		\$56.48		\$2,448	

CRUSHED ROCK COST

SALE NAME:	Backbreak Combo
PROJECT:	No. 1 and 2
QUARRY:	Hunt Creek Stockpile

MATERIAL: Crushed

DATE: 09/26/2013
BY: Will Lawrence

[illegible]

ROCK HAUL:

Truck type:	<u>D20</u>	No. trucks:	<u>2</u>
Delay min.:	<u>8</u>	Efficiency:	<u>85%</u>

Ave haul: \$5.21 /cy

Load: \$0.48 /cy

Spread: \$0.84 /cy

Truck type:	<u>D12</u>	No. trucks:	<u>5</u>
Delay min.:	<u>6</u>	Efficiency:	<u>85%</u>

Truck type: D10 No. trucks:
 Delay min.: 5 Efficiency: 85%

Production: cy/day = 913

CRUSHED ROCK HAUL COSTS

4,137 cy @ \$6.53 /cy

PIT RUN ROCK COST

SALE NAME:	Backbreak Combo
PROJECT:	No. 1 and 2
QUARRY:	Hunt Creek Quarry

MATERIAL: Pit Run

DATE: 09/26/2013
BY: Will Lawrence

[illegible]

ROCK HAUL:

Truck type: D20 No. trucks:
 Delay min.: 8 Efficiency: 85%

Ave haul:	\$5.73	/cy
Load:	\$1.08	/cy
Spread:	\$1.92	/cy

Truck type:	<u>D12</u>	No. trucks:	<u>4</u>
Delay min.:	<u>6</u>	Efficiency:	<u>85%</u>

Truck type: D10 No. trucks:
 Delay min.: 5 Efficiency: 85%

Production: cy/day = 441

PIT RUN ROCK HAUL COSTS

528 cy @ \$8.73 /cy

RIP RAP ROCK COST

SALE NAME:	Backbreak Combo
PROJECT:	No. 1 and 2
QUARRY:	Hunt Creek Quarry

DATE: 09/19/2013
BY: Will Lawrence

[illegible]

ROCK HAUL:

Truck type:	D12	No. trucks:	
Delay min.:	6	Efficiency:	85%
Truck type:	D10	No. trucks:	1
Delay min.:	5	Efficiency:	85%

Ave haul:	\$6.54	/cy
Load:	\$5.41	/cy
Develop:	-	/cy

Production: cy/day = 96

RIP RAP ROCK HAUL COSTS

33 cy @ \$11.95 /cy

Backbreak Combo Project No. 3 Road and Fill Vacating

V1

Location/Description	C330 Excavator	Labor	Seeding	Straw Mulch	Total
V1 Fill and CMP Removal	10 hrs				
V1 Erosion Control Mulch Hand Grass Seeding labor & seed		3 hr	0.1 ac	10 bales	
Total	10 hrs	3 hr	0.1 ac	10 Bales	
Rate	\$155 /hr	\$40 /hr	\$628.00 /ac	\$10.7 /Bale	
Cost	\$1,550	\$120	\$63	\$107.30	\$1,840

Prepared by: Will Lawrence

Date: 09/26/2013

Projects Road Maintenance Cost Summary

Sale: Backbreak Combo
Date: September 22, 2013
By: Will Lawrence

Type	Equipment/Rationale	Hours	Rate	Cost	
Post-Projects Road	Grader 14G	40	\$93	\$3,720	
					Total \$3,720

Final Road Maintenance

Production Rates
 Grader

Miles/day	Distance(miles)	Days	Hours
1.5	6.00	4.0	40.00

***Maintenance calculations were determined as follows:**

(2.0 mi.) Grade as needed from Hunt Creek Quarry to Nicolai Mainline to Highway 30

(4.0 mi.) Grade as needed Gnat Creek, Davis Bottom and Peterson Roads to Point 12

Total Miles: 6 miles.

Road Maintenance Cost Summary (Interim and Post Harvest)

Sale: Backbreak Combination
Date: September 26, 2013
By: Will Lawrence

MBF: 1,630
\$/MBF: \$8.80

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost
Final Haul Road Maintenance Haul Route	Grader 14G	\$778	2	41	\$100	\$5,656
	Dump Truck 12CY	\$163	1	10	\$79	\$953
	FE Loader C966	\$778	1	5	\$83	\$1,193
	Vibratory Roller	\$778	1	32	\$77	\$3,242
	Water Truck 2,500 gallon	\$190	1	10	\$89	\$1,080
	Excavator C315	\$805	1	10	\$101	\$1,815
	(bank slough removal I3-I4) Labor			10	\$40	\$400
Total						\$14,339

Final Road Maintenance

Production Rates

Grader

Vibratory Roller

Miles/day	Distance(miles)	Days	Hours
1.5	6.2	4.1	41
1.5	4.8	3.2	32

***Maintenance calculations were determined as follows:**

AREA 1

3.0 miles process, water and compact (I1-I2, I2-I3, I3-I4 (0+00-16+00))

0.2 miles process only (I3-I4 (16+00-24+80))

AREA 2

1.3 miles process, water and compact (I5-I6 (0+00-41+65), I7-I8, I8-I9)

0.5 miles new const. process, water and compact (2A-2B, 2C-2D, 2E-2F)

AREA 3

1.2 miles process only (I10-I11, I12-I13, I14-I15)

Total Miles: 6.20 Miles

**Backbreak Combo
FY 2014
TIMBER CRUISE REPORT**

1. **Sale Area Location:** Areas 1, 2, and 3 are located in portions of Sections 1, 2, 11, and 12 T8N, R7W and section 13 T8N, R8W W.M., Clatsop County, Oregon.

2. **Fund Distribution:** Fund: BOF 100% CSL 0%
Tax Code: 4-03 100%

3. **Sale Acreage by Area:**

Area	Harvest Type	Gross Acres	Stream Buffer Acres	New R/W Acres	Existing R/W Acres	Non-Thinnable Acres	Net Acreage
1	MC	19	0	0	1	0	18
2	PC	89	5	2	3	0	79
3	PC	115	10	0	2	2	101
4	RW	2	0	0	0	0	2
TOTALS		225	15	2	6	2	200

4. **Cruisers and Cruise Dates:** Area 1 was cruised by Derek Bangs. Area 2 was cruised by Ed Holloran, Jon Long, Jay Morey and Andrew Arvin. Area 3 was cruised by Will Lawrence, Jon Long, Jay Morey and Andrew Arvin. The cruise was performed in August of 2013.
5. **Cruise Method and Computation:** Area 1 is a modified clearcut, and Areas 2 and 3 are partial cuts; all areas were variable plot cruised. In Area 1 a 40 BAF was used for hardwoods and for conifers. These plots were located on a 3.5 chain by 3.5 chain grid, with a cruise/count plot ratio of 1 grade to 1 count. A total of 15 plots were sampled, with 7 grade plots and 8 count plots.

In Area 2 a 33.6 BAF was used for hardwoods and for conifers. These plots were located on an 8 chain by 4 chain grid, with a cruise/count plot ratio of 1 grade to 1 count. A total of 25 plots were sampled, with 12 grade plots and 13 count plots.

In Area 3 a 20 BAF was used for hardwoods and for conifers. These plots were located on a 10 chain by 3 chain grid, with a cruise/count plot ratio of 1 grade to 1 count. A total of 36 plots were sampled, with 8 grade plots and 25 count plots.

Cedar is a reserved species in Areas 1, 2, and 3.

* Statistic reports "cruise" and "count" plot totals vary due to count plots having graded trees on them, these trees were measured because of the infrequent occurrence of the species of these trees within the stand.

Area 4 R/W was calculated applying road R/W acreage using cruise volumes from Area 2. There is approximately 2 acres of R/W.

Cruisers used Corvallis Micro Technology (CMT) data collectors, and were downloaded to the Atterbury Super A.C.E. program at the Astoria 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.

AREAS	PROJECT	TRACT	CRUISE TYPE
1	BACKBRAK	AREA1	00MC
2	BACKBRAK	AREA2	PC02, PC2T, PC2L
3	BACKBRAK	AREA3	PC03, PC3T, PC3L
4 R/W	BACKBRAK	AREA4	A4RW

6. Timber Description: Area 1 is a modified clearcut unit. Areas 2 and 3 are partial cut units.

Area 1 is approximately 48 year-old old timber, consisting of mixed conifer and alder. The average Douglas-fir tree size to be harvested is approximately 13 inches DBH, with an average height of 39 feet to a merchantable top (6 inch d.i.b./40% fp.). The average hemlock tree size is approximately 12 inches DBH and 44 feet to a merchantable top (6 inch d.i.b.). The average alder tree size is approximately 13 inches DBH and 46 feet to a merchantable top (6 inch d.i.b.). The average volume per acre to be harvested (net) is approximately 22 MBF.

Area 2 is approximately 36 to 55 years old, consisting of mixed conifer maple, and alder. The average Douglas-fir tree size to be harvested is approximately 9 inches DBH, with an average height of 21 feet to a merchantable top (6 inch d.i.b./40% fp.). The average hemlock tree size is approximately 15 inches DBH and 51 feet to a merchantable top (6 inch d.i.b./40%fp). The average alder tree size is approximately 11 inches DBH and 40 feet to a merchantable top (6 inch d.i.b.). The average volume per acre to be harvested (net) is approximately 8 MBF.

Area 3 is approximately 41 to 50 years old, consisting of mixed conifer. The average Douglas-fir tree size to be harvested is approximately 14 inches DBH, with an average height of 48 feet to a merchantable top (6 inch d.i.b./40% fp.). The average hemlock tree size is approximately 16 inches DBH and 53 feet to a merchantable top (6 inch d.i.b./40%fp). The average volume per acre to be harvested (net) is approximately 6 MBF.

Area 4 R/W – The R/W is the same type timber as Area 2. The volume to remove from Area 4 R/W is approximately 24 MBF per acre.

7. Statistical Analysis: (See also “Statistics Reports,” attached.)

Area	Target CV	Target SE%	Actual CV	Actual SE%
1	50	15	44.5	11.9
2	60	13	44.0	9.0
3	50	13	27.8	4.6

The statistics are for all areas and Take and Leave trees combined based on Net BF/Acre.

8. Take Volumes by Species and Log Grades for All Sale Areas by MBF: (See “Species, Sort Grade-Board Feet Volumes (Project)”, “Statistics (Project)”, and the “Stand Table Summary” attached). Volumes do not include “in-growth.” The majority of defect and breakage was taken out during the cruise.

Species	DBH	Net Vol.	2 Saw	3Saw	4 Saw	Camp Run	% D & B	% Sale
Douglas-fir	12	438	100	284	54	-	3	26
Western Hemlock	15	824	402	351	71	-	8	49
Sitka Spruce	14	45	1	5	39	-	25	3
Western Red Cedar	15	1	1	<1	-	-	17	<1
Maple	11	20	-	-	-	20	29	1

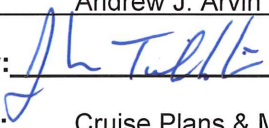
Species	DBH	Net Vol.	12”+	10”-11”	8”-9”	6”-7”	% D & B	% Sale
Red Alder	11	338	29	22	93	194	8	21

TOTAL NET VOLUME	1,666
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Alder grades based on small end diameter. Diameter break downs used were: 12"+ = 1 Saw; 10" – 11" = 2 Saw; 8" – 9" = 3 Saw; 6" – 7" = 4 Saw. These volumes were converted and reported as shown above and in the contract.

9. Prepared by: Andrew J. Arvin

Date: September 19, 2013

10. Approved by: 

Date: 11/1/13

11. Attachments: Cruise Plans & Maps (5 pages)
Species, Sort, Grade Reports (5 pages)
Statistics Reports (10 pages)
Log Stock Table Report (4 page)
Stand Table Summary (2 pages)

X:\Sunset Unit\2014 FY Sales\Backbreak Combination\Sale Prep\Cruise\Cruise Report Backbreak Combo.docx

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Backbreak Combo. **Area** 1

Harvest Type: (MC) Clearcut

Approx. Cruise Acres: 19 **Estimated CV%** 50 Net BF/Acre **SE% Objective** 15

Planned Sale Volume : 450 MBF **Estimated Sale Area Value/Acre:** \$4,737/Ac

A. Cruise Goals: (a) Grade minimum 35 conifer and 15 hardwood trees:
(b) Sample 15 cruise plots (7 grade/8 count); (c) Other goals (X Determine volume and quality)

B. Cruise Design:

1. Plot Cruises: BAF 40 Conifer 40 Hardwoods (Full point; Half point) (circle one) sighting at 4.5 feet.

Cruise Line Direction(s) 122° Az. ¹⁴
Cruise Line Spacing 3.5 (chains)
Cruise Plot Spacing 3.5 (chains)
Grade/Count Ratio 1:1

Take plots as marked on map. All cedar are leave trees. Record all snags as SN. Grade all hardwoods. Note buffer locations on cruise lines.

C. Tree Measurements:

- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 8" 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".
- 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 conifers and 7" for 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; R = Camp Run; 0 = Cull
Hardwoods: R = CampRun

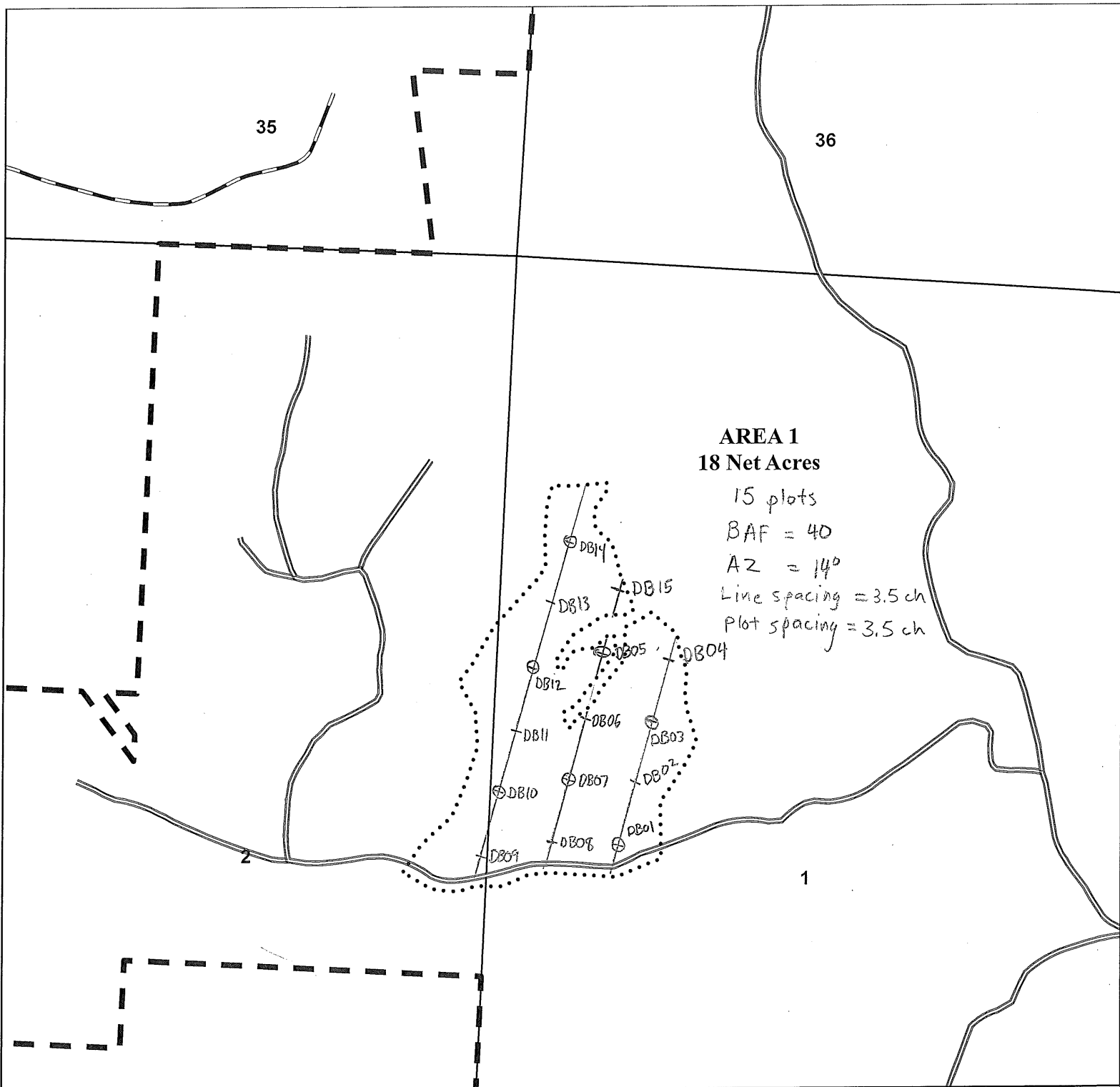
7. Deductions: Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally results 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: Will Lawrence Approved by:  Date: 5/9/13.



Legend

..... Timber_Sale_Boundary

--- ODF ownership

Roads

SURFACE

== Paved

== Surfed

— Unknown

----- Unsurfaced



0 500 1,000 2,000 Feet

Cruise Map Backbreak Combination FY 2014

1 of 1

Portions of sections 1, 2, 11, and 12, T8N, R7W
 and section 13, T8N, R8W, W.M.
 Clatsop County, Oregon

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Backbreak Combo. **Area** 2

Harvest Type: (PC) "Automark Thinning"

Approx. Cruise Acres: 89 **Estimated CV%** 60 Net BF/Acre **SE% Objective** 13

Planned Sale Volume : 348 MBF **Estimated Sale Area Value/Acre:** \$1,200/Ac

A. Cruise Goals: (a) Grade minimum 70 conifer and 20 hardwood trees:
(b) Sample 24 cruise plots (12 grade/ 12 count); (c) Other goals (X Determine volume and quality)

B. Cruise Design:

1. Plot Cruises: BAF 33.6 all species (Full point) Half point) (circle one) sighting at 4.5 feet.

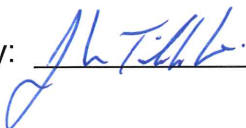
Cruise Line Direction(s) 308° Az.
Cruise Line Spacing 8 (chains)
Cruise Plot Spacing 4 (chains)
Grade/Count Ratio 1:1

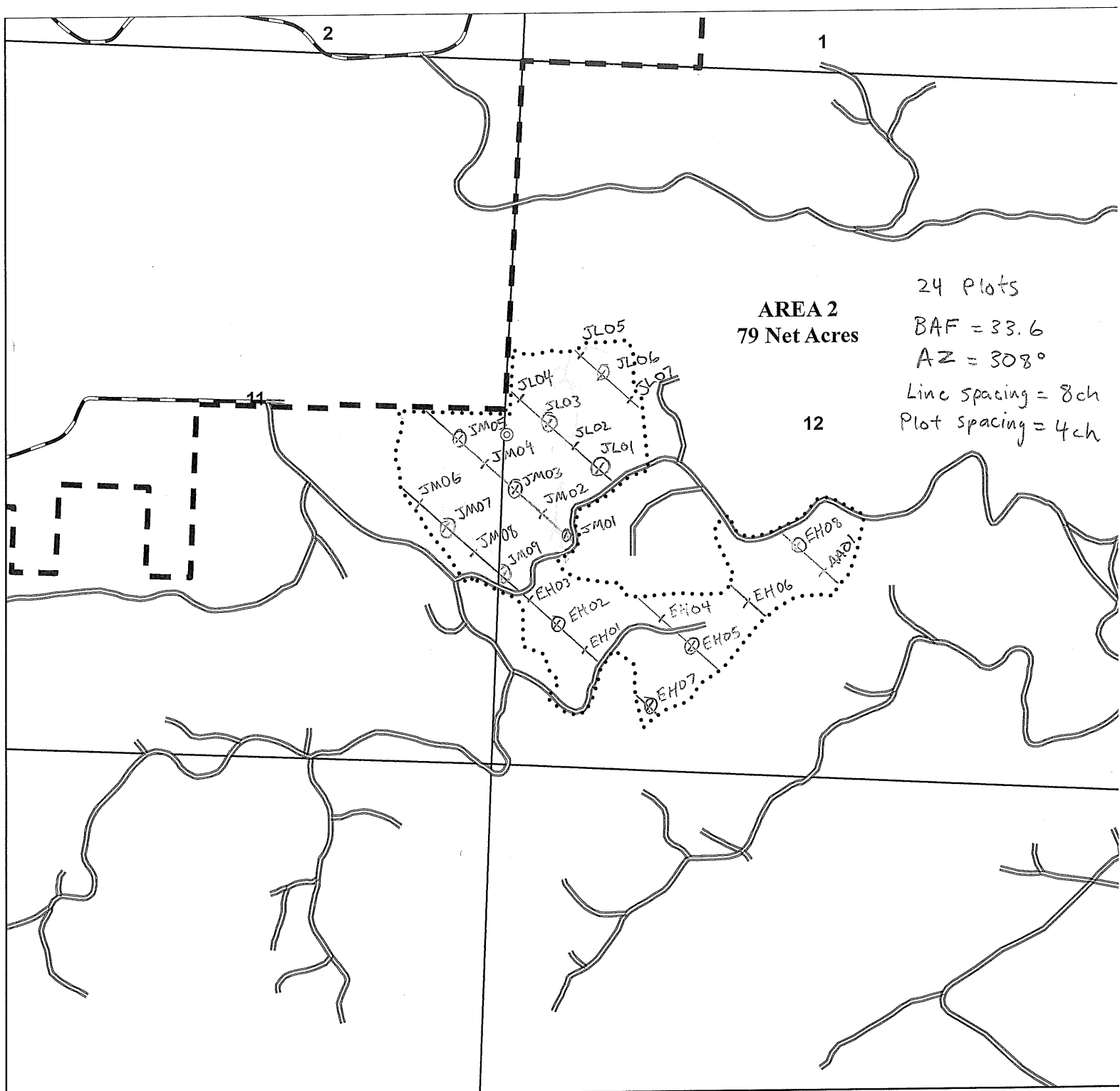
Basal Area leave target is 120 sq.ft. Crusier selects 3.5 conifer leave trees per plot.
Cruise all take and leave trees. Take plots as marked on map. All cedar are leave trees.
Record all snags as SN. Grade all hardwoods. Note buffer locations on cruise lines.

C. Tree Measurements:

- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 8" 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".
- 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 conifers and 7" for 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; R = Camp Run; 0 = Cull
- D. Alder Grades: 12" + = 1 Sawmill; 10" - 11" = 2 Sawmill; 8"-9" = 3 Sawmill; 6"-7" = 4 Sawmill
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: Will Lawrence Approved by:  Date: 5/9/12



Legend

Timber_Sale_Boundary

ODF ownership

Roads

SURFACE

Paved

Surfaced

Unknown

Unsurfaced



Cruise Map Backbreak Combination FY 2014

1 of 1

Portions of sections 1, 2, 11, and 12, T8N, R7W
and section 13, T8N, R8W, W.M.
Clatsop County, Oregon

0 500 1,000 2,000 Feet

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Backbreak Combo. **Area** 3

Harvest Type: (PC) "Automark Thinning"

Approx. Cruise Acres: 120 **Estimated CV%** 50 Net BF/Acre **SE% Objective** 13

Planned Sale Volume : 666 MBF **Estimated Sale Area Value/Acre:** \$1,500/Ac

A. Cruise Goals: (a) Grade minimum 80 conifer and 15 hardwood trees:
(b) Sample 39 cruise plots (9 grade/30 count); (c) Other goals (X Determine volume and quality)

B. Cruise Design:

1. Plot Cruises: BAF 20 all species (Full point; Half point) (circle one) sighting at 4.5 feet.

Cruise Line Direction(s) 90° Az.
Cruise Line Spacing 10 (chains)
Cruise Plot Spacing 3 (chains)
Grade/Count Ratio 1:3

Basal Area leave target is 120 sq.ft. Crusier selects 6 conifer leave trees per plot.
Cruise all take and leave trees. Take plots as marked on map. All cedar are leave trees.
Record all snags as SN. Grade all hardwoods. Note buffer locations on cruise lines.

C. Tree Measurements:

- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 8" 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".
- 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 conifers and 7" for 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:**

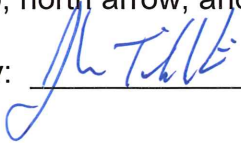
- A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DL, HL, CL, etc.)
- B. Sort: 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; R = Camp Run; 0 = Cull
- D. Alder Grades: 12" + = 1 Sawmill; 10" - 11" = 2 Sawmill; 8"-9" = 3 Sawmill; 6"-7" = 4 Sawmill

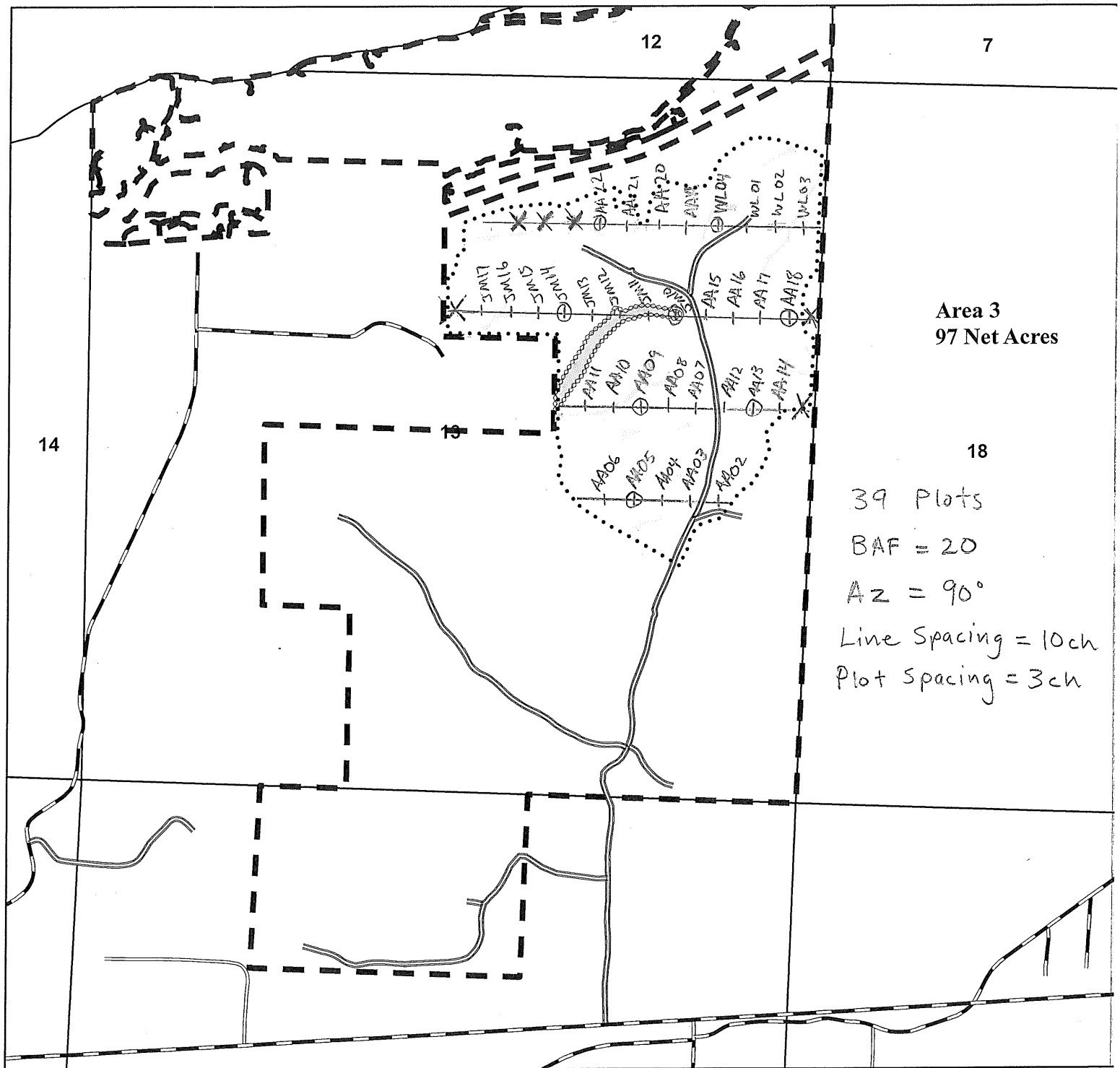
7. **Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally 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: Will Lawrence Approved by:  Date: 7/24/13



Area 3
97 Net Acres

39 Plots
BAF = 20
Az = 90°
Line Spacing = 10ch
Plot Spacing = 3ch

Legend

- Timber_Sale_Boundary
- ODF ownership

Roads

SURFACE

- Paved
- Surfaced
- Unknown
- Unsurfaced

Cruise Map Backbreak Combination FY 2014

Portions of sections 1, 2, 11, and 12, T8N, R7W
and section 13, T8N, R8W, W.M.
Clatsop County, Oregon



0 500 1,000 2,000
Feet

TC PSCPSTGR		Species, Sort Grade - Board Foot Volumes (Project)																	
T08N R07W S01 Ty00MC THRU T08N R08W S13 TyPC3T				Project: BACKBRAK												Page 1			
				Acres 200.00												Date 10/29/2013			
																Time 8:46:05PM			
S Spp	So Gr T rt ad	%	Bd. Ft. per Acre			Total	Percent of Net Board Foot Volume								Average Log			Logs	
		Net	Def%	Gross	Net	Net MBF	Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf	Per /Acre	
		BdFt					4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
D	DOCU		100.0	70											14		0.00	3.5	
D	DO2S	22	1.5	507	499	100		23	77			23	1	76	33	181	1.41	2.8	
D	DO3S	65		1,419	1,419	284		100				2	27	24	47	32	69	0.65	20.5
D	DO4S	13	.3	269	269	54		100				88	11	1	19	20	0.35	13.6	
D Totals		26	3.5	2,265	2,187	438 437		82	18			12	24	16	48	26	54	0.62	40.3
A	DOCU		100.0	147											8		0.00	3.7	
A	DO1S	8	2.3	150	146	29			100			54		46	22	113	1.31	1.3	
A	DO2S	7		111	111	22		100					36	64	28	96	0.97	1.2	
A	DO3S	27	1.1	472	467	93		100				1	53	26	21	32	68	0.65	6.9
A	DO4S	58		970	970	194		100				10	44	5	42	30	41	0.42	23.9
A Totals		20	8.4	1,849	1,694	338 339		91	9			10	42	10	38	28	46	0.50	36.8
H	DOCU		100.0	227											13		0.00	5.7	
H	DO2S	48	4.0	2,096	2,012	402		28	61	11		3	7	20	69	35	211	1.51	9.5
H	DO3S	43	3.2	1,814	1,756	351		96	4	0		5	1	38	56	35	81	0.73	21.6
H	DO4S	9		356	356	71		100				25	75			22	27	0.44	13.3
H Totals		49	8.2	4,494	4,124	824 825		63	31	6		6	10	26	58	29	82	0.82	50.2
M	DOCU		100.0	66											14		0.00	3.6	
M	DOCR	100	29.4	142	100	20		99	1			84	1	15	0	17	24	0.56	4.1
M Totals		1	51.9	208	100	20		99	1			84	1	15	0	15	13	0.33	7.7
S	DOCU		100.0	73											17		0.00	2.6	
S	DO2S	2		5	5	1			100					100	32	160	1.41	.0	
S	DO3S	10		23	23	5		14	86			86		6	8	20	90	1.05	.3
S	DO4S	88		196	196	39		100				100				16	45	0.87	4.4
S Totals		3	24.5	297	224	45		89	11			96		3	1	16	31	0.56	7.2
C	DOCU		100.0	0											12		0.00	.0	
C	DO2S	85	10.0	3	3	1			63	37			13	37	50	33	357	3.24	.0
C	DO3S	15		1	1	0		48	52					52	48	38	98	1.12	.0
C Totals		0	16.8	4	4	1		7	62	31			11	39	50	18	69	1.21	.1
Totals			8.6	9,117	8,332	1,666		75	22	3		12	20	19	49	26	59	0.65	142.4

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page		1			
				Project: BACKBRAK												Date		10/29/2013			
																Time		8:46:06PM			
T08N R07W S01 T00MC																T08N R07W S01 T00MC					
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt			
08N		07W		01		AREA1		00MC		18.00		15		29		1		W			
S So Gr Spp T rt ad				% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
									Log Scale Dia.				Log Length				Ln	Bd	CF/ Lf		
									4-5 6-11 12-16 17+				12-20 21-30 31-35 36-99				Ft	Ft			
A		DO		CU																	
A		DO		1S		21	2.3	1,666	1,627	29		100		54		46	22	113	1.31	14.4	
A		DO		2S		15		1,191	1,191	21		100		34		66	28	96	0.97	12.5	
A		DO		3S		31	2.3	2,422	2,366	43		100			55	45	35	72	0.62	32.7	
A		DO		4S		33		2,449	2,449	44		100		25	35	21	18	25	33	0.45	73.7
A		Totals				35	18.4	9,357	7,633	137		79	21	20	16	24	40	23	44	0.58	174.0
H		DO		2S		38	2.9	3,018	2,931	53		67	33			100	40	191	1.24	15.3	
H		DO		3S		46	2.4	3,597	3,510	63		100				36	64	36	83	0.63	42.0
H		DO		4S		16		1,204	1,204	22		100		40	60			20	25	0.39	48.1
H		Totals				35	2.2	7,819	7,645	138		88	12	6	10	17	67	29	73	0.68	105.4
D		DO		CU			00.0	774									14		0.00	38.7	
D		DO		2S		33	3.6	2,185	2,106	38		100				100	40	233	1.51	9.0	
D		DO		3S		62		3,876	3,876	70		100		13	4	83	37	104	0.77	37.4	
D		DO		4S		5		315	315	6		100		100			23	30	0.40	10.5	
D		Totals				29	11.9	7,149	6,297	113		67	33	13	3	84	26	66	0.68	95.6	
Type Totals							11.3	24,325	21,575	388		78	22	9	13	15	63	26	58	0.64	375.0

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page		1					
				Project: BACKBRAK												Date		10/29/2013					
																Time		8:46:06PM					
T08N R07W S12 TPC2T												T08N R07W S12 TPC2T											
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt		W			
08N		07W		12		AREA2		PC2T		79.00		25		25		1							
S So Gr T rt ad Spp			%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log			Logs Per /Acre				
								Log Scale Dia.				Log Length				Ln	Bd	CF/					
			Net	Def%	Gross	Net	Net MBF	4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	Ft	Lf					
H			DO	CU		00.0	192									6		0.00	3.1				
H			DO	2S	38	1.5	1,630	1,605	127	44	27	29		29	71	39	241	1.68	6.7				
H			DO	3S	50	2.7	2,154	2,095	166	100				54	46	36	87	0.76	24.2				
H			DO	4S	12		459	459	36	100			21	79		21	27	0.41	16.9				
H Totals					53	6.2	4,435	4,159	329	78	11	11	2	9	38	51	29	82	0.83	50.9			
A			DO	3S	24		604	604	48	100				100		30	65	0.68	9.3				
A			DO	4S	76		1,830	1,830	145	100			5	46	49	32	44	0.41	42.0				
A Totals					31		2,434	2,434	192	100			4	59	37	31	47	0.45	51.3				
D			DO	4S	100		548	548	43	100			100			20	20	0.35	27.4				
D Totals					7		548	548	43	100			100			20	20	0.35	27.4				
S			DO	CU		00.0	175									18		0.00	5.8				
S			DO	4S	100		485	485	38	100			100			16	45	0.87	10.9				
S Totals					6	26.5	660	485	38	100			100			16	29	0.53	16.7				
M			DO	CU		00.0	163									14		0.00	8.9				
M			DO	CR	100	29.4	346	244	19	100			85	15		17	24	0.56	10.1				
M Totals					3	52.0	509	244	19	100			85	15		15	13	0.33	19.1				
Type Totals						8.3	8,587	7,871	622	89	6	6	18	23	21	38	26	48	0.57	165.3			

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page		1		
				Project: BACKBRAK												Date		10/29/2013		
																Time		8:46:06PM		
T08N R08W S13 TPC3T												T08N R08W S13 TPC3T								
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt		
08N		08W		13		AREA3		PC3T		101.00		36		28		1		W		
S So Gr T rt ad Spp				% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre
									Log Scale Dia.				Log Length				Ln	Bd	CF/ Lf	
									4-5 6-11 12-16 17+				12-20 21-30 31-35 36-99				Ft	Ft		
H		DO CU			00.0	283											15	0.00		8.7
H		DO 2S		62	6.0	2,171 2,040		206	10 90				6 14 19 61				32	195 1.46		10.5
H		DO 3S		34	4.1	1,177 1,128		114	88 12				16 3 14 68				34	74 0.75		15.2
H		DO 4S		4		121 121		12	100				11 89				26	28 0.61		4.2
H		Totals		55	12.3	3,752 3,290		332	40 60				9 13 17 61				28	85 0.86		38.6
D		DO 2S		21		572 572		58	39 61				39 61				30	155 1.34		3.7
D		DO 3S		77		2,083 2,083		210	100				3 32 30 35				30	63 0.63		33.3
D		DO 4S		2		29 29		3	100				100				12	10 0.33		2.9
D		Totals		45		2,684 2,684		271	87 13				3 34 23 40				29	67 0.69		39.9
S		DO CU			00.0	4											8	0.00		.4
S		DO 3S		100		40 40		4	100				100				16	100 1.25		.4
S		Totals		1	9.1	44 40		4	100				100				12	50 0.83		.8
Type Totals					7.2	6,480 6,014		607	61 39				7 22 19 51				29	76 0.77		79.4

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page		1	
				Project: BACKBRAK												Date		10/29/2013	
																Time		8:46:06PM	
T08N R07W S12 TA4RW												T08N R07W S12 TA4RW							
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt										
08N	07W	12	AREA4	A4RW	2.00	25	77	1	W										
S So Gr T rt ad Spp			%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log			Logs Per /Acre
								Log Scale Dia.				Log Length				Ln	Bd	CF/	
			Net	Def%	Gross	Net	Net MBF	4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	Ft	Lf	
H	DO	CU		00.0	845											11		0.00	7.4
H	DO	2S	63	1.1	8,491	8,393	17		7	43	50	2		31	67	36	333	2.22	25.2
H	DO	3S	33	4.5	4,492	4,291	9		92	2	7		2	50	48	35	79	0.79	54.5
H	DO	4S	4		527	527	1		100			29	71			20	28	0.45	19.1
H	Totals		54	8.0	14,355	13,212	26		38	28	34	2	3	36	58	31	125	1.12	106.1
D	DO	CU		00.0	21											13		0.00	1.1
D	DO	2S	42	3.0	2,118	2,054	4		100					33	67	38	248	1.79	8.3
D	DO	3S	38		1,828	1,828	4	100					2	57	40	34	66	0.61	27.8
D	DO	4S	20	7.7	989	913	2	100				67		33		21	24	0.34	38.0
D	Totals		20	3.3	4,957	4,795	10		57	43		13	1	42	44	27	64	0.68	75.2
A	DO	2S	8		369	369	1	100					100			30	110	0.90	3.4
A	DO	3S	33		1,509	1,509	3	100				17	57	25		28	60	0.65	25.0
A	DO	4S	59		2,650	2,650	5	100				3	57		40	31	42	0.42	63.4
A	Totals		19		4,528	4,528	9	100				8	60	8	23	30	49	0.49	91.8
S	DO	CU		00.0	153											18		0.00	5.1
S	DO	2S	38		478	478	1		100					100		32	160	1.41	3.0
S	DO	3S	27		328	328	1	100						45	55	34	55	0.72	6.0
S	DO	4S	35		424	424	1	100				100				16	45	0.87	9.5
S	Totals		5	11.1	1,383	1,230	2		61	39		34		51	15	23	52	0.76	23.6
M	DO	CU		00.0	163											14		0.00	8.9
M	DO	CR	100	31.2	495	340	1		81	19		61	19	11	9	18	31	0.76	11.1
M	Totals		1	48.3	658	340	1		81	19		61	19	11	9	16	17	0.47	20.0
C	DO	CU		00.0	39											12		0.00	3.9
C	DO	2S	85	10.0	342	308	1			63	37		13	37	50	33	357	3.24	.9
C	DO	3S	15		54	54	0		48	52				52	48	38	98	1.12	.5
C	Totals		1	16.8	435	362	1		7	62	31		11	39	50	18	69	1.21	5.3
Type Totals				7.0	26,316	24,468	49		55	27	19	8	14	32	46	28	76	0.79	322.0

TC PSTATS						PROJECT STATISTICS				PAGE	1	
						PROJECT	BACKBRAK	DATE 11/19/2013				
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt		
08N 08N	07 08W	01 13	AREA1 AREA3	00MC PC3T	THR	200.00	101	424	1	W		
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL			101	424	4.2							
CRUISE			36	159	4.4	18,773	.8					
DBH COUNT												
REFOREST												
COUNT			57	260	4.6							
BLANKS			8									
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
WHEMLOCK			70	30.1	14.9	50		36.3	4,494	4,124	1,251	1,192
R ALDER			31	25.4	11.4	42		18.0	1,849	1,694	542	510
DOUG FIR			33	29.8	12.3	37		24.6	2,265	2,187	664	646
S SPRUCE			7	4.6	13.6	26		4.7	297	224	86	66
BL MAPLE			12	3.9	11.4	32		2.7	208	100	62	39
WR CEDAR			4	.0	14.5	21		.1	4	4	1	1
SNAG			2	.0	20.4	40		.0				
TOTAL			159	93.9	13.0	42		86.4	9,117	8,332	2,606	2,454
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			
WHEMLOCK		119.9	14.3	245	286	327						
R ALDER		60.5	10.9	76	85	94						
DOUG FIR		82.4	14.3	138	161	184						
S SPRUCE		78.3	31.8	54	79	104						
BL MAPLE		92.6	27.9	30	42	53						
WR CEDAR		121.4	69.4	131	428	724						
SNAG												
TOTAL		138.1	10.9	172	193	214	762	191	85			
CL	68.1	COEFF		TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR. %	S.E. %	LOW	AVG	HIGH	5	10	15			
WHEMLOCK		172.2	17.1	25	30	35						
R ALDER		289.3	28.8	18	25	33						
DOUG FIR		247.3	24.6	23	30	37						
S SPRUCE		457.9	45.5	3	5	7						
BL MAPLE		977.9	97.2	0	4	8						
WR CEDAR		827.1	82.2	0	0	0						
SNAG		1005.0	99.9	0	0	0						
TOTAL		120.7	12.0	83	94	105	582	145	65			
CL	68.1	COEFF		BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR. %	S.E. %	LOW	AVG	HIGH	5	10	15			
WHEMLOCK		170.4	16.9	30	36	42						
R ALDER		269.3	26.8	13	18	23						
DOUG FIR		165.7	16.5	21	25	29						
S SPRUCE		448.0	44.5	3	5	7						
BL MAPLE		970.9	96.5	0	3	5						
WR CEDAR		494.9	49.2	0	0	0						
SNAG		1005.0	99.9	0	0	0						
TOTAL		98.9	9.8	78	86	95	390	98	43			
CL	68.1	COEFF		NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR. %	S.E. %	LOW	AVG	HIGH	5	10	15			

PROJECT STATISTICS

PROJECT BACKBRAK

TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt
08N	07	01	AREA1	00MC	THR	200.00	101	424	1	W
08N	08W	13	AREA3	PC3T						
WHEMLOCK			172.4	17.1	3,418	4,124	4,831			
R ALDER			271.2	27.0	1,237	1,694	2,151			
DOUG FIR			145.9	14.5	1,869	2,187	2,504			
S SPRUCE			430.6	42.8	128	224	320			
BL MAPLE			971.0	96.5	3	100	196			
WR CEDAR			640.3	63.7	1	4	6			
SNAG										
TOTAL			99.5	9.9	7,508	8,332	9,157	396	99	44

TC TSTATS				STATISTICS			PAGE	1			
				PROJECT BACKBRAK			DATE	11/19/2013			
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
08N	07W	01	AREA1	00MC	18.00	15	75	1	W		
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		15	75	5.0							
CRUISE		7	29	4.1	4,063	.7					
DBH COUNT											
REFOREST											
COUNT		8	46	5.8							
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
R ALDER		12	90.6	12.9	46		82.7	9,357	7,633	2,666	2,304
WHEMLOCK		8	73.1	12.4	44		61.3	7,819	7,645	2,100	2,100
DOUG FIR		9	62.1	12.9	39		56.0	7,149	6,297	1,898	1,706
TOTAL		29	225.7	12.7	43		200.0	24,325	21,575	6,664	6,110
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		
R ALDER		61.3	18.5	89	109	129					
WHEMLOCK		70.3	26.5	114	155	196					
DOUG FIR		70.7	24.9	140	187	233					
TOTAL		71.4	13.5	126	146	166	211	53	23		
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
R ALDER		103.8	27.7	65	91	116					
WHEMLOCK		129.8	34.7	48	73	98					
DOUG FIR		99.0	26.4	46	62	78					
TOTAL		47.9	12.8	197	226	255	98	25	11		
CL:	68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
R ALDER		100.9	27.0	60	83	105					
WHEMLOCK		127.8	34.1	40	61	82					
DOUG FIR		96.6	25.8	42	56	70					
TOTAL		42.8	11.4	177	200	223	78	20	9		
CL:	68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
R ALDER		98.1	26.2	5,633	7,633	9,633					
WHEMLOCK		126.7	33.8	5,059	7,645	10,232					
DOUG FIR		106.8	28.5	4,501	6,297	8,093					
TOTAL		44.5	11.9	19,009	21,575	24,141	85	21	9		

TC TSTATS				STATISTICS				PAGE	1			
				PROJECT	BACKBRAK			DATE	11/19/2013			
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt			
08N	07W	12	AREA2	PC2T	79.00	25	68	1	W			
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL			25	68	2.7							
CRUISE			10	25	2.5	9,462	.3					
DBH COUNT												
REFOREST												
COUNT			11	43	3.9							
BLANKS			4									
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
WHEMLOCK			10	30.0	14.9	51		36.3	4,435	4,159	1,274	1,239
R ALDER			7	42.0	10.6	40		25.5	2,434	2,434	731	731
DOUG FIR			1	27.4	9.0	21		12.1	548	548	192	192
S SPRUCE			2	10.9	13.5	25		10.8	660	485	193	146
BL MAPLE			5	9.5	11.4	32		6.7	509	244	153	96
TOTAL			25	119.8	11.8	36		91.4	8,587	7,871	2,543	2,404
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		
WHEMLOCK			65.0	21.6	153	195	237					
R ALDER			46.1	18.8	49	60	71					
DOUG FIR												
S SPRUCE			15.7	14.7	38	45	52					
BL MAPLE			94.3	46.9	16	30	44					
TOTAL			104.5	21.3	83	105	128	454	114	50		
CL: 68.1 %	COEFF		TREES/ACRE					# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH			5	10	15		
WHEMLOCK			148.5	30.3	21	30	39					
R ALDER			192.7	39.3	25	42	58					
DOUG FIR			319.5	65.2	10	27	45					
S SPRUCE			233.9	47.7	6	11	16					
BL MAPLE			500.0	102.0		10	19					
TOTAL			86.8	17.7	99	120	141	313	78	35		
CL: 68.1 %	COEFF		BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH			5	10	15		
WHEMLOCK			148.6	30.3	25	36	47					
R ALDER			194.7	39.7	15	26	36					
DOUG FIR			319.5	65.2	4	12	20					
S SPRUCE			233.9	47.7	6	11	16					
BL MAPLE			500.0	102.0		7	14					
TOTAL			74.7	15.2	77	91	105	232	58	26		
CL: 68.1 %	COEFF		NET BF/ACRE					# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH			5	10	15		
WHEMLOCK			153.4	31.3	2,858	4,159	5,460					
R ALDER			197.4	40.2	1,455	2,434	3,414					
DOUG FIR			319.5	65.2	191	548	905					
S SPRUCE			233.9	47.7	254	485	716					
BL MAPLE			500.0	102.0		244	493					
TOTAL			81.8	16.7	6,558	7,871	9,183	278	70	31		

TC TSTATS				STATISTICS				PAGE 1			
				PROJECT	BACKBRAK		DATE 11/19/2013				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
08N	08W	13	AREA3	PC3T	101.00	36	110	1	W		
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		36	110	3.1							
CRUISE		6	28	4.7	4,834	.6					
DBH COUNT											
REFOREST											
COUNT		27	82	3.0							
BLANKS		3									
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
WHEMLOCK		18	21.9	16.0	53		30.6	3,752	3,290	1,029	943
DOUG FIR		9	25.5	14.3	48		28.3	2,684	2,684	798	798
S SPRUCE		1	.4	16.0	24		.6	44	40	10	8
TOTAL		28	47.9	15.1	50		59.4	6,480	6,014	1,837	1,749
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		
WHEMLOCK		58.2	14.1	163	189	216					
DOUG FIR		61.9	21.8	96	123	150					
S SPRUCE											
TOTAL		62.1	12.0	145	165	185		160	40	18	
CL: 68.1 %		COEFF		TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD: 1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK		144.6	24.1	17	22	27					
DOUG FIR		81.3	13.5	22	26	29					
S SPRUCE		600.0	99.9	0	0	1					
TOTAL		75.1	12.5	42	48	54		226	56	25	
CL: 68.1 %		COEFF		BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD: 1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK		143.0	23.8	23	31	38					
DOUG FIR		79.8	13.3	25	28	32					
S SPRUCE		600.0	99.9	0	1	1					
TOTAL		78.2	13.0	52	59	67		244	61	27	
CL: 68.1 %		COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD: 1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK		144.4	24.0	2,499	3,290	4,081					
DOUG FIR		79.4	13.2	2,329	2,684	3,040					
S SPRUCE		600.0	99.9	0	40	80					
TOTAL		82.6	13.8	5,187	6,014	6,841		272	68	30	

TC TSTATS				STATISTICS				PAGE	1			
				PROJECT		BACKBRAK		DATE	11/19/2013			
TWP	RGE	SECT	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt		
08N	07W	12	AREA4	A4RW		2.00	25	171	1	W		
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL			25	171	6.8							
CRUISE			13	77	5.9	414	18.6					
DBH COUNT												
REFOREST												
COUNT			11	89	8.1							
BLANKS			1									
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
WHEMLOCK			34	58.1	18.1	59		103.5	14,355	13,212	3,890	3,707
DOUG FIR			14	53.7	12.7	40		47.1	4,957	4,795	1,410	1,404
R ALDER			12	63.4	11.2	45		43.0	4,528	4,528	1,355	1,355
S SPRUCE			4	15.5	14.9	35		18.8	1,383	1,230	449	409
BL MAPLE			7	10.5	12.8	32		9.4	658	340	209	152
WR CEDAR			4	4.7	14.5	21		5.4	435	362	131	116
SNAG			2	1.2	20.4	40		2.7				
TOTAL			77	207.1	14.3	45		229.9	26,316	24,468	7,446	7,143
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	
WHEMLOCK			115.9	19.9	316	394	472					
DOUG FIR			89.8	24.9	134	179	223					
R ALDER			45.8	13.8	65	76	86					
S SPRUCE			89.4	51.1	44	90	136					
BL MAPLE			89.4	36.4	32	50	68					
WR CEDAR			121.4	69.4	131	428	724					
SNAG												
TOTAL			144.1	16.4	209	250	291		829	207	92	
CL: 68.1 %			COEFF		TREES/ACRE				# OF PLOTS REQ.		INF. POP.	
SD: 1.0			VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK			86.4	17.6	48	58	68					
DOUG FIR			178.2	36.3	34	54	73					
R ALDER			158.5	32.3	43	63	84					
S SPRUCE			213.9	43.6	9	15	22					
BL MAPLE			500.0	102.0		10	21					
WR CEDAR			408.4	83.3	1	5	9					
SNAG			500.0	102.0		1	2					
TOTAL			48.6	9.9	187	207	228		98	25	11	
CL: 68.1 %			COEFF		BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.	
SD: 1.0			VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK			81.7	16.7	86	104	121					
DOUG FIR			171.3	34.9	31	47	63					
R ALDER			157.1	32.0	29	43	57					
S SPRUCE			213.0	43.4	11	19	27					
BL MAPLE			500.0	102.0		9	19					
WR CEDAR			233.9	47.7	3	5	8					
SNAG			500.0	102.0		3	5					
TOTAL			38.1	7.8	212	230	248		61	15	7	
CL: 68.1 %			COEFF		NET BF/ACRE				# OF PLOTS REQ.		INF. POP.	
SD: 1.0			VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK			87.5	17.8	10,854	13,212	15,570					
DOUG FIR			173.9	35.5	3,095	4,795	6,496					
R ALDER			163.7	33.4	3,016	4,528	6,040					

TC TSTATS				STATISTICS				PAGE	2	
				PROJECT		BACKBRAK		DATE	11/19/2013	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
08N	07W	12	AREA4	A4RW	2.00	25	171	1	W	
CL:	68.1%	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.	S.E.%	LOW	AVG	HIGH	5	10	15	
S SPRUCE		219.7	44.8	679	1,230	1,781				
BL MAPLE		500.0	102.0		340	688				
WR CEDAR		311.2	63.5	132	362	591				
SNAG										
TOTAL		45.6	9.3	22,193	24,468	26,742	86	22	10	

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT		BACKBRAK		DATE	11/19/2013	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
08N	07W	12	AREA2	PC2L	79.00	25	103	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL		25	103	4.1						
CRUISE		13	52	4.0	7,962	.7				
DBH COUNT										
REFOREST										
COUNT		11	48	4.4						
BLANKS		1								
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
HEMLEAV		24	30.3	20.2	64	67.2	9,783	8,945	2,596	2,454
DOUGLEAV		13	36.9	13.2	43	35.0	3,844	3,714	1,086	1,081
ALDRLEAV		5	21.6	12.2	54	17.5	2,083	2,083	621	621
SPRUCELV		2	5.1	17.0	52	8.1	691	691	241	241
CEDLEAV		4	4.7	14.5	21	5.4	435	362	131	116
MAPLELV		2	.9	22.9	31	2.7	149	96	57	57
SNAG		2	1.2	20.4	40	2.7				
TOTAL		52	100.8	15.9	51	138.5	16,984	15,891	4,731	4,569
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		
HEMLEAV		108.6	22.6	369	477	585				
DOUGLEAV		83.9	24.2	145	191	237				
ALDRLEAV		34.1	17.0	81	98	115				
SPRUCELV		78.6	73.6	36	135	234				
CEDLEAV		121.4	69.4	131	428	724				
MAPLELV		42.4	39.7	60	100	140				
SNAG										
TOTAL		130.0	18.0	262	319	377	675	169	75	
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
HEMLEAV		79.5	16.2	25	30	35				
DOUGLEAV		153.3	31.3	25	37	48				
ALDRLEAV		198.9	40.6	13	22	30				
SPRUCELV		217.8	44.4	3	5	7				
CEDLEAV		408.4	83.3	1	5	9				
MAPLELV		500.0	102.0		1	2				
SNAG		500.0	102.0		1	2				
TOTAL		59.8	12.2	88	101	113	149	37	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		
HEMLEAV		72.2	14.7	57	67	77				
DOUGLEAV		137.3	28.0	25	35	45				
ALDRLEAV		193.3	39.4	11	17	24				
SPRUCELV		217.8	44.4	4	8	12				
CEDLEAV		233.9	47.7	3	5	8				
MAPLELV		500.0	102.0		3	5				
SNAG		500.0	102.0		3	5				
TOTAL		25.6	5.2	131	138	146	27	7	3	
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		

TC TSTATS				STATISTICS				PAGE	2
				PROJECT	BACKBRAK			DATE	11/19/2013
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
08N	07W	12	AREA2	PC2L	79.00	25	103	1	W
CL: 68.1 %		COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
SD: 1.0		VAR.	S.E.%	LOW	AVG	HIGH	5	10	15
HEMLEAV		78.7	16.0	7,509	8,945	10,380			
DOUGLEAV		142.4	29.0	2,636	3,714	4,793			
ALDRLEAV		200.3	40.8	1,232	2,083	2,934			
SPRUCELV		227.9	46.5	370	691	1,012			
CEDLEAV		311.2	63.5	132	362	591			
MAPLELV		500.0	102.0		96	194			
SNAG									
TOTAL		38.6	7.9	14,640	15,891	17,141	62	15	7

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT	BACKBRAK			DATE 11/19/2013		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
08N	08W	13	AREA3	PC3L	101.00	36	250	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL		36	250	6.9						
CRUISE		10	55	5.5	7,493			.7		
DBH COUNT										
REFOREST										
COUNT		26	181	7.0						
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
HEMLEAV		32	30.4	20.3	67	68.3	8,472	7,807	2,392	2,339
DOUGLEAV		18	37.6	17.5	72	62.8	8,727	8,507	2,378	2,365
SNAG		2	2.4	17.0	34	3.8	416		79	
ALDRLEAV		1	3.0	13.0	46	2.8	241	241	81	81
SPRUCELV		2	.8	19.6	45	1.7	111	77	45	40
TOTAL		55	74.2	18.6	67	139.3	17,968	16,632	4,975	4,825
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		
HEMLEAV		34.4	6.1	253	270	286				
DOUGLEAV		51.1	12.4	234	267	300				
SNAG										
ALDRLEAV										
SPRUCELV		82.5	77.2	27	120	213				
TOTAL		48.6	6.5	234	250	266	94	24	10	
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
HEMLEAV		66.1	11.0	27	30	34				
DOUGLEAV		70.7	11.8	33	38	42				
SNAG		354.3	59.0	1	2	4				
ALDRLEAV		305.6	50.9	1	3	5				
SPRUCELV		349.6	58.2	0	1	1				
TOTAL		22.6	3.8	71	74	77	20	5	2	
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
HEMLEAV		65.8	11.0	61	68	76				
DOUGLEAV		70.7	11.8	55	63	70				
SNAG		336.8	56.1	2	4	6				
ALDRLEAV		305.6	50.9	1	3	4				
SPRUCELV		336.4	56.0	1	2	3				
TOTAL		10.7	1.8	137	139	142	5	1	1	
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
HEMLEAV		66.6	11.1	6,941	7,807	8,673				
DOUGLEAV		71.5	11.9	7,495	8,507	9,520				
SNAG										
ALDRLEAV		305.6	50.9	118	241	364				
SPRUCELV		348.1	58.0	32	77	121				
TOTAL		17.0	2.8	16,162	16,632	17,103	12	3	1	

Log Stock Table - MBF

T08N R07W S01 Ty00MC
THRU
T08N R08W S13 TyPC3T

Project: BACKBRAK
Acres 200.00

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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+
A		DO 3S	40	7		7	2.1			7									
A		DO 4S	16	4		4	1.2			4									
A		DO 4S	19	7		7	2.1			7									
A		DO 4S	20	8		8	2.2			8									
A		DO 4S	23	4		4	1.3			4									
A		DO 4S	24	14		14	4.1			14									
A		DO 4S	26	2		2	.7			2									
A		DO 4S	27	3		3	.8			3									
A		DO 4S	29	3		3	.9			3									
A		DO 4S	30	58		58	17.2			58									
A		DO 4S	35	9		9	2.8			9									
A		DO 4S	40	81		81	23.9			81									
A		Totals		370	8.4	339	20.3			226	58	26	29						
H		DO CU	4	2	100.0														
H		DO CU	5	5	100.0														
H		DO CU	6	20	100.0														
H		DO CU	7	0	100.0														
H		DO CU	8	0	100.0														
H		DO CU	12	5	100.0														
H		DO CU	19	8	100.0														
H		DO CU	27	5	100.0														
H		DO CU	40	1	100.0														
H		DO 2S	12	0		0	.0								0				
H		DO 2S	16	12		12	1.5							12					
H		DO 2S	24	29		29	3.6						29						
H		DO 2S	32	44		44	5.3						21	21	1		1		
H		DO 2S	34	40	5.1	38	4.6								38				
H		DO 2S	40	294	5.0	279	33.8					112	58	79	28	1		1	
H		DO 3S	16	18		18	2.1			4				14					
H		DO 3S	28	0		0	.0				0								
H		DO 3S	30	3		3	.4			3									
H		DO 3S	32	112	5.7	106	12.9			34	15	57		0					
H		DO 3S	34	13		13	1.5			13									
H		DO 3S	35	13		13	1.6			5	8								
H		DO 3S	36	11		11	1.3			11									
H		DO 3S	38	6		6	.8			6	0								

T08N R07W S01 Ty00MC
THRU
T08N R08W S13 TyPC3T

Project: BACKBRAK
Acres 200.00

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S T Spp	So rt	Gr 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+			
H	DO	3S	40	186	2.7	181	22.0			63	40	78		1								
H	DO	4S	13	5		5	.6			5												
H	DO	4S	14	3		3	.4			3												
H	DO	4S	16	8		8	1.0			8												
H	DO	4S	17	2		2	.2			2												
H	DO	4S	18	0		0	.0				0											
H	DO	4S	21	0		0	.0				0											
H	DO	4S	22	0		0	.0			0												
H	DO	4S	23	11		11	1.3			11												
H	DO	4S	24	23		23	2.8			23												
H	DO	4S	26	9		9	1.1			9												
H	DO	4S	28	11		11	1.3			11												
H	Totals			899	8.2	825	49.5			210	64	246	109	126	67	1	1		1			
M	DO	CU	4	2	100.0																	
M	DO	CU	17	3	100.0																	
M	DO	CU	31	8	100.0																	
M	DO	CR	16	22	23.8	17	84.0			13	4											
M	DO	CR	24	0	13.3	0	.7						0									
M	DO	CR	32	6	50.0	3	15.0					3										
M	DO	CR	38	0	58.8	0	.3					0										
M	Totals			42	51.9	20	1.2			13	4	3	0									
S	DO	CU	8	0	100.0																	
S	DO	CU	18	14	100.0																	
S	DO	2S	32	1		1	2.1						1									
S	DO	3S	16	4		4	9.0						4									
S	DO	3S	32	0		0	.7			0												
S	DO	3S	36	0		0	.8			0												
S	DO	4S	15	20		20	45.4					20										
S	DO	4S	16	19		19	42.1				19											
S	Totals			59	24.5	45	2.7			1	19	20	5									
C	DO	CU	12	0	100.0																	
C	DO	2S	24	0	13.3	0	11.3						0									
C	DO	2S	32	0	19.8	0	31.3											0				
C	DO	2S	40	0		0	42.6							0								

Log Stock Table - MBF

T08N R07W S01 Ty00MC
THRU
T08N R08W S13 TyPC3T

Project: BACKBRAK
Acres 200.00

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S Spp	T	So rt	Gr 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+
C		DO	3S	32	0		0	7.7						0						
C		DO	3S	40	0		0	7.1			0									
C		Totals			1	16.8	1	.0			0		0	0		0				
Total		All Species			1,823	8.6	1,666	100.0			633	211	406	204	142	68	1	1	1	

TC		PSTNDSUM		Stand Table Summary										Page		1	
														Date:		10/29/2013	
T08N R07W S01 Ty00MC THRU T08N R08W S13 TyPC3T				Project BACKBRAK										Time:		8:46:06PM	
				Acres 200.00										Grown Year:			
S Spec	T	Sample		Tot					Average Log		Net		Net		Totals		
		DBH	Trees	FF 16'	Av Ht	Trees/ Acre	BA/ Acre	Logs Acre	Net Cu.Ft.	Net Bd.Ft.	Tons/ Acre	Cu.Ft. Acre	Bd.Ft. Acre	Tons	Cunits	MBF	
H		9	4	84	38	7.006	3.01	5.07	7.6	26.5		39	134		77	27	
H		10	1	89	60	1.265	.69	1.27	13.0	50.0		16	63		33	13	
H		11	2	84	36	1.092	.72	1.09	10.4	31.3		11	34		23	7	
H		13	4	83	60	1.657	1.53	1.69	23.6	60.0		40	101		80	20	
H		14	3	88	94	2.015	2.15	4.03	21.7	86.6		87	349		175	70	
H		15	6	87	77	3.783	4.64	6.87	22.7	75.8		156	521		312	104	
H		16	11	88	80	5.802	8.10	9.15	28.5	97.8		260	895		521	179	
H		17	2	87	84	1.088	1.71	2.18	27.2	95.0		59	207		119	41	
H		18	4	88	92	1.704	3.01	3.80	32.9	112.1		125	426		250	85	
H		19	6	84	80	1.938	3.82	3.88	32.4	99.7		126	386		251	77	
H		20	2	92	85	.407	.89	.81	43.3	120.0		35	98		70	20	
H		21	6	90	91	1.347	3.24	2.69	48.6	180.9		131	487		262	97	
H		22	3	95	81	.348	.92	.68	44.1	188.7		30	129		60	26	
H		23	2	89	92	.507	1.46	1.52	38.3	150.0		58	228		117	46	
H		24	6	85	93	.058	.18	.15	47.7	175.3		7	25		14	5	
H		25	2	84	92	.018	.06	.04	65.0	237.5		2	8		5	2	
H		26	2	85	110	.017	.06	.04	68.6	280.0		3	12		6	2	
H		27	1	83	84	.008	.03	.02	53.0	200.0		1	3		2	1	
H		30	1	82	84	.006	.03	.01	92.5	265.0		1	3		2	1	
H		32	1	84	99	.005	.03	.01	117.5	455.0		1	5		3	1	
H		42	1	86	131	.003	.03	.01	174.3	893.3		2	8		3	2	
H		Totals	70	86	69	30.075	36.32	44.99	26.5	91.7		1,192	4,124		2,383	825	
D		8	2	86	16	1.701	.59	.10	5.0	20.0		0	2		1	0	
D		9	4	86	39	12.391	5.41	11.05	7.0	20.1		77	222		155	44	
D		11	2	89	54	2.465	1.62	2.46	13.9	49.3		34	122		68	24	
D		12	1	86	50	.043	.03	.04	16.0	50.0		1	2		1	0	
D		13	3	89	59	1.801	1.66	1.80	21.9	59.8		39	108		79	22	
D		14	4	89	68	4.493	4.80	7.50	17.2	54.1		129	406		258	81	
D		15	3	88	78	2.240	2.71	4.48	18.8	70.1		84	314		169	63	
D		16	4	87	85	3.079	4.30	6.16	23.0	85.5		142	527		283	105	
D		18	1	88	106	.317	.56	.63	37.0	130.0		23	82		47	16	
D		19	2	85	95	.301	.59	.60	36.6	120.6		22	73		44	15	
D		20	2	85	103	.744	1.62	1.49	43.5	150.0		65	223		129	45	
D		21	2	84	108	.028	.07	.07	40.0	150.0		3	10		6	2	
D		22	1	89	105	.212	.56	.42	55.5	205.0		24	87		47	17	
D		23	1	83	103	.012	.03	.02	56.5	180.0		1	4		3	1	
D		24	1	83	111	.011	.03	.02	60.5	205.0		1	4		3	1	
D		Totals	33	87	56	29.838	24.60	36.85	17.5	59.3		646	2,187		1,293	437	
A		8	1	87	34	1.776	.62	1.78	6.0	20.0		11	36		21	7	
A		9	2	86	82	3.344	1.48	3.34	15.0	60.0		50	201		100	40	
A		10	5	86	69	5.483	2.99	5.55	14.9	49.8		83	276		165	55	
A		11	7	86	52	6.502	4.23	7.59	12.1	38.4		92	292		184	58	
A		12	4	86	91	3.762	2.95	7.52	14.8	47.5		111	357		222	71	
A		13	2	86	74	.766	.66	1.53	12.7	40.5		19	62		39	12	
A		14	2	86	72	.614	.66	.65	23.6	70.5		15	46		31	9	
A		15	4	86	74	1.545	1.90	2.05	21.6	64.9		44	133		89	27	
A		16	1	87	62	.444	.62	.89	18.0	65.0		16	58		32	12	
A		17	2	86	90	.787	1.24	1.57	27.5	97.5		43	153		87	31	
A		18	1	86	90	.351	.62	.70	36.0	115.0		25	81		51	16	
A		Totals	31	86	69	25.372	17.96	33.17	15.4	51.1		510	1,694		1,020	339	
S		13	2	79	52	2.356	2.17	2.36	13.0	40.0		31	94		61	19	

TC PSTNDSUM		Stand Table Summary										Page 2		
												Date: 10/29/2013		
T08N R07W S01 Ty00MC THRU T08N R08W S13 TyPC3T					Project BACKBRAK					Time: 8:46:06PM				
					Acres 200.00					Grown Year:				
S Spec	T	DBH	Sample Trees	Tot FF 16' Av Ht	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons Cunits MBF	
S		14	2	74 17	2.031	2.17	2.03	14.0	50.0		28	102	57	20
S		16	1	88 27	.201	.28	.20	20.0	100.0		4	20	8	4
S		17	2	84 65	.060	.09	.09	31.3	90.0		3	8	6	2
S		Totals	7	77 36	4.647	4.72	4.68	14.1	47.9		66	224	132	45
M		9	2	87 76	1.232	.54	2.46	6.0	20.0		15	49	30	10
M		10	2	87 56	.998	.54								
M		12	4	79 40	1.387	1.09	1.39	9.0	25.0		12	35	25	7
M		20	2	83 46	.250	.54	.25	46.0	60.0		11	15	23	3
M		22	1	82 37	.005	.01	.01	46.0	130.0		0	1	0	0
M		24	1	81 54	.004	.01	.00	78.0	70.0		0	0	1	0
M		Totals	12	84 56	3.876	2.75	4.11	9.6	24.3		39	100	79	20
C		8	1	71 17	.039	.01								
C		24	1	83 105	.004	.01	.01	61.5	210.0		1	2	1	0
C		28	1	74 36	.003	.01	.00	64.0	130.0		0	0	0	0
C		45	1	80 88	.001	.01	.00	178.0	580.0		0	1	1	0
C		Totals	4	73 28	.047	.05	.01	82.1	255.9		1	4	2	1
SN		18	1	89 48	.008	.01								
SN		24	1	89 45	.004	.01								
SN		Totals	2	89 47	.012	.03								
Totals			159	86 62	93.867	86.43	123.82	19.8	67.3		2,454	8,332	4,909	1,666

Legend

-  Timber Sale Boundary
-  Ownership
-  Sections
-  Stream Buffer
-  Reforestation_Area
-  Seasonal Restriction Boundary
-  Paved Road
-  Rocked Road
-  Fish, Perennial
-  NonFish, Perennial
-  Eagle Nest
-  Survey Monument
-  Existing Landing
-  Tractor Logging
-  Line Pull
-  Cable_Logging

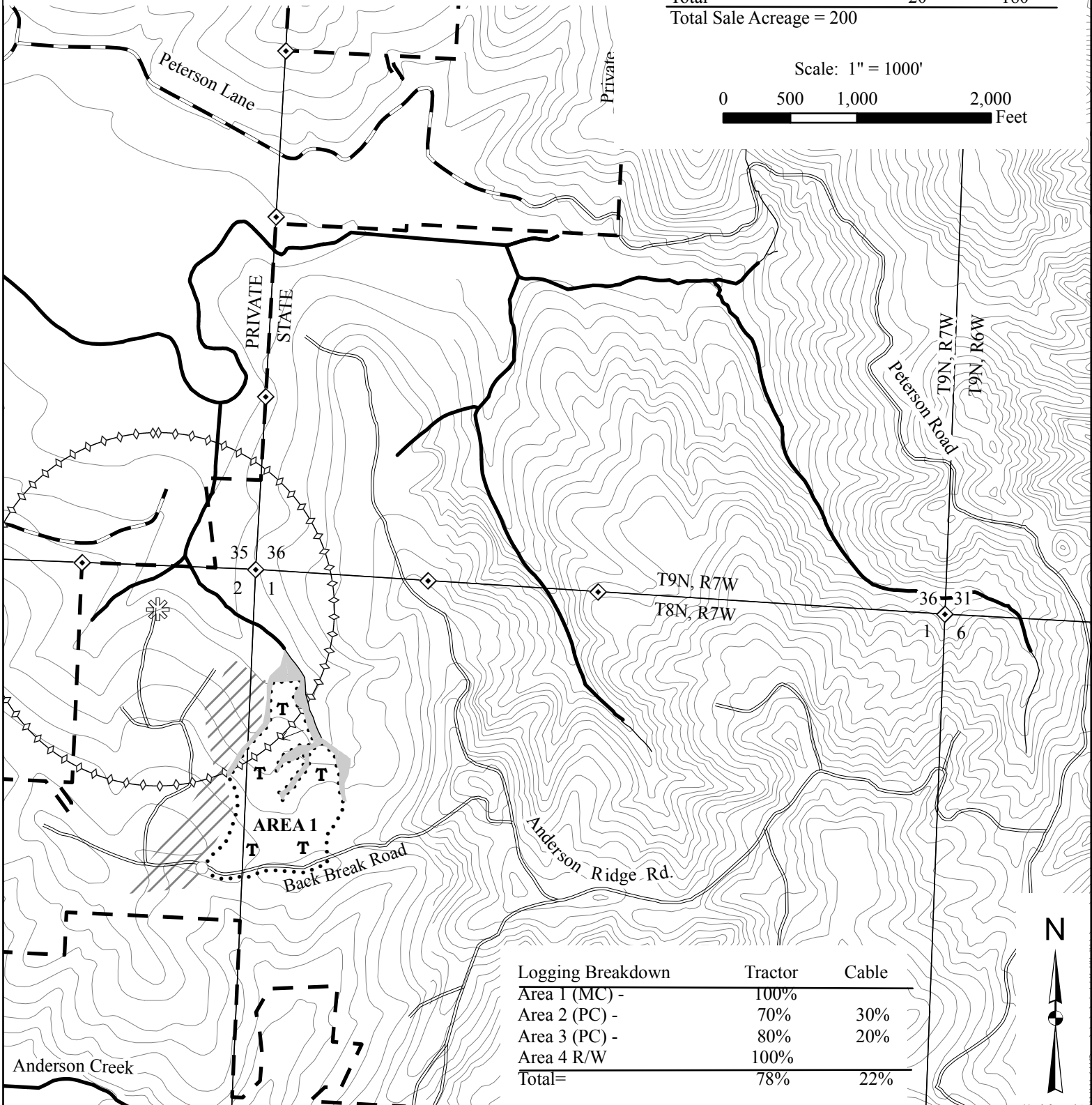
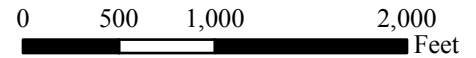
LOGGING PLAN MAP

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OF TIMBER SALE CONTRACT NO. 341-14-42
BACKBREAK COMBINATION
PORTIONS OF SECTIONS 1, 2, 11, AND 12, T8N, R7W
AND PORTIONS OF SECTION 13, T8N, R8W, W.M.
CLATSOP COUNTY, OREGON

Approximate Net Acreage	MC Acres	PC Acres
Area 1 (MC) -	18	
Area 2 (PC) -		79
Area 3 (PC) -		101
Area 4 R/W	2	
Total=	20	180
Total Sale Acreage = 200		

Scale: 1" = 1000'



Logging Breakdown	Tractor	Cable
Area 1 (MC) -	100%	
Area 2 (PC) -	70%	30%
Area 3 (PC) -	80%	20%
Area 4 R/W	100%	
Total=	78%	22%



LOGGING PLAN MAP

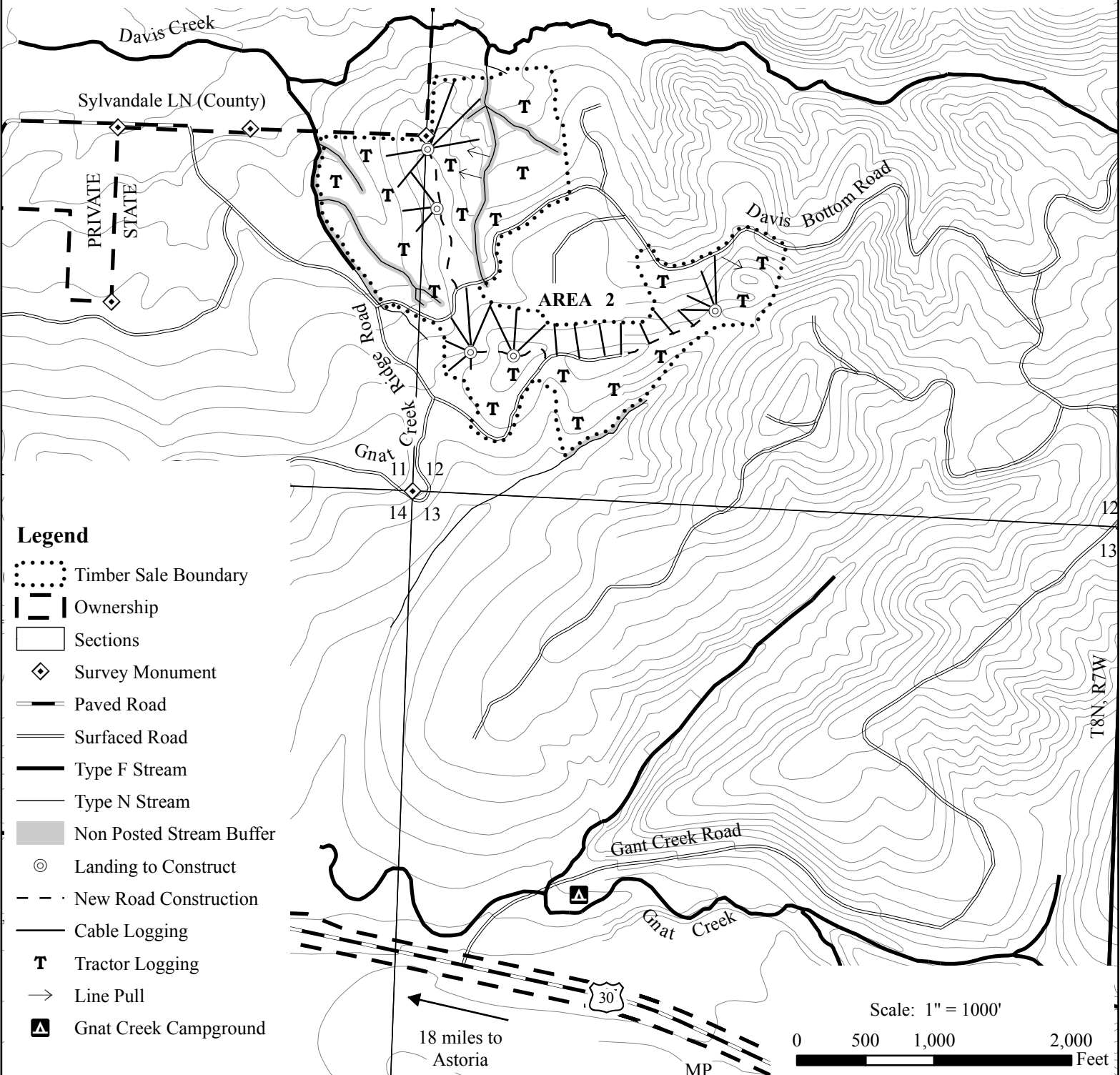
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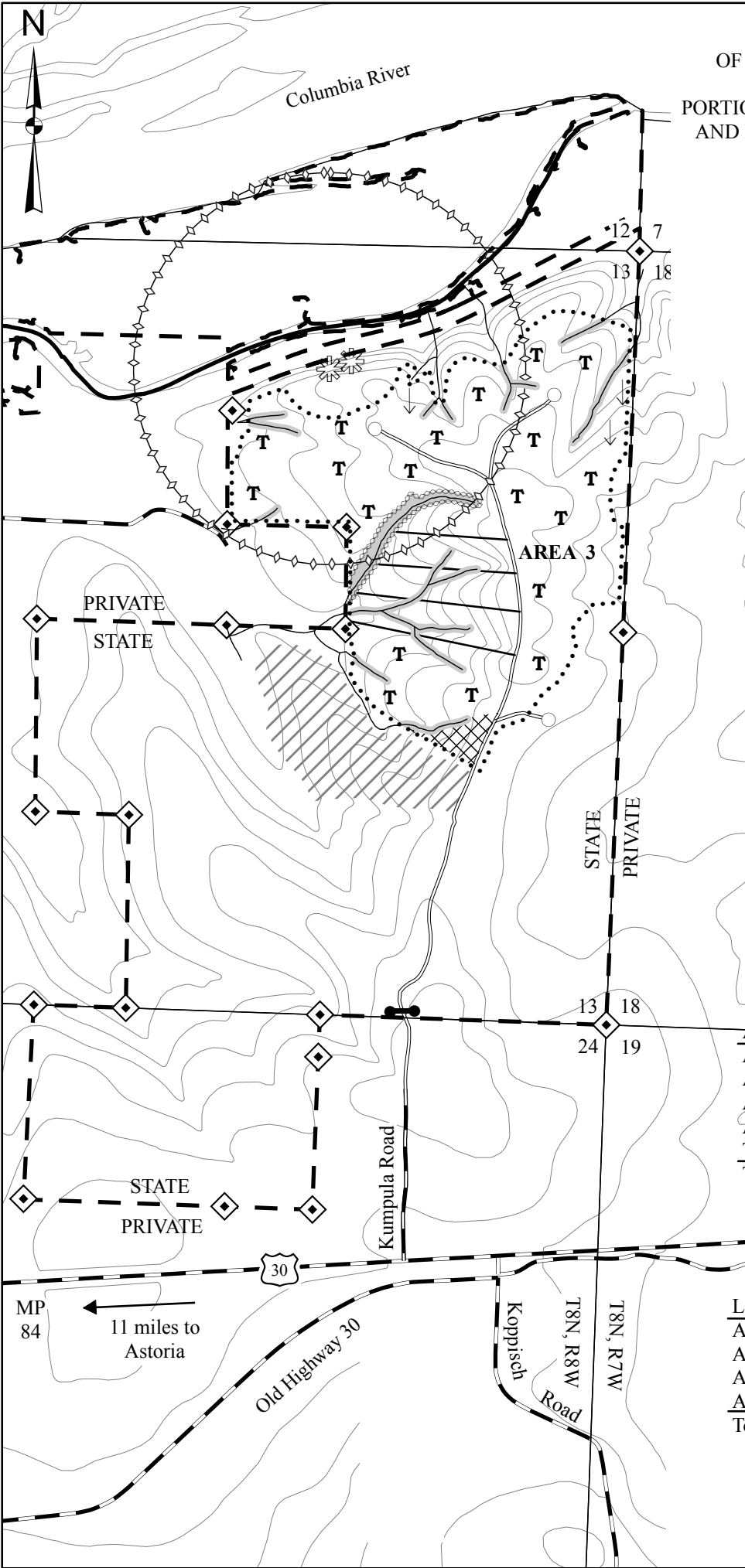
OF TIMBER SALE CONTRACT NO. 341-14-42
BACKBREAK COMBINATION
PORTIONS OF SECTIONS 1, 2, 11, AND 12, T8N, R7W
AND PORTIONS OF SECTION 13, T8N, R8W, W.M.
CLATSOP COUNTY, OREGON

Logging Breakdown	Tractor	Cable
Area 1 (MC) -	100%	
Area 2 (PC) -	70%	30%
Area 3 (PC) -	80%	20%
Area 4 R/W	100%	
Total=	78%	22%

Approximate Net Acreage	MC Acres	PC Acres
Area 1 (MC) -	18	
Area 2 (PC) -		79
Area 3 (PC) -		101
Area 4 R/W	2	
Total=	20	180
Total Sale Acreage = 200		



OF TIMBER SALE CONTRACT NO. 341-14-42
BACKBREAK COMBINATION
PORTIONS OF SECTIONS 1, 2, 11, AND 12, T8N, R7W
AND PORTIONS OF SECTION 13, T8N, R8W, W.M.
CLATSOP COUNTY, OREGON



Legend

- Timber Sale Boundary
- Ownership
- Sections
- Non Thinnable Area
- Reforestation Area
- Seasonal Restriction Boundary
- Non Posted Stream Buffer
- Posted Stream Buffer
- Paved Road
- Rocked Road
- Gate
- Survey Monument
- Existing Landing
- Eagle Nest
- Cable Logging
- Tractor Logging
- Line Pull

Approximate Net Acreage	MC Acres	PC Acres
Area 1 (MC) -	18	
Area 2 (PC) -		79
Area 3 (PC) -		101
Area 4 R/W	2	
Total=	20	180
Total Sale Acreage = 200		

Logging Breakdown	Tractor	Cable
Area 1 (MC) -	100%	
Area 2 (PC) -	70%	30%
Area 3 (PC) -	80%	20%
Area 4 R/W	100%	
Total=	78%	22%

