



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Cal Barr
Sale AT-341-2019-W00728-01

District: Astoria

Date: December 18, 2018

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$2,833,449.10	\$83,642.72	\$2,917,091.82
		Project Work:	(\$301,743.00)
		Advertised Value:	\$2,615,348.82



Timber Sale Appraisal Cal Barr Sale AT-341-2019-W00728-01

District: Astoria

Date: December 18, 2018

Timber Description

Location: Portions of Sections 24, 25, 26, 34, 35 and 36, T7N, R8W and Portions of Section 31, T7N, R7W, W.M., Clatsop County, Oregon

Stand Stocking: 60%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	17	0	97
Western Hemlock / Fir	16	0	97
Sitka Spruce	27	0	98
Alder (Red)	15	0	98

Volume by Grade	2S	3S & 4S 6" - 11"	2S 12"+	Other	8" - 9"	10" - 11"	12"+	6" - 7"	Total
Douglas - Fir	2,732	982	0	0	0	0	0	0	3,714
Western Hemlock / Fir	3,433	1,891	0	0	0	0	0	0	5,324
Sitka Spruce	0	209	658	1,094	0	0	0	0	1,961
Alder (Red)	0	0	0	0	41	67	46	84	238
Total	6,165	3,082	658	1,094	41	67	46	84	11,237

Comments: Pond Values: Local Pond Values, October 2018.

Expected Log Markets: Mist, Willamina, Banks, North Plains, Clatskanie, Tillamook, Garibaldi, Forest Grove, Warrenton, Wauna, Elma, WA, Longview, WA, Vancounver WA, and Chehalis, WA.

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost:
\$864.28/MBF = \$1,100/MBF - \$235.72/MBF

Other hardwoods Stumpage Price = Pond Value minus Logging Cost:
\$164.28/MBF = \$400/MBF - \$235.72/MBF

Other conifer Stumpage Price = Pond Value minus Logging Cost:
\$239.28/MBF = \$475/MBF - \$235.72/MBF

Conifer and Hardwood pulp: \$6.00/ton
NOTE: Sitka Spruce Other = 20"+ Sort

Other Costs (With Profit and Risk to be added):

Machine Washing for Invasive Weed Compliance = \$4,000

Ditch Filters:
25 bales of straw @ \$10/bale = \$250
12 hours of labor @ \$40/hour = \$480

TOTAL Other Costs (with Profit & Risk to be added): \$4,730

Other Costs (No Profit & Risk added):
None

ROAD MAINTENANCE
(See attached Road Maintenacnce Cost Summary Sheet)
TOTAL Road Maintenance: \$30,727/11,237 MBF = \$2.73

Slash piling = \$34,005
(See attached Site Prep Appraisal Sheet)



Timber Sale Appraisal
Cal Barr
Sale AT-341-2019-W00728-01

District: Astoria

Date: December 18, 2018

Logging Conditions

Combination#: 1	Douglas - Fir	18.00%
	Western Hemlock / Fir	18.00%
	Sitka Spruce	18.00%
	Alder (Red)	18.00%
Logging System:	Cable: Medium Tower >40 - <70	Process: Manual Falling/Delimbing
yarding distance:	Medium (800 ft)	downhill yarding: No
tree size:	Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF	
loads / day:	11.5	bd. ft / load: 4600
cost / mbf:	\$124.76	
machines:	Log Loader (A)	
	Tower Yarder (Medium)	
Combination#: 2	Douglas - Fir	38.00%
	Western Hemlock / Fir	38.00%
	Sitka Spruce	38.00%
	Alder (Red)	38.00%
Logging System:	Shovel	Process: Manual Falling/Delimbing
yarding distance:	Medium (800 ft)	downhill yarding: No
tree size:	Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF	
loads / day:	12	bd. ft / load: 4600
cost / mbf:	\$71.33	
machines:	Shovel Logger	
Combination#: 3	Douglas - Fir	35.00%
	Western Hemlock / Fir	35.00%
	Sitka Spruce	35.00%
	Alder (Red)	35.00%
Logging System:	Shovel	Process: Manual Falling/Delimbing
yarding distance:	Medium (800 ft)	downhill yarding: No
tree size:	Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF	
loads / day:	7	bd. ft / load: 3700
cost / mbf:	\$152.02	
machines:	Shovel Logger	
Combination#: 4	Douglas - Fir	9.00%
	Western Hemlock / Fir	9.00%
	Sitka Spruce	9.00%
	Alder (Red)	9.00%
Logging System:	Cable: Medium Tower >40 - <70	Process: Manual Falling/Delimbing
yarding distance:	Medium (800 ft)	downhill yarding: No
tree size:	Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF	
loads / day:	5	bd. ft / load: 3900
cost / mbf:	\$338.46	
machines:	Log Loader (A)	
	Tower Yarder (Medium)	



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal Cal Barr Sale AT-341-2019-W00728-01

District: Astoria

Date: December 18, 2018

Logging Costs

Operating Seasons: 2.00	Profit Risk: 10%
Project Costs: \$301,743.00	Other Costs (P/R): \$4,730.00
Slash Disposal: \$34,005.00	Other Costs: \$0.00

Miles of Road

Road Maintenance: \$2.73

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

Hauling Costs

Species	\$ / MBF	Trips/Day	MBF / Load
Douglas - Fir	\$0.00	3.0	4.7
Western Hemlock / Fir	\$0.00	3.0	4.5
Sitka Spruce	\$0.00	2.0	3.5
Alder (Red)	\$0.00	2.0	3.5



Timber Sale Appraisal
Cal Barr
Sale AT-341-2019-W00728-01

District: Astoria

Date: December 18, 2018

Logging Costs Breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Brand & Paint	Other	Total
Douglas - Fir									
\$133.23	\$2.81	\$0.78	\$69.40	\$0.42	\$20.66	\$3.03	\$2.00	\$0.00	\$232.33
Western Hemlock / Fir									
\$133.23	\$2.81	\$0.78	\$72.48	\$0.42	\$20.97	\$3.03	\$2.00	\$0.00	\$235.72
Sitka Spruce									
\$133.23	\$2.78	\$0.78	\$138.42	\$0.42	\$27.56	\$3.03	\$2.00	\$0.00	\$308.22
Alder (Red)									
\$133.23	\$2.78	\$0.78	\$138.42	\$0.42	\$27.56	\$3.03	\$2.00	\$0.00	\$308.22

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$586.78	\$354.45	\$0.00
Western Hemlock / Fir	\$0.00	\$491.12	\$255.40	\$0.00
Sitka Spruce	\$0.00	\$388.42	\$80.20	\$0.00
Alder (Red)	\$0.00	\$659.66	\$351.44	\$0.00



Timber Sale Appraisal
Cal Barr
Sale AT-341-2019-W00728-01

District: Astoria

Date: December 18, 2018

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
Alder (Red)	0	\$0.00	\$0.00

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	3,714	\$354.45	\$1,316,427.30
Western Hemlock / Fir	5,324	\$255.40	\$1,359,749.60
Sitka Spruce	1,961	\$80.20	\$157,272.20
Alder (Red)	238	\$351.44	\$83,642.72

Gross Timber Sale Value

Recovery: \$2,917,091.82

Prepared By: Ella Salkeld

Phone: 503-325-5451

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Cal Barr

Project No. 1: ROAD CONSTRUCTION:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
4A-4B(16+90), 4C-4D(4+00), 4A-4F(20+65), 7C-7D(24+10), 7E-7F(11+85)	77.50	
		\$81,727.00
7A-7B(1+00), 5A-5B(6+60)	7.60	\$1,017.00
Road Maint.		\$1,742.82
Move-In		\$4,456.80
TOTALS	85.10	\$88,944

Project No. 2: ROAD IMPROVEMENT:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
I1-I2(164+00), I3-I4(34+50), I5-I6(1+1), I7-I8(99+50), I9-I10(46+50), I11-I12(10+50), I13-I14(73+00), I15-I16(50+50), I17-I18(4+00), I19-I20(10+00), Pt. I23(0+00)	494.00	\$158,630.00
Road Maint.		\$3,341.18
Move-In		\$8,544.20
TOTALS		\$170,515

SPECIAL PROJECTS (Move-In and Road Maint. are included separately as needed, for each Special Project):

<u>Description</u>	<u>Cost</u>
Proj. 3 Road Vacating	\$4,947.00
Proj. 4 Fish Pipe	\$37,337.00
TOTAL	\$42,284

GRAND TOTAL **\$301,743**

Compiled By: CODY VALENCIA

Date: 1/9/19

Move In and Maintenance Calculator for Construction and Improvement

SALE NAME: Cal Barr

Project No. 1: ROAD CONSTRUCTION:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
4A-4B(16+90), 4C-4D(4+00),	77.50	
4A-4F(20+65), 7C-7D(24+10),		
7E-7F(11+85)		\$81,727.00
7A-7B(1+00), 5A-5B(6+60)	7.60	\$1,017.00
TOTALS	85.10	\$82,744

Project No. 2: ROAD IMPROVEMENT:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
I1-I2(164+00), I3-I4(34+50), I5-I6(1+50)		
I7-I8(99+50), I9-I10(46+50),		
I11-I12(10+50), I13-I14(73+00),	494.00	\$158,630.00
I15-I16(50+50), I17-I18(4+00),		
I19-I20(10+00), Pt. I23(0+00)		
TOTALS	494.00	\$158,630

MOVE IN (Construction & Improvement Only)

<u>Equipment</u>	<u>Cost</u>
Dozer (D8)	\$1,581.00
Excavator (C330x2)	\$3,162.00
Excavator (C315)	\$905.00
Dump Trucks (12cy x 8)	\$1,472.00
Front End Loader (C966x2)	\$1,750.00
Skidder (C518)	\$806.00
Grader (14G)	\$875.00
Vibratory Roller	\$875.00
Water Truck (2,500 gallon)	\$214.00
Backhoe	\$361.00
Extra Equipment Walk Time	\$1,000.00
TOTAL	\$13,001.00

ROAD MAINTENANCE (Construction & Improvement Only)

California Barrel Road	\$5,084.00
Simmons Ridge Road	
TOTAL	\$5,084.00

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Cal Barr
 ROAD: 4A-4B(16+90), 4C-4D(4+00), 4A-4F(20+65),
 POINTS: 7C-7D(24+10), 7E-7F(11+85), Dirt 7A-7B(1+00), 5A-5B(6+60)

NEW CONSTRUCTION: 77.50 STATIONS 1.47 MILES
 DIRT CONSTRUCTION 7.60 STATIONS 0.14 MILES

CLEARING & GRUBBING						
Method		Acres/amount	x	Rate	=	Cost
Clear & scatter	per acre	6.36	x	\$ 1,503	=	\$9,559.08
SUB TOTAL FOR CLEARING & GRUBBING						\$9,559.08

EXCAVATION						
	Material	Cy/amount	x	Rate	=	Cost
4A to 4B						
0+00-16+90	Drift up to 200'	\$/sta 16.90	x	\$214.00	=	\$3,616.60
12+50, 16+90	Landing Construction	\$/landing 2	x	\$438.00	=	\$876.00
	Fill compaction	\$/yd 1,000	x	\$0.79	=	\$790.00
	Fill construction (C330)	\$/hr 6	x	\$175.00	=	\$1,050.00
	End haul material to waste area	\$/yd 1,000	x	\$4.50	=	\$4,500.00
	Compact waste area	\$/yd 1,000	x	\$0.45	=	\$450.00
4C to 4D						
0+00-4+00	Balanced Construction	\$/sta 4.00	x	\$138.00	=	\$552.00
4+00	Landing Construction	\$/landing 1	x	\$438.00	=	\$438.00
	Fill compaction	\$/yd 200	x	\$0.79	=	
	Fill construction (C330)	\$/hr 2	x	\$175.00	=	
4A to 4F						
0+00-20+65	Balanced Construction	\$/sta 20.65	x	\$138.00	=	\$2,849.70
20+65	Landing Construction	\$/landing 1	x	\$438.00	=	\$438.00
5A to 5B						
0+00-6+60	Balanced Construction	\$/sta 2.00	x	\$138.00	=	\$276.00
6+60	Landing Construction	\$/landing 1	x	\$438.00	=	\$438.00
7A to 7B						
0+00-1+00	Balanced Construction	\$/sta 1	x	\$138.00	=	\$138.00
7C to 7D						
0+00-24+10	Balanced Construction	\$/sta 24.10	x	\$138.00	=	\$3,325.80
24+10	Landing Construction	\$/landing 1	x	\$438.00	=	\$438.00
7D to 7E						
0+00-11+85	Balanced Construction	\$/sta 11.85	x	\$438.00	=	\$5,190.30
11+85	Landing Construction	\$/landing 1	x	\$438.00	=	\$438.00
All						
	Place Riprap (C330)	\$/hr 4	x	\$175.00	=	\$700.00
SUB TOTAL FOR EXCAVATION						
						\$26,504.40

CULVERT MATERIALS AND INSTALLATION									
Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
4A to 4B					7A to 7B				
0+50	18" CPP	30	\$21.95	\$658.50	0+00	18" CPP	35	\$21.95	\$768.25
6+00	18" CPP	35	\$21.95	\$768.25	12+50	18" CPP	30	\$21.95	\$658.50
10+00	18" CPP	35	\$21.95	\$768.25	19+00	18" CPP	35	\$21.95	\$768.25
4A to 4F					7C to 7D				
0+60	18" CPP	35	\$21.95	\$768.25	0+50	18" CPP	30	\$21.95	\$658.50
4+50	18" CPP	30	\$21.95	\$658.50	7+00	18" CPP	30	\$21.95	\$658.50
12+68	18" CPP	50	\$21.95	\$1,097.50					
14+70	18" CPP	30	\$21.95	\$658.50					
18+20	18" CPP	30	\$21.95	\$658.50					

				Description	Quantity	Rate	Cost
Other/miscellaneous:							
Culvert stakes & markers:				White Fiberglass (Carsonite) 6' x 2½" posts	13	\$23.00	\$299.00

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION \$9,847.25

Subtotal of Clearing, Exc., Culv.

\$45,910.73

SURFACING		Subgrade prep:				Description		Stations/ amount	x	Rate/ sta/amt	Cost
						Grade, Shape and Ditch 16'		85.10	x	\$27.91	\$2,375.14
						Subgrade Compaction		77.50	x	\$22.69	\$1,758.48

ROAD SEGMENT 4A to 4B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	4A to 4B		0+00 to 16+90				
				Volume (CY) per	Number of					
Base Rock	4"-0" Crushed	0+00 to 16+90	8	Station	52	Stations	16.90	879	\$4.01	\$3,524
Junctions	4"-0" Crushed	0+00	N/A	Junction	22	Junctions	1	22	\$4.01	\$88
Turnouts	4"-0" Crushed	7+60	N/A	Turnout	33	Turnouts	1	33	\$4.01	\$132
Dissipator	24"-6" Riprap	6+00, 10+00	N/A	Culvert	11	Culverts	2	22	\$5.48	\$121
Landings	6"-0" Pit-run	12+50, 16+90	N/A	Landing	66	Landings	2	132	\$5.80	\$766
Total Rock for Road Segment:				4A to 4B				1,088		

\$4,631

ROAD SEGMENT 4C to 4D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	4C to 4D		0+00 to 4+00				
				Volume (CY) per	Number of					
Base Rock	4"-0" Crushed	0+00 to 4+00	8	Station	52	Stations	4.00	208	\$4.01	\$834
Junctions	4"-0" Crushed	0+00	N/A	Junction	11	Junctions	1	11	\$4.01	\$44
Turnarounds	4"-0" Crushed	1+84	N/A	Turnaround	22	Turnarounds	1	22	\$4.01	\$88
Landings	6"-0" Pit-run	3+85	N/A	Landing	66	Landings	1	66	\$5.80	\$383
Total Rock for Road Segment:				4C to 4D				307		

\$1,349

ROAD SEGMENT 4A to 4F				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	4A to 4F		0+00 to 20+65				
				Volume (CY) per	Number of					
Base Rock	4"-0" Crushed	0+00 to 20+65	8	station	52	stations	20.65	1,074	\$4.01	\$4,306
Junctions	4"-0" Crushed	0+00	N/A	Junction	11	Junctions	1	11	\$4.01	\$44
Turnouts	4"-0" Crushed	6+10, 9+50, 16+50	N/A	Turnaround	33	Turnarounds	3	99	\$4.01	\$397
Culvert Bedding/Backfill	1½"-0" Crushed	0+60, 4+50, 12+68, 18+20	N/A	Culvert	22	Culverts	4	88	\$4.01	\$353
Culvert Bedding/Backfill	1½"-0" Crushed	14+70	N/A	Culvert	33	Culverts	1	33	\$4.01	\$132
Dissipator	24"-6" Riprap	14+70	N/A	Culvert	22	Culverts	1	22	\$5.48	\$121
Landings	6"-0" Pit-run	20+65	N/A	Landing	66	Landings	1	66	\$5.80	\$383
Total Rock for Road Segment:				4A to 4F				1,393		

\$5,736

ROAD SEGMENT 5A to 5B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	5A to 5B		0+00 to 6+60				
				Volume (CY) per	Number of					
Junctions	4"-0" Crushed	0+00	N/A	Junction	22	Junctions	1	22	\$5.52	\$121
Total Rock for Road Segment:				5A to 5B				22		

\$121

ROAD SEGMENT 7A to 7B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	7A to 7B		0+00 to 1+00				
				Volume (CY) per	Number of					
Junctions	4"-0" Crushed	0+00	N/A	Junction	33	Junctions	1.00	33	\$5.52	\$182
Total Rock for Road Segment:				7A to 7B				33		

ROAD SEGMENT 7C to 7D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	7C to 7D		0+00 to 24+10				
				Volume (CY) per	Number of					
Base Rock	4"-0" Crushed	0+00 to 24+10	8	Station	52	Stations	24.10	1,253	\$5.52	\$6,918
Junctions	4"-0" Crushed	0+00	N/A	Junction	22	Junctions	1	22	\$5.52	\$121
Turnouts	4"-0" Crushed	14+00	N/A	Turnout	33	Turnouts	1	33	\$5.52	\$182
Turnarounds	4"-0" Crushed	6+00, 10+00	N/A	Turnaround	22	Turnarounds	2	44	\$5.52	\$243
Landings	6"-0" Pit-run	16+50, 24+10	N/A	Landing	66	Landings	2	132	\$5.80	\$766
Total Rock for Road Segment:				7C to 7D				1,484		

\$8,230

ROAD SEGMENT 7E to 7F				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	7E to 7F		0+00 to 11+85				
				Volume (CY) per	Number of					
Base Rock	4"-0" Crushed	0+00 to 11+85	8	Station	52	Stations	11.85	616	\$5.52	\$3,401
Junctions	4"-0" Crushed	0+00	N/A	Junction	22	Junctions	1	22	\$5.52	\$121
Turnouts	4"-0" Crushed	8+50	N/A	Turnout	33	Turnouts	1	33	\$5.52	\$182
Turnarounds	4"-0" Crushed	10+10	N/A	Turnaround	11	Turnarounds	1	11	\$5.52	\$61
Landings	6"-0" Pit-run	11+85	N/A	Landing	66	Landings	1	66	\$5.80	\$383
Total Rock for Road Segment:				7E to 7F				748		

\$4,149

\$182

Processing:		Description		No.sta	Rate/sta	Cost
		Water, Process & Compact Base Rock (4"-0"): 1 Lift		85.1	\$63.48	\$5,402

24"-6" Riprap	6"-0" Pit- run	4"-0" crushed	1 1/2"-0" crushed		Total
44	462	4,448	121		5,075

SUB TOTAL FOR SURFACING

\$33,933

SPECIAL PROJECTS

Description		Quantity	Rate/Qu.	Cost
Seed and Mulch waste area				
Hand Seed	per acre	0.5	\$706.00	\$353.00
Straw/ mulch app. w/blower	per acre	0.5	\$1,611.00	\$805.50
Labor	per hour	4.0	\$45.00	\$180.00
Develop 24"-6" Riprap	per cy	44.0	\$4.83	\$212.52
Develop 6"-0" Pit-run	per cy	462.0	\$2.92	\$1,349.04

SUB TOTAL FOR SPECIAL PROJECTS

\$2,900

Subtotal of Surfacing & Spec. Proj.

\$36,833

Subtotal of Clearing, Exc., Culv.

\$45,911

GRAND TOTAL**\$82,744**Compiled By: Cody ValenciaDate: #####

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Cal Barr

NEW CONSTRUCTION:

STATIONS

0.00 MILES

ROAD: I1-I2(164+00), I3-I4(34+50), I5-I6(1+50), I7-I8(99+50), I9-I10(46+50)

IMPROVEMENT:

494.00 STATIONS

9.36 MILES

POINTS: I11-I12(10+50), I13-I14(73+00), I15-I16(50+50), I17-I18(4+00), I19-I20(10+00), Pt. I23(0+00)

CLEARING & GRUBBING

Method	Acres/amount	x	Rate	=	Cost
I15 - I16 Clear right of way as marked	2		\$1,503.00		\$3,006.00
SUB TOTAL FOR CLEARING & GRUBBING					\$3,006

EXCAVATION

Material	Cy/amount	x	Rate	=	Cost
I1 - I2					
Install rock ditch filter (12x) C315(hrs.)	12.0	x	\$114.00	=	\$1,368.00
33+50, 36+70, 37+30, 44+50, 97+60, 98+00					
98+80, 101+15, 113+00, 123+90, 126+25, 132+50					
45+70 - 47+80 Ditchline reestablishment \$\$/sta	5.6	x	\$13.95	=	\$78.12
94+00 - 95+00					
103+10 - 105+60					
37+70 Install culvert outlet dissipator C315(hrs.)	1.0	x	\$203.00	=	\$203.00
I3 to I4					
7+60 Clean out culvert catchbasin and inlet C315(hrs.)	1.0	x	\$114.00	=	\$114.00
16+85 Repair culvert outlet and reconstruct D/O C315(hrs.)	1.0	x	\$114.00	=	\$114.00
Labor	1.0	x	\$45.00	=	\$45.00
21+00 Install rock ditch filter C315(hrs.)	1.0	x	\$114.00	=	\$114.00
22+00 Install rock ditch filter C315(hrs.)	1.0	x	\$114.00	=	\$114.00
I7 to I8					
4+20, 46+50					
78+30(2x) Install rock ditch filter (3x) C315(hrs.)	4.0	x	\$114.00	=	\$456.00
46+00 Install culvert outlet dissipator C315(hrs.)	1.0	x	\$203.00	=	\$203.00
4+20, 19+00 Repair culvert outlet and reconstruct D/O C315(hrs.)	2.0	x	\$114.00	=	\$228.00
47+50-49+30 Ditchline reestablishment \$\$/sta	3.0	x	\$13.95	=	\$41.85
78+30-79+50					
70+70, 74+40 Construct Ditchout C315(hrs.)	1.0	x	\$114.00	=	\$114.00
I9 to I10					
Install rock ditch filter (7x) C315(hrs.)	7.0	x	\$114.00	=	\$798.00
11+50, 12+80, 14+20, 14+60, 22+70, 22+90, 25+00,					
24+80 Reconstruct ditch filter C315(hrs.)	1.0	x	\$114.00	=	\$114.00
36+50, 43+30 Clean out culvert catchbasin and outlet C315(hrs.)	2.0	x	\$114.00	=	\$228.00
14+40 Construct Ditchout C315(hrs.)	0.5	x	\$114.00	=	\$57.00
44+50-46+50 Ditchline reestablishment \$\$/sta	1.0	x	\$13.95	=	\$13.95
I11 to I12					
0+00 Clean out culvert catchbasin and outlet C315(hrs.)	1.0	x	\$114.00	=	\$114.00
I15 to I16					
1+20, 10+70 Clean out culvert catchbasin and inlet (3x) C315(hrs.)	3.0	x	\$114.00	=	\$342.00
17+20 Construct Ditchout C315(hrs.)	0.5	x	\$114.00	=	\$57.00
47+00 Ditchline reestablishment \$\$/sta	23.1	x	\$13.95	=	\$322.25
27+40-50+50 Install culvert outlet dissipator C315(hrs.)	1.0	x	\$203.00	=	\$203.00
31+70					
I17 to I18					
4+00 Clean out culvert catchbasin and outlet C315(hrs.)	2.0	x	\$114.00	=	\$228.00
I23					
Install fish passage culvert / reconstruct fill		x		=	\$37,337.26
*see cost sheet					
SUB TOTAL FOR EXCAVATION					\$43,007

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
I1 to I2					I7 to I8				
37+70 18" CPP	40	\$21.95	\$878.00		46+50 18" CPP	50	\$21.95	\$1,097.50	
45+70 18" CPP	30	\$21.95	\$658.50		I11 to I12				
I3 to I4					5+60 18" CPP	30	\$21.95	\$658.50	
19+80 18" CPP	30	\$21.95	\$658.50		I15 to I16				
21+80 18" CPP	40	\$21.95	\$878.00		25+60 18" CPP	30	\$21.95	\$658.50	
26+40 18" CPP	30	\$21.95	\$658.50		31+70 18" CPP	30	\$21.95	\$658.50	

Description	Quantity	Rate	Cost
Other/miscellaneous:			
Culvert stakes & markers:			
Culvert markers (6' x 2 1/2" white carsonite)	11	\$23.00	\$253.00
SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION			\$7,058
Subtotal of Clearing, Exc., Culv.			\$53,071

SURFACING					Stations/ amount		Rate/ sta/amt		Cost		
Subgrade prep:				Description							
				Grade, Shape and Ditch 16' (I1-I2, I3-I4, I7-I8, I9-I10, I11-I12, I13-I14, I15-I16, I17-I18, I19-I20)		492.50		x		\$27.91 \$13,745.68	
				Subgrade Compaction		492.50		x		\$22.69 \$11,174.83	
				Sod Removal, additional grader time (I3-I4, I5-I6, I7-I8, I9-I10, I11-I12, I17-I18, I19-I20)							
				112 Stations 14G \$5/hr.		112.70		x		\$26.20 \$2,952.74	
				Backhoe to disperse debris		112.70		x		\$10.08 \$1,136.02	
ROAD SEGMENT		I1 to I2		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type		Depth of Rock (inches)		I1 to I2 Volume (CY) per					
Subgrade Leveling Rock		1 1/2"-0" Crushed		0+00-164+00 N/A		load 11		loads 30		330 \$4.01 \$1,323	
Landings		6"-0" Pit-run		16+90 N/A		Landing 66		Landings 1		66 \$5.80 \$383	
Rock Ditch Filters		6"-0" Pit-run		36+50, 36+70, 37+30, 44+50, 97+60, 98+00, 98+80, 101+15, 113+00, 123+90, 126+25, 132+50 N/A		3 filter series 11		3 filter series 12		132 \$5.80 \$766	
Culvert Bedding and Backfill		1 1/2"-0" Crushed		37+70, 45+70 N/A		culvert 33		culverts 2		66 \$4.01 \$265	
Culvert Energy Dissipator		24"-6" Riprap		37+70 N/A		culvert 11		culverts 1		11 \$5.80 \$64	
Total Rock for Road Segment:				I1 to I2				605		\$2,800	
ROAD SEGMENT		I3 to I4		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type		Depth of Rock (inches)		I3 to I4 Volume (CY) per					
Subgrade Leveling Rock		1 1/2"-0" Crushed		0+00-34+50 N/A		load 11		loads 15		165 \$4.01 \$662	
Culvert Bedding and Backfill		1 1/2"-0" Crushed		19+80, 21+80, 26+40 N/A		culvert 33		culverts 3		99 \$4.01 \$397	
Rock Ditch Filters		6"-0" Pit-run		22+00, 21+90 N/A		3 filter series 11		3 filter series 2		22 \$5.80 \$128	
Total Rock for Road Segment:				I3 to I4				286		\$1,186	
ROAD SEGMENT		I7 to I8		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type		Depth of Rock (inches)		I7 to I8 Volume (CY) per					
Subgrade Leveling Rock		1 1/2"-0" Crushed		0+00-69+30 N/A		load 11		loads 15		165 \$4.01 \$662	
Surfacing		4"-0" Crushed		69+30-99+50 4		station 25		stations 30.2		755 \$5.52 \$4,168	
Turnouts		4"-0" Crushed		73+00, 75+00, 80+00 4		Turnout 11		turnouts 3		33 \$5.52 \$182	
Traction Rock		1 1/2"-0" Crushed		80+00-88+00, 91+40-93+80 2		station 13		stations 10.4		135 \$4.01 \$542	
Culvert Bedding and Backfill		1 1/2"-0" Crushed		46+00 N/A		culvert 66		culverts 1		66 \$4.01 \$265	
Culvert Energy Dissipator		24"-6" Riprap		46+00 N/A		culvert 11		culverts 1		11 \$5.48 \$60	
Rock Ditch Filters		6"-0" Pit-run		4+20, 78+30 left, 46+50, 78+30 right N/A		3 filter series 11		3 filter series 4		44 \$5.80 \$255	
Turnaround		6"-0" Pit-run		90+70 N/A		turnaround 33		turnarounds 1		33 \$5.80 \$191	
Landings		6"-0" Pit-run		99+50 N/A		Landing 66		Landings 1		66 \$5.80 \$383	
Total Rock for Road Segment:				I7 to I8				1,308		\$6,708	
ROAD SEGMENT		I9 to I10		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type		Depth of Rock (inches)		I9 to I10 Volume (CY) per					
Surfacing		4"-0" Crushed		32+00-46+50 4		station 25		stations 14.5		363 \$5.52 \$2,001	
Subgrade Leveling Rock		1 1/2"-0" Crushed		0+00-32+00 N/A		load 11		loads 4		44 \$4.01 \$176	
Subgrade Leveling Rock		4"-0" Crushed		32+00-46+50 N/A		load 11		loads 6		66 \$5.52 \$364	
Rock Ditch Filters		6"-0" Pit-run		11+50, 12+80, 14+20, 14+60, 22+70, 22+90, 25+00 N/A		3 filter series 11		3 filter series 7		77 \$5.80 \$447	
Turnaround		4"-0" Crushed		46+00 N/A		turnaround 33		turnarounds 1		33 \$5.52 \$182	
Landings		6"-0" Pit-run		37+70 N/A		Landing 66		Landings 1		66 \$5.80 \$383	
Total Rock for Road Segment:				I9 to I10				649		\$3,553	
ROAD SEGMENT		I11 to I12		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type		Depth of Rock (inches)		I11 to I12 Volume (CY) per					
Surfacing		4"-0" Crushed		0+00-10+50 4		station 25		stations 10.5		263 \$5.52 \$1,449	
Culvert Bedding and Backfill		1 1/2"-0" Crushed		5+60 N/A		culvert 33		culverts 1		33 \$4.01 \$132	
Turnaround		6"-0" Pit-run		6+50 N/A		load 11		loads 3		33 \$5.80 \$191	
Landings		6"-0" Pit-run		10+50 N/A		Landing 66		Landings 1		66 \$5.80 \$383	
Total Rock for Road Segment:				I11 to I12				395		\$2,156	
ROAD SEGMENT		I13 to I14		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type		Depth of Rock (inches)		I13 to I14 Volume (CY) per					
Subgrade Leveling Rock		1 1/2"-0" Crushed		0+00-57+00 N/A		load 11		loads 12		132 \$4.01 \$529	
Subgrade Leveling Rock		4"-0" Crushed		57+00-73+00 N/A		load 11		loads 13		143 \$5.52 \$789	
Landings		6"-0" Pit-run		58+75, 62+00, 66+90 N/A		Landing 88		Landings 3		264 \$5.80 \$1,531	
Total Rock for Road Segment:				I13 to I14				539		\$2,850	
ROAD SEGMENT		I15 to I16		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type		Depth of Rock (inches)		I15 to I16 Volume (CY) per					
Subgrade Leveling Rock		1 1/2"-0" Crushed		0+00-27+40 N/A		load 11		loads 20		220 \$4.01 \$882	
Traction Rock		3/4"-0" Crushed		4+00-10+70 3		station 20		stations 6.7		134 \$4.01 \$537	
Surfacing		4"-0" Crushed		27+40-50+50 8		station 50		stations 23.1		1,155 \$4.01 \$4,632	
Junctions		4"-0" Crushed		32+30, 36+00, 44+20 N/A		junction 22		junctions 3		66 \$4.01 \$265	
Turnouts		4"-0" Crushed		40+65 8		turnout 22		turnouts 1		22 \$4.01 \$88	
Culvert Bedding and Backfill		1 1/2"-0" Crushed		25+60, 31+70 N/A		culvert 33		culverts 2		66 \$4.01 \$265	
Culvert Energy Dissipator		24"-6" Riprap		31+70 N/A		culvert 11		culverts 1		11 \$5.48 \$60	
Total Rock for Road Segment:				I15 to I16				1,674		\$6,729	
ROAD SEGMENT		I17 to I18		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type		Depth of Rock (inches)		I17 to I18 Volume (CY) per					
Subgrade Leveling Rock		4"-0" Crushed		0+00-4+00 N/A		load 11		loads 6		66 \$5.52 \$364	
Surfacing		4"-0" Crushed		0+00-4+00 4		station 25		stations 4		100 \$5.52 \$552	
Total Rock for Road Segment:				I17 to I18				166		\$916	
ROAD SEGMENT		I19 to I20		POINT TO POINT		Sta. to Sta.		TOTAL	Rate/	Cost	
				Depth of		I19 to I20					

Date: 10/31/2018

Cal Barr Timber Sale

Vacating Costs

Work Description	Station	Pump	C330	C315	D10/12 trk	D-8	Labor	Straw- bales	Seed-lbs
V1 to V2									
Remove fill and culvert			4.00				2	5	5
Remove old cuvert			1.00						
Waterbar road			1.50						
Subgrad ripping and tilling									
V3 to V4									
Remove fill and culvert			4.00				2	5	5
5A/V5 to 5B/V6									
Remove fill and culvert	4+20		12.00				2	7	10
Total Quantity (Hours)		0.00	22.50	0.00	0	0	6	17	20
Total Stations	18+00								
	(\$/Sta.)								
Rates	\$27.68	\$12.00	\$175.00	\$114.00	\$89.00	\$178.00	\$45.00	\$12.06	\$1.80
Total Dollars	\$498	\$0	\$3,938	\$0	\$0	\$0	\$270	\$205	\$36

Total Cost

\$4,947

Cal Barr Type F (Pipe Arch)

Sale Name: Cal Barr, Improvement Segment I23

Date: 12/11/18

Compiled By:

W. Lawrence

Construction Phase	QTY	Cost/C Y	Haul Cost	Equipment Hours					Labor	Culvert		Erosion Control		Total
				C330	C315	C315 Rock Hammer	24CY off Highway Dump	Pump		Ft	\$/ft	Acres	\$/Acre	
Walk equipment to site	CY			1	1									\$
Unload and move cmp to site				4										
Existing Fill and Culvert removal/disposal				5										
De-watering (w/pump) (24hrs/day)					2		5		20					
Excavate New Culvert Trench	1,386			20	20	20		40						
Haul Waste Material Offsite	693	4.50	\$ 3,118.50											
Place Reuseable Fill Material Onsite	693			2	2									
Build culvert bed compact w/pit-run and crushed rock	132			3					3					
Place culvert & compact flanks w/crushed rock	242			7	5				5					
Remaining Backfill Placement from Borrow Site	168	4.50	\$ 755.50	2	2				5					
Fill Compaction	861	0.79	\$ 680.19											
Develop Waste Area				2										
Compact/Shape Waste Area	693	0.45	\$ 311.85	2										
Place Stream and Streambed Retention	33			3										
Place Inlet and Outlet Channel Armor	99			8	3									
Place Riprap/Fill Armor	198			6	5									
Road subgrade prep. (station)	0.90	31.12	\$ 28.01											
Road Base Rock Processing(station)	0.90	63.48	\$ 57.13											
Road Surface Rock Processing (station)	0.90	63.48	\$ 57.13											
Seeding and Mulching:														
Total Hours				65	40	20	5	40	33			0.25	\$2,010	\$503
Equipment Rates:				\$175	\$114	\$50	\$143	\$12	\$45					
Sub total :			\$ 5,008	\$11,375	\$4,560	\$1,000	\$715	\$480	\$1,485					\$24,803
112" x 75" Aluminized Steel Culvert (12 ga)	151									85	\$123.77			\$10,520
Bands										3	\$182.00			\$546
Step Beveling (one end)										1	\$265.00			\$265
Freight to Astoria Area										1	\$700.00			\$700
Sub total Culvert Material Cost:														\$12,031

Total Installation Cost:

\$37,337

CRUSHED ROCK COST

SALE NAME:	Cal Barr
PROJECT:	1 and 2
Stockpile:	Elk Mountain

MATERIAL: 4"0" and 1 1/2"

DATE: 11/02/2018
BY: Cody Valencia

[illegible]

ROCK HAUL:

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

Ave haul:	\$3.23	/cy
Load:	\$0.30	/cy
Spread:	\$0.48	/cy

Truck type: D12 No. trucks: 8
 Delay min.: 6 Efficiency: 85%

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

Production: cy/day = 1,566

CRUSHED ROCK HAUL COSTS 5,753 cy @ \$4.01 /cy

RIP RAP ROCK COST

SALE NAME:	Cal Barr
PROJECT:	1 and 2
QUARRY:	Elk Mountain

MATERIAL: 24"-6" Rip Rap

DATE: 11/02/2018
BY: Cody Valencia

[illegible]

ROCK HAUL:

Truck type:	D12	No. trucks:	8
Delay min.:	6	Efficiency:	85%
Truck type:	D10	No. trucks:	
Delay min.:	5	Efficiency:	85%

Ave haul:	\$4.88	/cy
Load:	\$0.60	/cy
Develop:		/cy

Production: cy/day = 1,035

RIP RAP ROCK HAUL COSTS 407 cy @ \$5.48 /cy

CRUSHED ROCK COST

SALE NAME:	Cal Barr
PROJECT:	1 and 2
Stockpile:	Simmons

MATERIAL: 4"0"-0" crushed

DATE: 11/02/2018
BY: Cody Valenica

[illegible]

ROCK HAUL:

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

Ave haul:	\$4.26	/cy
Load:	\$0.48	/cy
Spread:	\$0.78	/cy

Truck type: D12 No. trucks: 8
 Delay min.: 6 Efficiency: 85%

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

Production: cy/day = 1,187

CRUSHED ROCK HAUL COSTS 4,011 cy @ \$5.52 /cy

PIT RUN ROCK COST

SALE NAME:	Cal Barr
PROJECT:	1 and 2
QUARRY:	California Barrel

MATERIAL: Pit Run

DATE: _____
BY: _____

[illegible]

ROCK HAUL:

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

Ave haul:	\$4.54	/cy
Load:	\$0.48	/cy
Spread:	\$0.78	/cy

Truck type:	<u>D12</u>	No. trucks:	<u>8</u>
Delay min.:	<u>6</u>	Efficiency:	<u>85%</u>

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

Production: cy/day = 1,113

PIT RUN ROCK HAUL COSTS	1,375 cy @	\$5.80 /cy
-------------------------	------------	------------

Projects Road Maintenance Cost Summary

Sale: Cal Barr
Date: 15-Nov-18
By: Cody Valencia

Type	Equipment/Rationale			Hours	Rate	Cost
Project Work	Grader 14G			16	\$113	\$1,808
Final Haul	Dump Truck 12CY			6	\$89	\$534
Road	FE Loader C966			6	\$94	\$564
Maintenance	Vibratory Roller			16	\$87	\$1,392
	Water Truck 2,500 gallon			6	\$101	\$606
	Labor			4	\$45	\$180
Total						\$5,084

Production Rates

Grader

Vibratory Roller

Miles/day	Distance(miles)	Days
1.5	2.74	1.8
1.5	2.74	1.8

NOTE:	California Barrerl Road	1.04	Miles
	California Barrerl x-over Road	0.34	Miles
	Simmons Ridge Road	0.65	Miles
	Unnamed spurs	0.71	Miles
	TOTAL=	2.74	Miles

Site Prep Appraisal

Sale Number: 341-19-23
Sale Name: Cal Barr
Date: 05/25/2018

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	B	31	47	\$129.00	\$5,998.50
3	MC	D	9	18	\$129.00	\$2,322.00
5	MC	D	13	26	\$129.00	\$3,354.00
8	MC	B	0	0	\$129.00	\$0.00
9	MC	B	78	117	\$129.00	\$15,093.00
In-unit Piling						Sub Total =
						\$26,767.50

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	3	\$220.00	\$660.00	139.5	\$5.00	\$697.50
3	3	\$220.00	\$660.00	54	\$5.00	\$270.00
5	3	\$220.00	\$660.00	78	\$5.00	\$390.00
8	6	\$220.00	\$1,320.00	0	\$5.00	\$0.00
9	12	\$220.00	\$2,640.00	351	\$5.00	\$1,755.00
*Cost includes separating firewood						Sub Total =
Materials						\$1,357.50

Landing Piling						Sub Total =
						\$3,300.00
Move-In Allowance	Number of Move-In's	Total Move-In Allowance				
\$1,290.00	1	\$1,290.00				
\$1,290.00	0.5	\$645.00				
\$1,290.00	0.5	\$645.00				
Move-In						Sub Total =
						\$2,580.00

Grand Total = \$34,005.00

Road Maintenance Cost Summary (Interim and Post Harvest)

Sale: Cal Barr
Date: November 16, 2018
By: Ella Salkeld FL

MBF: 11,237.00
\$/MBF: \$2.73

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost
Interim Operations	Grader 14G	\$875	2	40	\$113	\$6,270
	Dump Truck 12CY	\$184	1	8	\$89	\$896
	FE Loader C966	\$875	1	3	\$94	\$1,157
Final Road Maintenance	Grader 14G	\$875	1	50	\$113	\$6,525
	Dump Truck 12CY	\$184	2	32	\$89	\$3,216
	FE Loader C966	\$875	1	6	\$94	\$1,439
	Vibratory Roller	\$875	1	50	\$87	\$5,225
	Water Truck 2,500 gallon	\$214	1	25	\$101	\$2,739
	Rubber Tired Backhoe-small	\$361	1	24	\$87	\$2,449
	Labor			10	\$45	\$811
Total						\$30,727

Interim Operations Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	2.5	9.40	3.8	30

Final Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	1.5	9.40	6.3	50
Vibratory Roller	1.5	9.40	6.3	50

Process and compact: All crushed rock roads

California Barrel Road - 3.1

Spur 30 - 1.9

South Fork Road - 1

Middle Fork Road - 1.4

Unammed Spurs - 2

Grade & Process Total = 9.4

**Cal Barr Timber Sale
FY 2019
TIMBER CRUISE REPORT**

1. **Sale Area Location:** Areas 1, 2, 3, 4, 5, 6, 7, 8 and 9 are located in portions of Sections 24, 25, 26, 34, 35 and 36, T7N, R8W, and portions of Section 31, T7N, R7W, W.M., Clatsop County, Oregon.

2. **Fund Distribution:** Fund: BOF 100% CSL 0%
Tax Code: 1-02 100%

3. **Sale Acreage by Area:**

Area	Harvest Type	Gross Acres	Green Tree Area	Stream Buffer Acres	New R/W Acres	Existing R/W Acres	Net Acreage
1	MC	35	0	1	0	3	31
2	R/W	11	0	0	0	0	11
3	MC	12	2	0	0	1	9
4	PC	62	0	3	0	0	59
5	MC	14	0	0	0	<1	13
6	PC	5	0	<1	0	0	5
7	PC	98	0	7	0	2	89
8	MC	47	0	4	0	1	42
9	MC	121	0	9	0	9	103
TOTALS		405	2	24	0	16	362

4. **Cruisers and Cruise Dates:** Areas 1, 3, 8A, 8B, 9A and 9B were cruised on 9/09/2018 through 10/10/2018, by Ella Salkeld, Cody Valencia, John Choate, Bryce Rodgers and Will Lawrence. Areas 5 and 6 were cruised on 8/15/2018 and 8/27/2018, by Ella Salkeld, Cody Valencia and John Choate. Areas 4 and 7 were cruised by Andrew Arvin, John Choate, Jon Long, and Ed Holloran with Derek Snow in early January 2015.

5. **Cruise Method and Computation:** Areas 1 and 3 are modified clearcut units. A variable plot cruise with a 40.0 BAF was used in these Areas. These plots were located on a 2 chain by 4 chain grid, with a count/cruise plot ratio of 2:1. A total of 59 plots were sampled, with 25 measured plots and 34 count plots.

Area 2 R/W Right-of-way volume was calculated by multiplying the R/W acreage and the average volume per acre from the plots in Area 4 and 7.

Area 4 is a partial cut unit. A variable plot cruise with a 40 BAF was used in these areas. These plots were located on a 7 chain by 4 chain grid, with a count/cruise plot ratio of 1:1. A total of 24 plots were sampled, with 12 measured plots and 12 count plots. This area was cruised with in 2015. Plots were re-measured to calculate growth for four growing seasons and was grown forward in SuperAce using the calculated growth function which only recalculates Net Volume, not heights or diameters. The heights and diameters in this stand were adjusted in the timber description to reflect the growth that was measured in the field in 2018.

Area 5 is a modified clearcut unit. A variable plot cruise with a 40 BAF was used in this area. These plots were located on a 2 chain by 2 chain grid, with a count/cruise plot ratio of 2:1. A total of 12 plots were sampled, with 22 measured plots.

Area 6 is a partial cut unit. A variable plot cruise with a 40 BAF was used in this area. These plots were located on a 2 chain by 2 chain grid. A total of 10 plots were sampled, with all plots being measured plots.

Area 7 is a partial cut unit. A variable plot cruise with a 33.61 BAF was used in this area. These plots were located on a 10 chain by 4 chain grid, with a count/cruise plot ratio of 1:1. A total of 26 plots were sampled, with 13 measured plots and 13 count plots. This area was cruised with in 2015. Plots were re-measured to calculate growth for four growing seasons and was grown forward in SuperAce using the calculated growth function which only recalculates Net Volume, not heights or diameters. The heights and diameters in this stand were adjusted in the timber description to reflect the growth that was measured in the field in 2018.

Area 8 is a modified clearcut unit. The unit was stratified into two separate cruises, 8A and 8B. A variable plot cruise with a 71.11 BAF was used in cruise 8A. In cruise 8A the plots were located on a 3 chain by 3 chain grid, with a count/cruise plot ratio of 2:1. A total of 35 plots were sampled, with 15 measured plots and 25 count plots. A variable plot cruise with a 33.61 BAF was used in cruise 8B. In cruise 8B the plots were located on a 3 chain by 3 chain grid, with 8 measured plots. A total of 48 plots were sampled, with 23 measured plots and 25 count plots in Area 8.

Area 9 is a modified clearcut unit. The unit was stratified into two separate cruises, 9A and 9B. A variable plot cruise with a 40 BAF was used in cruise 9A. In Area 9A the plots were located on a 5 chain by 6 chain grid, with a count/cruise plot ratio of 1:1. A total of 27 plots were sampled, with 14 measured plots and 13 count plots. A variable plot cruise with a 71.11 BAF was used in cruise 9B. In cruise 9B the plots were located on a 3 chain by 5 chain grid, with a count/cruise plot ratio of 1:1. A total of 21 plots were sampled, with 11 measured plots and 10 count plots. A total of 48 plots were sampled, with 25 measured plots and 23 count plots in Area 9.

Cruisers used Allegro 2 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.

<u>AREAS</u>	<u>PROJECT</u>	<u>TRACT</u>	<u>CRUISE TYPE</u>
1, 3	CALBARR	A13	OOMC and TK
2/RW	CALBARR	RW	OOMC
4	CALBARR	A4	OOPC, TK, and LV
5	CALBARR	A5	OOMC and TK
6	CALBARR	6	OOPC, TK, and LV
7	CALBARR	A7	OOPC, TK, and LV
8A	CALBARR	A8A	OOMC and TK
8B	CALBARR	A8B	OOMC and TK
9A	CALBARR	A9A	OOMC and TK
9B	CALBARR	A9B	OOMC and TK

6. **Timber Description:** Areas 1 and 3 are approximately 70 year old stands of western hemlock, with some Douglas-fir, Sitka spruce and red alder. The average take hemlock tree size is approximately 19 inches DBH, with an average merchantable tree height of 54 feet. The average take Douglas-fir tree size for harvest is approximately 35 inches DBH, with an average merchantable tree height of 107 feet. The average take Sitka Spruce tree size is approximately 34 inches DBH, with an average merchantable tree height of 75 feet. The average take red alder tree size is approximately 15 inches DBH, with an average merchantable tree height of 40 feet. The average volume per acre to be harvested (net) is approximately 23 MBF. All trees were cruised to a merchantable top of 6 inch DIB or 40% fp.

Area 2/RW is similar to the timber description mentioned in Areas 4 and 7. The average volume is 16.5 MBF/Acre (net).

Area 4 is an approximately 35 year old stand of western hemlock, with some Douglas-fir and Sitka spruce. The average take hemlock tree size is approximately 11 inches DBH, with an average merchantable tree height of 34 feet. The average take Douglas-fir tree size for harvest is approximately 12 inches DBH, with an average merchantable tree height of 38 feet. The average take spruce tree size

is approximately 28 inches DBH, with an average merchantable tree height of 47 feet. The average volume per acre to be harvested (net) is approximately 6 MBF. All trees were cruised to a merchantable top of 6 inch DIB or 40% fp. The target basal area is 130-150. The SDI is 33%.

***Diameters and heights grown forward.**

Area 5 is approximately 50 year old stand of western hemlock, with some red alder and Sitka spruce. The average take hemlock tree size is approximately 17 inches DBH, with an average merchantable tree height of 68 feet. The average take red alder tree size is approximately 16 inches DBH, with an average merchantable tree height of 61 feet. The average take Sitka spruce tree size is approximately 26 inches DBH, with an average merchantable tree height of 70 feet. The average volume per acre to be harvested (net) is approximately 53 MBF. All trees were cruised to a merchantable top of 6 inch DIB or 40% fp.

Area 6 is approximately 50 year old stand of western hemlock and red alder. The average take hemlock tree size is approximately 13 inches DBH, with an average merchantable tree height of 66 feet. The average take alder tree size is approximately 11 inches DBH, with an average merchantable tree height of 53 feet. The average volume per acre to be harvested (net) is approximately 15 MBF. All trees were cruised to a merchantable top of 6 inch DIB or 40% fp. The target basal area is 160-180. The SDI is 33%.

Area 7 is an approximately 35 year old stand of Douglas-fir, with some western hemlock, red alder and Sitka spruce. The average take Douglas-fir tree size for harvest is approximately 13 inches DBH, with an average merchantable tree height of 38 feet. The average take hemlock tree size is approximately 13 inches DBH, with an average merchantable tree height of 52 feet. The average take red alder tree size is approximately 18 inches DBH, with an average merchantable tree height of 46 feet. The average take spruce tree size is approximately 20 inches DBH, with an average merchantable tree height of 53 feet. The average volume per acre to be harvested (net) is approximately 6 MBF. All trees were cruised to a merchantable top of 6 inch DIB or 40% fp. The target basal area is 130-150. The SDI is 33%.

***Diameters and heights grown forward.**

Area 8: cruise 8A is approximately 70 year old stand of western hemlock and Douglas-fir, with some red alder and Sitka spruce. The average take hemlock tree size is approximately 19 inches DBH, with an average merchantable tree height of 80 feet. The average take Douglas-fir tree size is approximately 23 inches DBH, with an average merchantable tree height of 91 feet. The average take red alder tree size is approximately 16 inches DBH, with an average merchantable tree height of 65 feet. The average take Sitka spruce tree size is approximately 29 inches DBH, with an average merchantable tree height of 72 feet. The average volume per acre to be harvested (net) is approximately 82 MBF.

Cruise 8B is approximately 30 year old stand of Douglas-fir and western hemlock. The average take Douglas-fir tree size is approximately 12 inches DBH, with an average merchantable tree height of 34 feet. The average take hemlock tree size is approximately 14 inches DBH, with an average merchantable tree height of 39 feet. The average volume per acre to be harvested (net) is approximately 14 MBF. All trees were cruised to a merchantable top of 6 inch DIB or 40% fp.

Area9: cruise 9A is approximately 60 year old stand of western hemlock, Douglas-fir and Sitka spruce with some red alder and. The average take hemlock tree size is approximately 23 inches DBH, with an average merchantable tree height of 65 feet. The average take Douglas-fir tree size is approximately 31 inches DBH, with an average merchantable tree height of 104 feet. The average take Sitka spruce tree size is approximately 28 inches DBH, with an average merchantable tree height of 78 feet. The average take red alder tree size is approximately 13 inches DBH, with an average merchantable tree height of 41 feet. The average volume per acre to be harvested (net) is approximately 45 MBF.

Cruise 9B is approximately 70 year old stand of western hemlock, Sitka spruce and Douglas-fir. The average take hemlock tree size is approximately 19 inches DBH, with an average merchantable tree height of 70 feet. The average take Sitka spruce tree size is approximately 25 inches DBH, with an average merchantable tree height of 93 feet. The average take Douglas-fir tree size is approximately 26 inches DBH, with an average merchantable tree height of 88 feet. The average volume per acre to be harvested (net) is approximately 46 MBF. All trees were cruised to a merchantable top of 6 inch DIB or 40% fp.

Cedar is a reserved species.

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

Areas	Target CV	Target SE%	Actual CV	Actual SE%
1,3	70	11	70.9	9.4
4	40	13	37.3	8
5	50	10	33.1	5.7
6	50	10	66.7	22.2
7	40	13	37.6	7.2
8A	45	9	35.3	5.6
8B	45	9	37	13.9
9A	45	9	37.3	7.3
9B	45	9	39.4	8.8

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.

Conifer

Species	DBH	Net Vol. MBF	2 Saw	3Saw	4 Saw	% D&B	% Sale
Douglas-fir	17	3,714	2,732	733	249	1	33
W. Hemlock	16	5,324	3,433	1,433	458	.4	48
Spruce	27	1,961	1,497	429	35	1.5	18

Hardwoods

Species	DBH	Net Vol. MBF	12"+	10-12"	8-10"	6-8"	% D&B	% Sale
Red Alder	15	238	46	67	41	84	.4	1

TOTAL NET VOLUME	11,237
-------------------------	---------------

9. Prepared by: Ella Salkeld

Date: 11/02/2018

10. Approved by: 

Date: 12/12/18

11. Attachments: Cruise Plans & Maps (13)
Species, Sort, Grade Report (9)
Statistics Reports (22)
Stand Table Report (3)
Log Stock Table Report MBF (4)

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Cal Barr

Area 1 and 3

Harvest Type: (MC) Modified Clearcut

Approx. Cruise Acres: 43 **Estimated CV%** 70 Net BF/Acre **SE% Objective** 11 Net BF/Acre

Planned Sale Volume : 9.3 MMBF **Estimated Sale Area Value/Acre:** \$8750/Acre
(25 MBF/Ac. @ \$350/Acre)

A. Cruise Goals: (a) Grade minimum 80 conifer and 35 hardwood trees
(b) Sample 59 cruise plots (25 grade/ 34 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)
Cruise Line Directions: Area 1: 116/296 & Area 2: 124/304
Cruise Line Spacing 4 (chains) 264 (Feet)
Cruise Plot Spacing 2 (chains) 132 (Feet)
Grade/Count Ratio 1:2

Take plots as marked on cruise map. All cedar will be reserved. Record all snags as SN.

DO NOT RECORD 12', 22' and 32' (for Hardwoods).

DO NOT RECORD 22' LENGTHS.

All hardwood will be measured to a G, or as appropriate.

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". 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 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 conifer 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 merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree. Hardwoods shall be recorded in 8' and 10' multiples.

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: Alder Grades: 12" + = 1 Sawmill; 10"-12" = 2 Sawmill; 10"-8" = 3 Sawmill; and 8"-6" 4 Sawmill, or R = Camp Run; 0 = Cull.
All Maple Camp Run = R

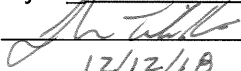
7. **Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally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

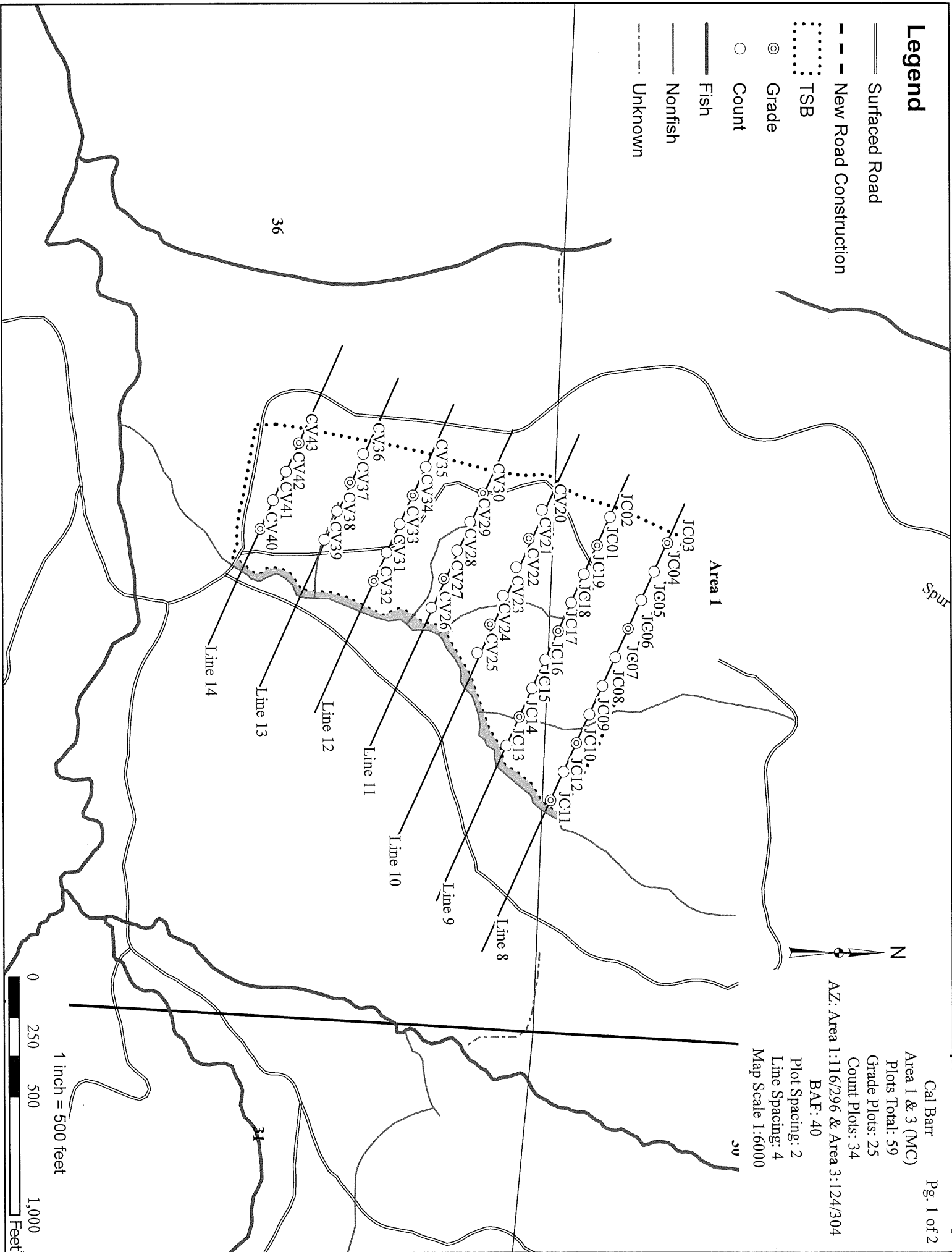
Cruise Design by: Ella Salkeld

Approved by: 

Date: 12/12/18

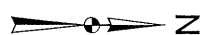
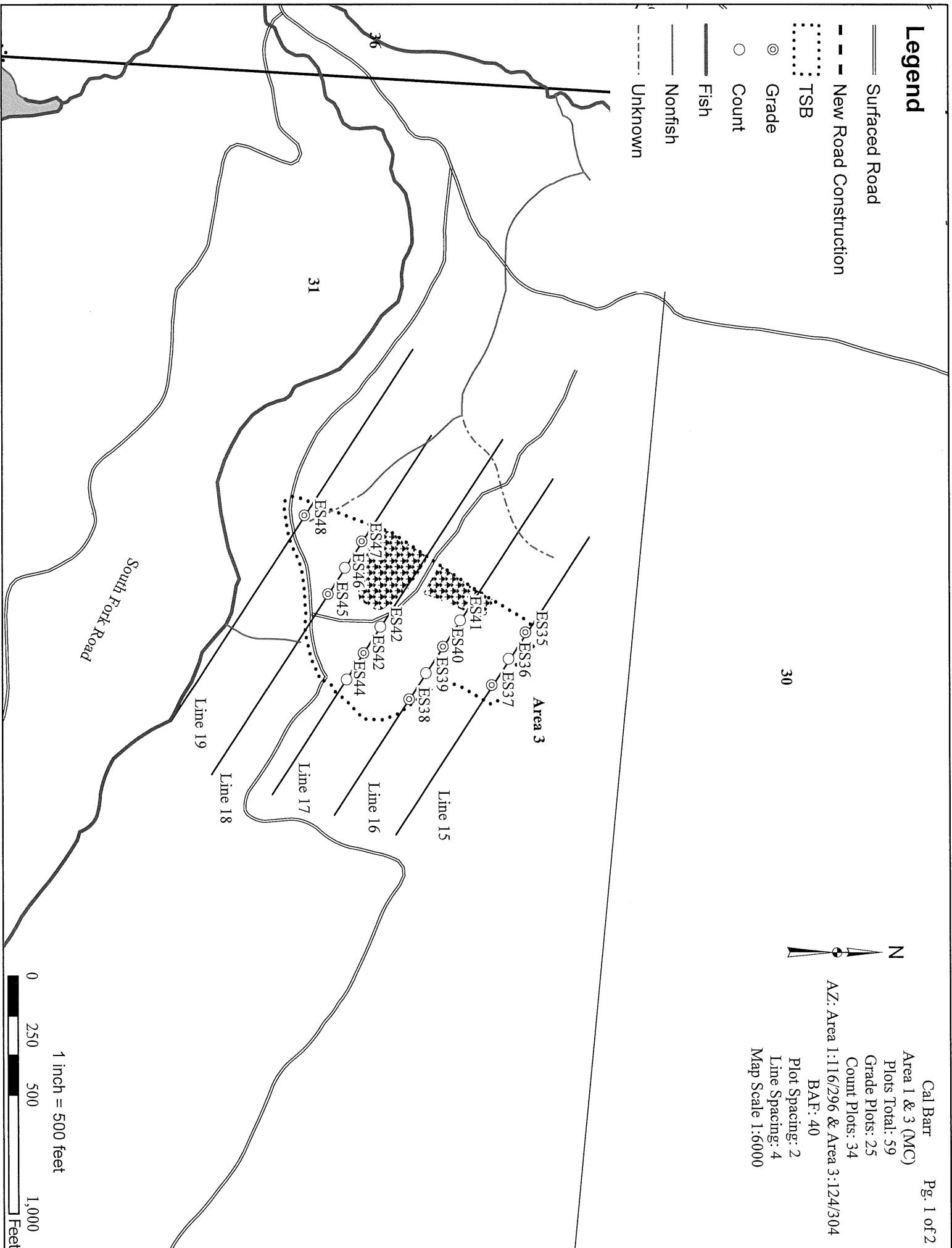
Legend

- Surfacted Road
- - - New Road Construction
- ⊙ TSB
- ⊙ Grade
- Count
- Fish
- Nonfish
- - - Unknown



Legend

-  Surfaced Road
-  New Road Construction
-  TSB
-  Grade
-  Count
-  Fish
-  Nonfish
-  Unknown



30

36

31

South Fork Road

Line 19

Line 18

Line 17

Line 16

Line 15

Area 3

ES35

ES36

ES37

ES41

ES40

ES39

ES38

ES42

ES42

ES44

ES46

ES45

ES48

0 250 500 1,000 Feet

1 inch = 500 feet

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Cal Barr **Area(s)** 4

Harvest Type: PC "Automark Thinning"

Approx. Cruise Acres: 63 **Estimated CV%** 40 **Net BF** **SE% Objective** 13 **Net BF**

Planned (Unit) Sale Volume: 260 MBF **Estimated Sale Area Value/Acre:** \$1,500
(5 MBF/Ac. @ \$300/Acre)

- A. Cruise Goals:** (a) Grade minimum 90 conifer and 5 hardwood trees:
(b) Sample 24 cruise plots; (c) Other goals (X Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes; _____ Determine LWD (down wood) cubic feet and decay classes; _____ Determine "diameter limit" harvest parameters;

B. Cruise Design:

- 1. Plot Cruises:** BAF 40 for all species Full point
Fixed Plot Size _____ Plot Radius _____ feet
Cruise Line Direction(s) 0°/180°
Cruise Line Spacing 7 chains
Cruise Plot Spacing 4 chains
Grade/Count Ratio 1 : 1 (12 measure – 12 count)

This is a partial cut with a planned residual B/A of 140.

Leave 4 leave trees per cruise plot and 3 on every other plot for an average of 3.50.

Take plots as marked on cruise map. All cedar will be reserved. Record all snags as SN.

DO NOT RECORD 12', 22' and 32' (for Hardwoods).

DO NOT RECORD 22' LENGTHS.

All hardwood will be measured to a G, or as appropriate.

If plot falls clearly inside a buffer or road drop the plot. Take plots as marked on map.
Grade all hardwoods as Camp Run. All Cedar is reserved Timber.

C. Tree Measurements:

- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 8" for hardwoods.
Record DBH to nearest ½" 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" 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 16', 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 merch. 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"-12" = 2 Sawmill; 10"-8" = 3 Sawmill; and 8"-6" 4 Sawmill, or R = Camp Run; 0 = Cull.
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 Intervisible 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.
ITS and 100% Cruises: Mark cruise "strips" with various colored flagging (not pink). Mark trees measured and graded with yellow paint.
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
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).
B. Data Recorder Instructions
C. Other

Cruise Design by: Ed Holloran

Approved by: [Signature]

Date: 12/12/18

Legend

- Type "F" Stream
- Type "N" Stream
- - - Seasonal Stream
- == Surfaced Road
- - - New Road Construction
- ⋯ TSB

Cal Barr
Area 4 (PC)
Plots Total: 23
Grade Plots: 12
Count Plots: 11
AZ: 0/180
BAF: 33.33
Plot Spacing: 4 Chains (264)
Line Spacing: 7 Chains (462)
Map Scale 1:6000



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 merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree. Hardwoods shall be recorded in 8' and 10' multiples.

6. **Species, Sort, and Grade Codes:**

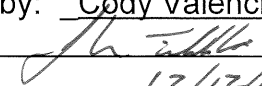
- A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DL, HL, CL, etc.)
- B. Sort: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

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: Cody Valencia
Approved by: 
Date: 12/13/18

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Cal Barr

Area 5 and 6

Harvest Type: (MC) Modified Clearcut

Approx. Cruise Acres: 19 **Estimated CV%** 50 Net BF/Acre **SE% Objective** 10 Net BF/Acre

Planned Sale Volume : 9.3 MMBF **Estimated Sale Area Value/Acre:** \$9,750/Acre
(25 MBF/Ac. @ \$390/Acre)

A. Cruise Goals: (a) Grade minimum 50 conifer and 35 hardwood trees
(b) Sample 44 cruise plots (22 grade/ 22 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)
Cruise Line Directions: 90°/270°
Cruise Line Spacing 2 (chains) 132 (Feet)
Cruise Plot Spacing 2 (chains) 132 (Feet)
Grade/Count Ratio 1:2

Take plots as marked on cruise map. All cedar will be reserved. Record all snags as SN.

DO NOT RECORD 12', 22' and 32' (for Hardwoods).

DO NOT RECORD 22' LENGTHS.

All hardwood will be measured to a G, or as appropriate.

Leave 3-4 trees per plot in thinning area.

C. Tree Measurements:

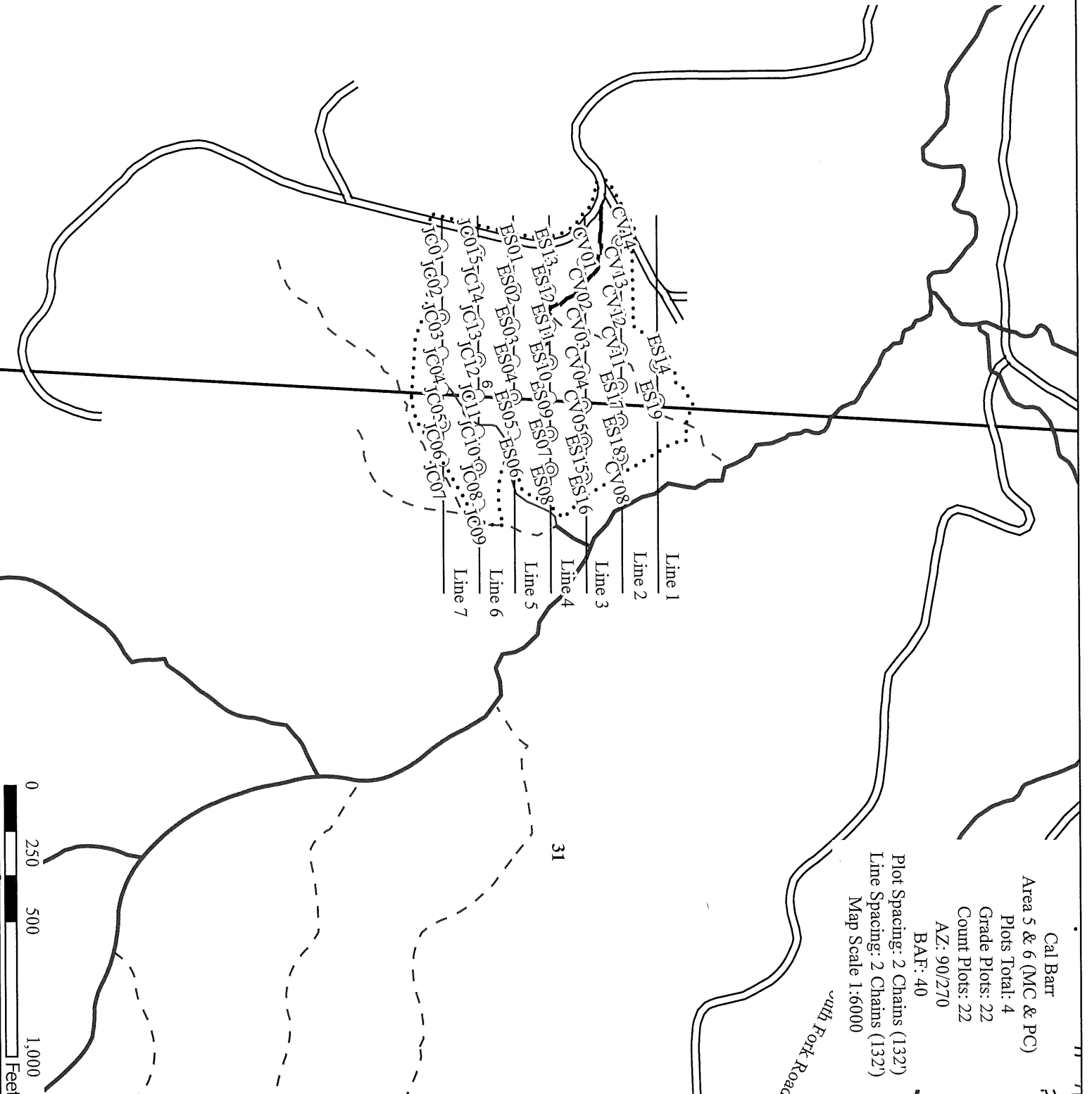
- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 8" for hardwoods.
Record dbh to nearest 1/2" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for
trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then
record to closest estimate.
- 2. 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 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 conifer 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.

Legend

- ⊙ Grade Plot
- Count Plot
- Type "F" Stream
- Type "N" Stream
- - - Seasonal Stream
- == Surfaced Road
- - - New Road Construction
- ⋯ TSB



36



**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Cal Barr **Area(s)** 7

Harvest Type: PC "Automark Thinning"

Approx. Cruise Acres: 94 **Estimated CV%** 40 Net BF **SE% Objective** 13 Net BF

Planned (Unit) Sale Volume: 516 MBF **Estimated Sale Area Value/Acre:** \$2,400
(6 MBF/Ac. @ \$400/Acre)

- A. Cruise Goals:** (a) Grade minimum 90 conifer and 5 hardwood trees:
(b) Sample 26 cruise plots; (c) Other goals (X Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes; _____ Determine LWD (down wood) cubic feet and decay classes; _____ Determine "diameter limit" harvest parameters;

B. Cruise Design:

- 1. Plot Cruises:** BAF 33.61 for all species Full point
Fixed Plot Size _____ Plot Radius _____ feet
Cruise Line Direction(s) 0°/180°
Cruise Line Spacing 10 chains
Cruise Plot Spacing 4 chains
Grade/Count Ratio 1 : 1 (13 measure – 13 count)

This is a partial cut with a planned residual B/A of 140.

Leave 4 to 5 trees per plot.

Take plots as marked on cruise map. All cedar will be reserved. Record all snags as SN.

DO NOT RECORD 12', 22' and 32' (for Hardwoods).

DO NOT RECORD 22' LENGTHS.

All hardwood will be measured to a G, or as appropriate.

If plot falls clearly inside a buffer or road drop the plot. Take plots as marked on map.
Grade all hardwoods as Camp Run. All Cedar is reserved Timber.

C. Tree Measurements:

- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 8" for hardwoods.
Record DBH to nearest ½" 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" 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 16', 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 merch. 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"-12" = 2 Sawmill; 10"-8" = 3 Sawmill; and 8"-6" 4 Sawmill, or R = Camp Run; 0 = Cull.
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 Intervisible 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.
ITS and 100% Cruises: Mark cruise "strips" with various colored flagging (not pink). Mark trees measured and graded with yellow paint.
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
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).
B. Data Recorder Instructions
C. Other

Cruise Design by: Ed Holloran

Approved by: [Signature]

Date: 12/12/18

Legend

- Type "F" Stream
- Type "N" Stream
- - - Seasonal Stream
- == Surfaced Road
- - - New Road Construction
- ⋯ TSB



Cal Barr
 Area 7 (PC)
 Plots Total: 28
 Grade Plots: 14
 Count Plots: 14
 AZ: 0/180
 BAF: 33.33
 Plot Spacing: 4 Chains (264')
 Line Spacing: 10 Chains (660')
 Map Scale 1:6000

S Fork N Fork Klaskanine River

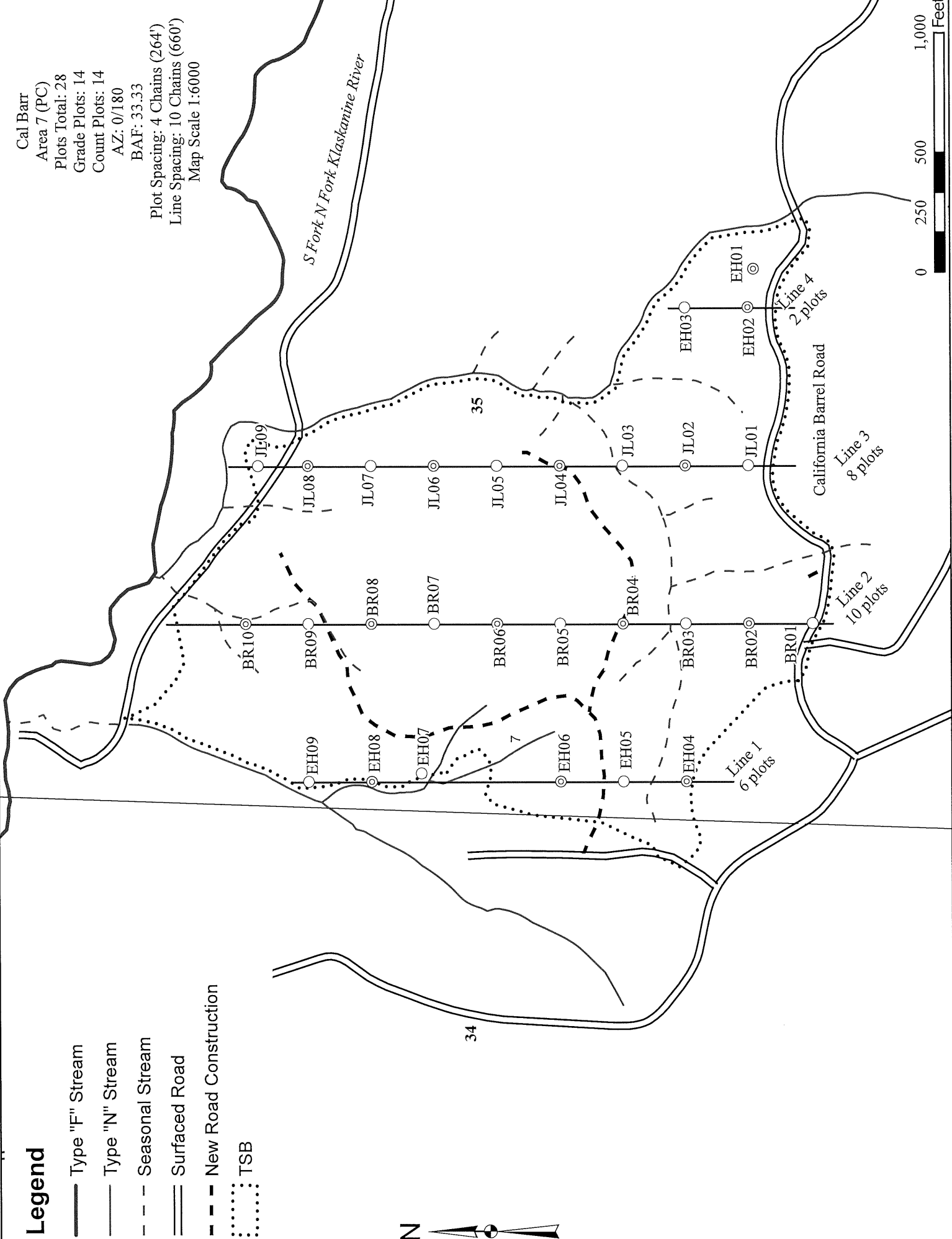
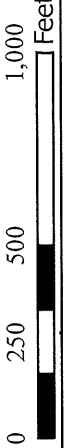
California Barrel Road

Line 3
8 plots

Line 2
10 plots

Line 1
6 plots

Line 4
2 plots



**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Cal Barr

Area 8

Harvest Type: (MC) Modified Clearcut

Approx. Cruise Acres: 47 **Estimated CV%** 45 Net BF/Acre **SE% Objective** 9 Net BF/Acre

Planned Sale Volume : 9.3 MMBF **Estimated Sale Area Value/Acre:** \$19,125Acre
(45 MBF/Ac. @ \$425/Acre)

A. Cruise Goals: (a) Grade minimum 100 conifer and 30 hardwood trees
(b) Sample 48 cruise plots (23 grade/ 25 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 8A:71.11 & 8B:33.31 (Full point)
Cruise Line Directions: 90/270
Cruise Line Spacing 3 (chains) 198 (Feet)
Cruise Plot Spacing 3 (chains) 198 (Feet)
Grade/Count Ratio 1:2

Take plots as marked on cruise map. All cedar will be reserved. Record all snags as SN.

DO NOT RECORD 12', 22' and 32' (for Hardwoods).

DO NOT RECORD 22' LENGTHS.

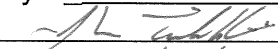
All hardwood will be measured to a G, or as appropriate.

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". 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 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 conifer 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 merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree. Hardwoods shall be recorded in 8' and 10' multiples.
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: Alder Grades: 12" + = 1 Sawmill; 10"-12" = 2 Sawmill; 10"-8" = 3 Sawmill; and 8"-6" 4 Sawmill, or R = Camp Run; 0 = Cull.
All Maple Camp Run = R
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: Ella Salkeld

Approved by: 

Date: 12/12/18

Legend

- Surfaced Road
- - - New Road Construction
- ⋯ TSB
- Fish
- Nonfish
- ⊙ Grade
- Count
- ⋯ Unknown

26

35

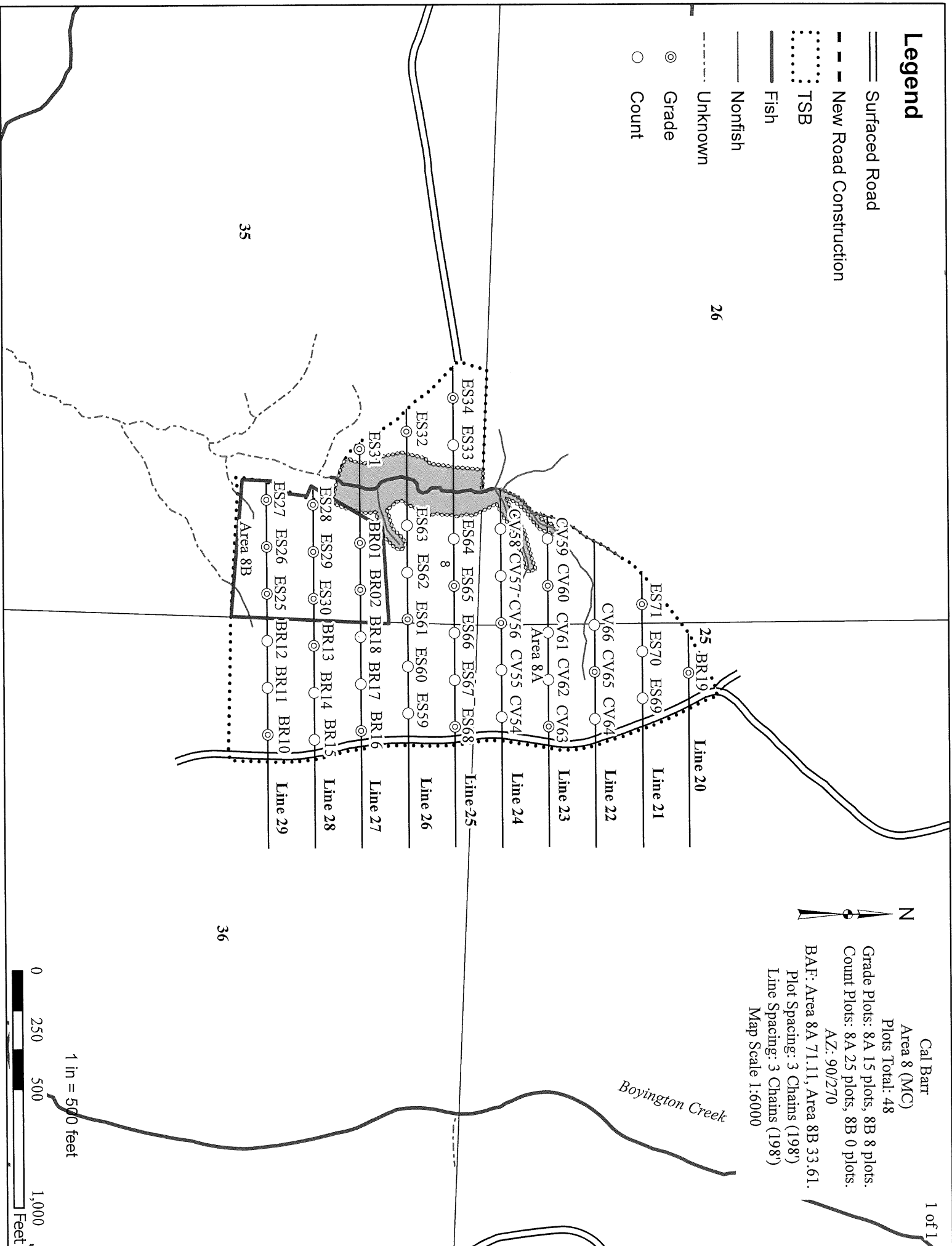
36



Cal Barr
Area 8 (MC)
Plots Total: 48
Grade Plots: 8A 15 plots, 8B 8 plots.
Count Plots: 8A 25 plots, 8B 0 plots.
AZ: 90/270
BAF: Area 8A 71.11, Area 8B 33.61.
Plot Spacing: 3 Chains (198')
Line Spacing: 3 Chains (198')
Map Scale 1:6000

Boyington Creek

1 in = 500 feet



CRUISE DESIGN ASTORIA DISTRICT

Sale Name: Cal BarrArea 9

Harvest Type: (MC) Modified Clearcut

Approx. Cruise Acres: 107 Estimated CV% 45 Net BF/Acre SE% Objective 9 Net BF/AcrePlanned Sale Volume : 9.3 MMBF Estimated Sale Area Value/Acre: \$20,250/Acre
(45 MBF/Ac. @ \$450/Acre)

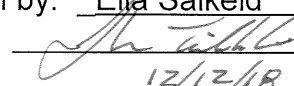
A. Cruise Goals: (a) Grade minimum 120 conifer and 30 hardwood trees
 (b) Sample 48 cruise plots (25 grade/ 23 count); (c) Other goals (Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes.

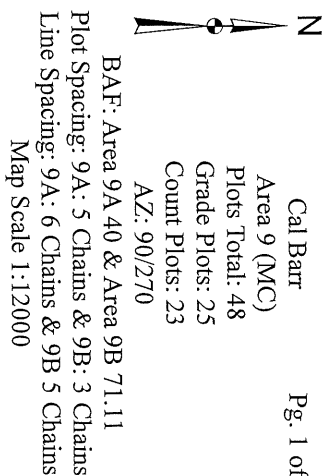
B. Cruise Design:1. Plot Cruises: BAF 9A:40 & 9B:77.11 (Full point)Cruise Line Directions: 90/2709A Cruise Line Spacing 6 (chains) 330 (Feet)Cruise Plot Spacing 5 (chains) 396 (Feet)9B Cruise Line Spacing 5 (chains) 198 (Feet)Cruise Plot Spacing 3 (chains) 330 (Feet)Grade/Count Ratio 1:1Take plots as marked on cruise map. All cedar will be reserved. Record all snags as SN.DO NOT RECORD 12', 22' and 32' (for Hardwoods).DO NOT RECORD 22' LENGTHS.All hardwood will be measured to a G, or as appropriate.**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". 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 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 conifer 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 merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree. Hardwoods shall be recorded in 8' and 10' multiples.
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: Alder Grades: 12" + = 1 Sawmill; 10"-12" = 2 Sawmill; 10"-8" = 3 Sawmill; and 8"-6" 4 Sawmill, or R = Camp Run; 0 = Cull.
All Maple Camp Run = R
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: Ella Salkeld
Approved by: 
Date: 12/12/18



TC PSCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																		
T07N R08W S31 TyTK THRU T07N R08W S36 TyTK					Project: CALBARR												Page 1			
					Acres 362.00												Date 11/29/2018 Time 8:16:41AM			
S So Gr Spp T rt ad		% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre	
							Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf		
							4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99						
D	DOCU														12	10		0.00	2.7	
D	DO2S	73	1.0	7,623	7,548	2,732			26	74	3	1	3	92	37	17	484	2.72	15.6	
D	DO3S	20		1,952	2,025	733		93	1	6	6	7	31	57	34	8	93	0.80	21.7	
D	DO4S	7		643	688	249		100			72	27	1	0	19	7	26	0.46	26.0	
D Totals		33		10,218	10,261	3,714		25	20	55	8	4	8	79	28	10	156	1.29	65.9	
H	DOCU														5	12		0.00	2.3	
H	DO2S	64	1.3	9,609	9,484	3,433			49	51	0	0	6	94	39	16	397	2.31	23.9	
H	DO3S	27		3,950	3,959	1,433		93	5	2	4	2	21	73	36	8	98	0.82	40.4	
H	DO4S	9		1,214	1,264	458		100			59	34	4	3	20	6	28	0.43	45.6	
H Totals		47	.4	14,774	14,708	5,324		34	33	33	6	4	10	80	30	9	131	1.13	112.2	
S	DOCU														17	10		0.00	.6	
S	DO2S	76	1.2	4,185	4,136	1,497			16	84	1	2	3	94	38	18	594	3.36	7.0	
S	DO3S	22	2.6	1,218	1,186	429		41	20	39	7	5	3	85	34	11	201	1.55	5.9	
S	DO4S	2		96	96	35		100			48	29		23	22	7	34	0.61	2.8	
S Totals		17	1.5	5,499	5,418	1,961		11	17	73	3	3	3	91	33	14	332	2.30	16.3	
A	DOCU														7	13		0.00	.6	
A	DO1S	19	1.1	130	128	46			100			7		93	38	13	237	1.66	.5	
A	DO2S	28	1.4	189	186	67		100			8	2		89	36	11	146	1.15	1.3	
A	DO3S	17	1.3	114	113	41		100			3	30	32	35	33	9	90	0.80	1.3	
A	DO4S	36		229	232	84		100			27	17	4	52	27	6	40	0.56	5.7	
A Totals		2	.4	662	659	238		81	19		12	13	7	68	28	8	70	0.77	9.4	
Totals			0.3	31,152	31,045	11,237		28	25	47	7	4	8	81	29	10	152	1.27	203.8	

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)											Page		1					
				Project: CALBARR											Date		11/29/2018					
															Time		11:53:44AM					
T07N R08W S36 TTK											T07N R08W S36 TTK											
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt				
07N		08W		36		A13		TK		40.00		57		99		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 Dia	Bd	CF/ Lf			
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft In	Ft				
H				DO	CU												8	10		0.00	3.2	
H				DO	2S	80	1.4	9,695	9,561	382		43	57		1	8	91	39	16	399	2.42	24.0
H				DO	3S	13	1.5	1,617	1,593	64	99	1		9	11	7	72	34	8	83	0.89	19.2
H				DO	4S	7	1.0	795	788	32	100			44	56			23	6	29	0.53	26.8
H				Totals		52	1.4	12,108	11,942	478	20	35	46	4	6	7	83	30	10	163	1.42	73.1
D				DO	CU												6	31		0.00	.6	
D				DO	2S	90	2.7	4,994	4,858	194		13	87	1	2		97	37	19	644	3.52	7.5
D				DO	3S	10	5.4	515	487	19	21	7	72	52	10		38	24	13	201	2.04	2.4
D				Totals		23	3.0	5,509	5,345	214	2	12	86	6	2		92	33	18	508	3.23	10.5
S				DO	2S	92	.1	4,019	4,016	161		13	87	3	8	5	84	34	20	693	4.40	5.8
S				DO	3S	7	6.5	323	302	12	34	5	61	13			87	29	13	259	2.44	1.2
S				DO	4S	1		38	38	2	100			100				18	8	30	0.76	1.3
S				Totals		19	.6	4,380	4,356	174	3	12	85	4	8	5	83	31	17	528	3.81	8.3
A				DO	CU												6	13		0.00	.3	
A				DO	1S	40		532	532	21		100			16		84	37	13	252	1.85	2.1
A				DO	2S	15	2.7	211	205	8	100			32	20		47	26	11	110	1.17	1.9
A				DO	4S	45	3.0	607	589	24	100			23	20	14	44	29	6	42	0.59	13.9
A				Totals		6	1.8	1,350	1,326	53	60	40		15	18	6	61	29	8	73	0.83	18.3
Type Totals							1.6	23,348	22,969	919	15	25	60	5	6	5	84	30	11	209	1.69	110.1

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page		1					
				Project: CALBARR												Date		11/29/2018					
																Time		11:53:44AM					
T07N R08W S36 TTK										T07N R08W S36 TTK													
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt					
07N		08W		36		A5		TK		13.00		34		108		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 Dia Bd CF/ Ft In Ft Lf							
			Net BdFt	Def%	Gross	Net	Net MBF	4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf				
								H	Totals	81	1.2	42,929	42,406	551	44	38	18	4	4	13	79	33	9
			A	DO	1S	36	2.1	1,971	1,930	25	100				100				38	13	225	1.52	8.6
			A	DO	2S	16		859	859	11	100				100				40	10	150	1.08	5.7
			A	DO	3S	28		1,455	1,455	19	100				42	58		32	9	96	0.87	15.2	
			A	DO	4S	20		1,032	1,032	13	100				46		54	23	6	35	0.54	29.5	
			A	Totals		10	.8	5,317	5,277	69	63	37		9	12	16	63	29	9	89	0.89	59.0	
			S	DO	CU														15	52		0.00	.2
			S	DO	2S	54	.5	2,752	2,737	36		36	64	2		10	87	37	16	424	2.79	6.5	
			S	DO	3S	42	3.3	2,119	2,050	27	32	7	61			6	94	40	13	378	2.45	5.4	
			S	DO	4S	4		191	191	2	100			63	37			21	7	30	0.65	6.3	
			S	Totals		9	1.7	5,061	4,977	65	17	23	60	4	1	8	87	32	12	272	2.17	18.3	
			Type Totals					1.2	53,308	52,660	685	44	36	20	4	5	13	78	32	9	124	1.04	426.2

Species, Sort Grade - Board Foot Volumes (Type)										Page 1											
Project: CALBARR										Date	11/29/2018										
										Time	11:53:44AM										
T07N R08W S31 TTK										T07N R08W S31 TTK											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
07N	08W	31	A4	TK	59.00	23	33	1	W												
S So Gr T rt ad Spp		% 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	Dia		Bd	CF/ Lf			
						4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft					
H	DO	3S	26	997	1,079	64	100				29 71				37	6	62	0.58	17.5		
H	DO	4S	74	2,653	2,921	172	100				57	43					20	6	28	0.40	104.4
H Totals		67		3,650	4,000	236	100				42	31	8	19	22	6	33	0.44	121.9		
D	DO	3S	62	1,072	1,207	71	100				38 62				36	6	63	0.54	19.2		
D	DO	4S	38	631	710	42	100				75	25					20	6	25	0.36	28.9
D Totals		32		1,703	1,917	113	100				28	9	24	39	27	6	40	0.46	48.1		
S	DO	3S	100	70	79	5	100				100				36	11	181	2.31	.4		
S Totals		1		70	79	5	100				100				36	11	181	2.31	.4		
Type Totals				10.6	5,423	5,996	354	100				37	24	13	27	23	6	35	0.46	170.5	

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page 1							
Project: CALBARR										Date	11/29/2018								
										Time	11:53:44AM								
T07N R08W S35 TTK										T07N R08W S35 TTK									
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt										
07N	08W	35	A7	TK	89.00	28	44	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	Dia	Bd	CF/ Lf				
D	DO	CU													14	7		0.00	8.1
D	DO	2S	6		205	217	19		100		100				18	12	104	1.31	2.1
D	DO	3S	55		1,807	1,992	177	100					29	71	37	7	88	0.71	22.8
D	DO	4S	39		1,283	1,399	125	100			72	28			19	7	27	0.48	51.5
D	Totals		63		3,295	3,608	321	94	6		34	11	16	39	23	7	43	0.57	84.5
H	DO	CU													3	11		0.00	4.6
H	DO	3S	78		1,304	1,424	127	100					46	54	36	8	90	0.67	15.8
H	DO	4S	22		343	387	34	100			100				18	6	23	0.39	17.2
H	Totals		32		1,648	1,811	161	100			21		36	42	24	7	48	0.56	37.5
A	DO	CU													10	16		0.00	1.2
A	DO	4S	100		140	158	14	100			26			74	31	7	54	0.80	2.9
A	Totals		3		140	158	14	100			26			74	25	10	38	0.70	4.2
S	DO	CU													25	7		0.00	1.2
S	DO	3S	100		122	138	12	100			100				16	13	113	1.81	1.2
S	Totals		2		122	138	12	100			100				21	10	56	0.71	2.4
Type Totals				-9.8	5,205	5,714	509	94	6		31	7	22	40	23	7	44	0.57	128.6

Species, Sort Grade - Board Foot Volumes (Type)										Page 1										
Project: CALBARR										Date	11/29/2018									
										Time	11:53:44AM									
T07N R08W S36 TTK										T07N R08W S36 TTK										
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt											
07N	08W	36	6	TK	5.00	10	25	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	Dia	Bd	CF/ Ft	In	Ft	Lf		
H	DO	2S	6	573	573	3	100													
H	DO	3S	81	1.0	6,914	6,844	34	100												
H	DO	4S	13	7.6	1,184	1,094	5	100												
H	Totals		56	1.9	8,671	8,511	43	93	7		3	3	15	79	34	8	82	0.64		104.0
A	DO	CU																		
A	DO	2S	15	1,053	1,053	5	100				54			46	24	10	88	0.91		11.9
A	DO	3S	37	4.1	2,521	2,417	12	100			10	34	18	38	31	8	69	0.65		34.9
A	DO	4S	48	3,145	3,145	16	100				19	34		46	27	6	40	0.38		79.4
A	Totals		44	1.5	6,719	6,615	33	100			21	29	6	43	24	8	46	0.50		144.8
Type Totals				1.7	15,390	15,126	76	96	4		11	14	11	64	28	8	61	0.57		248.8

T	Species, Sort Grade - Board Foot Volumes (Type)													Page		1						
Project: CALBARR															Date	11/29/2018						
															Time	11:53:44AM						
T07N R08W S35 T00MC										T07N R08W S35 T00MC												
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt													
07N	08W	35	RW	00MC	11.00	51	164	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	Dia	Bd	CF/ Lf							
										4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft		
D	DO	CU												10	8					0.00	8.7	
D	DO	2S	6	554	603	7	100	26	15	21	39	27	13	173	1.60					3.5		
D	DO	3S	67	5,219	5,810	64	96	4		5	30	64	36	8	103	0.82				56.7		
D	DO	4S	27	2,105	2,280	25	100	65	28	4	3	20	6	27	0.46					83.6		
D	Totals		53	7,879	8,694	96	90	10	19	12	23	46	25	7	57	0.67				152.4		
H	DO	CU												3	13					0.00	2.4	
H	DO	2S	12	862	911	10		75	25					35	65	36	13	261	1.86	3.5		
H	DO	3S	58	3,914	4,303	47	100			2	43	56	36	7	81	0.72				53.1		
H	DO	4S	30	1,962	2,154	24	100	61	30	8			20	6	28	0.42				77.2		
H	Totals		45	6,739	7,367	81	88	9	3	18	10	32	41	26	7	54	0.63				136.2	
S	DO	CU												25	7					0.00	.6	
S	DO	3S	90	273	306	3	62	38	22		58	21	28	11	144	1.66				2.1		
S	DO	4S	10	28	32	0	100		100				16	7	34	0.50				.9		
S	Totals		2	301	338	4	66	34	29		52	19	25	10	92	1.19				3.7		
A	DO	CU												10	16					0.00	.7	
A	DO	4S	100	77	87	1	100		26			74	31	7	54	0.80				1.6		
A	Totals		1	77	87	1	100		26			74	25	10	38	0.70				2.3		
Type Totals				-9.9	14,996	16,485	181	89	10	1	19	11	27	43	26	7	56	0.66			294.5	

TC		PSPCSTGR Species, Sort Grade - Board Foot Volumes (Project)																		
T07N R08W S36 TyTK 35.00 T07N R08W S36 TyTK 7.00		Project: CALBARR												Page 1						
		Acres 42.00												Date 11/29/2018 Time 11:55:22AM						
S Spp	So Gr T rt ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre	
		Def%	Gross	Net	Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf				
					4-5		6-11	12-16	17+	12-20	21-30	31-35					36-99			
D	DOCU																			
D	DO2S	74	1.5	24,705	24,327	1,022			38	62	2	1	1	96	39	17	461	2.49	52.8	
D	DO3S	22	.6	7,190	7,147	300			93	1	4	8	33	55	34	9	103	0.86	69.7	
D	DO4S	4	1.8	1,086	1,067	45			100		65	31	4		20	6	25	0.46	42.2	
D Totals		46	1.3	32,981	32,540	1,367			24	28	48	5	3	8	84	32	11	196	1.44	166.2
H	DOCU																			
H	DO2S	59	3.1	22,490	21,804	916			62	38			2	98	40	15	359	2.08	60.8	
H	DO3S	35	1.9	12,932	12,687	533			86	9	1	1	20	79	37	9	112	0.85	113.6	
H	DO4S	6	2.5	1,975	1,927	81			100		52	38	10		20	7	29	0.47	66.0	
H Totals		51	2.6	37,397	36,417	1,530			35	40	24	3	2	9	86	33	10	151	1.16	240.9
A	DO2S	70	1.6	1,037	1,020	43			100				100		40	11	169	1.21	6.0	
A	DO3S	15		232	232	10			100				100		40	9	120	0.92	1.9	
A	DO4S	15		205	205	9			100		49	51			23	6	26	0.47	8.0	
A Totals		2	1.2	1,474	1,457	61			100		7	7		86	31	8	91	0.90	16.0	
S	DO2S	89		581	581	24				100				100	40	19	600	3.60	1.0	
S	DO3S	11		68	68	3			100				100		30	9	70	1.27	1.0	
S Totals		1		649	649	27			10	90		10		90	35	14	335	2.60	1.9	
Totals			2.0	72,501	71,063	2,985			31	34	35	4	3	8	85	33	10	167	1.26	425.0

Species, Sort Grade - Board Foot Volumes (Project)

T07N R08W S36 TyTK	70.00
T07N R08W S36 TyTK	33.00

Project: CALBARR
Acres 103.00

Page 1
Date 11/29/2018
Time 11:56:01AM

S Spp	So Gr T rt ad	% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre	
							Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf		
							4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99						
D	DOCU															7	21		0.00	.6
D	DO2S	92	.5	14,543	14,469	1,490			19	81	3	2	5	90	37	18	513	2.89	28.2	
D	DO3S	7	1.2	994	982	101		85		15	22	19	26	34	28	10	97	1.07	10.2	
D	DO4S	1		123	123	13		100			100				18	8	31	0.66	4.0	
D Totals		29	.5	15,660	15,575	1,604		6	18	76	5	3	6	86	32	15	362	2.39	43.0	
S	DOCU															9	13		0.00	1.1
S	DO2S	76	1.4	12,564	12,393	1,276			16	84	1	1	3	95	38	18	589	3.28	21.0	
S	DO3S	22	3.2	3,686	3,568	367		41	19	39	4	5	2	88	35	11	202	1.48	17.7	
S	DO4S	2		294	294	30		100			44	30		26	22	7	35	0.60	8.5	
S Totals		30	1.8	16,545	16,255	1,674		11	17	72	2	3	3	92	33	14	336	2.26	48.3	
H	DOCU															6	18		0.00	.6
H	DO2S	81	.3	17,760	17,703	1,823			40	60	0		7	93	39	16	444	2.53	39.8	
H	DO3S	16	1.0	3,497	3,460	356		94	6		13	1	12	74	33	9	98	0.96	35.2	
H	DO4S	3	1.4	641	632	65		100			76	24			19	6	24	0.42	26.0	
H Totals		41	.5	21,898	21,796	2,245		18	34	48	5	1	8	87	32	11	214	1.63	101.7	
A	DO4S	100		74	74	8		100						100	40	6	60	0.60	1.2	
A Totals		0		74	74	8		100						100	40	6	60	0.60	1.2	
Totals			0.9	54,176	53,699	5,531		12	24	64	4	2	6	88	32	13	276	1.95	194.2	

TC PSTATS		PROJECT STATISTICS								PAGE	1	
		PROJECT CALBARR								DATE	11/29/2018	
TWP	RGE	SC	TRACT	TYPE		ACRES		PLOTS	TREES	CuFt	BdFt	
07N 07N	08 08W	31 36	A4 A9B	TK	THR	362.00		296	1,477	1	W	
			PLOTS	TREES	TREES PER PLOT		ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL			296	1477	5.0							
CRUISE			140	731	5.2		44,217	1.7				
DBH COUNT												
REFOREST												
COUNT			142	746	5.3							
BLANKS			14									
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			364	66.8	16.1	51	23.7	95.1	14,774	14,708	3,734	3,734
DOUG FIR			247	42.9	16.6	45	15.9	64.7	10,218	10,261	2,398	2,398
S SPRUCE			76	6.7	26.5	83	5.0	25.5	5,499	5,418	1,228	1,228
R ALDER			43	5.6	14.9	50	1.8	6.8	662	659	207	207
SNAG			1	.1	11.0	20	0.0	.0				
TOTAL			731	122.1	17.0	51	46.6	192.2	31,152	31,045	7,568	7,568
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		102.6	5.4	345	365	384						
DOUG FIR		150.3	9.6	393	434	475						
S SPRUCE		82.3	9.4	1,206	1,332	1,458						
R ALDER		78.0	11.9	119	135	152						
SNAG												
TOTAL		137.7	5.1	451	475	499			757	189	84	
CL	68.1	COEFF		SAMPLE TREES - CF					# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH			5	10	15	
WHEMLOCK		86.2	4.5	87	91	95						
DOUG FIR		133.2	8.5	88	97	105						
S SPRUCE		70.8	8.1	263	287	310						
R ALDER		66.5	10.1	37	41	45						
SNAG												
TOTAL		117.3	4.3	105	110	115			549	137	61	
CL	68.1	COEFF		TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH			5	10	15	
WHEMLOCK		165.7	9.6	60	67	73						
DOUG FIR		237.6	13.8	37	43	49						
S SPRUCE		335.7	19.5	5	7	8						
R ALDER		364.0	21.1	4	6	7						
SNAG		1214.5	70.5	0	0	0						
TOTAL		116.9	6.8	114	122	130			545	136	61	
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		126.2	7.3	88	95	102						
DOUG FIR		162.9	9.5	59	65	71						
S SPRUCE		293.0	17.0	21	26	30						
R ALDER		334.6	19.4	6	7	8						
SNAG		1214.5	70.5	0	0	0						
TOTAL		95.4	5.5	182	192	203			364	91	40	

PROJECT STATISTICS

PROJECT CALBARR

TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt
07N	08	31	A4	TK	THR	362.00	296	1,477	1	W
07N	08W	36	A9B	TK						

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		146.0	8.5	13,461	14,708	15,955			
DOUG FIR		186.7	10.8	9,148	10,261	11,373			
S SPRUCE		317.8	18.5	4,418	5,418	6,417			
R ALDER		344.4	20.0	527	659	791			
SNAG									
TOTAL		<i>123.1</i>	<i>7.2</i>	<i>28,825</i>	<i>31,045</i>	<i>33,265</i>	<i>605</i>	<i>151</i>	<i>67</i>

TC TSTATS				STATISTICS				PAGE	1					
				PROJECT	CALBARR			DATE	11/29/2018					
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt					
07N	08W	36	A13	00MC	40.00	57	211	1	W					
				TREES	ESTIMATED	PERCENT								
				PER PLOT	TOTAL	SAMPLE								
					TREES	TREES								
PLOTS		TREES												
TOTAL	57	211	3.7											
CRUISE	24	103	4.3	2,643	3.9									
DBH COUNT														
REFOREST														
COUNT	30	108	3.6											
BLANKS	3													
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				
WHEMLOCK		55	42.6	19.0	54	19.2	83.5	12,108	11,942	3,144	3,144			
DOUG FIR		10	3.3	35.2	107	3.8	22.5	5,509	5,345	1,107	1,107			
S SPRUCE		18	3.5	33.6	75	3.8	21.8	4,380	4,356	965	965			
R ALDER		16	13.9	14.6	40	4.2	16.1	1,350	1,326	439	439			
SNAG		4	2.7	16.8	34	1.0	4.2	64	64	21	21			
TOTAL		103	66.1	20.3	54	32.9	148.1	23,412	23,033	5,677	5,677			
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		84.7	11.4	474	535	596								
DOUG FIR		35.8	11.9	1,547	1,756	1,965								
S SPRUCE		77.3	18.7	1,587	1,952	2,318								
R ALDER		100.3	25.9	109	148	186								
SNAG		200.0	114.3		10	21								
TOTAL		120.6	11.9	723	820	918						580	145	64
CL:	68.1 %	COEFF	SAMPLE TREES - CF									# OF TREES REQ.		INF. POP.
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15					
WHEMLOCK		69.6	9.4	119	131	143								
DOUG FIR		31.4	10.5	322	360	398								
S SPRUCE		66.6	16.1	342	408	473								
R ALDER		80.4	20.7	37	46	56								
SNAG		200.0	114.3		3	7								
TOTAL		102.9	10.1	165	183	202						423	106	47
CL:	68.1 %	COEFF	TREES/ACRE									# OF PLOTS REQ.		INF. POP.
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15					
WHEMLOCK		127.2	16.8	35	43	50								
DOUG FIR		142.6	18.9	3	3	4								
S SPRUCE		180.2	23.8	3	4	4								
R ALDER		361.6	47.8	7	14	21								
SNAG		353.8	46.8	1	3	4								
TOTAL		111.0	14.7	56	66	76						492	123	55
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		106.8	14.1	72	84	95								
DOUG FIR		138.9	18.4	18	22	27								
S SPRUCE		159.5	21.1	17	22	26								
R ALDER		310.2	41.0	10	16	23								
SNAG		294.1	38.9	3	4	6								
TOTAL		75.5	10.0	133	148	163						228	57	25

TC TSTATS				STATISTICS				PAGE	2
				PROJECT CALBARR				DATE	11/29/2018
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
07N	08W	36	A13	00MC	40.00	57	211	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
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		101.6	13.5	10,335	11,942	13,548			
DOUG FIR		139.3	18.4	4,359	5,345	6,330			
S SPRUCE		162.9	21.6	3,417	4,356	5,295			
R ALDER		280.5	37.1	834	1,326	1,818			
SNAG		529.1	70.0	19	64	108			
TOTAL		<i>71.0</i>	<i>9.4</i>	<i>20,870</i>	<i>23,033</i>	<i>25,195</i>	<i>201</i>	<i>50</i>	<i>22</i>

TC TSTATS				STATISTICS				PAGE 1			
				PROJECT CALBARR				DATE 11/29/2018			
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
07N	08W	31	A4	00PC	59.00	23	141	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL		23	141	6.1							
CRUISE		12	74	6.2	17,499		.4				
DBH COUNT											
REFOREST											
COUNT		11	67	6.1							
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		27	76.8	14.6	43	23.4	89.6	6,851	7,586	2,380	
WHEMLOCK		23	121.9	10.2	24	21.7	69.3	3,650	4,000	1,202	
DOUGLEAV		13	41.4	14.4	39	12.3	46.7	3,505	3,961	1,139	
DOUG FIR		9	48.1	10.9	28	9.5	31.3	1,703	1,917	584	
SNAG		1	7.9	11.0	20	1.6	5.2				
S SPRUCE		1	.4	27.0	37	0.3	1.7	70	79	36	
TOTAL		74	296.6	12.3	31	69.6	243.8	15,779	17,543	5,342	
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		147.6	28.9	98	139	179					
WHEMLOCK		41.2	8.8	34	37	40					
DOUGLEAV		58.7	16.9	104	125	146					
DOUG FIR		44.6	15.7	39	46	54					
SNAG											
S SPRUCE											
TOTAL		146.8	17.1	76	92	108	861	215	96		
CL:	68.1 %	COEFF	SAMPLE TREES - CF					# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
HEMLEAV		109.0	21.4	32	41	49					
WHEMLOCK		62.5	13.3	11	13	14					
DOUGLEAV		51.3	14.8	31	36	42					
DOUG FIR		50.4	17.8	12	14	17					
SNAG											
S SPRUCE											
TOTAL		113.0	13.1	24	28	32	509	127	57		
CL:	68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
HEMLEAV		65.9	14.0	66	77	88					
WHEMLOCK		108.1	23.0	94	122	150					
DOUGLEAV		120.9	25.7	31	41	52					
DOUG FIR		210.4	44.8	27	48	70					
SNAG		264.0	56.2	3	8	12					
S SPRUCE		479.6	102.2		0	1					
TOTAL		44.9	9.6	268	297	325	84	21	9		
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		63.1	13.4	78	90	102					
WHEMLOCK		103.5	22.0	54	69	85					
DOUGLEAV		111.7	23.8	36	47	58					
DOUG FIR		196.3	41.8	18	31	44					

TC TSTATS				STATISTICS				PAGE	2
				PROJECT CALBARR				DATE	11/29/2018
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
07N	08W	31	A4	00PC	59.00	23	141	1	W
CL: 68.1 %		COEFF		BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.
SD: 1.0		VAR.	S.E.%	LOW	AVG	HIGH	5	10	15
SNAG		264.0	56.2	2	5	8			
S SPRUCE		479.6	102.2		2	4			
TOTAL		30.7	6.5	228	244	260	39	10	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
HEMLEAV		73.6	15.7	6,397	7,586	8,776			
WHEMLOCK		105.0	22.4	3,106	4,000	4,895			
DOUGLEAV		112.6	24.0	3,011	3,961	4,910			
DOUG FIR		195.2	41.6	1,120	1,917	2,713			
SNAG									
S SPRUCE		479.6	102.2		79	160			
TOTAL		37.3	8.0	16,148	17,543	18,938	58	15	6

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT	CALBARR			DATE	11/29/2018		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
07N	08W	36	A5	00MC	13.00	34	295	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL		34	295	8.7							
CRUISE		12	109	9.1	2,794		3.9				
DBH COUNT											
REFOREST											
COUNT		22	186	8.5							
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
WHEMLOCK		96	174.0	17.0	68	66.3	272.9	42,929	42,406	11,329	11,329
R ALDER		5	29.5	15.8	61	10.1	40.0	5,317	5,277	1,536	1,536
S SPRUCE		7	8.8	26.2	70	6.4	32.9	5,061	4,977	1,280	1,280
SNAG		1	2.7	9.0	40	0.4	1.2				
TOTAL		109	214.9	17.2	67	83.7	347.1	53,308	52,660	14,145	14,145
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	
WHEMLOCK		65.4	6.7	333	357	380					
R ALDER		44.3	22.0	156	200	244					
S SPRUCE		98.2	40.0	773	1,289	1,804					
SNAG											
TOTAL		108.3	10.4	364	406	448	468		117	52	
CL:	68.1 %	COEFF	SAMPLE TREES - CF					# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5		10	15	
WHEMLOCK		56.5	5.8	87	93	98					
R ALDER		42.6	21.2	46	58	70					
S SPRUCE		85.8	34.9	192	294	397					
SNAG											
TOTAL		90.0	8.6	94	103	112	323		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	
WHEMLOCK		62.1	10.6	155	174	192					
R ALDER		238.7	40.9	17	30	42					
S SPRUCE		177.6	30.4	6	9	11					
SNAG		583.1	99.9	0	3	5					
TOTAL		44.5	7.6	199	215	231	79		20	9	
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		54.4	9.3	247	273	298					
R ALDER		238.7	40.9	24	40	56					
S SPRUCE		172.9	29.6	23	33	43					
SNAG		583.1	99.9	0	1	2					
TOTAL		30.9	5.3	329	347	365	38		10	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	
WHEMLOCK		54.7	9.4	38,428	42,406	46,384					
R ALDER		238.7	40.9	3,119	5,277	7,435					
S SPRUCE		173.7	29.8	3,496	4,977	6,459					
SNAG											
TOTAL		33.1	5.7	49,674	52,660	55,647	44		11	5	

TC TSTATS				STATISTICS				PAGE	2
				PROJECT	CALBARR			DATE	11/29/2018
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
07N	08W	36	A5	00MC	13.00	34	295	1	W
				NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
CL:	68.1 %	COEFF		LOW	AVG	HIGH	5	10	15
SD:	1.0	VAR.	S.E. %						

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT CALBARR				DATE	11/29/2018		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
07N	08W	36	6	00PC	5.00	10	73	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL		10	73	7.3							
CRUISE		10	73	7.3	1,186	6.2					
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	
HEMLEAV		30	57.1	19.6	77	27.1	120.0	20,986	20,758	5,343	
WHEMLOCK		13	55.1	13.2	66	14.3	52.0	8,671	8,511	2,258	
R ALDER		12	70.4	11.2	53	14.4	48.0	6,719	6,615	1,760	
ALDRLEAV		8	20.5	16.9	80	7.8	32.0	5,470	5,427	1,408	
SNAG		5	15.6	15.3	43	5.1	20.0				
DOUGLEAV		3	7.2	17.5	88	2.9	12.0	2,056	1,983	532	
SPRUCELV		2	11.3	11.4	41	2.4	8.0	815	792	244	
TOTAL		73	237.1	15.0	64	75.3	292.0	44,717	44,086	11,546	
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		47.8	8.9	419	459	500					
WHEMLOCK		38.2	11.0	160	180	200					
R ALDER		42.5	12.8	92	106	119					
ALDRLEAV		42.1	15.9	252	300	348					
SNAG											
DOUGLEAV		32.4	22.4	230	297	363					
SPRUCELV		108.8	101.9		130	262					
TOTAL		77.1	9.0	261	287	313	237	59	26		
CL:	68.1 %	COEFF		SAMPLE TREES - CF			# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
HEMLEAV		40.1	7.4	107	116	124					
WHEMLOCK		36.4	10.5	43	48	53					
R ALDER		42.6	12.8	25	29	32					
ALDRLEAV		39.0	14.7	66	78	89					
SNAG											
DOUGLEAV		35.6	24.6	61	80	100					
SPRUCELV		110.0	103.0		41	82					
TOTAL		70.3	8.2	68	74	80	197	49	22		
CL:	68.1 %	COEFF		TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
HEMLEAV		57.8	19.2	46	57	68					
WHEMLOCK		130.7	43.5	31	55	79					
R ALDER		157.6	52.4	33	70	107					
ALDRLEAV		172.7	57.5	9	20	32					
SNAG		130.4	43.4	9	16	22					
DOUGLEAV		245.9	81.8	1	7	13					
SPRUCELV		253.9	84.5	2	11	21					
TOTAL		36.0	12.0	209	237	265	57	14	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		

TC TSTATS				STATISTICS				PAGE	2
				PROJECT CALBARR				DATE	11/29/2018
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
07N	08W	36	6	00PC	5.00	10	73	1	W
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		44.4	14.8	102	120	138			
WHEMLOCK		125.9	41.9	30	52	74			
R ALDER		151.1	50.3	24	48	72			
ALDRLEAV		164.6	54.8	14	32	50			
SNAG		105.4	35.1	13	20	27			
DOUGLEAV		225.0	74.9	3	12	21			
SPRUCELV		210.8	70.2	2	8	14			
TOTAL		23.3	7.8	269	292	315	24	6	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
HEMLEAV		50.7	16.9	17,254	20,758	24,262			
WHEMLOCK		124.4	41.4	4,987	8,511	12,035			
R ALDER		149.1	49.6	3,333	6,615	9,897			
ALDRLEAV		183.0	60.9	2,122	5,427	8,732			
SNAG									
DOUGLEAV		224.6	74.8	501	1,983	3,466			
SPRUCELV		223.5	74.4	203	792	1,381			
TOTAL		30.7	10.2	39,588	44,086	48,584	42	10	5

TC TSTATS				STATISTICS				PAGE 1			
				PROJECT CALBARR				DATE 11/29/2018			
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
07N	08W	35	A7	00PC	89.00	28	161	1	W		
				TREES	ESTIMATED						
				PER PLOT	TOTAL						
					TREES	PERCENT					
						SAMPLE					
						TREES					
TOTAL		28	161	5.8							
CRUISE		14	90	6.4	15,818		.6				
DBH COUNT											
REFOREST											
COUNT		14	71	5.1							
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		35	60.4	15.9	49	20.8	82.8	7,157	7,879	2,312	2,312
DOUG FIR		36	72.5	12.2	28	16.8	58.8	3,295	3,608	1,105	1,105
HEMLEAV		9	17.1	15.6	51	5.8	22.8	2,305	2,453	720	720
WHEMLOCK		5	21.8	12.3	42	5.1	18.0	1,648	1,811	500	500
R ALDER		2	2.9	17.3	36	1.2	4.8	140	158	72	72
SPRUCELV		2	1.8	19.0	49	0.8	3.6	290	323	95	95
S SPRUCE		1	1.2	19.0	43	0.6	2.4	122	138	35	35
TOTAL		90	177.7	14.1	40	51.4	193.3	14,956	16,369	4,840	4,840
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		50.3	8.5	137	150	163					
DOUG FIR		83.8	14.0	55	64	73					
HEMLEAV		41.9	14.8	145	171	196					
WHEMLOCK		56.2	27.9	67	92	118					
R ALDER		47.1	44.1	28	51	73					
SPRUCELV		12.9	12.0	164	186	209					
S SPRUCE											
TOTAL		68.5	7.2	105	113	121	188	47	21		
CL:	68.1 %	COEFF	SAMPLE TREES - CF					# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR. %	S.E. %	LOW	AVG	HIGH	5 10		15		
DOUGLEAV		43.1	7.3	40	43	46					
DOUG FIR		73.9	12.3	17	20	22					
HEMLEAV		45.7	16.1	43	51	59					
WHEMLOCK		44.5	22.1	19	25	31					
R ALDER		39.1	36.6	15	24	32					
SPRUCELV		59.4	55.7	31	69	107					
S SPRUCE											
TOTAL		64.8	6.8	31	34	36	167	42	19		
CL:	68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR. %	S.E. %	LOW	AVG	HIGH	5 10		15		
DOUGLEAV		40.3	7.7	56	60	65					
DOUG FIR		101.3	19.5	58	72	87					
HEMLEAV		144.7	27.8	12	17	22					
WHEMLOCK		162.9	31.3	15	22	29					
R ALDER		251.5	48.4	2	3	4					
SPRUCELV		388.5	74.7	0	2	3					
S SPRUCE		367.2	70.6	0	1	2					
TOTAL		43.5	8.4	163	178	193	78	20	9		
CL:	68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR. %	S.E. %	LOW	AVG	HIGH	5 10		15		

TC TSTATS				STATISTICS				PAGE	2
				PROJECT CALBARR				DATE	11/29/2018
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
07N	08W	35	A7	00PC	89.00	28	161	1	W
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		39.0	7.5	77	83	89			
DOUG FIR		94.1	18.1	48	59	69			
HEMLEAV		133.3	25.6	17	23	29			
WHEMLOCK		164.5	31.6	12	18	24			
R ALDER		249.4	48.0	2	5	7			
SPRUCELV		388.5	74.7	1	4	6			
S SPRUCE		367.2	70.6	1	2	4			
TOTAL		32.7	6.3	181	193	205	44	11	5
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		46.0	8.9	7,181	7,879	8,576			
DOUG FIR		109.8	21.1	2,846	3,608	4,370			
HEMLEAV		134.3	25.8	1,820	2,453	3,087			
WHEMLOCK		172.8	33.2	1,209	1,811	2,413			
R ALDER		265.4	51.1	77	158	239			
SPRUCELV		388.5	74.7	82	323	565			
S SPRUCE		367.2	70.6	40	138	235			
TOTAL		37.6	7.2	15,186	16,369	17,552	58	15	6

TC TSTATS				STATISTICS				PAGE 1			
				PROJECT CALBARR				DATE 11/29/2018			
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
07N	08W	36	A8A	00MC	35.00	40	251	1	W		
				TREES	ESTIMATED						
				PER PLOT	TOTAL						
					TREES						
PLOTS		TREES									
TOTAL		40		251		6.3					
CRUISE		15		85		5.7		7,179			
DBH COUNT								1.2			
REFOREST											
COUNT		25		166		6.6					
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
WHEMLOCK		48		120.2	18.9	80	54.0	234.7	44,131	42,968	10,890
DOUG FIR		26		59.8	23.1	91	36.2	174.2	37,385	36,909	8,439
SNAG		5		14.3	15.1	43	4.6	17.8			
R ALDER		5		9.6	16.5	65	3.5	14.2	1,769	1,748	537
S SPRUCE		1		1.2	29.0	72	1.0	5.3	779	779	212
TOTAL		85		205.1	20.0	80	99.8	446.2	84,064	82,404	20,078
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		72.5		10.5	440	492	543				
DOUG FIR		69.4		13.9	796	925	1,053				
SNAG											
R ALDER		18.5		9.2	169	186	203				
S SPRUCE											
TOTAL		88.7		9.6	524	579	635	314	79	35	
CL:	68.1 %	COEFF		SAMPLE TREES - CF				# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK		59.0		8.5	110	120	130				
DOUG FIR		58.8		11.8	177	201	225				
SNAG											
R ALDER		14.4		7.2	53	57	61				
S SPRUCE											
TOTAL		73.9		8.0	124	135	146	218	55	24	
CL:	68.1 %	COEFF		TREES/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK		72.2		11.4	107	120	134				
DOUG FIR		107.6		17.0	50	60	70				
SNAG		236.5		37.4	9	14	20				
R ALDER		259.7		41.0	6	10	14				
S SPRUCE		355.7		56.2	1	1	2				
TOTAL		36.5		5.8	193	205	217	53	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	
WHEMLOCK		68.3		10.8	209	235	260				
DOUG FIR		100.8		15.9	146	174	202				
SNAG		217.2		34.3	12	18	24				
R ALDER		258.2		40.8	8	14	20				
S SPRUCE		355.7		56.2	2	5	8				
TOTAL		28.6		4.5	426	446	466	33	8	4	

TC TSTATS				STATISTICS				PAGE	2
				PROJECT CALBARR				DATE	11/29/2018
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
07N	08W	36	A8A	00MC	35.00	40	251	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
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		69.7	11.0	38,236	42,968	47,700			
DOUG FIR		100.6	15.9	31,040	36,909	42,778			
SNAG									
R ALDER		255.3	40.3	1,043	1,748	2,454			
S SPRUCE		355.7	56.2	341	779	1,217			
TOTAL		35.3	5.6	77,811	82,404	86,997	50	12	6

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT CALBARR				DATE	11/29/2018	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
07N	08W	36	A8B	00MC	7.00	8	45	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
PLOTS		TREES								
TOTAL		8	45	5.6						
CRUISE		8	45	5.6		1,501		3.0		
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		34	168.0	12.5	34	40.4	142.8	10,960	10,696	3,284
WHEMLOCK		11	46.5	13.5	39	12.6	46.2	3,725	3,661	1,168
TOTAL		45	214.5	12.7	35	53.0	189.1	14,685	14,357	4,452
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		67.2	11.5	72	82	91				
WHEMLOCK		74.3	23.5	77	100	123				
TOTAL		69.4	10.3	77	86	95		192	48	21
CL: 68.1 %	COEFF	SAMPLE TREES - CF					# OF TREES REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUG FIR		60.0	10.3	22	25	28				
WHEMLOCK		66.1	20.9	25	32	39				
TOTAL		62.6	9.3	24	27	29		157	39	17
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUG FIR		54.8	20.7	133	168	203				
WHEMLOCK		110.5	41.7	27	46	66				
TOTAL		41.3	15.6	181	214	248		78	19	9
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		49.9	18.8	116	143	170				
WHEMLOCK		109.5	41.3	27	46	65				
TOTAL		35.5	13.4	164	189	214		57	14	6
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		54.0	20.3	8,520	10,696	12,872				
WHEMLOCK		92.2	34.8	2,388	3,661	4,934				
TOTAL		36.8	13.9	12,364	14,357	16,350		62	15	7

TC PSTATS			PROJECT STATISTICS							PAGE	1	
			PROJECT CALBARR							DATE	11/29/2018	
TWP	RGE	SC	TRACT	TYPE		ACRES		PLOTS	TREES	CuFt	BdFt	
07N	08	36	A8A	00MC		42.00		48	296	1	W	
07N	08W	36	A8B	00MC								
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES		PERCENT SAMPLE TREES				
TOTAL			48	296	6.2							
CRUISE			23	130	5.7	8,681		1.5				
DBH COUNT												
REFOREST												
COUNT			25	166	6.6							
BLANKS												
100 %												
STAND SUMMARY												
			SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUG FIR			60	77.9	19.9	70	37.8	169.0	32,981	32,540	7,580	7,580
WHEMLOCK			59	107.9	18.6	77	47.2	203.3	37,397	36,417	9,270	9,270
SNAG			5	11.9	15.1	43	3.8	14.8				
R ALDER			5	8.0	16.5	65	2.9	11.9	1,474	1,457	448	448
S SPRUCE			1	1.0	29.0	72	0.8	4.4	649	649	176	176
TOTAL			130	206.7	18.9	72	92.7	403.4	72,501	71,063	17,474	17,474
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			133.0	17.2	370	447	524					
WHEMLOCK			85.4	11.1	372	419	465					
SNAG												
R ALDER			18.5	9.2	169	186	203					
S SPRUCE												
TOTAL			117.1	10.3	367	409	451	547	137	61		
CL	68.1		COEFF	SAMPLE TREES - CF				# OF TREES REQ.		INF. POP.		
SD:	1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR			116.0	15.0	86	101	117					
WHEMLOCK			70.5	9.2	94	104	113					
SNAG												
R ALDER			14.4	7.2	53	57	61					
S SPRUCE												
TOTAL			98.6	8.6	89	97	106	388	97	43		
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			102.4	14.8	66	78	89					
WHEMLOCK			79.8	11.5	96	108	120					
SNAG			262.4	37.8	7	12	16					
R ALDER			287.5	41.5	5	8	11					
S SPRUCE			391.4	56.4	0	1	2					
TOTAL			37.0	5.3	196	207	218	55	14	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			96.3	13.9	146	169	192					
WHEMLOCK			80.5	11.6	180	203	227					
SNAG			241.7	34.9	10	15	20					
R ALDER			285.8	41.2	7	12	17					
S SPRUCE			391.4	56.4	2	4	7					
TOTAL			38.1	5.5	381	403	426	58	14	6		

PROJECT STATISTICS

PROJECT CALBARR

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
07N	08	36	A8A	00MC	42.00	48	296	1	W
07N	08W	36	A8B	00MC					

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		108.5	15.7	27,446	32,540	37,634			
WHEMLOCK		85.3	12.3	31,936	36,417	40,898			
SNAG									
R ALDER		282.7	40.8	863	1,457	2,051			
S SPRUCE		391.4	56.4	283	649	1,016			
TOTAL		<i>51.9</i>	<i>7.5</i>	<i>65,740</i>	<i>71,063</i>	<i>76,386</i>	<i>108</i>	<i>27</i>	<i>12</i>

TC TSTATS				STATISTICS				PAGE 1			
				PROJECT CALBARR				DATE 11/29/2018			
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
07N	08W	36	A9A	00MC	70.00	27	138	1	W		
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		27	138	5.1							
CRUISE		13	70	5.4	4,168	1.7					
DBH COUNT											
REFOREST											
COUNT		13	68	5.2							
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		23	33.1	23.1	65	20.0	96.3	20,250	20,198	4,477	4,477
DOUG FIR		27	11.5	31.3	104	11.0	61.3	15,575	15,476	3,168	3,168
S SPRUCE		18	9.6	28.2	78	7.8	41.5	9,040	8,911	1,981	1,981
R ALDER		1	4.8	13.0	41	1.2	4.4	289	289	116	116
SNAG		1	.6	22.0	83	0.3	1.5				
TOTAL		70	59.5	25.1	73	40.9	205.0	45,155	44,875	9,742	9,742
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		45.4	9.7	911	1,009	1,106					
DOUG FIR		45.5	8.9	1,390	1,526	1,662					
S SPRUCE		57.7	14.0	1,131	1,314	1,498					
R ALDER											
SNAG											
TOTAL		55.2	6.6	1,176	1,259	1,342		122	30	14	
CL:	68.1 %	COEFF	SAMPLE TREES - CF					# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK		37.9	8.1	201	219	236					
DOUG FIR		38.6	7.6	286	310	333					
S SPRUCE		48.0	11.6	248	280	313					
R ALDER											
SNAG											
TOTAL		47.2	5.6	249	264	278		89	22	10	
CL:	68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK		91.1	17.9	27	33	39					
DOUG FIR		84.2	16.5	10	11	13					
S SPRUCE		117.8	23.1	7	10	12					
R ALDER		381.3	74.7	1	5	8					
SNAG		519.6	101.9	1	1	1					
TOTAL		59.7	11.7	53	60	67		148	37	16	
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		75.8	14.9	82	96	111					
DOUG FIR		82.1	16.1	51	61	71					
S SPRUCE		101.8	20.0	33	41	50					
R ALDER		381.3	74.7	1	4	8					
SNAG		519.6	101.9	1	1	3					
TOTAL		35.4	6.9	191	205	219		52	13	6	

TC TSTATS				STATISTICS				PAGE	2
				PROJECT CALBARR				DATE	11/29/2018
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
07N	08W	36	A9A	00MC	70.00	27	138	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
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		78.0	15.3	17,111	20,198	23,285			
DOUG FIR		82.7	16.2	12,966	15,476	17,986			
S SPRUCE		104.8	20.5	7,081	8,911	10,742			
R ALDER		381.3	74.7	73	289	506			
SNAG									
TOTAL		37.3	7.3	41,590	44,875	48,160	58	14	6

TC TSTATS				STATISTICS				PAGE	1
				PROJECT CALBARR				DATE	11/29/2018
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
07N	08W	36	A9B	00MC	33.00	21	125	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	21	125	6.0		
CRUISE	11	67	6.1	5,631	1.2
DBH COUNT					
REFOREST					
COUNT	10	58	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
WHEMLOCK	26	86.1	19.0	70	38.9	169.3	27,458	27,245	7,258	7,258
S SPRUCE	26	39.1	25.2	93	27.0	135.4	32,506	31,877	7,215	7,215
DOUG FIR	12	22.5	25.7	88	16.0	81.3	16,492	16,444	3,724	3,724
SNAG	3	23.0	14.7	46	7.1	27.1				
TOTAL	67	170.6	21.1	74	90.0	413.1	76,456	75,567	18,197	18,197

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	69.0	13.8	366	425	483					
S SPRUCE	65.6	13.1	1,070	1,232	1,393					
DOUG FIR	44.5	13.4	769	888	1,007					
SNAG										
TOTAL	85.1	10.4	719	802	885		289	72	32	

CL: 68.1 %	COEFF	SAMPLE TREES - CF					# OF TREES REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK	53.1	10.6	98	109	121					
S SPRUCE	56.4	11.3	236	266	296					
DOUG FIR	38.8	11.7	173	196	219					
SNAG										
TOTAL	72.5	8.8	165	181	197		210	52	23	

CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK	80.3	17.9	71	86	102					
S SPRUCE	118.7	26.5	29	39	50					
DOUG FIR	120.8	27.0	16	22	29					
SNAG	179.3	40.1	14	23	32					
TOTAL	63.1	14.1	147	171	195		167	42	19	

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	74.5	16.7	141	169	198					
S SPRUCE	103.6	23.1	104	135	167					
DOUG FIR	121.5	27.2	59	81	103					
SNAG	175.6	39.3	16	27	38					
TOTAL	36.8	8.2	379	413	447		57	14	6	

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	74.2	16.6	22,727	27,245	31,763					
S SPRUCE	103.9	23.2	24,476	31,877	39,278					
DOUG FIR	125.2	28.0	11,843	16,444	21,045					
SNAG										
TOTAL	39.4	8.8	68,904	75,567	82,229		65	16	7	

TC PSTATS			PROJECT STATISTICS							PAGE	1	
			PROJECT CALBARR							DATE	11/29/2018	
TWP	RGE	SC	TRACT	TYPE		ACRES		PLOTS	TREES	CuFt	BdFt	
07N	08	36	A9A	00MC		103.00		48	263	1	W	
07N	08W	36	A9B	00MC								
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES		PERCENT SAMPLE TREES				
TOTAL			48	263	5.5							
CRUISE			24	137	5.7	9,799		1.4				
DBH COUNT												
REFOREST												
COUNT			23	126	5.5							
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			49	50.1	20.9	68	26.2	119.7	22,560	22,456	5,368	5,368
S SPRUCE			44	19.1	26.2	88	14.0	71.6	16,559	16,269	3,658	3,658
DOUG FIR			39	15.0	28.8	96	12.6	67.7	15,869	15,786	3,346	3,346
SNAG			4	7.7	15.2	47	2.5	9.7				
R ALDER			1	3.3	13.0	41	0.8	3.0	197	197	79	79
TOTAL			137	95.1	22.9	74	56.8	271.7	55,183	54,708	12,451	12,451
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			68.3	9.7	631	699	767					
S SPRUCE			61.7	9.3	1,148	1,265	1,383					
DOUG FIR			51.2	8.2	1,221	1,330	1,439					
SNAG												
R ALDER												
TOTAL			69.9	6.0	974	1,035	1,097	195	49	22		
CL	68.1		COEFF	SAMPLE TREES - CF				# OF TREES REQ.		INF. POP.		
SD:	1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK			55.5	7.9	148	161	173					
S SPRUCE			52.4	7.9	250	272	293					
DOUG FIR			43.5	7.0	256	275	294					
SNAG												
R ALDER												
TOTAL			60.0	5.1	212	223	234	144	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		
WHEMLOCK			88.3	12.7	44	50	56					
S SPRUCE			135.7	19.6	15	19	23					
DOUG FIR			104.4	15.1	13	15	17					
SNAG			276.9	39.9	5	8	11					
R ALDER			512.0	73.8	1	3	6					
TOTAL			69.5	10.0	86	95	105	193	48	21		
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			74.5	10.7	107	120	133					
S SPRUCE			112.9	16.3	60	72	83					
DOUG FIR			97.1	14.0	58	68	77					
SNAG			262.5	37.8	6	10	13					
R ALDER			512.0	73.8	1	3	5					
TOTAL			37.3	5.4	257	272	286	56	14	6		

PROJECT STATISTICS

PROJECT CALBARR

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
07N	08	36	A9A	00MC	103.00	48	263	1	W	
07N	08W	36	A9B	00MC						
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			76.9	11.1	19,964	22,456	24,947			
S SPRUCE			116.7	16.8	13,532	16,269	19,007			
DOUG FIR			98.2	14.2	13,551	15,786	18,022			
SNAG										
R ALDER			512.0	73.8	51	197	342			
TOTAL			37.9	5.5	51,718	54,708	57,698	57	14	6

TC PSTNDSUM		Stand Table Summary										Page Date:	1 11/29/2018		
T07N R08W S31 TyTK THRU T07N R08W S36 TyTK					Project CALBARR Acres 362.00					Time: 12:06:48PM Grown Year:					
S Spc T	Sample		Tot		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	T o t a l s		
	DBH	Trees	FF 16'	Av Ht				Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF
H	8	11	86	23	9.904	3.46	9.90	4.7	22.0		46	217		168	79
H	9	9	87	35	3.779	1.67	3.78	7.6	32.1		29	121		105	44
H	10	15	87	49	6.148	3.35	6.25	10.9	38.4		68	240		246	87
H	11	20	87	47	7.188	4.65	7.99	11.9	38.7		95	309		345	112
H	12	11	86	58	3.144	2.47	3.14	18.6	56.1		58	176		212	64
H	13	24	85	72	5.324	4.91	9.14	16.8	56.5		154	517		557	187
H	14	26	88	81	3.892	4.16	6.78	21.3	75.9		144	515		522	186
H	15	22	85	75	3.367	4.13	5.38	25.1	85.6		135	461		488	167
H	16	11	88	91	1.471	2.05	2.86	29.1	104.3		83	298		301	108
H	17	18	88	89	2.942	4.64	6.16	30.1	104.8		186	645		672	233
H	18	19	87	89	1.795	3.17	3.95	32.0	114.1		126	450		457	163
H	19	22	86	103	2.253	4.44	5.88	33.7	119.9		198	705		717	255
H	20	23	86	104	2.765	6.03	6.63	41.0	151.1		272	1,001		983	362
H	21	20	87	96	2.667	6.41	5.81	46.9	171.4		273	996		987	361
H	22	12	86	101	1.516	4.00	3.63	49.1	182.4		178	661		645	239
H	23	13	87	103	1.190	3.43	2.88	53.2	200.2		153	577		555	209
H	24	14	88	106	1.359	4.27	3.27	61.0	241.4		199	788		721	285
H	25	7	86	105	.466	1.59	1.10	65.4	244.9		72	269		260	97
H	26	13	88	107	1.295	4.77	3.26	68.8	295.0		225	963		813	349
H	27	8	88	110	.745	2.96	1.95	72.2	305.9		141	595		509	216
H	28	13	86	108	.990	4.24	2.49	78.3	339.0		195	843		705	305
H	29	9	88	115	.788	3.61	2.36	76.8	366.2		181	865		657	313
H	30	4	86	107	.322	1.58	.93	78.3	351.0		73	327		264	118
H	31	5	87	118	.308	1.62	.92	87.9	416.6		81	385		294	139
H	32	5	88	112	.570	3.18	1.55	97.9	461.2		152	717		551	260
H	33	3	86	129	.339	2.01	1.02	105.4	513.8		107	523		388	189
H	34	1	89	89	.007	.05	.01	126.0	557.1		2	8		7	3
H	35	2	87	119	.050	.34	.15	111.7	551.7		17	83		61	30
H	36	1	92	121	.109	.77	.33	124.0	666.7		41	218		147	79
H	37	2	83	111	.126	.94	.35	120.7	568.8		43	202		155	73
H	41	1	86	99	.018	.17	.04	184.0	845.0		7	31		24	11
H	Totals	364	87	68	66.834	95.07	109.89	34.0	133.8		3,734	14,708		13,516	5,324
D	8	1	86	17	.233	.08	.23	4.0	20.0		1	5		3	2
D	9	8	84	34	4.414	1.95	4.41	6.2	22.4		28	99		100	36
D	10	20	82	25	7.020	3.78	5.42	7.3	23.3		40	126		143	46
D	11	20	83	36	5.763	3.72	5.76	10.6	36.9		61	213		222	77
D	12	17	84	43	4.180	3.28	4.18	14.2	44.8		59	187		215	68
D	13	11	85	62	3.149	2.90	3.85	17.9	60.7		69	234		249	85
D	14	23	84	62	2.694	2.88	3.69	19.1	57.4		71	212		256	77
D	15	27	83	61	3.280	4.02	4.48	21.8	63.3		98	284		354	103
D	16	20	86	81	2.251	3.14	4.10	23.9	89.9		98	369		355	134
D	17	13	88	64	.761	1.20	1.49	22.1	76.9		33	115		120	42
D	18	7	86	89	.927	1.64	1.85	30.4	110.8		56	206		204	74
D	19	5	87	122	.712	1.40	2.08	32.6	125.6		68	262		246	95
D	20	5	85	101	.632	1.38	1.26	42.4	138.6		54	175		194	63
D	21	2	86	76	.029	.07	.06	36.7	132.2		2	8		8	3
D	22	2	88	111	.259	.68	.76	39.6	166.2		30	127		109	46
D	23	3	88	144	.464	1.34	1.38	52.8	224.5		73	309		263	112
D	24	1	89	113	.206	.65	.62	45.7	186.7		28	115		102	42
D	25	3	88	127	.456	1.56	1.37	56.5	247.1		77	338		280	122
D	26	6	87	125	.880	3.24	2.64	58.6	249.7		155	659		560	239
D	27	2	89	144	.318	1.27	.95	71.0	316.6		68	302		245	109
D	28	5	89	135	.528	2.26	1.37	78.4	371.1		108	509		389	184

TC PSTNDSUM		Stand Table Summary										Page	2		
												Date:	11/29/2018		
T07N R08W S31 TyTK THRU T07N R08W S36 TyTK				Project CALBARR						Time:		12:06:48PM			
				Acres 362.00						Grown Year:					
S Spc T	Sample		Tot		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals		
	DBH	Trees	FF 16'	Av Ht				Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF
D	29	9	87	129	1.073	4.92	3.22	75.7	341.1		244	1,098		882	397
D	30	5	88	135	.575	2.82	1.72	83.2	397.5		143	685		519	248
D	31	2	87	113	.210	1.10	.63	74.6	338.6		47	213		170	77
D	32	4	87	140	.418	2.34	1.25	97.4	463.7		122	582		443	211
D	33	4	87	127	.336	2.00	.93	101.2	478.1		94	446		342	161
D	34	2	90	132	.175	1.10	.52	107.3	537.8		56	282		204	102
D	35	3	87	134	.173	1.16	.52	112.8	542.7		58	282		212	102
D	36	4	86	137	.199	1.40	.60	118.2	584.5		70	348		255	126
D	37	3	88	143	.182	1.36	.55	135.7	705.6		74	386		269	140
D	39	3	87	135	.163	1.35	.49	142.5	726.2		70	354		252	128
D	42	5	87	140	.213	2.05	.64	162.3	828.5		104	530		376	192
D	43	1	88	157	.025	.25	.07	193.3	993.3		14	73		52	27
D	45	1	88	146	.041	.45	.12	204.3	1050.0		25	129		91	47
D	Totals	247	84	62	42.937	64.74	63.25	37.9	162.2		2,398	10,261		8,682	3,714
S	14	1	86	95	.444	.47	.89	22.0	80.0		20	71		71	26
S	15	2	83	55	.393	.48	.42	28.6	63.4		12	27		44	10
S	16	1	89	107	.340	.47	.68	32.5	120.0		22	82		80	30
S	17	1	88	75	.107	.17	.21	29.5	100.0		6	21		23	8
S	19	4	81	82	.786	1.55	1.50	35.2	131.6		53	197		190	71
S	20	3	84	96	.497	1.08	.99	45.5	148.2		45	147		164	53
S	22	1	86	79	.064	.17	.13	48.5	165.0		6	21		22	8
S	23	3	85	113	.494	1.42	1.48	48.1	186.7		71	277		258	100
S	24	4	85	107	.399	1.25	1.10	54.5	210.5		60	231		217	84
S	25	3	87	103	.228	.78	.60	60.2	241.3		36	144		130	52
S	27	4	85	98	.314	1.25	.67	82.3	323.6		55	215		198	78
S	28	6	85	104	.561	2.40	1.34	83.3	332.8		111	445		404	161
S	29	4	85	105	.417	1.91	1.04	83.3	348.9		87	363		314	132
S	30	3	85	119	.131	.64	.35	93.6	426.1		33	150		119	54
S	32	2	89	135	.165	.92	.50	110.4	576.8		55	286		198	103
S	33	2	85	123	.098	.58	.29	104.8	496.8		31	146		111	53
S	34	4	86	122	.238	1.50	.69	117.7	590.7		82	410		296	148
S	35	1	85	126	.020	.13	.06	120.0	593.3		7	36		26	13
S	36	4	86	129	.261	1.85	.78	131.8	659.9		103	517		374	187
S	37	3	87	127	.141	1.06	.41	142.5	726.6		58	295		210	107
S	38	4	86	126	.156	1.23	.47	144.8	719.8		68	336		245	122
S	39	3	87	124	.131	1.08	.38	157.7	793.5		59	298		214	108
S	40	3	84	135	.121	1.06	.36	166.9	805.2		61	292		219	106
S	41	1	82	99	.049	.45	.05	297.0	1460.0		14	71		52	26
S	42	1	81	99	.049	.47	.10	210.0	810.0		21	80		75	29
S	45	1	85	131	.012	.13	.04	207.7	1060.0		8	38		27	14
S	46	1	85	113	.012	.13	.03	193.7	870.0		7	30		24	11
S	48	1	85	111	.011	.13	.03	202.7	956.7		6	30		23	11
S	50	1	83	99	.012	.17	.02	299.0	1100.0		7	27		27	10
S	54	1	83	113	.008	.13	.03	254.0	1303.3		6	33		23	12
S	55	1	85	126	.008	.13	.02	294.7	1580.0		7	38		26	14
S	57	1	85	126	.008	.13	.02	319.7	1726.7		7	39		26	14
S	69	1	77	110	.007	.17	.01	330.0	1735.0		4	23		16	8
S	Totals	76	85	102	6.682	25.53	15.69	78.3	345.2		1,228	5,418		4,447	1,961
A	8	1	87	76	.158	.06	.16	12.0	60.0		2	9		7	3
A	9	1	86	114	.125	.06	.25	10.0	40.0		3	10		9	4
A	10	2	86	68	.306	.17	.31	15.0	43.3		5	13		17	5
A	11	5	86	52	.589	.39	.84	10.7	36.0		9	30		33	11

TC		PSTNDSUM										Stand Table Summary					Page Date:		3 11/29/2018											
T07N R08W S31 TyTK THRU T07N R08W S36 TyTK					Project					CALBARR					Time:		12:06:48PM													
					Acres					362.00					Grown Year:															
S Sp		T		Sample DBH		Tot FF Av 16' Ht		Trees/ Acres		BA/ Acres		Logs Acres		Average Log Net Cu.Ft.		Net Bd.Ft.		Tons/ Acres		Cu.Ft. Acres		Bd.Ft. Acres		Totals Tons Cunits MBF						
A				13		8		86		68		1.143		1.05		1.75		17.9		53.0		31		93		114			34	
A				14		3		87		56		.260		.28		.42		16.2		57.5		7		24		24			9	
A				15		5		86		71		.685		.84		1.19		23.1		72.3		27		86		99			31	
A				16		4		86		64		.854		1.19		1.26		27.4		78.9		34		99		125			36	
A				17		3		87		82		.420		.66		.77		31.3		103.1		24		79		87			29	
A				18		4		86		82		.444		.79		.89		33.4		112.5		30		100		108			36	
A				19		3		86		56		.466		.92		.61		30.1		89.3		18		55		67			20	
A				21		2		87		80		.093		.22		.19		44.5		145.0		8		27		30			10	
A				23		2		87		88		.077		.22		.19		45.4		172.0		9		33		32			12	
A				Totals		43		86		69		5.620		6.84		8.82		23.5		74.7		207		659		750			239	
SN				11		1		86		25		.072		.05																
SN				Totals		1		86		25		.072		.05																
Totals				731		86		68				122.146		192.22		197.65		38.3		157.1		7,568		31,045		27,395			11,238	

TC PLOGSTVB		Log Stock Table - MBF																	
T07N R08W S31 TyTK THRU T07N R08W S36 TyTK						Project: CALBARR		Acres 362.00										Page 1	
																		Date 11/29/2018	
																		Time 12:06:48PM	
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 2S	16	20		20	.5						9		11				
D		DO 2S	18	1		1	.0						1						
D		DO 2S	20	65		66	1.8						13	22	8		23		
D		DO 2S	24	27		27	.7						25	2					
D		DO 2S	26	1		1	.0						1						
D		DO 2S	28	2		2	.0						2						
D		DO 2S	30	9		9	.3							9					
D		DO 2S	32	79		79	2.1						11	14	26	28			
D		DO 2S	34	6		6	.2							6					
D		DO 2S	40	2,551	1.1	2,522	67.9						230	235	676	796	486	99	
D		DO 3S	14	5		5	.1			2		3							
D		DO 3S	16	12	5.4	11	.3				1	3						7	
D		DO 3S	18	3		3	.1					3							
D		DO 3S	20	23		23	.6			1	9	8	3	1					
D		DO 3S	24	6		7	.2			1		5							
D		DO 3S	26	18		18	.5				14	5							
D		DO 3S	28	6		6	.2			0	5								
D		DO 3S	30	18		18	.5				4	14							
D		DO 3S	32	209		218	5.9			60	44	113	1						
D		DO 3S	34	6		6	.2					6							
D		DO 3S	36	28		31	.8			25	5		1						
D		DO 3S	38	20		20	.5			2	17	1							
D		DO 3S	40	352		367	9.9			119	80	128			17	7	15		
D		DO 4S	14	32		35	1.0			19	15	2							
D		DO 4S	16	67		69	1.9			54	15								
D		DO 4S	18	6		6	.2			6									
D		DO 4S	20	63		68	1.8			66	2								
D		DO 4S	24	29		32	.9			26	6								
D		DO 4S	26	9		10	.3			10									
D		DO 4S	28	18		20	.5			20									
D		DO 4S	30	5	7.4	5	.1			5									
D		DO 4S	32	3	17.9	2	.1			2									
D		DO 4S	34	1	10.0	1	.0			1									
D		DO 4S	36	1	25.0	1	.0			1									
D		Totals		3,699		3,714	33.1			420	218	291	297	289	739	831	523	105	
H		DO 2S	16	10		10	.2						7				3		
H		DO 2S	18	3	11.1	2	.0								2				

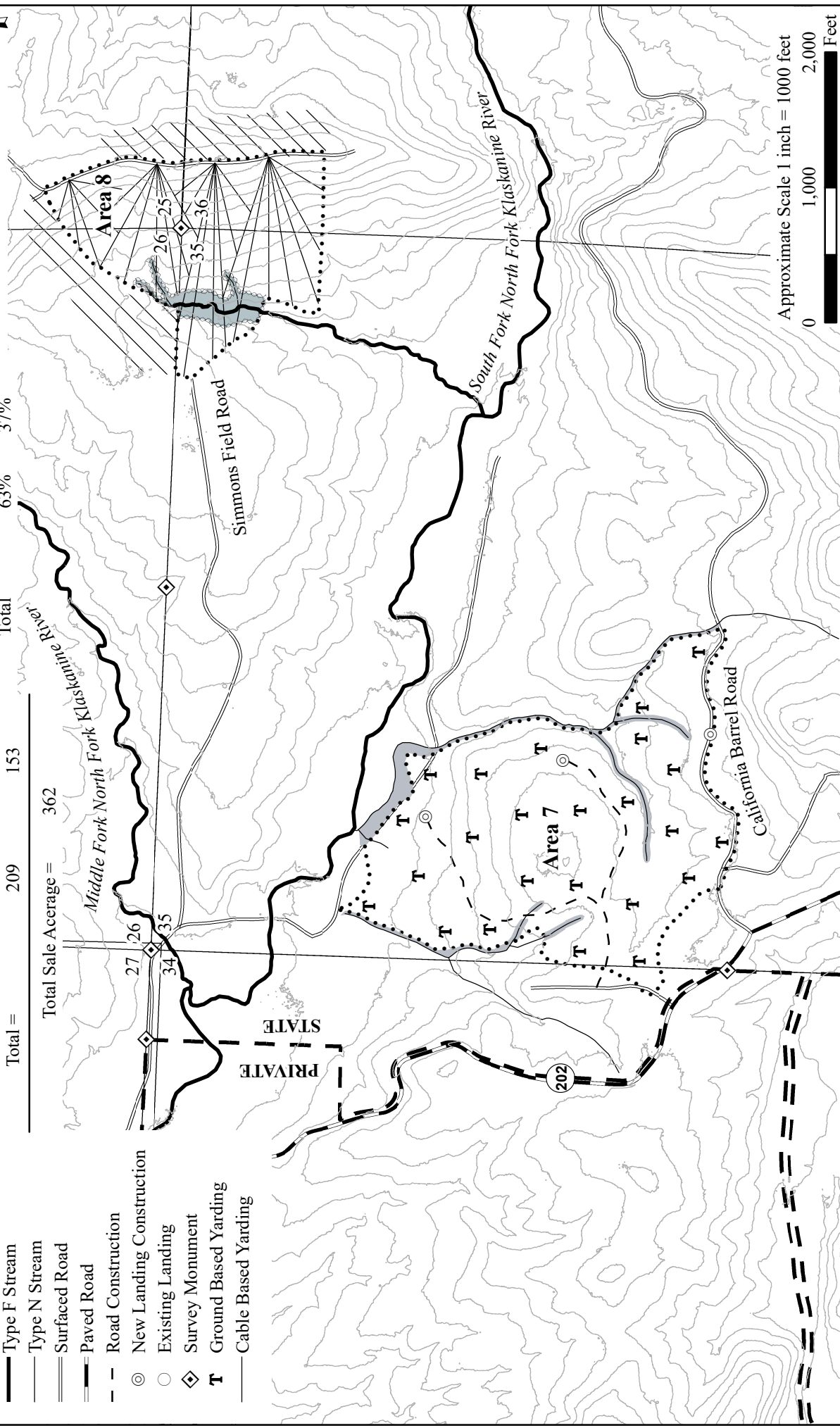
TC PLOGSTVB				Log Stock Table - MBF																
T07N R08W S31 TyTK THRU T07N R08W S36 TyTK				Project: CALBARR										Page 2						
				Acres 362.00										Date 11/29/2018						
														Time 12:06:48PM						
S T Spp	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling 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	2S	30	7		7	.1					3		5						
H	DO	2S	32	164		164	3.1					18	90	55						
H	DO	2S	34	36		36	.7						36							
H	DO	2S	36	46		46	.9						9	37						
H	DO	2S	38	33	1.4	33	.6					12	20							
H	DO	2S	40	3,179	1.4	3,135	58.9					485	611	983	888	168				
H	DO	3S	14	0		0	.0					0								
H	DO	3S	16	35		35	.7				7	28								
H	DO	3S	18	3		3	.1					3								
H	DO	3S	20	17		17	.3				4	12	1							
H	DO	3S	24	4		4	.1			1	3									
H	DO	3S	26	5		5	.1			4		2								
H	DO	3S	28	4		4	.1			2	1	1								
H	DO	3S	30	12	1.7	12	.2			3	5	4								
H	DO	3S	32	245		251	4.7			58	111	65	18							
H	DO	3S	34	51	2.6	50	.9			21	6	23								
H	DO	3S	36	98		98	1.8			40	30	28								
H	DO	3S	38	49		48	.9			9	9	28	2							
H	DO	3S	40	906		906	17.0			192	269	361	54	4	27					
H	DO	4S	12	8		8	.1			5	1	1								
H	DO	4S	14	43		46	.9			35	7	4								
H	DO	4S	16	106		114	2.1			110	4									
H	DO	4S	18	37		38	.7			35	2									
H	DO	4S	20	58		62	1.2			56	6									
H	DO	4S	24	31		34	.6			32	2									
H	DO	4S	26	35		36	.7			30	6	1								
H	DO	4S	27	9		10	.2			10										
H	DO	4S	28	24		26	.5			26										
H	DO	4S	30	54	3.5	52	1.0			52										
H	DO	4S	32	19	10.7	17	.3			17										
H	DO	4S	34	3		3	.1			3										
H	DO	4S	36	7	6.7	6	.1			6										
H	DO	4S	40	7		7	.1			7										
H	Totals			5,348		5,324	47.4			754	472	560	600	771	1109	888	171			
S	DO	2S	12	1		1	.0							0	0					
S	DO	2S	16	4		4	.2					3		1						
S	DO	2S	20	12		12	.6					11		2						

TC PLOGSTVB		Log Stock Table - MBF																
T07N R08W S31 TyTK THRU T07N R08W S36 TyTK				Project: CALBARR										Page 3				
				Acres 362.00										Date 11/29/2018				
														Time 12:06:48PM				
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+
S	DO 2S	24	10	1.3	10	.5					1	1	8					
S	DO 2S	26	3		3	.2					3							
S	DO 2S	30	15		15	.8					3		7	5				
S	DO 2S	32	42		42	2.2					8		31		3			
S	DO 2S	34	8		8	.4					8							
S	DO 2S	36	17		17	.9					5	10		3				
S	DO 2S	38	16	3.2	15	.8					9				6			
S	DO 2S	40	1,387	1.3	1,369	69.8					63	64	334	291	508	91	18	
S	DO 3S	14	0		0	.0					0							
S	DO 3S	16	14		16	.8					2	14						
S	DO 3S	20	14		14	.7			2		10	2						
S	DO 3S	24	5		5	.3			3		3							
S	DO 3S	26	3		3	.2						3						
S	DO 3S	28	6		6	.3					3	3						
S	DO 3S	30	6		6	.3		3	3									
S	DO 3S	32	12		12	.6					10	1			2			
S	DO 3S	36	19	3.0	19	.9					19							
S	DO 3S	38	55	2.5	54	2.8					21	10	10		13			
S	DO 3S	40	304	3.7	293	14.9			7	43	46	5	13	25	78	53	22	
S	DO 4S	12	1		1	.1			1	0								
S	DO 4S	14	2		2	.1				2								
S	DO 4S	16	7		7	.4			2	5								
S	DO 4S	18	2		2	.1				2								
S	DO 4S	20	4		4	.2			3	1								
S	DO 4S	24	10		10	.5			10									
S	DO 4S	40	8		8	.4			8									
S	Totals		1,991	1.5	1,961	17.5			35	61	113	153	97	408	392	571	113	18
A	DO 1S	30	3		3	1.4					3							
A	DO 1S	36	13		13	5.4					13							
A	DO 1S	40	31	1.7	30	12.6					16	9	6					
A	DO 2S	16	4		4	1.7					4							
A	DO 2S	20	2		2	.6					2							
A	DO 2S	28	2		2	.7					2							
A	DO 2S	40	61	1.5	60	25.3					60							
A	DO 3S	20	1		1	.5				1								
A	DO 3S	28	1		1	.5				1								

TC PLOGSTVB				Log Stock Table - MBF																
T07N R08W S31 TyTK THRU T07N R08W S36 TyTK				Project: CALBARR Acres 362.00												Page 4 Date 11/29/2018 Time 12:06:48PM				
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+	
A	DO	3S	30	11	2.7	11	4.6				11									
A	DO	3S	32	2		2	.9				2									
A	DO	3S	34	11		11	4.6					11								
A	DO	3S	40	15	1.5	14	6.0				14									
A	DO	4S	16	8		8	3.3			8										
A	DO	4S	18	9		9	4.0			6	4									
A	DO	4S	20	5		5	2.2			5										
A	DO	4S	24	3		3	1.4			3										
A	DO	4S	30	12	6.2	11	4.7			11										
A	DO	4S	34	3		3	1.3			3										
A	DO	4S	36	9		9	3.9			9										
A	DO	4S	40	33		34	14.4			34										
A	Totals			240		239	2.1			80	34	79	32	9	6					
Total	All Species			11,277		11,238	100.0			1289	784	1043	1082	1167	2261	2111	1265	219	18	

OF TIMBER SALE CONTRACT NO.
AT-341-2019-W00728-01 CAL BARR
PORTIONS OF SECTIONS 24, 25, 26, 34,
35, AND 36, T7N, R8W AND PORTIONS
OF SECTION 31, T7N, R7W, W.M.,
CLATSOP COUNTY, OREGON

Approximate Net Acreage	MC Acres	PC Acres	Logging Breakdown	Tractor	Cable
Area 1 (MC) =	31		Area 1	100%	0%
Area 2 (R/W) =	11		Area 2	100%	0%
Area 3 (MC) =	9		Area 3	100%	0%
Area 4 (PC) =		59	Area 4	39%	61%
Area 5 (MC) =	13		Area 5	100%	0%
Area 6 (PC) =		5	Area 6	100%	0%
Area 7 (PC) =		89	Area 7	100%	0%
Area 8 (MC) =	42		Area 8	0%	100%
Area 9 (MC) =	103		Area 9	76%	24%
Total =	209	153	Total	63%	37%



Approximate Scale 1 inch = 1000 feet
0 1,000 2,000 Feet

Approximate Net Acreage: MC Acres PC Acres

Area 1 (MC) =	31
Area 2 (R/W) =	11
Area 3 (MC) =	9
Area 4 (PC) =	59
Area 5 (MC) =	13
Area 6 (PC) =	5
Area 7 (PC) =	89
Area 8 (MC) =	42
Area 9 (MC) =	103
Total =	209
	153

Total Sale Acreage = 362

Logging Breakdown	Tractor	Cable
Area 1	100%	0%
Area 2	100%	0%
Area 3	100%	0%
Area 4	39%	61%
Area 5	100%	0%
Area 6	100%	0%
Area 7	100%	0%
Area 8	0%	100%
Area 9	76%	24%
Total	63%	37%

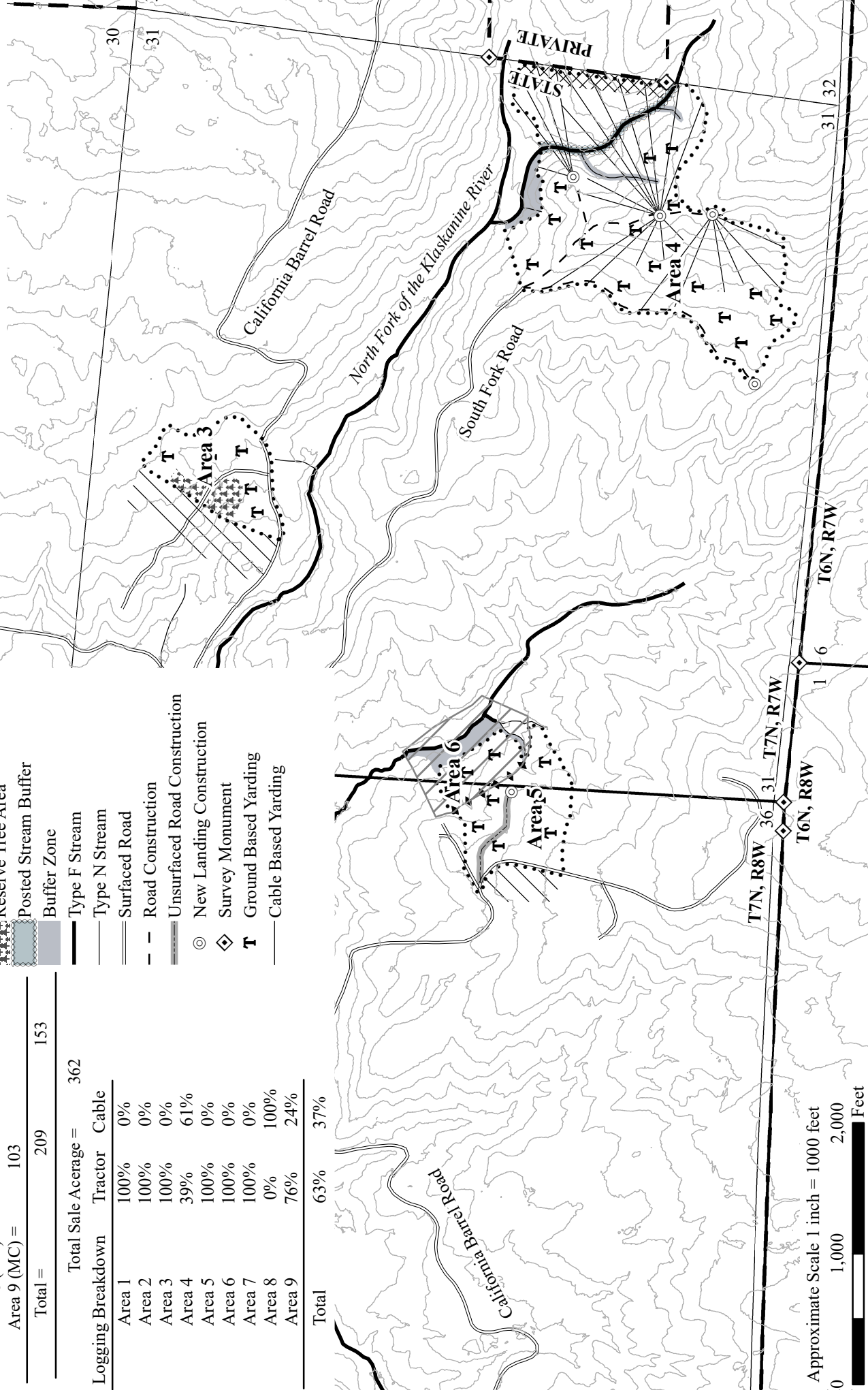
Legend

- Ownership Boundary
- Timber Sale Boundary
- Operationally Restricted Area
- Controlled Felling Area
- Reforestation Area
- Reserve Tree Area
- Posted Stream Buffer
- Buffer Zone
- Type F Stream
- Type N Stream
- Surfaced Road
- Road Construction
- Unsurfaced Road Construction
- New Landing Construction
- Survey Monument
- Ground Based Yarding
- Cable Based Yarding

LOGGING PLAN

Pg. 2 of 3

OF TIMBER SALE CONTRACT NO.
AT-314-2019-W00728-01 CAL BARR
PORTIONS OF SECTIONS 24, 25, 26, 34,
35, AND 36, T7N, R8W AND PORTIONS
OF SECTION 31, T7N, R7W, W.M.,
CLATSOP COUNTY, OREGON



Approximate Net Acreage MC Acres PC Acres

OF TIMBER SALE CONTRACT NO.
AT-314-2019-W00728-01 CAL BARR
PORTIONS OF SECTIONS 24, 25, 26, 34,
35, AND 36, T7N, R8W AND PORTIONS
OF SECTION 31, T7N, R7W, W.M.,
CLATSOP COUNTY, OREGON

Area 1 (MC) =	31	
Area 2 (R/W) =	11	
Area 3 (MC) =	9	
Area 4 (PC) =		59
Area 5 (MC) =	13	
Area 6 (PC) =		5
Area 7 (PC) =		89
Area 8 (MC) =	42	
Area 9 (MC) =	103	
Total =	209	153

Total Sale Acreage = 362

Logging Breakdown	Tractor	Cable
Area 1	100%	0%
Area 2	100%	0%
Area 3	100%	0%
Area 4	39%	61%
Area 5	100%	0%
Area 6	100%	0%
Area 7	100%	0%
Area 8	0%	100%
Area 9	76%	24%
Total	63%	37%

Legend

-  Ownership Boundary
-  Timber Sale Boundary
-  Reforestation Area
-  Clatsop2016_40Foot
-  Type F Stream
-  Type N Stream
-  Reserve Tree Area
-  Posted Stream Buffer
-  Buffer Zone
-  Surfaced Road
-  Road Construction
-  New Landing Construction
-  Survey Monument
-  Ground Based Yarding
-  Cable Based Yarding

Approximate Scale 1 inch = 1000 feet

0 1,000 2,000
Feet

