



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Sarajarvie Ridge Thin
Sale 341-14-38

District: Astoria

Date: June 05, 2013

cost summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$3,061,929.01	\$0.00	\$3,061,929.01
		Project Work:	\$(173,160.00)
		Advertised Value:	\$2,888,769.01



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timber description

Location: Portions of Sections 22, 23, 26, and 27, T6N, R7W, W.M., Clatsop County, Oregon.

Stand Stocking: 80%

SpecieName	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	23	0	97
Western Hemlock / Fir	17	0	97

Volume by Grade	2S	3S	4S	Total
Douglas - Fir	6,022	1,209	190	7,421
Western Hemlock / Fir	448	222	3	673
Total	6,470	1,431	193	8,094



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comments: Pond Values Used: 1st Quarter Calendar Year 2013.

Expected Log Markets: Warrenton, OR; Mist, OR; Clatskanie, OR;
Tillamook, OR; Forest Grove, OR.

Western redcedar and Other Cedars Stumpage Price = Pond Value
minus Logging Cost:
 $\$792.19/\text{MBF} = \$1,000/\text{MBF} - \$207.81/\text{MBF}$

Red Alder and Other Hardwoods Stumpage Price = Pond Value minus
Logging Cost:
 $\$347.19/\text{MBF} = \$555/\text{MBF} - \$207.81/\text{MBF}$

Sitka Spruce and Other Conifers Stumpage Price = Pond Value minus
Logging Cost:
 $\$192.19/\text{MBF} = \$400/\text{MBF} - \$207.81/\text{MBF}$

SCALING COST ALLOWANCE = \$5.00/MBF

FUEL COST ALLOWANCE = \$4.00/Gallon

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

Other Costs (with Profit & Risk to be added):
100% Branding and Painting: $\$1/\text{MBF} \times 8,094 \text{ MBF} = \$8,094$
Machine Washing for Noxious Weed Compliance = \$2,000
TOTAL Other Costs (with Profit & Risk to be added) = \$10,094

Other Costs (No Profit & Risk added):
None.



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logging conditions

combination#: 1 Douglas - Fir 50.00%
Western Hemlock / Fir 50.00%
yarding distance: Medium (800 ft) **downhill yarding:** No
logging system: Cable: Medium Tower >40 - <70 **Process:** Manual Falling/Delimbing
tree size: Mature / Partial Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 5.0 **bd. ft / load:** 4,500
cost / mbf: \$153.78
machines: Log Loader (A)
Tower Yarder (Medium)

combination#: 2 Douglas - Fir 50.00%
Western Hemlock / Fir 50.00%
yarding distance: Short (400 ft) **downhill yarding:** No
logging system: Wheel Skidder **Process:** Manual Falling/Delimbing
tree size: Mature / Partial Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 8.0 **bd. ft / load:** 4,500
cost / mbf: \$88.22
machines: Log Loader (B)
Tire Skidder



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logging costs

Operating Seasons:	2.00	Profit Risk:	14.00%
Project Costs:	\$173,160.00	Other Costs (P/R):	\$10,094.00
Slash Disposal:	\$0.00	Other Costs:	\$0.00

Miles of Road

Road Maintenance: \$3.17

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

Hauling Costs

Species	\$ / MBF	Trips/Day	MBF / Load
Douglas - Fir	\$0.00	2.0	4.5
Western Hemlock / Fir	\$0.00	3.0	4.5



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logging costs breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling	Other	Total
Douglas - Fir									
\$121.00	\$3.27	\$1.08	\$78.30	\$1.25	\$28.69	\$0.00	\$5.00	\$0.00	\$238.59
Western Hemlock / Fir									
\$121.00	\$3.27	\$1.08	\$52.20	\$1.25	\$25.03	\$0.00	\$5.00	\$0.00	\$208.83

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$626.00	\$387.41	\$0.00
Western Hemlock / Fir	\$0.00	\$486.63	\$277.80	\$0.00



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summary

Amortized

Specie	MBF	Value	Total
Douglas - Fir	0	\$0.00	\$0.00
Western Hemlock / Fir	0	\$0.00	\$0.00

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	7,421	\$387.41	\$2,874,969.61
Western Hemlock / Fir	673	\$277.80	\$186,959.40

Gross Timber Sale Value

Recovery: \$3,061,929.01

Prepared by: Jenny Johnson

Phone: 503-325-5451

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Sarajarvie Ridge Thin

ROAD CONSTRUCTION:

Project No. 1	Road segment	Length/Sta	Cost
	1A, 1B-1C, 1D-1E, 2A-2B,	36.40	\$44,892
	2C-2D, 2E-2F, 2G-2H, 2I, 2J-2K,		
	2L-2M		
	TOTALS	36.40	\$44,892

ROAD IMPROVEMENT:

Project No. 2	Road segment	Length/Sta	Cost
	I1-I2, I3-I4, I5-I6, I7-I8	267.60	\$82,828
	TOTALS		\$82,828

SPECIAL PROJECTS:

	Description	Cost
Project No. 3	Vacating	\$4,356
Project No. 4	Brushing	\$25,532
	Project Road Maintenance	\$6,474
	TOTAL	\$36,362

MOVE IN:

Equipment	Cost
Excavator (C330)	\$1,406
Excavator (C315)	\$805
Dozer (D8)	\$1,406
Rubber Tired Skidder	\$717
Vibratory Roller	\$778
10-12 yd dump truck (X 4 @ \$163 each)	\$652
20 yd dump truck (X 4 @ \$191 each)	\$764
Large Grader (14G)	\$778
Water Truck (2,500 gal)	\$190
Brusher	\$805
Front end loader C966	\$778

TOTAL \$9,079

GRAND TOTAL \$173,160

Compiled By: Morey *FL*

Date: 04/09/2013

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Sarajevie Ridge Thin
ROAD: 1A, 1B-1C (2+00), 1D-1E (1+00), 2A-2B (19+00),
NEW CONSTRUCTION: 36.40 STATIONS
IMPROVEMENT: STATIONS
0.69 MILES
MILES

CLEARING & GRUBBING

CLEARING & GRUBBING				
Method	Acres/amount	X	Rate	Cost
Scatter Outside of R/W	3	X	\$1,337	\$4,011.00
		X		

SUB TOTAL FOR CLEARING & GRUBBING

EXCAVATION

	Material	Cy/amount	X	Rate	=	Cost
1B-1C	Balanced Construction Field Design \$/sta.	2.00	X	\$122.00	=	\$244.00
	Landing Construction	1.00	X	\$389.00	=	\$389.00
1D-1E	Balanced Construction Field Design \$/sta.	1.00	X	\$122.00	=	\$122.00
	Landing Construction	1.00	X	\$389.00	=	\$389.00
2A-2B	Common drift excavation \$\$/cy	3.475	X	\$1.80	=	\$6,255.00
	Embankment compaction \$\$/cy	3.548	X	\$0.70	=	\$2,483.60
	Landing Construction	1.00	X	\$389.00	=	\$389.00
2C-2D	Balanced Construction Field Design \$/sta.	1.00	X	\$122.00	=	\$122.00
	Landing Construction	1.00	X	\$389.00	=	\$389.00
2E-2F	Balanced Construction Field Design \$/sta.	3.00	X	\$122.00	=	\$366.00
	Landing Construction	1.00	X	\$389.00	=	\$389.00
2G-2H	Balanced Construction Field Design \$/sta.	3.00	X	\$122.00	=	\$366.00
	Landing Construction	1.00	X	\$389.00	=	\$389.00
	End Haul Waste w/ 10-12 yd Truck \$/hr	1.00	X	\$79.00	=	\$79.00
2I	Landing Construction	1.00	X	\$389.00	=	\$389.00
2J-2K	Common drift excavation \$\$/cy	789	X	\$1.80	=	\$1,420.20
	Embankment compaction \$\$/cy	900	X	\$0.70	=	\$630.00
	Landing Construction	2.00	X	\$389.00	=	\$778.00
2L-2M	Balanced Construction Field Design \$/sta.	3.20	X	\$122.00	=	\$390.40
	Landing Construction	1.00	X	\$389.00	=	\$389.00

SUB TOTAL FOR EXCAVATION

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
1D-1E									
0+00	18"CPP	30	\$19.53	\$585.90					
2A-2B									
15+40	18"CPP	40	\$19.53	\$781.20					
2E-2F									
0+00	18"CPP	30	\$19.53	\$585.90					
2G-2H									
0+00	18"CPP	30	\$19.53	\$585.90					
2J-2K									
0+00	18"CPP	40	\$19.53	\$781.20					

Other/miscellaneous:

Culvert stakes & markers:

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION

Subtotal of Clearing, Exc., Culv.

\$3,420

\$23,799

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: <u>Sarajarvie Ridge Thin</u>	NEW CONSTRUCTION: _____	STATIONS _____	MILES _____
ROAD: <u>I1-12 (139+65), I3-14 (73+15), I5-16 (49+80),</u>	IMPROVEMENT: <u>267.60</u>	STATIONS _____	MILES <u>5.07</u>
POINTS: <u>I7-18 (5+0)</u>			

CLEARING & GRUBBING

Method	Acres/amount	x	Rate	=	Cost
		x		=	

SUB TOTAL FOR CLEARING & GRUBBING

EXCAVATION

Material	Cy/amount	x	Rate	=	Cost
I1-12					
Catch Basin Reestablishment w/ C315 \$/hr	1.00	x	\$101.00	=	\$101.00
End Haul Waste w/ 10-12 yd Truck \$/hr	1.00	x	\$79.00	=	\$79.00
97+05					
Ditchout Construction w/ C315 \$/hr	1.00	x	\$101.00	=	\$101.00
End Haul Waste w/ 10-12 yd Truck \$/hr	1.00	x	\$79.00	=	\$79.00
128+50					
Catch Basin Reestablishment and removal of trees & vegetation w/ C315 \$/hr	1.00	x	\$101.00	=	\$101.00
I3-14					
Ditchout Construction w/ C315 \$/hr	0.50	x	\$101.00	=	\$50.50
14+25					
Dam/ Catch Basin Construction w/ C315 \$/hr	1.00	x	\$101.00	=	\$101.00
41+20					
Ditchout Construction w/ C315 \$/hr	0.50	x	\$101.00	=	\$50.50
I5-16					
Culvert Removal/backfill trench w/ C315 \$/hr	1.00	x	\$101.00	=	\$101.00
16+90					
Catch Basin Reestablishment, Outlet Clearing & removal of trees & vegetation w/ C315 \$/hr	1.00	x	\$101.00	=	\$101.00
25+15					
Heavy Sod Removal from Landing and Turnaround Area w/ 14G & C315 \$/hr	1.00	x	\$100.00	=	\$100.00
49+80					
Turnaround Area w/ 14G & C315 \$/hr	1.00	x	\$101.00	=	\$101.00

SUB TOTAL FOR EXCAVATION

CULVERT MATERIALS AND INSTALLATION

Location	Dial/type	Lineal ft.	Rate	Cost	Location	Dial/type	Lineal ft.	Rate	Cost
I1-12					I3-14				
9+10	18" ACSP	60		*On Fill Sheet	52+15	24" ACSP	60		*On Fill Sheet
55+20	18" CPP	30	\$19.53	\$585.90	54+05	18" CPP	35	\$19.53	\$683.55
95+00	18" CPP	40	\$19.53	\$781.20	64+25	18" CPP	30	\$19.53	\$585.90
97+05	18" CPP	40	\$19.53	\$781.20	68+80	18" CPP	35	\$19.53	\$683.55
118+00	18" CPP	40	\$19.53	\$781.20	15-16				
129+75	18" CPP	35	\$19.53	\$683.55	7+95	18" CPP	35	\$19.53	\$683.55
137+15	18" CPP	30	\$19.53	\$585.90	12+75	18" CPP	30	\$19.53	\$585.90
I3-14					15+75	18" CPP	30	\$19.53	\$585.90
0+00	18" CPP	40	\$19.53	\$781.20	29+20	18" CPP	30	\$19.53	\$585.90
14+25	18" CPP	30	\$19.53	\$585.90	31+75	18" CPP	30	\$19.53	\$585.90
21+50	18" CPP	30	\$19.53	\$585.90	37+45	18" CPP	30	\$19.53	\$585.90
35+15	18" CPP	30	\$19.53	\$585.90	17-18				
41+20	18" CPP	40	\$19.53	\$781.20	3+00	18" CPP	30	\$19.53	\$585.90

Other/miscellaneous:	Description	Quantity	Rate	Cost
	Labor: Repair and Trimming of Culvert Inlets/ Outlets \$/hr.	1.50	\$40.00	\$60.00
	Dissipator Placement on Existing Culverts w/ C330 \$/hr.	3	\$155.00	\$465.00
Culvert stakes & markers:	Culvert Markers	28	\$20.00	\$560.00

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION

	\$14,756
Subtotal of Clearing, Exc., Culv.	\$15,822

SURFACING										
Subgrade prep:			Description				Stations/ amount	x	Rate/ sta/amt	Cost
Grade, Shape and Ditch 16' (1B-1C, 1D-1E, 2A-2B, 2C-2D, 2E-2F, 2G-2H, 2J-2K) Subgrade Compaction (1B-1C, 1D-1E, 2A-2B, 2C-2D, 2E-2F, 2G-2H, 2J-2K) Outslope 14' (2L-2M)							33.20	x	\$24.83	\$824.36
							33.20	x	\$20.19	\$670.31
							3.20	x	\$18.35	\$58.72
ROAD SEGMENT 1B to 1C			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of	0+00 to 2+00				
Base Rock Junction	4"-0" crushed	1B to 1C	8	station	2.00	stations	100	\$5.67	\$567	
Base Rock	4"-0" crushed	1B	N/A	junction	1	junctions	22	\$5.67	\$125	
Landings	6"-0" Pit Run	1C	N/A	Landing	1	Landings	50	\$7.42	\$371	
Total Rock for Road Segment:			1B to 1C				172			\$1,063
ROAD SEGMENT 1D to 1E			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of	0+00 to 1+00				
Base Rock Junction	4"-0" crushed	1D to 1E	8	station	1.00	stations	50	\$5.67	\$284	
Base Rock	4"-0" crushed	1D	N/A	junction	1	junctions	22	\$5.67	\$125	
Landings	6"-0" Pit Run	1E	N/A	Landing	1	Landings	50	\$7.42	\$371	
Total Rock for Road Segment:			1D to 1E				122			\$779
ROAD SEGMENT 1A, 2I			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of	n/a				
Landings	6"-0" Pit Run	1A, 2I	N/A	Landing	2	Landings	100	\$7.43	\$743	
Total Rock for Road Segment:			1A, 2I				100			\$743
ROAD SEGMENT 2A to 2B			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of	0+00 to 19+00				
Base Rock	4"-0" crushed	2A to 2B	8	station	19.00	stations	950	\$5.67	\$5,387	
Turnouts	4"-0" crushed	3+50, 6+55, 7+50, 13+80	8	turnout	4	turnouts	88	\$5.67	\$499	
Curve Widening	4"-0" crushed	1+60-5+00	N/A	N/A	N/A	N/A	66	\$5.67	\$374	
Junction										
Base Rock	4"-0" crushed	2A	N/A	junction	1	junctions	22	\$5.67	\$125	
Turn Arounds	4"-0" crushed	15+55	8	turn around	1	turn around	11	\$5.67	\$62	
Junction										
Surface Rock	1 1/2"-0" crushed	2A	N/A	junction	1	junctions	11	\$3.49	\$38	
Traction Rock	3/4"-0" crushed	10+00 to 18+00	2	station	8.0	stations	104	\$4.41	\$459	
Landings	6"-0" Pit Run	2B	N/A	Landing	1	Landings	50	\$7.43	\$372	
Total Rock for Road Segment:			2A to 2B				1,302			\$7,315

ROAD SEGMENT													
2C to 2D		2C to 2D		2C to 2D		2C to 2D		2C to 2D		2C to 2D		2C to 2D	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY)	per station	Sta. to Sta.	0+00 to 1+00	Number of	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost		
Base Rock Junction	4"-0" crushed	2C to 2D	8	station	50	stations	1.00		50	\$5.67	\$284		
Base Rock Landings	4"-0" crushed	2C	N/A	junction	22	junctions	1		22	\$5.67	\$125		
	6"-0" Pit Run	2D	N/A	Landing	50	Landings	1		50	\$7.43	\$372		
Total Rock for Road Segment: 122													
ROAD SEGMENT													
2E to 2F		2E to 2F		2E to 2F		2E to 2F		2E to 2F		2E to 2F		2E to 2F	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY)	per station	Sta. to Sta.	0+00 to 3+00	Number of	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost		
Base Rock Junction	4"-0" crushed	2E to 2F	8	station	50	stations	3.00		150	\$5.67	\$851		
Base Rock Junction	4"-0" crushed	2E	N/A	junction	22	junctions	1		22	\$5.67	\$125		
Surface Rock Landings	1 1/2"-0" crushed	2E	N/A	junction	11	junctions	1		11	\$3.49	\$38		
	6"-0" Pit Run	2F	N/A	Landing	50	Landings	1		50	\$7.43	\$372		
Total Rock for Road Segment: 233													
ROAD SEGMENT													
2G to 2H		2G to 2H		2G to 2H		2G to 2H		2G to 2H		2G to 2H		2G to 2H	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY)	per station	Sta. to Sta.	0+00 to 3+00	Number of	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost		
Base Rock Junction	4"-0" crushed	2G to 2H	8	station	50	stations	3.00		150	\$5.67	\$851		
Base Rock Junction	4"-0" crushed	2G	N/A	junction	22	junctions	1		22	\$5.67	\$125		
Surface Rock Landings	1 1/2"-0" crushed	2G	N/A	junction	11	junctions	1		11	\$3.49	\$38		
	6"-0" Pit Run	2H	N/A	Landing	50	Landings	1		50	\$7.43	\$372		
Total Rock for Road Segment: 233													
ROAD SEGMENT													
2J to 2K		2J to 2K		2J to 2K		2J to 2K		2J to 2K		2J to 2K		2J to 2K	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY)	per station	Sta. to Sta.	0+00 to 4+20	Number of	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost		
Base Rock Junction	4"-0" crushed	2J to 2K	8	station	50	stations	4.20		210	\$5.67	\$1,191		
Base Rock Junction	4"-0" crushed	2J	N/A	junction	22	junctions	1		22	\$5.67	\$125		
Surface Rock	1 1/2"-0" crushed	2J	N/A	junction	11	junctions	1		11	\$3.49	\$38		
Traction Rock Landings	3/4"-0" crushed	0+90 to 1+90	2	station	13	stations	1.0		13	\$4.41	\$57		
	6"-0" Pit Run	2+20, 2K	N/A	Landing	50	Landings	2		100	\$7.43	\$743		
Total Rock for Road Segment: 356													

\$780

\$1,385

\$1,385

\$2,154

ROAD SEGMENT				2L to 2M		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per station	Number of junctions	0+00 to 3+20						
Surface Rock Junction	6"-0" Pit Run	2L to 2M	6	38	3.20	stations				122	\$7.43	\$903
Surface Rock Junction	1 1/2"-0" crushed	2L	N/A	11	1	junctions				11	\$3.49	\$38
Base Rock	6"-0" Pit Run	2L	N/A	22	1	junctions				22	\$7.43	\$163
Landings	6"-0" Pit Run	2M	N/A	40	1	Landings				40	\$7.43	\$297
Total Rock for Road Segment:				2L to 2M						195		\$1,403
ROAD SEGMENT				2X		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per Landing	Number of Landings	0+00 to 3+20						
Landings	6"-0" Pit Run	2X	N/A	20	1.00	Landings				20	\$7.43	\$149
Total Rock for Road Segment:				Landing						20		\$149
Processing:												
				Description		No.sta	Rate/sta		Cost			
				Water, Process & Compact Base Rock:		33.20	\$56.48		\$1,875			
				Water, Process & Compact Surface/Traction Rock:		9.00	\$56.48		\$508			
				</								

SURFACING						
Subgrade prep:						
Description		Stations/ amount	x	Rate/ sta/amt	Cost	
Grade, Shape and Ditch 16' (11-12, 13-14, 15-16, 17-18)		267.60	x	\$24.83	\$6,644.51	
Subgrade Compaction (13-14, 15-16)		122.95	x	\$24.28	\$2,985.23	
Load & haul ditch material (11-12, 13-14, 15-16, : ~ 50% = 131.3 sta.)		131.30	x	\$22.92	\$3,009.40	
Scatter ditch waste materials (11-12, 13-14, 15-16, : ~ 50% = 131.3 sta., 17-18)		136.30	x	\$12.41	\$1,691.48	

ROAD SEGMENT		I1 to I2		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2		0+00 to 139+65				
				Volume (CY)	per	stations	Number of			
Base Rock	4"-0" crushed	9+10	8	station	N/A	N/A	N/A	33		
Subgrade Leveling	1 1/2"-0" crushed	0+00-67+15	N/A	N/A	N/A	N/A	N/A	165	\$3.49	\$576
Subgrade Leveling	1 1/2"-0" crushed	67+15-109+60	N/A	N/A	N/A	N/A	N/A	165	\$3.49	\$576
Subgrade Leveling	1 1/2"-0" crushed	109+60-139+15	N/A	N/A	N/A	N/A	N/A	165	\$3.49	\$576
Culvert Bedding/Backfill	1 1/2"-0" crushed	55+20, 129+75, 137+15	N/A	culvert	22	culverts	3	66	\$3.49	\$230
Culvert Bedding/Backfill	1 1/2"-0" crushed	97+05, 118+00	N/A	culvert	33	culverts	2	66	\$3.49	\$230
Culvert Bedding/Backfill	1 1/2"-0" crushed	95+00	N/A	culvert	44	culverts	1	44	\$3.49	\$154
Culvert Bedding/Backfill	1 1/2"-0" crushed	9+10	N/A	N/A	N/A	N/A	N/A	66		
Dissipator	24"-6"	95+00, 97+05, 98+35	N/A	dissipator	11	dissipators	3	33	\$7.43	\$245
Fill Armor/ Dissipator	24"-6"	7+10	N/A	N/A	N/A	N/A	N/A	33	\$7.43	\$245
Fill Armor/ Dissipator	24"-6"	9+10	N/A	N/A	N/A	N/A	N/A	99		
Total Rock for Road Segment:				I1 to I2				935		

ROAD SEGMENT		I3 to I4		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I3 to I4 Volume (CY) per	0+00 to 73+15 Number of					
Base Rock	4"-0" crushed	52+15	8	station	N/A	stations	N/A	33		
Turnout Reinforcement	4"-0" crushed	19+15, 45+90	N/A	TO	22	TO's	2	44	\$5.67	\$249
Subgrade Leveling	4"-0" crushed	0+00-21+50	N/A	N/A	N/A	N/A	N/A	110	\$5.67	\$624
Subgrade Leveling	4"-0" crushed	21+50-41+70	N/A	N/A	N/A	N/A	N/A	110	\$5.67	\$624
Subgrade Leveling	4"-0" crushed	41+70-58+75	N/A	N/A	N/A	N/A	N/A	165	\$5.67	\$936
Subgrade Leveling	4"-0" crushed	58+75-73+15	N/A	N/A	N/A	N/A	N/A	110	\$5.67	\$624
Surface Rock	1 1/2"-0" crushed	I3-I4	3	station	19	stations	73.2	1,390	\$3.49	\$4,851
Curve Widening	1 1/2"-0" crushed	0+00-21+50	3	curve	11	curves	7	77	\$3.49	\$269
Curve Widening	1 1/2"-0" crushed	21+50-41+70	3	curve	11	curves	6	66	\$3.49	\$230
Curve Widening	1 1/2"-0" crushed	41+70-58+75	3	curve	11	curves	10	110	\$3.49	\$384
Curve Widening	1 1/2"-0" crushed	58+75-73+15	3	curve	11	curves	6	66	\$3.49	\$230
		4+50, 11+00, 16+60, 19+15, 21+00, 24+45, 30+70, 34+55, 43+10, 45+90, 48+60, 50+90, 55+80, 56+55, 65+35								
Turnouts	1 1/2"-0" crushed		3	TO	22	TO's	15	330	\$3.49	\$1,152
Junctions	1 1/2"-0" crushed	37+30, 40+25, 53+00, 72+25	N/A	junction	22	junctions	4	88	\$3.49	\$307
Culvert Bedding/Backfill	1 1/2"-0" crushed	14+25, 21+50, 35+15, 54+05, 64+25, 66+80	N/A	culvert	22	culverts	6	132	\$3.49	\$461
Culvert Bedding/Backfill	1 1/2"-0" crushed	0+00, 41+20	N/A	culvert	33	culverts	2	66	\$3.49	\$230
Culvert Bedding/Backfill	1 1/2"-0" crushed	52+15	N/A	N/A	N/A	N/A	N/A	66		
Fill Armor/ Dissipator	24"-6"	33+05	N/A	N/A	N/A	N/A	N/A	33	\$7.43	\$245
Fill Armor/ Dissipator	24"-6"	52+15	N/A	N/A	N/A	N/A	N/A	66		
Fill Armor/ Dissipator	24"-6"	61+60	N/A	N/A	N/A	N/A	N/A	66	\$7.43	\$490
Total Rock for Road Segment:				I3 to I4			3,128			\$11,905

ROAD SEGMENT		15 to 16		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	15 to 16	Number of	0+00 to 49+80			
Base Rock	4"-0" crushed	15-16 4+75, 10+55, 12+05, 19+75, 27+70, 31+00, 33+55, 38+55, 42+85, 47+20	6	station	38	stations	49.8	1,892	\$5.67	\$10,730
Turnouts	4"-0" crushed	N/A	N/A	TO	22	TO's	10	220	\$5.67	\$1,247
Junctions	4"-0" crushed	5+90, 24+90	N/A	junction	22	junctions	2	44	\$5.67	\$249
Culvert Removal Backfill	4"-0" crushed	16+90	N/A	N/A	N/A	N/A	N/A	22	\$5.67	\$125
Traction Rock	3/4"-0" crushed	0+00-12+00, 18+70-27+70, 38+50-41+50	2	station	13	stations	24.0	312	\$4.41	\$1,376
Culvert Bedding/Backfill	1 1/2"-0" crushed	7+95, 12+75, 15+75, 29+20, 31+75, 37+45	N/A	culvert	22	culverts	6	132	\$3.49	\$461
Total Rock for Road Segment:		15 to 16						2,622		\$14,188
ROAD SEGMENT		17 to 18		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	17 to 18	Number of	0+00 to 5+00			
Subgrade Leveling	1 1/2"-0" crushed	17-18	N/A	N/A	N/A	N/A	N/A	33	\$3.49	\$115
Culvert Bedding/Backfill	1 1/2"-0" crushed	3+00	N/A	culvert	22	culverts	1	22	\$3.49	\$77
Total Rock for Road Segment:		17 to 18						55		\$192
Processing:		Description		No.sta		Rate/sta		Cost		
		Water, Process & Compact: (11-12, 17-18)		144.65		\$56.48		\$8,170		
		Water, Process & Compact Base Rock: (15-16)		49.80		\$56.48		\$2,813		
		Water, Process & Compact Surface Rock: (13-14)		73.15		\$56.48		\$4,132		
		Water, Process & Compact Traction Rock: (15-16)		24.00		\$56.48		\$1,356		
SUB TOTAL FOR IMPROVEMENT SURFACING		24"-6"		6"-0"pr		4"-0"		1 1/2"-0"		
		330		0		2,783		3,315		6,740
								Total		

SPECIAL PROJECTS		Description	Cost
		Seed/ Mulching of Waste Areas (0.2 acre @ \$1,351/acre)	\$270.20
		Front End Loader stockpile mobilization (\$83.00/hr x 2hrs)	\$166.00
SUB TOTAL FOR SPECIAL PROJECTS			\$436
GRAND TOTAL		Subtotal of Surfacing & Spec. Proj.	\$60,354
		Subtotal of Clearing, Exc., Culv.	\$15,822
		Subtotal of Fill Reconstruction 11-12 Sta. 9+10	\$6,652
		Subtotal of Fill Reconstruction 13-14 Sta. 52+15	\$7,806
			\$82,828

Compiled By: Morey

Date: 04/09/2013

Fill Reconstruction Cost EstimateJay Morey
02/25/2013
 Segment: I1 to I2 Station: 9+10
 Fill: 1 Height: 12

Materials	Quantity		\$	Total
18"x60', 16ga, AC	60		\$15.88	\$952.80
Beveled inlet	0		\$0.00	\$0.00
24"-6" Riprap Armor	99	cy	\$7.95	\$787.05
1 1/2"-0" Crushed Rock for Bedding/Backfill	66	cy	\$3.00	\$198.00
4"-0" Crushed Rock for Road	33	cy	\$5.67	\$187.11
Erosion Control	0	ac	\$0.00	\$0.00
Mulch, seed and fert.				

\$2,124.96

Equipment/Labor Costs		Quantity		\$/Hr.	Hours	Total
Excavator, Large						
	Operating	1		\$155.00	14	\$2,170.00
	Stand-By	1		\$93.00	4	\$372.00
Dump Truck						
	Operating	1		\$79.00	6	\$474.00
	Stand-By	1		\$47.40	2	\$94.80
Rubber Tire						
Skidder	Operating	1		\$92.00	6	\$552.00
	Stand-By	1		\$55.20	2	\$110.40
Front-End Loader, Medium						
	Operating	1		\$83.00	4	\$332.00
	Stand-By	1		\$49.80	1	\$49.80
Hand Held Tamper						
	Operating	1		\$10.00	6	\$60.00
	Stand-By	1		\$6.00	2	\$12.00
Water Pump						
	Operating	1		\$10.00	6	\$60.00
Laborer		1		\$40.00	6	\$240.00

\$4,527.00

Project Total	\$6,652
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Fill Reconstruction Cost EstimateJay Morey
02/25/2013Segment: I3 to I4 Station: 52+15
Fill: 1 Height: 12

Materials	Quantity		\$	Total
24"x60', 16ga, AC	60		\$21.24	\$1,274.40
Beveled inlet	1		\$24.00	\$24.00
24"-6" Riprap Armor	66	cy	\$7.95	\$524.70
1 1/2"-0" Crushed Rock for Bedding/Backfill	66	cy	\$3.49	\$230.34
4"-0" Crushed Rock for Road	33	cy	\$5.67	\$187.11
Erosion Control	0	ac	\$0.00	\$0.00
Mulch, seed and fert.				

\$2,240.55

Equipment/Labor Costs	Quantity		\$/Hr.	Hours	Total
Excavator, Large					
Operating	1		\$155.00	16	\$2,480.00
Stand-By	1		\$93.00	6	\$558.00
Dump Truck					
Operating	1		\$79.00	8	\$632.00
Stand-By	1		\$47.40	2	\$94.80
Rubber Tire					
Skidder					
Operating	1		\$92.00	8	\$736.00
Stand-By	1		\$55.20	2	\$110.40
Front-End Loader, Medium					
Operating	1		\$83.00	4	\$332.00
Stand-By	1		\$49.80	1	\$49.80
Hand Held Tamper					
Operating	1		\$10.00	8	\$80.00
Stand-By	1		\$6.00	2	\$12.00
Water Pump					
Operating	1		\$10.00	16	\$160.00
Laborer	1		\$40.00	8	\$320.00

\$5,565.00**Project Total \$7,806**

Sarajarvie Ridge Thin

Sarajarvie Ridge Thin Vacating Project No. 3 Vacating, Point V1

Location/Description	C330	C312	10-12cy DT	Laborer	Timber Faller	Straw	Seed	Volume Pump	Other
Point V1 Remove fill & culvert, pulback fill slopes. Redevelop stream channel	16			6				16	
Straw Mulch & Grass Seeding - 1.0 acres Straw Mulch @ 2 tons/acre Grass Seeding & Labor						60	1		
Waterbarring 2 waterbars @ \$35 ea.									2
Haul and dispose of removed culverts	1		1						
	17	0	1	6	0	60	1	16	2
	\$2,635.00	\$0.00	\$79.00	\$240.00	\$0.00	\$643.80	\$528.00	\$160.00	\$70.00

Total Estimated Cost

\$4,356

**Sarajarvie Ridge Thin Timber Sale
No. 341-13-29**

Mechanical Brushing Costs

Date: 02/27/13

Road Segment/ Point	Road Name	Length (Feet)	Miles	Brush Density	Cost / Mile	Segment Cost
B1 - B17	Crawford Ridge & Tie-thru Roads	19,760	3.74	Medium Heavy	\$1,180.02	\$4,416
B2	Crawford Ridge Side Spur	4,784	0.91	Medium	\$965.47	\$875
B3	Crawford Ridge Side Spur	4,109	0.78	Medium	\$965.47	\$751
B4	Crawford Ridge Side Spur	3,131	0.59	Heavy	\$1,609.12	\$954
B5	Crawford Ridge Side Spur	436	0.08	Light - Medium	\$750.92	\$62
B6	Crawford Ridge Side Spur	5,948	1.13	Heavy	\$1,609.12	\$1,813
B7	Crawford Ridge Side Spur	4,008	0.76	Heavy	\$1,610.12	\$1,222
B8	Crawford Ridge Side Spur	1,409	0.27	Heavy	\$1,611.12	\$430
B9	Crawford Ridge Side Spur	5,965	1.13	Heavy	\$1,612.12	\$1,821
B10	Crawford Ridge Side Spur	1,366	0.26	Heavy	\$1,613.12	\$417
B11	Crawford Ridge Side Spur	1,433	0.27	Heavy	\$1,614.12	\$438
B12	Crawford Ridge Side Spur	756	0.14	Heavy	\$1,615.12	\$231
B13	Crawford Ridge Side Spur	2,167	0.41	Heavy	\$1,616.12	\$663
B14-B32	Mulak Ridge Road	16,512	3.13	Medium	\$965.47	\$3,019
B15	Mulak Ridge Road Junction	340	0.06	Light	\$643.65	\$41
B16	Crawford Ridge Tie-thru Side Spur	576	0.11	Medium	\$965.47	\$105
B18	(Does not exist)					
B19	Crawford Ridge Tie-thru Side Spur	2,747	0.52	Very Heavy	\$1,877.30	\$977
B20	Mulak Ridge Road Side Spur	3,937	0.75	Heavy	\$1,615.12	\$1,204
B21	Mulak Ridge Road Side Spur	1,044	0.20	Very Heavy	\$1,877.30	\$371
B22	Mulak Ridge Road Side Spur	551	0.10	Light - Medium	\$750.92	\$78
B23	Mulak Ridge Road Side Spur	1,760	0.33	Light	\$643.65	\$215

B24	Mulak Ridge Road Side Spur	274	0.05	Light	\$643.65	\$33
B25	Mulak Ridge Road Side Spur	784	0.15	Medium	\$965.47	\$143
B26	Mulak Ridge Road Side Spur	1,356	0.26	Medium	\$965.47	\$248
B27	Mulak Ridge Road Side Spur	2,620	0.50	Medium	\$965.47	\$479
B28	Mulak Ridge Road Side Spur	347	0.07	Medium	\$965.47	\$63
B29	Mulak Ridge Road Side Spur	218	0.04	Medium	\$965.47	\$40
B30	Mulak Ridge Road Side Spur	1,901	0.36	Medium Heavy	\$1,180.02	\$425
B31	Mulak Ridge Road Side Spur	1,352	0.26	Medium Heavy	\$1,180.02	\$302
B33-B38	West Branch Road	12,994	2.46	Medium	\$965.47	\$2,376
B34	West Branch Road Side Spur	2,639	0.50	Medium	\$965.47	\$483
B35	West Branch Road Side Spur	1,332	0.25	Heavy	\$1,615.12	\$407
B36	West Branch Road Side Spur	477	0.09	Heavy	\$1,615.12	\$146
B37	West Branch Road Side Spur	916	0.17	Heavy	\$1,615.12	\$280
Totals			20.82		\$1,226	\$25,532

CRUSHED ROCK COST

SALE NAME:	Sarajarvie Ridge Thin
PROJECT:	Nos. 1 and 2
QUARRY:	Ebsen Road Stockpile 11/2"-0"

MATERIAL: Crushed

DATE: 04/09/2013
BY: Morey

[illegible]

ROCK HAUL:

Truck type: D20 No. trucks: 4
 Delay min.: 8 Efficiency: 85%

Ave haul:	\$2.22	/cy
Load:	\$0.48	/cy
Spread:	\$0.78	/cy

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

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

Production: cy/day = 1,438

CRUSHED ROCK HAUL COSTS 3,370 cy @ \$3.49 /cy

CRUSHED ROCK COST

SALE NAME:	Sarajarvie Ridge Thin
PROJECT:	Nos. 1 and 2
QUARRY:	Ebsen Road Stockpile 3/4"-0"

MATERIAL: Crushed

DATE: 04/09/2013
BY: Morey

[illegible]

ROCK HAUL:

Truck type: D20 No. trucks: 4
 Delay min.: 8 Efficiency: 85%

Ave haul:	\$3.15	/cy
Load:	\$0.48	/cy
Spread:	\$0.78	/cy

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

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

Production: cy/day = 1,017

CRUSHED ROCK HAUL COSTS 429 cy @ \$4.41 /cy

CRUSHED ROCK COST

SALE NAME: Sarajarvie Ridge Thin
PROJECT: Nos. 1 and 2
QUARRY: Hamilton Creek Road Stockpile 4"-6"

MATERIAL: 4"-0" Crushed

DATE: 04/09/2013
BY: Morey

[illegible]

ROCK HAUL:

Truck type: D20 No. trucks: 4
 Delay min.: 8 Efficiency: 85%

Ave haul:	\$4.40	/cy
Load:	\$0.48	/cy
Spread:	\$0.78	/cy

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

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

Production: cy/day = 1,300

CRUSHED ROCK HAUL COSTS 4,762 cy @ \$5.67 /cy

PIT RUN ROCK COST

SALE NAME:	Sarajarvie Ridge Thin
PROJECT:	No. 1
QUARRY:	Hamilton Creek Quarry

MATERIAL: Pit Run

DATE: 04/09/2013
BY: Morey

[illegible]

ROCK HAUL:

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

Ave haul:	\$5.02	/cy
Load:	\$0.84	/cy
Spread:	\$1.56	/cy

Truck type: D12 No. trucks: 4
 Delay min.: 6 Efficiency: 85%

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

Production: cy/day = 503

PIT RUN ROCK HAUL COSTS

704 cy @ \$7.43 /cy

RIP RAP ROCK COST

SALE NAME:	Sarajarvie Ridge Thin
PROJECT:	No. 2
QUARRY:	Hamilton Creek Quarry

MATERIAL: Rip Rap

DATE: 04/09/2013
BY: Morey

[illegible]

ROCK HAUL:

Truck type:	D12	No. trucks:	2
Delay min.:	6	Efficiency:	85%
Truck type:	D10	No. trucks:	2
Delay min.:	5	Efficiency:	85%

Ave haul:	\$5.25	/cy
Load:	\$2.70	/cy
Develop:		/cy

Production: cy/day = 240

RIP RAP ROCK HAUL COSTS 330 cy @ \$7.95 /cy

Projects Road Maintenance Cost Summary

Sale: Sarajarvie Ridge Thin
Date: 05-Apr-13
By: Jay Morey

Type	Equipment/Rationale	Hours	Rate	Cost
Final Haul Road Maintenance Haul Route	Grader 14G Dump Truck 12CY FE Loader C966 Vibratory Roller Water Truck 2,500 gallon	24 10 10 18 12	\$100 \$79 \$83 \$77 \$89	\$2,400 \$790 \$830 \$1,386 \$1,068
Total				\$6,474

Miles/day	Distance(miles)	Days
1.5	4.1	2.7
1.5	4.1	2.7

Production Rates
 Grader
 Vibratory Roller
 Hamilton Creek Road, Ebsen Road from Hamilton Creek Junct. to Pt. I3

Road Maintenance Cost Summary

Sale: Sarajarvie Ridge Thin
 Date: 10-Apr-13
 By: J. Johnson

MBF: 8,094
 \$\$/MBF: \$3.17

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost	Production Rates			
							Production Rates	Miles/day	Distance(miles)	Days
Interim Road Maintenance	Grader 14G	\$675	1	30	\$93	\$3,465				
	Dump Truck 12CY	\$141	1	16	\$73	\$1,309	Grader	3.0	8.0	2.7
	FE Loader C966	\$675	1	8	\$77	\$1,291				
Final Road Maintenance	Grader 14G	\$675	1	50	\$93	\$5,325				
	Dump Truck 12CY x 2	\$141	2	16	\$73	\$2,477	Grader	1.5	8.0	5.3
	FE Loader C966	\$675	1	16	\$77	\$1,907	Vibratory Roller*	1.5	8.0	5.3
	Excavator C315	\$699	1	16	\$94	\$2,203				
	Vibratory Roller	\$675	1	40	\$72	\$3,555				
Total	Water Truck 2,500 gallon	\$165	1	40	\$83	\$3,485				
	Labor	\$0	1	16	\$38	\$608				
						\$25,625				

*Final Road Maintenance Only

Sarajarvie Ridge Thin TIMBER CRUISE REPORT FY 2013

1. Sale Area Location: Areas 1 and 2 are located in Section 22, 23, 26, and 27, T6N, R7W, W.M., Clatsop County, Oregon.

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

3. Sale Acreage by Area:

Area	Treatment	Gross Acres	Non-thinnable	Existing R/W	New R/W	Stream Buffer	Net Acres	Survey Method
1	Partial Cut	266	0	0	0	5	261	GIS
2	Partial Cut	202	4	2	3	33	160	GIS
3	Right-of-Way	3	0	0	0	0	3	GIS
TOTALS		471	4	2	3	38	424	

4. Cruisers and Cruise Dates: Areas 1 and 2 were cruised by Derek Bangs, Dave Rygell, Nick Haile, and Ty Williams during March of 2013.

5. Cruise Method and Computation: Areas 1 and 2 are partial cut thinning units and were variable plot cruised using a 40 BAF. These plots are located on a 4 chain by 16 chain grid, with every fourth plot measured and graded. A total of 60 plots were sampled, with 19 measured and graded plots, and 41 count plots. Alder, Sitka Spruce and Cedar are reserve species and were recorded as leave trees.

All cruisers used Corvallis MicroTechnology (CMT) data collectors. Data was downloaded to the Atterbury Super A.C.E. program for computations. See the attached Cruise Design for more details on the cruise method. The cruise calculations were processed in the Astoria district office.

AREA	CRUISE	TRACT	TYPE	ACRES
1 & 2	T6NR7W27	AREA 12	00PC	421
R/W	T6NR7W27	AREA 12	R/W	3

6. Timber Description: Areas 1 & 2 are partial cut thinning units, approximately 70 years old, dominated by Douglas-fir, with a small component of western hemlock. The average Douglas-fir tree size to be harvested is 23 inches DBH, with an average bole height of 84 feet to a merchantable top (6 inch d.i.b.). The average hemlock tree size is 17 inches DBH and bole height of 47 feet to a merchantable top (6 inch d.i.b.). The average volume per acre to be harvested (net) is 18.8 mbf.

Area 3 (Right-of-Way) totals three acres of in-sale right-of-way. The timber type is similar to the Sale Area therefore the average cruise volume (net) from Area 1 and 2 was applied to these acres. The average volume per acre to be harvested is 53.2 mbf.

7. Statistical Analysis and Stand Summary: (See "Statistics" - Type Reports, attached Statistics for Stand B.F. volumes)

Areas	Estimated CV	Target SE%	Actual CV	Actual SE%
1 and 2 (PC)	55%	10%	35.9%	4.6%

8. Volumes by Species and Log Grade: (See "Species, Sort, Grade" - Project Report, attached).
 Volumes by Species and Grade for All Sale Areas: (MBF) Volumes do not include "in-growth."

Species*	DBH	Net Vol.	2 Saw	3 Saw	4 Saw	Camp Run	% D & B	% Sale
Douglas-fir	23"	7,421	6,022	1,209	190	0	6.6%	92%
Hemlock/True-fir	17"	673	448	222	3	0	2%	08%
TOTALS		8,094	6,470	1,431	193	0		100%

*There is less than 1 MBF of western red cedar, red alder, big leaf maple, and sitka spruce

9. Approvals:

Prepared by: Kevin Berry

Date: 03/29/2013

Unit Forester Approval: 

Date: 4/26/13

- 10. Attachments:**
- Cruise Design and Map – 3 pages
 - Volume Report - 3 pages
 - Statistics Reports - 7 page
 - Log Stock Table - 3 page
 - Stand Table Summary – 2 page

X:\Jewell_Unit\Timber Sales\2013\Sarajarvie Ridge Thin\Sale Prep\Cruise_Report_Sarajarvie_Rdg_Thin.docx

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Sarajarvie Ridge Thin **Area(s)** 1 & 2

Harvest Type: (PC) "Partial" Cut"

Approx. Cruise Acres: 411 **Estimated CV%** 55% Net BF **SE% Objective** 10 Net BF

Planned Sale Volume: 6,225 MBF **Estimated Sale Area Value/Acre:** \$5,250
(15 mbf acre.)

- A. Cruise Goals:** (a) Grade minimum 75 conifer
(b) Sample 53 cruise plots (13 grade/ 40 count); (c) Other goals (X Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes.

B. Cruise Design:

- 1. Plot Cruises:** BAF 40 (Full point; Half point) (circle one)
Cruise Line Direction(s) Area 1 AZ= 45'
Area 2 AZ =235'

Cruise Line Spacing 16 (chains)
Cruise Plot Spacing 4 (chains)
Grade/Count Ratio 1/3

The BA target is 160 sqft. Leaving 4 trees every plot. Do not count Alder for Basal Area. Record all hardwood as camp run. Record all cedar as leave trees. Record all snags as SN and record total height and diameter. If plot lands in buffer then offset at least 1/2 chain outside the buffer

C. Tree Measurements:

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

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

5. **Tree Segments:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12'; for hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each 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 = Camprun; 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 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: Kevin Berry

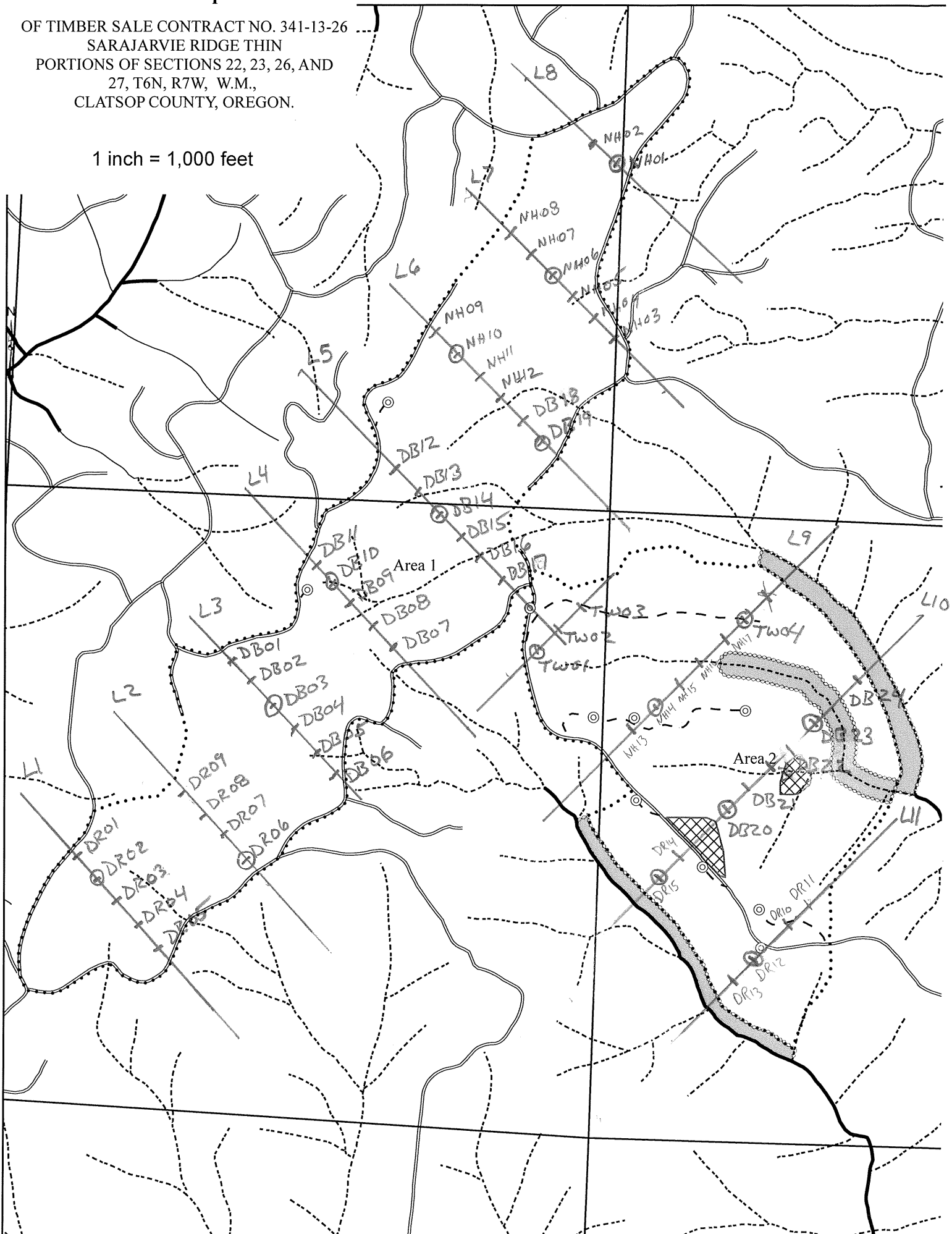
Approved by: _____

Date: 2/7/2012

Cruise Map

OF TIMBER SALE CONTRACT NO. 341-13-26
SARAJARVIE RIDGE THIN
PORTIONS OF SECTIONS 22, 23, 26, AND
27, T6N, R7W, W.M.,
CLATSOP COUNTY, OREGON.

1 inch = 1,000 feet



TC		Species, Sort Grade - Board Foot Volumes (Project)																
T06N R07W S27 TyR/W3.00 T06N R07W S27 TyTAKE421.00							Project: SARAJARV Acres424.00							Page 1 Date 4/1/2013 Time 3:09:26PM				
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	Bd Ft	CF/ Lf			
					4-5		6-11	12-16	17+	12-20	21-30	31-35				36-99		
D	DOCU		100.0	883										7		0.00	7.9	
D	DO2S	81	2.0	14,494	14,204	6,022		0	43	56	4	3	9	84	37	389	2.30	36.6
D	DO3S	16	2.0	2,909	2,851	1,209		100	0		3	5	12	80	37	106	0.89	27.0
D	DO4S	3	2.5	460	449	190		100			35	53		13	23	36	0.60	12.3
D Totals		92	6.6	18,746	17,504	7,422		19	35	46	5	5	9	81	32	209	1.56	83.7
C	DOCU		100.0	1											10		0.00	.0
C	DO2S	42		2	2	1			100					100	40	218	2.12	.0
C	DO3S	54		2	2	1		100				8	21	71	36	71	1.10	.0
C	DO4S	4		0	0	0		100			100				19	20	0.58	.0
C Totals		0	14.9	4	4	1		57	43		4	4	11	81	32	81	1.23	.0
H	DO2S	66		1,058	1,058	448		31		69			68	32	38	150	0.95	7.1
H	DO3S	34	5.8	555	523	222		100				32		68	36	110	1.16	4.8
H Totals		8	2.0	1,613	1,581	670		54		46		10	46	44	37	134	1.03	11.8
A	DOCR	100		1	1	0		100			54	26		21	23	53	0.94	.0
A Totals		0		1	1	0		100			54	26		21	23	53	0.94	.0
M	DOCU		100.0	0											7		0.00	.0
M	DOCR	100		1	1	0		20	80		80		20		28	125	1.20	.0
M Totals		0	19.4	1	1	0		20	80		80		20		21	83	1.06	.0
S	DO2S	80		1	1	0			100					100	40	290	1.77	.0
S	DO3S	20		0	0	0		100						100	29	35	0.54	.0
S Totals		0		1	1	0		19	81					100	32	120	1.05	.0
Totals			6.3	20,366	19,090	8,094		22	32	46	4	5	12	78	33	200	1.49	95.6

T		Species, Sort Grade - Board Foot Volumes (Type)														Page		1	
TSPCSTGR		Project: SARAJARV														Date		4/4/2013	
																Time		2:05:51PM	
T06N R07W S27 TTAKE														T06N R07W S27 TTAKE					
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt										
06N	07W	27	AREA12	TAKE	421.00	60	38	1	W										
			%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log			Logs Per /Acre
Spp	So	Gr	Net BdFt	Def%	Gross	Net	Net MBF	Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/Lf	
	T	ad						4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99				
D	DO	CU		00.0	874											7		0.00	7.8
D	DO	2S	80	2.0	14,277	13,988	5,889		0	44	56	4	3	9	84	37	387	2.30	36.2
D	DO	3S	17	2.0	2,895	2,838	1,195		100			3	5	12	81	37	106	0.89	26.8
D	DO	4S	3	2.5	459	447	188		100			34	53		13	23	36	0.60	12.3
D Totals			92	6.7	18,505	17,273	7,272		19	35	45	5	5	9	81	32	208	1.55	83.1
H	DO	2S	66		1,052	1,052	443		32		68			68	32	38	149	0.95	7.0
H	DO	3S	34	5.9	554	522	220		100				32		68	36	110	1.16	4.7
H Totals			8	2.0	1,606	1,574	663		54		46		10	46	44	37	134	1.03	11.8
Type Totals				6.3	20,112	18,847	7,935		22	32	45	4	5	12	78	33	199	1.48	94.9

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)														Page 1					
		Project: SARAJARV														Date 4/4/2013	Time 2:05:51PM				
T06N R07W S27 TR/W										T06N R07W S27 TR/W											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
06N	07W	27	AREA12	R/W	3.00	60	121	1	W												
S So Gr T rt ad Spp			% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre		
								Log Scale Dia.				Log Length				Ln	Bd	CF/			
										4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	Ft	Lf	
D	DO	CU			100.0	2,089												8		0.00	15.1
D	DO	2S	89		1.2	45,007	44,468	133			0	26	74	2	2	10	85	38	489	2.75	90.9
D	DO	3S	9		1.2	4,789	4,731	14			96	4		5	14	19	62	33	103	0.96	45.7
D	DO	4S	2		1.7	678	667	2			100			51	40		9	20	35	0.62	18.9
D Totals			94		5.1	52,563	49,866	150			11	24	66	3	4	11	82	32	292	2.04	170.7
H	DO	2S	71			1,809	1,809	5			19		81			42	58	39	208	1.30	8.7
H	DO	3S	29		4.6	739	705	2			100				24		76	37	112	1.16	6.3
H Totals			5		1.3	2,548	2,514	8			42		58		7	30	63	38	168	1.25	15.0
C	DO	CU			100.0	87												10		0.00	.4
C	DO	2S	42			213	213	1				100					100	40	218	2.12	1.0
C	DO	3S	54			264	264	1			100				8	21	71	36	71	1.10	3.7
C	DO	4S	4			20	20	0			100			100				19	20	0.58	1.0
C Totals			1		14.9	583	496	1			57	43		4	4	11	81	32	81	1.23	6.1
A	DO	CR	100			148	148	0			100			54	26		21	23	53	0.94	2.8
A Totals			0			148	148	0			100			54	26		21	23	53	0.94	2.8
M	DO	CU			100.0	18												7		0.00	.3
M	DO	CR	100			76	76	0			20	80		80		20		28	125	1.20	.6
M Totals			0		19.4	95	76	0			20	80		80		20		21	83	1.06	.9
S	DO	2S	80			89	89	0				100					100	40	290	1.77	.3
S	DO	3S	20			21	21	0			100						100	29	35	0.54	.6
S Totals			0			110	110	0			19	81					100	32	120	1.05	.9
Type Totals					5.1	56,046	53,211	160			13	23	64	3	4	12	81	32	271	1.92	196.4

TC TSTATS				STATISTICS				PAGE 1			
				PROJECT	SARAJARV		DATE 3/29/2013				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
06N	07W	27	AREA12	00PC	421.00	60	448	1	W		
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		60	448	7.5							
CRUISE		19	121	6.4	38,138	.3					
DBH COUNT REFOREST COUNT BLANKS 100 %		41	293	7.1							
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
DOUGLEAV		51	26.9	31.0	107		140.7	34,073	32,610	7,138	6,940
DOUG FIR		35	33.5	22.9	84		96.0	18,505	17,273	4,282	4,138
SNAG		16	10.3	20.9	62		24.7				
WHEMLOCK		3	10.3	16.5	47		15.3	1,606	1,574	450	450
CEDLEAV		7	4.7	20.4	44		10.7	583	496	255	240
HEMLEAV		1	1.5	27.0	84		6.0	981	981	263	263
ALDRLEAV		6	2.8	16.3	23		4.0	148	148	60	60
MAPLELV		1	.3	20.0	64		.7	95	76	24	20
SPRUCELV		1	.3	20.0	102		.7	110	110	31	31
TOTAL		121	90.6	24.6	80		298.7	56,101	53,268	12,502	12,143
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL: 68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.			
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15			
DOUGLEAV		39.3	5.5	1,245	1,317	1,390					
DOUG FIR		54.0	9.1	609	670	731					
SNAG											
WHEMLOCK		115.5	79.9	51	253	456					
CEDLEAV		68.6	27.9	91	126	161					
HEMLEAV											
ALDRLEAV		37.7	16.8	46	55	64					
MAPLELV											
SPRUCELV											
TOTAL		83.6	7.6	717	776	835	279	70	31		
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.			
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15			
DOUGLEAV		26.4	3.4	26	27	28					
DOUG FIR		98.7	12.7	29	33	38					
SNAG		162.0	20.9	8	10	12					
WHEMLOCK		211.8	27.3	7	10	13					
CEDLEAV		418.0	53.9	2	5	7					
HEMLEAV		269.6	34.8	1	2	2					
ALDRLEAV		685.0	88.4	0	3	5					
MAPLELV		774.6	99.9	0	0	1					
SPRUCELV		774.6	99.9	0	0	1					
TOTAL		49.8	6.4	85	91	96	99	25	11		
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.			
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15			
DOUGLEAV		24.3	3.1	136	141	145					
DOUG FIR		93.7	12.1	84	96	108					
SNAG		152.5	19.7	20	25	30					
WHEMLOCK		209.9	27.1	11	15	19					
CEDLEAV		413.5	53.3	5	11	16					

TC TSTATS				STATISTICS				PAGE	2
				PROJECT SARAJARV				DATE	3/29/2013
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07W	27	AREA12	00PC	421.00	60	448	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		269.6	34.8	4	6	8			
ALDRLEAV		656.1	84.6	1	4	7			
MAPLELV		774.6	99.9	0	1	1			
SPRUCELV		774.6	99.9	0	1	1			
TOTAL		35.1	4.5	285	299	312	49	12	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		26.7	3.4	31,487	32,610	33,732			
DOUG FIR		93.7	12.1	15,185	17,273	19,361			
SNAG									
WHEMLOCK		211.8	27.3	1,144	1,574	2,004			
CEDLEAV		425.7	54.9	224	496	769			
HEMLEAV		269.6	34.8	640	981	1,322			
ALDRLEAV		632.5	81.6	27	148	268			
MAPLELV		774.6	99.9	0	76	153			
SPRUCELV		774.6	99.9	0	110	220			
TOTAL		35.9	4.6	50,800	53,268	55,736	52	13	6

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT	SARAJARV			DATE	4/4/2013		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
06N	07W	27	AREA12	TAKE	421.00	60	167	1	W		
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		60	167	2.8							
CRUISE		10	38	3.8	18,431	.2					
DBH COUNT											
REFOREST											
COUNT		36	129	3.6							
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
DOUG FIR		35	33.5	22.9	84		96.0	18,505	17,273	4,282	4,138
WHEMLOCK		3	10.3	16.5	47		15.3	1,606	1,574	450	450
TOTAL		38	43.8	21.6	75		111.3	20,112	18,847	4,732	4,589
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		54.0	9.1	609	670	731					
WHEMLOCK		115.5	79.9	51	253	456					
TOTAL		58.3	9.4	577	637	697	136	34	15		
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		98.7	12.7	29	33	38					
WHEMLOCK		211.8	27.3	7	10	13					
TOTAL		85.5	11.0	39	44	49	292	73	32		
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		93.7	12.1	84	96	108					
WHEMLOCK		209.9	27.1	11	15	19					
TOTAL		83.2	10.7	99	111	123	276	69	31		
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		93.7	12.1	15,185	17,273	19,361					
WHEMLOCK		211.8	27.3	1,144	1,574	2,004					
TOTAL		86.5	11.2	16,745	18,847	20,949	298	75	33		

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT SARAJARV				DATE	4/4/2013	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
06N	07W	27	AREA12	R/W	3.00	60	448	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL		60	448	7.5						
CRUISE		19	121	6.4	273		44.4			
DBH COUNT										
REFOREST										
COUNT		41	293	7.1						
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
DOUG FIR		86	60.4	26.8	94	236.7	52,563	49,866	11,418	11,077
SNAG		16	10.3	20.9	62	24.7				
WHEMLOCK		4	12.1	18.0	51	21.3	2,548	2,514	703	703
WR CEDAR		7	4.7	20.4	44	10.7	583	496	255	240
R ALDER		6	2.8	16.3	23	4.0	148	148	60	60
BL MAPLE		1	.3	20.0	64	.7	95	76	24	20
S SPRUCE		1	.3	20.0	102	.7	110	110	31	31
TOTAL		121	90.9	24.5	80	298.7	56,046	53,211	12,490	12,131
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		53.0	5.7	994	1,054	1,114				
SNAG										
WHEMLOCK		88.1	50.3	175	353	530				
WR CEDAR		68.6	27.9	91	126	161				
R ALDER		37.7	16.8	46	55	64				
BL MAPLE										
S SPRUCE										
TOTAL		83.6	7.6	717	776	835	279	70	31	
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		52.3	6.7	56	60	65				
SNAG		162.0	20.9	8	10	12				
WHEMLOCK		169.7	21.9	9	12	15				
WR CEDAR		418.0	53.9	2	5	7				
R ALDER		685.0	88.4	0	3	5				
BL MAPLE		774.6	99.9	0	0	1				
S SPRUCE		774.6	99.9	0	0	1				
TOTAL		44.3	5.7	86	91	96	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		
DOUG FIR		44.1	5.7	223	237	250				
SNAG		152.5	19.7	20	25	30				
WHEMLOCK		167.2	21.6	17	21	26				
WR CEDAR		413.5	53.3	5	11	16				
R ALDER		656.1	84.6	1	4	7				
BL MAPLE		774.6	99.9	0	1	1				
S SPRUCE		774.6	99.9	0	1	1				
TOTAL		35.1	4.5	285	299	312	49	12	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		

TC TSTATS				STATISTICS				PAGE	2
				PROJECT SARAJARV				DATE	4/4/2013
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07W	27	AREA12	R/W	3.00	60	448	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
DOUG FIR		44.1	5.7	47,028	49,866	52,705			
SNAG									
WHEMLOCK		168.5	21.7	1,968	2,514	3,061			
WR CEDAR		425.7	54.9	224	496	769			
R ALDER		632.5	81.6	27	148	268			
BL MAPLE		774.6	99.9	0	76	153			
S SPRUCE		774.6	99.9	0	110	220			
TOTAL		38.9	5.0	50,544	53,211	55,878	60	15	7

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT SARAJARV				DATE	4/4/2013	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
06N	07W	27	AREA12	LEAV	421.00	60	281	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL		60	281	4.7						
CRUISE		19	83	4.4	19,707		.4			
DBH COUNT										
REFOREST										
COUNT		41	179	4.4						
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		51	26.9	31.0	107	140.7	34,073	32,610	7,138	6,940
SNAG		16	10.3	20.9	62	24.7				
CEDLEAV		7	4.7	20.4	44	10.7	583	496	255	240
HEMLEAV		1	1.5	27.0	84	6.0	981	981	263	263
ALDRLEAV		6	2.8	16.3	23	4.0	148	148	60	60
MAPLELV		1	.3	20.0	64	.7	95	76	24	20
SPRUCELV		1	.3	20.0	102	.7	110	110	31	31
TOTAL		83	46.8	27.1	84	187.3	35,989	34,421	7,770	7,554
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		39.3	5.5	1,245	1,317	1,390				
SNAG										
CEDLEAV		68.6	27.9	91	126	161				
HEMLEAV										
ALDRLEAV		37.7	16.8	46	55	64				
MAPLELV										
SPRUCELV										
TOTAL		87.5	9.6	759	839	920	306	76	34	
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUGLEAV		26.4	3.4	26	27	28				
SNAG		162.0	20.9	8	10	12				
CEDLEAV		418.0	53.9	2	5	7				
HEMLEAV		269.6	34.8	1	2	2				
ALDRLEAV		685.0	88.4	0	3	5				
MAPLELV		774.6	99.9	0	0	1				
SPRUCELV		774.6	99.9	0	0	1				
TOTAL		54.0	7.0	44	47	50	116	29	13	
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		24.3	3.1	136	141	145				
SNAG		152.5	19.7	20	25	30				
CEDLEAV		413.5	53.3	5	11	16				
HEMLEAV		269.6	34.8	4	6	8				
ALDRLEAV		656.1	84.6	1	4	7				
MAPLELV		774.6	99.9	0	1	1				
SPRUCELV		774.6	99.9	0	1	1				
TOTAL		19.1	2.5	183	187	192	14	4	2	
CL:	68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	

TC TSTATS				STATISTICS				PAGE	2
				PROJECT	SARAJARV			DATE	4/4/2013
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07W	27	AREA12	LEAV	421.00	60	281	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
DOUGLEAV		26.7	3.4	31,487	32,610	33,732			
SNAG									
CEDLEAV		425.7	54.9	224	496	769			
HEMLEAV		269.6	34.8	640	981	1,322			
ALDRLEAV		632.5	81.6	27	148	268			
MAPLELV		774.6	99.9	0	76	153			
SPRUCELV		774.6	99.9	0	110	220			
TOTAL		<i>15.4</i>	<i>2.0</i>	<i>33,737</i>	<i>34,421</i>	<i>35,105</i>	<i>9</i>	<i>2</i>	<i>1</i>

TC PLOGSTVB		Log Stock Table - MBF																	
T06N R07W S27 TyR/W 3.00 T06N R07W S27 TyTAKE 421.00					Project: SARAJARV Acres 424.00					Page 1 Date 3/29/2013 Time 11:39:00AM									
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+
D	DO	CU	2	7	100.0														
D	DO	CU	6	210	100.0														
D	DO	CU	8	40	100.0														
D	DO	CU	10	0	100.0														
D	DO	CU	12	78	100.0														
D	DO	CU	13	38	100.0														
D	DO	CU	20	1	100.0														
D	DO	2S	16	58		58	.8					0		57			1		
D	DO	2S	18	1		1	.0									1			
D	DO	2S	20	199		199	2.7							87			112		
D	DO	2S	22	1		1	.0										1		
D	DO	2S	23	0		0	.0					0							
D	DO	2S	24	178		178	2.4					51					127		
D	DO	2S	25	0		0	.0				0								
D	DO	2S	26	0		0	.0					0							
D	DO	2S	27	0		0	.0					0							
D	DO	2S	29	0		0	.0					0							
D	DO	2S	32	378		378	5.1					71		1	301		5	1	
D	DO	2S	34	160		160	2.2										160		
D	DO	2S	36	151		151	2.0										151		
D	DO	2S	37	28		28	.4				28								
D	DO	2S	40	4,991	2.5	4,868	65.6					608		1345	1918		977	20	
D	DO	3S	15	11		11	.2					11	0						
D	DO	3S	16	12		12	.2					12							
D	DO	3S	17	10		10	.1				9	0	0						
D	DO	3S	19	0		0	.0				0	0							
D	DO	3S	20	0		0	.0				0								
D	DO	3S	21	0		0	.0				0								
D	DO	3S	22	0		0	.0				0								
D	DO	3S	23	0		0	.0				0	0							
D	DO	3S	24	0		0	.0					0							
D	DO	3S	26	0		0	.0				0								
D	DO	3S	27	35		35	.5				34	0							
D	DO	3S	30	23		23	.3				0	23							
D	DO	3S	31	42		42	.6				19	23							
D	DO	3S	32	111	6.7	103	1.4				0	103							
D	DO	3S	33	1		1	.0				0	0							

TC PLOGSTVB			Log Stock Table - MBF																
T06N R07W S27 TyR/W T06N R07W S27 TyTAKE				3.00 421.00		Project: SARAJARV Acres 424.00		Page 2 Date 3/29/2013 Time 11:39:00AM											
S T Spp	So Gr rt de	Log Len	Gross MBF	Def %	Net MBF	% Spe	Net Volume by Scaling Diameter in Inches												
							2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+	
D	DO 3S	37	0		0	.0			0										
D	DO 3S	40	988	1.7	971	13.1			227	238	506	0							
D	DO 4S	12	0		0	.0			0										
D	DO 4S	13	0		0	.0			0										
D	DO 4S	14	0		0	.0					0								
D	DO 4S	15	8		8	.1				8									
D	DO 4S	16	10		10	.1				10									
D	DO 4S	17	15		15	.2			15	0									
D	DO 4S	18	22		22	.3			11	11									
D	DO 4S	19	0		0	.0			0										
D	DO 4S	20	11		11	.1				11									
D	DO 4S	21	0		0	.0				0									
D	DO 4S	22	75		75	1.0			35	40									
D	DO 4S	28	25		25	.3			25										
D	DO 4S	37	29	16.7	24	.3			24										
D	Totals		7,948	6.6	7,422	91.7			337	382	708	731	1433	2275	1294	261			
C	DO CU	10	0	100.0															
C	DO 2S	40	1		1	42.9					1								
C	DO 3S	27	0		0	4.2			0										
C	DO 3S	33	0		0	11.0			0										
C	DO 3S	38	0		0	11.7			0										
C	DO 3S	39	0		0	8.8					0								
C	DO 3S	40	0		0	17.5				0									
C	DO 4S	18	0		0	1.8			0										
C	DO 4S	20	0		0	2.1			0										
C	Totals		2	14.9	1	.0			0	0	0	1							
H	DO 2S	32	305		305	45.5							305						
H	DO 2S	40	143		143	21.4			141				2						
H	DO 3S	26	70		70	10.4					70								
H	DO 3S	40	166	8.3	152	22.6				152									
H	Totals		684	2.0	670	8.3			141	152	70		307						
A	DO CR	15	0		0	25.3					0								
A	DO CR	16	0		0	17.2					0								
A	DO CR	20	0		0	11.0			0										

TC PLOGSTVB		Log Stock Table - MBF																	
T06N R07W S27 TyR/W 3.00 T06N R07W S27 TyTAKE 421.00						Project: SARAJARV Acres 424.00						Page 3 Date 3/29/2013 Time 11:39:00AM							
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	CR	24	0		0	11.5			0									
A	DO	CR	30	0		0	14.3			0									
A	DO	CR	40	0		0	20.6				0								
A	Totals			0		0	.0			0	0	0							
M	DO	CU	7	0	100.0														
M	DO	CR	20	0		0	80.0							0					
M	DO	CR	35	0		0	20.0			0									
M	Totals			0	19.4	0	.0			0				0					
S	DO	2S	40	0		0	80.6							0					
S	DO	3S	40	0		0	19.4			0									
S	Totals			0		0	.0			0				0					
Total	All Species			8,635	6.3	8,094	100.0			479	534	778	732	1433	2583	1294	261		

TC PSTNDSUM				Stand Table Summary								Page 1			
												Date: 4/4/2013			
T06N R07W S27 TyR/W 3.00 T06N R07W S27 TyTAKE 421.00				Project SARAJARV Acres 424.00								Time: 1:09:43PM 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	14	2	86	64	2.566	2.74	2.57	26.0	70.0		67	180	283	76	
D	15	2	86	61	2.235	2.74	2.24	29.0	70.0		65	156	275	66	
D	16	4	85	111	3.929	5.49	7.86	28.3	97.5		222	766	941	325	
D	18	2	89	88	1.552	2.74	1.55	55.0	220.0		85	341	362	145	
D	21	6	87	109	3.421	8.23	7.98	39.9	158.6		318	1,266	1,349	537	
D	22	8	88	123	4.156	10.97	10.39	49.8	207.0		517	2,151	2,194	912	
D	23	1	89	129	.007	.02	.02	47.7	196.7		1	4	4	2	
D	24	12	87	123	5.239	16.46	13.97	53.4	217.5		746	3,038	3,161	1,288	
D	25	3	87	105	.810	2.76	1.63	59.5	289.3		97	470	410	199	
D	26	14	87	133	3.741	13.79	11.22	61.3	264.7		688	2,970	2,918	1,259	
D	27	2	87	140	.010	.04	.03	70.0	295.0		2	9	9	4	
D	28	8	86	127	1.301	5.56	3.90	65.6	271.0		256	1,058	1,086	449	
D	29	4	86	115	.606	2.78	1.22	80.4	335.2		98	409	417	174	
D	30	9	86	125	.587	2.88	1.76	76.7	328.1		135	579	573	245	
D	31	13	85	120	1.596	8.37	3.74	93.4	420.8		349	1,574	1,481	667	
D	32	7	86	137	1.477	8.25	4.43	90.2	412.3		400	1,827	1,695	775	
D	33	4	84	128	.013	.08	.04	88.2	410.9		3	15	13	6	
D	34	5	87	123	.015	.10	.04	103.6	490.7		4	21	19	9	
D	35	2	90	120	.006	.04	.01	125.0	598.0		2	9	8	4	
D	36	5	85	134	.396	2.80	1.19	103.1	519.0		123	617	520	262	
D	37	1	91	116	.003	.02	.01	118.0	643.3		1	5	4	2	
D	38	6	87	150	.015	.12	.05	137.4	715.3		6	34	27	14	
D	39	1	88	125	.002	.02	.01	124.7	636.7		1	4	4	2	
D	Totals	121	87	111	33.683	97.00	75.86	55.2	230.7		4,187	17,504	17,754	7,422	
H	13	2	92	56	5.547	5.11	5.55	22.0	60.0		122	333	517	141	
H	17	2	86	59	3.244	5.11	3.24	43.0	110.0		139	357	591	151	
H	25	2	93	79	1.500	5.11	3.00	63.0	295.0		189	885	801	375	
H	27	1	83	102	.009	.04	.02	87.0	325.0		2	6	7	3	
H	Totals	7	90	60	10.300	15.38	11.81	38.3	133.9		452	1,581	1,917	670	
C	16	1	83	47	.008	.01	.01	27.0	50.0		0	0	1	0	
C	17	2	82	59	.014	.02	.01	37.0	75.0		1	1	2	0	
C	23	1	81	80	.004	.01	.01	46.0	110.0		0	1	1	0	
C	25	1	81	75	.003	.01	.01	50.0	130.0		0	1	1	0	
C	26	1	83	47	.003	.01	.00	40.0	50.0		0	0	0	0	
C	31	1	86	50	.002	.01	.00	101.0	150.0		0	0	1	0	
C	Totals	7	82	58	.033	.08	.04	42.3	87.4		2	4	7	1	
A	14	1	87	17	.004	.00	.00	14.0	60.0		0	0	0	0	
A	15	1	87	23	.004	.00	.00	15.0	30.0		0	0	0	0	
A	17	3	87	27	.009	.01	.01	21.3	50.0		0	0	1	0	
A	19	1	87	53	.002	.00	.00	47.0	90.0		0	0	0	0	
A	Totals	6	87	27	.020	.03	.02	21.6	53.2		0	1	2	0	
S	20	1	88	102	.002	.00	.01	34.0	120.0		0	1	1	0	
S	Totals	1	88	102	.002	.00	.01	34.0	120.0		0	1	1	0	
M	20	1	87	77	.002	.00	.00	33.0	125.0		0	1	1	0	
M	Totals	1	87	77	.002	.00	.00	33.0	125.0		0	1	1	0	
SN	14	1	85	122	.010	.01									
SN	15	1	89	70	.009	.01									
SN	17	1	88	60	.007	.01									

TC		PSTNDSUM		Stand Table Summary										Page Date:		2 4/4/2013				
T06N R07W S27 TyR/W3.00 T06N R07W S27 TyTAKE421.00					ProjectSARAJARV										Time:		1:09:43PM			
					Acres424.00										Grown Year:					
S Sp	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				
		SN	19	2	88				73	.011				.02						
		SN	20	1	88				35	.005				.01						
		SN	22	2	87				24	.008				.02						
		SN	23	1	89				80	.004				.01						
		SN	24	2	88				112	.007				.02						
		SN	25	1	88				22	.003				.01						
		SN	27	1	88				108	.003				.01						
		SN	28	1	88				30	.003				.01						
		SN	29	1	88				95	.002				.01						
		SN	42	1	64				25	.001				.01						
SN	Totals	16	87	72	.073	.17														
Totals		159	87	99	44.113	112.66	87.74	52.9	217.6		4,642	19,090		19,682	8,094					

Logging Plan
 OF TIMBER SALE CONTRACT
 NO. 341-14-38
 SARAJARVIE RIDGE THIN
 PORTIONS OF SECTIONS 22, 23, 26, AND
 27, T6N, R7W, W.M.,
 CLATSOP COUNTY, OREGON.

Area 1 (PC) = 261 Acres

Area 2 (PC) = 160 Acres

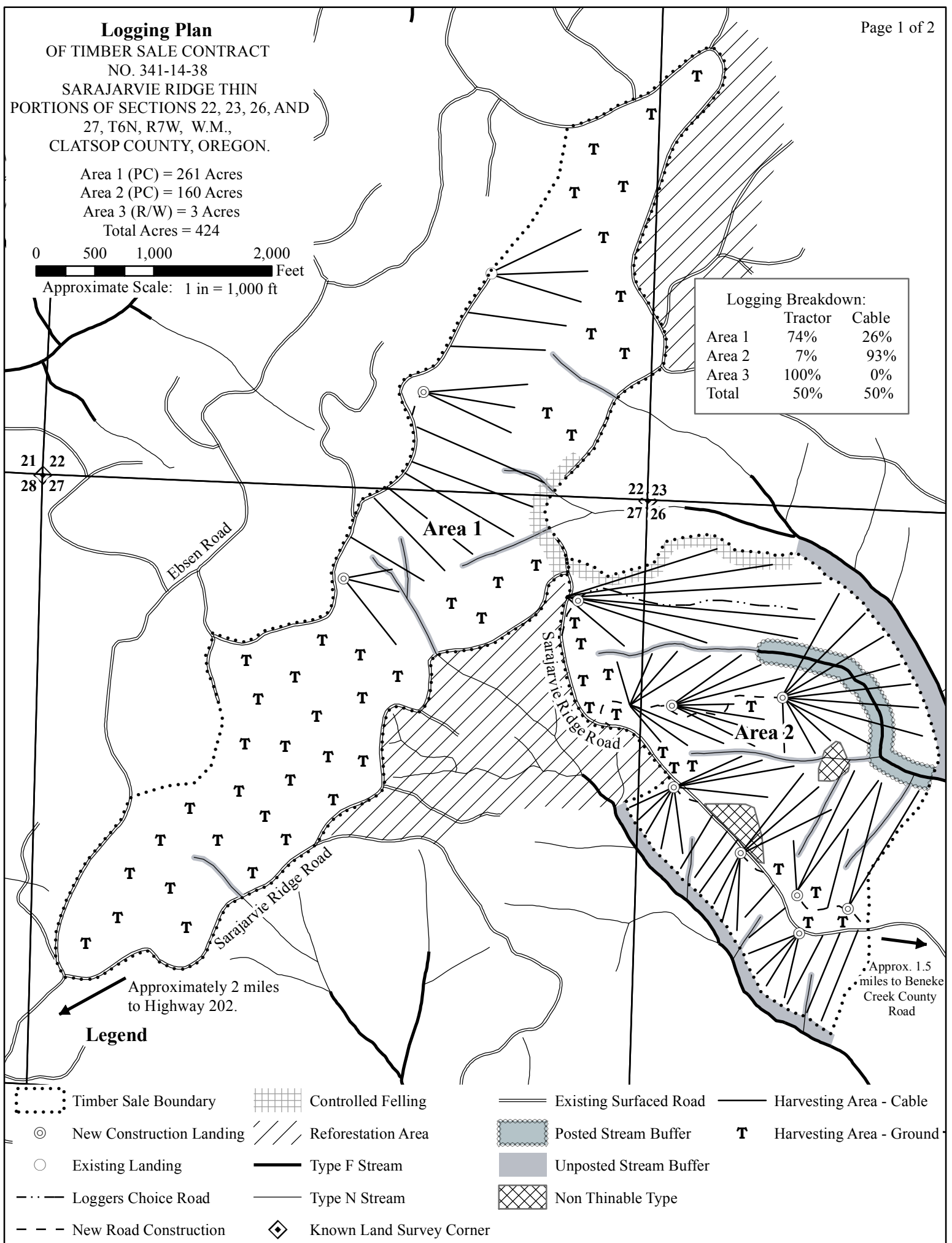
Area 3 (R/W) = 3 Acres

Total Acres = 424

0 500 1,000 2,000 Feet
 Approximate Scale: 1 in = 1,000 ft

Logging Breakdown:

	Tractor	Cable
Area 1	74%	26%
Area 2	7%	93%
Area 3	100%	0%
Total	50%	50%

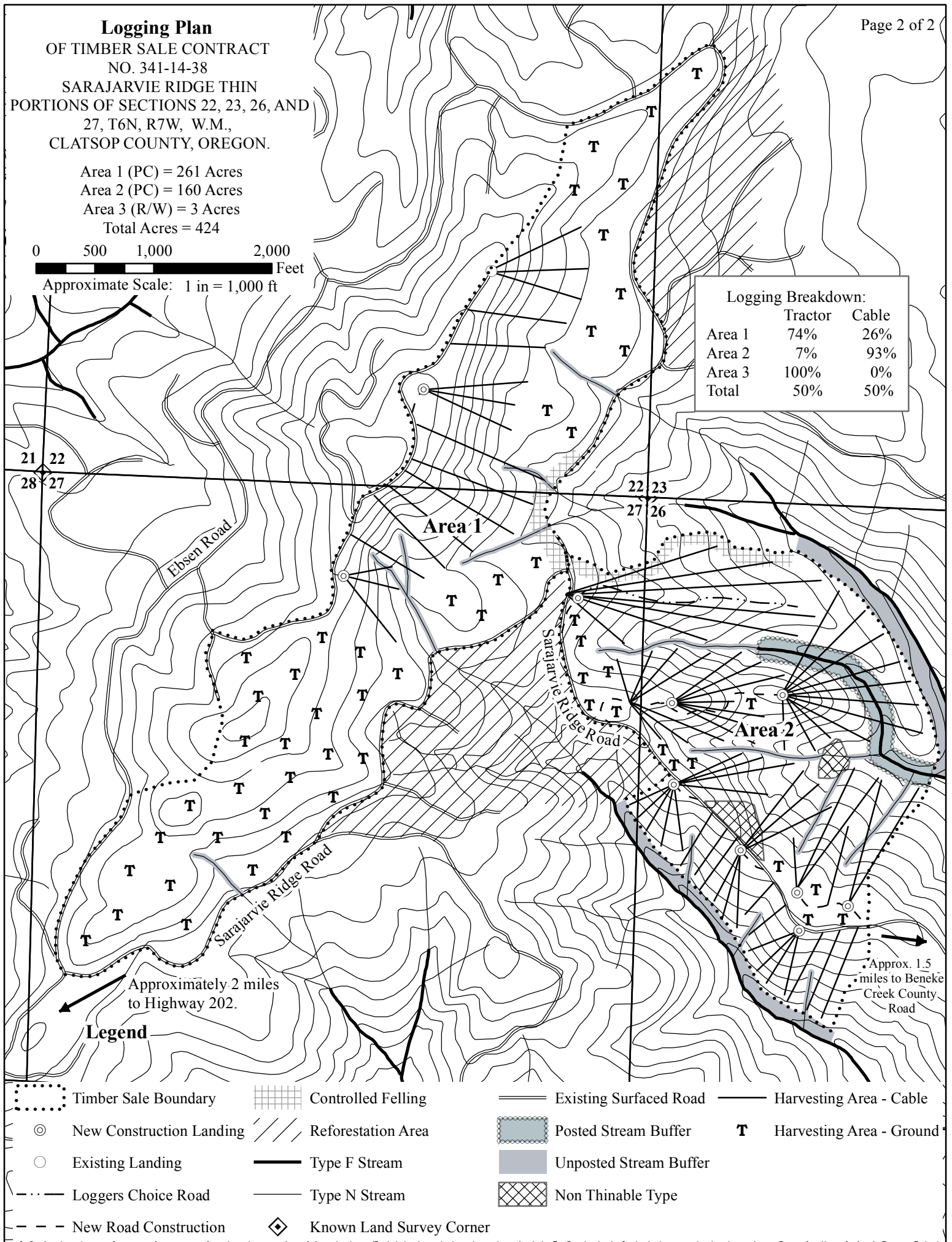


Logging Plan
 OF TIMBER SALE CONTRACT
 NO. 341-14-38
 SARAJARVIE RIDGE THIN
 PORTIONS OF SECTIONS 22, 23, 26, AND
 27, T6N, R7W, W.M.,
 CLATSOP COUNTY, OREGON.

Area 1 (PC) = 261 Acres
 Area 2 (PC) = 160 Acres
 Area 3 (R/W) = 3 Acres
 Total Acres = 424

0 500 1,000 2,000 Feet
 Approximate Scale: 1 in = 1,000 ft

Logging Breakdown:		
	Tractor	Cable
Area 1	74%	26%
Area 2	7%	93%
Area 3	100%	0%
Total	50%	50%



Legend

- | | | | |
|--------------------------|--------------------------|------------------------|--------------------------|
| Timber Sale Boundary | Controlled Felling | Existing Surfaced Road | Harvesting Area - Cable |
| New Construction Landing | Reforestation Area | Posted Stream Buffer | Harvesting Area - Ground |
| Existing Landing | Type F Stream | Unposted Stream Buffer | |
| Loggers Choice Road | Type N Stream | Non Thinable Type | |
| New Road Construction | Known Land Survey Corner | | |