



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Bergsvik 13
Sale 341-15-30

District: Astoria

Date: October 13, 2014

cost summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$1,289,444.79	\$50,018.17	\$1,339,462.96
Project Work:			\$(331,452.00)
Advertised Value:			\$1,008,010.96



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timber description

Location: Portions of Section 35, T5N, R9W, and portions of Sections 6 and 7, T4N, R8W, and portions of Sections 1, 2, 3, 12, and 13, T4N, R9W, W.M., Clatsop County, Oregon.

Stand Stocking: 40%

SpecieName	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	12	0	97
Western Hemlock / Fir	14	0	95
Sitka Spruce	16	0	95
Alder (Red)	11	0	95

Volume by Grade	2S	3S	4S	Camprur	Total
Douglas - Fir	17	1,331	907	0	2,255
Western Hemlock / Fir	345	1,581	303	0	2,229
Sitka Spruce	153	197	22	0	372
Alder (Red)	0	0	0	167	167
Total	515	3,109	1,232	167	5,023



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comments: Pond Values Use: 3rd Quarter Calendar Year 2014.

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

Western redcedar and Other Cedars Stumpage Price = Pond Value
minus Logging Cost:
 $\$861.34/\text{MBF} = \$1,140/\text{MBF} - \$277.67/\text{MBF}$

SCALING COST ALLOWANCE = $\$5.00/\text{MBF}$

FUEL COST ALLOWANCE = $\$4.00/\text{GALLON}$

HAULING COST ALLOWANCE

Hauling costs equivalent to \$780 daily truck cost.

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

Additional Logging Costs:

Branding and Painting: $\$1 \text{ per MBF} \times 5,023 \text{ MBF} = \$5,023$

Slash & Landing Piling (includes move-in and pile materials) =
\$4,868

Additional Move of:

Log Loader: $2 \times \$1,290 = \$2,580$,

Yoader: $2 \times \$1,406 = \$2,812$, and

Tracked Skidder: $2 \times \$778 = \$1,556$

Total Additional Move-in = $\$6,948$

Rigging intermediate supports: $5 \text{ supports} \times 2 \text{ hrs each} \times \$40/\text{hr} =$
\$400

Non-Project Landing Construction: $4 \text{ Landings} \times \$389/\text{landing} =$
\$1,556

Non-Project Landing Rock: $240\text{cy} \times \$6.00/\text{cy} = \$1,440$

Line Pulling Areas 3, 4, 7 and 8: $115 \text{ mbf} \times \$20/\text{mbf} = \$2,300$

TOTAL Other Costs (with Profit & Risk to be added) = $\$22,535$

Other Costs (No Profit & Risk added):

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

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



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logging conditions

combination#: 1

Douglas - Fir	48.00%
Western Hemlock / Fir	48.00%
Sitka Spruce	48.00%
Alder (Red)	48.00%

yarding distance: Medium (800 ft) **downhill yarding:** No
logging system: Cable: Medium Tower >40 - <70 **Process:** Manual Falling/Delimbing
tree size: Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF
loads / day: 5.0 **bd. ft / load:** 3,600
cost / mbf: \$192.23

machines: Log Loader (A)
Tower Yarder (Medium)

combination#: 2

Douglas - Fir	45.00%
Western Hemlock / Fir	45.00%
Sitka Spruce	45.00%
Alder (Red)	45.00%

yarding distance: Medium (800 ft) **downhill yarding:** No
logging system: Track Skidder **Process:** Harvester Head Delimbing
tree size: Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF
loads / day: 7.0 **bd. ft / load:** 3,800
cost / mbf: \$156.20

machines: Forwarder
Harvester

combination#: 3

Douglas - Fir	1.00%
Western Hemlock / Fir	1.00%
Sitka Spruce	1.00%
Alder (Red)	1.00%

yarding distance: Medium (800 ft) **downhill yarding:** No
logging system: Cable: Medium Tower >40 - <70 **Process:** Manual Falling/Delimbing
tree size: Mature Private Forest / Regen Cut (250 Bft/tree), 6-11 logs/MBF
loads / day: 7.0 **bd. ft / load:** 4,000
cost / mbf: \$123.57

machines: Log Loader (A)
Tower Yarder (Medium)

combination#: 4

Douglas - Fir	6.00%
Western Hemlock / Fir	6.00%
Sitka Spruce	6.00%
Alder (Red)	6.00%



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yarding distance:	Medium (800 ft)	downhill yarding:	No
logging system:	Shovel	Process:	Feller Buncher
tree size:	Mature Private Forest / Regen Cut (250 Bft/tree), 6-11 logs/MBF		
loads / day:	5.0	bd. ft / load:	3,500
cost / mbf:	\$82.20		
machines:	Feller Buncher w/ Delimber		



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logging costs

Operating Seasons:	3.00	Profit Risk:	14.00%
Project Costs:	\$331,452.00	Other Costs (P/R):	\$22,535.00
Slash Disposal:	\$0.00	Other Costs:	\$3,000.00

Miles of Road

Road Maintenance: \$5.89

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	4.5
Western Hemlock / Fir	\$0.00	4.0	4.8
Sitka Spruce	\$0.00	2.0	4.4
Alder (Red)	\$0.00	2.0	4.0



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logging costs breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling	Other	Total
Douglas - Fir									
\$168.73	\$6.07	\$2.62	\$52.20	\$4.49	\$32.78	\$0.00	\$5.00	\$0.60	\$272.49
Western Hemlock / Fir									
\$168.73	\$6.18	\$2.62	\$37.42	\$4.49	\$30.72	\$0.00	\$5.00	\$0.60	\$255.76
Sitka Spruce									
\$168.73	\$6.18	\$2.62	\$81.64	\$4.49	\$36.91	\$0.00	\$5.00	\$0.60	\$306.17
Alder (Red)									
\$168.73	\$6.18	\$2.62	\$89.81	\$4.49	\$38.06	\$0.00	\$5.00	\$0.60	\$315.49

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$579.36	\$306.87	\$0.00
Western Hemlock / Fir	\$0.00	\$489.34	\$233.58	\$0.00
Sitka Spruce	\$0.00	\$512.63	\$206.46	\$0.00
Alder (Red)	\$0.00	\$615.00	\$299.51	\$0.00



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summary

Amortized

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

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	2,255	\$306.87	\$691,991.85
Western Hemlock / Fir	2,229	\$233.58	\$520,649.82
Sitka Spruce	372	\$206.46	\$76,803.12
Alder (Red)	167	\$299.51	\$50,018.17

Gross Timber Sale Value

Recovery: \$1,339,462.96

Prepared by: John Tillotson

Phone: 503-325-5451

Sale Number: 341-15-30
Sale Name: Bergsvik 13
Date: 06/10/2014

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
2	MC	F	11.0	6	\$129.00	\$709.50
3	MC	F	11.0	6	\$129.00	\$709.50
4	MC	F	7.0	4	\$129.00	\$451.50

In-unit Piling	Sub Total =	\$1,870.50
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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
2	4	\$220.00	\$880.00	5.5	\$5.00	\$27.50
3	3	\$220.00	\$660.00	5.5	\$5.00	\$27.50
4	2	\$220.00	\$440.00	3.5	\$5.00	\$17.50

*Cost includes separating firewood

Materials	Sub Total =	\$72.50
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Landing Piling **Sub Total =** \$1,980.00

Move-In Allowance	Number of Move-In's	Total Move-In Allowance			
\$945.00	1	\$945.00	Move-In	Sub Total =	\$945.00

Grand Total = \$4,868.00

Road Maintenance Cost Summary (Interim and Post Harvest)

Sale: Bergsvik 13
Date: May 16, 2014
By: Andrew Arvin *PL*

MBF: 5,023
\$/MBF: \$5.89

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost
Interim Operations Entries - 1	Grader 14G	\$778	1	18	\$100	\$2,578
	Dump Truck 12CY	\$163	2	8	\$79	\$958
	FE Loader C966	\$778	1	4	\$77	\$1,086
Final Road Maintenance	Grader 14G	\$778	1	85	\$100	\$9,278
	Dump Truck 12CY	\$163	3	16	\$79	\$1,753
	FE Loader C966	\$778	1	8	\$83	\$1,442
	Vibratory Roller	\$778	1	75	\$77	\$6,553
	Water Truck 2,500 gallon	\$190	1	40	\$89	\$3,750
	Small Backhoe C580	\$321	1	20	\$77	\$1,861
	Labor			8	\$40	\$320
Total						\$29,579

Interim Operations Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	4.0	7.00	1.8	18

Final Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Process - Grader	1.5	11.2	7.5	75
Grade only	2	2	1.0	10
Vibratory Roller	1.5	11.2	7.5	75

*Maintenance calculations were determined as follows:

Haul Route is determined from sale ares to nearest paved road.

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Bergsvik 13

ROAD CONSTRUCTION:

	Road segment	Length/Sta	Cost
Project No. 1 (surfaced)	1A-1B, 4A-4B,	105.90	\$105,671.50
	7C, 7D, 8A-8B, 9A-9B,		
	9C-9D, 10A-10B,		
	10E-10F, 11A-11B,		
	11C-11D		
(unsurfaced)	2A-2B, 6A-6B, 7A-7B,	64.00	\$12,510.50
	8A-8B, 9E-9F,		
	10C-10D, 9G-9H		
(landings)	7C, 7D		
TOTALS		3.22 mi 169.90 sta	\$118,182

ROAD IMPROVEMENT:

	Road segment	Length/Sta	Cost
Project No. 2	I1 through I42	526.70	\$88,705.00
TOTALS		9.98 mi 526.70	\$88,705

SPECIAL PROJECTS:

	Description	Cost
Project No. 3	Cole Mountain Quarry	\$38,614.00
Project No. 4	Road Vacating	\$32,917.00
Project No. 5	Gate Installation	\$12,451.00
Project No. 6	Stream Enhancement	\$8,063.00
	Project Road Maintenance	\$11,280.00
TOTAL		\$103,325

MOVE IN:

	Equipment	Cost
	Excavator (C330) 1@\$1,406 5@\$815	\$5,481.00
	Excavator (C315) 2@\$805 7@\$467	\$4,879.00
	Grader(14G) 1@\$778	\$778.00
	Backhoe(C580) 1@\$321	\$321.00
	Dozer(D8) 1@\$1,406 1@\$815	\$2,221.00
	Vibratory Roller 1@\$778	\$778.00
	Water Truck (2,500 gal)	\$190.00
	10-12 yd3 Highway Dump x6	\$978.00
	20 yd Highway dump w/ pup trailer x3	\$573.00
	Front End Loader (C966) 2@\$778 1@\$452	\$2,008.00
	D6 (Shape and compact jaw-run) 1@\$778 5@\$451	\$3,033.00
TOTAL		\$21,240

GRAND TOTAL

\$331,452

Compiled By: W. Lawrence / A. Arvin

Date: 05/30/2014

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Bergsvik 13
 ROAD: 1A-1B, 2A-2B, 4A-4B, 6A-6B 7A-7B, 8A-8B, 9A-9B, 9C-9D,
 9E-9F, 9G-9H, 10A-10B, 10C-10D, 10E-10F, 11A-11B, 11C-11D
 POINTS: 7C, 7D

NEW CONSTRUCTION: 169.90 STATIONS
 IMPROVEMENT: STATIONS 3.22 MILES

CLEARING & GRUBBING

Method	Amount(aces)	x	Rate	=	Cost
Scatter outside right-of-way	\$/ac 11.0	x	\$1,337.00	=	\$14,707.00

SUB TOTAL FOR CLEARING & GRUBBING

\$14,707

EXCAVATION

Material	Amount(hrs.)	x	Rate	=	Cost
1A-1B					
Drift Earth up to 200'	3.80	x	\$190.00	=	\$722.00
Landing Constructon	1.0	x	\$389.00	=	\$389.00
Borrow site excavation	\$/C330 hrs 2.0	x	\$155.00	=	\$310.00
Endhaul excavation (load and haul <5000')	60.0	x	\$4.00	=	\$240.00
2A-2B					
Balanced Construction	20.0	x	\$122.00	=	\$2,440.00
Landing Constructon	1.0	x	\$389.00	=	\$389.00
4A-4B					
Drift Earth up to 200'	3.50	x	\$190.00	=	\$665.00
Balanced Construction	12.3	x	\$122.00	=	\$1,500.60
Landing Constructon	2.0	x	\$389.00	=	\$778.00
Borrow site excavation	\$/C330 hrs 2.0	x	\$155.00	=	\$310.00
Endhaul excavation (load and haul <5000')	430.0	x	\$4.00	=	\$1,720.00
6A-6B					
Balanced Construction	2.0	x	\$122.00	=	\$244.00
Landing Constructon	1.0	x	\$389.00	=	\$389.00
7A-7B					
Balanced Construction	3.0	x	\$122.00	=	\$366.00
Landing Constructon	1.0	x	\$389.00	=	\$389.00
7C					
Landing Constructon	1.0	x	\$389.00	=	\$389.00
7D					
Landing Constructon	1.0	x	\$389.00	=	\$389.00
8A-8B					
Drift Earth up to 200'	1.20	x	\$190.00	=	\$228.00
Balanced Construction	9.6	x	\$122.00	=	\$1,171.20
Landing Constructon	2.0	x	\$389.00	=	\$778.00
9A-9B					
Drift Earth up to 200'	14.70	x	\$190.00	=	\$2,793.00
Landing Constructon	1.0	x	\$389.00	=	\$389.00
9C-9D					
Balanced Construction	11.8	x	\$122.00	=	\$1,439.60
Landing Constructon	1.0	x	\$389.00	=	\$389.00
9E-9F					
Drift Earth up to 200'	5.70	x	\$190.00	=	\$1,083.00
Landing Constructon	1.0	x	\$389.00	=	\$389.00
9G-9H					
Balanced Construction	20.0	x	\$122.00	=	\$2,440.00
Landing Constructon	1.0	x	\$389.00	=	\$389.00
10A-10B					
Drift Earth up to 200'	9.00	x	\$190.00	=	\$1,710.00
Balanced Construction	17.5	x	\$122.00	=	\$2,135.00
Landing Constructon	3.0	x	\$389.00	=	\$1,167.00
Cut Slope Rounding	7.0	x	\$43.00	=	\$301.00
Endhaul excavation (load and haul <5000')	100.0	x	\$4.00	=	\$400.00
10C-10D					
Drift Earth up to 200'	1.50	x	\$190.00	=	\$285.00
Balanced Construction	8.0	x	\$122.00	=	\$976.00
Landing Constructon	1.0	x	\$389.00	=	\$389.00
10E-10F					
Balanced Construction	3.2	x	\$122.00	=	\$390.40
Landing Constructon	1.0	x	\$389.00	=	\$389.00
11A-11B					
Balanced Construction	17.5	x	\$122.00	=	\$2,135.00
Landing Constructon	3.0	x	\$389.00	=	\$1,167.00
Endhaul excavation (load and haul <5000')	100.0	x	\$4.00	=	\$400.00
11C-11D					
Balanced Construction	5.6	x	\$122.00	=	\$683.20
Landing Constructon	1.0	x	\$389.00	=	\$389.00

SUB TOTAL FOR EXCAVATION

\$36,035

[illegible]

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION	\$11,811
Subtotal of Clearing, Exc., Culv.	\$62,553

Subgrade prep:		Description					Stations/ amount	x	Rate/ sta/amt	Cost
		Grade, Shape and Ditch 16' (1A-1B, 4A-4B, Sta 0+00-7+00 on 8A-8B, 9A-9B, 9C-9D, 10A-10B, 10E-10F, 11A-11B, 11C-11D)(105.9 Sta.)					105.90	x	\$24.83	\$2,629.50
		Grade, Shape and Outslope 14' (2A-2B, 6A-6B, 7A-7B, Sta 7+00-10+80 on 8A-8B, 9E-9F, 9G-9H, 10C-10D)(38.2 Sta.)					64.00	x	\$18.35	\$1,174.40
		Subgrade Compaction					169.90	x	\$20.19	\$3,430.28

ROAD SEGMENT 1A-1B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type	Location	Depth of Rock (inches)	1A-1B		0+00 - 3+80				
					Volume (CY) per	Number of					
Base Rock		6"-0" jaw-run	0+00-3+80	8	station	50	stations	3.8	190	\$6.00	\$1,140
Landings		6"-0" jaw-run	3+80	N/A	landing	60	landings	1	60	\$6.00	\$360
Junctions		6"-0" jaw-run	0+00	N/A	junction	20	junctions	1	20	\$6.00	\$120
Junctions		3/4"-0" crushed	0+00	N/A	junction	20	junctions	1	20	\$4.60	\$92
Turnarounds		6"-0" jaw-run	2+45	8	TA	13	TA's	1	13	\$6.00	\$78
Total Rock for Road Segment:				1A-1B					303		

ROAD SEGMENT 2A-2B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type	Location	Depth of Rock (inches)	2A-2B		0+00 - 20+00				
					Volume (CY) per	Number of					
Junctions		6"-0" jaw-run	0+00	N/A	junction	20	junctions	1	20	\$6.00	\$120
Junctions		3/4"-0" crushed	0+00	N/A	junction	20	junctions	1	20	\$4.60	\$92
Total Rock for Road Segment:				2A-2B					40		

ROAD SEGMENT 4A-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-4B		0+00 - 15+80				
					Volume (CY) per	Number of					
Base Rock		4"-0" crushed	3+40-15+80	4	station	25	stations	12.4	310	\$6.16	\$1,910
Base Rock		6"-0" jaw-run	0+00-3+40	8	station	50	stations	3.4	170	\$6.00	\$1,020
Landings		6"-0" jaw-run	7+55, 15+80	N/A	landing	60	landings	2	120	\$6.00	\$720
Junctions		6"-0" jaw-run	0+00	N/A	junction	20	junctions	1	20	\$6.00	\$120
Junctions		3/4"-0" crushed	0+00	N/A	junction	20	junctions	1	20	\$6.00	\$120
Traction Rock		3/4"-0" crushed	0+00-3+50	2	station	13	stations	3.5	46	\$4.60	\$209
Turnarounds		4"-0" crushed	11+55	4	TA	7	TA's	1	7	\$6.16	\$43
Turnouts		4"-0" crushed	4+65	4	TO	11	TO's	1	11	\$6.16	\$68
Dissipator Rock		24"-6" rip-rap	3+40, 6+75, 13+70	N/A	culvert	10	culverts	3	30	\$5.55	\$167
Culvert bedding/backfill		1 1/2"-0" crushed	3+40, 6+75, 10+75, 13+70	N/A	culvert	30	culverts	4	120	\$2.73	\$328
Total Rock for Road Segment:				4A-4B					854		

ROAD SEGMENT 6A-6B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type	Location	Depth of Rock (inches)	6A-6B		0+00 - 2+00				
					Volume (CY) per	Number of					
Junctions		6"-0" jaw-run	0+00	N/A	junction	20	junctions	1	20	\$6.00	\$120
Junctions		3/4"-0" crushed	0+00	N/A	junction	20	junctions	1	20	\$4.60	\$92
Total Rock for Road Segment:				6A-6B					40		

ROAD SEGMENT 7A-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-7B		0+00 - 3+00				
					Volume (CY) per	Number of					
Junctions		6"-0" jaw-run	0+00	N/A	junction	20	junctions	1	20	\$6.00	\$120
Junctions		3/4"-0" crushed	0+00	N/A	junction	20	junctions	1	20	\$4.60	\$92
Culvert bedding/backfill		1 1/2"-0" crushed	0+00	N/A	culvert	30	culverts	1	30	\$2.73	\$82
Total Rock for Road Segment:				7A-7B					70		

ROAD SEGMENT 7C				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type	Location	Depth of Rock (inches)	7C		N/A				
					Volume (CY) per	Number of					
Landings		6"-0" jaw-run	N/A	N/A	landing	66	landings	1	66	\$6.00	\$396
Total Rock for Road Segment:				7C					66		

ROAD SEGMENT 7D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type	Location	Depth of Rock (inches)	7D		N/A				
					Volume (CY) per	Number of					
Landings		6"-0" jaw-run	N/A	N/A	landing	66	landings	1	66	\$6.00	\$396
Total Rock for Road Segment:				7D					66		

ROAD SEGMENT 8A-8B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type	Location	Depth of Rock (inches)	8A-8B		0+00 - 10+80				
					Volume (CY) per	Number of					
Base Rock		6"-0" jaw-run	0+00-7+00	6	station	38	stations	7.0	266	\$6.00	\$1,596
Landings		6"-0" jaw-run	7+00	N/A	landing	55	landings	1	55	\$6.00	\$330
Junctions		6"-0" jaw-run	0+00, 7+00	N/A	junction	22	junctions	2	44	\$4.60	\$202
Junctions		3/4"-0" crushed	0+00	N/A	junction	20	junctions	1	20	\$4.60	\$92
Turnarounds		6"-0" jaw-run	2+60	6	TA	10	TA's	1	10	\$6.00	\$60
Total Rock for Road Segment:				8A-8B					395		

ROAD SEGMENT 9A-9B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type	Location	Depth of Rock (inches)	9A-9B		0+00 - 14+70				
					Volume (CY) per	Number of					
Base Rock		6"-0" jaw-run	0+00-14+70	8	station	50	stations	14.7	735	\$6.00	\$4,410
Landings		6"-0" jaw-run	14+70	N/A	landing	55	landings	1	55	\$6.00	\$330
Traction Rock		3/4"-0" crushed	3+00-14+00	2	station	13	stations	11.0	143	\$4.60	\$658
Junctions		6"-0" jaw-run	0+00	N/A	junction	22	junctions	1	22	\$4.60	\$101
Junctions		3/4"-0" crushed	0+00	N/A	junction	20	junctions	1	20	\$4.60	\$92
Turnouts		6"-0" jaw-run	6+50, 8+15, 10+65	8	TO	22	TO's	3	66	\$6.00	\$396
Turnarounds		6"-0" jaw-run	13+40	8	TA	13	TA's	1	13	\$6.00	\$78
Culvert bedding/backfill		1 1/2"-0" crushed	7+00	N/A	culvert	30	culverts	1	30	\$2.73	\$82
Total Rock for Road Segment:				9A-9B					1,084		

ROAD SEGMENT 9C-9D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application		Rock Size and Type	Location	Depth of Rock (inches)	9C-9D		0+00 - 11+80				
					Volume (CY) per	Number of					
Base Rock		6"-0" jaw-run	0+00-11+80	8	station	50	stations	11.8	590	\$6.00	\$3,540
Landings		6"-0" jaw-run	11+80	N/A	landing	55	landings	1	55	\$6.00	\$330
Junctions		6"-0" jaw-run	0+00	N/A	junction	22	junctions	1	22	\$4.60	\$101
Junctions		3/4"-0" crushed	0+00	N/A	junction	20	junctions	1	20	\$4.60	\$92
Turnouts		6"-0" jaw-run	3+00, 7+30	10	TO	28	TO's	2	56	\$6.00	\$336
Turnarounds		6"-0" jaw-run	10+60	10	TA	17	TA's	1	17	\$6.00	\$102

SPECIAL PROJECTS	
Description	Cost
SUB TOTAL FOR SPECIAL PROJECTS	\$0.00

Date: 05/12/2014

Subtotal of Surfacing & Spec. Proj.	\$55,629
Subtotal of Clearing, Exc., Culv.	\$62,553

\$118,181.86

SUMMARY OF ROAD IMPROVEMENT COSTS

Page 1 of 6

SALE NAME: Bergsvik13
 ROAD: 11 through I42
 POINTS:

NEW CONSTRUCTION: STATIONS
 IMPROVEMENT: 528.20 STATIONS 10.00 MILES

CLEARING & GRUBBING

Method	Acres/amount	x	Rate	=	Cost
I13 to I14					
0+00 to 3+40 Scatter outside of right of way	0.30	x	\$1,337.00	=	\$401.10
SUB TOTAL FOR CLEARING & GRUBBING					\$401

EXCAVATION

Material	Cy/amount	x	Rate	=	Cost
I1 to I2					
0+70 Remove tank trap / road block. (C315 hrs.)	1.0	x	\$101.00	=	\$101.00
20+55 to 21+55 Road surface reconstruction (C315 hrs.)	0.5	x	\$101.00	=	\$50.50
(D8 hrs.)	1.5	x	\$158.00	=	\$237.00
20+55 to 27+25 Sod removal (14G hrs.)	2.0	x	\$100.00	=	\$200.00
(Backhoe hrs.)	2.0	x	\$77.00	=	\$154.00
23+25, 25+00, 26+70 Remove small waterbars (C315 hrs.)	0.5	x	\$101.00	=	\$50.50
27+25 Remove log road block (C315 hrs.)	0.5	x	\$101.00	=	\$50.50
Walk D8 to I13toI14 (D8 hrs.)	0.5	x	\$158.00	=	\$79.00
I13 to I14					
20+20 to 47+00 Spot grading (14G hrs.)	2.0	x	\$100.00	=	\$200.00
I15 to I16					
75+30 Landing improvement (C315 hrs.)	1.0	x	\$101.00	=	\$101.00
I17 to I18					
0+00 to 13+70 Spot Grading (14G hrs.)	2.0	x	\$100.00	=	\$200.00
I19 to I10					
0+00 to 7+40 Spot Grading (14G hrs.)	1.0	x	\$100.00	=	\$100.00
7+40 Landing improvement (C315 hrs.)	1.0	x	\$101.00	=	\$101.00
I13 to I14					
0+00 to 3+40 Junction realignment					
Drift earth up to 200' (\$/Sta.)	3.9	x	\$190.00	=	\$731.50
Embankment compaction (\$/CY)	250.0	x	\$0.70	=	\$175.00
Cut slope rounding 0+00 to 2+00 (\$/Sta.)	2.0	x	\$43.00	=	\$86.00
3+40 to 12+35 Sod removal (14G hrs.)	5.0	x	\$100.00	=	\$500.00
(Backhoe hrs.)	5.0	x	\$77.00	=	\$385.00
I15 to I16					
0+00 to 27+00 Sod removal (14G hrs.)	4.0	x	\$100.00	=	\$400.00
(Backhoe hrs.)	4.0	x	\$77.00	=	\$308.00
20+65 Construct extended ditchout (C315 hrs.)	1.0	x	\$101.00	=	\$101.00
21+30 Construct ditchout (C315 hrs.)	0.5	x	\$101.00	=	\$50.50
I17 to I18					
0+00 to 2+80 Sod removal (14G hrs.)	0.5	x	\$100.00	=	\$50.00
(Backhoe hrs.)	0.5	x	\$77.00	=	\$38.50
I21 to I22					
0+00 to 10+65 Sod removal (14G hrs.)	1.0	x	\$100.00	=	\$100.00
(Backhoe hrs.)	1.0	x	\$77.00	=	\$77.00
I25 to I26					
0+00 to 22+15 Sod removal (14G hrs.)	1.0	x	\$100.00	=	\$100.00
(Backhoe hrs.)	1.0	x	\$77.00	=	\$77.00
I27 to I28					
0+00 to 22+00 Sod removal (14G hrs.)	2.0	x	\$100.00	=	\$200.00
(Backhoe hrs.)	2.0	x	\$77.00	=	\$154.00
2+90 Culvert dissipator (C315 hrs.)	1.0	x	\$101.00	=	\$101.00
9+50 Culvert dissipator (C315 hrs.)	1.0	x	\$101.00	=	\$101.00
I31 to I32					
0+00 to 14+70 Sod removal (14G hrs.)	2.0	x	\$100.00	=	\$200.00
(Backhoe hrs.)	2.0	x	\$77.00	=	\$154.00
0+85 Additional pipe excavation (C315 hrs.)	2.5	x	\$101.00	=	\$252.50
3+05 Additional fill excavation (C315 hrs.)	2.0	x	\$101.00	=	\$202.00
14+70 Landing improvement (C315 hrs.)	0.5	x	\$101.00	=	\$50.50
I33 to I34					
0+00 to 69+25 Sod removal (14G hrs.)	4.0	x	\$100.00	=	\$400.00
(Backhoe hrs.)	4.0	x	\$77.00	=	\$308.00
4+35 Culvert dissipator (C315 hrs.)	1.0	x	\$101.00	=	\$101.00
5+20 Bank slough removal (C315 hrs.)	0.5	x	\$101.00	=	\$50.50
7+90 Culvert inlet/outlet improvement (Labor hrs.)	0.5	x	\$40.00	=	\$20.00
26+70 Bank slough removal (C315 hrs.)	1.0	x	\$101.00	=	\$101.00
I35 to I36					
0+00 to 16+80 Sod removal (14G hrs.)	1.0	x	\$100.00	=	\$100.00
(Backhoe hrs.)	1.0	x	\$77.00	=	\$77.00
5+70 Improve ditchouts (C315 hrs.)	1.0	x	\$101.00	=	\$101.00
I37 to I38					
0+00 to 28+90 Sod removal (14G hrs.)	4.0	x	\$100.00	=	\$400.00
(Backhoe hrs.)	4.0	x	\$77.00	=	\$308.00
3+85 Culvert inlet/outlet improvement (Labor hrs.)	0.5	x	\$40.00	=	\$20.00
9+00 Culvert inlet/outlet improvement (C315 hrs.)	0.5	x	\$101.00	=	\$50.50
(Labor hrs.)	0.5	x	\$40.00	=	\$20.00
14+65 Culvert inlet/outlet improvement (Labor hrs.)	0.5	x	\$40.00	=	\$20.00
27+80 Construct ditchout (C315 hrs.)	1.0	x	\$101.00	=	\$101.00
28+90 Improve landing (C315)	0.5	x	\$101.00	=	\$50.50
I39 to I40					
0+00 to 18+50 Sod removal (14G hrs.)	2.0	x	\$100.00	=	\$200.00
(Backhoe hrs.)	2.0	x	\$77.00	=	\$154.00
1+35 to 3+10 Settling pond/ditch armoring improvment (C315 hrs.)	2.0	x	\$101.00	=	\$202.00
(D.truck hrs.)	2.0	x	\$79.00	=	\$158.00

EXCAVATION CONTINUED

Material	Cy/amount	x	Rate	=	Cost
139 to 140					
16+05 Culvert inlet/outlet improvement					
(C315 hrs.)	0.5	x	\$101.00	=	\$50.50
(Labor hrs.)	0.5	x	\$40.00	=	\$20.00
141 to 142					
0+00 to 5+10 Sod removal	(14G hrs.) 1.0	x	\$100.00	=	\$100.00
	(Backhoe hrs.) 1.0	x	\$77.00	=	\$77.00

SUB TOTAL FOR EXCAVATION**\$9,409****CULVERT MATERIALS AND INSTALLATION**

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
113 to 114									
4+45	18" / CPP	30	\$19.53	\$585.90					
6+25	18" / CPP	30	\$19.53	\$585.90					
115 to 116									
16+25	18" / CPP	30	\$19.53	\$585.90					
125 to 126									
10+30	18" / CPP	30	\$19.53	\$585.90					
127 to 128									
9+50	18" / CPP	30	\$19.53	\$585.90					
131 to 132									
0+85	30" / ACSP	30	\$44.22	\$1,326.60					
3+05	18" / CPP	30	\$19.53	\$585.90					

Other/miscellaneous:
Culvert stakes & markers:

Description	Quantity	Rate	Cost
Fiberglass Culvert Markers	18	\$20.00	\$360.00

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION**\$3,444***Subtotal of Clearing, Exc., Culv.***\$13,254**

SURFACING		Stations/amount		Rate/sta/amt	Cost	Page 3 of 6
Subgrade prep:	Description					
	Grade, Shape and Ditch 16': I1-I2, I3-I4(0+00-20+20), I5-I6, I11-I12, I13-I14, I15-I16, I17-I18, I19-I20, I21-I22, I23-I24, I25-I26, I27-I28, I29-I30, I31-I32, I33-I34, I35-I36, I37-I38, I39-I40, I41-I42	476.00	x	\$24.83	\$11,819.08	
	Subgrade Compaction: I1-I2(20+55-27+70), I3-I4(12+25-20+20)	276.70	x	\$20.19	\$5,586.57	
	I5-I6(64+40-71+25), I11-I12(0+00-45+90), I13-I14(3+40-12+35), I15-I16, I17-I18, I25-I26(13+30-22+15), I27-I28, I31-I32(0+00-8+75), I33-I34, I35-I36, I37-I38, I39-I40(3+10-10+90&15+85-18+50), I41-I42					

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 27+70	Number of			
Road surface repair	4"-0" crushed	0+70	N/A	load	11	loads	11	\$6.16	\$68
Turnouts	4"-0" crushed	2+60, 19+55	N/A	junction	11	junctions	2	\$6.16	\$136
Subgrade Leveling	4"-0" crushed	4+50, 7+90, 17+00, 17+70, 20+95, 25+00, 25+85	N/A	load	11	loads	7	\$6.16	\$474
Additional subgrade leveling	4"-0" crushed	4+50, 17+70	N/A	load	11	loads	2	\$6.16	\$136
Surfacing	4"-0" crushed	20+55 to 27+70	4	station	25	stations	7.2	\$6.16	\$1,101
Junctions	4"-0" crushed	27+70	N/A	load	11	loads	1.00	\$6.16	\$68
Total Rock for Road Segment:			I1 to I2				322		

\$1,982

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	0+00 to 47+90	Number of			
Junctions	3/4"-0" crushed	0+00, 12+25, 18+35, 20+20	N/A	load	11	loads	4	\$4.60	\$202
Subgrade leveling	3/4"-0" crushed	1+90, 3+00, 5+15, 6+10, 6+70, 7+50, 8+30, 9+90, 11+00	N/A	load	11	loads	9	\$4.60	\$455
Turnouts	3/4"-0" crushed	1+00, 9+05, 15+30	N/A	turnout	11	turnouts	3	\$4.60	\$152
Surfacing	3/4"-0" crushed	12+25 to 20+20	3	station	19	stations	7.95	\$4.60	\$695
Total Rock for Road Segment:			I3 to I4				327		

\$1,504

ROAD SEGMENT I5 to I6			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (Inches)	I5 to I6	0+00 to 75+30	Number of			
Junctions	3/4"-0" crushed	0+00, 24+65	N/A	load	11	loads	2	\$4.60	\$101
Subgrade Leveling	3/4"-0" crushed	3+70, 6+80, 7+90, 11+50, 13+70, 19+80, 20+95, 23+70, 28+55, 31+65, 35+45, 48+20, 50+60, 51+85, 54+60, 58+35, 59+00, 61+90, 69+25, 69+90, 72+60, 73+40	N/A	load	11	loads	22	\$4.60	\$1,113
Turnouts	3/4"-0" crushed	4+85, 8+85, 30+05, 40+60, 51+20, 61+90, 72+60	N/A	turnout	11	turnouts	7	\$4.60	\$354
Surfacing	3/4"-0" crushed	64+40 to 71+25	2	station	13	stations	6.85	\$4.60	\$410
Landing improvement	6"-0" jaw-run	75+30	N/A	load	11	loads	5	\$6.00	\$330
Total Rock for Road Segment:			I5 to I6				485		

\$2,308

ROAD SEGMENT I7 to I8			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (Inches)	I7 to I8	0+00 to 13+70	Number of			
Junctions	4"-0" crushed	0+00	N/A	load	11	loads	1	\$6.16	\$68
Subgrade leveling	4"-0" crushed	1+70, 8+55, 13+00	N/A	load	11	loads	3	\$6.16	\$203
Turnouts	4"-0" crushed	3+25	N/A	turnout	11	turnouts	1	\$6.16	\$68
Total Rock for Road Segment:			I7 to I8				55		

\$339

ROAD SEGMENT I9 to I10			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (Inches)	I9 to I10	0+00 to 7+40	Number of			
Turnouts	4"-0" crushed	3+15, 5+90	N/A	turnout	11	turnouts	2	\$6.16	\$136
Landing improvement	6"-0" jaw-run	7+40	N/A	load	11	loads	5	\$6.00	\$330
Total Rock for Road Segment:			I9 to I10				77		

\$466

ROAD SEGMENT I11 to I12			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (Inches)	I11 to I12	0+00 to 63+90	Number of			
Subgrade Leveling	3/4"-0" crushed	2+20, 11+80, 12+50, 17+90	N/A	load	11	loads	4	\$4.60	\$202
Turnouts	3/4"-0" crushed	2+20, 10+00, 13+50, 23+05, 32+80, 34+00, 39+60	N/A	turnout	11	turnouts	7	\$4.60	\$354
Surfacing	3/4"-0" crushed	0+00 to 45+90	3	station	19	stations	45.90	\$4.60	\$4,012
Additional turnout improvement	4"-0" crushed	13+50	N/A	turnout	11	turnouts	1	\$6.16	\$68
Subgrade Leveling	4"-0" crushed	45+90, 47+80, 55+30	N/A	load	11	loads	3	\$6.16	\$203
Turnouts	4"-0" crushed	49+80, 52+55, 59+70	N/A	turnout	11	turnouts	3	\$6.16	\$203
Total Rock for Road Segment:			I11 to I12				1,070		

\$5,043

ROAD SEGMENT				I13to I14		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (Inches)	I13to I14 Volume (CY) per		0+00 to 12+35 Number of						
Base rock	4"-0" crushed	0+00 to 3+40	10	station	63	stations	3.40	214	\$6.16		\$1,319	
Surfacing	3/4"-0" crushed	0+00 to 3+40	3	station	19	stations	3.40	65	\$4.60		\$297	
Surfacing	4"-0" crushed	3+40 to 12+35	3	station	19	stations	8.95	170	\$6.16		\$1,048	
Turnouts	4"-0" crushed	7+80	N/A	turnout	11	turnouts	1	11	\$6.16		\$68	
Additional turnout improvement	4"-0" crushed	7+80	N/A	turnout	11	turnouts	1	11	\$6.16		\$68	
Landing improvement	6"-0" jaw-run	12+35	N/A	load	11	loads	5	55	\$6.00		\$330	
Total Rock for Road Segment:				I13to I14				526				
ROAD SEGMENT				I15 to I16		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (Inches)	I15 to I16 Volume (CY) per		0+00 to 27+00 Number of						
		0+00, 1+00, 1+75, 2+25, 3+50, 4+85, 9+30, 11+20, 16+25, 20+95, 23+20, 25+05										
Subgrade Leveling	4"-0" crushed	23+20, 25+05	N/A	load	11	loads	12	132	\$6.16		\$813	
Turnouts	4"-0" crushed	8+40, 10+30, 13+75, 17+60, 24+30	N/A	turnout	11	turnouts	5	55	\$6.16		\$339	
Additional turnout improvement	4"-0" crushed	10+30, 13+75	N/A	turnout	11	turnouts	2	22	\$6.16		\$136	
Junctions	4"-0" crushed	14+30	N/A	junction	11	junctions	1	11	\$6.16		\$68	
Surfacing	4"-0" crushed	0+00 to 27+00	4	station	25	stations	27.00	675	\$6.16		\$4,158	
Culvert bedding/backfill	1 1/2"-0" crushed	16+25	N/A	culvert	22	culverts	1	22	\$2.73		\$60	
Landing improvement	6"-0" jaw-run	27+00	N/A	load	11	loads	5	55	\$6.00		\$330	
Total Rock for Road Segment:				I15 to I16				972				
ROAD SEGMENT				I17 to I18		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (Inches)	I17 to I18 Volume (CY) per		0+00 to 2+80 Number of						
Subgrade Leveling	4"-0" crushed	1+80	N/A	load	11	loads	1	11	\$6.16		\$68	
Surfacing	4"-0" crushed	0+00 to 2+80	4	station	25	stations	2.80	70	\$6.16		\$431	
Landing Improvement	6"-0" jaw-run	2+80	N/A	load	11	loads	5	55	\$6.00		\$330	
Total Rock for Road Segment:				I17 to I18				136				
ROAD SEGMENT				I19 to I20		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (Inches)	I19 to I20 Volume (CY) per		0+00 to 32+65 Number of						
		2+00, 3+40, 5+15, 6+50, 8+60, 13+16, 14+15, 15+35, 18+20, 19+80, 22+10, 25+00, 28+45, 30+70										
Subgrade Leveling	3/4"-0" crushed	28+45, 30+70	N/A	load	11	loads	14	154	\$4.60		\$708	
Turnouts	3/4"-0" crushed	5+15, 6+50, 28+45	N/A	turnout	11	turnouts	3	33	\$4.60		\$152	
Landing improvement	6"-0" jaw-run	32+65	N/A	load	11	loads	5	55	\$6.00		\$330	
Total Rock for Road Segment:				I19 to I20				242				
ROAD SEGMENT				I21 to I22		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (Inches)	I21 to I22 Volume (CY) per		0+00 to 10+65 Number of						
Subgrade Leveling	3/4"-0" crushed	0+00, 0+90, 1+75	N/A	load	11	loads	3	33	\$4.60		\$152	
Turnouts	3/4"-0" crushed	5+25	N/A	turnout	11	turnouts	1	11	\$4.60		\$51	
Subgrade Leveling	4"-0" crushed	6+70, 8+40	N/A	load	11	loads	2	22	\$6.16		\$136	
Turnouts	4"-0" crushed	6+70	N/A	turnout	11	turnouts	1	11	\$6.16		\$68	
Total Rock for Road Segment:				I21 to I22				77				
ROAD SEGMENT				I23 to I24		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (Inches)	I23 to I24 Volume (CY) per		0+00 to 2+90 Number of						
Landing improvement	6"-0" jaw-run	2+90	N/A	load	11	loads	5	55	\$6.00		\$330	
Total Rock for Road Segment:				I23 to I24				55				
ROAD SEGMENT				I25 to I26		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (Inches)	I25 to I26 Volume (CY) per		0+00 to 22+15 Number of						
		1+00, 3+40, 4+40, 6+40, 11+50										
Subgrade Leveling	1 1/2"-0" crushed	11+50	N/A	load	11	loads	5	55	\$2.73		\$150	
Surfacing	1 1/2"-0" crushed	13+30 to 22+15	4	station	25	stations	8.85	221	\$2.73		\$604	
Turnouts	1 1/2"-0" crushed	5+00, 8+70,	N/A	turnout	11	turnouts	2	22	\$2.73		\$60	
Additional turnout improvement	1 1/2"-0" crushed	5+00	N/A	turnout	11	turnouts	1	11	\$2.73		\$30	
Culvert bedding/backfill	1 1/2"-0" crushed	10+30	N/A	culvert	22	culverts	1	22	\$2.73		\$60	
Total Rock for Road Segment:				I25 to I26				331				
ROAD SEGMENT				I27 to I28		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (Inches)	I27 to I28 Volume (CY) per		0+00 to 22+00 Number of						
		2+90, 3+95, 9+05, 16+55, 21+05										
Subgrade Leveling	1 1/2"-0" crushed	21+05	N/A	load	11	loads	5	55	\$2.73		\$150	
Surfacing	1 1/2"-0" crushed	0+00 to 22+00	2	station	13	stations	22.00	286	\$2.73		\$781	
Turnouts	1 1/2"-0" crushed	6+50, 10+55, 15+00,	N/A	turnout	11	turnouts	3	33	\$2.73		\$90	
Culvert bedding/backfill	1 1/2"-0" crushed	9+50	N/A	culvert	22	culverts	1	22	\$2.73		\$60	
Culvert dissipator	24"-6" riprap	2+90, 9+50	N/A	load	11	loads	2	22	\$5.55		\$122	
Total Rock for Road Segment:				I27 to I28				418				

\$3,130

\$5,903

\$829

\$1,190

\$406

\$330

\$904

\$1,203

ROAD SEGMENT I29 to I30				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I29 to I30 Volume (CY) per		0+00 to 6+55 Number of				
Subgrade Leveling	4"-0" crushed	0+00, 3+00, 5+95	N/A	load	11	loads	3	33	\$6.16	\$203
Turnouts	4"-0" crushed	1+20, 3+00	N/A	turnout	11	turnouts	2	22	\$6.16	\$136
Total Rock for Road Segment:				I29 to I30				55		
ROAD SEGMENT I31 to I32				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I31 to I32 Volume (CY) per		0+00 to 14+70 Number of				
Subgrade Leveling	4"-0" crushed	4+30, 8+75, 10+00, 13+20	N/A	load	11	loads	4	44	\$6.16	\$271
Surfacing	4"-0" crushed	0+00 to 8+75	3	station	19	stations	8.75	166	\$6.16	\$1,024
Turnouts	4"-0" crushed	3+55, 5+25, 13+90	N/A	turnout	11	turnouts	3	33	\$6.16	\$203
Additional turnout improvement	4"-0" crushed	13+90	N/A	load	11	loads	1	11	\$6.16	\$68
Culvert bedding/backfill	1 1/2"-0" crushed	0+85, 3+05	N/A	culvert	22	culverts	2	44	\$2.73	\$120
Fill replacement	6"-0" jaw-run	3+05	N/A	load	11	loads	2	22	\$6.00	\$132
Landing improvement	6"-0" jaw-run	14+70	N/A	load	11	loads	5	55	\$6.00	\$330
Total Rock for Road Segment:				I31 to I32				375		
ROAD SEGMENT I33 to I34				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I33 to I34 Volume (CY) per		0+00 to 69+25 Number of				
		1+00, 4+35, 5+20, 6+10, 14+20, 15+90, 19+80, 20+95, 22+85, 34+00, 34+50, 38+70, 42+10, 46+85, 53+05, 61+30, 62+50, 64+20, 68+00	N/A							
Subgrade Leveling	3/4"-0" crushed	68+00	N/A	load	11	loads	19	209	\$4.60	\$961
Surfacing	3/4"-0" crushed	0+00 to 68+00	2	station	13	stations	68.00	884	\$4.60	\$4,066
Surfacing	3/4"-0" crushed	68+00 to 69+25	4	station	25	stations	1.25	31	\$4.60	
		5+20, 8+90, 15+90, 19+40, 29+10, 34+25, 41+05, 50+50, 68+90								
Turnouts	3/4"-0" crushed	68+90	N/A	turnout	11	turnouts	9	99	\$4.60	\$455
Junctions	3/4"-0" crushed	0+00, 17+95, 26+15, 57+30, 60+00	N/A	junction	11	junctions	5	55	\$4.60	\$253
Culvert dissipator	24"-6" riprap	4+35	N/A	load	11	loads	1	11	\$5.55	\$61
Landing improvement	6"-0" jaw-run	69+25	N/A	load	11	loads	5	55	\$6.00	\$330
Total Rock for Road Segment:				I33 to I34				1,344		
ROAD SEGMENT I35 to I36				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I35 to I36 Volume (CY) per		0+00 to 16+80 Number of				
Subgrade Leveling	3/4"-0" crushed	2+60, 5+00, 6+20	N/A	load	11	loads	3	33	\$4.60	\$152
Surfacing	3/4"-0" crushed	0+00 to 16+80	3	station	19	stations	16.80	319	\$4.60	\$1,468
Turnouts	3/4"-0" crushed	4+50, 10+20, 14+10, 16+60	N/A	turnout	11	turnouts	4	44	\$4.60	\$202
Total Rock for Road Segment:				I35 to I36				396		
ROAD SEGMENT I37 to I38				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I37 to I38 Volume (CY) per		0+00 to 28+90 Number of				
		1+45, 3+00, 3+85, 6+05, 8+50, 9+00, 13+10, 15+25, 16+50, 16+75, 20+70, 21+80, 27+00								
Subgrade Leveling	4"-0" crushed	27+00	N/A	load	11	loads	13	143	\$6.16	\$881
Surfacing	4"-0" crushed	0+00 to 28+90	3	station	19	stations	28.90	549	\$6.16	\$3,382
"Y" jct. @ Hill Rd.	4"-0" crushed		N/A	load	11	loads	2.00	22	\$6.16	
Turnouts	4"-0" crushed	7+35, 11+80, 25+65	N/A	turnout	11	turnouts	3	33	\$6.16	\$203
Junctions	4"-0" crushed	13+65, 17+85	N/A	junction	11	junctions	2	22	\$6.16	\$136
Landing improvement	6"-0" jaw-run	28+90	N/A	load	11	loads	5	55	\$6.16	\$339
Total Rock for Road Segment:				I37 to I38				824		
ROAD SEGMENT I39 to I40				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I39 to I40 Volume (CY) per		0+00 to 18+50 Number of				
Subgrade Leveling	1 1/2"-0" crushed	1+00, 2+20, 11+40, 13+00, 13+20	N/A	load	11	loads	5	55	\$2.73	\$150
Surfacing	1 1/2"-0" crushed	3+10 to 10+90, 15+85 to 18+50	2	station	13	stations	10.45	136	\$2.73	\$371
Turnouts	1 1/2"-0" crushed	2+80, 6+90, 10+90	N/A	turnout	11	turnouts	3	33	\$2.73	\$90
Junctions	1 1/2"-0" crushed	15+85	N/A	junction	11	junctions	1	11	\$2.73	\$30
Ditchline Armoring	6"-0" jaw-run	1+35 to 3+10	N/A	load	11	loads	4	44	\$6.00	\$264
Total Rock for Road Segment:				I39 to I40				279		
ROAD SEGMENT I41 to I42				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I41 to I42 Volume (CY) per		0+00 to 5+10 Number of				
Surfacing	4"-0" crushed	0+00 to 5+10	3	station	19	stations	5.10	97	\$6.16	\$597
Total Rock for Road Segment:				I41 to I42				97		

\$339

\$2,148

\$6,127

\$1,823

\$4,941

\$905

\$597

SUB TOTAL FOR SURFACING

SPECIAL PROJECTS

Description

Cost

SUB TOTAL FOR SPECIAL PROJECTS

\$0

Subtotal of Surfacing & Spec. Proj.	\$75,450
Subtotal of Clearing, Exc., Culv.	\$13,254

GRAND TOTAL

\$88,705

Compiled By: W. Lawrence

Date: 05/09/2014

CRUSHED ROCK COST

SALE NAME: Bergsvik13
PROJECT: New Construction and Improvement
QUARRY: Upper Hamelt Stockpile Site

MATERIAL: 3/4"-0" Crushed

DATE: 05/09/2014
BY: W.Lawrence / A.Arvin

[illegible]

ROCK HAUL:

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

Ave haul:	\$3.33	/cy
Load:	\$0.48	/cy
Spread:	\$0.78	/cy

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

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

Production: cy/day = 1,427

CRUSHED ROCK HAUL COSTS 4,759 cy @ **\$4.60 /cy**

CRUSHED ROCK COST

SALE NAME: Bergsvik13
PROJECT: New Construction and Improvement
QUARRY: Lower Hamelt Stockpile Site

MATERIAL: 1 1/2"-0" Crushed

DATE: 05/09/2014
BY: W.Lawrence / A.Arvin

[illegible]

ROCK HAUL:

Truck type: D20 No. trucks: 2
 Delay min.: 8 Efficiency: 85%

Ave haul:	\$2.13	/cy
Load:	\$0.24	/cy
Spread:	\$0.36	/cy

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

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

Production: cy/day = 2,239

CRUSHED ROCK HAUL COSTS 1,579 cy @ \$2.73 /cy

CRUSHED ROCK COST

SALE NAME: Bergsvik13
PROJECT: New Construction and Improvement
QUARRY: Sweethome Stockpile Site

MATERIAL: 4"-0" Crushed

DATE: 04/29/2014
BY: W.Lawrence / A.Arvin

[illegible]

ROCK HAUL:

Truck type:	<u>D20</u>	No. trucks:	<u>3</u>
Delay min.:	<u>8</u>	Efficiency:	<u>85%</u>

Ave haul:	\$4.90	/cy
Load:	\$0.48	/cy
Spread:	\$0.78	/cy

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

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

Production: cy/day = 1,263

CRUSHED ROCK HAUL COSTS 4,167 cy @ \$6.16 /cy

PIT RUN ROCK COST

SALE NAME: Bergsvik 13
 PROJECT: New Construction and Improvement
 QUARRY: Cole Mountain Quarry

MATERIAL: 6"-0" Jaw-Run

DATE: 04/29/2014
 BY: W.Lawrence / A.Arvin

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES							Total Haul
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	
I5 to I6	75.30	55		3.50	0.75	0.40	0.25	0.20	0.20	5.30
I9 to I10	7.40	55		4.00	0.75	0.40	0.20	0.20	0.20	5.75
I13 to I14	12.35	55	3.00	3.00	0.50	0.20	0.20	0.20	0.15	7.25
I15 to I16	27.00	55	3.00	3.10	0.70	0.30	0.25	0.20	0.20	7.75
I17 to I18	2.80	55	3.00	3.10	0.50	0.35	0.25	0.20	0.20	7.60
I19 to I20	32.65	55	3.00	2.75	0.60	0.25	0.20	0.20	0.20	7.20
I23 to I24	2.90	55	3.00	2.50	0.40	0.20	0.20	0.20	0.20	6.70
I31 to I32	14.70	77		2.25	0.40	0.20	0.20	0.15	0.15	3.35
I33 to I34	69.25	55		3.00	0.80	0.40	0.25	0.20	0.20	4.85
I37 to I38	28.90	55		3.00	0.75	0.50	0.30	0.20	0.20	4.95
I39 to I40	18.50	44		3.00	0.60	0.30	0.20	0.15	0.15	4.40
1A-1B	3.80	283	3.00	3.10	0.80	0.30	0.25	0.20	0.25	7.90
4A-4B	15.80	310	3.00	3.10	0.70	0.30	0.25	0.20	0.20	7.75
7C	N/A	66	3.00	2.75	0.75	0.25	0.25	0.30	0.20	7.50
8A-8B	10.80	375		2.45	1.00	0.40	0.20	0.25	0.25	4.55
9A-9B	14.70	891		3.00	0.90	0.50	0.25	0.30	0.35	5.30
9C-9D	11.80	740		3.40	0.65	0.20	0.15	0.25	0.35	5.00
10A-10B	26.50	801		3.00	0.90	0.50	0.25	0.25	0.20	5.10
10E-10F	3.20	55		3.00	0.80	0.40	0.25	0.25	0.30	5.00
11A-11B	17.50	676		2.00	0.85	0.40	0.35	0.20	0.30	4.10
11C-11D	5.60	399		2.00	0.85	0.40	0.35	0.20	0.25	4.05
7D	N/A	66	3.00	2.75	0.70	0.20	0.20	0.25	0.20	7.30
2A-2B	20.00	20	3.00	3.10	0.80	0.30	0.25	0.20	0.25	7.90
6A-6B	2.00	20	3.00	2.75	0.60	0.25	0.15	0.15	0.20	7.10
7A-7B	3.00	20	3.00	2.75	0.60	0.25	0.25	0.20	0.20	7.25
9E-9F	5.70	22		3.00	0.60	0.30	0.30	0.25	0.15	4.60
9G-9H	20.00	22		3.00	0.90	0.40	0.25	0.20	0.25	5.00
10C-10D	9.50	22		3.00	0.90	0.50	0.25	0.25	0.20	5.10
TOTAL	461.65	5,404								AVERAGE HAUL 5.27
STA./NO.		CU. YD.								
CUBIC YARD WEIGHTED HAUL			0.56	2.79	0.80	0.38	0.25	0.23	0.27	
Average Round Trip Distance (miles)										10.55

ROCK HAUL:

Truck type:	D20	No. trucks:	
Delay min.:	8	Efficiency:	85%
Truck type:	D12	No. trucks:	6
Delay min.:	6	Efficiency:	85%
Truck type:	D10	No. trucks:	
Delay min.:	5	Efficiency:	85%

Ave haul: \$4.50 /cy
 Load: \$0.54 /cy
 Spread: \$0.96 /cy

Production: cy/day = 842

PIT RUN ROCK HAUL COSTS

5,404 cy @ **\$6.00 /cy**

RIP RAP ROCK COST

SALE NAME:	Bergsvik 13
PROJECT:	New Construction and Improvement
QUARRY:	Cole Mountain Quarry

MATERIAL: 24"-6" Rip Rap

DATE: 04/29/2014
BY: W.Lawrence / A.Arvin

[illegible]

ROCK HAUL:

Truck type:	<u>D12</u>	No. trucks:	<u>5</u>
Delay min.:	<u>6</u>	Efficiency:	<u>85%</u>
Truck type:	<u>D10</u>	No. trucks:	<u>5</u>
Delay min.:	<u>5</u>	Efficiency:	<u>85%</u>

Ave haul: \$4.64 /cy
Load: \$0.90 /cy
Develop: _____ /cy

Production: cy/day = 680

RIP RAP ROCK HAUL COSTS

74 cy @ \$5.55 /cy

SUMMARY OF ROCK DEVELOPMENT AND CRUSHING COSTS

PROJECT NO. <u>3</u>	Timber Sale Name: <u>Bergsvik 13</u>
Quarry: <u>Cole Mountain</u>	Swell: <u> </u>
Location: <u>SE 1/4, Sec.14 & NE 1/4 Sec. 23, T4N, R9W</u>	Shrink: <u> </u>
County: <u>Clatsop</u>	
By: <u>W. Lawrence</u>	Loading Hopper: <u>No</u>
Date: <u>05/20/2014</u>	

ROCK SIZE	REJECT	GRADATION	STOCKPILE CU. YDS.	TRUCK MEAS CU. YDS.	TOTAL CU. YDS.
3/4"-0"		CR			
1-1/2"-0"		CR			
6"-0"	20%	CR		5,403	5,403
6"-0"		PR			
24"-6"		RR		74	74
36"		RR			
TOTAL CUBIC YARDS OF ROCK:				5,477	5,477

1) MOBILIZATION & SET UP:

EQUIPMENT	QUANTITY	RATE	COST	EQUIPMENT	QUANTITY	RATE	COST
Excavator	1	\$1,406	\$1,406	Off Highway Dump Truck	1	\$553	\$553
Loader	1	\$805	\$805				
1 Stage Crusher	1	\$1,446	\$1,446				
Screening Plant	1	\$553	\$553				

SUB TOTAL FOR MOBILIZATION

\$4,763

EQUIPMENT SET UP	TIMES	RATE	COST
1 Stage Crusher	1	\$1,006	\$1,006
Screening Plant	1	\$293	\$293

SUB TOTAL FOR SET UP COSTS

\$1,299

TOTAL MOBILIZATION & SET UP COSTS

\$6,061

2) CLEARING & GRUBBING

DESCRIPTION	QUANTITY	UNIT	RATE	COST
Quarry and access road prep.				
Clearing and grubbing				
(C330)	10.0	hr	\$155	\$1,550

TOTAL CLEARING & GRUBBING COSTS

\$1,550

3) EXCAVATION

MATERIAL DESCRIPTION	QUANTITY	UNIT	RATE	COST
Overburden Removal (excavate, load haul, spread) (prep. for future entry)				
(C330)	30	hr	\$155.00	\$4,650
(Off Highway Dump Truck)	30	hr	\$127.00	\$3,810

TOTAL EXCAVATION COSTS

\$8,460

4) DEVELOP ROCK

ROCK SUMMARY			METHOD	%	QUANTITY	RATE	COST
Type	Cu. yd. Vol.	Weight	Ripping	100%	6,558	\$2.20	\$14,427
crushed	5,403	99%	Drill & shoot			\$2.30	
pit run	0	0	Oversize red			\$5.80	
rip rap	74	1%	Other				
Total	5,477						
reject	1,081	19.7%					

TOTAL ROCK DEVELOPMENT COSTS

\$14,427

5) CALIBRATION & TESTING

DESCRIPTION	NO.	\$/TEST	COST

TOTAL CALIBRATION & TESTING COSTS

6) FEEDING & LOADING

DESCRIPTION	CU. YD. QUANTITY	COST CU. YD.	TOTAL COST
Dig & Feed Rock	6,484	\$0.40	\$2,593

TOTAL FEEDING & LOADING COSTS

\$2,593

7) ROCK CRUSHING

ROCK SIZE	ROCK TYPE	CU. YD. QUANTITY	CRUSHER TYPE	HOURLY PRODUCTION	RATE CU. YD.	TOTAL COST
6"-0"	crushed	5,403			\$0.75	\$4,052
			1 stage w/s	200		

TOTAL ROCK CRUSHING COSTS

\$4,052

STOCKPILE SITE PREPARATION

Rock for Floor (CY)	\$/CY Haul	Total

HAUL & STOCKPILE

SUB TOTAL

9) MISCELLANEOUS COSTS

TOTAL MISCELLANEOUS COSTS

10) GRAND TOTAL:

\$38,614

\$/Cubic Yard

\$7.15

Bergsvik13 Timber Sale

Vacating Costs (Total)

Work Description	Stations	Pump	C330	C315	D24 trk	D10/12 trk	D-8	Labor	Straw-bales	Seed-lbs
V1 to V2	19.8	11.00	32.50			3.00		8.00	65	60
V3			0.50							
V4 to V5	14.2	4.00	14.00	3.00	0.00	1.50	0.00	6.50	69.00	35.50
V6 to V7	10.3		21.50	8.00		1.50		8.00	52	40
V8 to V9	7.4	8.00	19.00	5.00		2.00		4.50	62	20
V10			3.00					1.00	8	5
V11-V12	12.8	5.00	19.00			1.50		5.00	43	27.5
V13-V14	8.1		16.50			3.50		5.00	65	20
V15-V16	3.5		5.00			1.00		1.50	14	7.5
V17			2.50			1.50		0.50	6	2.5
V18-V19	6.7		7.50					1.00	15	5
V20-V21	4		5.00			1.50		2.50	29	12
Total Quantity (Hours)		28.00	146.00	16.00	0.00	17.00	0.00	43.50	428.00	235.00
Rates		\$10.00	\$155.00	\$101.00	\$127.00	\$99.00	\$158.00	\$40.00	\$10.73	\$1.60
Total Dollars		\$280	\$22,630	\$1,616	\$0	\$1,683	\$0	\$1,740	\$4,592	\$376

Total Cost

\$32,917

Total Stations

86.8

Total Miles

1.6

Bergsvik13 Timber Sale

Vacating Costs V1 to V2

Work Description	Station	Pump	C330	C315	D24 trk	D10/12 trk	D-8	Labor	Straw- bales	Seed-lbs
V1 to V2										
Walk equipment to back end of project			3.00							
Temporary stream crossing			2.00							
Haul off old culvert						1.5				
V1: Road block / Waterbar	0+00		1.00					0.50	4	2.5
Remove fill and culvert	0+30	1.00	2.00					0.50	4	5
Waterbar	1+80		0.50							
Remove fill and culverts	2+60	6.00	10.00					3.00	25	15
Waterbar	3+70		0.50							
Waterbar	4+90		0.50							
Waterbar	7+00		0.50							
Remove fill and culvert	8+20	1.00	2.00					1.00	8	10
Waterbar	8+60		0.50							
Remove fill and culvert	11+50		2.00					0.50	4	5
Waterbar	12+85		0.50							
Remove fill and culvert	13+10	2.00	3.00					1.00	8	10
Waterbar	13+30		0.50							
Remove fill and culvert	15+40	1.00	2.00					1.00	8	10
Waterbar	15+65		0.50							
Waterbar / remove culvert	18+65		1.00							
V2: Waterbar	19+80		0.50					0.50	4	2.5
Haul off old culverts						1.50				
Total Quantity (Hours)		11.00	32.50	0.00	0	3	0	8	65	60
Rates		\$10.00	\$155.00	\$101.00	\$127.00	\$99.00	\$158.00	\$40.00	\$10.73	\$1.60
Total Dollars		\$110	\$5,038	\$0	\$0	\$297	\$0	\$320	\$697	\$96

Total Cost

\$6,558

Bergsvik13 Timber Sale
Vacating Costs V3 and V4 to V5

Work Description	Station	Pump	C330	C315	D24 trk	D10/12 trk	D-8	Labor	Straw-bales	Seed-lbs
V3										
Waterbar			0.50							
V4 to V5										
Walk equipment to back end of project			1.00							
V4: Waterbar	0+00		0.50							
Waterbar	1+40		0.50							
Begin road outsloping\sidecast removal	2+25		0.50					0.5	4	2.5
Remove fill and culvert	3+00	4.00	3.00	3.00				2.00	10	10
Waterbar	3+50		0.50							
Waterbar	5+00		0.50							
Waterbar	6+30		0.50							
Waterbar	9+80		0.50							
Waterbar	13+10		0.50							
V5: End Road										
Outsloping\Sidecast removal	14+20		6.00					4.00	55	23
Haul off old culvert						1.50				
Total Quantity (Hours)		4.00	14.50	3.00	0.00	1.50	0.00	6.50	69	35.5
Rates		\$10.00	\$155.00	\$101.00	\$127.00	\$99.00	\$158.00	\$40.00	\$10.73	\$1.60
Total Dollars		\$40	\$2,248	\$303	\$0	\$149	\$0	\$260	\$740	\$57

Total Cost

\$3,796

Bergsvik13 Timber Sale

Vacating Costs V6 to V7

Work Description	Station	Pump	C330	C315	D24 trk	D10/12 trk	D-8	Labor	Straw-bales	Seed-lbs
V6 to V7										
Walk equipment to back end of project			2.00							
V6: Road block / Waterbar	0+00		1.00							
Remove fill and culvert	0+30		6.00	4.00				3.00	20	10
Remove fill and culvert	2+00		6.00	4.00				3.00	20	10
Waterbar	2+70		0.50							
Waterbar	3+60		0.50							
Remove fill	6+30		1.50					1.00	6	10
Waterbar	6+80		0.50							
Waterbar	8+00		0.50							
Remove fill and culvert	9+65		2.00					1.00	6	10
V7: Road block / Waterbar	10+30		1.00							
Haul off old culvert						1.50				
Total Quantity (Hours)		0.00	21.50	8.00	0.00	1.50	0.00	8.00	52	40
Rates		\$10.00	\$155.00	\$101.00	\$127.00	\$99.00	\$158.00	\$40.00	\$10.73	\$1.60
Total Dollars		\$0	\$3,333	\$808	\$0	\$149	\$0	\$320	\$558	\$64

Total Cost

\$5,231

Bergsvik13 Timber Sale
Vacating Costs V8 to V9

Work Description	Station	Pump	C330	C315	D24 trk	D10/12 trk	D-8	Labor	Straw- bales	Seed-lbs
V8 to V9										
Walk equipment to back end of project			0.50							
V8: Road block / Waterbar. Begin road surface ripping.	0+00		2.00					0.50	15	5
Remove fill and culvert. Begin partial road outslowing and sidecast pullback	1+95		3.00					1.0	15	5
Begin full road outslowing and sidecast pullback	3+00		3.00					1.0	20	5
Remove fill and culvert and scrap metal	6+20	8.00	10.00	5.00				2.0	12	5
V9: End road outslowing/sidecast pull back, Road block/Waterbar	7+40		0.50							
Haul off culvert & scrap metal						2.00				
Total Quantity (Hours)		8.00	19.00	5.00	0.00	2.00	0.00	4.50	62	20
Rates		\$10.00	\$155.00	\$101.00	\$127.00	\$99.00	\$158.00	\$40.00	\$10.73	\$1.60
Total Dollars		\$80	\$2,945	\$505	\$0	\$198	\$0	\$180	\$665	\$32

Total Cost

\$4,605

Bergsvik13 Timber Sale

Vacating Costs V10

Work Description	Station	Pump	C330	C315	D24 trk	D10/12 trk	D-8	Labor	Straw-bales	Seed-lbs
V10										
Walk equipment in/out of project			1.00							
Remove fill and puncheon			2.00					1.00	8	5
Total Quantity (Hours)		0.00	3.00	0.00	0.00	0.00	0.00	1.00	8	5
Rates		\$10.00	\$155.00	\$101.00	\$127.00	\$99.00	\$158.00	\$40.00	\$10.73	\$1.60
Total Dollars		\$0	\$465	\$0	\$0	\$0	\$0	\$40	\$86	\$8

Total Cost

\$599

Bergsvik13 Timber Sale
Vacating Costs V11 to V12

Work Description	Station	Pump	C330	C315	D24 trk	D10/12 trk	D-8	Labor	Straw-bales	Seed-lbs
V11 to V12										
Walk equipment to back end of project			2.00							
V11: Road block / Waterbar	0+00		1.00					0.50	4	2.5
Remove fill and culvert	0+35	5.00	8.00					1.50	15	10
Waterbar	5+00		0.50							
Remove fill	5+25		2.00					1.00	8	5
Remove fill	5+60		2.00					1.00	8	5
Waterbar	5+80		0.50							
Waterbar	8+10		0.50							
Remove fill	10+30		1.00					0.50	4	2.5
V12: Remove fill	12+80		1.50					0.50	4	2.5
Haul off old culvert						1.50				
Total Quantity (Hours)		5.00	19.00	0.00	0.00	1.50	0.00	5.00	43	27.5
Rates		\$10.00	\$155.00	\$101.00	\$127.00	\$99.00	\$158.00	\$40.00	\$10.73	\$1.60
Total Dollars		\$50	\$2,945	\$0	\$0	\$149	\$0	\$200	\$461	\$44

Total Cost

\$3,849

[illegible]

V13 to V14										
Walk equipment to back end of project			2.00							
V13: Road block. Begin partial road outsloping and sidecast pullback	0+00		3.00			2.00		2	30	10
Large Waterbar	2+10		1.00							
Waterbar	3+80		0.50							
Remove fill	5+70		3.50					1.00	15	5
Remove fill and culvert	7+05		6.00					2.00	20	5
V14: Waterbar	8+10		0.50							
Haul off old culvert						1.50				
Total Quantity (Hours)		0.00	16.50	0.00	0.00	3.50	0.00	5.00	65	20
Rates		\$10.00	\$155.00	\$101.00	\$127.00	\$99.00	\$158.00	\$40.00	\$10.73	\$1.60
Total Dollars		\$0	\$2,558	\$0	\$0	\$347	\$0	\$200	\$697	\$32

\$3,833

Bergsvik13 Timber Sale
Vacating Costs V15 to V16

Work Description	Station	Pump	C330	C315	D24 trk	D10/12 trk	D-8	Labor	Straw- bales	Seed-lbs
V15 to V16										
Walk equipment to back end			0.50							
V15: Road block / Waterbar	0+00		1.00					0.50	4	2.5
Waterbar	1+50		0.50							
Remove fill and culvert	2+50		2.50					1.00	10	5
V16: Waterbar	3+50		0.50							
Haul off old culvert						1				
Total Quantity (Hours)		0.00	5.00	0.00	0.00	1.00	0.00	1.50	14	7.5
Rates		\$10.00	\$155.00	\$101.00	\$127.00	\$99.00	\$158.00	\$40.00	\$10.73	\$1.60
Total Dollars		\$0	\$775	\$0	\$0	\$99	\$0	\$60	\$150	\$12

Total Cost

\$1,096

Bergsvik13 Timber Sale

Vacating Costs V17

Work Description	Station	Pump	C330	C315	D24 trk	D10/12 trk	D-8	Labor	Straw-bales	Seed-lbs
V17										
Walk equipment in/out of project			0.50							
Remove fill and culvert			1.00					0.50	6	2.5
Construct waterbars			1.00							
Haul off old culvert						1.5				
Total Quantity (Hours)		0.00	2.50	0.00	0.00	1.50	0.00	0.50	6	2.5
Rates		\$10.00	\$155.00	\$101.00	\$127.00	\$99.00	\$158.00	\$40.00	\$10.73	\$1.60
Total Dollars		\$0	\$388	\$0	\$0	\$149	\$0	\$20	\$64	\$4

Total Cost

\$624

[illegible]

V18 to V19										
Walk equipment to back end of project			2.00							
V18: Road block / Waterbar	0+00		0.50							
Waterbar	1+90		0.50							
Remove fill	5+90		4.00					1.00	15	5
V19: Waterbar	6+70		0.50							
Total Quantity (Hours)		0.00	7.50	0.00	0.00	0.00	0.00	1.00	15	5
Rates		\$10.00	\$155.00	\$101.00	\$127.00	\$99.00	\$158.00	\$40.00	\$10.73	\$1.60
Total Dollars		\$0	\$1,163	\$0	\$0	\$0	\$0	\$40	\$161	\$8

\$1,371

Vacating Costs V20 to V21

Total Cost	\$1,354
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Bergsvik13 Timber Sale**Gate Costs I1 to I2**

		Cy/amount	x	Rate	=	Cost
I1 to I2						
0+70	Install Gate					
	Gate	1.0	x	\$5,000.00	=	\$5,000.00
	Gate delivery (hrs.)	1.5	x	\$99.00	=	\$148.50
	Road prep. (C315)	3.0	x	\$101.00	=	\$303.00
	Gate placement (C315)	4.0	x	\$101.00	=	\$404.00
	Cement (bags)	10.0	x	\$5.00	=	\$50.00
	Labor	8.0	x	\$40.00	=	\$320.00
21+20	Install Gate					
	Gate	1.0	x	\$5,000.00	=	\$5,000.00
	Gate delivery (hrs.)	1.5	x	\$99.00	=	\$148.50
	Road prep. (C315)	3.0	x	\$101.00	=	\$303.00
	Gate placement (C315)	4.0	x	\$101.00	=	\$404.00
	Cement (bags)	10.0	x	\$5.00	=	\$50.00
	Labor	8.0	x	\$40.00	=	\$320.00

TOTAL FOR GATE AND INSTALATION**\$12,451**Compiled By: W. LawrenceDate: 03/27/2014

Bergsvik 13
Stream Enhancement

Location	Site	Number of Key Pieces	Smaller Pieces (tops)	Placement method	Helper/ Labor	Rate/Hr.	Hours	\$/Location	\$/Key Piece*	Number of Straw Bales	\$/Bale	Cost per Site
SE1-SE2	1	4	4	Ground based	\$40	\$155	4	\$780	\$97.50	2	\$10.73	\$801.46
SE1-SE2	2	4	4	Ground based	\$40	\$155	4	\$780	\$97.50	2	\$10.73	\$801.46
SE1-SE2	3	4	4	Ground based	\$40	\$155	4	\$780	\$97.50	2	\$10.73	\$801.46
SE1-SE2	4	4	4	Ground based	\$40	\$155	4	\$780	\$97.50	2	\$10.73	\$801.46
SE1-SE2	5	4	4	Ground based	\$40	\$155	4	\$780	\$97.50	2	\$10.73	\$801.46
SE3-SE4	6	4	4	Ground based	\$40	\$155	4	\$780	\$97.50	2	\$10.73	\$801.46
SE3-SE4	7	4	4	Ground based	\$40	\$155	4	\$780	\$97.50	2	\$10.73	\$801.46
SE3-SE4	8	4	4	Ground based	\$40	\$155	4	\$780	\$97.50	2	\$10.73	\$801.46
SE3-SE4	9	4	4	Ground based	\$40	\$155	4	\$780	\$97.50	2	\$10.73	\$801.46
SE3-SE4	10	4	4	Ground based	\$40	\$155	4	\$780	\$97.50	2	\$10.73	\$801.46

Grass Seed: \$1.60 per lb. 30 lbs. 10 Subtotal \$8,015 Seed \$48

Ground Based =C 330 excavator

Project Total **\$8,063**

Projects Road Maintenance Cost Summary

Sale: Bergsvik 13
Date: 5/16/14
By: Andrew Arvin *FL*

Type	Equipment/Rationale			Hours	Rate	Cost
Final Project Haul Road Maintenance	Grader 14G			48.0	\$100	\$4,800
	Dump Truck 12CY			4.0	\$79	\$316
	FE Loader C966			4.0	\$83	\$332
	Vibratory Roller			48.0	\$77	\$3,696
	Water Truck 2,500 gallon			24.0	\$89	\$2,136
Total						\$11,280

Production Rates

Grader
 Vibratory Roller

Miles/day	Distance(miles)	Days
1.5	8.50	5.7
1.5	8.50	5.7

Upper Hamlet Stockpile to Pt. I9 = 0.3 miles

Cole Mountain Quarry to Hamlet County Road = 4.7 miles

Sweethome Stockpile to I37/I39 = 3.5 miles

Bergsvik 13 TIMBER CRUISE REPORT FY 2014

1. **Sale Area Location:** Areas 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11 are located in portions of Sections 6, & 7, T4N, R8W, and Sections 1, 2, 3, 12, & 13, T4N R9W, and Section 35, T5N, R9W, W.M., Clatsop County, Oregon.

2. **Fund Distribution:** BOF 96%
CSL 4%

Tax Code: 10-02 (56%)
10-04 (02%)
10-14 (42%)

3. **Sale Acreage by Area:**

Area	Treatment	Gross Acres	Non-Posted Buffers	Posted Buffers	New R/W	Existing R/W	Non-Stocked Acres	Net Acres	Survey Method
1	Partial Cut	42	3	0	<1	1	0	38	GIS
2	Modified Clearcut	15	0	3	1	<1	0	11	GIS
3	Modified Clearcut	12	0	1	0	0	0	11	GIS
4	Modified Clearcut	8	0	0	1	0	0	7	GIS
5	Partial Cut	21	3	0	0	0	0	18	GIS
6	Partial Cut	40	3	0	<1	1	0	36	GIS
7	Partial Cut	46	4	0	<1	1	0	41	GIS
8	Partial Cut	74	4	0	1	3	0	66	GIS
9	Partial Cut	198	8	0	3	2	23	162	GIS
10	Partial Cut	105	5	0	3	<1	0	97	GIS
11	Partial Cut	73	5	0	2	<1	0	66	GIS
12 (R/W)	Right of Way	11	-	-	-	-	-	11	LxW
TOTALS		645	35	4	11	8	23	564	

4. **Cruisers and Cruise Dates:** All areas were cruised by Skylar Hoefer, John Choate, Jon Long, Andrew Arvin, Dave Rygell, Derek Bangs, and Kevin Berry in March 2014.

5. **Cruise Method and Computation:** All cruisers used Corvallis Micro Technology (CMT) data collectors, and were downloaded to the Atterbury Super A.C.E. program at the Astoria District for computing. See the attached Cruise Design for more details on the cruise method. The cruise calculations were processed in the Astoria District office.

Areas 1, 5, 6 and 10 are a partial cut units and were variable plot cruised using a 33.61 BAF. These plots are located on a 12 chain by 3 chain grid, with every fourth plot measured and graded. A total of 57 plots were sampled, with 14 measured and graded plots, and 43 count plots.

Areas 2, 3 and 4 are modified clearcut units and were variable plot cruised using a 40 BAF. These plots are located on a 6 chain by 3 chain grid, with every other plot measured and graded. A total of 19 plots were sampled, with 9 measured and graded plots, and 10 count plots.

Areas 7, 8, 9, and 11 are a partial cut units and were variable plot cruised using a 27.78 BAF. These plots are located on a 10 chain by 6.5 chain grid, with every third plot measured and graded. A total of 55 plots were sampled, with 22 measured and graded plots, and 33 count plots.

Area 12 R/W Right-of-way volume was calculated by multiplying the R/W acreage and the average volume per acre from the plots in Areas 1, 5, 6, 7, 8, 9, 10, and 11(PC), and Areas 2, 3, and 4(MC). Right-of-way totals 9 acres.

AREA	CRUISE	TRACT	TYPE	ACRES
1, 5, 6, and 10	T04N R08W 20	15610	00PC	189
1, 5, 6, and 10	T04N R08W 20	15610	TAKE	189
2, 3, and 4	T04N R08W 20	234	00MC	29
7, 8, 9, and 11	T04N R08W 29	78911	00PC	335
7, 8, 9, and 11	T04N R08W 29	78911	TAKE	335
Area 12 R/W	T04N R08W 33	RW	00RW	11

6. Timber Description:

Areas 1, 5, 6 and 10 are partial cut units, approximately 35 to 50 years old, consisting of Douglas-fir, western hemlock, Sitka spruce and red alder. The leave stand will have an average Basal Area of 130, and SDI of approximately 30%. The average Douglas-fir tree size to be harvested is approximately 15 inches DBH, with an average height of 58 feet to a merchantable top (6 inch d.i.b./40% fp). The average volume per acre to be harvested (net) is 9 MBF.

Areas 2, 3 and 4 are modified clearcut units, approximately 30 to 45 years old, consisting of western hemlock, Sitka spruce, and red alder. The average western hemlock tree size to be harvested is approximately 15 inches DBH, with an average height of 54 feet to a merchantable top (6 inch d.i.b./40% fp). The average volume per acre to be harvested (net) is 27 MBF.

Areas 7, 8, 9, and 11 are partial cut units, approximately 30 to 45 years old, consisting of western hemlock, Douglas-fir, Sitka spruce and red alder. The leave stand will have an average Basal Area of 130, and SDI of approximately 30%. The average western hemlock tree size to be harvested is approximately 11 inches DBH, with an average height of 30 feet to a merchantable top (6 inch d.i.b./40% fp). The average volume per acre to be harvested (net) is 7 MBF.

Area 12 R/W is similar to the timber description mentioned above in the timber sale areas. The average volume (net) is 27 MBF/acre.

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

Statistics for Stand B.F. volumes

Area	Estimated CV	Target SE%	Actual CV	Actual SE%
1, 5, 6, and 10	55	11	38	5.0
2, 3, and 4	45	12	32.4	7.6
7, 8, 9, and 11	55	11	30.3	4.1

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

Species	DBH	Net Vol.	2 Saw	3Saw	4 Saw	Camp Run	% D & B	% Sale
Douglas-fir	12"	2,255	17	1,331	907	-	5.1	45
Western Hemlock	14"	2,229	345	1,581	303	-	3.6	44
Sitka Spruce	16"	372	153	197	22	-	2.7	8
Red Alder	11"	167	-	-	-	167	8.2	3

TOTAL NET VOLUME	5,023
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9. Approvals:

Prepared by: Andrew Arvin Date: May 15, 2014

Unit Forester Approval:  Date: 6/16/14

10. Attachments:
- Cruise Design and Map - 11 pages
 - Volume Report - 5 pages
 - Statistics Report - 10 pages
 - Log Stock Tables - 3 pages
 - Stand Table Summary – 2 pages

X:\Sunset Unit\2014 FY Sales\Bergsvik 13\Sale Prep\Cruise\Bergsvik13_Cruise_Report.docx

CRUISE DESIGN ASTORIA DISTRICT

Sale Name: Bergsvik 13Area(s) 1, 5, 6, & 10

Harvest Type: (PC) "Automark Thinning"

Approx. Cruise Acres: 209 Estimated CV% 55 Net BF/Acre SE% Objective 11 Net BF/AcrePlanned Sale Volume : 1,800 MBF Estimated Sale Area Value/Acre: \$2,200/Ac
(Areas 1, 5, 6, & 10) (9 MBF/Ac.)

A. Cruise Goals: (a) Grade minimum 60 conifer and 10 hardwood trees
(b) Sample 44 cruise plots (1 grade/ 3 count); (c) Other goals (X Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes.

B. Cruise Design:

- 1. Plot Cruises:** BAF 33.6 (Full point; Half point) (circle one)
Cruise Line Direction(s) (North/South)
Cruise Line Spacing 12 (chains)
Cruise Plot Spacing 3 (chains)
Grade/Count Ratio 1/3

Basal Area leave target is 130 sq. ft. Cruiser needs to select 4 leave trees per plot. Cruise all take and leave trees. Take plots as marked on cruise map. Do not take plots in stream buffers. Stream buffers are 25' non-posted. Map out non-thinnable areas larger than 1 acre, but do not drop plots. All cedar and alder will be reserved. Grade all alder as Camp Run. Record all snags as SN.

C. Tree Measurements:

- 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.
- 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.
- 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.
- 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.
- 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 = Camp Run; 0 = Cull
Hardwoods: R = CampRun

- 7. Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally results in higher breakage percentages than gentler topography, and hemlock generally breaks more than D-fir and spruce.

- 8. Standard Field Procedures: Plot Type Cruises:** Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at inter-visible points, not to exceed 100' apart. On "measure/grade" plots write the tree number and/or tree diameter on at least the first measured tree (clockwise from the line direction) in yellow paint. All trees on the plot may be marked this way, if the cruiser chooses.

- 9. Cruising Equipment:** Relaskop, Rangefinder, Logger's Tape (with dbh on back) Biltmore Stick, Compass, Cruise Cards in Tatum OR Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging, Yellow Paint.

- 10. Attachments:** A. Cruise Map (showing cruise unit boundaries, roads, streams, approx. acres/unit, cruise lines and plot locations, legal description and section lines, BAF or plot size, measure/count plot ratio, north arrow, and scale.

Cruise Design by: Jon Long
Approved by: [Signature]
Date: 3/20/14

Bergsvik 13

FY2014

Portions of Sections 6, & 7, T4N, R8W,
and Sections 1, 2, 3, 12, & 13, T4N R9W,
and Section 35, T5N, R9W,
W.M., Clatsop County, Oregon.

Area 1

12 ch x 3 ch
AZ-90/270
BAF - 33.6

L2

JC02
JC01
JC03
JC04
JC05
JC06
JC07

DR03
DR02
DR01
DR04
DR05
DR06
DR07

Area 5

12 ch x 3 ch
AZ - 0/180
BAF - 33.6

35

36

L3

L4

KB06
KB05
KB04
KB03
KB01
KB02

L5

L6

Area 6

12 ch x 3 ch
AZ - 90/270
BAF - 33.6

10

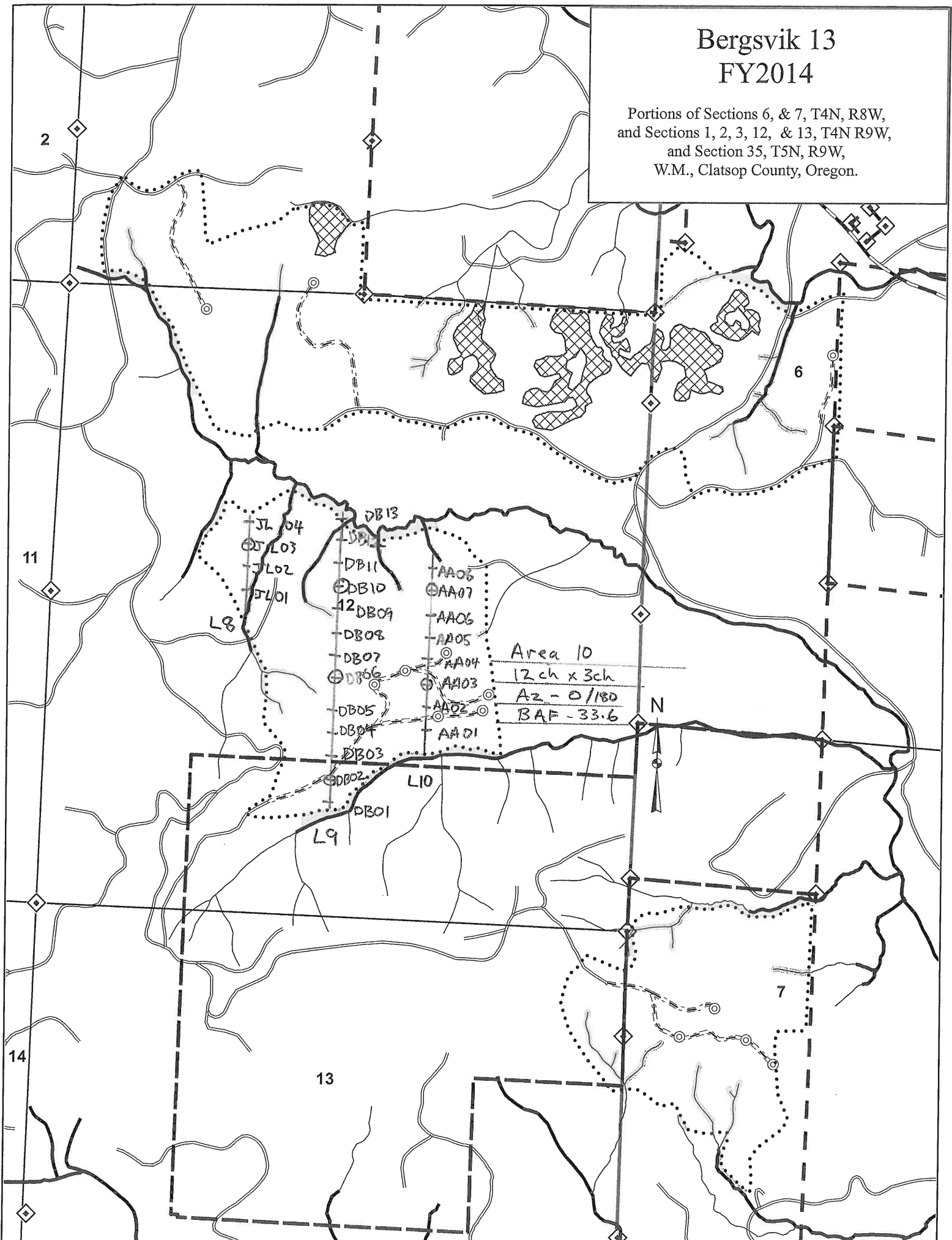
11

N

1

Bergsvik 13 FY2014

Portions of Sections 6, & 7, T4N, R8W,
and Sections 1, 2, 3, 12, & 13, T4N R9W,
and Section 35, T5N, R9W,
W.M., Clatsop County, Oregon.



CRUISE DESIGN ASTORIA DISTRICT

Sale Name: Bergsvik 13 **Area(s)** 2, 3, 4

Harvest Type: (MC) Modified Clearcut

Approx. Cruise Acres: 35 **Estimated CV%** 45 Net BF/Acre **SE% Objective** 12 Net BF/Acre

Planned Sale Volume : 600 MBF **Estimated Sale Area Value/Acre:** \$5,000/Ac
(Areas 2, 3, 4) (18 MBF/Ac.)

A. Cruise Goals: (a) Grade minimum 100 conifer and 10 hardwood trees
(b) Sample 18 cruise plots (1 grade/1 count); (c) Other goals (Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes.

B. Cruise Design:

1. Plot Cruises: BAF 40 (Full point; Half point) (circle one)
Cruise Line Direction(s) (Area 2 = 105*)(Area 3 = East/West) (Area 4 = 135*)
Cruise Line Spacing 6 (chains)
Cruise Plot Spacing 3 (chains)
Grade/Count Ratio 1/1

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

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 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 = Camp Run; 0 = Cull
Hardwoods: R = CampRun

7. **Deductions**: Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally results in higher breakage percentages than gentler topography, and hemlock generally breaks more than D-fir and spruce.

8. **Standard Field Procedures: Plot Type Cruises**: Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at inter-visible points, not to exceed 100' apart. On "measure/grade" plots write the tree number and/or tree diameter on at least the first measured tree (clockwise from the line direction) in yellow paint. All trees on the plot may be marked this way, if the cruiser chooses.

9. **Cruising Equipment**: Relaskop, Rangefinder, Logger's Tape (with dbh on back) Biltmore Stick, Compass, Cruise Cards in Tatum OR Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging, Yellow Paint.

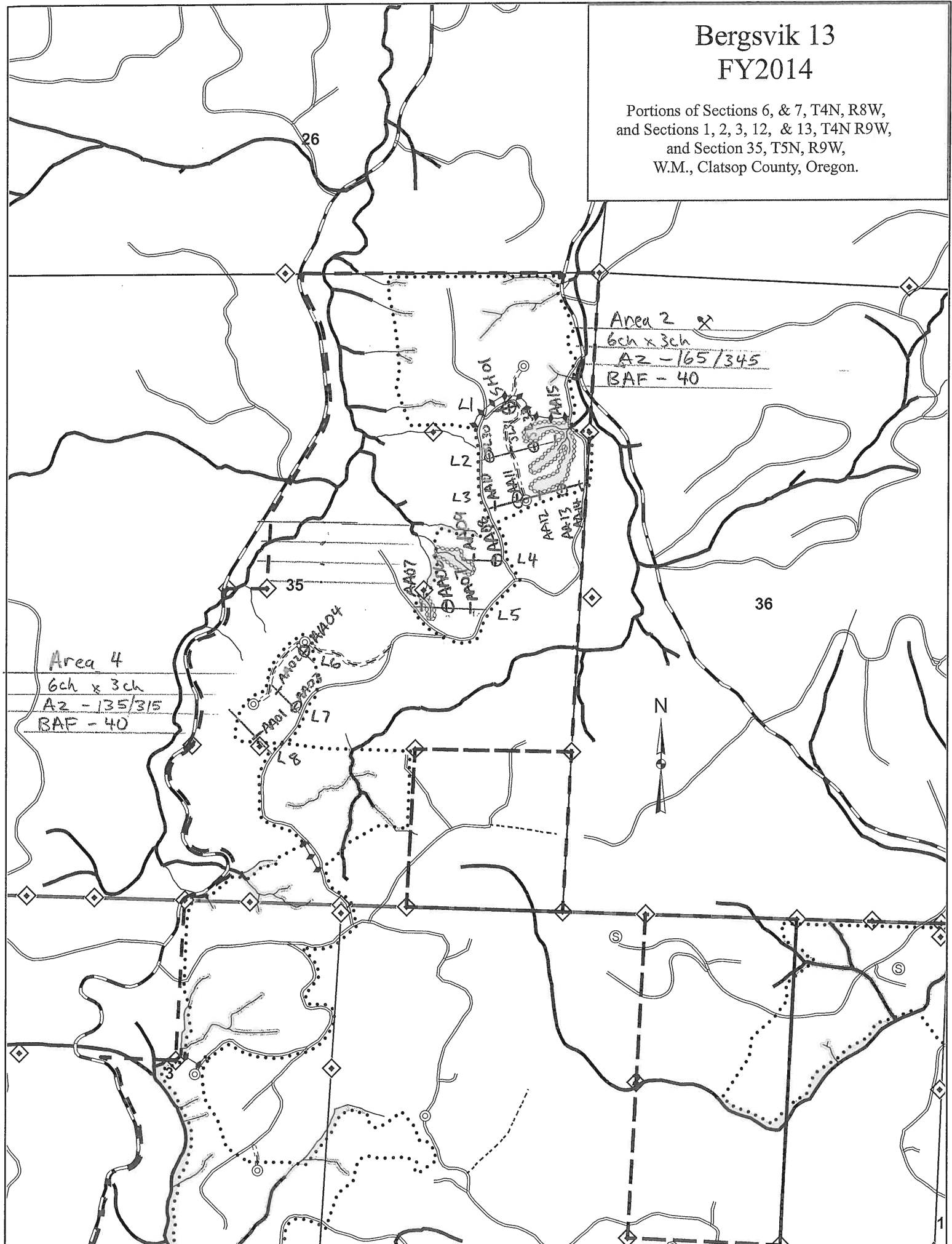
10. **Attachments**: A. Cruise Map (showing cruise unit boundaries, roads, streams, approx. acres/unit, cruise lines and plot locations, legal description and section lines, BAF or plot size, measure/count plot ratio, north arrow, and scale.

Cruise Design by: Andrew Arvin
Approved by: [Signature]
Date: 3/24/14

Bergsvik 13

FY2014

Portions of Sections 6, & 7, T4N, R8W,
and Sections 1, 2, 3, 12, & 13, T4N R9W,
and Section 35, T5N, R9W,
W.M., Clatsop County, Oregon.



CRUISE DESIGN ASTORIA DISTRICT

Sale Name: Bergsvik 13Area(s) 7, 8, 9, 11

Harvest Type: (PC) "Automark Thinning"

Approx. Cruise Acres: 394 Estimated CV% 55 Net BF/Acre SE% Objective 11 Net BF/AcrePlanned Sale Volume : 2,500 MBF Estimated Sale Area Value/Acre: \$1,800/Ac
(Areas 7, 8, 9, 11) (7 MBF/Ac.)

A. Cruise Goals: (a) Grade minimum 100 conifer and 10 hardwood trees
(b) Sample 60 cruise plots (1 grade/2 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 27.78 (Full point; Half point) (circle one)
Cruise Line Direction(s) (Area 7 = 60*), (Area 8 = 120*),
(Areas 9, 11 = North/South)
Cruise Line Spacing 10 (chains)
Cruise Plot Spacing 6.5 (chains)
Grade/Count Ratio 1/2

Basal Area leave target is 130 sq. ft. Cruiser needs to select 4.5 leave trees per plot. Cruise all take and leave trees. Take plots as marked on cruise map. Do not take plots in stream buffers. Stream buffers are 25' non-posted. Map out non-thinnable areas larger than 1 acre, but do not drop plots. All cedar and alder will be reserved. Grade all alder as Camp Run. Record all snags as SN.

C. Tree Measurements:

- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 8" for hardwoods.
Record dbh to nearest $\frac{1}{2}$ " for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.
- 2. Bole Length:** Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.
- 3. Top Cruise Diameter (TCD):** Minimum top outside bark is 7" for 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:

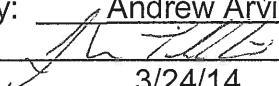
- A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DL, HL, CL, etc.)
- B. Sort: 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 = Camp Run; 0 = Cull
Hardwoods: R = CampRun

7. **Deductions**: Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally results in higher breakage percentages than gentler topography, and hemlock generally breaks more than D-fir and spruce.

8. **Standard Field Procedures: Plot Type Cruises**: Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at inter-visible points, not to exceed 100' apart. On "measure/grade" plots write the tree number and/or tree diameter on at least the first measured tree (clockwise from the line direction) in yellow paint. All trees on the plot may be marked this way, if the cruiser chooses.

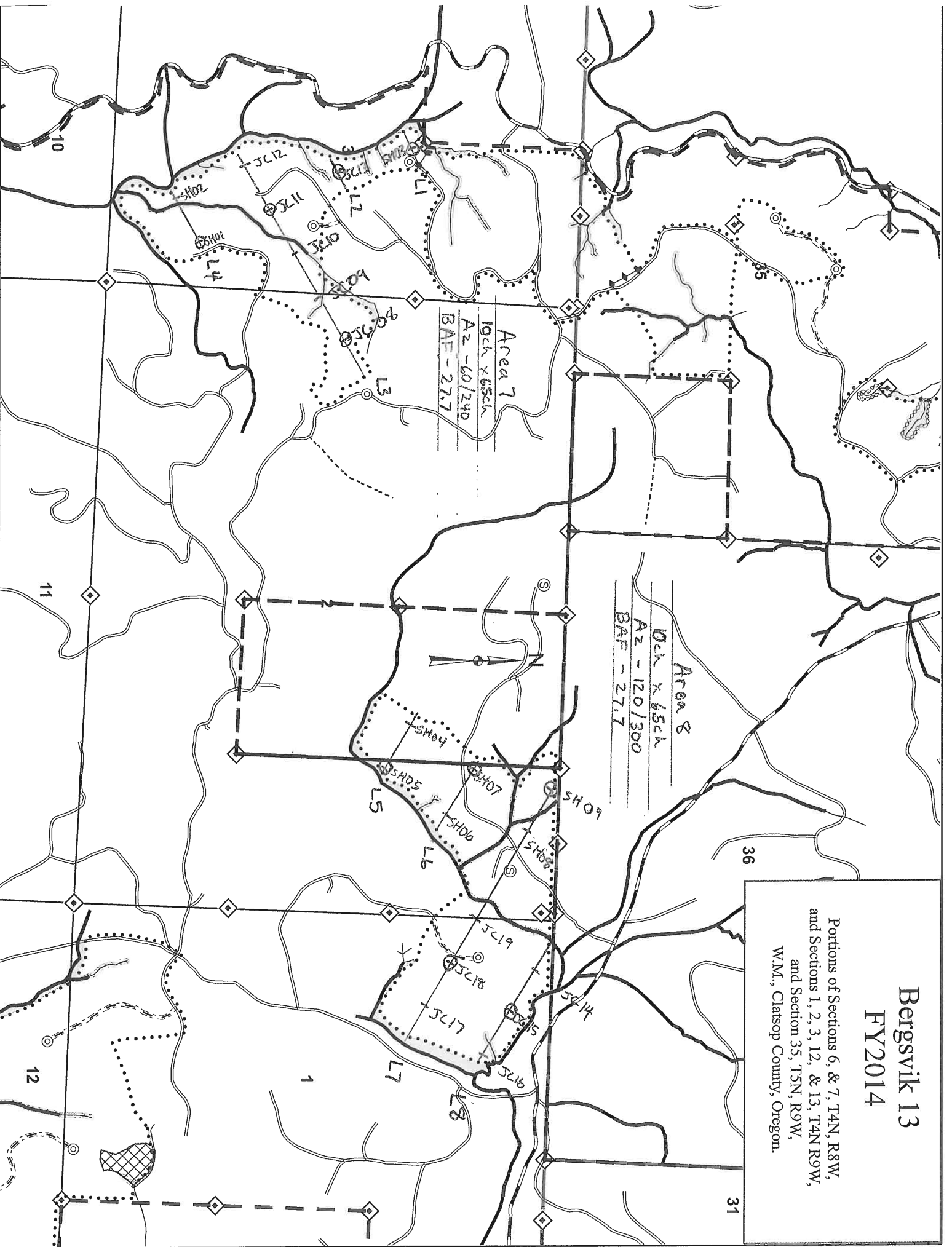
9. **Cruising Equipment**: Relaskop, Rangefinder, Logger's Tape (with dbh on back) Biltmore Stick, Compass, Cruise Cards in Tatum OR Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging, Yellow Paint.

10. **Attachments**: A. Cruise Map (showing cruise unit boundaries, roads, streams, approx. acres/unit, cruise lines and plot locations, legal description and section lines, BAF or plot size, measure/count plot ratio, north arrow, and scale.

Cruise Design by: Andrew Arvin
Approved by: 
Date: 3/24/14

Bergsvik 13 FY2014

Portions of Sections 6, & 7, T4N, R8W,
and Sections 1, 2, 3, 12, & 13, T4N R9W,
and Section 35, T5N, R9W,
W.M., Clatsop County, Oregon.



Portions of Sections 6, & 7, T4N, R8W,
and Sections 1, 2, 3, 12, & 13, T4N R9W,
and Section 35, T5N, R9W,
W.M., Clatsop County, Oregon.

BAF - 27.7

BAF - 27.7 //

13

TC		PSPCSTGR Species, Sort Grade - Board Foot Volumes (Project)																		
T04N R08W S06 TyTAKE THRU T04N R08W S06 Ty00RW				Project: B13 Acres 564.00										Page 1 Date 6/13/2014 Time 10:27:33AM						
Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent of Net Board Foot Volume								Average Log			Logs
									Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf	Per /Acre
					4-5	6-11	12-16		17+	12-20	21-30	31-35	36-99							
D		DOCU															12		0.00	4.7
D		DO2S			2.7	32	31	17	15	85			4	9	29	58	35	191	1.58	.2
D		DO3S		59	5.2	2,488	2,360	1,331		100	0		0	11	34	55	35	69	0.64	34.1
D		DO4S		41	5.1	1,695	1,608	907	7	93			49	28	13	10	22	26	0.41	61.9
D Totals				45	5.1	4,215	4,000	2,255	3	96	1		20	18	25	37	26	40	0.51	100.9
A		DOCU															12		0.00	1.4
A		DOCR		100	8.2	323	296	167		100			21	31	13	34	24	33	0.52	9.1
A Totals				3	8.2	323	296	167		100			21	31	13	34	22	28	0.49	10.4
H		DOCU															8		0.00	2.7
H		DO2S		15	4.5	640	612	345		0	89	10	4		22	74	36	236	1.64	2.6
H		DO3S		71	3.0	2,891	2,804	1,581		88	12	0		4	20	76	37	102	0.84	27.4
H		DO4S		14	5.7	571	538	303		100	0		40	31	29		22	27	0.44	20.1
H Totals				44	3.6	4,102	3,953	2,229	76	22	2		6	7	21	65	30	75	0.76	52.8
S		DOCU															10		0.00	.2
S		DO2S		41	1.4	276	272	153			63	37			47	53	37	390	2.53	.7
S		DO3S		53	3.6	362	349	197		95	5		5	8	18	69	35	72	0.76	4.9
S		DO4S		6	4.1	40	39	22		100			49	51			20	25	0.49	1.5
S Totals				7	2.7	679	660	372		56	29	15	6	7	29	58	31	91	0.92	7.3
Totals					4.4	9,319	8,910	5,023	1	84	12	2	13	13	23	51	27	52	0.62	171.4

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page 1				
				Project: B13										Date 6/13/2014				
														Time 10:32:43AM				
T04N R08W S06 TTAKE										T04N R08W S06 TTAKE								
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt									
04N	08W	06	15610	TAKE	189.00	57	36	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 Ft	Bd Ft	CF/ Lf	
							4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99				
D	DO	CU													14		0.00	9.9
D	DO	3S	73	6.0	2,540	2,388	451	100					43	57	36	72	0.64	33.2
D	DO	4S	27	2.7	864	841	159	6	94		52	37	11		21	24	0.42	35.0
D Totals			38	5.1	3,404	3,229	610	2	98		14	10	35	42	27	41	0.52	78.2
H	DO	CU													7		0.00	7.0
H	DO	2S	20	6.7	1,110	1,036	196	100					29	71	37	234	1.64	4.4
H	DO	3S	71	1.8	3,610	3,546	670	100				5	10	85	37	99	0.77	35.9
H	DO	4S	9		405	405	77	100			50	50			22	27	0.47	15.0
H Totals			59	2.7	5,125	4,987	943	79	21		4	8	13	75	30	80	0.77	62.2
S	DO	3S	100		143	143	27	100					100		40	60	0.63	2.4
S Totals			2		143	143	27	100					100		40	60	0.63	2.4
A	DO	CR	100		68	68	13	100					100		24	30	0.50	2.3
A Totals			1		68	68	13	100					100		24	30	0.50	2.3
Type Totals				3.6	8,739	8,427	1,593	1	87	12	8	9	21	62	28	58	0.64	145.0

T	Species, Sort Grade - Board Foot Volumes (Type)										Page 1								
Project: B13											Date	6/13/2014							
											Time	10:32:43AM							
T04N R08W S06 T00MC										T04N R08W S06 T00MC									
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt										
04N	08W	06	234	00MC	29.00	19	59	1	W										
S So Gr T rt ad Spp			%	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre
			Net BdFt					Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf	
H	DO	CU													11		0.00	5.1	
H	DO	2S	20	.8	3,820	3,790	110			72	28	10		12	78	35	237	1.61	16.0
H	DO	3S	65	.6	12,394	12,321	357		96	4			7	39	54	35	97	0.77	127.0
H	DO	4S	15	1.6	2,835	2,791	81		100			40	58	3		21	27	0.44	103.4
H	Totals		68	.8	19,049	18,901	548		77	17	6	8	13	28	51	29	75	0.73	251.5
D	DO	3S	72	3.3	5,622	5,436	158		100				7	28	65	36	78	0.70	69.7
D	DO	4S	28		2,043	2,043	59		100			49	51			20	24	0.37	83.5
D	Totals		27	2.4	7,666	7,479	217		100			13	19	20	47	27	49	0.57	153.2
S	DO	2S	34		550	550	16		100					100		32	230	2.12	2.4
S	DO	3S	37		575	575	17		100				42		58	36	70	0.55	8.2
S	DO	4S	29	6.1	485	455	13		100			23	77			21	29	0.48	15.9
S	Totals		6	1.8	1,610	1,580	46		65	35		7	37	35	21	26	60	0.69	26.5
Type Totals				1.3	28,325	27,961	811		83	13	4	9	16	26	48	28	65	0.67	431.3

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page		1				
				Project: B13										Date		6/13/2014				
														Time		10:32:43AM				
T04N R08W S06 TTAKE										T04N R08W S06 TTAKE										
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt		
04N		08W		06		78911		TAKE		335.00		55		77		1		W		
S So Gr Spp T rt ad			% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
								Log Scale Dia.				Log Length				Ln	Bd	CF/ Lf		
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	Ft			
D DO CU				5.1	1,995	1,893	634		100				21	27	52	4		0.00	2.1	
D DO 3S			49	6.1	2,081	1,954	654	8	92			49	23	14	14	35	64	0.63	29.5	
D DO 4S			51													22	27	0.41	73.3	
D Totals			56	5.6	4,076	3,847	1,289	4	96			25	22	21	33	25	37	0.49	104.8	
H DO 3S			78	6.6	1,503	1,403	470		65	35				17	83	38	111	0.99	12.6	
H DO 4S			22	11.3	433	384	129		100			35		65		21	26	0.42	14.8	
H Totals			26	7.7	1,936	1,788	599		73	27		7		27	66	29	65	0.76	27.4	
A DO CU																12		0.00	2.3	
A DO CR			100	8.9	490	446	150		100			23	26	14	37	24	33	0.52	13.6	
A Totals			6	8.9	490	446	150		100			23	26	14	37	22	28	0.48	15.9	
S DO CU																10		0.00	.3	
S DO 2S			45	1.4	393	387	130			59	41				41	59	38	429	2.60	.9
S DO 3S			52	4.5	457	437	146		93	7		7	6	23	65	33	74	0.82	5.9	
S DO 4S			3		21	21	7		100			100				20	20	0.50	1.0	
S Totals			12	3.0	871	845	283		51	30	19	6	3	31	60	31	105	1.02	8.1	
Type Totals				6.1	7,373	6,925	2,320		2	85	11	2	18	14	23	45	26	44	0.58	156.2

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page		1					
				Project: B13												Date		6/13/2014					
																Time		10:32:43AM					
T04N R08W S06 T00RW												T04N R08W S06 T00RW											
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt					
04N		08W		06		RW		00RW		11.00		131		332		1		W					
				%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log			Logs			
S So Gr				Net					Log Scale Dia.				Log Length				Ln	Bd	CF/	Per			
T rt ad				BdFt	Def%			Gross	Net	Net MBF	4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	Ft	Lf	/Acre	
D DO CU																				10		0.00	5.7
D DO 2S				12	2.7	1,659	1,615	18			15	85			4	9	29	58	35	191	1.58	8.4	
D DO 3S				63	4.5	8,355	7,983	88			98	2		1	7	41	51	35	81	0.75	98.0		
D DO 4S				25	4.8	3,295	3,137	35			5	95			45	36	13	6	22	26	0.43	119.5	
D Totals				46	4.3	13,308	12,734	140			1	87	12		12	15	33	41	28	55	0.65	231.7	
H DO CU																			8		0.00	4.7	
H DO 2S				28	2.9	3,683	3,578	39			3	85	12		5		20	75	37	247	1.66	14.5	
H DO 3S				59	2.1	7,768	7,603	84			84	14	2			6	33	61	36	108	0.87	70.3	
H DO 4S				13	2.9	1,615	1,568	17			99	1			30	52	18		23	30	0.49	51.9	
H Totals				46	2.4	13,066	12,748	140			63	33	5		5	10	27	57	30	90	0.86	141.5	
S DO CU																			9		0.00	.2	
S DO 2S				47	3.8	741	712	8				54	46				29	71	37	359	2.71	2.0	
S DO 3S				42	5.5	668	631	7			98	2		2	11	26	61	36	76	0.83	8.3		
S DO 4S				11	4.4	170	163	2			100			41	59			20	27	0.50	6.1		
S Totals				5	4.6	1,578	1,506	17			52	27	22		5	11	25	59	30	91	1.03	16.6	
A DO CU																			14		0.00	2.0	
A DO CR				100	6.4	458	429	5			100				16	25	24	36	25	36	0.56	11.8	
A Totals				2	6.4	458	429	5			100				16	25	24	36	24	31	0.51	13.8	
Type Totals					3.5	28,411	27,418	302			1	74	22	3	9	12	30	49	28	68	0.74	403.6	

TC PSTATS		PROJECT STATISTICS								PAGE	1	
		PROJECT B13								DATE	6/13/2014	
TWP	RGE	SC	TRACT	TYPE		ACRES		PLOTS	TREES	CuFt	BdFt	
04N 04N	08 08W	06 06	15610 RW	TAKE 00RW	THR	564.00		262	1,473	1	W	
			PLOTS	TREES	TREES PER PLOT		ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL			262	1473	5.6							
CRUISE			105	502	4.8		74,256	.7				
DBH COUNT												
REFOREST												
COUNT			150	888	5.9							
BLANKS			7									
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			261	82.1	11.7	33		61.3	4,215	4,000	1,336	1,336
WHEMLOCK			164	34.1	14.2	48		37.6	4,102	3,953	1,195	1,195
S SPRUCE			35	5.6	15.7	43		7.5	679	660	209	209
R ALDER			39	9.7	11.1	25		6.5	323	296	113	113
SNAG			3	.3	9.2	26		.1				
TOTAL			502	131.7	12.5	37		113.1	9,319	8,910	2,853	2,853
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		76.7	4.7	86	91	95						
WHEMLOCK		87.6	6.8	185	199	213						
S SPRUCE		105.1	17.8	175	213	251						
R ALDER		51.9	8.3	34	37	41						
SNAG												
TOTAL		107.3	4.8	124	130	136		460	115	51		
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		178.2	11.0	73	82	91						
WHEMLOCK		246.1	15.2	29	34	39						
S SPRUCE		478.2	29.5	4	6	7						
R ALDER		476.6	29.4	7	10	13						
SNAG		1469.9	90.7	0	0	1						
TOTAL		134.0	8.3	121	132	143		717	179	80		
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		163.1	10.1	55	61	68						
WHEMLOCK		229.4	14.2	32	38	43						
S SPRUCE		516.2	31.9	5	8	10						
R ALDER		446.6	27.6	5	6	8						
SNAG		1394.7	86.1	0	0	0						
TOTAL		122.1	7.5	105	113	122		595	149	66		
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		154.9	9.6	3,617	4,000	4,382						
WHEMLOCK		218.6	13.5	3,420	3,953	4,487						
S SPRUCE		535.9	33.1	442	660	879						
R ALDER		507.6	31.3	203	296	389						
SNAG												
TOTAL		123.9	7.6	8,228	8,910	9,591		613	153	68		

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TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	08W	06	234	00MC	29.00	19	132	1	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		19	132	6.9						
CRUISE		10	59	5.9	8,084	.7				
DBH COUNT										
REFOREST										
COUNT		9	68	7.6						
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
WHEMLOCK		34	139.9	14.5	54	160.0	19,049	18,901	5,333	5,333
DOUG FIR		18	113.4	12.2	38	92.6	7,666	7,479	2,374	2,374
S SPRUCE		6	20.7	13.0	36	18.9	1,610	1,580	484	484
SNAG		1	4.8	9.0	26	2.1				
TOTAL		59	278.8	13.4	46	273.7	28,325	27,961	8,191	8,191
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		59.7	10.2	147	164	180				
DOUG FIR		57.0	13.8	72	83	95				
S SPRUCE		88.8	39.5	76	125	174				
SNAG										
TOTAL		70.8	9.2	120	132	145	200	50	22	
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK		69.9	16.5	117	140	163				
DOUG FIR		72.3	17.0	94	113	133				
S SPRUCE		191.8	45.2	11	21	30				
SNAG		435.9	102.7		5	10				
TOTAL		24.3	5.7	263	279	295	25	6	3	
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		69.7	16.4	134	160	186				
DOUG FIR		74.9	17.6	76	93	109				
S SPRUCE		177.6	41.8	11	19	27				
SNAG		435.9	102.7		2	4				
TOTAL		23.5	5.5	259	274	289	23	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		
WHEMLOCK		72.5	17.1	15,673	18,901	22,129				
DOUG FIR		78.6	18.5	6,095	7,479	8,864				
S SPRUCE		190.7	44.9	870	1,580	2,291				
SNAG										
TOTAL		32.4	7.6	25,824	27,961	30,097	44	11	5	

TC TSTATS				STATISTICS PROJECT B13				PAGE 1 DATE 6/13/2014		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	08W	06	RW	00RW	11.00	131	972	1	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		131	972	7.4						
CRUISE		54	331	6.1	3,019	11.0				
DBH COUNT										
REFOREST										
COUNT		77	585	7.6						
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	178	168.0	13.3	40		162.4	13,308	12,734	4,155	4,155
WHEMLOCK	106	80.2	15.6	56		106.3	13,066	12,748	3,658	3,658
S SPRUCE	22	12.0	16.3	43		17.4	1,578	1,506	503	503
R ALDER	23	13.0	11.8	27		9.8	458	429	169	169
SNAG	2	1.3	11.4	28		.9				
TOTAL	331	274.5	14.1	44		296.8	28,411	27,418	8,486	8,486
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	72.9	5.5	98	104	110					
WHEMLOCK	91.3	8.9	201	220	240					
S SPRUCE	101.8	22.2	184	236	289					
R ALDER	51.9	11.0	34	39	43					
SNAG										
TOTAL	106.7	5.9	136	145	153	454	114	50		
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	72.1	6.3	157	168	179					
WHEMLOCK	113.1	9.9	72	80	88					
S SPRUCE	300.2	26.2	9	12	15					
R ALDER	303.9	26.5	10	13	16					
SNAG	731.8	63.9	0	1	2					
TOTAL	29.9	2.6	267	274	282	36	9	4		
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	67.9	5.9	153	162	172					
WHEMLOCK	110.9	9.7	96	106	117					
S SPRUCE	296.4	25.9	13	17	22					
R ALDER	283.1	24.7	7	10	12					
SNAG	655.7	57.2	0	1	1					
TOTAL	25.0	2.2	290	297	303	25	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		
DOUG FIR	69.0	6.0	11,967	12,734	13,502					
WHEMLOCK	112.4	9.8	11,497	12,748	14,000					
S SPRUCE	314.4	27.4	1,093	1,506	1,919					
R ALDER	305.0	26.6	315	429	543					
SNAG										
TOTAL	36.8	3.2	26,538	27,418	28,297	54	13	6		

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TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	08W	06	15610	00PC	189.00	57	382	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
PLOTS		TREES		TREES						
TOTAL		57	382	6.7						
CRUISE		17	90	5.3		33,192	.3			
DBH COUNT										
REFOREST										
COUNT		40	281	7.0						
BLANKS										
100 %										
STAND SUMMARY										
SAMPLE		TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
TREES		/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUGLEAV		27	46.0	16.3	54	66.6	6,266	5,911	1,995	1,995
HEMLEAV		24	34.3	17.4	64	56.6	8,097	7,914	2,140	2,140
DOUG FIR		19	54.0	12.6	39	46.6	3,404	3,229	1,070	1,070
WHEMLOCK		14	34.8	15.1	58	43.0	5,125	4,987	1,455	1,455
SPRUCELV		1	1.0	35.0	50	6.5	447	379	174	174
S SPRUCE		2	2.4	13.5	41	2.4	143	143	60	60
R ALDER		1	2.3	12.0	25	1.8	68	68	27	27
ALDRLEAV		2	1.0	14.9	38	1.2	57	57	25	25
TOTAL		90	175.6	15.3	52	224.7	23,606	22,687	6,946	6,946
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		58.8	11.5	137	155	173				
HEMLEAV		98.0	20.4	284	357	430				
DOUG FIR		69.2	16.3	59	71	82				
WHEMLOCK		51.8	14.4	144	169	193				
SPRUCELV										
S SPRUCE						60	60	60		
R ALDER										
ALDRLEAV		23.6	22.1	47	60	73				
TOTAL		115.4	12.2	167	190	213	532	133	59	
CL: 68.1 %	COEFF		TREES/ACRE				# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
DOUGLEAV		79.4	10.5	41	46	51				
HEMLEAV		98.8	13.1	30	34	39				
DOUG FIR		109.5	14.5	46	54	62				
WHEMLOCK		135.1	17.9	29	35	41				
SPRUCELV		284.5	37.6	1	1	1				
S SPRUCE		529.1	70.0	1	2	4				
R ALDER		558.7	73.9	1	2	4				
ALDRLEAV		755.0	99.9	0	1	2				
TOTAL		34.8	4.6	168	176	184	48	12	5	
CL: 68.1 %	COEFF		BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
DOUGLEAV		76.6	10.1	60	67	73				
HEMLEAV		94.7	12.5	50	57	64				
DOUG FIR		107.2	14.2	40	47	53				
WHEMLOCK		135.0	17.9	35	43	51				
SPRUCELV		284.5	37.6	4	6	9				
S SPRUCE		529.1	70.0	1	2	4				
R ALDER		558.7	73.9	0	2	3				
ALDRLEAV		755.0	99.9	0	1	2				

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TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	08W	06	15610	00PC	189.00	57	382	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
TOTAL		27.0	3.6	217	225	233	29	7	3
CL: 68.1 %		COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
SD: 1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUGLEAV		76.9	10.2	5,309	5,911	6,512			
HEMLEAV		95.5	12.6	6,914	7,914	8,914			
DOUG FIR		106.1	14.0	2,776	3,229	3,683			
WHEMLOCK		134.7	17.8	4,098	4,987	5,876			
SPRUCELV		284.5	37.6	236	379	521			
S SPRUCE		529.1	70.0	43	143	243			
R ALDER		558.7	73.9	18	68	118			
ALDRLEAV		755.0	99.9	0	57	114			
TOTAL		38.0	5.0	21,544	22,687	23,829	58	14	6

TC TSTATS				STATISTICS			PAGE 1			
				PROJECT B13			DATE 6/13/2014			
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	08W	06	15610	TAKE	189.00	57	159	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
PLOTS		TREES								
TOTAL	57	159	2.8							
CRUISE	14	36	2.6	17,653	.2					
DBH COUNT										
REFOREST										
COUNT	36	121	3.4							
BLANKS	7									
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	19	54.0	12.6	39		46.6	3,404	3,229	1,070	1,070
WHEMLOCK	14	34.8	15.1	58		43.0	5,125	4,987	1,455	1,455
S SPRUCE	2	2.4	13.5	41		2.4	143	143	60	60
R ALDER	1	2.3	12.0	25		1.8	68	68	27	27
TOTAL	36	93.4	13.6	46		93.8	8,739	8,427	2,612	2,612
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	69.2	16.3	59	71	82					
WHEMLOCK	51.8	14.4	144	169	193					
S SPRUCE			60	60	60					
R ALDER										
TOTAL	75.9	12.6	93	107	120	230	58	26		
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	109.5	14.5	46	54	62					
WHEMLOCK	135.1	17.9	29	35	41					
S SPRUCE	529.1	70.0	1	2	4					
R ALDER	558.7	73.9	1	2	4					
TOTAL	61.0	8.1	86	93	101	149	37	17		
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUG FIR	107.2	14.2	40	47	53					
WHEMLOCK	135.0	17.9	35	43	51					
S SPRUCE	529.1	70.0	1	2	4					
R ALDER	558.7	73.9	0	2	3					
TOTAL	62.7	8.3	86	94	102	157	39	17		
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUG FIR	106.1	14.0	2,776	3,229	3,683					
WHEMLOCK	134.7	17.8	4,098	4,987	5,876					
S SPRUCE	529.1	70.0	43	143	243					
R ALDER	558.7	73.9	18	68	118					
TOTAL	75.3	10.0	7,587	8,427	9,266	226	57	25		

TC TSTATS				STATISTICS				PAGE	1		
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TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
04N	08W	06	15610	LEAV	189.00	57	223	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL				57	223	3.9					
CRUISE				15	54	3.6	15,539	.3			
DBH COUNT											
REFOREST											
COUNT				42	168	4.0					
BLANKS											
100 %											
STAND SUMMARY											
SAMPLE		TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
TREES		/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
DOUGLEAV		27	46.0	16.3	54	66.6	6,266	5,911	1,995	1,995	
HEMLEAV		24	34.3	17.4	64	56.6	8,097	7,914	2,140	2,140	
SPRUCELV		1	1.0	35.0	50	6.5	447	379	174	174	
ALDRLEAV		2	1.0	14.9	38	1.2	57	57	25	25	
TOTAL		54	82.2	17.1	58	130.9	14,866	14,260	4,334	4,334	
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		58.8	11.5	137	155	173					
HEMLEAV		98.0	20.4	284	357	430					
SPRUCELV											
ALDRLEAV		23.6	22.1	47	60	73					
TOTAL		106.7	14.5	210	246	281	455	114	51		
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV		79.4	10.5	41	46	51					
HEMLEAV		98.8	13.1	30	34	39					
SPRUCELV		284.5	37.6	1	1	1					
ALDRLEAV		755.0	99.9	0	1	2					
TOTAL		25.7	3.4	79	82	85	26	7	3		
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		76.6	10.1	60	67	73					
HEMLEAV		94.7	12.5	50	57	64					
SPRUCELV		284.5	37.6	4	6	9					
ALDRLEAV		755.0	99.9	0	1	2					
TOTAL		14.3	1.9	128	131	133	8	2	1		
CL:	68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV		76.9	10.2	5,309	5,911	6,512					
HEMLEAV		95.5	12.6	6,914	7,914	8,914					
SPRUCELV		284.5	37.6	236	379	521					
ALDRLEAV		755.0	99.9	0	57	114					
TOTAL		29.8	3.9	13,697	14,260	14,823	36	9	4		

TC TSTATS				STATISTICS PROJECT B13				PAGE 1 DATE 6/13/2014		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	08W	06	78911	01PC	335.00	55	462	1	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		55	462	8.4						
CRUISE		28	185	6.6	77,019	.2				
DBH COUNT										
REFOREST										
COUNT		27	229	8.5						
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
DOUGLEAV		68	69.0	15.1	48	85.9	7,854	7,586	2,405	2,405
DOUG FIR		46	92.4	11.2	30	63.6	4,076	3,847	1,303	1,303
HEMLEAV		24	17.5	17.8	64	30.3	3,782	3,663	1,080	1,080
WHEMLOCK		10	23.0	13.2	36	21.7	1,936	1,788	609	609
R ALDER		15	14.6	11.0	25	9.6	490	446	170	170
S SPRUCE		5	5.9	16.8	45	9.1	871	845	260	260
SPRUCELV		8	3.1	21.3	55	7.6	773	719	248	248
ALDRLEAV		5	2.9	13.8	29	3.0	107	107	45	45
CEDLEAV		3	1.1	16.1	27	1.5	89	80	33	33
SNAG		1	.6	18.0	35	1.0				
TOTAL		185	229.9	13.6	39	233.4	19,978	19,080	6,153	6,153
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		56.0	6.8	125	134	144				
DOUG FIR		64.0	9.4	46	51	56				
HEMLEAV		41.0	8.5	210	229	249				
WHEMLOCK		94.9	31.6	94	137	180				
R ALDER		54.4	14.5	31	36	41				
S SPRUCE		98.9	49.1	141	278	415				
SPRUCELV		94.1	35.5	206	319	432				
ALDRLEAV		58.6	29.1	28	40	52				
CEDLEAV		76.0	52.6	70	147	224				
SNAG										
TOTAL		98.2	7.2	118	127	136	385	96	43	
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV		50.8	6.8	64	69	74				
DOUG FIR		83.0	11.2	82	92	103				
HEMLEAV		121.1	16.3	15	17	20				
WHEMLOCK		226.6	30.5	16	23	30				
R ALDER		224.4	30.2	10	15	19				
S SPRUCE		304.9	41.1	3	6	8				
SPRUCELV		343.3	46.3	2	3	4				
ALDRLEAV		348.1	46.9	2	3	4				
CEDLEAV		645.6	87.0	0	1	2				
SNAG		519.5	70.0	0	1	1				
TOTAL		28.2	3.8	221	230	239	32	8	4	
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		48.7	6.6	80	86	92				
DOUG FIR		77.8	10.5	57	64	70				
HEMLEAV		120.0	16.2	25	30	35				
WHEMLOCK		226.5	30.5	15	22	28				

TC TSTATS				STATISTICS			PAGE	2	
				PROJECT B13			DATE	6/13/2014	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	08W	06	78911	01PC	335.00	55	462	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
R ALDER		210.1	28.3	7	10	12			
S SPRUCE		305.9	41.2	5	9	13			
SPRUCELV		326.9	44.0	4	8	11			
ALDRLEAV		338.1	45.5	2	3	4			
CEDLEAV		548.7	73.9	0	2	3			
SNAG		519.5	70.0	0	1	2			
TOTAL		18.7	2.5	227	233	239	14	3	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
DOUGLEAV		52.6	7.1	7,049	7,586	8,124			
DOUG FIR		77.5	10.4	3,445	3,847	4,248			
HEMLEAV		122.8	16.5	3,057	3,663	4,268			
WHEMLOCK		235.0	31.7	1,222	1,788	2,354			
R ALDER		242.2	32.6	301	446	592			
S SPRUCE		305.5	41.2	497	845	1,192			
SPRUCELV		358.3	48.3	372	719	1,066			
ALDRLEAV		325.6	43.9	60	107	154			
CEDLEAV		525.3	70.8	23	80	137			
SNAG									
TOTAL		30.3	4.1	18,302	19,080	19,859	37	9	4

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT B13		DATE 6/13/2014				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	08W	06	78911	TAKE	335.00	55	210	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL				55	210	3.8				
CRUISE				27	76	2.8	45,500	.2		
DBH COUNT										
REFOREST										
COUNT				28	114	4.1				
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		46	92.4	11.2	30	63.6	4,076	3,847	1,303	1,303
WHEMLOCK		10	23.0	13.2	36	21.7	1,936	1,788	609	609
R ALDER		15	14.6	11.0	25	9.6	490	446	170	170
S SPRUCE		5	5.9	16.8	45	9.1	871	845	260	260
TOTAL		76	135.8	11.9	31	104.0	7,373	6,925	2,342	2,342
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		
DOUG FIR		64.0	9.4	46	51	56				
WHEMLOCK		94.9	31.6	94	137	180				
R ALDER		54.4	14.5	31	36	41				
S SPRUCE		98.9	49.1	141	278	415				
TOTAL		139.3	16.0	62	74	86	775	194	86	
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		83.0	11.2	82	92	103				
WHEMLOCK		226.6	30.5	16	23	30				
R ALDER		224.4	30.2	10	15	19				
S SPRUCE		304.9	41.1	3	6	8				
TOTAL		51.7	7.0	126	136	145	107	27	12	
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR		77.8	10.5	57	64	70				
WHEMLOCK		226.5	30.5	15	22	28				
R ALDER		210.1	28.3	7	10	12				
S SPRUCE		305.9	41.2	5	9	13				
TOTAL		49.3	6.6	97	104	111	97	24	11	
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		77.5	10.4	3,445	3,847	4,248				
WHEMLOCK		235.0	31.7	1,222	1,788	2,354				
R ALDER		242.2	32.6	301	446	592				
S SPRUCE		305.5	41.2	497	845	1,192				
TOTAL		62.7	8.4	6,340	6,925	7,510	157	39	17	

TC TSTATS				STATISTICS PROJECT B13				PAGE 1 DATE 6/13/2014		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	08W	06	78911	LEAV	335.00	55	256	1	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		55	256	4.7						
CRUISE		25	109	4.4	31,519	.3				
DBH COUNT										
REFOREST										
COUNT		30	136	4.5						
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
DOUGLEAV		68	69.0	15.1	48	85.9	7,854	7,586	2,405	2,405
HEMLEAV		24	17.5	17.8	64	30.3	3,782	3,663	1,080	1,080
SPRUCELV		8	3.1	21.3	55	7.6	773	719	248	248
ALDRLEAV		5	2.9	13.8	29	3.0	107	107	45	45
CEDLEAV		3	1.1	16.1	27	1.5	89	80	33	33
SNAG		1	.6	18.0	35	1.0				
TOTAL		109	94.1	15.9	50	129.3	12,605	12,155	3,811	3,811
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		56.0	6.8	125	134	144				
HEMLEAV		41.0	8.5	210	229	249				
SPRUCELV		94.1	35.5	206	319	432				
ALDRLEAV		58.6	29.1	28	40	52				
CEDLEAV		76.0	52.6	70	147	224				
SNAG										
TOTAL		76.6	7.3	152	164	176	235	59	26	
CL: 68.1 %		COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.	
SD: 1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUGLEAV		50.8	6.8	64	69	74				
HEMLEAV		121.1	16.3	15	17	20				
SPRUCELV		343.3	46.3	2	3	4				
ALDRLEAV		348.1	46.9	2	3	4				
CEDLEAV		645.6	87.0	0	1	2				
SNAG		519.5	70.0	0	1	1				
TOTAL		16.9	2.3	92	94	96	11	3	1	
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		48.7	6.6	80	86	92				
HEMLEAV		120.0	16.2	25	30	35				
SPRUCELV		326.9	44.0	4	8	11				
ALDRLEAV		338.1	45.5	2	3	4				
CEDLEAV		548.7	73.9	0	2	3				
SNAG		519.5	70.0	0	1	2				
TOTAL		6.2	.8	128	129	130	2	0	0	
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		52.6	7.1	7,049	7,586	8,124				
HEMLEAV		122.8	16.5	3,057	3,663	4,268				
SPRUCELV		358.3	48.3	372	719	1,066				
ALDRLEAV		325.6	43.9	60	107	154				
CEDLEAV		525.3	70.8	23	80	137				
SNAG										
TOTAL		19.8	2.7	11,830	12,155	12,479	16	4	2	

TC TSTATS				STATISTICS				PAGE	2
				PROJECT B13				DATE	6/13/2014
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	08W	06	78911	LEAV	335.00	55	256	1	W
CL: 68.1%				NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
SD: 1.0		COEFF VAR.	S.E.%	LOW	AVG	HIGH	5	10	15

TC TSTNDSUM				Stand Table Summary										
Project B13														
T04N R08W S06 TLEAV										T04N R08W S06 TLEA				
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees			Page:	1			
04N	08W	06	15610	LEAV	189.00	57	54			Date:	06/13/20			
										Time:	10:55:10AM			
S Spc	T	Sample		Av Ht	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net	Net	T o t a l s	
		DBH	Trees	FF 16'				Tot	Net Cu.Ft.		Net Bd.Ft.	Cu.Ft.		
HL		10	1	80	74	4.324	2.36	4.32	16.0	60.0	69	259	131	49
HL		12	1	80	54	3.003	2.36	3.00	19.0	50.0	57	150	108	28
HL		14	1	89	82	2.206	2.36	4.41	19.0	75.0	84	331	158	63
HL		15	1	88	84	1.922	2.36	3.84	22.5	85.0	86	327	163	62
HL		16	2	88	76	3.378	4.72	5.07	30.7	106.7	155	541	294	102
HL		17	3	88	81	4.489	7.08	8.98	28.0	95.0	251	853	475	161
HL		18	4	86	93	5.339	9.43	10.68	36.9	130.0	394	1,388	744	262
HL		19	3	87	98	3.594	7.08	7.19	41.3	158.3	297	1,138	561	215
HL		20	3	88	108	3.243	7.08	8.65	39.4	148.8	341	1,287	644	243
HL		21	1	85	91	.981	2.36	1.96	34.5	115.0	68	226	128	43
HL		22	1	88	94	.893	2.36	1.79	55.5	210.0	99	375	187	71
HL		34	1	86	78	.374	2.36	.75	77.0	300.0	58	224	109	42
HL		37	1	83	120	.316	2.36	.95	118.0	510.0	112	483	211	91
HL		41	1	85	94	.257	2.36	.51	133.5	645.0	69	332	130	63
HL		Totals	24	86	85	34.320	56.61	62.10	34.5	127.4	2,140	7,914	4,044	1,496
DL		11	1	89	49	3.739	2.47	3.74	13.0	30.0	49	112	92	21
DL		12	1	85	52	3.142	2.47	3.14	16.0	50.0	50	157	95	30
DL		14	4	82	66	9.234	9.87	9.23	23.5	57.5	217	531	410	100
DL		15	2	85	66	4.022	4.94	6.03	20.7	60.0	125	362	236	68
DL		16	3	80	74	5.302	7.40	8.84	24.8	70.0	219	619	414	117
DL		17	4	85	92	6.262	9.87	12.52	27.6	91.2	346	1,143	654	216
DL		18	3	84	70	4.189	7.40	6.98	30.4	80.0	212	559	401	106
DL		19	3	86	87	3.760	7.40	7.52	34.7	105.0	261	790	493	149
DL		20	3	83	84	3.393	7.40	6.79	36.0	111.7	244	758	462	143
DL		21	2	83	101	2.052	4.94	5.13	36.6	120.0	188	616	355	116
DL		23	1	80	88	.855	2.47	1.71	49.5	155.0	85	265	160	50
DL		Totals	27	84	73	45.952	66.63	71.64	27.9	82.5	1,995	5,911	3,771	1,117
SL		35	1	80	59	.971	6.49	.97	179.0	390.0	174	379	328	72
SL		Totals	1	80	59	.971	6.49	.97	179.0	390.0	174	379	328	72
AL		14	1	86	42	.552	.59	.55	19.0	50.0	10	28	20	5
AL		16	1	86	55	.422	.59	.42	35.0	70.0	15	30	28	6
AL		Totals	2	86	48	.974	1.18	.97	25.9	58.7	25	57	48	11
Totals		54		85	78	82.217	130.90	135.69	31.9	105.1	4334	14,260	8,192	2,695

TC TSTNDSUM				Stand Table Summary												
Project B13																
T04N R08W S06 TLEAV										T04N R08W S06 TLEA						
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page:	1							
04N	08W	06	78911	LEAV	335.00	55	109	Date:	06/13/20	Time:	10:55:10AM					
S Spc	T	Sample		Av Ht	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net	Net	Totals			
		DBH	Trees	FF 16'				Tot	Net Cu.Ft.		Net Bd.Ft.	Cu.Ft. Acre				Bd.Ft. Acre
DL		10	2	84	44	4.630	2.53	4.63	9.0	25.0		42	116		140	39
DL		11	2	89	81	3.827	2.53	5.74	13.0	46.7		75	268		250	90
DL		12	5	85	63	8.039	6.31	9.65	15.7	50.0		151	482		506	162
DL		13	7	85	56	9.589	8.84	12.33	15.8	46.7		195	575		652	193
DL		14	6	85	59	7.087	7.58	8.27	21.1	55.7		175	461		586	154
DL		15	10	85	73	10.290	12.63	19.55	18.7	61.1		365	1,194		1,224	400
DL		16	7	86	75	6.449	8.84	11.99	22.2	73.1		266	876		890	294
DL		17	6	86	73	4.807	7.58	8.81	25.6	79.1		226	697		757	233
DL		18	7	85	75	5.002	8.84	10.00	26.8	85.7		268	857		898	287
DL		19	8	84	75	5.131	10.10	10.26	29.9	93.8		307	962		1,029	322
DL		20	3	84	79	1.736	3.79	3.47	33.8	105.0		117	365		394	122
DL		21	3	87	86	1.575	3.79	3.15	41.2	145.0		130	457		434	153
DL		23	1	86	92	.438	1.26	.88	51.0	160.0		45	140		150	47
DL		24	1	82	89	.402	1.26	.80	55.5	170.0		45	137		149	46
DL		Totals	68	85	68	69.001	85.87	109.54	22.0	69.3		2,405	7,586		8,058	2,541
HL		13	1	85	88	1.370	1.26	2.74	17.5	55.0		48	151		161	50
HL		14	1	86	73	1.181	1.26	2.36	17.5	45.0		41	106		138	36
HL		16	3	87	81	2.713	3.79	5.43	24.8	90.0		135	488		451	164
HL		17	4	86	89	3.204	5.05	6.41	30.7	106.3		197	681		660	228
HL		18	4	86	62	2.858	5.05	5.00	27.6	85.7		138	429		462	144
HL		19	3	87	89	1.924	3.79	3.85	39.3	125.0		151	481		507	161
HL		20	3	86	79	1.736	3.79	3.47	38.3	130.0		133	451		446	151
HL		21	3	88	76	1.575	3.79	3.15	41.2	151.7		130	478		434	160
HL		22	1	88	92	.478	1.26	.96	55.5	205.0		53	196		178	66
HL		23	1	88	92	.438	1.26	.88	61.5	230.0		54	201		180	67
HL		Totals	24	86	80	17.478	30.31	34.24	31.5	107.0		1,080	3,663		3,618	1,227
SL		16	2	86	64	1.357	1.89	2.71	20.5	62.5		56	170		186	57
SL		21	1	83	49	.394	.95	.39	52.0	70.0		20	28		69	9
SL		22	1	88	69	.359	.95	.72	43.5	135.0		31	97		105	32
SL		25	1	86	94	.278	.95	.56	74.5	260.0		41	144		139	48
SL		26	1	75	50	.257	.95	.26	89.0	70.0		23	18		77	6
SL		27	1	80	73	.238	.95	.48	72.0	220.0		34	105		115	35
SL		32	1	86	102	.170	.95	.34	124.0	465.0		42	158		141	53
SL		Totals	8	84	67	3.051	7.58	5.45	45.5	131.9		248	719		831	241
AL		12	1	87	23	.772	.61									
AL		13	1	86	44	.658	.61	.66	17.0	50.0		11	33		37	11
AL		15	3	86	40	1.482	1.82	1.48	22.7	50.0		34	74		113	25
AL		Totals	5	86	37	2.911	3.03	2.14	20.9	50.0		45	107		150	36
CL		11	1	86	27	.765	.51	.77	9.0	20.0		7	15		23	5
CL		24	1	80	64	.161	.51	.16	75.0	190.0		12	31		40	10
CL		25	1	74	77	.148	.51	.30	48.0	115.0		14	34		48	11
CL		Totals	3	83	39	1.074	1.52	1.22	27.1	65.4		33	80		111	27
SN		18	1	86	47	.572	1.01									
SN		Totals	1	86	47	.572	1.01									
Totals			109	85	69	94.088	129.30	152.59	25.0	79.7		3811	12,155		12,768	4,072

T04N R08W S06 TyTAKE
THRU
T04N R08W S06 Ty00RW

Project: B13
Acres 564.00

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S T	So Gr rt	Log de 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	20	1		1	.0					1						
D	DO	2S	22	1		1	.0						1					
D	DO	2S	30	1		1	.0					1						
D	DO	2S	32	5	1.7	5	.2				2	2	1					
D	DO	2S	36	1		1	.0						1					
D	DO	2S	40	10	4.0	9	.4				1	7	2					
D	DO	3S	20	1		1	.0		0		1							
D	DO	3S	24	32		32	1.4		0	31	1							
D	DO	3S	26	68		68	3.0		0	30	37							
D	DO	3S	28	1		1	.0					1						
D	DO	3S	30	49		49	2.2			12	37							
D	DO	3S	32	436	8.7	399	17.7		121	159	118							
D	DO	3S	33	1		1	.0		1									
D	DO	3S	34	47		47	2.1		46	1								
D	DO	3S	36	161	17.7	132	5.9		132									
D	DO	3S	38	77		77	3.4		75	1	1							
D	DO	3S	40	530	1.1	525	23.3		314	131	78	1						
D	DO	4S	12	17		17	.8			17								
D	DO	4S	14	22		22	1.0			22								
D	DO	4S	16	192		192	8.5	64		128								
D	DO	4S	18	64		64	2.8			64								
D	DO	4S	20	154		154	6.8	0		154								
D	DO	4S	22	6		6	.3			6								
D	DO	4S	24	82		82	3.7			82								
D	DO	4S	26	36		36	1.6			36								
D	DO	4S	28	54		54	2.4			54								
D	DO	4S	30	79	9.3	71	3.2			71								
D	DO	4S	32	144	20.0	115	5.1	0		115								
D	DO	4S	34	1	20.0	1	.0			1								
D	DO	4S	36	74	16.7	62	2.7	0		62								
D	DO	4S	40	31		31	1.4			31								
D	Totals			2,377	5.1	2,256	44.9	0	64	1516	383	276	12	5				
A	DO	CR	12	17		17	10.4			17								
A	DO	CR	14	10		10	5.9			10								
A	DO	CR	16	12	33.3	8	4.8			8								
A	DO	CR	22	10		10	6.0			10								
A	DO	CR	24	13		13	7.8			13								

Log Stock Table - MBF

T04N R08W S06 TyTAKE
THRU
T04N R08W S06 Ty00RW

Project: B13
Acres 564.00

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S T Spp	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches												
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+	
A	DO	CR	26	10		10	5.7			10										
A	DO	CR	30	20		20	11.8			20										
A	DO	CR	32	31	30.2	22	13.0			22										
A	DO	CR	38	34		34	20.2			34										
A	DO	CR	40	25	6.2	24	14.3			24										
A	Totals			182	8.2	167	3.3			167										
H	DO	2S	16	12		12	.5							12						
H	DO	2S	20	1		1	.0												1	
H	DO	2S	32	84	8.3	77	3.4					73		2				1		
H	DO	2S	40	264	3.5	255	11.4					1	62	170	22					
H	DO	3S	21	0	22.2	0	.0					0								
H	DO	3S	24	15		15	.7					13	1	1						
H	DO	3S	28	49		49	2.2			35	2	12								
H	DO	3S	32	323	3.5	312	14.0			58	91	158	2	1			2			
H	DO	3S	34	1		1	.0			1										
H	DO	3S	36	68	1.4	67	3.0			67										
H	DO	3S	38	53		53	2.4			53										
H	DO	3S	40	1,122	3.3	1,085	48.6			183	321	396	15	169	0					
H	DO	4S	12	21		21	.9			21										
H	DO	4S	13	0		0	.0			0										
H	DO	4S	14	5		5	.2			5										
H	DO	4S	15	0		0	.0			0										
H	DO	4S	16	18		18	.8			18										
H	DO	4S	18	19		19	.8			19										
H	DO	4S	20	57		57	2.6			57										
H	DO	4S	21	3		3	.1			3										
H	DO	4S	22	12		12	.5			12										
H	DO	4S	24	21		21	.9			20		1								
H	DO	4S	26	16		16	.7			16										
H	DO	4S	28	35		35	1.6			35	0									
H	DO	4S	30	8	10.8	7	.3			7										
H	DO	4S	31	0		0	.0						0							
H	DO	4S	32	106	16.3	89	4.0			88	1									
H	Totals			2,313	3.6	2,230	44.4			698	415	581	153	344	35	2	1		1	
S	DO	2S	32	74	2.5	72	19.3							17		55				
S	DO	2S	40	82		82	21.9						1	77	3	1				

Log Stock Table - MBF

T04N R08W S06 TyTAKE
THRU
T04N R08W S06 Ty00RW

Project: B13
Acres 564.00

Page 3
Date 6/13/2014
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Spp	S T	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches										
									2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39
S		DO	3S	16	10		10	2.7						10					
S		DO	3S	24	9		9	2.3		9									
S		DO	3S	30	8		8	2.0			8								
S		DO	3S	32	1	12.5	1	.4				1							
S		DO	3S	33	34		34	9.0		34									
S		DO	3S	36	40		40	10.9		40	0								
S		DO	3S	40	102	6.9	95	25.6		39	0	56							
S		DO	4S	16	3		3	.7		3									
S		DO	4S	20	8		8	2.2		8									
S		DO	4S	22	11	8.8	10	2.6		7	3								
S		DO	4S	26	2		2	.4		2									
S		Totals			383	2.7	372	7.4		140	11	58	1	105	3	56			
Total		All Species			5,256	4.4	5,025	100.0	0	64	2521	809	914	166	453	37	57	1	1

Z

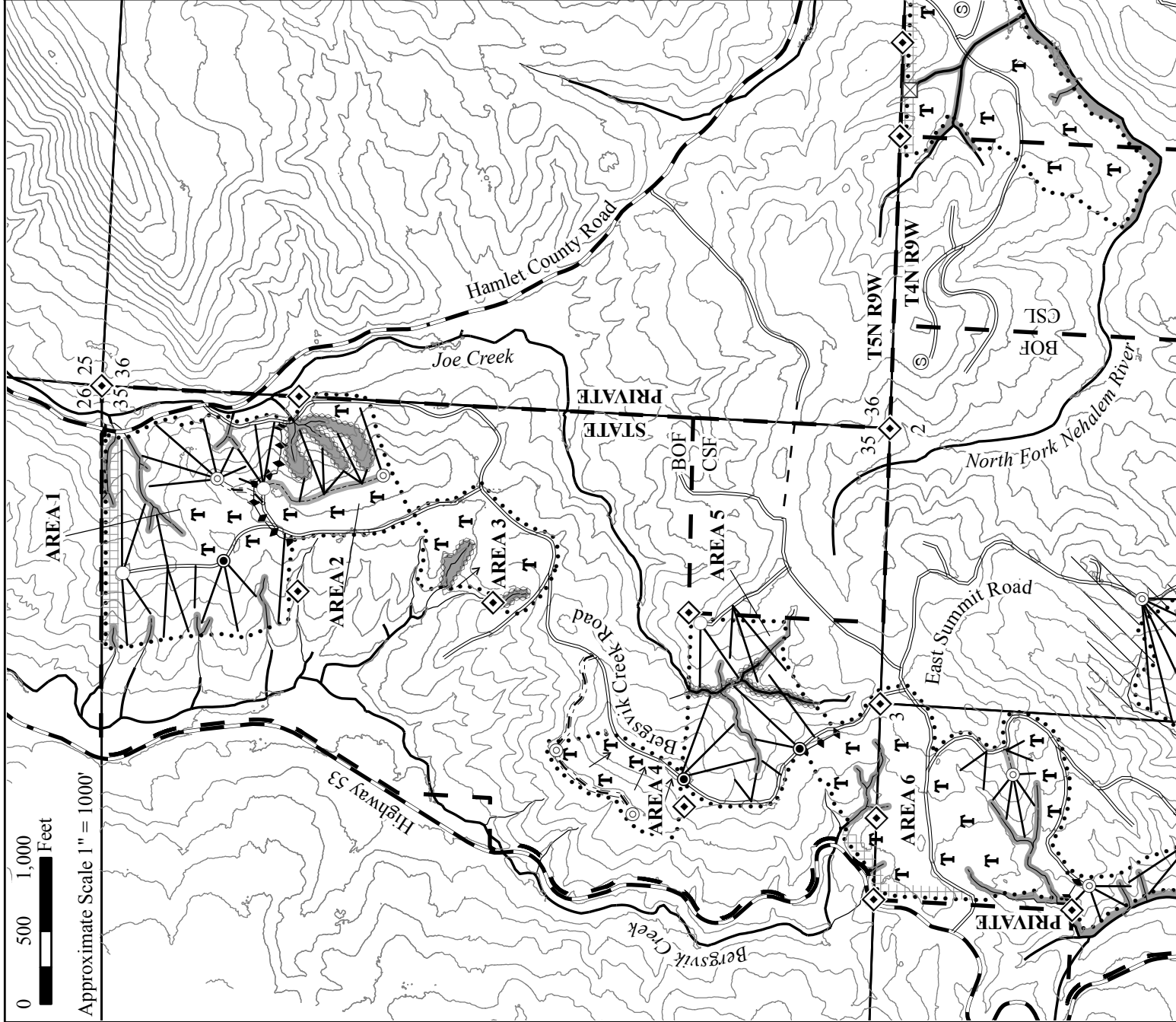
PORTIONS OF SECTION 35, T5N, R9W,
SECTIONS 6 & 7, T4N, R8W
AND SECTIONS 1, 2, 3 12 & 13, T4N R9W,
W.M., CLATSOP COUNTY, OREGON

	Ownership Boundary		New Landing Construction
	Survey Monument		Non-project Landing
	Fish Stream		Construction - Surfaced
	Nonfish Stream		Construction - Unsurfaced
	Surfaced Road		Right of Way Boundary
	Paved Road		Existing Grade
	Timber Sale Boundary		Stockpile
	Area Boundary		Temporary Stream Crossing
	Non-Thinnable Acres		Ground Yarding Area
	Non-Posted Stream Buffer		Cable Yarding Area
	Posted Stream Buffer		Line Pull Area
	Existing Landing		Controlled Felling Area

Area 5 (PC) -	18
Area 6 (PC) -	36
Area 7 (PC) -	41
Area 8 (PC) -	66
Area 9 (PC) -	162
Area 10 (PC) -	97
Area 11 (PC) -	66

Total Sale Acreage = 564

Logging Breakdown		
Area	Tractor	Cable
Area 1 (PC) -	11%	89%
Area 2 (MC) -	64%	36%
Area 3 (MC) -	100%	0%
Area 4 (MC) -	100%	0%
Area 5 (PC) -	0%	100%
Area 6 (PC) -	94%	6%
Area 7 (PC) -	39%	61%
Area 8 (PC) -	89%	11%
Area 9 (PC) -	78%	22%
Area 10 (PC) -	23%	77%
Area 11 (PC) -	0%	100%
Area 12 R/W -	100%	0%
Total:	53%	47%



LOGGING PLAN MAP

OF TIMBER SALE CONTRACT NO. 341-15-30
BERGSVIK 13

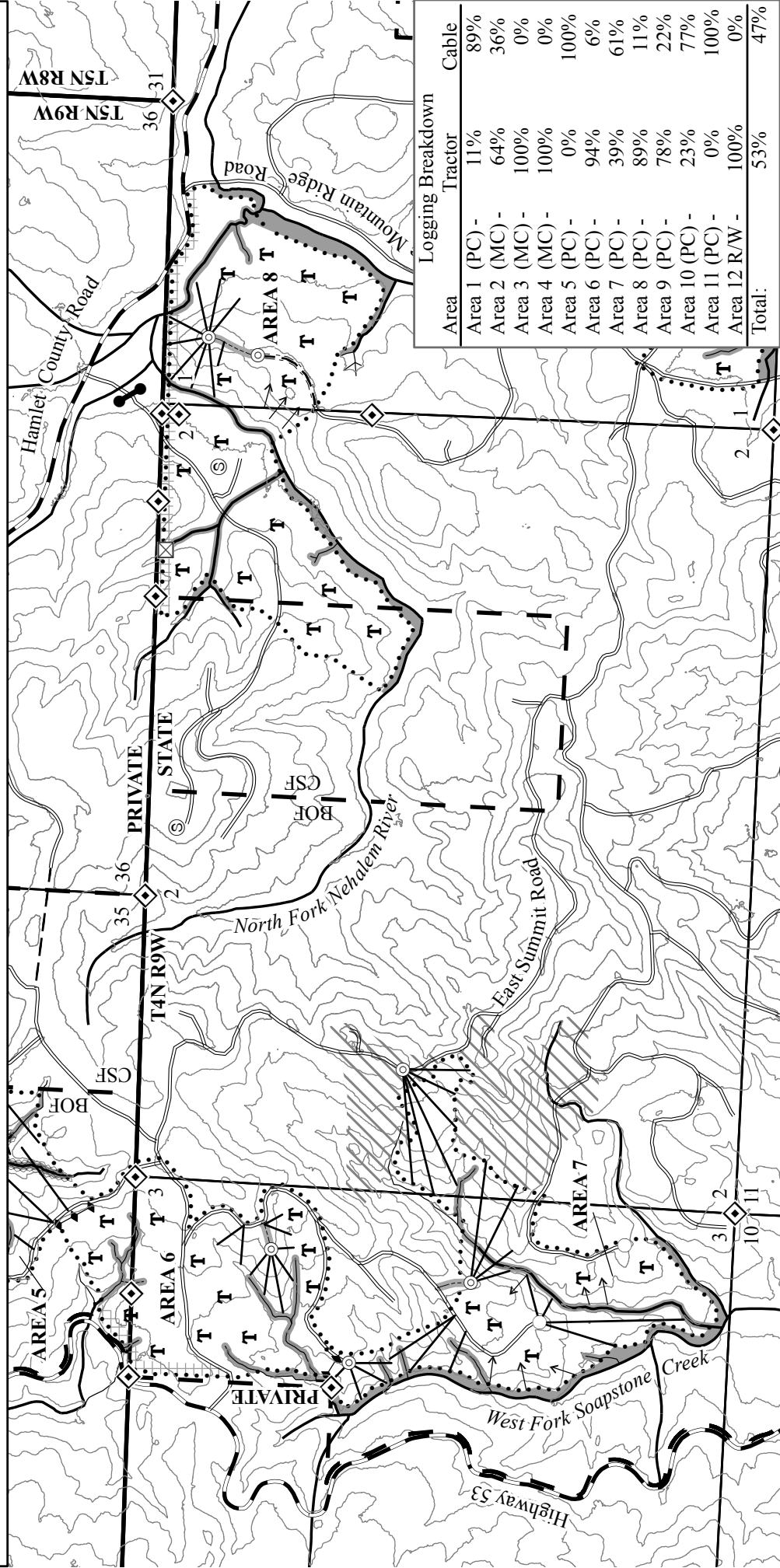
PORTIONS OF SECTION 35, T5N, R9W,
SECTIONS 6 & 7, T4N, R8W
AND SECTIONS 1, 2, 3 12 & 13, T4N R9W,
W.M., CLATSOP COUNTY, OREGON



Legend

- Ownership Boundary
- Survey Monument
- Fish Stream
- Nonfish Stream
- Surfaced Road
- Paved Road
- Timber Sale Boundary
- Area Boundary
- Non-Thinnable Acres
- Non-Posted Stream Buffer
- Posted Stream Buffer
- Existing Landing
- New Landing Construction
- Non-project Landing
- Construction - Surfaced
- Construction - Unsurfaced
- Right of Way Boundary
- Existing Grade
- Stockpile
- Temporary Stream Crossing
- Ground Yarding Area
- Cable Yarding Area
- Line Pull Area
- Controlled Felling Area

Approximate Net Acreage	MC Acres	PC Acres
Area 1 (PC) -		38
Area 2 (MC) -	11	
Area 3 (MC) -	11	
Area 4 (MC) -	7	
Area 5 (PC) -		18
Area 6 (PC) -		36
Area 7 (PC) -		41
Area 8 (PC) -		66
Area 9 (PC) -		162
Area 10 (PC) -		97
Area 11 (PC) -		66
Area 12 R/W -	11	
Total Sale Acreage = 564		



Logging Breakdown		
Area	Tractor	Cable
Area 1 (PC) -	11%	89%
Area 2 (MC) -	64%	36%
Area 3 (MC) -	100%	0%
Area 4 (MC) -	100%	0%
Area 5 (PC) -	0%	100%
Area 6 (PC) -	94%	6%
Area 7 (PC) -	39%	61%
Area 8 (PC) -	89%	11%
Area 9 (PC) -	78%	22%
Area 10 (PC) -	23%	77%
Area 11 (PC) -	0%	100%
Area 12 R/W -	100%	0%
Total:	53%	47%

LOGGING PLAN MAP

OF TIMBER SALE CONTRACT NO. 341-15-30

BERGSVIK 13

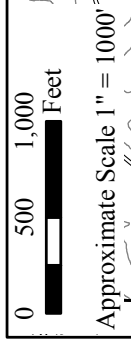
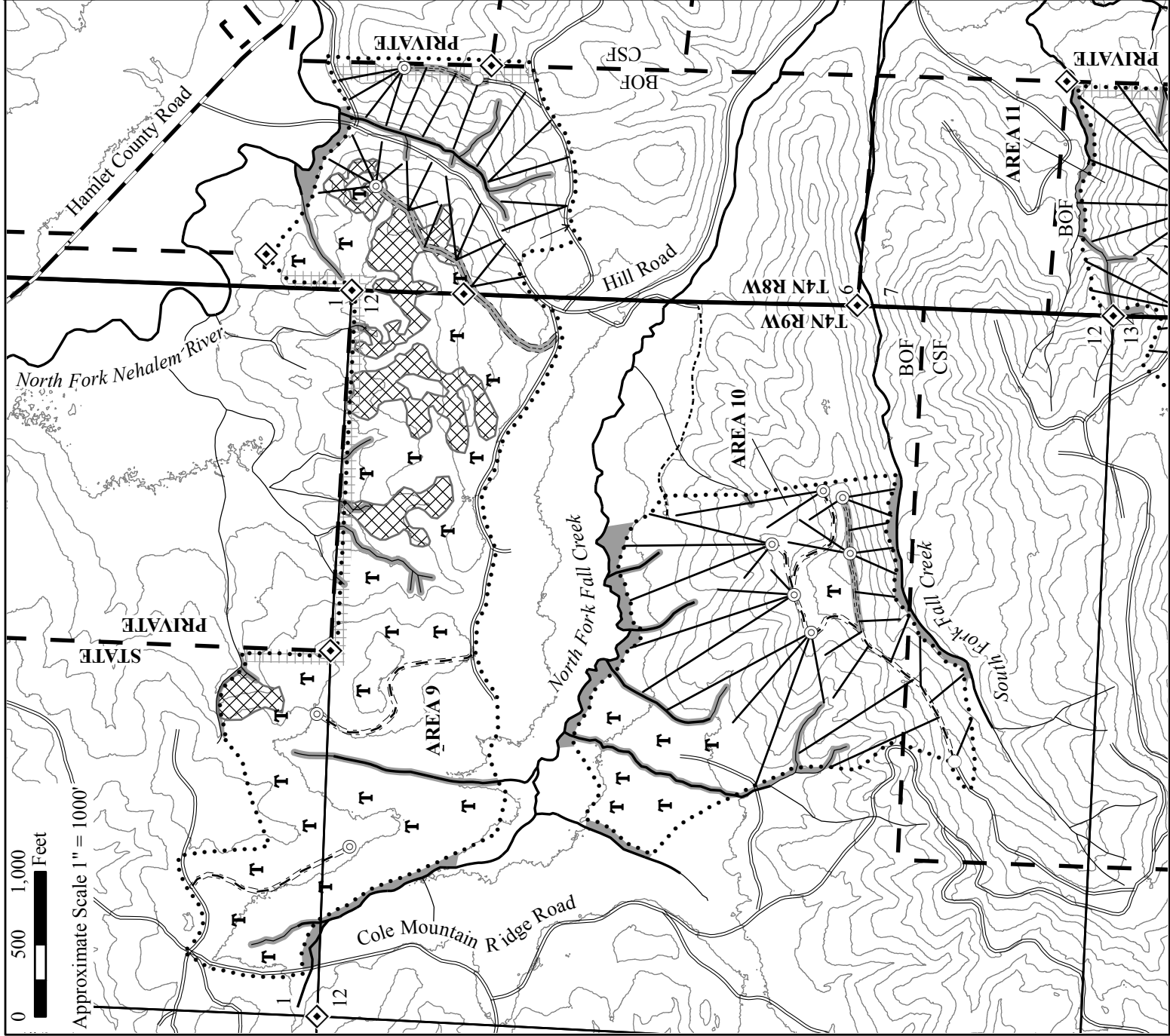
PORTIONS OF SECTION 35, T5N, R9W,
SECTIONS 6 & 7, T4N, R8W
AND SECTIONS 1, 2, 3 12 & 13, T4N R9W,
W.M., CLATSOP COUNTY, OREGON

- Legend**
- Ownership Boundary
 - Survey Monument
 - Fish Stream
 - Nonfish Stream
 - Surfaced Road
 - Paved Road
 - Timber Sale Boundary
 - Area Boundary
 - Non-Thinnable Acres
 - Non-Posted Stream Buffer
 - Posted Stream Buffer
 - Existing Landing
 - New Landing Construction
 - Non-project Landing
 - Construction - Surfaced
 - Construction - Unsurfaced
 - Right of Way Boundary
 - Existing Grade
 - Stockpile
 - Temporary Stream Crossing
 - Ground Yarding Area
 - Cable Yarding Area
 - Line Pull Area
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Approximate Net Acreage	MC Acres	PC Acres
Area 1 (PC) -		38
Area 2 (MC) -	11	
Area 3 (MC) -	11	
Area 4 (MC) -	7	
Area 5 (PC) -		18
Area 6 (PC) -		36
Area 7 (PC) -		41
Area 8 (PC) -		66
Area 9 (PC) -		162
Area 10 (PC) -		97
Area 11 (PC) -		66
Area 12 R/W -	11	

Total Sale Acreage = 564

Logging Breakdown		
Area	Tractor	Cable
Area 1 (PC) -	11%	89%
Area 2 (MC) -	64%	36%
Area 3 (MC) -	100%	0%
Area 4 (MC) -	100%	0%
Area 5 (PC) -	0%	100%
Area 6 (PC) -	94%	6%
Area 7 (PC) -	39%	61%
Area 8 (PC) -	89%	11%
Area 9 (PC) -	78%	22%
Area 10 (PC) -	23%	77%
Area 11 (PC) -	0%	100%
Area 12 R/W -	100%	0%
Total:	53%	47%



LOGGING PLAN MAP
OF TIMBER SALE CONTRACT NO. 341-15-30
BERGSVIK 13

PORTIONS OF SECTION 35, T5N, R9W,
SECTIONS 6 & 7, T4N, R8W
AND SECTIONS 1, 2, 3 12 & 13, T4N R9W,
W.M., CLATSOP COUNTY, OREGON

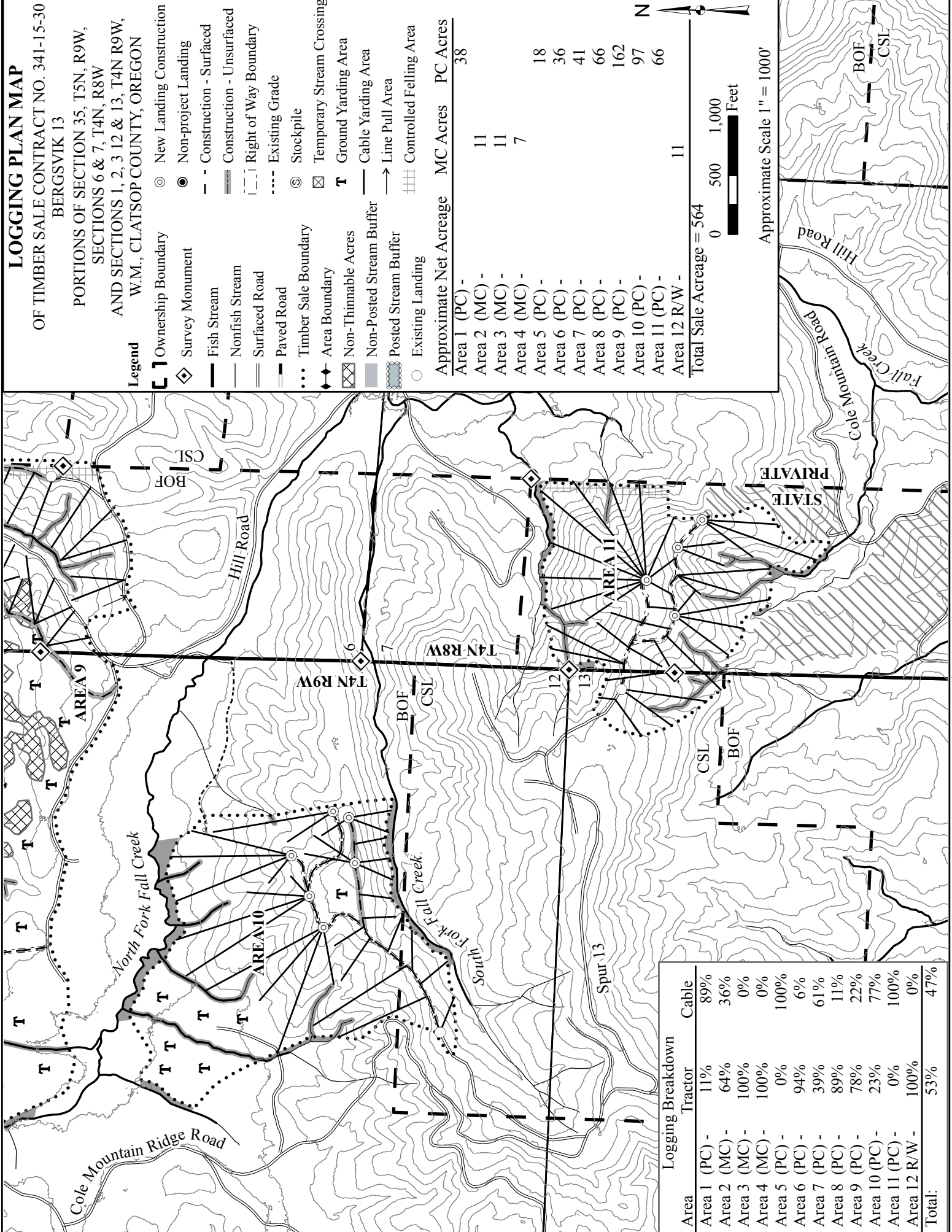
- Legend**
- Ownership Boundary
 - Survey Monument
 - Fish Stream
 - Nonfish Stream
 - Surfaced Road
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 - Non-Thimable Acres
 - Non-Posted Stream Buffer
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 - Construction - Surfaced
 - Construction - Unsurfaced
 - Right of Way Boundary
 - Existing Grade
 - Stockpile
 - Temporary Stream Crossing
 - Ground Yarding Area
 - Cable Yarding Area
 - Line Pull Area
 - Controlled Felling Area

Approximate Net Acreage	MC Acres	PC Acres
Area 1 (PC) -		38
Area 2 (MC) -	11	
Area 3 (MC) -	11	
Area 4 (MC) -	7	
Area 5 (PC) -		18
Area 6 (PC) -		36
Area 7 (PC) -		41
Area 8 (PC) -		66
Area 9 (PC) -		162
Area 10 (PC) -		97
Area 11 (PC) -		66
Area 12 R/W -	11	

Total Sale Acreage = 564

0 500 1,000 Feet

Approximate Scale 1" = 1000'



Area	Logging Breakdown	Tractor	Cable
Area 1 (PC) -	11%	89%	
Area 2 (MC) -	64%	36%	
Area 3 (MC) -	100%	0%	
Area 4 (MC) -	100%	0%	
Area 5 (PC) -	0%	100%	
Area 6 (PC) -	94%	6%	
Area 7 (PC) -	39%	61%	
Area 8 (PC) -	89%	11%	
Area 9 (PC) -	78%	22%	
Area 10 (PC) -	23%	77%	
Area 11 (PC) -	0%	100%	
Area 12 R/W -	100%	0%	
Total:	53%	47%	