"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Jarvie Combo
Sale 341-14-35

District: **Astoria** **Date:** **January 29, 2014**

cost summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	$4,186,355.88	$224,507.14	$4,410,863.02
		Project Work:	$(365,628.00)
		Advertised Value:	$4,045,235.02

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Jarvie Combo
Sale 341-14-35

District: **Astoria** **Date:** **January 29, 2014**

timber description

Location: Portions of Sections 23, 24, and 26, T6N, R7W, W.M., Clatsop County, Oregon.

Stand Stocking: 60%

SpecieName	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	25	0	97
Western Hemlock / Fir	18	0	97
Sitka Spruce	15	0	97
Alder (Red)	17	0	95

Volume by Grade	2S	3S	4S	Camprun	Total
Douglas - Fir	7,128	910	78	0	8,116
Western Hemlock / Fir	688	254	193	0	1,135
Sitka Spruce	8	2	4	0	14
Alder (Red)	0	0	0	598	598
Total	7,824	1,166	275	598	9,863

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Jarvie Combo
Sale 341-14-35

District: Astoria **Date: January 29, 2014**

comments:

Pond Values Used: 4th Quarter Calendar Year 2013.

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

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost:
$848.22/MBF = $1,050/MBF - $201.78/MBF

SCALING COST ALLOWANCE = $5.00/MBF

FUEL COST ALLOWANCE = $4.00/Gallon

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

Other Costs (with Profit & Risk to be added):
100% Branding and Painting: $1/MBF x 9,863 MBF = $9,863
Maching Washing for Noxious Weeds Compliance = $3,000
Slash Piling = $9,495
TOTAL Other Costs (with Profit & Risk to be added) = $22,358

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

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Jarvie Combo
Sale 341-14-35

District: **Astoria** **Date:** **January 29, 2014**

logging conditions

combination#: 1

Douglas - Fir	34.00%
Western Hemlock / Fir	34.00%
Sitka Spruce	34.00%
Alder (Red)	34.00%

yarding distance: Medium (800 ft) **downhill yarding:** No
logging system: Shovel **Process**: Feller Buncher
tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 7.0 **bd. ft / load:** 4,000
cost / mbf: $51.38

machines: Feller Buncher w/ Delimber

combination#: 2

Douglas - Fir	2.00%
Western Hemlock / Fir	2.00%
Sitka Spruce	2.00%
Alder (Red)	2.00%

yarding distance: Short (400 ft) **downhill yarding:** No
logging system: Cable: Medium Tower >40 - <70 **Process**: Stroke Delimber
tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 9.0 **bd. ft / load:** 4,000
cost / mbf: $92.89

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

combination#: 3

Douglas - Fir	58.00%
Western Hemlock / Fir	58.00%
Sitka Spruce	58.00%
Alder (Red)	58.00%

yarding distance: Medium (800 ft) **downhill yarding:** No
logging system: Track Skidder **Process**: Manual Falling/Delimbing
tree size: Mature / Partial Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 8.0 **bd. ft / load:** 4,000
cost / mbf: $107.51

machines: Log Loader (B)
Track Skidder

combination#: 4

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

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Jarvie Combo
Sale 341-14-35

District: Astoria **Date: January 29, 2014**

yarding distance:	Medium (800 ft)	**downhill yarding:**	No
logging system:	Cable: Medium Tower >40 - <70	**Process**:	Manual Falling/Delimbing
tree size:	Mature / Partial Cut (900 Bft/tree), 3-5 logs/MBF		
loads / day:	6.0	**bd. ft / load:**	4,000
cost / mbf:	$144.17		

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

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Jarvie Combo
Sale 341-14-35

District: **Astoria** **Date:** **January 29, 2014**

logging costs

Operating Seasons:	2.00	**Profit Risk:**	12.00%
Project Costs:	$365,628.00	**Other Costs (P/R):**	$22,358.00
Slash Disposal:	$0.00	**Other Costs:**	$0.00

Miles of Road

Road Maintenance: $2.44

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

Hauling Costs

Species	$ / MBF	Trips/Day	MBF / Load
Douglas - Fir	$0.00	2.0	4.5
Western Hemlock / Fir	$0.00	3.0	4.5
Sitka Spruce	$0.00	1.0	4.5
Alder (Red)	$0.00	2.0	3.5

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Jarvie Combo
Sale 341-14-35

District: **Astoria** **Date:** **January 29, 2014**

logging costs breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling	Other	Total
Douglas - Fir									
$90.33	$2.51	$0.89	$79.70	$2.27	$21.08	$0.00	$5.00	$0.00	$201.78
Western Hemlock / Fir									
$90.33	$2.51	$0.89	$53.14	$2.27	$17.90	$0.00	$5.00	$0.00	$172.04
Sitka Spruce									
$90.33	$2.51	$0.89	$159.40	$2.27	$30.65	$0.00	$5.00	$0.00	$291.05
Alder (Red)									
$90.33	$2.56	$0.89	$104.46	$2.27	$24.06	$0.00	$5.00	$0.00	$229.57

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	$0.00	$669.99	$468.21	$0.00
Western Hemlock / Fir	$0.00	$509.36	$337.32	$0.00
Sitka Spruce	$0.00	$541.43	$250.38	$0.00
Alder (Red)	$0.00	$605.00	$375.43	$0.00

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Jarvie Combo
Sale 341-14-35

District: **Astoria** **Date:** **January 29, 2014**

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	8,116	$468.21	$3,799,992.36
Western Hemlock / Fir	1,135	$337.32	$382,858.20
Sitka Spruce	14	$250.38	$3,505.32
Alder (Red)	598	$375.43	$224,507.14

Gross Timber Sale Value

Recovery: $4,410,863.02

Prepared by: Jenny Johnson **Phone:** 503-325-5451

Site Prep Appraisal

Sale Number: 341-14-35
Sale Name: Jarvie Combo
Date: 09/17/2013

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

Sale Area	Harvest Type	Veg Type/Zone	Ground Based Yarding Acres	Estimated Piling Hours/Area	Cost/Hour	Total Cost/Area
1	MC	A	95	40	$155.00	$6,200.00

Sub Total = *$6,200.00*

Sale Area	Number of Landings to be Piled	Cost/Landing Pile*	Total Cost/Area	Number of In-Unit Piles	Material Cost/Pile	Total Cost/Area
1	1	$465.00	$465.00	285	$5.00	$1,425.00

*Cost includes separating firewood

Sub Total = *$1,890.00*

Move-In Allowance	Number of Move-In's	Total Move-In Allowance
$1,406.00	1	$1,406.00

Sub Total = *$1,406.00*

Grand Total = **$9,496.00**

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Jarvie Combo

ROAD CONSTRUCTION:

	Road segment	Length/Sta		Cost	
Project No. 1	1A-1B, 1C-1D, 1E-1F, 2A-2B, 2C-2D, & 2E-2F	52.01		$54,646	
	TOTALS	52.01	0.99		$54,646

ROAD IMPROVEMENT:

	Road segment	Length/Sta	Cost	
Project No. 2	I1-I2, I3-I4, I5-I6, I7-I8, I9-I10, & I11-I12	312.10	$242,188	
	TOTALS			$242,188

SPECIAL PROJECTS:

	Description	Cost	
Project No. 3	Roadside Brushing and Spraying	$ 52,713.09	
	Project Road Maintenance	$6,228	
	TOTAL		$58,941

MOVE IN:

Equipment	Cost
Excavator (C330)	$1,406
Excavator (C315)	$805
Dozer (D8)	$1,406
Rubber Tired Skidder	$717
Vibratory Roller	$778
10-12 yd dump truck (X 4 @ $163 each)	$652
20 yd dump truck (X 4 @ $191 each)	$764
24 yd off highway dump	$774
Large Grader (14G)	$778
Water Truck (2,500 gal)	$190
Brusher	$805
Front end loader C966	$778

TOTAL $9,853

GRAND TOTAL **$365,628**

Compiled By: Kraig Kirkpatrick FL Date: 11/26/2013

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Jarvie Combo
ROAD: 1A-1B (3+15), 1C-1D (10+25), 1E-1F (6+70), 2A-2B (7+46),
POINTS: 2C-2D (10+75), & 2E-2F (13+70)

NEW CONSTRUCTION: 52.01 **STATIONS** 0.99 **MILES**
IMPROVEMENT: **STATIONS** **MILES**

CLEARING & GRUBBING

Method	Acres/amount	x	Rate	=	Cost
Scatter Outside of R/W	4	x	$1,337	=	$5,348.00
		x		=	

SUB TOTAL FOR CLEARING & GRUBBING $5,348

EXCAVATION

	Material	Cy/amount	x	Rate	=	Cost
1A-1B	Balanced Construction Field Design $/sta.	3.15	x	$122.00	=	$384.30
	Landing Construction	1.00	x	$389.00	=	$389.00
1C-1D	Balanced Construction Field Design $/sta.	10.25	x	$122.00	=	$1,250.50
	Landing Construction	1.00	x	$389.00	=	$389.00
1E-1F	Balanced Construction Field Design $/sta.	6.70	x	$122.00	=	$817.40
	Landing Construction	1.00	x	$389.00	=	$389.00
2A-2B	Balanced Construction Field Design $/sta.	7.46	x	$122.00	=	$910.12
	Landing Construction	1.00	x	$389.00	=	$389.00
	Cut slope rounding (5+10 - 7+00)	1.90	x	$43.00	=	$81.70
	Common Drift < 50% slopes	1,038	x	$1.80	=	$1,868.40
2C-2D	Balanced Construction Field Design $/sta.	10.75	x	$122.00	=	$1,311.50
	Landing Construction	1.00	x	$389.00	=	$389.00
2E-2F	Balanced Construction Field Design $/sta.	11.70	x	$122.00	=	$1,427.40
	Landing Construction	1.00	x	$389.00	=	$389.00
	Drift earth up to 200'	2.00	x	$190.00	=	$380.00
	Embankment Compaction	1,000	x	$0.70	=	$700.00
	Cut Slope Rounding (8+00 - 10+50)	2.50	x	$43.00	=	$107.50

SUB TOTAL FOR EXCAVATION $11,573

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
2E-2F									
7+10	18"CPP	60	$19.53	$1,171.80					
2C-2D									
5+00	18"CPP	30	$19.53	$585.90					
8+80	18"CPP	30	$19.53	$585.90					
1C-1D									
5+45	18"CPP	40	$19.53	$781.20					

	Description	Quantity	Rate	Cost
Other/miscellaneous:				
Culvert stakes & markers:		4	$20.00	$80.00

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION $3,205

Subtotal of Clearing, Exc., Culv. ***$20,126***

SURFACING

Subgrade prep: Description	Stations/ amount	x	Rate/ sta/amt	Cost
Grade, Shape and Ditch 16' (1A-1B, 1C-1D, 1E-1F, 2A-2B, 2C-2D, & 2E-2F)	52.01	x	$24.83	$1,291.41
Subgrade Compaction (1A-1B, 1C-1D, 1E-1F, 2A-2B, 2C-2D, & 2E-2F)	52.01	x	$20.19	$1,050.08

ROAD SEGMENT 1A to 1B				POINT TO POINT 1A to 1B		Sta. to Sta. 0+00 to 3+15		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of					
Base Rock	4"-0" crushed	1A to 1B	8	station	50	stations	3.15	158	$8.17	$1,287	
Junction Base Rock	4"-0" crushed	1A	N/A	junction	22	junctions	1	22	$8.17	$180	
Turn Arounds	4"-0" crushed	2+50	8	turn around	11	turn around	1	11	$8.17	$90	
Landings	6"-0" pit-run	1B	N/A	landing	50	landings	1	50	$9.85	$493	
Total Rock for Road Segment:			1A to 1B					241			$2,049

ROAD SEGMENT 1C to 1D				POINT TO POINT 1C to 1D		Sta. to Sta. 0+00 to 10+25		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of					
Base Rock	4"-0" crushed	1C to 1D	8	station	50	stations	10.25	513	$8.17	$4,187	
Junction Base Rock	4"-0" crushed	1C	N/A	junction	22	junctions	1	22	$8.17	$180	
Turn Arounds	4"-0" crushed	9+10	8	turn around	11	turn around	1	11	$8.17	$90	
Turnouts	4"-0" crushed	2+20, 7+25	8	turnout	22	turnouts	2	44	$8.17	$359	
Landings	6"-0" pit-run	1D	N/A	landing	50	landings	1	50	$9.85	$493	
Total Rock for Road Segment:			1C to 1D					640			$5,309

ROAD SEGMENT 1E to1F				POINT TO POINT 1E to1F		Sta. to Sta. 0+00 to 6+70		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of					
Base Rock	4"-0" crushed	1E to 1F	8	station	50	stations	6.70	335	$8.17	$2,737	
Junction Base Rock	4"-0" crushed	1E	N/A	junction	22	junctions	1	22	$8.17	$180	
Turn Arounds	4"-0" crushed	6+00	8	turn around	11	turn around	1	11	$8.17	$90	
Turnouts	4"-0" crushed	2+60	8	turnout	22	turnouts	1	22	$8.17	$180	
Landings	6"-0" pit-run	1F	N/A	landing	50	landings	1	50	$9.85	$493	
Total Rock for Road Segment:			1E to1F					440			$3,679

ROAD SEGMENT 2A to 2B				POINT TO POINT 2A to 2B		Sta. to Sta. 0+00 to 7+46		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of					
Base Rock	4"-0" crushed	2A to 2B	8	station	50	stations	7.46	373	$8.17	$3,047	
Turnouts	4"-0" crushed	4+20	8	turnout	22	turnouts	1	22	$8.17	$180	
Junction Base Rock	4"-0" crushed	2A	N/A	junction	22	junctions	1	22	$8.17	$180	
Turn Arounds	4"-0" crushed	7+10	8	turn around	11	turn around	1	11	$8.17	$90	
Traction Rock	1 1/2"-0" crushed	2+00 tp 7+00	1	station	6	stations	5	30	$5.07	$152	
Landings	6"-0" pit-run	2B	N/A	landing	50	landings	1	50	$9.85	$493	
Total Rock for Road Segment:			2A to 2B					508			$4,141

ROAD SEGMENT	2C to 2D			POINT TO POINT		Sta. to Sta.					
				2C to 2D		0+00 to 10+75		TOTAL	Rate/	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		VOLUME (CY)	Sta./ amt.		
Base Rock	4"-0" crushed	2C to 2D	8	station	50	stations	10.75	538	$8.17	$4,391	
Junction Base Rock	4"-0" crushed	2C	N/A	junction	22	junctions	1	22	$8.17	$180	
Turn Arounds	4"-0" crushed	10+10	8	turn around	11	turn around	1	11	$8.17	$90	
Turnouts	4"-0" crushed	3+30, 7+20	8	turnout	22	turnouts	2	44	$8.17	$359	
Landings	6"-0" pit-run	2D	N/A	landing	50	landings	1	50	$9.85	$493	
Total Rock for Road Segment:			2C to 2D					665			$5,513

ROAD SEGMENT	2E to 2F			POINT TO POINT		Sta. to Sta.					
				2E to 2F		0+00 to 13+70		TOTAL	Rate/	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		VOLUME (CY)	Sta./ amt.		
Base Rock	4"-0" crushed	2E to 2F	8	station	50	stations	13.70	685	$8.17	$5,596	
Junction Base Rock	4"-0" crushed	2E	N/A	junction	22	junctions	1	22	$8.17	$180	
Armor	24"-6" rip rap	7+10	N/A	Armor	N/A	Armor	N/A	100	$13.71	$1,371	
Turnarounds	4"-0" crushed	10+05	8	turn around	11	turn around	1	11	$8.17	$90	
Turnouts	4"-0" crushed	2+00,5+90,11+50	8	turnout	22	turnouts	3	66	$8.17	$539	
Landings	6"-0" pit-run	2F	N/A	landing	50	landings	1	50	$9.85	$493	
Total Rock for Road Segment:			2E to 2F					934			$8,269

Processing:

Description	No.sta	Rate/sta	Cost
Water, Process & Compact Base Rock:	52.00	$56.48	$2,937
Water, Process & Compact Surface/Traction Rock:	5.00	$56.48	$282

	24"-6"	6"-0"pr	4"-0"		1 1/2"-0"	Total	
SUB TOTAL FOR NEW CONSTRUCTION SURFACING	100	300	2,997		30	3,427	**$34,520**

SPECIAL PROJECTS

Description	Cost

SUB TOTAL FOR SPECIAL PROJECTS $0

Subtotal of Surfacing & Spec. Proj. *$34,520*
Subtotal of Clearing, Exc.,Culv. *$20,126*

GRAND TOTAL **$54,646**

Date: 09/18/2013

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Jarvie Combo
ROAD: I1-I2 (176+25), I3-I4 (9+70), I5-I6 (24+00), I7-I8 (63+50)
I9-I10 (30+65), I11-I12 (5+75)

NEW CONSTRUCTION: _____ STATIONS _____ MILES
IMPROVEMENT: 309.85 STATIONS 5.87 MILES

POINTS:

CLEARING & GRUBBING

Method	Acres/amount	x	Rate	=	Cost
		x		=	

SUB TOTAL FOR CLEARING & GRUBBING

EXCAVATION

	Material	Cy/amount	x	Rate	=	Cost
I1-I2	**Fill\Culvert Reconstruction**		x		=	
	Station16+95	(See Cost Sheets)	x		=	$3,954
	Station 106+60	(See Cost Sheets)	x		=	$6,595
	Station 142+35	(See Cost Sheets)	x		=	$2,655
	Station144+90	(See Cost Sheets)	x		=	$3,792
	Station 152+35	(See Cost Sheets)	x		=	$432
	Station 166+40	(See Cost Sheets)	x		=	$368
	Station 169+35	(See Cost Sheets)	x		=	$2,797
I3-I4	Establish Turnaround w/315, $/hr	1.00	x	$101.00	=	$101
I7-I8	**Fill\Type "F" Culvert Reconstruction**		x		=	
	Station18+15	(See Cost Sheets)	x		=	$25,836
	Station 37+05	(See Cost Sheets)	x		=	$50,775
I9-I10	Establish Turnaround w/315, $/hr	1.00	x	$101.00	=	$101
			x		=	
			x		=	
			x		=	
			x		=	
			x		=	
			x		=	

SUB TOTAL FOR EXCAVATION $97,406

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
I1-I2					**I5-I6**				
7+55	18" CPP	30	$19.53	$585.90	6+25	18" CPP	30	$19.53	$585.90
12+65	18" CPP	30	$19.53	$585.90	14+65	18" CPP	30	$19.53	$585.90
16+95	24" ACSP	65	See Cost Sheet	$7,084	17+00	18" CPP	30	$19.53	$585.90
21+10	18" CPP	30	$19.53	$585.90	**I7-I8**				
23+55	18" CPP	30	$19.53	$585.90	4+25	18" CPP	30	$19.53	$585.90
28+65	18" CPP	30	$19.53	$585.90	10+65	18" CPP	40	$19.53	$781.20
60+50	18" CPP	40	$19.53	$781.20	15+30	18" CPP	30	$19.53	$585.90
65+35	18" CPP	30	$19.53	$585.90	18+15	72" ACSP	60	See Cost Sheet	
69+70	18" CPP	30	$19.53	$585.90	20+00	18" CPP	30	$19.53	$585.90
79+40	18" CPP	30	$19.53	$585.90	22+60	18" CPP	30	$19.53	$585.90
81+85	18" CPP	30	$19.53	$585.90	28+70	24" ACSP	45	$34.97	$1,573.65
86+15	18" CPP	30	$19.53	$585.90	31+90	24" ACSP	50	$34.97	$1,748.50
92+90	18" CPP	30	$19.53	$585.90	32+65	18" CPP	30	$19.53	$585.90
97+80	18" CPP	60	$19.53	$1,171.80	*37+05	108" ACSP	90	See Cost Sheet	
102+65	18" CPP	40	$19.53	$781.20	43+40	18" CPP	30	$19.53	$585.90
106+60	24" ACSP	85	See Cost Sheet	$9,598.44	46+80	24" ACSP	40	$34.97	$1,398.80
113+00	18" CPP	40	$19.53	$781.20	**I9-I10**				
116+05	18" CPP	40	$19.53	$781.20	0+90	18" CPP	30	$19.53	$585.90
120+15	18" CPP	40	$19.53	$781.20	5+00	18" CPP	50	$19.53	$976.50
130+20	18" CPP	30	$19.53	$585.90	8+70	18" CPP	30	$19.53	$585.90
142+35	24" ACSP	55	See Cost Sheet	$4,533.03	14+45	18" CPP	30	$19.53	$585.90
144+90	24" ACSP	45	See Cost Sheet	$3,501.71					
148+25	18" CPP	30	$19.53	$585.90					
152+35	18" CPP	45	See Cost Sheet	$1,369.22					
155+85	18" CPP	30	$19.53	$585.90					
157+80	18" CPP	40	$19.53	$781.20					
161+65	18" CPP	30	$19.53	$585.90					
163+45	18" CPP	30	$19.53	$585.90					
166+40	18" CPP	40	See Cost Sheet	$1,204.03					
169+35	24" ACSP	50	See Cost Sheet	$5,647.93					
173+15	24" ACSP	40	$34.97	$1,398.80					

	Description	Quantity	Rate	Cost
Other/miscellaneous:				
Culvert stakes & markers:	Fiber glass markers	41	$20.00	$820.00

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION $63,900

Subtotal of Clearing, Exc., Culv.	***$161,306***

SURFACING

Subgrade prep:

Description	Stations/ amount	x	Rate/ sta/amt	Cost
Grade, Shape and Ditch 16'- All road improvement segments	309.85	x	$24.83	$7,693.58
Subgrade Compaction-Pt. I1 to I2 only	176.25	x	$20.19	$3,558.49
Load & haul ditch material & road sod with 315 or backhoe - 50% of all road improvement segments	154.93	x	$22.92	$3,551.00
Scatter ditch waste materials & road sod with 315 or backhoe- 50% of all road improvement segments	154.92	x	$12.41	$1,922.56

ROAD SEGMENT	I1 to I2			POINT TO POINT I1 to I2 Volume (CY) per		Sta. to Sta. 0+00 to 176+25 Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)								
Base Rock @ Fills	4"-0" crushed	16+95, 106+60, 142+35, 144+90, 152+35, 166+40, 169+35	8	station	N/A	stations	N/A	231			* On Fill Sheet
Subgrade Leveling	11/2"-0" crushed	0+00-176+25	N/A	N/A	N/A	N/A	N/A	220	$5.07	$1,115	
Surface Rock	11/2"-0" crushed	0+00-97+80	3	station	19	stations	97.8	1,858	$5.07	$9,421	
Curve Widening	11/2"-0" crushed		3	curve	11	curves	10	110	$5.07	$558	
Turnouts Base Rock	4"-0" crushed	41+85	8	TO	44	TO's	1	44	$8.17	$359	
Turnouts	11/2"-0" crushed	1+35, 4+35, 11+40, 15+70, 22+75, 41+85, 49+80, 55+50, 61+60, 69+10, 72+45, 78+90, 82+80, 105+70, 111+75, 126+10, 154+90, 159+80, 168+10, 170+45	3	TO	11	TO's	20	220	$5.07	$1,115	
Junctions	11/2"-0" crushed	0+00, 176+25	N/A	junction	22	junctions	2	44	$5.07	$223	
Culvert Bedding/Backfill	11/2"-0" crushed	7+55, 12+65, 21+10, 23+55, 28+65, 60+50, 65+35, 69+70, 79+40, 81+85, 86+15, 92+90, 97+80, 102+65, 113+00, 116+05, 120+15, 130+20, 148+25, 155+85, 157+80, 161+65, 163+45, 173+15	N/A	culvert	N/A	culverts	24	869	$5.07	$4,406	
Culvert Bedding/Backfill @ Fills	11/2"-0" crushed	16+95, 106+60, 142+35, 144+90, 152+35, 166+40, 169+35	N/A	culvert	N/A	culverts	7	583			* On Fill Sheet
Check Dams	6"-4" Pit-Run	106+60, 144+90, 169+35,	N/A	dam	N/A	dam	N/A	66	$9.85		
Dissipator	24"-6" Rip-Rap	79+40, 81+85, 86+15, 92+90, 97+80, 161+65, 163+45, 173+15	N/A	dissipator	11	dissipators	8	88	$13.71	$1,206	
Dissipator @ Fills	24"-6" Rip-Rap	16+95, 106+60, 142+35, 144+90, 152+35, 166+40, 169+35	N/A	dissipator	N/A	dissipators	N/A	220			* On Fill Sheet
Road Shoulder Armor	24"-6" Rip-Rap	18+35	N/A	N/A	N/A	N/A	N/A	55	$13.71	$754	
Fill Armor	24"-6" Rip-Rap	16+95, 106+60, 142+35, 144+90, 169+35	N/A	N/A	N/A	N/A	N/A	1,180			* On Fill Sheet
Total Rock for Road Segment:			I1 to I2					5,788			$19,158

ROAD SEGMENT	I3 to I4			POINT TO POINT I3 to I4 Volume (CY) per		Sta. to Sta. 0+00 to 9+70 Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)								
Subgrade Leveling	4"-0" crushed		N/A	N/A		N/A		77	$8.17	$629	
Turnaround	4"-0" crushed	5+80	N/A	TA	44	TA's	1	44	$8.17	$359	
Junctions	11/2"-0" crushed	0+00	N/A	junction	22	junctions	1	22	$5.07	$112	
Total Rock for Road Segment:			I3 to I4					143			$1,100

ROAD SEGMENT	I5 to I6			POINT TO POINT		Sta. to Sta.				
				I5 to I6		0+00 to 24+00				
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Subgrade Leveling	4"-0" crushed		N/A	N/A		N/A		308	$8.17	$2,516
Turnouts	4"-0" crushed	7+00, 16+40	N/A	TO	22	TO's	2	44	$8.17	$359
Junctions	11/2"-0" crushed	0+00	N/A	junction	22	junctions	1	22	$5.07	$112
Culvert Removal Backfill	11/2"-0" crushed	6+25, 14+65, 17+00	N/A	culvert	N/A	culverts	3	99	$5.07	$502
Landing Rock	6"-0" pit-run	24+00	N/A	landing	55	landings	1	55	$9.85	$542
Total Rock for Road Segment:			I5 to I6					528		$4,031

ROAD SEGMENT	I7 to I8			POINT TO POINT		Sta. to Sta.				
				I7 to I8		0+00 to 63+50				
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Subgrade Leveling	4"-0" crushed		N/A	N/A	N/A	N/A	N/A	110	$8.17	$899
Base Rock	4"-0" crushed	0+00 - 47+80	4	station	25	stations	47.8	1,195	$5.07	$6,059
Turnouts Base Rock	4"-0" crushed	6+75, 10+65, 33+05, 40+50, 44+10	4	TO	11	TO's	5	55	$8.17	$449
Curve Widening	4"-0" crushed		4	curve	11	curves	6	66	$8.17	$539
Culvert Bedding/Backfill	11/2"-0" crushed	4+25, 10+65, 15+30, 20+00, 22+60, 28+70, 31+90, 32+65, 43+40, 46+80	N/A	culvert	N/A	culverts	10	374	$5.07	$1,896
Check Dams	6"-4" Pit-Run	18+15, 37+05	N/A	dam	N/A	dam	N/A	66	$9.85	$650
Junctions	11/2"-0" crushed	0+00	N/A	junction	22	junctions	2	44	$5.07	$223
Landing Rock	6"-0" pit-run	63+50	N/A	landing	55	landings	1	55	$9.85	$542
Base Rock @ Fills	4"-0" crushed	18+15, 37+05	N/A	station	N/A	stations	N/A	100		* On Fill Sheet
Culvert Bedding/Backfill @ Fills	11/2"-0" crushed	18+15, 37+05	N/A	culvert	N/A	culverts	2	451		* On Fill Sheet
Fill Armor	24"-6" Rip-Rap	18+15, 37+05	N/A	culvert	N/A	culverts	2	665		* On Fill Sheet
Stream Bank Armor Rip Rap	24"-6" Rip-Rap	18+15	N/A					22		* On Fill Sheet
Streambed Retention Material	36"-6"	18+15, 37+05	N/A	culvert	N/A	culverts	2	66		* On Fill Sheet
Total Rock for Road Segment:			I7 to I8					3,269		$11,257

ROAD SEGMENT	I9 to I10			POINT TO POINT		Sta. to Sta.				
				I9 to I10		0+00 to 30+65				
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Subgrade Leveling	4"-0" crushed		N/A	N/A		N/A		110	$8.17	$899
Base Rock	4"-0" crushed	0+00 - 30+65	4	station	25	stations	30.7	766	$8.17	$6,260
Turnouts	4"-0" crushed	10+40, 19+65, 24+95,	N/A	TO	22	TO's	3	66	$8.17	$539
Turnaround	4"-0" crushed	28+85	N/A	TA	44	TA's	1	44	$8.17	$359
Junctions	11/2"-0" crushed	0+00, 6+30	N/A	junction	44	junctions	2	88	$5.07	$446
Culvert Bedding/Backfill @ Fills	11/2"-0" crushed	0+90, 5+00, 8+70, 14+45	N/A	culvert	N/A	culverts	4	165	$5.07	$837
Total Rock for Road Segment:			I9 to I10					1,239		$9,340

ROAD SEGMENT	I11 to I12			POINT TO POINT		Sta. to Sta.				
				I11 to I12		0+00 to 5+75				
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Subgrade Leveling	4"-0" crushed		N/A	N/A		N/A		77	$8.17	$629
Junctions	11/2"-0" crushed	0+00	N/A	junction	22	junctions	1	22	$5.07	$112
Turnaround	4"-0" crushed	3+10	N/A	TA	44	TA's	1	44	$8.17	$359
Landing Rock	6"-0" pit-run	5+75	N/A	landing	55	landings	1	55	$9.85	$542
Total Rock for Road Segment:			I11 to I12					198		$1,642

Processing:

Description	No.sta	Rate/sta	Cost
Water, Process & Compact:	312.10	$56.48	$17,627
			$0

SUB TOTAL FOR IMPROVEMENT SURFACING	24"-6"	6"-0"pr	4"-0"	1 1/2"-0"		Total	$80,882
	2,296	297	3,381	5,191		11,165	

SPECIAL PROJECTS

Description	Cost

SUB TOTAL FOR SPECIAL PROJECTS $0

Subtotal of Surfacing & Spec. Proj. *$80,882*
Subtotal of Clearing, Exc.,Culv. *$161,306*

GRAND TOTAL **$242,188**

Compiled By: Kraig Kirkpatrick

Date: 10/24/2013

Fill Reconstruction Cost Estimate

Kraig Kirkpatrick
10/18/2013

Segment: I1 to I2 Station: 16+95
Fill: 1 Height: 15

Materials	Quantity		$	Total	
24"x65', 14ga, CMP	65		$26.17	$1,701.05	
24"-6" Riprap Dissipator	99	cy	$13.71	$1,357.29	
24"-6" Riprap Fill Armor	240	cy	$13.71	$3,290.40	
1 1/2"-0" Crushed Rock for Bedding/Backfill	88	cy	$5.07	$446.16	
4"-0" Crushed Rock for Road	33	cy	$8.17	$269.61	
Erosion Control	0.01	ac	$1,979.00	$19.79	
Mulch and seed					**$7,084.30**

Excavation	Rate		CY/amount	Total	
End-Haul excavation $/cy					
Excavate Fill	$4.00		185	$740.00	
Backfill from barrow site	$4.00		253	$1,012.00	
Compaction					
Backfill (barrow & crushed rock)	$0.70		253	$177.10	
Waste material compaction	$0.40		185	$74.00	
Fill armor placement w/330, $/hr	$155.00		10	$1,550.00	
Laborer $/hr	$40.00		10	$400.00	
					$3,953.10

Project Total	**$11,037**

Fill Reconstruction Cost Estimate

Kraig Kirkpatrick
10/18/2013

Segment: I1 to I2 Station: 106+60
Fill: 2 Height: 18

Materials	Quantity		$	Total
24"x85', 14ga, CMP	85		$26.17	$2,224.45
24"-6" Riprap Dissipator	22	cy	$13.71	$301.62
24"-6" Riprap Fill Armor	450	cy	$13.71	$6,169.50
1 1/2"-0" Crushed Rock for Bedding/Backfill	121	cy	$5.07	$613.47
4"-0" Crushed Rock for Road	33	cy	$8.17	$269.61
Erosion Control Mulch and seed	0.01	ac	$1,979.00	$19.79

$9,598.44

Excavation	Rate		CY/amount	Total
End-Haul excavation $/cy				
Excavate Fill	$4.00		370	$1,480.00
Backfill from barrow site	$4.00		444	$1,776.00
Compaction				
Backfill (barrow & crushed rock)	$0.70		444	$310.80
Waste material compaction	$0.40		370	$148.00
Fill armor placement w/330, $/hr	$155.00		16	$2,480.00
Laborer $/hr	$40.00		10	$400.00

$6,594.80

Project Total	**$16,193**

Fill Reconstruction Cost Estimate

Kraig Kirkpatrick
10/18/2013

Segment: I1 to I2 Station: 142+35
Fill: 3 Height: 11

Materials	Quantity		$	Total	
24"x55', 14ga, CMP	55		$26.17	$1,439.35	
24"-6" Riprap Dissipator	22	cy	$13.71	$301.62	
24"-6" Riprap Fill Armor	150	cy	$13.71	$2,056.50	
1 1/2"-0" Crushed Rock for Bedding/Backfill	88	cy	$5.07	$446.16	
4"-0" Crushed Rock for Road	33	cy	$8.17	$269.61	
Erosion Control Mulch and seed	0.01	ac	$1,979.00	$19.79	**$4,533.03**

Excavation	Rate		CY/amount	Total	
End-Haul excavation $/cy					
Excavate Fill	$4.00		125	$500.00	
Backfill from barrow site	$4.00		150	$600.00	
Compaction					
Backfill (barrow & crushed rock)	$0.70		150	$105.00	
Waste material compaction	$0.40		125	$50.00	
Fill armor placement w/330, $/hr	$155.00		8	$1,240.00	
Laborer $/hr	$40.00		4	$160.00	
					$2,655.00

Project Total	**$7,188**

Fill Reconstruction Cost Estimate

Kraig Kirkpatrick
10/18/2013

Segment: I1 to I2 Station: 144+90
Fill: 4 Height: 8

Materials	Quantity		$	Total
24"x45', 14ga, CMP	45		$26.17	$1,177.65
24"-6" Riprap Dissipator	44	cy	$13.71	$603.24
24"-6" Riprap Fill Armor	80	cy	$13.71	$1,096.80
1 1/2"-0" Crushed Rock for Bedding/Backfill	66	cy	$5.07	$334.62
4"-0" Crushed Rock for Road	33	cy	$8.17	$269.61
Erosion Control Mulch and seed	0.01	ac	$1,979.00	$19.79

$3,501.71

Excavation	Rate		CY/amount	Total
End-Haul excavation $/cy				
Excavate Fill	$4.00		300	$1,200.00
Backfill from barrow site	$4.00		360	$1,440.00
Compaction				
Backfill (barrow & crushed rock)	$0.70		360	$252.00
Waste material compaction	$0.40		300	$120.00
Fill armor placement w/330, $/hr	$155.00		4	$620.00
Laborer $/hr	$40.00		4	$160.00

$3,792.00

Project Total	**$7,294**

Fill Reconstruction Cost Estimate

Kraig Kirkpatrick
10/18/2013

Segment: I1 to I2 Station: 152+35
Fill: 5 Height: 8

Materials	Quantity		$	Total	
18"x45', CPP	45		$10.73	$482.85	
24"-6" Riprap Dissipator	11	cy	$13.71	$150.81	
		cy		$0.00	
1 1/2"-0" Crushed Rock for Bedding/Backfill	88	cy	$5.07	$446.16	
4"-0" Crushed Rock for Road	33	cy	$8.17	$269.61	
Erosion Control	0.01	ac	$1,979.00	$19.79	
Mulch and seed					**$1,369.22**

Excavation	Rate		CY/amount	Total	
End-Haul excavation $/cy					
Excavate Fill	$4.00		66	$264.00	
Compaction					
Backfill (barrow & crushed rock)	$0.70		88	$61.60	
Waste material compaction	$0.40		66	$26.40	
				$0.00	
Laborer $/hr	$40.00		2	$80.00	
					$432.00

Project Total	**$1,801**

Fill Reconstruction Cost Estimate

Kraig Kirkpatrick
10/18/2013

Segment: I1 to I2 Station: 166+40
Fill: 6 Height: 7

Materials	Quantity		$	Total	
18"x40', CPP	40		$10.73	$429.20	
24"-6" Riprap Dissipator	11	cy	$13.71	$150.81	
1 1/2"-0" Crushed Rock for Bedding/Backfill	66	cy	$5.07	$334.62	
4"-0" Crushed Rock for Road	33	cy	$8.17	$269.61	
Erosion Control Mulch and seed	0.01	ac	$1,979	$19.79	
					$1,204.03

Excavation	Rate		CY/amount	Total	
End-Haul excavation $/cy					
Excavate Fill	$4.00		55	$220.00	
Compaction					
Backfill (barrow & crushed rock)	$0.70		66	$46.20	
Waste material compaction	$0.40		55	$22.00	
Laborer $/hr	$40.00		2	$80.00	
					$368.20

Project Total	**$1,572**

Fill Reconstruction Cost Estimate

Kraig Kirkpatrick
10/18/2013

Segment: I1 to I2 Station: 169+35
Fill: 7 Height: 10

Materials	Quantity		$	Total	
24"x50', 14ga, CMP	50		$26.17	$1,308.50	
24"-6" Riprap Dissipator	11	cy	$13.71	$150.81	
24"-6" Riprap Fill Armor	260	cy	$13.71	$3,564.60	
1 1/2"-0" Crushed Rock for Bedding/Backfill	66	cy	$5.07	$334.62	
4"-0" Crushed Rock for Road	33	cy	$8.17	$269.61	
Erosion Control Mulch and seed	0.01	ac	$1,979	$19.79	**$5,647.93**

Excavation	Rate		CY/amount	Total	
End-Haul excavation $/cy					
Excavate Fill	$4.00		118	$472.00	
Backfill from barrow site	$4.00		77	$308.00	
Compaction					
Backfill (barrow & crushed rock)	$0.70		143	$100.10	
Waste material compaction	$0.40		118	$47.20	
Fill armor placement w/330, $/hr	$155.00		10	$1,550.00	
Laborer $/hr	$40.00		8	$320.00	
					$2,797.30

Project Total	**$8,445**

Jarvie Combo. Type F (Round Pipe)

Sale Name: Jarvie Combo. Pt I7-I8 Sta. 18+15 Date: 11/15/13 Compiled By: Kraig Kirkpatrick

Construction Phase	QTY CY	Haul Cost/CY	Haul Cost	Equipment Hours						Labor	Culvert		Erosion Control		Total
				C330	C315	24CY off Highway Dump	Roller	Pump	Tamper		Ft	$/ft.	Acres	$/Acre	$
Unload and move cmp to site				4											
Fill and Culvert removal\disposal	350			20		20									
De-watering (w/pump) (24hrs/day)								24		24					
Build culvert bed compact w/crushed rock	33	$ 5.07	$ 167	1					2	2					
Place culvert \compact flanks w/crushed rock	143	$ 5.07	$ 725	2					4	4					
Remaining Backfill Placement from barrow site	255			12	12	12									
Fill Compaction							8								
Seed culvert w\onsite cobble															
Develop Waste Area				2											
Compact/Shape Waste Area					1										
Streambed Retention Rip Rap	22	$ 13.71	$ 302	1											
Stream Bank Armor Rip Rap	22	$ 13.71	$ 302	1											
Develop and Place Riprap/Fill Armor	121	$ 13.71	$ 1,659	8											
Road Surfacing Base Rock	50	$ 8.17	$ 409												
Seeding and Mulching:													0.100	$1,794	**$179**
Total Hours				51	13	32	8	24	6	30					
Equipment Rates:				$155	$101	$127	$77	$10	$10	$38					
Sub total :			**$ 3,563**	**$7,905**	**$1,313**	**$4,064**	**$616**	**$240**	**$60**	**$1,140**					**$18,901**
72" Aluminized Steel Culvert (12 ga)											60	$93			**$5,580**
Bands											2	$137			**$274**
Step Beveling (both ends)											2	$101			**$202**
Freight to Astoria Area											1	$500			**$700**
Sub total Culvert Material Cost:															**$6,756**

Total Installation Cost: **$25,836**

Jarvie Combo. Type F (Round Pipe)

Sale Name: Jarvie Combo Pt I7-I8 Sta. 37+05 Date: 11/15/13 Compiled By: Kraig Kirkpatrick

Construction Phase	QTY	Haul Cost/CY	Haul	Equipment Hours						Labor	Culvert		Erosion Control		Total
	CY		Cost	C330	C315	24CY off Highway Dump	Roller	Pump	Tamper		Ft	$/ft.	Acres	$/Acre	$
Unload and move cmp to site				4											
Fill and Culvert removal\disposal	2,470			30	30	30									
De-watering (w/pump) (24hrs/day)								24		24					
Build culvert bed compact w/crushed rock	77	$ 5.07	$ 390	2					3	3					
Place culvert \compact flanks w/crushed rock	198	$ 5.07	$ 1,004	2					5	5					
Remaining Backfill Placement from barrow site	2,195			20	20	20			5	8					
Fill Compaction							16								
Seed culvert w\onsite cobble															
Develop Waste Area				2											
Compact/Shape Waste Area					3										
Streambed Retention Rip Rap	44	$ 13.71	$ 603	2											
Develop and Place Riprap/Fill Armor	544	$ 13.71	$ 7,458	12											
Road Surfacing Base Rock	50	$ 8.17	$ 409												
Seeding and Mulching:													0.100	$1,794	**$179**
Total Hours				74	53	50	16	24	13	40					
Equipment Rates:				$155	$101	$127	$77	$10	$10	$38					
Sub total :			**$ 9,864**	**$11,470**	**$5,353**	**$6,350**	**$1,232**	**$240**	**$130**	**$1,520**					**$36,159**
108" Aluminized Steel Culvert (12 ga)											90	$140			**$12,628**
Bands											4	$202			**$806**
Step Beveling (both ends)											2	$151			**$302**
Freight to Astoria Area											1	$500			**$700**
Sub total Culvert Material Cost:															**$14,437**

Total Installation Cost: **$50,775**

CRUSHED ROCK COST

SALE NAME: Jarvie Combo
PROJECT: Nos. 1 and 2
QUARRY: Tidewater 1 1/2"-0" & 4"-0"

MATERIAL: 1 1/2"-0" & 4"-0"

DATE: 11/20/2013
BY: Kraig Kirkpatrick

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES 50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	Total Haul
2A-2B	7.46	30			1.00	1.00	1.00	0.60	0.15	3.75
I1-I2	97.80	3,904			1.00	1.00	0.50	0.50	0.15	3.15
I3-I4	9.70	22			1.00	1.50	1.00	0.40	0.10	4.00
I5-I6	24.00	121			1.00	1.50	1.00	0.25	0.10	3.85
I7-I8	63.50	1,869			1.00	1.50	1.00	0.50	0.10	4.10
I9-I10	30.65	253			1.00	1.50	1.00	0.60	0.15	4.25
I11-I12	5.75	22			1.00	1.50	1.50	0.50	0.15	4.65
TOTAL	238.86 STA./NO.	6,221 CU. YD.								AVERAGE HAUL
CUBIC YARD WEIGHTED HAUL					1.00	1.18	0.69	0.50	0.13	3.50
							Average Round Trip Distance (miles)		7.01	

ROCK HAUL:

Truck type: D20 No. trucks: 2
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: $3.81 /cy
Load: $0.48 /cy
Spread: $0.78 /cy

Production: cy/day = 1,414

CRUSHED ROCK HAUL COSTS 6,221 cy @ **$5.07 /cy**

CRUSHED ROCK COST

SALE NAME: Jarvie Combo
PROJECT: Nos. 1 and 2
QUARRY: Hamilton Creek Road Stockpile 4"-(

MATERIAL: 4"-0" Crushed

DATE: 09/19/2013
BY: Johnson

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES 50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	Total Haul
1A-1B	3.15	191	2	1	2.50	2.00	1.50	0.75	0.10	9.85
1C-1D	10.25	590	2	1	2.50	1.50	1.50	1.05	0.10	9.65
1E-1F	6.70	390	2	1	2.50	1.50	1.50	1.00	0.10	9.60
2A-2B	7.46	428	2	1	2.50	1.50	1.00	0.75	0.10	8.85
2C-2D	10.75	615	2	1	2.50	1.50	1.00	0.90	0.10	9.00
2E-2F	13.70	784	2	1	2.50	1.50	1.00	0.90	0.10	9.00
I1-I2	176.25	275	2	1	2.00	1.00	2.00	1.15	0.10	9.25
I3-I4	9.70	121	2	1	2.00	1.00	1.40	1.00	0.10	8.50
I5-I6	24.00	352	2	1	2.00	1.00	1.35	1.45	0.10	8.90
I7-I8	63.50	526	2	1	2.00	1.00	2.00	1.35	0.10	9.45
I9-I10	30.65	986	2	1	2.00	1.00	2.00	1.45	0.10	9.55
I11-I12	5.75	121	2	1	2.00	1.50	2.00	1.35	0.10	9.95
TOTAL	361.86	5,379								AVERAGE HAUL
	STA./NO.	CU. YD.								
CUBIC YARD WEIGHTED HAUL			**2.00**	**1.00**	**2.28**	**1.31**	**1.50**	**1.11**	**0.10**	**9.29**
								Average Round Trip Distance (miles)		18.59

ROCK HAUL:

Truck type: D20 No. trucks: 4
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: $6.91 /cy
Load: $0.48 /cy
Spread: $0.78 /cy

Production: cy/day = 1,012

CRUSHED ROCK HAUL COSTS 5,379 cy @ **$8.17 /cy**

PIT RUN ROCK COST

SALE NAME: Jarvie Combo
PROJECT: Nos. 1 and 2
QUARRY: Hamilton Creek Quarry

MATERIAL: Pit Run 6"-0"

DATE: 09/19/2013
BY: Johnson

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES 50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	Total Haul
1A-1B	3.15	50	2	1	2.50	2.00	1.50	0.75	0.10	9.85
1C-1D	10.25	50	2	1	2.50	1.50	1.50	1.05	0.10	9.65
1E-1F	6.70	50	2	1	2.50	1.50	1.50	1.00	0.10	9.60
2A-2B	7.46	50	2	1	2.50	1.50	1.00	0.75	0.10	8.85
2C-2D	10.75	50	2	1	2.50	1.50	1.00	0.90	0.10	9.00
2E-2F	13.70	50	2	1	2.50	1.50	1.00	0.90	0.10	9.00
I1-I2	176.25	66	2	1	2.00	1.00	2.00	1.15	0.10	9.25
I5-I6	24.00	55	2	1	2.00	1.00	1.35	1.45	0.10	8.90
I7-I8	63.50	121	2	1	2.00	1.00	2.00	1.35	0.10	9.45
I11-I12	5.75	55	2	1	2.00	1.50	2.00	1.35	0.10	9.95
TOTAL	321.51 STA./NO.	597 CU. YD.								AVERAGE HAUL
CUBIC YARD WEIGHTED HAUL			2.00	1.00	2.25	1.34	1.56	1.11	0.10	9.36

Average Round Trip Distance (miles) 18.72

ROCK HAUL:

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

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

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

Ave haul: $7.86 /cy
Load: $0.72 /cy
Spread: $1.26 /cy

Production: cy/day = 642

PIT RUN ROCK HAUL COSTS 597 cy @ **$9.85 /cy**

RIP RAP ROCK COST

SALE NAME: Jarvie Combo
PROJECT: Nos. 1 and 2
QUARRY: Hamilton Creek Quarry

MATERIAL: Rip Rap 24"-6"

DATE: 09/19/2013
BY: Johnson

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	
2E-2F	13.70	100	2	1	2.50	1.50	1.00	0.90	0.10	9.00
I1-I2	176.25	1,543	2	1	2.00	1.00	2.00	1.15	0.10	9.25
I7-I8	63.50	753	2	1	2.00	1.00	2.00	1.35	0.10	9.45
TOTAL	253.45	2,396								AVERAGE HAUL
	STA./NO.	CU. YD.								
CUBIC YARD WEIGHTED HAUL			2.00	1.00	2.02	1.02	1.96	1.20	0.10	9.30
								Average Round Trip Distance (miles)		18.60

ROCK HAUL:

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

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

Ave haul: $8.03 /cy
Load: $1.38 /cy
Develop: $4.30 /cy

Production: cy/day = 472

RIP RAP ROCK HAUL COSTS 2,396 cy @ **$13.71 /cy**

Jarvie Combo Timber Sale
No. 341-14-38

Mechanical Brushing Costs

Date: 11/22/13

Road Segment/ Point	Road Name	Length (Feet)	Miles	Brush Density	Cost / Mile	Segment Cost
B1	Beneke Rd	12,406	2.35	Medium	$1,100.00	$2,585
B2	Trailover Rd	14,852	2.81	Medium	$1,100.00	$3,094
B3	Music Rd	19,917	3.77	Heavy	$1,550.00	$5,847
B4	Wild Goose Tie-Thru Rd.	9,635	1.82	Heavy	$1,550.00	$2,828
B5	Wild Goose Rd.	11,960	2.27	Medium	$1,100.00	$2,492
B6	Trailover Ridge Rd	7,985	1.51	Medium	$1,100.00	$1,664
B7		1,715	0.32	Medium	$1,100.00	$357
B8		450	0.09	Medium	$1,100.00	$94
B9		1,195	0.23	Medium	$1,100.00	$249
B10		1,480	0.28	Medium	$1,100.00	$308
B11		4,810	0.91	Medium	$1,100.00	$1,002
B12		195	0.04	Medium	$1,100.00	$41
B13		540	0.10	Heavy	$1,550.00	$159
B14		3,650	0.69	Heavy	$1,550.00	$1,071
B15		1,410	0.27	Medium	$1,100.00	$294
B16		345	0.07	Medium	$1,100.00	$72
B17		145	0.03	Heavy	$1,550.00	$43
B18		95	0.02	Heavy	$1,550.00	$28
B19		260	0.05	Heavy	$1,550.00	$76
B20		150	0.03	Medium	$1,100.00	$31
B21		150	0.03	Heavy	$1,550.00	$44
B22		150	0.03	Heavy	$1,550.00	$44
B23		345	0.07	Heavy	$1,550.00	$101
B24		1,570	0.30	Medium	$1,100.00	$327
B25		285	0.05	Medium	$1,100.00	$59
B26		140	0.03	Heavy	$1,550.00	$41
B27		625	0.12	Heavy	$1,550.00	$183
B28		200	0.04	Heavy	$1,550.00	$59
B29		320	0.06	Medium	$1,100.00	$67
B30		890	0.17	Medium	$1,100.00	$185
B31		5,090	0.96	Medium	$1,100.00	$1,060
B32		115	0.02	Medium	$1,100.00	$24
B33		475	0.09	Medium	$1,100.00	$99
B34		905	0.17	Medium	$1,100.00	$189
B35		155	0.03	Medium	$1,100.00	$32
B36	Kalina Tie Thru	12,340	2.34	Heavy	$1,550.00	$3,623
B37		330	0.06	Medium	$1,100.00	$69
B38		2,080	0.39	Medium	$1,100.00	$433
B39		240	0.05	Medium	$1,100.00	$50
B40		5,035	0.95	Heavy	$1,550.00	$1,478
B41		100	0.02	Heavy	$1,550.00	$29

B42		135	0.03	Heavy	$1,550.00	$40
B43		170	0.03	Heavy	$1,550.00	$50
B44		330	0.06	Heavy	$1,550.00	$97
B45		325	0.06	Heavy	$1,550.00	$95
B46		2,640	0.50	Medium	$1,100.00	$550
B47		630	0.12	Medium	$1,100.00	$131
B48		240	0.05	Medium	$1,100.00	$50
B49		985	0.19	Medium	$1,100.00	$205
B50		295	0.06	Medium	$1,100.00	$61
B51		305	0.06	Medium	$1,100.00	$64
B52		3,665	0.69	Medium	$1,100.00	$764
B53		85	0.02	Medium	$1,100.00	$18
B54		260	0.05	Medium	$1,100.00	$54
B55		280	0.05	Heavy	$1,550.00	$82
B56		340	0.06	Medium	$1,100.00	$71
B57		7,760	1.47	Heavy	$1,550.00	$2,278
B58		185	0.04	Heavy	$1,550.00	$54
B59		535	0.10	Heavy	$1,550.00	$157
B60		3,920	0.74	Heavy	$1,550.00	$1,151
B61		260	0.05	Heavy	$1,550.00	$76
B62		465	0.09	Heavy	$1,550.00	$137
B63		160	0.03	Heavy	$1,550.00	$47
B64		90	0.02	Heavy	$1,550.00	$26
B65		175	0.03	Heavy	$1,550.00	$51
B66		215	0.04	Heavy	$1,550.00	$63
B67		495	0.09	Heavy	$1,550.00	$145
B68		190	0.04	Heavy	$1,550.00	$56
B69		135	0.03	Heavy	$1,550.00	$40
B70		125	0.02	Heavy	$1,550.00	$37
B71		1,575	0.30	Heavy	$1,550.00	$462
B72		220	0.04	Heavy	$1,550.00	$65
B73		95	0.02	Heavy	$1,550.00	$28
B74		145	0.03	Heavy	$1,550.00	$43
B75		405	0.08	Heavy	$1,550.00	$119
B76		350	0.07	Heavy	$1,550.00	$103
B77		150	0.03	Heavy	$1,550.00	$44
B78		85	0.02	Heavy	$1,550.00	$25
B79		9,055	1.71	Heavy	$1,550.00	$2,658
B80		275	0.05	Heavy	$1,550.00	$81
B81		315	0.06	Heavy	$1,550.00	$92
B82		825	0.16	Heavy	$1,550.00	$242
B83		95	0.02	Heavy	$1,550.00	$28
B84		810	0.15	Heavy	$1,550.00	$238
B85		780	0.15	Heavy	$1,550.00	$229
B86		545	0.10	Heavy	$1,550.00	$160
B87		2,985	0.57	Heavy	$1,550.00	$876
B88		155	0.03	Medium	$1,100.00	$32
B89		7,900	1.50	Medium	$1,100.00	$1,646
B90		3,550	0.67	Medium	$1,100.00	$740
B91		1,670	0.32	Medium	$1,100.00	$348
B92		380	0.07	Medium	$1,100.00	$79
B93		280	0.05	Medium	$1,100.00	$58

B94		830	0.16	Medium	$1,100.00	$173
B95		650	0.12	Medium	$1,100.00	$135
B96		495	0.09	Medium	$1,100.00	$103
B97		555	0.11	Medium	$1,100.00	$116
B98		340	0.06	Medium	$1,100.00	$71
B99		1,535	0.29	Medium	$1,100.00	$320
						$0
Totals		187180.00	35.45			**$46,495**

Road Maintenance Cost Summary

Sale: Jarvie Combo
Date: 06-Dec-13
By: J. Johnson

MBF: 9,863
$$/MBF: $2.44

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost
Interim Road Maintenance #1	Grader 14G	$675	1	20	$93	$2,535
	Dump Truck 12CY	$141	1	16	$73	$1,309
	FE Loader C966	$675	1	8	$77	$1,291
Interim Road Maintenance #2	Grader 14G	$675	1	20	$93	$2,535
	Dump Truck 12CY	$141	1	16	$73	$1,309
	FE Loader C966	$675	1	8	$77	$1,291
Final Road Maintenance	Grader 14G	$675	1	30	$93	$3,465
	Dump Truck 12CY x 2	$141	2	16	$73	$2,477
	FE Loader C966	$675	1	16	$77	$1,907
	Excavator C315	$699	1	16	$94	$2,203
	Vibratory Roller	$675	1	20	$72	$2,115
	Water Truck 2,500 gallon	$165	1	10	$83	$995
Total						$24,040

Production Rates

Production Rates	Miles/day	Distance(miles)	Days
Grader	3.0	4.5	1.5

Production Rates	Miles/day	Distance(miles)	Days
Grader	1.5	4.5	3.0
Vibratory Roller*	1.5	4.5	3.0

*Final Road Maintenance Only

Projects Road Maintenance Cost Summary

Sale: Jarvie Combo
Date: 22-Nov-13
By: Kraig Kirkpatrick FL

Type	Equipment/Rationale			Hours	Rate	Cost	
	Grader 14G			20	$100	$2,000	
Final Haul	Dump Truck 12CY			10	$79	$790	
Road	FE Loader C966			10	$83	$830	
Maintenance	Vibratory Roller			20	$77	$1,540	
Haul Route	Water Truck 2,500 gallon			12	$89	$1,068	
Total							$6,228

Production Rates	Miles/day	Distance(miles)	Days
Grader	1.5	3.6	2.4
Vibratory Roller	1.5	3.6	2.4

Hamilton Creek Road to Hwy 202, Tide Water Loop Quarry to Pt. I2

Jarvie Combo Timber Sale
No. 341-14-38

Roadside Spraying

Date: 11/22/13

Segments	Feet	Miles	Cost per Mile	Segment Cost
Total from brushing	186910.00	35.40	$170.00	$ 6,017.94
S1	3205	0.61	$170.00	$ 103.19
S2	390	0.07	$170.00	$ 12.56
S3	2240	0.42	$170.00	$ 72.12
S4	150	0.03	$170.00	$ 4.83
S5	240	0.05	$170.00	$ 7.73
Total	**193135.00**	**36.58**		**$ 6,218.36**

Jarvie Combo
TIMBER CRUISE REPORT
FY 2014

1. **Sale Area Location:** Areas 1 and 2 are located in Section 23, 24, and 26, T6N, R7W, W.M., Clatsop County, Oregon.

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

3. **Sale Acreage by Area:**

Area	Treatment	Gross Acres	GTRA	Existing R/W	New R/W	Stream Buffer	Net Acres	Survey Method
1	Modified Clearcut	135	1	2	1	36	95	GIS
2	Partial Cut	198	0	2	2	27	167	GIS
3	Right-of-Way	3	0	0	0	0	3	GIS
TOTALS		**336**	**1**	**4**	**3**	**63**	**265**	

4. Cruisers and Cruise Dates: Areas 1 and 2 were cruised by Jenny Johnson, Dave Rygell, and Nick Haile, during August of 2013.

5. Cruise Method and Computation: Areas 1 is a modified clearcut and was variable plot cruised using a 40 BAF. These plots are located on a 2 chain by 9 chain grid, with every third plot measured and graded. A total of 53 plots were sampled, with 25 measured and graded plots, and 28 count plots.

Areas 2 is a partial cut and was variable plot cruised using a 40 BAF. These plots are located on a 3 chain by 15 chain grid, with every fourth plot measured and graded. A total of 38 plots were sampled, with 12 measured and graded plots, 20 count plots, and 6 blank plots. Red alder, Sitka Spruce and cedar are reserve species and were recorded as leave trees.

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

AREA	CRUISE	TRACT	TYPE	ACRES
1	T6NR7W23	AREA 1	00MC	95
2	T6NR7W23	AREA 2	00PC	167
R/W	T6NR7W27	AREA 1	R/W	3

6. Timber Description: Area 1 is a modified clearcut, approximately 73 years old, dominated by Douglas-fir, red alder, and minor amounts of western hemlock. The average Douglas-fir tree size to be harvested is 29 inches DBH, with an average bole height of 103 feet to a merchantable top (8 inch d.i.b.). The average red alder tree size is 17 inches DBH and bole height of 44 feet to a merchantable top (10 inch d.i.b.). The average western hemlock tree size to be harvested in 22 inches DBH and bole height of 80 feet to a merchantable top (8 inch d.i.b.). The average volume per acre to be harvested (net) is 46.9 mbf.

Area 2 is a partial cut, approximately 75 years old, dominated by Douglas-fir, western hemlock, and minor amounts of Sitka Spruce. The average Douglas-fir tree size to be harvested is 23 inches DBH, with an average bole height of 102 feet to a merchantable top (8 inch d.i.b.). The average western hemlock tree size is 17.5 inches DBH and bole height of 57 feet to a merchantable top (8 inch d.i.b.). The average Sitka Spruce tree size is 13.0 inches DBH and bole height of 30 feet to a merchantable top (8 inch d.i.b.) The average volume per acre to be harvested (net) is 31.5 mbf.

Area 3 (Right-of-Way) totals three acres of in-sale right-of-way. The timber type is similar to Sale Area 1 therefore the average cruise volume (net) from Area 1 was applied to these acres. The average volume per acre to be harvested is 46.9 mbf.

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

Areas	Estimated CV	Target SE%	Actual CV	Actual SE%
1 (MC)	55%	8%	46.2%	6.3%
2 (PC)	40%	10%	35.4%	5.7%

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

Species*	DBH	Net Vol.	2 Saw	3 Saw	4 Saw	Camp Run	% D & B	% Sale
Douglas-fir	25.3"	8,116	7,128	910	78	0	1%	82%
Hemlock/True-fir	17.9"	1,135	688	254	193	0	1%	12%
Red alder/Hardwoods	17.4"	598	0	0	0	598	1%	6%
Spruce	14.8"	14	8	2	4	0	<1%	0%
TOTALS		**9,863**	**7,824**	**1,166**	**275**	**598**		**100%**

9. Approvals:

Prepared by: Jenny Johnson **Date:** 09/17/2013

Unit Forester Approval: [signature] **Date:** 10/4/13

10. Attachments:

Cruise Design and Map – 7 pages
Volume Report - 4 pages
Statistics Reports - 6 pages
Log Stock Table - 7 pages
Stand Table Summary (Leave) – 1 page

X:\Jewell_Unit\Timber Sales\2014\Jarvie Combo\Sale_Prep\Cruise_Report_Jarvie_Combo.docx

Revised August, 2002

CRUISE DESIGN
ASTORIA DISTRICT

Sale Name: Jarvie Combo **Area(s)** 1

Harvest Type: (MC) "Modified Clearcut"

Approx. Cruise Acres: 98 **Estimated CV%** 55% Net BF **SE% Objective** 8 Net BF

Planned Sale Volume: 8,193 MBF **Estimated Sale Area Value/Acre:** $16,215 (47 mbf acre.)

A. Cruise Goals: (a) Grade minimum 100 trees.
(b) Sample 54 cruise plots (18 grade/ 36 count); (c) Other goals (X Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes.

B. Cruise Design:

1. Plot Cruises: BAF 40 (Full point) Half point) (circle one)
Cruise Line Direction(s) Area 1 AZ= 90 deg. (West/East)

Cruise Line Spacing 9 (chains)
Cruise Plot Spacing 2 (chains)
Grade/Count Ratio 1/2

Record all hardwood as camp run. Record all cedar as leave trees. Record all snags as SN and record total height and diameter. If plot lands in buffer then offset at least ½ chain outside the buffer

C. Tree Measurements:

1. Diameter: Minimum DBH to cruise is 8" for conifers and 10" for hardwoods. Record dbh to nearest ½" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.

2. Bole Length: Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.

3. Top Cruise Diameter (TCD): Minimum top outside bark is 7" for conifers and 7" for hardwoods or 40 % of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for trees > 18" dbh.

4. Form Factors: (1) Measure or estimate a 16' form factor for every conifer tree measured/graded; OR (2) Measure a minimum of 20 form factors for each major conifer species on the cruise area, and use these to calculate average FF for the species on the cruise. Hardwood form factors are a Standard 87.

5. **Tree Segments:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12'; for hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree.

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

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

B. Sort: Use code "1" (Domestic).

C. Grade: A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; R = Camprun; 0 = Cull

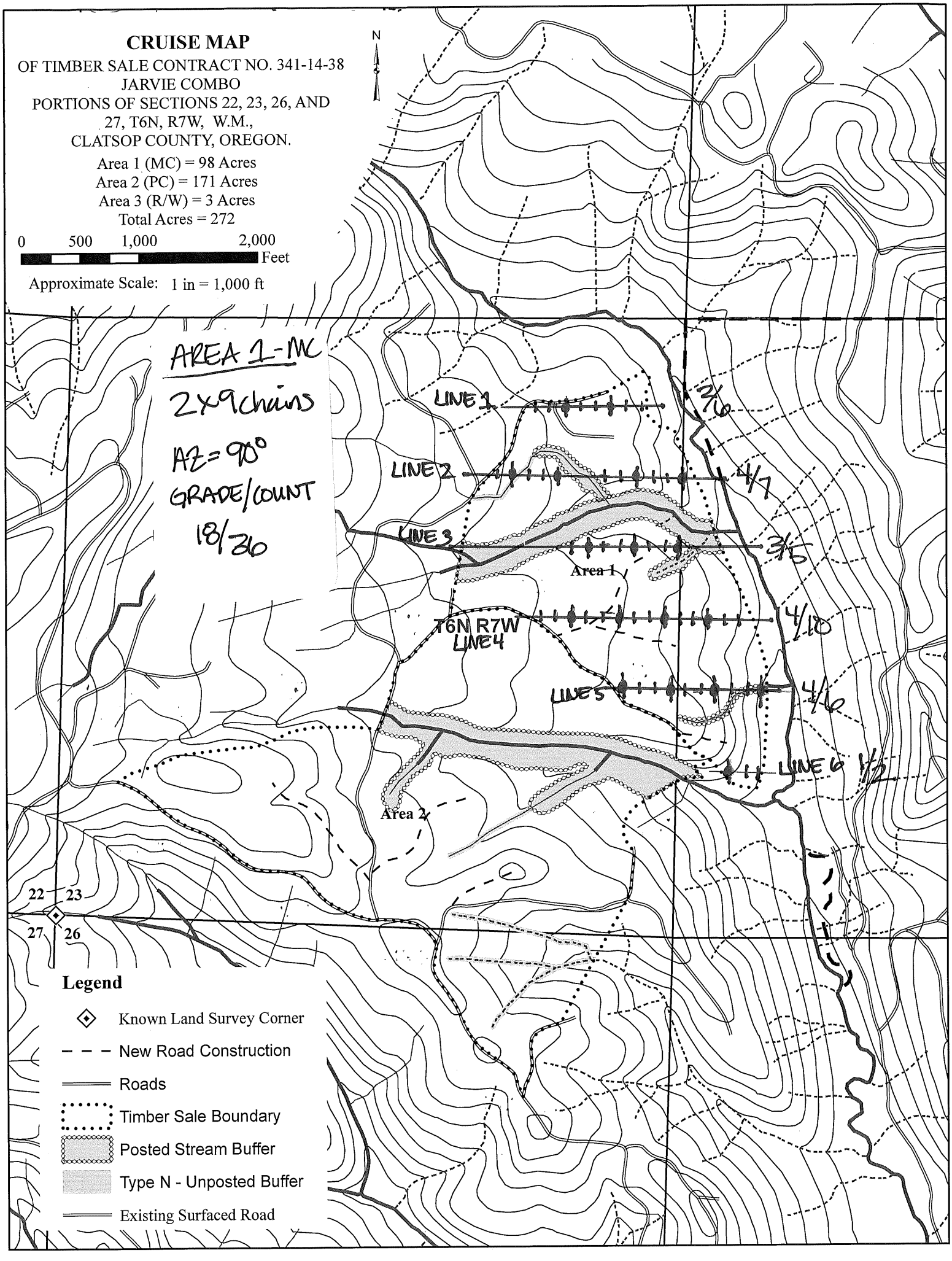
7. **Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally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

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

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

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

Cruise Design by: Jenny Johnson
Approved by: _____
Date: 8/5/2013


CRUISE MAP
OF TIMBER SALE CONTRACT NO. 341-14-38
JARVIE COMBO
PORTIONS OF SECTIONS 22, 23, 26, AND 27, T6N, R7W, W.M.,
CLATSOP COUNTY, OREGON.
Area 1 (MC) = 98 Acres
Area 2 (PC) = 171 Acres
Area 3 (R/W) = 3 Acres
Total Acres = 272
0 500 1,000 2,000 Feet
Approximate Scale: 1 in = 1,000 ft
N
AREA 1-MC
2x9chains
AZ=90°
GRADE/COUNT
18/36
LINE 1
LINE 2
LINE 3
LINE 4
LINE 5
LINE 6
3/6
4/7
3/6
4/10
4/6
1/2
Area 1
Area 2
T6N R7W
22
23
27
26
Legend
Known Land Survey Corner
New Road Construction
Roads
Timber Sale Boundary
Posted Stream Buffer
Type N - Unposted Buffer
Existing Surfaced Road

Revised August, 2002

CRUISE DESIGN
ASTORIA DISTRICT

Sale Name: Jarvie Combo **Area(s)** 2

Harvest Type: (PC) "Partial Cut"

Approx. Cruise Acres: 171 **Estimated CV%** 40% Net BF **SE% Objective** 10 Net BF

Planned Sale Volume: 8,193 MBF **Estimated Sale Area Value/Acre:** $6,210 (18 mbf acre.)

A. Cruise Goals: (a) Grade minimum 48 conifer
(b) Sample 37 cruise plots (12 grade/ 25 count); (c) Other goals (X Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes.

B. Cruise Design:

1. Plot Cruises: BAF 40 (Full point; Half point) (circle one)
Cruise Line Direction(s) Area 2 AZ= North/South

Cruise Line Spacing 15 (chains)
Cruise Plot Spacing 3 (chains)
Grade/Count Ratio 1/2

The BA target is 160 sqft. Leaving 4 trees every plot. **Do not count Alder or cedar toward Basal Area.** Record all hardwood as camp run. Record all cedar as leave trees. Record all snags as SN and record total height and diameter. If plot lands in buffer then offset at least ½ chain outside the buffer

C. Tree Measurements:

1. Diameter: Minimum DBH to cruise is 8" for conifers and 10" for hardwoods. Record dbh to nearest ½" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.

2. Bole Length: Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.

3. Top Cruise Diameter (TCD): Minimum top outside bark is 7" for conifers and 7" for hardwoods or 40 % of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for trees > 18" dbh.

4. Form Factors: (1) Measure or estimate a 16' form factor for every conifer tree measured/graded; OR (2) Measure a minimum of 20 form factors for each major conifer species on the cruise area, and use these to calculate average FF for the species on the cruise. Hardwood form factors are a Standard 87.

5. **Tree Segments:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12'; for hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree.

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

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

B. Sort: Use code "1" (Domestic).

C. Grade: A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; R = Camprun; 0 = Cull

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

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

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

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

Cruise Design by: Jenny Johnson
Approved by: _____
Date: 8/5/2013

Cruise Program Cheat Sheet

If in C:\

- Type "cd D:\"
  - Should now be in D:\
- Type "engmet"
  - Should now be in cruise program
- Select master
  - Select project
    - Select stand
      - Should now be in stand
- Hit button "F5" (plots)
  - Should now be in plot data
- Enter cruiser initials and plot # (ex. "DB01")
- Hit "F3" (CR)
  - Should now be ready to enter cruise information
- PF = "B1"
- A = "1"
- SPC = Species ("D" for Douglas fir "DL" for Douglas fir leave etc.)
- FP = "04"
- FF = Form factor
- TDF = Top diameter ("4" for 40%, "G" for 7 inch top, "H" for 8 inch top etc.)

Defect Deductions

-Percentage = first two digits then 00 and enter 1 to designate percentage. i.e. for a 2% deduction would look like 02001, or a 10% deduction would look like 10001

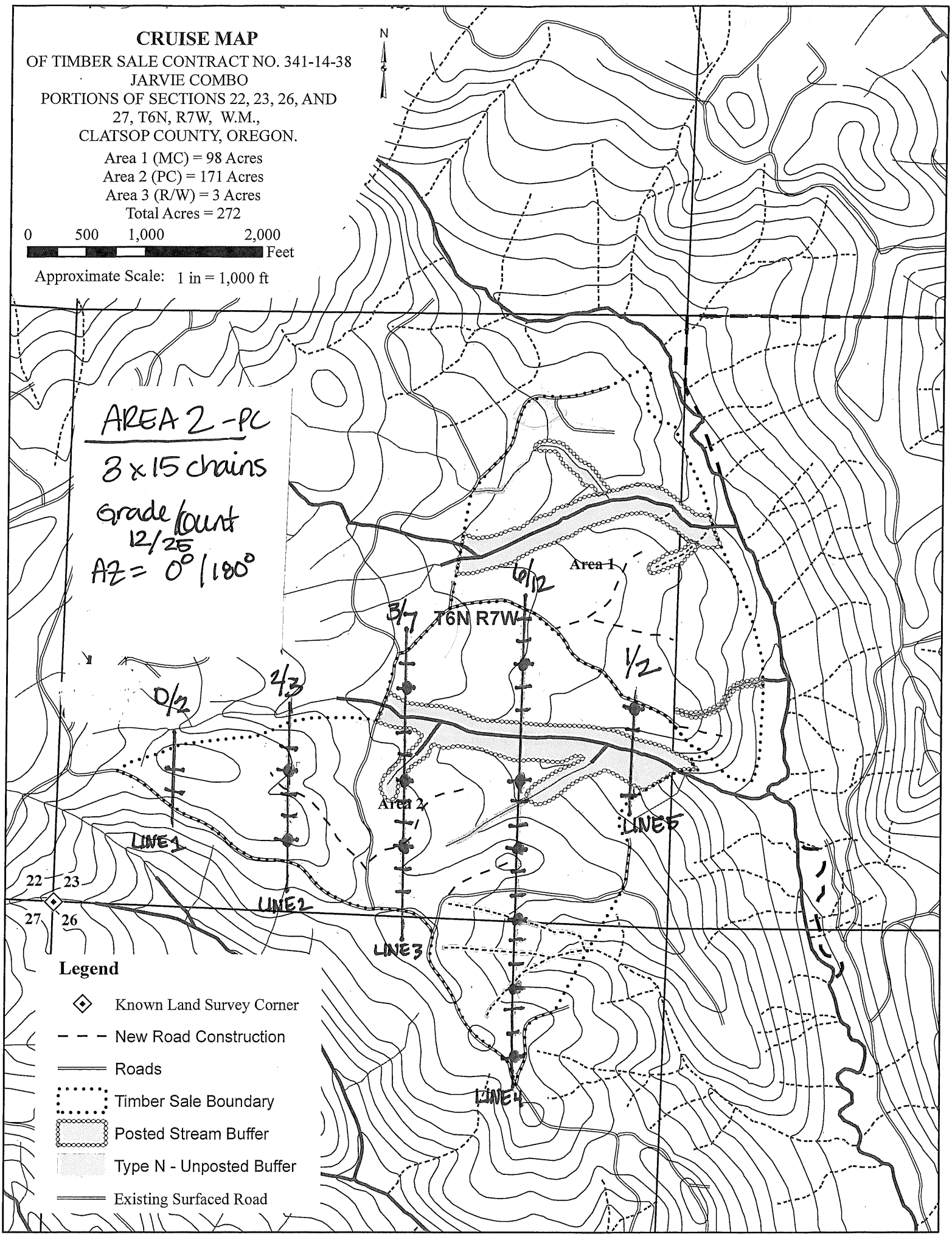
-Foot = enter the foot deduct in the first column. i.e. 5 foot deduct you would enter 5 in the first column. 10 foot deduct you would enter 1 in the first column and 0 in the second column.

Grades

Alder	2S	3S	4S	***Douglas fir***	2S	3S	4S
Min Diameter	12	10	5	Min Diameter	12	6	5
% Clear	50%			Board Feet	60	50	10

Form Factor (all bars = 18)

Bars	FF
17.5	97
17	94
16.5	92
16	89
15.5	86
15	83
14.5	81


CRUISE MAP
OF TIMBER SALE CONTRACT NO. 341-14-38
JARVIE COMBO
PORTIONS OF SECTIONS 22, 23, 26, AND
27, T6N, R7W, W.M.,
CLATSOP COUNTY, OREGON.
Area 1 (MC) = 98 Acres
Area 2 (PC) = 171 Acres
Area 3 (R/W) = 3 Acres
Total Acres = 272
0 500 1,000 2,000
Feet
Approximate Scale: 1 in = 1,000 ft
N
AREA 2 - PC
3 x 15 chains
Grade/count
12/25
AZ = 0°/180°
Area 1
6/12
3/7
T6N R7W
1/2
0/2
2/3
Area 2
LINE1
LINE2
LINE3
LINE4
LINE5
22
23
27
26
Legend
Known Land Survey Corner
New Road Construction
Roads
Timber Sale Boundary
Posted Stream Buffer
Type N - Unposted Buffer
Existing Surfaced Road

TC PSPCSTGR

Species, Sort Grade - Board Foot Volumes (Project)

T06N R07W S23 TyRW	3.00
T06N R07W S23 TyTAKE	95.00
T06N R07W S23 TyTAKE	167.00

Project: DEMO
Acres 265.00

Page 1
Date 10/4/2013
Time 10:33:19AM

Spp	S T	So Grt ad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent of Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log Ln Ft	Bd Ft	CF/ Lf	Logs Per /Acre
D		DOCU														10		0.00	5.4
D		DO2S	87	.6	27,064	26,898	7,128			32	68	1	0	7	92	39	460	2.46	58.5
D		DO3S	12	.3	3,443	3,434	910		96	4		8	17	24	51	32	88	0.82	39.0
D		DO4S	1		294	294	78		100			56	37		7	18	28	0.54	10.4
D		**Totals**	82	.6	30,802	30,626	8,116		12	29	59	2	2	9	87	33	270	1.79	113.3
A		DOCU														6		0.00	1.8
A		DOCR	100	.3	2,252	2,245	595		56	33	10	25	14	31	29	27	86	1.02	26.2
A		**Totals**	6	.3	2,252	2,245	595		56	33	10	25	14	31	29	26	80	1.00	28.0
M		DOCR	100		13	13	3	100						100		35	40	0.83	.3
M		**Totals**	0		13	13	3	100						100		35	40	0.83	.3
S		DOCU														10		0.00	.1
S		DO2S	59		31	31	8				100			100		32	480	2.78	.1
S		DO3S	13		7	7	2		100						100	38	110	1.26	.1
S		DO4S	28		14	14	4	100					100			29	20	0.52	.7
S		**Totals**	0		53	53	14	27	14		59		27	59	14	29	58	0.76	.9
H		DOCU														6		0.00	.5
H		DO2S	60	.2	2,599	2,595	688			13	87			33	67	37	574	2.96	4.5
H		DO3S	22		957	957	254		61	39		5	15	22	57	32	126	1.08	7.6
H		DO4S	18		731	731	194		68	27	4	15	28		57	27	59	0.67	12.3
H		**Totals**	12	.1	4,288	4,283	1,135		25	21	54	4	8	25	63	30	172	1.32	24.9
Totals				0.5	37,407	37,220	9,863	0	16	28	56	4	4	12	81	31	222	1.61	167.4

T TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: JARVIEP

Page 1
Date 9/26/2013
Time 10:46:18AM

T06N R07W S23 TTAKE

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
06N	07W	23	AREA1	TAKE	95.00	53	110	1	W

T06N R07W S23 TTAKE

Spp	ST	Sort	Grad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log Ln Ft	Bd Ft	CF/ Lf	Logs Per /Acre
D		DO	CU														7		0.00	4.2
D		DO	2S	91	.8	36,202	35,926	3,413			22	78	1	0	9	89	38	569	3.03	63.2
D		DO	3S	8	.8	3,195	3,170	301		89	11		9	32	24	35	30	100	0.98	31.8
D		DO	4S	1		329	329	31		100			64	20		16	18	36	0.64	9.2
D	**Totals**			84	.8	39,726	39,424	3,745		8	20	72	3	3	10	84	33	364	2.34	108.3
A		DO	CU														6		0.00	4.8
A		DO	CR	100	.3	6,090	6,072	577		56	33	10	25	14	31	29	27	86	1.02	70.9
A	**Totals**			13	.3	6,090	6,072	577		56	33	10	25	14	31	29	26	80	1.00	75.7
H		DO	CU														6		0.00	.3
H		DO	2S	73		968	968	92			44	56			18	82	37	344	2.12	2.8
H		DO	3S	16		222	222	21		100			63	14	23		21	63	0.83	3.5
H		DO	4S	11		133	133	13		36		64	16	84			21	76	0.96	1.7
H	**Totals**			3		1,322	1,322	126		20	32	47	12	11	17	60	26	157	1.47	8.4
M		DO	CR	100		34	34	3	100						100		35	40	0.83	.9
M	**Totals**			0		34	34	3	100						100		35	40	0.83	.9
S		DO	CU														10		0.00	.2
S		DO	2S	81		85	85	8				100			100		32	480	2.78	.2
S		DO	3S	19		19	19	2		100						100	38	110	1.26	.2
S	**Totals**			0		104	104	10		19		81			81	19	27	197	1.71	.5
Type Totals					.7	47,276	46,956	4,461	0	15	22	63	6	5	13	76	30	242	1.85	193.8

T TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: JARVIEP

Page 1
Date 9/26/2013
Time 10:46:18AM

T06N R07W S23 TRW

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
06N	07W	23	AREA1	RW	3.00	53	121	1	W

T06N R07W S23 TRW

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log: Ln Ft	Bd Ft	CF/ Lf	Logs Per /Acre
D		DO	CU														7		0.00	4.2
D		DO	2S	91	.8	36,202	35,926	108			22	78	1	0	9	89	38	569	3.03	63.2
D		DO	3S	8	.8	3,195	3,170	10		89	11		9	32	24	35	30	100	0.98	31.8
D		DO	4S	1		329	329	1		100			64	20		16	18	36	0.64	9.2
D	**Totals**			84	.8	39,726	39,424	118		8	20	72	3	3	10	84	33	364	2.34	108.3
A		DO	CU														6		0.00	4.8
A		DO	CR	100	.3	6,090	6,072	18		56	33	10	25	14	31	29	27	86	1.02	70.9
A	**Totals**			13	.3	6,090	6,072	18		56	33	10	25	14	31	29	26	80	1.00	75.7
H		DO	CU														6		0.00	.3
H		DO	2S	73		968	968	3			44	56			18	82	37	344	2.12	2.8
H		DO	3S	16		222	222	1		100			63	14	23		21	63	0.83	3.5
H		DO	4S	11		133	133	0		36		64	16	84			21	76	0.96	1.7
H	**Totals**			3		1,322	1,322	4		20	32	47	12	11	17	60	26	157	1.47	8.4
M		DO	CR	100		34	34	0	100						100		35	40	0.83	.9
M	**Totals**			0		34	34	0	100						100		35	40	0.83	.9
S		DO	CU														10		0.00	.2
S		DO	2S	81		85	85	0				100			100		32	480	2.78	.2
S		DO	3S	19		19	19	0		100						100	38	110	1.26	.2
S	**Totals**			0		104	104	0		19		81			81	19	27	197	1.71	.5
Type Totals					.7	47,276	46,956	141	0	15	22	63	6	5	13	76	30	242	1.85	193.8

T TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: JARVIEP

Date 9/26/2013

Time 10:46:18AM

T06N R07W S23 TTAKE

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
06N	07W	23	AREA2	TAKE	167.00	38	45	1	W

T06N R07W S23 TTAKE

Spp	ST	Sort	Grad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log Ln Ft	Bd Ft	CF/ Lf	Logs Per /Acre
D		DO	CU														11		0.00	6.1
D		DO	2S	84	.5	21,702	21,600	3,607			43	57			5	95	39	388	2.10	55.7
D		DO	3S	14		3,589	3,589	599		100			8	9	24	59	33	83	0.75	43.2
D		DO	4S	2		274	274	46		100			51	49			19	25	0.50	11.2
D	**Totals**			81	.4	25,565	25,463	4,252		15	36	48	2	2	7	89	33	219	1.49	116.2
H		DO	CU														6		0.00	.6
H		DO	2S	58	.2	3,557	3,550	593			8	92			36	64	37	643	3.22	5.5
H		DO	3S	24		1,389	1,389	232		57	43			15	22	62	35	140	1.11	9.9
H		DO	4S	18		1,082	1,082	181		71	29		15	24		61	27	58	0.66	18.5
H	**Totals**			19	.1	6,028	6,021	1,006		26	20	54	3	8	26	63	30	174	1.30	34.5
S		DO	4S	100		23	23	4	100					100			29	20	0.52	1.1
S	**Totals**			0		23	23	4	100					100			29	20	0.52	1.1
Type Totals					.3	31,616	31,507	5,262	0	17	33	50	2	3	11	84	33	207	1.44	151.9

PROJECT STATISTICS

PROJECT JARVIEM

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07	23	AREA1	00MC	95.00	53	342	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	53	342	6.5		
CRUISE	25	119	4.8	8,504	1.4
DBH COUNT					
REFOREST					
COUNT	28	168	6.0		
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	67	35.6	29.1	103		164.5	39,726	39,424	8,347	8,347
R ALDER	35	45.8	17.4	44		75.5	6,090	6,072	1,935	1,935
SNAG	11	4.3	18.9	26		8.3				
WHEMLOCK	4	2.8	22.2	80		7.5	1,322	1,322	316	316
BL MAPLE	1	.9	18.0	35		1.5	34	34	25	25
S SPRUCE	1	.2	28.0	82		.8	104	104	24	24
TOTAL	*119*	*89.5*	*23.0*	*68*		*258.1*	*47,276*	*46,956*	*10,647*	*10,647*

CONFIDENCE LIMITS OF THE SAMPLE

68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	**SAMPLE TREES - BF** LOW	AVG	HIGH	# OF TREES REQ. 5	10	INF. POP. 15
DOUG FIR	46.4	5.7	1,274	1,350	1,427			
R ALDER	77.3	13.1	148	170	192			
SNAG								
WHEMLOCK	65.7	37.5	415	665	915			
BL MAPLE								
S SPRUCE								
TOTAL	*91.2*	*8.3*	*768*	*838*	*908*	*332*	*83*	*37*

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	**SAMPLE TREES - CF** LOW	AVG	HIGH	# OF TREES REQ. 5	10	INF. POP. 15
DOUG FIR	37.8	4.6	266	278	291			
R ALDER	56.5	9.5	48	53	58			
SNAG								
WHEMLOCK	57.9	33.1	102	152	202			
BL MAPLE								
S SPRUCE								
TOTAL	*79.4*	*7.3*	*166*	*179*	*192*	*252*	*63*	*28*

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	**TREES/ACRE** LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
DOUG FIR	67.3	9.2	32	36	39			
R ALDER	104.3	14.3	39	46	52			
SNAG	279.1	38.3	3	4	6			
WHEMLOCK	299.9	41.2	2	3	4			
BL MAPLE	509.8	70.0	0	1	1			
S SPRUCE	728.0	99.9	0	0	0			
TOTAL	*39.7*	*5.4*	*85*	*90*	*94*	*63*	*16*	*7*

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	**BASAL AREA/ACRE** LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
DOUG FIR	60.4	8.3	151	165	178			
R ALDER	97.9	13.4	65	75	86			
SNAG	218.7	30.0	6	8	11			
WHEMLOCK	295.0	40.5	4	8	11			

PROJECT STATISTICS

PROJECT JARVIEM

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07	23	AREA1	00MC	95.00	53	342	1	W

BASAL AREA/ACRE

CL 68.1 SD: 1.00	COEFF VAR.	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
BL MAPLE	509.8	70.0	0	2	3			
S SPRUCE	728.0	99.9	0	1	2			
TOTAL	*27.1*	*3.7*	*249*	*258*	*268*	*29*	*7*	*3*

NET BF/ACRE

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
DOUG FIR	61.2	8.4	36,111	39,424	42,737			
R ALDER	101.8	14.0	5,223	6,072	6,920			
SNAG								
WHEMLOCK	293.2	40.2	790	1,322	1,854			
BL MAPLE	509.8	70.0	10	34	58			
S SPRUCE	728.0	99.9	0	104	208			
TOTAL	*46.2*	*6.3*	*43,977*	*46,956*	*49,935*	*85*	*21*	*9*

NET CUFT FT/ACRE

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
DOUG FIR	61.3	8.4	7,645	8,347	9,049			
R ALDER	99.9	13.7	1,670	1,935	2,200			
SNAG								
WHEMLOCK	292.7	40.2	189	316	443			
BL MAPLE	509.8	70.0	7	25	42			
S SPRUCE	728.0	99.9	0	24	48			
TOTAL	*41.3*	*5.7*	*10,043*	*10,647*	*11,251*	*68*	*17*	*8*

TC PSTATS

PROJECT STATISTICS

PROJECT JARVIEP

DATE 9/26/2013

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07	23	AREA2	00PC	167.00	38	314	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	38	314	8.3		
CRUISE	20	114	5.7	20,603	.6
DBH COUNT					
REFOREST					
COUNT	18	128	7.1		
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	46	28.0	30.6	118		143.2	41,133	40,911	8,151	8,147
DOUG FIR	34	39.6	23.1	102		114.7	25,565	25,463	5,784	5,784
WHEMLOCK	10	18.9	17.5	57		31.6	6,028	6,021	1,367	1,367
SNAG	14	12.6	14.6	26		14.7				
HEMLEAV	2	5.9	20.7	50		13.7	1,619	1,580	442	442
ALDRLEAV	7	17.2	11.1	27		11.6	578	557	204	204
S SPRUCE	1	1.1	13.0	30		1.1	23	23	17	17
TOTAL	*114*	*123.4*	*22.2*	*77*		*330.5*	*74,946*	*74,555*	*15,964*	*15,960*

CONFIDENCE LIMITS OF THE SAMPLE

68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	SAMPLE TREES - BF LOW	AVG	HIGH	# OF TREES REQ. 5	10	INF. POP. 15
DOUGLEAV	66.0	9.7	1,590	1,761	1,932			
DOUG FIR	54.3	9.3	723	797	871			
WHEMLOCK	100.6	33.5	489	735	981			
SNAG								
HEMLEAV	126.3	118.3		375	819			
ALDRLEAV	33.1	13.5	30	34	39			
S SPRUCE								
TOTAL	*102.1*	*9.6*	*924*	*1,022*	*1,119*	*416*	*104*	*46*

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	SAMPLE TREES - CF LOW	AVG	HIGH	# OF TREES REQ. 5	10	INF. POP. 15
DOUGLEAV	55.9	8.2	314	342	370			
DOUG FIR	45.8	7.8	163	176	190			
WHEMLOCK	87.1	29.0	108	152	196			
SNAG								
HEMLEAV	100.6	94.2	6	97	188			
ALDRLEAV	38.2	15.6	11	13	15			
S SPRUCE								
TOTAL	*89.3*	*8.4*	*189*	*206*	*224*	*319*	*80*	*35*

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	TREES/ACRE LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
DOUGLEAV	27.8	4.5	27	28	29			
DOUG FIR	89.4	14.5	34	40	45			
WHEMLOCK	156.9	25.4	14	19	24			
SNAG	169.6	27.5	9	13	16			
HEMLEAV	229.2	37.2	4	6	8			
ALDRLEAV	365.0	59.2	7	17	27			
S SPRUCE	616.4	99.9	0	1	2			
TOTAL	*42.3*	*6.9*	*115*	*123*	*132*	*71*	*18*	*8*

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	BASAL AREA/ACRE LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15

PROJECT STATISTICS

PROJECT JARVIEP

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07	23	AREA2	00PC	167.00	38	314	1	W

DOUGLEAV	23.1	3.7	138	143	149			
DOUG FIR	85.8	13.9	99	115	131			
WHEMLOCK	161.7	26.2	23	32	40			
SNAG	159.9	25.9	11	15	19			
HEMLEAV	228.2	37.0	9	14	19			
ALDRLEAV	358.4	58.1	5	12	18			
S SPRUCE	616.4	99.9	0	1	2			
TOTAL	*21.0*	*3.4*	*319*	*331*	*342*	*18*	*4*	*2*

CL 68.1	COEFF		**NET BF/ACRE**			# OF PLOTS REQ.		INF. POP.
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUGLEAV	23.4	3.8	39,359	40,911	42,462			
DOUG FIR	87.3	14.1	21,861	25,463	29,066			
WHEMLOCK	172.3	27.9	4,340	6,021	7,702			
SNAG								
HEMLEAV	234.7	38.0	979	1,580	2,181			
ALDRLEAV	344.5	55.8	246	557	868			
S SPRUCE	616.4	99.9	0	23	46			
TOTAL	*35.4*	*5.7*	*70,282*	*74,555*	*78,828*	*50*	*12*	*6*

CL 68.1	COEFF		**NET CUFT FT/ACRE**			# OF PLOTS REQ.		INF. POP.
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUGLEAV	23.2	3.8	7,841	8,147	8,453			
DOUG FIR	87.0	14.1	4,968	5,784	6,600			
WHEMLOCK	167.7	27.2	995	1,367	1,738			
SNAG								
HEMLEAV	230.8	37.4	276	442	607			
ALDRLEAV	342.3	55.5	91	204	317			
S SPRUCE	616.4	99.9	0	17	34			
TOTAL	*35.2*	*5.7*	*15,050*	*15,960*	*16,870*	*49*	*12*	*5*

TC PSTATS

PROJECT STATISTICS

PROJECT JARVIEP

DATE 9/17/2013

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07	23	AREA1	RW	265.00	144	813	1	W
06N	07W	23	AREA1	TAKE					
06N	07W	23	AREA2	TAKE					

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	144	813	5.6		
CRUISE	56	272	4.9	18,318	1.5
DBH COUNT					
REFOREST					
COUNT	82	472	5.8		
BLANKS	6				
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	168	38.1	25.3	102		133.2	30,802	30,626	6,732	6,732
R ALDER	70	16.9	17.4	44		27.9	2,252	2,245	716	716
WHEMLOCK	18	12.9	17.9	59		22.7	4,288	4,283	978	978
SNAG	11	.0	18.9	26		.1				
BL MAPLE	2	.3	18.0	35		.6	13	13	9	9
S SPRUCE	3	.8	14.8	34		.9	53	53	20	20
TOTAL	*272*	*69.1*	*22.2*	*79*		*185.3*	*37,407*	*37,220*	*8,454*	*8,454*

CONFIDENCE LIMITS OF THE SAMPLE

68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	SAMPLE TREES - BF LOW	AVG	HIGH	# OF TREES REQ. 5	10	INF. POP. 15
DOUG FIR	50.9	3.9	1,190	1,238	1,287			
R ALDER	76.7	9.2	154	170	185			
WHEMLOCK	85.0	20.6	559	704	849			
SNAG								
BL MAPLE			40	40	40			
S SPRUCE	82.3	56.9	172	400	628			
TOTAL	*84.1*	*5.1*	*816*	*860*	*904*	*282*	*71*	*31*

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	SAMPLE TREES - CF LOW	AVG	HIGH	# OF TREES REQ. 5	10	INF. POP. 15
DOUG FIR	42.0	3.2	249	258	266			
R ALDER	56.1	6.7	49	53	57			
WHEMLOCK	72.2	17.5	125	152	179			
SNAG								
BL MAPLE			29	29	29			
S SPRUCE	73.1	50.6	48	96	145			
TOTAL	*72.3*	*4.4*	*176*	*184*	*192*	*209*	*52*	*23*

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	TREES/ACRE LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
DOUG FIR	153.1	12.7	33	38	43			
R ALDER	207.7	17.3	14	17	20			
WHEMLOCK	318.1	26.5	10	13	16			
SNAG	475.8	39.6	0	0	0			
BL MAPLE	819.7	68.3	0	0	1			
S SPRUCE	1103.8	91.9	0	1	2			
TOTAL	*113.8*	*9.5*	*63*	*69*	*76*	*517*	*129*	*57*

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	BASAL AREA/ACRE LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
DOUG FIR	128.7	10.7	119	133	147			
R ALDER	199.6	16.6	23	28	33			
WHEMLOCK	312.6	26.0	17	23	29			

TC PSTATS

PROJECT STATISTICS

PROJECT JARVIEP

DATE 9/17/2013

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07	23	AREA1	RW	265.00	144	813	1	W
06N	07W	23	AREA1	TAKE					
06N	07W	23	AREA2	TAKE					

CL 68.1 SD: 1.00

BASAL AREA/ACRE

	COEFF VAR.	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
SNAG	381.7	31.8	0	0	0			
BL MAPLE	819.7	68.3	0	1	1			
S SPRUCE	909.9	75.8	0	1	2			
TOTAL	*106.0*	*8.8*	*169*	*185*	*202*	*448*	*112*	*50*

CL 68.1 SD: 1.0

NET BF/ACRE

	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
DOUG FIR	127.1	10.6	27,385	30,626	33,867			
R ALDER	204.6	17.0	1,863	2,245	2,628			
WHEMLOCK	331.0	27.6	3,103	4,283	5,464			
SNAG								
BL MAPLE	819.7	68.3	4	13	21			
S SPRUCE	905.6	75.4	13	53	93			
TOTAL	*116.0*	*9.7*	*33,624*	*37,220*	*40,816*	*538*	*134*	*60*

CL 68.1 SD: 1.0

NET CUFT FT/ACRE

	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
DOUG FIR	129.5	10.8	6,006	6,732	7,458			
R ALDER	202.2	16.8	595	716	836			
WHEMLOCK	322.5	26.8	715	978	1,241			
SNAG								
BL MAPLE	819.7	68.3	3	9	15			
S SPRUCE	838.9	69.8	6	20	34			
TOTAL	*114.2*	*9.5*	*7,651*	*8,454*	*9,258*	*521*	*130*	*58*

TC PLOGSTVB

Log Stock Table - MBF

T06N R07W S23 TyTAKE 95.00
T06N R07W S23 TyTAKE 167.00

Project: DEMO
Acres 262.00

Date 10/4/2013
Time 10:56:14AM

Spp	ST	Sort	Grade	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches 2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
D		DO	2S	20	49		49	.6									49			
D		DO	2S	21	4		4	.0							4					
D		DO	2S	22	4		4	.0						4						
D		DO	2S	29	5		5	.1						5						
D		DO	2S	30	5		5	.1						5						
D		DO	2S	32	462		460	5.8						123	98	104	63	36	36	
D		DO	2S	34	5		5	.1						5						
D		DO	2S	36	32		32	.4										32		
D		DO	2S	37	6		6	.1						6						
D		DO	2S	39	6		6	.1						6						
D		DO	2S	40	6,487		6,446	80.6						688	761	2438	1564	951	43	
D		DO	3S	11	7		7	.1				7								
D		DO	3S	17	2		2	.0				2								
D		DO	3S	19	3		3	.0				3								
D		DO	3S	20	62		62	.8				3	45			14				
D		DO	3S	21	23		23	.3			5	6	12							
D		DO	3S	22	3		3	.0				3								
D		DO	3S	23	4		4	.0					4							
D		DO	3S	25	19		19	.2			11		8							
D		DO	3S	26	4		4	.0					4							
D		DO	3S	27	27		27	.3			3	4	16	4						
D		DO	3S	28	18		18	.2			13		5							
D		DO	3S	29	34		34	.4				20	14							
D		DO	3S	30	22		22	.3				9	14							
D		DO	3S	32	177		177	2.2			5	130	34		9					
D		DO	3S	33	6		6	.1					6							
D		DO	3S	34	6		6	.1						6						
D		DO	3S	35	26		26	.3			26									
D		DO	3S	36	20		20	.2					20							
D		DO	3S	37	109		109	1.4			27	35	48							
D		DO	3S	38	21		21	.3				5	16							
D		DO	3S	39	61		61	.8			14	29	18							
D		DO	3S	40	230	1.1	227	2.8			64	43	120							
D		DO	3S	41	21		21	.3				21								
D		DO	4S	9	2		2	.0			2									
D		DO	4S	10	3		3	.0					3							
D		DO	4S	11	3		3	.0			2		1							

TC PLOGSTVB

Log Stock Table - MBF

T06N R07W S23 TyTAKE 95.00
T06N R07W S23 TyTAKE 167.00

Project: DEMO
Acres 262.00

Page 2
Date 10/4/2013
Time 10:56:14AM

Spp	ST	Sort	Grade	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches 2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
D		DO	4S	13	2		2	.0					2							
D		DO	4S	15	14		14	.2			11		2							
D		DO	4S	16	3		3	.0			3									
D		DO	4S	17	9		9	.1			9									
D		DO	4S	18	7		7	.1			5		2							
D		DO	4S	22	3		3	.0			3									
D		DO	4S	27	18		18	.2			10	8								
D		DO	4S	28	8		8	.1			8									
D		DO	4S	40	5		5	.1				5								
D		Totals			8,043		7,998	82.3			221	331	394	851	871	2556	1676	1019	79	
A		DO	CR	10	58		58	10.1						15		19	24			
A		DO	CR	11	1		1	.2				1								
A		DO	CR	14	3		3	.6			3									
A		DO	CR	15	8		8	1.3				8								
A		DO	CR	16	8		8	1.3			8									
A		DO	CR	18	3		3	.5			3									
A		DO	CR	20	64		64	11.2					33	15	17					
A		DO	CR	21	22		22	3.7			4					17				
A		DO	CR	22	7		7	1.1			7									
A		DO	CR	24	3		3	.5			3									
A		DO	CR	26	4		4	.8			4									
A		DO	CR	28	8		8	1.3			8									
A		DO	CR	29	5		5	.8			5									
A		DO	CR	30	34		34	5.8			22				12					
A		DO	CR	31	3		3	.6			3									
A		DO	CR	32	178		177	30.6			9	20	61	20	66					
A		DO	CR	36	9		9	1.6			9									
A		DO	CR	37	10		10	1.7			10									
A		DO	CR	40	150		150	26.0			39	25	38		26	22				
A		Totals			579		577	5.9			138	54	132	50	121	58	24			
M		DO	CR	35	3		3	100.0	3											
M		Totals			3		3	.0	3											
S		DO	2S	32	8		8	58.7								8				
S		DO	3S	38	2		2	13.5				2								
S		DO	4S	29	4		4	27.8	4											

TC PLOGSTVB

Log Stock Table - MBF

T06N R07W S23 TyTAKE 95.00
T06N R07W S23 TyTAKE 167.00

Project: DEMO
Acres 262.00

Date 10/4/2013
Time 10:56:14AM

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	40+
S		Totals			14		14	.1		4		2				8				
H		DO	2S	32	229		229	20.2						16		45	80	87		
H		DO	2S	40	457		456	40.3						24		129	201	102		
H		DO	3S	16	6		6	.5					6							
H		DO	3S	20	7		7	.6					7							
H		DO	3S	22	31		31	2.7			3		8			20				
H		DO	3S	29	8		8	.7				8								
H		DO	3S	32	51		51	4.6				51								
H		DO	3S	34	5		5	.4					5							
H		DO	3S	40	145		145	12.8					64	80						
H		DO	4S	16	5		5	.5			5									
H		DO	4S	19	21		21	1.8			13	7								
H		DO	4S	20	2		2	.2			2									
H		DO	4S	22	11		11	.9					3			.8				
H		DO	4S	25	17		17	1.5			17									
H		DO	4S	29	27		27	2.4			27									
H		DO	4S	37	95		95	8.4			26		16			53				
H		DO	4S	38	16		16	1.4				16								
H		Totals			1,132		1,131	11.6			94	83	109	121		255	281	189		
Total		All Species			9,771		9,723	100.0		7	453	470	634	1022	992	2877	1981	1208	79	

TC TLOGSTVB

Log Stock Table - MBF

Project: JARVIEP

T06N R07W S23 TTAKE

T06N R07W S23 TTAK

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
06N	07W	23	AREA1	TAKE	95.00	53	110

Page 1
Date 9/26/2013
Time 10:52:29AM

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	40+
D		DO	CU	2																
D		DO	CU	3																
D		DO	CU	6																
D		DO	CU	8																
D		DO	CU	10																
D		DO	CU	12																
D		DO	2S	20	49		49	1.3									49			
D		DO	2S	21	4		4	.1							4					
D		DO	2S	22	4		4	.1						4						
D		DO	2S	29	5		5	.1						5						
D		DO	2S	30	5		5	.1						5						
D		DO	2S	32	296	.5	294	7.9						56	44	59	63	36	36	
D		DO	2S	34	5		5	.1						5						
D		DO	2S	36	32		32	.8										32		
D		DO	2S	37	6		6	.2						6						
D		DO	2S	39	6		6	.2						6						
D		DO	2S	40	3,029	.8	3,004	80.2						59	300	851	800	951	43	
D		DO	3S	17	2		2	.0				2								
D		DO	3S	19	3		3	.1				3								
D		DO	3S	20	22		22	.6				3	6			14				
D		DO	3S	21	12		12	.3					12							
D		DO	3S	22	3		3	.1				3								
D		DO	3S	23	4		4	.1					4							
D		DO	3S	25	11		11	.3			3		8							
D		DO	3S	26	4		4	.1					4							
D		DO	3S	27	27		27	.7			3	4	16	4						
D		DO	3S	28	10		10	.3			5		5							
D		DO	3S	29	18		18	.5				4	14							
D		DO	3S	30	9		9	.2				9								
D		DO	3S	32	61		61	1.6			5	27	20		9					
D		DO	3S	33	6		6	.2					6							
D		DO	3S	34	6		6	.1						6						
D		DO	3S	36	6		6	.2					6							
D		DO	3S	37	38		38	1.0				21	17							
D		DO	3S	38	5		5	.1				5								
D		DO	3S	40	59	4.1	56	1.5				15	41							
D		DO	4S	10	3		3	.1					3							
D		DO	4S	11	3		3	.1			2		1							
D		DO	4S	13	2		2	.0					2							
D		DO	4S	15	2		2	.1					2							
D		DO	4S	16	3		3	.1			3									
D		DO	4S	18	7		7	.2			5		2							
D		DO	4S	22	3		3	.1			3									
D		DO	4S	27	3		3	.1			3									
D		DO	4S	40	5		5	.1				5								
D		Totals			3,774		3,745	84.0			32	99	170	155	356	924	911	1019	79	
A		DO	CU	4																
A		DO	CU	6																
A		DO	CU	8																
A		DO	CR	10	58		58	10.1						15		19	24			

TC TLOGSTVB

Log Stock Table - MBF

Project: JARVIEP

T06N R07W S23 TTAKE

T06N R07W S23 TTAK

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
06N	07W	23	AREA1	TAKE	95.00	53	110

Page 2
Date 9/26/2013
Time 10:52:29AM

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	40+
A		DO	CR	11	1		1	.2				1								
A		DO	CR	14	3		3	.6			3									
A		DO	CR	15	8		8	1.3				8								
A		DO	CR	16	8		8	1.3			8									
A		DO	CR	18	3		3	.5			3									
A		DO	CR	20	64		64	11.2					33	15	17					
A		DO	CR	21	22		22	3.7			4					17				
A		DO	CR	22	7		7	1.1			7									
A		DO	CR	24	3		3	.5			3									
A		DO	CR	26	4		4	.8			4									
A		DO	CR	28	8		8	1.3			8									
A		DO	CR	29	5		5	.8			5									
A		DO	CR	30	34		34	5.8			22				12					
A		DO	CR	31	3		3	.6			3									
A		DO	CR	32	178	1.0	177	30.6			9	20	61	20	66					
A		DO	CR	36	9		9	1.6			9									
A		DO	CR	37	10		10	1.7			10									
A		DO	CR	40	150		150	26.0			39	25	38		26	22				
A		Totals			579		577	12.9			138	54	132	50	121	58	24			
H		DO	CU	6																
H		DO	2S	32	16		16	12.9						16						
H		DO	2S	40	76		76	60.3						24				51		
H		DO	3S	16	6		6	4.8					6							
H		DO	3S	20	7		7	5.7					7							
H		DO	3S	22	3		3	2.4			3									
H		DO	3S	34	5		5	3.8					5							
H		DO	4S	20	2		2	1.6			2									
H		DO	4S	22	11		11	8.4					3			8				
H		Totals			126		126	2.8			5		21	41		8	51			
M		DO	CR	35	3		3	100.0		3										
M		Totals			3		3	.1		3										
S		DO	CU	10																
S		DO	2S	32	8		8	81.4								8				
S		DO	3S	38	2		2	18.6				2								
S		Totals			10		10	.2				2				8				
Total All Species					4,491		4,461	100.0		3	176	155	322	245	477	998	987	1019	79	

TC TLOGSTVB

Log Stock Table - MBF

Project: JARVIEP

T06N R07W S23 TTAKE

T06N R07W S23 TTAK

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
06N	07W	23	AREA2	TAKE	167.00	38	45

Page 1
Date 9/26/2013
Time 10:52:29AM

Spp	S T	So	Grade	Log Len	Gross MBF	% Def	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches: 2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
D		DO	CU	6																
D		DO	CU	12																
D		DO	CU	20																
D		DO	2S	32	166		166	3.9						67	54	45				
D		DO	2S	40	3,458	.5	3,441	80.9						629	461	1587	764			
D		DO	3S	11	7		7	.2				7								
D		DO	3S	20	40		40	.9					40							
D		DO	3S	21	11		11	.3			5	6								
D		DO	3S	25	8		8	.2			8									
D		DO	3S	28	8		8	.2			8									
D		DO	3S	29	16		16	.4				16								
D		DO	3S	30	14		14	.3					14							
D		DO	3S	32	117		117	2.7				103	14							
D		DO	3S	35	26		26	.6			26									
D		DO	3S	36	13		13	.3					13							
D		DO	3S	37	71		71	1.7			27	14	30							
D		DO	3S	38	16		16	.4					16							
D		DO	3S	39	61		61	1.4			14	29	18							
D		DO	3S	40	171		171	4.0			64	28	79							
D		DO	3S	41	21		21	.5				21								
D		DO	4S	9	2		2	.1			2									
D		DO	4S	15	11		11	.3			11									
D		DO	4S	17	9		9	.2			9									
D		DO	4S	27	15		15	.3			7	8								
D		DO	4S	28	8		8	.2			8									
D		Totals			4,269		4,252	80.8			189	232	224	696	515	1632	764			
H		DO	CU	6																
H		DO	2S	32	212		212	21.1								45	80	87		
H		DO	2S	40	382	.3	381	37.8								129	150	102		
H		DO	3S	22	28		28	2.7					8			20				
H		DO	3S	29	8		8	.8				8								
H		DO	3S	32	51		51	5.1				51								
H		DO	3S	40	145		145	14.4					64	80						
H		DO	4S	16	5		5	.5			5									
H		DO	4S	19	21		21	2.1			13	7								
H		DO	4S	25	17		17	1.7			17									
H		DO	4S	29	27		27	2.7			27									
H		DO	4S	37	95		95	9.4			26		16			53				
H		DO	4S	38	16		16	1.6				16								
H		Totals			1,007		1,006	19.1			89	83	89	80		247	230	189		
S		DO	4S	29	4		4	100.0		4										
S		Totals			4		4	.1		4										
Total All Species					5,280		5,262	100.0		4	277	315	313	776	515	1879	994	189		

TC PSTNDSUM

Stand Table Summary

Page 1
Date: 9/17/2013

T06N R07W S23 TyRW	3.00
T06N R07W S23 TyTAKE	95.00
T06N R07W S23 TyTAKE	167.00

Project JARVIEP
Acres 265.00

Time: 10:40:15AM
Grown Year:

Spc	S T	DBH	Sample Trees	FF 16'	Tot Av Ht	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
D		13	2	89	78	.985	.91	1.97	15.0	55.0		30	108		78	29
D		14	1	89	122	1.989	2.13	3.98	25.0	105.0		99	418		264	111
D		15	1	83	87	1.733	2.13	1.73	21.0	70.0		36	121		96	32
D		19	2	87	115	2.160	4.25	6.48	29.2	110.0		189	713		501	189
D		20	1	85	87	.975	2.13	1.95	37.5	115.0		73	224		194	59
D		21	9	87	115	5.176	12.45	14.27	37.9	151.6		540	2,163		1,432	573
D		22	3	88	143	1.150	3.03	3.45	48.0	206.4		166	712		439	189
D		23	10	86	140	2.733	7.89	8.20	50.4	206.3		413	1,692		1,095	448
D		24	6	88	151	1.932	6.07	7.15	47.7	210.8		341	1,507		904	399
D		25	9	86	140	4.633	15.79	13.63	57.7	245.6		786	3,348		2,084	887
D		26	11	86	151	2.716	10.01	8.72	62.1	275.2		542	2,400		1,435	636
D		28	7	86	133	1.134	4.85	3.40	69.9	312.5		238	1,064		631	282
D		29	11	88	146	2.183	10.01	6.55	85.1	413.6		557	2,709		1,477	718
D		30	4	88	147	1.051	5.16	3.15	92.3	442.6		291	1,396		772	370
D		31	14	87	140	1.851	9.70	5.55	90.4	435.2		502	2,417		1,330	640
D		32	10	82	144	.813	4.54	2.44	89.9	399.3		219	974		581	258
D		33	25	88	139	2.193	13.02	6.73	100.7	495.4		678	3,335		1,796	884
D		34	6	85	151	.432	2.72	1.44	103.1	508.0		148	732		394	194
D		35	14	86	146	.951	6.36	3.13	107.6	541.3		336	1,692		891	448
D		36	12	89	145	.771	5.45	2.44	121.6	637.4		297	1,556		786	412
D		37	2	88	149	.122	.91	.36	139.7	746.7		51	272		135	72
D		38	2	88	140	.115	.91	.35	138.7	733.3		48	254		127	67
D		40	2	89	153	.104	.91	.31	165.0	860.0		52	268		137	71
D		41	2	89	146	.099	.91	.30	149.3	813.3		44	242		118	64
D		42	2	89	159	.094	.91	.38	144.7	822.5		55	311		145	82
D		Totals	168	87	131	38.097	133.15	108.07	62.3	283.4		6,732	30,626		17,839	8,116
H		12	2	84	33	5.068	3.98	5.07	12.5	30.0		63	152		168	40
H		13	1	89	85	2.159	1.99	4.32	16.5	60.0		71	259		189	69
H		15	1	85	109	1.622	1.99	3.24	27.5	105.0		89	341		236	90
H		18	4	85	97	.790	1.40	2.37	25.3	96.7		60	229		159	61
H		23	2	87	97	1.379	3.98	3.45	50.4	194.0		174	669		461	177
H		26	1	89	135	.540	1.99	1.62	71.0	346.7		115	561		305	149
H		29	1	86	138	.434	1.99	1.30	87.0	406.7		113	529		300	140
H		32	5	88	122	.606	3.39	1.69	95.6	483.7		162	819		429	217
H		33	1	88	158	.335	1.99	1.34	97.3	540.0		130	724		345	192
H		Totals	18	86	77	12.932	22.69	24.40	40.1	175.5		978	4,283		2,592	1,135
A		10	2	86	17	1.462	.80	1.46	7.0	20.0		10	29		27	8
A		13	2	85	73	.865	.80	1.73	15.5	55.0		27	95		71	25
A		14	6	86	50	2.238	2.39	2.98	18.5	50.0		55	149		146	40
A		15	10	86	60	3.249	3.99	5.20	20.0	63.7		104	331		276	88
A		16	8	86	63	2.284	3.19	4.00	21.6	78.6		86	314		229	83
A		17	4	87	53	1.012	1.59	1.01	36.0	75.0		36	76		97	20
A		18	2	86	47	.451	.80	.45	36.0	60.0		16	27		43	7
A		19	2	86	70	.405	.80	.81	33.0	110.0		27	89		71	24
A		20	6	86	46	1.097	2.39	1.83	27.6	76.0		50	139		134	37
A		21	10	86	67	1.658	3.99	2.65	45.0	142.5		119	378		316	100
A		22	2	87	52	.302	.80	.30	48.0	70.0		14	21		38	6
A		23	4	86	70	.553	1.59	.83	58.0	170.0		48	141		127	37
A		24	2	86	52	.254	.80	.51	27.0	115.0		14	58		36	15
A		25	4	86	51	.468	1.59	.94	39.3	137.5		37	129		97	34
A		26	6	86	65	.649	2.39	1.51	46.9	177.1		71	268		188	71

TC PSTNDSUM

Stand Table Summary

Date: 9/17/2013

T06N R07W S23 TyRW	3.00
T06N R07W S23 TyTAKE	95.00
T06N R07W S23 TyTAKE	167.00

Project JARVIEP
Acres 265.00
Time: 10:40:15AM
Grown Year:

Spc	S T	DBH	Sample Trees	FF 16'	Tot Av Ht	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
A		Totals	70	86	55	16.946	27.91	26.21	27.3	85.7		716	2,245		1,896	595
S		13	1	79	33	.720	.66	.72	15.0	20.0		11	14		29	4
S		28	2	86	99	.065	.28	.13	68.5	295.0		9	39		24	10
S		Totals	3	80	38	.785	.94	.85	23.2	62.2		20	53		52	14
M		18	2	87	40	.316	.56	.32	29.0	40.0		9	13		24	3
M		Totals	2	87	40	.316	.56	.32	29.0	40.0		9	13		24	3
SN		11	1	88	68	.013	.01									
SN		12	1	89	35	.011	.01									
SN		16	1	88	17	.006	.01									
SN		20	1	88	30	.004	.01									
SN		22	1	85	20	.003	.01									
SN		25	1	85	17	.003	.01									
SN		26	1	89	30	.002	.01									
SN		28	1	86	25	.002	.01									
SN		30	2	83	19	.003	.02									
SN		45	1	89	30	.001	.01									
SN		Totals	11	87	37	.048	.09									
Totals			272	86	101	69.124	185.35	159.85	52.9	232.8		8,454	37,220		22,404	9,863

TC TSTNDSUM

Stand Table Summary

Project DEMO

T06N R07W S23 TLEAV

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
06N	07W	23	AREA2	LEAV	167.00		

T06N R07W S23 TLEA

Page: 1
Date: 10/04/20
Time: 10:34:50AM

Spc	S T	DBH	Sample Trees	FF 16'	Av Ht Tot	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
DL		20	1	92	116	1.426	3.11	4.28	34.7	140.0		148	599		248	100
DL		25	2	87	140	1.826	6.22	5.48	61.2	266.7		335	1,461		560	244
DL		26	3	89	144	2.532	9.34	8.44	60.8	287.0		513	2,423		857	405
DL		27	3	86	158	2.348	9.34	8.61	62.9	293.6		542	2,528		905	422
DL		28	4	89	152	2.911	12.45	10.19	69.9	342.9		713	3,493		1,190	583
DL		29	4	89	151	2.714	12.45	8.14	87.8	429.2		715	3,494		1,194	584
DL		30	6	90	147	3.804	18.67	11.41	90.7	452.2		1,035	5,161		1,728	862
DL		31	4	88	157	2.375	12.45	8.91	82.5	436.0		734	3,883		1,227	648
DL		32	2	87	156	1.114	6.22	3.90	92.7	461.4		362	1,800		604	301
DL		33	4	89	159	2.096	12.45	7.86	95.0	504.7		747	3,966		1,247	662
DL		34	1	82	153	.494	3.11	1.48	113.3	536.7		168	795		280	133
DL		35	3	86	157	1.397	9.34	5.12	104.1	533.6		533	2,734		891	457
DL		36	1	82	166	.440	3.11	1.32	135.0	683.3		178	903		298	151
DL		37	1	88	158	.417	3.11	1.25	146.3	820.0		183	1,025		306	171
DL		38	2	83	153	.790	6.22	2.37	141.3	685.0		335	1,624		560	271
DL		40	2	86	159	.713	6.22	2.14	165.7	865.0		354	1,851		592	309
DL		46	1	92	153	.270	3.11	.81	229.7	1296.7		186	1,049		310	175
DL		50	1	92	153	.228	3.11	.68	270.3	1540.0		185	1,054		309	176
DL		64	1	92	153	.139	3.11	.42	432.7	2553.3		181	1,067		302	178
DL		Totals	46	88	150	28.036	143.16	92.82	87.8	440.8		8,147	40,911		13,606	6,832
HL		18	1	88	34	3.872	6.84	3.87	28.0	40.0		108	155		181	26
HL		25	1	89	110	2.007	6.84	6.02	55.3	236.7		333	1,425		556	238
HL		Totals	2	88	60	5.879	13.68	9.89	44.6	159.7		442	1,580		737	264
AL		9	1	88	31	3.744	1.65	3.74	7.0	20.0		26	75		44	13
AL		10	1	88	25	3.033	1.65	3.03	7.0	20.0		21	61		35	10
AL		11	2	88	48	5.013	3.31	5.01	13.0	40.0		65	201		109	33
AL		12	1	85	56	2.106	1.65	2.11	19.0	50.0		40	105		67	18
AL		13	1	89	22	1.795	1.65	1.79	12.0	30.0		22	54		36	9
AL		14	1	88	40	1.547	1.65	1.55	19.0	40.0		29	62		49	10
AL		Totals	7	88	38	17.238	11.58	17.24	11.8	32.3		204	557		340	93
SL		13	1	79	33	1.142	1.05	1.14	15.0	20.0		17	23		29	4
SL		Totals	1	79	33	1.142	1.05	1.14	15.0	20.0		17	23		29	4
SN		11	3	88	15	4.785	3.16									
SN		12	1	91	30	1.340	1.05									
SN		13	3	87	28	3.426	3.16									
SN		14	1	89	60	.985	1.05									
SN		17	1	89	35	.668	1.05									
SN		19	1	91	62	.535	1.05									
SN		22	1	85	91	.399	1.05									
SN		24	1	88	40	.335	1.05									
SN		46	1	88	17	.091	1.05									
SN		50	1	89	18	.077	1.05									
SN		Totals	14	88	30	12.641	14.74									
Totals			70	88	87	64.936	184.21	121.09	72.8	355.7		8809	43,070		14,712	7,193

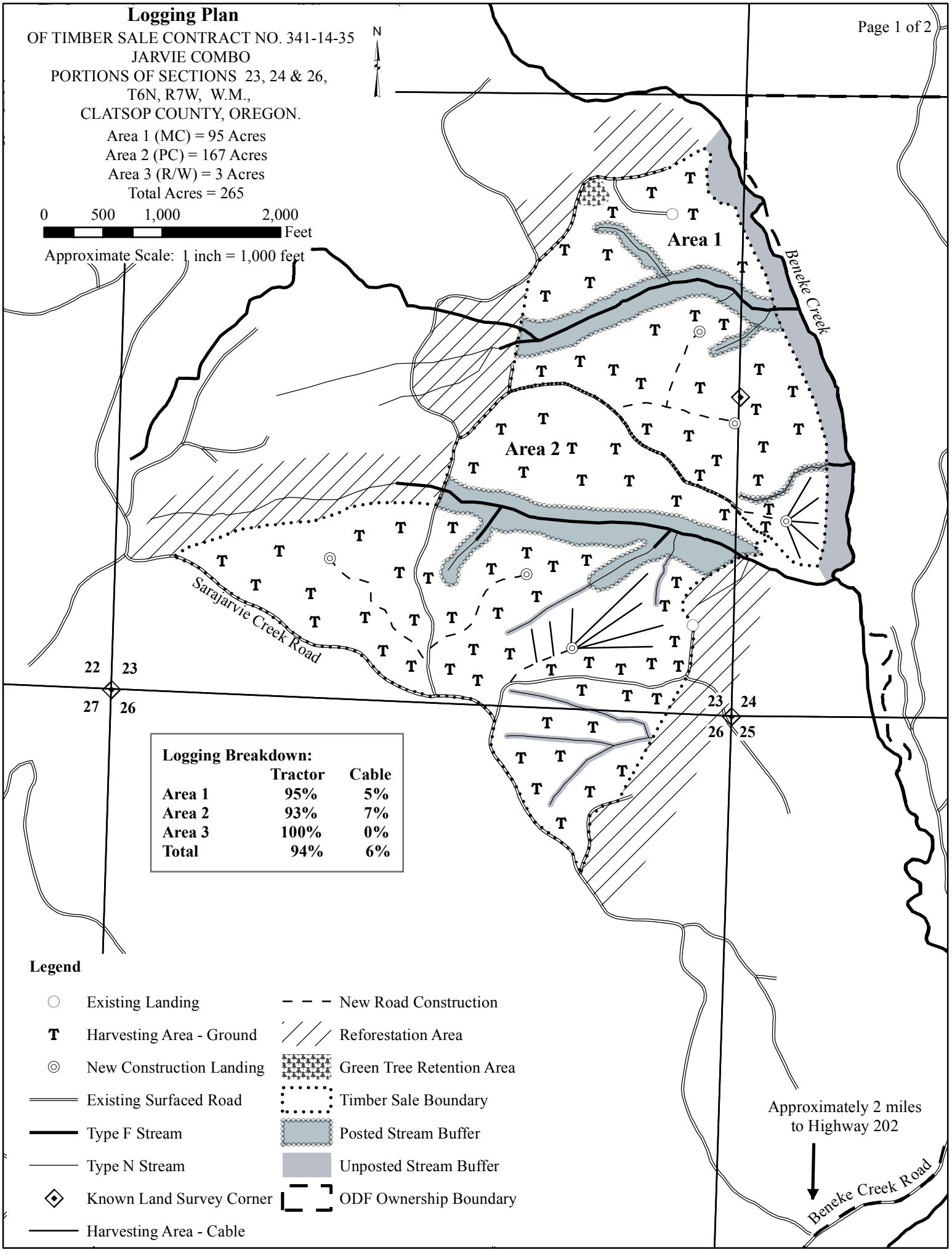
Logging Plan

OF TIMBER SALE CONTRACT NO. 341-14-35
JARVIE COMBO
PORTIONS OF SECTIONS 23, 24 & 26,
T6N, R7W, W.M.,
CLATSOP COUNTY, OREGON.

Area 1 (MC) = 95 Acres
Area 2 (PC) = 167 Acres
Area 3 (R/W) = 3 Acres
Total Acres = 265

0 500 1,000 2,000 Feet

Approximate Scale: 1 inch = 1,000 feet



Logging Breakdown:

	Tractor	Cable
Area 1	**95%**	**5%**
Area 2	**93%**	**7%**
Area 3	**100%**	**0%**
Total	**94%**	**6%**

Legend

- Existing Landing
- T Harvesting Area - Ground
- New Construction Landing
- Existing Surfaced Road
- Type F Stream
- Type N Stream
- Known Land Survey Corner
- Harvesting Area - Cable
- New Road Construction
- Reforestation Area
- Green Tree Retention Area
- Timber Sale Boundary
- Posted Stream Buffer
- Unposted Stream Buffer
- ODF Ownership Boundary

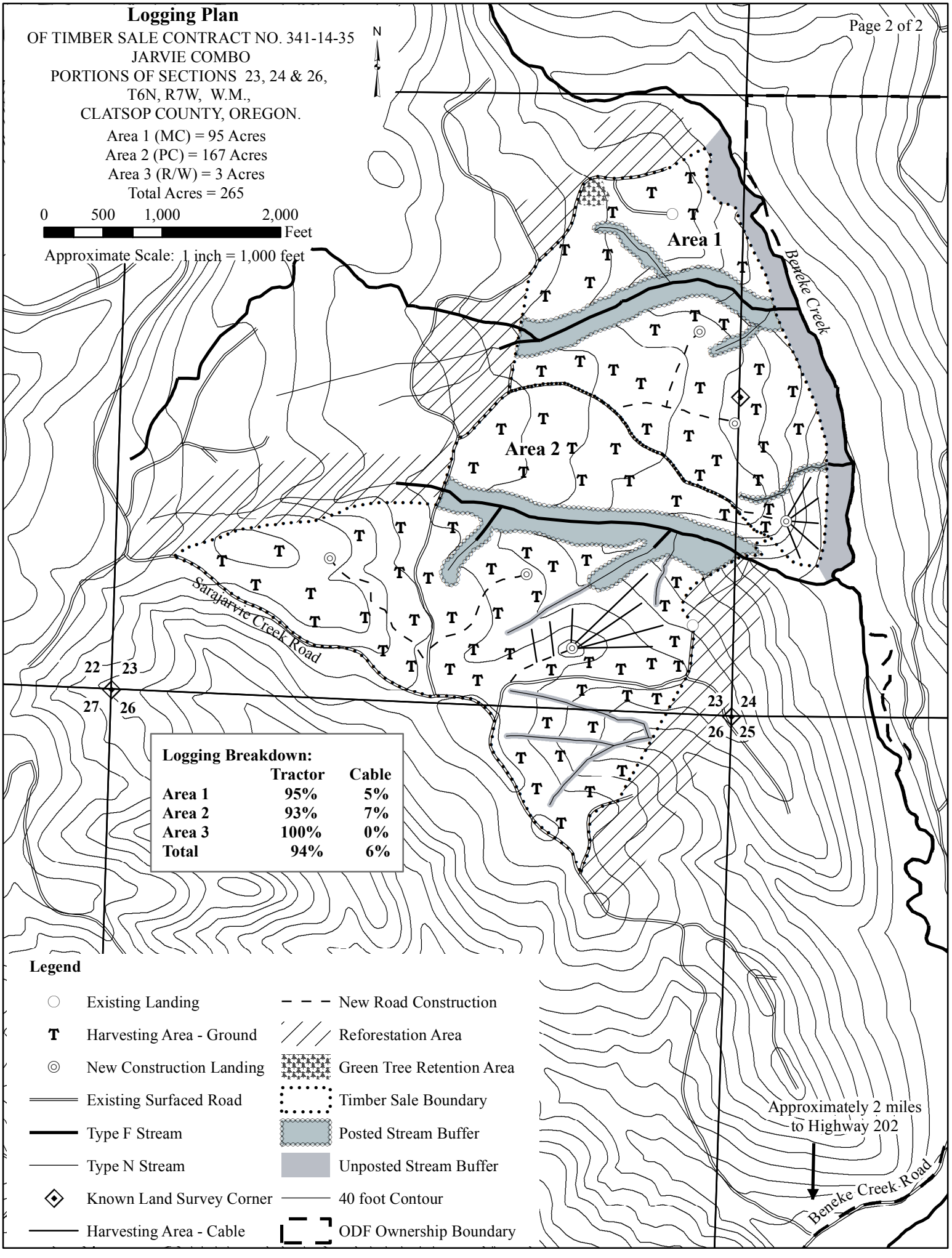
Logging Plan

OF TIMBER SALE CONTRACT NO. 341-14-35
JARVIE COMBO
PORTIONS OF SECTIONS 23, 24 & 26,
T6N, R7W, W.M.,
CLATSOP COUNTY, OREGON.

Area 1 (MC) = 95 Acres
Area 2 (PC) = 167 Acres
Area 3 (R/W) = 3 Acres
Total Acres = 265

0 500 1,000 2,000 Feet

Approximate Scale: 1 inch = 1,000 feet



Logging Breakdown:

	Tractor	Cable
Area 1	**95%**	**5%**
Area 2	**93%**	**7%**
Area 3	**100%**	**0%**
Total	**94%**	**6%**

Legend

- Existing Landing
- T Harvesting Area - Ground
- New Construction Landing
- Existing Surfaced Road
- Type F Stream
- Type N Stream
- Known Land Survey Corner
- Harvesting Area - Cable
- New Road Construction
- Reforestation Area
- Green Tree Retention Area
- Timber Sale Boundary
- Posted Stream Buffer
- Unposted Stream Buffer
- 40 foot Contour
- ODF Ownership Boundary