



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Trails End
Sale AT-341-2020-W00732-01

District: Astoria

Date: June 13, 2019

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$2,812,982.66	\$61,179.81	\$2,874,162.47
		Project Work:	(\$101,725.00)
		Advertised Value:	\$2,772,437.47



Timber Sale Appraisal Trails End Sale AT-341-2020-W00732-01

District: Astoria

Date: June 13, 2019

Timber Description

Location: Portions of Section 6, T6N, R6W and Sections 1 and 12, T6N, R7W, W.M., Clatsop County, Oregon.

Stand Stocking: 80%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	26	0	97
Western Hemlock / Fir	19	0	95
Alder (Red)	16	0	98

Volume by Grade	2S	3S & 4S 6"-11"	8" - 9"	10" - 11"	12"+	6" - 7"	Total
Douglas - Fir	3,876	530	0	0	0	0	4,406
Western Hemlock / Fir	2,672	891	0	0	0	0	3,563
Alder (Red)	0	0	14	100	20	47	181
Total	6,548	1,421	14	100	20	47	8,150

Comments: SOURCE OF POND VALUES
Pond Values Used: Local Pond Values, May 2019.

PRICING

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost:
 $\$761.89/\text{MBF} = \$1,030/\text{MBF} - \$268.11/\text{MBF}$

Bigleaf maple and Other Hardwoods Price = Pond Value minus Logging Cost:
 $\$106.89/\text{MBF} = \$375/\text{MBF} - \$268.11/\text{MBF}$

PULP PRICE

Pulp (Conifer and Hardwood) Price = \$5/ton

PROFIT & RISK COSTS

Machine Washing for Invasive Weed Compliance = \$2,000

Maintain Trailover Road: Clear yarding debris after harvest operations at the end of each day = 38 days X
0.5 hours X \$145/hour = \$2,755

Line-pulling in Areas 1 and 2 = 8 hours X \$45/hour = \$360

TOTAL Other Costs (with Profit & Risk to be added) = \$5,115.

NON-PROFIT & RISK COSTS

Construct Waterbars, Remove Culvert, and Block unsurfaced roads 1C to 1D and 1E to 1F (See attached appraisal)= \$1,977

SLASH DISPOSAL

Slash and Landing Piling (See attached appraisal)= \$16,863.

ROAD MAINTENANCE COST

\$2.87/mbf (See attached appraisal)



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Logging Conditions

Combination#: 1 Douglas - Fir 48.00%
 Western Hemlock / Fir 48.00%
 Alder (Red) 48.00%

Logging System: Cable: Medium Tower >40 - <70 **Process:** Manual Falling/Delimbing
yarding distance: Medium (800 ft) **downhill yarding:** No
tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 11 **bd. ft / load:** 4000
cost / mbf: \$150.00
machines: Log Loader (A)
 Tower Yarder (Medium)

Combination#: 2 Douglas - Fir 52.00%
 Western Hemlock / Fir 52.00%
 Alder (Red) 52.00%

Logging System: Shovel **Process:** Manual Falling/Delimbing
yarding distance: Short (400 ft) **downhill yarding:** No
tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 14 **bd. ft / load:** 4000
cost / mbf: \$70.31
machines: Shovel Logger



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Logging Costs

Operating Seasons: 2.00	Profit Risk: 12%
Project Costs: \$101,725.00	Other Costs (P/R): \$5,115.00
Slash Disposal: \$16,863.00	Other Costs: \$1,977.00

Miles of Road

Road Maintenance: \$2.87

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

Hauling Costs

Species	\$ / MBF	Trips/Day	MBF / Load
Douglas - Fir	\$0.00	2.0	4.0
Western Hemlock / Fir	\$0.00	2.0	4.0
Alder (Red)	\$0.00	2.0	3.8



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Logging Costs Breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Brand & Paint	Other	Total
Douglas - Fir									
\$108.56	\$2.96	\$1.08	\$122.31	\$0.63	\$28.26	\$2.07	\$2.00	\$0.24	\$268.11
Western Hemlock / Fir									
\$108.56	\$3.01	\$1.08	\$124.69	\$0.63	\$28.56	\$2.07	\$2.00	\$0.24	\$270.84
Alder (Red)									
\$108.56	\$2.93	\$1.08	\$127.50	\$0.63	\$28.88	\$2.07	\$2.00	\$0.24	\$273.89

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$684.04	\$415.93	\$0.00
Western Hemlock / Fir	\$0.00	\$546.00	\$275.16	\$0.00
Alder (Red)	\$0.00	\$611.90	\$338.01	\$0.00



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Summary

Amortized

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

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	4,406	\$415.93	\$1,832,587.58
Western Hemlock / Fir	3,563	\$275.16	\$980,395.08
Alder (Red)	181	\$338.01	\$61,179.81

Gross Timber Sale Value

Recovery: \$2,874,162.47

Prepared By: Justin Bush

Phone: 503-325-5451

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Trails End

Project No. 1: ROAD CONSTRUCTION:

	<u>Road segment</u>	<u>Length (Sta)</u>	<u>Length (Mile)</u>	<u>Cost</u>	
Surfaced	1A to 1B	32.20	0.61	\$73,231.21	
	2A to 2B				
Unsurfaced	1C to 1D	24.11	0.46	\$16,933.64	
	1E to 1F				
	Road Maint.			\$4,224.00	
	Move-In			\$7,336.00	
	TOTALS	56.31	1.07		\$101,725

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

<u>Description</u>	<u>Length/Vol.</u>	<u>Cost</u>
TOTAL		

GRAND TOTAL **\$101,725**

Compiled By: W. Lawrence, J. Bush

Date: 06/26/2019

Move In and Maintenance Calculator for Construction and Improvement

SALE NAME: Trails End

Project No. 1: ROAD CONSTRUCTION:

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Length/Mile</u>	<u>Cost</u>	
Surfaced	1A to 1B	32.20	0.61	\$73,231.21	
	2A to 2B				
Unsurfaced	1C to 1D	24.11	0.46	\$16,933.64	
	1E to 1F				
	TOTALS	56.31	1.07		\$90,165

Project No. 2: ROAD IMPROVEMENT:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Length/Mile</u>	<u>Cost</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
TOTALS	_____	_____	_____

MOVE IN (Construction & Improvement Only)

<u>Equipment</u>	<u>Length/Mile</u>	<u>Cost</u>
Dozer (D8)		\$1,581.00
Excavator (C330)		\$1,581.00
Dump Truck (12cy) x 6		\$534.00
Off Highway D.Truck (24cy)		\$870.00
Skidder (C518)		\$806.00
Grader (14G)		\$875.00
Vibratory Roller		\$875.00
Water Truck (2,500 gallon)		\$214.00
TOTAL		\$7,336.00

ROAD MAINTENANCE (Construction & Improvement Only)

	<u>Length/Mile</u>	<u>Cost</u>
Spur, Trailover, Wild Goose	2.00	\$4,224.00
TOTAL		\$4,224.00

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Trails End

NEW CONSTRUCTION: 56.31 STATIONS

1.07 MILES

ROAD: 1A to 1B(30+15), 1C to 1D(19+40), 1E to 1F(4+71), 2A to 2B(2+05)

IMPROVEMENT: STATIONS

0.00 MILES

POINTS:

CLEARING & GRUBBING

Method	Acres/amount	x	Rate	=	Cost
Scatter outside right of way	8.39	x	\$ 1,503	=	\$12,610.17
1A to 1B					
10+20-12+00 End-haul debris in full bench sections (5.15 Sta.)					
13+20-15+30 (C330)/(\$/Hr.)	10	x	\$175.00	=	\$1,750.00
18+85-19+70 (Off Hwy. D. Truck)/(\$/Hr.)	10	x	\$143.00	=	\$1,430.00
25+40-25+80					
SUB TOTAL FOR CLEARING & GRUBBING					\$15,790

EXCAVATION

Material	Cy/amount	x	Rate	=	Cost
1A to 1B					
0+00 - 30+15 Common drift (less than 50% slope) (\$/Cy)	2,950	x	\$2.02	=	\$5,959.00
Common drift (greater than 50% slope) (\$/Cy)	1,680	x	\$2.36	=	\$3,964.80
End-haul excavation (\$/Cy)	2,250	x	\$4.50	=	\$10,125.00
Embankment compaction (\$/Cy)	5,675	x	\$0.79	=	\$4,483.25
Cut slope rounding (\$/Sta.)	17	x	\$49.00	=	\$833.00
Extra time ripping rock (C330) (\$/Hr.)	10	x	\$175.00	=	\$1,750.00
End-haul excess embankment material (\$/Cy)	1,400	x	\$4.50	=	\$6,300.00
Excess embankment material compaction (\$/Cy)	1,400	x	\$0.45	=	\$630.00
Excess embankment material seeding (\$/Ac.)	0.10	x	\$706.00	=	\$70.60
Excess embankment material mulching (\$/Bale)	5.00	x	\$12.06	=	\$60.30
Install culvert outlet dissipator @ 8+00					
(C330)/(\$/Hr.)	2	x	\$175.00	=	\$350.00
30+15 Landing construction	1	x	\$438.00	=	\$438.00
1C to 1D					
0+00 - 19+40 Common drift (less than 50% slope) (\$/Cy)	2,430	x	\$2.02	=	\$4,908.60
Embankment compaction (\$/Cy)	2,260	x	\$0.79	=	\$1,785.40
Cut slope rounding (\$/Sta.)	7	x	\$49.00	=	\$343.00
19+40 Landing construction	1	x	\$438.00	=	\$438.00
1E to 1F					
0+00 - 4+71 Common drift (less than 50% slope) (\$/Cy)	500	x	\$2.02	=	\$1,010.00
Embankment compaction (\$/Cy)	650	x	\$0.79	=	\$513.50
2+70 Roadside landing construction	1	x	\$219.00	=	\$219.00
4+71 Landing construction	1	x	\$438.00	=	\$438.00
2A to 2B					
0+00 - 2+05 Balanced construction (\$/Sta.)	2.05	x	\$138.00	=	\$282.90
2+05 Landing construction	1	x	\$438.00	=	\$438.00
SUB TOTAL FOR EXCAVATION					\$45,340

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
1A to 1B					1C to 1D				
4+00	18/CPP	30	\$21.95	\$658.50	8+45	18/CPP	30	\$21.95	\$658.50
8+00	18/CPP	40	\$21.95	\$878.00					
13+00	18/CPP	30	\$21.95	\$658.50					
22+70	18/CPP	30	\$21.95	\$658.50					

Subtotal of Clearing, Exc., Culv.

\$64,735

SURFACING		Subgrade prep:		Description		Stations/ amount		Rate/ sta/amt		Cost	
				Grade, Shape and Ditch 16' (1A to 1B, 1C to 1D, 1E to 1F, 2A to 2B)		56.31		x		\$1,571.61	
				Subgrade Compaction (1A to 1B, 1C to 1D, 1E to 1F, 2A to 2B)		56.31		x		\$1,277.67	

ROAD SEGMENT		1A to 1B		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)		Rate/ Sta./ amt.		Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	1A to 1B		0+00 to 30+15		TOTAL VOLUME (CY)					
				Volume (CY) per station	Number of stations	Volume (CY) per station	Number of stations						
Base Rock	4"-0" crushed	0+00 - 30+15	8	station	50	station	30.15	1,508		\$4.32		\$6,512	
Turnouts	4"-0" crushed	5+20, 10+10, 17+80, 23+50	8	TO	20	TO's	4	80		\$4.32		\$346	
Turnarounds	4"-0" crushed	18+60, 27+80	8	TA	20	TA's	2	40		\$4.32		\$173	
Curve Widening	4"-0" crushed	4+60 - 5+50, 16+35-18+10	8	load	11	loads	3	33		\$4.32		\$143	
Surfacing	3/4"-0" crushed	0+00 - 28+50	2	station	13	stations	28.50	371		\$4.32		\$1,601	
Turnouts	3/4"-0" crushed	5+20, 10+10, 17+80, 23+50	2	TO	6	TO's	4	24		\$4.32		\$104	
Turnarounds	3/4"-0" crushed	18+60, 27+80	2	TA	3	TA's	2	6		\$4.32		\$26	
Curve Widening	3/4"-0" crushed	4+60 - 5+50, 16+35-18+10	2	load	11	loads	1	11		\$4.32		\$48	
Subgrade reinforcement	6"-0" pit run	0-00 to 30+15	N/A	load	11	loads	10	110		\$4.32		\$475	
Landing	6"-0" pit run	30+15	N/A	landing	77	landings	1	77		\$4.32		\$333	
Culvert Energy Dissipatd	24"-6" riprap	8+00	N/A	dissipator	22	dissipators	1	22		\$4.32		\$95	
Fill Armor	24"-6" riprap	15+95, 18+00, 28+00	N/A	load	11	loads	44	484		\$4.32		\$2,091	
Total Rock for Road Segment:		1A to 1B						2,765				\$11,945	

ROAD SEGMENT		1C to 1D		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)		Rate/ Sta./ amt.		Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	1C to 1D		0+00 to 19+40		TOTAL VOLUME (CY)					
				Volume (CY) per station	Number of stations	Volume (CY) per station	Number of stations						
Base Rock	4"-0" crushed	0+00 - 1+00	8	station	50	station	1	50		\$4.32		\$216	
Surfacing	3/4"-0" crushed	0+00 - 1+00	2	station	13	station	1	13		\$4.32		\$56	
Total Rock for Road Segment:		1C to 1D						63				\$272	

ROAD SEGMENT		2A to 2B		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)		Rate/ Sta./ amt.		Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A to 2B		0+00 to 2+05		TOTAL VOLUME (CY)					
				Volume (CY) per station	Number of stations	Volume (CY) per load	Number of landings						
Base Rock	6"-0" pit run	0+00 to 2+05	8	station	50	station	2.05	103		\$4.32		\$443	
Junction Rock	3/4"-0" crushed	0+00	N/A	load	11	loads	3	33		\$4.32		\$143	
Landing	6"-0" pit run	2+05	N/A	landing	77	landings	1	77		\$4.32		\$333	
Total Rock for Road Segment:		2A to 2B						213				\$918	

Processing:

Description	No. sta	Rate/sta	Cost
Water, Process & Compact Base Rock (2 lifts, 4"-0" CR: 1A to 1B, 1C to 1D (0+00 - 1+00):	31.15	\$126.96	\$3,954.80
Water, Process & Compact Surfacing Rock (3/4"-0": 1A to 1B, 1C to 1D (0+00 - 1+00):	29.50	\$63.48	\$1,872.66
Water, Process & Compact Junction Rock (3/4"-0": 2A to 2B):	0.50	\$63.48	\$31.74
Process & Compact 6"-0" Pit Run w/D8 (2A to 2B):	2.05	\$35.45	\$72.67
SUB TOTAL FOR SURFACING			\$21,916

SPECIAL PROJECTS			
Description	\$/cy		Cost
Develop pit-run rock		\$2.92	\$1,070.18
Develop riprap rock		\$4.83	\$2,443.98
SUB TOTAL FOR SPECIAL PROJECTS			\$3,514
GRAND TOTAL			\$25,430
			\$64,735
			\$90,165

Compiled By: W. Lawrence, J. Bush

Date: 06/26/2019

Subtotal of Surfacing & Spec. Proj.
Subtotal of Clearing, Exc., Culv.

Projects Road Maintenance Cost Summary

Sale: Trails End
 Date: 14-Feb-19
 By: W. Lawrence

Type	Equipment/Rationale			Hours	Rate	Cost
Project Work	Grader 14G			12	\$113	\$1,356
Final Haul	Dump Truck 12CY			5	\$89	\$445
Road	FE Loader C966			5	\$94	\$470
Maintenance	Vibratory Roller			12	\$87	\$1,044
	Water Truck 2,500 gallon			9	\$101	\$909
Total						\$4,224

Production Rates	Miles/day	Distance(miles)	Days
Grader	1.5	2.00	1.3
Vibratory Roller	1.5	2.00	1.3

NOTE: Spur, Trailover, Wild Goose 2.00 Miles
 _____ Miles
 _____ Miles
 _____ Miles
 TOTAL= 2.00 Miles

CRUSHED ROCK COST

SALE NAME:	Trails End
PROJECT:	No. 1
Stockpile:	Wild Goose

MATERIAL: All Rock

DATE: 06/14/2019
BY: W. Lawrence, J. Bush

[illegible]

ROCK HAUL:

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

Ave haul:	\$3.05	/cy
Load:	\$0.48	/cy
Spread:	\$0.78	/cy

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

Production: cy/day = 1,241

CRUSHED ROCK HAUL COSTS 3,041 cy @ \$4.32 /cy

Sale Number: AT-341-2020-W00
Sale Name: Trails End
Date: 06/11/2020

Sale Area	Harvest Type	Veg Type/Zone	Ground Based Yarding Acres	Estimated Piling Hours/Area	Cost/Hour	Total Cost/Area
1	MC	B	58	75	\$145	\$10,933
2	MC	B	4	5	\$145	\$754
					In-unit Piling	Sub Total =
\$11,687						
Sale Area	Number of Landings to be Piled	# cable acres per area	Total Cost/Area	Number of In-Unit Piles	Material Cost/Pile	Total Cost/Area
1	8	32	\$1,237	269	\$5	\$1,345
2	3	31	\$1,199	21	\$5	\$105
*Cost includes separating firewood					Materials	Sub Total =
					Landing Piling	Sub Total =
\$2,436						
Move-In Allowance	Additional Move-In Number of Move-In's	Total Move-In Allowance				
\$1,290.00	1	\$1,290				
					Move-In	Sub Total =
						\$1,290
Slash Endhaul						
Dump Truck hrs	Cost/Hour	Total	Loader hrs	Cost/Hour	Total	
	\$89.00	\$0		\$145	\$0	
					Sub Total =	\$0
					Grand Total =	\$16,863.00

Road Maintenance Cost Summary (Interim and Post Harvest)

Sale: Trails End
Date: June 11, 2019
By: Ella Salkeld, Justin Bush *EL*

MBF: 8,150
\$/MBF: \$2.87

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost	
Interim Operations	Grader 14G	\$875	2	16	\$113	\$3,558	
	Dump Truck 12CY	\$184	1	8	\$89	\$896	
	FE Loader C966	\$875	1	2	\$94	\$1,063	
	Vibratory Roller	\$875	2	10	\$87	\$2,620	
Final Road Maintenance	Grader 14G	\$875	1	32	\$113	\$4,491	
	Dump Truck 12CY	\$184	1	14	\$89	\$1,430	
	FE Loader C966	\$875	1	8	\$94	\$1,627	
	Vibratory Roller	\$875	1	32	\$87	\$3,659	
	Water Truck 2,500 gallon	\$214	1	20	\$101	\$2,234	
	Rubber Tired Backhoe-small	\$361	1	8	\$87	\$1,057	
	Labor			8	\$45	\$721	
Total							\$23,356

Interim Operations Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	2.5	5.5	2.2	18

Final Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	1.5	6.0	4.0	32
Vibratory Roller	1.5	6.0	4.0	32

Process and compact: All crushed rock roads
Beneke Creek Road 2.4 Miles
Trailover Road 2.4 Miles
Unnamed Spurs 1.2 Miles
Grade & Process Total = 6.0

Trails End TIMBER CRUISE REPORT FY 2020

1. Sale Area Location: Areas 1, 2, and 3 are located in portions of Section 6, T6N, R6W, and Sections 1 and 12, T6N, R7W, W.M., Clatsop County, OR.

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

3. Sale Acreage by Area:

Area	Treatment	Gross Acres	Stream Buffer Acres	Existing R/W Acres	New R/W Acres	Unstocked R/W Acres	Green Tree Retention Area	Net Acres	Survey Method
1	Modified Clearcut	112	16	0	6	0	0	90	GIS
2	Modified Clearcut	42	2	<1	<1	0	5	35	GIS
3	R/W (in-unit)*	8	0	0	0	2	0	6	GIS
TOTALS		162	18	<1	6	2	5	131	

*Area 3 includes approximately two acres of unstocked Right-Of-Way outside of the Timber Sale Area.

4. Cruisers and Cruise Dates:

Areas were cruised by Avery Petersen, Kevin Berry, Justin Bush, Ella Salkeld, and John Choate in May of 2019.

5. Cruise Method and Computation:

Areas 1 and 2: These areas were variable plot cruised utilizing a Spiegel Relaskop with a 40 BAF. A total of 59 plots were sampled on a 3 by 7 chain spacing. Lines were cruised on an azimuth of 0°/180° in Area 1 and 90°/270° in Area 2. The planned count to grade ratio was 2:1, resulting in 38 count plots and 21 grade plots*.

Area 3: (R/W) consists of three new spur roads and four landings within Area 1 (total area is approximately six acres) and one new spur road and one landing within Area 2 (total area is less than one acre). Cruise data for Area 3 was obtained from the Area 1 and 2 cruise and acreages have been adjusted accordingly.

(*The reported numbers of cruise and grade plots vary from the those indicated in the SuperACE reports for both the combined Project Statistics and the A3 Statistics due to measuring snags on count plots. Snags have been removed from the A12_TAKE data, resulting in accurate numbers of count and grade plots reported for this tract.)

Data was collected on Allegro 2 data collectors and downloaded to the Atterbury SuperACE 2008 program for computing. 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 and 2	TRAILS	A12_TAKE	00MC	125
3	TRAILS	A3	RW	6

6. Timber Description:

Areas 1 and 2 are modified clearcuts with an average age of 77 years. Approximately 10 acres in the southwest of Area 1 have been previously thinned with the Goose Pit Combo timber sale in 2006. The stand consists of Douglas-fir, western hemlock, red alder, and a minor component of western redcedar and snags, both designated as "Leave". Average Douglas-fir is 26 inches DBH and 114 feet to a merchantable top. Average western hemlock is 19 inches DBH and 77 feet to a merchantable top. Average red alder is 16 inches DBH and 51 feet to a merchantable top. Snags average 14 per acre with an average DBH of 16 inches; redcedar was not located within any of the cruise plots but was observed during layout. Average net volume to be

harvested per acre is 62 MBF. All trees were cruised to a merchantable top of six inches DIB, 40% of form point, or an otherwise anticipated break point.

Area 3 R/W (the in-unit portion) is similar to the timber description above in Areas 1 and 2. Average net volume to be harvested per acre is 62 MBF.

7. Statistical Analysis and Stand Summary

Statistics for Stand B.F. volumes

Area	Estimated CV	Target SE%	Actual CV	Actual SE%
1 and 2	55.0%	8.0%	42.7%	5.6%
3	55.0%	8.0%	42.7%	5.6%

8. Volumes by Species and Log Grade:

Volumes by Species and Grade for All Sale Areas: (MBF) Volumes do not include "in-growth."

Conifer

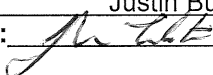
Species	DBH	Net Vol.	2 Saw	3 Saw	4 Saw	% D & B	% Sale
Douglas-fir	26"	4,406	3,876	485	45	2.2%	54%
Western hemlock	19"	3,563	2,672	781	110	4.4%	44%
TOTALS		7,969	6,548	1,266	155		

Hardwood

Species	DBH	Net Vol.	12"+	10"-11"	8"-9"	6"-7"	% D & B	% Sale
Red alder	16"	181	20	100	14	47	6.8%	2%
TOTALS		181	20	100	14	47		

TOTAL VOLUME	8,150 MBF
---------------------	------------------

9. Approvals:

Prepared by: Justin Bush
Unit Forester Approval: 

Date: 6-13-2019
Date: 7/12/2019

10. Attachments: Cruise Design and Maps (4 pages), Volume Reports (3 pages), Statistics Reports (3 pages), Stand Table Summary (2 pages), Log Stock Table (2 pages)

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Trails End **Area(s)** 1 and 2

Harvest Type: Modified Clearcut

Approx. Cruise Acres: 142 **Estimated CV%** 55 **SE% Objective** 8

Planned Sale Volume: 6,856 MBF **Estimated Sale Area Value/Acre:** \$21,242

A. Cruise Goals: (a) Grade minimum 80 trees:

Determine log grades for sale value; Determine snag and leave tree species and sizes;
Determine "diameter limit" harvest parameters;

B. Cruise Design:

1. Plot Cruises: BAF 40 Full point (Con)
Cruise Line Direction(s) (Area 1) N, S (Area 2) E, W
Cruise Line Spacing 7 chains (462 Feet)
Cruise Plot Spacing 3 chains (198 Feet)
Grade/Count Ratio 1:2

Record all cedar as leave. Record all snags as SN and record diameter & total height. 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 " or 40% of DOB at 16' form point. Generally, use 7" outside bark for trees less than 18" DBH and 40% of DOB @ FP for trees greater than 18" DBH.
- 4. Form Factors:** (1) Measure or estimate a 16' form factor for every conifer tree measured/graded; Hardwood form factors are a Standard 87.
- 5. Tree Segments:** Record conifer log segments in "standard" 32' and 40' log lengths whenever possible. Do not record odd segments to maximize grade. The maximum segment length is 40'. The minimum segment length is 12' and 8' for hardwoods. Minimum merchantable diameter for conifer is 8" DBH and 10" DBH for hardwoods. One foot of trim is assumed for each merchantable segment.

6. Species, Sort, and Grade Codes:

- A. Species: Record as D (Douglas-fir);
H (western hemlock); S (Sitka spruce); CL (western redcedar); NF (noble fir);
SF (silver fir); A (red alder); M (bigleaf maple).
- 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; 0 = Cull
- D. Hardwoods: 12" + = 1 Sawmill; 10"-12" = 2 Sawmill; 10"-8" = 3 Sawmill; and 8"-6"
= 4 Sawmill; 0 = Cull.

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

- 8. Standard Field Procedures:** Plot Type Cruises: Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at intervisible points. On "measure/grade" plots paint the tree diameter on each tree starting with the first tree right of the cruise line direction and continuing clockwise.

- 9. Cruising Equipment:** Relaskop, Rangefinder, Biltmore Stick, Compass, Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging.

- 10. Attachments:** A. Cruise Map (showing cruise unit boundaries, cruise lines and plot locations, BAF or plot size, measure/count plot ratio, north arrow, and scale bar).

Cruise Design by: Avery Petersen

Approved by: Derek Bangs

Date: 5/22/2019

TIMBER CRUISE

OF TIMBER SALE CONTRACT NO. 341-20-W00732-01
 TRAILS END
 PORTIONS OF SECTION 6, T6N, R6W, AND
 PORTIONS OF SECTIONS 1 AND 12, T6N, R7W, W.M.,
 CLATSOP COUNTY, OREGON

Approximate Net Acres

Area 1 (MC) = 90

Area 2 (MC) = 35

Area 3 (R/W) = 6

Total Acres = 131



1 inch = 500 feet

0 250 500
 Feet

Legend

- Grade Plot
- Count Plot
- Cruise Line
- Ownership
- ▭ Timber Sale Boundary
- - - Right Of Way
- - - New Road Construction - Surfaced
- - - New Road Construction - Unsurfaced
- == Surfaced Road
- ~ Type F Stream
- ~ Type N Stream

40 BAF

Total Plots = 59

Grade Plots = 21

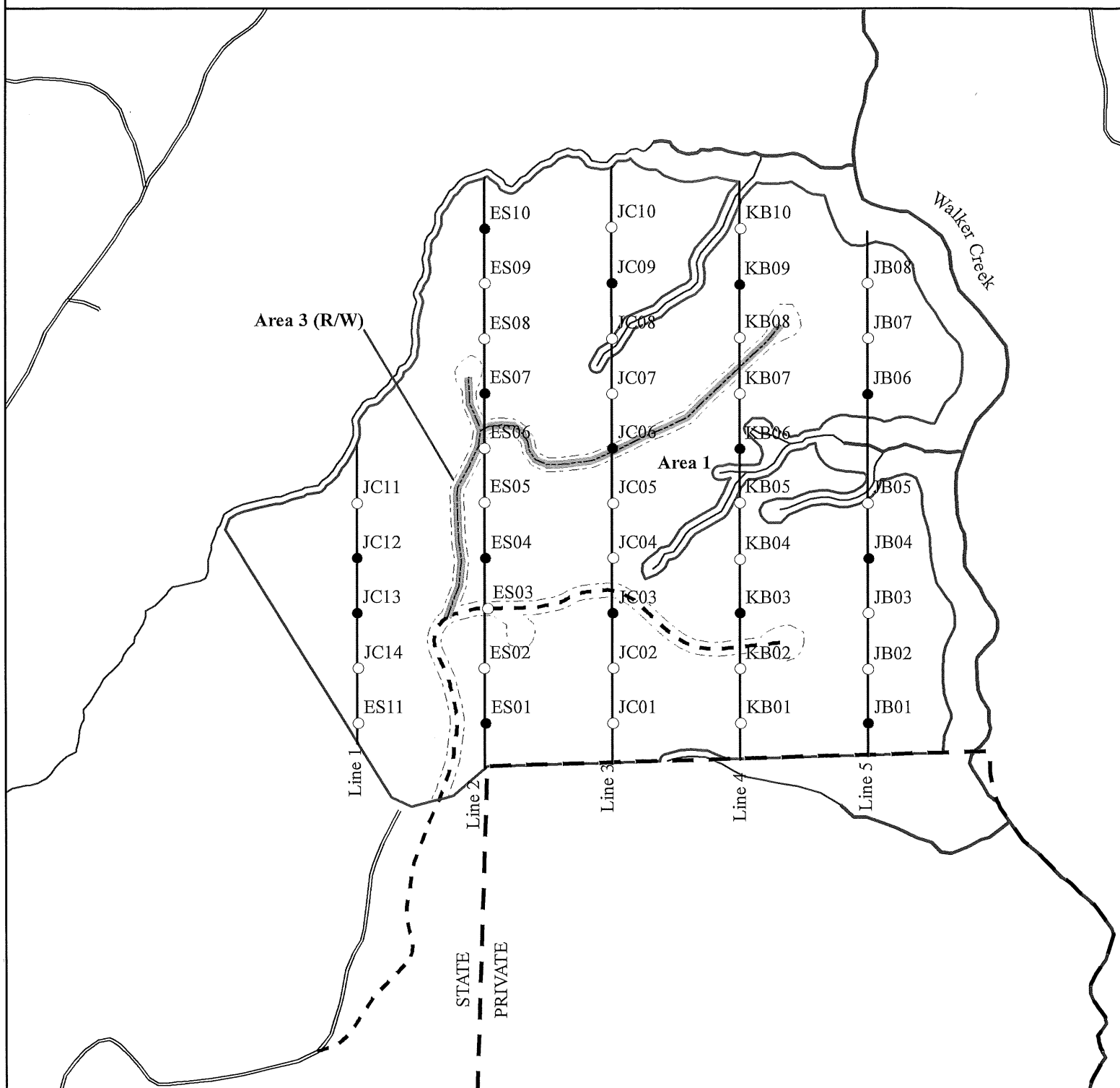
Count Plots = 38

Area 1 Line AZ: 0°/180°

Area 2 Line AZ: 90°/270°

Line Spacing: 7 ch. (462 ft.)

Plot Spacing: 3 ch. (198 ft.)



TIMBER CRUISE

OF TIMBER SALE CONTRACT NO. 341-20-W00732-01
TRAILS END
PORTIONS OF SECTION 6, T6N, R6W, AND
PORTIONS OF SECTIONS 1 AND 12, T6N, R7W, W.M.,
CLATSOP COUNTY, OREGON

Approximate Net Acres
Area 1 (MC) = 90
Area 2 (MC) = 35
Area 3 (R/W) = 6
Total Acres = 131

1 inch = 500 feet

0 250 500 Feet



Legend

- Grade Plot
- Count Plot
- Cruise Line
- ▬ Ownership
- ▭ Timber Sale Boundary
- - - Right Of Way
- - - New Road Construction - Surfaced
- == Surfaced Road
- Unknown Road
- ~ Type N Stream
- ~ Unknown Stream
- ▨ Green Tree Retention Area
- Area 1 Line AZ: 0°/180°
- Area 2 Line AZ: 90°/270°
- Line Spacing: 7 ch. (462 ft.)
- Plot Spacing: 3 ch. (198 ft.)

40 BAF

Total Plots = 59

Grade Plots = 21

Count Plots = 38

Area 3 (R/W)

Line 6

AP18

Line 7

AP01

AP02

AP03

AP04

AP05

AP06

AP07

AP08

AP09

Area 2

Line 8

AP15

AP14

AP13

AP12

AP11

AP10

Trailover Road

STATE
PRIVATE

TC		PSPCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																	
T06N R07W S01 Ty00MC125.00 T06N R07W S01 TyRW6.00				Project: TRAILS												Page 1					
				Acres 131.00												Date 6/13/2019					
																Time 12:38:38PM					
Spp	So Gr T rt ad	% Net BdFt	Bd. Ft. per Acre Def%GrossNet			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre		
							Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf			
							4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99							
D	DO CU		100.0	262												9	23		0.00	1.3	
D	DO 2S	87	1.6	30,062	29,589	3,876			29	71			1	2	97	39	17	490	2.51	60.4	
D	DO 3S	11	.2	3,711	3,703	485		95	5			3	6	21	70	35	9	108	0.88	34.3	
D	DO 4S	2		343	343	45		100				90	10			18	7	32	0.53	10.8	
D Totals		54	2.2	34,378	33,635	4,406		11	26	63		1	2	4	93	35	14	315	1.88	106.7	
H	DO CU		100.0	785												9	12		0.00	11.5	
H	DO 2S	75	2.1	20,832	20,400	2,672			48	52		3	1	8	88	38	15	357	2.07	57.1	
H	DO 3S	21	.8	6,005	5,959	781		95	5			3	11	25	62	36	8	95	0.77	62.5	
H	DO 4S	4		837	837	110		100				85	15			17	7	26	0.48	31.8	
H Totals		44	4.4	28,459	27,196	3,563		24	37	39		5	4	12	79	31	11	167	1.29	162.9	
A	DO CU		100.0	90												12	12		0.00	1.7	
A	DO 1S	11	6.6	165	154	20			100			51			49	28	15	194	1.94	.8	
A	DO 2S	55		761	761	100		100					23	10	67	37	10	147	1.10	5.2	
A	DO 3S	8		108	108	14		100					24		76	36	9	97	0.96	1.1	
A	DO 4S	26		359	359	47		100				22	9		69	30	6	45	0.60	8.0	
A Totals		2	6.8	1,482	1,381	181		89	11			11	17	5	66	30	9	82	0.85	16.8	
Totals			3.3	64,319	62,213	8,150		19	31	51		3	3	8	86	33	12	217	1.50	286.4	

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page		1		
				Project: TRAILS												Date		6/13/2019		
																Time		12:39:35PM		
T06N R07W S01 T00MC																T06N R07W S01 T00MC				
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt		
06N		07W		01		A12_TAKE		00MC		125.00		59		140		1		W		
S So Gr T rt ad Spp			%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs Per /Acre
								Log Scale Dia.				Log Length				Ln Dia		Bd CF/		
			Net	Def%	Gross	Net	Net MBF	4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf	
H			DO	CU	75	100.0	785	20,400	2,550		48	52	3	1	8	88	9	12		0.00
H			DO	2S	21	2.1	20,832	20,400	745	95	5		3	11	25	62	38	15	357	2.07
H			DO	3S	4	.8	6,005	5,959	105	100			85	15			36	8	95	0.77
H			DO	4S			837	837									17	7	26	0.48
H Totals				44	4.4	28,459	27,196	3,400		24	37	39	5	4	12	79	31	11	167	1.29
D			DO	CU	87	100.0	262	29,589	3,699		29	71		1	2	97	9	23		0.00
D			DO	2S	11	1.6	30,062	29,589	463	95	5		3	6	21	70	39	17	490	2.51
D			DO	3S	2	.2	3,711	3,703	43	100			90	10			35	9	108	0.88
D			DO	4S			343	343									18	7	32	0.53
D Totals				54	2.2	34,378	33,635	4,204		11	26	63	1	2	4	93	35	14	315	1.88
A			DO	CU	55	100.0	90	154	19		100		51			49	12	12		0.00
A			DO	1S	8	6.6	165	154	95	100				23	10	67	28	15	194	1.94
A			DO	2S			761	761	13	100					24	76	37	10	147	1.10
A			DO	3S			108	108	45	100			22	9		69	36	9	97	0.96
A			DO	4S			359	359									30	6	45	0.60
A Totals				2	6.8	1,482	1,381	173		89	11		11	17	5	66	30	9	82	0.85
Type Totals					3.3	64,319	62,213	7,777		19	31	51	3	3	8	86	33	12	217	1.50

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page		1		
				Project: TRAILS												Date		6/13/2019		
																Time		12:40:36PM		
T06N R07W S01 TRW												T06N R07W S01 TRW								
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt		
06N		07W		01		A3		RW		6.00		59		163		1		W		
S So Gr T rt ad Spp			% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre
								Log Scale Dia.				Log Length				Ln Dia		Bd CF/ Ft In Ft Lf		
H DO CU				100.0 785				48 52				3 1 8 88				9 12 0.00				11.5
H DO 2S			75	2.1 20,832 20,400			122	48 52				3 1 8 88				38 15 357 2.07				57.1
H DO 3S			21	.8 6,005 5,959			36	95 5				3 11 25 62				36 8 95 0.77				62.5
H DO 4S			4	837 837			5	100				85 15				17 7 26 0.48				31.8
H Totals			44	4.4 28,459 27,196			163	24 37 39				5 4 12 79				31 11 167 1.29				162.9
D DO CU				100.0 262				29 71				1 2 97				9 23 0.00				1.3
D DO 2S			87	1.6 30,062 29,589			178	29 71				1 2 97				39 17 490 2.51				60.4
D DO 3S			11	.2 3,711 3,703			22	95 5				3 6 21 70				35 9 108 0.88				34.3
D DO 4S			2	343 343			2	100				90 10				18 7 32 0.53				10.8
D Totals			54	2.2 34,378 33,635			202	11 26 63				1 2 4 93				35 14 315 1.88				106.7
A DO CU				100.0 90				100				51 49				12 12 0.00				1.7
A DO 1S			11	6.6 165 154			1	100				51 49				28 15 194 1.94				.8
A DO 2S			55	761 761			5	100				23 10 67				37 10 147 1.10				5.2
A DO 3S			8	108 108			1	100				24 76				36 9 97 0.96				1.1
A DO 4S			26	359 359			2	100				22 9 69				30 6 45 0.60				8.0
A Totals			2	6.8 1,482 1,381			8	89 11				11 17 5 66				30 9 82 0.85				16.8
Type Totals				3.3 64,319 62,213			373	19 31 51				3 3 8 86				33 12 217 1.50				286.4

TC PSTATS			PROJECT STATISTICS						PAGE	1	
			PROJECT		TRAILS					DATE	6/13/2019
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt	
06N 06N	07 07W	01 01	A12 TAKE A3	00MC RW		131.00	118	852	1	W	
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL			118	852	7.2						
CRUISE			45	295	6.6	14,925	2.0				
DBH COUNT											
REFOREST											
COUNT			73	539	7.4						
BLANKS											
100 %											
STAND SUMMARY											
SAMPLE TREES			TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK			132	68.6	19.3	77	31.7	139.0	28,459	27,196	6,647
DOUG FIR			114	34.2	25.9	114	24.6	125.4	34,378	33,635	7,139
R ALDER			30	10.5	15.8	51	3.6	14.2	1,482	1,381	454
SNAG			19	.6	16.4	44	0.2	.9			
TOTAL			295	113.9	21.2	85	60.7	279.6	64,319	62,213	14,239
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL	68.1	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK			76.7	6.7	585	627	668				
DOUG FIR			56.6	5.3	1,214	1,282	1,350				
R ALDER			40.9	7.6	135	146	157				
SNAG											
TOTAL			88.6	5.2	753	793	834	313	78	35	
CL	68.1	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK			128.1	11.8	61	69	77				
DOUG FIR			144.2	13.3	30	34	39				
R ALDER			410.7	37.8	7	11	14				
SNAG			261.1	24.0	0	1	1				
TOTAL			106.9	9.8	103	114	125	456	114	51	
CL	68.1	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK			125.8	11.6	123	139	155				
DOUG FIR			137.9	12.7	110	125	141				
R ALDER			405.9	37.3	9	14	20				
SNAG			247.6	22.8	1	1	1				
TOTAL			104.6	9.6	253	280	306	437	109	49	
CL	68.1	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK			127.2	11.7	24,013	27,196	30,379				
DOUG FIR			137.8	12.7	29,373	33,635	37,898				
R ALDER			401.7	37.0	871	1,381	1,891				
SNAG											
TOTAL			107.8	9.9	56,042	62,213	68,383	464	116	52	

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT	TRAILS		DATE	6/13/2019			
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
06N	07W	01	A12 TAKE	00MC	125.00	59	411	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
PLOTS		TREES		TREES							
TOTAL		59		411		7.0					
CRUISE		21		138		6.6		14,162			
DBH COUNT								1.0			
REFOREST											
COUNT		38		273		7.2					
BLANKS											
100 %											
STAND SUMMARY											
SAMPLE		TREES		AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
TREES		/ACRE		DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
WHEMLOCK		66		68.6	19.3	77	31.7	139.0	28,459	27,196	6,647
DOUG FIR		57		34.2	25.9	114	24.6	125.4	34,378	33,635	7,139
R ALDER		15		10.5	15.8	51	3.6	14.2	1,482	1,381	454
TOTAL		138		113.3	21.2	86	60.5	278.6	64,319	62,213	14,239
14,033											
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL:	68.1 %	COEFF		SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK		76.9		9.5		567		627		686	
DOUG FIR		56.8		7.5		1,186		1,282		1,379	
R ALDER		41.6		11.1		130		146		162	
TOTAL		82.3		7.0		786		845		904	
								270		68	
										30	
CL:	68.1 %	COEFF		TREES/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK		66.9		8.7		63		69		75	
DOUG FIR		83.0		10.8		31		34		38	
R ALDER		297.7		38.7		6		11		15	
TOTAL		42.9		5.6		107		113		120	
								74		18	
										8	
CL:	68.1 %	COEFF		BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK		64.4		8.4		127		139		151	
DOUG FIR		76.9		10.0		113		125		138	
R ALDER		294.0		38.2		9		14		20	
TOTAL		39.1		5.1		264		279		293	
								61		15	
										7	
CL:	68.1 %	COEFF		NET BF/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK		65.9		8.6		24,864		27,196		29,529	
DOUG FIR		76.8		10.0		30,277		33,635		36,993	
R ALDER		290.8		37.8		859		1,381		1,904	
TOTAL		42.7		5.6		58,753		62,213		65,672	
								73		18	
										8	

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT		TRAILS		DATE	6/13/2019		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
06N	07W	01	A3	RW	6.00	59	441	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL				59	441	7.5					
CRUISE				24	157	6.5	763	20.6			
DBH COUNT											
REFOREST											
COUNT				35	266	7.6					
BLANKS											
100 %											
STAND SUMMARY											
SAMPLE				TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS
TREES				/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC
WHEMLOCK				66	68.6	19.3	77	31.7	139.0	28,459	27,196
DOUG FIR				57	34.2	25.9	114	24.6	125.4	34,378	33,635
SNAG				19	13.8	16.4	44	5.0	20.3		
R ALDER				15	10.5	15.8	51	3.6	14.2	1,482	1,381
TOTAL				157	127.1	20.8	81	65.6	299.0	64,319	62,213
				14,239	14,033						
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL:	68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK			76.9	9.5	567	627	686				
DOUG FIR			56.8	7.5	1,186	1,282	1,379				
SNAG											
R ALDER			41.6	11.1	130	146	162				
TOTAL			94.7	7.6	691	748	804	358	89	40	
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK			66.9	8.7	63	69	75				
DOUG FIR			83.0	10.8	31	34	38				
SNAG			171.2	22.3	11	14	17				
R ALDER			297.7	38.7	6	11	15				
TOTAL			35.7	4.6	121	127	133	51	13	6	
CL:	68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK			64.4	8.4	127	139	151				
DOUG FIR			76.9	10.0	113	125	138				
SNAG			160.7	20.9	16	20	25				
R ALDER			294.0	38.2	9	14	20				
TOTAL			34.5	4.5	286	299	312	48	12	5	
CL:	68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK			65.9	8.6	24,864	27,196	29,529				
DOUG FIR			76.8	10.0	30,277	33,635	36,993				
SNAG											
R ALDER			290.8	37.8	859	1,381	1,904				
TOTAL			42.7	5.6	58,753	62,213	65,672	73	18	8	

TC		PSTNDSUM		Stand Table Summary								Page		1		
												Date:		6/13/2019		
T06N R07W S01 Ty00MC 125.00 T06N R07W S01 TyRW 6.00				Project				TRAILS				Time:		11:00:30AM		
				Acres				131.00				Grown Year:				
S Spc	T	Sample		Tot		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	T o t a l s		
		DBH	Trees	FF 16'	Av Ht				Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF
D		16	2	89	137	1.576	2.20	4.73	23.3	100.0		110	473		145	62
D		17	2	88	136	1.396	2.20	4.19	27.0	103.3		113	433		148	57
D		18	2	91	155	1.245	2.20	3.74	34.7	150.0		129	560		170	73
D		19	6	88	133	3.353	6.60	10.06	33.7	134.4		339	1,352		444	177
D		20	2	88	155	1.009	2.20	3.03	41.3	176.7		125	535		164	70
D		21	4	89	114	1.830	4.40	4.57	43.6	174.0		199	796		261	104
D		22	4	90	137	1.667	4.40	5.00	46.7	203.3		233	1,017		306	133
D		23	8	88	145	3.051	8.80	9.15	53.8	228.3		493	2,090		645	274
D		24	6	88	145	2.101	6.60	6.30	58.3	251.1		368	1,583		482	207
D		25	6	89	145	1.937	6.60	5.81	59.8	266.7		347	1,549		455	203
D		26	8	89	166	2.387	8.80	7.16	74.5	360.8		534	2,584		699	339
D		27	6	91	155	1.660	6.60	4.98	78.6	400.0		391	1,992		513	261
D		28	6	88	149	1.544	6.60	4.63	79.8	371.1		369	1,719		484	225
D		29	4	88	161	.959	4.40	3.36	78.4	380.0		263	1,276		345	167
D		30	10	87	162	2.241	11.00	7.62	85.9	419.4		655	3,196		858	419
D		31	4	90	162	.840	4.40	2.94	91.1	474.3		268	1,394		351	183
D		32	2	86	173	.394	2.20	1.58	86.5	442.5		136	697		179	91
D		33	14	90	158	2.593	15.40	8.89	103.2	536.2		918	4,768		1,202	625
D		35	4	86	151	.659	4.40	1.98	119.2	576.7		235	1,140		308	149
D		36	2	89	150	.311	2.20	.93	121.3	623.3		113	582		148	76
D		37	2	91	157	.295	2.20	.88	151.0	833.3		133	737		175	97
D		39	2	85	153	.265	2.20	.80	151.7	746.7		121	594		158	78
D		41	2	89	166	.240	2.20	.96	140.3	715.0		135	686		176	90
D		42	2	75	154	.229	2.20	.69	161.0	696.7		110	478		145	63
D		43	2	92	148	.218	2.20	.65	190.3	1016.7		125	665		163	87
D		45	2	85	174	.199	2.20	.80	170.0	927.5		135	739		177	97
D		Totals	114	89	148	34.198	125.42	105.42	67.3	319.1		7,100	33,635		9,300	4,406
H		11	8	89	63	12.763	8.42	15.95	12.2	42.0		195	670		255	88
H		13	4	86	56	4.569	4.21	4.57	19.0	55.0		87	251		114	33
H		14	4	88	106	3.940	4.21	7.88	23.0	92.5		181	729		237	95
H		15	4	92	111	3.432	4.21	8.58	22.6	94.0		194	807		254	106
H		16	6	88	125	4.525	6.32	13.57	24.6	95.6		333	1,297		437	170
H		17	6	90	100	4.008	6.32	8.02	34.3	121.7		275	975		361	128
H		18	8	88	107	4.767	8.42	10.72	36.6	127.8		392	1,370		514	180
H		19	12	88	108	6.417	12.63	14.97	39.9	154.3		597	2,310		782	303
H		21	12	89	117	5.253	12.63	14.88	43.5	182.4		648	2,714		849	356
H		22	8	89	130	3.191	8.42	9.57	49.9	218.3		478	2,090		626	274
H		23	2	92	141	.730	2.11	2.19	59.3	280.0		130	613		170	80
H		24	14	88	122	4.692	14.74	12.07	62.2	265.6		751	3,204		983	420
H		25	6	86	101	1.853	6.32	4.94	55.0	230.0		272	1,137		356	149
H		26	10	85	114	2.856	10.53	7.42	66.5	282.3		493	2,096		646	275
H		27	4	87	110	1.059	4.21	2.65	75.8	308.0		201	816		263	107
H		28	2	83	112	.492	2.11	.98	56.5	235.0		56	231		73	30
H		29	4	85	121	.918	4.21	2.75	75.8	333.3		209	918		274	120
H		31	4	88	131	.804	4.21	2.41	89.5	418.3		216	1,008		283	132
H		32	2	88	135	.377	2.11	1.13	108.7	550.0		123	622		161	81
H		33	4	89	135	.709	4.21	2.13	113.8	568.3		242	1,209		317	158
H		35	6	84	134	.946	6.32	2.84	110.4	524.4		313	1,488		410	195
H		36	2	89	144	.298	2.11	1.19	96.5	537.5		115	641		151	84
H		Totals	132	88	101	68.598	138.98	151.43	42.9	179.6		6,500	27,196		8,515	3,563
A		13	4	87	61	2.059	1.90	2.06	25.0	65.0		51	134		67	18
A		14	4	86	57	1.776	1.90	1.78	28.0	65.0		50	115		65	15

TC PSTNDSUM		Stand Table Summary										Page 2			
												Date: 6/13/2019			
T06N R07W S01 Ty00MC 125.00 T06N R07W S01 TyRW 6.00					Project TRAILS					Time: 11:00:30AM					
					Acres 131.00					Grown Year:					
S Spc T	Tot							Average Log		Net	Net	T o t a l s			
	Sample	FF	Av		Trees/	BA/	Logs	Net	Net						
	DBH	Trees	16'	Ht	Acre	Acre	Acre	Cu.Ft.	Bd.Ft.	Tons/	Cu.Ft.	Bd.Ft.	Tons	Cunits	MBF
A	15	2	87	99	.773	.95	1.55	26.0	95.0		40	147		53	19
A	16	12	87	72	4.079	5.69	6.12	29.3	100.0		179	612		235	80
A	18	2	87	74	.537	.95	1.07	21.0	80.0		23	86		30	11
A	19	2	87	70	.482	.95	.96	32.0	100.0		31	96		40	13
A	20	2	86	70	.435	.95	.87	31.0	120.0		27	104		35	14
A	22	2	86	72	.360	.95	.72	44.5	120.0		32	86		42	11
A	Totals	30	87	69	10.501	14.24	15.13	28.6	91.3		433	1,381		568	181
SN	9	1	89	55	.111	.05									
SN	11	1	89	24	.074	.05									
SN	13	1	89	22	.053	.05									
SN	15	1	89	31	.040	.05									
SN	16	3	86	33	.105	.15									
SN	17	2	89	41	.062	.10									
SN	18	3	89	36	.083	.15									
SN	19	1	89	88	.025	.05									
SN	21	1	89	119	.020	.05									
SN	27	3	89	60	.037	.15									
SN	29	1	88	150	.011	.05									
SN	31	1	88	31	.009	.05									
SN	Totals	19	88	44	.632	.93									
Totals		295	88	112	113.929	279.58	271.98	51.6	228.7		14,033	62,213		18,383	8,150

TC PLOGSTVB		Log Stock Table - MBF																	
T06N R07W S01 Ty00MC 125.00 T06N R07W S01 TyRW 6.00					Project: TRAILS Acres 131.00										Page 1 Date 6/13/2019 Time 10:59:12AM				
S T Spp	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches											
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
D	DO	2S	24	16		16	.4					5	11						
D	DO	2S	30	28		28	.6					18	10						
D	DO	2S	32	88	4.1	85	1.9					11	62	12					
D	DO	2S	36	6		6	.1					6							
D	DO	2S	40	3,799	1.5	3,741	84.9					382	323	1331	881	680	145		
D	DO	3S	12	2		2	.1						2						
D	DO	3S	14	5		5	.1					2	3						
D	DO	3S	16	3		3	.1					3							
D	DO	3S	20	4		4	.1				4								
D	DO	3S	24	4		4	.1					4							
D	DO	3S	26	5		5	.1					5							
D	DO	3S	28	4		4	.1				4								
D	DO	3S	30	16		16	.4				6			10					
D	DO	3S	32	81		81	1.8			19	39	13	10						
D	DO	3S	34	20		20	.5				20								
D	DO	3S	36	50		50	1.1			16	14	20							
D	DO	3S	38	34		34	.8			8	14	12							
D	DO	3S	40	256		255	5.8			17	50	188							
D	DO	4S	14	7		7	.1				2	5							
D	DO	4S	16	20		20	.4			9	7	4							
D	DO	4S	18	7		7	.1			7									
D	DO	4S	20	8		8	.2				8								
D	DO	4S	24	4		4	.1			4									
D	Totals			4,469	1.4	4,406	54.1			80	168	257	436	418	1342	881	680	145	
H	DO	2S	12	18		18	.5										18		
H	DO	2S	20	54		54	1.5								24		30		
H	DO	2S	24	30	16.0	25	.7									25			
H	DO	2S	28	10		10	.3						10						
H	DO	2S	32	223	1.4	220	6.2						48	19	153				
H	DO	2S	36	43		43	1.2						43						
H	DO	2S	38	50	5.3	47	1.3						47						
H	DO	2S	40	2,301	2.0	2,255	63.3						492	254	1009	268	232		
H	DO	3S	16	3		3	.1					3							
H	DO	3S	18	4		4	.1					4							
H	DO	3S	20	13		13	.4					13							
H	DO	3S	24	7		7	.2			7									

TC PLOGSTVB				Log Stock Table - MBF																
T06N R07W S01 Ty00MC 125.00 T06N R07W S01 TyRW 6.00				Project: TRAILS										Page 2						
				Acres 131.00										Date 6/13/2019						
				Time 10:59:12AM																
S T Spp	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches												
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+	
H	DO	3S	26	5		5	.2					5								
H	DO	3S	28	26		26	.7				21	5								
H	DO	3S	30	45		45	1.3			5	16	24								
H	DO	3S	32	195		195	5.5			23	34	126	13							
H	DO	3S	38	47		47	1.3			11	36									
H	DO	3S	40	440	1.4	434	12.2			142	96	172		24						
H	DO	4S	12	15		15	.4				15									
H	DO	4S	14	27		27	.8			21	6									
H	DO	4S	16	20		20	.6			15	5									
H	DO	4S	20	31		31	.9			24	7									
H	DO	4S	24	17		17	.5			17										
H	Totals			3,625	1.7	3,563	43.7			257	244	349	657	273	1210	293	280			
A	DO	1S	18	10		10	5.7							10						
A	DO	1S	40	11	12.5	10	5.5					10								
A	DO	2S	30	23		23	12.8					23								
A	DO	2S	32	10		10	5.4					10								
A	DO	2S	40	67		67	36.8					67								
A	DO	3S	30	3		3	1.9				3									
A	DO	3S	40	11		11	5.9				11									
A	DO	4S	16	3		3	1.5			3										
A	DO	4S	18	4		4	2.0			4										
A	DO	4S	20	4		4	2.3			4										
A	DO	4S	30	4		4	2.2			4										
A	DO	4S	40	33		33	18.0			33										
A	Totals			182		181	2.2			47	14	100	10	10						
Total	All Species			8,277	1.5	8,150	100.0			384	426	705	1103	691	2563	1174	960	145		

LOGGING MAP

OF TIMBER SALE CONTRACT NO. 341-20-W00732-01
TRAILS END
PORTIONS OF SECTION 6, T6N, R6W, AND
PORTIONS OF SECTIONS 1 AND 12, T6N, R7W, W.M.,
CLATSOP COUNTY, OREGON

Approximate Net Acres

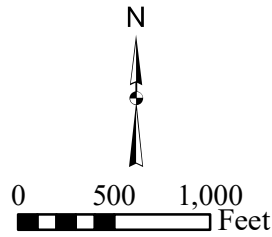
Area 1 (MC) = 90

Area 2 (MC) = 35

Area 3 (R/W) = 6

Total Acres = 131

1 inch = 1,000 feet



Legend

Timber Sale Boundary

Ownership Boundary

Existing Landing

Landing Construction

Tractor Area

Cable Area

Survey Monument

New Road Construction-
Surfaced

Line Pulling

Contour = 40 ft.

New Road Construction-
Unsurfaced

Surfaced Road

Type F Stream

Type N Stream

Buffer Zone

Posted Buffer

Controlled Felling Area

Reforestation Area

Green Tree Retention
Area

Logging Method

Area	Cable	Ground
1 (MC)	36%	64%
2 (MC)	89%	11%
3 (R/W)	0%	100%
Total	48%	52%

