



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal Wage Against the Machine

Sale AT-341-2015-03-

District: Astoria

Date: December 24, 2014

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$4,789,471.80	\$196,164.10	\$4,985,635.90
		Project Work:	(\$544,548.00)
		Advertised Value:	\$4,441,087.90



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District: Astoria

Date: December 24, 2014

Timber Description

Location: Portions of Sections 15, 16, 17, 20, 21, and 22, T5N, R6W, W.M., Clatsop County, Oregon.

Stand Stocking: 60%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	24	0	97
Western Hemlock / Fir	13	0	97
Red Cedar	23	0	95
Alder (Red)	17	0	95
Maple	17	0	95

Volume by Grade	2S	3S	4S	Camprun	Total
Douglas - Fir	8,491	943	185	0	9,619
Western Hemlock / Fir	220	83	27	0	330
Red Cedar	2	0	0	0	2
Alder (Red)	0	0	0	499	499
Maple	0	0	0	11	11
Total	8,713	1,026	212	510	10,461

Comments: Pond Values Used: 4th Quarter Calendar Year 2014.

Expected Log Markets: Mist, Clatskanie, Tillamook, Forest Grove, Longview, and Garibaldi.

SCALING COST ALLOWANCE = \$5.00/MBF

FUEL COST ALLOWANCE = \$4.00/Gallon

HAULING COST ALLOWANCE

Hauling costs equivalent to \$780 daily truck cost.

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

100% Brand and Paint: $\$1/\text{MBF} \times 10,461/\text{MBF} = \$10,461$

Log Loader Slash & Landing Piling (includes Move-In and Pile Materials): (see attached appraisal) = \$13,815

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

TOTAL Other Costs (with Profit & Risk to be added) = \$26,276

Other Costs (No Profit & Risk added):

Log Loader Slash & Landing Piling (includes Move-In and Pile Materials): (see attached appraisal) = \$13,815

TOTAL Other Costs (No Profit & Risk added) = \$13,815

ROAD MAINTENANCE

$\$26,426 / 10,461 \text{ MBF} = \$2.53/\text{MBF}$ (See Attached Appraisal)



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Logging Conditions

Combination#: 1

Logging System:	Cable: Medium Tower >40 - <70	Process:	Stroke Delimber
yarding distance:	Medium (800 ft)	downhill yarding:	No
tree size:	Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF		
loads / day:	12	bd. ft / load:	4600
cost / mbf:	\$108.70		
machines:	Log Loader (A) Stroke Delimber (A) Tower Yarder (Medium)		

Combination#: 2	Douglas - Fir	50.00%
	Western Hemlock / Fir	50.00%
	Red Cedar	50.00%
	Alder (Red)	50.00%
	Maple	50.00%

Logging System:	Track Skidder	Process:	Stroke Delimber
yarding distance:	Medium (800 ft)	downhill yarding:	No
tree size:	Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF		
loads / day:	13	bd. ft / load:	4000
cost / mbf:	\$61.00		
machines:	Stroke Delimber (B)		

Combination#: 3	Douglas - Fir	50.00%
	Western Hemlock / Fir	50.00%
	Red Cedar	50.00%
	Alder (Red)	50.00%
	Maple	50.00%

Logging System:	Shovel	Process:	Stroke Delimber
yarding distance:	Medium (800 ft)	downhill yarding:	No
tree size:	Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF		
loads / day:	12	bd. ft / load:	4000
cost / mbf:	\$66.08		
machines:	Stroke Delimber (B)		



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal Wage Against the Machine

Sale AT-341-2015-03-

District: Astoria

Date: December 24, 2014

Logging Costs

Operating Seasons: 1.00

Profit Risk: 14%

Project Costs: \$544,548.00

Other Costs (P/R): \$26,276.00

Slash Disposal: \$0.00

Other Costs: \$13,815.00

Miles of Road

Road Maintenance: \$2.53

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

Hauling Costs

Species	\$ / MBF	Trips/Day	MBF / Load
Douglas - Fir	\$0.00	3.0	4.0
Western Hemlock / Fir	\$0.00	3.0	3.7
Red Cedar	\$0.00	1.0	3.0
Alder (Red)	\$0.00	2.0	3.3
Maple	\$0.00	2.0	3.3



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District: Astoria

Date: December 24, 2014

Logging Costs Breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling	Other	Total
Douglas - Fir									
\$63.54	\$2.61	\$0.42	\$66.95	\$2.51	\$19.04	\$0.00	\$5.00	\$1.32	\$161.39
Western Hemlock / Fir									
\$63.54	\$2.61	\$0.42	\$72.38	\$2.51	\$19.80	\$0.00	\$5.00	\$1.32	\$167.58
Red Cedar									
\$63.54	\$2.66	\$0.42	\$273.00	\$2.51	\$47.90	\$0.00	\$5.00	\$1.32	\$396.35
Alder (Red)									
\$63.54	\$2.66	\$0.42	\$124.09	\$2.51	\$27.05	\$0.00	\$5.00	\$1.32	\$226.59
Maple									
\$63.54	\$2.66	\$0.42	\$124.09	\$2.51	\$27.05	\$0.00	\$5.00	\$1.32	\$226.59

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$647.19	\$485.80	\$0.00
Western Hemlock / Fir	\$0.00	\$516.29	\$348.71	\$0.00
Red Cedar	\$0.00	\$1,140.00	\$743.65	\$0.00
Alder (Red)	\$0.00	\$615.00	\$388.41	\$0.00
Maple	\$0.00	\$440.00	\$213.41	\$0.00



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal Wage Against the Machine

Sale AT-341-2015-03-

District: Astoria

Date: December 24, 2014

Summary

Amortized

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

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	9,619	\$485.80	\$4,672,910.20
Western Hemlock / Fir	330	\$348.71	\$115,074.30
Red Cedar	2	\$743.65	\$1,487.30
Alder (Red)	499	\$388.41	\$193,816.59
Maple	11	\$213.41	\$2,347.51

Gross Timber Sale Value

Recovery: \$4,985,635.90

Prepared By: Nick Haile

Phone: 503-325-5451

Road Maintenance Cost Summary

Sale: Wage Against the Machine
Date: 11-Dec-14
By: N. Haile

MBF: 10,461
\$/MBF: \$2.51

Type	Equipment/Rationale	Move In	Times	Hours	Rate	Cost
Progressive Operations 1st Entry	Grader 14G	\$778	1	14	\$100	\$2,178
	Dump Truck 12CY x 2	\$163	1	14	\$79	\$1,269
	FE Loader C966	\$778	1	14	\$83	\$1,940
Progressive Operations 2st Entry	Grader 14G	\$778	1	14	\$100	\$2,178
	Dump Truck 12CY x 2	\$163	1	14	\$79	\$1,269
	FE Loader C966	\$778	1	14	\$83	\$1,940
Final Haul Maintenance Haul Route	Grader 14G	\$778	1	24	\$100	\$3,178
	Dump Truck 12CY	\$163	1	24	\$79	\$2,059
	Vibratory Roller	\$778	1	24	\$77	\$2,626
	Water Truck 2,500 gallon	\$190	1	24	\$89	\$2,326
	FE Loader C966	\$778	1	24	\$83	\$2,770
	Rubber Tire Backhoe	\$321	1	16	\$77	\$1,553
	Labor		1	24	\$40	\$960
Total						\$26,246

Production Rates	Miles/day	Distance(miles)	Days
Grader	2.5	3.6	1.4

Production Rates	Miles/day	Distance(miles)	Days
Grader	2.5	3.6	1.4

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

Site Prep Appraisal

Sale Number: 341-15-03
Sale Name: Wage Against the Machine
Date: 09/03/2014

Vegetation Type/Zone	Vegetation Type/Zone Code	Production Rate (hr/ac)	Estimated Piles/Acre
Doug-fir	A	1.0	3.0
Hemlock/Fir	B	1.5	4.0
Hemlock/Spruce	C	2.0	6.0
Hemlock	D	2.0	6.0
Conifer/Hardwood	E	1.5	3.0

Estimated In-Unit and Landing

Sale Area	Harvest Type	Veg Type/Zone	Ground Based Yarding Acres	Piling Hours/Area	Cost/Hour	Total Cost/Area
1	MC	A	51	51	\$110.00	\$5,610.00
2	MC	A	22	22	\$110.00	\$2,420.00
3	MC	A	23	23	\$110.00	\$2,530.00
4	MC	A	21	21	\$110.00	\$2,310.00

*Cost includes separating firewood

Sub Total = \$12,870.00

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

Grand Total = \$13,815.00

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Wage Against the Machine

ROAD CONSTRUCTION:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
3A to 3B and 4A to 4B	34.40	\$34,527
TOTALS		\$34,527

ROAD IMPROVEMENT:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
I1-I2, I3-I4, I5-I6, I7-I8, I9-I10	197.05	\$118,303
I11-I12, I13-I14, I15-I16		
TOTALS		\$118,303

SPECIAL PROJECTS:

<u>Description</u>	<u>Cost</u>
Project #3 Buster Creek Quarry Development and Rock Crushing.	\$159,900
Project #4 Green Mountain 2 Quarry Development, Rock Crushing, and Stockpiling	\$168,659
Project #5 Vacating Costs	\$1,594
Project #6 Test Drilling	\$40,000
Project Road Maintenance	\$12,252
TOTAL	\$382,405

MOVE IN:

<u>Equipment</u>	<u>Cost</u>
Dozer (D8)	\$1,406.00
Excavator (C330)	\$1,406.00
Excavator (C315)	\$805.00
Dump Trucks (12cy x 6)	\$978.00
Dump Trucks (20cy x 2)	\$382.00
Front End Loader	\$778.00
Grader (14G)	\$778.00
Vibratory Roller	\$778.00
Rubber Tire Skidder (C518)	\$717.00
Water Truck (2,500 gallon)	\$190.00
Backhoe (C 580)	\$321.00
24cy Off Highway Dump	\$774.00
TOTAL	\$9,313.00

GRAND TOTAL **\$544,548**

Compiled By: N. Haile

Date: 12/24/2014

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Wage Against the Machine

NEW CONSTRUCTION: 34.40 STATIONS

0.65 MILES

ROAD: 3A to 3B (11.5), 4A to 4B (22.90)

IMPROVEMENT: STATIONS

MILES

POINTS:

CLEARING & GRUBBING

	Method	Acres/amount	x	Rate	=	Cost
3A-3B	Scatter outside of Right of Way	1	x	\$ 1,337	=	\$1,337.00
4A-4B	Scatter outside of Right of Way	2.1	x	\$ 1,337	=	\$2,807.70
			x		=	

SUB TOTAL FOR CLEARING & GRUBBING

\$4,145

EXCAVATION

	Material	Cy/amount	x	Rate	=	Cost
3A-3B	Balanced Construction \$/sta	12	x	\$122.00	=	\$1,439.60
	Common Drift \$/cy	1,000	x	\$1.80	=	\$1,800.00
4A-4B	Balanced Construction \$/sta	21	x	\$122.00	=	\$2,562.00
	Common Drift \$/sta	2	x	\$190.00	=	\$380.00
	Landing Construction \$/ldg	3	x	\$389.00	=	\$1,167.00
			x		=	

SUB TOTAL FOR EXCAVATION

\$7,349

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
3A to 3B									
0+00	18"CPP	40	\$19.53	\$781.20					
8+50	18"CPP	30	\$19.53	\$585.90					
4A to 4B									
0+00	18"CPP	40	\$19.53	\$781.20					
7+00	18"CPP	30	\$19.53	\$585.90					
12+30	18"CPP	30	\$19.53	\$585.90					

Other/miscellaneous:

Description

Quantity

Rate

Cost

Culvert stakes & markers:

Carsonite Culvert Markers

5

\$20.00

\$100.00

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION

\$3,420

Subtotal of Clearing, Exc., Culv.

\$14,913

SURFACING				Stations/ amount	x	Rate/ sta/amt	Cost
Subgrade prep: Description							
Grade, Shape and Ditch 16'				34.40	x	\$24.83	\$854.15
Subgrade Compaction				34.40	x	\$20.19	\$694.54

ROAD SEGMENT 3A to 3B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	3A to 3B		0+00 to 11+50					
				Volume (CY) per	Number of						
Base Rock	5"-0" crushed	0+00 to 11+50	8	station	50	stations	11.50	575	\$5.85	\$3,364	
Traction Rock	1 1/2"-0" crushed	3A to 3B	3	station	19	stations	12	219	\$5.85	\$1,278	
Culvert Bedding/Backfill	1 1/2"-0" crushed	0+00, 8+50	N/A	Culvert	33	Culverts	2	66	\$5.85	\$386	
Turnouts	5"-0" crushed	6+25	8	TO	22	TO's	1	22	\$5.85	\$129	
Junctions	5"-0" crushed	3A, 3B	N/A	junction	22	junctions		66	\$5.85	\$386	
Total Rock for Road Segment:				3A to 3B				948			\$5,543

ROAD SEGMENT 4A to 4B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	4A to 4B		0+00 to 22+90					
				Volume (CY) per	Number of						
Base Rock	5"-0" crushed	0+00 to 22+90	8	station	50	stations	22.90	1,145	\$5.85	\$6,698	
Traction Rock	1 1/2"-0" crushed	0+00 to 2+00, 5+00 to 7+00	3	station	19	stations	4	76	\$5.85	\$445	
Culvert Bedding/Backfill	1 1/2"-0" crushed	0+00, 7+00, 12+30	N/A	Culvert	33	Culverts	3	99	\$5.85	\$579	
Turnouts	5"-0" crushed	2+00, 5+00, 11+10	N/A	TO	22	TO's	3	66	\$5.85	\$386	
Turnarounds	5"-0" crushed	14+40	N/A	TA	11	TA's	1	11	\$5.85	\$64	
Junctions	5"-0" crushed	0+00	N/A	junction	22	junctions	1	22	\$5.85	\$129	
Landings	6"-0" Pit Run	15+15, 19+37, 22+90	N/A	Landing	66	Landings	3	198	\$6.94	\$1,374	
Total Rock for Road Segment:				4A to 4B				1,617			\$9,675

Processing:	Description	No. sta	Rate/sta	Cost
	Water, Process & Compact Base Rock:	34.40	\$56.48	\$1,943
	Water, Process & Compact Traction Rock:	16.00	\$56.48	\$904

SUB TOTAL FOR SURFACING	24"-6"rr	6"-0"pr	4"-0"	1 1/2"-0"	Total
		198	1,907	460	2,565

SPECIAL PROJECTS	Description	Cost

SUB TOTAL FOR SPECIAL PROJECTS		\$0
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Subtotal of Surfacing & Spec. Proj.		\$19,613
Subtotal of Clearing, Exc., Culv.		\$14,913
GRAND TOTAL		\$34,527

Compiled By: N. Halle

Date: 11/21/2014

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Wage Against the Machine

ROAD: Road Improvement

POINTS: I1-I2 (22.90), I3-I4 (18.00), I5-I6 (22.40), I7-I8 (11.50), I9-I10 (52.80), I11-I12 (17.70), I13-I14 (14.75), I15-I16 (37.00)

NEW CONSTRUCTION: _____ **STATIONS**

IMPROVEMENT: 197.05 STATIONS

STATIONS	MILES
1	0.0
2	0.5
3	1.0
4	1.5
5	2.0
6	2.5
7	3.0
8	3.5
9	4.0
10	4.5
11	5.0
12	5.5
13	6.0
14	6.5
15	7.0
16	7.5
17	8.0
18	8.5
19	9.0
20	9.5
21	10.0
22	10.5
23	11.0
24	11.5
25	12.0
26	12.5
27	13.0
28	13.5
29	14.0
30	14.5
31	15.0
32	15.5
33	16.0
34	16.5
35	17.0
36	17.5
37	18.0
38	18.5
39	19.0
40	19.5
41	20.0
42	20.5
43	21.0
44	21.5
45	22.0
46	22.5
47	23.0
48	23.5
49	24.0
50	24.5
51	25.0
52	25.5
53	26.0
54	26.5
55	27.0
56	27.5
57	28.0
58	28.5
59	29.0
60	29.5
61	30.0
62	30.5
63	31.0
64	31.5
65	32.0
66	32.5
67	33.0
68	33.5
69	34.0
70	34.5
71	35.0
72	35.5
73	36.0
74	36.5
75	37.0
76	37.5
77	38.0
78	38.5
79	39.0
80	39.5
81	40.0
82	40.5
83	41.0
84	41.5
85	42.0
86	42.5
87	43.0
88	43.5
89	44.0
90	44.5
91	45.0
92	45.5
93	46.0
94	46.5
95	47.0
96	47.5
97	48.0
98	48.5
99	49.0
100	49.5
101	50.0
102	50.5
103	51.0
104	51.5
105	52.0
106	52.5
107	53.0
108	53.5
109	54.0
110	54.5
111	55.0
112	55.5
113	56.0
114	56.5
115	57.0
116	57.5
117	58.0
118	58.5
119	59.0
120	59.5
121	60.0
122	60.5
123	61.0
124	61.5
125	62.0
126	62.5
127	63.0
128	63.5
129	64.0
130	64.5
131	65.0
132	65.5
133	66.0
134	66.5
135	67.0
136	67.5
137	68.0
138	68.5
139	69.0
140	69.5
141	70.0
142	70.5
143	71.0
144	71.5
145	72.0
146	72.5
147	73.0
148	73.5
149	74.0
150	74.5
151	75.0
152	75.5
153	76.0
154	76.5
155	77.0
156	77.5
157	78.0
158	78.5
159	79.0
160	79.5
161	80.0

3.73 MILES

CLEARING & GRUBBING

Method	Acres/amount	x	Rate	=	Cost
Daylighting: decking non-merch, slash disposal,	5	x	\$ 101.00	=	\$505.00
excavator (\$101/hr), dump truck (\$79/hr)	5	x	\$ 79.00	=	\$395.00
		x		=	
		x		=	

SUB TOTAL FOR CLEARING & GRUBBING

\$900

EXCAVATION

Material	Cy/amount	x	Rate	=	Cost
Excavator time for culvert work on I1 to I2	3.00	x	\$155.00	=	\$465.00
Excavator time for culvert work on I9 to I10	1.00	x	\$155.00	=	\$155.00
		x		=	

SUB TOTAL FOR EXCAVATION

\$620

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost		
I1-I2	22+15	18"/CPP	50	\$19.53	\$976.50	I11-I12	16+30	18"/CPP	40	\$19.53	\$781.20
I3-I4	3+50*	18"/CPP	40	\$19.53	\$781.20						
	4+50	24"/CPP	70	*Fill Sheet	\$8,745.00						
	8+10	18"/CPP	30	\$19.53	\$585.90						
	15+70	18"/CPP	50	\$19.53	\$976.50						
I5-I6	7+85	18"/CPP	30	\$19.53	\$585.90						
I7-I8	2+70	18"/CPP	35	\$19.53	\$683.55						
	6+20	24"/CPP	60	\$27.04	\$1,622.40						
I9-I10	16+70*	18"/CPP	40	\$19.53	\$781.20						
	26+40*	18"/CPP	40	\$19.53	\$781.20						
	27+40	18"/CPP	70	*Fill Sheet	\$8,552.00						
I11-I12	6+90*	18"/CPP	40	\$19.53	\$781.20						

	Description	Quantity	Rate	Cost
Other/miscellaneous:	Labor	2	\$40.00	\$80.00
Culvert stakes & markers:	Culvert Markers	22	\$20.00	\$440.00

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION

\$27,154

Subtotal of Clearing, Exc., Culv.

\$28,674

SURFACING		amount	x	sta/amt	Cost
Subgrade prep:	Description				
	Grade, Shape and Ditch 16' All Road Segments	197.05	x	\$24.83	\$4,892.75
	Subgrade Compaction All Road Segments	197.05	x	\$20.19	\$3,978.44

ROAD SEGMENT I1 to I2				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2		0+00 to 22+90				
				Volume (CY) per		Number of				
Base Rock	5"-0" crushed	0+00 to 22+60	6	station	38	stations	22.90	870	\$5.85	\$5,091
Leveling Rock	5"-0" crushed		N/A	load	11	loads	10	110	\$5.85	\$644
Junctions	5"-0" crushed	0+00	3	unction	22	unctions	1	22	\$5.85	\$129
Turnouts	5"-0" crushed		3	TO	22	TO's	5	110	\$5.85	\$644
Turnarounds	5"-0" crushed		3	TA	22	TA's	1	22	\$5.85	\$129
Culvert Bedding/Backfill	1 1/2"-0" crushed	22+15	N/A	culvert	44	culverts	1	44	\$5.85	\$257
Landings	6"-0" Pit Run	22+90	N/A	Landing	50	Landings	1	50	\$6.94	\$347

\$7,239

ROAD SEGMENT I3 to I4				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I3 to I4		0+00 to 18+00				
				Volume (CY) per	Number of					
Base Rock	5"-0" crushed	0+00 to 18+00	6	station	38	stations	18.00	684	\$5.85	\$4,001
Leveling Rock	5"-0" crushed		N/A	load	11	loads	7	77	\$5.85	\$450
Turnouts	5"-0" crushed		3	TO	22	TO's	2	44	\$5.85	\$257
Junctions	5"-0" crushed	0+00	3	unction	22	unctions	2	44	\$5.85	\$257
Culvert Bedding/Backfill	1 1/2"-0" crushed		N/A	culvert	44	culverts	3	132	\$5.85	\$772
Fill Reconstruction	5"-0" crushed	4+50				See Fill Sheet		33	See Fill Sheet	\$0
Fill Reconstruction	24"-6" Riprap	4+50				See Fill Sheet		140	See Fill Sheet	\$0
Fill Reconstruction	1 1/2"-0" crushed	4+50				See Fill Sheet		88	See Fill Sheet	\$0
Landings	6"-0" Pit Run	18+00	N/A	Landing	50	Landings	1	50	\$6.94	\$347
Total Rock for Road Segment:				I3 to I4				1,292		

\$6,086

Total Rock for Road Segment:				I3 to I4				1,292				
ROAD SEGMENT				I5 to I6		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I5 to I6		0+00 to 22+40						
				Volume (CY) per	Number of							
Base Rock	5'-0" crushed	0+00 to 22+40	6	station	38	loads	22.40	851	\$5.85	\$4,980		
Leveling Rock	5'-0" crushed		N/A	station	11	stations	10	110	\$5.85	\$644		
Junctions	5'-0" crushed	0+00	3	unction	22	junctions	1	22	\$5.85	\$129		
Turnarounds	5'-0" crushed	20+90	3	TA	22	TA's	1	22	\$5.85	\$129		
Turnouts	1 1/2"-0" crushed	1+80, 17+40	3	TO's	22	TO's	2	44	\$5.85	\$257		
Landings	6'-0" Pit Run	22+40	N/A	Landing	50	Landings	1	50	\$6.94	\$347		
Culvert Bedding/Backfill	1 1/2"-0" crushed		N/A	culvert	33	culverts	1	33	\$5.85	\$193		
Total Rock for Road Segment:				I5 to I6				1,132				

\$6,678

ROAD SEGMENT I7 to I8				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I7 to I8		0+00 to 11+50				
				Volume (CY) per	Number of					
Base Rock	5'-0" crushed	0+00 to 11+50	6	station	38	loads	11.50	437	\$5.85	\$2,556
Leveling Rock	5'-0" crushed		N/A	station	11	stations	10	110	\$5.85	\$644
Turnarounds	5'-0" crushed		3	TA	22	TA's	1	22	\$5.85	\$129
Turnouts	1 1/2'-0" crushed		3	TO's	22	TO's	1	22	\$5.85	\$129
Junctions	5'-0" crushed	0+00	3	junction	22	junctions	1	22	\$5.85	\$129
Landings	6'-0" Pit Run	11+50	N/A	Landing	50	Landings	1	50	\$6.94	\$347
Culvert Bedding/Backfill	1 1/2'-0" crushed	2+70, 6+20	N/A	culvert	44	culverts	2	88	\$5.85	\$515
Total Rock for Road Segment:				I7 to I8				751		

\$4,448

ROAD SEGMENT			I9 to I10		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I9 to I10		0+00 to 52+80					
				Volume (CY) per		Number of					
Base Rock	5'-0" crushed	0+00 to 52+80	6	station	38	loads	52.80	2,006	\$5.85	\$11,737	
Leveling Rock	5'-0" crushed		N/A	load	11	loads	25	275	\$5.85	\$1,609	
Turnarounds	5'-0" crushed		3	TA	22	TA's	1	22	\$5.85	\$129	
Turnouts	1 1/2'-0" crushed		3	turnout	22	TO's	4	88	\$5.85	\$515	
Junctions	1 1/2'-0" crushed	0+00, 3A, 4A	3	junction	22	junctions	3	66	\$5.85	\$386	
Fill Reconstruction	5'-0" crushed	4+50					See Fill Sheet	33	See Fill Sheet	\$0	
Fill Reconstruction	24"-6" Riprap	4+50					See Fill Sheet	170	See Fill Sheet	\$0	
Fill Reconstruction	1 1/2'-0" crushed	4+50					See Fill Sheet	88	See Fill Sheet	\$0	
Culvert Bedding/Backfill	1 1/2'-0" crushed	16+70, 26+40	N/A	culvert	44	culverts	2	88	\$5.85	\$515	
Landings	6'-0" Pit Run	52+80	N/A	Landing	50	Landings	1	50	\$6.94	\$347	

\$15,238

Total Rock for Road Segment:				I9 to I10				2,886			
ROAD SEGMENT			I11 to I12/V1		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I11 to I12/V1		0+00 to 17+70					
				Volume (CY) per	Number of						
Base Rock	5"-0" crushed	0+00 to 17+70	6	station	38	stations	17.70	673	\$5.85	\$3,935	
Leveling Rock	5"-0" crushed		N/A	station	11	stations	7	77	\$5.85	\$450	
Turnouts	5"-0" crushed		3	turnout	22	TO's	3	66	\$5.85	\$386	
Turnarounds	5"-0" crushed		3	TA	22	TA's	1	22	\$5.85	\$129	
Junctions	5"-0" crushed	0+00	3	unction	22	unctions	2	44	\$5.85	\$257	
Culvert Bedding/Backfill	1 1/2"-0" crushed	6+90, 16+30	N/A	culvert	44	culverts	2	88	\$5.85	\$515	
Total Rock for Road Segment:				I11 to I12/V1				970			

\$5,672

ROAD SEGMENT				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (Inches)	I13/V2 to I14		0+00 to 14+75				
				Volume (CY) per	Number of					
Base Rock	5'-0" crushed	0+00 to 14+75	6	station	38	stations	14.75	561	\$5.85	\$3,279
Turnarounds	5'-0" crushed		3	TA	22	TA's	1	22	\$5.85	\$129
Turnouts	5'-0" crushed		3	turnout	22	TO's	2	44	\$5.85	\$257
Junctions	5'-0" crushed	3B	3	unction	22	unctions	1	22	\$5.85	\$129
Landings	6'-0" Pit Run	14+75	N/A	Landing	50	Landings	1	50	\$6.94	\$347
Total Rock for Road Segment:				I13/V2 to I14				699		

\$4,141

ROAD SEGMENT				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I15 to I16		0+00 to 37+00				
				Volume (CY) per		Number of				
Base Rock	5'-0" crushed	0+00 to	6	station	38	stations	37.00	1,406	\$5.85	\$8,225
Turnarounds	5'-0" crushed		3	TA	22	TA's	1	22	\$5.85	\$129
Turnouts	5'-0" crushed		3	turnout	22	TO's	4	88	\$5.85	\$515
Junctions	5'-0" crushed	0+00	3	junction	22	junctions	1	22	\$5.85	\$129
Total Rock for Road Segment:				I15 to I16				1,538		

\$8,997

Processing:	Description	No.sta	Rate/sta	Cost
	Water, Process & Compact (Base Rock):	197.05	\$56.48	\$11,129

	Water, Process & Compact (Surface/Leveling Rock)					197.05	\$56.48	\$11,129
		24"-6" Riprap	6"-0" pit-run	4"-0" crushed	1 1/2"-0" stkl	Total		
SUB TOTAL FOR SURFACING		310	300	9,017	869	10,496		\$89,629
SPECIAL PROJECTS								
	Description					Cost		
SUB TOTAL FOR SPECIAL PROJECTS								\$0
							Subtotal of Surfacing & Spec. Proj.	\$89,629
							Subtotal of Clearing, Exc., Culv.	\$28,674
GRAND TOTAL								\$118,303

Compiled By: N. Haile

Date: 12/05/14

Fill Reconstruction Cost Estimate

N.Haile
11/14/2014

Segment: I3 to I4 Station: 4+50
Fill: 1 Height: 10

Materials	Quantity		\$	Total
24"x70', 16ga, CMP	70		\$27.04	\$1,892.80
4"-0" subgrade replacement	33	cy	\$5.85	\$193.05
24"-6" Riprap Armor	120	cy	\$4.90	\$588.00
24"-6" Dissipator	20	cy	\$4.90	\$98.00
Screened Rock for Bedding/Backfill	88	cy	\$5.85	\$514.80
Erosion Control Mulch and seed	0.05	ac	\$1,433.00	\$71.65

\$3,358.30

Equipment/Labor Costs		Quantity		\$/Hr.	Hours	Total
Excavator, Large						
	Operating	1		\$155.00	16	\$2,480.00
	Stand-By	1		\$93.00	2	\$186.00
Dump Truck						\$0.00
	Operating	2		\$79.00	8	\$1,264.00
	Stand-By	2		\$47.40	2	\$189.60
Rubber Tire Skidder						\$0.00
	Operating	1		\$92.00	4	\$368.00
	Stand-By	1		\$55.20	2	\$110.40
Front-End Loader, Medium						\$0.00
	Operating	1		\$83.00	2	\$166.00
	Stand-By	1		\$49.80	8	\$398.40
Hand Held Tamper						\$0.00
	Operating	1		\$10.00	4	\$40.00
	Stand-By	1		\$6.00	4	\$24.00
Laborer		1		\$40.00	4	\$160.00

\$5,386.40

Rock Cost shown on the Road Improvement cost sheet.

Project Total \$8,745

Fill Reconstruction Cost Estimate

N. Haile
11/14/2014

Segment: I9 to I10 Station: 27+40
Fill: 1 Height: 12

Materials	Quantity		\$	Total
18"x70', CPP	70		\$19.53	\$1,367.10
4"-0" subgrade replacement	33	cy	\$5.85	\$193.05
24"-6" Riprap Armor	150	cy	\$4.90	\$735.00
24"-6" Dissipator	20	cy	\$4.90	\$98.00
Screened Rock for Bedding/Backfill	88	cy	\$5.85	\$514.80
Erosion Control	0.05	ac	\$1,433.00	\$71.65
Mulch and seed				

\$2,979.60

Equipment/Labor Costs		Quantity		\$/Hr.	Hours	Total
Excavator, Large						
	Operating	1		\$155.00	16	\$2,480.00
	Stand-By	1		\$93.00	4	\$372.00
Dump Truck						\$0.00
	Operating	2		\$79.00	8	\$1,264.00
	Stand-By	2		\$47.40	2	\$189.60
Rubber Tire Skidder						\$0.00
	Operating	1		\$92.00	4	\$368.00
	Stand-By	1		\$55.20	2	\$110.40
Front End Loader, Medium						\$0.00
	Operating	1		\$83.00	2	\$166.00
	Stand-By	1		\$49.80	8	\$398.40
Hand Held Tamper						\$0.00
	Operating	1		\$10.00	4	\$40.00
	Stand-By	1		\$6.00	4	\$24.00
Laborer		1		\$40.00	4	\$160.00

\$5,572.40

Rock Cost shown on the Road Improvement cost sheet.

Project Total	\$8,552
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SUMMARY OF ROCK DEVELOPMENT AND CRUSHING COSTS

PROJECT NO. 3

Timber Sale Name: Wage Against the Machine

Quarry: Buster Creek

Location: NW 1/4, Section 25, T5N, R7W, W.M.

Shrink:	16%
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County: Clatsop

Loading Hopper: Yes

By: C.Bangs

Date: 12/08/14

ROCK SIZE	REJECT	GRADATION	STOCKPILE CU. YDS.	TRUCK MEAS CU. YDS.	TOTAL CU. YDS.
3/4"-0"		CR			
1-1/2"-0"		CR			
4"-0"	40%	CR		10,924	10,924
6"-0"		PR		498	498
24"-6"		RR		310	310
36"		RR			
TOTAL CUBIC YARDS OF ROCK:				11,732	11,732

1) MOBILIZATION & SET UP:

Lowboy Mobilized

Lowboy Mobilized							
EQUIPMENT	QUANTITY	RATE	COST	EQUIPMENT	QUANTITY	RATE	COST
Loading Hopper	1	\$553	\$553				
Screening Plants	1	\$553	\$553				
2 Stage Crusher	1	\$2,175	\$2,175				
Drill & Compressor	1	\$1,406	\$1,406				
Off Highway Dump Truck	2	\$774	\$1,548				
Excavator	1	\$1,406	\$1,406				
Front End Loader	1	\$805	\$805				
D6 Cat	1	\$778	\$778				
Powder	1	\$351	\$351				

SUB TOTAL FOR MOBILIZATION

\$9,574

EQUIPMENT SET UP	TIMES	RATE	COST
2 Stage Crusher	1	\$2,175	\$2,175
Screening Plants	1	\$293	\$293
Loading Hopper	1	\$293	\$293
Original Calibration	1	\$544	\$544

SUB TOTAL FOR SET UP COSTS

\$3,305

TOTAL MOBILIZATION & SET UP COSTS

\$12,879

2) CLEARING & GRUBBING

[illegible]

TOTAL CLEARING & GRUBBING COSTS**3) EXCAVATION**

MATERIAL DESCRIPTION	QUANTITY	UNIT	RATE	COST
Overburden Removal	1,000	C.Y.	\$3.50	\$3,500
Bench, Access Road and Drilling preparation	20	HRS	\$155.00	\$3,100
(Excavator/OR Truck)	20	HRS	\$125.00	\$2,500

TOTAL EXCAVATION COSTS

\$9,100

4) DEVELOP ROCK

ROCK SUMMARY			METHOD	%	QUANTITY	RATE	COST
Type	Cu. yd. Vol.	Weight	Ripping	20%	2,346	\$2.20	\$5,162
crushed	10,924	93%	Drill & shoot	80%	12,881	\$2.70	\$34,779
pit run	498	4%	Oversize red	5%	571	\$5.80	\$3,312
rip rap	310	3%	Other				
Total	11,732						
reject	4,370	37.2%					
TOTAL ROCK DEVELOPMENT COSTS							\$43,254

5) CALIBRATION & TESTING

DESCRIPTION	NO.	\$/TEST	COST
Calibrate			
Calibrate			
Test	5	\$57.30	\$287
Test			

TOTAL CALIBRATION & TESTING COSTS

\$287

6) FEEDING & LOADING

DESCRIPTION		CU. YD. QUANTITY		COST CU. YD.		TOTAL COST
Dig & Feed Rock		15,294		\$0.78		\$11,907
Shot rock (loading/hauling) hrs.	C330	120		\$155.00		\$18,600
	ORx2	240		\$125.00		\$30,000

TOTAL FEEDING & LOADING COSTS

\$60,507

7) ROCK CRUSHING

ROCK SIZE	ROCK TYPE	CU. YD. QUANTITY	CRUSHER TYPE	HOURLY PRODUCTION	RATE CU. YD.	TOTAL COST
4"-0"	crushed	10,924	2 stage w/s	140	\$2.48	\$27,076

TOTAL ROCK CRUSHING COSTS

\$27,076

8) STOCKPILING

STOCKPILE SITE PREPARATION

Equipment	Hours	Rate	Total
Dozer		\$113.00	
Compactor		\$77.00	
Grader		\$100.00	
Excavator		\$155.00	

SUB TOTAL

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

HAUL & STOCKPILE						
STOCKPILE LOCATION	SIZE	# of TRUCKS	CU. YDS.	RATE	COST	

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

SUB TOTAL

TOTAL STOCKPILING COSTS

9) MISCELLANEOUS COSTS

DESCRIPTION				COST
Load and haul reject material to Waste Area				\$4,370
\$1.00 /CY	4,370 CY			
D6 hours to work waste area	16 Hours	\$113.00 /Hour		\$1,808
Final Quarry Maintenance				
C330	4 Hours	\$155.00 /Hour		\$620

TOTAL MISCELLANEOUS COSTS \$6,798

10) GRAND TOTAL:

\$159,900

\$/Cubic Yard

\$14.64

Footnotes:

SUMMARY OF ROCK DEVELOPMENT AND CRUSHING COSTS

PROJECT NO. 4 Timber Sale Name: Wage Against the Machine
 Quarry: Green Mountain No. 2
 Location: NE1/4, Section 34, T5N, R6W, W.M. Shrink: 16%
 County: Clatsop
 By: C.Bangs Loading Hopper: Yes
 Date: 12/08/14

ROCK SIZE	REJECT	GRADATION	STOCKPILE CU. YDS.	TRUCK MEAS CU. YDS.	TOTAL CU. YDS.
3/4"-0"		CR			
1-1/2"-0"		CR			
4"-0"	40%	CR	10,000		11,600
6"-0"		PR			
24"-6"		RR			
36"		RR			
TOTAL CUBIC YARDS OF ROCK:			10,000		11,600

1) MOBILIZATION & SET UP:

Lowboy Mobilized							
EQUIPMENT	QUANTITY	RATE	COST	EQUIPMENT	QUANTITY	RATE	COST
Loading Hopper	1	\$553	\$553	Dump Trucks	4	\$163	\$652
Screening Plants	1	\$553	\$553	D8 Cat	1	\$1,406	\$1,406
2 Stage Crusher	1	\$2,175	\$2,175				
Drill & Compressor	1	\$1,406	\$1,406				
Off Highway Dump Truck	1	\$774	\$774				
Excavator	1	\$1,406	\$1,406				
Front End Loader	1	\$805	\$805				
D6 Cat	1	\$778	\$778				
Powder	1	\$351	\$351				

SUB TOTAL FOR MOBILIZATION

\$10,858

EQUIPMENT SET UP	TIMES	RATE	COST
2 Stage Crusher	1	\$2,175	\$2,175
Screening Plants	1	\$293	\$293
Loading Hopper	1	\$293	\$293
Original Calibration	1	\$544	\$544

SUB TOTAL FOR SET UP COSTS

\$3,305

TOTAL MOBILIZATION & SET UP COSTS

\$14,163

2) CLEARING & GRUBBING

DESCRIPTION	QUANTITY	UNIT	RATE	COST
Clear & Grub				
C330	24	Hours	\$155	\$3,720
Off Highway	8	Hours	\$127	\$1,016
Pile & burn C330	16	Hours	\$155	\$2,480

TOTAL CLEARING & GRUBBING COSTS

\$7,216

3) EXCAVATION

MATERIAL DESCRIPTION	QUANTITY	UNIT	RATE	COST
Overburden Removal (Excavate, Load, and Haul)	6,000	C.Y.	\$3.50	\$21,000
CAT HRS @ WA	40	Hours	\$155.00	\$6,200
Waste Area Compaction	6,000	C.Y.	\$0.40	\$2,400

TOTAL EXCAVATION COSTS

\$29,600

4) DEVELOP ROCK

ROCK SUMMARY			METHOD	%	QUANTITY	RATE	COST
Type	Cu. yd. Vol.	Weight	Ripping	20%	2,320	\$2.20	\$5,104
crushed	11,600	100%	Drill & shoot	80%	12,992	\$2.70	\$35,078
pit run	0	0	Oversize red	5%	580	\$5.80	\$3,364
rip rap	0	0	Other				
Total	11,600						
reject	4,640	40.0%					

TOTAL ROCK DEVELOPMENT COSTS

\$43,546

5) CALIBRATION & TESTING

DESCRIPTION	NO.	\$/TEST	COST
Calibrate			
Calibrate			
Test	5	\$57.30	\$287
Test			

TOTAL CALIBRATION & TESTING COSTS

\$287

6) FEEDING & LOADING

DESCRIPTION	CU. YD. QUANTITY	COST CU. YD.	TOTAL COST
Dig & Feed Rock	16,240	\$0.78	\$12,644

TOTAL FEEDING & LOADING COSTS

\$12,644

7) ROCK CRUSHING

ROCK SIZE	ROCK TYPE	CU. YD. QUANTITY	CRUSHER TYPE	HOURLY PRODUCTION	RATE CU. YD.	TOTAL COST
4"-0"	crushed	11,600	2 stage w/s	140	\$2.48	\$28,751

TOTAL ROCK CRUSHING COSTS

\$28,751

8) STOCKPIILING

STOCKPILE SITE PREPARATION

Equipment	Hours	Rate	Total
Dozer	2	\$113.00	\$226.00
Compactor		\$77.00	
Grader		\$100.00	
Excavator		\$155.00	

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

\$226.00

SUB TOTAL \$226

HAUL & STOCKPILE					
STOCKPILE LOCATION	SIZE	# of TRUCKS	CU. YDS.	RATE	COST
1. _____					
2. _____					
3. Green Mountain	4"-0"	4	11,600	\$1.67	\$19,365
4. _____					
5. _____					
6. _____					

SUB TOTAL \$19,365

TOTAL STOCKPIILING COSTS \$19,591

9) MISCELLANEOUS COSTS

DESCRIPTION	COST
Load and haul reject material to Waste Area	\$9,280
\$2.00 /CY 4,640 CY	
D6 hours to work waste area 8 Hours	\$113.00 /Hour \$904
Compact Reject Material 4,640 CY	\$0.40 /CY \$1,856
Final Quarry Maintenance	
C330 4 Hours \$155.00 /Hour	\$620
Grader 2 Hours \$100.00 /Hour	\$200

TOTAL MISCELLANEOUS COSTS \$12,860

10) GRAND TOTAL: \$168,659

\$/Cubic Yard \$14.54

Footnotes:

Wage Against the Machine Project No. 5 Fill Vacating at Point V1 to V2

Description	Quantity	Rate	Cost
Remove fill @ Pt. "V2". Develop minimum 10' stream channel.			
Slope back material @ 1 1/2:1 (C330:\$/hr)	8	\$155.00	\$1,240.00
Spread grass seed and straw mulch (Laborer \$/hr)	4	\$40.00	\$160.00
Straw	10	\$10.00	\$100.00
Pasture seed mix (Annual Rye 33%, Orchard Grass 33%, Perennial Rye 34%) (\$/lb.)	10	\$1.40	\$14.00
Waterbar and block road (C330:\$/hr)	2	\$40.00	\$80.00
Move-In: Equipment on site, moved in with Project No. 1	0	\$0.00	\$0.00

Grand Total	\$1,594
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State Timber Sale Contract

No. 341-15-03

Wage Against the Machine

Test Drilling Costs

Test Drill Sites	Activity	# of Holes	Footage	Drill Hours	Rate	Equip Hours	Rate	Dollars
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Green Mountain #2 Quarry (Drill Site #1)

C315 Excavator	Build trail					4	\$101	\$404
Hydraulic Drill	Drilling	18	1080	12	\$307			\$3,684
Core Drilling	Drilling	3	240		\$50			\$12,000
C315 Excavator	Waterbar/Block					4	\$101	\$404
Mobilization								
C315								\$805
Hydraulic Drill	Mobilized with rock crushing.							
Core Drill Rig								\$1,500
Sub-Total								\$18,797

Military Site (Drill Site #2)

C315 Excavator	Build trail					4	\$101	\$404
Hydraulic Drill	Drilling	18	1080	12	\$307			\$3,684
Core Drilling	Drilling	2	180		\$50			\$9,000
C315 Excavator	Waterbar/Block					4	\$101	\$404
Mobilization								
C315	Mobilized from Site #1							\$805
Hydraulic Drill	Mobilized from Site #1							\$1,220
Core Drill Rig	Mobilized from Site #1							\$1,220
Sub-Total								\$16,737

Total Drilling Cost

\$35,534

Total Project

\$40,000

By: C.Bangs

Date: 12/22/14

Projects Road Maintenance Cost Summary

Sale: Wage Against the Machine
Date: 11-Dec-14
By: N. Haile

Type	Equipment/Rationale	Hours	Rate	Cost
Projects Road Maintenance	Grader 14G	37	\$100	\$3,700
	Dump Truck 12CY	20	\$79	\$1,580
	FE Loader C966	10	\$83	\$830
	Vibratory Roller	37	\$77	\$2,849
	Water Truck 2,500 gallon	37	\$89	\$3,293
Total				\$12,252

Production Rates	Miles/day	Distance(miles)	Days
Grader	1.5	5.6	3.7
Vibratory Roller	1.5	5.6	3.7
Wage Road, Stanley Creek Road, Buster Creek Road, Green Mountain Road, Wageland Road			

*Includes Project No. 4 maintenance from Green Mountain No. 2 quarry to Green Mountain Stockpiles.

Road Maintenance Cost Summary

Sale: Wage Against the Machine
Date: 11-Dec-14
By: N. Haile *FL*

MBF: 10,461
\$/MBF: \$2.51

Type	Equipment/Rationale	Move In	Times	Hours	Rate	Cost
Progressive Operations 1st Entry	Grader 14G	\$778	1	14	\$100	\$2,178
	Dump Truck 12CY x 2	\$163	1	14	\$79	\$1,269
	FE Loader C966	\$778	1	14	\$83	\$1,940
Progressive Operations 2st Entry	Grader 14G	\$778	1	14	\$100	\$2,178
	Dump Truck 12CY x 2	\$163	1	14	\$79	\$1,269
	FE Loader C966	\$778	1	14	\$83	\$1,940
Final Haul Maintenance Haul Route	Grader 14G	\$778	1	24	\$100	\$3,178
	Dump Truck 12CY	\$163	1	24	\$79	\$2,059
	Vibratory Roller	\$778	1	24	\$77	\$2,626
	Water Truck 2,500 gallon	\$190	1	24	\$89	\$2,326
	FE Loader C966	\$778	1	24	\$83	\$2,770
	Rubber Tire Backhoe	\$321	1	16	\$77	\$1,553
Total						\$26,246

Progressive Ops. 1st Entry	Production Rates	Miles/day	Distance(miles)	Days
	Grader	2.5	3.6	1.4

Progressive Ops. 2nd Entry	Production Rates	Miles/day	Distance(miles)	Days
	Grader	2.5	3.6	1.4

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

Wage Against The Machine

TIMBER CRUISE REPORT

FY 2015

1. **Sale Area Location:** Areas 1, 2, 3, and 4 are located in portions of Sections 15, 16, 17, 20, 21, & 22 T5N, R6W, W.M., Clatsop County, Oregon.

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

3. **Sale Acreage by Area:**

Area	Treatment	Gross Acres	Existing R/W	New R/W*	Stream Buffer	Net Acres	Survey Method
1	Modified Clearcut	70	8	0	11	51	GIS
2	Modified Clearcut	49	1	0	17	31	GIS
3	Modified Clearcut	35	3	1	8	23	GIS
4	Modified Clearcut	111	4	2	20	85	GIS
5	Right-of-Way	3	0	0	0	3	GIS
TOTALS		268	16	3	56	193	

4. **Cruisers and Cruise Dates:** Areas 1, 2, 3, and 4 were cruised by Nick Haile, David Rygell, Derek Bangs, on September 23 through the 26, 2014.

5. Cruise Method and Computation:

Areas 1, 2, 3, and 4 are Modified Clearcut units and were variable plot cruised using a 40 BAF. The plots are located on a 4 chain by 8 chain grid, with every third plot measured and graded. A total of 60 plots were sampled, with 22 measured and graded plots, and 38 count plots. Alder and maple were graded on two of the count plots because of the rarity of the species in the cruise; this meant that those count plots were regarded as cruise plots.

All cruisers used Corvallis MicroTechnology (CMT) and/or Allegro data collectors, and were downloaded to the Atterbury Super A.C.E. program in District for computing. See the attached Cruise Design for more details on the cruise method. The cruise calculations were processed in the Astoria district office.

AREA	CRUISE	TRACT	TYPE	ACRES
1, 2, 3, 4	T5NR6W21	00MC	TAKE	190
5	T5NR6W21	RIGHT-OF-WAY	RW	3

6. **Timber Description:** Areas 1, 2, 3, and 4 are modified clearcut units, approximately 75 year-old, consisting of Douglas-fir, with minor amounts of western hemlock, red alder, and maple. The average Douglas-fir tree size to be harvested is 24.4 inches DBH, with an average height of 94 feet to a merchantable top (40% of DBH). The average volume (net) is approximately 54 MBF/acre.

Area 5 R/W is similar to the timber description mentioned above for all areas. The average volume (net) is approximately 55 MBF/acre.

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

Area	Estimated CV	Target SE%	Actual CV	Actual SE%
1, 2, 3, and 4	50%	8%	35.4%	4.6%

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

Species	DBH	Net Vol. MBF	2 Saw	3 Saw	4 Saw	Camp Run	% D & B	% Sale
Douglas-fir	24.4	9,619	8,491	943	185	0	2.9%	92%
Hemlock/True-fir	12.6	330	220	83	27	0	9.5%	3%
Red Alder	17.1	499	0	0	0	499	<1%	4%
Maple	17.7	11	0	0	0	11	37.5%	<1%
Cedar	23.1	2	2	0	0	0	<1%	<1%
TOTALS		10,461						

9. Approvals:

Prepared by: Nick Haile Date: 10/01/14

Unit Forester Approval:  Date: 10/3/14

- 10. Attachments:**
- Cruise Designs and Maps – 3 pages
 - Volume Report - 3 pages
 - Statistics Reports - 3 pages
 - Stand Table Summary – 2 pages
 - Log Stock Tables - 3 pages

X:\Jewell_Unit\Timber Sales\2015\Wage Against the Machine\Sale Prep\WATM_CruiseReport.docx

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Wage Against the Machine **Area(s):** 1, 2, 3, and 4

Harvest Type: Modified Clearcut

Approx. Cruise Acres: 193 **Estimated CV%:** 50 Net BF or BA/Acre **SE% Objective:** 8

Planned Sale Volume: 10,586 MBF **Estimated Sale Area Value/Acre:** \$20,569/ac

A. Cruise Goals: (a) Grade minimum 100 conifer 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; Half point) (circle one)
Cruise Line Direction(s) N/S (Areas 1 & 4), EW (Areas 2 & 3)
Cruise Line Spacing 8 chains
Cruise Plot Spacing 4 chains
Grade/Count Ratio 2:1

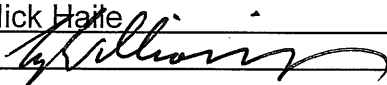
Record all hardwood as camp run. Record all cedar as leave. Record all snags as SN and record diameter & total height only on grade plots. If plot lands in buffer then offset at least 1/2 chain outside the buffer.

C. Tree Measurements:

- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 10" for hardwoods. Record dbh to nearest 1/2" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.
- 2. Bole Length:** Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.
- 3. Top Cruise Diameter (TCD):** Minimum top outside bark is 7" 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); DL (Douglas-fir over 30" dbh); HL (Western hemlock over 30" dbh); SL (Sitka spruce over 30" dbh); CL (Western red cedar over 30" dbh); NFL (Noble fir over 30" dbh); SFL (Silver fir over 30" dbh)
B. Sort: Use code "1" (Domestic).
C. Grade: A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; R = Camp Run; 0 = Cull
- 7. Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally results in higher breakage percentages than gentler topography, and hemlock generally breaks more than D-fir and spruce.
- 8. Standard Field Procedures:** Plot Type Cruises: Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at intervisible points, not to exceed 100' apart. On "measure/grade" plots write the tree number and/or tree diameter on at least the first measured tree (clockwise from the line direction) in yellow paint. All trees on the plot may be marked this way, if the cruiser chooses.
ITS and 100% Cruises: Mark cruise "strips" with various colored flagging (not pink). Mark trees measured and graded with yellow paint.
- 9. Cruising Equipment:** Relaskop, Rangefinder, Logger's Tape (with dbh on back), Biltmore Stick, Compass, Cruise Cards in Tatum OR Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging
- 10. Attachments:** A. Cruise Map (showing cruise unit boundaries, cruise lines and plot locations, legal description and section lines, BAF or plot size, measure/count plot ratio, north arrow, and scale.

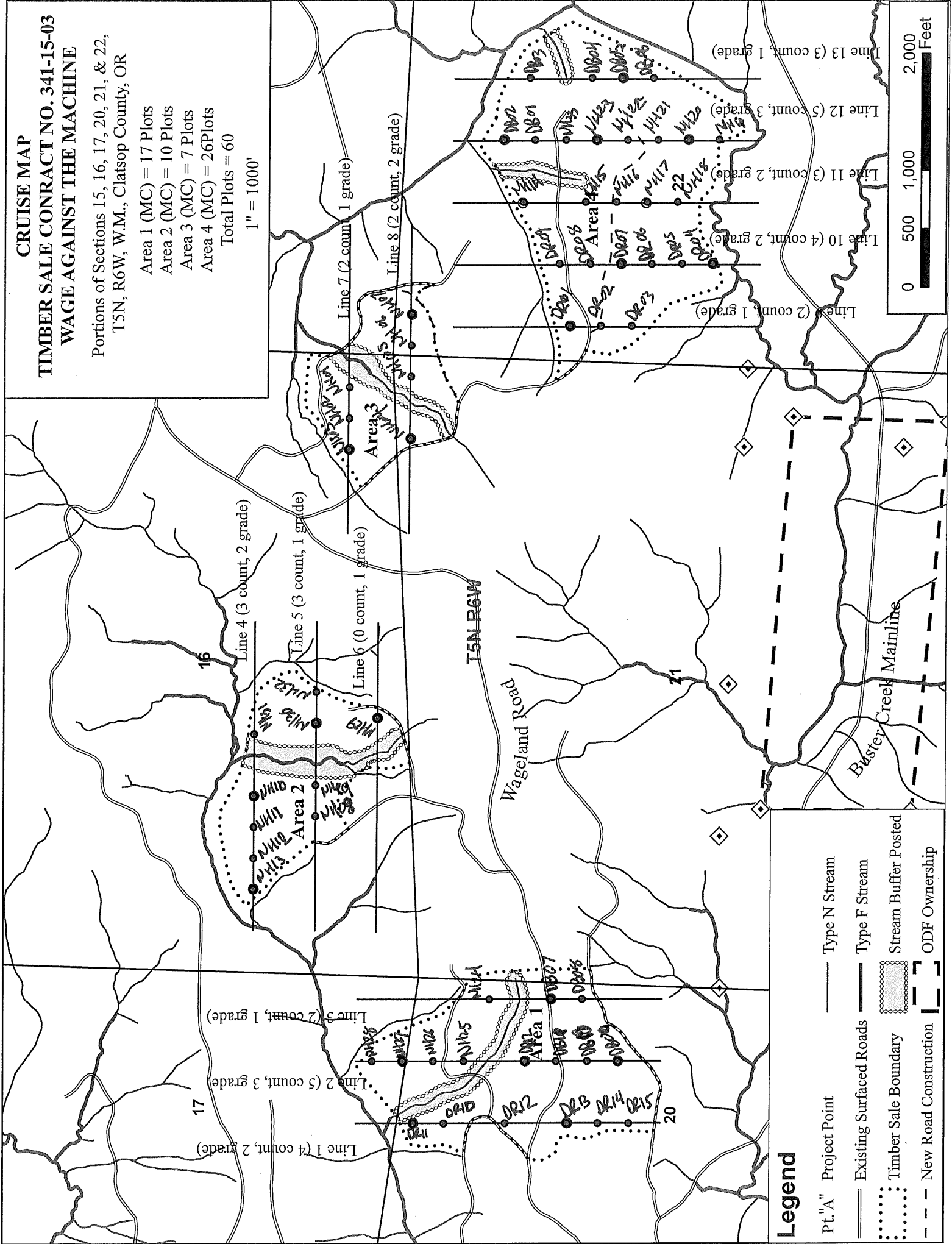
Cruise Design by: Nick Harte
Approved by: 
Date: 9/03/14

CRUISE MAP

TIMBER SALE CONTRACT NO. 341-15-03 WAGE AGAINST THE MACHINE

Portions of Sections 15, 16, 17, 20, 21, & 22,
T5N, R6W, W.M., Clatsop County, OR

Area 1 (MC) = 17 Plots
Area 2 (MC) = 10 Plots
Area 3 (MC) = 7 Plots
Area 4 (MC) = 26 Plots
Total Plots = 60
1" = 1000'



Legend

- Pt. "A" Project Point
- Existing Surfaced Roads
- Timber Sale Boundary
- New Road Construction
- Type N Stream
- Type F Stream
- Stream Buffer Posted
- ODF Ownership

TC		PSPCSTGR Species, Sort Grade - Board Foot Volumes (Project)																	
T05N R06W S21 TyRW3.00 T05N R06W S21 TyTAKE190.00					Project: WAGEMACH Acres193.00										Page1 Date12/31/2014 Time7:53:27AM				
Spp	So Gr T rt ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent of Net Board Foot Volume								Average Log			Logs Per /Acre	
							Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf		
			4-5	6-11	12-16		17+	12-20	21-30	31-35	36-99								
H	DOCU		100.0	152											16		0.00	5.2	
H	DO2S	66	1.3	1,154	1,139	220			50	50			12	88	38	449	2.62	2.5	
H	DO3S	25	2.7	443	431	83		100				4	16	80	37	100	0.86	4.3	
H	DO4S	9		141	141	27	34	66			15	85			26	10	0.26	13.6	
H Totals		3	9.5	1,890	1,711	330	3	31	33	33	1	8	12	78	27	67	0.70	25.7	
D	DOCU		100.0	1,043											10		0.00	4.3	
D	DO2S	88	.9	44,412	43,994	8,491		3	27	69	2	2	6	90	38	453	2.48	97.2	
D	DO3S	10		4,887	4,887	943		98	2		4	16	24	57	33	98	0.87	49.9	
D	DO4S	2	1.2	971	959	185	26	74			23	47		30	26	30	0.46	31.9	
D Totals		92	2.9	51,313	49,840	9,619	1	14	24	61	2	4	8	85	34	272	1.77	183.2	
A	DOCR	100		2,587	2,587	499	2	54	44		2	12	46	40	30	99	0.95	26.1	
A Totals		5		2,587	2,587	499	2	54	44		2	12	46	40	30	99	0.95	26.1	
C	DO2S	74		9	9	2		82	18				100		40	366	2.12	.0	
C	DO3S	21		2	2	0		100					20	80	38	136	0.92	.0	
C	DO4S	5		0	0	0		100				100			24	40	0.52	.0	
C Totals		0		11	11	2		25	61	13		4	4	92	36	215	1.45	.1	
M	DOCU		100.0	33											10		0.00	.5	
M	DOCR	100		55	55	11		100					100		27	43	0.73	1.3	
M Totals		0	37.9	88	55	11		100					100		22	32	0.64	1.7	
Totals			3.0	55,890	54,205	10,462	1	16	26	57	2	5	10	83	33	229	1.59	236.8	

T		Species, Sort Grade - Board Foot Volumes (Type)										Page		1						
TSPCSTGR		Project: WAGEMACH										Date		12/31/2014						
												Time		7:54:11AM						
T05N R06W S21 TRW										T05N R06W S21 TRW										
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt											
05N	06W	21	1234	RW	3.00	60	133	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 Ft	Bd Ft	CF/ Lf		
D	DO	CU		00.0	1,043									10		0.00	4.3			
D	DO	2S	88	.9	44,412	43,994	132	3	27	69	2	2	6	90	38	453	2.48	97.2		
D	DO	3S	10		4,887	4,887	15	98	2		4	16	24	57	33	98	0.87	49.9		
D	DO	4S	2	1.2	971	959	3	26	74		23	47		30	26	30	0.46	31.9		
D Totals			91	2.9	51,313	49,840	150	1	14	24	61	2	4	8	85	34	272	1.77	183.2	
A DO CR			100		2,587	2,587	8	2	54	44		2	12	46	40	30	99	0.95	26.1	
A Totals			5		2,587	2,587	8	2	54	44		2	12	46	40	30	99	0.95	26.1	
H	DO	CU		00.0	152										16		0.00	5.2		
H	DO	2S	66	1.3	1,154	1,139	3		50	50				12	88	38	449	2.62	2.5	
H	DO	3S	25	2.7	443	431	1	100				4	16	80	37	100	0.86	4.3		
H	DO	4S	9		141	141	0	34	66		15	85			26	10	0.26	13.6		
H Totals			3	9.5	1,890	1,711	5	3	31	33	33	1	8	12	78	27	67	0.70	25.7	
C	DO	2S	74		548	548	2		82	18				100	40	366	2.12	1.5		
C	DO	3S	21		155	155	0	100					20	80	38	136	0.92	1.1		
C	DO	4S	5		31	31	0	100			100				24	40	0.52	.8		
C Totals			1		735	735	2	25	61	13		4	4	92	36	215	1.45	3.4		
M	DO	CU		00.0	33										10		0.00	.5		
M	DO	CR	100		55	55	0	100					100		27	43	0.73	1.3		
M Totals			0	37.9	88	55	0	100					100		22	32	0.64	1.7		
Type Totals					3.0	56,614	54,929	165	1	17	26	57	2	5	10	83	33	229	1.58	240.1

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)														Page 1		
		Project: WAGEMACH														Date 12/31/2014	Time 7:54:11AM	
T05N R06W S21 TTAKE										T05N R06W S21 TTAKE								
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt									
05N	06W	21	1234	TAKE	190.00	60	128	1	W									
S So Gr T rt ad Spp		% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre
							Log Scale Dia.				Log Length				Ln	Bd	CF/	
							4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	Ft	Lf	
D	DO	CU		00.0	1,043										10		0.00	4.3
D	DO	2S	88	.9	44,412	43,994	8,359	3	27	69	2	2	6	90	38	453	2.48	97.2
D	DO	3S	10		4,887	4,887	928	98	2		4	16	24	57	33	98	0.87	49.9
D	DO	4S	2	1.2	971	959	182	26	74		23	47		30	26	30	0.46	31.9
D Totals		92	2.9	51,313	49,840	9,470	1	14	24	61	2	4	8	85	34	272	1.77	183.2
A	DO	CR	100		2,587	2,587	492	2	54	44	2	12	46	40	30	99	0.95	26.1
A Totals		5		2,587	2,587	492	2	54	44		2	12	46	40	30	99	0.95	26.1
H	DO	CU		00.0	152										16		0.00	5.2
H	DO	2S	66	1.3	1,154	1,139	216		50	50			12	88	38	449	2.62	2.5
H	DO	3S	25	2.7	443	431	82	100				4	16	80	37	100	0.86	4.3
H	DO	4S	9		141	141	27	34	66		15	85			26	10	0.26	13.6
H Totals		3	9.5	1,890	1,711	325	3	31	33	33	1	8	12	78	27	67	0.70	25.7
M	DO	CU		00.0	33										10		0.00	.5
M	DO	CR	100		55	55	10	100					100		27	43	0.73	1.3
M Totals		0	37.9	88	55	10	100						100		22	32	0.64	1.7
Type Totals			3.0	55,879	54,194	10,297	1	16	26	57	2	5	10	83	33	229	1.59	236.7

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT	WAGEMAC		DATE	12/31/2014		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
05N	06W	21	1234	00MC	193.00	60	417	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL				60	417	6.9				
CRUISE				24	139	5.8	20,727	.7		
DBH COUNT										
REFOREST										
COUNT				36	265	7.4				
BLANKS										
100 %										
STAND SUMMARY										
SAMPLE		TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
TREES		/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR		99	68.9	24.4	94	223.3	51,313	49,840	11,237	11,071
R ALDER		14	13.0	17.1	61	20.7	2,587	2,587	734	734
WHEMLOCK		13	19.3	12.6	37	16.7	1,890	1,711	526	487
SNAG		6	4.4	23.0	61	12.7				
WR CEDAR		5	1.1	23.1	110	3.3	735	735	176	176
BL MAPLE		2	.8	17.7	53	1.3	88	55	32	25
TOTAL		139	107.4	21.8	78	278.0	56,614	54,929	12,704	12,494
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		69.3	7.0	1,045	1,123	1,201				
R ALDER		48.1	13.3	194	224	253				
WHEMLOCK		139.9	40.3	234	392	549				
SNAG										
WR CEDAR		46.3	23.0	548	712	876				
BL MAPLE				70	70	70				
TOTAL		88.5	7.5	819	885	952	312	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	
DOUG FIR		49.6	6.4	64	69	73				
R ALDER		248.6	32.1	9	13	17				
WHEMLOCK		213.2	27.5	14	19	25				
SNAG		198.1	25.5	3	4	5				
WR CEDAR		774.6	99.9	0	1	2				
BL MAPLE		556.4	71.8	0	1	1				
TOTAL		39.2	5.1	102	107	113	61	15	7	
CL:	68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		44.8	5.8	210	223	236				
R ALDER		240.4	31.0	14	21	27				
WHEMLOCK		199.0	25.7	12	17	21				
SNAG		197.1	25.4	9	13	16				
WR CEDAR		774.6	99.9	0	3	7				
BL MAPLE		543.1	70.0	0	1	2				
TOTAL		27.3	3.5	268	278	288	30	7	3	
CL:	68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		45.2	5.8	46,933	49,840	52,747				
R ALDER		250.1	32.3	1,753	2,587	3,422				
WHEMLOCK		280.4	36.2	1,092	1,711	2,330				
SNAG										

TC TSTATS				STATISTICS				PAGE	2
				PROJECT	WAGEMAC			DATE	12/31/2014
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
05N	06W	21	1234	00MC	193.00	60	417	1	W
CL: 68.1 %				COEFF			NET BF/ACRE		# OF PLOTS REQ.
SD: 1.0		VAR.	S.E.%	LOW	AVG	HIGH	5	10	INF. POP.
									15
WR CEDAR		774.6	99.9	1	735	1,469			
BL MAPLE		556.4	71.8	15	55	94			
TOTAL		35.4	4.6	52,423	54,929	57,434	50	12	6

TC PSTATS			PROJECT STATISTICS							PAGE	1	
			PROJECT		WAGEMAC			DATE			12/31/2014	
TWP	RGE	SC	TRACT	TYPE		ACRES		PLOTS	TREES	CuFt	BdFt	
05N	06	21	1234	RW		193.00		120	791	1	W	
05N	06W	21	1234	TAKE								
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES		PERCENT SAMPLE TREES				
TOTAL			120	791	6.6							
CRUISE			47	261	5.6	19,665		1.3				
DBH COUNT												
REFOREST												
COUNT			72	504	7.0							
BLANKS			1									
100 %												
STAND SUMMARY												
			SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUG FIR			198	68.9	24.4	94		223.3	51,313	49,840	11,237	11,071
R ALDER			28	13.0	17.1	61		20.7	2,587	2,587	734	734
WHEMLOCK			26	19.3	12.6	37		16.7	1,890	1,711	526	487
WR CEDAR			5	.0	23.1	110		.1	11	11	3	3
BL MAPLE			4	.8	17.7	53		1.3	88	55	32	25
TOTAL			261	101.9	21.7	79		262.1	55,890	54,205	12,531	12,320
CONFIDENCE LIMITS OF THE SAMPLE												
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR												
CL	68.1	COEFF		SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
DOUG FIR			69.2	4.9	1,068	1,123	1,178					
R ALDER			47.2	9.1	203	224	244					
WHEMLOCK			137.0	27.4	284	392	499					
WR CEDAR			46.3	23.0	548	712	876					
BL MAPLE					70	70	70					
TOTAL			84.1	5.2	881	929	978	282	71	31		
CL	68.1	COEFF		TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
DOUG FIR			119.1	10.9	61	69	76					
R ALDER			358.1	32.7	9	13	17					
WHEMLOCK			311.2	28.4	14	19	25					
WR CEDAR			1095.4	99.9	0	0	0					
BL MAPLE			777.6	70.9	0	1	1					
TOTAL			114.9	10.5	91	102	113	527	132	59		
CL	68.1	COEFF		BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
DOUG FIR			115.4	10.5	200	223	247					
R ALDER			347.2	31.7	14	21	27					
WHEMLOCK			292.6	26.7	12	17	21					
WR CEDAR			1095.4	99.9	0	0	0					
BL MAPLE			759.2	69.2	0	1	2					
TOTAL			107.4	9.8	236	262	288	460	115	51		
CL	68.1	COEFF		NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
DOUG FIR			115.7	10.6	44,578	49,840	55,102					
R ALDER			360.1	32.8	1,737	2,587	3,437					
WHEMLOCK			400.8	36.6	1,086	1,711	2,337					
WR CEDAR			1095.4	99.9	0	11	23					
BL MAPLE			777.6	70.9	16	55	94					
TOTAL			110.7	10.1	48,734	54,205	59,676	489	122	54		

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT	WAGEMAC	DATE 12/31/2014					
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
05N	06W	21	1234	LEAV	190.00	60	24	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
PLOTS		TREES									
TOTAL		60		24		.4					
CRUISE		6		11		1.8		1,049			
DBH COUNT								1.0			
REFOREST											
COUNT		9		13		1.4					
BLANKS		45									
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
SNAG		6		4.4		23.0	61	12.7			
WR CEDAR		5		1.1		23.1	110	3.3		735	735
TOTAL		11		5.5		23.1	71	16.0		735	735
										176	176
										176	176
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	
SNAG											
WR CEDAR		46.3		23.0		548 712		876			
TOTAL		131.7		41.6		189 324		458		762 190 85	
CL:	68.1 %	COEFF		TREES/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%		S.E.%	LOW	AVG	HIGH	5 10		15	
SNAG		198.1		25.5		3 4		5			
WR CEDAR		774.6		99.9		0 1		2			
TOTAL		216.7		28.0		4 6		7		1,876 469 208	
CL:	68.1 %	COEFF		BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%		S.E.%	LOW	AVG	HIGH	5 10		15	
SNAG		197.1		25.4		9 13		16			
WR CEDAR		774.6		99.9		0 3		7			
TOTAL		216.9		28.0		12 16		20		1,878 470 209	
CL:	68.1 %	COEFF		NET BF/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%		S.E.%	LOW	AVG	HIGH	5 10		15	
SNAG											
WR CEDAR		774.6		99.9		1 735		1,469			
TOTAL		774.6		99.9		1 735		1,469		23,959 5,990 2,662	

TC TSTNDSUM				Stand Table Summary											
				Project		WAGEMAC									
T05N R06W S21 TLEAV												T05N R06W S21 TLEA			
Twp	Rge	Sec	Tract	Type				Acres		Plots	Sample Trees		Page: 1		
05N	06W	21	1234	LEAV				190.00		60	11		Date: 12/31/20		
												Time: 7:56:57AM			
S Spc	T	Sample		Av	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net	Net	T o t a l s		
		DBH	Trees	FF 16'				Ht Tot	Net Cu.Ft.		Net Bd.Ft.	Cu.Ft. Acre	Bd.Ft. Acre	Tons	Cunits
C		21	1	86	144	.277	.67	.83	40.7	160.0		34	133	64	25
C		22	2	85	148	.505	1.33	1.52	45.5	188.3		69	285	131	54
C		23	1	86	158	.231	.67	.69	53.3	220.0		37	153	70	29
C		31	1	82	163	.127	.67	.38	96.0	430.0		37	164	70	31
C		Totals	5	85	151	1.141	3.33	3.42	51.5	214.8		176	735	335	140
SN		18	2	87	51	2.389	4.22								
SN		22	1	89	48	.800	2.11								
SN		27	2	88	98	1.062	4.22								
SN		55	1	83	30	.128	2.11								
SN		Totals	6	87	61	4.379	12.67								
Totals			11	87	80	5.519	16.00	3.42	51.5	214.8		176	735	335	140

TC		PSTNDSUM		Stand Table Summary										Page		1	
														Date:		12/31/2014	
T05N R06W S21 TyRW3.00 T05N R06W S21 TyTAKE190.00				Project						WAGEMACH				Time:		7:57:21AM	
				Acres						193.00				Grown Year:			
S Spec	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		11	2	85	27	3.418	2.26	3.42	9.0	20.0		31	68		59	13	
D		13	2	86	49	2.447	2.26	2.45	19.0	50.0		47	122		90	24	
D		14	4	87	87	4.221	4.51	8.44	19.0	62.5		160	528		310	102	
D		15	2	83	47	1.838	2.26	1.84	23.0	30.0		42	55		82	11	
D		16	6	88	105	4.847	6.77	9.69	28.0	101.7		271	986		524	190	
D		17	4	87	103	2.862	4.51	5.72	32.8	112.5		187	644		362	124	
D		18	6	89	120	3.830	6.77	10.21	30.4	112.5		310	1,149		599	222	
D		19	8	86	122	4.583	9.02	12.60	33.7	124.5		425	1,570		820	303	
D		20	2	87	126	1.034	2.26	3.10	35.7	140.0		111	434		214	84	
D		22	16	87	132	6.837	18.05	20.51	44.1	188.8		905	3,871		1,747	747	
D		24	4	89	132	1.436	4.51	4.31	50.7	226.7		218	977		421	188	
D		25	8	88	134	2.647	9.02	7.94	58.4	255.0		464	2,025		895	391	
D		26	18	87	138	5.507	20.30	16.52	63.2	278.1		1,044	4,595		2,016	887	
D		27	12	86	138	3.404	13.54	10.78	63.7	279.5		687	3,013		1,326	581	
D		28	10	85	153	2.638	11.28	7.91	80.5	371.3		637	2,939		1,230	567	
D		29	8	89	150	1.967	9.02	5.90	86.5	415.0		510	2,449		985	473	
D		30	14	87	144	3.217	15.79	9.65	88.4	413.8		853	3,994		1,646	771	
D		31	20	86	152	4.304	22.56	13.77	90.4	434.7		1,246	5,987		2,404	1,155	
D		32	4	83	148	.808	4.51	2.42	99.7	461.7		242	1,119		466	216	
D		33	4	85	132	.760	4.51	2.28	97.7	451.7		223	1,029		430	199	
D		34	8	85	130	1.431	9.02	5.01	84.4	387.9		423	1,943		816	375	
D		35	8	84	151	1.351	9.02	4.39	112.8	541.5		495	2,377		955	459	
D		36	6	86	140	.957	6.77	2.55	117.5	580.0		300	1,481		579	286	
D		37	2	87	129	.302	2.26	.91	121.3	600.0		110	544		212	105	
D		38	4	87	146	.573	4.51	1.72	129.8	678.3		223	1,166		431	225	
D		39	2	86	171	.272	2.26	1.09	127.8	690.0		139	751		268	145	
D		41	2	86	140	.246	2.26	.74	157.3	793.3		116	586		224	113	
D		42	2	89	126	.234	2.26	.70	158.0	830.0		111	584		215	113	
D		46	2	84	129	.195	2.26	.59	129.7	616.7		76	362		147	70	
D		47	2	86	171	.187	2.26	.75	186.0	1025.0		139	768		269	148	
D		48	2	86	140	.180	2.26	.54	213.0	1053.3		115	567		221	109	
D		49	2	86	171	.172	2.26	.69	199.3	1107.5		137	763		265	147	
D		51	2	72	166	.159	2.26	.48	153.3	833.3		73	398		141	77	
D		Totals	198	87	119	68.865	223.33	179.63	61.6	277.5		11,071	49,840		21,368	9,619	
A		13	4	86	79	3.203	2.95	6.41	15.8	52.5		101	336		195	65	
A		14	2	87	91	1.381	1.48	2.76	21.5	85.0		59	235		115	45	
A		16	2	87	92	1.057	1.48	2.11	27.5	100.0		58	211		112	41	
A		17	4	86	91	1.873	2.95	3.75	31.7	107.5		119	403		230	78	
A		18	4	86	79	1.671	2.95	4.18	26.4	96.0		110	401		213	77	
A		19	2	87	83	.750	1.48	1.50	37.0	115.0		55	172		107	33	
A		20	2	87	33	.677	1.48	.68	30.0	30.0		20	20		39	4	
A		21	4	86	81	1.227	2.95	3.07	36.0	134.0		110	411		213	79	
A		22	4	86	78	1.118	2.95	1.68	59.7	236.7		100	397		193	77	
A		Totals	28	86	81	12.957	20.67	26.13	28.1	99.0		734	2,587		1,417	499	
H		8	6	83	31	11.018	3.85	7.35	4.0			29			57		
H		10	2	87	31	2.351	1.28	2.35	7.0	10.0		16	24		32	5	
H		14	4	86	68	2.399	2.56	3.60	20.0	56.7		72	204		139	39	
H		17	4	82	77	1.627	2.56	2.44	27.7	80.0		68	195		130	38	
H		18	2	88	105	.725	1.28	1.45	39.5	150.0		57	218		111	42	
H		22	2	88	110	.486	1.28	1.46	44.0	186.7		64	272		124	52	
H		29	2	86	122	.280	1.28	.84	77.3	353.3		65	296		125	57	
H		32	2	80	110	.230	1.28	.69	85.0	346.7		59	239		113	46	

TC PSTNDSUM		Stand Table Summary										Page 2		
												Date: 12/31/2014		
T05N R06W S21 TyRW 3.00 T05N R06W S21 TyTAKE 190.00					Project WAGEMACH					Time: 7:57:21AM				
					Acres 193.00					Grown Year:				
S Spc T	Tot Sample FF Av DBH Trees 16' Ht				Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Net Cu.Ft. Bd.Ft.		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons Cunits MBF	
H	39	2	87	108	.155	1.28	.31	184.5	855.0		57	264	110	51
H	Totals	26	84	47	19.269	16.67	20.48	23.8	83.6		487	1,711	940	330
M	16	2	86	65	.477	.67	.95	14.0	35.0		13	33	26	6
M	20	2	85	40	.306	.67	.31	38.0	70.0		12	21	22	4
M	Totals	4	86	55	.783	1.33	1.26	19.8	43.5		25	55	48	11
C	21	1	86	144	.004	.01	.01	40.7	160.0		1	2	1	0
C	22	2	85	148	.008	.02	.02	45.5	188.3		1	4	2	1
C	23	1	86	158	.004	.01	.01	53.3	220.0		1	2	1	0
C	31	1	82	163	.002	.01	.01	96.0	430.0		1	3	1	0
C	Totals	5	85	151	.018	.05	.05	51.5	214.8		3	11	5	2
Totals		261	86	100	101.892	262.05	227.55	54.1	238.2		12,320	54,205	23,778	10,462

TC PLOGSTVB			Log Stock Table - MBF																
T05N R06W S21 TyRW T05N R06W S21 TyTAKE			3.00 190.00		Project: WAGEMACH Acres 193.00													Page 1 Date 12/31/2014 Time 7:57:55AM	
S T Spp	So Gr rt de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches												
							2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+	
H	DO CU	6	4	100.0															
H	DO CU	10	11	100.0															
H	DO CU	20	14	100.0															
H	DO 2S	32	27		27	8.3						10	17						
H	DO 2S	40	195	1.5	192	58.3					34		49	70	40				
H	DO 3S	25	3		3	1.0			3										
H	DO 3S	32	13		13	4.0				13									
H	DO 3S	36	8		8	2.5			8										
H	DO 3S	40	61	3.8	58	17.7			9	25	24								
H	DO 4S	15	4		4	1.2			2		2								
H	DO 4S	26	5		5	1.4			5										
H	DO 4S	27	5		5	1.4	5												
H	DO 4S	29	5		5	1.4		5											
H	DO 4S	30	9		9	2.8			9										
H	Totals		365	9.5	330	3.2	5	5	34	29	39	34	10	66	70	40			
D	DO CU	6	32	100.0															
D	DO CU	9	16	100.0															
D	DO CU	10	45	100.0															
D	DO CU	12	20	100.0															
D	DO CU	15	23	100.0															
D	DO CU	20	64	100.0															
D	DO 2S	19	27		27	.3					10	17							
D	DO 2S	20	118	5.1	112	1.2								38	37	36			
D	DO 2S	22	20		20	.2				7		13							
D	DO 2S	24	48	4.3	46	.5									46				
D	DO 2S	25	14		14	.1				6		8							
D	DO 2S	26	103	2.7	101	1.0							46		55				
D	DO 2S	27	8		8	.1					8								
D	DO 2S	30	8		8	.1					8								
D	DO 2S	32	540		536	5.6				46	47	62	76	71	235				
D	DO 2S	35	6		6	.1					6								
D	DO 2S	36	64	3.7	61	.6							61						
D	DO 2S	38	11		11	.1					11								
D	DO 2S	40	7,605		7,541	78.4			75	146	744	981	2193	2352	762	287			
D	DO 3S	15	4		4	.0					4								

Log Stock Table - MBF

T05N R06W S21 TyRW 3.00
T05N R06W S21 TyTAKE 190.00

Project: WAGEMACH
Acres 193.00

Page 3
Date 12/31/2014
Time 7:57:55AM

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	24	5		5	1.1			5									
A		DO	CR	26	4		4	.9			4									
A		DO	CR	30	4		4	.8		4										
A		DO	CR	32	191		191	38.3			13	28	61	56	33					
A		DO	CR	33	5		5	1.1			5									
A		DO	CR	34	32		32	6.5							32					
A		DO	CR	36	12		12	2.5			12									
A		DO	CR	38	26		26	5.2		7	19									
A		DO	CR	40	161		161	32.3					65	57	39					
A		Totals			499		499	4.8		11	81	40	149	114	104					
C		DO	2S	40	2		2	74.6					0	1	0	0				
C		DO	3S	32	0		0	1.9			0									
C		DO	3S	35	0		0	2.2				0								
C		DO	3S	40	0		0	17.0				0								
C		DO	4S	22	0		0	2.9			0									
C		DO	4S	27	0		0	1.4			0									
C		Totals			2		2	.0			0		0	0	1	0	0			
M		DO	CU	10	6	100.0														
M		DO	CR	32	11		11	100.0			11									
M		Totals			17	37.9	11	.1			11									
Total		All Species			10,787	3.0	10,462	100.0	5	65	318	498	907	992	1206	2442	2532	1174	323	

LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-15-03
WAGE AGAINST THE MACHINE
PORTIONS OF SECTIONS 15, 16, 17, 20, 21, & 22,
T5N, R6W, W.M., CLATSOP COUNTY, OREGON

Approximate Net Acres	MC Acres
Area 1 (MC) -	51
Area 2 (MC) -	31
Area 3 (MC) -	23
Area 4 (MC) -	85
Area 5 R/W (MC)	3
Total Sale Acreage =	193

Approximate Scale: 1"=1,000'

N

Logging Breakdown	Tractor	Cable
Area 1 (MC) -	100%	0%
Area 2 (MC) -	70%	30%
Area 3 (MC) -	100%	0%
Area 4 (MC) -	25%	75%
Area 5 R/W	100%	0%
Total=	55%	45%

