



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Shingle Wave
Sale 341-11-14

District: Astoria

Date: November 23, 2010

cost summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$732,356.62	\$122,825.52	\$855,182.14
		Project Work:	\$(68,286.00)
		Advertised Value:	\$786,896.14



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Shingle Wave
Sale 341-11-14

District: Astoria

Date: November 23, 2010

timber description

Location: Portions of Sections 4, 5, and 9, T7N, R6W, and Section 32, T8N, R6W, W.M., Clatsop County, Oregon.

Stand Stocking: 60%

SpecieName	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	15	0	97
Western Hemlock / Fir	17	0	96
Sitka Spruce	13	0	95
Alder (Red)	12	0	95

Volume by Grade	2S	3S	4S	Camprur	Total
Douglas - Fir	111	414	67	0	592
Western Hemlock / Fir	758	534	64	0	1,356
Sitka Spruce	442	1,318	342	0	2,102
Alder (Red)	0	0	0	414	414
Total	1,311	2,266	473	414	4,464



Timber Sale Appraisal
Shingle Wave
Sale 341-11-14

"STEWARDSHIP IN FORESTRY"

District: Astoria

Date: November 23, 2010

comments: Pond Values Used: 3rd Quarter Calendar Year 2010.

Expected Log Markets: Warrenton, Tillamook, Garibaldi, Forest Grove, Clatskanie, and Mist, OR; Morton and Longview, WA.

Western redcedar Stumpage Price = Pond Value minus Logging Cost
 $\$690.76/\text{MBF} = \$850.00/\text{MBF} - \$159.24/\text{MBF}$

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

FUEL COST ALLOWANCE = $\$3.00/\text{Gallon}$

HAULING COST ALLOWANCE

Hauling costs equivalent to $\$700$ daily truck cost.

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

Additional Logging Costs:

Branding and Painting: $\$1\text{MBF} \times 4,464 \text{ MBF} = \$4,464$

Log Loader Slash & Landing Piling (includes Move-In and Pile Materials) = $\$8,570$ (see attached appraisal)

Close Dirt Spur: $3\text{hrs} @ \$120/\text{hr} = \360

Machine washing for noxious weed compliance = $\$1,000$

TOTAL Other Costs (with Profit & Risk to be added) = $\$14,394$

Other Costs (No Profit & Risk added):

Removal of temporary stream crossings: (Move in 315C, labor, removal, and mobilization between sites) = $\$1,339$

Recreation trail rehab.: $4\text{hrs.} @ \$120/\text{hr} = \480

TOTAL Other Costs (No Profit @ Risk added) = $\$1,819$



Timber Sale Appraisal
Shingle Wave
Sale 341-11-14

"STEWARDSHIP IN FORESTRY"

District: Astoria

Date: November 23, 2010

logging conditions

combination#: 1 Douglas - Fir 48.00%
 Western Hemlock / Fir 48.00%
 Sitka Spruce 48.00%
 Alder (Red) 48.00%

yarding distance: Medium (800 ft) **downhill yarding:** No
logging system: Track Skidder **Process:** Stroke Delimber

tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF

loads / day: 8.0 **bd. ft / load:** 3,200

cost / mbf: \$56.18

machines: Stroke Delimber (B)

combination#: 2 Douglas - Fir 52.00%
 Western Hemlock / Fir 52.00%
 Sitka Spruce 52.00%
 Alder (Red) 52.00%

yarding distance: Short (400 ft) **downhill yarding:** No
logging system: Shovel **Process:** Manual Falling/Delimiting

tree size: Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF

loads / day: 9.0 **bd. ft / load:** 3,900

cost / mbf: \$71.36

machines: Shovel Logger



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Shingle Wave
Sale 341-11-14

District: Astoria

Date: November 23, 2010

logging costs

Operating Seasons:	2.00	Profit Risk:	17.00%
Project Costs:	\$68,286.00	Other Costs (P/R):	\$14,394.00
Slash Disposal:	\$0.00	Other Costs:	\$1,819.00

Miles of Road

Road Maintenance: \$6.79

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	4.0	4.5
Western Hemlock / Fir	\$0.00	3.0	3.5
Sitka Spruce	\$0.00	3.0	3.8
Alder (Red)	\$0.00	2.0	3.1



Timber Sale Appraisal
 Shingle Wave
 Sale 341-11-14

"STEWARDSHIP IN FORESTRY"

District: Astoria

Date: November 23, 2010

logging costs breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling	Other	Total
Douglas - Fir									
\$64.07	\$6.99	\$1.96	\$34.24	\$3.22	\$18.78	\$0.00	\$5.00	\$0.41	\$134.67
Western Hemlock / Fir									
\$64.07	\$7.06	\$1.96	\$59.26	\$3.22	\$23.05	\$0.00	\$5.00	\$0.41	\$164.03
Sitka Spruce									
\$64.07	\$7.13	\$1.96	\$55.10	\$3.22	\$22.35	\$0.00	\$5.00	\$0.41	\$159.24
Alder (Red)									
\$64.07	\$7.13	\$1.96	\$101.32	\$3.22	\$30.21	\$0.00	\$5.00	\$0.41	\$213.32

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$385.43	\$250.76	\$0.00
Western Hemlock / Fir	\$0.00	\$340.71	\$176.68	\$0.00
Sitka Spruce	\$0.00	\$323.05	\$163.81	\$0.00
Alder (Red)	\$0.00	\$510.00	\$296.68	\$0.00



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Shingle Wave
Sale 341-11-14

District: Astoria

Date: November 23, 2010

summary

Amortized

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

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	592	\$250.76	\$148,449.92
Western Hemlock / Fir	1,356	\$176.68	\$239,578.08
Sitka Spruce	2,102	\$163.81	\$344,328.62
Alder (Red)	414	\$296.68	\$122,825.52

Gross Timber Sale Value

Recovery: \$855,182.14

Prepared by: Jay Morey

Phone: 503-325-5451

Site Prep Appraisal

Sale Number: 341-11-14
 Sale Name: Shingle Wave
 Date: 08/26/2010

Vegetation Type/Zone	Vegetation Type/Zone Code	Production Rate (hr/ac)	Estimated Piles/Acre
Doug-fir	A	1.0	3.0
Hemlock/Fir	B	1.5	4.5
Hemlock/Spruce	C	2.0	6.0
Hemlock	D	2.0	6.0
Conifer/Hardwood	E	1.5	4.5
Whole Tree Yarding	F	0.5	0.5

Sale Area	Harvest Type	Veg Type/Zone	Ground Based Yarding Acres	Estimated Piling Hours/Area	Cost/Hour	Total Cost/Area	
1	MC	F	49.0	25	\$110.00	\$2,695.00	
4	MC	F	53.0	27	\$110.00	\$2,915.00	
In-unit Piling						Sub Total =	\$5,610.00
Sale Area	Number of Landings to be Piled	Cost/Landing Pile	Total Cost/Area	Number of In-Unit Piles	Material Cost/Pile	Total Cost/Area	
1	4	\$220.00	\$880.00	24.5	\$5.00	\$122.50	
4*	4	\$220.00	\$880.00	26.5	\$5.00	\$132.50	
Materials						Sub Total =	\$255.00
Landing Piling						Sub Total =	\$1,760.00
Move-In Allowance	Number of Move-In's	Total Move-In Allowance			Move-In	Sub Total =	\$945.00
\$945.00	1	\$945.00					
Grand Total =							\$8,570.00

*Cost includes separating firewood

Harvesting Road Maintenance Cost Summary

Sale: Shingle Wave
 Date: 26-Aug-10
 By: J. Morey

MBF: 4,464
 \$\$/MBF: \$6.79

FL

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost
Progressive Operations 1st Entry	Grader 14G	\$675	1	24	\$93	\$2,907
	Dump Truck 12CY	\$141	1	8	\$73	\$725
	FE Loader C966	\$675	1	8	\$77	\$1,291
Progressive Operations 2nd Entry	Grader 14G	\$675	1	8	\$93	\$1,419
Final Road Maintenance	Grader 14G	\$675	1	90	\$93	\$9,045
	Dump Truck 12CY x 2	\$141	2	20	\$73	\$3,202
	FE Loader C966	\$675	1	10	\$77	\$1,445
	Vibratory Roller	\$675	1	70	\$77	\$6,065
	Water Truck 2,500 gallo	\$165	1	45	\$83	\$3,900
	Labor				\$38	\$304
Total						\$30,303

*Final Road Maintenance Only

Production Rates

Production Rates	Miles/day	Distance(miles)	Days
Grader	2.5	6.0	2.4

Production Rates	Miles/day	Distance(miles)	Days
Grader	2.5	2.0	0.8

Production Rates	Miles/day	Distance(miles)	Days
Grader	1.5	13.5	9.0
Vibratory Roller*	1.5	13.5	9.0

Final Road Maintenance on portions of Shingle Mill Road, Shingle Shack Road, Nicolai Mainline, Microwave Road and associated spurs.

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Shingle Wave

NEW CONSTRUCTION:

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 1	1A to 1B, 2A to 2B	51.30	\$15,791.50
	3A to 3B, 4A to 4B	30.80	\$28,716.50
	TOTALS	82.10	\$44,508.00

ROAD IMPROVEMENT:

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 2	l1 to l2	84.00	
	l3 to l4	5.50	
	TOTALS	89.50	\$4,741.00

SPECIAL PROJECTS:

	<u>Description</u>	<u>Cost</u>
	Project road maintenance	\$12,646.00
	TOTAL	\$12,646.00

MOVE IN:

	<u>Equipment</u>	<u>Cost</u>
	D-8 Dozer x1 @ \$1,220	\$1,220.00
	10cy Dump Trucks (4@ \$141 each)	\$564.00
	20cy Dump Trucks (3@ \$166 each)	\$498.00
	Front End Loader - Medium (966)	\$675.00
	Grader (14G) @ \$675	\$675.00
	Vibratory Roller @ \$675	\$675.00
	Water Truck (2,500 gal.) @ \$165	\$165.00
	Excavator - Small (315) @ \$699	\$699.00
	Excavator (C330) @ \$1,220	\$1,220.00
	TOTAL	\$6,391.00

GRAND TOTAL \$68,286.00

Compiled By: Bryce Rodgers

Date: 08/24/2010

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Shingle Wave
 ROAD: 1A-1B(19.3) 2A-2B(32.0) 3A-3B(5.4) 4A-4B(25.4)

NEW CONSTRUCTION: 82.10 STATIONS 1.55 MILES
 IMPROVEMENT: _____ STATIONS _____ MILES

CLEARING & GRUBBING						
	Method	Acres/amount	X	Rate	=	Cost
2A-2B 0+00-11+00	Scatter stumps from old road (Dirt)	1.00	X	\$782.00	=	\$782.00
1A-1B, 2A-2B	Scattering (Dirt)	2.70	X	\$1,161.00	=	\$3,134.70
3A-3B, 4A-4B	Scattering (Rocked)	2.10	X	\$1,161.00	=	\$2,438.10
SUB TOTAL FOR CLEARING & GRUBBING						\$6,355

EXCAVATION						
	Material	Cy/amount	X	Rate	=	Cost
1A-1B, 2A-2B	Balanced construction \$\$/sta.	\$1.30	X	\$165.00	=	\$8,464.50
3A-3B, 4A-4B	Balanced construction \$\$/sta.	30.80	X	\$165.00	=	\$5,082.00
PL 1B, PL 2B	Landing construction \$\$/landing	2.00	X	\$338.00	=	\$676.00
PL 3B, PL 4B	Landing construction \$\$/landing	2.00	X	\$338.00	=	\$676.00
1A-1B 14+80	construct temp. stream crossing (C315) \$\$/hr.	2.00	X	\$94.00	=	\$188.00
2A-2B 14+72	construct temp. stream crossing (C315) \$\$/hr.	4.00	X	\$94.00	=	\$376.00
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
SUB TOTAL FOR EXCAVATION						\$15,463

4A-4B

CULVERT MATERIALS AND INSTALLATION									
Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
8+00	18	30	\$17.64	\$529.20					
Other/miscellaneous:			Description	Quantity	Rate	Cost			
Culvert stakes & markers:			Culvert Marker	1	\$18.00	\$18.00			
SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION						\$547			

Subtotal of Clearing, Exc., Cuv. **\$22,365**

SURFACING		Subgrade prep:	Description	Stations/amount	x	Rate/ sta/amt	Cost
1A to 1B, 2A to 2B			Grade, Shape and Outslope 14'	51.30	x	\$15.93	\$817.21
3A to 3B, 4A to 4B			Grade, Shape and Outslope 14' rock outslope	30.80	x	\$15.93	\$490.64
			Subgrade Compaction	30.80	x	\$17.52	\$539.62

ROAD SEGMENT 1A-1B				POINT TO POINT	Sta. to Sta.	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	1A-1B Volume (CY) per	0+00 to 19+30 Number of			
Junctions	6"-0" pit-run	0+00	8	junction 22	junctions 1	22	\$10.45	\$230
Stream Crossing	6"-0" pit-run	14+80	8	crossing 44	crossings 1	44	\$10.45	\$460
Total Rock for Road Segment:						66		\$690

ROAD SEGMENT 2A-2B				POINT TO POINT	Sta. to Sta.	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A-2B Volume (CY) per	0+00 to 32+00 Number of			
Junctions	6"-0" pit-run	0+00	8	junction 22	junctions 1	22	\$10.45	\$230
Stream Crossing	6"-0" pit-run	14+72	8	crossing 44	crossings 1	44	\$10.45	\$460
Total Rock for Road Segment:						66		\$690

ROAD SEGMENT 3A-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-3B Volume (CY) per	0+00 to 5+40 Number of			
Base Rock	4"-0" Crushed	0+00-5+40	8	station 50	stations 5.4	270	\$8.79	\$2,373
Junction Rock	3/4"-0" Crushed	0+00	2	junction 11	junctions 1.0	11	\$8.79	\$97
Junction Rock	4"-0" Crushed	0+00	8	junction 22	junctions 1	22	\$8.79	\$193
Landing Rock	6"-0" pit-run	5+40	N/A	landing 66	landings 1	66	\$10.45	\$690
Total Rock for Road Segment:						369		\$3,353

ROAD SEGMENT 4A-4B				POINT TO POINT	Sta. to Sta.	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	4A-4B Volume (CY) per	0+00 to 25+40 Number of			
Base Rock	4"-0" Crushed	0+00-25+40	8	station 50	stations 25.40	1,270	\$8.79	\$11,163
		8+00-9+00, 11-00-12+00					\$8.79	
Traction Rock	3/4"-0" Crushed		2	station 13	stations 2	26		\$229
Turnouts	4"-0" Crushed	6+00, 13+00, 18+00, 22+00	8	TO 22	TO's 4	88	\$8.79	\$774
Turnarounds	4"-0" Crushed	22+00	8	TA 22	TA's 1	22	\$8.79	\$193
Landing Rock	6"-0" pit-run	25+40	N/A	landing 66	landings 1	66	\$10.45	\$690
Total Rock for Road Segment:						1,472		\$13,048

Processing:		Description	No sta	Rate/sta	Cost
		Water, Process & Compact: (4"-0" 1 lift)	30.80	\$49.02	\$1,510
		(3/4"-0" crushed 1 lift)	2.00	\$49.02	\$98

SUB TOTAL FOR SURFACING 264 1,672 37 1,973 1,973 **\$21,236**

SPECIAL PROJECTS		Description	Cost
		Develop Pit run rock \$2.30/cy@264cy	\$607
		6 1/2 oz. woven x 12.5' wide 2 sta. @ \$120/sta	\$240
		Mulch stream crossings 6 bales @ \$10.00/bale	\$60.00
SUB TOTAL FOR SPECIAL PROJECTS			\$907

Subtotal of Surfacing & Spec. Proj. \$22,143
Subtotal of Cleaning, Exc., Culv. \$22,365

GRAND TOTAL **\$44,508**

Compiled By: Bryce Rodgers

Date: 08/23/2010

SUMMARY OF ROAD IMPROVEMENT SURFACING COSTS

SURFACING		Subgrade prep:		Description	Stations/amount	x	Rate/sta/amt	Cost
				Grade, Shape and Ditch 16'		x		\$0.00
				Subgrade Compaction		x		\$0.00

ROAD SEGMENT		I1-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-I2		0+00 to 84+00				
				Volume (CY) per	Number of					
Traction rock	3/4"-0" crushed	19+20-22+50, 31+50-33+00, 43+00-48+00	2	station	13	stations	9.80	127	\$8.79	\$1,120
Traction rock	3/4"-0" crushed	52+00- 68+60,64+25- 68+60,73+75- 80+00	2	station	13	stations	17.1	222	\$8.79	\$1,954
Total Rock for Road Segment:			I1-I2					350		\$3,074

ROAD SEGMENT		I3-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-I4		0+00 to 5+50				
				Volume (CY) per	Number of					
Traction rock	3/4"-0" crushed	0+00-2+15	2	station	13	stations	2.15	28	\$8.79	\$246
Total Rock for Road Segment:			I3-I4					28		\$246

Processing:		Description	No. sta	Rate/sta	Cost
		Water, Process & Compact: (3/4"-0" crushed 1 lift)	29.00	\$49.02	\$1,422

SUB TOTAL FOR SURFACING		3/4"-0"	Total	378	378	\$4,741

SPECIAL PROJECTS		Description	Cost

SUB TOTAL FOR SPECIAL PROJECTS		\$0

Subtotal of Surfacing & Spec. Proj.		\$4,741
Subtotal of Clearing, Exc., Culv.		\$0

GRAND TOTAL		\$4,741

Compiled By: Bryce Rodgers

Date: 08/24/2010

PIT RUN ROCK COST

SALE NAME: Shingle Wave
 PROJECT: No. 1
 QUARRY: Hunt Creek

MATERIAL: Pit-Run

DATE: 08/24/2010
 BY: B Rodgers

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES							Total Haul
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	
1A-1B	19.30	66			1.4	1.25	0.95	0.50	0.28	4.38
2A-2B	32.00	66			2	1.60	1.40	0.75	0.52	6.07
3A-3B	5.40	66			1	1.25	0.95	0.50	0.26	4.36
4A-4B	25.40	66	0.4	1.2	3.0	2.00	1.00	0.90	0.46	8.96
TOTAL	82.10	264								AVERAGE HAUL 5.94
	STA./NO.	CU. YD.								
CUBIC YARD WEIGHTED HAUL			0.10	0.30	1.90	1.53	1.08	0.66	0.38	
									Average Round Trip Distance (miles)	11.89

ROCK HAUL:

Truck type: D20 No. trucks:
 Delay min.: 8 Efficiency: 85% Ave haul: \$7.10 /cy
 Load: \$1.43 /cy
 Truck type: D12 No. trucks: Spread: \$1.91 /cy
 Delay min.: 6 Efficiency: 85%
 Truck type: D10 No. trucks: 4 Production: cy/day = 328
 Delay min.: 5 Efficiency: 85%

PIT RUN ROCK HAUL COSTS 264 cy @ \$10.45 /cy

Projects Road Maintenance Cost Summary

Sale: Shingle Wave
Date: August 23, 2010
By: Bryce Rodgers

Type	Equipment/Rationale	Hours	Rate	Cost
Post-Projects Road	Grader 14G	58	\$93	\$5,394
	Dump Truck 12CY (2 trucks)	6	\$73	\$438
	FE Loader C966	3	\$77	\$231
	Vibratory Roller	58	\$72	\$4,176
	Water Truck 2500 gallon	29	\$83	\$2,407
Total				\$12,646

Final Road Maintenance

Production Rates

Grader

Vibratory Roller

Miles/day	Distance(miles)	Days	Hours
1.5	8.7	5.8	58
1.5	8.7	5.8	58

***Maintenance calculations were determined as follows:**

Maintain from Hunt Creek Stockpile to Highway 30.

Maintain Shinglemill Road from Highway 30 to Point I2 (end of Shingle Shack Road).

Total Miles: 8.7 miles.

**Shingle Wave
FY 2011
TIMBER CRUISE REPORT**

1. **Sale Area Location:** Areas 1, 2, 3 and 4 are located in portions of Sections 4 and 5 T7N, R6W, and Section 32 T8N, R6W; W.M., Clatsop County, Oregon.

All timber sale areas are posted with ODF "Timber Sale Boundary", "Area Boundary" signs and pink ribbon. Area 5 R/W is posted with ODF "Right-of-Way Boundary" signs.

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

3. **Sale Acreage by Area:**

Area	Harvest Type	Gross Acres	New R/W Acres	Stream Buffer Acres	Existing R/W Acres	Net Acreage
1	MC	55	-1	-5	0	49
2	PC	39	-2	0	0	37
3	PC	84	-1	-3	0	80
4	MC	54	-1	0	0	53
5	R/W	*7				*7
TOTALS		239		-8	0	226

* Approximately 1.5 acres of Area 5 is out-of-sale R/W. This is the same average timber type as other in-sale R/W, therefore it was included in the overall R/W acreage for cruise volume calculations. In addition, approximately 1.0 acre of Area 5 is out-of-sale R/W that passes through a recent clearcut containing no merchantable volume.

4. **Cruisers and Cruise Dates:** Area 1 was cruised by Bryce Rodgers and Jay Morey. Area 2 was cruised by Bryce Rodgers and Ed Holloran. Areas 3 and 4 were cruised by Bryce Rodgers, Jay Morey, and Kraig Kirkpatrick. All areas were cruised in July 2010.
5. **Cruise Method and Computation:** Cruises used Corvallis MicroTechnology (CMT) and Juniper 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.

Areas 1 and 4 (Modified Clear Cuts), were variable plot cruised with a 40.0 BAF for conifers and hardwoods. 50 plots were sampled on a cruise grid of 4 chains by 5 chains, with a count/cruise ratio of 1:1.

Areas 2 and 3 (Partial Cut), were variable plot cruised with a 33.6 BAF for conifers and hardwoods. 58 plots were sampled on a cruise grid of 4.5 chains by 4.5 chains, with a count/cruise ratio of 1:1.

Area 5 R/W, was calculated applying road R/W acreage using cruise per acre volumes for clear cut harvest in Areas 1 and 4.

<u>AREAS</u>	<u>PROJECT</u>	<u>TRACT</u>	<u>CRUISE TYPE</u>
1, 4	SHINGLEW	A14, A14TAKE	00MC
2,3	SHINGLEW	A23TRY3, A23TAKE, A23LEAVE	00PC
5R/W	SHINGLEW	A5RW	00MC

6. **Timber Description:**

Areas 1 and 4 (Modified Clearcut) – These stands are approximately 40 to 45 years old with a few scattered patches and individual trees approximately 70 years old in Area 1. They are Sitka spruce dominant mixed conifer stands with small patches and stringers of hardwoods. The average “take” volume per acre is 27 MBF, tree size is 14 inches DBH and 49 feet to a merchantable top (6” D.I.B. or 40% of the diameter at 16 feet).

Areas 2 and 3 (Partial Cut) – These stand are approximately 40 to 45 years old, consisting of Sitka spruce dominant conifer stands with small patches and stringers of hardwoods. These stands average 17 inches in DBH, with an average height of 52 feet to a merchantable top (6” D.I.B. or 40% of the diameter at 16 feet). The take volume averages 14 inches in DBH with an average merchantable height of 45 feet. This stand will be harvested to an SDI of approximately 33, with a basal area target of 160 ft², while retaining approximately 86 trees per acre. The average (net) volume to be harvested is 13.3 MBF/acre.

Area 5 R/W – The R/W is the same type timber as Areas 1 through 4. The average volume to remove from Area 5 is 27 MBF per acre. There is 7 acres of R/W total.

7. Statistical Analysis: (See also “Statistics Reports,” attached.)

Area	Target CV	Target SE%	Actual CV	Actual SE%
1 and 4	50	9	46.0	6.5
2 and 3	50	10	40.8	5.4

The statistics for all areas are “Take” and “Leave” stands combined.

8. Take Volumes by Species and Log Grades for All Sale Areas by MBF: (See “Species, Sort Grade-Board Feet Volumes (Project)” and the “Stand Table Summary” attached, of the thinning and regeneration harvest areas combined.) Volumes do not include “ingrowth.” The majority of defect and breakage was culled out during the cruise.

Species	DBH	Net Vol.	2 Saw	3Saw	4 Saw	Camp Run	% D & B	% Sale
Douglas-fir	14.8	592	111	414	67	-	5.8	13
Hemlock	16.7	1,284	706	516	62	-	5.9	29
Spruce	13.2	2,102	442	1,318	342	-	2.2	47
True fir	20.7	72	52	18	2	-	4.4	2
Alder	12.4	414	-	-	-	414	9.7	9
TOTAL		4,464				414	4.5	100

9. Prepared by: Jay Morey

Date: August 26, 2010

10. Approved by: 

Date: 10/04/10

11. Attachments:
- Cruise Plans & Maps (4 pages)
 - Species, Sort, Grade Reports (4 pages)
 - Statistics Reports (7 pages)
 - Stand Table Summary Reports (3 pages)
 - Take - Log Stock Table Reports (3 pages)

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Shingle Wave **Area(s)** 1 & 4

Harvest Type: (CC) Clearcut

Approx. Cruise Acres: 110 **Estimated CV%** 50 Net BF or BA/Acre **SE% Objective** 9 Net BF or BA/Acre

Planned Sale Volume: 3.6 MMBF **Estimated Sale Area Value/Acre:** \$3,000

- A. Cruise Goals:** (a) Grade minimum 100 conifer and 50 hardwood trees:
 (b) Sample 53 cruise plots; (c) Other goals (Determine "automark" thinning standards; Determine log grades for sale value; Determine snag and leave tree species and sizes; Determine LWD (down wood) cubic feet and decay classes; Determine "diameter limit" harvest parameters;)
Basal Area leave target sq. ft. Cruiser needs to select or leave trees per plot.

Cruise all Alder as Camp Run All Cedar Are Leave

B. Cruise Design:

- 1. Plot Cruises:** BAF 40 (Full point) Half point) (circle one)
 Fixed Plot Size Plot Radius feet
 Cruise Line Direction(s) Area 4 North/South Area Area 1 AZ=60
 Cruise Line Spacing 5 (chains)
 Cruise Plot Spacing 4 (chains)
 Grade/Count Ratio 1:2
- 2. ITS (Sample Tree) Cruises:** Measure-grade ratios: D-fir Hemlock
 Spruce True Fir Cedar Hardwood

C. Tree Measurements:

- 1. Diameter:** Minimum DBH to cruise is 8 " for conifers and 8" for hardwoods. Record dbh to nearest 1/2" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.
- 2. Bole Length:** Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.
- 3. Top Cruise Diameter (TCD):** Minimum top outside bark for conifer is 7 ", 7 " for hardwoods or 40 % of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for trees > 18" dbh.
- 4. Form Factors:** (1) Measure or estimate a 16' form factor for every conifer tree measured/graded; OR (2) Measure a minimum of 20' form factors for each major conifer species on the cruise area, and use these to calculate average FF for the species on the cruise. Hardwood form factors are a Standard 87.

5. **Tree Segments:** For conifers 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. For hardwoods, record preferred lengths in 8' and 10' multiples.

6. **Species, Sort, and Grade Codes:** A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DL, HL, CL, etc.)
B. Sort: Use code "1" (Domestic).
C. Grade: A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; R = Camp Run; 0 = Cull ; 9 = Utility
Hardwoods: #2 Sawmill = 12" + scaling diameter; #3 Sawmill = 10 and 11"; #4 Sawmill = 8 and 9"

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, Yellow Paint.

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

Cruise Design by: Bryce Rodgers
Approved by: [Signature]
Date: _____

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Shingle Wave Area 2.3

Harvest Type: PC "Automark Thinning" (circle one)

Approx. Cruise Acres: 133 Estimated CV% 50 Net BF or BA/Acre SE% Objective 10 Net BF or BA/Acre

Planned Sale Volume: 3.6 MMBF Estimated Sale Area Value/Acre: \$2,000

- A. Cruise Goals:** (a) Grade minimum 100 conifer and 50 hardwood trees:
 (b) Sample 58 cruise plots; (c) Other goals (Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes; Determine LWD (down wood) cubic feet and decay classes; Determine "diameter limit" harvest parameters;)
Basal Area leave target 150 sq. ft. Cruiser needs to select 4 or 5 leave trees per plot. Leave all Cedar, Record all Hardwoods as Camp Run.

B. Cruise Design:

- 1. Plot Cruises:** BAF 33.61 (Full point) Half point) (circle one)
 Fixed Plot Size Plot Radius feet
 Cruise Line Direction(s) AZ=235
 Cruise Line Spacing 4.5 (chains)
 Cruise Plot Spacing 4.5 (chains)
 Grade/Count Ratio 1:2
- 2. ITS (Sample Tree) Cruises:** Measure-grade ratios: D-fir Hemlock
 Spruce True Fir Cedar Hardwood

C. Tree Measurements:

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

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

5. **Tree Segments:** For conifer 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. For hardwoods, record preferred lengths in 8' and 10' multiples.
6. **Species, Sort, and Grade Codes:** A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DL, HL, CL, etc.)
B. Sort: Use code "1" (Domestic).
C. Grade: A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; R = Camp Run; 0 = Cull ; 9 = Utility
Hardwoods: #2 Sawmill = 12" + scaling diameter; #3 Sawmill = 10 and 11"; #4 Sawmill = 8 and 9"

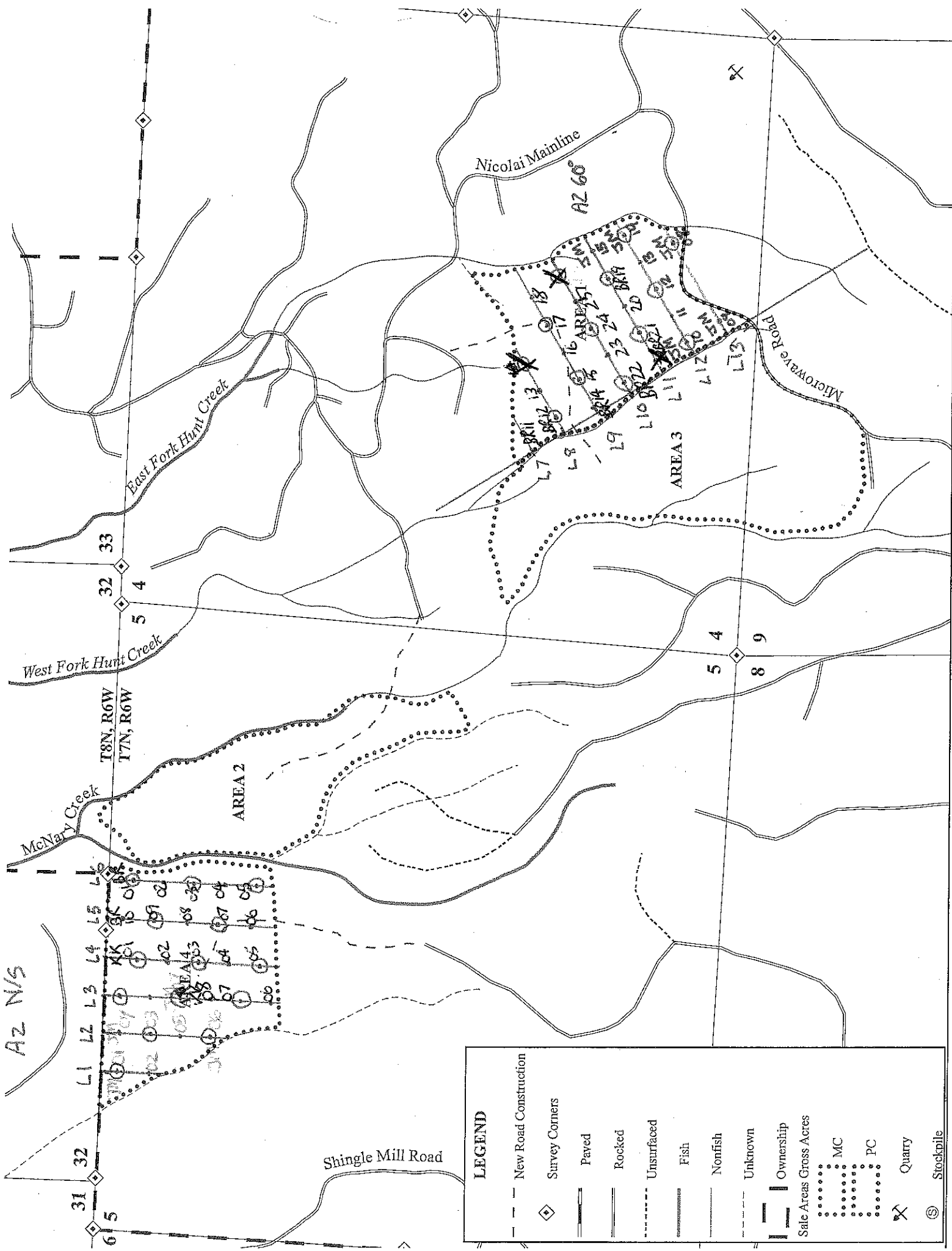
7. **Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally 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, Yellow Paint.

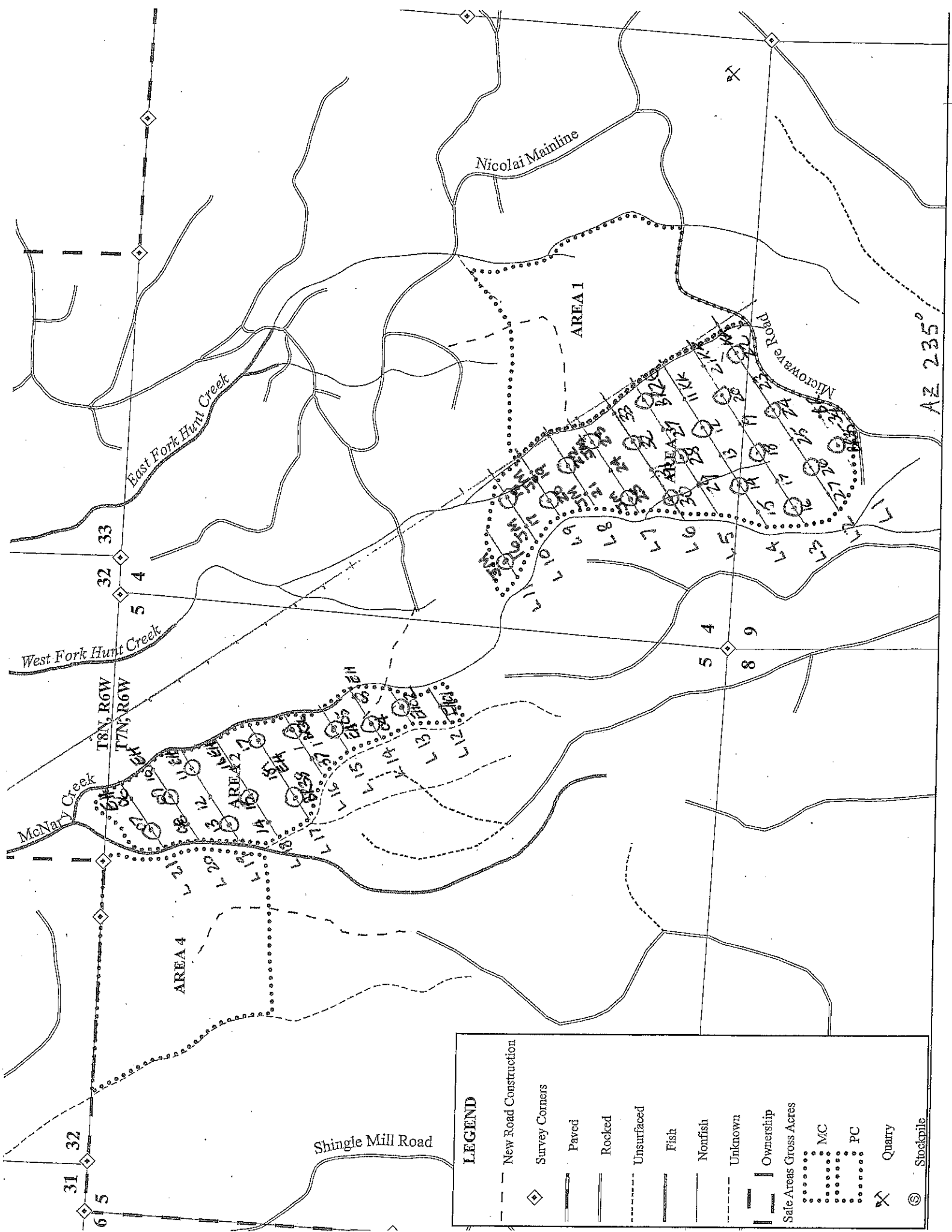
10. **Attachments:** A. Cruise Map (showing cruise unit boundaries, roads, streams, approx. acres/unit, cruise lines and plot locations, legal description and section lines, BAF or plot size, measure/count plot ratio, north arrow, and scale.

Cruise Design by: Bryce Rodgers
Approved by: [Signature]
Date: _____



LEGEND

- New Road Construction
- ◇ Survey Corners
- Paved
- Rocked
- - - - - Unsurfaced
- Fish
- Nonfish
- - - - - Unknown
- Ownership
- Sale Areas Gross Acres
- MC
- PC
- ⚡ Quarry
- Ⓢ Stockpile



LEGEND

- - - New Road Construction
- ◊ Survey Corners
- ▬ Paved
- ▬ Rocky
- - - Unsurfaced
- ▬ Fish
- ▬ Nonfish
- - - Unknown
- ▬ Ownership
- ▬ Sale Areas Gross Acres
- MC
- PC
- ✕ Quarry
- © Stockpile

AZ 235°

Species, Sort Grade - Board Foot Volumes (Project)

T07N R06W S04 Ty00MC 102.00 T07N R06W S04 Ty00PC 117.00 T07N R06W S04 Ty00MC 6.00	Project: SHINGLEW Acres 225.00	Page 1 Date 8/26/2010 Time 11:52:46AM
---	---	--

S Sp	So T	Gr rt	ad	Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent of Net Board Foot Volume								Average Log			Logs Per /Acre	
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf		
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
A	DOCU				100.0	199										9		0.00	7.9		
A	DOCR			100		1,839	1,839	414		78	19	3		16	26	25	33	29	58	0.61	31.5
A	Totals			9	9.7	2,038	1,839	414		78	19	3		16	26	25	33	25	47	0.56	39.4
H	DOCU				100.0	185												8		0.00	3.8
H	DO2S			55	3.7	3,261	3,140	706			77	23		2	3	34	61	35	247	1.71	12.7
H	DO3S			40	2.1	2,340	2,290	516		89	6	6		2	4	36	58	35	90	0.76	25.3
H	DO4S			5		278	278	62		100				63	37			19	25	0.50	11.0
H	Totals			29	5.9	6,064	5,709	1,284		40	45	15		5	5	33	57	30	108	0.98	52.8
S	DOCU				100.0	87												6		0.00	3.9
S	DO2S			21	.8	1,981	1,965	442			65	35			3	22	76	37	303	2.08	6.5
S	DO3S			62	1.2	5,932	5,860	1,318			95	5		1	2	43	54	35	91	0.74	64.7
S	DO4S			17	2.4	1,557	1,519	342		1	99			63	32	5		19	27	0.42	56.8
S	Totals			47	2.2	9,557	9,344	2,102		0	76	17	7	11	7	32	50	28	71	0.73	131.9
D	DOCU				100.0	95												15		0.00	3.0
D	DO2S			18	3.1	508	493	111			26	74				41	59	36	176	1.46	2.8
D	DO3S			70	2.4	1,887	1,842	414			100	0			5	33	62	36	92	0.76	20.1
D	DO4S			12	2.3	306	299	67		17	83			70	20	9		20	23	0.43	12.8
D	Totals			13	5.8	2,796	2,633	592		2	84	14		8	6	32	55	29	68	0.72	38.6
NF	DOCU				100.0	14												6		0.00	.1
NF	DO2S			72		231	231	52			57	43				36	64	35	281	1.82	.8
NF	DO3S			25		78	78	18		100						32	68	37	95	0.83	.8
NF	DO4S			3		8	8	2		100				100				24	30	0.37	.3
NF	Totals			2	4.4	332	317	72		27	41	32			3	34	63	33	157	1.20	2.0
Totals					4.5	20,786	19,842	4,464		0	66	25	9	9	8	32	51	28	75	0.76	264.8

T07N R06W S04 T00MC T07N R06W S04 T00MC
 Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt BdFt
 07N 06W 04 A14TAKE 00MC 102.00 50 144 1 W

Spp	S T	So rt	Gr ad	%	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf	
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99				
S		DO	CU		00.0	44											3	0.00	2.6	
S		DO	2S	21	.4	3,062	3,050	311		52	48		4	96		39	383	2.39	8.0	
S		DO	3S	63	1.3	9,183	9,065	924-025	95	5		1	3	40	57	35	92	0.73	98.9	
S		DO	4S	16	3.5	2,222	2,144	219	100			55	38	7		20	27	0.41	80.1	
S Totals				53	1.7	14,511	14,259	1,454	76	14	10	9	8	26	57	29	75	0.73	189.5	
H		DO	CU		00.0	242										6	0.00	2.9		
H		DO	2S	50	.3	2,738	2,730	278		71	29		3	44	52	35	268	1.84	10.2	
H		DO	3S	42	3.1	2,316	2,243	229	100				8	49	44	34	88	0.76	25.6	
H		DO	4S	8		390	390	40	100			52	48			19	25	0.48	15.9	
H Totals				20	5.7	5,686	5,364	547	49	36	15	4	8	43	45	28	98	0.94	54.6	
A		DO	CU		00.0	363										10	0.00	13.6		
A		DO	CR	100		3,016	3,016	308	81	16	4	16	29	24	31	29	59	0.60	51.5	
A Totals				11	10.7	3,379	3,016	308	81	16	4	16	29	24	31	25	46	0.55	65.0	
D		DO	CU		00.0	127										16	0.00	3.7		
D		DO	2S	24	3.7	901	867	87 88	21	79			39	61		36	175	1.46	5.0	
D		DO	3S	68	.6	2,469	2,455	250	100				7	22	71	37	98	0.75	25.0	
D		DO	4S	8		252	252	27 26	30	70		66	34			20	23	0.47	10.9	
D Totals				13	4.7	3,749	3,575	364-265	2	79	19	5	7	25	63	31	80	0.76	44.7	
NF		DO	CU		00.0	30										6	0.00	.2		
NF		DO	2S	72		481	481	49		57	43		36	64		35	281	1.82	1.7	
NF		DO	3S	25		162	162	17	100				32	68		37	95	0.83	1.7	
NF		DO	4S	3		17	17	2	100			100				24	30	0.37	.6	
NF Totals				2	4.4	691	661	67	27	41	32	3	34	63	33	157	1.20	4.2		
Type Totals					4.1	28,017	26,874	2,744	0	70	20	10	8	10	29	53	28	75	0.74	358.1

2,740

T07N R06W S04 T00PC T07N R06W S04 T00PC
 Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt BdFt
 07N 06W 04 A23TAKE 00PC 117.00 58 96 1 W

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf		
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
S		DO	CU		00.0	126											8		0.00	5.1	
S		DO	2S	20	2.0	984	964	113			100			85	15		33	187	1.56	5.1	
S		DO	3S	60	1.0	2,924	2,893	339		94	6			1	54	45	36	87	0.76	33.2	
S		DO	4S	20		943	943	110	2	98				81	19		17	27	0.45	35.3	
S	Totals			36	3.5	4,976	4,799	562	0	76	24			16	4	49	30	26	61	0.72	78.7
H		DO	CU		00.0	127											9		0.00	4.6	
H		DO	2S	58	6.0	3,731	3,507	410			82	18		3	3	27	67	36	234	1.63	15.0
H		DO	3S	39	1.2	2,359	2,330	273		79	11	11		4		25	71	36	93	0.76	25.0
H		DO	4S	3		174	174	20		100				84	16		18	27	0.53	6.4	
H	Totals			45	5.9	6,391	6,011	703		33	52	15		6	2	26	67	31	118	1.01	51.0
D		DO	CU		00.0	65											13		0.00	2.3	
D		DO	2S	8		149	149	17		51	49					49	51	36	185	1.48	.8
D		DO	3S	72	5.6	1,335	1,261	148		100						54	46	35	82	0.77	15.4
D		DO	4S	20	3.6	352	339	40	8	92				73	12	15		19	24	0.40	14.4
D	Totals			13	8.0	1,902	1,750	205	2	94	4			14	2	46	38	27	53	0.65	32.9
A		DO	CU		00.0	47											5		0.00	2.7	
A		DO	CR	100		753	753	88		71	29			15	16	30	39	28	57	0.64	13.1
A	Totals			6	5.9	800	753	88		71	29			15	16	30	39	24	48	0.62	15.8
Type Totals					5.4	14,068	13,313	1,558	0	59	34	7		11	4	37	48	27	75	0.79	178.5

Species, Sort Grade - Board Foot Volumes (Type)										Page	1										
T TSPCSTGR										Date	8/25/2010										
Project: SHINGLEW										Time	1:18:15PM										
T07N R06W S04 T00MC										T07N R06W S04 T00MC											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
07N	06W	04	A5RW	00MC	6.00	50	148	1	W												
Spp	S	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
									Net	Def%	Gross	Net	Net MBF	Log Scale Dia.				Log Length			
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	Ft	Lf		
S	DO	CU			00.0	44											3		0.00	2.6	
S	DO	2S	21	.4	3,066	3,054	18			52	48		4		96		39	383	2.39	8.0	
S	DO	3S	64	1.3	9,327	9,209	55		96	4			1	3	39	57	35	92	0.74	99.8	
S	DO	4S	15	3.5	2,226	2,147	13		100				55	38	7		20	27	0.41	80.2	
S	Totals		52	1.7	14,663	14,410	86		76	14	10		9	8	26	57	29	76	0.73	190.6	
H	DO	CU			00.0	333											6		0.00	3.7	
H	DO	2S	52	.8	2,982	2,959	18			73	27		3	41	56		35	269	1.83	11.0	
H	DO	3S	41	3.1	2,392	2,318	14		100				8	48	45		34	87	0.75	26.6	
H	DO	4S	7		395	395	2		100				52	48			19	25	0.48	16.1	
H	Totals		21	7.0	6,101	5,672	34		48	38	14		4	8	41	47	28	99	0.95	57.4	
D	DO	CU			00.0	119											16		0.00	3.5	
D	DO	2S	21	3.7	844	813	5		21	79					39	61	36	175	1.46	4.7	
D	DO	3S	71	1.0	2,766	2,739	16		93	7			6	19	75		37	105	0.79	26.2	
D	DO	4S	8	4.4	303	290	2		25	75			54	27	18		22	25	0.47	11.6	
D	Totals		14	4.7	4,032	3,842	23		2	76	22		4	6	23	67	32	84	0.78	45.9	
A	DO	CU			00.0	363											10		0.00	13.6	
A	DO	CR	100		3,016	3,016	18		81	16	4		16	29	24	31	29	59	0.60	51.5	
A	Totals		11	10.7	3,379	3,016	18		81	16	4		16	29	24	31	25	46	0.55	65.0	
NF	DO	CU			00.0	30											6		0.00	.2	
NF	DO	2S	72		481	481	3			57	43				36	64	35	281	1.82	1.7	
NF	DO	3S	25		162	162	1		100						32	68	37	95	0.83	1.7	
NF	DO	4S	3		17	17	0		100				100				24	30	0.37	.6	
NF	Totals		2	4.4	691	661	4		27	41	32		3	34	63		33	157	1.20	4.2	
Type Totals				4.4	28,867	27,601	165 166		0	70	21	9		8	10	29	54	28	76	0.75	363.2

TC TSTATS		STATISTICS							PAGE	1	
		PROJECT SHINGLEW							DATE	8/25/2010	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
07N	06W	04	A14TAKE	00MC	102.00	50	282	1	W		
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		50	282	5.6							
CRUISE		26	144	5.5	21,919	.7					
DBH COUNT											
REFOREST											
COUNT		24	134	5.6							
BLANKS											
100 %											
STAND SUMMARY											
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC	
S SPRUCE	78	116.6	13.2	48		111.2	14,511	14,259	3,978	3,969	
WHEMLOCK	22	29.5	16.2	55		42.4	5,686	5,364	1,511	1,462	
R ALDER	22	42.2	12.2	41		34.4	3,379	3,016	987	897	
DOUG FIR	17	24.9	15.7	58		33.6	3,749	3,575	1,094	1,058	
NOB FIR	5	1.7	20.7	84	1	4.0	691	661	172	167	
TOTAL	144	214.9	13.9	49		225.6	28,017	26,874	7,742	7,554	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15			
S SPRUCE	114.3	16.2	98	117	135						
WHEMLOCK	151.6	21.4	23	30	36						
R ALDER	162.8	23.0	32	42	52						
DOUG FIR	194.1	27.4	18	25	32						
NOB FIR	707.1	100.0	0	2	3						
TOTAL	48.3	6.8	200	215	230	93	23	10			
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15			
S SPRUCE	103.9	14.7	95	111	128						
WHEMLOCK	144.4	20.4	34	42	51						
R ALDER	150.4	21.3	27	34	42						
DOUG FIR	188.4	26.6	25	34	43						
NOB FIR	707.1	100.0	0	4	8						
TOTAL	37.5	5.3	214	226	238	56	14	6			
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15			
S SPRUCE	107.1	15.1	12,100	14,259	16,418						
WHEMLOCK	145.2	20.5	4,262	5,364	6,465						
R ALDER	150.6	21.3	2,374	3,016	3,659						
DOUG FIR	200.1	28.3	2,563	3,575	4,586						
NOB FIR	707.1	100.0	0	661	1,321						
TOTAL	47.3	6.7	25,078	26,874	28,670	89	22	10			

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT SHINGLEW				DATE	8/25/2010	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
07N	06W	04	A14	00MC	102.00	50	293	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES				
TOTAL		50	293	5.9						
CRUISE		27	151	5.6	22,431		.7			
DBH COUNT										
REFOREST										
COUNT		23	130	5.7						
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
S SPRUCE	78	116.6	13.2	48		111.2	14,511	14,259	3,978	3,969
WHEMLOCK	22	29.5	16.2	55		42.4	5,686	5,364	1,511	1,462
R ALDER	22	42.2	12.2	41		34.4	3,379	3,016	987	897
DOUG FIR	17	24.9	15.7	58		33.6	3,749	3,575	1,094	1,058
NOB FIR	5	1.7	20.7	84	1	4.0	691	661	172	167
HEMLEAV	1	.9	22.0	90		2.4	436	309	106	87
SNAG	2	1.3	18.3	41		2.4				
DOUGLEAV	2	.9	18.3	77		1.6	224	212	63	63
SPRUCELV	1	.9	18.0	37		1.6	145	145	43	43
CEDLEAV	1	1.0	12.0	25		.8	31	31	13	13
TOTAL	151	219.9	14.0	49		234.4	28,852	27,571	7,967	7,760
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
S SPRUCE	114.3	16.2	98	117	135					
WHEMLOCK	151.6	21.4	23	30	36					
R ALDER	162.8	23.0	32	42	52					
DOUG FIR	194.1	27.4	18	25	32					
NOB FIR	707.1	100.0	0	2	3					
HEMLEAV	522.7	73.9	0	1	2					
SNAG	403.5	57.1	1	1	2					
DOUGLEAV	518.8	73.4	0	1	2					
SPRUCELV	494.9	70.0	0	1	2					
CEDLEAV	707.1	100.0	0	1	2					
TOTAL	45.9	6.5	206	220	234	84	21	9		
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
S SPRUCE	103.9	14.7	95	111	128					
WHEMLOCK	144.4	20.4	34	42	51					
R ALDER	150.4	21.3	27	34	42					
DOUG FIR	188.4	26.6	25	34	43					
NOB FIR	707.1	100.0	0	4	8					
HEMLEAV	522.7	73.9	1	2	4					
SNAG	399.8	56.5	1	2	4					
DOUGLEAV	494.9	70.0	0	2	3					
SPRUCELV	494.9	70.0	0	2	3					
CEDLEAV	707.1	100.0	0	1	2					
TOTAL	34.6	4.9	223	234	246	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		
S SPRUCE	107.1	15.1	12,100	14,259	16,418					
WHEMLOCK	145.2	20.5	4,262	5,364	6,465					

TC TSTATS				STATISTICS			PAGE 2		
PROJECT SHINGLEW							DATE 8/25/2010		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
07N	06W	04	A14	00MC	102.00	50	293	1	W
CL: 68.1 %		COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
SD: 1.0		VAR.		LOW	AVG	HIGH	5	10	15
R ALDER		150.6	21.3	2,374	3,016	3,659			
DOUG FIR		200.1	28.3	2,563	3,575	4,586			
NOB FIR		707.1	100.0	0	661	1,321			
HEMLEAV		522.7	73.9	81	309	538			
SNAG									
DOUGLEAV		495.1	70.0	64	212	361			
SPRUCELV		494.9	70.0	43	145	246			
CEDLEAV		707.1	100.0	0	31	61			
TOTAL		46.0	6.5	25,778	27,571	29,363	85	21	9

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SHINGLEW			DATE	8/25/2010	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
07N	06W	04	A23TAKE	00PC	117.00	58	213	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES				
TOTAL	58	213	3.7							
CRUISE	26	96	3.7	13,038					.7	
DBH COUNT										
REFOREST										
COUNT	28	117	4.2							
BLANKS	4									
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
S SPRUCE	36	53.7	13.1	39		50.4	4,976	4,799	1,473	1,442
WHEMLOCK	24	25.1	17.3	66		41.1	6,391	6,011	1,652	1,616
DOUG FIR	27	21.9	13.8	42		22.6	1,902	1,750	591	577
R ALDER	9	10.8	12.6	37		9.3	800	753	243	234
TOTAL	96	111.4	14.3	45		123.4	14,068	13,313	3,960	3,869
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
S SPRUCE	123.3	16.2	45	54	62					
WHEMLOCK	182.5	24.0	19	25	31					
DOUG FIR	197.1	25.9	16	22	28					
R ALDER	298.7	39.2	7	11	15					
TOTAL	59.1	7.8	103	111	120	140	35	16		
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
S SPRUCE	117.3	15.4	43	50	58					
WHEMLOCK	186.2	24.4	31	41	51					
DOUG FIR	183.5	24.1	17	23	28					
R ALDER	302.1	39.7	6	9	13					
TOTAL	62.6	8.2	113	123	134	157	39	17		
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
S SPRUCE	118.9	15.6	4,050	4,799	5,549					
WHEMLOCK	197.3	25.9	4,454	6,011	7,568					
DOUG FIR	169.1	22.2	1,361	1,750	2,138					
R ALDER	306.3	40.2	450	753	1,056					
TOTAL	82.5	10.8	11,871	13,313	14,756	272	68	30		

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT SHINGLEW				DATE	8/25/2010	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
07N	06W	04	A23LEAVE	00PC	117.00	58	293	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
		PLOTS	TREES		TREES	TREES				
TOTAL		58	293	5.1						
CRUISE		32	149	4.7	10,037		1.5			
DBH COUNT										
REFOREST										
COUNT		26	130	5.0						
BLANKS										
100 %										
STAND SUMMARY SDI										
	SAMPLE	TREES	AVG	BOLE	RE/	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
SPRUCELV	56	29.9	20.3	63	0.1331	67.2	8,578	8,349	2,449	2,407
HEMLEAV	38	22.9	19.3	64	0.0940	46.4	6,997	6,538	1,812	1,762
DOUGLEAV	34	18.6	20.3	70	0.0828	41.7	5,270	5,045	1,486	1,461
ALDRLEAV	12	10.8	11.7	32	0.0145	8.1	705	656	198	188
SNAG	8	2.9	17.2	43		4.6	159		49	
NFIRLEAV	1	.7	22.0	82	0.0035	1.7	283	211	70	70
TOTAL	149	85.8	19.0	61		169.8	21,993	20,799	6,065	5,889
CONFIDENCE LIMITS OF THE SAMPLE 0.3279 = 33%										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
SPRUCELV	98.0	12.9	26	30	34					
HEMLEAV	101.9	13.4	20	23	26					
DOUGLEAV	107.4	14.1	16	19	21					
ALDRLEAV	286.4	37.6	7	11	15					
SNAG	321.2	42.2	2	3	4					
NFIRLEAV	563.6	74.0	0	1	1					
TOTAL	30.6	4.0	82	86	89	38	9	4		
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
SPRUCELV	89.8	11.8	59	67	75					
HEMLEAV	99.6	13.1	40	46	52					
DOUGLEAV	106.0	13.9	36	42	48					
ALDRLEAV	272.3	35.8	5	8	11					
SNAG	317.0	41.6	3	5	7					
NFIRLEAV	563.6	74.0	0	2	3					
TOTAL			170	170	170					
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
SPRUCELV	89.3	11.7	7,371	8,349	9,328					
HEMLEAV	108.3	14.2	5,608	6,538	7,468					
DOUGLEAV	109.7	14.4	4,319	5,045	5,772					
ALDRLEAV	298.3	39.2	399	656	913					
SNAG										
NFIRLEAV	563.6	74.0	55	211	367					
TOTAL	20.3	2.7	20,245	20,799	21,353	16	4	2		

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT SHINGLEW				DATE 8/25/2010		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
07N	06W	04	A23TRY3	00PC	117.00	58	506	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
		PLOTS	TREES		TREES	TREES				
TOTAL		58	506	8.7						
CRUISE		32	245	7.7	23,075		1.1			
DBH COUNT										
REFOREST										
COUNT		26	237	9.1						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
SPRUCELV	56	29.9	20.3	63		67.2	8,578	8,349	2,449	2,407
S SPRUCE	36	53.7	13.1	39		50.4	4,976	4,799	1,473	1,442
HEMLEAV	38	22.9	19.3	64		46.4	6,997	6,538	1,812	1,762
DOUGLEAV	34	18.6	20.3	70		41.7	5,270	5,045	1,486	1,461
WHEMLOCK	24	25.1	17.3	66		41.1	6,391	6,011	1,652	1,616
DOUG FIR	27	21.9	13.8	42		22.6	1,902	1,750	591	577
R ALDER	9	10.8	12.6	37		9.3	800	753	243	234
ALDRLEAV	12	10.8	11.7	32		8.1	705	656	198	188
SNAG	8	2.9	17.2	43		4.6	159		49	
NFIRLEAV	1	.7	22.0	82	0	1.7	283	211	70	70
TOTAL	245	197.2	16.5	52		293.2	36,061	34,112	10,025	9,757
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
SPRUCELV	98.0	12.9	26	30	34					
S SPRUCE	123.3	16.2	45	54	62					
HEMLEAV	101.9	13.4	20	23	26					
DOUGLEAV	107.4	14.1	16	19	21					
WHEMLOCK	182.5	24.0	19	25	31					
DOUG FIR	197.1	25.9	16	22	28					
R ALDER	298.7	39.2	7	11	15					
ALDRLEAV	286.4	37.6	7	11	15					
SNAG	321.2	42.2	2	3	4					
NFIRLEAV	563.6	74.0	0	1	1					
TOTAL	32.8	4.3	189	197	206	43	11	5		
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
SPRUCELV	89.8	11.8	59	67	75					
S SPRUCE	117.3	15.4	43	50	58					
HEMLEAV	99.6	13.1	40	46	52					
DOUGLEAV	106.0	13.9	36	42	48					
WHEMLOCK	186.2	24.4	31	41	51					
DOUG FIR	183.5	24.1	17	23	28					
R ALDER	302.1	39.7	6	9	13					
ALDRLEAV	272.3	35.8	5	8	11					
SNAG	317.0	41.6	3	5	7					
NFIRLEAV	563.6	74.0	0	2	3					
TOTAL	25.8	3.4	283	293	303	27	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		
SPRUCELV	89.3	11.7	7,371	8,349	9,328					
S SPRUCE	118.9	15.6	4,050	4,799	5,549					

STATISTICS
PROJECT SHINGLEW

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
07N	06W	04	A23TRY3	00PC	117.00	58	506	1	W
CL: 68.1%	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.	S.E.%	LOW	AVG	HIGH	5	10	15	
HEMLEAV	108.3	14.2	5,608	6,538	7,468				
DOUGLEAV	109.7	14.4	4,319	5,045	5,772				
WHEMLOCK	197.3	25.9	4,454	6,011	7,568				
DOUG FIR	169.1	22.2	1,361	1,750	2,138				
R ALDER	306.3	40.2	450	753	1,056				
ALDRLEAV	298.3	39.2	399	656	913				
SNAG									
NFIRLEAV	563.6	74.0	55	211	367				
TOTAL	40.8	5.4	32,283	34,112	35,942	67	17	7	

TC TSTNDSUM		Stand Table Summary													
Project SHINGLEW															
T07N R06W S04 T00PC											T07N R06W S04 T00PC				
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page:							
07N	06W	04	A23TAKE	00PC	117.00	58	96	1	Date:	08/25/20					
								Time:	1:23:12PM						
S Spc	T	Sample		Av	Trees/ Acres	BA/ Acres	Logs Acres	Average Log		Net Tons/ Acres	Net Cu.Ft. Acres	Net Bd.Ft. Acres	Totals		
		DBH	Trees	FF 16'				Ht Tot	Net Cu.Ft.				Net Bd.Ft.	Tons	Cunits
H	11	1	85	18	2.598	1.71	2.60	8.0	30.0	21	78		24	9	
H	12	1	94	125	2.183	1.71	4.37	20.5	90.0	89	393		105	46	
H	14	1	85	19	1.604	1.71									
H	15	2	87	92	2.794	3.43	6.98	18.8	72.0	131	503		154	59	
H	16	2	90	102	2.456	3.43	4.91	30.5	112.5	150	553		175	65	
H	17	5	91	92	5.438	8.57	9.79	35.3	131.1	346	1,283		405	150	
H	18	2	89	103	1.940	3.43	3.88	39.3	132.5	152	514		178	60	
H	20	2	81	75	1.572	3.43	3.14	35.3	117.5	111	369		130	43	
H	21	2	86	106	1.425	3.43	3.56	42.8	162.0	153	577		178	68	
H	22	1	89	121	.649	1.71	1.95	46.7	200.0	91	390		106	46	
H	23	1	86	71	.594	1.71	1.19	48.5	160.0	58	190		67	22	
H	25	1	83	110	.503	1.71	1.01	66.0	260.0	66	262		78	31	
H	26	2	88	103	.930	3.43	1.86	82.2	335.0	153	623		179	73	
H	28	1	83	131	.401	1.71	1.20	79.0	230.0	95	277		111	32	
H	Totals	24	88	86	25.086	41.14	46.44	34.8	129.4	1,616	6,011		1,890	703	
S	8	1	86	20	4.012	1.40	4.01	5.0	20.0	20	80		23	9	
S	9	1	88	19	3.170	1.40	3.17	6.0	30.0	19	95		22	11	
S	10	4	87	28	10.270	5.60	10.27	9.3	35.0	95	359		111	42	
S	11	3	87	35	6.366	4.20	6.37	12.3	40.0	79	255		92	30	
S	12	3	86	73	5.349	4.20	7.13	19.0	60.0	136	428		159	50	
S	13	4	86	61	6.077	5.60	7.60	20.2	54.0	153	410		180	48	
S	14	1	85	72	1.310	1.40	2.62	16.5	55.0	43	144		51	17	
S	15	5	86	81	5.706	7.00	11.41	22.3	80.0	254	913		298	107	
S	16	2	87	81	2.006	2.80	4.01	24.0	90.0	96	361		113	42	
S	17	4	87	65	3.554	5.60	5.33	31.5	95.0	168	506		196	59	
S	18	5	85	71	3.962	7.00	7.92	27.6	92.0	219	729		256	85	
S	19	1	88	90	.711	1.40	1.42	40.5	135.0	58	192		67	22	
S	21	2	83	82	1.164	2.80	2.33	43.8	140.0	102	326		119	38	
S	Totals	36	86	52	53.658	50.42	73.60	19.6	65.2	1,442	4,799		1,687	562	
D	9	1	78	17	1.895	.84									
D	10	2	86	19	3.069	1.67	3.07	6.5	25.0	20	77		23	9	
D	11	2	83	80	2.537	1.67	3.80	11.7	36.7	44	140		52	16	
D	12	2	84	51	2.131	1.67	2.13	15.5	45.0	33	96		39	11	
D	13	2	87	89	1.816	1.67	2.72	20.7	73.3	56	200		66	23	
D	14	5	82	65	3.915	4.19	6.26	16.5	43.8	103	274		121	32	
D	15	1	85	72	.682	.84	1.36	17.0	45.0	23	61		27	7	
D	16	3	80	81	1.798	2.51	3.60	22.3	68.3	80	246		94	29	
D	17	3	83	75	1.593	2.51	3.19	23.0	76.7	73	244		86	29	
D	19	4	84	69	1.700	3.35	2.98	32.0	85.7	95	255		111	30	
D	20	2	80	82	.767	1.67	1.53	31.2	102.5	48	157		56	18	
D	Totals	27	83	60	21.905	22.60	30.65	18.8	57.1	577	1,750		675	205	
A	11	3	87	43	4.987	3.09	4.99	11.1	36.9	55	184		65	22	
A	13	4	87	49	4.562	4.12	5.68	16.5	48.2	94	274		110	32	
A	17	1	86	85	.654	1.03	1.31	30.5	110.0	40	144		47	17	
A	18	1	87	103	.583	1.03	1.17	39.0	130.0	45	152		53	18	
A	Totals	9	87	51	10.786	9.27	13.14	17.8	57.3	234	753		274	88	
Totals		96	86	61	111.435	123.43	163.83	23.6	81.3	3869	13,313		4,526	1,558	

TC TSTNDSUM		Stand Table Summary														
Project SHINGLEW																
T07N R06W S04 T00MC										T07N R06W S04 T00MC						
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page:	1							
07N	06W	04	A14TAKE	00MC	102.00	50	144	Date:	09/15/20							
								Time:	8:44:29AM							
S Spc	T	DBH	Sample Trees	FF 16'	Av Ht Tot	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Net Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals		
									Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF
S		8	1	89	20	4.084	1.43	4.08	5.0	20.0		20	82		21	8
S		9	7	87	39	22.589	9.98	22.59	8.9	38.6		200	871		204	89
S		10	5	87	68	13.069	7.13	13.07	14.6	52.0		191	680		195	69
S		11	8	87	84	17.282	11.41	30.24	13.0	47.1		393	1,426		401	145
S		12	5	87	88	9.076	7.13	18.15	14.8	52.0		269	944		274	96
S		13	7	87	83	10.827	9.98	20.11	18.4	63.8		370	1,284		377	131
S		14	9	86	84	12.002	12.83	24.00	20.2	69.4		485	1,667		495	170
S		15	9	86	86	10.455	12.83	20.91	24.1	85.6		504	1,789		514	182
S		16	5	87	93	5.105	7.13	10.21	30.4	108.0		310	1,103		317	112
S		17	4	87	94	3.618	5.70	7.24	33.4	112.5		241	814		246	83
S		18	2	87	97	1.613	2.85	3.23	38.8	130.0		125	420		128	43
S		20	2	89	76	1.307	2.85	2.61	40.5	137.5		106	359		108	37
S		21	4	86	77	2.371	5.70	4.15	50.0	165.7		207	688		212	70
S		24	1	77	71	.454	1.43	.91	43.5	145.0		39	132		40	13
S		25	1	78	78	.418	1.43	.84	61.0	165.0		51	138		52	14
S		26	1	86	78	.387	1.43	.77	64.5	220.0		50	170		51	17
S		27	1	89	91	.359	1.43	.72	85.0	360.0		61	258		62	26
S		30	2	88	91	.581	2.85	1.16	103.5	450.0		120	523		123	53
S		31	1	89	91	.272	1.43	.54	111.0	465.0		60	253		62	26
S		32	2	85	85	.511	2.85	1.02	107.7	442.5		110	452		112	46
S		38	1	83	84	.181	1.43	.36	150.5	575.0		54	208		56	21
S		Totals	78	87	72	116.561	111.20	186.92	21.2	76.3		3,969	14,259		4,048	1,454
H		8	1	89	20	5.521	1.93	5.52	5.0	20.0		28	110		28	11
H		12	1	87	107	2.454	1.93	4.91	17.5	60.0		86	294		88	30
H		13	1	86	76	2.091	1.93	4.18	16.0	55.0		67	230		68	23
H		14	1	86	33	1.803	1.93	1.80	16.0	30.0		29	54		29	6
H		15	3	87	102	4.711	5.78	9.42	26.5	98.3		250	927		255	95
H		16	4	88	88	5.521	7.71	11.04	27.8	102.5		306	1,132		313	115
H		19	1	85	71	.979	1.93	1.96	27.0	95.0		53	186		54	19
H		20	1	91	78	.883	1.93	1.77	40.5	165.0		72	292		73	30
H		21	3	89	76	2.404	5.78	4.81	41.8	151.7		201	729		205	74
H		22	1	82	71	.730	1.93	1.46	34.5	115.0		50	168		51	17
H		25	1	88	78	.565	1.93	1.13	59.5	225.0		67	254		69	26
H		26	1	89	88	.523	1.93	1.05	73.0	300.0		76	314		78	32
H		27	1	92	87	.485	1.93	.97	79.5	335.0		77	325		79	33
H		29	2	79	78	.840	3.85	1.68	59.8	207.5		100	349		102	36
H		Totals	22	87	72	29.511	42.40	51.70	28.3	103.7		1,462	5,364		1,492	547
D		11	2	79	51	5.990	3.95	2.99	17.0	60.0		51	180		52	18
D		13	1	87	119	2.144	1.98	4.29	20.0	85.0		86	365		87	37
D		14	1	86	109	1.849	1.98	3.70	21.5	85.0		80	314		81	32
D		15	2	87	87	3.221	3.95	6.44	21.3	82.5		137	531		140	54
D		16	2	86	88	2.831	3.95	5.66	23.5	80.0		133	453		136	46
D		17	1	83	85	1.254	1.98	2.51	27.5	85.0		69	213		70	22
D		18	3	84	77	3.355	5.93	6.71	28.3	85.0		190	570		194	58
D		19	1	83	103	1.004	1.98	2.01	41.0	125.0		82	251		84	26
D		20	1	82	85	.906	1.98	1.81	39.0	110.0		71	199		72	20
D		21	2	85	77	1.643	3.95	3.29	36.7	115.0		121	378		123	39
D		22	1	78	66	.749	1.98	1.50	26.0	80.0		39	120		40	12
D		Totals	17	84	81	24.946	33.60	40.91	25.9	87.4		1,058	3,575		1,079	365
A		9	2	86	56	7.079	3.13	3.54	11.0	40.0		39	142		40	14

TC TSTNDSUM	Stand Table Summary														
Project SHINGLEW															
T07N R06W S04 T00MC								T07N R06W S04 T00MC							
Twp	Rge	Sec	Tract		Type	Acres	Plots	Sample Trees			Page:	2			
07N	06W	04	A14TAKE		00MC	102.00	50	144			Date:	09/15/20			
											Time:	8:44:29AM			
S Spc	T	Sample DBH	FF Trees	Av Ht 16'	Trees/ Acres	BA/ Acres	Logs Acres	Average Log		Net Tons/ Acres	Net Cu.Ft. Acres	Net Bd.Ft. Acres	Totals		
								Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF
A		10	3	86	62	8.601	4.69	8.60	13.3	46.7	115	401	117	41	
A		11	4	87	86	9.477	6.25	14.22	14.0	50.0	199	711	203	73	
A		12	1	86	78	1.991	1.56	3.98	13.0	45.0	52	179	53	18	
A		13	4	86	61	6.786	6.25	8.48	20.2	58.0	171	492	175	50	
A		14	3	87	59	4.388	4.69	5.85	21.3	60.0	124	351	127	36	
A		18	1	86	50	.885	1.56	.88	21.0	40.0	19	35	19	4	
A		19	2	86	62	1.588	3.13	3.18	27.2	100.0	87	318	88	32	
A		20	1	86	66	.717	1.56	1.43	31.5	125.0	45	179	46	18	
A		21	1	87	79	.650	1.56	1.30	36.0	160.0	47	208	48	21	
A		Totals	22	86	67	42.161	34.40	51.47	17.4	58.6	897	3,016	915	308	
NF		16	1	87	123	.573	.80	1.72	22.7	93.3	39	160	40	16	
NF		17	1	87	109	.508	.80	1.02	32.5	125.0	33	127	34	13	
NF		23	1	84	99	.277	.80	.55	60.0	215.0	33	119	34	12	
NF		27	1	85	107	.201	.80	.40	70.5	275.0	28	111	29	11	
NF		31	1	87	102	.153	.80	.31	109.5	470.0	33	143	34	15	
NF		Totals	5	86	111	1.712	4.00	4.00	41.8	165.3	167	661	170	67	
Totals			144	86	72	214.890	225.60	334.99	22.5	80.2	7554	26,874	7,705	2,741	

Log Stock Table - MBF

T07N R06W S04 Ty00MC	102.00
T07N R06W S04 Ty00PC	117.00
T07N R06W S04 Ty00MC	6.00

Project: SHINGLEW
Acres 225.00

S Spp	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+	
H		DO	4S	20	6		6	.4			6										
H		DO	4S	22	10		10	.8			10										
H		DO	4S	24	8		8	.6			4	3									
H		DO	4S	26	6		6	.5			6										
H		Totals			1,364	5.9	1,284	28.8			228	122	169	350	178	220	16				
S		DO	CU	2	2	100.0															
S		DO	CU	6	5	100.0															
S		DO	CU	8	6	100.0															
S		DO	CU	12	2	100.0															
S		DO	CU	16	4	100.0															
S		DO	2S	24	12		12	.6							12						
S		DO	2S	32	99	2.4	96	4.6					64	32							
S		DO	2S	40	335		334	15.9					106	55	40	114	20				
S		DO	3S	20	9		9	.4				9									
S		DO	3S	22	7		7	.3			3	2	2								
S		DO	3S	28	23		23	1.1			6		14	3							
S		DO	3S	32	579	1.9	568	27.0			67	269	211	21							
S		DO	3S	36	63		63	3.0			48		15								
S		DO	3S	38	31		31	1.5			31										
S		DO	3S	40	622		617	29.3			165	138	272	42							
S		DO	4S	14	5		5	.2			5										
S		DO	4S	15	2		2	.1			2										
S		DO	4S	16	162		160	7.6			148	12									
S		DO	4S	18	29		29	1.4		2	27										
S		DO	4S	20	20		20	1.0			20										
S		DO	4S	22	16		16	.8			14	2									
S		DO	4S	24	57		57	2.7			57										
S		DO	4S	26	25		25	1.2			25										
S		DO	4S	28	11		11	.5			11										
S		DO	4S	32	24	30.1	17	.8			17										
S		Totals			2,150	2.2	2,102	47.1		2	646	432	516	236	87	51	114	20			
D		DO	CU	6	10	100.0															
D		DO	CU	15	4	100.0															
D		DO	CU	18	6	100.0															
D		DO	2S	32	47	3.3	45	7.6					20	25							

Log Stock Table - MBF

T07N R06W S04 Ty00MC	102.00
T07N R06W S04 Ty00PC	117.00
T07N R06W S04 Ty00MC	6.00

Project: SHINGLEW
Acres 225.00

S T	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+
D	DO	2S 40	68	3.0	66	11.1				9	57							
D	DO	3S 30	19		19	3.2				19								
D	DO	3S 32	147	6.2	137	23.2			50	21	66							
D	DO	3S 36	3		3	.5			3									
D	DO	3S 40	256		255	43.1			58	80	116		1					
D	DO	4S 14	2		2	.3			2									
D	DO	4S 16	17		17	2.9			17									
D	DO	4S 18	7		7	1.3		1	6									
D	DO	4S 20	21		21	3.5		9	12									
D	DO	4S 22	4		4	.7		1	4									
D	DO	4S 24	4		4	.6			4									
D	DO	4S 26	6		6	.9			6									
D	DO	4S 32	8	20.0	6	1.1			6									
D	Totals		629	5.8	592	13.3		11	166	101	231	82	1					
NF	DO	CU 6	3	100.0														
NF	DO	2S 32	19		19	26.2					19							
NF	DO	2S 40	33		33	46.7						11	10	13				
NF	DO	3S 32	6		6	7.8			6									
NF	DO	3S 40	12		12	16.8			2	7	3							
NF	DO	4S 24	2		2	2.6			2									
NF	Totals		75	4.4	71	1.6			4	12	3	19	11	10	13			
Total	All Species		4,677	4.5	4,464	100.0		13	1255	771	928	720	320	294	143	20		

LOGGING PLAN MAP

OF TIMBER SALE CONTRACT NO. 341-11-14
SHINGLE WAVE
PORTIONS OF SECTIONS 4 AND 5, T7N, R6W,
AND PORTIONS OF SECTION 32, T8N, R6W,
W.M., CLATSOP COUNTY, OREGON.
APPROXIMATE SCALE 1"=1,000'

1,000 500 0 1,000 Feet

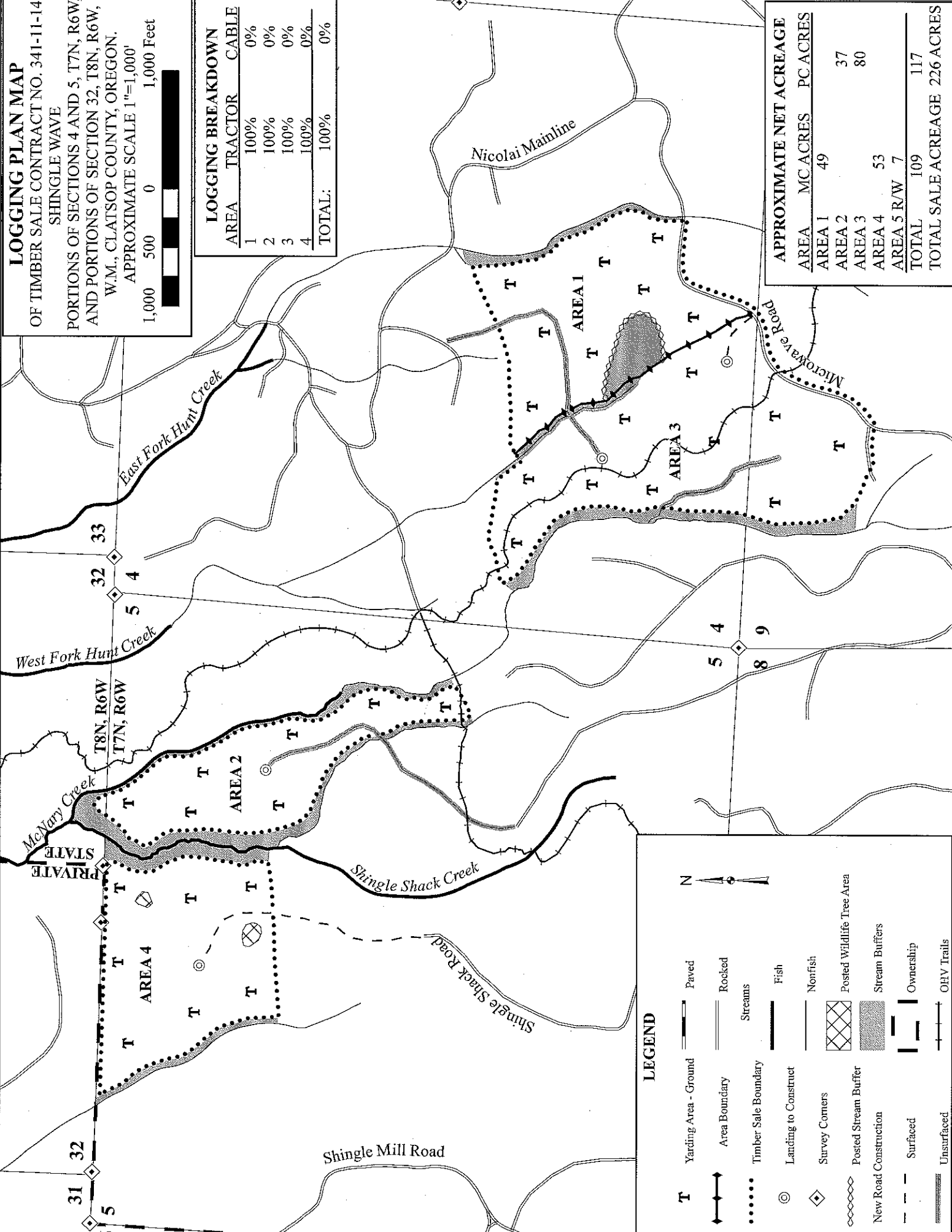


LOGGING BREAKDOWN

AREA	TRACTOR	CABLE
1	100%	0%
2	100%	0%
3	100%	0%
4	100%	0%
TOTAL:	100%	0%

APPROXIMATE NET ACREAGE

AREA	MC ACRES	PC ACRES
AREA 1	49	37
AREA 2		80
AREA 3		
AREA 4	53	
AREA 5 R/W	7	
TOTAL	109	117
TOTAL SALE ACREAGE		226 ACRES



LEGEND

- T Yarding Area - Ground
- Area Boundary
- Timber Sale Boundary
- Landing to Construct
- Survey Corners
- Posted Stream Buffer
- New Road Construction
- Surfaced
- Unsurfaced
- Paved
- Rocked
- Streams
- Fish
- Nonfish
- Posted Wildlife Tree Area
- Stream Buffers
- Ownership
- OHV Trails