

**OREGON DEPARTMENT OF FORESTRY**

**TIMBER SALE APPRAISAL**

**COST SUMMARY**

<b>Timber Sale Name :</b>	North Cronin
<b>Timber Sale Number :</b>	341-02-36
<b>ODF District / Unit :</b>	TILLAMOOK / NORTH UNIT
<b>Gross Timber Sale Value :</b>	\$420,937
<b>Minus Project Work :</b>	\$138,220
<b>Net Timber Sale Value : (Advertised Value)</b>	\$282,717



SALE 2-36  
NORTH CRONIN

\*\*\*\*\* LOGGING COSTS \*\*\*\*\*

COMB 1 DF 57% WH/WF 57% SS 0% WRC 0% RA 20% SP 0% PP 0% WP 0% IC 0%  
YARDING METHOD 7 SJ5 SLOPE 60% YARDING DISTANCE 400 %UPHILL 100%  
#LANDINGS 45 #TAILHOLDS 0  
LOADING METHOD 4T SJ5 TRAK

COMB 2 DF 43% WH/WF 43% SS 0% WRC 0% RA 80% SP 0% PP 0% WP 0% IC 0%  
YARDING METHOD 5 D4 SLOPE 10% YARDING DISTANCE 300 %UPHILL 50%  
#LANDINGS 18 #TAILHOLDS 0  
LOADING METHOD 4T SJ5 TRAK

HAUL COSTS:				I	ROAD MAINT COSTS:	I	# SEASONS 1.6
	\$ /	TRIPS	MBF/	I			
	MBF	/DAY	LOAD	I			
DF	0.00	2	3.3	I	\$/MBF \$ 5.91	I	PROFIT & RISK 20%
WH/WF	0.00	2	3.1	I		I	
SS	0.00	0	0.0	I	OR MILES OF:	I	
WRC	0.00	0	0.0	I		I	
RA	0.00	2	3.0	I	DIRT	0.0	I
SP	0.00	0	0.0	I	ROCK (CONT ROCK)	0.0	I
PP	0.00	0	0.0	I	ROCK (STATE ROCK)	0.0	I
WP	0.00	0	0.0	I	PAVED	0.0	I
IC	0.00	0	0.0	I			I

PROJECT COSTS	\$ 138220.00
SLASH DISPOSAL COSTS	\$ 0.00
OTHER COSTS INCLUDING P&R	\$ 213536.00
OTHER COSTS NOT INCLUDING P&R	\$ 5270.00

FIXED COSTS ARE NOT ASSIGNED TO RED ALDER  
LOCAL POND VALUE USED FOR SPECIES 5 GRADE 15 \$400

SALE 2-36  
NORTH CRONIN

\*\*\*\*\* APPRAISAL \*\*\*\*\*

	DF	WH/WF	SS	WRC	RA	SP	PP	WP	IC
LOGGING COSTS									
FALL &BUCK	16.89	21.11	0.00	0.00	16.89	0.00	0.00	0.00	0.00
YARDING	35.90	41.14	0.00	0.00	24.91	0.00	0.00	0.00	0.00
LOADING	9.25	10.51	0.00	0.00	9.19	0.00	0.00	0.00	0.00
ROAD MAINT	6.22	6.22	0.00	0.00	6.22	0.00	0.00	0.00	0.00
FIRE PROT	1.44	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HAULING	69.16	80.84	0.00	0.00	80.84	0.00	0.00	0.00	0.00
OTHER	71.15	71.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SUBTOTAL	210.01	232.41	0.00	0.00	138.05	0.00	0.00	0.00	0.00
PROF & RISK	42.00	46.48	0.00	0.00	27.61	0.00	0.00	0.00	0.00
SLASH DISP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCALING	2.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00
OTHER	1.76	1.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	255.77	282.65	0.00	0.00	167.66	0.00	0.00	0.00	0.00

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AMORTIZATION 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00  
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POND VALUE 552.44 348.14 0.00 0.00 400.00 0.00 0.00 0.00 0.00 0.00  
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STUMPAGE 296.67 65.49 0.00 0.00 232.34 0.00 0.00 0.00 0.00 0.00  
AMORTIZED 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

\*\*\*\*\* SUMMARY \*\*\*\*\*

AMORTIZED				UNAMORTIZED			
DF	OMBF	\$	0.00=\$	0.0	835MBF	\$	296.67=\$ 247719.45
WH/WF	OMBF	\$	0.00=\$	0.0	2166MBF	\$	65.49=\$ 141851.34
SS	OMBF	\$	0.00=\$	0.0	OMBF	\$	0.00=\$ 0.0
WRC	OMBF	\$	0.00=\$	0.0	OMBF	\$	0.00=\$ 0.0
RA	OMBF	\$	0.00=\$	0.0	135MBF	\$	232.34=\$ 31365.90
SP	OMBF	\$	0.00=\$	0.0	OMBF	\$	0.00=\$ 0.0
PP	OMBF	\$	0.00=\$	0.0	OMBF	\$	0.00=\$ 0.0
WP	OMBF	\$	0.00=\$	0.0	OMBF	\$	0.00=\$ 0.0
IC	OMBF	\$	0.00=\$	0.0	OMBF	\$	0.00=\$ 0.0
TOTAL		\$		0.0		\$	420936.69
						\$	420936.69

ROUNDED TOTALS: CASH SALE \$ 420937 RECOVERY SALE \$ 420936.69

\*\*\*\*\* OFFICE USE \*\*\*\*\*

BID PRICE PER MBF: DF \_\_\_\_\_ WH/WF \_\_\_\_\_ SS \_\_\_\_\_ WRC \_\_\_\_\_ RA \_\_\_\_\_  
SP \_\_\_\_\_ PP \_\_\_\_\_ WP \_\_\_\_\_ IC \_\_\_\_\_

ESTIMATED TOTAL OR LUMPSUM PRICE \$ \_\_\_\_\_

SALE DATE: \_\_\_\_\_ TERMINATION DATE: \_\_\_\_\_

PURCHASER: \_\_\_\_\_ # QUALIFIED BIDDERS: \_\_\_\_\_

**Additional Costs****North Cronin**

"STEWARDSHIP IN FORESTRY"

Cable Yarding Volume:	1788 MBF
Ground Yarding Volume:	1348 MBF
<b>Total Sale Volume:</b>	<b>3136 MBF</b>

ADDITIONAL COSTS - PROFIT & RISK TO BE ADDED						
Harvesting and Layout	Cost / MBF			Volume (MBF)		
Locate Corridors & Skid Roads:	\$ 5	x	3136	=		\$15,680
Tree Selection & Fall to Lead:	\$ 40	x	3136	=		\$125,440
						<b>\$141,120</b>
Yarding & Loading:	Cost / MBF			Volume (MBF)		
Rig Skyline Corridors:	\$ 8	x	1788	=		\$14,304
Clear Chute at Cable Settings:	\$ 10	x	1788	=		\$17,880
Brand & Paint:	\$ 2	x	3136	=		\$6,272
Lateral Line Pulling:	\$ 10	x	3136	=		\$31,360
						<b>\$69,816</b>
Intermediate Supports ( per support)	\$ 100	x	26	=		\$2,600
						<b>\$2,600</b>
						<b>OTHER COSTS TOTAL \$213,536</b>
ADDITIONAL COSTS - PROFIT & RISK INCLUDED						
Non-Project Roads						
Road 1	24	Stations	x	\$ 65	=	\$1,560
Road 2	22	Stations	x	\$ 65	=	\$1,430
Road 3	9	Stations	x	\$ 65	=	\$585
Road 4	3	Stations	x	\$ 65	=	\$195
	58				<b>Total</b>	<b>\$3,770</b>
Longview Fibre Road Use permit						<b>\$1,500</b>
						<b>OTHER COSTS TOTAL \$5,270</b>

ROAD MAINTENANCE					
	\$/Mile	MMBF	Miles		\$/MBF
*Grading:	\$500	3.14	14		\$1,500
**Ditch Clearing and End Haul					\$0.15
	\$/Yd	MMBF	Miles	CuYd	\$/MBF
Replacement rock	\$3.85	0.73	4.65	50	\$0.90
***Maintenance rock	\$3.85	3.14	14	50	\$1.65
<b>TOTAL ROAD MAINTENANCE COST / MBF:</b>					<b>\$5.91</b>
*Assumes grading the road once per 2 MMBF					
**Includes cost for excavating, hauling, compaction, and sediment control devices.					
***Assumes 50 cy for normal maintenance /2 MMBF/mile					

**PROJECT SUMMARY SHEET**

Sale: North Cronin Date: Jun. 29 2001

**Construction -**

Point	C - D	stations =	23+70	\$6,385.66
Point	E - F	stations =	4+00	\$2,149.16
Point		stations =		\$0.00
Point		stations =		\$0.00
Point		stations =		\$0.00
SUB TOTAL				\$8,534.82

**Improvement -**

Point	A - B	stations =	134+35	\$109,087.53
Point		stations =		\$0.00
Point		stations =		\$0.00
Point		stations =		\$0.00
Point		stations =		\$0.00
SUB TOTAL				\$109,087.53

**Special Projects -**

<b>MAINTENANCE STOCKPILE @ ROCK PIT:</b>				
600 Cubic Yards @ \$9.51/c.y.			\$5,706.00	
<b>MAINTENANCE STOCKPILE #2</b>				
Site Development			\$390.00	
Pit Run Base Rock: 83 C.Y. @ \$6.16/c.y.			\$511.28	
400 Cubic Yards @ \$11.22/c.y.			\$4,488.00	
<b>MAINTENANCE STOCKPILE #3</b>				
Site Development & Approaches			\$700.00	
Pit Run Base Rock: 83 C.Y. @ \$4.96/c.y.			\$411.68	
400 Cubic Yards @ \$14.71/c.y.			\$5,884.00	
SUB TOTAL				\$18,090.96

**Move - In -**

Grader		\$298.83
Roller		\$356.71
Excavator		\$765.19
Cat		\$725.57
2 Dump Trucks		\$359.76
		\$0.00
		\$0.00
SUB TOTAL		\$2,506.06

GRAND TOTAL \$138,219.37

**SUMMARY OF CONSTRUCTION COST**

Sale: North Cronin Road: Points A - B

Construction -                      stations Improvement - 134+35 stations  
0.00 miles                      miles

**CLEARING AND GRUBBING -**

Scattering 7.70 acres @ \$790.00 per acre = \$6,083.00

TOTAL CLEARING AND GRUBBING \$6,083.00

**EXCAVATION -**

	120.65 sta. @	\$65.00 per sta. =	\$7,842.25
7+90 - 8+40	95 cys. @	\$2.83 per c.y. =	\$268.85
25+10 - 26+35 &			
28+50 - 30+75	242 cys. @	\$3.99 per c.y. =	\$965.58
33+80 - 35+05	213 cys. @	\$2.84 per c.y. =	\$604.92
53+70 - 55+20 &			
56+30 - 57+30	593 cys. @	\$4.04 per c.y. =	\$2,395.72
69+70 - 75+15	4491 cys. @	\$2.09 per c.y. =	\$9,386.19
79+05 - 80+55	384 cys. @	\$3.04 per c.y. =	\$1,167.36

Drill & Shoot:

28+50 - 30+75 245 cys. @ \$5.59 per c.y. = \$1,369.55

TOTAL EXCAVATION \$24,000.42

**CULVERT MATERIALS -**

Culverts

268	LF of 18"	\$4,154.00	40	LF of 24"	\$736.40
78	LF of 30"	\$1,716.00	0	LF of 36"	\$0.00
0	LF of 42"	\$0.00	0	LF of 48"	\$0.00
		<u>\$5,870.00</u>			<u>\$736.40</u>

Half Rounds

50	LF of 21"	\$593.50	0	LF of 30"	\$0.00
		<u>\$593.50</u>			<u>\$0.00</u>

Culvert Stakes

10	1/2rnd stakes @	\$8.00 per stake=	\$80.00
11	Marker states @	\$6.00 per stake=	\$66.00

TOTAL CULVERT MATERIALS \$7,279.90

**SURFACING- 0+00 to 65+60 -- 3"-0"**

6" Depth	2,165	cy. of	Crshd Rock @	\$13.95 per c.y.=	\$30,198.15
CrvWiden	75	cy. of	Crshd Rock @	\$13.95 per c.y.=	\$1,046.13
9Trnouts	99	cy. of	Crshd Rock @	\$13.95 per c.y.=	\$1,380.89

TOTAL SURFACING \$32,625.17

**SURFACING- 65+60 to 89+70 -- 1 1/2"-0"**

6" Depth	795	cy. of	Crshd Rock @	\$13.95 per c.y.=	\$11,088.93
CrvWiden	60	cy. of	Crshd Rock @	\$13.95 per c.y.=	\$836.90
3Trnouts	33	cy. of	Crshd Rock @	\$13.95 per c.y.=	\$460.30

TOTAL SURFACING \$12,386.13

**SURFACING- 89+70 to 134+35 -- 3"-0"**

6" Depth	1,473	cy. of	Crshd Rock @	\$13.95 per c.y.=	\$20,545.90
CrvWiden	30	cy. of	Crshd Rock @	\$13.95 per c.y.=	\$418.45
6Trnouts	66	cy. of	Crshd Rock @	\$13.95 per c.y.=	\$920.59
SmTurnrd	11	cy. of	Crshd Rock @	\$13.95 per c.y.=	\$153.43

TOTAL SURFACING \$22,038.38

**SPECIAL PROJECTS-**

Grade Road: 2.54 Miles @ \$628.62/mi. \$1,596.69

Roll Subgrade: 134+35 Stations @ \$11/sta. \$1,477.85

Develop Waste Areas \$700.00

Grass Seed & Fertilize Areas of Disturbed Soil & Waste Areas: 5 Acres @ \$180/ac. \$900.00

TOTAL SPECIAL PROJECTS \$4,674.54

GRAND TOTAL \$109,087.53

**SUMMARY OF CONSTRUCTION COST**

Sale: North Cronin Road: Points C - D

Construction - 23+70 stations Improvement -            stations  
0.45 miles            miles

**CLEARING AND GRUBBING -**

Scattering 2.37 acres @ \$790.00 per acre = \$1,872.30  
**TOTAL CLEARING AND GRUBBING \$1,872.30**

**EXCAVATION -**

Cat 22 hr.s @ \$130.31 per hr. = \$2,866.82  
0.00 sta. @ \$65.00 per sta. = \$0.00  
0 cys. @ \$0.00 per c.y. = \$0.00  
**TOTAL EXCAVATION \$2,866.82**

**CULVERT MATERIALS -**

Culverts  
0 LF of 18" \$0.00 0 LF of 24" \$0.00  
0 LF of 30" \$0.00 0 LF of 36" \$0.00  
0 LF of 42" \$0.00 0 LF of 48" \$0.00  
\$0.00 \$0.00

Half Rounds  
0 LF of 21" \$0.00 0 LF of 30" \$0.00  
0 LF of 36" \$0.00 0 LF of 42" \$0.00  
0 LF of 48" \$0.00 0 LF of 54" \$0.00  
\$0.00 \$0.00

Culvert Stakes  
0 stakes @ \$8.00 per stake = \$0.00  
**TOTAL CULVERT MATERIALS \$0.00**

**SURFACING-**

12" Depth 134 cy. of Pit Run @ \$6.63 per c.y. = \$888.99  
CrvWiden 10 cy. of Pit Run @ \$6.63 per c.y. = \$66.34  
**TOTAL SURFACING \$955.34**

**SPECIAL PROJECTS**

Grade Road: ,45 Miles @ \$378/mi. \$170.10  
Roll Subgrade: 23+70 Stations @ \$11/sta. \$269.10  
Grass Seed & Fertilize Areas of Disturbed Soil: 1.4 Acres @ \$180/ac. \$252.00  
\$0.00  
**TOTAL SPECIAL PROJECTS \$691.20**

**GRAND TOTAL \$6,385.66**



**SUMMARY OF CONSTRUCTION COST**

Sale: North Cronin Road: Points E - F

Construction - 4+00 stations Improvement -            stations  
0.08 miles 0.00 miles

**CLEARING AND GRUBBING -**

Scattering 0.30 acres @ \$790.00 per acre = \$237.00  
**TOTAL CLEARING AND GRUBBING \$237.00**

**EXCAVATION -**

Cat 3 hr.s @ \$130.00 per hr. = \$390.00  
**TOTAL EXCAVATION \$390.00**

**CULVERT MATERIALS -**

**Culverts**

0 LF of 18" \$0.00	0 LF of 24" \$0.00
0 LF of 30" \$0.00	0 LF of 36" \$0.00
0 LF of 42" \$0.00	0 LF of 48" \$0.00
0 LF of 54" \$0.00	0 LF of 60" \$0.00
<u>\$0.00</u>	<u>\$0.00</u>

**Half Rounds**

0 LF of 21" \$0.00	0 LF of 30" \$0.00
0 LF of 36" \$0.00	0 LF of 42" \$0.00
0 LF of 48" \$0.00	0 LF of 54" \$0.00
0 LF of 60" \$0.00	0 LF of 66" \$0.00
<u>\$0.00</u>	<u>\$0.00</u>

**Culvert Stakes**

0 stakes @ \$8.00 per stake = \$0.00  
**TOTAL CULVERT MATERIALS \$0.00**

**SURFACING-**

12" Depth	134 cy. of	Pit Run	@	\$6.04 per c.y.=	\$809.36
CrvWiden	95 cy. of	Pit Run	@	\$6.04 per c.y.=	\$573.80
<b>TOTAL SURFACING</b>					<b>\$1,383.16</b>

**SPECIAL PROJECTS**

<u>Grade Road</u>	<u>\$60.00</u>
<u>Grass Seed, Fertilize Areas of Disturbed Soil</u>	<u>\$35.00</u>
<u>Roll Subgrade: \$11/Sta.</u>	<u>\$44.00</u>
<b>TOTAL SPECIAL PROJECTS</b>	<b>\$139.00</b>

**GRAND TOTAL \$2,149.16**

**ROCK PIT DEVELOPMENT AND CRUSHING COST SUMMARY**

**SALE: NORTH CRONIN**

Pit:	<u>LONGVIEW</u>	Location:	<u>SE1/4 NE1/4 SEC33 T4N R7W</u>
Rock:	<u>1 1/2"-0", 3"-0" Crushed</u>	Road:	<u>4807 c.y.</u>
Swell:	<u>1.30</u>	Stockpile Size:	<u>1400 c.y.</u>
Shrinkage:	<u>1.16</u>	Total Truck Loads:	<u>6207 c.y.</u>
Drill Pct.:	<u>100%</u>	In Place Total:	<u>4775 c.y.</u>

Pit Development:				\$1,000.00
Drill & Shoot:	\$2.40 /cu.yd.	x	4775 cu.yds.	= \$11,459.08
Strip Rock:	\$1.50 /cu.yd.	x	0 cu.yds.	= \$0.00
Push Rock:	\$0.60 /cu.yd.	x	6207 cu.yds.	= \$3,724.20
Load Crusher:	\$0.60 /cu.yd.	x	6207 cu.yds.	= \$3,724.20
Crushing	\$3.45 /cu.yd.	x	6207 cu.yds.	= \$21,414.15
Load Dump Truck:	\$0.60 /cu.yd.	x	6207 cu.yds.	= \$3,724.20
Oversize Reduction:	\$5.00 /cu.yd.	x	239 cu.yds.	= \$1,193.65
			Sub Total	\$46,239.48

Move-In:				
Drill & Compressor				\$320.07
2 Loaders				\$952.00
4 Dump Trucks				\$752.64
3-Stage Crusher				\$3,061.47
3-Stage Set-Up				\$2,520.00
Change Gradation				\$207.00
<b>TOTAL</b>				<b>\$7,813.18</b>

Base Cost \$8.71 Per Cu.Yd.

Road Segment	Haul Cost /cu.yd.	Proc Cost /cu.yd.	Base Cst. /cu.yd.	Cost /cu.yd.	Number Cu. Yds	ROCK COST
A - B	\$3.85	\$1.39	\$8.71	\$13.95	4807	\$67,049.67
	\$0.00	\$0.00	\$0.00	\$0.00	0	\$0.00
	\$0.00	\$0.00	\$0.00	\$0.00	0	\$0.00
				Total C.Y.	4807	Sub Total \$67,049.67

Stockpile	Haul Cost /cu.yd.	Proc Cost /cu.yd.	Base Cst. /cu.yd.	Cost /cu.yd.	Number Cu.Yds.	ROCK COST
	\$0.00	\$0.80	\$8.71	\$9.51	600	\$5,705.00
	\$1.94	\$0.55	\$8.71	\$11.19	400	\$4,477.74
	\$5.45	\$0.55	\$8.71	\$14.71	400	\$5,883.34
				Total C.Y.	1400	Sub Total \$5,705.00

TOTAL ROCKING COSTS = \$72,754.67

**PIT RUN PIT DEVELOPMENT AND STRIPPING COST SUMMARY**  
**SALE: NORTH CRONIN**

Pit:	<u>Cronin Pit Run</u>	Location:	<u>Sec. 33 T1N R7W</u>
Rock:	<u>PIT RUN</u>	Road:	<u>373 c.y.</u>
Swell:	<u>1.30</u>	Stockpile Size:	<u>c.y.</u>
Shrinkage:	<u>1.16</u>	Total Truck Loads:	<u>373 c.y.</u>
Drill Pct.:	<u>100%</u>	In Place Total:	<u>287 c.y.</u>

Pit Development:					\$300.00
Drill & Shoot:	\$1.90 /cu.yd.	x	0 cu.yds.	=	\$0.00
Strip Rock:	\$1.50 /cu.yd.	x	373 cu.yds.	=	\$559.50
Push Rock:	\$0.60 /cu.yd.	x	0 cu.yds.	=	\$0.00
Load Dump Truck:	\$0.70 /cu.yd.	x	373 cu.yds.	=	\$261.10
			Sub Total		\$1,120.60

Base Cost \$3.00 Per Cu.Yd.

Road Segment	Haul Cost /cu.yd.	Proc Cost /cu.yd.	Base Cst. /cu.yd.	Cost /cu.yd.	Number Cu. Yds	ROCK COST
C - D	\$3.08	\$0.55	\$3.00	\$6.63	144	\$955.34
E - F	\$2.49	\$0.55	\$3.00	\$6.04	229	\$1,384.14
	\$0.00	\$0.00	\$0.00	\$0.00	0	\$0.00
	\$0.00	\$0.00	\$0.00	\$0.00	0	\$0.00
	\$0.00	\$0.00	\$0.00	\$0.00	0	\$0.00
	\$0.00	\$0.00	\$0.00	\$0.00	0	\$0.00
					Total C.Y. 373	Sub Total \$2,339.48

Stockpile	Haul Cost /cu.yd.	Proc Cost /cu.yd.	Base Cst. /cu.yd.	Cost /cu.yd.	Number Cu.Yds.	ROCK COST
	\$0.00	\$0.00	\$0.00	\$0.00	0	\$0.00
	\$0.00	\$0.00	\$0.00	\$0.00	0	\$0.00
					Total C.Y. 0	Sub Total \$0.00

TOTAL ROCKING COSTS = \$2,339.48



**OREGON DEPARTMENT OF FORESTRY  
CRUISE REPORT**

**North Cronin**

1. **Type of Sale:** Partial Cut, Recovery
2. **Legal Description:** Portions of sections 29, 30, 31, 32 & 33, T4N, R7W, WM, Clatsop County.

3. **Sale Acreage:**

	Gross Acres	Net Acres
Area I	28	28
Area II	18	18
Area III	17	17
Area IV	170	130
<b>Total Sale</b>	<b>233</b>	<b>193</b>

The sale boundaries were plotted and the acreage was calculated on a GIS digital ortho photograph. Deductions from total acreage have been made for areas with less than the minimum basal area required in the contract thinning specifications, inaccessibility, hardwood types, and existing roads.

4. **Cruising Procedures:**

- A. **Cruise Method:** A total of 65 variable radius full point plots were measured in Areas I, II, III, and IV, having 12, 10, 10, and 33 plots respectively. Cruise lines were established on transects to sample thinnable types within the sale area (see cruise map). Plots were spaced three chains apart in Areas I and III and four chains apart in Areas II and IV. Conifer trees with a DBH at least 8 inches or greater and red alder with a DBH at least 10 inch or greater were recorded on all plots. All tree diameters were measured to the nearest inch. Residual and surplus trees were designated to achieve residual basal area targets for each area. A total of 150 surplus trees were sampled throughout the sale area for merchantable height and grade. A form factor was recorded for every grade tree and form point was 16 feet for conifers and 4 feet for red alder. All tree heights were measured to the nearest foot.
- B. **Plot size:** Full Point plots with a basal area factor of 20 was used for Area I. A basal area factor of 34 was used for Areas II, III, and IV. The point of conifer tree observation was at 4.5 feet.

C. **Grading System**: Trees were graded according to Columbia River Log Scaling and Grading Rules.

5. **Computation Procedure**: Grade trees were used to develop a volume basal area ratio (V-BAR). Volume for grade trees were computed using the Atterbury SUPERA.C.E. 98 program. Residual and surplus trees were designated on each cruise plot to develop a stand table which was used to expand the volume for the sale area.
6. **Hidden Defect and Breakage**: A 5% deduction was applied to the volume to account for the defect and breakage.
7. **Timber Description**: The sale area burned in the 1945 Salmonberry Fire and Area III lies on the perimeter of the 1933 Wolf Creek Fire. The sale area was salvage logged in the mid 1950's. The 55 year old naturally regenerated stands consist mostly of overstocked hemlock with scattered Douglas-fir, noble fir, and hardwoods. There has been no management activity in these stands since they were established. The understory consists of sword fern and vine maple. Swiss needle cast infection is very low with six to seven years of needle retention in the Douglas-fir. The Douglas-fir is expected to respond favorably to the thinning. The current average and expected stand characteristics for the sale areas are shown in the attached stand tables.
8. **Cruiser Names/Dates**: Joe Travers and Cris Woodward, January 2001.
9. **Revenue Distribution**:  
FDF: 100%  
Tax Code: 8-01  
Deed Numbers: 120,336  
Rehabilitation Obligated: None
10. **Attachments**:  
Volume Summaries  
Stand Table  
Cruise Map  
Logging Plan

North Cronin Area I

DBH	Total TK tr/acre	Total LV tr/acre	Doug-fir TK tr/acre	Doug-fir LV tr/acre	Hemlock TK tr/acre	Hemlock LV tr/acre	Sprce/Cdr TK tr/acre	Sprce/Cdr LV tr/acre	Red Alder TK tr/acre	Red Alder LV tr/acre
8"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9"	6.4	0.0	0.0	0.0	6.4	0.0	0.0	0.0	0.0	0.0
10"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11"	8.6	4.3	0.0	0.0	0.0	4.3	0.0	0.0	8.6	0.0
12"	18.0	0.0	0.0	0.0	10.8	0.0	0.0	0.0	7.2	0.0
13"	12.3	0.0	0.0	0.0	3.1	0.0	0.0	0.0	9.2	0.0
14"	10.6	2.7	0.0	0.0	5.3	0.0	0.0	0.0	5.3	2.7
15"	13.9	6.9	0.0	0.0	9.2	4.6	0.0	0.0	4.6	2.3
16"	2.0	6.1	0.0	0.0	0.0	4.1	0.0	0.0	2.0	2.0
17"	7.2	3.6	1.8	0.0	3.6	1.8	0.0	0.0	1.8	1.8
18"	1.6	4.8	0.0	1.6	1.6	3.2	0.0	0.0	0.0	0.0
19"	5.8	1.4	0.0	0.0	5.8	0.0	0.0	0.0	0.0	1.4
20"	2.6	6.5	0.0	2.6	2.6	2.6	0.0	0.0	0.0	1.3
21"	1.2	4.7	0.0	0.0	0.0	4.7	0.0	0.0	1.2	0.0
22"	3.2	4.3	0.0	1.1	3.2	2.1	0.0	0.0	0.0	1.1
24"	0.9	2.7	0.0	0.0	0.9	2.7	0.0	0.0	0.0	0.0
26"	0.0	2.3	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0
28"	0.0	1.3	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0
30"	0.6	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
32"	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
34"	0.0	1.3	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0
36"	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
38"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40"	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
42"	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
44"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Trees/acre

	All Spec	Doug-fir	Hemlock	Sprce/Cdr	Red Alder
Current	151	7	92	0	53
Residual	57	5	39	0	13
Take	95	2	53	0	40

Basal Area/acre

	All Spec	Doug-fir	Hemlock	Sprce/Cdr	Red Alder
Current	246	14	173	0	60
Residual	133	11	102	0	20
Take	113	2	71	0	40

Quadratic Mean Diameter

	All Spec	Doug-fir	Hemlock	Sprce/Cdr	Red Alder
Current	17.3	18.8	18.6	0.0	14.4
Residual	20.8	19.9	22.0	0.0	17.0
Take	14.8	15.2	15.6	0.0	13.5

Stand Density Index (%)

	Doug-fir	Hemlock	Sprce/Cdr
Current	60	45	52
Residual	30	23	26

**North Cronin Area II**

DBH	Total TK tr/acre	Total LV tr/acre	Doug-fir TK tr/acre	Doug-fir LV tr/acre	Hemlock TK tr/acre	Hemlock LV tr/acre	Sprce/Cdr TK tr/acre	Sprce/Cdr LV tr/acre	Red Alder TK tr/acre	Red Alder LV tr/acre
8"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10"	14.7	7.3	7.3	3.7	7.3	3.7	0.0	0.0	0.0	0.0
11"	18.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.2	0.0
12"	17.8	7.6	0.0	0.0	0.0	7.6	0.0	0.0	17.8	0.0
13"	13.0	4.3	4.3	0.0	2.2	2.2	0.0	0.0	6.5	2.2
14"	16.8	9.4	5.6	5.6	0.0	1.9	0.0	0.0	11.2	1.9
15"	9.8	3.3	3.3	0.0	1.6	1.6	0.0	0.0	4.9	1.6
16"	7.2	8.6	1.4	4.3	2.9	1.4	0.0	0.0	2.9	2.9
17"	7.6	6.3	2.5	6.3	0.0	0.0	0.0	0.0	5.1	0.0
18"	2.3	9.1	2.3	5.7	0.0	2.3	0.0	0.0	0.0	1.1
19"	2.0	5.1	0.0	4.1	0.0	0.0	0.0	0.0	2.0	1.0
20"	0.0	3.7	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.9
21"	0.0	1.7	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.8
22"	0.0	3.0	0.0	1.5	0.0	0.8	0.0	0.0	0.0	0.8
24"	0.0	3.2	0.0	2.5	0.0	0.6	0.0	0.0	0.0	0.0
26"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28"	0.0	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
30"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32"	0.0	0.4	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
34"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

**Trees/acre**

	All Spec	Doug-fir	Hemlock	Sprce/Cdr	Red Alder
Current	183	65	36	0	82
Residual	73	38	22	0	13
Take	109	27	14	0	69

**Basal Area/acre**

	All Spec	Doug-fir	Hemlock	Sprce/Cdr	Red Alder
Current	216	94	36	0	86
Residual	110	66	24	0	20
Take	106	28	12	0	66

**Quadratic Mean Diameter**

	All Spec	Doug-fir	Hemlock	Sprce/Cdr	Red Alder
Current	14.7	16.3	13.5	0.0	13.9
Residual	16.6	17.8	14.1	0.0	16.7
Take	13.3	13.8	12.5	0.0	13.3

**Stand Density Index (%)**

	Doug-fir	Hemlock	Sprce/Cdr
Current	57	42	48
Residual	27	21	24

North Cronin Area III

DBH	Total TK tr/acre	Total LV tr/acre	Doug-fir TK tr/acre	Doug-fir LV tr/acre	Hemlock TK tr/acre	Hemlock LV tr/acre	Sprce/Cdr TK tr/acre	Sprce/Cdr LV tr/acre	Red Alder TK tr/acre	Red Alder LV tr/acre
8"	9.7	0.0	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10"	12.5	0.0	6.2	0.0	6.2	0.0	0.0	0.0	0.0	0.0
11"	51.5	5.2	0.0	0.0	51.5	0.0	0.0	0.0	0.0	5.2
12"	17.3	4.3	0.0	0.0	17.3	0.0	0.0	0.0	0.0	4.3
13"	11.1	0.0	3.7	0.0	7.4	0.0	0.0	0.0	0.0	0.0
14"	3.2	6.4	0.0	0.0	3.2	0.0	0.0	0.0	0.0	6.4
15"	13.9	5.5	5.5	0.0	8.3	0.0	0.0	0.0	0.0	5.5
16"	7.3	0.0	2.4	0.0	4.9	0.0	0.0	0.0	0.0	0.0
17"	4.3	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0
18"	17.3	0.0	11.5	0.0	5.8	0.0	0.0	0.0	0.0	0.0
19"	10.4	3.5	6.9	0.0	3.5	0.0	0.0	0.0	0.0	3.5
20"	7.8	0.0	4.7	0.0	3.1	0.0	0.0	0.0	0.0	0.0
21"	0.0	7.1	0.0	5.7	0.0	1.4	0.0	0.0	0.0	0.0
22"	0.0	9.0	0.0	7.7	0.0	1.3	0.0	0.0	0.0	0.0
24"	0.0	2.2	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0
26"	0.0	0.9	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0
28"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30"	0.0	0.7	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0
32"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Trees/acre

	All Spec	Doug-fir	Hemlock	Sprce/Cdr	Red Alder
Current	211	68	118	0	25
Residual	45	17	3	0	25
Take	166	51	115	0	0

Basal Area/acre

	All Spec	Doug-fir	Hemlock	Sprce/Cdr	Red Alder
Current	255	112	116	0	27
Residual	82	48	7	0	27
Take	173	65	109	0	0

Quadratic Mean Diameter

	All Spec	Doug-fir	Hemlock	Sprce/Cdr	Red Alder
Current	14.9	17.4	13.4	0.0	14.2
Residual	18.3	22.6	21.5	0.0	14.2
Take	13.8	15.3	13.1	0.0	0.0

Stand Density Index (%)

	Doug-fir	Hemlock	Sprce/Cdr
Current	66	50	57
Residual	20	15	17



North Cronin Area IV

DBH	Total TK tr/acre	Total LV tr/acre	Doug-fir TK tr/acre	Doug-fir LV tr/acre	Hemlock TK tr/acre	Hemlock LV tr/acre	Sprce/Cdr TK tr/acre	Sprce/Cdr LV tr/acre	Red Alder TK tr/acre	Red Alder LV tr/acre
8"	8.9	0.0	0.0	0.0	8.9	0.0	0.0	0.0	0.0	0.0
9"	14.0	0.0	2.3	0.0	11.7	0.0	0.0	0.0	0.0	0.0
10"	15.1	1.9	1.9	0.0	13.2	0.0	0.0	0.0	0.0	1.9
11"	21.9	0.0	3.1	0.0	18.7	0.0	0.0	0.0	0.0	0.0
12"	35.4	0.0	7.9	0.0	27.5	0.0	0.0	0.0	0.0	0.0
13"	22.4	2.2	4.5	0.0	17.9	0.0	0.0	0.0	0.0	2.2
14"	20.2	1.0	5.8	0.0	14.5	0.0	0.0	0.0	0.0	1.0
15"	22.7	0.8	7.6	0.0	15.1	0.0	0.0	0.0	0.0	0.8
16"	4.4	7.4	2.2	0.7	2.2	4.4	0.0	0.0	0.0	2.2
17"	3.3	9.8	2.6	2.6	0.7	6.5	0.0	0.0	0.0	0.7
18"	0.6	12.2	0.6	6.4	0.0	5.2	0.0	0.0	0.0	0.6
19"	0.0	8.9	0.0	4.2	0.0	4.7	0.0	0.0	0.0	0.0
20"	0.0	6.1	0.0	2.8	0.0	3.3	0.0	0.0	0.0	0.0
21"	0.0	4.3	0.0	3.0	0.0	1.3	0.0	0.0	0.0	0.0
22"	0.0	5.5	0.0	2.7	0.0	2.3	0.0	0.0	0.0	0.4
24"	0.0	3.3	0.0	1.6	0.0	1.6	0.0	0.0	0.0	0.0
26"	0.0	0.6	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.0
28"	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
30"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44"	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Trees/acre

	All Spec	Doug-fir	Hemlock	Sprce/Cdr	Red Alder
Current	233	63	160	0	10
Residual	64	24	30	0	10
Take	169	38	130	0	0

Basal Area/acre

	All Spec	Doug-fir	Hemlock	Sprce/Cdr	Red Alder
Current	261	88	162	0	11
Residual	121	52	58	0	11
Take	141	37	104	0	0

Quadratic Mean Diameter

	All Spec	Doug-fir	Hemlock	Sprce/Cdr	Red Alder
Current	14.3	16.1	13.6	0.0	14.6
Residual	18.6	19.7	18.9	0.0	14.6
Take	12.4	13.3	12.1	0.0	0.0

Stand Density Index (%)

	Doug-fir	Hemlock	Sprce/Cdr
Current	69	52	59
Residual	29	22	25

# Volume Summary

## North Cronin

### AREA I

28 acres

	Total Basal Area Per Acre	Take Basal Area Per Acre	V-BAR	Vol/Acre MBF	Gross Volume MBF	D&B Percent	Adjusted Volume MBF
Douglas-fir	14	3	150	0.5	13	5%	12
Hemlock	173	71	120	8.5	239	11%	212
Alder	60	40	80	3.2	90	7%	83
Total	247	114		12.2	341		308

### AREA II

18 acres

	Total Basal Area Per Acre	Take Basal Area Per Acre	V-BAR	Vol/Acre MBF	Gross Volume MBF	D&B Percent	Adjusted Volume MBF
Douglas-fir	94	28	135	3.8	68	5%	65
Hemlock	36	12	110	1.3	24	5%	23
Alder	86	66	50	3.3	59	13%	52
Total	216	106		8.4	151		139

### AREA III

17 acres

	Total Basal Area Per Acre	Take Basal Area Per Acre	V-BAR	Vol/Acre MBF	Gross Volume MBF	D&B Percent	Adjusted Volume MBF
Douglas-fir	112	61	120	7.3	124	6%	117
Hemlock	116	109	95	10.4	176	5%	167
Total	228	170		17.7	300		284

### AREA IV

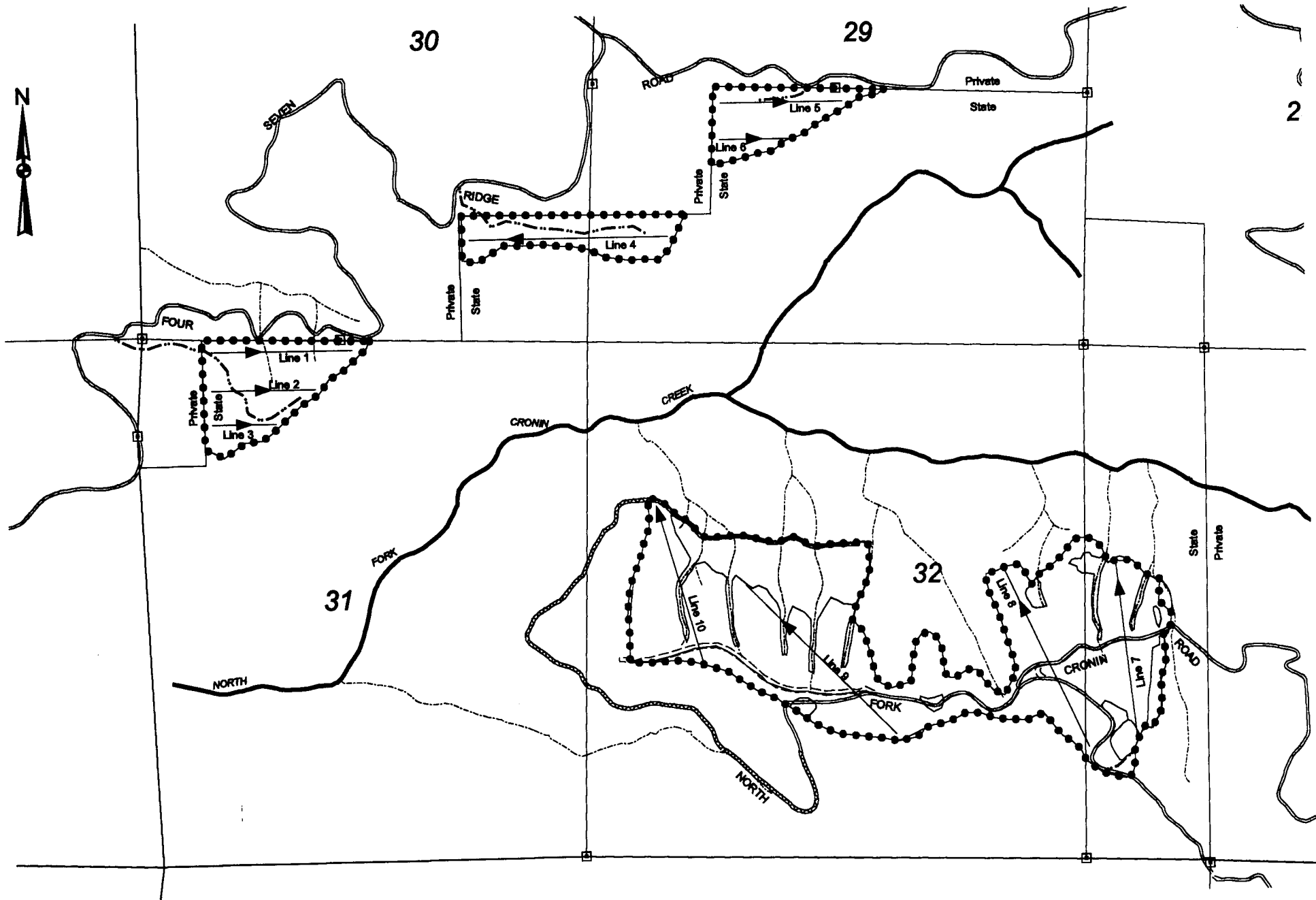
130 acres

	Total Basal Area Per Acre	Take Basal Area Per Acre	V-BAR	Vol/Acre MBF	Gross Volume MBF	D&B Percent	Adjusted Volume MBF
Douglas-fir	88	35	150	5.3	683	6%	642
Hemlock	162	102	140	14.3	1856	5%	1764
Total	250	137		19.5	2539		2405

### Total Sale Area

193 acres

Species	Net Vol. MBF
Douglas-fir	835
hemlock	2166
Alder	135
Sale Total	3136



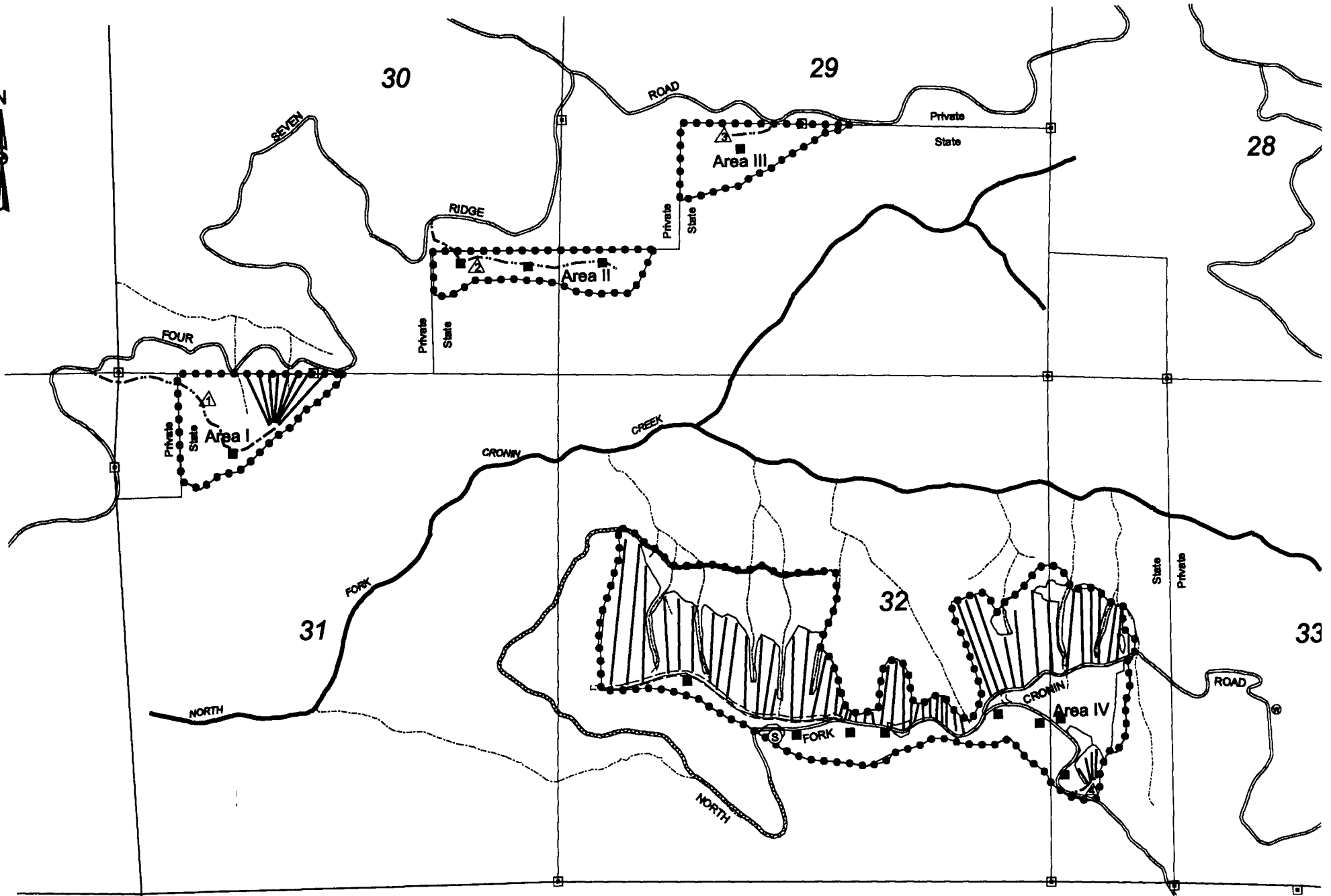
- Surfaced existing road
- Unsurfaced existing road
- County Roads
- New construction Road
- Abandoned Road
- Non Project Road
- Corridors
- Tractor Landings
- Non Required Thinning

- Timbersale boundary
- Waste area
- Stockpile
- Rock pit
- Known Land Survey Corner
- Type F Stream
- Type N Stream
- Stream Buffer
- Cruise Line

North Cronin  
Cruise Map  
Portions of Sections 29, 30, 31, 32, and 33  
T4N, R7W, W.M. Clatsop County, Oregon

700 0 700 1400 Feet

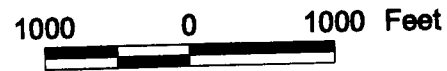
Approximate Acreage:		
Area	Gross	Net
I	28	28
II	18	18
III	17	17
IV	170	130
<b>Total</b>	<b>233</b>	<b>193</b>



- Surfaced existing road
- Unsurfaced existing road
- County Roads
- New construction Road
- Abandoned Road
- Non Project Road
- Corridors
- Tractor Landings
- Non Required Thinning

- Timbersale boundary
- Waste area
- Stockpile
- Rock pit
- Known Land Survey Corner
- Type F Stream
- Type N Stream
- Stream Buffer

North Cronin  
Logging Plan  
Portions of Sections 29, 30, 31, 32, and 33  
T4N, R7W, W.M. Clatsop County, Oregon



Approximate Acreage:		
Area	Gross	Net
I	28	28
II	18	18
III	17	17
IV	170	130
<b>Total</b>	<b>233</b>	<b>193</b>

**OREGON DEPARTMENT OF FORESTRY  
WRITTEN PLAN**

**SALE NAME:** North Cronin

**PROTECTED RESOURCE:** Type N streams, unnamed tributaries of North Fork Cronin Creek and Nehalem River.

**LOCATION:** Portions of Section 29, 30, 31, 32, and 33 T4N, R7W, W.M., Clatsop County, Oregon.

**ACTIVITIES:** Cable and ground yarding; Road Improvement and Road Construction: culvert installation, road widening, rocking and rock pit development.

**Riparian Management Area (RMA):** The area within 25 horizontal feet from the high water mark on each side of the protected small Type N perennial stream. **High Risk Sites:** Active landslides and slumps; Slopes steeper than 80%; headwalls or draws steeper than 70%; and incised channels with slopes steeper than 60 %.

**PROTECTION MEASURES:**

**YARDING and FELLING:**

- All trees in the RMA outside of yarding corridors are reserved from cutting.
- Adjacent trees will be felled away from or parallel to the RMA.
- If trees or logs fall or slide into a stream channel they will not be limbed, bucked, or removed without approval from ODF.
- When cable yarding lines are strung across RMA's they will be at least 150 feet apart and pulled out prior to rigging the next yarding road.
- Cable yarding will be used on high risk sites.
- A self-clamping carriage capable of passing over intermediate supports and being positioned and repositioned for each turn of logs without lowering the skyline will be used to control the direction of yarding.
- Intermediate supports will be used to provide lift.
- Logs will have at least one end suspended when yarded.
- Soil gouging will be incidental and limited to a depth of 1 foot (measured vertically).
- Type N streams shown on the timber sale Exhibit "A" will have a 25 foot no harvest buffer to protect water quality and high risk sites that may be in these areas.
- Ground yarding equipment will not operate within 35 feet of Type N streams and 50 feet of Type F streams
- Ground yarding will not be allowed on high risk sites.
- Active landslides and slumps that may be discovered within the harvest areas will be reviewed by the State to determine protective measures for these areas. Further consultation with the Area geotechnical specialist and/or removal of the sites from the harvest area may be required.

**PROJECT WORK:**

- In stream project work activity within 100 feet of the protected streams will be allowed from July 1 through September 15.
- Sediment traps will be used as needed to protect water quality.
- Fill material will be placed and compacted in 8 inch lifts. Fill slopes will be constructed at a 1½ :1 fill width to height ratio.
- Rip rap placement will be accomplished by placing rock by machine rather than end dumping.
- Waste material will be end-hauled to stable locations marked in the field.
- Roads will not be constructed on high risk sites.

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