



"STEWARDSHIP IN FORESTRY"

# Timber Sale Appraisal Cost Summary Crawford Ridge Thinning Sale 341-05-11

District: Astoria

Date: 10/11/04

	Conifer	Hardwood	Total
<b>Gross Timber Sale Value</b>	\$355,302.06	\$252.14	\$355,554.20
		<b>Project Work</b>	(\$84,263.00)
		<b>Advertised Value</b>	\$271,291.20



# Timber Sale Appraisal Timber Description Crawford Ridge Thinning Sale 341-05-11

"STEWARDSHIP IN FORESTRY"

**District:** Astoria

**Location:** Portions of Sections 30,31,& 32, T6N, R6W; portions of Section 1, T5N, R7W, and portions of Sections 4 & 5, T5N, R6W, W.M., Clatsop County, Oregon.

**Date:** 10/11/04

**Stand Stocking:** 80%

Species	Avg. DBH	Amortized%	Recovery%
Douglas - Fir	14	0	97
Western Hemlock / Fir	13	0	97
Sitka Spruce	37	0	97
Red Cedar	34	0	97
Alder (Red)	11	0	95

Volume by Grade	Douglas - Fir	Western Hemlock / Fir	Sitka Spruce	Red Cedar	Alder (Red)	Total
2S	109	53	1	1	0	164
3S	968	360	0	0	0	1,328
4S	153	49	0	0	1	203
<b>Total</b>	<b>1,230</b>	<b>462</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1,695</b>

**Comments:** Pond Values Used: 3rd Quarter 2004 + Local Pond Values.

Log Markets: Mist, Clatskanie, Tillamook, Forest Grove

Additional Costs with P&R:

100% branding and painting:  $\$1/\text{MBF} \times 1,695\text{MBF} = \$1,695$

Additional costs for cable thinning (bucking tops, topping or girdling tail trees, cable corridor layout, etc.):  $\$5/\text{MBF} \times 746 \text{ MBF} = \$3,730$

Additional rigging costs (rigging tailtrees & supports):  $\$5/\text{MBF} \times 746\text{MBF} = \$3,730.$

Total cost with P&R =  $\$9,155$

Costs without P&R:

Vacating dirt road segments 1A to 1B, 4A to 4B, and I5 to I6 after harvest:  $\$45/\text{sta.} \times 26 \text{ stations} = \$1,170$

Total non-P&R costs:  $\$1,170$



# Timber Sale Appraisal

## Logging Conditions

### Crawford Ridge Thinning

#### Sale 341-05-11

"STEWARDSHIP IN FORESTRY"

**Combination#: 1**

Douglas - Fir	44.00%	
Western Hemlock / Fir	44.00%	
Sitka Spruce	44.00%	
Red Cedar	44.00%	
Alder (Red)	44.00%	

**Yarding Distance:** Short (400 ft)      **Downhill Yarding:** No  
**Logging System:** Cable: Medium Tower >40 - <70      **Process:** Manual Delimiting  
**Tree Size:** Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF  
**Loads/Day:** 4      **Bd. Ft./Load:** 3,700  
**Cost/MBF:** \$224.10

**Machines:**  
 Log Loader (A)  
 Tower Yarder (Medium)

**Combination#: 2**

Douglas - Fir	54.00%	
Western Hemlock / Fir	54.00%	
Sitka Spruce	54.00%	
Red Cedar	54.00%	
Alder (Red)	54.00%	

**Yarding Distance:** Short (400 ft)      **Downhill Yarding:** Yes  
**Logging System:** Track Skidder      **Process:** Manual Falling/Delimiting  
**Tree Size:** Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF  
**Loads/Day:** 5      **Bd. Ft./Load:** 3,700  
**Cost/MBF:** \$176.51

**Machines:**  
 Log Loader (B)  
 Track Skidder

**Combination#: 3**

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

**Yarding Distance:** Short (400 ft)      **Downhill Yarding:** Yes  
**Logging System:** Track Skidder      **Process:** Manual Falling/Delimiting  
**Tree Size:** Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF  
**Loads/Day:** 7      **Bd. Ft./Load:** 3,700  
**Cost/MBF:** \$127.91

**Machines:**  
 Log Loader (B)  
 Track Skidder



# Timber Sale Appraisal Logging Costs Crawford Ridge Thinning Sale 341-05-11

"STEWARDSHIP IN FORESTRY"

Date: 10/11/04

Operating Seasons: 2.0

Profit & Risk: 12%

Project Costs: \$84,263

Other Costs (P/R): \$9,155

Slash Disposal: \$0

Other Costs: \$1,170

Miles of Road			
Dirt	Rock (Contractor)	Rock (State)	Paved
0.0	0.0	0.0	0.0

Road Maintenance: \$12.67

### Hauling Costs

Species	\$/MBF	Trips/Day	MBF/Load
Douglas - Fir	\$0.00	3.0	3.7
Western Hemlock / Fir	\$0.00	2.0	3.5
Sitka Spruce	\$0.00	2.0	5.0
Red Cedar	\$0.00	2.0	5.0
Alder (Red)	\$0.00	2.0	3.0

**Local Pond Values**

<b>Date</b>	<b>Species</b>	<b>Grade</b>	<b>Value</b>
10/11/04	Douglas - Fir	2S	\$580.00
10/11/04	Douglas - Fir	3S	\$555.00
10/11/04	Douglas - Fir	4S	\$515.00
10/11/04	Western Hemlock / Fir	2S	\$425.00
10/11/04	Western Hemlock / Fir	3S	\$395.00
10/11/04	Western Hemlock / Fir	4S	\$365.00
10/11/04	Sitka Spruce	2S	\$435.00
10/11/04	Sitka Spruce	3S	\$405.00
10/11/04	Sitka Spruce	4S	\$385.00
10/11/04	Red Cedar	2S	\$1,050.00
10/11/04	Red Cedar	3S	\$1,050.00
10/11/04	Alder (Red)	3S	\$620.00
10/11/04	Alder (Red)	4S	\$590.00



# Timber Sale Appraisal Logging Costs Breakdown Crawford Ridge Thinning Sale 341-05-11

"STEWARDSHIP IN FORESTRY"

Costs	Douglas - Fir	Western Hemlock / Fir	Sitka Spruce	Red Cedar	Alder (Red)
<b>Logging</b>	196.48	196.48	196.48	196.48	196.48
<b>Road Maintenance</b>	13.06	13.06	13.06	13.06	13.34
<b>Fire Protection</b>	3.20	3.20	3.20	3.20	3.20
<b>Hauling</b>	39.54	67.73	47.42	47.42	80.84
<b>Other (P/R appl.)</b>	5.40	5.40	5.40	5.40	5.40
<b>Profit &amp; Risk</b>	30.92	34.30	31.87	31.87	35.91
<b>Slash Disposal</b>	0.00	0.00	0.00	0.00	0.00
<b>Scaling</b>	2.00	2.00	2.00	2.00	2.00
<b>Other</b>	0.69	0.69	0.69	0.69	0.69
<b>Total</b>	291.29	322.86	300.12	300.12	337.86

<b>Amortization</b>	0.00	0.00	0.00	0.00	0.00
<b>Pond Value</b>	552.24	395.26	435.00	1,050.00	590.00
<b>Stumpage</b>	260.95	72.40	134.88	749.88	252.14
<b>Amortized</b>	0.00	0.00	0.00	0.00	0.00



"STEWARDSHIP IN FORESTRY"

# Timber Sale Appraisal Summary

## Crawford Ridge Thinning Sale 341-05-11

**Amortized**

	Douglas - Fir	Western Hemlock / Fir	Sitka Spruce	Red Cedar	Alder (Red)
<b>MBF</b>	0.00	0.00	0.00	0.00	0.00
<b>Value</b>	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	0.00	0.00	0.00	0.00	0.00

**Unamortized**

	Douglas - Fir	Western Hemlock / Fir	Sitka Spruce	Red Cedar	Alder (Red)
<b>MBF</b>	1,230.00	462.00	1.00	1.00	1.00
<b>Value</b>	260.95	72.40	134.88	749.88	252.14
<b>Total</b>	320,968.50	33,448.80	134.88	749.88	252.14

### Gross Timber Sale Value

**Recovery \$355,554.20**

Prepared by: Alan Kelso

Date: 10/11/04

District: Astoria

Phone: (503) 325-5451





**SUMMARY OF CONSTRUCTION COSTS**

**SALE NAME:** Crawford Ridge Thinning  
**ROAD:** 1A-1B(4.85), 4A-4B(10.7)

**NEW CONSTRUCTION:** 15.55 STATIONS 0.29 MILES  
**IMPROVEMENT:**                      STATIONS                      MILES

<b>CLEARING &amp; GRUBBING</b>						
Method	Acres/amount	x	Rate	=	Cost	
Scatter Outside of R/W	2.00	x	\$840.00	=	\$1,680.00	
		x		=		
		x		=		
<b>SUB TOTAL FOR CLEARING &amp; GRUBBING</b>					\$1,680	

<b>EXCAVATION</b>						
Material	amount	x	Rate	=	Cost	
1A-1B Common (Reg. Standard Design)	4.85	x	\$117.00	=	\$567.45	
1A-1B & 4A-4B Landing construction	2	x	\$270.00	=	\$540.00	
4A-4B Common Excavation \$\$/cy	785.00	x	\$1.35	=	\$1,059.75	
4A-4B Endhaul Excavation \$\$/cy	150.00	x	\$2.75	=	\$412.50	
4A-4B Embankment Compaction \$\$/cy	768.00	x	\$0.40	=	\$307.20	
4A-4B Cutslope Rounding \$\$/sta	2.00	x	\$27.00	=	\$54.00	
		x		=		
1A-1B, 4A-4B Grade and Shape 14' outslope \$\$/sta	15.55	x	\$11.20	=	\$174.16	
		x		=		
		x		=		
		x		=		
<b>SUB TOTAL FOR EXCAVATION</b>					\$3,115	

<b>CULVERT MATERIALS AND INSTALLATION</b>								
Location	Dia/type	Lineal ft.	Rate	Cost	No. bands	Rate	Cost	
					Description	Quantity	Rate	Cost
Other/miscellaneous:								
Culvert stakes & markers:								
<b>SUB TOTAL FOR CULVERT MATERIALS &amp; INSTALLATION</b>								

**TOTAL** **\$4,795**

**SUMMARY OF CONSTRUCTION COSTS**

**SALE NAME:** Crawford Ridge Thinning  
**ROAD:** I1-I2(320.95), I3-I4\*(35.9), I5-I6(10.3), & I7-I8(5.45)

**NEW CONSTRUCTION:** 0.00 STATIONS  
**IMPROVEMENT:** 372.60 STATIONS

0.00 MILES  
 7.07 MILES

\*I3-I4 fill reconstruction costs & quantities for Sta. 23+41 & 31+66 are attached on a supplemental sheet)

**CLEARING & GRUBBING**

Method	Acres/amount	x	Rate	=	Cost
I5 - I6 Scatter Outside of R/W	0.71	x	\$840.00	=	\$596.40
		x		=	
		x		=	

**SUB TOTAL FOR CLEARING & GRUBBING**

\$596

**EXCAVATION**

Material	Hrs	x	Rate	=	Cost
C325 excavator for fill reconstructions	20.00	x	\$115.00	=	\$2,300.00
Frontend loader for fill reconstructions	8.00	x	\$75.00	=	\$600.00
Skidder w/operator for fill compaction	10.00	x	\$60.00	=	\$600.00
Dump truck for fill reconstruction	10.00	x	\$57.00	=	\$570.00
Mechanical tamper w/operator	8.00	x	\$34.00	=	\$272.00

**SUB TOTAL FOR EXCAVATION**

\$4,342

**CULVERT MATERIALS AND INSTALLATION**

	Location	Dia/type	Lineal ft.	Rate	Cost	No. bands	Rate	Cost
I1-I2	18+70	18"CPP	30	\$11.00	\$330.00			
I1-I2	58+60	18"CPP	36	\$11.00	\$396.00			
I1-I2	63+15	18"CPP	38	\$11.00	\$418.00			
**I1-I2	307+00	18"CPP	60	\$7.50	\$450.00			
**I1-I2	312+30	18"CPP	40	\$7.50	\$300.00			
**I1-I2	317+15	18"CPP	40	\$7.50	\$300.00			
I3-I4	0+25	18"CPP	32	\$11.00	\$352.00			
**I3-I4	8+42	18"CPP	46	\$7.50	\$345.00			
I3-I4	13+65	18"CPP	34	\$11.00	\$374.00			
**I7-I8	3+40	18"CPP	40	\$7.50	\$300.00			
**I7-I8	5+45	18"CPP	40	\$7.50	\$300.00			

Other/miscellaneous:

Culvert stakes & markers: 6' FIBERGLASS MARKERS 20 \$14.10 \$282.00

\*\* Cost for materials only. Installation costs are included in the fill re-construction costs above.

**SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION**

\$4,147

**Subtotal**

**\$9,085**

<b>SURFACING</b>	I1 to I2, I3 to I4 (does not include surfacing for fill replacements@23+41 or 31+66), I5 to I6, and I7 to I8	Stations/amount	x	Rate/sta/amt	Cost
	Subgrade prep:				
	Description				
	Grade, Shape and Ditch 16' on I1 to I2, I3 to I4, and I7 to I8	362.30	x	\$15.20	\$5,506.96
	Grade and Shape 14' outside on I5 - I6	10.30	x	\$11.20	\$115.36

ROAD SEGMENT		I1 to I2		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta / amt	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2 Volume (CY) per	0+00 to 320+95 Number of					
Culvert bedding	1 1/2"-0" Crushed	18+70	N/A	culvert 20	culverts 1			20	\$5.59	\$112
Base rock replace	1 1/2"-0" Crushed	18+70	N/A	culvert 10	culverts 1			10	\$5.59	\$56
Culvert bedding	1 1/2"-0" Crushed	58+60	N/A	culvert 20	culverts 1			20	\$5.59	\$112
Base rock replace	1 1/2"-0" Crushed	58+60	N/A	culvert 10	culverts 1			10	\$5.59	\$56
Culvert bedding	1 1/2"-0" Crushed	63+15	N/A	culvert 20	culverts 1			20	\$5.59	\$112
Base rock replace	1 1/2"-0" Crushed	63+15	N/A	culvert 10	culverts 1			10	\$5.59	\$56
Culvert bedding	1 1/2"-0" Crushed	307+00	N/A	culvert 20	culverts 1			20	\$5.59	\$112
Base rock replace	1 1/2"-0" Crushed	307+00	N/A	culvert 10	culverts 1			10	\$5.59	\$56
Culvert bedding	1 1/2"-0" Crushed	312+30	N/A	culvert 20	culverts 1			20	\$5.59	\$112
Base rock replace	1 1/2"-0" Crushed	312+30	N/A	culvert 10	culverts 1			10	\$5.59	\$56
Culvert bedding	1 1/2"-0" Crushed	317+15	N/A	culvert 20	culverts 1			20	\$5.59	\$112
Base rock replace	1 1/2"-0" Crushed	317+15	N/A	culvert 10	culverts 1			10	\$5.59	\$56
Subgrade leveling	1 1/2"-0" Crushed		N/A					1,600	\$5.59	\$8,944
Total rock for Road Segment I1 to I2								1,780		

\$9,950

ROAD SEGMENT		I3 to I4		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta / amt	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I3 to I4 Volume (CY) per	0+00 to 35+90 Number of					
Culvert bedding	1 1/2"-0" Crushed	0+25	N/A	culvert 20	culverts 1			20	\$5.59	\$112
Base rock replace	1 1/2"-0" Crushed	0+25	N/A	culvert 10	culverts 1			10	\$5.59	\$56
Culvert bedding	1 1/2"-0" Crushed	8+42	N/A	culvert 20	culverts 1			20	\$5.59	\$112
Base rock replace	1 1/2"-0" Crushed	8+42	N/A	culvert 10	culverts 1			10	\$5.59	\$56
Energy Dissipator	24"-6" Rip rap	8+42	N/A	dissipator 10	dissipators 1			10	\$9.66	\$96
Fill Armor	24"-6" Rip rap	8+42	N/A	N/A	N/A	N/A	N/A	30	\$9.56	\$287
Culvert bedding	1 1/2"-0" Crushed	13+65	N/A	culvert 20	culverts 1			20	\$5.59	\$112
Base rock replace	1 1/2"-0" Crushed	13+65	N/A	culvert 10	culverts 1			10	\$5.59	\$56
Energy Dissipator	24"-6" Rip rap	13+65	N/A	dissipator 10	dissipators 1			10	\$9.66	\$96
Subgrade leveling	1 1/2"-0" Crushed		N/A					250	\$5.59	\$1,398
Total rock for Road Segment I3 to I4								390		

\$2,379

ROAD SEGMENT		I7 to I8		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta / amt	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I7 to I8 Volume (CY) per	0+00 to 5+45 Number of					
Culvert bedding	1 1/2"-0" Crushed	3+40	N/A	culvert 20	culverts 1			20	\$5.59	\$112
Base rock replace	1 1/2"-0" Crushed	3+40	N/A	culvert 10	culverts 1			10	\$5.59	\$56
Culvert bedding	1 1/2"-0" Crushed	5+45	N/A	culvert 20	culverts 1			20	\$5.59	\$112
Base rock replace	1 1/2"-0" Crushed	5+45	N/A	culvert 10	culverts 1			10	\$5.59	\$56
Subgrade leveling	1 1/2"-0" Crushed		N/A					50	\$5.59	\$280
Total rock for Road Segment I7 to I8								110		

\$615

Processing:	Description	No. sta	Rate/sta	Cost
	Water, process, & compact crushed rock on subgrade leveling:	362.30	\$37.00	\$13,405

**TOTAL ROCK QUANTITIES**

24"-6" Rip	6"-0" Rip	4"-0" Rip	1 1/2"-0"	3/4"-0"	Total
50	0	0	2,230	0	2,280

**SUBTOTAL FOR SURFACING**

\$31,971

**SPECIAL PROJECTS**

Description	Cost
Placement 24"-6" Dissipator and Fill Armor 50yds@\$2/yd	\$100
Crush and load old culverts to be hauled away @ \$115/hr x 2 hours	\$230
Haul away old culverts @\$57/hr x 2 hrs	\$114
Fill Reconstruction Costs for Stations 307+00, 312+30, 317+15 on I1-I2; 8+42 on I3-I4; 3+40, 5+45 on I7-I8*	\$5,923
Fill Reconstruction Costs for Stations 23+41 & 31+66 on I3-I4(includes clearing, grubbing, excavation, culvert materials, rock, & application)*	\$26,206
Sidecast Pullback at Sta. 30+25 to 31+25 and 32+72 to 34+00.	\$1,094

\*See attached supplemental sheets for complete cost and rock quantity breakdown

**SUBTOTAL FOR SPECIAL PROJECTS**

\$33,667

\$33,667

**GRAND TOTAL**

\$74,724

Compiled By: Alan Kelso

Date: 7/29/04

**Crawford Ridge Thinning**

**Project No. 1**

**Segment I1 to I2, I3 to I4\*, & I7 to I8**

Location/Description	Excavator C 325	Rubber Tire Skidder	Mechanical tamper w/Operator	Dump Truck	Total
Fill Re-construction Sta. 307+00 I1-I2 12' Fill	10 hr	6 hr	2 hr	4 hr	22
Fill Re-construction Sta. 312+30 I1-I2 6' Fill	4 hr	2 hr	1.5 hr	1.5 hr	9
Fill Re-construction Sta. 317+15 I1-I2 6' Fill	4 hr	2 hr	1.5 hr	1.5 hr	9
Fill Re-construction 8+42 I3-I4 8' Fill	8 hr	4 hr	1 hr	1 hr	14
Fill Re-construction Sta. 3+40 I7-I8 6' Fill	4 hr	2 hr	1.5 hr	1.5 hr	9
Fill Re-construction Sta. 5+45 I7-I8 5' Fill	4 hr	2 hr	1.5 hr	1.5 hr	9
<b>Total</b>	<b>34 hr</b>	<b>18 hr</b>	<b>9 hr</b>	<b>11 hr</b>	<b>72</b>
<b>Rate</b>	<b>\$115 /hr</b>	<b>\$60 /hr</b>	<b>\$34 /hr</b>	<b>\$57 /hr</b>	
<b>Cost</b>	<b>\$3,910</b>	<b>\$1,080</b>	<b>\$306</b>	<b>\$627</b>	<b>\$5,923</b>

\* two large fills shown in separate calculations

A.Kelso

6/8/2004

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Crawford Ridge  
 ROAD: Fills @ 23+14 and 31+62 (I3 to I4)  
 POINTS:

NEW CONSTRUCTION: \_\_\_\_\_ STATIONS \_\_\_\_\_ MILES  
 IMPROVEMENT: 2.52 STATIONS 0.05 MILES

CLEARING & GRUBBING						
Method	Amount	x	Rate	=	Cost	
1+35 sta @ 20' = 2700 sqf = .06 acres	0.06	x	\$840.00	=	\$50.40	
		x		=		
<b>SUB TOTAL FOR CLEARING &amp; GRUBBING</b>					<b>\$50</b>	

EXCAVATION						
Material	Quantity	x	Rate	=	Cost	
1+35 sta	150	x	\$2.75	=	\$412.50	
		x		=		
<b>SUB TOTAL FOR EXCAVATION</b>					<b>\$413</b>	

CULVERT MATERIALS AND INSTALLATION									
Location	Dia/type	Lineal ft.	Rate	Cost	Index/Location	Dia/type	Lineal ft.	Rate	Cost
23+41	24" CPP	64		\$5,193.00					
31+66 & 32+06				\$15,068.00					
Description						Quantity	Rate	Cost	
<b>SUB TOTAL FOR CULVERT MATERIALS &amp; INSTALLATION</b>									<b>\$20,261</b>

\* See attached sheets for itemization of cost development.

**SURFACING**

Subgrade prep:	Description	Sta/amount	x	Rate/sta/amt	Cost
	Grade, Shape, Ditch	3.63	x	\$15.20	\$55.18
	Roll and Compact	3.63	x	\$12.50	\$45.38

ROAD SEGMENT:		13 to 14		POINT TO POINT		STA. TO STA.		TOTAL VOLUME (cy)	Rate/ Sta Amt	COST
Application	Rock Size and Type	Location	Depth of Rock (Inches)	13 to 14 Volume (CY) per	Fills @ 23+41, 31+66, 32+06 Number of	Stations	Number of			
Base Rock	4"-0" Crushed		8	Station	50	Stations	3.63	182	\$6.29	\$1,141.64
Curve Widening Fill #3 only	4"-0" Crushed		8	Curve	50	Curves	1	50	\$6.29	\$314.50
Fill Widening	4"-0" Crushed		8	Fill	16	Fills	2	32	\$6.29	\$201.28
Surfacing	1 1/2"-0" Crushed		3	Station	19	Stations	3.63	69	\$5.59	\$385.54
Curve Widening Fill #3 only	1 1/2"-0" Crushed		3	Curve	19	Curves	1	19	\$5.59	\$106.21
Fill Widening	1 1/2"-0" Crushed		3	Fill	6	Fills	2	12	\$5.59	\$67.08
Culvert Bedding	salvaged 1 1/2"-0"							252	\$4.36	\$1,098.72
Fill Armoring	24"-6" Rip Rap					Fills	2	156	\$9.56	\$1,491.36
Energy Dissipators	24"-6" Rip Rap			Dissipator	10	Dissipators	3	30	\$9.56	\$286.80
Total Rock for Road Segment:								<b>801</b>		<b>\$5,093.13</b>
ROAD SEGMENT:		13 to 14		POINT TO POINT		STA. TO STA.				

Processing:	Description	Stations	\$/Sta	Cost
	Water, Process and Compact 4"-0" Crushed	3.63	\$37.00	\$134.31
	Water, Process and Compact 1 1/2"-0" Crushed	3.63	\$37.00	\$134.31

TOTAL ROCK QUANTITY	24"-6"	6"-0"	4"-0"	3/4"-0"	1-1/2"-0"	Total
	186		264		352	801

**SUBTOTAL SURFACING**

**\$5,193.68**

**SPECIAL PROJECTS**

Description	Cost
Seeding and mulching the waste sites (0.12 acra @ \$1,195/acre)	\$144

**SUB TOTAL SPECIAL PROJECTS**

**\$144**

**GRAND TOTAL**

**\$26,206**

Compiled By: d.mellison, revised by A.Kelso

Date: 8/18/2004

**STATION 23+41**  
**Fill #2**  
**Road Segment I3 to I4**

Sale Name: Crawford Ridge

Date: 5/25/04

Construction Phase	Equipment Used								Labor	Culvert		Erosion Control		Total
	C325	D-7 Cat	Dmp Tr.	Grder	Cat 966	Roller	Wtr. Tr.	Wacker		Feet	\$/ft.	Acres	\$/Acre	\$
Unload and Move CPP to site.	2								1					
Fill and Culvert Removal (Hrs.)	7													
Develop streambed (20')	1													
Place CPP/ tamp blanket (Hrs.)	2							2	1.5					
Load/Haul Borrow Material	4		11		4									
Backfill and compact in layers (Hrs.)	4					4								
Mix Borrow & 1/2 Exc. Material	2													
Place fill armor & riprap	2													
Load,haul/dress waste material	1.5		5											
<b>Total Hours</b>	<b>25.5</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>4</b>	<b>4</b>	<b>0</b>	<b>2</b>	<b>2.5</b>					
Equipment Rates:	\$115	\$90	\$57	\$80	\$50	\$75	\$57	\$6	\$25					
<b>Sub total Hourly rates:</b>	<b>\$2,933</b>	<b>\$0</b>	<b>\$912</b>	<b>\$0</b>	<b>\$200</b>	<b>\$300</b>	<b>\$0</b>	<b>\$12</b>	<b>\$63</b>					<b>\$4,419</b>
24" CPP										64	\$11.45			\$733
Beveling											\$25.00			\$25
<b>Sub total Culvert Material Cost:</b>														<b>\$758</b>
<b>Sub total Seeding and Mulching:</b>												0.014	\$1,195	<b>\$16</b>

**Total Installation Cost:**

**\$5,193**

- Notes:**
- 1) Borrow site is up the second road to the right past point I3. See exhibit A.
  - 2 Waste site is at point I3.
  - 3 The disposal of the old culvert is costed jointly with the fill with the double culverts.
  - 4 The new culvert location has a 4.4' lower invert elev., 17% gradient and new bed location.
  - 5 The assumption is made that half the fill excavation can be reused in the fill, but will be mixed with the borrow material.
  - 6 Approximately 700 cy will be excavated, and 350 cy borrowed.
  - 7)Cat 966 will be operated by the dump truck drivers hence a cost of \$50/hour
- By: d.mellison



## STATION 31+66 &amp; 32+06

Fill #3

Road Segment I3 to I4

Sale Name: Crawford Ridge

Date:

6/2/04

Construction Phase	Equipment Used								Labor	Culvert		Erosion Control		Total \$
	C325	D-7 Cat	Dmp Tr.	Grder	Cat 966	Roller	Wtr. Tr.	Wacker		Feet	\$/ft.	Acres	\$/Acre	
Unload and Move CSP to site.	4								4					
Fill and Culvert Removal (Hrs.)	16													
De-waterring w/ditch/old culvert (Hrs.)	4													
Develop streambed (20')	3													
Place CSP/ tamp blanket (Hrs.)	6							6	6					
Borrow Site Development		3												
Load/Haul Borrow Material			23		11									
Backfill and compact in layers (Hrs.)	10					5								
Mix Borrow & 1/2 Exc. Material	4													
Remove de-waterring system (Hrs.)	2								2					
Place Fill armor & riprap	3													
Develop waste area		4												
Load/haul waste&spread@waste area	2.5	4	8											
Culvert Disposal, fills #2 & #3.	1		3											
<b>Total Hours</b>	<b>55.5</b>	<b>11</b>	<b>34</b>	<b>0</b>	<b>11</b>	<b>5</b>	<b>0</b>	<b>6</b>	<b>12</b>					
Equipment Rates:	\$115	\$90	\$57	\$80	\$50	\$75	\$57	\$6	\$25					
<b>Sub total Hourly rates:</b>	<b>\$6,383</b>	<b>\$990</b>	<b>\$1,938</b>	<b>\$0</b>	<b>\$550</b>	<b>\$375</b>	<b>\$0</b>	<b>\$36</b>	<b>\$300</b>					<b>\$10,572</b>
36" CSP (AC) 14 GA.										86	\$24.17			\$2,079
36" Band 14 GA										3	\$25.00			\$75
Beveling										1	\$46.75			\$47
42" CSP (AC) 14 GA										70	\$29.19			\$2,043
42" Band 14 GA										2	\$27.00			\$54
Beveling										1	\$55.00			\$55
<b>Sub total Culvert Material Cost:</b>														<b>\$4,353</b>
<b>Sub total Seeding and Mulching:</b>												0.12	\$1,195	<b>\$143</b>

**Total Installation Cost:****\$15,068****Notes:**

- 1) Cat 966 will be operated by the dump truck drivers hence a cost of \$50/hr.
- 2 Waste site is at point I3.
- 3 Both culvert inlets have changed location. The 36" CSP will be installed at a 9% gradient, and the 42" CSP at a 14% gradient.
- 4 Approximately 1560 cy will be excavated, and it is expected that half that quantity will be reused in the fills with the remainder being hauled to the waste site.
- 5 Approximately half the outer road edge will be excavated between the two culverts.

By: d.mellison

SUMMARY OF CONSTRUCTION COSTS

**Sidecast Pullback**

SALE NAME: Crawford Ridge  
 ROAD: I3 to I4  
 POINTS: Fill #3 @ sta 31+62

NEW CONSTRUCTION: \_\_\_\_\_ STATIONS \_\_\_\_\_ MILES  
 IMPROVEMENT: 1.88 STATIONS 0.04 MILES

CLEARING & GRUBBING					
Method	Amount	x	Rate	=	Cost
haul to waste area	0.093	x	\$1,980	=	\$184.14
		x		=	
<b>SUB TOTAL FOR CLEARING &amp; GRUBBING</b>					<b>\$184</b>

EXCAVATION					
Material	Quantity	x	Rate	=	Cost
Endhaul sidecast pullback material	331	x	\$2.75	=	\$910.25
		x		=	
<b>SUB TOTAL FOR EXCAVATION</b>					<b>\$910</b>

SPECIAL PROJECTS	
Description	Cost
<b>SUB TOTAL SPECIAL PROJECTS</b>	

GRAND TOTAL **\$1,094**

Compiled By: d.mellison

Date: 6/3/04



SALE NAME: Crawford Ridge  
 PROJECT: I3 to I4  
 QUARRY: Salvaged rock for bedding

ROCK TYPE: 1 1/2"-0"

DATE: 6/3/2004  
 BY: d.mellison

Segment	Stations	Cubic Yards							Total
		Base	Running	Turnout	Subg Reinf	Bedding	Curves	F.Widen	
Fill #2	23+41					48			48
Fill #3	31+66					96			96
Fill #3	32+06					108			108
									0
									0
									0
									0
									0
									0
									0
									0
									0
Grand Total	0.00	0	0	0	0	252	0	0	252

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	
Fill #2	23+41	48			1.12	2.00	0.60	0.10	0.10	3.92
Fill #3	31+66	96			1.29	2.00	0.60	0.10	0.10	4.09
Fill #3	32+06	108			1.29	2.00	0.60	0.10	0.10	4.09
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
TOTAL	0.00	252								
CUBIC YARD WEIGHTED HAUL			0.00	0.00	1.26	2.00	0.60	0.10	0.10	AVERAGE HAUL 4.06
Average Round Trip Distance (miles) 8.12										

ROCK HAUL:

Truck type: D20 No. trucks: \_\_\_\_\_  
 Delay min.: 15 Efficiency: 75%

Truck type: D12 No. trucks: 3  
 Delay min.: 5 Efficiency: 85%

Truck type: D10 No. trucks: \_\_\_\_\_  
 Delay min.: 10 Efficiency: 75%

Ave haul: \$2.86 /cy  
 Load: \$0.75 /cy  
 Spread: \$0.75 /cy

Production: cy/day = 478

CRUSHED ROCK HAUL COSTS 252 cy @ \$4.36 /cy

SALE NAME: Crawford Ridge  
 PROJECT: I3 to I4  
 QUARRY: Northrup

ROCK TYPE: 4"-0"

DATE: 6/11/04  
 BY: d.mellison

Segment	Stations	Cubic Yards							Total
		Base	Running	Turnout	Subg Reinf	Junction	Curves	F.Widen	
Fill #2	23+41	25						16	41
Fill #3	31+66	157					50	16	223
									0
									0
									0
									0
									0
Grand Total	0.00	182	0	0	0	0	50	32	264

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	
Fill #2	23+41	41	4.60	2.00	1.44	0.58	0.60	0.10	0.10	9.42
Fill #3	31+66	223	4.60	2.00	1.44	0.74	0.60	0.10	0.10	9.58
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
TOTAL	0.00	264								
	STA./NO.	CU. YD.								
<b>CUBIC YARD WEIGHTED HAUL</b>			<b>4.60</b>	<b>2.00</b>	<b>1.44</b>	<b>0.72</b>	<b>0.60</b>	<b>0.10</b>	<b>0.10</b>	<b>AVERAGE HAUL 9.56</b>
Average Round Trip Distance (miles) 19.11										

ROCK HAUL:

Truck type: D20 No. trucks: \_\_\_\_\_  
 Delay min.: 15 Efficiency: 75%

Truck type: D12 No. trucks: \_\_\_\_\_  
 Delay min.: 5 Efficiency: 85%

Truck type: D10 No. trucks: 3  
 Delay min.: 5 Efficiency: 85%

Ave haul: \$4.79 /cy  
 Load: \$0.75 /cy  
 Spread: \$0.75 /cy

Production: cy/day = 285

CRUSHED ROCK HAUL COSTS 264 cy @ \$6.29 /cy



**TIMBER CRUISE REPORT**  
**Crawford Ridge Thinning**  
**FY 2005**

**1. Sale Area Location:** Areas 1 through 4 are located in Portions of Section 1, T5N, R7W; Sections 30, 31 and 32, T6N, R6W; and Sections 4 and 5, T5N, R6W, W.M., Clatsop County, Oregon.

**2. Fund Distribution:** BOF 100%  
 Tax Code = 8-01, 143 acres (100%)

**3. Sale Acreage by Area:**

Area	Treatment	Gross Acres	Existing R/W	New R/W	Stream Buffer	Non-Thinnable	Net Acres	Survey Method
1	SDI 25 Thinning	42.3	0.7	0.5	1.7	2.4	37	GIS
2	SDI 25 Thinning	28.0	2	0	0	0	26	GIS
3	SDI 25 Thinning	30.1	3.7	0	0.4	0	26	GIS
4	SDI 25 Thinning	64	2.6	1.5	7.9	0	52	GIS
5 In-sale R/W	Sale Access	2	0	0	0	0	2	LxW
<b>TOTALS</b>		<b>166.4</b>	<b>9.0</b>	<b>2.0</b>	<b>10.0</b>	<b>2.4</b>	<b>143</b>	

**4. Cruisers and Cruise Dates:** Areas 1-4 were cruised by Cullen Bangs, Lanny Freeman, Dave Wolfram, Alan Kelso, Jon Long, Derek Bangs, and Josh Barnard in April, 2004.

**5. Cruise Method and Computation:**

Areas 1-4 are "automark" thinning areas (SDI 25) and were variable plot cruised using a 33.61 BAF. These plots are located on a 3 by 8 chain grid. Every third plot was measured and graded. A total of 62 plots were sampled, with 22 measured and graded plots, 38 count plots, and 2 blank plots. On the 22 measured and graded plots, all take and leave trees were measured and graded with the biggest and best trees left to meet the target residual basal area of 100 ft<sup>2</sup>/acre.

Area 5 R/W, right-of-way volume, was calculated from the cruise. Acres of right-of-way were multiplied by the total cruise volume/acre.

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

<u>AREA</u>	<u>CRUISE</u>	<u>CRUISE TYPE</u>
1-4	SDI 25	06N06W SEC30 TYPE 0001 (cut)
5 R/W	Right-of-way	06N06W SEC30 TYPE R/W

**6. Timber Description:**

Areas 1-4 are automark thinnings, approximately 35 to 40 years old, consisting primarily of planted Douglas-fir /western hemlock stands with scattered hardwoods. Part of Area 1 is shown on Exhibit A as "Nonthinnable Type" where hardwoods occurred in a larger patch. There are scattered larger trees that are not being targeted for harvest. These sale areas will be harvested to an SDI of 25 by removing approximately 103

trees and 11.7 net MBF per acre. Of the trees to be cut, the Douglas-fir averages 13.9" DBH, with an average height of 54 feet to a merchantable top (6" d.i.b.). The western hemlock averages 13.3" DBH and 51 feet to a merchantable top (6" d.i.b.). All other species and all trees over 22 inches DBH are reserved unless in rights of way, corridors, skid trails, or landings.

Area 5, R/W timber is similar to the timber in Areas 1-4 described above. It is all in-sale right-of-way with an average volume of 25MBF/acre.

7. **Statistical Summary:** (See "Statistics" Project Reports, attached)

**Statistics for Board Feet Volumes by Cruise Type**

Area	Target CV	Target SE%	Actual CV	Actual SE%
1-4	42%	11.1%	52.4	6.7

8. **Volumes by Species and Log Grade:** (See "Species, Sort, Grade – Board Foot Volumes (Type)" Reports, attached)

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

Species	DBH	Net Vol.	2 Saw	3 Saw	4 Saw	D & B	% Sale
Douglas-fir	14	1,230	109	968	153	15	72
Western hemlock	13	462	53	360	49	3	27
Red alder and other hardwoods	11	1	0	<1	1	0	<1
Sitka spruce	37	1	1	<1	<1	0	<1
Western redcedar	34	1	1	0	0	0	<1
<b>TOTALS</b>		<b>1,695</b>	<b>164</b>	<b>1,328</b>	<b>203</b>	<b>18</b>	<b>100</b>

9. **Approvals:**

Prepared by: Alan Kelso Date: July 20, 2004

Reviewed by: Jon Long Date: July 21, 2004

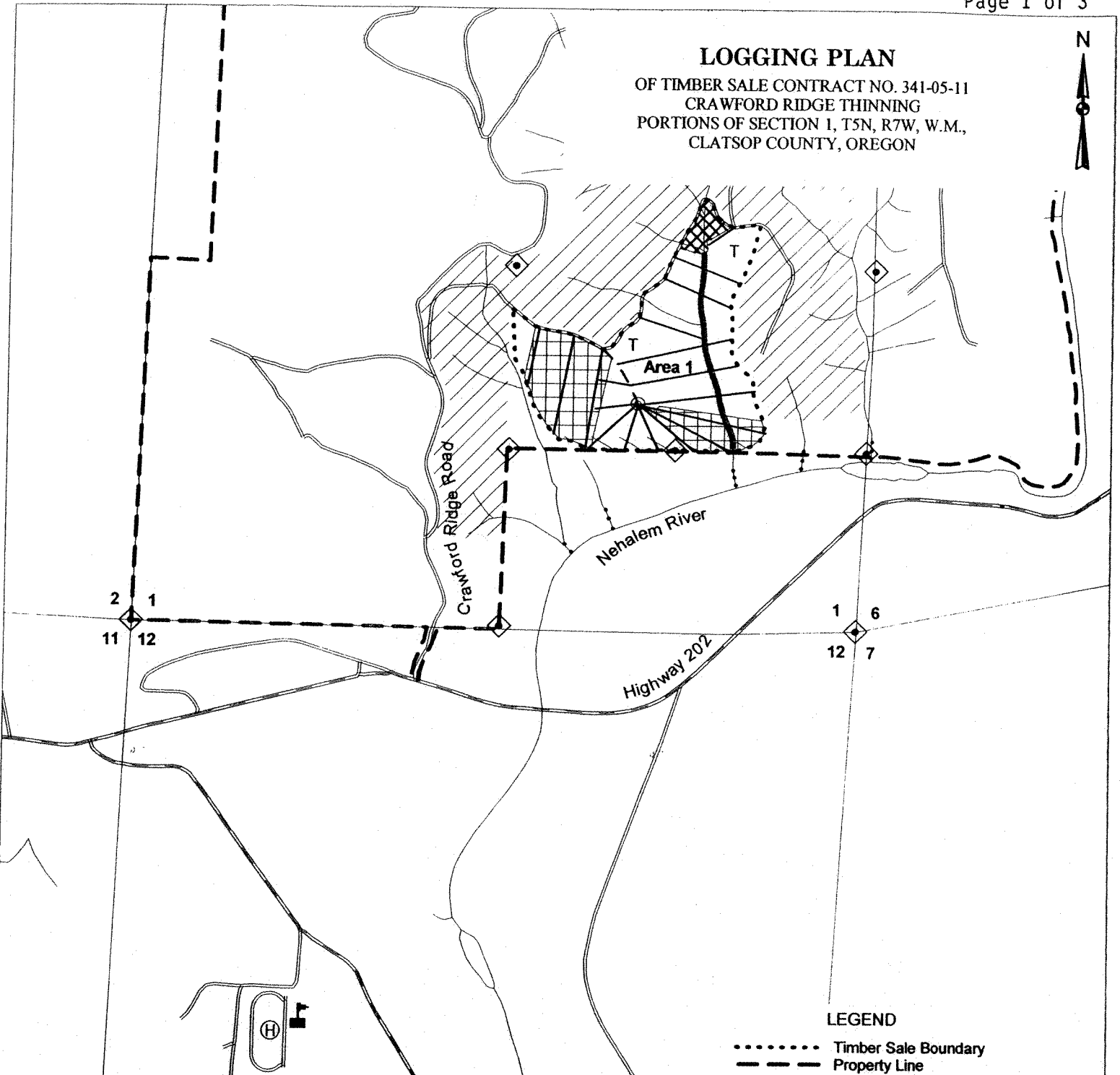
10. **Attachments:**

- Cruise Design
- Cruise Maps (3)
- Species, Sort, Grade-Board Foot Volume Reports - 3 pages
- Statistics Reports - 4 pages
- Stand Table - 1 page
- Log Stock Tables – 3 pages



# LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-05-11  
 CRAWFORD RIDGE THINNING  
 PORTIONS OF SECTION 1, T5N, R7W, W.M.,  
 CLATSOP COUNTY, OREGON

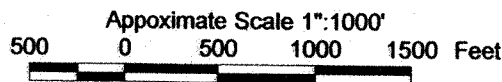


### LEGEND

- ..... Timber Sale Boundary
- Property Line
- - - New Construction Roads
- ⊙ New Construction Landings
- Existing Surfaced Roads
- Existing Landings
- ▨ Non-thinnable Type
- ▩ Controlled Felling Area
- ▬ Unposted Stream Buffers
- ▭ Reforestation Area
- Pt. "A" Point for Project Work
- ⊕ Helicopter Evacuation Location
- ⬠ Known Land Survey Corner
- ~ Type F Stream
- ~ Type N Stream
- ▭ Intermediate Supports Recommended
- ⊕ School
- ▨ Tractor Logging Area
- ▭ Cable Logging Area

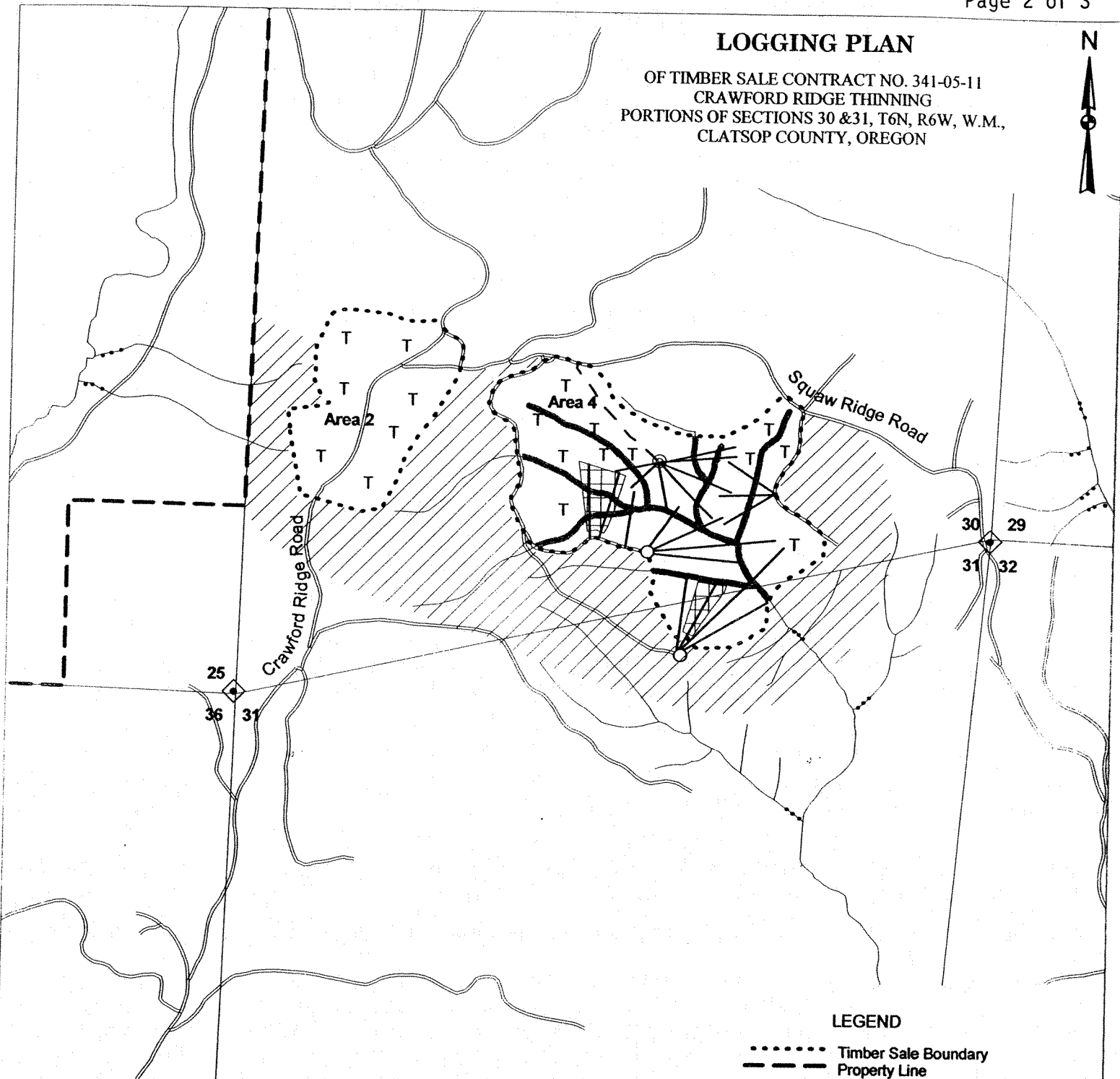
LOGGING BREAKDOWN		
AREA	TRACTOR	CABLE
1	11%	89%
2	100%	0%
3	100%	0%
4	44%	56%

Approximate Net Acreages:  
 Area 1 (PC) - 37 Acres  
 Area 2 (PC) - 26 Acres  
 Area 3 (PC) - 26 Acres  
 Area 4 (PC) - 52 Acres  
 Area 5 (R/W) - 2 Acres  
 Total PC Acres = 143



# LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-05-11  
 CRAWFORD RIDGE THINNING  
 PORTIONS OF SECTIONS 30 & 31, T6N, R6W, W.M.,  
 CLATSOP COUNTY, OREGON

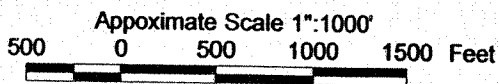


Approximate Net Acreages:  
 Area 1 (PC) - 37 Acres  
 Area 2 (PC) - 26 Acres  
 Area 3 (PC) - 26 Acres  
 Area 4 (PC) - 52 Acres  
 Area 5 (R/W) - 2 Acres  
 Total PC Acres = 143

LOGGING BREAKDOWN		
AREA	TRACTOR	CABLE
1	11%	89%
2	100%	0%
3	100%	0%
4	44%	56%

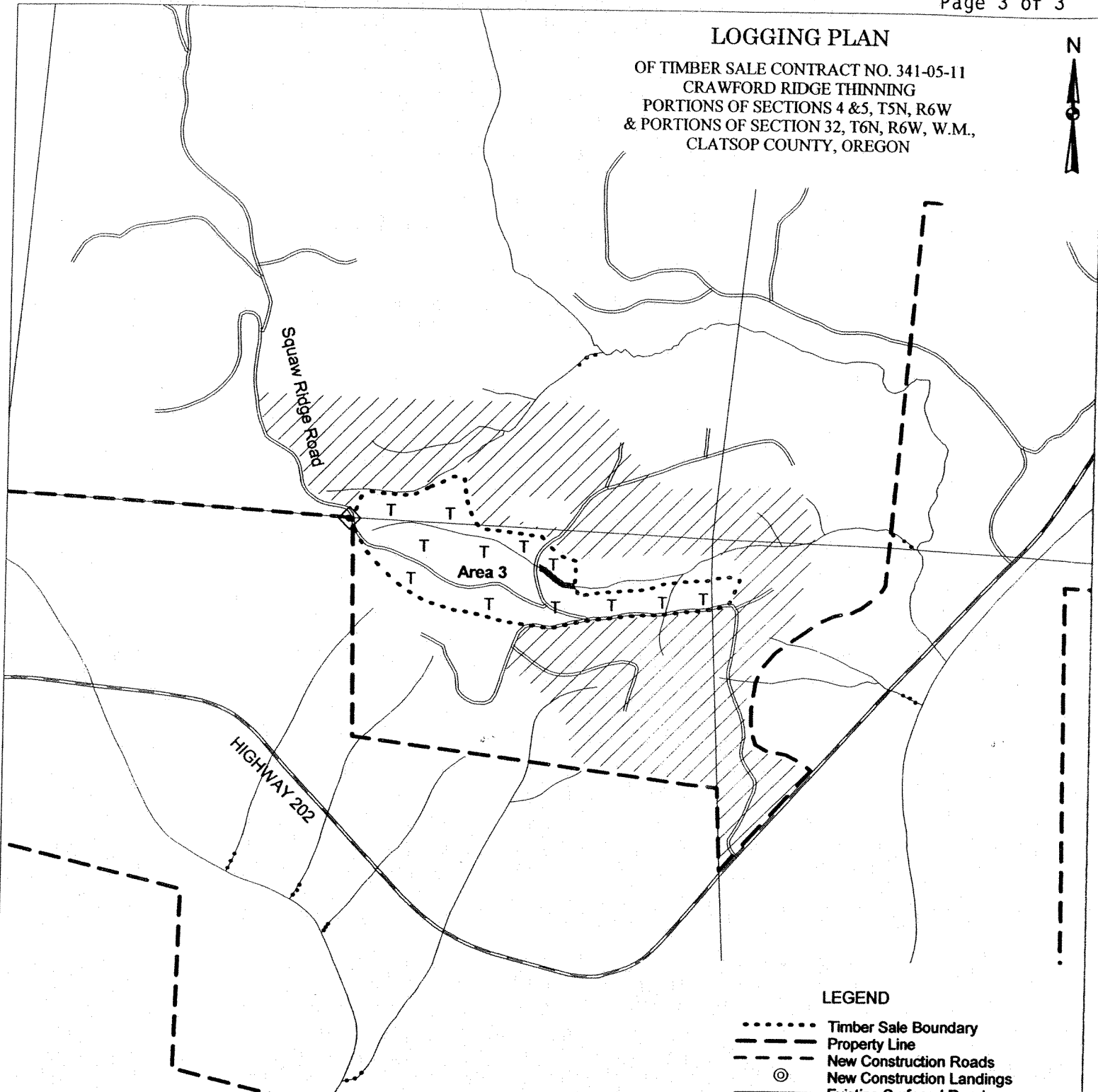
## LEGEND

- ..... Timber Sale Boundary
- Property Line
- New Construction Roads
- ⊙ New Construction Landings
- Existing Surfaced Roads
- ⊙ Existing Landings
- ▨ Non-thinnable Type
- ▨ Unposted Stream Buffers
- ▨ Reforestation Area
- Pt. "A" Point for Project Work
- ⊕ Helicopter Evacuation Location
- ◊ Known Land Survey Corner
- ~ Type F Stream
- ~ Type N Stream
- ▨ Intermediate Supports Recommended
- T Tractor Logging Area
- ▨ Cable Logging Area



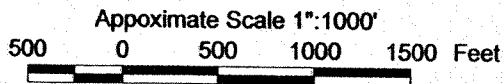
# LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-05-11  
 CRAWFORD RIDGE THINNING  
 PORTIONS OF SECTIONS 4 & 5, T5N, R6W  
 & PORTIONS OF SECTION 32, T6N, R6W, W.M.,  
 CLATSOP COUNTY, OREGON



Approximate Net Acreages:  
 Area 1 (PC) - 37 Acres  
 Area 2 (PC) - 26 Acres  
 Area 3 (PC) - 26 Acres  
 Area 4 (PC) - 52 Acres  
 Area 5 (R/W) - 2 Acres  
 Total PC Acres = 143

LOGGING BREAKDOWN		
AREA	TRACTOR	CABLE
1	11%	89%
2	100%	0%
3	100%	0%
4	44%	56%



## LEGEND

- ..... Timber Sale Boundary
- Property Line
- - - New Construction Roads
- ⊙ New Construction Landings
- Existing Surfaced Roads
- Existing Landings
- ▨ Non-thinnable Type
- ▬ Unposted Stream Buffers
- ▭ Reforestation Area
- ⊕ Pt. "A"
- ⊙ Helicopter Evacuation Location
- ⊙ Known Land Survey Corner
- ~ Type F Stream
- ~ Type N Stream
- ▭ Intermediate Supports Recommended
- T Tractor Logging Area
- ▭ Cable Logging Area

Revised August, 2002  
(alder changes 2-9-04)

**CRUISE DESIGN  
ASTORIA DISTRICT**

Sale Name: Crawford Ridge Thinning Area(s) 1, 2, 3, and 4

Harvest Type: Automark Thinning (circle one)

Net BF or

Net BF

or

Approx. Cruise Acres: 143 Estimated CV% 42 BA/Acre SE% Objective 11.1 BA/Acre

Planned Sale Volume: 858 MBF Estimated Sale Area Value/Acre: \$1,200  
Remove approx. 6 MBF/ac

A. **Cruise Goals:** (a) Grade minimum 100 trees.  
(b) Sample 21 cruise plots, 35 count plots; (c) Other goals:

**B. Cruise Design:**

Plot Cruises: BAF 33.61 (Full point; Half point) (circle one)

Fixed Plot Size      Plot Radius      feet

Cruise Line Direction(s) Areas 1 and 2—E-W. Areas 3 and 4—N-S

Cruise Line Spacing 8 chains

Cruise Plot Spacing 3 chains

Grade/Count Ratio 1:2 (1 grade to 2 count)

Reserve species: all species other than Douglas-fir

Leave trees: all trees over 22" DBH, regardless of stocking, for moving to LYR or OFS.

The leave-tree basal area is 100. Grade plots are circled on the map. **Leave 3 trees per plot.** Mark all leave trees with a "L" on all grade plots. **Record all species other than Douglas-fir and western hemlock and ALL trees over 22" DBH as leave trees even if this results in more than 3 leave trees per plot. Favor hemlock over Douglas-fir as a leave tree.** Hardwoods shall be cruised and graded, but do not count towards the prescribed basal area. Map alder types along cruise line so that non thinnable acres can be subtracted from the cruise. Do not take plots within 25 ft. of unposted stream buffers shown on cruise map or in large hardwood types.

**C. Tree Measurements:**

**Diameter:** Minimum DBH to cruise is 8" for conifers and 9" 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 (estimate only on variable plot cruises), then record to closest estimate.

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

**Top Cruise Diameter (TCD):** Minimum top outside bark is 7" or 40% of dob at 16' form point. Generally, use 7" outside bark for trees < 20" dbh and 40% of dob @ FP for trees > 20" dbh.

**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.

**Tree Segments:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12'; for hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree. **Use shift F9 to test questionable segment volumes or minimum top diameters.**

**Species, Sort, and Grade Codes:** A. Species: Record as D (Douglas-fir); H (western hemlock); S (Sitka Spruce); C (western redcedar); 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.)

Sort: Use code "1" (Domestic).

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 (pulp, usually alder)**

**For alder only, don't use #1 sawmill—lump with #2. #2 sawmill = 12" scaling diameter.**

**#3 sawmill = 10" and 11" scaling diameter. #4 sawmill = 8" and 9" scaling diameter. Any log with less than 8" scaling diameter is considered utility (grade 9) (2/9/04)**

**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.

**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.

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

**Official Rules for the following Log Scaling and Grading Bureaus**

**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: Alan Kelso

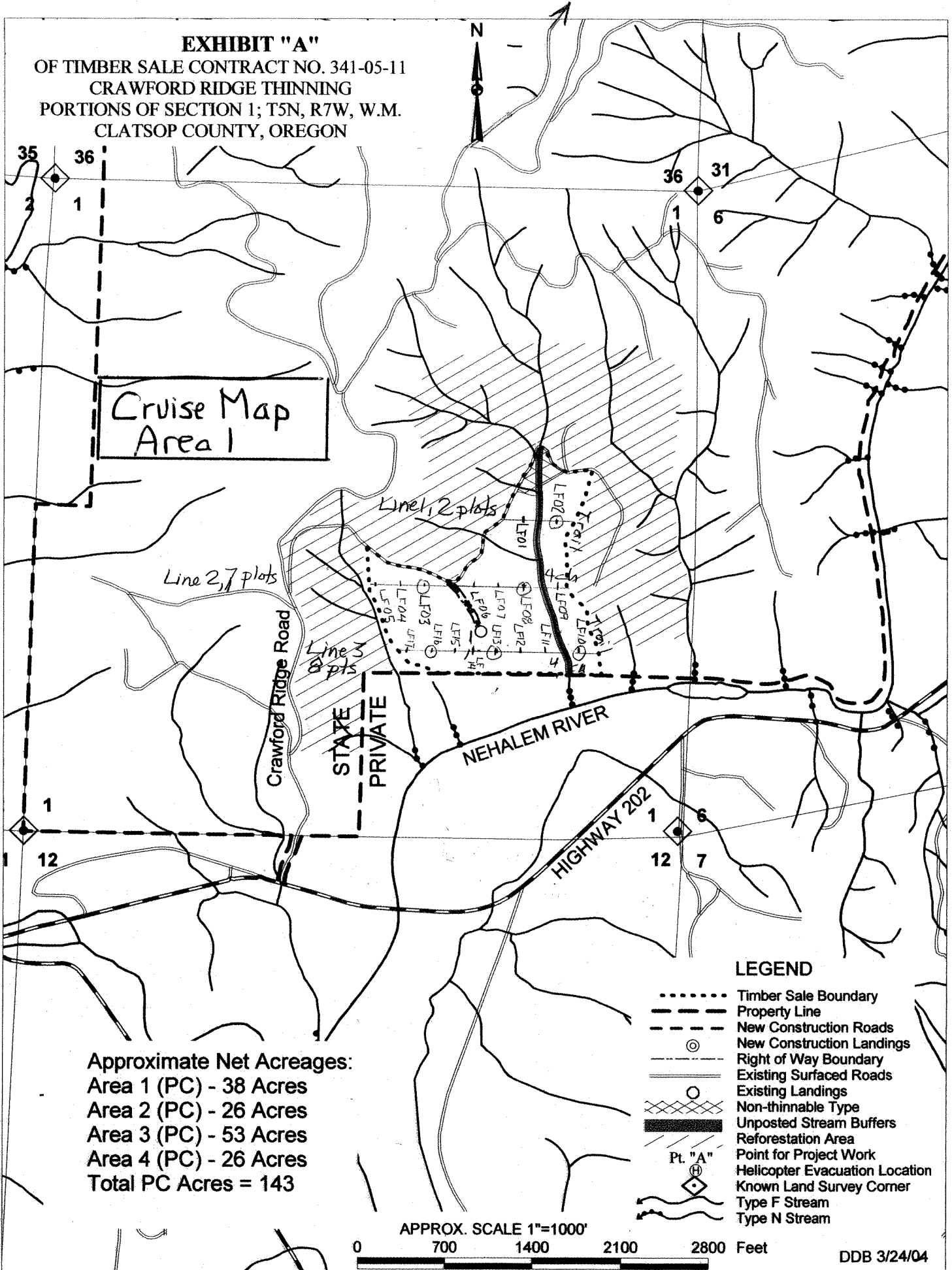
Approved by: Jon Long 4/1/04

Date: 4/1/2004

X:\Jewell Unit\Timber Sales\2005\Crawford Ridge Thinning\CR Cruise Design Areas 1, 2, 3, and 4.doc

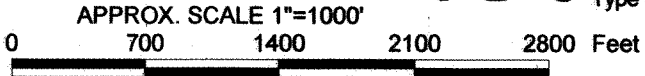
**EXHIBIT "A"**

OF TIMBER SALE CONTRACT NO. 341-05-11  
 CRAWFORD RIDGE THINNING  
 PORTIONS OF SECTION 1; T5N, R7W, W.M.  
 CLATSOP COUNTY, OREGON



**Approximate Net Acreages:**  
 Area 1 (PC) - 38 Acres  
 Area 2 (PC) - 26 Acres  
 Area 3 (PC) - 53 Acres  
 Area 4 (PC) - 26 Acres  
 Total PC Acres = 143

- LEGEND**
- ..... Timber Sale Boundary
  - Property Line
  - New Construction Roads
  - ⊙ New Construction Landings
  - Right of Way Boundary
  - Existing Surfaced Roads
  - Existing Landings
  - ▨ Non-thinnable Type
  - ▩ Unposted Stream Buffers
  - ▨ Reforestation Area
  - ⊕ Pt. "A"
  - ⊕ Helicopter Evacuation Location
  - ◆ Known Land Survey Corner
  - ~ Type F Stream
  - ~ Type N Stream

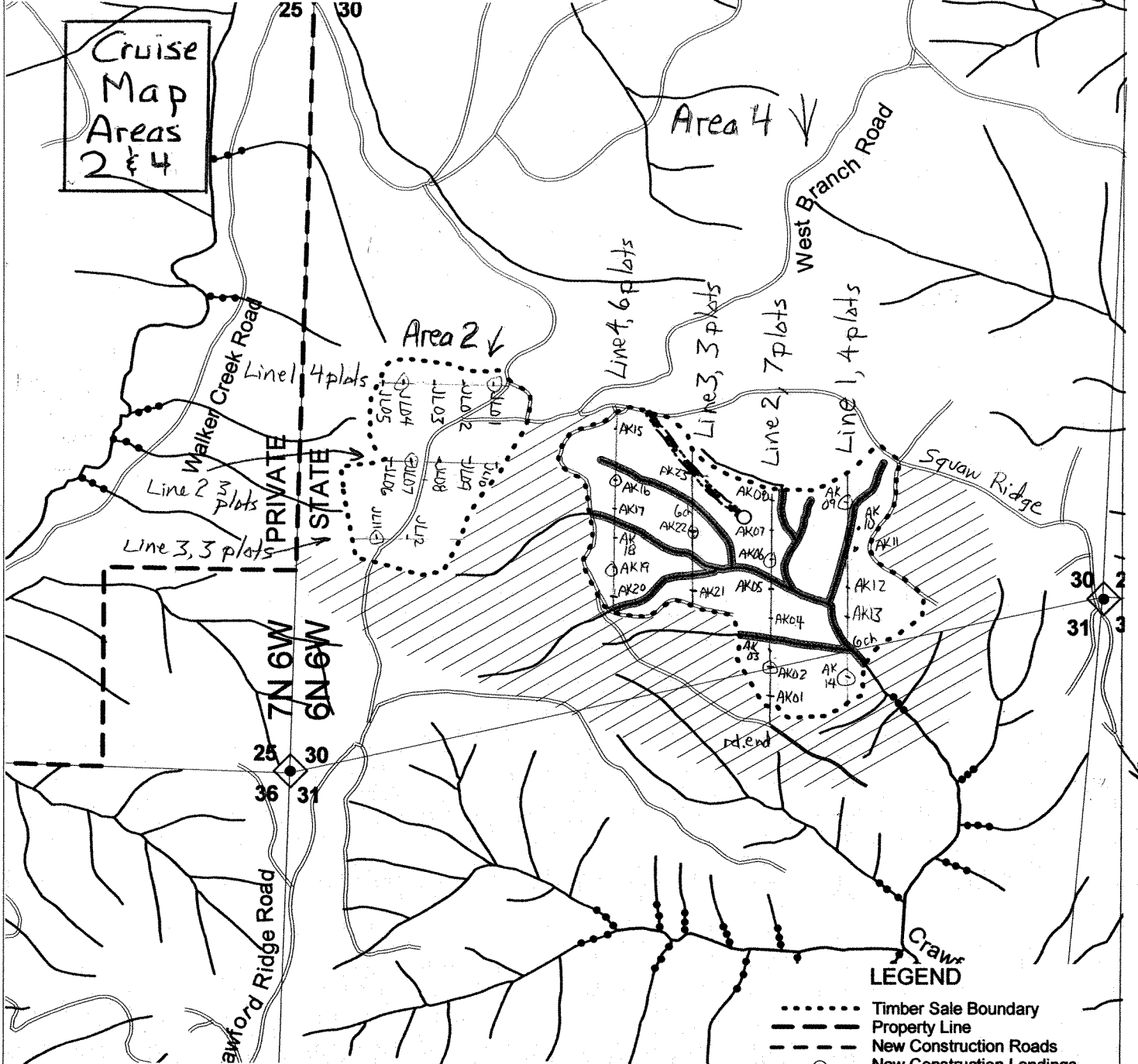


DDB 3/24/04

**EXHIBIT "A"**  
**OF TIMBER SALE CONTRACT NO. 341-05-11**  
**CRAWFORD RIDGE THINNING**  
**PORTIONS OF SECTIONS 30 & 31; T6N, R6W, W.M.**  
**CLATSOP COUNTY, OREGON**

*Cruise Map, Page 2 of 3*

**Cruise Map Areas 2 & 4**

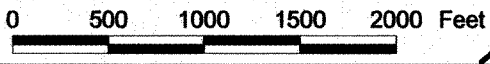


**Approximate Net Acreages:**  
 Area 1 (PC) - 38 Acres  
 Area 2 (PC) - 26 Acres  
 Area 3 (PC) - 53 Acres  
 Area 4 (PC) - 26 Acres  
 Total PC Acres = 143

**LEGEND**

- ..... Timber Sale Boundary
- Property Line
- - - - - New Construction Roads
- ⊙ New Construction Landings
- ⊖ Right of Way Boundary
- Existing Surfaced Roads
- Existing Landings
- ▨ Non-thinnable Type
- ▬ Unposted Stream Buffers
- ▭ Reforestation Area
- Pt. "A" Point for Project Work
- ⊕ Helicopter Evacuation Location
- ⬢ Known Land Survey Corner
- ~ Type F Stream
- ~ Type N Stream

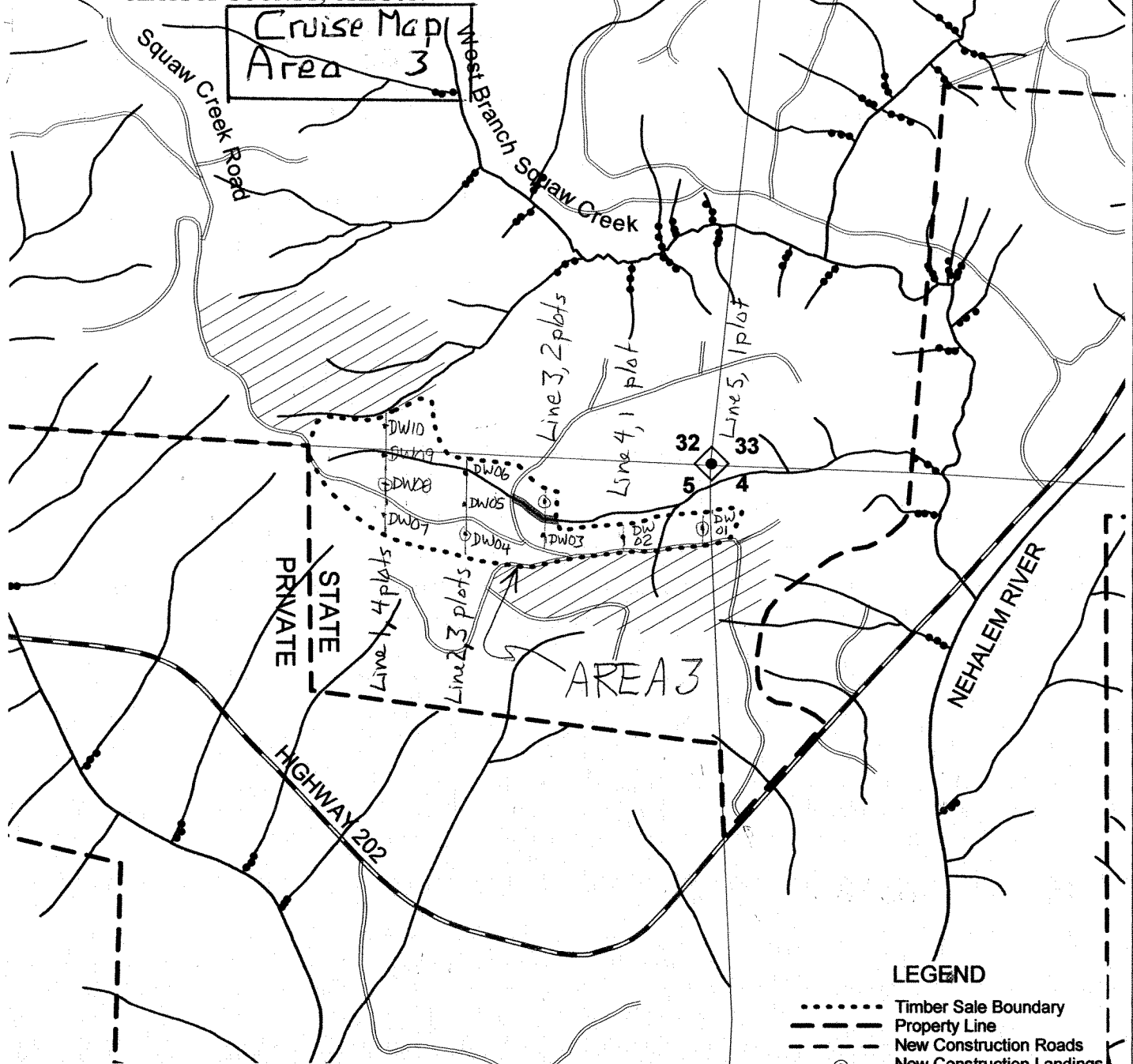
APPROX. SCALE 1"=1000'



DDB 3/24/04

**EXHIBIT "A"**

OF TIMBER SALE CONTRACT NO. 341-05-11  
 CRAWFORD RIDGE THINNING  
 PORTIONS OF SECTIONS 4 & 5; T5N, R6W, W.M.  
 & PORTIONS OF SECTION 32; T6N, R6W W.M  
 CLATSOP COUNTY, OREGON

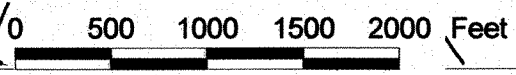


Approximate Net Acreages:  
 Area 1 (PC) - 38 Acres  
 Area 2 (PC) - 26 Acres  
 Area 3 (PC) - 53 Acres  
 Area 4 (PC) - 26 Acres  
 Total PC Acres = 143

**LEGEND**

- ..... Timber Sale Boundary
- Property Line
- - - - - New Construction Roads
- ⊙ New Construction Landings
- Right of Way Boundary
- ===== Existing Surfaced Roads
- Existing Landings
- ▨ Non-thinnable Type
- ▬ Unposted Stream Buffers
- ▭ Reforestation Area
- Pt. "A"
- ⊕ Point for Project Work
- ⊠ Helicopter Evacuation Location
- ⊠ Known Land Survey Corner
- ~ Type F Stream
- ~ Type N Stream

APPROX. SCALE 1"=1000'





**Species, Sort Grade - Board Foot Volumes (Project)**

T06N R06W S30 Ty0001	141.00
T06N R06W S30 TyR/W	2.00

**Project: CRAWFORD**

**Page 1**  
**Date 7/16/2004**  
**Time 2:13:13PM**

**Acres 143.00**

Spp	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								
D	?	?																					
D	?	2S	6	.0	765	765	109		37	63			14	18	38	30	7			0.00		8.6	
D	?	3S	57	1.5	6,870	6,766	968		100	0			2	0	26	72	30	143		1.19		5.3	
D	?	4S	9		1,072	1,072	153	1	99				37	63			36	89		0.68		76.2	
<b>D Totals</b>			73	1.2	8,708	8,603	1,230	0	94	6			7	10	24	59	29	66		0.64		130.5	
H	?	?																					
H	?	2S	3	.1	374	374	53			94	6		1		38	61	7			0.00		11.3	
H	?	3S	21	.8	2,540	2,520	360		100	0				9	34	57	36	250		1.64		1.5	
H	?	4S	3		341	341	49		100				37	63			35	78		0.66		32.4	
<b>H Totals</b>			27	.6	3,255	3,235	463		88	11	1		4	13	31	51	26	55		0.61		58.8	
M	?	2S	0		1	1	0			100			100				20	120		1.40		.0	
M	?	UT	0		2	2	0		65		35		65		35		22	55		0.73		.0	
<b>M Totals</b>			0		3	3	0		46	29	25		75		25		22	65		0.82		.0	
S	?	?																					
S	?	2S	0		6	6	1				100		24		76		6	1038		6.16		.0	
S	?	3S	0		0	0	0		9	91			9		91		26	110		1.69		.0	
S	?	4S	0		1	1	0			100					100		32	280		2.34		.0	
<b>S Totals</b>			0		7	7	1		0	15	85		21	10	69		26	502		4.00		.0	
C	?	?																					
C	?	2S	0	3.8	1	1	0				100				100		6	510		3.48		.0	
C	?	3S	0		0	0	0		100						100		40	120		1.25		.0	
<b>C Totals</b>			0	3.1	1	1	0		19		81				19	81	26	210		2.29		.0	
A	?	3S	0		1	1	0		100						100		32	50		0.50		.0	
A	?	4S	0		2	2	0		100				100				16	30		0.52		.1	
<b>A Totals</b>			0		3	3	0		100				61		39		20	36		0.51		.1	
<b>Totals</b>				1.0	11,976	11,851	1,695		0	92	7	0		7	11	26	57	28	63		0.63		189.4



T06N R06W S30 T0001 T06N R06W S30 T0001  
 Twp Rge Sec Tract Typ Acres Plots Sample Trees  
 06N 06W 30 CUT 0001 141.00 62 70

Spp	So	Gr	% 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	
Grade	Tr	ad					4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
D	?	?													7		0.00		8.6
D	?	2S	9		724	724	102	38	62		14	19	39	28	30	141	1.18		5.1
D	?	3S	79	1.5	6,814	6,712	946	00			2		26	72	36	89	0.68		75.6
D	?	4S	13		1,065	1,065	150	1	99		37	63			21	27	0.43		40.1
<b>D</b>	<b>Totals</b>		73	1.2	8,603	8,500	1,199	0	95	5	7	9	24	59	29	66	0.63		129.4
H	?	?													7		0.00		11.2
H	?	2S	10		330	330	47		100				40	60	36	240	1.58		1.4
H	?	3S	79	.8	2,514	2,495	352	00				9	34	57	35	77	0.66		32.2
H	?	4S	11		338	338	48	00			37	63			21	25	0.38		13.4
<b>H</b>	<b>Totals</b>		27	.6	3,183	3,164	446	90	10		4	13	31	51	26	54	0.61		58.2
<b>Type Totals</b>				1.0	11,786	11,664	1,645	0	93	7	7	11	26	57	28	62	0.63		187.6

### Stand Table Summary

T06N R06W S30 Ty0001 141.00

Project **CRAWFORD**  
Acres **141.00**

Page **1**  
Date: **4/27/2004**  
Time **10:32:01AM**

S SpC T	DBH	Sample Trees	FF 16	Tot Av Ht	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals		
								Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF
DL	10	1	86	24	2.901	1.58	2.90	7.0	20.0		20	58		29	8
DL	12	1	88	44	2.015	1.58	2.01	15.0	40.0		30	81		43	11
DL	13	1	91	66	1.717	1.58	3.43	13.0	45.0		45	154		63	22
DL	15	4	87	74	5.158	6.33	10.32	18.0	62.5		186	645		262	91
DL	16	7	91	89	7.933	11.08	17.00	23.6	89.3		401	1,519		566	214
DL	17	5	88	88	5.019	7.91	11.04	25.6	92.7		283	1,024		399	144
DL	18	8	88	88	7.163	12.66	15.22	29.9	105.3		456	1,603		643	226
DL	19	2	92	105	1.607	3.16	4.02	33.8	128.0		136	514		192	73
DL	20	5	88	95	3.626	7.91	8.70	34.8	131.7		303	1,146		427	162
DL	21	1	85	78	.658	1.58	1.32	38.5	135.0		51	178		71	25
DL	22	1	91	96	.599	1.58	1.20	51.5	215.0		62	258		87	36
DL	23	1	88	78	.548	1.58	1.10	48.0	140.0		53	154		74	22
DL	Totals	37	89	79	38.945	58.55	78.26	25.9	93.7		2,025	7,332		2,855	1,034
HL	12	1	88	60	1.767	1.39	1.77	19.0	60.0		34	106		47	15
HL	14	1	94	65	1.298	1.39	2.60	17.0	70.0		44	182		62	26
HL	15	2	85	104	2.341	2.78	4.68	23.8	95.2		111	446		157	63
HL	16	3	86	78	2.982	4.16	5.96	21.7	78.3		129	467		182	66
HL	18	2	86	89	1.571	2.78	3.14	24.7	92.5		78	291		110	41
HL	22	4	84	92	2.103	5.55	4.21	47.4	173.7		199	731		281	103
HL	24	2	88	73	.883	2.78	.88	68.5	235.0		61	208		85	29
HL	25	3	87	106	1.221	4.16	3.26	50.5	221.3		164	721		232	102
HL	27	1	88	103	.349	1.39	.70	90.0	375.0		63	262		89	37
HL	28	1	92	110	.325	1.39	.65	102.5	480.0		67	312		94	44
HL	30	2	86	120	.565	2.78	1.70	82.0	363.3		139	616		196	87
HL	31	2	88	100	.530	2.78	1.06	104.8	460.0		111	487		156	69
HL	34	1	85	123	.220	1.39	.66	106.3	523.3		70	346		99	49
HL	Totals	25	87	87	16.155	34.69	31.26	40.6	165.5		1,270	5,172		1,791	729
SL	34	1	80	83	.172	1.08	.34	94.0	425.0		32	146		46	21
SL	42	1	86	146	.113	1.08	.45	149.0	752.5		67	339		95	48
SL	Totals	2	82	108	.285	2.17	.79	125.2	610.8		99	485		140	68
AL	10	1	86	19	2.937	1.45	2.94	7.0	30.0		21	88		29	12
AL	12	2	86	32	3.681	2.89	3.68	13.0	40.0		48	147		67	21
AL	Totals	3	86	26	6.618	4.34	6.62	10.3	35.6		68	235		96	33
ML	10	1	86	18	1.325	.72	1.33	7.0	30.0		9	40		13	6
ML	17	1	87	76	.459	.72	.92	25.5	90.0		23	83		33	12
ML	20	1	86	59	.331	.72	.66	30.0	100.0		20	66		28	9
ML	Totals	3	86	37	2.115	2.17	2.90	18.1	64.9		53	189		74	27
CL	34	1	78	108	.086	.54	.26	59.7	210.0		15	54		22	8
CL	Totals	1	78	108	.086	.54	.26	59.7	210.0		15	54		22	8
Totals		71	88	75	64.204	102.46	120.10	29.4	112.1		3,531	13,468		4,978	1,899

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT CRAWFORD				DATE	4/27/2004		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES				
06N	06W	30	CUT	0001	141.00	62	70				
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		62	196	3.2							
CRUISE		19	70	3.7	14,545	.5					
REFOREST COUNT		33	126	3.8							
BLANKS		10									
100 %											
STAND SUMMARY											
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC	
DOUG FIR	48	72.4	13.9	54		76.4	8,603	8,500	2,394	2,394	
WHEMLOCK	22	30.8	13.3	51		29.8	3,183	3,164	925	925	
<b>TOTAL</b>	<b>70</b>	<b>103.2</b>	<b>13.7</b>	<b>53</b>		<b>106.3</b>	<b>11,786</b>	<b>11,664</b>	<b>3,320</b>	<b>3,320</b>	
SD:	1	COEFF VAR.%	S.E.%	SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.		
				LOW	AVG	HIGH	5	10	15		
DOUG FIR		92.5	11.1	81	91	101					
WHEMLOCK		186.8	22.3	30	38	46					
<b>TOTAL</b>		<b>55.4</b>	<b>6.6</b>	<b>120</b>	<b>129</b>	<b>137</b>	<b>123</b>	<b>31</b>	<b>14</b>		
SD:	1	COEFF VAR.%	S.E.%	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
				LOW	AVG	HIGH	5	10	15		
DOUG FIR		110.8	14.1	62	72	83					
WHEMLOCK		174.6	22.2	24	31	38					
<b>TOTAL</b>		<b>84.2</b>	<b>10.7</b>	<b>92</b>	<b>103</b>	<b>114</b>	<b>284</b>	<b>71</b>	<b>32</b>		
SD:	1	COEFF VAR.%	S.E.%	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
				LOW	AVG	HIGH	5	10	15		
DOUG FIR		110.4	14.0	66	76	87					
WHEMLOCK		164.7	20.9	24	30	36					
<b>TOTAL</b>		<b>83.4</b>	<b>10.6</b>	<b>95</b>	<b>106</b>	<b>118</b>	<b>278</b>	<b>70</b>	<b>31</b>		
SD:	1	COEFF VAR.%	S.E.%	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
				LOW	AVG	HIGH	5	10	15		
DOUG FIR		124.1	15.8	7,161	8,500	9,840					
WHEMLOCK		174.6	22.2	2,462	3,164	3,865					
<b>TOTAL</b>		<b>92.8</b>	<b>11.8</b>	<b>10,289</b>	<b>11,664</b>	<b>13,039</b>	<b>345</b>	<b>86</b>	<b>38</b>		

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT CRAWFORD				DATE	4/27/2004	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES			
06N	06W	30	THIN	0001	141.00	62	141			
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		62	385	6.2						
CRUISE		22	141	6.4	23,562	6				
REFOREST										
COUNT		38	244	6.4						
BLANKS		2								
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUG FIR	48	72.4	13.9	54		76.4	8,603	8,500	2,394	2,394
DOUGLEAV	37	38.9	16.6	61		58.5	7,480	7,332	2,024	2,024
HEMLEAV	25	15.9	19.8	68		34.2	5,130	5,092	1,250	1,250
WHEMLOCK	22	30.8	13.3	51		29.8	3,183	3,164	925	925
ALDRLEAV	3	6.6	11.0	21		4.3	235	235	68	68
MAPLE LV	3	2.1	13.7	31		2.2	189	189	53	53
SPRUCELV	2	.3	37.4	99		2.2	485	485	99	99
CEDLEAV	1	.1	34.0	80		.5	56	54	15	15
<b>TOTAL</b>	<b>141</b>	<b>167.1</b>	<b>15.1</b>	<b>55</b>		<b>208.2</b>	<b>25,361</b>	<b>25,051</b>	<b>6,829</b>	<b>6,829</b>
		COEFF	SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.		
SD:	1	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		165.3	13.9	39	45	51				
DOUGLEAV		189.0	15.9	48	57	66				
HEMLEAV		293.0	24.7	66	88	109				
WHEMLOCK		282.8	23.8	14	19	23				
ALDRLEAV		703.3	59.2	0	1	1				
MAPLE LV		780.5	65.7	1	3	5				
SPRUCELV		960.4	80.9	5	27	50				
CEDLEAV		1187.4	100.0		4	9				
<b>TOTAL</b>		<b>137.6</b>	<b>11.6</b>	<b>216</b>	<b>244</b>	<b>272</b>	<b>757</b>	<b>189</b>	<b>84</b>	
		COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		110.8	14.1	62	72	83				
DOUGLEAV		75.8	9.6	35	39	43				
HEMLEAV		116.0	14.7	14	16	18				
WHEMLOCK		174.6	22.2	24	31	38				
ALDRLEAV		388.8	49.4	3	7	10				
MAPLE LV		466.7	59.3	1	2	3				
SPRUCELV		475.5	60.4	0	0	0				
CEDLEAV		787.4	100.0		0	0				
<b>TOTAL</b>		<b>55.1</b>	<b>7.0</b>	<b>155</b>	<b>167</b>	<b>179</b>	<b>121</b>	<b>30</b>	<b>13</b>	
		COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		110.4	14.0	66	76	87				
DOUGLEAV		72.0	9.1	53	59	64				
HEMLEAV		113.4	14.4	29	34	39				
WHEMLOCK		164.7	20.9	24	30	36				
ALDRLEAV		383.9	48.8	2	4	6				
MAPLE LV		475.5	60.4	1	2	3				
SPRUCELV		475.5	60.4	1	2	3				
CEDLEAV		787.4	100.0	0	1	1				
<b>TOTAL</b>		<b>48.3</b>	<b>6.1</b>	<b>195</b>	<b>208</b>	<b>221</b>	<b>93</b>	<b>23</b>	<b>10</b>	
		COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	

TC TSTATS				STATISTICS				PAGE 2	
				PROJECT CRAWFORD				DATE 4/27/2004	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES		
06N	06W	30	THIN	0001	141.00	62	141		
		COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
SD	1	VAR.	S.E.%	LOW	AVG	HIGH	5	10	15
DOUG FIR		124.1	15.8	7,161	8,500	9,840			
DOUGLEAV		72.5	9.2	6,657	7,332	8,007			
HEMLEAV		120.6	15.3	4,312	5,092	5,872			
WHEMLOCK		174.6	22.2	2,462	3,164	3,865			
ALDRLEAV		393.6	50.0	118	235	353			
MAPLE LV		515.5	65.5	65	189	312			
SPRUCELV		475.5	60.4	192	485	778			
CEDLEAV		787.4	100.0	0	54	108			
<b>TOTAL</b>		52.4	6.7	23,383	25,051	26,720	110	27	12

TC PSTATS		<b>PROJECT STATISTICS</b>					PAGE 1			
		<b>PROJECT CRAWFORD</b>					DATE 4/27/2004			
TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES			
06N	06	30	LEAV	0001	141.00	62	71			
		<b>PLOTS</b>	<b>TREES</b>	<b>TREES PER PLOT</b>	<b>ESTIMATED TOTAL TREES</b>	<b>PERCENT SAMPLE TREES</b>				
TOTAL		62	190	3.1						
CRUISE REFOREST COUNT		22	71	3.2	9,053	.8				
BLANKS		38	119	3.1						
100 %		2								
<b>STAND SUMMARY</b>										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUGLEAV	37	38.9	16.6	61		58.5	7,480	7,332	2,025	2,025
HEMLEAV	25	16.2	19.8	68		34.7	5,211	5,172	1,270	1,270
ALDRLEAV	3	6.6	11.0	21		4.3	235	235	68	68
MAPLE LV	3	2.1	13.7	31		2.2	189	189	53	53
SPRUCELV	2	.3	37.4	99		2.2	485	485	99	99
CEDLEAV	1	.1	34.0	80		.5	56	54	15	15
<b>TOTAL</b>	<b>71</b>	<b>64.2</b>	<b>17.1</b>	<b>58</b>		<b>102.5</b>	<b>13,656</b>	<b>13,468</b>	<b>3,531</b>	<b>3,531</b>
SD:	1	COEFF VAR. %	S.E. %	SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.	
				LOW	AVG	HIGH	5	10	15	
DOUGLEAV		114.4	13.6	97	113	128				
HEMLEAV		196.2	23.3	133	174	214				
ALDRLEAV		495.8	58.8	1	2	2				
MAPLE LV		551.2	65.4	2	6	10				
SPRUCELV		680.2	80.7	10	54	98				
CEDLEAV		842.6	100.0		9	18				
<b>TOTAL</b>		<b>123.2</b>	<b>14.6</b>	<b>305</b>	<b>357</b>	<b>409</b>	<b>608</b>	<b>152</b>	<b>68</b>	
SD:	1	COEFF VAR. %	S.E. %	TREES/ACRE			# OF PLOTS REQ.		INF. POP.	
				LOW	AVG	HIGH	5	10	15	
DOUGLEAV		75.8	9.6	35	39	43				
HEMLEAV		113.5	14.4	14	16	18				
ALDRLEAV		388.8	49.4	3	7	10				
MAPLE LV		466.7	59.3	1	2	3				
SPRUCELV		475.5	60.4	0	0	0				
CEDLEAV		787.4	100.0		0	0				
<b>TOTAL</b>		<b>45.5</b>	<b>5.8</b>	<b>60</b>	<b>64</b>	<b>68</b>	<b>83</b>	<b>21</b>	<b>9</b>	
SD:	1	COEFF VAR. %	S.E. %	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.	
				LOW	AVG	HIGH	5	10	15	
DOUGLEAV		72.0	9.1	53	59	64				
HEMLEAV		110.9	14.1	30	35	40				
ALDRLEAV		383.9	48.8	2	4	6				
MAPLE LV		475.5	60.4	1	2	3				
SPRUCELV		475.5	60.4	1	2	3				
CEDLEAV		787.4	100.0		1	1				
<b>TOTAL</b>		<b>26.8</b>	<b>3.4</b>	<b>99</b>	<b>102</b>	<b>106</b>	<b>29</b>	<b>7</b>	<b>3</b>	
SD:	1	COEFF VAR. %	S.E. %	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.	
				LOW	AVG	HIGH	5	10	15	
DOUGLEAV		72.5	9.2	6,657	7,332	8,007				
HEMLEAV		118.1	15.0	4,397	5,172	5,948				
ALDRLEAV		393.6	50.0	118	235	353				
MAPLE LV		515.5	65.5	65	189	312				
SPRUCELV		475.5	60.4	192	485	778				
CEDLEAV		787.4	100.0		54	108				
<b>TOTAL</b>		<b>34.7</b>	<b>4.4</b>	<b>12,874</b>	<b>13,468</b>	<b>14,062</b>	<b>48</b>	<b>12</b>	<b>5</b>	





Log Stock Table - MBF

T06N R06W S30 Ty0001 141.00  
T06N R06W S30 TyR/W 2.00

Project: CRAWFORD  
Acres 143.00

Spp	S T	So rt	Gr de	Lo 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		Totals			1,245	1.2	1,230	72.6			2	400	298	460	54	16	0				
H		?	2S	12	0		0	.0							0						
H		?	2S	16	0		0	.0										0			
H		?	2S	32	21		21	4.4						19	0	1	0				
H		?	2S	40	33		33	7.0						1	29	1	2				
H		?	3S	22	16		16	3.4				16									
H		?	3S	26	0		0	.0				0									
H		?	3S	28	0		0	.0			0										
H		?	3S	30	15		15	3.2			0	15									
H		?	3S	32	112	2.5	109	23.6			49	45	15				0	0			
H		?	3S	34	15		15	3.2			15										
H		?	3S	36	18		18	3.8			18										
H		?	3S	40	188		188	40.6			34	85	69								
H		?	4S	13	4		4	.9			4										
H		?	4S	14	4		4	.9			4										
H		?	4S	15	3		3	.7			3										
H		?	4S	16	3		3	.6			3										
H		?	4S	18	4		4	.8			4										
H		?	4S	21	0		0	.0				0									
H		?	4S	24	7		7	1.6			7										
H		?	4S	25	5		5	1.0			5										
H		?	4S	26	6		6	1.2			6										
H		?	4S	28	13		13	2.8			13										
H		Totals			465		463	27.3			164	161	84	20	29	2	3	0			
M		?	2S	20	0		0	29.2						0							
M		?	UT	12	0		0	24.6							0						
M		?	UT	16	0		0	21.1			0										
M		?	UT	36	0		0	10.5			0										
M		?	UT	38	0		0	14.6			0										
M		Totals			0		0	.0			0		0		0						
S		?	2S	20	0		0	20.2										0			
S		?	2S	40	1		1	64.8										0	0		
S		?	3S	12	0		0	.5			0										
S		?	3S	40	0		0	4.6					0								

**Log Stock Table - MBF**

T06N R06W S30 Ty0001	141.00
T06N R06W S30 TyR/W	2.00

Project: **CRAWFORD**  
 Acres **143.00**

Spp	S T	So rt	Gr de	Lo Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches													
									2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+		
S		?	4S	32	0		0	9.9					0									
S		Totals			1		1	.1		0		0	0		0		0		0			
C		?	2S	40	0	3.8	0	81.0						0								
C		?	3S	32	0		0	19.0				0										
C		Totals			0	3.1	0	.0				0		0								
A		?	3S	32	0		0	39.1		0												
A		?	4S	15	0		0	23.5			0											
A		?	4S	16	0		0	37.4		0												
A		Totals			0		0	.0		0	0											
Total		All Species			1,713	1.0	1,695	100.0		2	564	459	544	74	46	3	3	1	0			

**FOREST PRACTICES ACT "WRITTEN PLAN"**  
**For Project No. 1, Culvert Replacements**  
**Crawford Ridge Thinning Timber Sale, 341-05-11**

**Landowner:** Oregon Department of Forestry  
92219 Hwy 202  
Astoria, OR 97103  
(503) 325-5451

**Protected Resources:**

Two unnamed Type N streams crossed in the same fill located in the NE¼, Section 1, T5N, R7W, W.M., Clatsop County, Oregon. A "written plan" is required for construction/reconstruction of any fill over 15 feet high on a live stream.

**Situation:**

An existing fill structure on Road Segment I3 to I4 contains two culverts that are undersized and are in a deteriorating condition. The fill height when reconstructed will exceed 15' in height.

**Drainage Area, and Culvert Design:**

The existing culverts will be replaced with 36"x85' and 42"x69' aluminized-steel culverts designed to meet the 50 year peak flow. Both will have beveled inlets. The culvert designs meet and exceed the requirements of the FPA for stream crossing structures.

**Resource Protection Measures:**

- Machine activity in stream channels will be minimized.
- Minimum 1½ cubic yard track mounted excavator type equipment shall be used for embankment excavation, stream channel development and riprap placement.
- Unsuitable fill-material debris encountered during fill excavation will be hauled to approved waste areas where it will be compacted, seed and mulched, and sloped to drain.
- Erosion control measures shall be applied to all exposed excavation areas, bare soils and waste materials.
- Riprap rock will be used to armor embankments, stream banks, and embedded as an energy dissipator.
- Activity in live streams shall not be allowed from September 1 through June 30.

I, the undersigned, submit this written plan in compliance with the requirements in the Forest Practices Act regarding the operations conducted during the construction of a 15 foot high fill. I agree to the protection measures listed on this plan:

Submitted:

\_\_\_\_\_

Purchaser/Operator Contract Representative

\_\_\_\_\_

Date

Reviewed:

\_\_\_\_\_

State Lands Forester

\_\_\_\_\_

Date

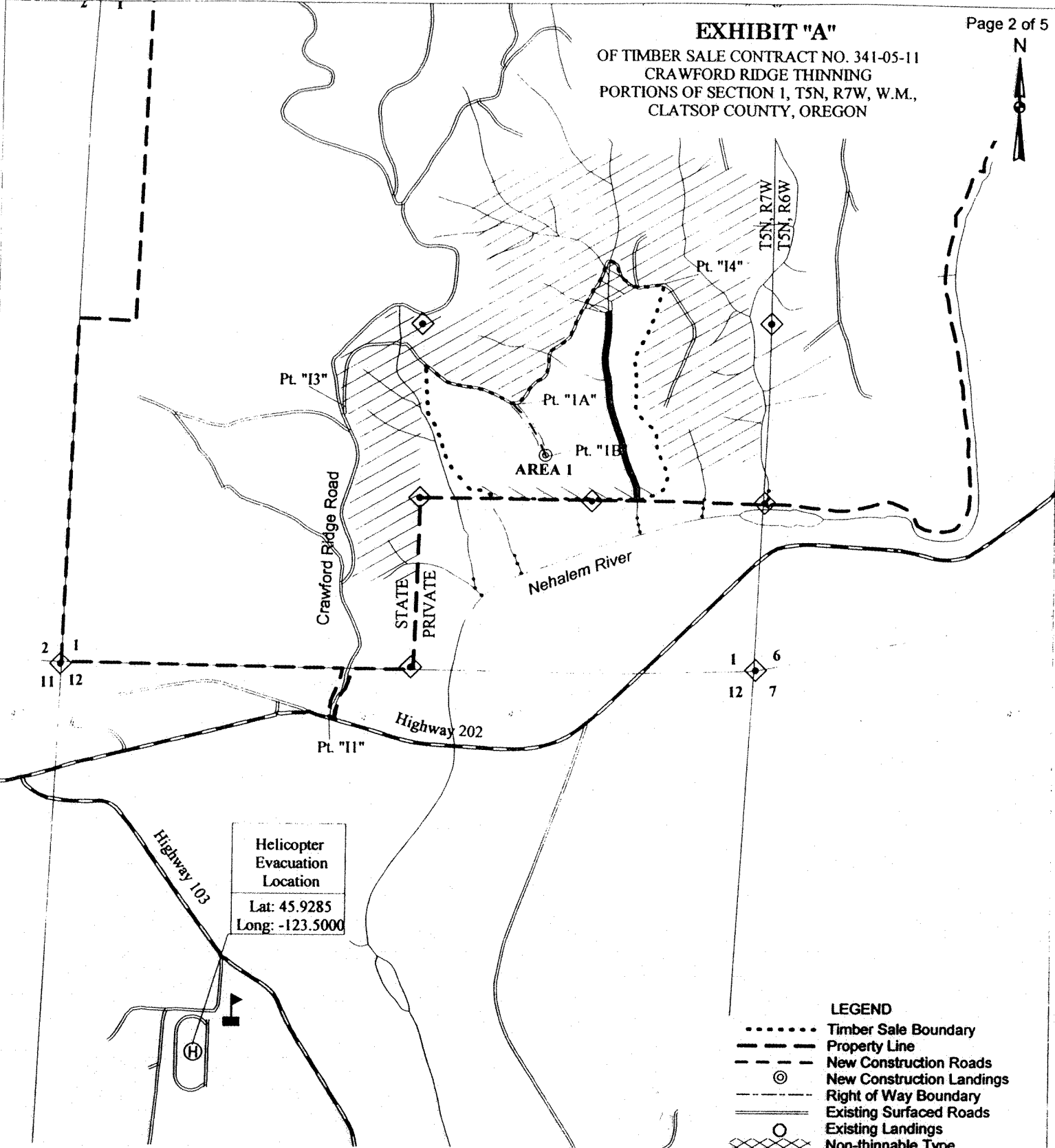
Attachments: Exhibit A

Original: Salem cc: Operator, Purchaser, District File, Jewell Unit, Engineering Unit

X:\Jewell Unit\Timber Sales\2005\Crawford Ridge Thinning\Don's stuff\Crawford Ridge Thinning\Written Plans\Fill @ 31+66, 32+06.doc

### EXHIBIT "A"

OF TIMBER SALE CONTRACT NO. 341-05-11  
CRAWFORD RIDGE THINNING  
PORTIONS OF SECTION 1, T5N, R7W, W.M.,  
CLATSOP COUNTY, OREGON



Approximate Net Acreages:  
Area 1 (PC) - 37 Acres  
Area 2 (PC) - 26 Acres  
Area 3 (PC) - 26 Acres  
Area 4 (PC) - 52 Acres  
Area 5 (R/W) - 2 Acres  
Total PC Acres = 143

APPROX. SCALE= 1"=1000'



#### LEGEND

- ..... Timber Sale Boundary
- Property Line
- - - New Construction Roads
- ⊙ New Construction Landings
- - - Right of Way Boundary
- Existing Surfaced Roads
- Existing Landings
- ▨ Non-thinnable Type
- ▧ Controlled Felling Area
- ▬ Unposted Stream Buffers
- ▭ Reforestation Area
- ⊙ Pt. "A"
- ◆ Known Land Survey Corner
- ~ Type F Stream
- ~ Type N Stream
- ⊙ Helicopter Evacuation Location
- ⊙ School