"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Cost Summary
Northrup Quarry Combination
Sale 341-07-06

District: Astoria **Date:** 7/18/06

	Conifer	Hardwood	Total
Gross Timber Sale Value	$4,575,595.26	$712,839.50	$5,288,434.76
		Project Work	($460,512.00)
		Advertised Value	$4,827,922.76

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Timber Description
Northrup Quarry Combination
Sale 341-07-06

District: Astoria

Location: Portions of Sections 16 and 17, T6N, R6W, W.M., Clatsop County, Oregon.

Date: 7/18/06 **Stand Stocking:** 80%

Species	Avg. DBH	Amortized%	Recovery%
Douglas - Fir	20	0	97
Western Hemlock / Fir	17	0	96
Alder (Red)	13	0	95
Maple	20	0	95

Volume by Grade	Douglas - Fir	Western Hemlock / Fir	Alder (Red)	Maple	Total
2S	8,393	63	0	0	8,456
3S	2,491	14	0	0	2,505
4S	270	25	0	0	295
Camprun	0	0	1,913	158	2,071
Total	11,154	102	1,913	158	13,327

Comments: Pond Values Used: 2nd Quarter Calendar Year 2006.

Log Markets: Mist, Clatskanie, Tillamook, Forest Grove.

Additional Costs with P&R:
100% Branding and Painting: $1/MBF x 13,327 = $13,327

TOTAL Costs w/P&R = $13,327

Additional Costs without P&R:
Pile Slash at Cable Landings in Areas 3 and 5: 7 landings x $262.50/landing = $1,838.00
Excavator Slash Piling: 81.0 hours x $120/hr = $9,720.00
Additional log loader Piling: 3 hours x $65/hr x 7 Landings = $1,365.00
Excavator Move-In: 2 move-in's x $945/move-in = $1,890.00
Equestrian Trail Rehabilitation: 17 Stations x $40/Sta. = $680
Waterbar and block dirt road segments 3A to 3B and 3C to 3D after harvest:
$50/station x 27.5 stations = $1,375.00
Snag Creation in Areas 3 and 5: Area 3 - 30 snags x $45/snag =
$1,350, Area 5 - 20 snags x $45/snag = $900
Snag Creation total: 50 snags x $45/snag = $2,250

TOTAL Cost No P&R = $19,118.00

Western Red Cedar Stumpage Value = Average Pond Value - Total Logging Costs
$755/MBF = $1,000/MBF - $245/MBF

Hauling costs adjusted to make equivalent to $700 daily truck cost.

Hauling Cost Calculation Conifers:
$700 - % Profit & Risk ($700 / 1.14) = $614 Daily Truck Cost.
$614 Daily Truck Cost / (3 trips per day x 4.5 mbf per load) = $45.48/MBF Gross Hauling Cost.
$45.48/MBF Gross Hauling Cost - Recovery Percentage Adjustment
($45.48 - $1.36 [3%]) = $44.12/MBF Net Hauling Cost.

Hauling Cost Calculation Hardwoods:
$700 - % Profit & Risk ($700 / 1.14) = $614 Daily Truck Cost.
$614 Daily Truck Cost / (2 trips per day x 3.5 MBF per load) = $87.71/MBF Gross Hauling Cost.
$87.71/MBF Gross Hauling Cost - Recovery Percentage Adjustment
($87.71 - $4.39 [5%]) = $83.32/MBF Net Hauling Cost.

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Logging Conditions
Northrup Quarry Combination
Sale 341-07-06

Combination#: 1

	Douglas - Fir	34.00%
	Western Hemlock / Fir	34.00%
	Alder (Red)	34.00%
	Maple	34.00%

Yarding Distance: Long (1,500 ft) **Downhill Yarding:** No
Logging System: Cable: Medium Tower >40 - <70 **Process:** Manual Delimbing
Tree Size: Mature / Partial Cut (900 Bft/tree), 3-5 logs/MBF
Loads/Day: 4 **Bd. Ft./Load:** 4,000
Cost/MBF: $207.29
Machines:
Log Loader (A)
Tower Yarder (Medium)

Combination#: 2

	Douglas - Fir	26.00%
	Western Hemlock / Fir	26.00%
	Alder (Red)	26.00%
	Maple	26.00%

Yarding Distance: Medium (800 ft) **Downhill Yarding:** Yes
Logging System: Track Skidder **Process:** Feller Buncher
Tree Size: Mature / Partial Cut (900 Bft/tree), 3-5 logs/MBF
Loads/Day: 6 **Bd. Ft./Load:** 4,000
Cost/MBF: $146.62
Machines:
Feller Buncher w/ Delimber
Log Loader (B)
Stroke Delimber (B)
Track Skidder

Combination#: 3

	Douglas - Fir	30.00%
	Western Hemlock / Fir	30.00%
	Alder (Red)	30.00%
	Maple	30.00%

Yarding Distance: Long (1,500 ft) **Downhill Yarding:** No
Logging System: Cable: Medium Tower >40 - <70 **Process:** Stroke Delimber
Tree Size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF
Loads/Day: 7 **Bd. Ft./Load:** 4,000
Cost/MBF: $117.24
Machines:
Log Loader (A)
Stroke Delimber (A)
Tower Yarder (Medium)

Combination#: 4	Douglas - Fir	10.00%
	Western Hemlock / Fir	10.00%
	Alder (Red)	10.00%
	Maple	10.00%

Yarding Distance: Short (400 ft) **Downhill Yarding**: Yes
Logging System: Shovel **Process:** Manual Delimbing
Tree Size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF
Loads/Day: 7 **Bd. Ft./Load:** 4,000
Cost/MBF: $84.09
Machines:
Shovel Logger

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Logging Costs
Northrup Quarry Combination
Sale 341-07-06

Date: 7/18/06

Operating Seasons: 3.0 **Profit & Risk:** 14%

Project Costs: $460,512 **Other Costs (P/R):** $13,327

Slash Disposal: $0 **Other Costs:** $19,118

Road Maintenance: $1.46

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

Hauling Costs

Species	$/MBF	Trips/Day	MBF/Load
Douglas - Fir	$44.12	3.0	4.5
Western Hemlock / Fir	$44.12	2.0	3.7
Alder (Red)	$83.32	2.0	3.5
Maple	$83.32	2.0	3.5

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Logging Costs Breakdown
Northrup Quarry Combination
Sale 341-07-06

Costs	Douglas - Fir	Western Hemlock / Fir	Alder (Red)	Maple
Logging	152.18	152.18	152.18	152.18
Road Maintenance	1.51	1.52	1.54	1.54
Fire Protection	0.61	0.61	0.61	0.61
Hauling	45.48	45.96	87.71	87.71
Other (P/R appl.)	1.00	1.00	1.00	1.00
Profit & Risk	28.11	28.18	34.03	34.03
Slash Disposal	0.00	0.00	0.00	0.00
Scaling	2.00	2.00	2.00	2.00
Other	1.43	1.43	1.43	1.43
Total	232.32	232.88	280.50	280.50

Amortization	0.00	0.00	0.00	0.00
Pond Value	640.85	417.70	635.00	500.00
Stumpage	408.53	184.82	354.50	219.50
Amortized	0.00	0.00	0.00	0.00

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal Summary
Northrup Quarry Combination Sale 341-07-06

Amortized

	Douglas - Fir	Western Hemlock / Fir	Alder (Red)	Maple
MBF	0.00	0.00	0.00	0.00
Value	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00

Unamortized

	Douglas - Fir	Western Hemlock / Fir	Alder (Red)	Maple
MBF	11,154.00	102.00	1,913.00	158.00
Value	408.53	184.82	354.50	219.50
Total	4,556,743.62	18,851.64	678,158.50	34,681.00

Gross Timber Sale Value

Recovery $5,288,434.76

Prepared by: Jasen McCoy Date: 7/18/06

District: Astoria Phone: (503) 325-5451

Final Road Maintenance Cost Summary

Sale: Northrup Quarry Combination
Date: 13-Apr-06
By: J. Long

MBF: 13,327
$$/MBF: $1.46

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost
Progressive Operations 1st Entry(3.2 mi.)	Grader 14G	$570	1	16	$84	$1,914
	Dump Truck 12CY	$119	1	8	$59	$591
	FE Loader C966	$570	1	8	$79	$1,202
Progressive Operations 2nd Entry(3.2 mi.)	Grader 14G	$570	1	16	$84	$1,914
	Dump Truck 12CY	$119	1	8	$59	$591
	FE Loader C966	$570	1	8	$79	$1,202
Final Road Maintenance (4.8 mi.)	Grader 14G	$570	1	40	$84	$3,930
	Dump Truck 12CY x 3	$119	4	24	$59	$1,892
	FE Loader C966	$570	1	8	$79	$1,202
	Vibratory Roller	$570	1	32	$79	$3,098
	Water Truck 2,500 gallon	$139	1	24	$70	$1,819
	Labor			8	$18	$144
Total						$19,499

Production Rates

Production Rates	Miles/day	Distance(miles)	Days
Grader	2.5	3.2	1.3

Production Rates	Miles/day	Distance(miles)	Days
Grader	2.5	3.2	1.3

Production Rates	Miles/day	Distance(miles)	Days
Grader	1.5	4.8	3.2
Vibratory Roller*	1.5	4.8	3.2

*Final Road Maintenance Only

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SUMMARY OF ALL PROJECT COSTS

SALE NAME: Northrup Quarry Combination

NEW CONSTRUCTION:

	Road segment	Length/Sta	Cost	
Project No. 1	1A-1B, 3A-3B, 3C-3D, 3E-3F,	75.40	$45,498	
	4A-4B, 4C-4D, 5A-5B, and 5C-5D			
	TOTALS	75.40		$45,498

ROAD IMPROVEMENT:

	Road segment	Length/Sta	Cost	
Project No. 1	I1-I2, I3-I4, I5-I6,	192.50	$79,509	
	and I7-I8			
	TOTALS	192.50		$79,509

SPECIAL PROJECTS:

Project No. 2	Northrup Quarry Development & Rock Crushing (35,586 cy)	$258,348	
Project No. 3	Northrup Creek Road Improvement	$23,439	
Project No. 4	Fish Culvert Installation	$17,968	
Project No. 5	Roadside Brushing (18 mi.)	$24,937	
Project No. 6	Stream Enhancement	$2,250	
	Project Work Road Maintenance	$2,557	
	TOTALS		**$329,499**

MOVE IN:

Equipment	Cost	
Dozer (D8)	$1,030	
Dump Trucks (12 cy x 3)	$357	
Dump Trucks (20 cy x 1)	$140	
F E Loader (C966)	$570	
Grader (14G)	$570	
Rubber Tire Skidder (C518)	$570	
Vibratory Roller	$570	
Water Truck (2,500 gallon)	$139	
Excavator (C330) x 2	$2,060	
TOTAL		$6,006

GRAND TOTAL **$460,512**

Compiled By: J. Long Date: 05/12/2006

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SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Northrup Quarry Combination (Designed Roads)
ROADS: 3A-3B (25.0), 3E-3F (19.4), and 4A-4B (19.5)

NEW CONSTRUCTION: 63.90 **STATIONS** 1.21 **MILES**
IMPROVEMENT: **STATIONS** 0.00 **MILES**

CLEARING & GRUBBING

Method	Acres/amount		Rate	=	Cost
Scatter Outside of R/W	7.0	x	$980.00	=	$6,860.00

SUB TOTAL FOR CLEARING & GRUBBING $6,860

EXCAVATION

Material	Cy/amount/station		Rate	=	Cost
Common drift excavation $$/cy	4,949	x	$1.28	=	$6,334.72
End-haul excavation $$/sta.	3,450	x	$2.90	=	$10,005.00
Embankment comapaction $$/cy	6,738	x	$0.45	=	$3,032.10
Cut slope rounding $$/sta.	20	x	$31.00	=	$620.00
Waste material comapaction $$/cy	824	x	$0.25	=	$206.00

SUB TOTAL FOR EXCAVATION $19,992

CULVERT MATERIALS AND INSTALLATION

	Location	Dia/type	Lineal ft.	Rate	Cost	No. bands	Rate	Cost
4A-4B	1+65	18"CPP	30	$13.60	$408.00			
4A-4B	3+85	18"CPP	30	$13.60	$408.00			
4A-4B	6+95	18"CPP	30	$13.60	$408.00			

	Description	Quantity	Rate	Cost
Other/miscellaneous:				$0.00
				$0.00
Culvert stakes & markers:	6' FIBERGLASS MARKERS	3	$14.10	$42.30

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION $1,266

Subtotal **$28,118**

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Northrup Quarry Combination (Field Design)
ROAD: 1A-1B (3.0), 3C-3D (2.5), 4C-4D (1.5), 5A-5B (2.0), 5C-5D (2.5)

NEW CONSTRUCTION: 11.50 **STATIONS** 0.22 **MILES**
IMPROVEMENT: **STATIONS** 0.00 **MILES**

CLEARING & GRUBBING

Method	Acres/amount	x	Rate	=	Cost
Scatter Outside of R/W	1.4	x	$980.00	=	$1,372.00

SUB TOTAL FOR CLEARING & GRUBBING $1,372

EXCAVATION

Material	Sta/amount	x	Rate	=	Cost
Common (Drift Earth up to 200') $$/sta.	6.00	x	$139.00	=	$834.00
Balanced construction $$/sta.	5.50	x	$89.00	=	$489.50
Landing Construction $$/landing	5	x	$285.00	=	$1,425.00
1B, 3D, 4D, 5B, and 5D					

SUB TOTAL FOR EXCAVATION $2,749

CULVERT MATERIALS AND INSTALLATION

	Location	Dia/type	Lineal ft.	Rate	Cost	No. bands	Rate	Cost
5C-5D	0+00	18"CPP	40	$13.60	$544.00			

	Description	Quantity	Rate	Cost
Other/miscellaneous:	Culvert markers:	1	$14.10	$14.10

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION $558

Subtotal **$4,679**

Project No. 1 New Road Construction

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Northrup Quarry Combination
ROAD: 1A-1B (3.0), 3A-3B (25.0), 3C-3D (2.5), 3E-3F (19.4), 4A-4B (19.5), 4C-4D (1.5), 5A-5B (2.0), & 5C-5D (2.5)

NEW CONSTRUCTION: 75.40 STATIONS 1.43 MILES
IMPROVEMENT: 0.00 STATIONS 0.00 MILES

SURFACING

Subgrade prep:

Description	Stations/ amount	x	Rate/ sta/amt	Cost
Grade, Shape and Ditch 16'	47.90	x	$18.20	$871.78
Subgrade Compaction	47.90	x	$14.80	$708.92
Grade, 14' Outslope	27.50	x	$13.45	$369.88
Waterbar	27.50	x	$11.70	$321.75

ROAD SEGMENT: 1A to 1B — POINT TO POINT: 1A to 1B — Sta. to Sta.: 0+00 to 3+00

Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Base Rock	4"-0" Crushed		8	station	50	stations	3.00	150	$2.18	$327
Turn-Around	4"-0" Crushed		8	turnaround	24	junctions	1	24	$2.18	$52
Junctions	4"-0" Crushed		8	junction	24	junctions	1	24	$2.18	$52
Landings	6"-0" Pit-run	1B	N/A	Landing	50	Landings	1	50	$2.71	$136
Total Rock for Road Segment:			1A to 1B					248		$432

ROAD SEGMENT: 3E to 3F — POINT TO POINT: 3E to 3F — Sta. to Sta.: 0+00 to 19+40

Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Base Rock	4"-0" Crushed		8	station	50	stations	19.40	970	$2.18	$2,115
Traction Rock	3/4"-0" Crushed		2	station	13	stations	9.00	117	$2.18	$255
Turnouts	4"-0" Crushed		10	turnout	22	turnouts	4	88	$2.18	$192
Turn-Around	4"-0" Crushed		N/A	TA	24	TA	1	24	$2.18	$52
Landings	6"-0" Pit-run	2+70, 6+50, 3F	N/A	Landing	50	Landings	3	150	$2.71	$407
Total Rock for Road Segment:			3E to 3F					1,349		$3,020

ROAD SEGMENT: 4A-4B — POINT TO POINT: 4A-4B — Sta. to Sta.: 0+00 to 19+50

Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Base Rock	4"-0" Crushed		8	station	50	stations	19.50	975	$2.18	$2,126
Traction Rock	3/4"-0" Crushed		2	station	13	stations	6.00	78	$2.18	$170
Turnouts	4"-0" Crushed		8	turnout	22	turnouts	3	66	$2.18	$144
Turn-Around	4"-0" Crushed		N/A	TA	24	TA	1	24	$2.18	$52
Culvert Bedding	1 1/2"-0" Crushed	6+95	N/A					20	$2.18	$44
Energy Dissipator	24"-6" Riprap	6+95	N/A					10	$2.71	$27
Landings	6"-0" Pit-run	4B	N/A	Landing	50	Landings	1	50	$2.71	$136
Total Rock for Road Segment:			4A-4B					1,223		$2,698

ROAD SEGMENT: 4C-4D — POINT TO POINT: 4C-4D — Sta. to Sta.: 0+00 to 1+50

Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Base Rock	4"-0" Crushed		8	station	50	stations	1.50	75	$2.18	$164
Junctions	4"-0" Crushed		8	junction	24	junctions	1	24	$2.18	$52
Turn-Around	4"-0" Crushed		N/A	TA	24	TA	1	24	$2.18	$52
Landings	6"-0" Pit-run		N/A	Landing	50	Landings	1	50	$2.71	$136
Total Rock for Road Segment:			4C-4D					173		$404

ROAD SEGMENT: 5A-5B — POINT TO POINT: 5A-5B — Sta. to Sta.: 0+00 to 2+00

Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Base Rock	4"-0" Crushed		8	station	50	stations	2.00	100	$2.18	$218
Junctions	4"-0" Crushed		8	junction	24	junctions	1	24	$2.18	$52
Turn-Around	4"-0" Crushed		N/A	TA	24	TA	1	24	$2.18	$52
Landings	6"-0" Pit-run		N/A	Landing	80	Landings	1	80	$2.71	$217
Total Rock for Road Segment:			5A-5B					228		$539

ROAD SEGMENT: 5C-5D — POINT TO POINT: 5C-5D — Sta. to Sta.: 0+00 to 2+50

Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Base Rock	4"-0" Crushed		8	station	50	stations	2.50	125	$2.18	$273
Junctions	4"-0" Crushed		8	junction	24	junctions	1	24	$2.18	$52
Turn-Around	4"-0" Crushed		N/A	TA	24	TA	1	24	$2.18	$52
Landings	6"-0" Pit-run		N/A	Landing	80	Landings	1	80	$2.71	$217
Total Rock for Road Segment:			5C-5D					253		$594

Processing:

Description	No.sta	Rate/sta	Cost
Water, Process & Compact Crushed Rock:	47.90	$41.40	$1,983
Process traction rock	15.00	$41.40	$621

$12,563

SPECIAL PROJECTS

Description			Cost
Riprap placement for dissipator	1 hr x $138/hr	=	$138

SUB TOTAL FOR SPECIAL PROJECTS $138

GRAND TOTAL **$45,498**

Compiled By: J. Long Date: 05/12/2006

Project No. 1 Road Improvement — SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Northrup Quarry Combination — **NEW CONSTRUCTION:** 0.00 STATIONS 0.00 MILES
ROAD: I1-I2 (140.0), I3-I4 (26.7), I5-I6 (24.55), & I7-I8 (1.25) — **IMPROVEMENT:** 192.50 STATIONS 3.65 MILES

SURFACING

Subgrade prep:

Description	Stations/ amount	x	Rate/ sta/amt	Cost
Grade, Shape and Ditch	192.50	x	$18.20	$3,503.50
Compact subgrade w / roller	192.50	x	$14.80	$2,849.00

ROAD SEGMENT	I1 to I2			POINT TO POINT		Sta. to Sta.					
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2 Volume (CY) per		0+00 to 140+00 Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Subgrade Leveling	3/4"-0" Crushed		N/A					300	$2.51	$753	
Curve Widening	3/4"-0" Crushed		N/A					230	$2.51	$577	
Surfacing	3/4"-0" Crushed	0+00 - 35+25	3	station	24	stations	35.3	846	$2.51	$2,123	
Surfacing	3/4"-0" Crushed	35+25 - 140+00	3	station	22	stations	104.8	2,305	$2.51	$5,784	
Surfacing Rock (Fills)	3/4"-0" Crushed	Fills	4					110			On Fill Sheets*
Base Rock (Fills)	4"-0" Crushed	Fills	10					200			On Fill Sheets*
Turn Outs	3/4"-0" Crushed		3	turnout	10	turnouts	19	190	$2.51	$477	
Junctions	3/4"-0" Crushed		3	junction	10	junctions	6	60	$2.51	$151	
Junctions	3/4"-0" Crushed	35+25	3	junction	40	junctions	1	40	$2.51	$100	
Culvert Bed./ Backfill	1 1/2"-0" Crushed	X-drains	N/A	culvert	20	culverts	4	80	$2.51	$201	
Culvert Bed./ Backfill	1 1/2"-0" Crushed	Fills	N/A					240			On Fill Sheets*
Fill Armor/ Dissipator	24"-6" Riprap	Fills	N/A					530			On Fill Sheets*
Fill Armor/ Dissipator	24"-6" Riprap	85+15	N/A					60	$2.71		
Energy Dissipator	24"-6" Riprap		N/A	culvert	10	culverts	2	20	$2.71	$54	
Total Rock for Road Segment:			I1 to I2					5,211			$10,221

ROAD SEGMENT	I3 to I4			POINT TO POINT		Sta. to Sta.					
Application	Rock Size and Type	Location	Depth of Rock (inches)	I3 to I4 Volume (CY) per		0+00 to 26+70 Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Subgrade Leveling	1 1/2"-0" Crushed		N/A					50	$2.51	$126	
Curve Widening	1 1/2"-0" Crushed		N/A					50	$2.51	$126	
Surfacing	1 1/2"-0" Crushed		3	station	22	stations	26.7	587	$2.51	$1,474	
Surfacing Rock (Fills)	1 1/2"-0" Crushed	Fills	3					20			On Fill Sheets*
Base Rock (Fills)	4"-0" Crushed	Fills	10					40			On Fill Sheets*
Turn Outs	1 1/2"-0" Crushed		3	turnout	10	turnouts	3	30	$2.51	$75	
Junctions	1 1/2"-0" Crushed		3	junction	10	junctions	1	10	$2.51	$25	
Culvert Bed./ Backfill	1 1/2"-0" Crushed	X-drains	N/A	culvert	20	culverts	2	40	$2.51	$100	
Culvert Bed./ Backfill	1 1/2"-0" Crushed	Fills	N/A					70			On Fill Sheets*
Fill Armor/ Dissipator	24"-6" Riprap	Fills	N/A					80			On Fill Sheets*
Energy Dissipator	24"-6" Riprap	0+70	N/A	culvert	10	culverts	1	10	$2.71	$27	
Total Rock for Road Segment:			I3 to I4					987			$1,953

ROAD SEGMENT	I5 to I6			POINT TO POINT		Sta. to Sta.					
Application	Rock Size and Type	Location	Depth of Rock (inches)	I5 to I6 Volume (CY) per		0+00 to 24+55 Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Subgrade Leveling	4"-0" Crushed		N/A					120	$2.51	$301	
Curve Widening	4"-0" Crushed		N/A					30	$2.51	$75	
Surfacing	4"-0" Crushed		6	station	38	stations	24.6	933	$2.51	$2,342	
Base Rock (Fills)	4"-0" Crushed	Fills	10					60			On Fill Sheets*
Turn Outs	4"-0" Crushed		3	turnout	20	turnouts	3	60	$2.51	$151	
Culvert Bed./ Backfill	1 1/2"-0" Crushed	Fills	N/A					100			On Fill Sheets*
Fill Armor/ Dissipator	24"-6" Riprap	Fills	N/A					210			On Fill Sheets*
Landings	6"-0" Pit-run	16+00 & I6	N/A	Landing	50	Landings	2	100	$2.71	$271	
Total Rock for Road Segment:			I5 to I6					1,613			$3,140

ROAD SEGMENT	I7 to I8			POINT TO POINT		Sta. to Sta.					
Application	Rock Size and Type	Location	Depth of Rock (inches)	I7 to I8 Volume (CY) per		0+00 to 1+25 Number of		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Base Rock (Fills)	4"-0" Crushed	Fills	10					60			On Fill Sheets*
Culvert Bed./ Backfill	1 1/2"-0" Crushed	X-drains	N/A	culvert	20	culverts	1	20	$2.51	$50	
Culvert Bed./ Backfill	1 1/2"-0" Crushed	Fills	N/A	fill				70			On Fill Sheets*
Fill Armor/ Dissipator	24"-6" Riprap	Fills	N/A	fill				70			On Fill Sheets*
Total Rock for Road Segment:			I7 to I8					220			$50

Processing:

Description	No.sta	Rate/sta	Cost
Water, Process & Compact Crushed Rock:	192.50	$41.40	$7,970

SUB TOTAL FOR SURFACING $29,686

SPECIAL PROJECTS

Description			Cost
Installing Culvert Marke	25 Markers x $14.10	=	$353
Riprap placement for x-drain dissipator	8hr x $138/hr	=	$1,104

SUB TOTAL FOR SPECIAL PROJECTS $1,457

GRAND TOTAL **$79,491**

Compiled By: J. Morey Date: 05/12/2006

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Northrup Quarry
ROAD: Project No. 1 Road Improvement
POINTS: I1-I2 (140.0), I3-I4 (26.7), I5-I6 (24.55), & I7-I8 (1.25)

NEW CONSTRUCTION: _____ STATIONS _____ MILES
IMPROVEMENT: 192.50 STATIONS 3.65 MILES

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
I1-I2 1+30	18"/CPP	40	$13.60	$544.00	I3-I4 0+70	18"/CPP	40	$13.60	$544.00
I1-I2 16+10	24"/CMP.AC	80	Fill Sheet	$11,609.10	I3-I4 2+05	24"/CMP.AC	50	Fill Sheet	$5,316.90
I1-I2 33+00	24"/CMP.AC	56	Fill Sheet	$6,126.80	I5-I6 15+85	18"/CPP	30	$13.60	$408.00
I1-I2 39+75	18"/CPP	30	$13.60	$408.00	I5-I6 22+90	24"/CMP.AC	80	Fill Sheet	$10,334.10
I1-I2 43+70	18"/CPP	44	$13.60	$598.40	I7-I8 0+40	18"/CPP	36	$13.60	$489.60
I1-I2 45+25	24"/CMP.AC	54	Fill Sheet	$6,051.90	I7-I8 1+25	24"/CMP.AC	50	Fill Sheet	$5,527.80
I1-I2 85+15	18"/CPP	30	$13.60	$408.00					

* Fill re-construction costs are listed on individual fill sheets.

	Description	Quantity	Rate	Cost
Other/miscellaneous:				

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION $48,367

Compiled By: Jay Morey Date: 04/20/2006

Fill Reconstruction Cost Estimate

Jay Morey
05/12/2006

Segment: I1 to I2 Station: 16+10
Fill: 1 Height: 18

Materials	Quantity		$	Total	
24"x80', 16ga, AC	80		$27.40	$2,192.00	
Beveled inlet	1		$24.00	$24.00	
24"-6" Riprap Armor	300	cy	$2.71	$813.00	
1 1/2"-0" Crushed Rock for Bedding/Backfill	100	cy	$2.51	$251.00	
3/4"-0" Crushed Rock for Road	50	cy	$2.51	$125.50	
4"-0" Crushed Rock for Road	120	cy	$2.51	$301.20	
Erosion Control	0	ac	$1,315.00	$0.00	
Mulch, seed and fert.					**$3,706.70**

Equipment/Labor Costs		Quantity		$/Hr.	Hours	Total	
Excavator, Large							
	Operating	1		$138.00	24	$3,312.00	
	Stand-By	1		$82.80	4	$331.20	
Dump Truck							
	Operating	2		$59.00	20	$2,360.00	
	Stand-By	2		$35.40	4	$283.20	
Rubber Tire							
Skidder	Operating	1		$62.00	8	$496.00	
	Stand-By	1		$37.20	2	$74.40	
Front-End Loader, Medium							
	Operating	1		$79.00	7	$553.00	
	Stand-By	1		$47.40	3	$142.20	
Hand Held Tamper							
	Operating	1		$7.00	6	$42.00	
	Stand-By	1		$4.20	2	$8.40	
Water Pump							
	Operating	1		$7.00	12	$84.00	
Laborer		1		$18.00	12	$216.00	**$7,902.40**

Project Total **$11,609**

Fill Reconstruction Cost Estimate

Jay Morey
05/12/2006

Segment: I1 to I2 Station: 33+00
Fill: 2 Height: 10

Materials	Quantity		$	Total	
24"x56', 16ga, AC	56		$27.40	$1,534.40	
Beveled inlet	1		$24.00	$24.00	
24"-6" Riprap Armor	120	cy	$2.71	$325.20	
1 1/2"-0" Crushed Rock for Bedding/Backfill	70	cy	$2.51	$175.70	
3/4"-0" Crushed Rock for Road	30	cy	$2.51	$75.30	
4"-0" Crushed Rock for Road	40	cy	$2.51	$100.40	
Erosion Control	0	ac	$1,315.00	$0.00	
Mulch, seed and fert.					**$2,235.00**

Equipment/Labor Costs		Quantity		$/Hr.	Hours	Total	
Excavator, Large							
	Operating	1		$138.00	10	$1,380.00	
	Stand-By	1		$82.80	2	$165.60	
Dump Truck							
	Operating	2		$59.00	10	$1,180.00	
	Stand-By	2		$35.40	2	$141.60	
Rubber Tire							
Skidder	Operating	1		$62.00	4	$248.00	
	Stand-By	1		$37.20	2	$74.40	
Front-End Loader, Medium							
	Operating	1		$79.00	5	$395.00	
	Stand-By	1		$47.40	3	$142.20	
Hand Held Tamper							
	Operating	1		$7.00	3	$21.00	
Laborer		1		$18.00	8	$144.00	**$3,891.80**

Project Total **$6,127**

Fill Reconstruction Cost Estimate

Jay Morey
05/12/2006

Segment: I1 to I2 Station: 45+25
Fill: 3 Height: 10

Materials	Quantity		$	Total	
24"x54', 16ga, AC	54		$27.40	$1,479.60	
Beveled inlet	1		$24.00	$24.00	
24"-6" Riprap Armor	110	cy	$2.71	$298.10	
1 1/2"-0" Crushed Rock for Bedding/Backfill	70	cy	$2.51	$175.70	
3/4"-0" Crushed Rock for Road	30	cy	$2.51	$75.30	
4"-0" Crushed Rock for Road	40	cy	$2.51	$100.40	
Erosion Control	0	ac	$1,315.00	$0.00	
Mulch, seed and fert.					**$2,153.10**

Equipment/Labor Costs		Quantity		$/Hr.	Hours	Total	
Excavator, Large							
	Operating	1		$138.00	10	$1,380.00	
	Stand-By	1		$82.80	2	$165.60	
Dump Truck							
	Operating	2		$59.00	10	$1,180.00	
	Stand-By	2		$35.40	2	$141.60	
Rubber Tire							
Skidder	Operating	1		$62.00	4	$248.00	
	Stand-By	1		$37.20	2	$74.40	
Front-End Loader, Medium							
	Operating	1		$79.00	5	$395.00	
	Stand-By	1		$47.40	3	$142.20	
Hand Held Tamper							
	Operating	1		$7.00	4	$28.00	
Laborer		1		$18.00	8	$144.00	**$3,898.80**

Project Total **$6,052**

Fill Reconstruction Cost Estimate

Jay Morey
05/12/2006

Segment: I3 to I4 Station: 2+05
Fill: 4 Height: 9

Materials	Quantity		$	Total	
24"x 50', 16ga, AC	50		$27.40	$1,370.00	
Beveled inlet	1		$24.00	$24.00	
24"-6" Riprap Armor	80	cy	$2.71	$216.80	
1 1/2"-0" Crushed Rock for Bedding/Backfill	70	cy	$2.51	$175.70	
1 1/2"-0" Crushed Rock for Road	20	cy	$2.51	$50.20	
4"-0" Crushed Rock for Road	40	cy	$2.51	$100.40	
Erosion Control		ac	$1,315.00	$0.00	
Mulch, seed and fert.					**$1,937.10**

Equipment/Labor Costs		Quantity		$/Hr.	Hours	Total	
Excavator, Large							
	Operating	1		$138.00	8	$1,104.00	
	Stand-By	1		$82.80	2	$165.60	
Dump Truck							
	Operating	2		$59.00	8	$944.00	
	Stand-By	2		$35.40	2	$141.60	
Rubber Tire							
Skidder	Operating	1		$62.00	4	$248.00	
	Stand-By	1		$37.20	2	$74.40	
Front-End Loader, Medium							
	Operating	1		$79.00	5	$395.00	
	Stand-By	1		$47.40	3	$142.20	
Hand Held Tamper							
	Operating	1		$7.00	3	$21.00	
Laborer		1		$18.00	8	$144.00	**$3,379.80**

Project Total **$5,317**

Fill Reconstruction Cost Estimate

Jay Morey
05/12/2006

Segment: I5 to I6 Station: 22+90
Fill: 5 Height: 16

Materials	Quantity		$	Total	
24"x 80', 16ga, AC	80		$27.40	$2,192.00	
Beveled inlet	1		$24.00	$24.00	
24"-6" Riprap Armor	210	cy	$2.71	$569.10	
1 1/2"-0" Crushed Rock for Bedding/Backfill	100	cy	$2.51	$251.00	
4"-0" Crushed Rock for Road	60	cy	$2.51	$150.60	
Erosion Control		ac	$1,315.00	$0.00	
Mulch, seed and fert.					**$3,186.70**

Equipment/Labor Costs		Quantity		$/Hr.	Hours	Total	
Excavator, Large							
	Operating	1		$138.00	20	$2,760.00	
	Stand-By	1		$82.80	4	$331.20	
Dump Truck							
	Operating	2		$59.00	20	$2,360.00	
	Stand-By	2		$35.40	4	$283.20	
Rubber Tire							
Skidder	Operating	1		$62.00	8	$496.00	
	Stand-By	1		$37.20	2	$74.40	
Front-End Loader, Medium							
	Operating	1		$79.00	6	$474.00	
	Stand-By	1		$47.40	4	$189.60	
Hand Held Tamper							
	Operating	1		$7.00	5	$35.00	
Laborer		1		$18.00	8	$144.00	**$7,147.40**

Project Total	**$10,334**

Fill Reconstruction Cost Estimate

Jay Morey
05/12/2006

Segment: I7 to I8 Station: 1+25
Fill: 6 Height: 9

Materials	Quantity		$	Total
24"x40', 16ga, AC	40		$27.40	$1,096.00
Beveled inlet	1		$24.00	$24.00
24"-6" Riprap Armor	70	cy	$2.71	$189.70
1 1/2"-0" Crushed Rock for Bedding/Backfill	70	cy	$2.51	$175.70
4"-0" Crushed Rock for Road	60	cy	$2.51	$150.60
Erosion Control		ac	$1,315.00	$0.00
Mulch, seed and fert.				

$1,636.00

Equipment/Labor Costs		Quantity		$/Hr.	Hours	Total
Excavator, Large						
	Operating	1		$138.00	10	$1,380.00
	Stand-By	1		$82.80	2	$165.60
Dump Truck						
	Operating	2		$59.00	10	$1,180.00
	Stand-By	2		$35.40	2	$141.60
Rubber Tire						
Skidder	Operating	1		$62.00	4	$248.00
	Stand-By	1		$37.20	2	$74.40
Front-End Loader, Medium						
	Operating	1		$79.00	5	$395.00
	Stand-By	1		$47.40	3	$142.20
Hand Held Tamper						
	Operating	1		$7.00	3	$21.00
Laborer		1		$18.00	8	$144.00

$3,891.80

Project Total **$5,528**

SALE NAME:	Northrup Quarry Combination			DATE:	04/18/2006
PROJECT:	No. 1 Road Construction	ROCK TYPE:	Crushed	BY:	J. Long
QUARRY:	Northrup		3/4"-0", 1 1/2"-0", & 4"-0"		

		Cubic Yards							
Segment	Stations	Base	Surfacing	Turnout	Turnaround	Junction	Curves	Misc	Total
1A-1B	3.00	150			24	24			198
3E-3F	19.40	970	117	88	24				1,199
4A-4B	19.50	975	78	66	24			20	1,163
4C-4D	1.50	75			24	24			123
5A-5B	2.00	100			24	24			148
5C-5D	2.50	125			24	24			173
Grand Total	44.90	2,395	195	154	144	96	0	20	3,004

			ONE WAY HAUL IN MILES							
Road Segment	Stations	Cubic Yards	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	Total Haul
1A-1B	3.00	198					0.00	0.25	0.05	0.30
3E-3F	19.40	1,199					0.10	0.10	0.05	0.25
4A-4B	19.50	1,163				0.70	0.30	0.20	0.05	1.25
4C-4D	1.50	123				0.70	0.30	0.15	0.05	1.20
5A-5B	2.00	148				0.80	0.30	0.15	0.05	1.30
5C-5D	2.50	173				1.00	0.30	0.15	0.05	1.50
TOTAL	47.90	3,004								AVERAGE HAUL
	STA./NO.	CU. YD.								
CUBIC YARD WEIGHTED HAUL						**0.40**	**0.20**	**0.16**	**0.05**	**0.80**
						Average Round Trip Distance (miles)			1.61	

ROCK HAUL:

Truck type:	D20	No. trucks:		Ave haul:	$1.13	/cy
Delay min.:	8	Efficiency:	85%	Load:	$0.40	/cy
Truck type:	D12	No. trucks:	3	Spread:	$0.65	/cy
Delay min.:	6	Efficiency:	85%			
Truck type:	D10	No. trucks:		Production: cy/day =		1,208
Delay min.:	5	Efficiency:	85%			

CRUSHED ROCK HAUL COSTS 3,004 cy @ **$2.18 /cy**

SALE NAME:	Northrup Quarry Combination			DATE:	04/18/2006
PROJECT:	Nos. 1, 3, & 4 Road Improvement	ROCK TYPE: Crushed		BY:	J. Morey
QUARRY:	Northrup	1 1/2", 3/4, & 4"-0"			

		Cubic Yards							
Segment	Stations	Base	Surfacing	Turnout	Turnaround	Junction	Curves	Misc	Total
I1-I2	140.00	200	3,261	190		100	230	620	4,601
I3-I4	26.70	40	607	30		10	50	160	897
I5-I6	24.55	60	933	60			30	220	1,303
I7-I8	1.25	60						90	150
A-B	12.84							500	500
Proj. 4	1.00	108						193	301
Grand Total	206.34	468	4,801	280	0	110	310	1,783	7,752

			ONE WAY HAUL IN MILES							
Road Segment	Stations	Cubic Yards	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	Total Haul
I1-I2	140.00	4,601			0.80	0.80	0.50	0.15	0.05	2.30
I3-I4	26.70	897				0.05	0.10	0.10	0.05	0.30
I5-I6	24.55	1,303				0.10	0.30	0.15	0.05	0.60
I7-I8	1.25	150				0.10	0.30	0.15	0.05	0.60
A-B	12.84	500			0.80	0.50	0.30	0.15	0.05	1.80
Proj. 4	1.00	301			1.50	0.50	0.40	0.15	0.05	2.60
TOTAL	206.34	7,752								AVERAGE HAUL
	STA./NO.	CU. YD.								
CUBIC YARD WEIGHTED HAUL			**0.00**	**0.00**	**0.58**	**0.55**	**0.40**	**0.14**	**0.05**	**1.73**
								Average Round Trip Distance (miles)		3.46

ROCK HAUL:

Truck type:	D20	No. trucks:	1	Ave haul:	$1.46	/cy
Delay min.:	8	Efficiency:	85%	Load:	$0.40	/cy
Truck type:	D12	No. trucks:	2	Spread:	$0.65	/cy
Delay min.:	6	Efficiency:	85%			
Truck type:	D10	No. trucks:	0	Production: cy/day =	993	
Delay min.:	5	Efficiency:	85%			

CRUSHED ROCK HAUL COSTS 7,752 cy @ **$2.51 /cy**

SALE NAME:	Northrup Quarry Combination			DATE:	05/12/2006
PROJECT:	No.s 1, 3, & 4	ROCK TYPE: Pit Run & Riprap		BY:	J. Long/ J. Morey
QUARRY:	Northrup Quarry	6"-0", 12"-6", 24"-6", & 24"-12"			

		Cubic Yards							
Segment	Stations	Base	Curve Widden	Turnout	Turnaround	Junction	Landings	Misc	Total
1A-1B	3.00						50		50
3E-3F	19.40						150		150
4A-4B	19.50						50	10	60
4C-4D	1.50						50		50
5A-5B	2.00						80		80
5C-5D	2.50						80		80
I1-I2	140.00							610	610
I3-I4	26.70							90	90
I5-I6	25.60						100	210	310
I7-I8	1.25							70	70
A-B	12.84							630	630
Proj. 4	1.00							100	100
Grand Total	255.29	0	0	0	0	0	560	1,720	2,280

			ONE WAY HAUL IN MILES							
Road Segment	Stations	Cubic Yards	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	Total Haul
1A-1B	3.00	50					0.20	0.15	0.05	0.40
3E-3F	19.40	150					0.10	0.15	0.05	0.30
4A-4B	19.50	60			0.50	0.35	0.30	0.25	0.05	1.45
4C-4D	1.50	50			0.50	0.30	0.25	0.15	0.05	1.25
5A-5B	2.00	80			0.50	0.40	0.30	0.15	0.05	1.40
5C-5D	2.50	80			0.50	0.60	0.30	0.15	0.05	1.60
I1-I2	140.00	610			0.80	0.80	0.50	0.15	0.05	2.30
I3-I4	26.70	90				0.05	0.10	0.10	0.05	0.30
I5-I6	25.60	310				0.10	0.30	0.15	0.05	0.60
I7-I8	1.25	70				0.10	0.30	0.15	0.05	0.60
A-B	12.84	630			0.80	0.50	0.30	0.15	0.05	1.80
Proj. 4	1.00	100			1.00	1.00	0.45	0.10	0.05	2.60
TOTAL	255.29	2,280								AVERAGE HAUL
	STA./NO.	CU. YD.								
CUBIC YARD WEIGHTED HAUL			**0.00**	**0.00**	**0.32**	**0.32**	**0.24**	**0.10**	**0.03**	**1.02**
							Average Round Trip Distance (miles)		2.04	

ROCK HAUL:

Truck type:	D20	No. trucks:	0	Ave haul:	$1.31	/cy
Delay min.:	8	Efficiency:	85%	Load:	$0.50	/cy
Truck type:	D12	No. trucks:	0	Spread:	$0.90	/cy
Delay min.:	6	Efficiency:	85%			
Truck type:	D10	No. trucks:	2	Production: cy/day =	695	
Delay min.:	5	Efficiency:	85%			

CRUSHED ROCK HAUL COSTS 2,280 cy @ **$2.71 /cy**

SUMMARY OF ROCK DEVELOPMENT AND CRUSHING COSTS

PROJECT NO. 2 **Timber Sale Name: Northrup Quarry Combination**

Quarry: Northrup Ridge
Location: SE 1/4, Sec 17, T6N, R6W
County: Clatsop
By: C.Bangs
Date: 04/19/2006

Swell:
Shrink: 16%

ROCK SIZE	REJECT	GRADATION	STOCKPILE CU. YDS.	TRUCK MEAS CU. YDS.	TOTAL CU. YDS.
3/4"-0"	5%	CR		15,276	15,276
1-1/2"-0"	5%	CR	10,000	1,580	13,180
4"-0"		CR		4,400	4,400
2"-1"	10%	CR		500	500
6"-0"		PR		560	560
24"-6"		RR		1,720	1,720
TOTAL CUBIC YARDS OF ROCK:			10,000	24,036	**35,636**

1) MOBILIZATION & SET UP:

EQUIPMENT MOBILIZATION	DISTANCE IN MILES	DIST. FACTOR	BASE RATE	COST
3 Stage Crusher	75	1.40	$2,353	$3,294
Screening Plants (2)	75	1.40	$954	$1,336
D8 Cat & D6 Cat	75	1.40	$1,600	$2,240
Loader	75	1.40	$590	$826
Drill & Compressor	75	1.40	$1,030	$1,442
Powder	75	1.40	$286	$400
4 Dump Trucks	75	1.40	$476	$666
Excavator	75	1.40	$500	$700
SUB TOTAL FOR MOBILIZATION				$10,905

EQUIPMENT SET UP	TIMES	RATE	COST
3 Stage Crusher	1	$2,682	$2,682
Screening Plants (2)	1	$451	$451
Change Gradation	3	$424	$1,272

SUB TOTAL FOR SET UP COSTS $4,405

TOTAL MOBILIZATION & SET UP COSTS $15,310

2) CLEARING & GRUBBING

DESCRIPTION	QUANTITY	UNIT	RATE	COST

TOTAL CLEARING & GRUBBING COSTS

3) EXCAVATION

MATERIAL DESCRIPTION	QUANTITY	UNIT	RATE	COST

TOTAL EXCAVATION COSTS

4) DEVELOP ROCK

ROCK SUMMARY

Type	Cu. yd. Vol.	Weight
crushed	33,356	94%
pit run	560	2%
rip rap	1,720	5%
Total	35,636	
reject	1,473	4.1%

METHOD	%	QUANTITY	RATE	COST
Ripping	10%	3,564	$1.90	$6,771
Drill & shoot	90%	33,398	$1.95	$65,126
Oversize red				
Other				

TOTAL ROCK DEVELOPMENT COSTS $71,897

5) CALIBRATION & TESTING

DESCRIPTION	NO.	$/TEST	COST
Calibrate	3	$400	$1,200
Calibrate			
Test	17	$50	$850
Test			

TOTAL CALIBRATION & TESTING COSTS $2,050

6) FEEDING & LOADING

DESCRIPTION	CU. YD. QUANTITY	COST CU. YD.	TOTAL COST
Dig & Feed Rock	34,829	$0.76	$26,551

TOTAL FEEDING & LOADING COSTS $26,551

7) ROCK CRUSHING

ROCK SIZE	ROCK TYPE	CU. YD. QUANTITY	CRUSHER TYPE	HOURLY PRODUCTIO	RATE CU. YD.	TOTAL COST
3/4"-0"	crushed	15,276	3 stage w/s	110	$2.95	$45,134
1-1/2"-0"	crushed	13,180	3 stage w/s	120	$2.71	$35,696
4"-0"	crushed	4,400	2 stage	140	$1.71	$7,543
2"-1"	crushed	500	3 stage w/s	120	$2.71	$1,354

TOTAL ROCK CRUSHING COSTS $89,726

8) STOCKPILING

STOCKPILE PREPARATION OR CONST	COST
Construct/Prepare Stockpile Site	$336
(See Footnote)	

SUB TOTAL $336

HAUL & STOCKPILE STOCKPILE LOCATION	SIZE	# of TRUCKS	CU. YDS.	RATE	COST
1. Cow Creek	3/4"-0"	4	11,000	$2.31	$25,357
2. Northrup Ridge	1-1/2"-0"	3	11,600	$1.87	$21,672
3.					
4.					
5.					
6.					

SUB TOTAL $47,029

TOTAL STOCKPILING COSTS $47,365

9) MISCELLANEOUS COSTS

DESCRIPTION	COST
Load, Haul, and Spread the reject material at the waste area.	$4,345
$3.30/CY 1,473 CY	
Final Quarry Dev., Access Road Const., Waterbarring, Drainage,	$1,104
Block Quarry Access, 8 Large Excavator hours @ $138/hr = $1104	

TOTAL MISCELLANEOUS COSTS $5,449

10) GRAND TOTAL: **$258,348**

$/Cubic Yard $7.75

Footnotes:

Construct/Reconstruct Stockpile Floor

Equipment	Hours	Rate	Total
Dozer		$120.00	
Compactor		$75.00	
Grader.	4	$84.00	$336.00
Excavator		$130.00	
			$336.00

Rock for Floor (CY)	$/CY Haul	Total

Total Construct Stockpile Floor $336.00

Road Improvement Estimates
Project No. 3
Location: Northrup Creek Road Improvement

Cullen Bangs
04/14/2006

Materials	Quantity		$	Total	
12" double wall perforated drain pipe	1070	ft	$4.00	$4,280	
Perforated drain pipe coupler	43	ea	$4.00	$172	
24"-12" Riprap	500	cy	$2.71	$1,355	
24"-6" Riprap	30	cy	$2.71	$81	
12"-6" Riprap	100	cy	$2.71	$271	
2"-1" Crushed Drain Rock	500	cy	2.51	$1,255	
10 oz. Fabric, 8' wide	1070	ft	$1.41	$1,509	
4.5 oz. Fabric, 16' wide	1070	ft	$1.89	$2,022	
Seeding and Mulching	0.2	ac	$1,315	$263	**$11,208**

Equipment/Labor Costs		Quantity		$/Hr.	Hours	Total	
Excavator, Large							
	Operating	1		$138.00	58	$8,004	
	Stand-By	1		$82.80	5	$414	
Dump Truck							
	Operating	1		$59.00	36	$2,124	
	Stand-By	1		$35.40	5	$177	
Vibratory Roller							
	Operating	1		$79.00	4	$316	
	Stand-By	1		$47.40	0	$0	
Water Truck							
	Operating	1		$70.00	2	$140	
	Stand-By	1		$42.00	0	$0	
Road Grader, Large							
	Operating	1		$84.00	4	$336	
	Stand-By	1		$50.40	0	$0	
Laborer		2		$20.00	36	$720	**$12,231**

Project Total	**$23,439**

Pipe Arch Cost Estimate
Project No. 4
Location: Northrup Creek Road/Northrup Creek Tributary

Cullen Bangs
04/14/2006

Materials	Quantity		$	Total	
83"x63"x66', AC, 12 gage,3x1, Step Bevel Both Ends, 24" Bands				$7,631	
24"-6" Riprap - Fill Armor and Streambed Development	100	cy	$2.71	$271	
1 1/2"-0" Crushed Rock for Bedding/Backfill	160	cy	$2.51	$402	
1 1/2"-0" Crushed Rock for Road	33	cy	$2.51	$83	
4"-0" Crushed Rock for Road	108	cy	$2.51	$271	
Erosion Control Mulch, seed and fert.	0.2	ac	$1,315.00	$263	**$8,921**

Equipment/Labor Costs		Quantity		$/Hr.	Hours	Total	
Excavator, Large							
	Operating	1		$138.00	37	$5,106	
	Stand-By	1		$82.80	5	$414	
Dump Truck							
	Operating	1		$59.00	11	$649	
	Stand-By	1		$35.40	2	$71	
Vibratory Roller							
	Operating	1		$79.00	8	$632	
	Stand-By	1		$47.40	2	$95	
Front-End Loader, Medium							
	Operating	1		$79.00	4	$316	
	Stand-By	1		$47.40	2	$95	
Road Grader, Large							
	Operating	1		$84.00	4	$336	
	Stand-By	1		$50.40	0	$0	
Hand Held Tamper							
	Operating	1		$7.00	8	$56	
	Stand-By	1		$4.20	2	$8	
Water Pump							
	Operating	1		$7.00	24	$168	
Laborer		2		$20.00	55	$1,100	**$9,046**

Project Total	**$17,966**

Project No. 5 Northrup Quarry Brushing

Segment	Length (Miles)	Brush Type	Cost/Mile	Cost
I1-B1	1.90	M	$1,350	$2,565.00
I1-B1	0.60	H	$1,650	$990.00
B3-B4	0.10	L	$1,150	$115.00
I1-B2	2.85	L	$1,150	$3,277.50
I1-B2	3.00	M	$1,350	$4,050.00
I1-B2	3.95	H	$1,650	$6,517.50
B5-B6	0.20	H	$1,650	$330.00
B6-B7	0.20	H	$1,650	$330.00
B8	1.30	M	$1,350	$1,755.00
B9	0.15	M	$1,350	$202.50
B10	0.80	L	$1,150	$920.00
B11	0.10	M	$1,350	$135.00
B12	0.20	M	$1,350	$270.00
B13	0.25	L	$1,150	$287.50
B14	0.10	L	$1,150	$115.00
B15	0.40	L	$1,150	$460.00
B16	0.30	L	$1,150	$345.00
B17	0.10	L	$1,150	$115.00
B18	0.65	L	$1,150	$747.50
B19-B20	0.30	L	$1,150	$345.00
B21	0.05	H	$1,650	$82.50
B22	0.14	VH	$2,300	$322.00
B23	0.35	H	$1,650	$577.50
B24	0.05	H	$1,650	$82.50
Total	18.04			$24,937.00

L = Light Brush $1,150
M = Medium Brush $1,350
H = Heavy Brush $1,650
VH= Very Heavy $ 2,300
(1-11-05)

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Northrup Quarry Combination
Project No. 6 Stream Enhancement

Location	Site	Number of Trees	$/Tree*	Location Cost
SE1	1	5	$225.00	$1,125.00
SE2	2	5	$225.00	$1,125.00
			Project Total	**$2,250.00**

*$/Tree includes transportation cost of tree up to 0.5 miles.

Road Maintenance after completion of Project Work (New Construction & Improvement)

Sale: Northrup Quarry
Date: 13-Apr-06
By: J. Long

Type	Equipment/Rationale			Hours	Rate	Cost	
	Grader 14G			10	$84	$840	
Final Haul	Dump Truck 12CY			8	$59	$472	
Road	FE Loader C966			8	$79	$632	
Maintenance	Vibratory Roller			8	$79	$632	
Haul Route	Water Truck (2,500 gal)			8	$70		
Total							$2,576

Production Rates	Miles/day	Distance(miles)	Days
Grader	1.5	1.1	0.7

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TIMBER CRUISE REPORT
Northrup Quarry Combination
FY 2005

1. **Sale Area Location:** Areas 1, 2, 3, 4, 5, and 6 are located in Portions of Sections 16 and 17, T6N, R6W; W.M., Clatsop County, Oregon.

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

3. **Sale Acreage by Area:**

Area	Treatment	Gross Acres	Existing R/W	New R/W	Non-Thinnable	Stream Buffer	Net Acres	Survey Method
1	Partial Cut	110	7	0	0	9	94	GIS
1(a)	Group Selection Area	0.5	0	0	0	0	0.5	GIS
1(b)	Group Selection Area	0.5	0	0	0	0	0.5	GIS
1(c)	Group Selection Area	1	0	0	0	0	1	GIS
2	Partial Cut	29	1	0	0	2	26	GIS
3	Modified Clearcut	118	0	4	4	11	99	GIS
4	Partial Cut	115	3	3	0	3	106	GIS
5	Modified Clearcut	48	1	1	0	2	44	GIS
6	Right-of-Way	--	0	--	0	0	8	GIS
TOTALS		**422**	**12**	**8**	**4**	**27**	**379**	

4. Cruisers and Cruise Dates: Areas 1-6 and A-C were cruised by Derek Bangs, Lanny Freeman, Jon Long, Jasen McCoy, Jay Morey, Ty Williams, and Dave Wolfgram, in March, 2006.

5. Cruise Method and Computation:
AREAS 1 and 2 are "auto-mark" thinning units (SDI 25), and were variable plot cruised using a 40 BAF. These plots are located on a 2 chain by 12.5 chain grid, with every third plot measured and graded. A total of 48 plots were sampled, with 17 measured and graded plots, and 32 count plots. Cedar and alder are reserve species, and were recorded as "leave" trees. The "biggest and best" trees were recorded as "leave" trees to meet a target residual basal area of 120 ft^2/acre. Hardwoods do not count towards the residual basal area.
AREAS 1(a), 1(b), and 1(c) The group selection area volume was calculated by multiplying the acreage and the average volume per acre from the plots in Areas 1 and 2.
AREA 4 is an "auto-mark" thinning unit (SDI 30), and was variable plot cruised using a 40 BAF. These plots are located on a 2 chain by 12.5 chain grid, with every third plot measured and graded. A total of 48 plots were sampled, with 21 measured and graded plots, and 27 count plots. Cedar and alder are reserve species, and were recorded as "leave" trees. The target residual basal area is 150 ft^2/acre. Hardwoods do not count towards the residual basal area.
AREAS 3 and 5 are modified clearcut units and were variable plot cruised using a 54 BAF. These plots are located on a 4 chain by 9 chain grid, with every other plot measured and graded. A total of 41 plots were sampled, with 18 measured and graded plots, and 23 count plots. Cedar is a reserve species.
AREA 6 R/W The Right-of Way volume was calculated by multiplying the R/W acreage and the average volume per acre from the plots in Areas 3 and 5. In-sale right of way totals 8 acres.

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

AREA	CRUISE	TRACT	TYPE
1 and 2	06N06W SEC 17	AREAS 1 & 2	TAKE
4	06N06W SEC 17	AREA 4	TAKE
3 and 5	06N06W SEC 17	AREAS 3 & 5	TAKE
1(a), 1(b), and 1(c)	06N06W SEC 17	AREAS 1 & 2	TAKE
6 R/W	06N06W SEC 17	AREAS 3 & 5	TAKE

6. Timber Description: Areas 1 and 2 are "auto-mark" thinning units, approximately 65-70 years old, consisting of dense Douglas-fir stands mixed with western hemlock, noble fir, red alder, with an occasional western redcedar. These stands will be thinned to a SDI of 25, removing approximately 53 trees per acre and 23 MBF/acre. The average conifer "take" tree size is 20.7" DBH and 86 feet to a merchantable top (6" d.i.b.).
Area 4 is also an "auto-mark" thinning unit, approximately 60 years old, consisting of dense Douglas-fir stands mixed with western hemlock, noble fir, red alder, with an occasional western redcedar. Area 4 will be thinned to a SDI of 30, removing approximately 62 trees per acre and 14.7 MBF/acre. The average conifer "take" tree size is 16.2" DBH and 67 feet to a merchantable top (6" d.i.b.).
Areas 3 & 5 are clearcut units, approximately 60-65 years old, consisting of Douglas-fir, hemlock, red alder, maple, with a minor component of western redcedar. The Douglas-fir averages 21.6" DBH, with an average height of 89 feet to a merchantable top (6" d.i.b.). The average hemlock tree size is 15" DBH and 25 feet to a merchantable top (6" d.i.b.). The average alder tree size is 13.4" DBH and 54 feet to a merchantable top (7" d.i.b.). The average volume per acre to be harvested (net) is 57.9 MBF.
Area 6 R/W is similar to the timber description mentioned above for Areas 3 and 5. The average volume (net) is 59.5 MBF/acre.
Areas 1(a), 1(b), and (c) are ½ to 1 acre group selection patch cuts within Area 1. The timber description is similar to the timber description mentioned above for Area 1. The average volume (net) is 49 MBF/acre.

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

Statistics for Stand B.F. volumes

Area	Estimated CV	Target SE%	Actual CV	Actual SE%
1 and 2	40%	7%	34%*	4.9%
4	40%	7%	34.7%*	5.0%
3 and 5	45%	8%	66.7%	10.4%
Total combined SE	--	--	--	4.96%**

* Statistics for the thinning units are for the current stand (Take and leave trees combined).
** Statistics were combined for the total sale SE for Areas 1-5.

8. Volumes by Species and Log Grade: (See "Species, Sort, Grade - Type and Project Reports, attached, of individual sale areas and combined areas and five cruise types).
Volumes by Species and Grade for All Sale Areas: (MBF) Volumes do not include "in-growth."

Species	DBH	Net Vol.	2 Saw	3Saw	4 Saw	CR	% D & B	% Sale
Douglas-fir	20"	11,154	8,393	2,491	270	0	1.1	83
Hemlock/True Fir	17"	102	63	14	25	0	1.5	<1
Alder	13"	1,913	0	0	0	1,913	.2	15
Maple	20"	158	0	0	0	158	2.9	1.5
TOTALS		**13,327**	**8,456**	**2,505**	**295**	**2,071**		

9. Approvals:

Prepared by: Jasen McCoy **Date:** April 4, 2006

Reviewed by: [signature] **Date:** 5/24/06

10. Attachments:

Cruise Designs (3)
Cruise Maps (1)
Volume Reports - 6 pages
Statistics Reports - 10 pages
Combined SE Calculation
Stand Tables - 2 pages
Log Stock Tables – 3 pages

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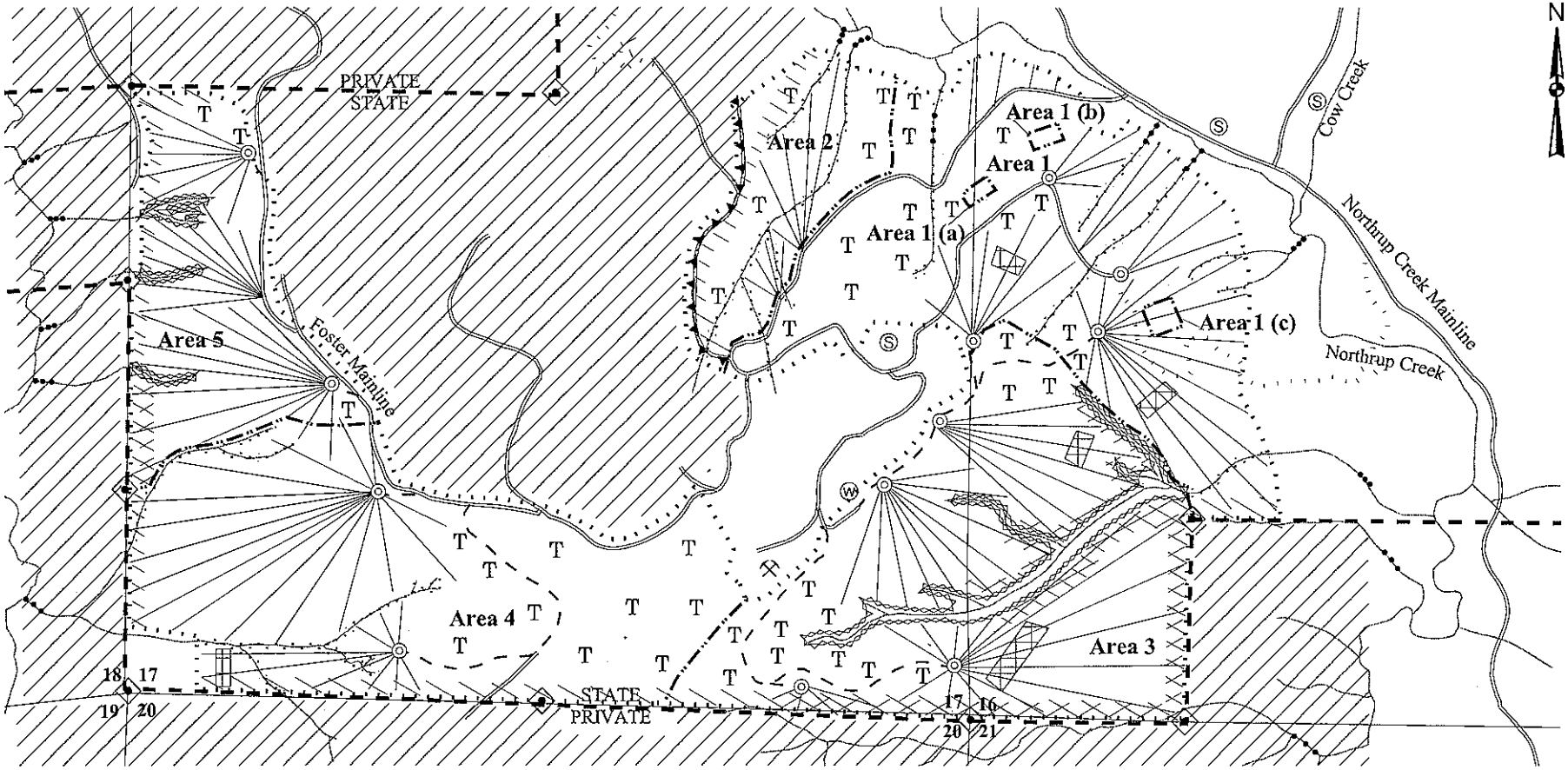


Logging Plan

OF TIMBER SALE CONTRACT NO. 341-07-06
NORTHRUP QUARRY COMBINATION
PORTIONS OF SECTIONS 16 and 17 of T6N, R6W, W.M.,
CLATSOP COUNTY, OREGON

LOGGING BREAKDOWN		
Area	Tractor	Cable
1	40%	60%
2	42%	58%
3	20%	80%
4	40%	60%
5	16%	84%

Legend

- Timber Sale Boundary
- Area Boundary
- Landings To Be Constructed
- Surfaced Existing Road
- New Construction Road
- Property Line
- Known Land Survey Corner
- Type F Stream
- Type N Stream
- 100' Top Attached Yarding
- Unposted Stream Buffer
- Posted Stream Buffer
- Reforestation Area
- Recreation Horse Trail
- Intermediate Supports
- Controlled Felling
- Quarry
- Stockpile
- Tractor Logging Areas
- Cable Logging Areas
- Seasonal Restrictions

500 0 500 1000 Feet

Approximate Scale= 1":1,000'

Aproximate Net Acreage:	PC Acres	MC Acres	Group Selection Acres
Area 1 (PC) -	94	0	
Area 1 (a)-			0.5
Area 1 (b)-			0.5
Area 1 (c)-			1.0
Area 2 (PC) -	26	0	
Area 3 (MC) -	0	99	
Area 4 (PC) -	106	0	
Area 5 (MC) -	0	44	
Area 6 (R/W)-	0	8	
Total by prescription	226	151	2
Total Sale Acreage	379		

Revised August, 2002

CRUISE DESIGN
ASTORIA DISTRICT

Sale Name: Northrup Quarry Combination **Area(s)** 1, 2

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

Approx. Cruise Acres: 123 **Estimated CV%** 40 Net BF or BA/Acre **SE% Objective** 7 Net BF or BA/Acre

Planned Sale Volume : 3,000 MBF (Areas 1, 2) **Estimated Sale Area Value/Acre:** $10,000/Ac (25 MBF/Ac.)

A. Cruise Goals: (a) Grade minimum 100 conifer:
(b) Sample 42 cruise plots (1 grade/2 count); (c) Other goals (____ Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes.

B. Cruise Design:

1. Plot Cruises: BAF 40 (Full point; Half point) (circle one)
Cruise Line Direction(s) East/West
Cruise Line Spacing 12.5 (chains) (feet)
Cruise Plot Spacing 2 (chains) (feet)
Grade/Count Ratio 1/2

Basal Area leave target 110-130 sq. ft. Cruiser needs to select 3 leave trees per plot. Cruise all take and leave trees. Alder will not be thinned; Record alder as leave trees. All cedar are leave trees and count towards the leave tree basal area. Alder will not count towards the leave tree BA. In patch cut areas in Area 1, cruise same as thinning.

C. Tree Measurements:

1. Diameter: Minimum DBH to cruise is 8" for conifers and 10" for hardwoods. Record dbh to nearest ½" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.

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

3. Top Cruise Diameter (TCD): Minimum top outside bark is 7" for conifers and 8" 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:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12'; for hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree.

6. **Species, Sort, and Grade Codes:**

A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple). 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
Hardwoods: R = CampRun

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.

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: Jasen McCoy
Approved by: _____
Date: 3-22-2006

Revised August, 2002

CRUISE DESIGN
ASTORIA DISTRICT

Sale Name: Northrup Quarry Combination **Area(s)** 3 & 5

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

Approx. Cruise Acres: 143 **Estimated CV%** 45 Net BF or BA/Acre **SE% Objective** 8% Net BF or BA/Acre

Planned Sale Volume: 7,150 MBF (Areas 3 & 5) **Estimated Sale Area Value/Acre:** $ 20,000/Ac (50 MBF/Ac)

A. **Cruise Goals:** (a) Grade minimum 100 conifer and 50 hardwood trees: (b) Sample 40 cruise plots (1 grade/ 1 count); (c) Other goals (____ Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes.

B. **Cruise Design:**

1. **Plot Cruises:** BAF 54 (Full point; Half point) (circle one)
   Cruise Line Direction(s) See Map (North/South)(East/West)
   Cruise Line Spacing 9
   Cruise Plot Spacing 4 (chains) (feet)
   Grade/Count Ratio 1/1

Do not take plots in stream buffers shown on cruise map. All cedar and marked wildlife trees are leave trees and are recorded as leave trees.

C. **Tree Measurements:**

1. **Diameter:** Minimum DBH to cruise is 8" for conifers and 10" for hardwoods. Record dbh to nearest ½" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.

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

3. **Top Cruise Diameter (TCD):** Minimum top outside bark is 7" for conifers and 8" 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:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum

merchantable segment length is 12'; for hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree.

6. **Species, Sort, and Grade Codes:**

A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple). 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
Hardwoods: R = CampRun

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.

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: Jasen McCoy
Approved by: _____
Date: 3/22/2006

Revised August, 2002

CRUISE DESIGN
ASTORIA DISTRICT

Sale Name: Northrup Quarry Combination **Area(s)** 4

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

Approx. Cruise Acres: 106 **Estimated CV%** 40 Net BF or BA/Acre **SE% Objective** 7 Net BF or BA/Acre

Planned Sale Volume : 2,500 MBF (Area 4) **Estimated Sale Area Value/Acre:** $9,600/Ac (24 MBF/Ac.)

A. Cruise Goals: (a) Grade minimum 100 conifer:
(b) Sample 46 cruise plots (1 grade/2 count); (c) Other goals (____ Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes.

B. Cruise Design:

1. **Plot Cruises:** BAF 40 (Full point; Half point) (circle one)
   Cruise Line Direction(s) AZ= 250°
   Cruise Line Spacing 11 (chains) (feet)
   Cruise Plot Spacing 2 (chains) (feet)
   Grade/Count Ratio 1/2

Basal Area leave target 140-160 sq. ft. Cruiser needs to select 3 to 4 (Mostly 4) leave trees per plot. Cruise all take and leave trees. Alder will not be thinned; Record alder as leave trees. All cedar are leave trees and count towards the leave tree basal area. Alder will not count towards the leave tree BA.

C. Tree Measurements:

1. **Diameter:** Minimum DBH to cruise is 8" for conifers and 10" for hardwoods. Record dbh to nearest ½" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.

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

3. **Top Cruise Diameter (TCD):** Minimum top outside bark is 7" for conifers and 8" 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:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12'; for hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree.

6. **Species, Sort, and Grade Codes:**

A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple). 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
Hardwoods: R = CampRun

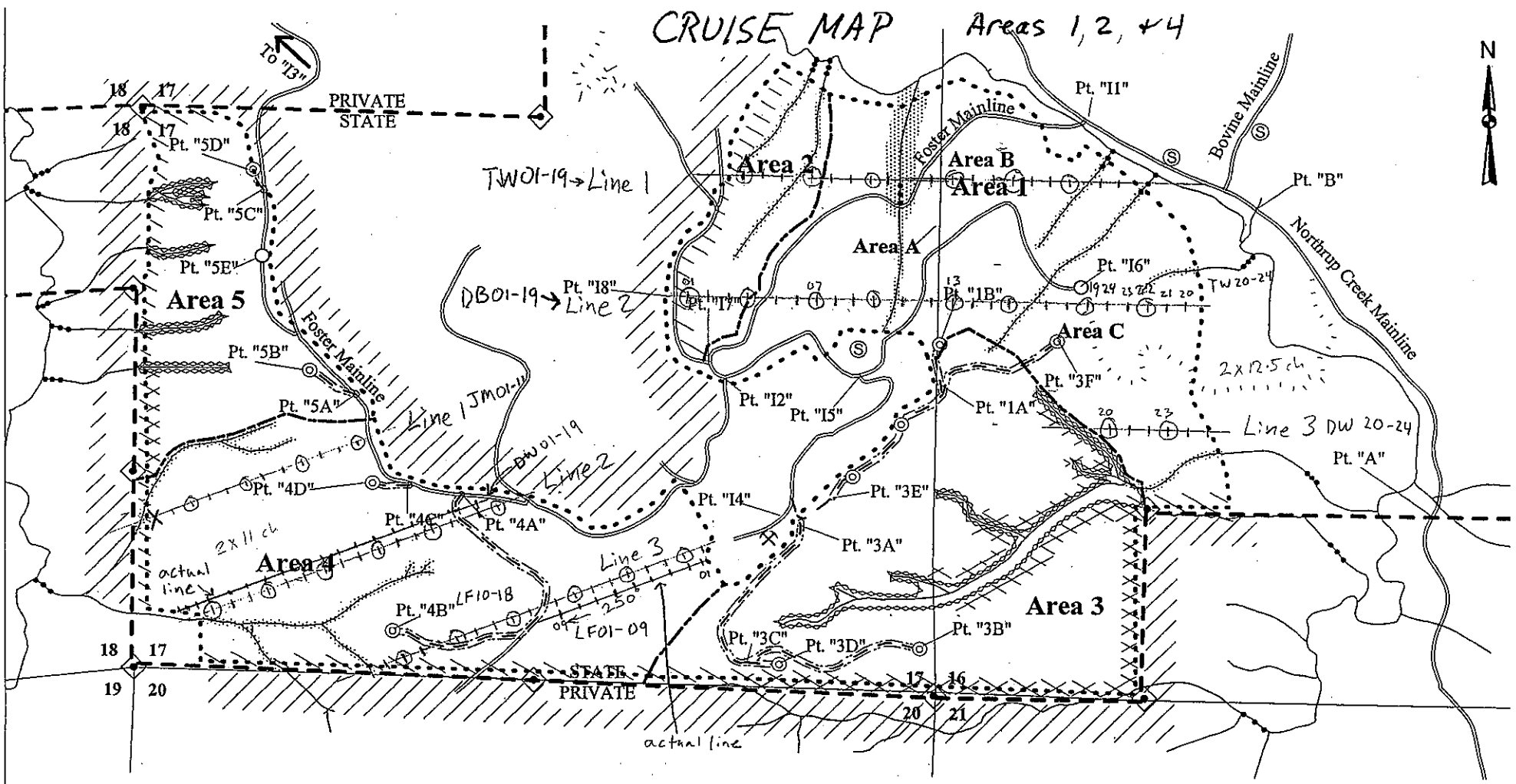
7. **Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally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

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: Jasen McCoy
Approved by: _____
Date: 3/22/06



LEGEND

- Timber Sale Boundary
- Area Boundary
- Landings To Be Constructed
- Surfaced Existing Road
- New Construction Road
- Right of Way Boundary
- Property Line
- Known Land Survey Corner
- Type F Stream
- Type N Stream
- Unposted Stream Buffer
- Posted Stream Buffer
- Reforestation Area
- Recreation Horse Trail
- Controlled Felling
- Quarry
- Stockpile
- Pt. "A" Project Points

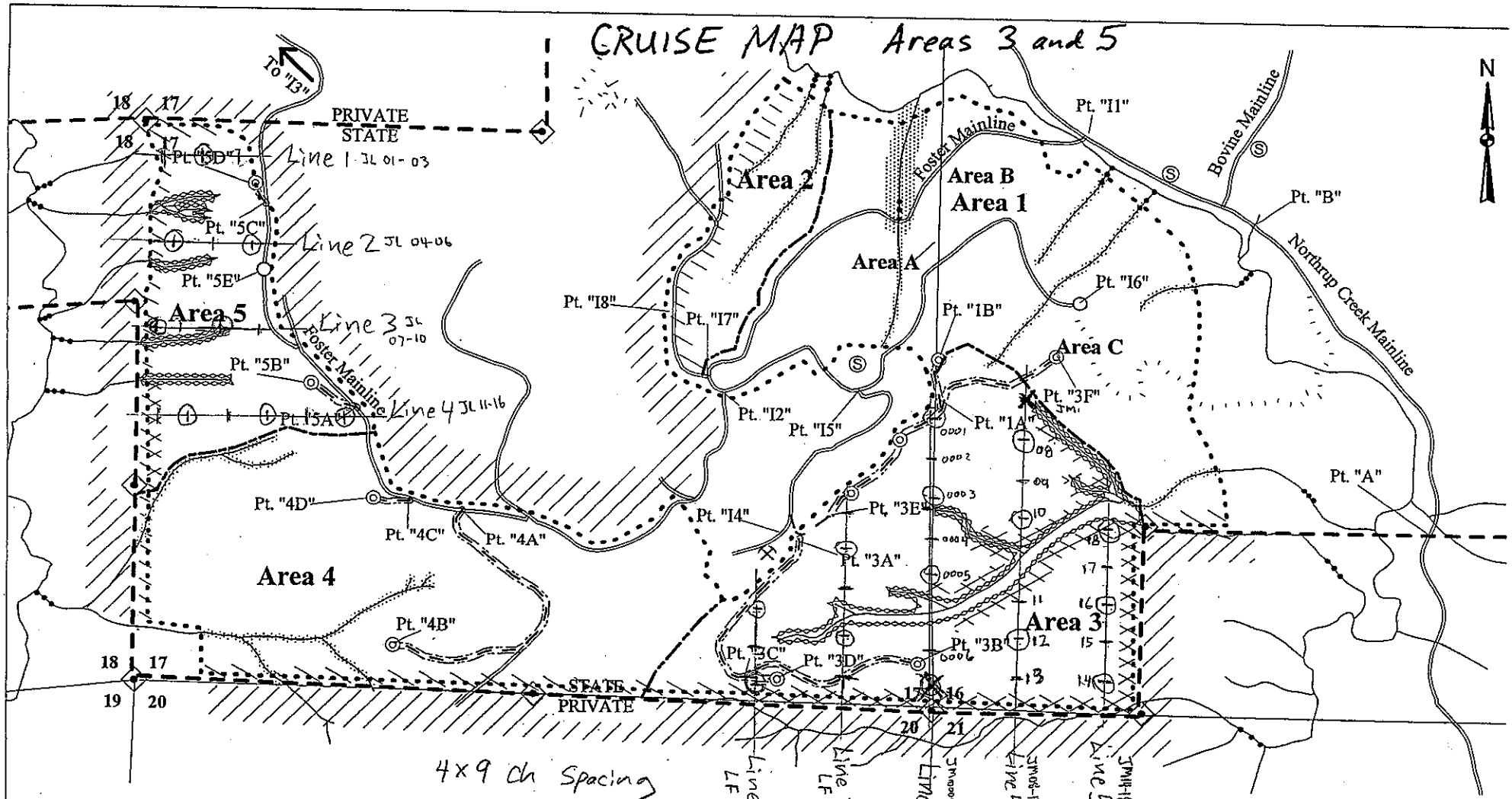
500 0 500 1000 Feet

Approximate Scale= 1:1,000

EXHIBIT "A"

OF TIMBER SALE CONTRACT NO. 341 ~~06-38~~ 07-06
NORTHRUP QUARRY COMBINATION
PORTIONS OF SECTIONS 16 & 17 of T6N, R6W, W.M.,
CLATSOP COUNTY, OREGON

Approximate Net Acreage:	PC	MC
Area 1 (PC) -	100 Acres	
Area 2 (PC) -	23 Acres	
Area 3 (MC) -		99 Acres
Area 4 (PC) -	106 Acres	
Area 5 (MC) -		44 Acres
Area 6 (R/W)-		8 Acres
Area A (MC)		1 Acre
Area B (MC)		1 Acre
Area C (MC)		1 Acre
Total Acres = 380		



LEGEND

- Timber Sale Boundary
- Area Boundary
- Landings To Be Constructed
- Surfaced Existing Road
- New Construction Road
- Right of Way Boundary
- Property Line
- Known Land Survey Corner
- Type F Stream
- Type N Stream
- Unposted Stream Buffer
- Posted Stream Buffer
- Reforestation Area
- Recreation Horse Trail
- Controlled Felling
- Quarry
- Stockpile
- Pt. "A" Project Points

500 0 500 1000 Feet

Approximate Scale= 1:1,000

EXHIBIT "A"

OF TIMBER SALE CONTRACT NO. 341-06-89
NORTHRUP QUARRY COMBINATION
PORTIONS OF SECTIONS 16 & 17 of T6N, R6W, W.M.,
CLATSOP COUNTY, OREGON

Approximate Net Acreage:	PC	MC
Area 1 (PC) -	100 Acres	
Area 2 (PC) -	23 Acres	
Area 3 (MC) -		99 Acres
Area 4 (PC) -	106 Acres	
Area 5 (MC) -		44 Acres
Area 6 (R/W)-		8 Acres
Area A (MC)		1 Acre
Area B (MC)		1 Acre
Area C (MC)		1 Acre
Total Acres = 380		

TC PSPCSTGR

Species, Sort Grade - Board Foot Volumes (Project)

T06N R06W S17 TyTAKE
THRU
T06N R06W S17 TyTAKE

Project: NORTHRUP
Acres 379.00

Date 4/11/2006
Time 11:41:27AM

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent of Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log Ln Ft	Bd Ft	CF/ Lf	Logs Per /Acre
D		2															24		0.25	.0
D		3																	0.00	.0
D		DO0															7		0.00	5.5
D		DO2		63	.8	22,332	22,144	8,393		3	44	53	0	2	31	67	36	346	2.04	64.1
D		DO3		19	1.9	6,702	6,573	2,491	0	87	11	1	1	6	48	46	34	87	0.75	75.4
D		DO4		2	.3	716	714	271	3	94	4		42	49	6	4	20	31	0.49	23.1
D Totals				84	1.1	29,751	29,431	11,154	0	24	36	40	1	4	34	60	32	175	1.28	168.0
GF		DO2		0		7	7	3			5	95				100	40	720	3.29	.0
GF		DO3		0		0	0	0		100					100		32	120	1.16	.0
GF Totals				0		7	7	3		4	5	91			4	96	39	607	2.96	.0
H		DO2		0		158	158	60			3	97				100	40	524	2.86	.3
H		DO3		0		36	36	14		100					2	98	40	120	1.17	.3
H		DO4		0		69	69	26		100			0	100			24	40	0.75	1.7
H Totals				1		262	262	99		40	2	59	0	26	0	74	28	113	1.22	2.3
A		DOCR		14	.2	5,056	5,046	1,913		91	9		5	38	2	55	29	74	0.71	68.6
A Totals				14	.2	5,056	5,046	1,913		91	9		5	38	2	55	29	74	0.71	68.6
M		DO0															24		0.00	.0
M		DOCR		1	3.6	433	417	158		23	42	36	77	23			21	110	1.52	3.8
M Totals				1	3.6	433	417	158		23	42	36	77	23			21	110	1.50	3.8
Totals					1.0	35,509	35,164	13,327	0	34	32	34	3	9	29	59	31	145	1.13	242.7

TC TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: NORTHRUP

Date 4/4/2006

Time 10:33:45AM

T06N R06W S17 TTAKE

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
06N	06W	17	AREAS 1 & 2	TAKE	120.00	48	57	1	W

T06N R06W S17 TTAKE

Spp	ST	Sort	Grad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log: Ln Ft	Bd Ft	CF/ Lf	Logs Per /Acre
D		DO	0														6		0.00	2.2
D		DO	2	74	.5	16,571	16,496	1,980		3	59	39	1	3	26	70	36	297	1.87	55.6
D		DO	3	24	1.7	5,331	5,240	629	1	90	9		0	8	49	42	34	88	0.78	59.5
D		DO	4	2		459	459	55		100			29	71			22	28	0.48	16.5
D	**Totals**			97	.7	22,361	22,194	2,663	0	25	46	29	2	5	31	62	33	166	1.25	133.7
H		DO	2	82		479	479	57				100				100	40	530	2.90	.9
H		DO	3	18		108	108	13		100						100	40	120	1.18	.9
H	**Totals**			3		588	588	71		18		82				100	40	325	2.04	1.8
Type Totals					.7	22,948	22,782	2,734	0	25	45	30	1	5	30	63	33	168	1.26	135.5

TC TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: NORTHRUP

Page 1
Date 4/4/2006
Time 10:47:00AM

T06N R06W S17 TPATC

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
06N	06W	17	AREAS 1 & 2	PATC	2.00	48	116	1	W

T06N R06W S17 TPATC

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log: Ln Ft	Bd Ft	CF/ Lf	Logs Per /Acre
D			2														24		0.25	.4
D			3																0.00	.4
D		DO	0														8		0.00	5.2
D		DO	2	82	.8	37,022	36,709	73		2	44	54	1	2	23	74	36	350	2.12	104.9
D		DO	3	17	1.7	7,697	7,567	15	1	86	8	5	2	10	47	40	33	90	0.82	84.2
D		DO	4	1		651	651	1		100			29	62	9		21	31	0.52	21.3
D	**Totals**			91	1.0	45,371	44,927	90	0	18	38	45	2	4	27	67	33	208	1.50	216.4
A		DO	CR	100		1,387	1,387	3		70	30		9		54	37	30	89	0.91	15.5
A	**Totals**			3		1,387	1,387	3		70	30		9		54	37	30	89	0.91	15.5
H		DO	2	76		1,108	1,108	2			68	32				100	40	402	2.16	2.8
H		DO	3	23		331	331	1		100					38	62	37	120	1.02	2.8
H		DO	4	1		21	21	0		100			100				8	10	0.47	2.1
H	**Totals**			3		1,459	1,459	3		24	51	25	1		9	90	30	192	1.53	7.6
M		DO	0														24		0.00	5.0
M		DO	CR	100		63	63	0		100				100			24	40	0.75	1.6
M	**Totals**			0		63	63	0		100				100			24	10	0.18	6.5
GF		DO	2	96		1,324	1,324	3			5	95				100	40	720	3.29	1.8
GF		DO	3	4		51	51	0		100					100		32	120	1.16	.4
GF	**Totals**			3		1,375	1,375	3		4	5	91			4	96	39	607	2.96	2.3
Type Totals					.9	49,657	49,212	98	0	19	37	44	2	4	26	68	32	198	1.46	248.3

TC TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: NORTHRUP

Date 4/4/2006
Time 10:27:36AM

T06N R06W S17 TTAKE

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
06N	06W	17	AREA 4	TAKE	106.00	48	32	1	W

T06N R06W S17 TTAKE

Spp	ST	Sort	Grad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log Ln Ft	Bd Ft	CF/ Lf	Logs Per /Acre
D		DO	0														3		0.00	6.5
D		DO	2	57	2.2	8,439	8,252	875		2	67	31			29	71	37	292	1.82	28.3
D		DO	3	40	1.0	5,802	5,746	609		100			1	5	55	40	34	77	0.63	74.8
D		DO	4	3		475	475	50		100			39	30	31		20	34	0.46	14.1
D	**Totals**			100	1.6	14,716	14,474	1,534		44	38	18	2	3	39	56	31	117	0.93	123.7
Type Totals					1.6	14,716	14,474	1,534		44	38	18	2	3	39	56	31	117	0.93	123.7

TC TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: NORTHRUP

Date 4/11/2006

Time 11:04:53AM

T06N R06W S17 TTAKE

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
06N	06W	17	AREAS 3 &5	TAKE	143.00	41	137	1	W

T06N R06W S17 TTAKE

Spp	ST	Sort	Grad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log: Ln Ft	Bd Ft	CF/ Lf	Logs Per /Acre
D		DO	0														9		0.00	7.4
D		DO	2	80	.8	36,469	36,192	5,176		3	36	61		2	34	65	36	380	2.16	95.4
D		DO	3	18	2.5	8,411	8,199	1,172		80	18	3	1	5	43	50	34	93	0.81	88.3
D		DO	4	2	.5	1,091	1,085	155	5	89	6		48	46		6	20	31	0.50	34.6
D	**Totals**			77	1.1	45,971	45,477	6,503	0	19	32	49	1	3	35	61	32	202	1.42	225.6
A		DO	CR	100	.2	12,672	12,647	1,809		91	9		5	38	2	55	29	74	0.71	171.9
A	**Totals**			21	.2	12,672	12,647	1,809		91	9		5	38	2	55	29	74	0.71	171.9
M		DO	CR	100	3.6	1,086	1,047	150		23	42	36	77	23			21	111	1.52	9.5
M	**Totals**			2	3.6	1,086	1,047	150		23	42	36	77	23			21	111	1.52	9.5
H		DO	4	100		172	172	25		100				100			24	40	0.75	4.3
H	**Totals**			0		172	172	25		100				100			24	40	0.75	4.3
Type Totals					.9	59,901	59,342	8,486	0	35	27	38	3	11	27	58	30	144	1.13	411.3

TC TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: NORTHRUP

Date 4/11/2006
Time 11:38:12AM

T06N R06W S17 TRW

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
06N	06W	17	AREAS 3 &5	RW	8.00	41	137	1	W

T06N R06W S17 TRW

Spp	ST	Sort	Grad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log: Ln Ft	Bd Ft	CF/ Lf	Logs Per /Acre
D		DO	0														9		0.00	7.4
D		DO	2	80	.8	36,469	36,192	290		3	36	61		2	34	65	36	380	2.16	95.4
D		DO	3	18	2.5	8,411	8,199	66		80	18	3	1	5	43	50	34	93	0.81	88.3
D		DO	4	2	.5	1,091	1,085	9	5	89	6		48	46		6	20	31	0.50	34.6
D	**Totals**			77	1.1	45,971	45,477	364	0	19	32	49	1	3	35	61	32	202	1.42	225.6
A		DO	CR	100	.2	12,672	12,647	101		91	9		5	38	2	55	29	74	0.71	171.9
A	**Totals**			21	.2	12,672	12,647	101		91	9		5	38	2	55	29	74	0.71	171.9
M		DO	CR	100	3.6	1,086	1,047	8		23	42	36	77	23			21	111	1.52	9.5
M	**Totals**			2	3.6	1,086	1,047	8		23	42	36	77	23			21	111	1.52	9.5
H		DO	4	100		172	172	1		100				100			24	40	0.75	4.3
H	**Totals**			0		172	172	1		100				100			24	40	0.75	4.3
Type Totals					.9	59,901	59,342	475	0	35	27	38	3	11	27	58	30	144	1.13	411.3

TC TSTATS

STATISTICS

PROJECT NORTHRUP

DATE 4/4/2006

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	06W	17	AREAS 1 & 2	12PC	120.00	48	310	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	48	310	6.5		
CRUISE	17	116	6.8	11,805	1.0
DBH COUNT					
REFOREST					
COUNT	31	194	6.3		
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
DOUG FIR	55	52.6	20.7	86		122.5	22,234	22,076	5,457	5,429
DOUG FIR-F	1	.4	19.0	80		.8	127	119	35	35
DOUGLEAV	45	26.0	27.0	106		103.3	23,082	22,802	5,149	5,122
ALDRLEAV	7	9.4	15.6	51		12.5	1,387	1,387	418	418
ML	3	6.5	12.8	24		5.8	63	63	29	29
GFIRLEAV	2	.8	31.8	119	1	4.2	1,375	1,375	258	258
HEMLEAV	2	1.7	21.0	90		4.2	849	849	199	199
WHEMLOCK	1	.9	26.0	89		3.3	588	588	147	147
TOTAL	*116*	*98.4*	*21.9*	*84*		*256.7*	*49,705*	*49,258*	*11,691*	*11,637*

SAMPLE TREES - BF

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF TREES REQ. 7	10	INF. POP. 15
DOUG FIR	132.4	12.3	218	249	279			
DOUG FIR-F	1077.0	100.0		2	5			
DOUGLEAV	141.4	13.1	324	373	422			
ALDRLEAV	444.1	41.2	6	10	14			
ML	1077.0	100.0		0	1			
GFIRLEAV	771.3	71.6	9	32	55			
HEMLEAV	758.4	70.4	2	8	14			
WHEMLOCK	1077.0	100.0		6	11			
TOTAL	*64.9*	*6.0*	*639*	*681*	*722*	*86*	*42*	*19*

TREES/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUG FIR	68.4	9.9	47	53	58			
DOUG FIR-F	692.8	100.0		0	1			
DOUGLEAV	33.4	4.8	25	26	27			
ALDRLEAV	350.3	50.6	5	9	14			
ML	356.1	51.4	3	7	10			
GFIRLEAV	407.8	58.9	0	1	1			
HEMLEAV	356.4	51.4	1	2	3			
WHEMLOCK	416.7	60.1	0	1	1			
TOTAL	*43.2*	*6.2*	*92*	*98*	*105*	*38*	*19*	*8*

BASAL AREA/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUG FIR	66.1	9.5	111	123	134			
DOUG FIR-F	692.8	100.0		1	2			
DOUGLEAV	30.8	4.4	99	103	108			
ALDRLEAV	350.3	50.6	6	13	19			
ML	346.2	50.0	3	6	9			
GFIRLEAV	407.8	58.9	2	4	7			
HEMLEAV	356.4	51.4	2	4	6			
WHEMLOCK	416.7	60.1	1	3	5			
TOTAL	*31.6*	*4.6*	*245*	*257*	*268*	*20*	*10*	*4*

STATISTICS

PROJECT NORTHRUP

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	06W	17	AREAS 1 & 2	12PC	120.00	48	310	1	W

		COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
SD:	1	VAR.	S.E.%	LOW	AVG	HIGH	7	10	15

		COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
SD:	1	VAR.%	S.E.%	LOW	AVG	HIGH	7	10	15
DOUG FIR		67.1	9.7	19,939	22,076	24,213			
DOUG FIR-F		692.8	100.0		119	237			
DOUGLEAV		31.5	4.6	21,763	22,802	23,840			
ALDRLEAV		350.3	50.6	686	1,387	2,089			
ML		399.8	57.7	27	63	100			
GFIRLEAV		407.8	58.9	566	1,375	2,185			
HEMLEAV		356.5	51.5	412	849	1,286			
WHEMLOCK		416.7	60.1	234	588	941			
TOTAL		*34.0*	*4.9*	*46,843*	*49,258*	*51,674*	*24*	*12*	*5*

TC PSTATS

PROJECT STATISTICS

PROJECT NORTHRUP

DATE 4/4/2006

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	06W	17	AREA 4	04PC	106.00	48	305	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	48	305	6.4		
CRUISE	17	99	5.8	14,597	.7
DBH COUNT					
REFOREST					
COUNT	31	206	6.6		
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
DOUGLEAV	52	44.3	23.4	94		132.5	29,659	29,494	6,542	6,529
DOUG FIR	32	61.9	16.2	67		88.3	14,716	14,474	3,612	3,604
ALDRLEAV	14	29.6	13.2	39		28.3	2,827	2,827	768	768
SPRUCELV	1	1.9	9.0	24		.8	38	38	15	15
TOTAL	*99*	*137.7*	*18.2*	*69*		*250.0*	*47,239*	*46,832*	*10,937*	*10,916*

SAMPLE TREES - BF

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF TREES REQ. 7	10	INF. POP. 15
DOUGLEAV	125.4	12.6	419	479	540			
DOUG FIR	207.4	20.8	98	124	150			
ALDRLEAV	314.3	31.6	12	17	23			
SPRUCELV	995.0	100.0		0	0			
TOTAL	*86.5*	*8.7*	*567*	*621*	*675*	*153*	*75*	*33*

TREES/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUGLEAV	38.4	5.5	42	44	47			
DOUG FIR	98.3	14.2	53	62	71			
ALDRLEAV	183.6	26.5	22	30	37			
SPRUCELV	692.8	100.0		2	4			
TOTAL	*57.5*	*8.3*	*126*	*138*	*149*	*67*	*33*	*15*

BASAL AREA/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUGLEAV	22.6	3.3	128	133	137			
DOUG FIR	88.6	12.8	77	88	100			
ALDRLEAV	184.1	26.6	21	28	36			
SPRUCELV	692.8	100.0		1	2			
TOTAL	*36.4*	*5.3*	*237*	*250*	*263*	*27*	*13*	*6*

NET BF/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUGLEAV	25.4	3.7	28,413	29,494	30,574			
DOUG FIR	89.1	12.9	12,612	14,474	16,335			
ALDRLEAV	172.9	25.0	2,121	2,827	3,532			
SPRUCELV	692.8	100.0	0	38	75			
TOTAL	*34.7*	*5.0*	*44,485*	*46,832*	*49,178*	*25*	*12*	*5*

STATISTICS

PROJECT NORTHRUP

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	06W	17	AREAS 1 & 2	TAKE	120.00	48	152	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	48	152	3.2		
CRUISE	16	57	3.6	6,474	.9
DBH COUNT					
REFOREST					
COUNT	26	95	3.7		
BLANKS	6				
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	55	52.6	20.7	86		122.5	22,234	22,076	5,457	5,429
DOUG FIR-F	1	.4	19.0	80		.8	127	119	35	35
WHEMLOCK	1	.9	26.0	89		3.3	588	588	147	147
TOTAL	*57*	*54.0*	*20.7*	*86*		*126.7*	*22,948*	*22,782*	*5,639*	*5,611*

SAMPLE TREES - BF

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF TREES REQ. 7	10	INF. POP. 15
DOUG FIR	59.3	7.9	467	506	546			
DOUG FIR-F	755.0	100.0		5	10			
WHEMLOCK	755.0	100.0		11	23			
TOTAL	*54.8*	*7.3*	*485*	*523*	*561*	*61*	*30*	*13*

TREES/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUG FIR	68.4	9.9	47	53	58			
DOUG FIR-F	692.8	100.0		0	1			
WHEMLOCK	416.7	60.1	0	1	1			
TOTAL	*68.3*	*9.9*	*49*	*54*	*59*	*95*	*47*	*21*

BASAL AREA/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUG FIR	66.1	9.5	111	123	134			
DOUG FIR-F	692.8	100.0		1	2			
WHEMLOCK	416.7	60.1	1	3	5			
TOTAL	*66.2*	*9.6*	*115*	*127*	*139*	*89*	*44*	*19*

NET BF/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUG FIR	67.1	9.7	19,939	22,076	24,213			
DOUG FIR-F	692.8	100.0		119	237			
WHEMLOCK	416.7	60.1	234	588	941			
TOTAL	*66.8*	*9.6*	*20,585*	*22,782*	*24,979*	*91*	*45*	*20*

STATISTICS

PROJECT NORTHRUP

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	06W	17	AREAS 1 & 2	PATC	2.00	48	310	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	48	310	6.5		
CRUISE	17	116	6.8	198	58.7
DBH COUNT					
REFOREST					
COUNT	31	194	6.3		
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
DOUG FIR	100	79.0	22.9	92		225.8	45,244	44,808	10,596	10,542
DOUG FIR-F	1	.4	19.0	80		.8	127	119	35	35
R ALDER	7	9.4	15.6	51		12.5	1,387	1,387	418	418
WHEMLOCK	3	2.8	22.3	90		7.5	1,459	1,459	350	350
BL MAPLE	3	6.5	12.8	24		5.8	63	63	29	29
GR FIR	2	.8	31.8	119	1	4.2	1,375	1,375	258	258
TOTAL	*116*	*98.8*	*21.8*	*84*		*256.7*	*49,657*	*49,212*	*11,685*	*11,631*

SAMPLE TREES - BF

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF TREES REQ. 7	10	INF. POP. 15
DOUG FIR	71.8	6.7	580	622	663			
DOUG FIR-F	1077.0	100.0		2	5			
R ALDER	444.1	41.2	6	10	14			
WHEMLOCK	622.5	57.8	6	14	22			
BL MAPLE	1077.0	100.0		0	1			
GR FIR	771.3	71.6	9	32	55			
TOTAL	*64.9*	*6.0*	*639*	*681*	*722*	*86*	*42*	*19*

TREES/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUG FIR	45.1	6.5	74	79	84			
DOUG FIR-F	692.8	100.0		0	1			
R ALDER	350.3	50.6	5	9	14			
WHEMLOCK	262.8	37.9	2	3	4			
BL MAPLE	356.1	51.4	3	7	10			
GR FIR	407.8	58.9	0	1	1			
TOTAL	*39.9*	*5.8*	*93*	*99*	*104*	*32*	*16*	*7*

BASAL AREA/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUG FIR	41.7	6.0	212	226	239			
DOUG FIR-F	692.8	100.0		1	2			
R ALDER	350.3	50.6	6	13	19			
WHEMLOCK	261.7	37.8	5	8	10			
BL MAPLE	346.2	50.0	3	6	9			
GR FIR	407.8	58.9	2	4	7			
TOTAL	*31.6*	*4.6*	*245*	*257*	*268*	*20*	*10*	*4*

NET BF/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUG FIR	41.5	6.0	42,125	44,808	47,491			
DOUG FIR-F	692.8	100.0		119	237			
R ALDER	350.3	50.6	686	1,387	2,089			
WHEMLOCK	261.8	37.8	908	1,459	2,011			
BL MAPLE	399.8	57.7	27	63	100			
GR FIR	407.8	58.9	566	1,375	2,185			
TOTAL	*35.6*	*5.1*	*46,681*	*49,212*	*51,743*	*26*	*13*	*6*

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PROJECT NORTHRUP

DATE 4/4/2006

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	06W	17	AREA 4	TAKE	106.00	48	107	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	48	107	2.2		
CRUISE	11	32	2.9	6,566	.5
DBH COUNT					
REFOREST					
COUNT	26	75	2.9		
BLANKS	11				
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	32	61.9	16.2	67		88.3	14,716	14,474	3,612	3,604
TOTAL	*32*	*61.9*	*16.2*	*67*		*88.3*	*14,716*	*14,474*	*3,612*	*3,604*

SD: 1	COEFF VAR.%	S.E.%	**SAMPLE TREES - BF** LOW	AVG	HIGH	# OF TREES REQ. 7	10	INF. POP. 15
DOUG FIR	85.0	15.0	326	383	441			
TOTAL	*85.0*	*15.0*	*326*	*383*	*441*	*147*	*72*	*32*

SD: 1	COEFF VAR.%	S.E.%	**TREES/ACRE** LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUG FIR	98.3	14.2	53	62	71			
TOTAL	*98.3*	*14.2*	*53*	*62*	*71*	*197*	*97*	*43*

SD: 1	COEFF VAR.%	S.E.%	**BASAL AREA/ACRE** LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUG FIR	88.6	12.8	77	88	100			
TOTAL	*88.6*	*12.8*	*77*	*88*	*100*	*160*	*78*	*35*

SD: 1	COEFF VAR.%	S.E.%	**NET BF/ACRE** LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUG FIR	89.1	12.9	12,612	14,474	16,335			
TOTAL	*89.1*	*12.9*	*12,612*	*14,474*	*16,335*	*162*	*79*	*35*

TC TSTATS

STATISTICS

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PROJECT NORTHRUP

DATE 4/11/2006

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	06W	17	AREAS 3 &5	TAKE	143.00	41	249	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	41	249	6.1		
CRUISE	21	137	6.5	27,227	.5
DBH COUNT					
REFOREST					
COUNT	20	112	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
DOUG FIR	84	83.6	21.6	89		212.0	45,971	45,477	10,237	10,237
R ALDER	49	95.0	13.4	54		93.5	12,672	12,647	3,491	3,491
BL MAPLE	3	7.5	20.5	26		17.1	1,086	1,047	299	299
WHEMLOCK	1	4.3	15.0	25		5.3	172	172	77	77
TOTAL	*137*	*190.4*	*17.8*	*68*		*328.0*	*59,901*	*59,342*	*14,104*	*14,104*

SAMPLE TREES - BF

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF TREES REQ. 7	10	INF. POP. 15
DOUG FIR	119.5	10.2	446	496	547			
R ALDER	154.5	13.2	47	55	62			
BL MAPLE	743.7	63.5	1	3	5			
WHEMLOCK	1170.5	100.0		0	1			
TOTAL	*98.9*	*8.5*	*508*	*555*	*602*	*200*	*98*	*43*

TREES/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUG FIR	78.7	12.3	73	84	94			
R ALDER	301.6	47.1	50	95	140			
BL MAPLE	249.1	38.9	5	7	10			
WHEMLOCK	502.4	78.5	1	4	8			
TOTAL	*141.6*	*22.1*	*148*	*190*	*233*	*409*	*201*	*89*

BASAL AREA/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUG FIR	64.8	10.1	191	212	233			
R ALDER	284.4	44.4	52	94	135			
BL MAPLE	248.7	38.8	10	17	24			
WHEMLOCK	502.4	78.5	1	5	9			
TOTAL	*71.6*	*11.2*	*291*	*328*	*365*	*105*	*51*	*23*

NET BF/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUG FIR	63.4	9.9	40,973	45,477	49,980			
R ALDER	328.0	51.2	6,168	12,647	19,126			
BL MAPLE	251.0	39.2	636	1,047	1,457			
WHEMLOCK	502.4	78.5	37	172	306			
TOTAL	*66.7*	*10.4*	*53,160*	*59,342*	*65,524*	*91*	*44*	*20*

TC TSTATS

STATISTICS

PROJECT NORTHRUP

DATE 4/4/2006

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	06W	17	AREAS 1 & 2	LEAV	120.00	48	158	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	48	158	3.3		
CRUISE	17	59	3.5	5,330	1.1
DBH COUNT					
REFOREST					
COUNT	31	99	3.2		
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
DOUGLEAV	45	26.0	27.0	106		103.3	23,082	22,802	5,149	5,122
ALDRLEAV	7	9.4	15.6	51		12.5	1,387	1,387	418	418
ML	3	6.5	12.8	24		5.8	63	63	29	29
GFIRLEAV	2	.8	31.8	119	1	4.2	1,375	1,375	258	258
HEMLEAV	2	1.7	21.0	90		4.2	849	849	199	199
TOTAL	*59*	*44.4*	*23.2*	*82*		*130.0*	*26,757*	*26,477*	*6,052*	*6,026*

SAMPLE TREES - BF

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF TREES REQ. 7	10	INF. POP. 15
DOUGLEAV	72.5	9.4	664	733	802			
ALDRLEAV	310.1	40.4	12	19	27			
ML	768.1	100.0		1	1			
GFIRLEAV	547.9	71.3	18	63	108			
HEMLEAV	538.6	70.1	5	17	28			
TOTAL	*61.2*	*8.0*	*767*	*833*	*899*	*76*	*37*	*17*

TREES/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUGLEAV	33.4	4.8	25	26	27			
ALDRLEAV	350.3	50.6	5	9	14			
ML	356.1	51.4	3	7	10			
GFIRLEAV	407.8	58.9	0	1	1			
HEMLEAV	356.4	51.4	1	2	3			
TOTAL	*85.2*	*12.3*	*39*	*44*	*50*	*148*	*73*	*32*

BASAL AREA/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUGLEAV	30.8	4.4	99	103	108			
ALDRLEAV	350.3	50.6	6	13	19			
ML	346.2	50.0	3	6	9			
GFIRLEAV	407.8	58.9	2	4	7			
HEMLEAV	356.4	51.4	2	4	6			
TOTAL	*25.0*	*3.6*	*125*	*130*	*135*	*13*	*6*	*3*

NET BF/ACRE

SD: 1	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUGLEAV	31.5	4.6	21,763	22,802	23,840			
ALDRLEAV	350.3	50.6	686	1,387	2,089			
ML	399.8	57.7	27	63	100			
GFIRLEAV	407.8	58.9	566	1,375	2,185			
HEMLEAV	356.5	51.5	412	849	1,286			
TOTAL	*16.4*	*2.4*	*25,851*	*26,477*	*27,102*	*5*	*3*	*1*

TC TSTATS

STATISTICS

PAGE 1

PROJECT NORTHRUP

DATE 4/4/2006

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	06W	17	AREA 4	LEAV	106.00	48	198	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	48	198	4.1		
CRUISE	17	67	3.9	8,031	.8
DBH COUNT					
REFOREST					
COUNT	31	131	4.2		
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
DOUGLEAV	52	44.3	23.4	94		132.5	29,659	29,494	6,542	6,529
ALDRLEAV	14	29.6	13.2	39		28.3	2,827	2,827	768	768
SPRUCELV	1	1.9	9.0	24		.8	38	38	15	15
TOTAL	*67*	*75.8*	*19.8*	*71*		*161.7*	*32,523*	*32,358*	*7,325*	*7,313*

SD: 1	COEFF VAR.%	S.E.%	SAMPLE TREES - BF LOW	AVG	HIGH	# OF TREES REQ. 7	10	INF. POP. 15
DOUGLEAV	86.1	10.5	634	708	783			
ALDRLEAV	252.8	30.9	18	26	34			
SPRUCELV	818.5	100.0		0	1			
TOTAL	*79.2*	*9.7*	*663*	*734*	*805*	*128*	*63*	*28*

SD: 1	COEFF VAR.%	S.E.%	TREES/ACRE LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUGLEAV	38.4	5.5	42	44	47			
ALDRLEAV	183.6	26.5	22	30	37			
SPRUCELV	692.8	100.0	0	2	4			
TOTAL	*74.0*	*10.7*	*68*	*76*	*84*	*112*	*55*	*24*

SD: 1	COEFF VAR.%	S.E.%	BASAL AREA/ACRE LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUGLEAV	22.6	3.3	128	133	137			
ALDRLEAV	184.1	26.6	21	28	36			
SPRUCELV	692.8	100.0		1	2			
TOTAL	*32.7*	*4.7*	*154*	*162*	*169*	*22*	*11*	*5*

SD: 1	COEFF VAR.%	S.E.%	NET BF/ACRE LOW	AVG	HIGH	# OF PLOTS REQ. 7	10	INF. POP. 15
DOUGLEAV	25.4	3.7	28,413	29,494	30,574			
ALDRLEAV	172.9	25.0	2,121	2,827	3,532			
SPRUCELV	692.8	100.0		38	75			
TOTAL	*24.3*	*3.5*	*31,222*	*32,358*	*33,494*	*12*	*6*	*3*

Area or Stratum	Total Cruised Volume (Net BF/Acre* x Total Stratum Acres)	Calculated Stratum SE%*	Stratum Standard Error (B.F) (Stratum SE% x Total Cruised Volume)	Standard Error^2
Areas 1 & 2	5,910,960.00	4.9%	289,637.04	83,889,614,939.96
Area 4	4,964,192.00	5.0%	248,209.60	61,608,005,532.16
Areas 3 & 5	8,485,906.00	10.4%	882,534.22	778,866,656,531.28
Totals	19,361,058.00			924,364,277,003.40

$$\text{Combined SE \%} = \frac{\sqrt{\Sigma(\text{Standard Error}^2)}}{\Sigma(\text{Stratum Volume})}(100)$$

$$= \frac{\sqrt{924,364,277,003.40}}{19,361,058.00}(100)$$

$$= 4.96\%$$

*Net BF/Acre from Statistics Report Stand Summary information.

TC TSTNDSUM

Stand Table Summary

Project NORTHRUP

T06N R06W S17 TLEAV

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
06N	06W	17	AREAS 1 & 2	LEAV	120.00	48	59

T06N R06W S17
Page: 1
Date: 04/04/20
Time: 10:30:41AM

Spc	S T	DBH	Sample Trees	FF 16'	Av Ht Tot	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
DL		20	1	88	129	1.053	2.30	4.21	27.7	125.0		117	526		140	63
DL		21	1	86	140	.955	2.30	2.86	41.0	160.0		117	458		141	55
DL		23	2	89	115	1.592	4.59	3.98	51.6	216.0		205	860		246	103
DL		24	4	86	133	2.924	9.19	8.77	52.0	221.7		456	1,944		547	233
DL		25	6	85	124	4.042	13.78	10.78	58.9	239.4		635	2,580		761	310
DL		26	6	87	143	3.737	13.78	11.83	62.2	276.8		736	3,276		883	393
DL		27	4	86	135	2.310	9.19	6.93	66.1	289.2		458	2,004		550	240
DL		28	7	86	141	3.759	16.07	12.35	67.4	311.3		833	3,845		999	461
DL		29	2	87	133	1.001	4.59	3.00	76.2	331.7		229	996		275	120
DL		30	3	85	145	1.403	6.89	4.21	84.6	393.3		356	1,656		427	199
DL		31	1	86	124	.438	2.30	2.19	42.6	198.0		93	434		112	52
DL		32	1	85	140	.411	2.30	1.23	96.3	446.7		119	551		143	66
DL		33	2	86	127	.773	4.59	2.32	95.2	433.3		221	1,005		265	121
DL		34	1	86	111	.364	2.30	.73	128.5	595.0		94	433		112	52
DL		35	2	86	121	.687	4.59	2.06	101.7	473.3		210	976		252	117
DL		38	2	85	149	.583	4.59	1.75	139.7	718.3		244	1,257		293	151
DL		Totals	45	86	134	26.032	103.33	79.22	64.7	287.8		5,122	22,802		6,146	2,736
AL		13	1	87	47	1.937	1.79	1.94	19.0	50.0		37	97		44	12
AL		14	1	86	76	1.670	1.79	3.34	18.5	75.0		62	251		74	30
AL		16	3	86	67	3.837	5.36	6.39	26.2	82.0		168	524		201	63
AL		18	1	87	97	1.011	1.79	2.02	37.5	125.0		76	253		91	30
AL		19	1	87	94	.907	1.79	1.81	42.0	145.0		76	263		91	32
AL		Totals	7	86	70	9.362	12.50	15.51	27.0	89.5		418	1,387		502	166
GFL		30	1	90	141	.424	2.08	1.27	97.7	506.7		124	645		149	77
GFL		34	1	91	154	.330	2.08	.99	134.7	736.7		133	730		160	88
GFL		Totals	2	90	147	.755	4.17	2.26	113.9	607.3		258	1,375		309	165
HL		21	2	89	110	1.732	4.17	5.20	38.3	163.3		199	849		239	102
HL		Totals	2	89	110	1.732	4.17	5.20	38.3	163.3		199	849		239	102
ML		12	2	86	34	4.951	3.89									
ML		15	1	86	30	1.584	1.94	1.58	18.0	40.0		29	63		34	8
ML		Totals	3	86	33	6.536	5.83	1.58	18.0	40.0		29	63		34	8
Totals			59	86	105	44.417	130.00	103.77	58.1	255.1		6026	26,477		7,231	3,177

TC TSTNDSUM

Stand Table Summary

Project NORTHRUP

T06N R06W S17 TLEAV

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
06N	06W	17	AREA 4	LEAV	106.00	48	67

T06N R06W S17
Page: 1
Date: 04/04/20(
Time: 10:25:46AM

Spc	S T	DBH	Sample Trees	FF 16'	Av Ht Tot	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
DL		13	1	85	43	2.764	2.55	2.76	16.0	40.0		44	111		47	12
DL		14	2	86	99	4.767	5.10	9.53	18.5	70.0		176	667		187	71
DL		17	1	89	122	1.617	2.55	4.85	25.7	93.3		124	453		132	48
DL		18	1	86	85	1.442	2.55	2.88	29.5	105.0		85	303		90	32
DL		19	3	89	126	3.882	7.64	11.65	32.0	133.3		373	1,553		395	165
DL		20	3	86	108	3.504	7.64	8.18	38.1	140.0		312	1,145		331	121
DL		21	4	88	129	4.237	10.19	11.65	43.7	183.6		510	2,140		540	227
DL		22	1	89	134	.965	2.55	2.90	44.3	190.0		128	550		136	58
DL		23	1	91	162	.883	2.55	2.65	59.0	273.3		156	724		166	77
DL		24	3	87	116	2.433	7.64	6.49	52.3	217.5		339	1,411		359	150
DL		25	3	88	149	2.242	7.64	6.73	63.8	285.6		429	1,921		455	204
DL		26	6	87	135	4.147	15.29	12.44	62.1	273.9		773	3,407		819	361
DL		27	2	88	149	1.282	5.10	3.85	73.5	341.7		283	1,314		300	139
DL		28	4	88	133	2.384	10.19	7.15	70.7	349.2		505	2,497		536	265
DL		29	4	87	158	2.222	10.19	7.22	81.8	400.0		591	2,889		626	306
DL		30	2	87	130	1.038	5.10	3.11	79.2	390.0		247	1,215		261	129
DL		32	4	88	141	1.825	10.19	5.47	100.1	481.7		548	2,637		581	280
DL		34	2	87	111	.808	5.10	2.02	108.6	524.0		219	1,059		233	112
DL		35	2	89	148	.763	5.10	2.29	123.8	631.7		283	1,445		300	153
DL		36	2	86	166	.721	5.10	2.16	139.5	741.7		302	1,604		320	170
DL		38	1	86	107	.324	2.55	.65	158.0	695.0		102	450		108	48
DL		Totals	52	87	122	44.250	132.50	116.63	56.0	252.9		6,529	29,494		6,921	3,126
AL		10	3	87	48	11.132	6.07	11.13	10.3	33.3		115	371		122	39
AL		12	1	86	34	2.577	2.02									
AL		13	2	87	80	4.391	4.05	6.59	17.7	70.0		116	461		123	49
AL		15	2	86	78	3.298	4.05	8.25	17.2	64.0		142	528		150	56
AL		16	4	87	62	5.798	8.10	7.25	29.4	106.0		213	768		226	81
AL		17	1	86	125	1.284	2.02	3.85	27.3	110.0		105	424		112	45
AL		18	1	86	82	1.145	2.02	2.29	33.5	120.0		77	275		81	29
AL		Totals	14	87	62	29.625	28.33	39.35	19.5	71.8		768	2,827		814	300
SL		9	1	74	48	1.886	.83	1.89	8.0	20.0		15	38		16	4
SL		Totals	1	74	48	1.886	.83	1.89	8.0	20.0		15	38		16	4
Totals			67	87	96	75.762	161.67	157.87	46.3	205.0		7313	32,358		7,752	3,430

TC PLOGSTVB

Log Stock Table - MBF

T06N R06W S17 TyTAKE
THRU
T06N R06W S17 TyTAKE

Project: NORTHRUP
Acres 379.00

Date 4/11/2006
Time 11:25:19AM

Spp	S T	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches 2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
D		DO	2	16	0		0	.0										0		
D		DO	2	20	23		23	.2							22	0				
D		DO	2	23	6		6	.1					6		1					
D		DO	2	24	51		51	.5					0	27	23					
D		DO	2	28	53	3.3	52	.5				6		1			45			
D		DO	2	30	32	6.7	30	.3						30						
D		DO	2	32	2,664	1.1	2,635	23.6					195	561	496	773	502	43	65	
D		DO	2	36	109		109	1.0						19	91					
D		DO	2	38	53		53	.5								53				
D		DO	2	40	5,477		5,438	48.8					48	783	1170	2005	967	463	3	
D		DO	3	11	0		0	.0			0									
D		DO	3	12	0		0	.0				0								
D		DO	3	14	2		2	.0			2									
D		DO	3	15	1		1	.0				1								
D		DO	3	17	7		7	.1			3	4								
D		DO	3	18	0		0	.0				0								
D		DO	3	19	5		5	.0					5							
D		DO	3	20	8		8	.1			4	4	0							
D		DO	3	22	4		4	.0			4		0							
D		DO	3	23	10	12.7	9	.1			0	3	5							
D		DO	3	24	32		32	.3			8	13	11			0				
D		DO	3	26	22		22	.2			7	5	10							
D		DO	3	27	16		16	.1			12	4	0							
D		DO	3	28	6		6	.1			0	6								
D		DO	3	29	30	3.0	29	.3			13	16								
D		DO	3	30	23		23	.2			10	5	8							
D		DO	3	31	6		6	.1				6								
D		DO	3	32	1,133	2.3	1,107	9.9		5	209	316	396	93	61	27				
D		DO	3	33	14		14	.1			9	5								
D		DO	3	34	29		29	.3			21	8								
D		DO	3	35	31		31	.3			31									
D		DO	3	36	69	4.5	66	.6			38	8	19							
D		DO	3	37	34		34	.3			9	25								
D		DO	3	38	93		93	.8			84	10								
D		DO	3	39	29		29	.3			19	10								
D		DO	3	40	904	1.9	887	8.0	0		162	281	318	62	33	30	1			
D		DO	3	41	26		26	.2			12	13								

TC PLOGSTVB

Log Stock Table - MBF

T06N R06W S17 TyTAKE
THRU
T06N R06W S17 TyTAKE

Project: NORTHRUP
Acres 379.00

Date 4/11/2006
Time 11:25:19AM

Spp	ST	Sort	Grade	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	4	10	2		2	.0			2									
D		DO	4	12	4		4	.0			0	4								
D		DO	4	13	0		0	.0				0								
D		DO	4	15	15		15	.1			13	2								
D		DO	4	16	30		30	.3			20	6	4							
D		DO	4	17	3		3	.0			3									
D		DO	4	18	23		23	.2			21	2								
D		DO	4	19	16		16	.1			7	9								
D		DO	4	20	19		19	.2			15	4								
D		DO	4	21	28		28	.2			28									
D		DO	4	22	23		23	.2			19	4								
D		DO	4	23	18		18	.2		8	10									
D		DO	4	24	5	16.2	4	.0			0	4								
D		DO	4	26	17		17	.2			17									
D		DO	4	27	7		7	.1			0		6							
D		DO	4	28	35		35	.3			35									
D		DO	4	32	16		16	.1					16							
D		DO	4	33	0		0	.0					0							
D		DO	4	37	9		9	.1			0			9						
D		Totals			11,274	1.1	11,152	83.7	0	12	850	785	1047	1584	1897	2888	1515	506	68	
GF		DO	2	40	3		3	96.3						0		0	1	1		
GF		DO	3	32	0		0	3.7					0							
GF		Totals			3		3	.0					0	0		0	1	1		
H		DO	2	40	60		60	60.1							1	58				
H		DO	3	32	0		0	.3					0							
H		DO	3	40	13		13	13.5				13								
H		DO	4	15	0		0	.0			0									
H		DO	4	24	26		26	26.1			26									
H		Totals			99		99	.7			26	13	0		1	58				
A		DO	CR	13	6		6	.3			6									
A		DO	CR	16	33		33	1.7			22			11						
A		DO	CR	18	40		40	2.1			40									
A		DO	CR	19	13		13	.7			13									
A		DO	CR	20	8		8	.4			8									
A		DO	CR	22	66		66	3.5			66									

TC PLOGSTVB

Log Stock Table - MBF

T06N R06W S17 TyTAKE
THRU
T06N R06W S17 TyTAKE

Project: NORTHRUP
Acres 379.00

Date 4/11/2006
Time 11:25:19AM

Spp	ST	Sort	Grade	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches 2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
A		DO	CR	23	14		14	.7			14									
A		DO	CR	24	159	2.3	155	8.1			92	63								
A		DO	CR	26	176		176	9.2			176									
A		DO	CR	27	132		132	6.9				132								
A		DO	CR	28	17		17	.9			17									
A		DO	CR	30	163		163	8.5			41		91	31						
A		DO	CR	31	19		19	1.0			19									
A		DO	CR	32	23		23	1.2			22		1							
A		DO	CR	36	22		22	1.1				22								
A		DO	CR	37	33		33	1.7						33						
A		DO	CR	40	994		994	52.0			0	251	646	97						
A		Totals			1,917		1,914	14.4			536	468	738	171						
M		DO	CR	15	66		66	41.6								66				
M		DO	CR	16	63	9.5	57	35.9								57				
M		DO	CR	22	12		12	7.6				12								
M		DO	CR	24	0		0	.1			0									
M		DO	CR	29	1		1	.7				1								
M		DO	CR	30	22		22	14.2				22								
M		Totals			164	3.6	158	1.2			0	35				122				
Total		All Species			13,458		13,326	100.0	0	12	1412	1302	1786	1755	1899	3069	1516	507	68	