



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Green Giant
Sale 341-12-46

District: Astoria

Date: March 05, 2012

cost summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$3,542,523.40	\$76,452.22	\$3,618,975.62
Project Work:			\$(661,781.00)
Advertised Value:			\$2,957,194.62



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timber description

Location: Portions of Sections 10, 27, 28, 33, 34, 35, and 36, T5N, R6W, W.M., Clatsop County, Oregon.

Stand Stocking: 60%

SpecieName	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	22	0	97
Western Hemlock / Fir	17	0	97
Red Cedar	18	0	97
Alder (Red)	16	0	95

Volume by Grade	2S	3S	4S	Camprur	Total
Douglas - Fir	8,505	2,345	287	0	11,137
Western Hemlock / Fir	778	518	84	0	1,380
Red Cedar	2	2	0	0	4
Alder (Red)	0	0	0	338	338
Total	9,285	2,865	371	338	12,859



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comments: Pond Values Used: 4th Quarter Calendar Year 2011.

Expected Log Markets: Mist, OR; Clatskanie, OR; Tillamook, OR;
Forest Grove, OR.

SCALING COST ALLOWANCE = \$5.00/MBF

FUEL COST ALLOWANCE = \$4.00/Gallon

HAULING COST ALLOWANCE

Hauling costs equivalent to \$740 daily truck cost.

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

100% Branding and Painting: $\$1/\text{MBF} \times 12,859 \text{ MBF} = \$12,859$

Log Loader Slash & Landing Piling (includes Move-In and Pile
Materials): = \$35,825 (see attached appraisal)

Machine washing for noxious weed compliance = \$2,000

TOTAL Other Costs (with Profit & Risk to be added) = \$50,684

Other Costs (No Profit & Risk added):

Snag Creation: $288 \text{ snags} \times \$40.00/\text{snag} = \$11,800$

TOTAL Other Costs (No Profit & Risk added) = \$11,800



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logging conditions

combination#: 1 Douglas - Fir 43.00%
 Western Hemlock / Fir 43.00%
 Red Cedar 43.00%
 Alder (Red) 43.00%

yarding distance: Medium (800 ft) downhill yarding: No
logging system: Cable: Medium Tower >40 - <70 Process: Manual Delimbing
tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 7.0 bd. ft / load: 4,800
cost / mbf: \$102.98

machines: Log Loader (A)
 Tower Yarder (Medium)

combination#: 2 Douglas - Fir 10.00%
 Western Hemlock / Fir 10.00%
 Red Cedar 10.00%
 Alder (Red) 10.00%

yarding distance: Long (1,500 ft) downhill yarding: No
logging system: Cable: Large Tower >=70 Process: Manual Delimbing
tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 6.0 bd. ft / load: 4,200
cost / mbf: \$146.56

machines: Log Loader (A)
 Tower Yarder (Large)

combination#: 3 Douglas - Fir 45.00%
 Western Hemlock / Fir 45.00%
 Red Cedar 45.00%
 Alder (Red) 45.00%

yarding distance: Medium (800 ft) downhill yarding: No
logging system: Shovel Process: Manual Delimbing
tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 8.0 bd. ft / load: 4,200
cost / mbf: \$74.54

machines: Shovel Logger

combination#: 4 Douglas - Fir 2.00%
 Western Hemlock / Fir 2.00%
 Red Cedar 2.00%
 Alder (Red) 2.00%



"STEWARDSHIP IN FORESTRY"

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Green Giant
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District: Astoria

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yarding distance: Short (400 ft)

downhill yarding: No

logging system: Shovel

Process: Manual Delimbing

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

loads / day: 6.0

bd. ft / load: 4,200

cost / mbf: \$99.39

machines: Shovel Logger



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal Green Giant Sale 341-12-46

District: Astoria

Date: March 05, 2012

logging costs

Operating Seasons:	2.00	Profit Risk:	14.00%
Project Costs:	\$661,781.00	Other Costs (P/R):	\$50,684.00
Slash Disposal:	\$3.73	Other Costs:	\$11,800.00

Miles of Road

Road Maintenance: \$3.73

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

Hauling Costs

Species	\$ / MBF	Trips/Day	MBF / Load
Douglas - Fir	\$0.00	2.0	4.2
Western Hemlock / Fir	\$0.00	2.0	3.7
Red Cedar	\$0.00	1.0	3.7
Alder (Red)	\$0.00	1.0	3.3



"STEWARDSHIP IN FORESTRY"

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logging costs breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling	Other	Total
Douglas - Fir									
\$94.47	\$3.84	\$0.68	\$79.60	\$3.94	\$25.55	\$0.00	\$5.00	\$0.92	\$214.00
Western Hemlock / Fir									
\$94.47	\$3.84	\$0.68	\$90.35	\$3.94	\$27.06	\$0.00	\$5.00	\$0.92	\$226.26
Red Cedar									
\$94.47	\$3.84	\$0.68	\$180.70	\$3.94	\$39.71	\$0.00	\$5.00	\$0.92	\$329.26
Alder (Red)									
\$94.47	\$3.92	\$0.68	\$206.54	\$3.94	\$43.34	\$0.00	\$5.00	\$0.92	\$358.81

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$507.52	\$293.52	\$0.00
Western Hemlock / Fir	\$0.00	\$423.15	\$196.89	\$0.00
Red Cedar	\$0.00	\$800.00	\$470.74	\$0.00
Alder (Red)	\$0.00	\$585.00	\$226.19	\$0.00



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summary

Amortized

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

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	11,137	\$293.52	\$3,268,932.24
Western Hemlock / Fir	1,380	\$196.89	\$271,708.20
Red Cedar	4	\$470.74	\$1,882.96
Alder (Red)	338	\$226.19	\$76,452.22

Gross Timber Sale Value

Recovery: \$3,618,975.62

Prepared by: Kevin Berry

Phone: 503-325-5451

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Green Giant

PROJECT No. 1: Sale Access Construction:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
1A-1B,2A-2B,2C-2D,2E-2F, 3A-3B,3C-3D	100+50	\$78,217.00
TOTALS		\$78,217.00

PROJECT No. 2: Sale Access Road Improvement:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
15 to 16, 16 to 17, 17 to 18	430+50	\$40,870.00
TOTALS		\$40,870.00

PROJECT No. 3: Grasslands Tie-Thru:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
A to B, 13 to 14, 13 to 13A	75+60	\$100,229.00
TOTAL		\$100,229.00

PROJECT No. 4: Hamilton Cr. Rd. Road Improvement

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
11 to 12	108+50	\$36,671.00
TOTAL		\$36,671.00

SPECIAL PROJECTS:

<u>Description</u>	<u>Cost</u>
Proj. 5: Green Mountain No. 2 Crushing	\$214,651.00
Proj. 5: Deep Creek Stockpile Site Const.	\$18,818.00
Proj. 6: Hamilton Creek Crushing	\$129,184.00
Proj. 7: Test Drilling	\$16,417.00
Project Road Maintenance	\$18,476.00
TOTAL	\$397,546.00

MOVE IN:

<u>Equipment</u>	<u>Cost</u>	
C330	\$1,220.00	
Dozer	\$1,220.00	
Grader (Green Mountain)	\$675.00	
Water Truck	\$165.00	
Vibratory Roller	\$675.00	
Rock Trucks *		*Sufficient quantity moved in with the crushing.
Skidder	\$622.00	
Secondary Mobilization		
C330	\$1,220.00	Deep Creek/Grasslands
Grader 1 hr. @ \$93/Hr.	\$93.00	Deep Creek/Grasslands
Water Truck 1 hr @ \$83/Hr.	\$83.00	Deep Creek/Grasslands
Skidder 1 hr @ \$85/Hr.	\$85.00	Grasslands
Vibratory Roller (2)	\$1,350.00	Deep Creek/Grasslands/Hamilton Creek
Grader (Hamilton Creek)	\$675.00	
Water Truck (Hamilton Creek)	\$165.00	
TOTAL	\$8,248.00	

GRAND TOTAL **\$661,781.00**

Compiled By: dmellison

Date: 12/20/11

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SURFACING				Stations/ amount		x	Rate/ sta/amt		Cost
Subgrade prep: Description									
Grade, Shape and Ditch 16'				100.50		x	\$21.55		\$2,165.78
Subgrade Compaction				100.50		x	\$17.52		\$1,760.76
						x			

ROAD SEGMENT		1A to 1B		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	1A to 1B		0+00 to 42+50					
				Volume (CY) per	Number of						
Base Rock	4"-0" Crushed	0+00 to 42+50	8	Station	50	Stations	42.50	2,125	\$2.69	\$5,716	
Junctions	1 1/2 "-0" Crushed	1A	8	Junctions	22	Junctions	1.00	22	\$2.69	\$59	
Traction Rock	1 1/2 "-0" Crushed	24+50 to 28+50, 31+00 to 42+00	3	Stations	19	Stations	15.00	285	\$2.69	\$767	
Turnouts	4"-0" Crushed	3+00,11+00, 18+00	8	Station	22	Turnouts	3.00	66	\$2.69	\$178	
Turnarounds	4"-0" Crushed	41+50	8	TA	22	TA's	1.00	22	\$2.69	\$59	
Landings	6"-0" Pit-run	22+00,28+50,34+ 50,1B	N/A	Landings	80	Landings	4.00	320	\$2.75	\$880	
Total Rock for Road Segment:				1A to 1B				2,840			\$7,659

ROAD SEGMENT		2A to 2B		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A to 2B		0+00 to 23+50					
				Volume (CY) per	Number of						
Base Rock	4"-0" Crushed	0+00 to 23+50	8	Station	50	Stations	23.50	1,175	\$2.69	\$3,161	
Junctions	1 1/2"-0" Crushed	2A	3	Junctions	22	Junctions	1.00	22	\$2.69	\$59	
Traction Rock	1 1/2"-0" Crushed	2+50 to 5+50, 10+00 to 17+00	3	Station	19	Stations	10.00	190	\$2.69	\$511	
Landings	6"-0" Pit-run	3+10, 2B	N/A	Landings	80	Landings	2.00	160	\$2.75	\$440	
Total Rock for Road Segment:				2A to 2B				1,547			\$4,171

ROAD SEGMENT		2C to 2D		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	2C to 2D		0+00 to 1+00					
				Volume (CY) per	Number of						
Base Rock	4"-0" Crushed	0+00 to 1+00	8	Station	50	Stations	1.00	50	\$2.69	\$135	
Junctions	4"-0" Crushed	2C	8	Junctions	22	Junctions	1.00	22	\$2.69	\$59	
Landings	6"-0" Pit-run	2D	N/A	Landing	80	Landings	1.00	80	\$2.75	\$220	
Total Rock for Road Segment:				2C to 2D				152			\$414

ROAD SEGMENT		2E to 2F		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	2E to 2F		0+00 to 4+00					
				Volume (CY) per	Number of						
Base Rock	4"-0" Crushed	0+00 to 4+00	8	Station	50	Stations	4.00	200	\$2.69	\$538	
Junctions	4"-0" Crushed	2E	8	Junction	22	Junctions	1.00	22	\$2.69	\$59	
Landings	6"-0" Pit-run	2F	N/A	Landing	80	Landings	1.00	80	\$2.75	\$220	
Total Rock for Road Segment:				2E to 2F				302			\$817

ROAD SEGMENT		3A to 3B		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	3A to 3B		0+00 to 25+50					
				Volume (CY) per	Number of						
Base Rock	4"-0" Crushed	0+00 to 25+50	8	Station	50	Stations	25.50	1,275	\$2.69	\$3,430	
Junctions	1 1/2"-0" Crushed	3A	3	Junctions	22	Junctions	1.00	22	\$2.69	\$59	
Traction Rock	1 1/2"-0" Crushed	2+00 to 13+00	3	Station	19	Stations	11.00	209	\$2.69	\$562	
Turnouts	4"-0" Crushed	7+50, 16+50	8	Station	22	Turnouts	2.00	44	\$2.69	\$118	
Turnarounds	4"-0" Crushed	23+00	8	TA	22	TA's	1.00	22	\$2.69	\$59	
Landing	6"-0" Pit-run	1+00, 13+50, 3B	N/A	Landing	80	Landings	3.00	240	\$2.75	\$660	
Dissipator	24"-6" riprap			Dissipator	11	Dissipators	2.00	22	\$3.39	\$75	
Total Rock for Road Segment:				3A to 3B				1,834			\$4,963

ROAD SEGMENT		3C to 3D		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	3C to 3D		0+00 to 4+00					
				Volume (CY) per	Number of						
Base Rock	4"-0" Crushed	0+00 to 4+00	8	Station	50	Stations	4.00	200	\$2.69	\$538	
Junctions	4"-0" Crushed	3C	8	Junction	22	Junctions	1.00	22	\$2.69	\$59	
Landings	6"-0" Pit-run	3D	N/A	Landing	80	Landings	1.00	80	\$2.75	\$220	
Total Rock for Road Segment:				3C to 3D				302			\$817

Processing:		Description		No. sta	Rate/sta	Cost
		Water, Process & Compact:		100.50	\$49.02	\$4,927
		Water, Process & Compact:Traction Rock		36.00	\$49.02	\$1,765
		24"-6"	6"-0"pr	4"-0"	1 1/2"-0"	3/4"-0"
		22	960	5,245	750	0
					Total	
SUB TOTAL FOR SURFACING				6,977		\$29,459

SPECIAL PROJECTS		Description	Cost
		* 6"-0" pit-run development cost included in crushing project	
SUB TOTAL FOR SPECIAL PROJECTS			

GRAND TOTAL		Subtotal of Surfacing & Spec. Proj.		\$29,459
		Subtotal of Clearing, Exc.,Culv.		\$48,758
				\$78,217

\$8,541

Compiled By: C.Bangs Date: 11/09/2011

Subtotal of Surfacing & Spec. Proj.	\$32,329
Subtotal of Clearing, Exc., Culy.	\$8,541

CRUSHED ROCK COST

SALE NAME: Green Giant
 PROJECT: Project No. 1 and 2
 QUARRY: Green Mtn. No. 2

MATERIAL: Crushed

DATE: 12/21/2011
 BY: C.Bangs

Segment	Stations	Cubic Yards						Misc	Total
		Base	Running	Turnout	Turnaround	Junction			
1A-1B	42.50	2,125	285	66	22	22			2,520
2A-2B	23.50	1,175	190			22			1,387
2C-2D	1.00	50				22			72
2E-2F	4.00	200				22			222
3A-3B	25.50	1,275	209	44	22	22			1,572
3C-3D	4.00	200				22			222
I5-I6	293.50		1,089					22	1,111
I6-I7	16.00		55					22	77
I7-I8	121.00		1,282	165		44		55	1,546
Grand Total	531.00	5,025	3,110	275	44	176		99	8,729

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES							Total Haul
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	
1A-1B	42.50	2,520					0.17	0.23	0.17	0.57
2A-2B	23.50	1,387				0.15	0.45	0.17	0.06	0.83
2C-2D	1.00	72				0.15	0.45	0.08	0.04	0.72
2E-2F	4.00	222				0.15	0.45	0.04	0.06	0.70
3A-3B	25.50	1,572					0.40	0.15	0.20	0.75
3C-3D	4.00	222					0.40	0.15	0.07	0.62
I5-I6	293.50	1,111				1.00	1.00	0.80	0.20	3.00
I6-I7	16.00	77					0.12	0.20	0.20	0.52
I7-I8	121.00	1,546				0.50	0.50		0.15	1.15
TOTAL	531.00	8,729								
	STA./NO.	CU. YD.								
CUBIC YARD WEIGHTED HAUL						0.24	0.43	0.23	0.15	AVERAGE HAUL 1.06

Average Round Trip Distance (miles) 2.12

ROCK HAUL:

Truck type: D20 No. trucks:
 Delay min.: 8 Efficiency: 85%

Ave haul: \$1.96 /cy
 Load: * /cy
 Spread: \$0.73 /cy

Truck type: D12 No. trucks: 4
 Delay min.: 6 Efficiency: 85%

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

Production: cy/day = 1,190

CRUSHED ROCK HAUL COSTS 8,729 cy @ \$2.69 /cy

*Loading off of crusher

PIT RUN ROCK COST

SALE NAME: Green Giant
 PROJECT: Project No. 1
 QUARRY: Green Mtn. No. 2

MATERIAL: Pit Run

DATE: 12/21/2011
 BY: C.Bangs

Segment	Stations	Cubic Yards						Misc	Total
		Base	Landing	Turnout	Turnaround	Junction			
1A-1B	42.50		320						320
2A-2B	23.50		160						160
2C-2D	1.00		80						80
2E-2F	4.00		80						80
3A-3B	25.50		240						240
3C-3D	4.00		80						80
Grand Total	100.50		960						960

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES							Total Haul
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	
1A-1B	42.50	320				0.02	0.15	0.23	0.17	0.57
2A-2B	23.50	160				0.15	0.45	0.17	0.06	0.83
2C-2D	1.00	80				0.15	0.45	0.08	0.04	0.72
2E-2F	4.00	80				0.15	0.45	0.04	0.06	0.70
3A-3B	25.50	240					0.40	0.15	0.20	0.75
3C-3D	4.00	80					0.40	0.15	0.07	0.62
TOTAL	100.50	960								
	STA./NO.	CU. YD.								
CUBIC YARD WEIGHTED HAUL						0.06	0.33	0.17	0.13	AVERAGE HAUL 0.69
Average Round Trip Distance (miles)										1.37

ROCK HAUL:

Truck type: D20 No. trucks:
 Delay min.: 8 Efficiency: 85%

Ave haul: \$1.58 /cy
 Load: \$0.45 /cy
 Spread: \$0.73 /cy

Truck type: D12 No. trucks: 3
 Delay min.: 6 Efficiency: 85%

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

Production: cy/day = 1,110

PIT RUN ROCK HAUL COSTS

960 cy @ \$2.75 /cy

RIP RAP ROCK COST

SALE NAME: Green Giant
 PROJECT: Project No. 1
 QUARRY: Green Mtn. No. 2

MATERIAL: Rip Rap

DATE: 12/21/2011
 BY: C.Bangs

		Cubic Yards								
Segment	Stations	Dissapator	Armor					Misc	Total	
I5-I6	293.50	22							22	
I6-I7	16.00	22							22	
3A to 3B	25.50	22							22	
Grand Total	335.00	66							66	

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES							Total Haul
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	
I5-I6	293.50	22					0.60	0.21	0.10	0.91
I6-I7	16.00	22					0.12	0.20	0.20	0.52
3A to 3B	25.50	22					0.40	0.15	0.20	0.75
						</				

ROCK HAUL:

Truck type: D12 No. trucks: 1
 Delay min.: 6 Efficiency: 85%

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

Ave haul: \$1.71 /cy
 Load: \$1.68 /cy
 Develop: * /cy

Production: cy/day = 341

RIP RAP ROCK HAUL COSTS

66 cy @ **\$3.39 /cy**

*Developed with Quarry Costs

Subtotal of Clearing, Exc., Culv.	\$19,402
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SURFACING						Stations/ amount	x	Rate/ sta/amt	Cost
Subgrade prep: Description									
Grade, Shape and Ditch 16' (A-B, I3-I4)						71.10	x	\$21.55	\$1,532.21
Subgrade Compaction (A-B, I3-I4)						71.10	x	\$17.52	\$1,245.67

ROAD SEGMENT A to B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	A to B		0+00 to 15+10					
				Volume (CY) per		Number of					
Base Rock	4"-0" Crushed	0+00 to 15+10	10	Station	63	Stations	15.1	951	\$8.21	\$7,810	
Turnouts	4"-0" Crushed	5+00, 11+75	10	Turnout	28	Turnouts	2	56	\$8.21	\$460	
Curve Widening	4"-0" Crushed	0+00	10					44	\$8.21	\$361	
Junctions	4"-0" Crushed	0+00	10					77	\$8.21	\$632	
Surfacing Rock	1 1/2"-0" Crushed	0+00 to 15+10	4	Station	25	Stations	15	378	\$8.21	\$3,099	
Turnouts	1 1/2"-0" Crushed	5+00, 11+75	4	Turnout	11	Turnouts	2	22	\$8.21	\$181	
Curve Widening	1 1/2"-0" Crushed	0+00	4					22	\$8.21	\$181	
Junctions	1 1/2"-0" Crushed	0+00	4					44	\$8.21	\$361	
Dissipator	24"-6" riprap	0+00, 2+10, 12+90		Dissipator	3	Dissipator	11	33	\$12.06	\$398	
Fill Armor	24"-6" riprap	0+50 to 1+50						55	\$12.06	\$663	
Total Rock for Road Segment: A to B								1,682			\$14,146

ROAD SEGMENT I3 to I4				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	I3 to I4		0+00 to 56+00					
				Volume (CY) per		Number of					
Base Rock	4"-0" Crushed	0+00 to 56+00	10	Station	63	Stations	56.00	3,528	\$8.21	\$28,965	
		5+50, 11+60, 17+00, 22+00, 28+30, 34+20, 37+00, 48+00, 56+00	10								
Turnouts	4"-0" Crushed		10	Turnout	28	Turnouts	9	252	\$8.21	\$2,069	
Curve Widening	4"-0" Crushed		10					407	\$8.21	\$3,341	
Junctions	4"-0" Crushed	0+00	10					88	\$8.21	\$722	
Surfacing Rock	1 1/2"-0" Crushed	0+00 to 56+00	4	Station	25	Stations	56	1,400	\$8.21	\$11,494	
		5+50, 11+60, 17+00, 22+00, 28+30, 34+20, 37+00, 48+00, 56+00	4								
Turnouts	1 1/2"-0" Crushed		4	Turnout	11	Turnouts	9	99	\$8.21	\$813	
Curve Widening	1 1/2"-0" Crushed		4					220	\$8.21	\$1,806	
Junctions	1 1/2"-0" Crushed	0+00	4					88	\$8.21	\$722	
French Drain	24"-6" riprap	1+50						33	\$12.06	\$398	
Total Rock for Road Segment: I3 to I4								6,115			\$50,331

Processing:				Description	No.sta	Rate/sta	Cost
				Water, Process & Compact: A-B (15.1), I3-I4 (44.0) 4"-0" Two Lifts	59.10	\$98.04	\$5,794
				Water, Process & Compact: I3-I4 (12.0) 4"-0" One Lift	12.00	\$49.02	\$588
				Water, Process & Compact: A-B (15.1), I3-I4 (56.0) 1 1/2"-0"	71.10	\$49.02	\$3,485
				4"-0"	1 1/2"-0"	24"-6"	Total
SUB TOTAL FOR SURFACING				5,403	2,273	121	7,797
							7,797
							\$77,123

SPECIAL PROJECTS				Description	Cost
				C330 (french drain, moving stumps, ditchouts)	\$ 1,440.00
				Faller to cut marked trées (I3-I4, I3-I3A)	\$ 380.00
				Seeding and Mulching	\$ 300.00
				Geotextile 6 1/2 oz. woven x 12.5' wide (1,320ft) (0+00 to 12+00, and 1+50)	\$1,584.00
SUB TOTAL FOR SPECIAL PROJECTS					\$3,704
				Subtotal of Surfacing & Spec. Proj.	\$80,827
				Subtotal of Clearing, Exc., Culv.	\$19,402
GRAND TOTAL					\$100,229

Compiled By: C.Bangs

Date: 12/15/2011

Compiled By: C.Bangs

Date: 12/15/2011

CRUSHED ROCK COST

SALE NAME: Green Giant
 PROJECT: Project No. 3
 QUARRY: Green Mtn. No. 2

MATERIAL: Crushed

DATE: 12/15/2011
 BY: C.Bangs

Segment	Stations	Cubic Yards						Misc	Total
		Base	Running	Turnout	Turnaround	Junction			
A to B	15.10	951	378	78		121		66	1,594
I3 to I4	56.00	3,528	1,400	351		176		627	6,082
Grand Total	71.10	4,479	1,778	429		297		693	7,676

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES							Total Haul
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	
A to B	15.10	1,594			3	2.00	1.00	1.06	0.20	7.26
I3 to I4	56.00	6,082			3	2.00	1.40	1.30	0.23	7.93
TOTAL	71.10	7,676								
STA./NO.		CU. YD.								
CUBIC YARD WEIGHTED HAUL					3.00	2.00	1.32	1.25	0.22	AVERAGE HAUL 7.79
Average Round Trip Distance (miles)										15.58

ROCK HAUL:

Truck type: D20 No. trucks: 2
 Delay min.: 8 Efficiency: 85%

Ave haul: \$6.76 /cy
 Load: * /cy
 Spread: \$1.46 /cy

Truck type: D12 No. trucks: 4
 Delay min.: 6 Efficiency: 85%

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

Production: cy/day = 568

CRUSHED ROCK HAUL COSTS 7,676 cy @ \$8.21 /cy

*Loading off of crusher

RIP RAP ROCK COST

SALE NAME: Green Giant
 PROJECT: Project No. 3
 QUARRY: Green Mtn. No. 2

MATERIAL: Rip Rap

DATE: 12/15/2011
 BY: C.Bangs

		Cubic Yards									
Segment	Stations	Dissipator	Armor							Misc	Total
A to B	15.10	33	55								88
I3 to I4	56.00									33	33
Grand Total	71.10	33	55							33	121
Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES								
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	Total Haul	
A to B	15.10	88			3	2.00	1.00	1.06	0.20	7.26	
I3 to I4	56.00	33			3	2.00	1.40	1.30	0.23	7.93	
TOTAL	71.10	121									
STA./NO.		CU. YD.									
CUBIC YARD WEIGHTED HAUL					3.00	2.00	1.11	1.13	0.21	AVERAGE HAUL	7.44
Average Round Trip Distance (miles)										14.89	

ROCK HAUL:

Truck type: D12 No. trucks: 1
 Delay min.: 6 Efficiency: 85%

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

Ave haul: \$7.02 /cy
 Load: \$5.04 /cy
 Develop: * /cy

Production: cy/day = 83

RIP RAP ROCK HAUL COSTS 121 cy @ \$12.06 /cy

*Developed with Quarry Costs

\$18,102

SURFACING				Stations/ amount	x	Rate/ sta/amt	Cost
Subgrade prep: Description							
Grade, Shape and Ditch 16'				108.55	x	\$21.55	\$2,339.25
Subgrade Compaction				108.55	x	\$17.52	\$1,901.80

ROAD SEGMENT		I1 to I2		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2		0+00 + 76+68				
				Volume (CY) per		Number of				
Surface Course	11/2"-0" crushed		3	station	19	stations	76.68	1,457	\$3.15	\$4,589
Leveling Rock	11/2"-0" crushed		n/a	load	11	loads	12	132	\$3.15	\$416
Junctions	11/2"-0" crushed		3	junction	n/a	junctions	2	40	\$3.15	\$126
Turnouts	11/2"-0" crushed		3	turnout	8	turnouts	12	96	\$3.15	\$302
Bedding / backfill	11/2"-0" crushed		n/a	culvert	n/a	culverts	10	257	\$3.15	\$810
Curve widening	11/2"-0" crushed		3	curve	n/a	curves	7	88	\$3.15	\$277
Grade Raise	4"-0" crushed	60+78	n/a	raise	11	raises	1	11	\$3.15	\$35
Settling pond / ditch armor	4"-0" crushed rock	72+98	8	ponds/armor	22	ponds/armor	1	22	\$3.15	\$69
Extra re-inforcement	4"-0" crushed rock	31+29	n/a	n/a		n/a		11	\$3.15	\$35
Turnouts	4"-0" crushed rock	2+88,5+70,14+71,31+29,41+80	8	turnout	22	turnouts	10	220	\$3.15	\$810
Turnouts	4"-0" crushed rock	44+46,52+37,55+87,62+20,69+59								
Fill Armor	24"-6" riprap	60+78	n/a	fill	30	fills	1	30	\$2.32	\$70
Dissipators	24"-6" riprap		n/a	dissipator	10	dissipators	4	40	\$2.32	\$93
Total Rock for Road Segment:				I1 to I2				2,404		\$7,631

ROAD SEGMENT		I1 to I2		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2		76+68 to 108+55				
				Volume (CY) per		Number of				
Leveling Rock	11/2"-0" crushed		n/a	load	11	loads	18	198	\$3.15	\$624
Bedding / backfill	11/2"-0" crushed		n/a	culvert	22	culverts	5	110	\$3.15	\$347
Turnouts	11/2"-0" crushed		3	turnout	8	turnouts	4	32	\$3.15	\$101
Turnouts	4"-0" crushed rock	89+15,93+54,100+00,	8	turnout	22	turnouts	3	66	\$3.23	\$213
Dissipators	24"-6" riprap		n/a	dissipator	10	dissipators	4	40	\$2.29	\$92
Total Rock for Road Segment:				I1 to I2				446		\$1,376

ROAD SEGMENT		0		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2						
				Volume (CY) per		Number of				
Base Rock			5	station		stations		0		\$0
Junctions			N/A	junction		junctions		0		\$0
Culvert Bedding/Backfill			N/A	culvert		culverts		0		\$0
Landings			N/A	Landing		Landings		0		\$0
Total Rock for Road Segment:				0				0		\$0

Processing:				Description	No. sta	Rate/sta	Cost
				Water, Process & Compact:	76.68	\$49.02	\$3,759
				Old rock plus leveling rock	31.87	\$49.02	\$1,562

24"-6"	6"-0"pr	4"-0"	11/2"-0"	Total
110		330	2,410	2,850

SUB TOTAL FOR SURFACING									\$18,569
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SPECIAL PROJECTS				Description	Cost
SUB TOTAL FOR SPECIAL PROJECTS					\$0

				Subtotal of Surfacing & Spec. Proj.		\$18,569
				Subtotal of Clearing, Exc., Culv.		\$18,102
GRAND TOTAL						\$36,671

Compiled By: d.mellison

Date: 07/29/11

CRUSHED ROCK COST

SALE NAME: Green Giant
 PROJECT: No. 2
 QUARRY: Hamilton Creek

MATERIAL: Crushed

DATE: 07/29/11
 BY: d.mellison

		Cubic Yards							
Segment	Stations	Base	Running	Turnout	Bedding	Junction	Leveling	Curves	Total
I1 to I2	76+68	33	1,457	316	257	40	132	88	2,323
			11						11
	31+87			98	110		198		406
Grand Total		33	1,468	414	367	40	330	88	2,740

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES							Total Haul
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	
I1 to I2	76+68	2,323				0.48	0.55	0.15	0.15	1.33
		11				0.30	0.30	0.15	0.15	0.90
	31+87	406					0.10	0.10	0.10	0.30
TOTAL		2,740								AVERAGE HAUL 1.18
STA./NO.		CU. YD.								
CUBIC YARD WEIGHTED HAUL						0.41	0.48	0.14	0.14	

Average Round Trip Distance (miles)2.35

ROCK HAUL:

Truck type: D20 No. trucks:
 Delay min.: 8 Efficiency: 85%

Ave haul: \$1.97 /cy
 Load: \$0.45 /cy
 Spread: \$0.73 /cy

Truck type: D12 No. trucks: 4
 Delay min.: 6 Efficiency: 85%

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

Production: cy/day = 1,183

CRUSHED ROCK HAUL COSTS 2,740 cy @ **\$3.15 /cy**

RIP RAP ROCK COST

SALE NAME: Green Giant
PROJECT: _____
QUARRY: Hamilton Ck Quarry

MATERIAL: Rip Rap

DATE: 07/29/11
BY: d.mellison

		Cubic Yards							
Segment	Stations	Dissapator	Armor					Misc	Total
I1-I2	76.68	40	30						70
	31.87	40							40
Grand Total	108.55	80	30						110

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES							Total Haul
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	
I1-I2	76.68	70				0.48	0.55	0.15	0.15	1.33
	31.87	40					0.10	0.10	0.10	0.30
TOTAL 108.55		110								AVERAGE HAUL 0.96
STA./NO.		CU. YD.								
CUBIC YARD WEIGHTED HAUL						0.31	0.39	0.13	0.13	

Average Round Trip Distance (miles) 1.91

ROCK HAUL:

Truck type:	D12	No. trucks:	4
Delay min.:	6	Efficiency:	85%
Truck type:	D10	No. trucks:	
Delay min.:	5	Efficiency:	85%

Ave haul: \$1.76 /cy
Load: \$0.56 /cy
*Develop: _____ /cy

Production: cy/day = 1,326

RIP RAP ROCK HAUL COSTS	110 cy @	\$2.32 /cy
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* Development is in the crushing costs.

PIT RUN ROCK COST

SALE NAME: Green Giant
PROJECT: _____
QUARRY: Hamilton Creek

DATE: 07/19/11
BY: d.mellison

		Cubic Yards								
Segment	Stations	Base	Landing	Turnout	Turnaround	Junction	Reject	Waste	Total	
Crushing							2,571		2,571	
Crusher site								1,000	1,000	
Grand Total							2,571	1,000	3,571	
Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES							Total Haul
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	
Crushing		2,571					0.30	0.15	0.15	0.60
Crusher site		1,000								

ROCK HAUL:

Truck type:	D20	No. trucks:	1
Delay min.:	8	Efficiency:	85%
Truck type:	D12	No. trucks:	2
Delay min.:	6	Efficiency:	85%

Ave haul:	1.222131	/cy
Load:	\$0.28	/cy
Compaction		/cy

Production: cy/day = 1,571

PIT RUN ROCK HAUL COSTS	3,571 cy @	\$1.50 /cy
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SUMMARY OF ROCK DEVELOPMENT AND CRUSHING COSTS

PROJECT NO.	Project No. 5	Timber Sale Name:	Green Giant
Quarry:	Green Mountain No. 2	Swell:	
Location:	NE1/4, Section 34, T5N, R6W W.M.	Shrink:	16%
County:	Clatsop		
By:	d.mellison	Loading Hopper:	Yes
Date:	08/04/11		

ROCK SIZE	REJECT	GRADATION	STOCKPILE CU. YDS.	TRUCK MEAS CU. YDS.	TOTAL CU. YDS.
3/4"-0"	12%	CR			
1-1/2"-0"	15%	CR	5,000	5,823	11,623
4"-0"	12%	CR		11,769	11,769
6"-0"		PR		960	960
24"-6"		RR		187	187
36"		RR			
TOTAL CUBIC YARDS OF ROCK:			5,000	18,739	24,539

1) MOBILIZATION & SET UP:

EQUIPMENT	QUANTITY	RATE	COST	EQUIPMENT	QUANTITY	RATE	COST
Dump Trucks	8	\$141	\$1,128	Off Highway Dump Truck	1	\$515	\$515
Screening Plants	1	\$515	\$515	Screening Plant		\$515	
D8 Cat		\$1,220		Loading Hopper	1	\$515	\$515
D6 Cat	1	\$675	\$675	Loader	1	\$699	\$699
Drill & Compressor	1	\$1,180	\$1,180				
Powder	1	\$327	\$327	3 Stage Crusher	1	\$2,694	\$2,694
Dump Trucks		\$141					
Excavator	1	\$1,220	\$1,220	Excavator		\$1,220	

SUB TOTAL FOR MOBILIZATION

\$9,469

EQUIPMENT SET UP	TIMES	RATE	COST
3 Stage Crusher	1	\$3,205	\$3,205
Screening Plants	1	\$273	\$273
Loading Hopper	1	\$273	\$273
Original Calibration	1	\$507	\$507

SUB TOTAL FOR SET UP COSTS

\$4,258

TOTAL MOBILIZATION & SET UP COSTS

\$13,727

2) CLEARING & GRUBBING

DESCRIPTION	QUANTITY	UNIT	RATE	COST
Pile and burning	0.7	acres	\$2,345	\$1,686
Load and Hauling slash				
330 Excavator	12	hours	\$144	\$1,728
Dump Truck (Off Hwy)	12	hours	\$93	\$1,116
Dump Truck (Highway)	12	hours	\$73	\$876
Move-in Fire Truck for the burning of the Clearing Debris	1	ea	\$165	\$165

TOTAL CLEARING & GRUBBING COSTS

\$5,571

3) EXCAVATION

MATERIAL DESCRIPTION	QUANTITY	UNIT	RATE	COST
Overburden removal (3 feet)	3,500	bcy	\$1.34	\$4,690

TOTAL EXCAVATION COSTS \$4,690

4) DEVELOP ROCK

ROCK SUMMARY			METHOD	%	QUANTITY	RATE	COST
Type	Cu. yd. Vol.	Weight	Ripping	30%	7,362	\$1.75	\$12,883
crushed	23,392	95%	Drill & shoot	70%	19,386	\$2.30	\$44,589
pit run	960	4%	Oversize red	2%	487	\$5.80	\$2,825
rip rap	187	1%	Other				
Total	24,539						
reject	3,156	12.9%					

TOTAL ROCK DEVELOPMENT COSTS \$60,296

5) CALIBRATION & TESTING

DESCRIPTION	NO.	\$/TEST	COST
Calibrate	1	\$507.00	\$507
Calibrate			
Test	11	\$57.30	\$630
Test			

TOTAL CALIBRATION & TESTING COSTS \$1,137

6) FEEDING & LOADING

DESCRIPTION	CU. YD. QUANTITY	COST CU. YD.	TOTAL COST
Dig & Feed Rock	26,548	\$0.72	\$19,027

TOTAL FEEDING & LOADING COSTS \$19,027

7) ROCK CRUSHING

ROCK SIZE	ROCK TYPE	CU. YD. QUANTITY	CRUSHER TYPE	HOURLY PRODUCTION	RATE CU. YD.	TOTAL COST
3/4"-0"	crushed		3 stage w/s			
1-1/2"-0"	crushed	11,623	3 stage w/s	125	\$3.11	\$36,171
4"-0"	crushed	11,769	3 stage w/s	140	\$2.78	\$32,701

TOTAL ROCK CRUSHING COSTS \$68,872

8) STOCKPILING

STOCKPILE SITE PREPARATION

Equipment	Hours	Rate	Total
Dozer		\$120.00	
Compactor		\$72.00	
Grader	2	\$90.00	\$180.00
Excavator		\$138.00	

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

\$180.00

SUB TOTAL

\$180

HAUL & STOCKPILE

STOCKPILE LOCATION	SIZE	# of TRUCKS	CU. YDS.	RATE	COST
1. _____		2			
2. Deep Creek	1-1/2"-0"	8	5,800	\$6.32	\$36,634
3. _____					
4. _____					
5. _____		2			
6. _____					

SUB TOTAL

\$36,634

TOTAL STOCKPILING COSTS

\$36,814

9) MISCELLANEOUS COSTS

DESCRIPTION	COST
Load, Haul, and Spread the reject material at the waste area.	\$4,229
\$1.34 /CY 3,156 CY	
Final Quarry Dev., Waterbarring, Drainage, block access	
\$144 /hr 2 hours	\$288

TOTAL MISCELLANEOUS COSTS

\$4,517

10) GRAND TOTAL:

\$214,651

\$/Cubic Yard

\$9.18

Footnotes:

HAUL and STOCKPILE COST

SALE NAME: Green Giant
 QUARRY: Green Mountain No. 2 ROCK TYPE: Crushed

Location 1. 0	ONE WAY HAUL IN MILES						
	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH
							0.10
Truck type: <u>D12</u> No. trucks: <u>2</u> Delay min.: <u>15</u> Efficiency: <u>75%</u> Ave haul: \$1.85 /cy Load: \$0.00 /cy Stockpile: \$1.25 /cy Truck type: <u>D12</u> No. trucks: <u> </u> Delay min.: <u>12</u> Efficiency: <u>75%</u> Production: cy/day = 632 Truck type: <u> </u> No. trucks: <u> </u> Delay min.: <u>10</u> Efficiency: <u>75%</u>							
Location 1. 0		Haul and Stockpile Cost				\$3.10 /cy	

Location 2. Deep Creel 1-1/2"-0"	ONE WAY HAUL IN MILES						
	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH
			0.50	5.30	0.30	0.30	0.30
Truck type: <u>D20</u> No. trucks: <u>4</u> Delay min.: <u>8</u> Efficiency: <u>85%</u> Ave haul: \$5.48 /cy Load: \$0.00 /cy Stockpile: \$0.84 /cy Truck type: <u>D12</u> No. trucks: <u>4</u> Delay min.: <u>6</u> Efficiency: <u>85%</u> Production: cy/day = 975 Truck type: <u>D10</u> No. trucks: <u> </u> Delay min.: <u>10</u> Efficiency: <u>75%</u>							
Location 2. Deep Creek		Haul and Stockpile Cost				\$6.32 /cy	

Location 3. 0	ONE WAY HAUL IN MILES						
	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH
				1.00	1.00		
Truck type: <u>D20</u> No. trucks: <u> </u> Delay min.: <u>15</u> Efficiency: <u>75%</u> Ave haul: #DIV/0! /cy Load: \$0.00 /cy Stockpile: #N/A /cy Truck type: <u>D12</u> No. trucks: <u> </u> Delay min.: <u>12</u> Efficiency: <u>75%</u> Production: cy/day = 0 Truck type: <u>D10</u> No. trucks: <u> </u> Delay min.: <u>10</u> Efficiency: <u>75%</u>							
Location 3. 0		Haul and Stockpile Cost				#DIV/0! /cy	

HAUL and STOCKPILE COST

Location 4. 0	ONE WAY HAUL IN MILES						
	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH
				1.00	1.00		
Truck type: <u>D20</u> No. trucks: _____ Delay min.: <u>15</u> Efficiency: <u>75%</u> Ave haul: #DIV/0! /cy Load: \$0.00 /cy Stockpile: #N/A /cy Truck type: <u>D12</u> No. trucks: _____ Delay min.: <u>12</u> Efficiency: <u>75%</u> Truck type: <u>D10</u> No. trucks: _____ Delay min.: <u>10</u> Efficiency: <u>75%</u> Production: cy/day = 0							
Location 4. 0		Haul & Stockpile Cost			#DIV/0! /cy		

Location 5. 0	ONE WAY HAUL IN MILES						
	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH
							0.10
Truck type: <u>D20</u> No. trucks: <u>2</u> Delay min.: <u>15</u> Efficiency: <u>75%</u> Ave haul: \$1.43 /cy Load: \$0.00 /cy Stockpile: \$0.78 /cy Truck type: <u>D12</u> No. trucks: _____ Delay min.: <u>12</u> Efficiency: <u>75%</u> Truck type: <u>D10</u> No. trucks: _____ Delay min.: <u>10</u> Efficiency: <u>75%</u> Production: cy/day = 1,054							
Location 5. 0		Haul & Stockpile Cost			\$2.20 /cy		

Location 6. 0	ONE WAY HAUL IN MILES						
	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH
				1.00	1.00		
Truck type: <u>D20</u> No. trucks: _____ Delay min.: <u>15</u> Efficiency: <u>75%</u> Ave haul: #DIV/0! /cy Load: \$0.00 /cy Stockpile: #N/A /cy Truck type: <u>D12</u> No. trucks: _____ Delay min.: <u>12</u> Efficiency: <u>75%</u> Truck type: <u>D10</u> No. trucks: _____ Delay min.: <u>10</u> Efficiency: <u>75%</u> Production: cy/day = 0							
Location 6. 0		Haul & Stockpile Cost			#DIV/0! /cy		

PIT RUN ROCK COST

SALE NAME: Green Giant
 PROJECT: No. 5
 QUARRY: Green Mountain No. 2

MATERIAL: Waste

DATE: 08/04/11
 BY: d.mellison

		Cubic Yards								
Segment	Stations	Base	Landing	Turnout	Turnaround	Junction	Overburden	Reject	Total	
Overburden							3,500		3,500	
Reject								2,424	2,424	
Grand Total							3,500	2,424	5,924	

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES								Total Haul
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH		
Overburden		3,500						0.035	0.035	0.07	
Reject		2,424						0.04	0.04	0.08	
TOTAL		5,924									
STA./NO.		CU. YD.									
CUBIC YARD WEIGHTED HAUL								0.04	0.04	AVERAGE HAUL 0.07	

Average Round Trip Distance (miles)0.15

ROCK HAUL:

Truck type: D20 No. trucks: 1
 Delay min.: 8 Efficiency: 85%

Truck type: D12 No. trucks: 1
 Delay min.: 6 Efficiency: 85%

Ave haul: 0.757268 /cy
 Load: \$0.28 /cy
 Compaction \$0.30 /cy

Production: cy/day = 1,764

PIT RUN ROCK HAUL COSTS 5,924 cy @ \$1.34 /cy

Subtotal of Clearing, Exc., Culv.	\$8,700
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SURFACING					Stations/ amount		Rate/ sta/amt	Cost
Subgrade prep:		Description				x		
		Grade, and Shape (site area is equal to 26.11 sta. of road)			26.11	x	\$15.93	\$415.93
		Subgrade Compaction			26.11	x	\$17.52	\$457.45

ROAD SEGMENT				Deep Ck Stockpile site		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Deep Ck Stockpile site Volume (CY) per		Number of						
Base Rock	4"-0" crushed		8	station	n/a	stations	n/a	1,167	\$6.71	\$7,831		
Junctions	4"-0" crushed		8	junction	22	junctions	1	20	\$6.71	\$134		
								0		\$0		
								0		\$0		
								0		\$0		
Total Rock for Road Segment:								1,187				\$7,965

ROAD SEGMENT				0		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of						
Subgrade Leveling			N/A					0		\$0		
Traction Rock			N/A	station		stations		0		\$0		
Culvert Bedding/Backfill			N/A	culvert		culverts		0		\$0		
Turnouts			N/A	TO		TO's		0		\$0		
Turnarounds			N/A	TA		TA's		0		\$0		
Junctions			N/A	junction		junctions		0		\$0		
Total Rock for Road Segment:								0				\$0

ROAD SEGMENT				0		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of						
Base Rock			5	station		stations		0		\$0		
Junctions			N/A	junction		junctions		0		\$0		
Culvert Bedding/Backfill			N/A	culvert		culverts		0		\$0		
Landings			N/A	Landing		Landings		0		\$0		
Total Rock for Road Segment:								0				\$0

Processing:		Description		# lifts	No. sta	Rate/sta	Cost
		Water, Process & Compact:		1	26.11	\$49.02	\$1,280

	6"-0"pr	4"-0"	1 1/2"-0"	Total
SUB TOTAL FOR SURFACING		1,187		1,187

\$10,118

SPECIAL PROJECTS	
Description	Cost
SUB TOTAL FOR SPECIAL PROJECTS	

\$0

Subtotal of Surfacing & Spec. Proj.		\$10,118
Subtotal of Clearing, Exc., Culv.		\$8,700
GRAND TOTAL		\$18,818

Compiled By: <u>d.mellison</u>	Date: <u>07/29/11</u>
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CRUSHED ROCK COST

SALE NAME: Green Giant
PROJECT: Deep Creek Stockpile Site Construction MATERIAL: Crushed
QUARRY: _____

DATE: 07/26/11
BY: d.mellison

		Cubic Yards								
Segment	Stations	Base	Running	Turnout	Turnaround	Junction		Misc	Total	
		1,167				20			1,187	
Grand Total		1,167				20			1,187	

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES							Total Haul
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	
		1,187			0.50	5.30	0.30	0.30	0.30	6.70
TOTAL		1,187								AVERAGE HAUL 6.70
STA./NO. CUBIC YARD WEIGHTED HAUL					0.50	5.30	0.30	0.30	0.30	

Average Round Trip Distance (miles) 13.40

ROCK HAUL:

Truck type:	<u>D20</u>	No. trucks:	<u>4</u>
Delay min.:	<u>8</u>	Efficiency:	<u>85%</u>

Ave haul:	\$5.48	/cy
Load:	\$0.45	/cy
Spread:	\$0.78	/cy

Truck type:	<u>D12</u>	No. trucks:	<u>4</u>
Delay min.:	<u>6</u>	Efficiency:	<u>85%</u>

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

Production: cy/day = 975

CRUSHED ROCK HAUL COSTS 1,187 cy @ \$6.71 /cy

SUMMARY OF ROCK DEVELOPMENT AND CRUSHING COSTS

PROJECT NO. <u>6</u>	Timber Sale Name: <u>Green Giant</u>
Quarry: <u>Hamilton Creek</u>	Swell: <u> </u>
Location: <u>NW 1/4, NW 1/4, Sec. 28, T6N, R7W</u>	Shrink: <u>16%</u>
County: <u>Clatsop</u>	Loading Hopper: <u>no</u>
By: <u>d.mellison</u>	
Date: <u>06/10/11</u>	

ROCK SIZE	REJECT	GRADATION	STOCKPILE CU. YDS.	TRUCK MEAS CU. YDS.	TOTAL CU. YDS.
3/4"-0"		CR			
1-1/2"-0"	20%	CR		2,410	2,410
4"-0"	20%	CR	9,000		10,440
6"-0"		PR			
24"-6"		RR		110	110
36"		RR			
TOTAL CUBIC YARDS OF ROCK:			9,000	2,520	12,960

1) MOBILIZATION & SET UP:

EQUIPMENT	QUANTITY	RATE	COST	EQUIPMENT	QUANTITY	RATE	COST
Dump Trucks	3	\$141	\$423	Off Highway Dump Truck		\$515	
Screening Plants	1	\$515	\$515	Screening Plant		\$515	
D8 Cat	1	\$1,220	\$1,220	Loading Hopper		\$515	
D6 Cat		\$675		Loader	2	\$699	\$1,398
Drill & Compressor		\$1,180					
Powder		\$327		3 Stage Crusher	1	\$2,694	\$2,694
Dump Trucks		\$141					
Excavator	1	\$1,220	\$1,220	Excavator		\$1,220	

SUB TOTAL FOR MOBILIZATION

\$7,470

EQUIPMENT SET UP	TIMES	RATE	COST
3 Stage Crusher	1	\$3,205	\$3,205
Screening Plants	1	\$273	\$273
Original Calibration	1	\$507	\$507

SUB TOTAL FOR SET UP COSTS

\$3,985

TOTAL MOBILIZATION & SET UP COSTS**\$11,455****2) CLEARING & GRUBBING**

DESCRIPTION	QUANTITY	UNIT	RATE	COST
Scatter Clearing an Grubbing debris at Rock Source, Crusher and Stockpile site				
C330 Excavator	5	Hours	\$144	\$720
Fell and deck Alder Trees				
Cutter Labor	6	Hours	\$38	\$228
C330 Excavator	2	Hours	\$144	\$288

TOTAL CLEARING & GRUBBING COSTS**\$1,236**

3) EXCAVATION

MATERIAL DESCRIPTION	QUANTITY	UNIT	RATE	COST
Pitrun (excavate, load haul to crusher site, compact)	254	bcy	\$1.12	\$284
Spread pitrun (D8)	1	hours	\$147	\$147
Excavate Crusher Site, haul to Stockpile site	1,000	bcy	\$1.50	\$1,500
Excavate Crusher Site, push to WA	587	bcy	\$0.54	\$317

TOTAL EXCAVATION COSTS

\$2,248

4) DEVELOP ROCK

ROCK SUMMARY			METHOD	%	QUANTITY	RATE	COST
Type	Cu. yd. Vol.	Weight	Ripping	100%	12,960	\$1.75	\$22,680
crushed	12,850	99%	Drill & shoot			\$2.30	
pit run	0	0	Oversize red			\$5.80	
rip rap	110	1%	Other				
Total	12,960						
reject	2,570	19.8%					

TOTAL ROCK DEVELOPMENT COSTS

\$22,680

5) CALIBRATION & TESTING

DESCRIPTION	NO.	\$/TEST	COST
Calibrate	1	\$507.00	\$507
Calibrate			
Test	6	\$57.30	\$344
Test			

TOTAL CALIBRATION & TESTING COSTS

\$851

6) FEEDING & LOADING

DESCRIPTION	CU. YD. QUANTITY	COST CU. YD.	TOTAL COST
Dig & Feed Rock	15,420	\$0.66	\$10,147

TOTAL FEEDING & LOADING COSTS

\$10,147

7) ROCK CRUSHING

ROCK SIZE	ROCK TYPE	CU. YD. QUANTITY	CRUSHER TYPE	HOURLY PRODUCTION	RATE CU. YD.	TOTAL COST
3/4"-0"	crushed					
1-1/2"-0"	crushed	2,410	3 stage w/s	120	\$3.24	\$7,812
4"-0"	crushed	10,440	3 stage w/s	150	\$2.59	\$27,074

TOTAL ROCK CRUSHING COSTS

\$34,887

8) STOCKPILING

STOCKPILE SITE PREPARATION

Equipment	Hours	Rate	Total
Dozer	2	\$147.00	\$294
Compactor	3	\$72.00	\$216
Grader	1.5	\$93.00	\$139.5
Excavator		\$138.00	

*Rock for Floor (CY)	\$/CY Haul	Total
793		

* No rock hauled for the floor, comes from old pile at the site.
\$649.50

SUB TOTAL

\$650

HAUL & STOCKPILE

STOCKPILE LOCATION	SIZE	# of TRUCKS	CU. YDS.	RATE	COST
1. _____		2			
2. _____		3			
3. Hamilton Creek	4"-0"	3	10,440	\$3.64	\$38,010
4. _____					
5. _____		2			
6. _____					

SUB TOTAL

\$38,010

TOTAL STOCKPILING COSTS

\$38,660

9) MISCELLANEOUS COSTS

DESCRIPTION	COST
Load, haul, the reject material to the waste area.	\$3,855
\$1.50 /CY 2,570 CY	
Spread reject and hauled excavation(Di 5 \$147	\$735
Final Quarry Dev., Access Road Const., Waterbarring, Drainage,	
C330 Excavator 2 \$144	\$288
Compact reject and hauled excavation	
3,571 CY \$0.60	\$2,143

TOTAL MISCELLANEOUS COSTS

\$7,021

10) GRAND TOTAL:

\$129,184

\$/Cubic Yard

\$10.05

Footnotes:

HAUL and STOCKPILE COST

SALE NAME: Green Giant
 QUARRY: Hamilton Creek ROCK TYPE: Crushed

Location 1. 0	ONE WAY HAUL IN MILES																																																																						
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							0.10																																																																
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Delay min.: <u>10</u>	Efficiency: <u>75%</u>																																																																						
Location 1. 0				Haul and Stockpile Cost		\$3.82 /cy																																																																	

Location 2. 0	ONE WAY HAUL IN MILES																																																																						
	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH																																																																
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Location 3. Hamilton Creek 4"-0"	ONE WAY HAUL IN MILES																																																																						
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Location 3. Hamilton Creek				Haul and Stockpile Cost		\$3.64 /cy																																																																	

HAUL and STOCKPILE COST

Location 4. 0	ONE WAY HAUL IN MILES						
	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH
				1.00	1.00		
Truck type: <u>D20</u> No. trucks: _____ Delay min.: <u>15</u> Efficiency: <u>75%</u> Ave haul: #DIV/0! /cy Load: #N/A /cy Stockpile: #N/A /cy Truck type: <u>D12</u> No. trucks: _____ Delay min.: <u>12</u> Efficiency: <u>75%</u> Truck type: <u>D10</u> No. trucks: _____ Delay min.: <u>10</u> Efficiency: <u>75%</u> Production: cy/day = 0							
Location 4. 0		Haul & Stockpile Cost			#DIV/0! /cy		

Location 5. 0	ONE WAY HAUL IN MILES						
	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH
							0.10
Truck type: <u>D20</u> No. trucks: <u>2</u> Delay min.: <u>15</u> Efficiency: <u>75%</u> Ave haul: \$1.43 /cy Load: \$0.48 /cy Stockpile: \$0.78 /cy Truck type: <u>D12</u> No. trucks: _____ Delay min.: <u>12</u> Efficiency: <u>75%</u> Truck type: <u>D10</u> No. trucks: _____ Delay min.: <u>10</u> Efficiency: <u>75%</u> Production: cy/day = 1,054							
Location 5. 0		Haul & Stockpile Cost			\$2.68 /cy		

Location 6. 0	ONE WAY HAUL IN MILES						
	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH
				1.00	1.00		
Truck type: <u>D20</u> No. trucks: _____ Delay min.: <u>15</u> Efficiency: <u>75%</u> Ave haul: #DIV/0! /cy Load: #N/A /cy Stockpile: #N/A /cy Truck type: <u>D12</u> No. trucks: _____ Delay min.: <u>12</u> Efficiency: <u>75%</u> Truck type: <u>D10</u> No. trucks: _____ Delay min.: <u>10</u> Efficiency: <u>75%</u> Production: cy/day = 0							
Location 6. 0		Haul & Stockpile Cost			#DIV/0! /cy		

Test Drilling Costs

Test Drill Sites	Activity	# of Holes	Footage	Drill Hours	Rate	Feet of Trail	Equip Hours	Rate	Dollars
------------------	----------	------------	---------	-------------	------	---------------	-------------	------	---------

Hamilton Creek Quarry (Drill Site #1)

C330 Excavator	Build trail					200	1.5	\$144	\$216
Hydraulic Drill	Drilling	12	525	6	\$267				\$1,602
C330 Excavator	Water barring						0.5	\$144	\$72
Mobilization									
C330	Cost in the crushing sheet.								
Hydraulic Drill									\$1,220
Sub-Total									\$3,110

Green Mountain #2 Quarry (Drill Site #2)

C330 Excavator	Build trail					300	2	\$144	\$288
Hydraulic Drill	Drilling	12	780	8	\$267				\$2,136
C330 Excavator	Water barring						0.5	\$144	\$72
Mobilization	Costs are in the crushing cost sheets.								
Sub-Total									\$2,496

Military Ridge Lower Site (Drill Site #3)

Hydraulic Drill	Drilling	4	200	3	\$267				\$801
Mobilization									
Hydraulic Drill	Travel from Green Mountain No. 2. (± 1.45 miles)						1	\$267	\$267
Sub-Total									\$801

Military Ridge Upper Site (Drill Site #4)

C315 Excavator	Build Trail					800	3	\$94	\$282
Hydraulic Drill	Drilling	16	640	8	\$267				\$2,136
C315 Excavator	Water barring						2	\$94	\$188
Mobilization									
C315									\$699
Hydraulic Drill	Travel from Military Ridge Lower Site. (± 2.5 miles)						2	\$267	\$534
Sub-Total									\$3,305

Green Mountain (Drill Site #5)

Hydraulic Drill	Drilling	30	1200	10	\$267				\$2,670
Mobilization									
Hydraulic Drill	Travel from Military Ridge Upper Site. (± 3.45 miles)						3	\$267	\$801
Sub- Total									\$3,471

Green Mountain (Drill Site #6)

C315 Excavator	Build Trail					700	3	\$94	\$282
Hydraulic Drill	Drilling	20	800	9	\$267				\$2,403
C315 Excavator	Water baring						2	\$94	\$188
Mobilization									
C315 Excavator	Travel from Green Mountain #3 to #4 (± 0.3 miles)						1	\$94	\$94
Hydraulic Drill	Travel from Green Mountain #3 to #4 (± 0.3 miles)						1	\$267	\$267
Sub-Total									\$3,234

Total Drilling Cost

\$16,417

By: d.mellison

Date: 07/29/11

Road Maintenance after completion of Projects

Sale: Green Giant
Date: 21-Dec-11
By: C.Bangs
 (Green Mountain/Stanley Creek Junction to Point A and Deep Creek)

Type	Equipment/Rationale	Move in Rate	Hours	Rate	Cost
Post- Project Road Maintenance	Grader 14G (onsite)		60	\$93	\$5,580
	Dump Truck 12CY (2 trucks, onsite)		32	\$73	\$2,336
	FE Loader C966 (onsite)		10	\$77	\$770
	Vibratory Roller (onsite)		60	\$94	\$5,640
	Water Truck 2500 gallon (onsite)		50	\$83	\$4,150
Total					\$18,476

Production Rates	Miles/day	Distance(miles)	Days
Grader	1.0	6.0	6.0

Road Maintenance Cost Summary

Sale: Green Giant
 Date: 27-Dec-11
 By: Kevin Berry FL

MBF: 12,859
 \$\$/MBF: \$2.68

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost	Production Rates			
Progressive Operations 1st Entry	Grader 14G Dump Truck 10CY x 2 FE Loader C966	\$675 \$282 \$675	1	24	\$90	\$2,835	Production Rates	Miles/day	Distance(miles)	Days
			2	8	\$73	\$1,450	Grader	2.5	7.3	2.9
			1	8	\$74	\$1,267				
Progressive Operations 2nd Entry	Grader 14G Dump Truck 10CY x 2 FE Loader C966	\$675 \$282 \$675	1	32	\$90	\$3,555	Production Rates	Miles/day	Distance(miles)	Days
			2	8	\$73	\$1,450	Grader	2.5	10.3	4.1
			1	8	\$74	\$1,267				
Final Road Maintenance	Grader 14G Dump Truck 10CY x 3 FE Loader C966 Vibratory Roller Water Truck 2,500 gallon Labor	\$675 \$423 \$675 \$675 \$165	1	64	\$90	\$6,435	Production Rates	Miles/day	Distance(miles)	Days
			3	16	\$73	\$3,927	Grader	1.5	12.2	8.1
			1	16	\$74	\$1,859	Vibratory Roller*	1.5	12.2	8.1
			1	64	\$72	\$5,283				
						\$5,157				
Total						\$34,485				

*Final Road Maintenance Only

Green Giant TIMBER CRUISE REPORT FY 2012

1. Sale Area Location: Areas 1 through 5 are located in portions of Sections 27, 28, 33, 34, 35, and 36, T5N, R6W, W.M. Clatsop County, OR.
2. Fund Distribution: BOF 100%
Tax Code 8-01 (100%)
3. Sale Acreage by Area:

Area	Treatment	Gross Acres	Existing R/W	GTRA	New R/W	Stream Buffer	Net Acres	Survey Method
1	Modified Clearcut	90	4	2	2	4	78	GIS
2	Modified Clearcut	65	1	0	2	0	62	GIS
3	Modified Clearcut	48	1	0	2	1	44	GIS
4	Modified Clearcut	115	6	3	0	2	104	GIS
5	Right-of-Way	8	0	0	1*	0	7	GIS
TOTALS		326	12	5	7	7	295	

* One acre of right-of-way is outside the sale area but within the same timber type.

4. Cruisers and Cruise Dates:

All areas were cruised by Jon Long, Jasen McCoy, Derek Bangs, Kevin Berry, and Bryce Rodgers on 12/16/2011 and 12/19/2011.

5. Cruise Method and Computation:

Areas 1 through 4 are modified clearcut units and were variable plot cruised using a 40 BAF. These plots are located on a 4 chain by 12 chain grid, with every third plot measured and graded. A total of 64 plots were sampled, with 22 measured and graded plots, and 42 count plots.

Area 5 (Right-of-Way) is six acres of in-sale right-of-way and one acre of out-of-sale right-of-way. Cruise volume from Areas 1 through 4 was applied to these acres.

All cruisers 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	ACRES
1, 2, 3, & 4	GREENGNT	AREA1234	Take	288
5	GREENGNT	AREA 5	R/W	7

6. Timber Description:

Areas 1, 2, 3 and 4 are modified clearcut units, approximately 60 to 70 year-old, consisting of Douglas-fir, western hemlock, true-fir, western red cedar and minor amounts of Sitka Spruce. The average Douglas-fir tree size to be harvested is 22 inches DBH, with an average height of 83 feet to a merchantable top (6 inch d.i.b.). The average hemlock/true-fir tree size is 17 inches DBH and 63 feet to a merchantable top (6 inch d.i.b.). The average red alder tree size is 16 inches DBH and 56 feet to a merchantable top (6 inch d.i.b.). The average western red cedar tree size is 18 inches DBH and 43 feet to a merchantable top (6 inch d.i.b.). The average volume per acre to be harvested (net) is 43.6 MBF.

Area 5 R/W has six acres located within Areas 1 through 4 and one acre outside of Areas 1 through 4 but within the same timber type. Volume includes all trees located with the right-of-way boundary. The average net volume per acre to be harvested in this area is 45.6 MBF.

7. Statistical Analysis and Stand Summary

Statistics for Stand B.F. volumes

Area	Estimated CV	Target SE%	Actual CV	Actual SE%
1, 2, 3, and 4	45%	7%	35%	4.4%

8. Volumes by Species and Log Grade:

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	Camp Run	% D & B	% Sale
Douglas-fir	22"	11,137	8,505	2,345	287	0	2%	87%
Hemlock/True-fir	17"	1,380	778	518	84	0	3%	10%
Red Alder	16"	338	0	0	0	338	< 1%	3%
Cedar	18"	4	2	2	0	0	< 1%	<1%
TOTALS		12,859	9,285	2,865	371	338		

9. Approvals:Prepared by: Kevin BerryDate: Dec 27, 2011Unit Forester Approval: Date: 12/28/11**10. Attachments:**

Cruise Designs and Maps - 4 pages
Volume Reports - 3 pages
Statistics Reports - 1 page
Log Stock Tables -3 pages
Stand Table Summary – 1 page

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Green Giant **Area(s)** 1, 2, 3, & 4

Harvest Type: Modified Clearcut

Approx. Cruise Acres: 311 **Estimated CV%** 45 Net BF or
BA/Acre **SE% Objective** 7

Planned Sale Volume: 11,762 **Estimated Sale Area Value/Acre:** \$ 6,926

A. Cruise Goals: (a) Grade minimum 100 conifer trees:
Determine log grades for sale value; Determine snag and leave tree species and sizes;
Determine "diameter limit" harvest parameters;

B. Cruise Design:

1. Plot Cruises: BAF 40 (Full point; Half point) (circle one)

Cruise Line Direction(s) Area 1 & 3 45' az
Area 2 & 4 360' az

Cruise Line Spacing 12 chains

Cruise Plot Spacing 4 chains

Grade/Count Ratio 1:2

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

C. Tree Measurements:

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

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

3. Top Cruise Diameter (TCD): Minimum top outside bark is 7 " or 40% of dob at 16'
form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP
for trees > 18" dbh.

4. Form Factors: (1) Measure or estimate a 16' form factor for every conifer tree
measured/graded; OR (2) Measure a minimum of 20 form factors for each major
conifer species on the cruise area, and use these to calculate average FF for the
species on the cruise. Hardwood form factors are a Standard 87.

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

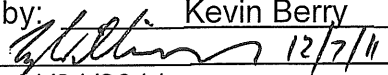
6. **Species, Sort, and Grade Codes:** A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple); DL(Douglas-fir over 30" dbh); HL(Western hemlock over 30" dbh); SL(Sitka spruce over 30" dbh); CL (Western red cedar over 30" dbh); NFL (Noble fir over 30" dbh); SFL (Silver fir over 30" dbh)
 B. Sort: Use code "1" (Domestic).
 C. Grade: A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; R = Camp Run; 0 = Cull

7. **Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally results in higher breakage percentages than gentler topography, and hemlock generally breaks more than D-fir and spruce.

8. **Standard Field Procedures:** Plot Type Cruises: Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at intervisible points, not to exceed 100' apart. On "measure/grade" plots write the tree number and/or tree diameter on at least the first measured tree (clockwise from the line direction) in yellow paint. All trees on the plot may be marked this way, if the cruiser chooses.
ITS and 100% Cruises: Mark cruise "strips" with various colored flagging (not pink). Mark trees measured and graded with yellow paint.

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

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

Cruise Design by: Kevin Berry
 Approved by:  12/7/11
 Date: 11/21/2011

CRUISE MAP

Legend

- lidar07_40ft
- streams
- Fish Stream
- Nonfish Stream
- Unknown Stream
- Timber Sale Boundary
- Existing Surfaced Roads
- New Road Construction

4ch x 12ch spacing
40 BAF

FY2012
Green Giant

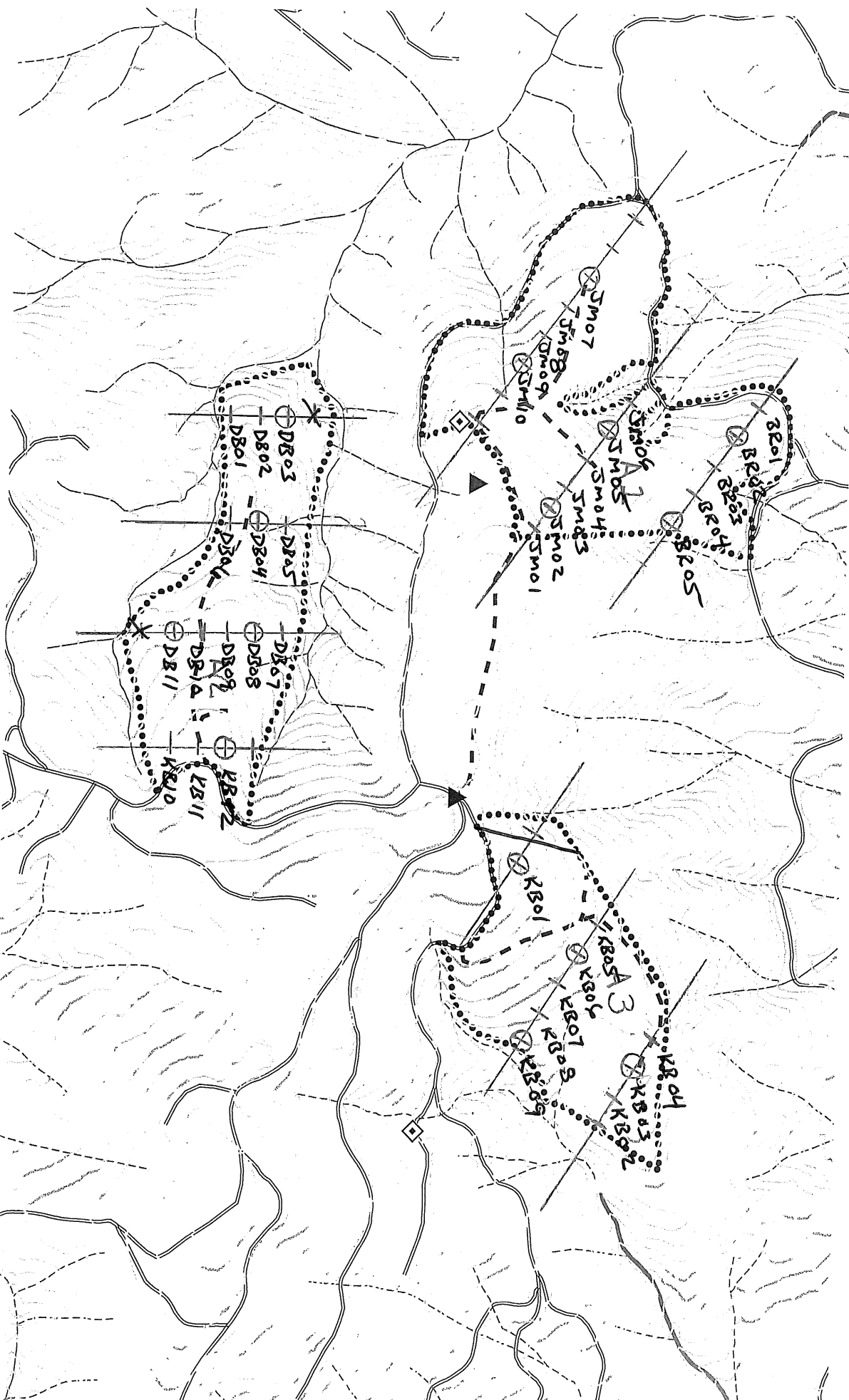
A1, A3 - N45°W
A2 - N°

1:2 ratio Portions Sections 27, 28, 33, and 34, T5N, R6W,

W.M., Clatsop County, Oregon

1,500 750 0
Feet

Approximate Net Acreage:
Area 1 (MC) 87
Area 2 (MC) 59
Area 3 (MC) 52
Area 4 (MC) 113
Total Sale Acreage = 311



CRUISE MAP

40h x 120h Spacing
40 BAF

44 - N

FY2012

Green Giant

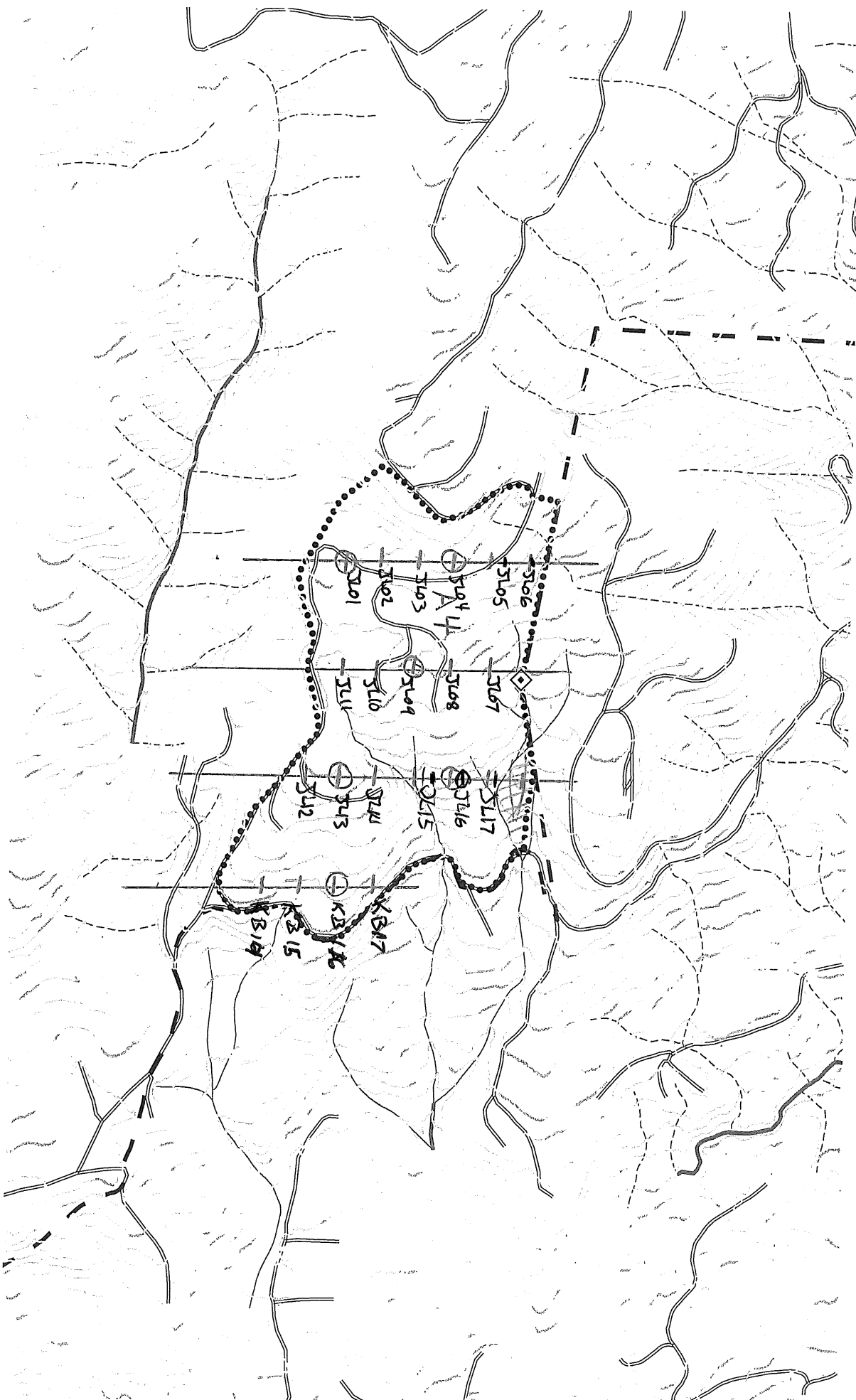
1:2 ratio Portions Sections 27, 28, 33, and 34, T5N, R6W,

W.M., Clatsop County, Oregon

Approximate Net Acreage:
Area 1 (MC) 87
Area 2 (MC) 59
Area 3 (MC) 52
Area 4 (MC) 113
Total Sale Acreage = 311

- Legend
- Ilidar07_40ft
 - streams
 - Fish Stream
 - Nonfish Stream
 - Unknown Stream
 - Timber Sale Boundary
 - Existing Surfaced Roads
 - New Road Construction

1,500 750 0 Feet



TC		PSPCSTGR Species, Sort Grade - Board Foot Volumes (Project)																
T05N R06W S27 TyR/W7.00 T05N R06W S27 TyTAKE288.00			Project: GREENGNT										Page 1					
			Acres 295.00										Date 12/27/2011					
													Time 7:48:33AM					
S Spp	So Gr T rt ad	% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent of Net Board Foot Volume								Average Log			Logs Per /Acre
							Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf	
			4-5	6-11	12-16		17+	12-20	21-30	31-35	36-99							
D	DOCU																	
D	DO2S	76	1.7	29,314	28,829	8,505		2	38	60	3	8	17	72	36	369	2.24	78.1
D	DO3S	21	2.1	8,121	7,950	2,345	1	86	14		1	11	42	46	33	93	0.85	85.9
D	DO4S	3	.4	976	972	287		100			41	59			20	31	0.50	31.6
D Totals		87	1.7	38,411	37,752	11,137	0	22	32	46	3	10	22	65	30	177	1.40	213.2
A	DOCU														3		0.00	1.6
A	DOCR	100		1,145	1,145	338	4	46	50		13	27	36	25	30	88	0.84	13.0
A Totals		3		1,145	1,145	338	4	46	50		13	27	36	25	27	78	0.83	14.7
H	DOCU														6		0.00	1.2
H	DO2S	56	2.9	2,718	2,638	778			75	25			13	87	39	287	1.82	9.2
H	DO3S	37	3.1	1,812	1,756	518		83	17		6	2	28	64	34	96	0.79	18.3
H	DO4S	7		286	286	84	21	79			19	61	21		25	29	0.48	9.8
H Totals		11	2.8	4,816	4,680	1,381	1	36	48	14	3	5	19	73	32	122	1.02	38.5
C	DO2S	40		6	6	2		54	46			46	54		31	122	1.62	.0
C	DO3S	55	7.6	8	8	2		63	37				60	40	36	72	1.00	.1
C	DO4S	5		1	1	0		100			100				15	20	0.62	.0
C Totals		0	4.3	14	14	4		61	39		4	19	55	22	31	76	1.13	.2
S	DOCU														32		0.00	.3
S Totals															32		0.00	.3
Totals			1.8	44,387	43,591	12,859	0	24	34	41	4	10	22	65	30	163	1.31	266.8

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page		1	
				Project: GREENGNT												Date		12/27/2011	
																Time		7:48:34AM	
T05N R06W S27 TTAKE														T05N R06W S27 TTAKE					
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt	
05N		06W		27		AREA1234		TAKE		288.00		64		126		1		W	
S So Gr Spp T rt ad			% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre
								Log Scale Dia.				Log Length				Ln	Bd	CF/ Lf	
								4-5 6-11 12-16 17+				12-20 21-30 31-35 36-99				Ft	Ft		
D DO CU																9		0.00	17.6
D DO 2S			76	1.7 29,284 28,800			8,294	2 38 60				3 8 17 73				36	369	2.24	78.1
D DO 3S			21	2.1 8,117 7,946			2,288	1 86 14				1 11 42 46				33	93	0.85	85.8
D DO 4S			3	.4 976 972			280	100				41 59				20	31	0.50	31.5
D Totals			87	1.7 38,377 37,717			10,863	0 22 32 46				3 10 22 65				30	177	1.40	213.1
H DO CU																6		0.00	1.2
H DO 2S			56	3.0 2,716 2,636			759	75 25				13 87				39	288	1.82	9.2
H DO 3S			37	3.1 1,812 1,756			506	83 17				6 2 28 64				34	96	0.79	18.3
H DO 4S			7	287 287			83	21 79				19 61 21				25	29	0.48	9.8
H Totals			11	2.8 4,815 4,679			1,347	1 36 48 14				3 5 19 73				32	122	1.02	38.5
A DO CU																3		0.00	1.6
A DO CR			100	1,145 1,145			330	4 46 50				13 27 36 25				30	88	0.84	13.0
A Totals			3	1,145 1,145			330	4 46 50				13 27 36 25				27	78	0.83	14.7
S DO CU																32		0.00	.3
S Totals																32		0.00	.3
Type Totals				1.8 44,337 43,541			12,540	0 24 34 41				4 10 22 65				30	163	1.31	266.5

T		Species, Sort Grade - Board Foot Volumes (Type)														Page		1			
TSPCSTGR		Project: GREENGNT														Date		12/27/2011			
																Time		7:48:34AM			
T05N R06W S27 TR/W										T05N R06W S27 TR/W											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
05N	06W	27	AREA 5	R/W	7.00	64	134	1	W												
S So Gr T rt ad Spp			%	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre		
								Log Scale Dia.				Log Length				Ln	Bd	CF/			
			Net BdFt							4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	Ft	Lf	
D	DO	CU																9		0.00	18.4
D	DO	2S	76	1.6	30,541	30,048	210				2	38	60	2	8	18	72	36	369	2.24	81.4
D	DO	3S	21	2.1	8,297	8,123	57	1	86	14				2	11	42	46	33	92	0.85	87.9
D	DO	4S	3	.4	1,008	1,004	7		100					42	58			20	31	0.50	32.6
D Totals			86	1.7	39,846	39,175	274	0	22	32	46			3	10	22	65	30	178	1.41	220.3
H	DO	CU																6		0.00	1.2
H	DO	2S	57	2.7	2,807	2,731	19			77	23					21	79	38	269	1.75	10.1
H	DO	3S	37	3.0	1,789	1,736	12		84	16				5	7	27	61	34	93	0.77	18.8
H	DO	4S	6		271	271	2	21	79					19	61	21		25	29	0.48	9.3
H Totals			10	2.7	4,868	4,739	33	1	35	50	13			3	6	23	68	32	120	1.01	39.3
C	DO	2S	40		239	239	2		54	46					46	54		31	122	1.62	2.0
C	DO	3S	55	7.6	345	319	2		63	37						60	40	36	72	1.00	4.4
C	DO	4S	5		26	26	0		100				100					15	20	0.62	1.3
C Totals			1	4.3	610	584	4		61	39				4	19	55	22	31	76	1.13	7.7
A	DO	CU																3		0.00	1.6
A	DO	CR	100		1,145	1,145	8	4	46	50				13	27	36	25	30	88	0.84	13.0
A Totals			3		1,145	1,145	8	4	46	50				13	27	36	25	27	78	0.83	14.7
S	DO	CU																32		0.00	.3
S Totals																		32		0.00	.3
Type Totals				1.8	46,469	45,643	319	0	24	34	41			4	10	23	63	30	162	1.31	282.3

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT	GREENGNT			DATE	12/27/2011		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
05N	06W	27	AREA1234	TAKE	288.00	64	411	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
PLOTS		TREES									
TOTAL		64		411		6.4					
CRUISE		22		126		5.7		31,697		.4	
DBH COUNT											
REFOREST											
COUNT		42		278		6.6					
BLANKS											
100 %											
STAND SUMMARY											
SAMPLE		TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
TREES		/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
DOUG FIR		107	82.0	21.9	83	214.4	38,377	37,717	9,068	9,068	
WHEMLOCK		13	20.5	16.9	63	31.9	4,815	4,679	1,258	1,258	
R ALDER		5	7.3	15.8	56	10.0	1,145	1,145	328	328	
S SPRUCE		1	.3	20.0	32	.6					
TOTAL		126	110.1	20.7	77	256.9	44,337	43,541	10,654	10,654	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL:	68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR		62.2	6.0	588	626	664					
WHEMLOCK		76.3	22.0	251	322	393					
R ALDER		52.1	25.9	123	166	209					
S SPRUCE											
TOTAL		68.4	6.1	537	571	606	187	47	21		
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR		51.6	6.4	77	82	87					
WHEMLOCK		207.5	25.9	15	20	26					
R ALDER		290.3	36.3	5	7	10					
S SPRUCE		800.0	99.9	0	0	1					
TOTAL		43.6	5.4	104	110	116	76	19	8		
CL:	68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR		46.1	5.8	202	214	227					
WHEMLOCK		206.4	25.8	24	32	40					
R ALDER		293.9	36.7	6	10	14					
S SPRUCE		800.0	99.9	0	1	1					
TOTAL		32.9	4.1	246	257	267	43	11	5		
CL:	68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR		47.2	5.9	35,495	37,717	39,940					
WHEMLOCK		212.3	26.5	3,438	4,679	5,919					
R ALDER		311.6	38.9	700	1,145	1,591					
S SPRUCE											
TOTAL		35.0	4.4	41,636	43,541	45,446	49	12	5		

Log Stock Table - MBF

T05N R06W S27 TyR/W 7.00
T05N R06W S27 TyTAKE 288.00

Project: GREENGNT
Acres 295.00

Page 1
Date 12/27/2011
Time 7:48:35AM

S T Spp	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	2S	16	40		40	.4							40					
D	DO	2S	18	114		114	1.0									114			
D	DO	2S	20	62		62	.6									62			
D	DO	2S	22	70		70	.6									1	69		
D	DO	2S	24	310		309	2.8						52	121	67	69			
D	DO	2S	26	47	27.3	34	.3				34								
D	DO	2S	30	239	1.5	235	2.1									235			
D	DO	2S	32	1,342	1.3	1,325	11.9				59	310	394	369	193				
D	DO	2S	34	149		149	1.3							149					
D	DO	2S	36	54		54	.5							54					
D	DO	2S	40	6,219	1.7	6,112	54.9				87	865	1286	2475	1223	175			
D	DO	3S	14	4		4	.0				4								
D	DO	3S	16	12		12	.1				5	7							
D	DO	3S	17	6		6	.0				6								
D	DO	3S	19	8		8	.1					8							
D	DO	3S	22	52		52	.5				7	20		24					
D	DO	3S	23	18		18	.2				8	10							
D	DO	3S	24	50		50	.4				11	11	27						
D	DO	3S	26	27		27	.2				27								
D	DO	3S	27	16		16	.1				16								
D	DO	3S	28	52		52	.5			42	10								
D	DO	3S	30	44	4.7	41	.4			19	10	12							
D	DO	3S	31	10		10	.1			10									
D	DO	3S	32	958	3.3	926	8.3			35	168	517	177	30					
D	DO	3S	33	9		9	.1			9									
D	DO	3S	34	35		35	.3			21			14						
D	DO	3S	36	139	4.3	133	1.2	15		101		17							
D	DO	3S	38	161		161	1.4			99	15			47					
D	DO	3S	40	796	1.3	786	7.1			69	149	568							
D	DO	4S	11	3		3	.0				3								
D	DO	4S	12	4		4	.0				4								
D	DO	4S	14	17		17	.1			13	4								
D	DO	4S	16	29		29	.3			24	5								
D	DO	4S	17	8		8	.1					8							
D	DO	4S	18	37		37	.3			18	19								
D	DO	4S	20	22	5.5	21	.2			16	5								
D	DO	4S	21	45		45	.4			38	7								

Log Stock Table - MBF

T05N R06W S27 TyR/W	7.00
T05N R06W S27 TyTAKE	288.00

Project: **GREENGNT**
 Acres **295.00**

Page **3**
 Date **12/27/2011**
 Time **7:48:35AM**

S Spp	T	So Gr rt de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches											
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
C		Totals		4	4.3	4	.0			2	1		1	1					
Total		All Species		13,094	1.8	12,859	100.0		47	882	590	1659	1944	2121	3312	1877	426		

TC PSTNDSUM		Stand Table Summary										Page 1			
												Date: 12/27/2011			
T05N R06W S27 TyR/W 7.00 T05N R06W S27 TyTAKE 288.00		Project GREENGNT										Time: 7:48:34AM			
		Acres 295.00										Grown Year:			
S Spec T	Sample		Tot		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals		
	DBH	Trees	FF 16'	Av Ht				Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF
D	13	6	85	84	6.524	6.01	10.87	13.4	44.0		146	478	430	141	
D	14	2	86	36	1.875	2.00	1.88	17.0	30.0		32	56	94	17	
D	15	8	87	92	6.533	8.02	13.07	20.4	75.0		266	980	785	289	
D	16	10	86	99	7.178	10.02	14.36	26.4	95.0		379	1,364	1,118	402	
D	17	6	88	103	3.815	6.01	7.63	31.0	113.3		237	865	698	255	
D	18	10	85	88	5.671	10.02	11.34	28.4	91.0		322	1,032	950	304	
D	19	4	88	107	2.036	4.01	5.09	33.2	114.0		169	580	499	171	
D	20	14	85	109	6.431	14.03	15.62	37.3	131.8		582	2,058	1,718	607	
D	21	4	87	119	1.667	4.01	5.00	33.8	136.7		169	683	499	202	
D	22	18	87	112	6.834	18.04	18.98	40.2	163.2		762	3,098	2,249	914	
D	23	12	90	120	4.168	12.03	11.12	50.0	217.5		556	2,418	1,640	713	
D	24	14	85	113	4.466	14.03	11.48	49.6	191.7		569	2,201	1,679	649	
D	25	14	88	114	4.116	14.03	10.58	50.0	203.3		529	2,152	1,561	635	
D	26	14	89	127	3.805	14.03	10.87	62.5	275.5		679	2,995	2,003	884	
D	27	18	89	129	4.537	18.04	12.60	68.7	313.2		866	3,947	2,553	1,164	
D	28	17	85	131	3.761	16.08	10.82	68.7	293.7		743	3,176	2,192	937	
D	29	13	87	121	2.632	12.07	7.90	71.6	329.4		565	2,602	1,668	768	
D	30	16	87	130	3.267	16.04	10.21	77.0	358.4		786	3,659	2,318	1,079	
D	31	4	88	110	.765	4.01	2.29	65.3	316.7		150	727	442	214	
D	32	4	88	135	.718	4.01	2.15	91.8	445.0		198	958	583	283	
D	33	4	87	125	.675	4.01	1.69	100.8	454.0		170	766	502	226	
D	36	2	85	140	.284	2.00	.85	123.7	606.7		105	516	310	152	
D	37	2	85	125	.268	2.00	.81	118.7	546.7		96	440	282	130	
D	Totals	216	87	107	82.026	214.57	197.20	46.0	191.4		9,076	37,752	26,774	11,137	
H	12	2	88	28	3.118	2.45	3.12	11.0	30.0		34	94	101	28	
H	13	2	89	87	2.657	2.45	5.31	16.0	55.0		85	292	251	86	
H	15	6	86	74	5.986	7.35	9.98	23.8	82.0		237	818	701	241	
H	17	3	90	106	1.589	2.50	3.18	36.3	129.5		115	411	340	121	
H	18	2	89	105	1.386	2.45	4.16	28.3	113.3		118	471	347	139	
H	19	2	90	164	1.244	2.45	2.49	52.5	260.0		131	647	385	191	
H	20	6	87	99	3.367	7.35	6.73	47.7	161.7		321	1,089	947	321	
H	26	2	89	104	.664	2.45	1.99	55.3	226.7		110	452	325	133	
H	31	2	85	108	.467	2.45	.93	114.5	435.0		107	406	316	120	
H	Totals	27	88	85	20.478	31.89	37.89	33.2	123.5		1,259	4,680	3,713	1,381	
A	15	6	87	64	4.889	6.00	8.15	21.6	74.0		176	603	519	178	
A	16	2	87	78	1.432	2.00	2.86	25.0	90.0		72	258	211	76	
A	19	2	87	92	1.016	2.00	2.03	39.5	140.0		80	284	237	84	
A	Totals	10	87	71	7.337	10.00	13.05	25.1	87.8		328	1,145	967	338	
C	15	2	77	62	.087	.11	.09	30.0	55.0		3	5	8	1	
C	17	1	77	68	.034	.05	.03	38.0	90.0		1	3	4	1	
C	23	1	74	65	.019	.05	.04	37.0	85.0		1	3	4	1	
C	28	1	77	55	.012	.05	.02	48.0	115.0		1	3	4	1	
C	Totals	5	77	63	.152	.27	.18	35.4	75.7		6	14	19	4	
S	20	2	90	36	.286	.63									
S	Totals	2	90	36	.286	.63									
Totals		260	87	101	110.280	257.35	248.33	43.0	175.5		10,669	43,591	31,474	12,859	

LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-12-46
GREEN GIANT
PORTIONS OF SECTIONS 27, 28, 33, 34, 35,
AND 36, T5N, R6W, W.M.,
CLATSOP COUNTY, OREGON

Approximate Scale = 1":1,000'

0 250 500 1,000 1,500 2,000 Feet

Approximate Net Acreage

Area 1 (MC) - 78 Acres

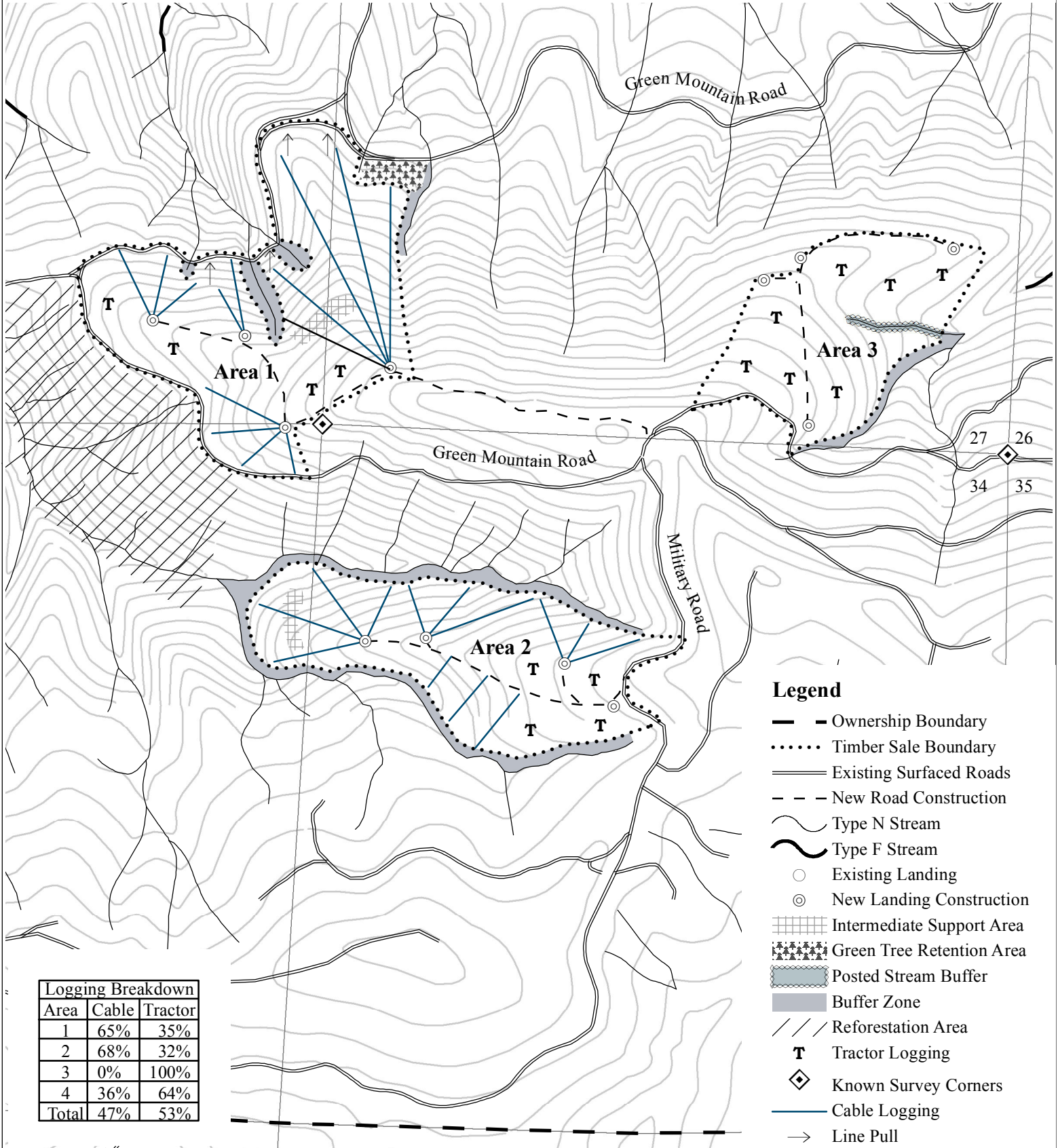
Area 2 (MC) - 62 Acres

Area 3 (MC) - 44 Acres

Area 4 (MC) - 104 Acres

Area 5 (R/W) - 7 Acres

Total Sale Areas - 295 Acres



Logging Breakdown		
Area	Cable	Tractor
1	65%	35%
2	68%	32%
3	0%	100%
4	36%	64%
Total	47%	53%

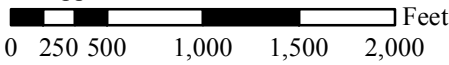
Legend

- Ownership Boundary
- Timber Sale Boundary
- Existing Surfaced Roads
- - - New Road Construction
- ~ Type N Stream
- ~ Type F Stream
- Existing Landing
- ⊙ New Landing Construction
- Intermediate Support Area
- Green Tree Retention Area
- Posted Stream Buffer
- Buffer Zone
- /// Reforestation Area
- T Tractor Logging
- ◆ Known Survey Corners
- Cable Logging
- Line Pull

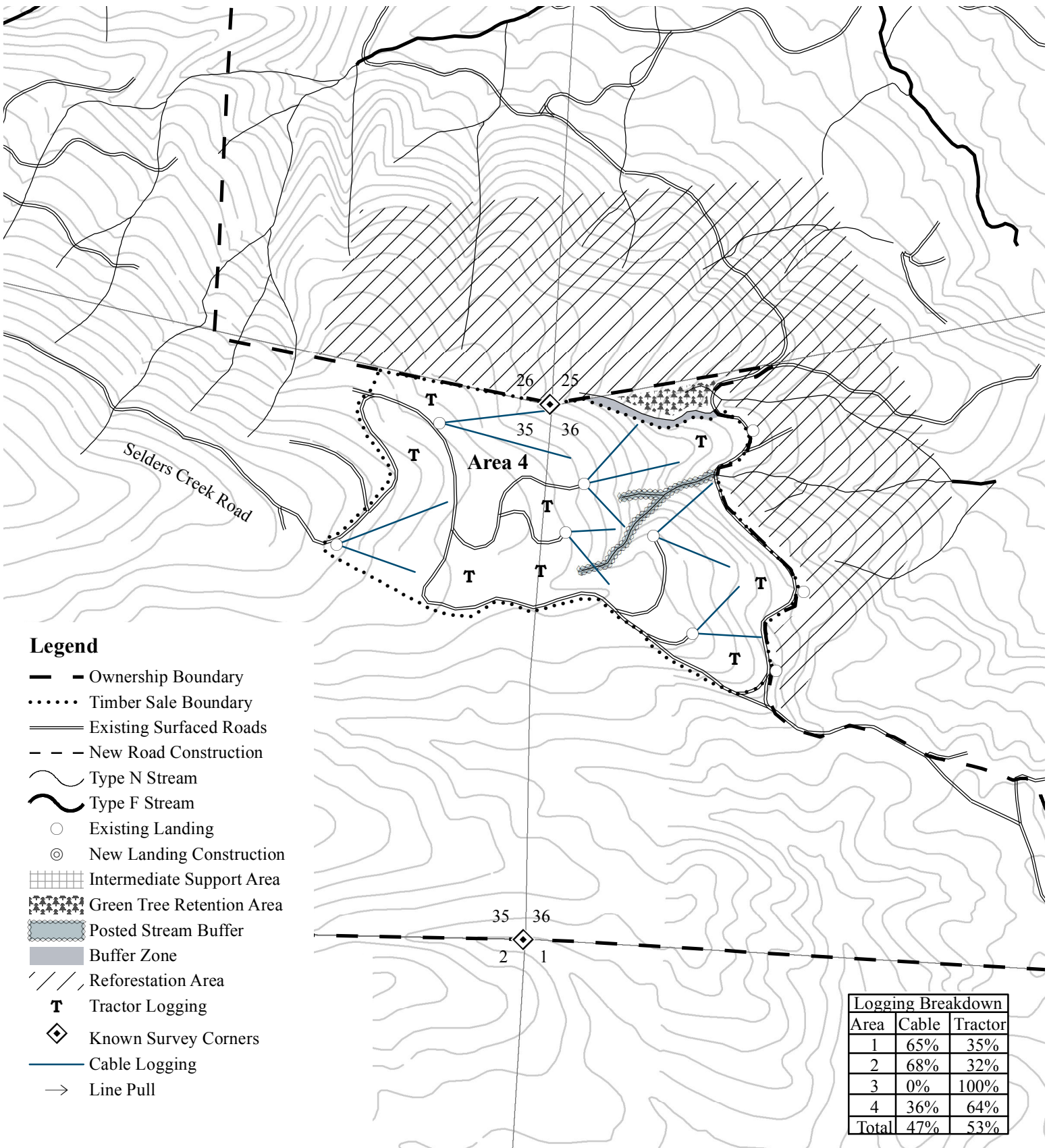
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OF TIMBER SALE CONTRACT NO. 341-12-46
GREEN GIANT
PORTIONS OF SECTIONS 27, 28, 33, 34, 35,
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