



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal Cost Summary Huff 'n Puff Sale 341-07-10

District: Astoria

Date: 7/20/06

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$1,811,294.43	\$592,925.55	\$2,404,219.98
		Project Work	(\$607,320.00)
		Advertised Value	\$1,796,899.98



Timber Sale Appraisal Timber Description Huff 'n Puff Sale 341-07-10

"STEWARDSHIP IN FORESTRY"

District: Astoria

Location: Portions of Sections 11, 12, and 13, T4N, R8W, W. M., Clatsop County, Oregon.

Date: 7/20/06

Stand Stocking: 60%

Species	Avg. DBH	Amortized%	Recovery%
Douglas - Fir	19	0	95
Western Hemlock / Fir	17	0	94
Sitka Spruce	17	0	94
Red Cedar	40	0	96
Alder (Red)	15	0	94

Volume by Grade	Douglas - Fir	Western Hemlock / Fir	Sitka Spruce	Red Cedar	Alder (Red)	Total
SM	41	0	0	0	0	41
2S	2,335	1,124	257	1	0	3,717
3S	915	505	341	0	0	1,761
4S	185	130	96	0	0	411
Camprun	0	0	0	0	1,515	1,515
Total	3,476	1,759	694	1	1,515	7,445

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

Expected Log Markets: Longview and Tillamook.

OTHER COSTS + P&R

Line Pulling Area 3: 20hrs X \$25/hr = \$500

Swing Logging in Area 1: Mobilization: 2hrs X \$87.50/hr = \$175

Shovel Swing: 18hrs X \$87.50/hr = \$1,575

Rigging intermediate supports: 10 supports X 2 hrs each X \$25/hr = \$500

Non-Project Landing Construction: 4 Landings X \$180/landing = \$720

Non-Project Landing Rock: 240cy X \$2.71/cy = \$650

TOTAL OTHER COST + P&R = \$4,120

NON-P&R COSTS

Slash Piling in Areas 1 and 3: 54hrs X \$120/hr = \$6,480

Move in excavator for slash piling: = \$945

Additional cable landing piling:

 Areas 1 and 3: 14 landings @ 5hrs/landing X \$87.50/hr = \$6,125

 Area 2: 1 landing @ 20hrs/landing X \$87.50/hr = \$1,750

TOTAL NON-P&R COST = \$15,300

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

Hauling Cost Calculation:

\$700 - % Profit & Risk (\$700 / 1.15) = \$608 Daily Truck Cost.

\$608 Daily Truck Cost / (3 trips per day x 4 mbf per load) = \$50.66/MBF Gross Hauling Cost.

\$50.66/MBF Gross Hauling Cost - Recovery Percentage Adjustment

(\$50.66 - \$2.53 [5%]) = \$48.13/MBF Net Hauling Cost.



Timber Sale Appraisal

Logging Conditions

Huff 'n Puff

Sale 341-07-10

"STEWARDSHIP IN FORESTRY"

Combination#: 1	Douglas - Fir	5.00%	
	Western Hemlock / Fir	5.00%	
	Sitka Spruce	5.00%	
	Red Cedar	5.00%	
	Alder (Red)	5.00%	
Yarding Distance:	Short (400 ft)		Downhill Yarding: Yes
Logging System:	Shovel		Process: Manual Delimiting
Tree Size:	Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF		
Loads/Day:	9		Bd. Ft./Load: 4,000
Cost/MBF:	\$65.41		
Machines:	Shovel Logger		
Combination#: 2	Douglas - Fir	95.00%	
	Western Hemlock / Fir	95.00%	
	Sitka Spruce	95.00%	
	Red Cedar	95.00%	
	Alder (Red)	95.00%	
Yarding Distance:	Medium (800 ft)		Downhill Yarding: No
Logging System:	Cable: Large Tower >=70		Process: Stroke Delimber
Tree Size:	Mature Private Forest / Regen Cut (250 Bft/tree), 6-11 logs/MBF		
Loads/Day:	6		Bd. Ft./Load: 4,000
Cost/MBF:	\$156.03		
Machines:	Log Loader (A)		
	Stroke Delimber (A)		
	Tower Yarder (Large)		



Timber Sale Appraisal

Logging Costs

Huff 'n Puff

Sale 341-07-10

"STEWARDSHIP IN FORESTRY"

Date: 7/20/06

Operating Seasons: 2.0

Profit & Risk: 15%

Project Costs: \$607,320

Other Costs (P/R): \$4,120

Slash Disposal: \$0

Other Costs: \$15,300

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

Road Maintenance: \$4.08

Hauling Costs

Species	\$/MBF	Trips/Day	MBF/Load
Douglas - Fir	\$48.13	3.0	4.0
Western Hemlock / Fir	\$48.13	3.0	4.0
Sitka Spruce	\$48.13	3.0	4.0
Red Cedar	\$48.13	2.0	4.0
Alder (Red)	\$48.13	3.0	3.5



Timber Sale Appraisal Logging Costs Breakdown Huff 'n Puff Sale 341-07-10

"STEWARDSHIP IN FORESTRY"

Costs	Douglas - Fir	Westem Hemlock / Fir	Sitka Spruce	Red Cedar	Alder (Red)
Logging	151.50	151.50	151.50	151.50	151.50
Road Maintenance	4.29	4.34	4.34	4.25	4.34
Fire Protection	0.73	0.73	0.73	0.73	0.73
Hauling	50.66	51.20	51.20	50.14	51.20
Other (P/R appl.)	0.55	0.55	0.55	0.55	0.55
Profit & Risk	31.16	31.25	31.25	31.08	31.25
Slash Disposal	0.00	0.00	0.00	0.00	0.00
Scaling	2.00	2.00	2.00	2.00	2.00
Other	2.06	2.06	2.06	2.06	2.06
Total	242.95	243.63	243.63	242.31	243.63

Amortization	0.00	0.00	0.00	0.00	0.00
Pond Value	638.51	427.33	405.65	1,000.00	635.00
Stumpage	395.56	183.70	162.02	757.69	391.37
Amortized	0.00	0.00	0.00	0.00	0.00



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal Summary Huff 'n Puff Sale 341-07-10

Amortized

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

Unamortized

	Douglas - Fir	Western Hemlock / Fir	Sitka Spruce	Red Cedar	Alder (Red)
MBF	3,476.00	1,759.00	694.00	1.00	1,515.00
Value	395.56	183.70	162.02	757.69	391.37
Total	1,374,966.56	323,128.30	112,441.88	757.69	592,925.55

Gross Timber Sale Value

Recovery \$2,404,219.98

Prepared by: Kevin Berry

Date: 7/20/06

District: Astoria

Phone: (503) 325-5451

Road Maintenance Cost Summary (Interim and Post Harvest)

Sale: Huff 'n Puff
Date: April 3, 2006
By: Dan Goody

MBF: 7,445
\$/MBF: \$4.08

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost
Interim Operations Entries (2)	Grader 14G	\$570	2	72	\$84	\$7,188
	Dump Truck 12CY	\$119	4	40	\$59	\$2,836
	FE Loader C966	\$570	2	20	\$79	\$2,720
Final Road Maintenance Haul Route	Grader 14G	\$570	1	60	\$84	\$5,610
	Dump Truck 12CY (2 @ \$119)	\$238	1	24	\$59	\$1,654
	FE Loader C966	\$570	1	12	\$79	\$1,518
	Vibratory Roller	\$570	1	60	\$79	\$5,310
	Water Truck 2,500 gallon Labor	\$139	1	45	\$70	\$3,289
				10	\$25	\$250
Total						\$30,375

Interim Operations Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	2.5	18.0	7.2	72.0

Final Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	1.5	9.0	6.0	60.0
Vibratory Roller	1.5	9.0	6.0	60.0

Cougar Mtn Rd., Beaver Ridge Road, Buzzard Ridge Road, Plus New Roads - Totaling 9.0 Miles

SURFACING		Stations/ amount	x	Rate/ sta/amt	Cost
Subgrade prep:	Description				
	Grade, Shape and Ditch 16'	64.83	x	\$18.20	\$1,179.91
	Subgrade Compaction	64.83	x	\$14.80	\$959.48

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 Volume (CY) per	0+00 to 59+63 Number of	
Base Rock	4"-0" crushed		8	station 50	stations 59.63	2,982 \$4.60 \$13,715
Junctions	4"-0" crushed	1A	8	junction 40	junctions 1	40 \$4.60 \$184
Junctions	3/4"-0" crushed	1A	3	junction 20	junctions 1	20 \$4.60 \$92
Turnouts	4"-0" crushed	2+18, 27+17, 33+62	8	TO 22	TO's 3	66 \$4.60 \$304
Turnouts	4"-0" crushed	40+60, 48+85	8	TO 22	TO's 2	44 \$4.60 \$202
Turnouts	3/4"-0" crushed	2+18, 27+17, 33+62	3	TO 10	TO's 3	30 \$4.60 \$138
Turnouts	3/4"-0" crushed	40+60, 48+85	3	TO 10	TO's 2	20 \$4.60 \$92
Curve Widening	4"-0" crushed	1+30 to 2+25, 15+65 to 16+68	8	curve 36	curves 2	72 \$4.60 \$331
Curve Widening	4"-0" crushed	18+40 to 19+25, 26+35 to 26+88	8	curve 36	curves 2	72 \$4.60 \$331
Curve Widening	4"-0" crushed	36+03 to 37+03, 50+07 to 52+50	8	curve 36	curves 2	72 \$4.60 \$331
Curve Widening	3/4"-0" crushed	1+30 to 2+25, 15+65 to 16+68	3	curve 10	curves 2	20 \$4.60 \$92
Curve Widening	3/4"-0" crushed	18+40 to 19+25, 26+35 to 26+88	3	curve 10	curves 2	20 \$4.60 \$92
Curve Widening	3/4"-0" crushed	36+03 to 37+03, 50+07 to 52+50	3	curve 10	curves 2	20 \$4.60 \$92
Turn-Arounds	4"-0" crushed	44+20, 56+70	8	TA 24	TA's 2	48 \$4.60 \$221
Surface Rock	3/4"-0" crushed		3	station 19	stations 59.63	1,133 \$4.60 \$5,212
Energy Dissipators	24"-6" riprap	3+36, 9+85, 12+33	N/A	dissipator 12	dissipators 3.00	36 \$3.97 \$143
Energy Dissipators	24"-6" riprap	18+32, 20+71, 36+14	N/A	dissipator 12	dissipators 3.00	36 \$3.97 \$143
Retaining Wall Backfill	18"-0" crushed	18+40 to 19+15	N/A			858 \$4.60 \$3,947
Landings	4"-0" crushed	16+11	8	Landing 80	Landings 1	80 \$4.60 \$368
Landings	6"-0" pit-run	42+91, 1B	N/A	Landing 80	Landings 2	160 \$4.69 \$750
Total Rock for Road Segment:				1A to 1B		5,828

\$26,780

ROAD SEGMENT 1C to 1D		POINT TO POINT	Sta. to Sta.	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	1C to 1D Volume (CY) per	0+00 to 1+36 Number of	
Base Rock	4"-0" crushed		8	station 50	stations 1.36	68 \$4.60 \$313
Junctions	4"-0" crushed	1C	8	junction 24	junctions 1	24 \$4.60 \$110
Junctions	3/4"-0" crushed	1C	3	junction 10	junctions 1	10 \$4.60 \$46
Landings	6"-0" pit-run	1D	N/A	Landing 80	Landings 1	80 \$4.69 \$375
Total Rock for Road Segment:				1C to 1D		182

\$844

ROAD SEGMENT 1E to 1F		POINT TO POINT	Sta. to Sta.	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	1E to 1F Volume (CY) per	0+00 to 2+15 Number of	
Base Rock	4"-0" crushed		8	station 50	stations 2.15	108 \$4.60 \$495
Junctions	4"-0" crushed	1E	8	junction 24	junctions 1	24 \$4.60 \$110
Junctions	3/4"-0" crushed	1E	3	junction 10	junctions 1	10 \$4.60 \$46
Landings	6"-0" pit-run	1F	N/A	Landing 80	Landings 1	80 \$4.69 \$375
Total Rock for Road Segment:				1E to 1F		222

\$1,026

ROAD SEGMENT 1G to 1H		POINT TO POINT	Sta. to Sta.	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	1G to 1H Volume (CY) per	0+00 to 1+69 Number of	
Base Rock	4"-0" crushed		8	station 50	stations 1.69	85 \$4.60 \$389
Junctions	4"-0" crushed		8	junction 24	junctions 1	24 \$4.60 \$110
Junctions	3/4"-0" crushed		3	junction 10	junctions 1	10 \$4.60 \$46
Landings	6"-0" pit-run		N/A	Landing 80	Landings 1	80 \$4.69 \$375
Total Rock for Road Segment:				1G to 1H		199

\$920

Processing:	Description	No. sta	Rate/ sta	Cost
	Water, Process & Compact 4"-0"	64.83	\$41.40	\$2,684
	Water, Process & Compact 3/4"-0"	59.63	\$41.40	\$2,469
SUB TOTAL FOR SURFACING			6,430	\$36,863

SPECIAL PROJECTS		Description	Cost
SUB TOTAL FOR SPECIAL PROJECTS			\$0

GRAND TOTAL **\$220,827**

Compiled By: Dan Goody Date: 03/29/2008

Assumptions

- Excavator \$120/hr
- Laborer \$30/hr
- Dump Truck (12 CY) \$65/hr
- Flatbed \$75/hr

Used to transport ultra blocks from plant in Vancouver to Hamlet

Item

Unit

Cost/Unit	Quantity	Cost	Notes / Assumptions
\$65	84	\$5,460	
\$50	84	\$4,200	8 loads required-Assume 3 trucks available

Days of Excavator Time	Quantity	Cost	Notes / Assumptions
Unload/Load	3	\$3,000	3 days to unload/load on dump trucks
Haul to wall site	84	\$1,813	5 blocks/load, 6 mile haul (one-way)
Unload/stage	84	\$420	10 min. (exc. & laboree) time to unload 5 blocks/load

2. Initial Excavation

Assume 1,000 CY of excavation required - 600 foot haul to temporary waste area

Cost/Unit	Quantity	Cost	Notes / Assumptions
Excavator	1,000	\$3,330	Assume 3 trucks to haul waste
Haul to waste area	1,000	\$1,730	
Bed Preparation	4	\$720	Assume 4 hours to prepare and compact bed
Pipe Purchase	70	\$88	
Placement	0.7	\$126	Assume 0.7 hours to place pipe (100/hr.)

3. Placement of Blocks/Geogrid

Excavator and 2 laborers

Cost/Unit	Quantity	Cost	Notes / Assumptions
Block Placement	84	\$3,024	Assume 5 blocks/hr
Geogrid Purchase	345	\$1,035	
Geogrid Placement	345	\$414	Assume 60 sy/hr (2 laborers)

4. Granular Backfill Placement

Rock Transport from Stockpile
Spread and Compact

Cost/Unit	Quantity	Cost	Notes / Assumptions
Rock Transport from Stockpile	858	\$0	Costed in Rock Sheet
Spread and Compact	858	\$3,432	Assume hoe can spread/compact 30 cy/hr.

5. Surveying/Administration

Preliminary Staking
Construction Admin.
Geotech Testing

Cost/Unit	Quantity	Cost	Notes / Assumptions
Lump Sump	1	\$2,000	
Preliminary Staking	4	\$2,560	Assume 8 hr. day @ \$80/hr.
Construction Admin.	35	\$2,450	Assume 5 7 hr. days

Total

\$35,801

Fill

Huff 'n Puff Engineered Fill

1A to 1B

Station 21+88 to 24+75

Assumptions

Excavator \$120/hr
 Laborer \$30/hr

Embankment placement costs are already accounted for under the road construction cost estimate
 This estimate only accounts for items above normal construction (geogrid, surveying, inspection, geotech inspection)

Item

Unit

Placement of Geogrid

Item	Unit	Quantity	Cost	Notes / Assumptions
Stratagrid 500 purchase	\$/sy	6,000	\$17,880	
Tensar BX1100 purchase	\$/sy	1,174	\$2,465	
Geogrid Delivery	\$/sy	7,174	\$3,444	Assume 1 round trip flatbed from Portland (7 hours x \$75/hr)
Geogrid Placement	\$/sy	7,174	\$8,609	Assume 50 sy/hr (2 laborers)

Surveying/Administration

Item	Unit	Quantity	Cost	Notes / Assumptions
Preliminary Staking	\$/day	2	\$2,000	
Construction Admin.	\$/day	4	\$2,560	Assume 8 hr. day @ \$80/hr.
Geotech Testing	\$/hr	35	\$2,450	Assume 5 days (7hrs./day)

Total

\$39,408

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Huff 'n Puff
 ROAD: 1X-1Y (8.83), 3A-3B (5.9), 3C-3D (5.35), 3E

NEW CONSTRUCTION: 20.08 STATIONS 0.38 MILES
 IMPROVEMENT: _____ STATIONS _____ MILES

CLEARING & GRUBBING						
Method	Acres/amount	x	Rate	=	Cost	
Piling - Scatter Outside R/W	2.07	x	\$980.00	=	\$2,028.60	
		x		=		
		x		=		
SUB TOTAL FOR CLEARING & GRUBBING					\$2,029	

EXCAVATION						
Material	Cyl/amount	x	Rate	=	Cost	
1X-1Y Common Drift up to 200' (< 50% slopes) \$\$/cy	2,689	x	\$1.28	=	\$3,441.92	
1X-1Y Embankment Compaction \$\$/cy	2,500	x	\$0.45	=	\$1,125.00	
1X-1Y Cut-Slope Rounding (\$\$/sta.)	3	x	\$31.00	=	\$93.00	
3A-3B Field Design (Drift up to 200') \$\$/sta.	5.90	x	\$139.00	=	\$820.10	
3C-3D Field Design (Drift up to 200') \$\$/sta.	5.35	x	\$139.00	=	\$743.65	
		x		=		
Undesigned Landing Construction \$\$/Landing (Landings: 3B, 3D, 1+85 on 3C-3D, 3E)	4	x	\$285.00	=	\$1,140.00	
		x		=		
		x		=		
		x		=		
		x		=		
SUB TOTAL FOR EXCAVATION					\$7,364	

CULVERT MATERIALS AND INSTALLATION								
	Location	Dia/type	Lineal ft.	Rate	Cost	No. bands	Rate	Cost
1X-1Y	2+10	18" CPP	30	\$13.60	\$408.00			
1X-1Y	5+60*	24" CPP	70	\$13.60	\$952.00			
1X-1Y	7+70	18" CPP	30	\$22.00	\$660.00			
			* Indicates culverts not requiring a culvert marker.					
	Description					Quantity	Rate	Cost
Other/miscellaneous:								
Culvert stakes & markers:	6" Fiberglass Markers					2	\$14.10	\$28.20
SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION								\$2,048

Subtotal **\$11,440**

SURFACING		Stations/ amount	x	Rate/ sta/amt	Cost
Subgrade prep:	Description				
	Grade, Shape and Ditch 16'	20.08	x	\$18.20	\$365.46
	Subgrade Compaction	20.08	x	\$14.80	\$297.18

ROAD SEGMENT 1X to 1Y				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	0+00 to 8+83	0+00 to 5+90			
Base Rock	4"-0" crushed		8	station 50	stations 8.83	442		\$4.60	\$2,031	
Junctions	4"-0" crushed	1X	8	junction 36	junctions 1	36		\$4.60	\$168	
Turnouts	4"-0" crushed	4+50	8	TO 22	TO's 1	22		\$4.60	\$101	
Curve Widening	4"-0" crushed	0+77 to 1+52	8	curve 24	curves 1	24		\$4.60	\$110	
Energy Dissipators	24"-6" rtrap	2+10, 7+70	N/A	dissipator 12	dissipators 2	24		\$3.97	\$95	
Landings	6"-0"	4+50, 1Y	N/A	Landing 80	Landings 2	160		\$4.69	\$750	
Total Rock for Road Segment:				1X to 1Y		708				\$3,254

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)	Volume (CY) per	Number of	1C to 1D	0+00 to 5+35			
Base Rock	4"-0" crushed		8	station 50	stations 5.90	295		\$4.60	\$1,357	
Junctions	4"-0" crushed	3A	8	junction 24	junctions 1	24		\$4.60	\$110	
Landings	6"-0" pit-run	3B	N/A	Landing 80	Landings 1	80		\$4.69	\$376	
Total Rock for Road Segment:				1C to 1D		399				\$1,843

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)	Volume (CY) per	Number of	1E to 1F	0+00 to 5+35			
Base Rock	4"-0" crushed		8	station 50	stations 5.35	268		\$4.60	\$1,231	
Junctions	4"-0" crushed	3C	8	junction 24	junctions 1	24		\$4.60	\$110	
Landings	6"-0" pit-run	1+86, 3D	N/A	Landing 80	Landings 2	160		\$4.69	\$750	
Total Rock for Road Segment:				1E to 1F		452				\$2,091

ROAD SEGMENT 3E				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	1G to 1H	N/A			
Landings	6"-0" pit-run	3E	N/A	Landing 80	Landings 1	80		\$4.69	\$376	
Total Rock for Road Segment:				1G to 1H		80				\$375

Processing:		Description	No. sta	Rate/sta	Cost
		Water, Process & Compact 4"-0"	20.08	\$41.40	\$831
SUB TOTAL FOR SURFACING				1,638	\$9,057

SPECIAL PROJECTS		Description	Cost
SUB TOTAL FOR SPECIAL PROJECTS			\$0

GRAND TOTAL **\$20,497**

Compiled By: Dan Goody Date: 03/29/2006

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Huff 'n Puff	NEW CONSTRUCTION: _____	STATIONS	_____	MILES
ROAD: I1-I2(66.7), I3-I4(134.05), I5-I6(28.9), I7-I8(39.75), I9-I10(12.5), I11-I12(7.9), I13-I14(24.4)	IMPROVEMENT: _____	314.20	STATIONS	5.95 MILES

CLEARING & GRUBBING						
Method	Acres/amount	x	Rate	=	Cost	
		x		=		
		x		=		
		x		=		
		x		=		

SUB TOTAL FOR CLEARING & GRUBBING

EXCAVATION						
Material	Cy/amount	x	Rate	=	Cost	
Construct TO on I11-I12 at 4+50 \$\$/hr dozer	3	x	\$126.00	=	\$378.00	
		x		=		
		x		=		
		x		=		
		x		=		
		x		=		
		x		=		
		x		=		
		x		=		
		x		=		
		x		=		

SUB TOTAL FOR EXCAVATION \$378

CULVERT MATERIALS AND INSTALLATION								
	Location	Dia/type	Lineal ft.	Rate	Cost	No. bands	Rate	Cost
I3-I4	124+15	18" CPP	40	\$13.60	\$544.00			
I11-I12	6+65	18" CPP	40	\$13.60	\$544.00			
I13-I14	23+60	18" CPP	40	\$13.60	\$544.00			

* Indicates culverts not requiring a culvert marker.

	Description	Quantity	Rate	Cost
Other/miscellaneous:	Repair culvert inlet @ sta. 36+20 on I7-I8 \$\$/hr	2.00	\$18.00	\$36.00
Culvert stakes & markers:	6' Fiberglass Markers	3	\$14.10	\$42.30

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION \$1,710

Subtotal **\$2,088**

SURFACING			Description		Stations/amount	x	Rate/ sta/amt	Cost			
Subgrade prep:			Grade, Shape and Ditch 16'		314.20	x	\$18.20	\$5,718.44			
			Subgrade Compaction		314.20	x	\$14.80	\$4,650.16			
ROAD SEGMENT I1 to I2											
Application	Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt	Cost	
				I1 to I2		0+00 to 66+70					
Leveling Rock	3/4"-0" crushed		N/A			300		\$4.60	\$1,380		
Surface Rock	3/4"-0" crushed		3	station	19	stations	66.70	\$4.60	\$5,830		
Turnouts	3/4"-0" crushed		3	TO	10	TO's	8	\$4.60	\$368		
Curve Widening	3/4"-0" crushed		3	curve	10	curves	2	\$4.60	\$92		
Junctions	3/4"-0" crushed		N/A	junction	12	junctions	1	\$4.60	\$55		
Total Rock for Road Segment:				I1 to I2		1,679				\$7,725	
ROAD SEGMENT I3 to I4											
Application	Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt	Cost	
				I3 to I4		0+00 to 134+05					
Leveling Rock	1 1/2"-0" crushed		N/A			600		\$4.60	\$2,760		
Surface Rock	1 1/2"-0" crushed		3	station	19	stations	134.05	\$4.60	\$11,716		
Turnouts	1 1/2"-0" crushed		3	TO	10	TO's	16	\$4.60	\$736		
Curve Widening	1 1/2"-0" crushed		3	curve	10	curves	9	\$4.60	\$414		
Junctions	1 1/2"-0" crushed		N/A	junction	12	junctions	7	\$4.60	\$386		
Energy Dissipators	24"-6" riprap	124+15, 127+80	N/A	dissipator	12	dissipators	2	\$3.97	\$95		
Culvert Backfill	1 1/2"-0" crushed	124+15	N/A	culvert	24	culverts	1	\$4.60	\$110		
Total Rock for Road Segment:				I3 to I4		3,529				\$16,218	
ROAD SEGMENT I5 to I6											
Application	Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt	Cost	
				I5 to I6		0+00 to 28+90					
Leveling Rock	4"-0" crushed		N/A			250		\$4.60	\$1,150		
Total Rock for Road Segment:				I5 to I6		250				\$1,150	
ROAD SEGMENT I7 to I8											
Application	Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt	Cost	
				I7 to I8		0+00 to 39+75					
Leveling Rock	1 1/2"-0" crushed		N/A			200		\$4.60	\$920		
Surface Rock	1 1/2"-0" crushed		3	station	19	stations	39.75	\$4.60	\$3,474		
Turnouts	1 1/2"-0" crushed		3	TO	12	TO's	4	\$4.60	\$221		
Curve Widening	1 1/2"-0" crushed		3	curve	10	curves	4	\$4.60	\$184		
Junctions	1 1/2"-0" crushed		3	junction	12	junctions	1	\$4.60	\$55		
Total Rock for Road Segment:				I7 to I8		1,055				\$4,854	
ROAD SEGMENT I9 to I10											
Application	Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt	Cost	
				I9 to I10		0+00 to 12+50					
Leveling Rock	4"-0" crushed		N/A			100		\$4.60	\$460		
Surface Rock	4"-0" crushed		6	station	38	stations	13	\$4.60	\$2,185		
Total Rock for Road Segment:				I9 to I10		575				\$2,645	
ROAD SEGMENT I11 to I12											
Application	Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt	Cost	
				I11 to I12		0+00 to 7+90					
Leveling Rock	1 1/2"-0" crushed		N/A			60		\$4.60	\$276		
Culvert Backfill	1 1/2"-0" crushed	6+65	N/A	culvert	24	culverts	1	\$4.60	\$110		
Total Rock for Road Segment:				I11 to I12		84				\$386	
ROAD SEGMENT I13 to I14											
Application	Rock Size and Type	Location	Depth of Rock (inches)	POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt	Cost	
				I13 to I14		0+00 to 24+40					
Leveling Rock	4"-0" crushed		N/A			120		\$4.60	\$552		
Surface Rock	4"-0" crushed		6	station	38	stations	24.40	\$4.60	\$4,265		
Turnouts	4"-0" crushed		6	TO	17	TO's	2	\$4.60	\$156		
Culvert Backfill	1 1/2"-0" crushed	26+60	N/A	culvert	24	culverts	1	\$4.60	\$110		
Total Rock for Road Segment:				I13 to I14		1,105				\$5,084	
Processing:											
				Description		No.sta	Rate/sta	Cost			
				Water, Process & Compact:		277.40	\$41.40	\$11,484			
				24"-6"	6"-0"	4"-0"	1 1/2"-0"	3/4"-0"	Total		
SUB TOTAL FOR SURFACING				24	0	1,906	4,668	1,679	8,278	8,278	\$59,915
SPECIAL PROJECTS											
				Description		Cost					
				Placement of Dissipater Rock (24cyds. X \$2.00/cyd):		\$48					
SUB TOTAL FOR SPECIAL PROJECTS											
GRAND TOTAL											
\$62,052											
Compiled By: Dan Goody					Date: 03/29/2006						

RIP RAP ROCK COST

SALE NAME: Huff 'n Puff
 PROJECT: Nos. 1 and 2
 QUARRY: Flagpole

ROCK TYPE: Riprap

DATE: 03/29/2006
 BY: D. Goody

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	59.63	72			3.00	0.60	0.50	0.45	0.56	5.11
1X-1Y	8.83	24			3.00	0.60	0.50	0.55	0.23	4.88
13-14	134.05	24			2.20	0.55	0.25	0.23	0.52	3.75
TOTAL	202.51	120								
CUBIC YARD WEIGHTED HAUL					2.84	0.59	0.45	0.43	0.49	
Average Round Trip Distance (miles)									9.58	AVERAGE HAUL
										4.79

ROCK HAUL:

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

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

Ave haul: \$3.97 /cy
 Load: /cy
 Develop: /cy

Production: cy/day = 229

RIP RAP ROCK HAUL COSTS 120 cy @ \$3.97 /cy

SUMMARY OF ROCK DEVELOPMENT AND CRUSHING COSTS

PROJECT NO. 3

Timber Sale Name: Huff'n Puff

Quarry: Flagpole Quarry
 Location: NW1/1 NW1/4 Sec 3 T4NR8W
 County: Clatsop
 By: d.mellison
 Date: 2\15\06

Swell: _____
 Shrink: 16%

ROCK SIZE	REJECT	GRADATION	STOCKPILE CU. YDS.	TRUCK MEAS CU. YDS.	TOTAL CU. YDS.
3/4"-0"	3%	CR	1,569	3,830	5,650
1-1/2"-0"		CR	6,897 *	5,768 **	13,769
4"-0"		CR		7,028	7,028
6"-0"		PR		1,955	1,955
24"-6"		RR		756	756
36"-12'		RR		24	24
TOTAL CUBIC YARDS OF ROCK:			8,466	19,361	29,182

* 6897 cy stockpile measure = 8000 cy truck measure. This quantity is for rock royalty payment to Fibre per Agreement.
 ** 500 cy for rock haul maintenance on Fibre roads.

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
D7 Cat	75	1.40	\$590	\$826
Loader	75	1.40	\$590	\$826
Drill & Compressor (2)	75	1.40	\$1,040	\$1,456
Powder	75	1.40	\$286	\$400
2 Dump Trucks	75	1.40	\$238	\$333
Excavator	75	1.40	\$1,030	\$1,442
SUB TOTAL FOR MOBILIZATION				\$9,913

EQUIPMENT SET UP	TIMES	RATE	COST
3 Stage Crusher		\$2,682	\$2,682
Screening Plants (2)		\$451	\$451
Change Gradation	2	\$424	\$848
SUB TOTAL FOR SET UP COSTS			\$3,981

TOTAL MOBILIZATION & SET UP COSTS **\$13,894**

2) CLEARING & GRUBBING

DESCRIPTION	QUANTITY	UNIT	RATE	COST

TOTAL CLEARING & GRUBBING COSTS

3) EXCAVATION

MATERIAL DESCRIPTION	QUANTITY	UNIT	RATE	COST
Clear Access roads and benches (Cat D7)	4	hrs	\$94.00	\$376

TOTAL EXCAVATION COSTS \$376

4) DEVELOP ROCK

ROCK SUMMARY			METHOD	%	QUANTITY	RATE	COST
Type	Cu. yd.	Vol.	Weight	Ripping			
crushed	26,447		91%	Drill & shoot	100%	29,351	\$1.90
pit run	1,955		7%	Oversize red	3%	852	\$5.04
rip rap	780		3%	Other			
Total	29,182						
reject	170		0.6%				

TOTAL ROCK DEVELOPMENT COSTS \$60,061

5) CALIBRATION & TESTING

DESCRIPTION	NO.	\$/TEST	COST
Calibrate	3	\$400	\$1,200
Calibrate			
Test	11	\$50	\$550
Test			

TOTAL CALIBRATION & TESTING COSTS \$1,750

6) FEEDING & LOADING

DESCRIPTION	CU. YD. QUANTITY	COST CU. YD.	TOTAL COST
Dig & Feed Rock	26,616	\$0.77	\$20,527

TOTAL FEEDING & LOADING COSTS \$20,527

7) ROCK CRUSHING

ROCK SIZE	ROCK TYPE	CU. YD. QUANTITY	CRUSHER TYPE	HOURLY PRODUCTIO	RATE CU. YD.	TOTAL COST
3/4"-0"	crushed	5,650	3 stage w/s	110	\$2.95	\$16,693
1-1/2"-0"	crushed	13,769	3 stage w/s	120	\$2.71	\$37,290
4"-0"	crushed	7,028	2 stage	140	\$1.71	\$12,048

TOTAL ROCK CRUSHING COSTS \$66,031

8) STOCKPILING

STOCKPILE PREPARATION OR CONST					COST
Clear & Grub Stockpile site (scatter/windrow)	0.4	Acres	\$660		\$264
Level Stockpile site (Cat D7)	3	Hrs.	\$94		\$282
Rock Stockpile site (Pit run)	430	Cyds.	\$0.94		\$404
Process Pit run 50cy/sta.) = 50	8.6	Cyds.	\$43.40		\$373

SUB TOTAL \$1,323

HAUL & STOCKPILE STOCKPILE LOCATION	SIZE	# of TRUCKS	CU. YDS.	RATE	COST
1. Fagpole Quarry	11/2"-0"	2	8,000	\$0.94	\$7,509
2.	1-1/2"-0"		8,001		
3. Cougar Mountain Stockpile site		6	1,569	\$3.88	\$6,091
4.					
5.					
6.					

SUB TOTAL \$13,601

TOTAL STOCKPILING COSTS **\$14,924**

9) MISCELLANEOUS COSTS

DESCRIPTION	COST

TOTAL MISCELLANEOUS COSTS

10) GRAND TOTAL: **\$177,564**

\$/Cubic Yard \$6.71

Sale Name: Huff'n Puff
 Project: No. 4, Point 4A
 Project Type: Type F Stream Crossing

Prepared by: d.mellison

Date: 3/22/06

Phase I: Fill, Culvert Removal and Disposal

Qty.	Equipment	Qty (Cy)	(\$/Cy)	Hours	(\$/Hr)	Cost (\$)
1	C330 Excavator w/ 2 cy bucket			10	\$138.00	\$1,380.00
1	12 yard dumb truck			4	\$59.00	\$236.00
	Waste (load, haul, dump)	261	\$3.36			\$876.96
						\$2,492.96

Phase II: Development of Foundation, Channel & De-watering

Qty.	Equipment	Qty (Cy)	(\$/Cy)	Hours	(\$/Hr)	Cost (\$)
1	C330 Excavator w/ 2 cy bucket			12	\$138.00	\$1,656.00
	Load, haul, dump footing pad 11/2"-0" Cr. Rock	12	\$2.61			\$31.32
	24"-6" Rip Rap Footing Foundation Rock (\$/cy)	60	\$7.06			\$423.60
	Load, haul, dump 4"-0" Cr. Rock for Channel	5	\$4.44			\$22.20
1	Water Pump			16	\$7.00	\$112.00
1	Hand Held Tamper			3	\$7.00	\$21.00
1	Rock hammer			4	\$85.00	\$340.00
2	Laborer			26	\$25.00	\$1,300.00
						\$3,906.12

Phase III: Installation and Fill Reconstruction

Qty.	Equipment	Qty (Cy)	(\$/Cy)	Hours	(\$/Hr)	Cost (\$)
2	C330 Excavator w/ 2 cy bucket			26	\$138.00	\$3,588.00
	Backfill with Borrow Material	153	\$5.30			\$810.90
1	Hand Held Tamper			10	\$6.00	\$60.00
2	Laborer			32	\$25.00	\$800.00
	24"-6" Rip-Rap Fill Armor Rock (\$/cy)	156	\$7.06			\$1,101.36
1	Concrete Open Bottom Slab Culvert (E-80 loading), 15' span x 21.28' wide (inc. eng. Fees)				\$20,870	\$20,870.00
						\$27,230.26

Phase IV: Surfacing and Mulching

Qty.	Equipment	Qty (Cy)	(\$/Cy)	Unit	(\$/Unit)	Cost (\$)
	4"-0" Base Rock (\$/cy)	48	\$4.44			\$213.12
	1 1/2"-0" Surface Rock (\$/cy)	36	\$2.61			\$93.96
	Processing Crushed Rock			1	\$72.00	\$72.00
	Straw Mulch w/Seed Application EC mix (\$/ac.)			0.02	\$1,315	\$26.30
						\$405.38

Miscellaneous Costs

Qty.	Equipment			Ft.	(\$/Ft.)	Cost (\$)
	Geotextile Fabric, stabilization, separation, reinforcement ~ 16' width			30	\$1.21	\$36.30
1	Structure Delivery				\$3,500	\$3,500.00
	Mobilization					\$4,052.00
24	Slab Culvert Joint Sealant				\$4.75	\$114.00
						\$7,702.30

Total Project Cost = \$41,737.02

Sale Name: Huff'n Puff
 Project: No. 4, Point 4B
 Project Type: Type F Stream Crossing

Prepared by: d.mellison

Date: 3/22/06

Phase I: Fill, Culvert Removal and Disposal

Qty.	Equipment	Qty (Cy)	(\$/Cy)	Hours	(\$/Hr)	Cost (\$)
1	C330 Excavator w/ 2 cy bucket			13	\$138.00	\$1,794.00
	Cat D7 (Waste site spread and shape)			5	\$94.00	\$470.00
1	12 yard dumb truck			4	\$59.00	\$236.00
	Waste (load, haul, dump)	720	\$3.36			\$2,419.20
						\$4,919.20

Phase II: Development of Foundation, Channel & De-watering

Qty.	Equipment	Qty (Cy)	(\$/Cy)	Hours	(\$/Hr)	Cost (\$)
1	C330 Excavator w/ 2 cy bucket			12	\$138.00	\$1,656.00
	Load, haul, dump bedding 1 1/2"-0" Cr. Rock	36	\$2.61			\$93.96
	24"-6" Rip Rap Footing Foundation Rock (\$/cy)	48	\$7.06			\$338.88
1	Water Pump			44	\$7.00	\$308.00
1	Rock hammer			4	\$85.00	\$340.00
2	Laborer			10	\$25.00	\$500.00
						\$3,236.84

Phase III: Installation and Fill Reconstruction

Qty.	Equipment	Unit	(\$/unit)	Hours	(\$/Hr)	Cost (\$)
2	C330 Excavator w/ 2 cy bucket			32	\$138.00	\$4,416.00
	Skidder			2	\$62.00	\$124.00
	Motorized Buggy			8	\$10.00	\$80.00
	Backfill with Borrow Material	82	\$5.30			\$434.60
	Backfill 1 1/2"-0" Crushed Rock	408	\$2.61			\$1,064.88
1	Hand Held Tamper			18	\$6.00	\$108.00
2	Laborer			53	\$25.00	\$1,325.00
	24"-6" Rip-Rap Fill Armor Rock (\$/cy)	96	\$7.06			\$677.76
1	120" Aluminized Steel Cul. (10 ga)(delivered) (3"x1" corrugation) (step bevel both ends)	72				\$13,817.00
						\$22,047.24

Phase IV: Surfacing and Mulching

Qty.	Equipment	Qty (Cy)	(\$/Cy)	Unit	(\$/Unit)	Cost (\$)
	4"-0" Base Rock (\$/cy)	72	\$4.44			\$319.68
	1 1/2"-0" Surface Rock (\$/cy)	36	\$2.61			\$93.96
	Processing Crushed Rock			1	\$101.00	\$101.00
	Straw Mulch w/Seed Application EC mix (\$/ac.)			0.04	\$1,315	\$52.60
						\$567.24

Miscellaneous Costs

Qty.	Equipment			Ft.	(\$/Ft.)	Cost (\$)
	Geotextile Fabric, stabilization, separation, reinforcement ~ 16' width			30	\$1.21	\$36.30
	Mobilization					\$209.00
24	Slab Culvert Joint Sealant				\$4.75	\$114.00
						\$359.30

Total Project Cost = \$31,129.82

Sale Name: Huff'n Puff
 Project: No. 4, Point 4C
 Project Type: Type F Stream Crossing

Prepared by: d.mellison

Date: 3/22/06

Phase I: Fill, Culvert Removal and Disposal

Qty.	Equipment	Qty (Cy)	(\$/Cy)	Hours	(\$/Hr)	Cost (\$)
1	C330 Excavator w/ 2 cy bucket			8.5	\$138.00	\$1,173.00
1	12 yard dumb truck			4	\$59.00	\$236.00
	Waste (load, haul, dump)	72	\$3.36			\$241.92
						\$1,650.92

Phase II: Development of Foundation, Channel & De-watering

Qty.	Equipment	Qty (Cy)	(\$/Cy)	Hours	(\$/Hr)	Cost (\$)
1	C330 Excavator w/ 2 cy bucket			10	\$138.00	\$1,380.00
	Load, haul, dump footing pad 1 1/2"-0" Cr. Rock	12	\$2.61			\$31.32
	24"-6" Rip Rap Footing Foundation Rock (\$/cy)	72	\$7.06			\$508.32
	Waste (load, haul, dump)	193	\$3.36			\$648.48
	Load, haul, dump 4"-0" Cr. Rock for Channel	15	\$4.44			\$66.60
1	Water Pump			16	\$7.00	\$112.00
1	Hand Held Tamper			3	\$7.00	\$21.00
1	Rock hammer			12	\$85.00	\$1,020.00
2	Laborer			34	\$25.00	\$1,700.00
						\$5,487.72

Phase III: Installation and Fill Reconstruction

Qty.	Equipment	Qty (Cy)	(\$/Cy)	Hours	(\$/Hr)	Cost (\$)
2	C330 Excavator w/ 2 cy bucket			26	\$138.00	\$3,588.00
	Backfill with Borrow Material	107	\$5.30			\$567.10
1	Hand Held Tamper			8	\$6.00	\$48.00
2	Laborer			30	\$25.00	\$750.00
	24"-6" Rip-Rap Fill Armor Rock (\$/cy)	228	\$7.06			\$1,609.68
1	Concrete Open Bottom Slab Culvert (E-80 loading), 10' span x 22.17' wide (inc. eng. Fees)				\$18,570	\$18,570.00
						\$25,132.78

Phase IV: Surfacing and Mulching

Qty.	Equipment	Qty (Cy)	(\$/Cy)	Unit	(\$/Unit)	Cost (\$)
	4"-0" Base Rock (\$/cy)	60	\$4.44			\$266.40
	1 1/2"-0" Surface Rock (\$/cy)	60	\$2.61			\$156.60
	Processing Crushed Rock			1.25	\$89.40	\$111.75
	Straw Mulch w/Seed Application EC mix (\$/ac.)			0.04	\$1,315	\$52.60
						\$587.35

Miscellaneous Costs

Qty.	Equipment			Ft.	(\$/Ft.)	Cost (\$)
	Geotextile Fabric, stabilization, separation, reinforcement ~ 16' width			30	\$1.21	\$36.30
1	Structure Delivery				\$3,500	\$3,500.00
	Mobilization					\$347.00
24	Slab Culvert Joint Sealant				\$4.75	\$114.00
						\$3,997.30

Total Project Cost = \$36,856.07

SALE NAME: Huff "n" Puff
 PROJECT: Type F's
 QUARRY: Fall Creek

ROCK TYPE: 4"-0"

DATE: 3/21/06
 BY: d.mellison

Segment	Stations	Cubic Yards							Total
		Base	Running	Turnout	Channel	Stockpile	Curves	F.Widen	
4B	1.00	72							72
4A	1.00	48			5				53
4C	1.25	60			15				75
									0
									0
									0
									0
									0
									0
									0
									0
Grand Total	3.25	180	0	0	20	0	0	0	200

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	
4B	1.00	72				1.19	0.60	0.20	0.20	2.19
4A	1.00	53				0.88	0.60	0.20	0.20	1.88
4C	1.25	75				1.88	0.60	0.20	0.20	2.88
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
TOTAL	3.25	200								
CUBIC YARD WEIGHTED HAUL		CU. YD.	0.00	0.00	0.00	1.37	0.60	0.20	0.20	AVERAGE HAUL 2.37

Average Round Trip Distance (miles) 4.73

ROCK HAUL:

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

Ave haul: \$2.44 /cy
 Load: \$0.70 /cy
 Spread: \$1.30 /cy

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

Truck type: D10 No. trucks: _____
 Delay min.: 10 Efficiency: 85%

Production: cy/day = 580

CRUSHED ROCK HAUL COSTS 200 cy @ \$4.44 /cy

RIP RAP ROCK COST

SALE NAME: Huff "n" Puff
 PROJECT: Type F's
 QUARRY: Fall Creek

ROCK TYPE: Rip Rap

DATE: 3/21/06
 BY: d.mellison

Segment	Stations	Cubic Yards					Misc	Total
		Dissapator	Fill Armor	SE Armor	Ret Bouldr			
4B			96	24	24		144	
4A			156	60			216	
4C			228	72			300	
Grand Total			480	156	24		660	

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	
4B		144				1.19	0.60	0.20	0.20	2.19
4A		216				0.88	0.60	0.20	0.20	1.88
4C		300				1.88	0.60	0.20	0.20	2.88
TOTAL		660				1.40	0.60	0.20	0.20	AVERAGE HAUL 2.40
CUBIC YARD WEIGHTED HAUL		STA./NO.	CU. YD.			1.40	0.60	0.20	0.20	
Average Round Trip Distance (miles)									4.80	

ROCK HAUL:

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

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

Ave haul: \$2.46 /cy
 Load: \$1.50 /cy
 Develop: \$3.10 /cy

Production: cy/day = 383

RIP RAP ROCK HAUL COSTS

660 cy @ \$7.06 /cy

SALE NAME: Huff "n" Puff
 PROJECT: Type F's
 QUARRY: Fall Creek

ROCK TYPE: Borrow

DATE: 2/13/06
 BY: d.mellison

Segment	Stations	Cubic Yards							Total
		Base	Running	Turnout	Borrow	Stockpile	Curves	F.Widen	
4B					82				82
4A					153				153
4C					107				107
									0
									0
									0
									0
									0
									0
									0
									0
Grand Total	0.00	0	0	0	342	0	0	0	342

0

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	
4B	0.00	82				1.19	0.60	0.20	0.20	2.19
4A	0.00	153				0.88	0.60	0.20	0.20	1.88
4C	0.00	107				1.88	0.60	0.20	0.20	2.88
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
0	0.00	0								0.00
TOTAL	0.00	342								
STA./NO.		CU. YD.								AVERAGE HAUL
LENGTH WEIGHT										0.00
CUBIC YARD WEIGHTED HAUL			0.00	0.00	0.00	1.27	0.60	0.20	0.20	2.27
Average Round Trip Distance (miles)									4.53	

ROCK HAUL:

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

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

Truck type: D10 No. trucks: _____
 Delay min.: 10 Efficiency: 85%

Ave haul: \$2.38 /cy
 Load: \$1.06 /cy
 Spread: \$1.86 /cy

Production: cy/day = 594

CRUSHED ROCK HAUL COSTS 342 cy @ \$5.30 /cy

Loading: \$79/hr*8 hr/594 cy/day = \$1.06
 Spreading: \$138/hr* 8 hrs/594 cy/day = \$1.86

Projects Road Maintenance Cost Summary

Sale: Huff 'n Puff
Date: March 29, 2006
By: Dan Goody

Type	Equipment/Rationale	Hours	Rate	Cost
Interim	Grader 14G	16	\$84	\$1,344
	Dump Truck 12CY	10	\$59	\$590
	FE Loader C966	10	\$79	\$790
Post-Projects Road	Grader 14G	29	\$84	\$2,436
	Dump Truck 12CY (2 trucks)	16	\$59	\$944
	FE Loader C966	8	\$79	\$632
	Vibratory Roller	29	\$79	\$2,291
	Water Truck 2500 gallon	16	\$70	\$1,120
Total				\$10,147

Final Road Maintenance

Production Rates
 Grader
 Vibratory Roller

Miles/day	Distance(miles)	Days	Hours
1.5	4.4	2.9	29.33
1.5	4.4	2.9	29.33

TIMBER CRUISE REPORT

Huff 'n Puff FY 2006

- Sale Area Location:**
Portions of Sections 11, 12 and 13, T4N, R8W, W.M., Clatsop County, Oregon.
- Fund Distribution:**
BOF = 100% Tax Code = 8-01
LCR Balance = \$1,566.49 – Section 12, T4N, R8W, W.M.
- Sale Acreage and Treatments by Area:**

Area	Harvest Type	Gross Acres	Existing R/W	Stream Buffers	Net Acres	Survey Method
1	MC	88.3	0	16.1	72.2	GIS
2	MC	106.7	0	14.6	92.1	GIS
3	MC	77.3	1.8	3.8	71.7	GIS
4	R/W	2.7			2.7	Length X Width
TOTAL		275.0	1.8	34.5	238.7	

- Cruisers and Cruise Dates:**
Area 1, 2 and 3 were cruised by Bryce Rodgers, Ed Holloran Dave Horning, and Kraig Kirkpatrick in March 2006.
- Cruise Method and Computations:**
The 3 sale areas were combined into 1 cruise for statistical purposes. The cruise was designed for a variable plot sample using a 40 Basal Area Factor for conifer species and a 33.61 Basal Area Factor for hardwood species. 94 plots were sampled with 43 cruise plots (2:1 ratio) on a 6 x 4 chain grid. Area 4 (R/W) includes only portions of new road construction outside the sale areas. The data was download to the Atterbury SUPER A.C.E. program and computations were made at the Astoria District Office. See the attached Cruise Design for more details on the cruise method.
- Timber Description:**
Area 1, 2, & 3 (MC) – These stands are Modified Clearcuts, about 60 to 70 years old, consisting of small to medium sized mixed hardwood and conifer. Red alder is the major hardwood species. The Alder occurs in marginally stocked stands that dominate the lower 2/3 of the slope. Douglas-fir and western hemlock are the major conifer species and occur in pure isolated patches mainly on the upper 1/3 of the slope and scattered throughout the sale areas. The harvest will remove approximately 146 trees per acre and 31.0 MBF per acre.

7. **Statistical Analysis and Stand Summary:** Evaluated on Net BF/Acre.

Area	Target CV %	Target SE %	Actual CV %	Actual SE %
1,2,3	70	9.0	58.6	6.0


8. **Volumes by Species and Sale Areas:** (See the Species, Sort, Grade, and the Log Stock Table attached.) Volumes do not include "in-growth". The majority of defect and breakage was culled during the cruise. The total net MBF volumes by species and grade are as follows:

Species	DBH	Net. MBF	Spec. Mill	2 Saw	3 Saw	4 Saw	Camp Run	% D & B	Sale%
Douglas-fir	18.6	3,476	41	2,335	915	185	0	9.7	47
W. Hemlock & True fir	17.1	1,759	0	1,124	505	130	0	9.4	24
Sitka Spruce & other conifers	16.6	694	0	257	341	96	0	9.7	8
Cedar	40	1	0	1	0	0	0	5.0	1
Red Alder & other hardwoods*	15.1	1,515	0	0	0	0	1,515	9.5	19
Totals		7,445							

*Approximately 34 MBF of the hardwoods is bigleaf maple.

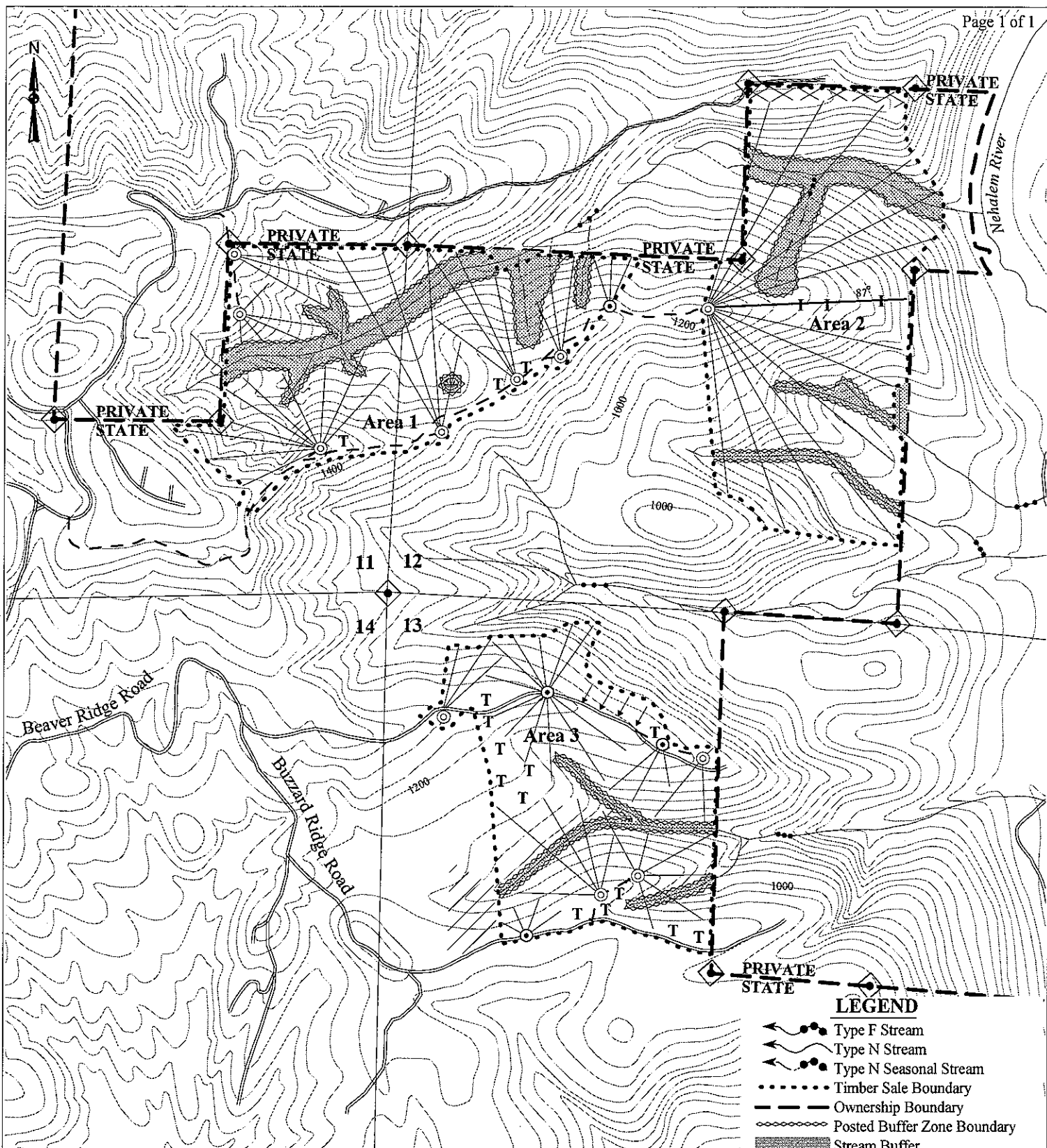
9. **Approvals:**

Prepared by: Kevin Berry Date: March 6, 2006

Approved by:  Date: 3/22/06

10. **Attachments:**

- Species, Sort & Grade (Volume) Report – 1 page.
- Statistical Reports – 5 pages.
- Log Stock Table-MBF (take) – 3 pages.
- Cruise Designs and Maps – 2 pages



APPROXIMATE ACREAGE

AREA	MC ACRES
AREA 1	72
AREA 2	92
AREA 3	72
AREA 4 RW	2
TOTAL ALL AREAS	238

LOGGING BREAKDOWN

AREA	TRACTOR	CABLE
1	2%	98%
2	0%	100%
3	13%	87%
TOTAL	5%	95%

LOGGING PLAN MAP
 OF TIMBER SALE CONTRACT NO. 341-07-10
 HUFF 'N PUFF
 PORTIONS OF SECTIONS
 11, 12, & 13, T4N, R8W,
 W.M., CLATSOP COUNTY, OREGON.
 APPROX. SCALE 1"=1,000'

- LEGEND**
- Type F Stream
 - Type N Stream
 - Type N Seasonal Stream
 - Timber Sale Boundary
 - Ownership Boundary
 - Posted Buffer Zone Boundary
 - Stream Buffer
 - Pond
 - Reforestation Area
 - Surfaced Road
 - New Road Construction
 - Landing to Construct
 - Loggers Choice Landing
 - Cable Yarding
 - Tractor Yarding
 - Line Pulling
 - Intermediate Support Area
 - Swing Logging Area
 - Equipment Access Road
 - Known Land Survey Corner

TC PSPCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																	
T04N R08W S12 TyR/W 2.70		Project: HUFFPUFF										Page 1							
T04N R08W S12 TyTAKE 236.00		Acres 238.70										Date 3/17/2006							
												Time 3:47:23PM							
S Spp	So Gr	T rt ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent of Net Board Foot Volume								Average Log			Logs Per /Acre
				Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/Lf	
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99				
D	70	CU		100.0	261											5		0.00	4.3
D	70	2S	31	1.6	9,941	9,781	2,335			54	46	8	2	29	60	35	331	2.11	29.6
D	70	3S	12	.4	3,849	3,833	915		90	10	0	3	7	34	56	34	96	0.82	40.1
D	70	4S	2		776	776	185		100			49	51			20	27	0.44	29.2
D	70	SM	1		171	171	41			100					100	40	400	2.43	4
D Totals			47	2.9	14,997	14,561	3,476		29	40	31	9	6	29	56	29	141	1.19	103.6
A	70	CU		100.0	315											10		0.00	4.8
A	70	CR	20	.4	6,225	6,202	1,481		63	33	4	17	29	17	37	27	82	0.90	75.2
A Totals			20	5.2	6,540	6,202	1,481		63	33	4	17	29	17	37	26	77	0.88	80.0
H	70	CU		100.0	377											10		0.00	4.9
H	70	2S	14	.3	4,524	4,509	1,076			74	26		2	53	45	35	298	1.91	15.1
H	70	3S	7	1.0	2,125	2,104	502		92	0	8	4	4	40	52	34	104	0.86	20.2
H	70	4S	2		541	541	130 129		100			62	38			20	28	0.50	19.0
H Totals			23	5.4	7,567	7,154	1,708		35	46	19	6	5	45	44	28	121	1.09	59.2
S	70	CU		100.0	65											10		0.00	.2
S	70	2S	3		1,077	1,077	257			42	58			51	49	36	383	2.30	2.8
S	70	3S	5	1.5	1,451	1,429	341		36	28	36	3	3	11	83	36	160	1.26	9.0
S	70	4S	1		403	403	96		100	0		38	31	17	15	24	37	0.61	10.9
S Totals			9	2.9	2,996	2,908	694		32	29	39	7	6	27	61	30	127	1.16	22.8
M	70	CU		100.0	30											8		0.00	.8
M	70	3S	0	4.2	149	143	34		100			8	75	18		26	57	0.86	2.5
M Totals			0	20.0	179	143	34		100			8	75	18		22	43	0.78	3.3
GF	70	2S	1		201	201	48			17	83			100		32	511	2.91	4
GF	70	3S	0		10	10	2		100					100		32	140	1.50	.1
GF	70	4S	0		6	6	2 1		100					100		30	50	0.80	.1
GF Totals			1		217	217	52		7	16	76			3	97	32	368	2.31	6
C	70	CU		100.0	1											6		0.00	.0
C	70	2S	0	6.4	4	4	1				100			100		32	1030	6.66	.0
C	70	3S	0		0	0	0		100					100		40	70	1.70	.0
C Totals			0	17.9	5	4	1		6		94			94	6	26	367	3.60	.0
Totals				4.0	32,501	31,191	7,445		37	39	24	10	11	30	49	28	116	1.08	269.6

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT HUFFPUFF		DATE 3/17/2006				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	08W	12	AREAS 1 2 3	TAKE	236.00	94	562	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL	94	562	6.0							
CRUISE	34	194	5.7	34,438			6.			
DBH COUNT										
REFOREST										
COUNT	59	366	6.2							
BLANKS	1									
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	66	47.1	18.6	67		88.5	14,987	14,552	3,641	3,595
R ALDER	57	51.9	15.1	42		64.4	6,540	6,201	1,902	1,825
WHEMLOCK	43	29.0	17.1	58		46.4	7,555	7,143	1,857	1,782
S SPRUCE	18	15.0	16.6	47		22.6	2,991	2,904	811	799
BL MAPLE	8	2.7	15.5	27		3.6	179	143	65	57
GR FIR	2	.2	28.2	98	0	.9	217	217	43	43
TOTAL	194	145.9	16.9	53		226.2	32,469	31,161	8,320	8,101
	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH		5	10		15
DOUG FIR	125.8	13.0	41	47	53					
R ALDER	109.2	11.3	46	52	58					
WHEMLOCK	164.3	16.9	24	29	34					
S SPRUCE	236.3	24.4	11	15	19					
BL MAPLE	349.6	36.1	2	3	4					
GR FIR	969.5	100.0		0	0					
TOTAL	61.3	6.3	137	146	155		150	38		17
	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH		5	10		15
DOUG FIR	116.1	12.0	78	89	99					
R ALDER	105.5	10.9	57	64	71					
WHEMLOCK	151.4	15.6	39	46	54					
S SPRUCE	246.1	25.4	17	23	28					
BL MAPLE	350.6	36.2	2	4	5					
GR FIR	969.5	100.0		1	2					
TOTAL	56.3	5.8	213	226	239		127	32		14
	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH		5	10		15
DOUG FIR	115.7	11.9	12,816	14,552	16,289					
R ALDER	108.2	11.2	5,509	6,201	6,893					
WHEMLOCK	153.7	15.9	6,011	7,143	8,276					
S SPRUCE	266.6	27.5	2,105	2,904	3,702					
BL MAPLE	408.9	42.2	83	143	203					
GR FIR	969.5	100.0		217	434					
TOTAL	64.7	6.7	29,082	31,161	33,240		167	42		19

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	08W	12	AREAS 1 2 3	LV	236.00	94	92	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	94	92	1.0		
CRUISE	26	45	1.7	2,452	1.8
DBH COUNT					
REFOREST					
COUNT	28	41	1.5		
BLANKS	40				
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
SNAG	33	5.4	27.4	49		22.1				
HEMLEAV	1	.8	36.0	100		6.0	1,247	1,247	291	291
DOUGLEAV	5	1.4	23.6	91		4.3	800	747	192	192
CEDLEAV	1	.3	40.0	80		3.0	457	375	105	96
SPRUCELV	3	1.5	17.4	54		2.6	392	392	101	101
ALDRLEAV	2	.9	15.0	42		1.1	35	35	38	38
TOTAL	45	10.4	26.2	60		38.9	2,932	2,797	725	717

SD:	COEFF VAR.%	S.E.%	TREES/ACRE			# OF PLOTS REQ.		INF. POP.
1			LOW	AVG	HIGH	5	10	15
SNAG	192.8	19.9	4	5	6			
HEMLEAV	310.7	32.0	1	1	1			
DOUGLEAV	301.9	31.1	1	1	2			
CEDLEAV	491.9	50.7	0	0	1			
SPRUCELV	539.2	55.6	1	2	2			
ALDRLEAV	719.5	74.2	0	1	2			
TOTAL	137.9	14.2	9	10	12	760	190	84

SD:	COEFF VAR.%	S.E.%	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.
1			LOW	AVG	HIGH	5	10	15
SNAG	146.7	15.1	19	22	25			
HEMLEAV	310.7	32.0	4	6	8			
DOUGLEAV	291.4	30.1	3	4	6			
CEDLEAV	491.9	50.7	1	3	4			
SPRUCELV	448.4	46.2	1	3	4			
ALDRLEAV	719.5	74.2	0	1	2			
TOTAL	101.8	10.5	35	39	43	415	104	46

SD:	COEFF VAR.%	S.E.%	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
1			LOW	AVG	HIGH	5	10	15
SNAG								
HEMLEAV	310.7	32.0	848	1,247	1,647			
DOUGLEAV	291.8	30.1	522	747	972			
CEDLEAV	491.9	50.7	185	375	566			
SPRUCELV	433.9	44.7	217	392	568			
ALDRLEAV	719.5	74.2	9	35	61			
TOTAL	182.5	18.8	2,270	2,797	3,324	1,333	333	148

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT HUFFPUFF				DATE 3/17/2006		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	08W	12	AREAS 1 2 3	0001	236.00	94	654	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL	94	654	7.0							
CRUISE	44	239	5.4	36,891			6			
DBH COUNT										
REFOREST										
COUNT	50	363	7.3							
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	66	47.1	18.6	67		88.5	14,987	14,552	3,641	3,595
R ALDER	57	51.9	15.1	42		64.4	6,540	6,201	1,902	1,825
WHEMLOCK	43	29.0	17.1	58		46.4	7,555	7,143	1,857	1,782
S SPRUCE	18	15.0	16.6	47		22.6	2,991	2,904	811	799
SNAG	33	5.4	27.4	49		22.1				
HEMLEAV	1	.8	36.0	100		6.0	1,247	1,247	291	291
DOUGLEAV	5	1.4	23.6	91		4.3	800	747	192	192
BL MAPLE	8	2.7	15.5	27		3.6	179	143	65	57
CEDLEAV	1	.3	40.0	80		3.0	457	375	105	96
SPRUCELV	3	1.5	17.4	54		2.6	392	392	101	101
ALDRLEAV	2	.9	15.0	42		1.1	79	79	30	30
GR FIR	2	.2	28.2	98	0	.9	217	217	43	43
TOTAL	239	156.3	17.6	54		265.2	35,445	34,002	9,037	8,810
	COEFF	TREES/ACRE				# OF PLOTS REQ.			INF. POP.	
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	125.8	13.0	41	47	53					
R ALDER	109.2	11.3	46	52	58					
WHEMLOCK	164.3	16.9	24	29	34					
S SPRUCE	236.3	24.4	11	15	19					
SNAG	192.8	19.9	4	5	6					
HEMLEAV	310.7	32.0	1	1	1					
DOUGLEAV	301.9	31.1	1	1	2					
BL MAPLE	349.6	36.1	2	3	4					
CEDLEAV	491.9	50.7	0	0	1					
SPRUCELV	539.2	55.6	1	2	2					
ALDRLEAV	719.5	74.2	0	1	2					
GR FIR	969.5	100.0		0	0					
TOTAL	53.9	5.6	148	156	165		116	29		13
	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.			INF. POP.	
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	116.1	12.0	78	89	99					
R ALDER	105.5	10.9	57	64	71					
WHEMLOCK	151.4	15.6	39	46	54					
S SPRUCE	246.1	25.4	17	23	28					
SNAG	146.7	15.1	19	22	25					
HEMLEAV	310.7	32.0	4	6	8					
DOUGLEAV	291.4	30.1	3	4	6					
BL MAPLE	350.6	36.2	2	4	5					
CEDLEAV	491.9	50.7	1	3	4					
SPRUCELV	448.4	46.2	1	3	4					
ALDRLEAV	719.5	74.2	0	1	2					
GR FIR	969.5	100.0		1	2					
TOTAL	43.8	4.5	253	265	277		77	19		9

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	08W	12	AREAS 1 2 3	0001	236.00	94	654	1	W
SD: 1		COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
		VAR.	S.E.%	LOW	AVG	HIGH	5	10	15
SD: 1		COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
		VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUG FIR		115.7	11.9	12,816	14,552	16,289			
R ALDER		108.2	11.2	5,509	6,201	6,893			
WHEMLOCK		153.7	15.9	6,011	7,143	8,276			
S SPRUCE		266.6	27.5	2,105	2,904	3,702			
SNAG									
HEMLEAV		310.7	32.0	848	1,247	1,647			
DOUGLEAV		291.8	30.1	522	747	972			
BL MAPLE		408.9	42.2	83	143	203			
CEDLEAV		491.9	50.7	185	375	566			
SPRUCELV		433.9	44.7	217	392	568			
ALDRLEAV		719.5	74.2	20	79	137			
GR FIR		969.5	100.0		217	434			
TOTAL		58.6	6.0	31,948	34,002	36,056	137	34	15

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT HUFFPUFF		DATE 3/17/2006				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	08W	12	AREAS 1 2 3	R/W	2.70	94	654	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL	94	654	7.0							
CRUISE	44	239	5.4		427		56.0			
DBH COUNT										
REFOREST										
COUNT	50	363	7.3							
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	71	48.0	18.8	68		92.8	15,830	15,325	3,841	3,796
R ALDER	59	52.8	15.1	42		65.4	6,586	6,294	1,929	1,860
WHEMLOCK	44	32.2	17.3	59		52.3	8,581	8,127	2,106	2,023
S SPRUCE	21	16.5	16.7	48		25.1	3,405	3,322	916	904
SNAG	33	5.4	27.4	49		22.1				
BL MAPLE	8	2.7	15.5	27		3.6	179	143	65	57
WR CEDAR	1	.3	40.0	80		3.0	457	375	105	96
GR FIR	2	.2	28.2	98	0	.9	217	217	43	43
TOTAL	239	158.1	17.5	54		265.2	35,255	33,803	9,005	8,779
	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	125.1	12.9	42	48	54					
R ALDER	107.1	11.0	47	53	59					
WHEMLOCK	147.6	15.2	27	32	37					
S SPRUCE	216.6	22.3	13	16	20					
SNAG	192.8	19.9	4	5	6					
BL MAPLE	349.6	36.1	2	3	4					
WR CEDAR	491.9	50.7	0	0	1					
GR FIR	969.5	100.0		0	0					
TOTAL	52.1	5.4	150	158	167	109	27	12		
	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	114.4	11.8	82	93	104					
R ALDER	103.4	10.7	58	65	72					
WHEMLOCK	134.5	13.9	45	52	60					
S SPRUCE	230.1	23.7	19	25	31					
SNAG	146.7	15.1	19	22	25					
BL MAPLE	350.6	36.2	2	4	5					
WR CEDAR	491.9	50.7	1	3	4					
GR FIR	969.5	100.0		1	2					
TOTAL	43.8	4.5	253	265	277	77	19	9		
	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	113.6	11.7	13,529	15,325	17,120					
R ALDER	106.8	11.0	5,601	6,294	6,987					
WHEMLOCK	136.0	14.0	6,987	8,127	9,267					
S SPRUCE	253.6	26.2	2,453	3,322	4,190					
SNAG										
BL MAPLE	408.9	42.2	83	143	203					
WR CEDAR	491.9	50.7	185	375	566					
GR FIR	969.5	100.0		217	434					
TOTAL	59.2	6.1	31,738	33,803	35,868	140	35	16		

Log Stock Table - MBF
Project: **HUFFPUFF**

T04N R08W S12 TTAKE

T04N R08W S12

Twp Rge Sec Tract Type Acres Plots Sample Trees
04N 08W 12 AREAS 1 2 3 TAKE 236.00 94 194

Page 1
Date 3/17/2006
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S 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
D	DO	CU	2	7	100.0												
D	DO	CU	3	10	100.0												
D	DO	CU	4	11	100.0												
D	DO	CU	6	4	100.0												
D	DO	CU	10	23	100.0												
D	DO	CU	16	6	100.0												
D	DO	2S	16	111	13.8	96	2.8									96	
D	DO	2S	18	80		80	2.3								26	29	26
D	DO	2S	20	17		17	.5								17		
D	DO	2S	30	56		56	1.6						24				32
D	DO	2S	32	682	1.2	673	19.6						132	135	205	201	
D	DO	2S	40	1,398	1.0	1,384	40.3						321	284	533	189	57
D	DO	3S	16	22		22	.6					4	18				
D	DO	3S	18	2		2	.1				2						
D	DO	3S	20	4		4	.1				4						
D	DO	3S	24	4		4	.1				4						
D	DO	3S	26	16		16	.5				5	11					
D	DO	3S	28	5		5	.1				5						
D	DO	3S	30	39		39	1.1			21	18						
D	DO	3S	32	299		299	8.7			59	91	149					
D	DO	3S	34	10		10	.3					10					
D	DO	3S	36	63		63	1.8			10	21	32					
D	DO	3S	38	8		8	.2			8							
D	DO	3S	40	436	.8	433	12.6			88	131	144		70			
D	DO	4S	12	7		7	.2				5	2					
D	DO	4S	14	10		10	.3			7	3						
D	DO	4S	15	2		2	.1			2							
D	DO	4S	16	40		40	1.2			40							
D	DO	4S	17	3		3	.1			3							
D	DO	4S	18	8		8	.2			8							
D	DO	4S	20	19		19	.5			15	4						
D	DO	4S	22	8		8	.2			4	4						
D	DO	4S	23	3		3	.1				3						
D	DO	4S	24	69		69	2.0			49	20						
D	DO	4S	26	14		14	.4			14							
D	DO	SM	40	40		40	1.2							40			
D	Totals			3,537	2.9	3,434	46.7			328	319	352	495	489	821	547	83
A	DO	CU	2	2	100.0												
A	DO	CU	6	45	100.0												
A	DO	CU	8	7	100.0												
A	DO	CU	26	3	100.0												
A	DO	CU	30	13	100.0												
A	DO	CU	36	4	100.0												
A	DO	CR	15	4		4	.3			4							
A	DO	CR	16	126		126	8.6			59	36	12	19				
A	DO	CR	18	25		25	1.7			17	7						
A	DO	CR	20	87		87	5.9			62						25	
A	DO	CR	24	95		95	6.5			33	14	22		26			
A	DO	CR	26	28	4.3	27	1.8							27			
A	DO	CR	28	17		17	1.2				17						

Log Stock Table - MBF
Project: HUFFPUFF

T04N R08W S12 TTAKE

T04N R08W S12

Twp Rge Sec Tract Type Acres Plots Sample Trees
 04N 08W 12 AREAS 1 2 3 TAKE 236.00 94 194

Page 3
 Date 3/17/2006
 Time 3:53:52PM

S Spp	So T	Gr rt	Log de	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
S	DO	4S	32		16		16	2.3			16								
S	DO	4S	38		7		7	1.0			7								
S	DO	4S	40		7		7	1.0				7							
S	Totals				706	2.9	685	9.3			134	37	46	60	76	245	45	42	
M	DO	CU	6		3	100.0													
M	DO	CU	14		4	100.0													
M	DO	3S	16		3		3	8.0			3								
M	DO	3S	24		7		7	19.8				7							
M	DO	3S	30		19	2.6	18	54.7			3	11	5						
M	DO	3S	32		7	14.3	6	17.5				6							
M	Totals				42	20.0	34	.5			6	17	12						
GF	DO	2S	32		47		47	92.5						8	14	9	16		
GF	DO	3S	32		2		2	4.6				2							
GF	DO	4S	30		1		1	2.9			1								
GF	Totals				51		51	.7			1	2	8	14	9	16			
Total All Species					7,663	4.0	7,354	100.0			955	790	1006	1157	875	1694	737	141	

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: HOFF'N PUFF Area(s) 1, 2, 3

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

Approx. Cruise Acres: 223 Estimated CV% 70 ^{Net BF or} BAF/Acre SE% Objective 9% ^{Net BF or} BAF/Acre

Planned Sale Volume: 11.7 MMBF Estimated Sale Area Value/Acre: \$ 1405

- A. **Cruise Goals:** (a) Grade minimum 100 conifer and 100 hardwood trees:
 (b) Sample 60 cruise plots; (c) Other goals (Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes; Determine LWD (down wood) cubic feet and decay classes; Determine "diameter limit" harvest parameters;

33.6 For Hardwood
40.0 For Conifer

B. Cruise Design:

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

Fixed Plot Size Plot Radius feet

Cruise Line Direction(s) N-S

Cruise Line Spacing 6 (chains) (feet)

Cruise Plot Spacing 4 (chains) (feet)

Grade/Count Ratio

2. ITS (Sample Tree) Cruises: Measure-grade ratios: D-fir Hemlock
Spruce True Fir Cedar Hardwood

C. Tree Measurements:

1. **Diameter:** Minimum DBH to cruise is 9" for conifers and 9" for hardwoods. Record dbh to nearest 1/2" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.

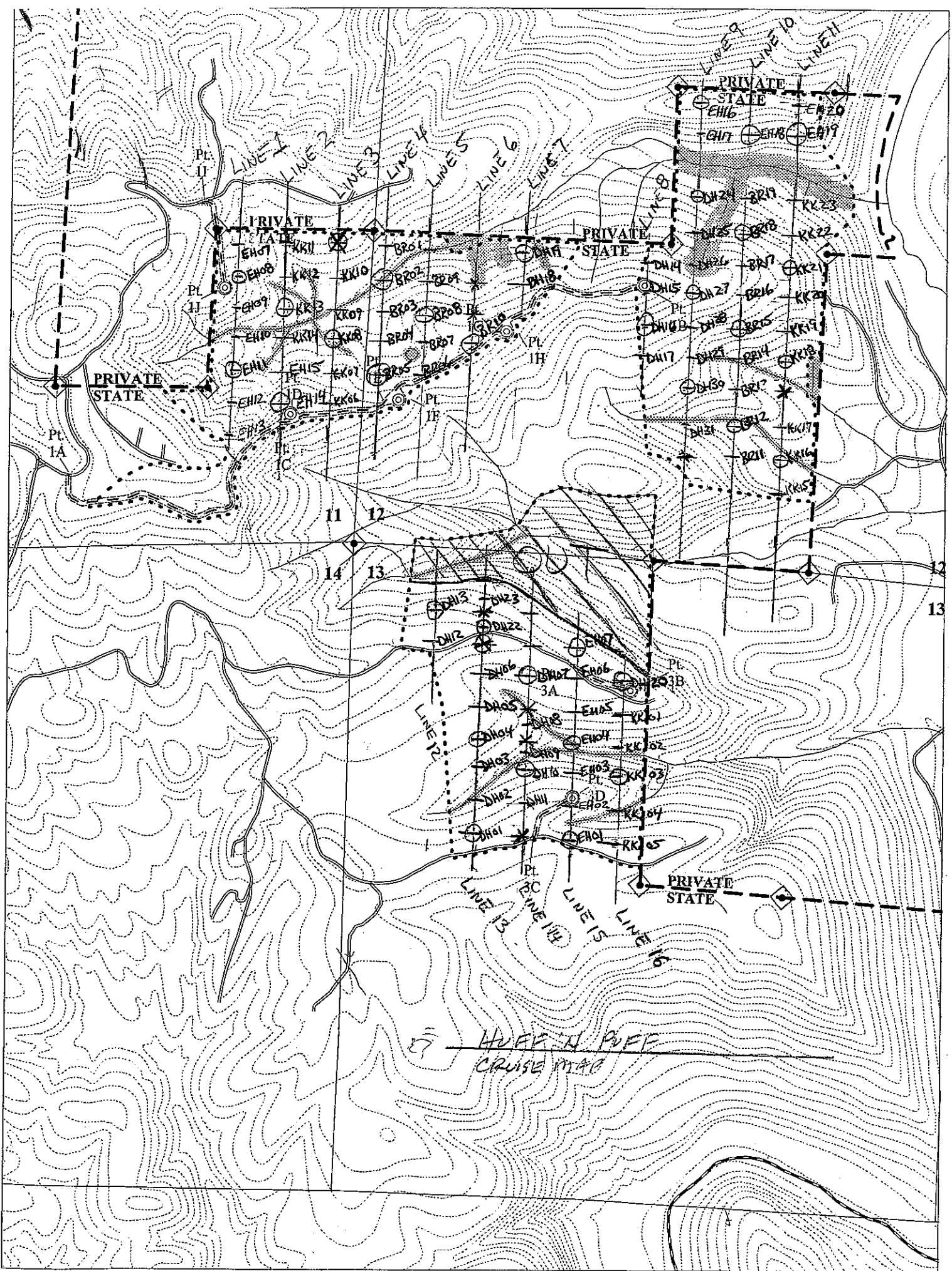
2. **Bole Length:** Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.

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). 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
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, 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).
 B. Data Recorder Instructions
 C. Other

Cruise Design by: Kevin Berry
 Approved by: Dan Gandy
 Date: 2/23/06



HUFFMAN PUFF
CRUISE MAP