Timber Sale Appraisal
Sweet Lass

Sale WO-341-2018-35-

District: West Oregon **Date: June 02, 2017**

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	$257,760.02	$0.00	$257,760.02
		Project Work:	($34,807.00)
		Advertised Value:	$222,953.02

Timber Sale Appraisal
Sweet Lass

Sale WO-341-2018-35-

District: West Oregon **Date: June 02, 2017**

Timber Description

Location: Portions of Section 29, T11S, R7W, W.M., Benton County, Oregon.

Stand Stocking: 80%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	12	0	95

Volume by Grade	2S	3S	4S	Total
Douglas - Fir	100	417	106	623
Total	100	417	106	623

Comments: Pond Values Used: Local Pond Values, April 2017.

Western Hemlock and Other Conifers Stumpage Price = Pond Value minus Logging Cost:
$307.03/MBF = $574.90/MBF - $267.87/MBF

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost minus Additional Haul Cost:
$1,056/MBF = $1,423.88/MBF - $267.88/MBF - $100/MBF

Red Alder and Other Hardwoods Stumpage Price = Pond Value minus Logging Cost:
$384.38/MBF = $652.25/MBF - $267.87/MBF

SCALING COST ALLOWANCE = $5.00/MBF

BRANDING AND PAINTING COST ALLOWANCE = $2.00/MBF

FUEL COST ALLOWANCE = $3.00/Gallon

HAULING COST ALLOWANCE
Hauling costs equivalent to $780 daily truck cost.

Other Costs (with Profit & Risk to be added):
None.

Other Costs (No Profit & Risk added):
Equipment Cleaning (Invasive Species) = $2,000
Pile Landing Slash: 5 Cable Landings ($180/hr x 5 hrs) = $900
TOTAL Other Costs (No Profit & Risk added) = $2,900

SLASH DISPOSAL
Pile Slash on Ground Based Logging Area: ($250/acre x 7 acres) = $1,750
Equipment Move-In & Weed Wash = $510
TOTAL Slash Disposal Costs = $2,260

Logging Conditions

Combination#: 1 Douglas - Fir 81.00%

Logging System: Cable: Medium Tower >40 - <70 **Process:** Stroke Delimber
yarding distance: Medium (800 ft) **downhill yarding:** No
tree size: Mature Private Forest / Regen Cut (250 Bft/tree), 6-11 logs/MBF
loads / day: 10 **bd. ft / load:** 4000
cost / mbf: $150.00
machines: Log Loader (A)
Stroke Delimber (A)
Tower Yarder (Medium)

Combination#: 2 Douglas - Fir 19.00%

Logging System: Shovel **Process:** Stroke Delimber
yarding distance: Short (400 ft) **downhill yarding:** No
tree size: Mature Private Forest / Regen Cut (250 Bft/tree), 6-11 logs/MBF
loads / day: 12 **bd. ft / load:** 4000
cost / mbf: $66.08
machines: Stroke Delimber (B)

Timber Sale Appraisal
Sweet Lass

Sale WO-341-2018-35-

District: West Oregon **Date: June 02, 2017**

Logging Costs

Operating Seasons:	1.00	**Profit Risk:**	15%
Project Costs:	$34,807.00	**Other Costs (P/R):**	$0.00
Slash Disposal:	$2,260.00	**Other Costs:**	$2,900.00

Miles of Road

Road Maintenance: $9.80

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	3.0	4.0

Timber Sale Appraisal
Sweet Lass

Sale WO-341-2018-35-

District: West Oregon

Date: June 02, 2017

Logging Costs Breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling / Brand & Paint	Other	Total
Douglas - Fir									
$134.06	$10.29	$7.04	$68.25	$0.00	$32.95	$3.63	$7.00	$4.65	$267.87

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	$0.00	$681.61	$413.74	$0.00

Timber Sale Appraisal
Sweet Lass

Sale WO-341-2018-35-

District: West Oregon **Date: June 02, 2017**

Summary

Amortized

Specie	MBF	Value	Total
Douglas - Fir	0	$0.00	$0.00

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	623	$413.74	$257,760.02

Gross Timber Sale Value

Recovery: $257,760.02

Prepared By: Kyle Kaupp **Phone:** 503-931-2352

SUMMARY OF ROAD COSTS
SWEET LASS TIMBER SALE

Project No. 1

ROAD CONSTRUCTION:

		Rocking		
Segments	Length	1.5"-0 Roads	6"-0 Jaw Run Roads	Construct $
A to A1	1+10	10 cy	125 cy	$ 3,093.38
Point B	0+70	20 cy	60 cy	$ 1,444.87
C to C1	1+30	10 cy	135 cy	$ 3,405.45
Point D	1+00	20 cy	80 cy	$ 1,912.27
Totals	4+10	60 cy	400 cy	$ 9,855.96

Total miles = 0.08 **Project No. 1** **$ 9,855.96**

Project No. 2

ROAD IMPROVEMENT:

		Rocking			
Segments	Length	1.5"-0	3"-0		Total
Lasky Ck. Rd.	69+20				$ 685.08
Pt. 1 to Pt. 5	64+30	150 cy	10 cy		$ 2,945.94
Pt. 2 to Pt. 3	69+63	200 cy	10 cy		$ 2,944.88
Totals	203+13	350 cy	20 cy		$ 6,575.90

Total miles = 3.85 **Project No. 2** **$ 6,575.90**

Equipment Move-in for Projects 1 and 2	Cost	
Excavator, C 325 or equiv.	$ 1,290.00	
Dozer, D7 or equiv.	$ 805.00	
Grader, G14 or equiv.	$ 778.00	
Backhoe	$ 321.00	
Vibratory roller	$ 778.00	
Total	$ 3,972.00	**$ 3,972.00**

Project No. 3

ROADSIDE BRUSHING:

Table 1				Table 2			
Point to Point	Stations	Miles	Cost	Point to Point	Stations	Miles	Cost
Pt 1 to Pt 3	90+87	1.72	$ 1,634.97	Pt 19 to Pt 20	18+38	0.35	$ 313.30
Pt 2 to Pt 4	124+66	2.36	$ 2,242.94	Pt 19 to Pt 21	3+23	0.06	$ 67.29
Pt 5 to Pt 6	103+65	1.96	$ 1,864.91	Pt 22 to Pt 23	4+38	0.08	$ 91.25
Pt 7 to Pt 8	81+44	1.54	$ 1,465.30	Pt 24 to Pt 25	45+53	0.86	$ 819.20
Pt 9 to Pt 10	22+25	0.42	$ 463.54	Pt 26 to Pt 27	36+69	0.69	$ 660.14
Pt 11 to Pt 12	21+22	0.40	$ 381.80	Pt 28 to Pt 29	57+31	1.09	$ 1,031.15
Pt 13 to Pt 14	10+74	0.20	$ 183.07	Pt 30 to Pt 31	2+33	0.04	$ 41.92
Pt 15 to Pt 16	7+59	0.14	$ 158.13	Pt 32 to Pt 33	5+24	0.10	$ 119.09
Pt 17 to Pt 18	7+37	0.14	$ 153.54				
Totals		8.90	$ 8,548.20	Totals		3.28	$ 3,143.33

EQUIPMENT MOVE IN:

Grader, G14 or equiv.	$ 321.00
Backhoe	$ 321.00
Total	$ 642.00

Total miles = 12.18 (Costs include a rubber tired backhoe to clear debris off roads) **Project No. 3** **$ 12,333.53**

Project No. 4

ROADSIDE SPRAYING:

Total Miles	Cost per mile			Total Costs
12.18	$ 170.00			$ 2,069.88

(COSTS INCLUDE MARKING LIVE WATER STREAMS) **Project No. 4** **$ 2,069.88**

Grand total	**$ 34,807.27**

James Stuart 05/08/2017

SUMMARY OF MAINTENANCE COST

SALE Sweet Lass Final Road Maintenance Estimate

(Costed in appraisal, not in project costs)

Grading Move-in Grader $ 340

Road Segment	Length	Cost/Sta	Cost	Mileage
Lasky Creek Rd to Pt. 2	93.85	$13.75	$1,290	1.8
Pt. 2 to Pt. 3	69.63	$13.75	$957	1.3
A to A1	1.1	$13.75	$15	0.0
C to C1	1.3	$13.75	$18	0.0
Sub Total			$2,248	3.1

Maintenance Rock:

	Volume	Cost/CY	Cost
1½-0"	200	$19.28	$3,856.55

Grand Total $6,104

TS Volume 623 MBF

Cost / MBF = $9.80

NOTES: Grade haul route to County Road.

PROJECT NO. 1

ROAD - NEW CONSTRUCTION COSTS

Sale: **Sweet Lass** Road Segment: **A to A1**

Length: 1.10 Stations 0.02 Miles

NEW CONSTRUCTION:

	Quantity or Stations	Designed Cubic Yards/Station		Cost per Station or Acre	Sum $
		1.5"-0	6"-0 Jaw Run		
Balanced Construction	1+10		50 cy	$ 400.00	$ 440.00
Landing Construction	1		50 cy	$ 450.00	$ 450.00
Two-way Junction	1	10 cy	20 cy		
Subgrade Compaction	1+10			$ 20.19	$ 22.21
				SUB-TOTAL	$ 912.21

SURFACING:

Size and type	Roads & Landing	Two-way Junction	Cubic Yards	Rock Haul	Cost
1.5"-0 (Bark Cr stockpile)		10 cy	10 cy	$ 3.85	$ 38.55
6"-0 Jaw Run	105 cy	20 cy	125 cy	$ 16.62	$ 2,077.50
Grade/Compact Rock	1.1 sta.				$ 65.12
				SUB-TOTAL	$ 2,181.17

GRAND TOTAL =	**$ 3,093.38**

PROJECT NO. 1

ROAD - NEW CONSTRUCTION COSTS

Sale: **Sweet Lass** Road Segment: **Point B**

NEW CONSTRUCTION:

	Quantity or Stations	Designed Cubic Yards		Cost per	Sum $
		1.5"-0	6"-0 Jaw Run	Station or Acre	
Landing Construction	0+70	20 cy	60 cy	$ 450.00	$ 315.00
Subgrade Compaction	0+70			$ 20.19	$ 14.13
				SUB-TOTAL	$ 329.13

SURFACING:

Size and type	Roads	Landing	Cubic Yards	Rock Haul	Cost
1.5"-0 (Bark Cr stockpile)	20 cy		20 cy	$ 3.85	$ 77.09
6"-0 Jaw Run		60 cy	60 cy	$ 16.62	$ 997.20
Grade/Compact Rock	0.7 sta.				$ 41.44
				SUB-TOTAL	$ 1,115.73
				GRAND TOTAL =	**$ 1,444.87**

PROJECT NO. 1

ROAD - NEW CONSTRUCTION COSTS

Sale: **Sweet Lass** Road Segment: **C to C1**

Length: 1.30 Stations 0.02 Miles

NEW CONSTRUCTION:

	Quantity or Stations	Designed Cubic Yards/Station		Cost per Station or Acre	Sum $
		1.5"-0	6"-0 Jaw Run		
Balanced Construction	1+30		50 cy	$ 400.00	$ 520.00
Landing Construction	1		50 cy	$ 450.00	$ 450.00
Two-way Junction	1	10 cy	20 cy	$ 50.00	$ 50.00
Subgrade Compaction	1+30			$ 20.19	$ 26.25
				SUB-TOTAL	$ 1,046.25

SURFACING:

Size and type	Roads & Landing	Two-way Junction	Cubic Yards	Rock Haul	Cost
1.5"-0 (Bark Cr stockpile)		10 cy	10 cy	$ 3.85	$ 38.55
6"-0 Jaw Run	115 cy	20 cy	135 cy	$ 16.62	$ 2,243.70
Grade/Compact Rock	1.3 sta.				$ 76.96
				SUB-TOTAL	$ 2,359.21

GRAND TOTAL =	**$ 3,405.45**

PROJECT NO. 1

ROAD - NEW CONSTRUCTION COSTS

Sale: **Sweet Lass** Road Segment: **Point D**

NEW CONSTRUCTION:

	Quantity or Stations	Designed Cubic Yards/Station		Cost per Station or Acre	Sum $
		1.5"-0	6"-0 Jaw Run		
Landing Construction	1+00	20 cy	80 cy	$ 450.00	$ 450.00
Subgrade Compaction	0+70			$ 20.19	$ 14.13
				SUB-TOTAL	$ 464.13

SURFACING:

Size and type	Roads	Landing	Cubic Yards	Rock Haul	Cost
1.5"-0 (Bark Cr stockpile)	20 cy		20 cy	$ 3.85	$ 77.09
6"-0 Jaw Run		80 cy	80 cy	$ 16.62	$ 1,329.60
Grade/Compact Rock	0.7 sta.				$ 41.44
				SUB-TOTAL	$ 1,448.13

GRAND TOTAL =	**$ 1,912.27**

James Stuart 05/08/2017

MOVE-IN COSTS

Timber Sale: **Sweet Lass**

A-B Distance	Factor	MILEAGE Distance	Factor
0-25	0.58	55	1.07
30	0.66	60	1.15
35	0.74	65	1.23
40	0.82	70	1.31
45	0.91	75	1.40
50	1.00	80	1.48

MILEAGE FACTOR =	1.00

No.	EQUIPMENT DESCRIPTION	Base Cost	Move in Cost	Wash Equip.	Distance ($/mile)	Begin Mileage	End Mileage	Total Miles	/ithin Ar< Cost	Total Cost
1	Graders	$ 110	$ 320.00	$ 100.00		0	0	0	$ -	$ 530.00
1	Rollers & Compactors	$ 85	$ 320.00	$ 50.00		0	0	0	$ -	$ 455.00
1	Excavators	$ 140	$ 350.00	$ 150.00		0	0	0	$ -	$ 640.00
1	Small backhoes	$ 85	$ 320.00	$ 100.00		0	0	0	$ -	$ 505.00
1	Tractors (D6 - D8)	$ 130	$ 350.00	$ 150.00		0	0	0	$ -	$ 630.00
2	Dump Truck (10 cy +)	$ 85	$ -	$ -		0	0	0	$ -	$ 170.00
1	Loader (3 cy +)	$ 95	$ 120.00	$ 150.00		0	0	0	$ -	$ 365.00
1	Water Truck (3000 gal)	$ 85	$ 85.00	$ -		0	0	0	$ -	$ 170.00

ROADS TOTAL MOVE-IN COSTS = **$ 3,465.00**

PROJECT NO. 2

ROAD - IMPROVEMENT COSTS

Sale: **Sweet Lass**

Road Segment: **Lasky Road to Pt. 1**
(Lasky Road)

Length: 69.20 Stations 1.31 Miles

ROAD IMPROVEMENT:

	Quantity or Stations	Designed Cubic Yards/Station		Cost per Station	Sum $
		1.5-0	6"-0 Jaw Run		
Spot grading	69+20	x		$ 9.90	$ 685.08
				SUB-TOTAL	$ 685.08

SURFACING:

Size and type	Roads	Waste Area TA.	Cubic Yards	Load and haul	Cost
1.5"-0 (Bark Cr stockpile)					
				SUB-TOTAL	

GRAND TOTAL =	**$ 685.08**

James Stuart 05/08/2017

PROJECT NO. 2

ROAD - IMPROVEMENT COSTS

Sale: **Sweet Lass**

Road Segment: **Pt. 1 to Pt. 5**
(Lasky Road)

Length: 64.30 Stations 1.22 Miles

ROAD IMPROVEMENT:

	Quantity or Stations	1.5-0	3"-0	Cost per Station or Acre	Sum $
Grade/compact surfacing rock	64+30	x		$ 24.28	$ 1,561.20
Clear Waste Area	1			$ 75.00	$ 75.00
Slough removal (315 excavator)	30 cy			$ 4.00	$ 120.00
(Endhaul ditch material)					
Grade and pull ditch	25+00			$ 22.92	$ 573.00
				SUB-TOTAL	$ 2,329.20

SURFACING:

Size and type	Roads	Waste Area TA.	Cubic Yards	Load and haul	Cost
1.5"-0 (Bark Cr stockpile)	150 cy		150 cy	$ 3.85	$ 578.19
3"-0 (Bark Cr stockpile)		10 cy	10 cy	$ 3.85	$ 38.55
				SUB-TOTAL	$ 616.74

GRAND TOTAL =	**$ 2,945.94**

PROJECT NO. 2

ROAD - IMPROVEMENT COSTS

Sale: **Sweet Lass** Road Segment: **Point 2 to Point 3**

Length: 69.63 Stations 1.32 Miles

ROAD IMPROVEMENT:

	Quantity or Stations	1.5"-0	3"-0	Cost per Station or Hour	Sum $
Grade/compact surfacing rock	69+63	x		$ 24.28	$ 1,690.62
Ditch Sediment Filter	1		x	$ 101.00	$ 101.00
Re-establish ditch	15+00			$ 22.92	$ 343.80
				SUB-TOTAL	$ 2,135.42

SURFACING:

Size and type	Roads	Ditch Sediment Filter	Cubic Yards	Load and haul	Cost
1.5"-0 (Bark Cr. Stockpile)	200 cy		200 cy	$ 3.85	$ 770.92
3"-0		10 cy	10 cy	$ 3.85	$ 38.55
				SUB-TOTAL	$ 809.47
				GRAND TOTAL =	**$ 2,944.88**

James Stuart 05/08/2017

ROAD SEGMENT				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
				A to A1		0+00 to 1+10			
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of			
Base rock	6-0"	0+00 to 1+10	9	50	station	1.1	stations	55	74
Two-Way Junction	6-0"	0+00	9	20	junction	1	junctions	20	27
Junction	1 1/2-0"	0+00	NA	10	junction	1	junctions	10	14
Landing	6-0"	1+10	NA	50	landing	1	landings	50	68
Total Rock for Road Segment:								135	182
ROAD SEGMENT				POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
				B		0+00			
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of			
Landing	6-0"	1C	NA	60	landing	1	landings	60	81
Junction	1 1/2-0"	0+00	NA	20	junction	1	junctions	20	27
ROAD SEGMENT				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
				C to C1		0+00 to 1+30			
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of			
Base rock	6-0"	0+00 to 1+30	9	50	station	1.3	stations	65	88
Two-Way Junction	6-0"	0+00	9	20	junction	1	junctions	20	27
Junction	1 1/2-0"	0+00	NA	10	junction	1	junctions	10	14
Landing	6-0"	1+10	NA	50	landing	1	landings	50	68
Total Rock for Road Segment:								145	
ROAD SEGMENT				POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
				D		0+00			
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of			
Landing	6-0"	1C	NA	80	landing	1	landings	80	108
Junction	1 1/2-0"	0+00	NA	20	junction	1	junctions	20	27
ROAD SEGMENT				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
				Pt. 1 to Pt. 5		0+00 to 64+30			
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of			
Spot rock	1 1/2-0"	0+00 to 64+30	NA				stations	120	162
Turnouts	1 1/2-0"		NA	10	turnout	3	turnouts	30	41
Turnaround	3-0"		NA	10	TA	1	TA's	10	14
Total Rock for Road Segment:								160	
ROAD SEGMENT				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	TOTAL VOLUME (TONS)
				Pt. 2 to Pt. 3		0+00 to 1+00			
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of			
Spot rock	1 1/2-0"	0+00 to 4+50	NA				stations	150	203
Turnouts	1 1/2-0"		NA	10	turnout	5	turnouts	50	68
Ditch filters	3-0"	12+37	NA	10	TA	1	TA's	10	14
Total Rock for Road Segment:								210	
ROCK CONVERSION FACTORS									

Size	3/4-0"	1 1/2-0"	3-0"	jaw-run	pit run
Tons/CY	1.35	1.35	1.35	1.35	1.35
	(Conversion factors from Richard Quarry)				

TOTAL ROCK VOLUMES

Rock Size	1 1/2-0"	3-0"	jaw-run
CY	410	10	400
Tons	554	14	540

Rock Haul Cost Computation

SALE NAME: Sweet Lass
ROAD NAME: Area 1 roads CLASS: Medium
ROCK SOURCE: Rickard 10 CY truck
Route: Garrett Ln, Hwy 20, Tum Tum Rd, Lasky Rd

TIME Computation:
Road speed time factors:

1.	55 MPH		MRT	0.0	minutes
2.	50 MPH	12.0	MRT	14.4	minutes
3.	45 MPH		MRT	0.0	minutes
4.	40 MPH		MRT	0.0	minutes
5.	35 MPH	6.0	MRT	10.3	minutes
6.	30 MPH		MRT	0.0	minutes
7.	25 MPH	4.5	MRT	10.8	minutes
8.	20 MPH		MRT	0.0	minutes
9.	15 MPH	2.0	MRT	8.0	minutes
10.	10 MPH		MRT	0.0	minutes
11.	05 MPH	0.2	MRT	2.4	minutes

Dump or spread time per RT		0.50	minutes
Total hauling cycle time for this setting (100% efficiency)		46.39	minutes
Operator efficiency correction	0.85	54.57	minutes
Job efficiency correction	0.90	60.63	minutes
Truck capacity (CY)	10.00	6.06	min/CY
Loading time, delay time per CY		0.25	min/CY
TIME (minutes) per cubic yard		6.31	min/CY

COST per CY computation

Cost of truck and operator per hour	$79.00	/hr.
Cost of truck and operator per minute	$1.32	/min
Cost per CY	$8.31	/CY
Spread and compact — Water truck, Grader & Roller	$1.50	/CY

Size	**Cost/Yd (Pit)**	**Cost Delivered w/o processing**	**Cost Delivered with processing**
1½ - 0"	$ 10.97	$19.28	$20.78
3 - 0"	$ 9.31	$17.62	$19.12
Jaw Run	$ 8.31	$16.62	$18.12
pit-run	7.65	$15.96	$17.46

Note: Pit costs April 1, 2017 Rickard Rock Quarry

Sweet Lass (Sale Name) **Haul to : Spurs A, B, C and D**

Wild Rose	(Quarry)	**Wild Rose**		(Stockpile)		Spread	
Jaw Run	(Rock Type)	D10	(Truck)	12-G	(Grader)	Vibratory Roller	(Compactor)
6"-0	(Rock Size)	14G	(Loader)	D8	(Tractor)		

Hauling Time Computation

50 MPH	14	Miles per round trip	17	Minutes
40 MPH		Miles per round trip	0	Minutes
35 MPH		Miles per round trip	0	Minutes
30 MPH		Miles per round trip	0	Minutes
25 MPH	5	Miles per round trip	12	Minutes
20 MPH	3	Miles per round trip	9	Minutes
15 MPH	1	Miles per round trip	4	Minutes
10 MPH	0.9	Miles per round trip	5	Minutes
5 MPH	0.1	Miles per round trip	1	Minutes
	24	**Total Miles per Round Trip**		
Dump or Spread Time per Round Trip			0	Minutes
Total Hauling Cycle Time for this Setting (100% Efficiency)			49	Minutes
Operator Efficiency Correction (80% Efficiency)			61	Minutes

Time Per Cubic Yard

Hauling Only (per cubic yard)	5.07	min/cu.yd
Delay Time (while loading = loading time per cubic yard)	0.52	min/cu.yd
Total Time Per Cubic Yard	5.59	min/cu.yd

Hauling Cost Per Cubic Yard Computation

Cost of Truck Per Hour	$ 50.00	per Hr.
Cost of Truck Operator Per Hour	$ 35.00	per Hr.
Total Operating Cost Per Hour	$ 85.00	per Hr.
Operating Cost Per Minute	$ 1.42	per Min.
Cost Per Cubic Yard	**$ 7.92**	per Cu. Yd.
Loading Cost Per Cubic Yard	**$ 0.95**	per Cu. Yd.
Spreading Cost Per Cubic Yard		
Cost of Grader Per Hour	$ 55.00	per Hr.
Cost of Grader Operator Per Hour	$ 50.00	per Hr.
Cost of Compaction Equip. Per Hour	$ 50.00	per Hr.
Cost of Compaction Equip. Op. Per Hour	$ 50.00	per Hr.
Total Operating Cost Per Hour	$ 205.00	per Hr.
Cost Per Cubic Yard to Grade and Roll	**$ 1.42**	Cu. Yd.
Total Cost to Load, Haul and Place	**$ 10.30**	Cu. Yd.
Cost to Crush	**$ 9.80**	
Grand Total Combined	**$ 20.10**	

Rates

Dump Truck	Rate ($/Hr.)	Capacity (cy)	Operator ($/Hr.)	Total
B20	$ 70.00	20	$ 35.00	$ 105.00
D10	$ 50.00	12	$ 35.00	$ 85.00
OH25	$ 80.00	25	$ 35.00	$ 115.00

Grader	Rate ($/Hr.)	Operator ($/Hr.)	Total
12-G	$ 55.00	$ 50.00	$ 105.00
14-G	$ 60.00	$ 50.00	$ 110.00

Compaction Equipment	Rate ($/Hr.)	Operator ($/Hr.)	Total
Vibratory Roller	$ 50.00	$ 50.00	$ 100.00
Vib. Grid Roller	$ 50.00	$ 50.00	$ 100.00
Hand Held Compactor	$ 20.00	$ 50.00	$ 70.00

Tractors	Rate ($/Hr.)	Operator ($/Hr.)	Total
D4	$ 35.00	$ 50.00	$ 85.00
D6	$ 60.00	$ 50.00	$ 110.00
D7	$ 70.00	$ 50.00	$ 120.00
D8	$ 110.00	$ 50.00	$ 160.00

Loader	Rate ($/Hr.)	Capacity (cy)	Operator ($/Hr.)	Total
14G Cat Wheel Loader	$ 60.00	3	$ 50.00	$ 110.00

Loading Costs	Rate (Min/Load)	Delay (Min)	Total Loading Time (Min)
Crushed Rock	5	1.25	6.25
Pit-Run/Jaw-Run Rock	5	1.25	6.25
Rip Rap Rock	5	1.25	6.25
Fill Material	5	1.25	6.25

Dump or Spread Time (Min)	
Pile Dump	0.25
Truck Spread	0.5
Spreading w/Grader	5

Sweet Lass (Sale Name) **Haul to : Lasky Creek Road**

	(Quarry)	**Bark Creek**		(Stockpile)		Spread	
Crushed	(Rock Type)	D10	(Truck)	12-G	(Grader)	Vibratory Roller	(Compactor)
1.5"-0	(Rock Size)	14G	(Loader)	D8	(Tractor)		
3"-0							

Hauling Time Computation

50 MPH		Miles per round trip	0	Minutes
40 MPH		Miles per round trip	0	Minutes
35 MPH		Miles per round trip	0	Minutes
30 MPH		Miles per round trip	0	Minutes
25 MPH		Miles per round trip	0	Minutes
20 MPH	2	Miles per round trip	6	Minutes
15 MPH	0	Miles per round trip	0	Minutes
10 MPH	1	Miles per round trip	6	Minutes
5 MPH	0.2	Miles per round trip	2	Minutes
	3.2	**Total Miles per Round Trip**		
Dump or Spread Time per Round Trip			0	Minutes
Total Hauling Cycle Time for this Setting (100% Efficiency)			15	Minutes
Operator Efficiency Correction (80% Efficiency)			18	Minutes

Time Per Cubic Yard

Hauling Only (per cubic yard)	1.53	min/cu.yd
Delay Time (while loading = loading time per cubic yard)	0.52	min/cu.yd
Total Time Per Cubic Yard	2.05	min/cu.yd

Hauling Cost Per Cubic Yard Computation		
Cost of Truck Per Hour	$ 50.00	per Hr.
Cost of Truck Operator Pre Hour	$ 35.00	per Hr.
Total Operating Cost Per Hour	$ 85.00	per Hr.
Operating Cost Per Minute	$ 1.42	per Min.
Cost Per Cubic Yard	**$ 2.90**	per Cu. Yd.
Loading Cost Per Cubic Yard	**$ 0.95**	per Cu. Yd.
Spreading Cost Per Cubic Yard		
Cost of Grader Per Hour	$ 55.00	per Hr.
Cost of Grader Operator Per Hour	$ 50.00	per Hr.
Cost of Compaction Equip. Per Hour	$ 50.00	per Hr.
Cost of Compaction Equip. Op. Per Hour	$ 50.00	per Hr.
Total Operating Cost Per Hour	$ 205.00	per Hr.
Cost Per Cubic Yard to Grade and Roll	**$ -**	Cu. Yd.
Total Cost to Load, Haul and Place	**$ 3.85**	Cu. Yd.
Cost to Crush	**$ -**	
Grand Total Combined	**$ 3.85**	

Rates

Dump Truck	**Rate ($/Hr.)**	**Capacity (cy)**	**Operator ($/Hr.)**	**Total**
B20	$ 70.00	20	$ 35.00	$ 105.00
D10	$ 50.00	12	$ 35.00	$ 85.00
OH25	$ 80.00	25	$ 35.00	$ 115.00

Grader	**Rate ($/Hr.)**	**Operator ($/Hr.)**	**Total**
12-G	$ 55.00	$ 50.00	$ 105.00
14-G	$ 60.00	$ 50.00	$ 110.00

Compaction Equipment	**Rate ($/Hr.)**	**Operator ($/Hr.)**	**Total**
Vibratory Roller	$ 50.00	$ 50.00	$ 100.00
Vib. Grid Roller	$ 50.00	$ 50.00	$ 100.00
Hand Held Compactor	$ 20.00	$ 50.00	$ 70.00

Tractors	**Rate ($/Hr.)**	**Operator ($/Hr.)**	**Total**
D4	$ 35.00	$ 50.00	$ 85.00
D6	$ 60.00	$ 50.00	$ 110.00
D7	$ 70.00	$ 50.00	$ 120.00
D8	$ 110.00	$ 50.00	$ 160.00

Loader	**Rate ($/Hr.)**	**Capacity (cy)**	**Operator ($/Hr.)**	**Total**
14G Cat Wheel Loader	$ 60.00	3	$ 50.00	$ 110.00

Loading Costs	**Rate (Min/Load)**	**Delay (Min)**	**Total Loading Time (Min)**
Crushed Rock	5	1.25	6.25
Pit-Run/Jaw-Run Rock	5	1.25	6.25
Rip Rap Rock	5	1.25	6.25
Fill Material	5	1.25	6.25

Dump or Spread Time (Min)	
Pile Dump	0.25
Truck Spread	0.5
Spreading w/Grader	5

James Stuart 05/08/2017

Sweet Lass (Sale Name)

Total Yards End Hauled: cy

On site	EndHual	To nearest waste area				Spread and Compact	
Waste	(Type)	D10	(Truck)	D6	(Grader)	Vibratory Roller	(Compactor)
	(Rock Size)		(Loader)	Cat 325 Excavator	(Excavator)		
	(Water Truck Size)		Gal/cu.yd				

Hauling Time Computation

50 MPH		Miles per round trip	0	Minutes
40 MPH		Miles per round trip	0	Minutes
35 MPH		Miles per round trip	0	Minutes
30 MPH		Miles per round trip	0	Minutes
25 MPH		Miles per round trip	0	Minutes
20 MPH		Miles per round trip	0	Minutes
15 MPH	0.75	Miles per round trip	3	Minutes
10 MPH	0	Miles per round trip	0	Minutes
5 MPH	0.02	Miles per round trip	0	Minutes
	0.77	**Total Miles per Round Trip**		
Dump or Spread Time per Round Trip			0	Minutes
Total Hauling Cycle Time for this Setting (100% Efficiency)			3.49	Minutes
Operator Efficiency Correction (80% Efficiency)			4.36	Minutes

Time Per Cubic Yard

Hauling Only (per cubic yard)	0.36	min/cu.yd
Delay Time (while loading = loading time per cubic yard)	0.52	min/cu.yd
Total Time Per Cubic Yard	0.88	min/cu.yd

Hauling Cost Per Cubic Yard Computation			
Cost of Truck Per Hour	$	50.00	per Hr.
Cost of Truck Operator Pre Hour	$	35.00	per Hr.
Total Operating Cost Per Hour	$	85.00	per Hr.
Operating Cost Per Minute	$	1.42	per Min.
Cost Per Cubic Yard	**$**	**1.25**	per Cu. Yd.
Loading Cost Per Cubic Yard	**$**	**1.56**	per Cu. Yd.
Spreading Cost Per Cubic Yard			
Cost of Excavator Per Hour	$	130.00	per Hr.
Cost of Excavator Operator Per Hour	$	50.00	per Hr.
Cost of Compaction Equip. Per Hour	$	110.00	per Hr.
Cost of Compaction Equip. Op. Per Hour	$	50.00	per Hr.
Total Operating Cost Per Hour	$	340.00	per Hr.
Cost Per Cubic Yard to Place and Compact	$	2.36	Cu. Yd.
Total Cost to Load, Haul, and Place	**$**	**5.18**	Cu. Yd.

Rates

Dump Truck	Rate ($/Hr.)	Capacity (cy)	Operator ($/Hr.)	Total
B20	$ 70.00	20	$ 35.00	$ 105.00
D10	$ 50.00	12	$ 35.00	$ 85.00
OH25	$ 80.00	25	$ 35.00	$ 115.00

Grader	Rate ($/Hr.)	Operator ($/Hr.)	Total
12-G	$ 55.00	$ 50.00	$ 105.00
14-G	$ 60.00	$ 50.00	$ 110.00

Compaction Equipment	Rate ($/Hr.)	Operator ($/Hr.)	Total
Vibratory Roller	$ 50.00	$ 50.00	$ 100.00
Vib. Grid Roller	$ 50.00	$ 50.00	$ 100.00
Hand Held Compactor	$ 20.00	$ 50.00	$ 70.00

Tractors	Rate ($/Hr.)	Operator ($/Hr.)	Total
D4	$ 35.00	$ 50.00	$ 85.00
D6	$ 60.00	$ 50.00	$ 110.00
D7	$ 70.00	$ 50.00	$ 120.00
D8	$ 110.00	$ 50.00	$ 160.00

Loader	Rate ($/Hr.)	Capacity (cy)	Operator ($/Hr.)	Total
14G Cat Wheel Loader	$ 60.00	3	$ 50.00	$ 110.00
Cat 325 Excavator	$ 130.00	1.5	$ 50.00	$ 180.00

Loading Costs	Rate (Min/Load)	Delay (Min)	Total Loading Time (Min)
Crushed Rock	5	1.25	6.25
Pit-Run/Jaw-Run Rock	5	1.25	6.25
Rip Rap Rock	5	1.25	6.25
Fill Material	5	1.25	6.25

Dump or Spread Time (Min)	
Pile Dump	0.25
Truck Spread	0.5
Spreading w/dozer	5
Place with Excavator	6

Sweet Lass (341-18-35)
FY 2017

TIMBER CRUISE REPORT

1. **Sale Area Location**: Portions of Section 29, T11S, R07W, W.M., Benton County, Oregon

2. **Fund Distribution:**
   a. **Fund** BOF 100%
   b. **Tax Code**

3. **Sale Acreage by Area:**

Area	Treatment	Gross Acres	Stream Buffers	Existing Roads	Green Tree Retention Areas	Net Sale Acres	Acreage Comp. Method
1	Modified Clearcut	42	3	1	2	36	Ortho photo, GIS, GPS

4. **Cruisers and Cruise Dates:** The sale area was cruised by Aaron McEwen in October of 2016.

5. **Cruise Method and Computation:** The sale consists of one modified clearcut area that was cruised using variable radius plot sampling. The sale area was cruised using a 20 BAF with plots 3 chains apart on plot lines spaced 4 chains apart. A total of 26 plots were taken with 16 count plots and 10 cruise plots. Cruise plots were measured for DBH, height and defect. Cruise plot data was entered into a variable plot excel spreadsheet to determine average DBH, TPA and volume per acre. A Hidden defect and breakage of 5% was applied to the resulting volume. Grade breakdown was determined by applying the average grade breakdown from several similar sales previously cruised in the area.

   Digital ortho photos, LiDar data, and GPS data from a Garmin GPSmap 64st were used to map the boundaries for the sale, and ArcMap 10.4.1 was used to determine gross acreage.

6. **Measurement Standards:** Tree heights were measured to the nearest foot, to a top diameter of 7 inches outside bark. Diameters were measured to the nearest inch, and a standard form factor of 87 was used. Most trees were graded in 40 foot log segments unless breakage, defect, or length to top of grade cruise diameter warranted otherwise.

7. **Timber Description:** Timber in the sale area consists of 38 to 48 year-old planted Douglas-fir, and minor amounts of red alder. An ice storm in November 2014 broke the tops out of approximately two-thirds of the trees. Most breakage was above the merchantable height and trees are still living. About 12% of the trees, mostly from the smaller diameter classes, are standing dead, but recent evaluation shows them to still contain sound wood. The average volume per acre to be harvested (net) is 17.3 MBF.

8. Total Volume (MBF) by Species and Grade:

Species	Gross Cruise Volume	Hidden D&B	Hidden D&B (MBF)	Net Sale Volume
Area 1				
Douglas-fir	655	5%	32	623

Species	DBH	Net Vol.	2-Saw	3-Saw	4-Saw
Area 1	Grade Percentages		16%	67%	17%
Douglas-fir	13	623	100	417	106

Attachments: Density Management Worksheets
Average Historic Sort Grade Percentages
Cruise maps

Prepared by: Blake McKinley Date: 4/25/2017

Unit Forester: Evelyn Hukari Date: 5/4/17

Evelyn Hukari

Unit: **Sweet Lass**
Date: **10/17/2016**

Current

DIAM. CLASS	# by CLASS	TPA
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	2	11
9	3	14
10	7	26
11	8	24
12	7	18
13	15	33
14	21	39
15	16	26
16	12	17
17	11	14
18	3	3
19	5	5
20	2	2
21	3	2
22	1	1
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
Total	116	

SPECIES	D-Fir
BAF	20
# PLOTS	10

TPA	235
BA	232
QMD	13.5
RD	63
SDI	380

Post Harvest

DIAM. CLASS	# by CLASS	TPA
3		0
4		0
5		0
6		0
7		0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	2	2
21	3	2
22	1	1
23		0
24		0
25		0
26		0
27		0
28		0
29		0
30		0
31		0
32		0
33		0
34		0

SPECIES	D-Fir
BAF	20
# PLOTS	10

TPA	5
BA	12
QMD	21
RD	3
SDI	16

Diam.	Tree/ac removed	Volume/ tree	Volume/ Acre
8"	11	20	220
9"	14	30	420
10"	26	40	1040
11"	24	50	1200
12"	18	60	1080
13"	33	70	2310
14"	39	80	3120
15"	26	105	2730
16"	17	140	2380
17"	14	160	2240
18"	3	170	510
19"	5	200	1000
	Total/Acre		18250
	x in-growth		1
			18250
	x D&B		0.95
			17338

Unit Name: **Sweet Lass**
Date: **10/17/2016**

DBH	DF-BTG Tree Cnt	DF-BTD Tree Cnt	DF-intact Tree Cnt	No. Plots	Trees/Plot Df	Trees/Plot Hem	Trees/Plot Alder	STF	DF-BTG Per Acre	DF-BTD Per Acre	DF-intact Per Acre
8"	0	2	0	10	0.00	0.20	0.00	57	0.00	11.40	0.00
9"	1	0	2	10	0.10	0.00	0.20	46	4.60	0.00	9.20
10"	5	2	0	10	0.50	0.20	0.00	37	18.50	7.40	0.00
11"	6	1	1	10	0.60	0.10	0.10	30	18.00	3.00	3.00
12"	3	2	2	10	0.30	0.20	0.20	26	7.80	5.20	5.20
13"	11	0	4	10	1.10	0.00	0.40	22	24.20	0.00	8.80
14"	12	1	8	10	1.20	0.10	0.80	19	22.80	1.90	15.20
15"	11	0	5	10	1.10	0.00	0.50	16	17.60	0.00	8.00
16"	5	0	7	10	0.50	0.00	0.70	14	7.00	0.00	9.80
17"	5	0	6	10	0.50	0.00	0.60	13	6.50	0.00	7.80
18"	1	0	2	10	0.10	0.00	0.20	11	1.10	0.00	2.20
19"	1	0	4	10	0.10	0.00	0.40	10	1.00	0.00	4.00
20"	1	0	1	10	0.10	0.00	0.10	9	0.90	0.00	0.90
21"	1	0	2	10	0.10	0.00	0.20	8	0.80	0.00	1.60
22"	0	0	1	10	0.00	0.00	0.10	8	0.00	0.00	0.80
23"	0	0	0	10	0.00	0.00	0.00	7	0.00	0.00	0.00
24"	0	0	0	10	0.00	0.00	0.00	6	0.00	0.00	0.00
Tot.	63	8	45								

DFG = Green Douglas-fir w/ broken top; DFD = Dead Douglas-fir w/ broken top

Av. Trees/plot	6	1	5	TPA	131	29	77
Trees/Plot Tot.	11.6			TPA Tot.	236		

BA/Acre:	
Douglas-fir - BT Green	126
Douglas-fir - BT Dead	16
Douglas-fir intact	90
Total	232

BA/Tree:	
Douglas-fir - BT Green	0.96
Douglas-fir - BT Dead	0.55
Douglas-fir intact	1.18

Av. Stand DBH:	
Douglas-fir - Green	13.29
Douglas-fir - Dead	10.08
Douglas-fir - intact	14.69
Average	12.83

%SDI:	
Douglas-fir All	0.59
Douglas-fir Dead	0.05

Gross Volume Est.:	193 Tr./Ac.	x	70 BF/Tr.	=	13,510	BF/Acre
	43 Tr./Ac.	x	110 BF/Tr.	=	4,730	BF/Acre
					18,240	BF/Acre
				D & B	0.95	
				Tot. Net	17,328	BF/Acre

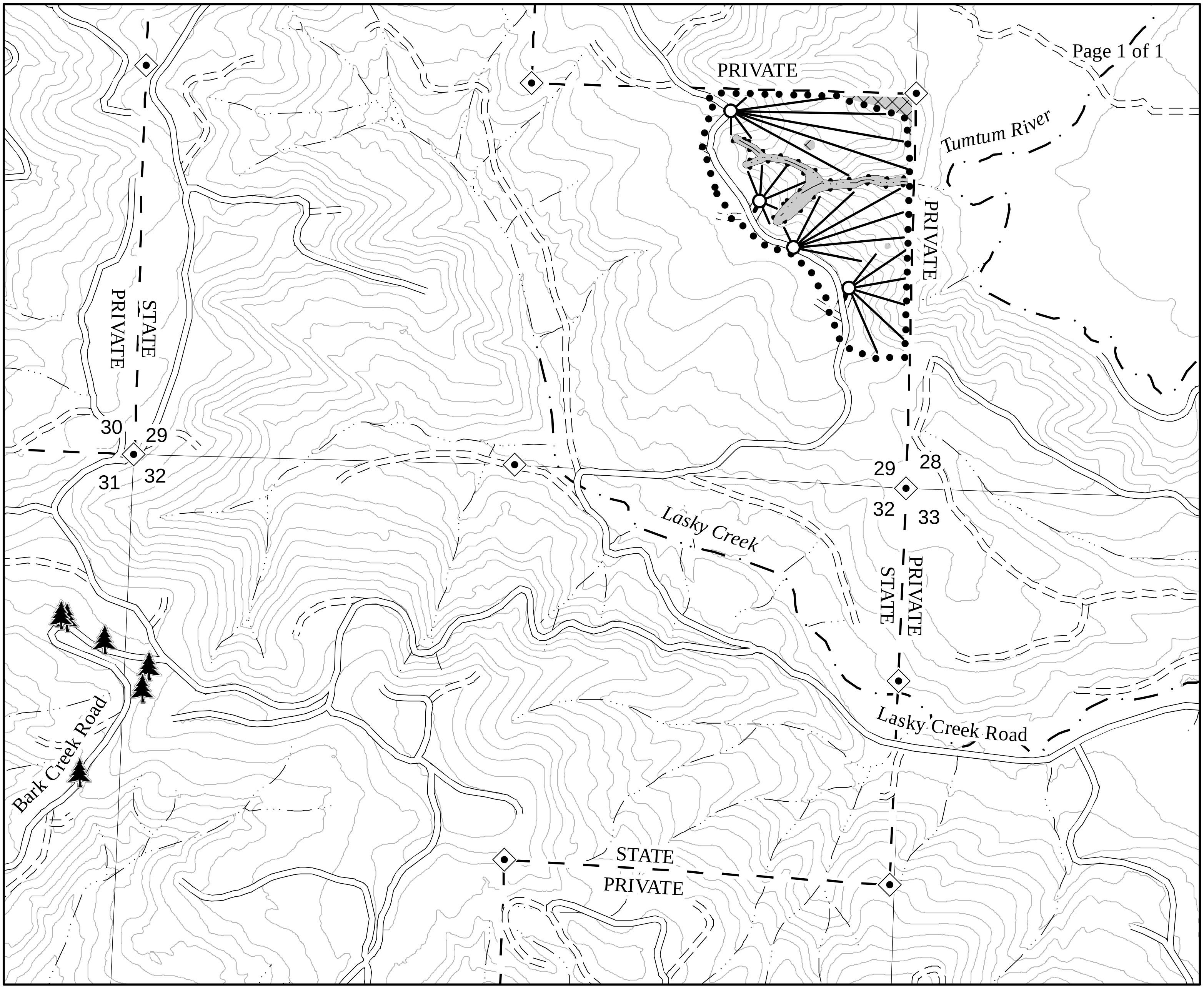
Young ClearCut Breakdown

03/23/2017

<table>
<tr><th>Sale</th><th>Area</th><th>Grade</th><th>Volume</th><th>Percent</th></tr>
<tr><td rowspan="3">Aire Apparent</td><td rowspan="3">1</td><td>2</td><td>111</td><td></td></tr>
<tr><td>3</td><td>54</td><td></td></tr>
<tr><td>4</td><td>8</td><td></td></tr>
<tr><td rowspan="2">Cabin Fever</td><td rowspan="2">1</td><td>3</td><td>294</td><td></td></tr>
<tr><td>4</td><td>114</td><td></td></tr>
<tr><td rowspan="4">Wildwood Combo</td><td rowspan="2">1</td><td>3</td><td>128</td><td></td></tr>
<tr><td>4</td><td>32</td><td></td></tr>
<tr><td rowspan="2">2</td><td>3</td><td>348</td><td></td></tr>
<tr><td>4</td><td>87</td><td></td></tr>
<tr><td rowspan="3">SwitchUp</td><td rowspan="3">1</td><td>2</td><td>385</td><td></td></tr>
<tr><td>3</td><td>631</td><td></td></tr>
<tr><td>4</td><td>121</td><td></td></tr>
<tr><td rowspan="6">Lakeridge</td><td rowspan="3">1</td><td>2</td><td>0</td><td></td></tr>
<tr><td>3</td><td>479</td><td></td></tr>
<tr><td>4</td><td>120</td><td></td></tr>
<tr><td rowspan="3">2</td><td>2</td><td>0</td><td></td></tr>
<tr><td>3</td><td>117</td><td></td></tr>
<tr><td>4</td><td>29</td><td></td></tr>
<tr><td colspan="2" rowspan="3">TOTAL</td><td>2</td><td>496</td><td>16%</td></tr>
<tr><td>3</td><td>2051</td><td>67%</td></tr>
<tr><td>4</td><td>511</td><td>17%</td></tr>
<tr><td></td><td></td><td></td><td>3058</td><td></td></tr>
</table>

As of 3/28/17

Gross: 18.2 MBF/acre
Net: 17.3 MBF/acre



Legend

Boundaries

- Timber Sale Boundary
- State Forest Property Boundary
- Right of Way (Posted)

Roads

- Surfaced Road
- Unsurfaced Road
- New Construction

Streams

- Type F Stream
- Type N Stream
- Posted Stream Buffer
- Stream Buffer
- Cable Corridors
- Land Survey Monument
- Parent Trees
- Green Tree Retention Area

LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-18-035
SWEET LASS
PORTIONS OF SECTION 29, T11S, R7W, W.M.,
BENTON COUNTY, OREGON

NET ACRES Cable = 29
NET ACRES Tractor = 7

This product is for informational use and may not have been prepared for or be suitable for legal, engineering or survey purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of this information.

Scale

1:12,000

1,000 0 1,000 2,000 Feet

N

Created By: Blake McKinley
blake.mckinley@oregon.gov
Date: 04/27/2017