



Timber Sale Appraisal  
Zig Zag Alder  
Sale 341-12-20

"STEWARDSHIP IN FORESTRY"

District: Tillamook

Date: July 06, 2011

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**cost summary**

	<b>Conifer</b>	<b>Hardwood</b>	<b>Total</b>
<b>Gross Timber Sale Value</b>	\$295,538.88	\$260,106.70	\$555,645.58
		<b>Project Work:</b>	\$(87,170.00)
		<b>Advertised Value:</b>	\$468,475.58



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**timber description**

Location: Portions of Sections 21, 22 and 28, T1S, R7W, W.M., Tillamook County, Oregon.

Stand Stocking: 80%

SpecieName	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	14	0	95
Alder (Red)	14	0	90

Volume by Grade	10" - 11"	12"+	2S	3S	4S	6" - 7"	8" - 9"	Total
Douglas - Fir	0	0	551	1,265	572	0	0	2,388
Alder (Red)	258	85	0	0	0	538	93	974
Total	258	85	551	1,265	572	538	93	3,362



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comments: Pond Values Used: 2nd Quarter Calendar Year 2011.

Western redcedar & Other Cedars Stumpage Price = Pond Value minus  
Logging Cost  
 $\$650/\text{MBF} = \$950/\text{MBF} - \$300/\text{MBF}$

Sitka Spruce & Other Conifers Stumpage Price = Pond Value minus  
Logging Cost  
 $\$95/\text{MBF} = \$395/\text{MBF} - \$300/\text{MBF}$

Pulp (Conifer and Hardwood) Price =  $\$26.00/\text{MBF}$   
(See attached Pulp Appraisal sheet)

SCALING COST ALLOWANCE =  $\$5.00/\text{MBF}$

FUEL COST ALLOWANCE =  $\$4.00/\text{Gallon}$

HAULING COST ALLOWANCE  
Hauling cost equivalent to  $\$740$  daily truck cost.

Other Costs (Profit and Risk to be added):  
Branding and Painting:  $\$2/\text{MBF} \times 3362 \text{ MBF} = \$6,724$   
TOTAL Other Costs (Profit and Risk to be added) =  $\$6,724$

Other Costs (No Profit and Risk added):  
Slash Piling and Sorting:  $\$2.50/\text{acre cable harvest} \times 205 \text{ acres} =$   
 $\$512.50$   
Trask Public Safety Road Fee:  $\$20/\text{MBF} \times 3,362 \text{ MBF} = \$67,240$   
Cover Material for Piles:  $20 \text{ piles} \times \$5/\text{pile} = \$100$   
Motorcycle Filters:  $4 \text{ filters} \times \$75/\text{filter} = \$300$   
TOTAL Other Costs (No Profit and Risk added) =  $\$68,152.50$

ROAD MAINTENANCE  
Maintenance Rock:  $(\$7.61/\text{cu. yd.} \times 8.2 \text{ miles} \times 20 \text{ cu.}$   
 $\text{yd./MMBF/mile} \times 3.362 \text{ MMBF})/3362 \text{ MBF} = \$1.25/\text{MBF}$

Interim Grading -  $\$250/\text{Mile} \times 8.2 \text{ miles} \times 1 \text{ grading}/3362 \text{ MBF} =$   
 $\$.61/\text{MBF}$

Final Maintenance:  
Grading -  $\$500/\text{Mile} \times 8.2 \text{ miles} \times 1 \text{ grading}/3362 \text{ MBF} = \$1.22/\text{MBF}$

Vibratory Roller:  $\$17.75/\text{station} \times 52.8 \text{ stations/mile} \times 8.2$   
 $\text{miles}/3,362 = \$2.29/\text{MBF}$

TOTAL Maintenance Cost =  $\$5.37/\text{MBF}$



"STEWARDSHIP IN FORESTRY"

# Timber Sale Appraisal Zig Zag Alder Sale 341-12-20

District: Tillamook

Date: July 06, 2011

## logging conditions

**combination#:** 1            Douglas - Fir                    30.00%  
                                 Alder (Red)                    10.00%

**yarding distance:** Long (1,500 ft)                    **downhill yarding:** No  
**logging system:** Cable: Large Tower >=70                    **Process:** Stroke Delimber  
**tree size:** Small / Thinning 10in (90 Bft/tree), 18-20 logs/MBF  
**loads / day:** 4.0                    **bd. ft / load:** 3,500  
**cost / mbf:** \$273.33

**machines:** Log Loader (A)  
Stroke Delimber (A)  
Tower Yarder (Large)

**combination#:** 2            Douglas - Fir                    25.00%  
                                 Alder (Red)                    10.00%

**yarding distance:** Medium (800 ft)                    **downhill yarding:** No  
**logging system:** Cable: Large Tower >=70                    **Process:** Stroke Delimber  
**tree size:** Small / Thinning 10in (90 Bft/tree), 18-20 logs/MBF  
**loads / day:** 6.0                    **bd. ft / load:** 3,500  
**cost / mbf:** \$182.22

**machines:** Log Loader (A)  
Stroke Delimber (A)  
Tower Yarder (Large)

**combination#:** 3            Douglas - Fir                    45.00%  
                                 Alder (Red)                    80.00%

**yarding distance:** Short (400 ft)                    **downhill yarding:** No  
**logging system:** Cable: Large Tower >=70                    **Process:** Stroke Delimber  
**tree size:** Small / Thinning 10in (90 Bft/tree), 18-20 logs/MBF  
**loads / day:** 8.0                    **bd. ft / load:** 3,500  
**cost / mbf:** \$136.67

**machines:** Log Loader (A)  
Stroke Delimber (A)  
Tower Yarder (Large)



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal  
Zig Zag Alder  
Sale 341-12-20

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Date: July 06, 2011

**logging costs**

Operating Seasons:	2.00	Profit Risk:	15.00%
Project Costs:	\$87,170.00	Other Costs (P/R):	\$6,724.00
Slash Disposal:	\$0.00	Other Costs:	\$68,152.50

**Miles of Road**

Road Maintenance: \$5.37

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	3.5
Alder (Red)	\$0.00	3.0	3.3

**Local Pond Values**

Date	Specie	Grade	Value
7/6/11	Douglas - Fir	2S	\$520.00
7/6/11	Douglas - Fir	3S	\$480.00
7/6/11	Douglas - Fir	4S	\$455.00
7/6/11	Alder (Red)	8" - 9"	\$590.00
7/6/11	Alder (Red)	10" - 11"	\$625.00
7/6/11	Alder (Red)	12"+	\$650.00
7/6/11	Alder (Red)	6" - 7"	\$510.00



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**logging costs breakdown**

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling	Other	Total
<b>Douglas - Fir</b>									
\$189.06	\$5.64	\$2.61	\$91.31	\$2.00	\$43.59	\$0.00	\$5.00	\$20.27	\$359.48
<b>Alder (Red)</b>									
\$154.89	\$5.91	\$2.61	\$67.63	\$2.00	\$34.96	\$0.00	\$5.00	\$20.27	\$293.27

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$483.24	\$123.76	\$0.00
Alder (Red)	\$0.00	\$560.32	\$267.05	\$0.00



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**summary**

**Amortized**

Specie	MBF	Value	Total
Douglas - Fir	0	\$0.00	\$0.00
Alder (Red)	0	\$0.00	\$0.00

**Unamortized**

Specie	MBF	Value	Total
Douglas - Fir	2,388	\$123.76	\$295,538.88
Alder (Red)	974	\$267.05	\$260,106.70

**Gross Timber Sale Value**

Recovery: \$555,645.58

Prepared by: David Luttrell

Phone: 503-815-7025

## Pulp Appraisal

<b>Sale Name</b>	<b>Zig Zag Alder</b>
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Species	Douglas-fir	Hemlock	Alder	Spruce
<b>Stems Per/ac.</b>	95	0	90	0
<b>Acres</b>	205	0	205	0
<b>Total Stems</b>	19475	0	18450	0
<b>BF/Stem, Conversion</b>	10	10	10	10
<b>Total MBF Per/Species</b>	195	0	185	0
<b>Pond Value Per/MBF</b>	\$270	\$300	\$340	\$300
<b>* Logging + Hauling Costs</b>	\$240.00	\$0.00	\$310.00	\$0.00
<b>Stumpage</b>	\$30.00	\$300.00	\$30.00	\$300.00
<b>Tons Per/MBF, Conversion</b>	10	10	10	10
<b>Price Per/Ton</b>	\$3.00	\$30.00	\$3.00	\$30.00
<b>Total Tons Per/Species</b>	1948	0	1845	0
<b>Total Value</b>	\$5,842.50	\$0.00	\$5,535.00	\$0.00

	Total Price	Price/Ton	Price/MBF
	\$11,377.50	\$3.00	\$30.00
<b>Total Less P/R15%</b>	\$967,087.50	\$2.55	\$25.50

<b>Contract Price</b>	<b>\$26</b>
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\* logging + hauling costs = \$30. under pond value





PROJECT SUMMARY SHEET

Sale: Zig Zag Alder

**CONSTRUCTION**

Point	A to B	7+20	stations =	\$8,097.25
Point	C to D	6+95	stations =	\$7,233.27
Point	E to F	1+55	stations =	\$2,784.17
Point	I to J	0+75	stations =	\$1,467.86
<b>SUBTOTAL CONSTRUCTION</b>				<b>\$19,582.55</b>

**IMPROVEMENT**

Point	A to B	108+40	stations =	\$40,345.13
Point	G to H	12+95	stations =	\$7,184.92
Point	K to L	60+05	stations =	\$11,783.88
<b>SUBTOTAL IMPROVEMENT</b>				<b>\$59,433.43</b>

**RECONSTRUCTION**

Point	A to B	2+25	stations =	\$2,275.71
Point	I to J	0+85	stations =	\$1,691.88
<b>SUBTOTAL RECONSTRUCTION</b>				<b>\$3,967.59</b>

**MOVE IN**

**\$4,186.43**

**GRAND TOTAL** **\$87,170.00**

## SUMMARY OF CONSTRUCTION COST

Sale: <b>Zig Zag Alder</b>		Road: <b>A to B</b>						
Construction -	7+20 0.14	stations miles	Improvement -	108+40 2.05	stations miles	Reconstruction -	2+25 0.04	stations miles

**CONSTRUCTION:** CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station	=	
110+65		111+05	50%		Outslope	\$459	=	\$183.60
111+05		112+70	30%		Outslope	\$191	=	\$315.15
112+70		115+10	60%	0.76	Outslope	\$1,844	=	\$4,425.60
115+10		116+45	45%		Outslope	\$269	=	\$363.15
116+45		117+35	25%		Outslope	\$165	=	\$148.50
117+35		117+85	15%		Outslope	\$107	=	\$53.50
<b>TOTAL</b>								<b>\$5,489.50</b>

**IMPROVEMENT:** EXCAVATION -  
Road Earthwork

	108.40	sta. @	\$10.00	per sta. =	\$1,084.00
<b>TOTAL EXCAVATION</b>					<b>\$1,084.00</b>

**RECONSTRUCTION:** CLEARING AND GRUBBING -

Widening	0.036	acres @	\$660.00	per acre =	\$23.76
Scattering	0.270	acres @	\$980.00	per acre =	\$264.60
<b>TOTAL CLEARING AND GRUBBING</b>					<b>\$288.36</b>

**RECONSTRUCTION:** EXCAVATION -

Road Earthwork	2.25	sta. @	\$25.00	per sta. =	\$56.25
Widening	318	cy. @	\$1.40	per c.y. =	\$445.20
<b>TOTAL EXCAVATION</b>					<b>\$501.45</b>

**RECONSTRUCTION:** ENDHAUL -

Widening	108+55	to	108+90	254	cy. @	\$1.86	per c.y. =	\$472.44
Widening	108+90	to	109+25	64	cy. @	\$1.86	per c.y. =	\$119.04
Spread & compact				318	cy. @	\$0.25	per c.y. =	\$79.50
<b>TOTAL ENDHAUL</b>								<b>\$670.98</b>

**ROCK**

0+00 to	5+40	200	cy. of	Crushed	@	\$12.17	per c.y. =	\$2,434.00
14+10 to	20+85	240	cy. of	Crushed	@	\$12.30	per c.y. =	\$2,952.00
51+05 to	117+85	3,560	cy. of	Pit-Run	@	\$7.81	per c.y. =	\$27,803.60
Landing Rock	TBD/117+85	330	cy. of	Pit-Run	@	\$7.25	per c.y. =	\$2,392.50
Energy Dissipator	45+50	10	cy. of	Riprap	@	\$11.39	per c.y. =	\$113.90
<b>TOTAL ROCK</b>								<b>\$35,696.00</b>

**SPECIAL PROJECTS**

Pull / Construct Ditch & Scatter Material: 0+00 to 52+40	35.15	stations @	\$50.00	per station	\$1,757.50
Construct waste areas -	2.00	hours @	\$130.00	per hour	\$260.00
Drifting material from 112+70 to 110+65	2.05	stations @	\$140.00	per station	\$287.00
Pull Back and End Haul Existing Sidecast, Right: 78+95 to 80+15 -	1.00	hours @	\$310.00	per hour	\$310.00
Pull/Construct Ditch & End Haul Material: 40+05 to 44+30	4.25	stations @	\$60.00	per station	\$255.00
Construct Turnaround @ 51+50 & 117+35	2.00	@	\$60.00	each	\$120.00
Grade and shape road -	117.85	stations @	\$15.50	per station	\$1,826.68
Construct Ditch Out @ 5+50, Right	0.50	hours @	\$60.00	per hour	\$30.00
Roll subgrade w/ vibratory roller prior to rocking -	117.85	stations @	\$13.20	per station	\$1,555.62
Grass seed and fertilize -	1.3	acres @	\$220.00	per acre	\$286.00
Mulching -	0.5	acres @	\$600.00	per acre	\$300.00
<b>TOTAL SPECIAL PROJECTS</b>					<b>\$6,987.80</b>

**GRAND TOTAL** **\$50,718.09**

## SUMMARY OF CONSTRUCTION COST

Sale:

**Zig Zag Alder**

Road:

**C to D**

Construction -	6+95	stations	Improvement -	0+00	stations	Reconstruction -	0+00	stations
	0.13	miles		0.00	miles		0.00	miles

**CONSTRUCTION:** CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station	=		
0+00		0+20	0%			\$55	=	\$11.00	
0+20		0+85	10%			\$90	=	\$58.50	
0+85		4+20	30%			\$191	=	\$639.85	
4+20		5+15	20%			\$139	=	\$132.05	
5+15		5+90	60%			\$1,493	=	\$1,119.75	
5+90		6+25	30%			\$191	=	\$66.85	
6+25		6+95	5%			\$74	=	\$51.80	
<b>TOTAL</b>								<b>\$2,079.80</b>	
\$0.00								<b>TOTAL CULVERTS</b>	<b>\$0.00</b>

ROCK	0+00 to	6+95	400 cy. of	Pit-Run	@	\$7.02 per c.y.=	\$2,808.00
	Landing Rock	6+95	165 cy. of	Pit-Run	@	\$7.08 per c.y.=	\$1,168.20
<b>TOTAL ROCK</b>							<b>\$3,976.20</b>

SPECIAL PROJECTS								
Construct Landing @ 6+95 -	1.00	@	\$285.00	each				\$285.00
Pullback & End Haul Existing Sidecast, Right: 3+50 to 4+20-	1.00	hours @	\$310.00	per hour				\$310.00
Construct Turnaround @ 3+85	1.00	@	\$60.00	each				\$60.00
Grade and shape road -	6.95	stations @	\$15.50	per station				\$107.73
Cut Thru Ridge & Drift Ahead for Switchback: 0+20 to 1+30 -	1.30	stations @	\$140.00	each				\$182.00
Roll subgrade w/ vibratory roller prior to rocking -	6.95	stations @	\$13.20	per station				\$91.74
Grass seed and fertilize -	0.64	acres @	\$220.00	per acre				\$140.80
<b>TOTAL SPECIAL PROJECTS</b>								<b>\$1,177.27</b>

**GRAND TOTAL** **\$7,233.27**

## SUMMARY OF CONSTRUCTION COST

Sale:

**Zig Zag Alder**

Road:

**E to F**

Construction -	1+55	stations	Improvement -	0+00	stations	Reconstruction -	0+00	stations
	0.03	miles		0.00	miles		0.00	miles

**CONSTRUCTION:** CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station	=		
0+00		1+55	15%			\$107		\$165.85	
								<b>TOTAL</b>	<b>\$165.85</b>

**ROCK**

0+00	to	1+55	140	cy. of	Pit-Run	@	\$7.05 per c.y.=	\$987.00	
Landing		Rock	1+55	165	cy. of	Pit-Run	@	\$7.07 per c.y.=	\$1,166.55
								<b>TOTAL ROCK</b>	<b>\$2,153.55</b>

**SPECIAL PROJECTS**

Landing Construction @ 1+55 -	1.00	@	\$285.00	each	\$285.00		
Construct Turnaround @ A to B, 82+00 -	1.00	@	\$60.00	each	\$60.00		
Grade and shape road -	1.55	stations @	\$31.00	per station	\$48.05		
Roll subgrade w/ vibratory roller prior to rocking -	1.55	stations @	\$26.40	per station	\$40.92		
Grass seed and fertilize -	0.14	acres @	\$220.00	per acre	\$30.80		
						<b>TOTAL SPECIAL PROJECTS</b>	<b>\$464.77</b>

**GRAND TOTAL**      **\$2,784.17**

## SUMMARY OF CONSTRUCTION COST

Sale:

**Zig Zag Alder**

Road:

**G to H**

<u>Construction -</u>	0+00	stations	<u>Improvement -</u>	12+95	stations	<u>Reconstruction -</u>	0+00	stations
	0.00	miles		0.25	miles		0.00	miles

**IMPROVEMENT:** EXCAVATION -

Road Earthwork	12.95	sta. @	\$10.00	per sta. =	\$129.50	
					<b>TOTAL EXCAVATION</b>	<b>\$129.50</b>

**ROCK**

0+00 to	12+95	720	cy. of	Pit-Run	@	\$7.17	per c.y. =	\$5,162.40	
Landing Rock	12+95	165	cy. of	Pit-Run	@	\$7.27	per c.y. =	\$1,199.55	
								<b>TOTAL ROCK</b>	<b>\$6,361.95</b>

**SPECIAL PROJECTS**

Construct Turnaround @ 12+00	1.00	@	\$60.00	each	\$60.00	
Grade and shape road -	12.95	stations @	\$15.50	per station	\$200.73	
Roll subgrade w/ vibratory roller prior to rocking -	12.95	stations @	\$13.20	per station	\$170.94	
Grass seed and fertilize -	1.19	acres @	\$220.00	per acre	\$261.80	
					<b>TOTAL SPECIAL PROJECTS</b>	<b>\$693.47</b>

<b>GRAND TOTAL</b>	<b>\$7,184.92</b>
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## SUMMARY OF CONSTRUCTION COST

Sale:

**Zig Zag Alder**

Road:

**I to J**

Construction -	0+75	stations	Improvement -	0+00	stations	Reconstruction -	0+85	stations
	0.01	miles		0.00	miles		0.02	miles

**CONSTRUCTION:** CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station	=		
0+85		1+60	15%		Outslope	\$107	=	\$80.25	
								<b>TOTAL</b>	<b>\$80.25</b>

**RECONSTRUCTION:** CLEARING AND GRUBBING -  
Scattering

0.10	acres @	\$980.00 per acre =		\$98.00	
				<b>TOTAL CLEARING AND GRUBBING</b>	<b>\$98.00</b>

**RECONSTRUCTION:** EXCAVATION -  
Road Earthwork

0.85	sta. @	\$25.00 per sta. =		\$21.25	
				<b>TOTAL EXCAVATION</b>	<b>\$21.25</b>

**ROCK**

0+00 to	1+60	140 cy. of	Pit-Run	@	\$7.42 per c.y. =		\$1,038.80	
Landing Rock	1+60	165 cy. of	Pit-Run	@	\$7.44 per c.y. =		\$1,227.60	
							<b>TOTAL ROCK</b>	<b>\$2,266.40</b>

**SPECIAL PROJECTS**

Drift material from 1+60 to 0+00 -	1.60	stations @	\$140.00	per station	\$224.00	
Construct Landing @ 1+60 -	1.00	@	\$285.00	each	\$285.00	
Construct Turnaround @ 0+85	1.00	@	\$60.00	each	\$60.00	
Grade and shape road -	1.60	stations @	\$31.00	per station	\$49.60	
Roll subgrade w/ vibratory roller prior to rocking -	1.60	stations @	\$26.40	per station	\$42.24	
Grass seed and fertilize -	0.15	acres @	\$220.00	per acre	\$33.00	
					<b>TOTAL SPECIAL PROJECTS</b>	<b>\$693.84</b>

**GRAND TOTAL** **\$3,159.74**

## SUMMARY OF CONSTRUCTION COST

Sale: **Zig Zag Alder**

Road: **K to L**

Construction -	0+00	stations	Improvement -	60+05	stations	Reconstruction -	0+00	stations
	0.00	miles		1.14	miles		0.00	miles

**IMPROVEMENT: EXCAVATION -**

Road Earthwork	60.05	sta. @	\$10.00	per sta. =	\$600.50	
	<b>TOTAL EXCAVATION</b>					<b>\$600.50</b>

**CULVERTS - MATERIALS & INSTALLATION**

Culverts

60	LF of 18"	\$1,050.00	0	LF of 24"	\$0.00
		\$1,050.00			\$0.00

Culvert Stakes & Markers

2	markers	\$16.00
		\$16.00

**TOTAL CULVERTS \$1,066.00**

**ROCK**

Slope Stabilization	58+75	20	cy. of	Riprap	@	\$7.71 per c.y.=	\$154.20
Energy Dissipator	58+75/60+05	20	cy. of	Riprap	@	\$11.39 per c.y.=	\$227.80
Backfill	58+75/60+05	20	cy. of	Crushed	@	\$11.32 per c.y.=	\$226.40
Bedding	58+78/60+05	10	cy. of	Crushed	@	\$11.32 per c.y.=	\$113.20
							<b>TOTAL ROCK</b>
							<b>\$721.60</b>

**SPECIAL PROJECTS**

Failing Sidecast Pullback: 36+20, Right	2.00	hours @	\$310.00	per hour	\$620.00
Failing Sidecast Pullback: 46+05, Right	4.00	hours @	\$310.00	per hour	\$1,240.00
Failing Sidecast Pullback: 52+20, Right -	4.00	hours @	\$310.00	per hour	\$1,240.00
Failing Sidecast Pullback: 54+05, Right -	4.00	hours @	\$310.00	per hour	\$1,240.00
Failing Sidecast Pullback: 58+75, Right -	2.00	hours @	\$310.00	per hour	\$620.00
Failing Sidecast Pullback: 60+05, Right -	4.00	hours @	\$310.00	per hour	\$1,240.00
Grade and shape road -	60.05	stations @	\$15.50	per station	\$930.78
Reconstruct Road Prism @ 58+75, Right -	4.00	hours @	\$145.00	per hour	\$580.00
Failing Sidecast Pullback: 21+20, Right	4.00	hours @	\$310.00	each	\$1,240.00
Construct Ditch from 58+75 to 59+35	1.00	hours @	\$215.00	per hour	\$215.00
Grass seed and fertilize sidecast pullback areas -	0.50	acres @	\$220.00	per acre	\$110.00
Mulching sidecast pullback areas @ 58+75 & 60+05 (Culv. Installations)	0.20	acres @	\$600.00	per acre	\$120.00
					<b>TOTAL SPECIAL PROJECTS</b>
					<b>\$9,395.78</b>

**GRAND TOTAL**

**\$11,783.88**

## SUMMARY OF CONSTRUCTION COST

Sale: **Zig Zag Alder**

Road: **A to M**

Construction -	0+00	stations	Improvement -	0+75	stations	Reconstruction -	0+00	stations
	0.00	miles		0.01	miles		0.00	miles

**SPECIAL PROJECTS**

Pull/Construct Ditch & Scatter Material: 0+00 to 0+75	0.75	stations @	\$50.00	per station	\$37.50
Grass seed and fertilize -	0.10	acres @	\$220.00	per acre	\$22.00
Mulching -	0.10	acres @	\$600.00	per acre	\$60.00
				TOTAL SPECIAL PROJECTS	<b>\$119.50</b>
<b>GRAND TOTAL</b>					<b>\$119.50</b>



## ROCK PIT DEVELOPMENT AND CRUSHING COST SUMMARY

Pit:	Pit_run	Location:	Sec. 15, T1S, R7W, W.M.
Sale:	<b>Zig Zag Alder</b>	Road:	Lone Pine (K-L) <span style="float: right;">6050 c.y.</span>
Swell:	1.40	Stockpile:	c.y.
Shrinkage:	1.16	Total Truck Loads:	6050 c.y.
Drill Pct.:	50%	In Place Total:	4321 c.y.

Pit Development & Cleanup including Clearing and grubbing of Waste Area @ adjacent to pit, place overburden in Waste Area, spread and compact. \$5,889.32

Drill & Shoot:	\$2.50	/cu.yd.	x	2161	cu.yds.	=	\$5,402.50
Rip Rock:	\$1.90	/cu.yd.	x	2160	cu.yds.	=	\$4,104.00
Load Dump Truck:	\$0.70	/cu.yd.	x	6050	cu.yds.	=	\$4,235.00

Subtotal \$19,630.82

Move In and set up Drill and Compressor	1	@	\$563.73	=	\$563.73
Move in Roller and Compactor	1	@	\$563.73	=	\$563.73
Move in Grader	1	@	\$163.52	=	\$163.52
Move in Loader	1	@	\$718.47	=	\$718.47
Move in Excavator	1	@	\$951.02	=	\$951.02
Move in Trucks	4	@	\$185.33	=	\$741.32
Move in Water Truck	1	@	\$217.85	=	\$217.85
					Subtotal <span style="border-bottom: 1px solid black;">\$3,919.64</span>

TOTAL PRODUCTION COSTS \$23,550.46

Base Cost= \$3.89 Per Cu.Yd.

Road Segment	Haul Cost \$/cu.yd.	Proc Cost \$/cu.yd.	Base Cost. \$/cu.yd.	Cost \$/cu.yd.	Number Cu. Yds	ROCK COST
A to B 5105 11785 (Pit-Run)	2.82	1.10	3.89	7.81	3560	\$27,803.60
A to B Landing Rock (Pit-Run)	2.26	1.10	3.89	7.25	330	\$2,392.50
A to B Energy Dissipator (Riprap)	2.42	1.40	7.57	11.39	10	\$113.90
C to D 0 695 (Pit-Run)	2.03	1.10	3.89	7.02	400	\$2,808.00
C to D Landing Rock (Pit-Run)	2.09	1.10	3.89	7.08	165	\$1,168.20
E to F 0 155 (Pit-Run)	2.06	1.10	3.89	7.05	140	\$987.00
E to F Landing Rock (Pit-Run)	2.08	1.10	3.89	7.07	165	\$1,166.55
G to H 0 1295 (Pit-Run)	2.18	1.10	3.89	7.17	720	\$5,162.40
G to H Landing Rock (Pit-Run)	2.28	1.10	3.89	7.27	165	\$1,199.55
I to J 0 160 (Pit-Run)	2.43	1.10	3.89	7.42	140	\$1,038.80
I to J Landing Rock (Pit-Run)	2.45	1.10	3.89	7.44	165	\$1,227.60
K to L Slope Stabilization (Riprap)	2.42	1.40	3.89	7.71	20	\$154.20
K to L Energy Dissipator (Riprap)	2.42	1.40	7.57	11.39	20	\$227.80
N Stockpile	2.55	0.00	3.89	6.44	50	\$322.00
Total C.Y.					6050	Sub Total <span style="border-bottom: 1px solid black;">\$45,772.10</span>

TOTAL ROCKING COSTS \$45,772.10

**ROCK PIT DEVELOPMENT AND CRUSHING COST SUMMARY**

Pit:	Crushed	Location:	Sec.25 , T1S, R8W, W.M.
Sale:	<u>Zig Zag Alder</u>	Road:	N. F. Trask 470 c.y.
Swell:	1.40	Stockpile:	c.y.
Shrinkage	1.16	Total Truck Loads:	470 c.y.
Drill Pct:	100%	In Place Total:	336 c.y.

Pit Development & Cleanup including Clearing and grubbing of Waste Area @ adjacent to pit, place overburden in Waste Area, spread and compact. Load Dump Truck: \$0.70 /cu.yd. x 470 cu.yds. = \$329.00

Subtotal \$329.00

Move in Loader 1 @ \$420.00 = \$420.00  
 Move in Trucks 4 @ \$140.00 = \$560.00  
 Change Gradation

Subtotal \$980.00

**TOTAL PRODUCTION COSTS \$1,309.00**

Base Cost= \$2.79 Per Cu.Yd.

Road Segment	Haul Cost \$/cu.yd.	Proc Cost \$/cu.yd.	Base Cost \$/cu.yd.	Cost \$/cu.yd.	Number Cu. Yds	ROCK COST
A to B 0 540 (Crushed )	6.93	2.45	2.79	12.17	200	\$2,434.00
A to B 1410 2085 (Crushed )	7.06	2.45	2.79	12.30	240	\$2,952.00
K to L Backfill (Crushed)	8.53	0.00	2.79	11.32	20	\$226.40
K to L Bedding (Crushed)	8.53	0.00	2.79	11.32	10	\$113.20
				Total C.Y.	470	Sub Total \$5,725.60

**TOTAL ROCKING COSTS \$5,725.60**

## Move-In Calculations for Project Work not Involving Rocking/Pit Work

Sale: **Zig Zag Alder**

LOWBOY HAUL (Round Trip)		
DIST. (mi)	ROADWAY	AVE SPEED (mph)
20.4	Pavement	30
13.6	Main Lines	7
4.4	Steep Grades	2

No.	EQUIPMENT DESCRIPTION	Move in Cost	Pilot Cars	Within Area Move (\$/mile)	Begin Mileage	End Mileage	Total Miles	Within Area Cost	Total Cost
1	Graders	\$726.69		\$3.65	0.00	0.00	0	\$0.00	\$726.69
1	Excavators (Large)	\$966.66	1	\$44.80	0.00	0.00	0	\$0.00	\$966.66
1	Tired Backhoes/Skidlers	\$563.73		\$3.00	0.00	0.00	0	\$0.00	\$563.73
1	Tractors (D7)	\$832.55	2	\$11.30	0.00	0.00	0	\$0.00	\$832.55
4	Dump Truck (10 cy +)	\$911.47		\$2.85	0.00	0.00	0	\$0.00	\$911.47
1	Water Truck (1500 Gal)	\$185.33		\$2.85	0.00	0.00	0	\$0.00	\$185.33
<b>TOTAL MOVE-IN COSTS:</b>								<b>\$4,186.43</b>	

ROAD SEGMENT: A to B			STATIONS: 0+00 to 117+85					
Application	Rock Size and Type	Location	Compacted Depth	Volume (CY) per	Number of Units	Curve Widening (CY)	Approx. Total (CY)	
Road Rock	Crushed 2'-0"	0+00 to 5+40	6"	station	31.481	5.40	180	
Road Rock	Crushed 2'-0"	14+10 to 20+85	6"	station	31.111	6.75	220	
Road Rock	Pit-Run 6'-0"	51+05 to 117+85	9"	station	47.455	66.80	3,320	
Turnouts	Crushed 2'-0"	A to B	6"	TO	20	1	20	
Turnouts	Crushed 2'-0"	A to B	6"	TO	20	1	20	
Turnouts	Pit-Run 6'-0"	A to B	9"	TO	20	9	180	
Turnarounds	Pit-Run 6'-0"	51+50/117+35	9"	TA	30	2	60	
Application	Rock Size and Type	Location	Approx. Total (CY)					
Landing Rock	Pit-Run 6'-0"	TBD/117+85	330					
Energy Dissipator	Riprap 24"-12"	45+50	10					

ROAD SEGMENT: C to D			STATIONS: 0+00 to 6+95					
Application	Rock Size and Type	Location	Compacted Depth	Volume (CY) per	Number of Units	Curve Widening (CY)	Approx. Total (CY)	
Road Rock	Pit-Run 6'-0"	0+00 to 6+95	9"	station	47.482	6.95	350	
Turnouts	Pit-Run 6'-0"	C to D	9"	TO	20	1	20	
Turnarounds	Pit-Run 6'-0"	3+85	9"	TA	30	1	30	
Application	Rock Size and Type	Location	Approx. Total (CY)					
Landing Rock	Pit-Run 6'-0"	6+95	165					

ROAD SEGMENT: E to F			STATIONS: 0+00 to 1+55					
Application	Rock Size and Type	Location	Compacted Depth	Volume (CY) per	Number of Units	Curve Widening (CY)	Approx. Total (CY)	
Road Rock	Pit-Run 6'-0"	0+00 to 1+55	9"	station	51.613	1.55	90	
Turnouts	Pit-Run 6'-0"	E to F	9"	TO	20	1	20	
Turnarounds	Pit-Run 6'-0"	A to B, 82+00	9"	TA	30	1	30	
Application	Rock Size and Type	Location	Approx. Total (CY)					
Landing Rock	Pit-Run 6'-0"	1+55	165					

ROAD SEGMENT: G to H			STATIONS: 0+00 to 12+95					
Application	Rock Size and Type	Location	Compacted Depth	Volume (CY) per	Number of Units	Curve Widening (CY)	Approx. Total (CY)	
Road Rock	Pit-Run 6'-0"	0+00 to 12+95	9"	station	47.876	12.95	650	
Turnouts	Pit-Run 6'-0"	G to H	9"	TO	20	2	40	
Turnarounds	Pit-Run 6'-0"	12+00	9"	TA	30	1	30	
Application	Rock Size and Type	Location	Approx. Total (CY)					
Landing Rock	Pit-Run 6'-0"	12+95	165					

ROAD SEGMENT: I to J			STATIONS: 0+00 to 1+60					
Application	Rock Size and Type	Location	Compacted Depth	Volume (CY) per	Number of Units	Curve Widening (CY)	Approx. Total (CY)	
Road Rock	Pit-Run 6'-0"	0+00 to 1+60	9"	station	50.000	1.60	90	
Turnouts	Pit-Run 6'-0"	I to J	9"	TO	20	1	20	
Turnarounds	Pit-Run 6'-0"	0+85	9"	TA	30	1	30	
Application	Rock Size and Type	Location	Approx. Total (CY)					
Landing Rock	Pit-Run 6'-0"	1+60	165					

ROAD SEGMENT: K to L			STATIONS: 0+00 to 60+05					
Application	Rock Size and Type	Location	Approx. Total (CY)					
Slope Stabilization	Riprap 48"-24"	58+75	20					
Energy Dissipator	Riprap 24"-12"	58+75/60+05	20					
Backfill	Crushed 2'-0"	58+75/60+05	20					
Bedding	Crushed 2'-0"	58+78/60+05	10					

ROAD SEGMENT: N			STATIONS: 0+00 ## 0+00					
Application	Rock Size and Type	Location	Approx. Total (CY)					
Stockpile	Pit-Run 6'-0"		50					

Road Segment A to B						
Road Rock	Size of Rock	Compacted Depth	Point to Point	Station to Station	Volume (CY) per Station	Approx. Total Truck Measure Volume
Crushed	2'-0"	6"	A to B	0+00 to 5+40	31,481 CY	170 CY
Crushed	2'-0"	6"	A to B	14+10 to 20+85	31,111 CY	210 CY
Pit-Run	6'-0"	9"	A to B	51+05 to 117+65	47,455 CY	3170 CY
Curve Widening	Size of Rock	Compacted Depth	Point to Point	Station to Station	Approx. Total Truck Measure Volume	
Crushed	2'-0"	6"	A to B	0+00 to 5+40	10 CY	
Crushed	2'-0"	6"	A to B	14+10 to 20+85	10 CY	
Pit-Run	6'-0"	9"	A to B	51+05 to 117+65	150 CY	
Turnouts	Size of Rock	Compacted Depth	No. of T. O.	Point to Point	Volume per T. O.	Approx. Total Truck Measure Volume
Crushed	2'-0"	6"	1	A to B	20 CY	20 CY
Crushed	2'-0"	6"	1	A to B	20 CY	20 CY
Pit-Run	6'-0"	9"	8	A to B	20 CY	160 CY
Turnarounds	Size of Rock	Compacted Depth	No. of T.A.	Location	Volume per T. A.	Approx. Total Truck Measure Volume
Pit-Run	6'-0"	9"	2	51+50/117+35	30 CY	60 CY
Misc. Type of Rock	Size of Rock	Compacted Depth	Location	Use	Approx. Total Truck Measure Volume	
Pit-Run	6'-0"	12"	A to B TBD/117+85	Landing Rock	330 CY	
Riprap	24'-12"	---	A to B 45+50	Energy Dissipator	10 CY	

Road Segment C to D						
Road Rock	Size of Rock	Compacted Depth	Point to Point	Station to Station	Volume (CY) per Station	Approx. Total Truck Measure Volume
Pit-Run	6'-0"	9"	C to D	0+00 to 6+95	47,482 CY	330 CY
Curve Widening	Size of Rock	Compacted Depth	No. of T. O.	Point to Point	Approx. Total Truck Measure Volume	
Pit-Run	6'-0"	9"	C to D	0+00 to 6+95	20 CY	
Turnouts	Size of Rock	Compacted Depth	No. of T. O.	Point to Point	Volume per T. O.	Approx. Total Truck Measure Volume
Pit-Run	6'-0"	9"	1	C to D	20 CY	20 CY
Turnarounds	Size of Rock	Compacted Depth	No. of T.A.	Location	Volume per T. A.	Approx. Total Truck Measure Volume
Pit-Run	6'-0"	9"	1	9+85	30 CY	30 CY
Misc. Type of Rock	Size of Rock	Compacted Depth	Location	Use	Approx. Total Truck Measure Volume	
Pit-Run	6'-0"	12"	C to D 6+95	Landing Rock	165 CY	

Road Segment E to F						
Road Rock	Size of Rock	Compacted Depth	Point to Point	Station to Station	Volume (CY) per Station	Approx. Total Truck Measure Volume
Pit-Run	6'-0"	9"	E to F	0+00 to 1+55	51,613 CY	80 CY
Curve Widening	Size of Rock	Compacted Depth	No. of T. O.	Point to Point	Approx. Total Truck Measure Volume	
Pit-Run	6'-0"	9"	E to F	0+00 to 1+55	10 CY	
Turnouts	Size of Rock	Compacted Depth	No. of T. O.	Point to Point	Volume per T. O.	Approx. Total Truck Measure Volume
Pit-Run	6'-0"	9"	1	E to F	20 CY	20 CY
Turnarounds	Size of Rock	Compacted Depth	No. of T.A.	Location	Volume per T. A.	Approx. Total Truck Measure Volume
Pit-Run	6'-0"	9"	1	A to B, 62+30	30 CY	30 CY
Misc. Type of Rock	Size of Rock	Compacted Depth	Location	Use	Approx. Total Truck Measure Volume	
Pit-Run	6'-0"	12"	E to F 1+55	Landing Rock	165 CY	

Road Segment G to H						
Road Rock	Size of Rock	Compacted Depth	Point to Point	Station to Station	Volume (CY) per Station	Approx. Total Truck Measure Volume
Pit-Run	6'-0"	9"	G to H	0+00 to 12+95	47,876 CY	650 CY
Curve Widening	Size of Rock	Compacted Depth	No. of T. O.	Point to Point	Approx. Total Truck Measure Volume	
Pit-Run	6'-0"	9"	G to H	0+00 to 12+95	30 CY	
Turnouts	Size of Rock	Compacted Depth	No. of T. O.	Point to Point	Volume per T. O.	Approx. Total Truck Measure Volume
Pit-Run	6'-0"	9"	2	G to H	20 CY	40 CY
Turnarounds	Size of Rock	Compacted Depth	No. of T.A.	Location	Volume per T. A.	Approx. Total Truck Measure Volume
Pit-Run	6'-0"	9"	1	12+00	30 CY	30 CY
Misc. Type of Rock	Size of Rock	Compacted Depth	Location	Use	Approx. Total Truck Measure Volume	
Pit-Run	6'-0"	12"	G to H 12+95	Landing Rock	165 CY	

Road Segment I to J						
Road Rock	Size of Rock	Compacted Depth	Point to Point	Station to Station	Volume (CY) per Station	Approx. Total Truck Measure Volume
Pit-Run	6'-0"	9"	I to J	0+00 to 1+60	50,000 CY	80 CY
Curve Widening	Size of Rock	Compacted Depth	No. of T. O.	Point to Point	Approx. Total Truck Measure Volume	
Pit-Run	6'-0"	9"	I to J	0+00 to 1+60	10 CY	
Turnouts	Size of Rock	Compacted Depth	No. of T. O.	Point to Point	Volume per T. O.	Approx. Total Truck Measure Volume
Pit-Run	6'-0"	9"	1	I to J	20 CY	20 CY
Turnarounds	Size of Rock	Compacted Depth	No. of T.A.	Location	Volume per T. A.	Approx. Total Truck Measure Volume
Pit-Run	6'-0"	9"	1	9+85	30 CY	30 CY
Misc. Type of Rock	Size of Rock	Compacted Depth	Location	Use	Approx. Total Truck Measure Volume	
Pit-Run	6'-0"	12"	I to J 1+60	Landing Rock	165 CY	

Road Segment K to L						
Road Rock	Size of Rock	Compacted Depth	Point to Point	Station to Station	Volume (CY) per Station	Approx. Total Truck Measure Volume
Riprap	48'-24"	---	K to L 58+75	Slope Stabilization	20 CY	
Riprap	24'-12"	---	K to L 58+75/60+05	Energy Dissipator	20 CY	
Crushed	2'-0"	---	K to L 58+75/60+05	Backfill	20 CY	
Crushed	2'-0"	---	K to L 58+75/60+05	Bedding	10 CY	

Road Segment N						
Misc. Type of Rock	Size of Rock	Compacted Depth	Location	Use	Approx. Total Truck Measure Volume	
Pit-Run	6'-0"	---	N	Stockpiles	50 CY	

SALE: Zig Zag Alder  
 ROCK QUANTITIES

TYPE OF ROCK	SIZE OF ROCK	COMPACTED DEPTH (in.)	SURFACED WIDTH (ft.)	LOCATION	APPROX. TOTAL TRUCK MEASURE VOLUME (CY)
Pit-Run	6"-0"	9	12	51+05 A to B to 117+85	3370

Pit-Run  
 9 INCH LIFT

TURNAROUNDS (MODIFIED)		51+05	to	117+85
NUMBER	DESCRIPTION	UNIT	QUANTITY	
2	30'X16' W/20' RADII RETURNS	TCY	60	
TURNOUTS		51+05	to	117+85
NUMBER	DESCRIPTION	UNIT	QUANTITY	
9	8' WIDTH, 25' LONG, (2) 25' TRANSITIO	TCY	180	
CURVE WIDENING		51+05	to	117+85
		UNIT	QUANTITY	
		TCY	150	

3320

TOTAL	Pit-Run	9 INCH LIFT	TCY	3560
TOTAL	Crushed	Stockpile	TCY	0
GRAND TOTAL:			TCY	3560

SALE: Zig Zag Alder  
 ROCK QUANTITIES

TYPE OF ROCK	SIZE OF ROCK	COMPACTED DEPTH (in.)	SURFACED WIDTH (ft.)	LOCATION	APPROX. TOTAL TRUCK MEASURE VOLUME (CY)
Crushed	2"-0"	6	12	14+10 A to B to 20+85	210

Crushed  
 6 INCH LIFT

TURNAROUNDS (MODIFIED)		14+10	to	20+85
NUMBER	DESCRIPTION	UNIT	QUANTITY	
0	30'X16' W/20' RADII RETURNS	TCY	0	
TURNOUTS		14+10	to	20+85
NUMBER	DESCRIPTION	UNIT	QUANTITY	
1	8' WIDTH, 25' LONG, (2) 25' TRANSITIO	TCY	20	
CURVE WIDENING		14+10	to	20+85
		UNIT	QUANTITY	
		TCY	10	

220

TOTAL	Crushed	6 INCH LIFT	TCY	240
TOTAL	Crushed	Stockpile	TCY	0
GRAND TOTAL:			TCY	240

SALE: Zig Zag Alder  
 ROCK QUANTITIES

TYPE OF ROCK	SIZE OF ROCK	COMPACTED DEPTH (in.)	SURFACED WIDTH (ft.)	LOCATION	APPROX. TOTAL TRUCK MEASURE VOLUME (CY)
Crushed	2"-0"	6	12	0+0 A to B to 5+40	170

Crushed  
6 INCH LIFT

TURNAROUNDS (MODIFIED)		+00	to	5+40
NUMBER	DESCRIPTION	UNIT	QUANTITY	
0	30'X16' W/20' RADII RETURNS	TCY	0	
TURNOUTS		+00	to	5+40
NUMBER	DESCRIPTION	UNIT	QUANTITY	
1	8' WIDTH, 25' LONG, (2) 25' TRANSITIO	TCY	20	
CURVE WIDENING		+00	to	5+40
		UNIT	QUANTITY	
		TCY	10	

TOTAL	Crushed	6	INCH LIFT	TCY	200
TOTAL	Crushed		Stockpile	TCY	0
GRAND TOTAL:				TCY	200



SALE: Zig Zag Alder  
 ROCK QUANTITIES

TYPE OF ROCK	SIZE OF ROCK	COMPACTED DEPTH (in.)	SURFACED WIDTH (ft.)	LOCATION	APPROX. TOTAL TRUCK MEASURE VOLUME (CY)
Pit-Run	6"-0"	9	12	0+00 C to D to 6+95	330

Pit-Run  
 9 INCH LIFT

TURNAROUNDS (MODIFIED)		+00	to	6+95
NUMBER	DESCRIPTION	UNIT	QUANTITY	
1	30'X16' W/20' RADII RETURNS	TCY	30	
TURNOUTS		+00	to	6+95
NUMBER	DESCRIPTION	UNIT	QUANTITY	
1	8' WIDTH, 25' LONG, (2) 25' TRANSITIO	TCY	20	
CURVE WIDENING		+00	to	6+95
		UNIT	QUANTITY	
		TCY	20	

360

TOTAL	Pit-Run	9 INCH LIFT	TCY	400
TOTAL	Crushed	Stockpile	TCY	0
GRAND TOTAL:			TCY	400

SALE: Zig Zag Alder  
 ROCK QUANTITIES

TYPE OF ROCK	SIZE OF ROCK	COMPACTED DEPTH (in.)	SURFACED WIDTH (ft.)	LOCATION	APPROX. TOTAL TRUCK MEASURE VOLUME (CY)
Pit-Run	6"-0"	9	12	0+00 E to F to 1+55	30

Pit-Run  
 9 INCH LIFT

TURNAROUNDS (MODIFIED)		+00	to	1+55
NUMBER	DESCRIPTION	UNIT	QUANTITY	
1	30'X16' W/20' RADII RETURNS	TCY	30	
TURNOUTS		+00	to	1+55
NUMBER	DESCRIPTION	UNIT	QUANTITY	
1	8' WIDTH, 25' LONG, (2) 25' TRANSITIO	TCY	20	
CURVE WIDENING		+00	to	1+55
		UNIT	QUANTITY	
		TCY	10	

TOTAL	Pit-Run	9 INCH LIFT	TCY	140
TOTAL	Crushed	Stockpile	TCY	0
GRAND TOTAL:			TCY	140

SALE: Zig Zag Aider  
 ROCK QUANTITIES

TYPE OF ROCK	SIZE OF ROCK	COMPACTED DEPTH (in.)	SURFACED WIDTH (ft.)	LOCATION	APPROX. TOTAL TRUCK MEASURE VOLUME (CY)
Pit-Run	6"-0"	9	12	0+00 G to H to 12+95	620

Pit-Run  
 9 INCH LIFT

TURNAROUNDS (MODIFIED)		+00	to	12+95
NUMBER	DESCRIPTION	UNIT	QUANTITY	
1	30'X16' W/20' RADII RETURNS	TCY	30	
TURNOUTS		+00	to	12+95
NUMBER	DESCRIPTION	UNIT	QUANTITY	
2	8' WIDTH, 25' LONG, (2) 25' TRANSITIO	TCY	40	
CURVE WIDENING		+00	to	12+95
		UNIT	QUANTITY	
		TCY	30	

TOTAL	Pit-Run	9 INCH LIFT	TCY	720
TOTAL	Crushed	Stockpile	TCY	0
GRAND TOTAL:			TCY	720

SALE: Zig Zag Aider  
 ROCK QUANTITIES

TYPE OF ROCK	SIZE OF ROCK	COMPACTED DEPTH (in.)	SURFACED WIDTH (ft.)	LOCATION	APPROX. TOTAL TRUCK MEASURE VOLUME (CY)
Pit-Run	6"-0"	9	12	0+00 I to J to 1+60	80

Pit-Run  
 9 INCH LIFT

TURNAROUNDS (MODIFIED)		+00	to	1+60
NUMBER	DESCRIPTION	UNIT	QUANTITY	
1	30'X16' W/20' RADII RETURNS	TCY	30	
TURNOUTS		+00	to	1+60
NUMBER	DESCRIPTION	UNIT	QUANTITY	
1	8' WIDTH, 25' LONG, (2) 25' TRANSITIO	TCY	20	
CURVE WIDENING		+00	to	1+60
		UNIT	QUANTITY	
		TCY	10	

90

TOTAL	Pit-Run	9	INCH LIFT	TCY	140
TOTAL	Crushed		Stockpile	TCY	0
GRAND TOTAL:				TCY	140

Cost Update 04/05/2007 06/26/2005 11/26/2007  
 G. Baker Blake

Side cast/Windrow	\$ 660	per acre
Scattering	\$ 980	per acre
Piling	\$ 910	per acre (doesn't include burning)
End Haul	Cost on individual basis	

Roadside Brushing		
Light	\$ 600	per mile
Medium	\$ 800	per mile
Heavy	\$ 1300	per mile

**Excavation**

Balanced Road Construction	\$ 90	per Station
Drifting up to 200'	\$ 140	per Station
Landing Construction	\$ 285	per landing

	Slopes < 50%		Slopes > 50%		
Common	\$ 1.40	per CY	\$ 1.40	per CY	
Rippable Rock	\$ 2.25	per CY	\$ 3.20	per CY	Includes load
Drill and Shoot	\$ 4.90	per CY	\$ 7.50	per CY	Includes excavation/load
Push (up to 250')	\$ 0.75	per CY			
Compaction (waste areas)	\$ 0.25	per CY			
Compaction (fills)	\$ 0.45	per CY			
Construct Waterbar	\$ 25.00	ea.			
Construct Rolling Dip	\$ 150.00	ea.			
Construct Turn Around	\$ 75.00	ea.			
Construct Turn Out	\$ 60.00	ea.			
Construct Landing	\$ 285.00	ea.			
Load/Place Large Riprap	\$ 1.40	per CY (each)			
Remove OG Stumps	\$ 75.00	ea.			

Above rates are on a truck (loose) volume basis

**Subgrade Prep & Rock Compaction**

Activity	Surface	
	Common	Rocky
Grade & Shape 12'-14' Outsloped	\$ 14.00 per sta	\$ 19.00 per sta
Grade & Shape 14'-16' Crowned W/ Ditch	\$ 15.50 per sta	\$ 20.00 per sta
Roll Subgrade Prior to Rocking (Vib)	\$ 13.20 per sta	
Proof-roll subgrade prior to rocking	\$ 4.70 per sta	
Rip Road & Remove Boulders (1' below SG)		\$ 35.00 per sta (added on to basic road building cost)
Pull ditch & endhaul waste material (<500')	\$ 60.00 per sta	
Pull ditch & endhaul waste material (<1000')	\$ 80.00 per sta	
Pull ditch & endhaul waste material (<2000')	\$ 100.00 per sta	
Process Pit-Run Rock(W/ Cat only)	\$ 0.75 per CY	
Process Pit-Run Rock(W/ Cat & Roller)	\$ 1.10 per CY	
Process Crushed Rock	\$ 2.45 per CY	

**Rock Crushing & Pit Development Costs**

Drill & Shoot (Down holes)	\$ 2.50	per CY	Crushing 3/4"	\$ 3.60	per CY
Drill & Shoot (Lifters)	\$ 4.60	per CY	Crushing 1 1/2"	\$ 3.00	per CY
Rip Rock	\$ 1.90	per CY	Crushing 2"	\$ 2.80	per CY
Push Rock	\$ 0.70	per CY	Crushing 3"	\$ 2.60	per CY
Load Crusher	\$ 0.70	per CY	Crushing 4"	\$ 2.35	per CY
Load Dump Truck	\$ 0.70	per CY	Screening 10"-3" Drain Rock	\$ 3.40	per CY
Oversize Reduction	\$ 4.50	per CY	Screening OB W/ plant	\$ 2.60	per CY
Change Gradation	\$ 210.00		Shape Stock Pile	\$ 1.25	per CY
Setup Jaw	\$ \$733.00		Setup Screening Plant	\$ 395.00	
Setup 2-Stage Crusher	\$ \$1,598.00				
Setup 3-Stage Crusher	\$ \$2,520.00				

**Culverts**

(Plastic) Updated 6/13/05

Diameter (Inches)	Thickness (Gage)	\$/ft (materials only)	Bands/ea.	Installation & Materials (Typical)
18	N/A	\$ 11.50	\$ 19.00	\$ 17.50 per ft
24	N/A	\$ 21.00	\$ 33.00	\$ 27.00 per ft
30	N/A	\$ 28.00	\$ 73.00	\$ 36.00 per ft
				Cost culverts over 30" on an individual basis & installation cost
				Bevel (1:1)
36	N/A	\$ 33.00		\$ 43.00
				Call for quote on culverts over 36"

**Slope Protection**

Halfrounds	Materials	Materials + Installation
21"	\$ 0.00 per ft	\$ 18.90 per foot
30"	\$ 0.00 per ft	\$ 25.20 per foot
<b>Plastimate Culvert Sleeve (Elephant Trunk)</b>		
18"	\$ 0.00 per ft	\$ per foot
24"	\$ 10.35 per ft	\$ 13.00 per foot
Halfround Stakes	\$ 8.00	ea.
Culvert Markers	\$ 8.00	ea.

### Geotextiles & Subdrains

	Material Only	Material + Installation (Typical)	Comments
Woven (Mirafi 600X, Contech C300)	\$ 0.75 sq. yd.	\$ 0.95 sq. yd.	SG Stabilization, Heavy duty (low flow rate)
Woven (Mirafi 500X, Contech C200)	\$ sq. yd.	\$ sq. yd.	SG Stabilization, Medium duty (low flow rate)
Woven (Mirafi 700GX)	\$ 1.20 sq. yd.	\$ 1.40 sq. yd.	SG Stabilization, Heavy duty (med. flow rate)
Geogrid (Tensar BX1100)	\$ 1.95 sq. yd.	\$ 2.15 sq. yd.	SG Stabilization, Extra heavy duty (high flow rate)
Nonwoven (Mirafi 140NL, Con. C-40NW)	\$ 0.60 sq. yd.	\$ 0.95 sq. yd.	Subdrain separation (High flow rate)
12" Aluminized Perf Pipe	\$ 6.35 ft		
18" Aluminized Perf Pipe	\$ 11.80 ft		

### Erosion Control

Straw Bales	\$ 4.50	ea.	
Bio-Bags	\$ 5.00	ea.	
Grass Seeding & Fertilizing (Hand)	\$ 220.00	Acre	
Straw Mulching (Hand)	\$ 600.00	Acre	
Hydo-Mulching & Seeding	\$ 1000.00	Acre (Minimum 5 Acres, includes mobilization)	
Volume Pump Rental/Operation (3")	\$ 75.00	Day (includes operation)	
Flexible PVC Pipe	\$	per foot	
Silt Fencing	\$ 4.00	per foot	(includes installation/disposal)

### Equipment Rates

#### Excavators

Small (C205, C312)	\$ 95.00	per Hr W/ Operator
Medium (C225, C325)	\$ 125.00	per Hr W/ Operator
Large (C231, C330)	\$ 145.00	per Hr W/ Operator

#### Dozers

D6	\$ 95.00	per Hr W/ Operator
D7 W/ Winch	\$ 135.00	per Hr W/ Operator
D8 W/ Winch or Ripper	\$ 145.00	per Hr W/ Operator

#### Rubber Tired Backhoes

Small (416, C580)	\$ 60.00	per Hr W/ Operator
Medium (436, JCB)	\$ 75.00	per Hr W/ Operator

#### Front End Loaders

Small (C950)	\$ 75.00	per Hr W/ Operator
Medium (C966)	\$ 90.00	per Hr W/ Operator
Large (C980)	\$ 105.00	per Hr W/ Operator

#### Graders

Small (12G)	\$ 80.00	per Hr W/ Operator
Medium (14G)	\$ 90.00	per Hr W/ Operator
Large (16G)	\$ 95.00	per Hr W/ Operator

#### Compaction Equipment

Vibratory Roller/Grid Roller	\$ 85.00	per Hr W/ Operator
Sheeps Foot Roller (Tow Behind)	\$ 75.00	per Day
Hydraulic Tamper Attachment	\$ 80.00	per Day
Rubber Tired Skidder (C518)	\$ 65.00	per Hr W/ Operator
Laborer (General)	\$ 30.00	per Hr
Hand Held Vibratory Compactor	\$ 45.00	per Day (Doesn't include labor)

#### Drills

Air Track (2"-3 1/2" Holes)	\$ 120.00	per Hr W/ Operator
Hydraulic (3 1/2"-6" Holes)	\$ 225.00	per Hr W/ Operator
Jack Hammer	\$ 50.00	per Day (Doesn't include labor)
Welder	\$ 70.00	per Day (Doesn't include labor)

#### Trucks

10-12 CY Highway Dump	\$ 70.00	per Hr W/ Operator
20 CY Highway (Belly or Pup & Trailer)	\$ 86.00	per Hr W/ Operator
25 CY Off Highway Dump	\$ 105.00	per Hr W/ Operator

Water Truck (1,500 Gal)	\$ 65.00	per Hr W/ Operator
Water Truck (2,500 Gal)	\$ 75.00	per Hr W/ Operator
Lowboy (5 Axle)	\$ 140.00	per Hr W/ Operator
Lowboy (9 Axle)	\$ 160.00	per Hr W/ Operator
Tilt bed truck/trailer	\$ 85.00	per Hr W/ Operator
Pickup	\$ 45.00	per Hr W/ Operator
60 Ton Crane	\$ 0.00	per Hr W/ Operator
90 Ton Crane	\$ 0.00	per Hr W/ Operator
120 Ton Crane	\$ 0.00	per Hr W/ Operator
<u>NEW STUFF</u>		
Compaction (Fills)	\$ 0.35	per CY



STEWARDSHIP IN FORESTRY

## Zig Zag Alder

### Volume Summary

Area 1-Modified Clearcut				
118 acres				
SPECIES	Gross MBF/Acre	Gross MBF	Hidden D&B	Net Vol MBF
Douglas-fir	11.1	1310	6%	1238
Hemlock		0	5%	0
Spruce		0	5%	0
Noble Fir		0	5%	0
Alder	5.2	616	11%	549
<b>TOTAL</b>	<b>16.3</b>	<b>1926</b>		<b>1787</b>

Areas 2-Modified Clearcut				
98 acres				
SPECIES	Gross MBF/Acre	Gross MBF	Hidden D&B	Net Vol MBF
Douglas-fir	12.4	1220	6%	1150
Hemlock		0	5%	0
Spruce			5%	0
Noble Fir		0	5%	0
Alder	5.1	497	15%	424
<b>TOTAL</b>	<b>17.5</b>	<b>1717</b>		<b>1575</b>

TOTAL SALE VOLUME			216 acres	
SPECIES	Gross Vol (MBF)	Net Vol (MBF)		
Douglas-fir	2530	2388		
Hemlock	0	0		
Spruce	0	0		
Noble Fir	0	0		
Red Alder	1113	974		
<b>TOTAL</b>	<b>3643</b>	<b>3362</b>		





# OREGON DEPARTMENT OF FORESTRY CRUISE REPORT *Zig Zag Alder*

## 1. Type of Sale

Regeneration harvest, Recovery

## 2. Legal Description

Portions of Sections 21, 22 and 28, T 1 S, R 7 W, W.M. Tillamook County, Oregon

## 3. Sale Acreage

Sale acreage was determined by GPS and orthophotographs along with GIS.

ACRES		
	<u>Gross</u>	<u>Net</u>
<b>Area 1 (Modified Clearcut)</b>	145	118
<b>Area 2 (Modified Clearcut)</b>	129	98

### Gross Acres

Area within the Timber Sale Boundary signs

### Net acres

*Used for calculating the advertised volume.*

Gross acres, less green tree retention, roads, Non-required thinning areas, and riparian areas classified as Special Stewardship in LMCS inside the sale boundary.

## 4. Cruising Procedures

### A. Cruise Method

A total of 37 plots were taken. Cruise lines and plots were placed to obtain representative sampling throughout the sale area. All trees were recorded by species, merchantable height, form, and diameter class. Diameters were measured to the nearest inch and heights to the nearest foot. Conifers less than 8" DBH and hardwoods less than 9" DBH were not sampled.

### B. Plot size

All plots were variable radius plots. A BAF of 33.61 was used for all species. The point of tree observation was 4.5 feet.

### C. Grading System

Tree heights were measured to a 6" merchantable top for conifers, and 7" for hardwoods. All measurements were outside the bark. All species were graded using Columbia River Log Scaling and Grading Bureau rules, favoring a 40' log.

## 5. Computation Procedure

The volumes and statistics for the timber cruised were computed using SuperACE 2004, developed by Atterbury Consultants, Inc. All conifers 8 inches DBH and greater containing 20 net board feet and all hardwoods 9 inches DBH and greater containing 30 net board feet were recorded on all plots. Species were recorded on all trees, and they were graded and measured for merchantable height, diameter, and form factor. The standard error and the coefficient of variation for the cruise as based on net board feet per acre shown in the table below.

Area	C.V. (%)	S.E. (%)
1	48.1	10.7
2	47.5	12.3

## 6. Hidden Defect and Breakage

A 5% defect and breakage reduction was applied to conifers and a 10% reduction to hardwood volumes for hidden defect. This was in addition to visual defect deducted during the cruise.

## 7. Timber Description

The entire sale area was burned in the 1939 Saddle Mountain Fire. The sale area is predominantly composed of Douglas-fir and red alder with a few scattered Sitka spruce, western red cedar and big leaf maple. Most of the alder was aerially sprayed in the 1970's resulting in short boles and multiple tops.

- Area 1 (Modified Clearcut) – Approximately 72 acres of Area 1 was planted during the 1963-1964 planting season. The remainder of Area 1 was naturally regenerated. 79 acres of Area 1 was aerially sprayed.
- Area 2 (Modified Clearcut) - Approximately 49 acres of Area 2 was planted during the 1961-1962 planting season and replanted during the 1968-1969 planting season. The remainder of the area was naturally regenerated. Alder on approximately 74 acres was aerially sprayed.

	DBH	Height	Merch Top
<b>Area 1</b>			
Douglas-fir (69%)	15.1	86	5"
Alder (30%)	13.4	42	6"
<b>Area 2</b>			
Douglas-fir (72%)	12.9	83	5"
Alder (27%)	14.6	56	6"

**8. Cruiser Names/Dates**

Luttrell, Stumpf, Wells and Neuman. April, 2011.

**9. Revenue Distribution**

FDF 100%

Tax Code: 9-2

Deed Numbers: 161, 162

**10. Attachments**

Stand Table

Volume Summaries

Log Stock Tables

Logging Plan

**11. Stand and Log Stock Tables Species Key**

DF – Douglas-fir take

DL – Douglas-fir leave

RA – Red alder take

RC – Western red cedar Reserved

SS – Sitka spruce Reserved

WH – Western hemlock Reserved

NF – Noble fir Reserved

BM – Big leaf maple Reserved

OC – Snags >15" DBH



TC		TLOGSTVB		Log Stock Table - MBF																	
				Project: ZIGZAG																	
T01S R07W S21 T00MC										T01S R07W S21 T00M											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page	2												
01S	07W	21	001	00MC	118.00	21	135	Date	5/12/2011												
								Time	1:36:53PM												
Spp	T	So	Gr	Log	Gross	% Def	Net	% Spc	Net Volume by Scaling Diameter in Inches												
									MBF	MBF	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39
DF	CO	4	28		9		9	.7		9											
DF	CO	4	29		2		2	.2		2											
DF	CO	4	30		2		2	.2		2											
DF	CO	4	31		5		5	.4		5											
DF	CO	4	32		5		5	.4		5											
DF	CO	4	33		13		13	1.0		13											
DF	CO	4	35		2		2	.1		2											
DF	CO	4	36		3		3	.2		3											
DF	CO	4	37		27		27	2.1		27											
DF	CO	4	39		17		17	1.3		17											
DF	CO	4	40		105		105	8.1		67	38										
DF	Totals				1,310		1,304	67.6		237	97	369	149	147	91	197	17				
DL	CO	2	40		22	10.0	19	64.5							19						
DL	CO	3	32		3		3	8.4			3										
DL	CO	4	34		8		8	27.2		8											
DL	Totals				32	6.7	30	1.6		8		3			19						
BM	H	4	20		11		11	72.7				11									
BM	H	4	22		4		4	27.3			4										
BM	Totals				15		15	.8			4		11								
Total All Species					1,973	2.2	1,929	100.0		245	504	443	225	161	117	217	17				





T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page 1									
Project: ZIGZAG										Date 5/12/2011		Time 1:37:45PM									
T01S R07W S21 T00MC										T01S R07W S21 T00MC											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
01S	07W	21	001	00MC	118.00	21	135	S	W												
Spp	S	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log			Logs	
					Net	Def%	Gross		Net	Log Scale Dia.				Log Length				Ln	Bd		CF/Lf
				BdFt			Net MBF	4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	Ft		/Acre		
RA	H	3		18	11.3	1,023	908	107	74	26			18	34	28	20	27	94	1.12	9.6	
RA	H	4		82	4.5	4,198	4,009	473	97	3			27	20	23	30	25	37	0.58	107.4	
RA	Totals			30	5.8	5,222	4,917	580	93	7			25	23	24	28	26	42	0.63	117.0	
DF	CO	2		25	1.3	2,802	2,766	326			53	47	5		4	90	39	317	1.94	8.7	
DF	CO	3		52	.3	5,865	5,850	690			82	15	3			13	87	38	115	0.79	51.1
DF	CO	4		23		2,434	2,434	287	83	17			15	24	8	53	30	33	0.33	73.3	
DF	Totals			68	.5	11,102	11,050	1,304	18	47	21	13	5	5	10	80	34	83	0.66	133.1	
DL	CO	2		64	10.0	183	165	19			100					100	40	540	3.44	.3	
DL	CO	3		8		21	21	3			100					100	32	70	1.16	.3	
DL	CO	4		28		69	69	8	100							100	34	40	0.46	1.7	
DL	Totals			2	6.7	274	256	30	27	8	64					36	64	35	109	0.99	2.3
BM	H	4		100		126	126	15			100		73	27			21	55	0.71	2.3	
BM	Totals			1		126	126	15			100		73	27			21	55	0.71	2.3	
Type Totals					2.2	16,723	16,348	1,929	13	61	16	10	11	11	14	64	30	64	0.65	254.7	

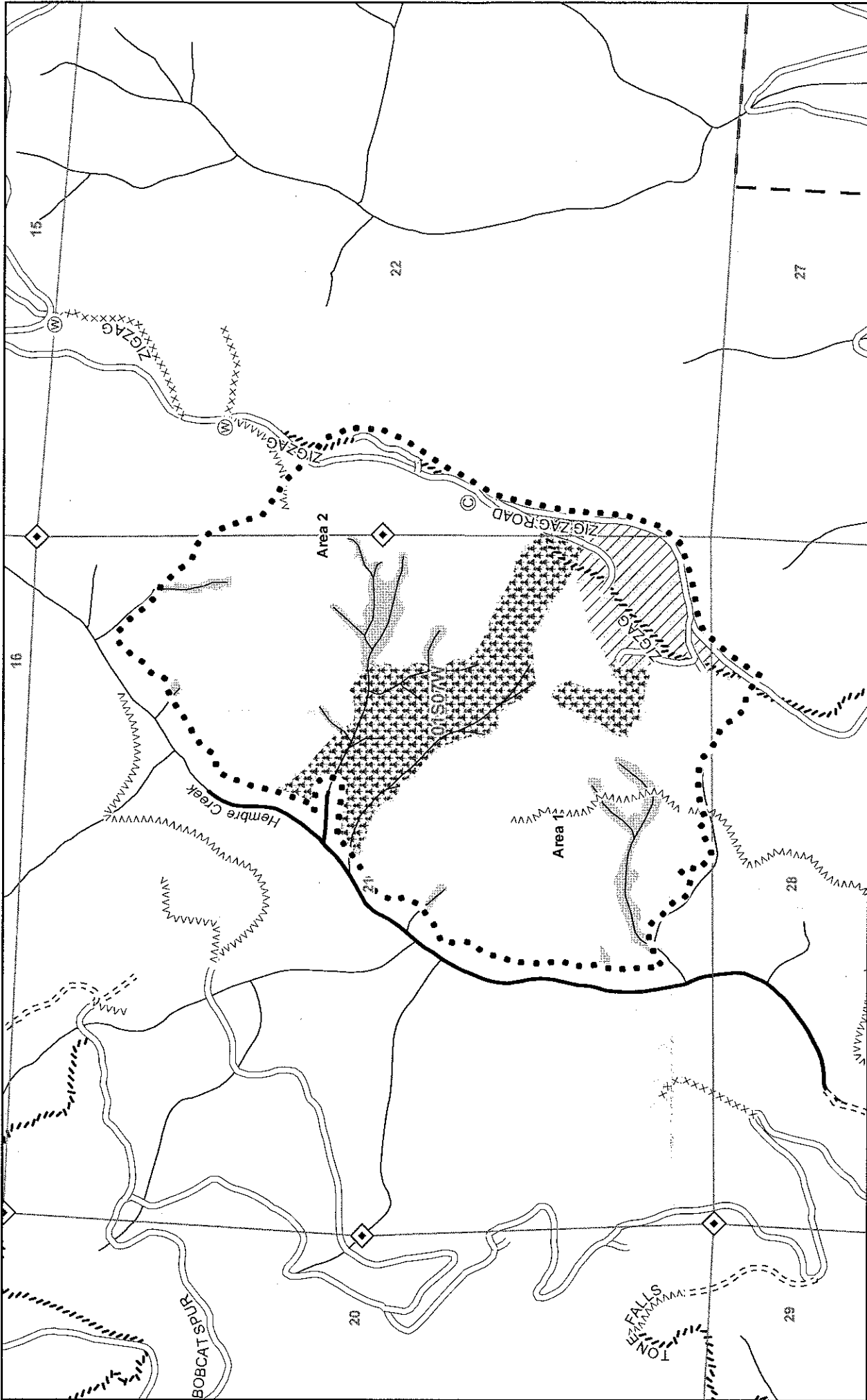


T01S R07W S21 TMC T01S R07W S21 TMC  
 Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt BdFt  
 01S 07W 21 002 MC 98.00 16 89 S W

Spp	S T	So rt	Gr ad	%	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
					Net BdFt	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				
DF		CO	2	21	2.3	2,708	2,647	259		68	32				100	40	372	2.25	7.1		
DF		CO	3	54	.3	6,691	6,674	654		90	10			21	79	37	83	0.61	80.1		
DF		CO	4	25	.3	3,046	3,038	298	92	8			34	11	12	43	26	28	0.28	110.0	
DF		Totals		71	.7	12,445	12,359	1,211	23	51	20	7	8	3	15	74	31	63	0.53	197.2	
RA		H	3	47	.5	2,331	2,318	227		78	22			11	33	8	48	30	123	1.20	18.8
RA		H	4	53	8.0	2,745	2,526	248		100				18	22	16	44	30	46	0.58	55.4
RA		Totals		28	4.6	5,075	4,844	475		89	11			15	27	12	46	30	65	0.73	74.2
SS		CO	3	100		122	122	12			100			100				20	140	1.74	.9
SS		Totals		1		122	122	12			100			100				20	140	1.74	.9
DL		CO	3	87		159	159	16		100						100		40	70	0.53	2.3
DL		CO	4	13		23	23	2	100					100				13	10	0.20	2.3
DL		Totals		1		182	182	18	12	88				12		88		27	40	0.45	4.6
Type Totals					1.8	17,825	17,508	1,716	16	61	17	5		11	9	14	66	31	63	0.58	276.9

TC		TSTNDSUM		Stand Table Summary												
Project														ZIGZAG		
T01S R07W S21 T00MC										T01S R07W S21 T00MC						
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees			Page:	1					
01S	07W	21	001	00MC	118.00	21	135			Date:	05/12/2011					
										Time:	1:38:29PM					
Spc	S T	Sample		Av	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net	Net	Totals			
		DBH	Trees	FF 16'				Ht Tot	Net Cu.Ft.		Net Bd.Ft.	Tons	Cunits	MBF		
DF		9	3	85	83	10.865	4.80	10.86	10.7	40.0	3.31	116	435	391	137	51
DF		10	2	84	78	5.867	3.20	5.87	12.2	50.0	2.03	71	293	240	84	35
DF		11	3	85	71	7.273	4.80	9.70	11.1	45.0	3.09	108	436	365	127	51
DF		12	1	86	88	2.037	1.60	2.04	17.1	60.0	.99	35	122	117	41	14
DF		13	7	85	78	12.151	11.20	20.83	14.5	53.3	8.60	302	1,111	1,015	356	131
DF		14	4	85	86	5.987	6.40	11.97	15.2	58.7	5.22	183	703	616	215	83
DF		15	10	85	93	13.038	16.00	26.08	19.3	72.0	14.30	502	1,877	1,687	592	222
DF		16	6	86	88	6.875	9.60	13.75	19.7	75.8	7.71	270	1,043	910	319	123
DF		18	2	85	117	1.811	3.20	4.53	27.8	106.0	3.59	126	480	424	149	57
DF		19	2	86	112	1.625	3.20	4.06	30.8	118.0	3.57	125	479	421	148	57
DF		20	4	86	98	2.934	6.40	6.60	33.3	120.0	6.27	220	792	740	260	93
DF		21	1	84	84	.665	1.60	1.33	36.4	115.0	1.38	48	153	163	57	18
DF		23	2	85	88	1.109	3.20	2.22	48.3	162.5	3.05	107	360	360	126	43
DF		24	3	85	79	1.528	4.80	3.57	40.5	147.1	4.11	144	525	485	170	62
DF		25	1	87	124	.469	1.60	1.41	47.7	206.7	1.92	67	291	227	79	34
DF		26	1	85	92	.434	1.60	.87	65.8	220.0	1.63	57	191	192	67	23
DF		27	6	86	103	2.414	9.60	5.63	62.9	240.7	10.11	355	1,356	1,193	418	160
DF		29	2	86	113	.698	3.20	1.74	53.8	230.0	2.67	94	401	315	111	47
DF		Totals	60	85	86	77.781	96.00	133.06	22.0	83.0	83.56	2,931	11,050	9,860	3,459	1,304
RA		8	1	80	17	4.584	1.60	4.58	4.1	20.0	.52	19	92	61	22	11
RA		9	2	78	21	7.243	3.20	7.24	5.1	20.0	1.02	37	145	120	43	17
RA		10	1	80	17	2.934	1.60									
RA		11	7	80	36	16.971	11.20	16.97	9.6	30.0	4.51	163	509	532	193	60
RA		12	5	81	50	10.186	8.00	12.22	11.3	38.3	3.78	138	469	446	162	55
RA		13	14	80	48	24.302	22.40	26.04	14.5	36.7	10.35	377	955	1,222	444	113
RA		14	7	80	48	10.477	11.20	11.97	13.9	42.5	4.58	167	509	541	197	60
RA		15	8	81	51	10.430	12.80	11.73	21.2	47.8	6.83	248	561	806	293	66
RA		16	8	82	42	9.167	12.80	9.17	22.8	50.0	5.76	209	458	680	247	54
RA		17	5	80	48	5.075	8.00	5.08	29.3	56.0	4.08	149	284	481	175	34
RA		18	3	83	55	2.716	4.80	3.62	30.0	85.0	2.98	108	308	352	128	36
RA		19	1	79	72	.813	1.60	1.63	29.1	90.0	1.31	47	146	155	56	17
RA		20	5	81	56	3.667	8.00	5.13	32.5	60.0	4.58	167	308	541	197	36
RA		22	1	80	82	.606	1.60	1.21	32.9	120.0	1.10	40	145	130	47	17
RA		27	1	81	63	.402	1.60	.40	52.0	70.0	.58	21	28	68	25	3
RA		Totals	69	80	43	109.573	110.40	117.00	16.1	42.0	51.99	1,889	4,917	6,135	2,229	580
DL		13	1	85	45	1.736	1.60	1.74	15.7	40.0	.75	27	69	88	32	8
DL		31	1	84	88	.305	1.60	.61	87.3	305.0	1.47	53	186	173	63	22
DL		Totals	2	85	51	2.041	3.20	2.35	34.3	109.0	2.21	81	256	261	95	30
BM		16	1	80	59	1.146	1.60	2.29	15.0	55.0	.91	34	126	107	41	15
BM		Totals	1	80	59	1.146	1.60	2.29	15.0	55.0	0.91	34	126	107	41	15
OC		11	1	84	73	4.849	3.20									
OC		Totals	1	84	73	4.849	3.20									
Totals			133	82	61	195.390	214.40	254.70	19.4	64.2	138.67	4935	16,348	16,364	5,823	1,929

TC		TSTNDSUM		Stand Table Summary												
Project														ZIGZAG		
T01S R07W S21 TMC												T01S R07W S21 TMC				
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page:								
01S	07W	21	002	MC	98.00	16	89		1	Date:	05/12/2011					
										Time:	1:35:54PM					
Spc	S T	Sample		Av	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net	Net	Totals			
		DBH	Trees	FF 16'				Ht Tot	Net Cu.Ft.		Net Bd.Ft.	Tons/ Acre	Cu.Ft. Acre	Bd.Ft. Acre	Tons	Cunits
DF		8	2	84	70	12.032	4.20	12.03	7.9	35.0	2.72	95	421	266	93	41
DF		9	3	82	84	14.260	6.30	19.01	8.5	37.5	4.63	162	713	453	159	70
DF		10	5	81	74	19.251	10.50	23.10	11.1	41.7	7.30	258	963	716	252	94
DF		11	5	80	79	15.910	10.50	31.82	9.0	38.0	8.13	285	1,209	797	279	118
DF		12	4	81	82	10.695	8.40	18.72	12.3	42.9	6.57	231	802	644	226	79
DF		13	7	81	83	15.948	14.70	31.90	13.1	47.1	11.94	419	1,504	1,170	410	147
DF		14	4	79	82	7.858	8.40	15.72	15.1	47.5	6.76	237	746	662	232	73
DF		15	4	81	88	6.845	8.40	13.69	19.1	67.5	7.46	262	924	731	257	91
DF		16	1	86	97	1.504	2.10	3.01	23.4	95.0	2.00	70	286	196	69	28
DF		18	2	86	118	2.377	4.20	4.75	32.4	130.0	4.39	154	618	430	151	61
DF		19	1	82	98	1.067	2.10	2.13	33.9	110.0	2.06	72	235	202	71	23
DF		20	1	82	113	.963	2.10	2.89	27.2	96.7	2.24	79	279	219	77	27
DF		21	1	83	142	.873	2.10	2.62	37.5	136.7	2.81	98	358	276	96	35
DF		22	2	86	98	1.591	4.20	3.18	45.2	157.5	4.10	144	501	402	141	49
DF		23	1	81	107	.728	2.10	1.46	51.3	165.0	2.13	75	240	209	73	24
DF		24	1	81	135	.668	2.10	2.01	47.8	203.3	2.73	96	408	268	94	40
DF		25	3	84	114	1.848	6.30	4.93	50.8	208.8	7.13	250	1,029	699	245	101
DF		26	1	77	147	.570	2.10	1.71	56.0	220.0	2.73	96	376	267	94	37
DF		27	1	85	108	.528	2.10	1.58	52.2	220.0	2.36	83	349	231	81	34
DF		35	1	82	121	.314	2.10	.94	93.9	423.3	2.52	89	399	247	87	39
DF	Totals	50	81	83		115.830	105.00	197.19	16.5	62.7	92.70	3,254	12,359	9,085	3,188	1,211
RA		10	2	86	56	7.701	4.20	7.70	10.0	30.0	2.11	77	231	207	75	23
RA		11	4	84	57	12.728	8.40	12.73	13.8	42.5	4.83	176	541	474	172	53
RA		12	1	85	51	2.674	2.10	2.67	16.2	30.0	1.19	43	80	117	42	8
RA		13	4	83	59	9.113	8.40	9.11	15.0	50.0	3.77	137	456	369	134	45
RA		14	2	82	55	3.929	4.20	3.93	23.7	50.0	2.56	93	196	251	91	19
RA		15	4	83	43	6.845	8.40	8.56	17.5	56.0	4.11	150	479	403	147	47
RA		16	4	82	52	6.016	8.40	7.52	23.6	62.0	4.88	177	466	478	174	46
RA		17	7	81	59	9.326	14.70	9.33	33.2	104.3	8.50	310	973	833	304	95
RA		18	4	83	73	4.753	8.40	7.13	32.7	105.0	6.41	233	749	628	228	73
RA		19	1	83	44	1.067	2.10	1.07	26.7	90.0	.78	28	96	77	28	9
RA		21	1	83	66	.873	2.10	.87	61.3	180.0	1.47	54	157	144	52	15
RA		22	2	82	53	1.591	4.20	2.39	33.5	93.3	2.20	80	223	216	78	22
RA		25	1	81	70	.616	2.10	1.23	47.4	160.0	1.61	58	197	158	57	19
RA	Totals	37	83	56		67.232	77.70	74.24	21.8	65.3	44.44	1,616	4,844	4,355	1,584	475
DL		13	1	87	76	2.278	2.10	4.56	11.8	40.0	1.48	54	182	145	53	18
DL	Totals	1	87	76		2.278	2.10	4.56	11.8	40.0	1.48	54	182	145	53	18
SS		21	1	83	38	.873	2.10	.87	34.7	140.0	.79	30	122	77	30	12
SS	Totals	1	83	38		.873	2.10	.87	34.7	140.0	0.79	30	122	77	30	12
Totals		89	82	73		186.213	186.90	276.86	17.9	63.2	139.41	4954	17,508	13,662	4,855	1,716



**LOGGING PLAN**  
 Timber Sale Contract No. 341-12-20  
 Zig Zag Alder  
 Portions of Sections 21, 22, and 28,  
 T1S, R7W, W.M.,  
 Tillamook County, Oregon

Tillamook District GIS  
 06/14/2011  
 This product is for informational use and may not have been prepared or suitable for legal, engineering, or surveying purposes.

Type of Area Operation	Acres
1 Modified clearcut	145 118
2 Modified clearcut	128 98
<b>Total</b>	<b>273 216</b>

Legend:

- Rock source
- Stock pile
- Waste area
- Bridge
- Gate
- Survey corner
- Domestic water supply intake
- Truck turn-around
- Helicopter landing zone
- Cultural site
- Landing
- Buffer
- Non-required thinning
- Cable yarding
- Ground yarding
- Helicopter yarding
- Downhill yarding
- Green tree retention area
- Restricted area
- Area boundary
- Sale boundary
- Ownership boundary
- Perennial Type-F stream
- Perennial Type-N stream
- Unsurfaced road
- Surfaced road
- Paved road
- Abandoned road
- Swing road
- Non-project road
- Blocked road
- OHV trail
- Non-motorized trail
- Transmission line
- Railroad

Scale: 0 to 1,000 Feet