Timber Sale Appraisal
Stone Age
Sale WO-341-2021-W00371-01

"STEWARDSHIP IN FORESTRY"

District: West Oregon

Date: March 13, 2020

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	$1,298,947.86	$61,081.80	$1,360,029.66
		Project Work:	($55,334.00)
		Advertised Value:	$1,304,695.66

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District: West Oregon **Date: March 13, 2020**

Timber Description

Location: Portions of Section 19, T10S, R8W, W.M. Benton County, Oregon

Stand Stocking: 60%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	23	0	97
Alder (Red)	14	0	94
Maple	22	0	94

Volume by Grade	2S	3S & 4S 6"-11"	Camprun	Total
Douglas - Fir	2,439	648	0	3,087
Alder (Red)	0	0	329	329
Maple	0	0	25	25
Total	2,439	648	354	3,441

Comments: Pond Values Used: Local Pond Values, January, 2020

Western Hemlock and Other Conifers Stumpage Price = Pond Value minus Logging Cost:
$200.28/MBF = $490/MBF - $289.72/MBF

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost:
$585.28/MBF = $875/MBF - $289.72/MBF

PULP (Conifer and Hardwood Price) = $3/TON

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

TOTAL Other Costs (with Profit & Risk to be added) = None

Other Costs (No Profit & Risk added):

Equipment Cleaning (Invasive Species): $2,000

Landing slash piling/firewood sorting: 6 Landings @ $180/Landing = $1,080

TOTAL Other Costs (No Profit & Risk added) = $3,080

ROAD MAINTENANCE
Move-in: (Grader and Roller) $1,750
Final Road Maintenance: $10,162.81
TOTAL Road Maintenance: $11,912.81/3,441 MBF = $3.46/MBF

SLASH DISPOSAL
Project Work:
In Unit: 8 hrs @ $150/hr = $1,200
Walk between area: 1 hrs @ $150/hr = $150

TOTAL Slash Disposal = $1,350

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Logging Conditions

Combination#: 1

Douglas - Fir	94.00%
Alder (Red)	94.00%
Maple	94.00%

Logging System: Cable: Large Tower >=70 **Process:** Manual Falling/Delimbing

yarding distance: Medium (800 ft) **downhill yarding:** No

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

loads / day: 9 **bd. ft / load:** 4600

cost / mbf: $164.25

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

Combination#: 2

Douglas - Fir	6.00%
Alder (Red)	6.00%
Maple	6.00%

Logging System: Shovel **Process:** Manual Falling/Delimbing

yarding distance: Short (400 ft) **downhill yarding:** No

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

loads / day: 13 **bd. ft / load:** 4600

cost / mbf: $65.84

machines: Shovel Logger

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District: West Oregon **Date: March 13, 2020**

Logging Costs

Operating Seasons:	2.00	**Profit Risk:**	10%
Project Costs:	$55,334.00	**Other Costs (P/R):**	$0.00
Slash Disposal:	$1,350.00	**Other Costs:**	$3,080.00

Miles of Road **Road Maintenance:** $3.46

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	5.1
Alder (Red)	$0.00	2.0	3.5
Maple	$0.00	2.0	4.0

"STEWARDSHIP IN FORESTRY"

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District: West Oregon **Date: March 13, 2020**

Logging Costs Breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Brand & Paint	Other	Total
Douglas - Fir									
$158.35	$3.56	$2.55	$95.93	$0.00	$26.04	$0.39	$2.00	$0.90	$289.72
Alder (Red)									
$158.35	$3.67	$2.55	$143.85	$0.00	$30.84	$0.39	$2.00	$0.90	$342.55
Maple									
$158.35	$3.67	$2.55	$125.88	$0.00	$29.04	$0.39	$2.00	$0.90	$322.78

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	$0.00	$710.50	$420.78	$0.00
Alder (Red)	$0.00	$526.00	$183.45	$0.00
Maple	$0.00	$351.85	$29.07	$0.00

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District: West Oregon **Date: March 13, 2020**

Summary

Amortized

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

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	3,087	$420.78	$1,298,947.86
Alder (Red)	329	$183.45	$60,355.05
Maple	25	$29.07	$726.75

Gross Timber Sale Value

Recovery: $1,360,029.66

Prepared By: Cody Valencia **Phone:** 541-929-3266

SUMMARY OF ALL PROJECT COSTS

Sale Name: Stone Age

Date: April 2020
Time: 13:33

Project #1 - Improvements

Road Segment	Length	Cost	
1 to 2	157.3 sta	$22,821	
3 to 4	8.0 sta	$9,234	
5 to 6	2.7 sta	$3,970	
7 to 8	5.3 sta	$6,543	
9 to 10	2.9 sta	$4,089	
2 to 11	78.0 sta	$2,829	
12 to 13	55.5 sta	$2,415	
TOTALS	309.7 sta		$51,901

Project #2 - Move in	Cost	
Excavator, C315 or equiv.	$905	
Grader, Cat 14-G or equiv.	$875	
Vibratory roller	$875	
Road Brusher	$778	
TOTAL	$3,433	$3,433

GRAND TOTAL **$55,334**

Compiled by Cody Valencia Date 04/28/2020

SUMMARY OF CONSTRUCTION COST

SALE	Stone Age		Project #	1	LENGTH	const		157.3 sta
ROAD	1 to 2 (Surfaced)							

IMPROVEMENT

Sod removal	157.3 sta	@	$15.40	/sta	=	$2,422	
Shape surface (with road grader)	157.3 sta	@	$20.63	/sta	=	$3,245	
Compact surface (with vibratory roller)	157.3 sta	@	$16.00	/sta	=	$2,517	
Curve widening (Sta. 52+10) (with road grader)	0.5 hrs	@	$114.00	/hr	=	$57	
					TOTAL IMPROVEMENT =		$8,241

SURFACING

			Size	Cost/yd			
Curve widening rock (Sta 52+10)	30	cy of	3"-0"	$26.24	=	$787	
Turnout rock (4)	40	cy of	3"-0"	$26.24	=	$1,050	
Turnaround rock (1)	10	cy of	3"-0"	$26.24	=	$262	
Spot rock	380	cy of	1½"-0"	$26.74	=	$10,161	
Fill armoring (Sta 52+10, 70+50, 88+10)	30	cy of	Jaw-Run	$25.24	=	$757	
Fill armoring (Sta 57+60, 74+70)	20	cy of	Rip-Rap	$36.49	=	$730	
Placing armor rock (with Excavator)	3.0 hrs	@	$114.00	/hr	=	$342	
					TOTAL ROCK COST =		$14,089

SPECIAL PROJECTS

Construct rock ditch filters (Sta 36+60) (with Excavator)	1.0 hrs	@	$114.00	/hr	=	$114	
Ditch filter rock	10	cy of	Jaw-Run	$25.24	=	$252	
Clean out culverts (inlets and outlets)	5	culverts	@	$25.00	ea =	$125	
					TOTAL SPECIAL PROJECTS COST =		$491

Compiled by: Cody Valencia
Date: Apr 28, 2020

GRAND TOTAL =====> **$22,821**

SUMMARY OF CONSTRUCTION COST

SALE	Stone Age	Project #	1	LENGTH const	8.0 sta
ROAD	3 to 4 (Surfaced)				

IMPROVEMENT

Brush Road (Heavy)	0.15	miles	@	$1,400.00	/mile	=	$210	
Remove sod and brushing debris (with grader)	8.0	sta	@	$15.40	/sta	=	$123	
					TOTAL IMPROVEMENT =			$333

SURFACING

			Size	Cost/yd			
Surface rock (6" lift)	260	cy of	3"-0"	$26.24	=	$6,822	
Turnout rock (4+10)	10	cy of	3"-0"	$26.24	=	$262	
Landing rock	50	cy of	Jaw-Run	$25.24	=	$1,262	
Junction rock	10	cy of	3"-0"	$26.24	=	$262	
Shape surface (with road grader)	8.0	sta	@	$20.63	/sta	=	$165
Compact surface (with vibratory roller)	8.0	sta	@	$16.00	/sta	=	$128
					TOTAL ROCK COST =		$8,901

Compiled by: Cody Valencia
Date: Apr 28, 2020

GRAND TOTAL =====> $9,234

SUMMARY OF CONSTRUCTION COST

SALE	Stone Age		Project #	1	LENGTH	const		2.7 sta
ROAD	5 to 6 (Surfaced)							

IMPROVEMENT								
Brush Road (Heavy)	0.05	miles	@	$1,400.00	/mile	=	$70	
Pull and pile alder (with Excavator)	1	hr	@	$114.00	/hr	=	$114	
Remove sod and brushing debris (with grader)	2.7	sta	@	$15.40	/sta	=	$42	
					TOTAL IMPROVEMENT =			$226
EXCAVATION	With C315 excavator or equivalent							
Bank Slough Removal (with Excavator)	1	hr	@	$114.00	/hr	=	$114	
Endhaul to waste area (Expanded 20%)	80.0	cy	@	$3.00	/cy	=	$240	
					TOTAL EXCAVATION =			$354
SURFACING				Size	Cost/yd			
Surface rock (6" lift)	90	cy of		Jaw-Run	$25.24	=	$2,272	
Landing rock	30	cy of		Jaw-Run	$25.24	=	$757	
Junction rock	10	cy of		3"-0"	$26.24	=	$262	
Shape surface (with road grader)	2.7	sta	@	$20.63	/sta	=	$56	
Compact subgrade (with vibratory roller)	2.7	sta	@	$16.00	/sta	=	$43	
					TOTAL ROCK COST =			$3,390

Compiled by:	Cody Valencia		
Date:	Apr 28, 2020	**GRAND TOTAL =====>**	**$3,970**

SUMMARY OF CONSTRUCTION COST

SALE	Stone Age	Project #	1	LENGTH const	5.3 sta
ROAD	7 to 8 (Surfaced)				

IMPROVEMENT

Re-open road and Landing (with Excavator)	3	hrs	@	$114.00	/hr	=	$342
Brush Road (Medium)	0.1	miles	@	$1,100.00	/mile	=	$110
Remove sod and brushing debris (with grader)	5.3	sta	@	$15.40	/sta	=	$82
					TOTAL IMPROVEMENT =		$534

SURFACING

			Size	Cost/yd			
Surface rock (6"lift)	180	cy of	Jaw-Run	$25.24	=	$4,543	
Landing rock	40	cy of	Jaw-Run	$25.24	=	$1,010	
Junction rock	10	cy of	3"-0"	$26.24	=	$262	
Shape surface (with road grader)	5.3	sta	@	$20.63	/sta	=	$109
Compact surface (with vibratory roller)	5.3	sta	@	$16.00	/sta	=	$85
					TOTAL ROCK COST =		$6,009

Compiled by: Cody Valencia
Date: Apr 28, 2020

GRAND TOTAL =====> $6,543

SUMMARY OF CONSTRUCTION COST

SALE	Stone Age	Project # 1	LENGTH const		2.9 sta
ROAD	9 to 10 (Surfaced)				

IMPROVEMENT

Re-open road (with road grader)	2.9	sta	@	$15.40	/sta	=	$45
Brush Road (Light)	0.05	miles	@	$800.00	/mile	=	$40
Remove sod and brushing debris (with grader)	2.9	sta	@	$15.40	/sta	=	$45
Pile alder (with Excavator)	0.5	hrs	@	$114.00	/hr	=	$57

TOTAL IMPROVEMENT = $187

SURFACING

			Size	Cost/yd		
Surface rock (6" lift)	100	cy of	Jaw-Run	$25.24	=	$2,524
Landing rock	40	cy of	Jaw-Run	$25.24	=	$1,010
Junction rock	10	cy of	3"-0"	$26.24	=	$262
Shape surface (with road grader)	2.9	sta	@	$20.63	/sta	=	$60
Compact surface (with vibratory roller)	2.9	sta	@	$16.00	/sta	=	$46

TOTAL ROCK COST = $3,902

Compiled by: Cody Valencia
Date: Apr 28, 2020

GRAND TOTAL =====> $4,089

SUMMARY OF CONSTRUCTION COST

SALE	Stone Age	Project #	1	LENGTH const	78.0 sta
ROAD	2 to 11 (Surfaced)				

IMPROVEMENT

Brush Road (Medium)	1.48	miles	@	$1,100.00	/mile	=	$1,628
Remove sod and brushing debris (with grader)	78.0	sta	@	$15.40	/sta	=	$1,201

TOTAL IMPROVEMENT = $2,829

Compiled by: Cody Valencia
Date: Apr 28, 2020

GRAND TOTAL =====> $2,829

SUMMARY OF CONSTRUCTION COST

SALE	Stone Age		Project #	1	LENGTH	const		55.5 sta
ROAD	12 to 13 (Surfaced)							

IMPROVEMENT

Brush Road (Heavy)	1.05	miles	@	$1,400.00	/mile	=	$1,470	
Remove sod and brushing debris (with grader)	55.5	sta	@	$15.40	/sta	=	$855	
Additonal Labor to hand cut alder	2.0	hrs	@	$45.00	/hr	=	$90	
					TOTAL IMPROVEMENT =			$2,415

Compiled by:	Cody Valencia		
Date:	Apr 28, 2020	**GRAND TOTAL =====>**	**$2,415**

SUMMARY OF MAINTENANCE COST

SALE Stone Age Final log haul Maintenance Cost Estimate

(Costed in appraisal, not in project costs)

Move-in	Grader	$	875
	Vibratory Roller	$	875

Road Segment	Length	Cost/Sta	Cost	Mileage
1 to 2	157.3	$36.63	$5,761.90	2.98
3 to 4	8.0	$20.63	$165.04	0.15
5 to 6	2.7	$20.63	$55.70	0.05
7 to 8	5.3	$20.63	$109.34	0.10
9 to 10	2.9	$20.63	$59.83	0.05
Total	176.2		$6,151.81	3.34

Maintenance Rock:

	Volume	Cost/CY	Cost
1½"-0"	150	$26.74	$4,011.00

Grand Total		$	11,912.81
TS Volume	3,441	MBF	
Cost / MBF =			$3.46

NOTES:

Rock Haul Cost Computation

SALE NAME: DATE: Apr 28, 2020
ROAD NAME: CLASS: Medium
ROCK SOURCE 10 CY truck
Route:

TIME Computation:
Road speed time factors:

1.	55 MPH	4.4	MRT	4.8	minutes
2.	50 MPH		MRT	0.0	minutes
3.	45 MPH		MRT	0.0	minutes
4.	40 MPH		MRT	0.0	minutes
5.	35 MPH	33.8	MRT	57.9	minutes
6.	30 MPH		MRT	0.0	minutes
7.	25 MPH		MRT	0.0	minutes
8.	20 MPH	4.2	MRT	12.6	minutes
9.	15 MPH	2.0	MRT	8.0	minutes
10.	10 MPH		MRT	0.0	minutes
11.	05 MPH	0.5	MRT	6.0	minutes

Dump or spread time per RT		0.50	minutes
Total hauling cycle time for this setting (100% efficiency)		89.80	minutes
		89.80	
Operator efficiency correction	0.85	105.65	minutes
Job efficiency correction	0.90	117.39	minutes
Truck capacity (CY)	10.00	11.74	min/CY
Loading time, delay time per CY		0.25	min/CY
TIME (minutes) per cubic yard		11.99	min/CY

COST per CY computation

Cost of truck and operator per hour	$90.00	/hr.
Cost of truck and operator per minute	$1.50	/min
Cost per CY	$17.99	/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"	$ 8.75	$26.74	$28.24
3" - 0"	$ 8.25	$26.24	$27.74
Jaw-Run	$ 7.25	$25.24	$26.74
Pit-Run	$ 6.50	$24.49	$25.99
Rip-Rap	$ 18.50	$36.49	$37.99

TIMBER CRUISE REPORT

Stone Age
(WO-341-2021-W00371-01)
FY 2020

1. **Sale Area Location**: Portions of Section 19, T10S, R8W, W.M., Lincoln County, Oregon.

2. **Fund Distribution:**
   a. **Fund** BOF 100%

3. **Sale Acreage by Area:**

Area	Treatment	Gross Acres	Stream Buffers	Existing Roads	Green Tree Reserve Area	Net Sale Acres	Acreage Comp. Method
1	Modified Clearcut	108	18	3	1	86	GIS

4. **Cruisers and Cruise Dates:** The sale was cruised by Cody Valencia and Zane Sandborg in February 2020.

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 40 BAF with plots spaced 3 chains apart on plot lines spaced 7 chains apart. A total of 45 plots were taken with 16 measure plots and 29 count plots.

6. Measure plots were measured for DBH, height, form factor, grade, and defect. Data was entered into the Atterbury SuperACE cruise program to determine stand statistics and net board foot volume. Additional volume was removed to account for hidden defect and breakage.

   Digital ortho photos, Lidar data, and GPS data were used to map the boundaries for the sale, and ArcMap GIS was used to determine gross and net acreage.

7. **Measurement Standards:** Tree heights were measured to the nearest foot, to a top diameter of 6 inches inside bark or to 40% of form factor. Diameters at breast height (DBH) were measured to the nearest inch, and a form point of 16 feet was used to calculate form factor. Form factors were measured or estimated on every tree. Most trees were graded in 40 foot log segments unless breakage, defect, or length to top of grade cruise diameter warranted otherwise.

8. **Timber Description:** Timber in the sale area includes 86 acres of 73 to 98 year-old Douglas-fir and red alder with some scattered bigleaf maple. The average Douglas-fir to be removed is approximately 23 inches DBH, with an average height of 89 feet to a merchantable top. The average red alder is approximately 14 inches DBH, with an average height of 42 feet to a merchantable top. The average volume per acre to be harvested (net) is approximately 40 MBF. Conifer trees other than Douglas-fir and Douglas-fir over 60" DBH are reserved from cutting.

9. **Statistical Analysis and Stand Summary:** (See attached "Statistics").

Area	Target CV	Target SE	Actual CV	Actual SE
1	60%	11%	64.7%	9.6%

Note: Statistics shown are for conifer and hardwood trees combined. Percentages are for net board foot volume.

10. Total Volume (MBF) by Species and Grade: (See attached volume report "Species, Sort Grade – Board Foot Volumes - Project").

Species	Gross Cruise Volume	Cruised D & B	Cruised D & B (MBF)	Hidden D & B	Hidden D & B (MBF)	Net Sale Volume
Douglas-fir	3,385	0.9%	30	8%	268	3,087
Red Alder	365	1.8%	7	8%	29	329
Bigleaf Maple	29	7.9%	2	8%	2	25
Total	3,779	--	39	--	299	3,441

Species	Ave. DBH	Net Vol.	2-Saw	3-Saw	4-Saw	Camp Run
Douglas-fir	23	Grade %	79%	18%	3%	-
		3,087	2,439	556	92	-
Red Alder	14	Grade %	-	-	-	100%
		329	-	-	-	329
Bigleaf Maple	22	Grade %	-	-	-	100%
		25	-	-	-	25
Total		3,441	2,439	556	92	354

Attachments: Cruise Design
Cruise Maps
Species, Sort Grade – Board Foot Volumes
Statistics
Stand Table Summary
Log Stock Table – MBF

Prepared by: Cody Valencia Date: 3/18/2020

Unit Forester: Evelyn Hukari Date: 4/10/20

Revised August, 2002

CRUISE DESIGN
WEST OREGON DISTRICT

Sale Name: __**Stone Age**_____ **Area** __**1**____

Harvest Type: MC
Approx. Cruise Acres: __88____ **Estimated CV%** _60__ Net BF /Acre **SE% Objective** _11__ Net BF /Acre

Planned Sale Volume:__2.3__ MMBF **Estimated Sale Area Value/Acre:** $ 21,850__

A. Cruise Goals: (a) Grade minimum __80____ conifer and __24___ hardwood trees: (b) Sample _45_ cruise plots (16 grade: 29 count); (c) Other goals _X_ Determine log grades for sale value; __ Determine take and leave tree species and sizes.

(Special cruising directions – leave trees etc.) Take plots as shown on map. Do not take plots in buffers.

DO NOT RECORD 12', 22' and 32' (for Hardwoods).

DO NOT RECORD 22' LENGTHS.

B. Cruise Design:

1. **Plot Cruises:** BAF _40_ (Full point; Half point) (circle one)
   Cruise Line Direction(s) __30°/210°_____
   Cruise Line Spacing ___3/198_____ (chains) (feet)
   Cruise Plot Spacing __7/462_____ (chains) (feet)
   Grade/Count Ratio __1:2__

C. Tree Measurements:

1. **Diameter:** Minimum DBH to cruise is _8"__ for conifers and _10"_ for hardwoods. Record dbh to nearest ½" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.

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

3. **Top Cruise Diameter (TCD):** Minimum top outside bark for conifer is _7"_, _7"_ for hardwoods or _40__% of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for trees > 18" dbh.

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

5. **Tree Segments:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12'; for

hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each merch. log 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 DF (Douglas-fir); WH (Western hemlock); SS (Sitka Spruce); RC (Western red cedar); NF (Noble fir); SF (Silver fir); RA (Red alder); BM (Bigleaf maple). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DFL, 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; K = Camp Run; 0 = Cull ;
   Hardwoods: K = Camprun; #1 Sawmill = 12"+ scaling diameter; #2 Sawmill = 10" and 11"; #3 Sawmill = 8" and 9"; #4 Sawmill = 6" and 7"

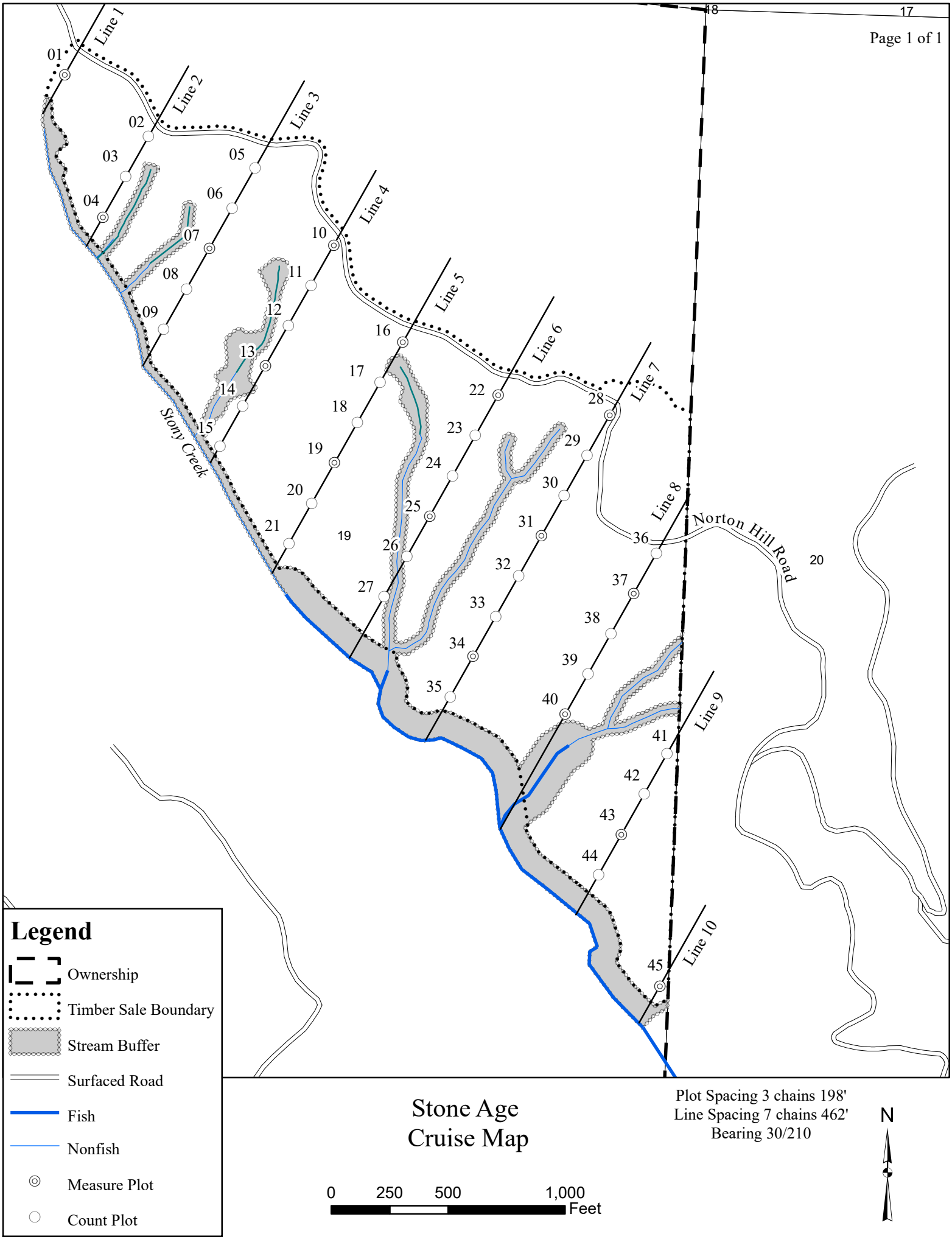
7. **Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally 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 points with red flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie red flagging above eye level near plot center and another red flagging around a sturdy wooden stake marking plot center. On red flagging, write the plot identification number. On "measure/grade" plots write the tree number and/or tree diameter on all measured trees (clockwise from the line direction) in yellow paint. Mark leave trees with an L for leave.
   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 or Lazer, Logger's Tape (with dbh on back), Biltmore Stick, Compass, Cruise Cards or Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging, Yellow Paint.

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

Cruise Design by: __Cody Valencia_____
Approved by: _____
Date: _____



Legend

- Ownership
- Timber Sale Boundary
- Stream Buffer
- Surfaced Road
- Fish
- Nonfish
- Measure Plot
- Count Plot

Stone Age Cruise Map

0 250 500 1,000 Feet

Plot Spacing 3 chains 198'
Line Spacing 7 chains 462'
Bearing 30/210

N

TC TSTATS

STATISTICS

PAGE 1

PROJECT STONEAGE

DATE 4/28/2020

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
10S	**08W**	**19**	**A1**	**ALL**	86.00	45	289	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	45	289	6.4		
CRUISE	16	98	6.1	9,811	1.0
DBH COUNT					
REFOREST					
COUNT	29	191	6.6		
BLANKS					
100 %					

STAND SUMMARY

	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DF	65	64.9	23.1	89	39.2	188.4	39,363	39,017	9,098	9,098
R ALDER	19	46.1	14.1	42	13.3	49.8	4,241	4,165	1,395	1,395
DF LEAVE	7	.5	64.6	135	1.5	12.4	4,169	3,877	726	726
BL MAPLE	7	2.5	21.5	47	1.3	6.2	339	312	127	127
TOTAL	*98*	*114.1*	*20.3*	*69*	*57.0*	*256.9*	*48,112*	*47,371*	*11,346*	*11,346*

CONFIDENCE LIMITS OF THE SAMPLE

68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR

CL: 68.1 % COEFF

SAMPLE TREES - BF

OF TREES REQ. INF. POP.

SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DF	95.4	11.8	851	965	1,079			
R ALDER	59.0	13.9	93	108	123			
DF LEAVE	12.2	5.0	6,747	7,100	7,453			
BL MAPLE	61.2	24.9	90	120	150			
TOTAL	*158.4*	*16.0*	*988*	*1,177*	*1,365*	*1,002*	*250*	*111*

CL: 68.1 % COEFF

TREES/ACRE

OF PLOTS REQ. INF. POP.

SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DF	86.2	12.8	57	65	73			
R ALDER	156.2	23.3	35	46	57			
DF LEAVE	177.0	26.4	0	1	1			
BL MAPLE	333.5	49.7	1	2	4			
TOTAL	*62.6*	*9.3*	*103*	*114*	*125*	*157*	*39*	*17*

CL: 68.1 % COEFF

BASAL AREA/ACRE

OF PLOTS REQ. INF. POP.

SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DF	79.1	11.8	166	188	211			
R ALDER	145.5	21.7	39	50	61			
DF LEAVE	179.0	26.7	9	12	16			
BL MAPLE	334.5	49.8	3	6	9			
TOTAL	*49.2*	*7.3*	*238*	*257*	*276*	*97*	*24*	*11*

CL: 68.1 % COEFF

NET BF/ACRE

OF PLOTS REQ. INF. POP.

SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DF	78.7	11.7	34,441	39,017	43,592			
R ALDER	148.4	22.1	3,244	4,165	5,085			
DF LEAVE	178.9	26.6	2,844	3,877	4,910			
BL MAPLE	386.1	57.5	133	312	492			
TOTAL	*59.5*	*8.9*	*43,175*	*47,371*	*51,567*	*141*	*35*	*16*

TC TSTNDSUM

Stand Table Summary

Project **STONEAGE**

T10S R08W S19 TALL

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
10S	08W	19	A1	ALL	86.00	45	98

T10S R08W S19 TALL

Page: 1
Date: 04/28/202(
Time: 1:54:34PM

Spc	S T	DBH	Sample Trees	FF 16'	Av Ht Tot	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
DF		12	1	86	59	3.691	2.90	3.69	18.0	60.0		66	221		57	19
DF		13	1	82	42	3.145	2.90	3.15	15.0	30.0		47	94		41	8
DF		15	4	85	109	9.450	11.60	18.90	24.2	83.8		458	1,583		394	136
DF		16	1	89	101	2.076	2.90	4.15	26.5	100.0		110	415		95	36
DF		17	2	85	94	3.679	5.80	7.36	29.5	102.5		217	754		187	65
DF		18	2	86	114	3.281	5.80	8.20	30.6	108.0		251	886		216	76
DF		19	2	87	118	2.945	5.80	7.36	35.2	128.0		259	942		223	81
DF		21	3	87	118	3.616	8.70	9.64	40.1	153.7		387	1,483		333	127
DF		22	2	83	108	2.196	5.80	5.49	44.8	164.0		246	901		212	77
DF		23	2	84	138	2.010	5.80	6.03	47.3	193.3		285	1,166		245	100
DF		24	3	86	125	2.768	8.70	7.38	55.8	227.5		412	1,680		354	144
DF		25	4	87	130	3.402	11.60	10.21	57.1	240.8		583	2,458		501	211
DF		26	6	84	133	4.718	17.39	13.37	63.5	260.0		848	3,476		730	299
DF		27	5	85	139	3.646	14.50	11.67	62.0	265.6		723	3,099		622	267
DF		28	5	85	137	3.390	14.50	10.17	72.4	308.0		736	3,132		633	269
DF		29	3	87	135	1.896	8.70	5.69	79.9	373.3		454	2,124		391	183
DF		30	5	86	150	2.953	14.50	8.86	89.5	418.7		793	3,709		682	319
DF		31	2	90	126	1.106	5.80	3.32	85.2	408.3		283	1,355		243	117
DF		32	1	85	134	.519	2.90	1.56	94.0	426.7		146	664		126	57
DF		33	2	86	142	.976	5.80	2.93	103.0	456.7		302	1,337		259	115
DF		34	3	87	157	1.379	8.70	4.14	120.8	607.8		500	2,515		430	216
DF		35	2	85	154	.868	5.80	2.60	123.2	596.7		321	1,553		276	134
DF		36	2	86	140	.820	5.80	2.46	119.3	570.0		294	1,403		253	121
DF		47	1	82	210	.241	2.90	.96	197.8	1085.0		190	1,044		164	90
DF		56	1	85	185	.169	2.90	.68	275.3	1507.5		187	1,022		160	88
DF		Totals	65	85	117	64.942	188.44	159.96	56.9	243.9		9,098	39,017		7,825	3,355
RA		10	1	86	66	4.803	2.62	4.80	14.0	50.0		67	240		58	21
RA		11	2	86	50	7.940	5.24	7.94	14.0	45.0		111	357		96	31
RA		12	1	87	67	3.336	2.62	3.34	21.0	60.0		70	200		60	17
RA		13	4	86	70	11.369	10.48	14.21	21.6	60.0		307	853		264	73
RA		15	5	87	64	10.674	13.10	17.08	22.3	65.0		380	1,110		327	95
RA		16	1	87	71	1.876	2.62	3.75	22.0	80.0		83	300		71	26
RA		18	1	87	56	1.483	2.62	1.48	44.0	90.0		65	133		56	11
RA		19	3	86	77	3.992	7.86	7.98	34.2	113.3		273	905		235	78
RA		27	1	87	44	.659	2.62	.66	59.0	100.0		39	66		33	6
RA		Totals	19	86	64	46.132	49.78	61.25	22.8	68.0		1,395	4,165		1,200	358
DFL		60	1	86	230	.091	1.78	.36	365.3	2105.0	.00	132	762	0	114	66
DFL		62	1	85	147	.085	1.78	.25	379.0	1933.3	.00	96	492	0	83	42
DFL		63	1	83	181	.082	1.78	.33	337.5	1805.0	.00	111	593	0	95	51
DFL		65	2	84	183	.154	3.56	.54	384.7	2032.9	.01	208	1,098	0	179	94
DFL		66	1	84	180	.075	1.78	.22	424.3	2120.0	.00	95	476	0	82	41
DFL		74	1	80	169	.060	1.78	.18	464.7	2556.7	.00	83	457	0	71	39
DFL		Totals	7	84	183	.546	12.44	1.89	384.3	2053.5	0.02	726	3,877	2	624	333
BM		15	1	87	44	.724	.89	.72	24.0	50.0		17	36		15	3
BM		18	1	87	86	.503	.89	1.01	32.5	105.0		33	106		28	9
BM		19	1	86	66	.451	.89	.90	28.5	100.0		26	90		22	8
BM		25	1	87	38	.261	.89	.26	37.0	90.0		10	23		8	2
BM		27	1	86	55	.224	.89	.22	90.0	180.0		20	40		17	3
BM		32	1	87	57	.159	.89	.16	63.0	50.0		10	8		9	1
BM		34	1	86	56	.141	.89	.14	83.0	60.0		12	8		10	1

TC TSTNDSUM

Stand Table Summary

Project **STONEAGE**

T10S R08W S19 TALL

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
10S	08W	19	A1	ALL	86.00	45	98

Spc	S T	DBH	Sample Trees	FF 16'	Av Ht Tot	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
BM		Totals	7	87	58	2.463	6.22	3.42	37.2	91.4		127	312		109	27
Totals			98	86	95	114.083	256.89	226.51	50.1	209.1	.02	11346	47,371	2	9,758	4,074

T TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: STONEAGE

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Date 4/28/2020
Time 1:54:34PM

T10S R08W S19 TALL

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
10S	08W	19	A1	ALL	86.00	45	98	1	W

T10S R08W S19 TALL

Spp	ST	Sort	Grad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log Ln Ft	Dia In	Bd Ft	CF/ Lf	Logs Per /Acre
DF		DO	2M	79	1.0	31,419	31,110	2,675			30	70		0	0	99	40	16	460	2.53	67.6
DF		DO	3M	18	.5	6,985	6,948	598		92		8	2	5	12	81	36	9	114	0.89	60.8
DF		DO	4M	3		958	958	82		100			52	48			21	7	30	0.51	31.5
DF	**Totals**			82	.9	39,363	39,017	3,355		19	24	57	2	2	2	94	35	12	244	1.64	160.0
RA		DO	CU														6	25		0.00	.7
RA		DO	CR	100	1.8	4,241	4,165	358		87	13		10	40		49	29	8	68	0.77	61.2
RA	**Totals**			9	1.8	4,241	4,165	358		87	13		10	40		49	29	8	67	0.77	61.9
DFL		DO	CU														7	62		0.00	.1
DFL		DO	2M	30	7.0	1,270	1,181	102				100				100	40	35	2280	10.29	.5
DFL		DO	3M	70	7.0	2,899	2,696	232				100	2		4	95	36	33	1968	10.31	1.4
DFL	**Totals**			8	7.0	4,169	3,877	333				100	1		3	96	36	34	1991	10.24	1.9
BM		DO	CU														10	20		0.00	.8
BM		DO	CR	100	7.9	339	312	27		58	42		36	19		46	29	10	91	1.30	3.4
BM	**Totals**			1	7.9	339	312	27		58	42		36	19		46	25	12	74	1.20	4.2
Type Totals					1.5	48,112	47,371	4,074		24	21	55	3	6	2	90	33	11	208	1.50	228.0

TC TLOGSTVB

Log Stock Table - MBF

Project: STONEAGE

T10S R08W S19 TALL

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
10S	08W	19	A1	ALL	86.00	45	98

T10S R08W S19 TALL

Page 1
Date 4/28/2020
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Spp	ST	Sort	Grade	Log Len	Gross MBF	% Def	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches 2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
DF		DO	2M	28	4		4	.1							4					
DF		DO	2M	32	10		10	.3						10						
DF		DO	2M	36	25		25	.7						25						
DF		DO	2M	38	96		96	2.9						11	20	17	48			
DF		DO	2M	40	2,567	1.0	2,540	75.7						349	281	982	537	309	41	42
DF		DO	3M	18	3		3	.1												
DF		DO	3M	20	6		6	.2				3	3							
DF		DO	3M	24	15		15	.5				7	8							
DF		DO	3M	26	14		14	.4				10	4							
DF		DO	3M	28	4		4	.1				4								
DF		DO	3M	32	58		58	1.7			25		33							
DF		DO	3M	34	11		11	.3				6	5							
DF		DO	3M	36	54		54	1.6			28	10	17							
DF		DO	3M	38	35		35	1.0			9		26							
DF		DO	3M	40	400	.8	397	11.8			28	133	194					14	28	
DF		DO	4M	12	7		7	.2			1	3	2							
DF		DO	4M	16	15		15	.5			7	8								
DF		DO	4M	18	8		8	.2			6	2								
DF		DO	4M	20	13		13	.4			3	11								
DF		DO	4M	24	14		14	.4			6	8								
DF		DO	4M	26	3		3	.1			3									
DF		DO	4M	28	14		14	.4			14									
DF		DO	4M	30	8		8	.2			8									
DF		Totals			3,385		3,355	82.4			138	204	291	395	305	1002	585	323	69	42
RA		DO	CU	6																
RA		DO	CR	16	7	16.1	6	1.7			6									
RA		DO	CR	18	22		22	6.2			22									
RA		DO	CR	20	9		9	2.4			9									
RA		DO	CR	26	6		6	1.6				6								
RA		DO	CR	28	18		18	5.1					18							
RA		DO	CR	30	126	4.3	121	33.7			21	17	63	19						
RA		DO	CR	36	67		67	18.7			67									
RA		DO	CR	38	19		19	5.4					19							
RA		DO	CR	40	90		90	25.2			13	50		27						
RA		Totals			365	1.8	358	8.8			137	73	101	47						
DFL		DO	CU	7																
DFL		DO	2M	40	109	7.0	102	30.5									7	8	36	51
DFL		DO	3M	16	2		2	.6									2			
DFL		DO	3M	18	2	16.1	2	.6									2			
DFL		DO	3M	32	4	6.6	4	1.2									4			
DFL		DO	3M	34	5	5.6	4	1.3									4			
DFL		DO	3M	38	14	3.3	13	4.0									5	8		
DFL		DO	3M	40	222	7.2	206	61.8										5	83	118
DFL		Totals			359	7.0	333	8.2									24	21	119	169
BM		DO	CU	8																
BM		DO	CU	12																
BM		DO	CU	15																
BM		DO	CR	18	6	6.2	6	21.7							6					

TC TLOGSTVB

Log Stock Table - MBF

Project: **STONEAGE**

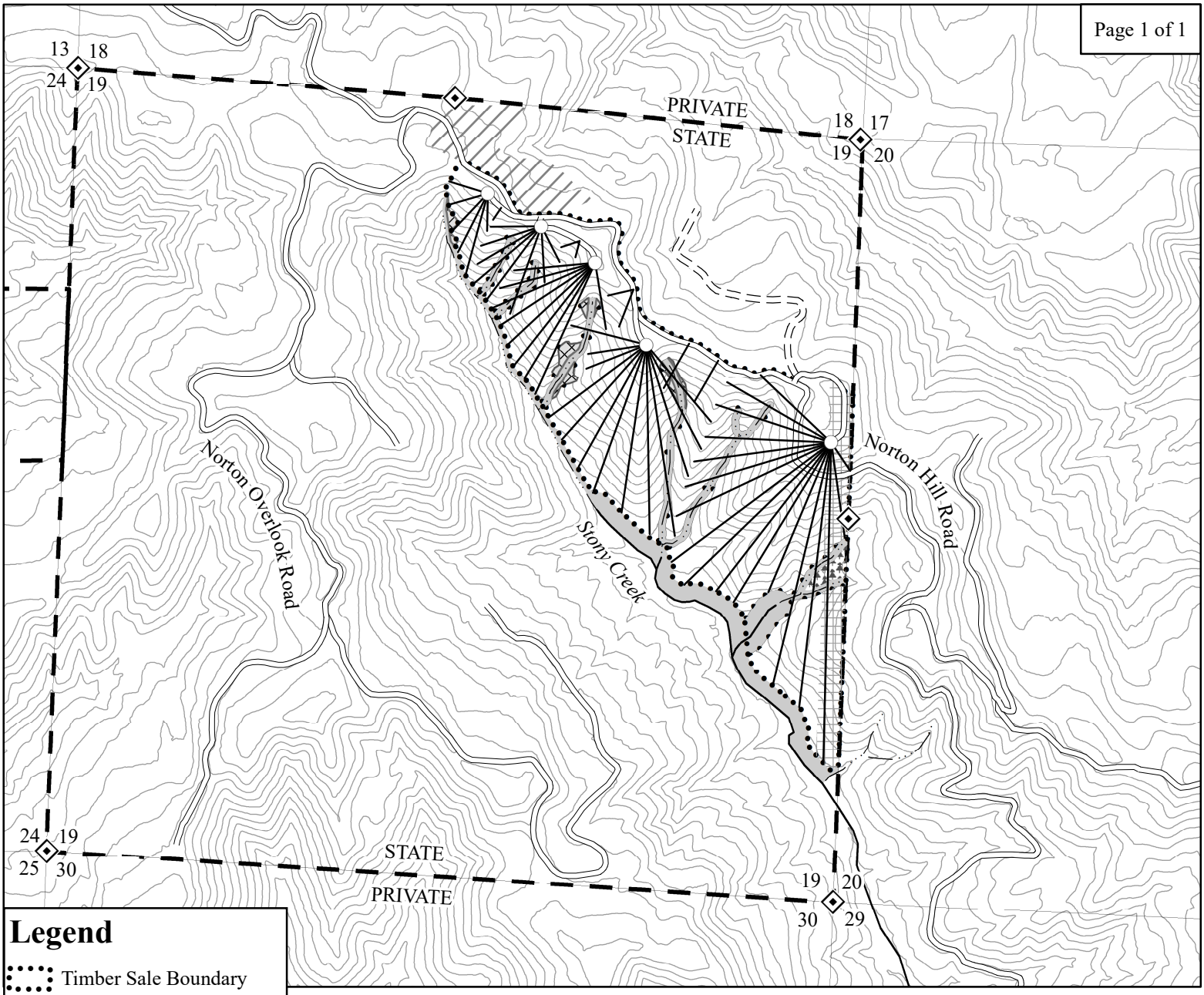
T10S R08W S19 TALL

T10S R08W S19 TALL

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
10S	08W	19	A1	ALL	86.00	45	98

Page 2
Date 4/28/2020
Time 1:54:34PM

Spp	S T	So rt	Gr de	Log Len	Gross MBF	% Def	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches 2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
BM		DO	CR	20	4	5.6	4	14.0				2		2						
BM		DO	CR	28	2		2	7.2				2								
BM		DO	CR	30	4	16.7	3	11.6				3								
BM		DO	CR	36	1	16.7	1	2.5			1									
BM		DO	CR	38	1	14.3	1	2.7			1									
BM		DO	CR	40	12	7.0	11	40.3					7	3						
BM		Totals			29	7.9	27	.7			1	7	7	5	6					
Total All Species					4,138	1.5	4,074	100.0			277	284	400	447	311	1002	609	344	188	211



Legend

- Timber Sale Boundary
- Green Tree Retention Area
- Reforestation Area
- Controlled Felling Area
- Posted Stream Buffer
- Stream Buffer
- Slope Buffer

Roads

- Surfaced Road
- Unsurfaced Road

Streams

- Type "F" Stream
- Type "N" Stream
- Cable Corridor
- Landing
- Land Survey Monument

LOGGING PLAN

OF TIMBER SALE CONTRACT NO.
WO-341-2021-W00371-01
STONE AGE
PORTIONS OF SECTION 19
OF T10S, R8W, W.M.
LINCOLN COUNTY, OREGON.

AREA	TRACTOR ACRES	CABLE ACRES
1 (MC)	5	81
TOTAL	5	81

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.

1 inch = 1,000 feet

0 500 1,000 2,000 Feet

N