

SETs: Stand Evaluation Tools

II. **Tree Value Conversion Standards for Hardwood Sawtimber**

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SETs

THIS IS ONE of a series of papers designed to help the forester estimate the value of timber stands. We call these papers SETs—Stand Evaluation Tools. The first three papers are being published concurrently. They are:

SETs I. AN INDIVIDUAL-TREE APPROACH TO MAKING STAND EVALUATIONS (USDA Forest Service Research Paper NE-336), which describes a method for using individual tree values to make stand evaluations.

SETs II. TREE VALUE CONVERSION STANDARDS FOR HARDWOOD SAWTIMBER (USDA Forest Service Research Paper NE-337), which provides values for individual sawtimber trees.

SETs III. COMPOSITE VOLUME AND VALUE TABLES FOR HARDWOOD PULPWOOD (USDA Forest Service Research Paper NE-338), which provides values for individual growing-stock trees.

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II. Tree Value Conversion Standards for Hardwood Sawtimber

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FOREWORD

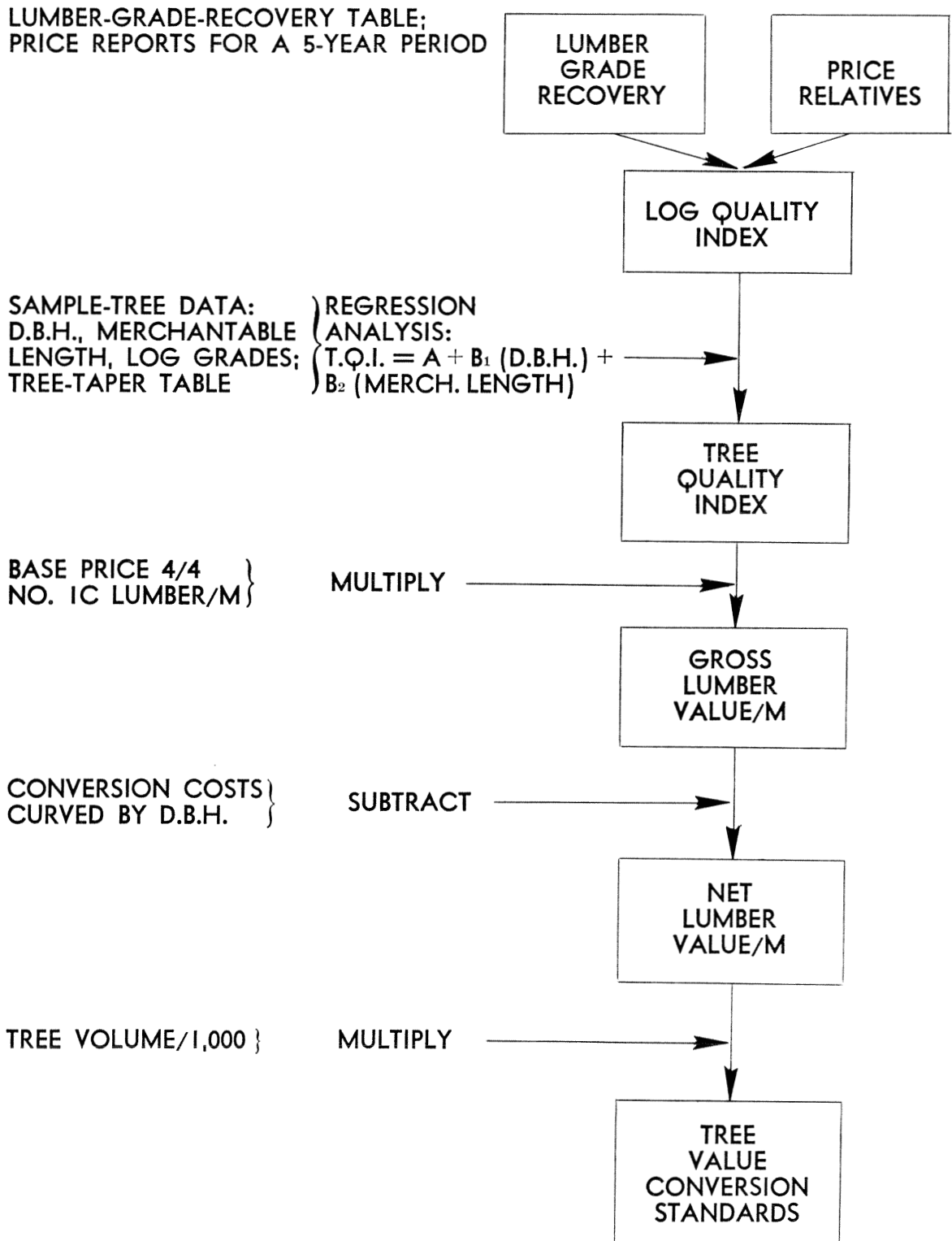
In the past it has been customary to base estimates of probable profits from the management of lands for the future production of timber in the United States upon the increase of the timber in quantity. Everyone familiar with the lumber business knows, however, that the lumber which comes out of large trees is worth more per thousand feet than that which comes from small trees, because the large trees turn out a higher proportion of the choice grades. It is apparent that estimates of profits through careful forest management should take into account this factor of quality increase; but, in the absence of an accurate determination of what this quality increase is, it has hitherto been impossible to do more than state in general terms the fact that such an increase would take place and that its effect would be to make the profit from deferred operations greater than that actually shown by the figures indicating the future yield to be expected.

—Edward A. Braniff in the 1904 Yearbook of Agriculture

ABSTRACT

Tree quality index tables are presented for 12 important hardwood species of the oak-hickory forest. From these, tree value conversion standards are developed for each species, log grade, merchantable height, and diameter at breast height. The method of calculating tree value conversion standards and adapting them to different conditions is explained. A computer program for calculating tree values for different lumber values and conversion costs is included.

Figure 1. — Calculation of tree value conversion standards



INTRODUCTION

IN RECENT YEARS the USDA Forest Service has published a series of papers that deal with the rates of value increase for most of the important hardwood species (see References). An important part of these computations is a system for generating individual values for sawtimber trees. The system and the values both have a lot of potential uses for evaluating timber stands and their development. And so, in this paper we: a) describe fully the value system, b) present a set of sawtimber tree values, c) show how the values can be applied, and d) describe a computer program for generating tree volumes and tree value conversion standards. In doing so, our aim is to provide researchers and practitioners with a means for making rigorous timber evaluations.

To further that aim, we are publishing concurrently two other papers — COMPOSITE VOLUME AND VALUE TABLES FOR HARDWOOD PULPWOOD and AN INDIVIDUAL-TREE APPROACH TO MAKING STAND EVALUATIONS. These three papers combined make a useful set of working tools.

TREE VALUE CONVERSION STANDARDS . . .

What They Are

Tree value conversion standards (TVCS) are a measure of a tree's worth in dollars, based on the quantity and quality of its expected yield of 4/4 (1-inch) lumber. They are standards, not in the sense that they are fixed and absolute values, but in the sense that they are criteria for gaging tree value within a given framework of circumstances.

In the following section we describe the system that we used to generate the tree value

conversion standards included in this publication. We also define the circumstances in which those standards fit.

In general, the inputs were regional, and the resulting standards may be applied regionally. But local differences may occur within a region, and changes may take place throughout a region over a period of time. Thus you may want to develop local value standards of your own or adjust our regional ones.

How They Were Calculated

We used the quality index (Q.I.) approach to calculating tree value conversion standards (*Herrick 1956*). This approach was a series of index values to calculate the net value of the 4/4 lumber that can be sawed from the tree's logs. The process is shown in figure 1.

We developed Q.I.'s for individual logs, by species, log grade, and log diameter, using the formula:

$$\begin{aligned} \text{Log Q.I.} = & (\% \text{ FAS} \times \text{P.R.}_{\text{FAS}}) + \\ & (\% \text{ SEL} \times \text{P.R.}_{\text{SEL}}) \\ & + (\% \text{ \#1C} \times \text{P.R.}_{\text{\#1C}}) + . . . \\ & + (\% \text{ \#3B} \times \text{P.R.}_{\text{\#3B}}). \end{aligned}$$

The percentages are the proportion of a log's lumber that would meet the specifications for each lumber grade. We obtained this information by hand-curving data from HARDWOOD LUMBER GRADES FOR STANDARD LUMBER (*Vaughn et al. 1966*).

The P.R.'s are price relatives or price indexes that express the price of each lumber grade as a proportion of that of No. 1 Common (table 1). The price relatives given here are based on the average prices of 4/4 plain-sawed No. 1 Common lumber of each species over the 5-year period 1964 through 1968, f.o.b. mills in the Johnson City, Tennessee area, as reported in HARDWOOD MARKET REPORT (*Lemsky 1964-68*).

Table 1. — Lumber Price relatives

Species	Lumber Grade							
	FAS	SEL	SAPS	1C	2C 2A	2B	3A	3B
White ash	1.63	1.56	—	1.00	0.53	—	0.44	0.39
Beech	1.25	1.18	—	1.00	.54	—	.42	.38
Black cherry	1.45	1.40	—	1.00	.46	—	.27	.25
Elm	1.28	1.13	—	1.00	.52	—	—	.40
Hickory	1.19	1.10	—	1.00	.40	—	—	—
Red maple	1.28	1.23	—	1.00	.47	—	.43	.30
Sugar maple	1.53	1.47	—	1.00	.44	—	.38	.27
Black oak ^a	1.65	1.57	—	1.00	.64	—	.56	.37
Chestnut oak ^a	1.82	1.74	—	1.00	.66	—	.58	.39
Red oak	1.65	1.57	—	1.00	.64	—	.56	.37
White oak	1.82	1.74	—	1.00	.66	—	.58	.39
Yellow-poplar	1.42	1.36	1.29	1.00	.67	0.45	.23	.23

^a Prices for chestnut oak and black oak were not available. Because lumber of these species is intermixed with white oak and red oak respectively, prices of the latter species were used to calculate the price relatives.

We developed tree Q.I.'s for a sample of trees, using the formula:

$$\begin{aligned} \text{Tree Q.I.} = & (\% \text{ of tree volume in 1st log} \\ & \times \text{Q.I.}_{1\text{st log}}) \\ & + (\% \text{ of tree volume in 2nd log} \times \text{Q.I.}_{2\text{nd log}}) \\ & + \dots + (\% \text{ of tree volume in nth log} \times \\ & \text{Q.I.}_{\text{nth log}}). \end{aligned}$$

The percentage of tree volume in each log is based on a tree volume table, which provides the volume of each log in a tree of given size as well as the volume for the entire merchantable height of the tree (International 1/4-inch log rule).

The log Q.I.'s are those that we developed in the previous step. To apply them, we used a hardwood taper table, which provided the diameter inside bark at the small end of each log.

After developing a quality index for each of our sample trees, we used regression analysis to develop tree quality indexes for each species, by butt-log grade, dbh, and merchantable height. The regression equations and quality index values are given in appendix A.

We then converted these tree quality indexes to gross tree values per thousand board feet. To do so we multiplied each T.Q.I. by the 1972 price of No. 1 Common 4/4 lumber for each species (table 2). The year 1972 was selected because it reflects a period of

relative stability in the economy. Prices since that time have been distorted by inflation and recession.

We then converted gross tree values per thousand to net tree values per thousand by subtracting conversion cost — the cost of converting standing timber into 4/4 lumber. It includes the costs of labor and materials used in felling and bucking the trees, skidding and loading, other logging costs, transportation, and milling. In this study we used

Table 2. — Price of No. 1 Common 4/4-inch lumber, January 1, 1972^a

Species	Price per Mfbm
White ash	\$195
Beech	142
Black cherry	175
Elm	145
Hickory	140
Red maple	190
Sugar maple	185
Black oak ^b	155
Chestnut oak ^b	140
Red oak	155
White oak	140
Yellow-poplar	170

^a Prices from Hardwood Market Report for 4/4 plain-sawed No. 1 Common lumber, f.o.b. mills in the Johnson City, Tennessee area.

^b Prices for chestnut oak and black oak were not available. Because lumber of these species is intermixed with white oak and red oak respectively, prices of the latter species were used.

an average conversion cost of \$70 per thousand for 16-inch trees (table 52).

Finally, we calculated tree value conversion standards by multiplying net tree values per thousand by appropriate tree volumes. We include in appendix A tree value conversion standards by species, butt-log grade, dbh and merchantable height, computed from the lumber prices in table 2 and a conversion cost estimated at \$70.

How TVCS's Differ From Stumpage Values

Our tree value conversion standards are not stumpage values: There are some important differences between the two.

The customary method of estimating stumpage value begins with the expected selling price of the product or products that are to be made from the timber. From it is subtracted the estimated cost of converting the timber into those products. The difference is termed a conversion return. And from it is subtracted an allowance for the operator's profit and risk. The final difference, the residue, is the stumpage value of the timber.

Our tree value conversion standards are conversion returns only — one step short of stumpage values. We have refrained from taking that step because profit and risk are somewhat arbitrary, and often highly personal matters.

In computing our tree value conversion standards, we have limited ourselves to a single product — 4/4 lumber. Also, we have used given yields by lumber grade, given lumber prices, and only one level of conversion costs. Our tree value conversion standards are, therefore, estimates of conversion return under a single, specified set of conditions and they must be recognized as such. They are not estimates of conversion return from any particular logging chance. And, since they contain no allowance for profit and risk, they are not stumpage values.

Our tree value conversion standards can, however, be adjusted to fit many local conditions, such as lumber prices, lumber-grade recovery, logging chance, operator efficiency, etc. We will show how this is done in the next section. After making the needed adjust-

ments, you might use the TVCS's to estimate your own stumpage values by subtracting an appropriate allowance for profit and risk.

Adapting TVCS To Local Conditions

Our tree value conversion standards are suitable for regional use and for estimating broad value relationships. But they can also be adapted more closely to local conditions.

Major adjustments are needed where product yields or product values differ greatly from the ones we used in deriving our tree quality indexes. Such cases include local areas where mills a. have different mixes of lumber grade recovery, b. turn part of their output into products other than grade lumber, or c. sell their grade lumber at price mixes other than those we used to derive the price relatives. In such cases we suggest that tree value conversion standards be calculated to fit local or specific circumstances. This can be done by the procedure we outlined for calculating TVCS.

Minor adjustments are needed where our tree quality indexes are suitable, but No. 1 Common lumber prices, conversion costs, or volume measures differ from those we used.

The price of No. 1 Common lumber fluctuates, sometimes for a particular species, sometimes for all species. It may differ from one locality to another, and it may vary from time to time. Conversion costs differ from one logging chance to another for any given operator. So can mill log and lumber overrun and underrun. These kinds of fluctuations and variations are common and it is reasonable to expect them. So we should be able to adjust tree conversion value standards to fit them.

Although such adjustments can be made most efficiently by computer, they can, if necessary, be made with a desk calculator. Either way, they must be made one species at a time; they should be made by log grade, merchantable height, and dbh; and they can be made using the formula

$$\text{TVCS} = [(\text{TQI} \times \text{P\#1C}) - \text{CC}] (\text{TV})$$

where

TQI = tree quality index

P#1C = price of No. 1 Common per
Mfbm

CC = conversion cost per Mfbm
and TV = tree volume in Mfbm

This formula consolidates some of the steps that we used in deriving our TVCS values. The term $TQI \times P\#1C$ represents a tree's gross lumber value per Mfbm. That term minus CC represents the tree's net lumber value per Mfbm.

To facilitate making adjustments with a desk calculator, we have included in appendix A a complete set of TQI values, a representative set of conversion costs, and a composite board-foot volume table (International 1/4-inch rule). To adjust a tree's TVCS for different prices of No. 1 Common lumber or conversion costs, we need only to insert the tree's TQI and TV values into the formula given above, substitute the appropriate P#1C and CC values and solve the resulting equation. To adjust for overrun or underrun we need, simply, to expand or reduce the tree's value conversion standard by the percentage of overrun or underrun. And, if we need to make adjustments, we can make them by 2-inch diameter classes and interpolate between the classes.

To facilitate making adjustments with a computer, we have included a Fortran IV program in appendix B. This program calculates for each sawtimber tree the TQI, volume, and TVCS, giving the user the option of substituting current prices of No. 1 Common lumber and conversion costs to suit his own situation. The program may be used as presented to summarize the volume and TVCS for the sawtimber component of a particular stand; or the user may wish to incorporate the basic set of equations for volume, TQI, and TVCS into his existing inventory system. The program listing with user instructions and examples is given in appendix B.

How To Use TVCS

As noted earlier, we developed our tree value conversion standards to calculate the rates of value increase and financial maturity diameters for various hardwood species. But TVCS can be put to work in other ways.

Value standards can be applied to forest

inventories, much as volume standards are. The mechanics are simple, using either TVCS tables that are comparable to volume tables or TVCS equations that are comparable to volume equations. Such applications add a new dimension to inventory work by allowing stock tables, per-acre estimates, stand summaries, etc. to be expressed in dollars as well as board feet.

TVCS summaries add much meaning to inventories, reflecting timber quality as well as quantity. They can be provided simply by adding value standard calculations to the normal calculations of board-foot volumes. The other ingredients — species, dbh, merchantable height, and butt-log grade — are usually included in field tallies.

There are other possible advantages of including value summaries in inventory systems. One is the ease of making value projections for timber stands, which opens new avenues for evaluating timber management alternatives. An application of such an evaluation is discussed and illustrated in the companion paper *AN INDIVIDUAL-TREE APPROACH TO MAKING STAND EVALUATIONS* (DeBald and Mendel 1976b).

SUMMARY

Value is a neglected dimension in timber inventories. There are few prescribed methods of calculating it. Guidelines are few, indefinite, and often sketchily narrative in form. Our presentation of value standards and the method by which they are constructed should overcome these obstacles and encourage others to delve deeper into timber valuation.

The tree value conversion standards are presented in two forms that are familiar to all timber estimators: in volume table format and in volume equation form. Thus they should pose no problem to a potential user. Their resemblance to volume standards is not entirely coincidental. It is an expression of the partial dependence of value on volume. By using value standards we are merely introducing a pricing mechanism into the timber-estimating procedure to produce an estimate of value based on both the volume and quality of the tree.

The availability of value standards and the possibility of altering them to fit local conditions should encourage the reporting of forestry investigations in terms of value as well as volume. Only dbh, merchantable height, and butt-log grade must be measured or estimated. These measurements are already required for most timber inventories, so the standards present an opportunity to enhance the results of forestry investigations without any appreciable increase in cost.

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APPENDIX A

Table 3.—Regression coefficients used to derive tree quality index (TQI) values

Species	Butt-log grade ^a	Regression coefficient		
		b ₀	b ₁	b ₂
White ash	1	0.52016	0.02554	—0.00063
	2	.42017	.02779	— .00153
	3	.19192	.01458	.00666
Beech	1	0.63384	0.01341	—0.00383
	2	.56182	.00840	— .00267
	3	.43325	.00825	— .00169
Black cherry	1	0.62909	0.02316	—0.00319
	2	.41975	.02264	— .00227
	3	.20834	.02347	— .00083
Elm	1	0.70931	0.01151	—0.00430
	2	.51667	.01113	— .00186
	3	.43276	.00797	.00003
Hickory	1	0.57123	0.01550	—0.00476
	2	.51371	.00667	— .00224
	3	.45999	.00000	.00000
Red maple	1	0.54256	0.02047	—0.00535
	2	.70533	.00202	— .00383
	3	.46333	.00008	— .00010
Sugar maple	1	0.59368	0.02170	—0.00616
	2	.43199	.01369	— .00155
	3	.36873	.00952	— .00200
Black oak	1	0.79449	0.01372	—0.00535
	2	.52900	.00994	— .00150
	3	.55305	.00354	— .00157
Chestnut oak	1	0.85192	0.00747	—0.00406
	2	.55315	.00874	— .00181
	3	.46905	.00722	— .00061
Red oak	1	0.69524	0.01869	—0.00418
	2	.59992	.01144	— .00242
	3	.53211	.00574	— .00189
White oak	1	0.56518	0.02548	—0.00464
	2	.33601	.02089	— .00177
	3	.38063	.01206	— .00065
Yellow-poplar	1	0.51132	0.01549	—0.00082
	2	.63478	.00880	— .00344
	3	.41512	.00946	— .00110

where: $TQI = b_0 + b_1 (\text{dbh}) + b_2 (\text{merch. height})$.

^a For trees with a butt-log grade below 3, we assigned a TQI value of 0.400, a nominal value corresponding to the price relative for lumber grade 3B. Lumber grade yields were not available for such logs. We also labelled them "grade 4". In the hardwood log-grading classification such logs are identified as tie and timber or construction logs. This, in part, explains why the TQI value is constant for all trees with butt-log "grade 4" regardless of species, dbh, or length.

Table 4. — White ash; butt log grade I

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)									
	16	24	32	40	48	56	64			
	<i>TQI</i>	<i>TVCS</i>	<i>TQI</i>	<i>TVCS</i>	<i>TQI</i>	<i>TVCS</i>	<i>TQI</i>	<i>TVCS</i>	<i>TQI</i>	<i>TVCS</i>
16	0.92	\$ 11.46	0.91	\$ 15.90	0.90	\$ 22.62	0.89	\$ 28.56	0.89	\$ 30.46
17	.94	13.72	.93	19.14	.92	27.77	.91	34.98	.91	37.54
18	.97	16.66	.96	23.02	.95	33.50	.94	42.67	.94	47.02
19	1.00	19.85	.99	27.48	.98	40.08	.97	50.90	.97	56.11
20	1.02	23.42	1.01	32.28	1.00	47.18	1.00	59.77	.99	65.92
21	1.05	27.38	1.04	37.70	1.03	55.35	1.02	70.68	1.02	76.44
22	1.07	31.77	1.06	43.80	1.05	64.11	1.05	81.65	1.04	89.14
23	1.10	36.30	1.09	50.00	1.08	73.44	1.07	94.12	1.07	104.25
24	1.12	41.70	1.11	56.92	1.10	82.90	1.10	107.59	1.09	118.10
25	1.15	47.11	1.14	64.05	1.13	93.45	1.12	121.48	1.12	134.00
26	1.17	53.01	1.16	72.05	1.15	105.12	1.15	135.71	1.14	150.31
27	1.20	59.11	1.19	79.60	1.18	116.31	1.17	150.42	1.17	167.19
28	1.23	65.06	1.22	89.27	1.21	128.81	1.20	167.49	1.19	184.69
29	1.25	72.59	1.24	98.40	1.23	143.71	1.23	185.26	1.22	204.76
30	1.28	80.80	1.27	107.85	1.26	157.24	1.25	203.69	1.25	225.59
31	1.30	88.93	1.29	119.67	1.28	173.27	1.28	224.81	1.27	247.23
32	1.33	97.36	1.32	130.91	1.31	189.90	1.30	244.70	1.30	271.69
33	1.35	106.09	1.34	143.61	1.33	207.13	1.33	267.37	1.32	297.04
34	1.38	115.12	1.37	156.76	1.36	227.11	1.35	292.96	1.35	323.30
35	1.40	125.56	1.40	170.37	1.39	245.60	1.38	317.29	1.37	352.63

Merchantable height to an 8-inch dib top (feet)

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
14	0.78	\$ 6.22	0.77	\$ 8.39	0.76	\$ 10.35	0.75	\$ 11.66	0.74	\$ 12.72	—	—	—	—
15	.81	7.94	.80	10.74	.79	13.04	.78	14.87	.76	16.42	0.75	\$ 17.25	—	—
16	.84	9.86	.83	13.45	.82	16.04	.80	18.47	.79	20.83	.78	22.45	.77	\$ 23.47
17	.87	11.97	.86	16.45	.84	20.11	.83	23.10	.82	25.83	.81	28.11	.79	29.63
18	.90	14.72	.88	20.05	.87	24.50	.86	28.32	.85	31.84	.83	34.96	.82	37.88
19	.92	17.73	.91	24.22	.90	29.64	.89	34.37	.87	38.55	.86	42.40	.85	46.04
20	.95	21.12	.94	28.75	.93	35.23	.91	40.97	.90	45.87	.89	50.52	.88	54.94
21	.98	24.91	.97	33.90	.95	41.66	.94	48.61	.93	55.01	.92	60.53	.91	64.61
22	1.01	29.13	.99	39.73	.98	48.73	.97	56.85	.96	64.27	.95	70.73	.93	76.29
23	1.03	33.52	1.02	45.70	1.01	56.32	1.00	65.72	.99	74.22	.97	82.39	.96	90.22
24	1.06	38.74	1.05	52.36	1.04	64.05	1.03	74.74	1.01	85.78	1.00	94.99	.99	103.15
25	1.09	44.00	1.08	59.26	1.07	72.95	1.05	84.92	1.04	97.03	1.03	108.08	1.02	117.99
26	1.12	49.74	1.11	67.00	1.09	82.13	1.08	95.98	1.07	109.38	1.06	121.56	1.04	133.31
27	1.15	55.71	1.13	74.38	1.12	91.66	1.11	106.77	1.10	123.03	1.08	135.57	1.07	149.25
28	1.17	61.58	1.16	83.79	1.15	102.44	1.14	118.85	1.12	135.59	1.11	151.81	1.10	165.87
29	1.20	68.97	1.19	92.74	1.18	113.72	1.16	133.23	1.15	150.44	1.14	168.82	1.13	184.96
30	1.23	77.05	1.22	102.05	1.20	125.46	1.19	146.42	1.18	165.90	1.17	186.56	1.16	204.86
31	1.26	85.10	1.24	113.66	1.23	139.59	1.22	162.04	1.21	183.86	1.20	206.88	1.18	225.65
32	1.28	93.47	1.27	124.77	1.26	153.34	1.25	178.30	1.24	202.59	1.22	226.20	1.21	249.15
33	1.31	102.17	1.30	137.33	1.29	167.64	1.28	195.22	1.26	222.07	1.25	248.21	1.24	273.64
34	1.34	111.20	1.33	150.39	1.32	184.54	1.30	214.82	1.29	242.33	1.28	273.08	1.27	299.11
35	1.37	121.64	1.36	163.93	1.34	199.99	1.33	233.10	1.32	265.40	1.31	296.89	1.29	337.57

Table 6. — White ash; butt log grade 3

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.46	\$ 0.41	0.51	\$ 1.29	—	—	—	—	—	—	—	—	—	—
12	.47	.78	.53	1.92	0.58	—	—	—	—	—	—	—	—	—
13	.49	1.27	.54	2.79	.59	4.65	—	—	—	—	—	—	—	—
14	.50	1.87	.56	3.75	.61	6.22	8.94	—	—	—	—	—	—	—
15	.52	2.64	.57	5.00	.62	7.91	11.25	—	—	—	—	—	—	—
16	.53	3.54	.59	6.48	.64	9.81	13.82	—	—	—	—	—	—	—
17	.55	4.57	.60	8.15	.65	12.37	17.12	—	—	—	—	—	—	—
18	.56	5.90	.61	10.17	.67	15.15	20.82	—	—	—	—	—	—	—
19	.58	7.41	.63	12.53	.68	18.42	25.09	—	—	—	—	—	—	—
20	.59	9.14	.64	15.13	.70	21.98	29.72	—	—	—	—	—	—	—
21	.60	11.10	.66	18.11	.71	26.08	35.06	—	—	—	—	—	—	—
22	.62	13.32	.67	21.50	.73	30.60	40.82	—	—	—	—	—	—	—
23	.63	15.69	.69	25.02	.74	35.47	46.98	—	—	—	—	—	—	—
24	.65	18.38	.70	28.83	.75	40.30	53.09	—	—	—	—	—	—	—
25	.66	21.07	.72	32.72	.77	45.78	59.83	—	—	—	—	—	—	—
26	.68	23.96	.73	37.01	.78	51.33	67.18	—	—	—	—	—	—	—
27	.69	26.95	.75	41.06	.80	57.03	74.16	—	—	—	—	—	—	—
28	.71	29.88	.76	46.20	.81	63.45	81.92	—	—	—	—	—	—	—
29	.72	33.37	.77	51.08	.83	70.13	91.18	—	—	—	—	—	—	—
30	.74	37.60	.79	56.15	.84	77.05	99.52	—	—	—	—	—	—	—
31	.75	41.62	.80	62.47	.86	85.38	109.42	—	—	—	—	—	—	—
32	.77	45.82	.82	68.51	.87	93.43	119.66	—	—	—	—	—	—	—
33	.78	50.19	.83	75.33	.89	101.78	130.24	—	—	—	—	—	—	—
34	.79	54.74	.85	82.41	.90	111.65	142.51	—	—	—	—	—	—	—
35	.81	59.99	.86	89.75	.92	120.60	153.82	—	—	—	—	—	—	—

Table 7. — White ash; butt log grade 4

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16		24		32		40		48		56	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.40	\$ —.14	0.40	—	0.40	—	0.40	—	0.40	—	0.40	—
12	.40	— .04	.40	—	.40	—	.40	—	.40	—	.40	—
13	.40	.10	.40	\$ 0.14	.40	\$ 0.18	.40	—	.40	—	.40	—
14	.40	.29	.40	.40	.40	.51	.40	\$ 0.67	.40	—	.40	—
15	.40	.54	.40	.75	.40	.93	.40	\$ 1.25	.40	—	.40	—
16	.40	.84	.40	1.18	.40	1.44	.40	1.98	.40	\$ 1.35	.40	—
17	.40	1.20	.40	1.69	.40	2.12	.40	2.49	.40	2.19	.40	\$ 2.36
18	.40	1.66	.40	2.32	.40	2.90	.40	3.43	.40	3.19	.40	3.46
19	.40	2.20	.40	3.07	.40	3.84	.40	4.55	.40	4.44	.40	4.93
20	.40	2.83	.40	3.93	.40	4.92	.40	5.83	.40	5.87	.40	6.52
21	.40	3.56	.40	4.93	.40	6.18	.40	7.34	.40	7.50	.40	8.33
22	.40	4.39	.40	6.09	.40	7.60	.40	9.03	.40	9.51	.40	10.36
23	.40	5.29	.40	7.33	.40	9.19	.40	10.90	.40	11.65	.40	12.81
24	.40	6.17	.40	8.48	.40	10.53	.40	12.49	.40	14.15	.40	15.78
25	.40	6.97	.40	9.53	.40	11.91	.40	14.07	.40	16.41	.40	18.13
26	.40	7.72	.40	10.56	.40	13.13	.40	15.58	.40	18.51	.40	20.53
27	.40	8.43	.40	11.42	.40	14.27	.40	16.87	.40	20.34	.40	22.66
28	.40	9.07	.40	12.50	.40	15.50	.40	18.23	.40	22.06	.40	24.65
29	.40	9.88	.40	13.47	.40	16.74	.40	19.87	.40	23.97	.40	26.57
30	.40	10.74	.40	14.41	.40	17.95	.40	21.22	.40	25.89	.40	28.76
31	.40	11.55	.40	15.62	.40	19.43	.40	22.85	.40	27.77	.40	30.92
32	.40	12.37	.40	16.71	.40	20.78	.40	24.47	.40	29.94	.40	33.09
33	.40	13.18	.40	17.92	.40	22.14	.40	26.10	.40	31.84	.40	35.52
34	.40	14.00	.40	19.15	.40	23.77	.40	27.99	.40	34.00	.40	37.96
35	.40	14.95	.40	20.37	.40	25.14	.40	29.64	.40	36.45	.40	40.41
										38.63	.40	43.13

Table 8. — Beech; butt log grade I

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)																						
	16			24			32			40			48			56			64				
	TQI	TVCS		TQI	TVCS		TQI	TVCS		TQI	TVCS		TQI	TVCS		TQI	TVCS		TQI	TVCS		TQI	TVCS
16	0.79	\$ 4.39		0.76	\$ 5.50		0.73	\$ 5.95		0.70	\$ 6.12		0.66	—		0.63	—		0.60	—		0.60	—
17	.80	5.41		.77	6.89		.74	7.73		.71	8.03		.68	—		.65	—		.62	—		.62	—
18	.81	6.74		.78	8.57		.75	9.68		.74	10.25		.69	\$ 10.40		.66	—		.63	—		.63	—
19	.83	8.21		.80	10.52		.77	12.00		.74	12.85		.70	13.17		.67	—		.64	—		.64	—
20	.84	9.87		.81	12.68		.78	14.56		.75	15.75		.72	16.26		.69	\$ 16.34		.66	—		.66	—
21	.85	11.74		.82	15.14		.79	17.52		.76	19.14		.73	20.12		.70	20.39		.67	—		.67	—
22	.87	13.84		.84	17.94		.81	20.81		.78	22.85		.75	24.15		.71	24.67		.68	—		.68	—
23	.88	16.03		.85	20.84		.82	24.39		.79	26.91		.76	28.57		.73	29.62		.70	—		.70	—
24	.89	18.52		.86	23.93		.83	27.87		.80	30.83		.77	33.38		.74	34.68		.71	—		.71	—
25	.91	20.97		.88	27.04		.85	31.75		.82	35.08		.79	37.96		.75	39.79		.72	—		.72	—
26	.92	23.57		.89	30.43		.86	35.63		.83	39.64		.80	42.81		.77	44.88		.74	—		.74	—
27	.93	26.22		.90	33.58		.87	39.58		.84	43.95		.81	48.08		.78	50.08		.75	—		.75	—
28	.95	28.77		.92	37.60		.89	44.01		.86	48.74		.83	52.87		.79	56.05		.76	—		.76	—
29	.96	32.01		.93	41.37		.90	48.63		.87	54.44		.84	58.53		.81	62.30		.78	—		.78	—
30	.97	35.52		.94	45.26		.91	53.38		.88	59.60		.85	64.38		.82	68.77		.79	—		.79	—
31	.99	38.98		.96	50.13		.93	59.12		.90	65.72		.87	71.19		.84	76.20		.80	—		.80	—
32	1.00	42.56		.97	54.74		.94	64.66		.91	72.07		.88	78.27		.85	83.25		.82	—		.82	—
33	1.02	46.25		.98	59.95		.95	70.40		.92	78.66		.89	85.62		.86	91.27		.83	—		.83	—
34	1.03	50.06		1.00	65.33		.97	77.18		.94	86.29		.91	93.24		.88	100.34		.84	—		.84	—
35	1.04	54.47		1.01	70.89		.98	83.33		.95	93.37		.92	101.93		.89	109.01		.86	—		.86	—

Table 9. — Beech; butt log grade 2

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
14	0.64	\$ 1.27	0.62	\$ 1.44	0.59	—	0.57	—	0.55	—	—	—	—	—
15	.65	1.79	.62	2.10	.60	\$ 2.14	.58	—	.56	—	0.54	—	—	—
16	.65	2.39	.63	2.91	.61	3.02	.59	—	.57	—	.55	—	0.53	—
17	.66	3.09	.64	3.84	.62	4.18	.60	\$ 4.19	.58	—	.56	—	.53	—
18	.67	3.99	.65	4.98	.63	5.52	.61	5.68	.59	—	.56	—	.54	—
19	.68	5.00	.66	6.33	.64	7.11	.61	7.47	.59	\$ 7.48	.57	—	.55	—
20	.69	6.16	.67	7.84	.64	8.91	.62	9.51	.60	9.66	.58	—	.56	—
21	.70	7.49	.67	9.58	.65	11.00	.63	11.90	.61	12.37	.59	—	.57	—
22	.70	8.98	.68	11.58	.66	13.36	.64	14.57	.62	15.27	.60	\$ 15.44	.58	—
23	.71	10.57	.69	13.69	.67	15.96	.65	17.52	.63	18.49	.61	19.04	.58	\$ 19.17
24	.72	12.31	.70	15.86	.68	18.40	.66	20.28	.64	21.86	.61	22.59	.59	22.71
25	.73	14.00	.71	18.00	.69	21.07	.67	23.21	.64	25.02	.62	26.10	.60	26.51
26	.74	15.75	.72	20.28	.69	23.68	.67	26.26	.65	28.26	.63	29.51	.61	30.20
27	.75	17.51	.72	22.38	.70	26.30	.68	29.12	.66	31.74	.64	32.93	.62	33.93
28	.75	19.20	.73	25.03	.71	29.23	.69	32.26	.67	34.88	.65	36.83	.63	37.75
29	.76	21.34	.74	27.52	.72	32.26	.70	36.01	.68	38.59	.66	40.91	.63	42.13
30	.77	23.66	.75	30.08	.73	35.38	.71	39.39	.69	42.41	.66	45.12	.64	46.66
31	.78	25.94	.76	33.28	.74	39.15	.72	43.39	.69	46.85	.67	49.96	.65	51.40
32	.79	28.30	.77	36.31	.75	42.78	.72	47.54	.70	51.46	.68	54.53	.66	56.75
33	.80	30.72	.78	39.73	.75	46.53	.73	51.84	.71	56.24	.69	59.74	.67	62.33
34	.80	33.23	.78	43.26	.76	50.97	.74	56.82	.72	61.20	.70	65.62	.68	68.12
35	.81	36.12	.79	46.90	.77	54.98	.75	61.43	.73	66.85	.71	71.24	.69	74.60

Table 10. — Beech; butt log grade 3

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16		24		32		40		48		56	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.50	\$ —0.49	0.48	—	—	—	—	—	—	—	—	—
12	.51	— .40	.49	—	0.48	—	—	—	—	—	—	—
13	.51	— .24	.50	—	.49	—	0.47	—	—	—	—	—
14	.52	— .02	.51	—	.49	—	.48	—	—	—	—	—
15	.53	.28	.52	—	.50	—	.49	—	0.47	—	—	—
16	.54	.67	.52	—	.51	—	.50	—	.48	—	—	—
17	.55	1.15	.53	1.30	.52	—	.51	—	.49	—	0.46	—
18	.55	1.77	.54	2.10	.53	—	.51	—	.50	—	.47	—
19	.56	2.50	.55	3.08	.54	3.33	.52	—	.51	—	.48	—
20	.57	3.36	.56	4.21	.54	4.70	.53	—	.52	—	.49	—
21	.58	4.37	.57	5.55	.55	6.32	.54	6.76	.53	6.93	.51	—
22	.59	5.53	.57	7.11	.56	8.18	.55	8.89	.53	9.28	.52	—
23	.60	6.80	.58	8.81	.57	10.28	.56	11.30	.54	11.95	.53	\$ 12.43
24	.60	8.14	.59	10.51	.58	12.23	.56	13.52	.55	14.63	.54	15.35
25	.61	9.43	.60	12.18	.59	14.32	.57	15.84	.56	17.17	.54	18.44
26	.62	10.76	.61	13.92	.59	16.34	.58	18.22	.57	19.73	.55	21.42
27	.63	12.11	.62	15.54	.60	18.37	.59	20.46	.57	22.46	.56	24.43
28	.64	13.41	.62	17.57	.61	20.63	.60	22.93	.58	24.97	.56	27.52
29	.65	15.04	.63	19.50	.62	23.01	.60	25.86	.59	27.93	.58	31.08
30	.65	16.82	.64	21.50	.63	25.46	.61	28.55	.60	30.99	.59	34.78
31	.66	18.59	.65	23.99	.63	28.42	.62	31.73	.61	34.55	.59	38.69
32	.67	20.43	.66	26.38	.64	31.30	.63	35.06	.62	38.28	.60	43.10
33	.68	22.34	.66	29.08	.65	34.31	.64	38.53	.62	42.17	.61	47.73
34	.69	24.33	.67	31.89	.66	37.86	.65	42.55	.63	46.24	.62	50.08
35	.69	26.63	.68	34.81	.67	41.12	.65	46.32	.64	50.87	.63	54.77
												\$ 12.43
												15.35
												18.44
												21.42
												24.43
												27.52
												31.08
												34.78
												38.69
												43.10
												47.73
												50.08
												52.59
												54.77

Table 11. — Beech; butt log grade 4

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16		24		32		40		48		56	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.40	\$ -1.15	0.40	—	0.40	—	0.40	—	0.40	—	0.40	—
12	.40	-1.25	.40	—	.40	—	.40	—	.40	—	.40	—
13	.40	-1.34	.40	—	.40	—	.40	—	.40	—	.40	—
14	.40	-1.39	.40	—	.40	—	.40	—	.40	—	.40	—
15	.40	-1.41	.40	—	.40	—	.40	—	.40	—	.40	—
16	.40	-1.39	.40	—	.40	—	.40	—	.40	—	.40	—
17	.40	-1.30	.40	—	.40	—	.40	—	.40	—	.40	—
18	.40	-1.20	.40	—	.40	—	.40	—	.40	—	.40	—
19	.40	-1.02	.40	—	.40	—	.40	—	.40	—	.40	—
20	.40	-.77	.40	—	.40	—	.40	—	.40	—	.40	—
21	.40	.45	.40	—	.40	—	.40	—	.40	—	.40	—
22	.40	-.04	.40	—	.40	—	.40	—	.40	—	.40	—
23	.40	.46	.40	\$ 0.63	.40	\$ 0.79	.40	\$ 0.94	.40	\$ 1.08	.40	\$ 1.36
24	.40	.83	.40	1.14	.40	1.42	.40	1.68	.40	1.96	.40	2.44
25	.40	1.14	.40	1.56	.40	1.95	.40	2.30	.40	2.68	.40	3.03
26	.40	1.36	.40	1.87	.40	2.32	.40	2.75	.40	3.18	.40	3.59
27	.40	1.54	.40	2.09	.40	2.61	.40	3.09	.40	3.61	.40	4.04
28	.40	1.69	.40	2.33	.40	2.89	.40	3.39	.40	3.93	.40	4.46
29	.40	1.87	.40	2.55	.40	3.17	.40	3.76	.40	4.31	.40	4.90
30	.40	2.05	.40	2.75	.40	3.42	.40	4.05	.40	4.65	.40	5.30
31	.40	2.23	.40	3.01	.40	3.74	.40	4.40	.40	5.06	.40	5.77
32	.40	2.40	.40	3.24	.40	4.04	.40	4.75	.40	5.47	.40	6.18
33	.40	2.58	.40	3.51	.40	4.33	.40	5.11	.40	5.88	.40	6.66
34	.40	2.76	.40	3.78	.40	4.69	.40	5.52	.40	6.30	.40	7.19
35	.40	2.97	.40	4.05	.40	5.00	.40	5.89	.40	6.78	.40	7.68

Merchantable height to an 8-inch dib top (feet)

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)																						
	16			24			32			40			48			56			64				
	TQI	TVCS		TQI	TVCS		TQI	TVCS		TQI	TVCS		TQI	TVCS		TQI	TVCS		TQI	TVCS		TQI	TVCS
16	0.95	\$ 10.08		0.92	\$ 13.45		0.90	\$ 15.67		0.87	\$ 17.59		0.85	\$ 19.30		0.82	\$ 20.18		0.80	\$ 20.41		0.80	\$ 20.41
17	.97	12.06		.95	16.23		.92	19.40		.90	21.76		.87	23.70		.84	25.08		.82	25.64		.82	25.64
18	.99	14.64		.97	19.55		.94	23.38		.92	26.42		.89	28.98		.87	31.00		.84	32.65		.84	32.65
19	1.02	17.43		.99	23.36		.97	28.34		.94	31.79		.92	34.84		.89	37.39		.86	39.54		.86	39.54
20	1.04	20.55		1.02	27.47		.99	33.02		.96	37.62		.94	41.20		.91	44.35		.89	47.04		.89	47.04
21	1.06	24.02		1.04	32.13		1.01	38.75		.99	44.34		.96	49.15		.94	52.90		.91	55.16		.91	55.16
22	1.09	27.86		1.06	37.36		1.04	45.02		1.01	51.56		.99	57.15		.96	61.59		.93	64.97		.93	64.97
23	1.11	31.82		1.09	42.69		1.06	51.73		1.03	59.30		1.01	65.72		.98	71.51		.96	76.68		.96	76.68
24	1.13	36.52		1.11	48.59		1.08	58.47		1.06	67.07		1.03	75.59		1.01	82.13		.98	87.41		.98	87.41
25	1.16	41.20		1.13	54.65		1.11	66.21		1.08	75.71		1.05	85.11		1.03	93.06		.98	99.65		.98	99.65
26	1.18	46.28		1.15	61.42		1.13	74.12		1.10	85.23		1.08	95.48		1.05	104.23		1.03	112.18		1.03	112.18
27	1.20	51.52		1.18	67.78		1.15	82.27		1.13	94.33		1.10	106.90		1.08	115.76		1.05	125.14		1.05	125.14
28	1.23	56.61		1.20	75.94		1.18	91.47		1.15	104.49		1.12	117.29		1.10	129.11		1.07	138.59		1.07	138.59
29	1.25	63.06		1.22	83.61		1.20	101.05		1.17	116.60		1.15	129.60		1.12	143.05		1.10	154.03		1.10	154.03
30	1.27	70.08		1.25	91.55		1.22	110.97		1.20	127.60		1.17	142.35		1.15	157.51		1.12	170.07		1.12	170.07
31	1.30	77.02		1.27	101.49		1.24	122.92		1.22	140.63		1.19	157.17		1.17	174.09		1.14	186.79		1.14	186.79
32	1.32	84.20		1.29	110.92		1.27	134.46		1.24	154.14		1.22	172.57		1.19	189.74		1.17	205.67		1.17	205.67
33	1.34	91.62		1.32	121.57		1.29	146.42		1.27	168.15		1.24	188.53		1.21	207.58		1.19	225.28		1.19	225.28
34	1.37	99.29		1.34	132.59		1.31	160.57		1.29	184.38		1.26	205.07		1.24	227.72		1.21	245.64		1.21	245.64
35	1.39	108.17		1.36	143.97		1.34	173.39		1.31	199.41		1.29	223.92		1.26	246.91		1.24	268.38		1.24	268.38

Table 13. — Black cherry; butt log grade 2

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
14	0.70	\$ 3.81	0.68	\$ 4.96	0.66	\$ 5.86	0.65	\$ 6.31	0.63	\$ 6.54	—	—	—	—
15	.72	5.00	.70	6.55	.69	7.68	.67	8.43	.65	8.92	0.63	\$ 8.93	—	—
16	.75	6.35	.73	8.43	.71	9.75	.69	10.86	.67	11.81	.65	12.23	0.64	\$ 12.23
17	.77	7.86	.75	10.53	.73	12.54	.71	13.99	.70	15.15	.68	15.94	.66	16.18
18	.79	9.82	.77	13.08	.75	15.60	.74	17.58	.72	19.21	.70	20.47	.68	21.48
19	.81	11.99	.80	16.05	.78	19.22	.76	21.78	.74	23.82	.72	25.52	.70	26.92
20	.84	14.45	.82	19.31	.80	23.20	.78	26.42	.76	28.92	.75	31.11	.73	32.98
21	.86	17.22	.84	23.04	.82	27.81	.80	31.83	.79	35.29	.77	38.00	.75	39.65
22	.88	20.33	.86	27.28	.85	32.91	.83	37.73	.81	41.86	.79	45.17	.77	47.71
23	.90	23.58	.89	31.68	.87	38.44	.85	44.13	.83	48.99	.81	53.40	.80	57.37
24	.93	27.39	.91	36.50	.89	44.00	.87	50.57	.85	57.11	.84	62.18	.82	66.33
25	.95	31.21	.93	41.48	.91	50.36	.89	57.70	.88	65.01	.86	71.26	.84	76.50
26	.97	35.36	.95	47.02	.94	56.87	.92	65.54	.90	73.61	.88	80.57	.86	86.95
27	.99	39.65	.98	52.29	.96	63.62	.94	73.12	.92	83.08	.90	90.22	.89	97.82
28	1.02	43.87	1.00	58.99	.98	71.24	.96	81.59	.94	91.84	.93	101.39	.91	109.17
29	1.04	49.19	1.02	65.39	1.00	79.22	.99	91.67	.97	102.17	.95	113.12	.93	122.20
30	1.06	55.00	1.04	72.03	1.03	87.54	1.01	100.95	.99	112.95	.97	125.37	.95	135.82
31	1.09	60.79	1.07	80.32	1.05	97.55	1.03	111.92	1.01	125.47	.99	139.42	.98	150.10
32	1.11	66.82	1.09	88.27	1.07	107.31	1.05	123.37	1.04	138.55	1.02	152.83	1.00	166.23
33	1.13	73.10	1.11	97.25	1.09	117.47	1.08	135.30	1.06	152.18	1.04	168.11	1.02	183.09
34	1.15	79.61	1.13	106.60	1.12	129.47	1.10	149.12	1.08	166.38	1.06	185.33	1.04	200.67
35	1.18	87.13	1.16	116.30	1.14	140.47	1.12	162.05	1.10	182.56	1.09	201.98	1.07	220.33

Merchantable height to an 8-inch dib top (feet)

[illegible]

Table 15. — Black cherry; butt log grade 4

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16			24			32			40		
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	.40	\$—0.51	.40	—	.40	—	.40	—	.40	—	.40	—
12	.40	— .48	.40	—	.40	—	.40	—	.40	—	.40	—
13	.40	— .43	.40	—	.40	—	.40	—	.40	—	.40	—
14	.40	— .32	.40	—	.40	—	.40	—	.40	—	.40	—
15	.40	— .18	.40	—	.40	—	.40	—	.40	—	.40	—
16	.40	.02	.40	\$ 0.03	.40	0.03	.40	\$ 0.04	.40	0.04	.40	\$ 0.05
17	.40	.28	.40	.39	.40	.49	.40	.57	.40	.65	.40	.73
18	.40	.60	.40	.84	.40	1.05	.40	1.24	.40	1.43	.40	1.61
19	.40	1.01	.40	1.40	.40	1.76	.40	2.08	.40	2.38	.40	2.68
20	.40	1.49	.40	2.07	.40	2.59	.40	3.07	.40	3.51	.40	3.94
21	.40	2.06	.40	2.86	.40	3.58	.40	4.26	.40	4.91	.40	5.51
22	.40	2.73	.40	3.79	.40	4.73	.40	5.62	.40	6.46	.40	7.25
23	.40	3.48	.40	4.82	.40	6.04	.40	7.16	.40	8.23	.40	9.29
24	.40	4.17	.40	5.72	.40	7.11	.40	8.43	.40	9.83	.40	11.07
25	.40	4.77	.40	6.53	.40	8.16	.40	9.63	.40	11.19	.40	12.66
26	.40	5.32	.40	7.27	.40	9.04	.40	10.73	.40	12.41	.40	14.00
27	.40	5.82	.40	7.88	.40	9.85	.40	11.64	.40	13.61	.40	15.22
28	.40	6.26	.40	8.64	.40	10.71	.40	12.59	.40	14.57	.40	16.55
29	.40	6.83	.40	9.31	.40	11.57	.40	13.73	.40	15.72	.40	17.89
30	.40	7.43	.40	9.96	.40	12.40	.40	14.66	.40	16.83	.40	19.18
31	.40	7.99	.40	10.80	.40	13.43	.40	15.78	.40	18.14	.40	20.68
32	.40	8.55	.40	11.54	.40	14.36	.40	16.90	.40	19.44	.40	21.98
33	.40	9.11	.40	12.38	.40	15.29	.40	18.02	.40	20.75	.40	23.47
34	.40	9.67	.40	13.22	.40	16.41	.40	19.33	.40	22.06	.40	25.15
35	.40	10.32	.40	14.07	.40	17.35	.40	20.45	.40	23.56	.40	26.66

Merchantable height to an 8-inch dib top (feet)

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)																			
	16			24			32			40			48			56			64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
16	0.82	\$ 5.21	0.79	\$ 6.56	0.76	\$ 7.13	0.72	\$ 7.37	0.69	—	0.65	—	0.62	—	0.65	—	0.62	—	—	—
17	.84	6.30	.80	8.04	.77	9.04	.73	9.42	.70	—	.66	—	.63	—	.66	—	.63	—	—	—
18	.85	7.73	.81	9.83	.78	11.11	.74	11.76	.71	\$ 11.94	.68	\$ 11.94	.64	—	.68	—	.64	—	—	—
19	.86	9.29	.82	11.89	.79	13.55	.76	14.48	.72	14.81	.69	14.81	.65	—	.69	—	.65	—	—	—
20	.87	11.04	.84	14.15	.80	16.21	.77	17.49	.73	17.99	.70	17.99	.66	\$ 18.00	.70	\$ 18.00	.66	—	—	—
21	.88	13.00	.85	16.71	.81	19.28	.78	20.98	.74	21.96	.71	21.96	.68	—	.71	22.13	.68	—	—	—
22	.89	15.17	.86	19.61	.83	22.67	.79	24.78	.76	26.06	.72	26.06	.69	—	.72	26.45	.69	—	—	—
23	.91	17.44	.87	22.59	.84	26.33	.80	28.91	.77	30.52	.73	30.52	.70	—	.73	31.43	.70	—	\$ 31.65	—
24	.92	20.02	.88	25.76	.85	29.87	.81	32.88	.78	35.40	.74	35.40	.71	—	.74	36.52	.71	—	36.64	—
25	.93	22.54	.89	28.91	.86	33.83	.83	37.18	.79	40.00	.76	40.00	.72	—	.76	41.63	.72	—	42.15	—
26	.94	25.21	.91	32.41	.87	37.77	.84	41.79	.80	44.86	.77	44.86	.73	—	.77	46.68	.73	—	47.61	—
27	.95	27.92	.92	35.60	.88	41.76	.85	46.11	.81	50.12	.78	50.12	.74	—	.78	51.82	.74	—	53.17	—
28	.96	30.51	.93	39.69	.89	46.23	.86	50.89	.83	54.85	.79	54.85	.76	—	.79	57.71	.76	—	58.90	—
29	.97	33.81	.94	43.49	.91	50.86	.87	56.60	.84	60.45	.80	60.45	.77	—	.80	63.85	.77	—	65.46	—
30	.99	37.38	.95	47.40	.92	55.61	.88	61.72	.85	66.22	.81	66.22	.78	—	.81	70.19	.78	—	72.25	—
31	1.00	40.87	.96	52.30	.93	61.36	.89	67.80	.86	72.94	.83	72.94	.79	—	.83	77.46	.79	—	79.33	—
32	1.01	44.47	.97	56.91	.94	66.86	.91	74.07	.87	79.88	.84	79.88	.80	—	.84	82.30	.80	—	87.32	—
33	1.02	48.17	.99	62.11	.95	72.54	.92	80.55	.88	87.07	.85	87.07	.81	—	.85	92.09	.81	—	95.61	—
34	1.03	51.97	1.00	67.47	.96	79.27	.93	88.07	.89	94.50	.86	94.50	.83	—	.86	100.89	.83	—	104.22	—
35	1.04	56.37	1.01	72.98	.97	85.30	.94	94.98	.91	102.96	.87	102.96	.84	—	.87	109.25	.84	—	113.84	—

Table 17. — Elm; butt log grade 2

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16		24		32		40		48		56	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
14	0.64	\$ 1.49	0.63	\$ 1.84	0.61	\$ 2.04	0.60		0.58			
15	.65	2.08	.64	2.62	.62	2.94	.61	\$ 3.05	.59		0.58	
16	.67	2.78	.65	3.57	.64	3.98	.62	4.26	.61			
17	.68	3.57	.66	4.66	.65	5.39	.63	5.82	.62	\$ 4.40	.59	
18	.69	4.59	.67	5.99	.66	6.98	.64	7.66	.63	6.07	.60	
19	.70	5.74	.68	7.55	.67	8.87	.65	9.84	.64	8.12	.60	
20	.71	7.07	.69	9.30	.68	10.99	.67	12.29	.65	10.50	.62	\$ 8.43
21	.72	8.57	.71	11.32	.69	13.46	.68	15.16	.66	13.18	.64	11.19
22	.73	10.27	.72	13.62	.70	16.22	.69	18.35	.67	16.53	.65	14.33
23	.74	12.07	.73	16.05	.71	19.26	.70	21.85	.68	17.46	.66	17.83
24	.75	14.07	.74	18.58	.72	22.17	.71	25.19	.69	20.06	.66	21.29
25	.77	16.04	.75	21.12	.74	25.39	.72	28.78	.71	23.94	.67	25.73
26	.78	18.10	.76	23.85	.75	28.57	.73	32.59	.72	28.11	.68	30.21
27	.79	20.20	.77	26.40	.76	31.81	.74	36.20	.73	32.06	.69	34.72
28	.80	22.22	.78	29.62	.77	35.44	.75	40.18	.74	36.21	.70	39.16
29	.81	24.79	.79	32.66	.78	39.21	.77	44.93	.75	40.69	.71	43.68
30	.82	27.57	.81	35.80	.79	43.11	.78	49.23	.76	44.75	.72	48.85
31	.83	30.32	.82	39.72	.80	47.81	.79	54.34	.77	49.56	.75	54.26
32	.84	33.17	.83	43.45	.81	52.35	.80	59.63	.77	54.52	.75	59.87
33	.85	36.12	.84	47.66	.82	57.07	.81	65.13	.78	60.30	.76	66.29
34	.87	39.17	.85	52.02	.84	62.64	.82	71.49	.79	66.30	.77	72.38
35	.88	42.70	.86	56.53	.85	67.70	.83	77.41	.81	72.54	.78	79.31
									.82	79.01	.79	87.14
									.82	86.38	.80	94.62
												102.13

Merchantable height to an 8-inch dib top (feet)

Dbh (inches)	Merchantable height to an 8-inch dilt top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.52	\$-0.26	0.52	—	—	—	—	—	—	—	—	—	—	—
12	.53	—	.53	—	—	—	—	—	—	—	—	—	—	—
13	.54	.09	.54	\$	0.13	0.17	0.54	0.19	—	—	—	—	—	—
14	.54	.37	.55	.52	.66	.77	.55	.77	—	—	—	—	—	—
15	.55	.73	.55	1.03	1.29	1.52	.55	1.52	\$	0.88	—	\$	1.89	—
16	.56	1.19	.56	1.67	2.05	2.43	.56	2.43	—	—	—	—	—	—
17	.57	1.73	.57	2.43	3.06	3.61	.57	3.61	—	—	—	—	—	—
18	.58	2.42	.58	3.38	4.23	5.02	.58	5.02	—	—	—	—	—	—
19	.58	3.23	.58	4.52	5.65	6.71	.59	6.71	—	—	—	—	—	—
20	.59	4.18	.59	5.81	7.28	8.64	.59	8.64	—	—	—	—	—	—
21	.60	5.28	.60	7.32	9.18	10.92	.60	10.92	—	—	—	—	—	—
22	.61	6.53	.61	9.07	11.33	13.47	.61	13.47	—	—	—	—	—	—
23	.62	7.89	.62	10.94	13.72	16.30	.62	16.30	—	—	—	—	—	—
24	.62	9.34	.62	12.83	15.96	18.94	.63	18.94	—	—	—	—	—	—
25	.63	10.74	.63	14.70	18.39	21.73	.63	21.73	—	—	—	—	—	—
26	.64	12.18	.64	16.66	20.74	24.63	.64	24.63	—	—	—	—	—	—
27	.65	13.64	.65	18.48	23.12	27.34	.65	27.34	—	—	—	—	—	—
28	.66	15.04	.66	20.76	25.76	30.32	.66	30.32	—	—	—	—	—	—
29	.66	16.81	.66	22.92	28.51	33.88	.67	33.88	—	—	—	—	—	—
30	.67	18.73	.67	25.14	31.34	37.08	.67	37.08	—	—	—	—	—	—
31	.68	20.64	.68	27.92	34.75	40.89	.68	40.89	—	—	—	—	—	—
32	.69	22.61	.69	30.57	38.05	44.83	.69	44.83	—	—	—	—	—	—
33	.70	24.66	.70	33.55	41.47	48.91	.70	48.91	—	—	—	—	—	—
34	.70	26.77	.70	36.65	45.52	53.65	.71	53.65	—	—	—	—	—	—
35	.71	29.22	.71	39.85	49.20	58.04	.71	58.04	—	—	—	—	—	—

Merchantable height to an 8-inch dib top (feet)

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.40	\$-1.10	0.40	—	0.40	—	0.40	—	0.40	—	0.40	—	0.40	—
12	.40	-1.18	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
13	.40	-1.26	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
14	.40	-1.29	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
15	.40	-1.30	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
16	.40	-1.26	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
17	.40	-1.16	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
18	.40	-1.04	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
19	.40	.84	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
20	.40	.57	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
21	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
22	.40	.21	.40	0.29	.40	\$ 0.36	.40	0.43	.40	\$ 0.49	.40	0.55	.40	\$ 0.61
23	.40	.73	.40	1.01	.40	1.27	.40	1.50	.40	1.73	.40	1.95	.40	2.18
24	.40	1.13	.40	1.56	.40	1.93	.40	2.29	.40	2.68	.40	3.01	.40	3.33
25	.40	1.47	.40	2.01	.40	2.51	.40	2.97	.40	3.45	.40	3.91	.40	4.33
26	.40	1.72	.40	2.36	.40	2.93	.40	3.48	.40	4.02	.40	4.54	.40	5.06
27	.40	1.93	.40	2.62	.40	3.27	.40	3.87	.40	4.52	.40	5.06	.40	5.65
28	.40	2.11	.40	2.90	.40	3.60	.40	4.23	.40	4.90	.40	5.57	.40	6.17
29	.40	2.32	.40	3.17	.40	3.94	.40	4.67	.40	5.35	.40	6.09	.40	6.76
30	.40	2.54	.40	3.41	.40	4.25	.40	5.02	.40	5.77	.40	6.57	.40	7.32
31	.40	2.75	.40	3.72	.40	4.63	.40	5.45	.40	6.26	.40	7.14	.40	7.89
32	.40	2.97	.40	4.01	.40	4.98	.40	5.87	.40	6.75	.40	7.63	.40	8.52
33	.40	3.18	.40	4.32	.40	5.34	.40	6.30	.40	7.25	.40	8.20	.40	9.16
34	.40	3.40	.40	4.65	.40	5.77	.40	6.79	.40	7.76	.40	8.85	.40	9.81
35	.40	3.65	.40	4.97	.40	6.14	.40	7.23	.40	8.33	.40	9.43	.40	10.53

Table 20. — Hickory; butt log grade I

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)									
	16	24	32	40	48	56	64			
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
16	0.74	\$ 3.57	0.71	\$ 4.22	0.67	\$ 4.21	0.63	—	—	—
17	.76	4.53	.72	5.49	.68	5.77	.64	—	—	—
18	.77	5.76	.74	7.03	.70	7.53	.66	—	—	—
19	.79	7.15	.75	8.84	.71	9.64	.68	\$ 9.75	—	—
20	.81	8.74	.77	10.87	.73	12.01	.69	12.39	—	—
21	.82	10.53	.78	13.20	.74	14.78	.71	15.49	—	—
22	.84	12.55	.80	15.87	.76	17.88	.72	18.95	\$ 19.18	—
23	.85	14.69	.81	18.67	.78	21.29	.74	22.77	23.28	—
24	.87	17.11	.83	21.65	.79	24.61	.75	26.47	27.71	—
25	.88	19.50	.84	24.66	.81	28.32	.77	30.48	31.99	—
26	.90	22.04	.86	27.94	.82	32.04	.78	34.79	36.52	—
27	.91	24.65	.88	31.03	.84	35.86	.80	38.91	41.45	—
28	.93	27.19	.89	34.94	.85	40.14	.81	43.50	46.01	—
29	.94	30.39	.91	38.66	.87	41.63	.83	48.95	51.40	\$ 53.26
30	.96	33.87	.92	42.51	.88	49.29	.85	53.97	57.01	59.76
31	.98	37.33	.94	47.31	.90	54.90	.86	59.91	63.53	66.62
32	.99	40.92	.95	51.90	.91	60.36	.88	66.10	70.35	74.37
33	1.01	44.64	.97	57.09	.93	66.04	.89	72.56	77.48	82.53
34	1.02	48.50	.98	62.48	.95	72.76	.91	80.05	84.93	89.51
35	1.04	52.95	1.00	68.06	.96	78.91	.92	87.06	93.41	100.65

Table 21. — Hickory; butt log grade 2

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
14	0.57	\$ 0.44	0.55	—	0.54	—	0.52	—	0.50	—	—	—	—	—
15	.58	.80	.56	\$ 0.80	.54	—	.52	—	.51	—	0.49	—	—	—
16	.58	1.24	.57	1.37	.55	—	.53	—	.51	—	.49	—	0.48	—
17	.59	1.76	.57	2.06	.56	\$ 2.06	.54	—	.52	—	.50	—	.48	—
18	.60	2.43	.58	2.92	.56	3.06	.54	—	.53	—	.51	—	.49	—
19	.60	3.21	.59	3.95	.57	4.27	.55	\$ 4.27	.53	—	.51	—	.50	—
20	.61	4.12	.59	5.13	.58	5.67	.56	5.85	.54	—	.52	—	.50	—
21	.62	5.17	.60	6.50	.58	7.32	.56	7.73	.55	\$ 7.79	.53	—	.51	—
22	.62	6.36	.61	8.10	.59	9.20	.57	9.85	.55	10.10	.53	—	.52	—
23	.63	7.65	.61	9.82	.60	11.31	.58	12.24	.56	12.71	.54	\$ 12.83	.52	—
24	.64	9.02	.62	11.52	.60	13.24	.58	14.42	.57	15.33	.55	15.59	.53	—
25	.64	10.34	.63	13.19	.61	15.31	.59	16.69	.57	17.77	.55	18.29	.54	—
26	.65	11.68	.63	14.93	.62	17.29	.60	19.00	.58	20.22	.56	20.84	.54	\$ 21.01
27	.66	13.02	.64	16.52	.62	19.27	.60	21.14	.59	22.82	.57	23.39	.55	23.76
28	.66	14.30	.65	18.52	.63	21.46	.61	23.49	.59	25.16	.57	26.26	.56	26.56
29	.67	15.92	.65	20.40	.64	23.75	.62	26.29	.60	27.92	.58	29.29	.56	29.78
30	.68	17.67	.66	22.33	.64	26.09	.62	28.82	.61	30.76	.59	32.40	.57	33.11
31	.68	19.40	.67	24.75	.65	28.92	.63	31.82	.61	34.07	.59	35.98	.58	36.60
32	.69	21.19	.67	27.03	.66	31.65	.64	34.93	.62	37.50	.60	39.38	.58	40.55
33	.70	23.03	.68	29.62	.66	34.48	.64	38.15	.63	41.08	.61	43.25	.59	44.66
34	.70	24.93	.69	32.29	.67	37.83	.65	41.89	.63	44.79	.61	47.62	.60	48.96
35	.71	27.14	.69	35.05	.68	40.86	.66	45.37	.64	49.02	.62	51.82	.60	53.76

Table 22. — Hickory; butt log grade 3

Dbb (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.46	\$-.079	0.46	—	—	—	—	—	—	—	—	—	—	—
12	.46	— .81	.46	—	0.46	—	—	—	—	—	—	—	—	—
13	.46	— .82	.46	—	.46	—	—	—	—	—	—	—	—	—
14	.46	— .79	.46	—	.46	—	—	—	—	—	—	—	—	—
15	.46	— .71	.46	—	.46	—	—	—	0.46	—	0.46	—	—	—
16	.46	— .59	.46	—	.46	—	—	—	.46	—	.46	—	0.46	—
17	.46	— .40	.46	—	.46	—	—	—	.46	—	.46	—	.46	—
18	.46	— .17	.46	—	.46	—	—	—	.46	—	.46	—	.46	—
19	.46	.14	.46	—	.46	\$.024	—	—	.46	\$.032	.46	\$.036	.46	\$.040
20	.46	.52	.46	.72	.46	.91	—	\$.028	.46	1.23	.46	1.38	.46	\$ 1.53
21	.46	.99	.46	1.37	.46	1.72	—	2.04	.46	2.35	.46	2.64	.46	2.88
22	.46	1.55	.46	2.15	.46	2.68	—	3.18	.46	3.66	.46	4.11	.46	4.51
23	.46	2.19	.46	3.03	.46	3.80	—	4.51	.46	5.18	.46	5.86	.46	6.53
24	.46	2.75	.46	3.77	.46	4.69	—	5.56	.46	6.49	.46	7.30	.46	8.07
25	.46	3.23	.46	4.42	.46	5.52	—	6.52	.46	7.58	.46	8.58	.46	9.52
26	.46	3.64	.46	4.98	.46	6.20	—	7.35	.46	8.50	.46	9.60	.46	10.69
27	.46	4.01	.46	5.43	.46	6.79	—	8.03	.46	9.39	.46	10.50	.46	11.73
28	.46	4.33	.46	5.98	.46	7.41	—	8.71	.46	10.08	.46	11.45	.46	12.70
29	.46	4.74	.46	6.46	.46	8.03	—	9.54	.46	10.92	.46	12.42	.46	13.80
30	.46	5.17	.46	6.93	.46	8.63	—	10.21	.46	11.72	.46	13.36	.46	14.87
31	.46	5.57	.46	7.53	.46	9.37	—	11.01	.46	12.66	.46	14.43	.46	15.95
32	.46	5.97	.46	8.07	.46	10.04	—	11.82	.46	13.60	.46	15.38	.46	17.16
33	.46	6.38	.46	8.68	.46	10.72	—	12.63	.46	14.55	.46	16.46	.46	18.37
34	.46	6.79	.46	9.29	.46	11.53	—	13.58	.46	15.50	.46	17.68	.46	19.60
35	.46	7.27	.46	9.90	.46	12.22	—	14.40	.46	16.59	.46	18.77	.46	20.95

Table 23. — Hickory; butt log grade 4

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.40	\$-1.19	0.40	—	0.40	—	0.40	—	0.40	—	0.40	—	0.40	—
12	.40	-1.29	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
13	.40	-1.39	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
14	.40	-1.45	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
15	.40	-1.49	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
16	.40	-1.47	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
17	.40	-1.40	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
18	.40	-1.31	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
19	.40	-1.14	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
20	.40	— .91	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
21	.40	— .60	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
22	.40	— .21	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
23	.40	.27	.40	\$ 0.38	.40	—	.40	\$ 0.56	.40	0.65	.40	\$ 0.73	.40	0.82
24	.40	.63	.40	.86	.40	0.48	.40	1.07	.40	1.27	.40	1.49	.40	1.85
25	.40	.92	.40	1.26	.40	1.57	.40	1.86	.40	2.16	.40	2.45	.40	2.71
26	.40	1.12	.40	1.54	.40	1.91	.40	2.27	.40	2.62	.40	2.96	.40	3.30
27	.40	1.28	.40	1.74	.40	2.17	.40	2.57	.40	3.00	.40	3.36	.40	3.75
28	.40	1.41	.40	1.94	.40	2.41	.40	2.83	.40	3.28	.40	3.73	.40	4.13
29	.40	1.57	.40	2.14	.40	2.66	.40	3.15	.40	3.61	.40	4.11	.40	4.56
30	.40	1.72	.40	2.31	.40	2.88	.40	3.40	.40	3.91	.40	4.45	.40	4.96
31	.40	1.87	.40	2.53	.40	3.15	.40	3.71	.40	4.26	.40	4.86	.40	5.37
32	.40	2.03	.40	2.74	.40	3.40	.40	4.01	.40	4.61	.40	5.21	.40	5.82
33	.40	2.18	.40	2.96	.40	3.66	.40	4.32	.40	4.97	.40	5.62	.40	6.28
34	.40	2.34	.40	3.20	.40	3.97	.40	4.67	.40	5.34	.40	6.09	.40	6.75
35	.40	2.52	.40	3.43	.40	4.24	.40	4.99	.40	5.75	.40	6.51	.40	7.27

Merchantable height to an 8-inch dib top (feet)

27

Table 25. — Red maple; butt log grade 2

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16		24		32		40		48		56	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
14	0.67	\$ 4.22	0.64	\$ 5.23	0.61	\$ 5.85	0.58	\$ 5.86	0.55	—	—	—
15	.67	5.15	.64	6.42	.61	7.09	.58	7.24	.55	—	0.52	—
16	.68	6.14	.65	7.75	.62	8.44	.58	8.74	.55	—	.52	—
17	.68	7.21	.65	9.17	.62	10.28	.59	10.68	.56	—	.53	—
18	.68	8.59	.65	10.37	.62	12.21	.59	12.83	.56	\$ 12.91	.53	—
19	.68	10.06	.65	12.79	.62	14.45	.59	15.29	.56	15.44	.53	—
20	.68	11.68	.65	14.84	.62	16.84	.59	17.94	.56	18.18	.53	—
21	.69	13.47	.66	17.15	.63	19.56	.59	20.98	.56	21.59	.53	—
22	.69	15.43	.66	19.72	.63	22.51	.60	24.23	.57	25.02	.54	—
23	.69	17.42	.66	22.30	.63	25.65	.60	27.70	.57	28.69	.54	\$ 28.85
24	.69	19.68	.66	25.00	.63	28.57	.60	30.92	.57	32.61	.54	32.82
25	.69	21.81	.66	27.64	.63	31.81	.60	34.33	.57	36.15	.54	36.66
26	.70	24.03	.67	30.46	.64	34.92	.60	37.90	.57	39.78	.54	40.29
27	.70	26.22	.67	32.94	.64	37.98	.61	41.10	.58	43.63	.55	43.85
28	.70	28.25	.67	36.17	.64	41.37	.61	44.60	.58	46.89	.55	47.91
29	.70	30.87	.67	39.06	.64	44.81	.61	48.79	.58	50.79	.55	52.03
30	.70	33.66	.67	41.95	.64	48.26	.61	52.35	.58	54.69	.55	56.17
31	.71	36.32	.68	45.65	.65	52.46	.61	56.61	.58	59.25	.55	60.91
32	.71	39.00	.68	48.99	.65	56.35	.62	60.92	.59	63.87	.56	65.18
33	.71	41.70	.68	52.76	.65	60.28	.62	65.28	.59	68.54	.56	70.05
34	.71	44.43	.68	56.56	.65	64.98	.62	70.36	.59	73.27	.56	75.54
35	.71	47.61	.68	60.41	.65	69.00	.62	74.83	.59	78.68	.56	80.55
												80.44

Table 26. — Red maple; butt log grade 3

Dbh (inches)	Merchantable height to an 8-inch dbh top (feet)																		
	16			24			32			40			48			56			64
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	
11	0.46	\$ 0.34	0.46	\$ 0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
12	.46	.53	.46	.73	0.46	\$ 0.89	—	—	—	—	—	—	—	—	—	—	—	—	
13	.46	.78	.46	1.08	.46	1.31	0.46	\$ 1.47	—	—	—	—	—	—	—	—	—	—	
14	.46	1.07	.46	1.48	.46	1.86	.46	2.14	.46	\$ 2.38	.46	2.68	.46	2.98	.46	3.24	.46	3.48	
15	.46	1.45	.46	2.00	.46	2.47	.46	2.88	.46	3.24	.46	3.68	.46	4.08	.46	4.48	.46	4.88	
16	.46	1.88	.46	2.62	.46	3.17	.46	3.72	.46	4.28	.46	4.70	.46	5.12	.46	5.52	.46	5.92	
17	.46	2.38	.46	3.32	.46	4.12	.46	4.82	.46	5.48	.46	6.08	.46	6.68	.46	7.28	.46	7.88	
18	.46	3.01	.46	4.16	.46	5.17	.46	6.07	.46	6.94	.46	7.75	.46	8.55	.46	9.35	.46	10.15	
19	.46	3.72	.46	5.16	.46	6.41	.46	7.54	.46	8.59	.46	9.60	.46	10.60	.46	11.60	.46	12.60	
20	.46	4.54	.46	6.26	.46	7.78	.46	9.17	.46	10.42	.46	11.65	.46	12.87	.46	14.09	.46	15.31	
21	.46	5.45	.46	7.52	.46	9.36	.46	11.07	.46	12.70	.46	14.17	.46	15.35	.46	16.53	.46	17.71	
22	.46	6.49	.46	8.96	.46	11.12	.46	13.14	.46	15.05	.46	16.79	.46	18.36	.46	19.81	.46	21.17	
23	.46	7.58	.46	10.46	.46	13.04	.46	15.41	.46	17.62	.46	19.81	.46	21.97	.46	24.08	.46	26.15	
24	.46	8.71	.46	11.91	.46	14.73	.46	17.39	.46	20.19	.46	22.63	.46	24.88	.46	27.04	.46	29.20	
25	.46	9.74	.46	13.26	.46	16.51	.46	19.40	.46	22.45	.46	25.29	.46	27.94	.46	30.22	.46	32.56	
26	.46	10.75	.46	14.63	.46	18.12	.46	21.40	.46	24.65	.46	27.70	.46	30.72	.46	33.36	.46	35.94	
27	.46	11.72	.46	15.80	.46	19.66	.46	23.13	.46	26.93	.46	29.98	.46	32.56	.46	35.94	.46	38.88	
28	.46	12.59	.46	17.29	.46	21.34	.46	24.99	.46	28.79	.46	32.56	.46	35.94	.46	38.88	.46	41.79	
29	.46	13.72	.46	18.61	.46	23.02	.46	27.22	.46	31.03	.46	35.15	.46	38.88	.46	41.79	.46	44.71	
30	.46	14.91	.46	19.91	.46	24.69	.46	29.07	.46	33.23	.46	37.00	.46	40.63	.46	44.00	.46	47.17	
31	.46	16.03	.46	21.58	.46	26.73	.46	31.28	.46	35.80	.46	40.63	.46	44.71	.46	48.00	.46	51.29	
32	.46	17.15	.46	23.07	.46	28.58	.46	33.50	.46	38.38	.46	43.21	.46	48.00	.46	51.29	.46	54.59	
33	.46	18.28	.46	24.75	.46	30.45	.46	35.73	.46	40.96	.46	46.15	.46	51.29	.46	54.59	.46	58.27	
34	.46	19.41	.46	26.44	.46	32.68	.46	38.32	.46	43.55	.46	49.46	.46	54.59	.46	58.27	.46	61.55	
35	.46	20.73	.46	28.13	.46	34.55	.46	40.56	.46	46.52	.46	52.42	.46	58.27	.46	61.55	.46	64.83	

Merchantable height to an 8-inch dib top (feet)

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.40	\$-0.23	0.40	—	0.40	—	0.40	—	0.40	—	0.40	—	0.40	—
12	.40	— .15	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
13	.40	— .03	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
14	.40	.13	.40	\$ 0.18	.40	\$ 0.23	.40	\$ 0.27	.40	\$ 0.31	.40	—	.40	—
15	.40	.35	.40	.49	.40	.61	.40	.72	.40	.82	.40	\$ 0.89	.40	—
16	.40	.63	.40	.88	.40	1.08	.40	1.28	.40	1.48	.40	1.64	.40	\$ 1.77
17	.40	.96	.40	1.36	.40	1.70	.40	2.00	.40	2.30	.40	2.57	.40	2.78
18	.40	1.39	.40	1.91	.40	2.43	.40	2.87	.40	3.31	.40	3.72	.40	4.13
19	.40	1.90	.40	2.65	.40	3.31	.40	3.92	.40	4.50	.40	5.06	.40	5.62
20	.40	2.49	.40	3.46	.40	4.33	.40	5.13	.40	5.87	.40	6.60	.40	7.33
21	.40	3.18	.40	4.41	.40	5.52	.40	6.56	.40	7.57	.40	8.50	.40	9.26
22	.40	3.97	.40	5.51	.40	6.88	.40	8.17	.40	9.40	.40	10.54	.40	11.59
23	.40	4.83	.40	6.70	.40	8.40	.40	9.96	.40	11.45	.40	12.93	.40	14.42
24	.40	5.67	.40	7.78	.40	9.67	.40	11.47	.40	13.39	.40	15.07	.40	16.65
25	.40	6.42	.40	8.78	.40	10.97	.40	12.96	.40	15.06	.40	17.05	.40	18.91
26	.40	7.12	.40	9.74	.40	12.11	.40	14.37	.40	16.62	.40	18.76	.40	20.90
27	.40	7.78	.40	10.54	.40	13.17	.40	15.57	.40	18.20	.40	20.36	.40	22.75
28	.40	8.37	.40	11.54	.40	14.31	.40	16.83	.40	19.48	.40	22.13	.40	24.53
29	.40	9.13	.40	12.44	.40	15.46	.40	18.35	.40	21.01	.40	23.91	.40	26.56
30	.40	9.92	.40	13.31	.40	16.58	.40	19.60	.40	22.51	.40	25.65	.40	28.56
31	.40	10.67	.40	14.43	.40	17.95	.40	21.11	.40	24.26	.40	27.66	.40	30.57
32	.40	11.43	.40	15.44	.40	19.20	.40	22.61	.40	26.01	.40	29.41	.40	32.82
33	.40	12.18	.40	16.56	.40	20.46	.40	24.12	.40	27.77	.40	31.42	.40	35.08
34	.40	12.94	.40	17.70	.40	21.97	.40	25.87	.40	29.54	.40	33.69	.40	37.35
35	.40	13.82	.40	18.83	.40	23.24	.40	27.39	.40	31.55	.40	35.71	.40	39.87

Table 28. — Sugar maple; butt log grade I

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16			24			32			40		
	TQI	TVCS	TQI	TQI	TVCS	TQI	TQI	TVCS	TQI	TVCS	TQI	TVCS
16	0.84	\$ 9.01	0.79	\$ 11.28	\$ 12.17	0.74	0.69	\$ 12.46	0.65	—	0.60	—
17	.86	10.86	.81	13.76	15.35	.77	.72	15.84	.67	—	.62	—
18	.89	13.25	.84	16.75	18.79	.79	.74	19.69	.69	\$ 19.75	.64	—
19	.91	15.86	.86	20.19	22.83	.81	.76	24.19	.71	24.45	.66	—
20	.93	18.79	.88	23.94	27.24	.83	.78	29.12	.73	29.64	.68	—
21	.95	22.06	.90	28.19	32.31	.85	.80	34.86	.75	36.12	.70	—
22	.97	25.69	.92	33.00	37.89	.87	.82	41.09	.78	42.79	.73	—
23	.99	29.44	.94	37.92	43.91	.90	.85	47.84	.80	50.04	.75	—
24	1.02	33.88	.97	43.36	49.97	.92	.87	54.62	.82	58.30	.77	—
25	1.04	38.31	.99	48.95	56.90	.94	.89	62.14	.84	66.33	.79	\$ 68.54
26	1.06	43.12	1.01	55.19	64.00	.96	.91	70.41	.86	75.08	.81	77.53
27	1.08	48.08	1.03	61.08	71.34	.98	.93	78.38	.88	84.72	.83	87.00
28	1.10	52.91	1.05	68.61	79.62	1.00	.95	87.29	.91	93.63	.86	97.95
29	1.12	59.03	1.08	75.73	88.28	1.03	.98	97.90	.93	104.14	.88	109.48
30	1.15	65.69	1.10	83.11	97.27	1.05	1.00	107.63	.95	115.10	.90	121.53
31	1.17	72.29	1.12	92.33	108.09	1.07	1.02	119.15	.97	127.84	.92	135.35
32	1.19	79.13	1.14	101.12	118.60	1.09	1.04	131.15	.99	141.14	.94	148.57
33	1.21	86.21	1.16	111.05	129.53	1.11	1.06	143.63	1.01	155.00	.96	163.64
34	1.23	93.54	1.18	121.35	142.43	1.13	1.09	158.09	1.04	169.44	.99	180.66
35	1.25	102.01	1.21	132.01	154.21	1.16	1.11	171.60	1.06	185.88	1.01	197.07
												205.16

Table 29. — Sugar maple; butt log grade 2

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16		24		32		40		48		56	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
14	0.60	\$ 2.88	0.59	\$ 3.76	0.57	\$ 4.47	0.56	\$ 4.83	0.55	\$ 5.03	—	—
15	.61	3.79	.60	4.98	.59	5.86	.58	6.45	.56	6.85	0.55	\$ 6.90
16	.63	4.82	.61	6.41	.60	7.43	.59	8.31	.58	9.07	.56	9.44
17	.64	5.97	.63	8.02	.62	9.57	.60	10.71	.59	11.64	.58	12.29
18	.65	7.46	.64	9.96	.63	11.91	.62	13.46	.60	14.76	.59	15.78
19	.67	9.12	.66	12.23	.64	14.68	.63	16.68	.62	18.30	.61	19.66
20	.68	10.99	.67	14.72	.66	17.73	.64	20.24	.63	22.21	.62	23.96
21	.69	13.11	.68	17.58	.67	21.25	.66	24.38	.65	27.10	.63	29.26
22	.71	15.48	.70	20.82	.68	25.16	.67	28.90	.66	32.14	.65	34.76
23	.72	17.97	.71	24.18	.70	29.40	.69	33.81	.67	37.61	.66	41.10
24	.74	20.82	.72	27.80	.71	33.57	.70	38.65	.69	43.73	.67	47.71
25	.75	23.66	.74	31.48	.72	38.28	.71	43.93	.70	49.58	.69	54.45
26	.76	26.69	.75	35.53	.74	43.03	.73	49.67	.71	55.86	.70	61.24
27	.78	29.80	.76	39.34	.75	47.91	.74	55.14	.73	62.73	.72	68.21
28	.79	32.82	.78	44.18	.77	53.40	.75	61.22	.74	68.99	.73	76.25
29	.80	36.65	.79	48.75	.78	59.12	.77	68.47	.75	76.39	.74	84.66
30	.82	40.81	.81	53.49	.79	65.05	.78	75.07	.77	84.06	.76	93.39
31	.83	44.94	.82	59.41	.81	72.19	.79	82.88	.78	92.98	.77	103.39
32	.85	49.22	.83	65.04	.82	79.11	.81	91.00	.80	102.25	.78	112.87
33	.86	53.65	.85	71.41	.83	86.29	.82	99.43	.81	111.89	.80	123.66
34	.87	58.24	.86	78.00	.85	94.77	.84	109.20	.82	121.88	.81	135.85
35	.89	63.54	.87	84.83	.86	102.49	.85	118.27	.84	133.27	.82	147.50
											.76	111.39
											.77	122.84
											.80	134.75
											.81	147.12
											.82	160.95

Table 30. — Sugar maple; butt log grade 3

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.44	\$ 0.04	0.43	—	—	—	—	—	—	—	—	—	—	—
12	.45	.27	.43	—	0.42	—	—	—	—	—	—	—	—	—
13	.46	.59	.44	—	.43	—	—	—	—	—	—	—	—	—
14	.47	1.00	.45	\$ 1.06	.44	—	0.41	—	—	—	—	—	—	—
15	.48	1.52	.46	1.74	.45	—	.43	—	0.40	—	—	—	—	—
16	.49	2.15	.47	2.57	.46	\$ 2.62	.44	—	.41	—	—	—	0.39	—
17	.50	2.88	.48	3.56	.47	3.84	.45	—	.42	—	—	—	.40	—
18	.51	3.82	.49	4.77	.48	5.26	.46	\$ 5.40	.43	—	—	—	.41	—
19	.52	4.90	.50	6.21	.49	6.98	.47	7.34	.44	\$ 7.34	—	—	.42	—
20	.53	6.15	.51	7.84	.50	8.93	.48	9.55	.45	9.73	—	—	.43	—
21	.54	7.58	.52	9.73	.50	11.21	.49	12.17	.46	12.71	\$ 12.77	—	.44	—
22	.55	9.21	.53	11.91	.51	13.80	.50	15.11	.47	15.93	16.21	—	.45	—
23	.56	10.95	.54	14.23	.52	16.66	.51	18.38	.48	19.52	20.24	—	.46	\$ 20.54
24	.57	12.87	.55	16.64	.53	19.41	.52	21.51	.49	23.33	24.28	—	.47	24.62
25	.57	14.76	.56	19.07	.54	22.44	.53	24.86	.51	26.97	28.36	—	.48	29.07
26	.58	16.75	.57	21.68	.55	25.46	.54	28.40	.52	30.79	32.40	—	.49	33.48
27	.59	18.79	.58	24.13	.56	28.53	.55	31.79	.53	34.92	36.53	—	.50	38.01
28	.60	20.77	.59	27.22	.57	31.97	.56	35.54	.54	38.72	41.25	—	.51	42.71
29	.61	23.26	.60	30.16	.58	35.58	.56	40.00	.55	43.21	46.23	—	.52	48.11
30	.62	25.97	.61	33.21	.59	39.33	.57	44.10	.56	47.88	51.42	—	.53	53.74
31	.63	28.67	.62	37.01	.60	43.83	.58	48.95	.57	53.30	57.38	—	.54	59.68
32	.64	31.48	.63	40.65	.61	48.23	.59	54.01	.58	58.97	63.10	—	.55	66.39
33	.65	34.40	.63	44.76	.62	52.80	.60	59.29	.59	64.89	69.61	—	.55	73.43
34	.66	37.42	.64	49.04	.63	58.20	.61	65.41	.60	71.07	76.96	—	.56	80.79
35	.67	40.91	.65	53.48	.64	63.16	.62	71.14	.61	78.11	84.07	—	.57	89.02

Table 31. — Sugar maple; butt log grade 4

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.40	\$-0.34	0.40	—	0.40	—	0.40	—	0.40	—	0.40	—	0.40	—
12	.40	— .27	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
13	.40	— .17	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
14	.40	— .03	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
15	.40	.17	.40	\$ 0.24	.40	\$ 0.30	.40	\$ 0.35	.40	—	.40	—	.40	—
16	.40	.43	.40	.60	.40	.74	.40	.87	.40	\$ 1.01	.40	\$ 1.13	.40	—
17	.40	.74	.40	1.05	.40	1.31	.40	1.55	.40	1.78	.40	1.99	.40	—
18	.40	1.15	.40	1.60	.40	2.00	.40	2.37	.40	2.73	.40	3.07	.40	\$ 3.41
19	.40	1.63	.40	2.27	.40	2.84	.40	3.37	.40	3.87	.40	4.35	.40	4.84
20	.40	2.20	.40	3.05	.40	3.82	.40	4.53	.40	5.18	.40	5.83	.40	6.48
21	.40	2.86	.40	3.97	.40	4.97	.40	5.91	.40	6.82	.40	7.66	.40	8.34
22	.40	3.63	.40	5.03	.40	6.29	.40	7.47	.40	8.60	.40	9.65	.40	10.60
23	.40	4.47	.40	6.19	.40	7.76	.40	9.22	.40	10.59	.40	11.97	.40	13.35
24	.40	5.28	.40	7.25	.40	9.01	.40	10.69	.40	12.47	.40	14.05	.40	15.52
25	.40	6.00	.40	8.21	.40	10.27	.40	12.13	.40	14.10	.40	15.96	.40	17.71
26	.40	6.68	.40	9.14	.40	11.37	.40	13.49	.40	15.61	.40	17.62	.40	19.64
27	.40	7.32	.40	9.91	.40	12.39	.40	14.65	.40	17.14	.40	19.17	.40	21.43
28	.40	7.89	.40	10.88	.40	13.49	.40	15.88	.40	18.38	.40	20.88	.40	23.16
29	.40	8.62	.40	11.75	.40	14.61	.40	17.35	.40	19.87	.40	22.61	.40	25.13
30	.40	9.39	.40	12.60	.40	15.70	.40	18.57	.40	21.33	.40	24.31	.40	27.07
31	.40	10.13	.40	13.70	.40	17.04	.40	20.04	.40	23.03	.40	26.27	.40	29.04
32	.40	10.86	.40	14.68	.40	18.26	.40	21.51	.40	24.75	.40	27.99	.40	31.24
33	.40	11.60	.40	15.78	.40	19.50	.40	22.99	.40	26.48	.40	29.97	.40	33.46
34	.40	12.35	.40	16.89	.40	20.98	.40	24.71	.40	28.22	.40	32.19	.40	35.70
35	.40	13.22	.40	18.01	.40	22.23	.40	26.22	.40	30.20	.40	34.19	.40	38.18

Table 32. — Black oak; butt log grade I

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
16	0.93	\$ 7.76	0.89	\$ 9.89	0.84	\$ 10.91	0.80	\$ 11.50	0.76	\$ 11.70	0.71	—	0.67	—
17	.94	9.23	.90	11.88	.86	13.51	.81	14.28	.77	14.52	.73	—	.69	—
18	.96	11.14	.91	14.26	.87	16.27	.83	17.40	.78	17.90	.74	—	.70	—
19	.97	13.19	.93	16.99	.88	19.48	.84	21.00	.80	21.69	.76	\$ 21.71	.71	—
20	.98	15.48	.94	19.93	.90	22.95	.85	24.91	.81	25.82	.77	26.06	.73	—
21	1.00	18.02	.95	23.25	.91	26.93	.87	29.43	.83	30.97	.78	31.41	.74	—
22	1.01	20.83	.97	26.98	.93	31.27	.88	34.30	.84	36.20	.80	36.90	.75	—
23	1.02	23.71	.98	30.76	.94	35.92	.90	39.52	.85	41.82	.81	43.20	.77	\$ 43.64
24	1.04	27.07	1.00	34.87	.95	40.48	.91	44.63	.87	48.12	.82	49.74	.78	50.03
25	1.05	30.36	1.01	39.01	.97	45.65	.92	50.22	.88	54.08	.84	56.37	.80	57.17
26	1.07	33.88	1.02	43.58	.98	50.82	.94	56.27	.89	60.47	.85	63.00	.81	64.34
27	1.08	37.45	1.04	47.79	.99	56.09	.95	61.97	.91	67.42	.87	69.76	.82	71.66
28	1.09	40.88	1.05	53.20	1.01	62.00	.96	68.30	.92	73.66	.88	77.55	.84	79.22
29	1.11	45.25	1.06	58.23	1.02	68.11	.98	75.84	.94	81.05	.89	85.66	.85	87.88
30	1.12	49.97	1.08	63.38	1.03	74.39	.99	82.60	.95	88.66	.91	94.02	.86	96.84
31	1.13	54.59	1.09	69.87	1.05	81.99	1.01	90.62	.96	97.52	.92	103.61	.88	106.16
32	1.15	59.33	1.11	75.95	1.06	89.24	1.02	98.89	.98	106.68	.93	112.61	.89	116.68
33	1.16	64.21	1.12	82.81	1.08	96.72	1.03	107.42	.99	116.14	.95	122.86	.90	127.59
34	1.18	69.21	1.13	89.87	1.09	105.59	1.05	117.33	1.00	125.90	.96	134.44	.92	138.90
35	1.19	75.01	1.15	97.12	1.10	113.52	1.06	126.41	1.02	137.03	.98	145.41	.93	151.52

Table 33. — Black oak; butt log grade 2

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
14	0.64	\$ 2.01	0.63	\$ 2.60	0.62	\$ 3.05	0.61	\$ 3.25	0.60	\$ 3.32	—	—	—	—
15	.65	2.69	.64	3.50	.63	4.08	.62	4.44	.61	4.66	0.59	—	—	—
16	.66	3.46	.65	4.57	.64	5.26	.63	5.83	.62	6.30	.60	\$ 6.47	0.59	—
17	.67	4.32	.66	5.77	.65	6.85	.64	7.61	.63	8.21	.61	8.58	.60	\$ 8.66
18	.68	5.45	.67	7.23	.66	8.61	.65	9.66	.64	10.53	.62	11.17	.61	11.67
19	.69	6.69	.68	8.94	.67	10.69	.66	12.08	.65	13.18	.63	14.07	.62	14.80
20	.70	8.12	.69	10.83	.68	12.99	.67	14.76	.66	16.13	.64	17.31	.63	18.30
21	.71	9.73	.70	12.99	.69	15.66	.68	17.89	.67	19.81	.65	21.29	.64	22.17
22	.72	11.53	.71	15.46	.70	18.62	.69	21.32	.68	23.63	.66	25.46	.65	26.85
23	.73	13.43	.72	18.03	.71	21.86	.70	25.07	.69	27.79	.67	30.26	.66	32.47
24	.74	15.56	.73	20.72	.72	24.95	.71	28.65	.70	32.32	.68	35.14	.67	37.44
25	.75	17.64	.74	23.42	.73	28.40	.72	32.50	.71	36.57	.69	40.04	.68	42.92
26	.76	19.82	.75	26.33	.74	31.80	.73	36.60	.72	41.05	.70	44.86	.69	48.33
27	.77	22.04	.76	29.02	.75	35.26	.74	40.46	.73	45.89	.71	49.75	.70	53.83
28	.78	24.17	.77	32.45	.76	39.12	.75	44.72	.74	50.24	.72	55.35	.71	59.47
29	.79	26.88	.78	35.66	.77	43.12	.76	49.80	.75	55.39	.73	61.19	.72	65.94
30	.80	29.80	.79	38.96	.78	47.25	.77	54.36	.76	60.69	.74	67.20	.73	72.61
31	.81	32.69	.80	43.10	.79	52.22	.78	59.78	.77	66.86	.75	74.10	.74	79.55
32	.82	35.66	.81	47.00	.80	57.01	.79	65.38	.78	73.24	.76	80.57	.75	87.38
33	.83	38.74	.82	51.42	.81	61.95	.80	71.18	.79	79.84	.77	87.95	.76	95.50
34	.84	41.90	.83	55.97	.82	67.81	.81	77.89	.79	86.67	.78	96.28	.77	103.90
35	.85	45.57	.84	60.67	.83	73.09	.82	84.08	.80	94.45	.79	104.18	.78	113.28

Table 34. — Black oak; butt log grade 3

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)									
	16	24	32	40	48	56	64			
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	.57	\$ 0.34	.55							
12	.57	.56	.56							
13	.57	.85	.55							
14	.58	1.20	.56							
15	.58	1.65	.57							
16	.58	2.16	.57							
17	.59	2.75	.58							
18	.59	3.51	.58							
19	.60	4.37	.58							
20	.60	5.35	.59							
21	.60	6.46	.59							
22	.61	7.71	.59							
23	.61	9.04	.60							
24	.61	10.46	.60							
25	.62	11.80	.60							
26	.62	13.15	.61							
27	.62	14.49	.61							
28	.63	15.74	.61							
29	.63	17.34	.62							
30	.63	19.06	.62							
31	.64	20.72	.63							
32	.64	22.41	.63							
33	.64	24.14	.63							
34	.65	25.91	.64							
35	.65	27.96	.64							

Table 35. — Black oak; butt log grade 4

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.40	\$-0.90	0.40	—	0.40	—	0.40	—	0.40	—	0.40	—	0.40	—
12	.40	— .95	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
13	.40	— .99	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
14	.40	— .97	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
15	.40	— .94	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
16	.40	— .84	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
17	.40	— .69	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
18	.40	— .50	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
19	.40	— .23	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
20	.40	.11	.40	\$ 0.16	.40	\$ 0.20	.40	\$ 0.23	.40	\$ 0.27	.40	\$ 0.30	.40	\$ 0.33
21	.40	.53	.40	.74	.40	.93	.40	1.10	.40	1.27	.40	1.43	.40	1.56
22	.40	1.04	.40	1.45	.40	1.81	.40	2.15	.40	2.47	.40	2.77	.40	3.05
23	.40	1.64	.40	2.27	.40	2.85	.40	3.38	.40	3.89	.40	4.39	.40	4.90
24	.40	2.14	.40	2.94	.40	3.65	.40	4.33	.40	5.06	.40	5.69	.40	6.29
25	.40	2.57	.40	3.52	.40	4.39	.40	5.19	.40	6.03	.40	6.83	.40	7.57
26	.40	2.92	.40	4.00	.40	4.97	.40	5.90	.40	6.82	.40	7.70	.40	8.58
27	.40	3.23	.40	4.38	.40	5.47	.40	6.47	.40	7.56	.40	8.46	.40	9.45
28	.40	3.50	.40	4.82	.40	5.98	.40	7.03	.40	8.14	.40	9.25	.40	10.25
29	.40	3.84	.40	5.23	.40	6.50	.40	7.71	.40	8.83	.40	10.05	.40	11.16
30	.40	4.18	.40	5.61	.40	6.99	.40	8.26	.40	9.49	.40	10.81	.40	12.04
31	.40	4.51	.40	6.10	.40	7.59	.40	8.93	.40	10.26	.40	11.70	.40	12.93
32	.40	4.85	.40	6.55	.40	8.14	.40	9.59	.40	11.03	.40	12.47	.40	13.92
33	.40	5.18	.40	7.04	.40	8.70	.40	10.26	.40	11.81	.40	13.36	.40	14.92
34	.40	5.52	.40	7.55	.40	9.37	.40	11.03	.40	12.60	.40	14.36	.40	15.93
35	.40	5.91	.40	8.05	.40	9.94	.40	11.71	.40	13.49	.40	15.27	.40	17.05

Table 36. — Chestnut oak; butt log grade I

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16		24		32		40		48		56	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
16	0.91	\$ 5.98	0.87	\$ 7.70	0.84	\$ 8.61	0.81	\$ 9.22	0.78	\$ 9.56	0.74	—
17	.91	7.10	.88	9.23	.85	10.62	.82	11.39	.78	11.79	.75	—
18	.92	8.55	.89	11.05	.86	12.75	.82	13.82	.79	14.45	.76	\$ 14.62
19	.93	10.12	.90	13.15	.86	15.23	.83	16.61	.80	17.41	.77	17.75
20	.94	11.86	.90	15.39	.87	17.90	.84	19.64	.81	20.63	.77	21.16
21	.94	13.79	.91	17.93	.88	20.95	.85	23.14	.81	24.65	.78	25.37
22	.95	15.92	.92	20.78	.89	24.29	.85	26.90	.82	28.71	.79	29.67
23	.96	18.11	.93	23.67	.89	27.86	.86	30.92	.83	33.07	.80	34.59
24	.97	20.61	.93	26.72	.90	31.26	.87	34.75	.84	37.84	.80	39.56
25	.97	23.01	.94	29.75	.91	35.06	.88	38.87	.84	42.24	.81	44.49
26	.98	25.54	.95	33.04	.92	38.78	.88	43.25	.85	46.86	.82	49.29
27	.99	28.07	.96	36.00	.92	42.50	.89	47.28	.86	51.82	.83	54.09
28	1.00	30.46	.96	39.83	.93	46.66	.90	51.72	.87	56.16	.83	59.60
29	1.00	33.52	.97	43.32	.94	50.93	.91	57.02	.87	61.32	.84	65.27
30	1.01	36.80	.98	46.87	.95	55.26	.91	61.66	.88	66.56	.85	71.05
31	1.02	39.98	.99	51.36	.95	60.51	.92	67.19	.89	72.68	.86	77.67
32	1.03	43.23	.99	55.51	.96	65.47	.93	72.84	.90	78.94	.86	83.77
33	1.03	46.53	1.00	60.19	.97	70.53	.94	78.63	.90	85.36	.87	90.72
34	1.04	49.91	1.01	64.97	.98	76.56	.94	85.35	.91	91.92	.88	98.56
35	1.05	53.82	1.02	69.85	.98	81.85	.95	91.41	.92	99.42	.89	105.88
												\$ 29.83
												35.46
												40.33
												45.68
												50.90
												56.13
												61.44
												67.52
												73.72
												80.12
												87.32
												94.72
												102.32
												110.79

Table 37. — Chestnut oak; butt log grade 2

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)									
	16	24	32	40	48	56	64			
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
14	0.65	\$ 1.28	0.62	\$ 1.70	0.60	—	—	—	—	—
15	.66	1.80	.63	2.49	.61	\$ 2.54	0.59	—	—	—
16	.66	2.41	.64	3.08	.62	3.60	.61	3.67	0.58	—
17	.67	3.11	.64	4.04	.63	4.97	.62	5.43	.59	—
18	.68	4.02	.65	5.21	.64	6.58	.62	6.93	.61	—
19	.69	5.04	.66	6.60	.65	8.50	.63	9.02	.60	\$ 9.45
20	.70	6.21	.67	8.15	.66	10.66	.64	11.38	.63	11.89
21	.71	7.55	.68	9.93	.66	13.20	.65	14.32	.64	15.05
22	.72	9.05	.69	11.98	.67	16.02	.66	17.43	.64	18.42
23	.73	10.66	.70	14.13	.68	19.11	.67	20.87	.65	22.34
24	.73	12.42	.71	16.35	.69	22.03	.68	24.50	.66	26.23
25	.74	14.12	.73	18.54	.70	25.12	.68	27.89	.67	30.09
26	.75	15.89	.74	20.89	.71	28.37	.69	31.41	.68	33.84
27	.76	17.68	.75	23.04	.72	31.41	.70	35.18	.69	37.63
28	.77	19.39	.75	25.77	.73	34.75	.71	38.57	.70	41.94
29	.78	21.56	.76	28.33	.73	38.91	.72	42.58	.71	46.44
30	.79	23.91	.77	30.96	.76	42.31	.73	46.70	.71	51.08
31	.80	26.22	.78	34.26	.77	46.56	.74	51.50	.72	56.40
32	.80	28.61	.79	37.37	.78	50.96	.75	56.46	.73	61.40
33	.81	31.07	.80	40.88	.78	55.51	.75	61.61	.74	67.11
34	.82	33.61	.81	44.51	.79	60.78	.76	66.94	.75	73.55
35	.83	36.55	.82	48.25	.80	65.65	.77	73.01	.76	79.67
										85.64

Merchantable height to an 8-inch dib top (feet)

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.54	\$-0.26	0.53	—	—	—	—	—	—	—	—	—	—	—
12	.55	—	.54	—	—	—	—	—	—	—	—	—	—	—
13	.55	.06	.55	\$	0.54	—	—	—	—	—	—	—	—	—
14	.56	.33	.56	.38	\$	0.39	—	—	—	—	—	—	—	—
15	.57	.67	.56	.85	.56	.95	.55	\$	0.54	—	—	—	—	—
16	.57	1.10	.57	1.44	.57	1.64	.56	1.80	.56	\$	1.91	\$	1.94	—
17	.58	1.61	.58	2.16	.57	2.56	.57	2.85	.56	3.07	.55	3.22	.55	\$
18	.59	2.27	.58	3.04	.58	3.64	.57	4.11	.56	4.51	.56	4.83	.56	5.10
19	.60	3.04	.59	4.10	.59	4.94	.58	5.64	.58	6.22	.57	6.72	.57	7.16
20	.60	3.94	.60	5.31	.59	6.44	.59	7.40	.58	8.19	.58	8.90	.57	9.55
21	.61	4.98	.61	6.73	.60	8.20	.60	9.49	.59	10.64	.59	11.59	.58	12.25
22	.62	6.18	.61	8.37	.61	10.20	.60	11.83	.60	13.28	.59	14.51	.59	15.53
23	.63	7.47	.62	10.14	.62	12.43	.61	14.44	.61	16.22	.60	17.90	.60	19.49
24	.63	8.84	.63	11.90	.62	14.49	.62	16.84	.61	19.24	.61	21.21	.60	22.92
25	.64	10.16	.64	13.63	.63	16.72	.63	19.36	.62	22.06	.62	24.47	.61	26.60
26	.65	11.50	.64	15.44	.64	18.86	.63	21.96	.63	24.93	.62	27.60	.62	30.14
27	.65	12.86	.65	17.10	.64	21.01	.64	24.38	.63	27.99	.63	30.72	.63	33.69
28	.66	14.15	.66	19.19	.65	23.39	.65	27.03	.64	30.73	.64	34.28	.63	37.30
29	.67	15.79	.66	21.17	.65	25.87	.65	30.20	.64	33.97	.64	37.98	.64	41.45
30	.68	17.56	.67	23.19	.67	28.41	.66	33.04	.66	37.30	.65	41.79	.65	45.72
31	.68	19.32	.68	25.72	.67	31.49	.67	36.42	.66	41.18	.66	46.17	.65	50.17
32	.69	21.14	.69	28.13	.68	34.45	.68	39.92	.67	45.20	.67	50.29	.66	55.19
33	.70	23.02	.69	30.84	.68	37.52	.68	43.55	.68	49.37	.67	54.98	.67	60.39
34	.70	24.96	.70	33.65	.70	41.16	.69	47.75	.69	53.68	.68	60.28	.68	65.79
35	.71	27.21	.71	36.56	.70	44.45	.70	51.64	.69	58.60	.69	65.33	.68	71.82

Table 39. — Chestnut oak; butt log grade 4

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16		24		32		40		48		56	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	.40	\$-1.19	.40	—	.40	—	.40	—	.40	—	.40	—
12	.40	-1.29	.40	—	.40	—	.40	—	.40	—	.40	—
13	.40	-1.39	.40	—	.40	—	.40	—	.40	—	.40	—
14	.40	-1.45	.40	—	.40	—	.40	—	.40	—	.40	—
15	.40	-1.49	.40	—	.40	—	.40	—	.40	—	.40	—
16	.40	-1.47	.40	—	.40	—	.40	—	.40	—	.40	—
17	.40	-1.40	.40	—	.40	—	.40	—	.40	—	.40	—
18	.40	-1.31	.40	—	.40	—	.40	—	.40	—	.40	—
19	.40	-1.14	.40	—	.40	—	.40	—	.40	—	.40	—
20	.40	— .91	.40	—	.40	—	.40	—	.40	—	.40	—
21	.40	— .60	.40	—	.40	—	.40	—	.40	—	.40	—
22	.40	— .21	.40	—	.40	—	.40	—	.40	—	.40	—
23	.40	.27	.40	—	.40	\$ 0.48	.40	—	.40	\$ 0.65	.40	\$ 0.82
24	.40	.63	.40	.86	.40	1.07	.40	1.27	.40	1.49	.40	1.85
25	.40	.92	.40	1.26	.40	1.57	.40	1.86	.40	2.16	.40	2.71
26	.40	1.12	.40	1.54	.40	1.91	.40	2.27	.40	2.62	.40	3.30
27	.40	1.28	.40	1.74	.40	2.17	.40	2.57	.40	3.00	.40	3.75
28	.40	1.41	.40	1.94	.40	2.41	.40	2.83	.40	3.28	.40	4.13
29	.40	1.57	.40	2.14	.40	2.66	.40	3.15	.40	3.61	.40	4.57
30	.40	1.72	.40	2.31	.40	2.88	.40	3.40	.40	3.91	.40	4.96
31	.40	1.87	.40	2.53	.40	3.15	.40	3.71	.40	4.26	.40	5.37
32	.40	2.03	.40	2.74	.40	3.40	.40	4.01	.40	4.51	.40	5.82
33	.40	2.18	.40	2.96	.40	3.66	.40	4.32	.40	4.97	.40	6.28
34	.40	2.34	.40	3.20	.40	3.97	.40	4.67	.40	5.34	.40	6.75
35	.40	2.52	.40	3.43	.40	4.24	.40	5.00	.40	5.75	.40	7.27

Table 40. — Red oak; butt log grade I

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
16	0.93	\$ 7.74	0.89	\$ 10.08	0.86	\$ 11.41	0.83	\$ 12.40	0.79	\$ 13.10	0.76	\$ 13.11	0.73	—
17	.95	9.30	.91	12.23	.88	14.24	.85	15.50	.81	16.33	.78	16.62	.75	—
18	.96	11.32	.93	14.80	.90	17.28	.86	19.00	.83	20.21	.80	20.87	.76	\$ 21.12
19	.98	13.52	.95	17.76	.92	20.83	.88	23.05	.85	24.56	.82	25.53	.78	26.04
20	1.00	15.98	.97	20.97	.94	24.68	.90	27.47	.87	29.32	.84	30.65	.80	31.47
21	1.02	18.73	.99	24.60	.95	29.10	.92	32.58	.89	35.26	.85	36.95	.82	37.39
22	1.04	21.77	1.01	28.70	.97	33.95	.94	38.10	.91	41.29	.87	43.42	.84	44.56
23	1.06	24.91	1.02	32.88	.99	39.16	.96	44.04	.92	47.80	.89	50.83	.86	53.15
24	1.08	28.59	1.04	37.46	1.01	44.32	.98	49.93	.94	55.17	.91	58.65	.88	60.94
25	1.10	32.23	1.06	42.11	1.03	50.21	1.00	56.41	.96	62.22	.93	66.64	.90	69.74
26	1.11	36.15	1.08	47.27	1.05	56.16	1.01	63.49	.98	69.83	.95	74.72	.91	78.67
27	1.13	40.16	1.10	52.10	1.07	62.27	1.03	70.22	1.00	78.17	.97	83.02	.93	87.87
28	1.15	44.05	1.12	58.27	1.08	69.15	1.05	77.73	1.02	85.74	.98	92.62	.95	97.40
29	1.17	48.98	1.14	64.06	1.10	76.30	1.07	86.67	1.04	94.70	1.00	102.63	.97	108.34
30	1.19	54.34	1.16	70.04	1.12	83.68	1.09	94.75	1.06	103.97	1.02	113.02	.99	119.70
31	1.21	59.61	1.17	77.53	1.14	92.59	1.11	104.35	1.07	114.76	1.04	124.92	1.01	131.54
32	1.23	65.06	1.19	84.61	1.16	101.17	1.13	114.28	1.09	125.94	1.06	136.15	1.03	144.91
33	1.25	70.69	1.21	92.61	1.18	110.05	1.14	124.57	1.11	137.54	1.08	148.96	1.04	158.82
34	1.26	76.49	1.23	100.88	1.20	120.57	1.16	136.51	1.13	149.56	1.10	163.42	1.06	173.25
35	1.28	83.21	1.25	109.41	1.22	130.06	1.18	147.54	1.15	163.25	1.12	177.19	1.08	189.38

Merchantable height to an 8-inch dib top (feet)

[illegible]

Table 42. — Red oak; butt log grade 3

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16	24	32	40	48	56	64					
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.56	\$ 0.32	0.55	\$ 0.30	—	—	—	—	—	—	—	—
12	.57	.56	.56	.60	0.54	—	—	—	—	—	—	—
13	.58	.87	.56	1.01	.55	—	—	—	—	—	—	—
14	.58	1.26	.57	1.49	.55	—	—	—	—	—	—	—
15	.59	1.74	.57	2.13	.56	\$ 1.57	—	—	—	—	—	—
						2.28	—	—	0.51	—	—	—
16	.59	2.31	.58	2.89	.56	3.12	\$ 3.19	—	.52	—	0.50	—
17	.60	2.96	.58	3.77	.57	4.24	4.42	—	.52	—	.51	—
18	.61	3.80	.59	4.85	.57	5.51	5.86	—	.53	—	.51	—
19	.61	4.74	.60	6.12	.58	7.02	7.58	\$ 6.00	.54	—	.52	—
20	.62	5.82	.60	7.53	.59	8.72	9.52	7.85	.55	\$ 7.88	.54	—
								9.95	.56	10.13	.53	—
21	.62	7.05	.61	9.16	.59	10.70	11.80	12.56	.55	12.91	.53	—
22	.63	8.44	.61	11.03	.60	12.91	14.33	15.33	.55	15.89	.54	\$ 16.03
23	.63	9.91	.62	12.99	.60	15.35	17.11	18.40	.56	19.35	.54	19.97
24	.64	11.50	.62	14.98	.61	17.61	19.69	21.57	.56	22.72	.55	23.35
25	.65	13.03	.63	16.94	.62	20.07	22.39	24.51	.57	26.02	.55	26.97
26	.65	14.60	.64	19.00	.62	22.43	25.19	27.50	.58	29.18	.56	30.44
27	.66	16.18	.64	20.87	.63	24.79	27.77	30.69	.58	32.32	.57	33.90
28	.66	17.67	.65	23.24	.63	27.41	30.60	33.51	.59	35.90	.57	37.40
29	.67	19.56	.65	25.44	.64	30.12	33.98	36.85	.59	39.61	.58	41.43
30	.67	21.60	.66	27.69	.64	32.88	36.97	40.27	.60	43.41	.58	45.55
31	.68	23.60	.66	30.52	.65	36.22	40.54	44.25	.60	47.77	.59	49.84
32	.69	25.65	.67	33.17	.66	39.41	44.21	48.35	.61	51.84	.59	54.66
33	.69	27.76	.68	36.16	.66	42.69	47.99	52.59	.62	56.48	.60	59.66
34	.70	29.93	.68	39.23	.67	46.59	52.38	56.95	.62	61.72	.61	64.83
35	.70	32.43	.69	42.39	.67	50.07	56.40	61.93	.63	66.67	.61	70.60

Merchantable height to an 8-inch dib top (feet)

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.40	\$-0.90	0.40	—	0.40	—	0.40	—	0.40	—	—	—	0.40	—
12	.40	-.95	.40	—	.40	—	.40	—	.40	—	—	—	.40	—
13	.40	-.99	.40	—	.40	—	.40	—	.40	—	—	—	.40	—
14	.40	-.97	.40	—	.40	—	.40	—	.40	—	—	—	.40	—
15	.40	-.94	.40	—	.40	—	.40	—	.40	—	—	—	.40	—
16	.40	-.84	.40	—	.40	—	.40	—	.40	—	—	—	.40	—
17	.40	-.69	.40	—	.40	—	.40	—	.40	—	—	—	.40	—
18	.40	-.50	.40	—	.40	—	.40	—	.40	—	—	—	.40	—
19	.40	-.23	.40	—	.40	—	.40	—	.40	—	—	—	.40	—
20	.40	.11	.40	\$.016	.40	\$.020	.40	\$.023	.40	\$.027	.40	\$.030	.40	\$.033
21	.40	.53	.40	.74	.40	.93	.40	1.10	.40	1.27	.40	1.43	.40	1.56
22	.40	1.04	.40	1.45	.40	1.81	.40	2.15	.40	2.47	.40	2.77	.40	3.05
23	.40	1.64	.40	2.28	.40	2.85	.40	3.38	.40	3.89	.40	4.39	.40	4.90
24	.40	2.14	.40	2.94	.40	3.65	.40	4.33	.40	5.06	.40	5.69	.40	6.29
25	.40	2.57	.40	3.52	.40	4.39	.40	5.19	.40	6.03	.40	6.83	.40	7.57
26	.40	2.92	.40	4.00	.40	4.97	.40	5.90	.40	6.82	.40	7.70	.40	8.58
27	.40	3.23	.40	4.38	.40	5.47	.40	6.47	.40	7.56	.40	8.46	.40	9.45
28	.40	3.50	.40	4.82	.40	5.98	.40	7.03	.40	8.14	.40	9.25	.40	10.25
29	.40	3.84	.40	5.23	.40	6.50	.40	7.71	.40	8.83	.40	10.05	.40	11.16
30	.40	4.18	.40	5.61	.40	6.99	.40	8.26	.40	9.49	.40	10.81	.40	12.04
31	.40	4.51	.40	6.10	.40	7.59	.40	8.93	.40	10.26	.40	11.70	.40	12.93
32	.40	4.85	.40	6.55	.40	8.14	.40	9.59	.40	11.03	.40	12.48	.40	13.92
33	.40	5.18	.40	7.04	.40	8.70	.40	10.26	.40	11.81	.40	13.36	.40	14.92
34	.40	5.52	.40	7.55	.40	9.37	.40	11.03	.40	12.60	.40	14.37	.40	15.93
35	.40	5.91	.40	8.05	.40	9.94	.40	11.72	.40	13.49	.40	15.27	.40	17.05

Table 44. — White oak; butt log grade I

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16		24		32		40		48		56	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
16	0.90	\$ 5.86	0.86	\$ 7.44	0.82	\$ 8.17	0.79	\$ 8.56	0.75	\$ 8.64	0.71	—
17	.92	7.26	.89	9.35	.85	10.64	.81	11.25	.78	11.45	.74	—
18	.95	9.08	.91	11.67	.88	13.36	.84	14.36	.80	14.87	.76	—
19	.98	11.10	.94	14.37	.90	16.59	.86	18.02	.83	18.79	.79	\$ 19.03
20	1.00	13.39	.96	17.36	.93	20.16	.89	22.10	.85	23.17	.81	23.73
21	1.03	15.97	.99	20.77	.95	24.29	.91	26.86	.88	28.65	.84	29.52
22	1.05	18.85	1.01	24.65	.98	28.89	.94	32.08	.90	34.35	.87	35.63
23	1.08	21.88	1.04	28.68	1.00	33.89	.97	37.77	.93	40.59	.89	42.68
24	1.10	25.41	1.07	33.09	1.03	38.89	.99	43.47	.95	47.62	.92	50.14
25	1.13	28.95	1.09	37.62	1.05	44.58	1.02	49.76	.98	54.47	.94	57.85
26	1.15	32.77	1.12	42.65	1.08	50.40	1.04	56.64	1.00	61.89	.97	65.74
27	1.18	36.72	1.14	47.43	1.10	56.43	1.07	63.30	1.03	70.06	.99	73.94
28	1.20	40.60	1.17	53.50	1.13	63.22	1.09	70.74	1.06	77.64	1.02	83.40
29	1.23	45.49	1.19	59.29	1.16	70.35	1.12	79.59	1.08	86.58	1.04	93.38
30	1.26	50.82	1.22	65.31	1.18	77.78	1.14	87.76	1.11	95.92	1.07	103.81
31	1.28	56.13	1.24	72.81	1.21	86.71	1.17	97.41	1.13	106.77	1.10	115.79
32	1.31	61.66	1.27	80.01	1.23	95.42	1.19	107.50	1.16	118.11	1.12	127.27
33	1.33	67.41	1.29	88.13	1.26	104.50	1.22	118.01	1.18	129.96	1.15	140.35
34	1.36	73.37	1.32	96.59	1.28	115.22	1.25	130.19	1.21	142.32	1.17	155.14
35	1.38	80.26	1.35	105.37	1.31	125.06	1.27	141.61	1.23	156.40	1.20	169.41
												\$ 23.76
												80
												.83
												.85
												.88
												.90
												.93
												.96
												.98
												1.01
												1.03
												1.06
												1.08
												1.11
												1.13
												1.16

Table 45. — White oak; butt log grade 2

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16		24		32		40		48		56	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
14	0.60	\$ 0.76	0.59	\$ 0.85	0.57	\$ 1.73	0.56	—	0.54	—	—	—
15	.62	1.36	.61	1.64	.59	—	.58	—	.56	—	0.55	—
16	.64	2.09	.63	2.63	.61	2.86	.60	\$ 2.97	.59	—	.57	—
17	.66	2.95	.65	3.82	.63	4.37	.62	4.66	.61	\$ 4.79	.59	—
18	.68	4.06	.67	5.28	.66	6.13	.64	6.70	.63	7.08	.61	—
19	.70	5.34	.69	7.03	.68	8.26	.66	9.17	.65	9.80	.63	\$ 7.25
20	.73	6.84	.71	9.03	.70	10.70	.68	12.00	.67	12.93	.65	10.22
21	.75	8.57	.73	11.36	.72	13.57	.70	15.36	.69	16.83	.68	13.65
22	.77	10.54	.75	14.05	.74	16.82	.72	19.13	.71	21.64	.70	17.89
23	.79	12.66	.77	16.93	.76	20.43	.75	23.31	.73	25.72	.72	22.49
24	.81	15.06	.79	19.99	.78	24.00	.77	27.45	.75	30.85	.74	27.84
25	.83	17.47	.82	23.15	.80	28.00	.79	31.97	.77	35.88	.76	33.41
26	.85	20.06	.84	26.60	.82	32.08	.81	36.86	.79	41.26	.78	39.16
27	.87	22.75	.86	29.92	.84	36.32	.83	41.63	.82	47.17	.80	45.00
28	.89	25.41	.88	34.10	.86	41.09	.85	46.95	.84	52.73	.82	51.08
29	.91	28.74	.90	38.14	.89	46.13	.87	53.27	.86	59.26	.84	58.06
30	.93	32.40	.92	42.37	.91	51.41	.89	59.19	.88	66.12	.86	65.48
31	.96	36.08	.94	47.61	.93	57.75	.91	66.17	.90	74.08	.88	73.26
32	.98	39.94	.96	52.70	.95	64.00	.93	73.50	.92	82.45	.91	82.19
33	1.00	43.97	.98	58.46	.97	70.55	.95	81.19	.94	91.23	.93	90.84
34	1.02	48.19	1.00	64.48	.99	78.26	.98	90.08	.96	100.43	.95	100.68
35	1.04	53.05	1.02	70.77	1.01	85.44	1.00	98.51	.98	110.91	.97	111.81
												122.63
												133.68

Table 46. — White oak; butt log grade 3

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16		24		32		40		48		56	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.50	\$—0.50	0.50	—	—	—	—	—	—	—	—	—
12	.51	— .38	.51	—	—	—	—	—	—	—	—	—
13	.53	— .19	.52	—	—	—	—	—	—	—	—	—
14	.54	.09	.53	—	—	—	0.51	—	—	—	—	—
15	.55	.46	.55	\$ 0.54	.54	—	.52	—	0.52	—	—	—
16	.56	.93	.56	1.19	.55	—	.54	—	.53	—	0.53	—
17	.58	1.50	.57	1.98	.56	1.32	.55	\$ 1.46	.54	—	.54	—
18	.59	2.23	.58	2.97	.56	2.33	.57	2.74	.55	\$ 2.83	.55	—
19	.60	3.10	.59	4.17	.58	3.54	.57	4.35	.57	4.63	.56	\$ 4.85
20	.61	4.12	.61	5.55	.60	5.01	.58	6.28	.58	6.77	.57	7.20
21	.62	5.31	.62	7.17	.61	6.27	.60	8.53	.59	9.26	.59	9.92
22	.64	6.68	.63	9.05	.62	8.73	.61	11.32	.60	12.34	.60	13.03
23	.65	8.17	.64	11.09	.62	11.04	.62	14.37	.61	15.70	.61	16.81
24	.66	9.78	.65	13.18	.64	13.61	.63	17.77	.63	19.63	.62	21.38
25	.67	11.38	.67	15.28	.65	16.07	.64	21.36	.64	23.56	.63	25.48
26	.68	13.04	.68	17.52	.66	18.75	.66	24.79	.65	27.52	.64	29.94
27	.70	14.74	.69	19.63	.67	21.41	.67	28.37	.66	31.43	.65	34.37
28	.71	16.40	.70	22.27	.69	24.13	.68	32.23	.67	35.42	.66	38.90
29	.72	18.49	.71	24.81	.70	27.17	.69	35.80	.69	39.99	.68	43.59
30	.73	20.77	.73	27.46	.71	30.37	.70	40.01	.69	44.80	.69	48.97
31	.74	23.06	.74	30.74	.72	33.69	.72	44.38	.71	49.81	.70	54.58
32	.76	25.45	.75	33.91	.73	37.69	.73	49.47	.72	55.56	.71	60.49
33	.77	27.94	.76	37.50	.75	41.61	.74	54.79	.73	61.09	.72	67.15
34	.78	30.54	.77	41.24	.76	45.71	.75	60.36	.74	67.35	.74	74.13
35	.79	33.53	.79	45.14	.77	50.53	.76	66.17	.75	74.45	.75	81.42
					.78	54.99	.78	72.78	.77	81.30	.76	89.58

Table 47. — White oak; butt log grade 4

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16		24		32		40		48		56	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	.40	\$-1.19	.40	—	.40	—	.40	—	.40	—	.40	—
12	.40	-1.29	.40	—	.40	—	.40	—	.40	—	.40	—
13	.40	-1.39	.40	—	.40	—	.40	—	.40	—	.40	—
14	.40	-1.45	.40	—	.40	—	.40	—	.40	—	.40	—
15	.40	-1.49	.40	—	.40	—	.40	—	.40	—	.40	—
16	.40	-1.47	.40	—	.40	—	.40	—	.40	—	.40	—
17	.40	-1.40	.40	—	.40	—	.40	—	.40	—	.40	—
18	.40	-1.31	.40	—	.40	—	.40	—	.40	—	.40	—
19	.40	-1.14	.40	—	.40	—	.40	—	.40	—	.40	—
20	.40	— .91	.40	—	.40	—	.40	—	.40	—	.40	—
21	.40	— .60	.40	—	.40	—	.40	—	.40	—	.40	—
22	.40	— .21	.40	—	.40	—	.40	—	.40	—	.40	—
23	.40	.27	.40	\$ 0.38	.40	\$ 0.48	.40	\$ 0.56	.40	\$ 0.65	.40	\$ 0.82
24	.40	.63	.40	.86	.40	1.07	.40	1.27	.40	1.49	.40	1.85
25	.40	.92	.40	1.26	.40	1.57	.40	1.86	.40	2.16	.40	2.71
26	.40	1.12	.40	1.54	.40	1.91	.40	2.27	.40	2.62	.40	3.30
27	.40	1.28	.40	1.74	.40	2.17	.40	2.57	.40	3.00	.40	3.75
28	.40	1.41	.40	1.94	.40	2.41	.40	2.83	.40	3.28	.40	4.13
29	.40	1.57	.40	2.14	.40	2.66	.40	3.15	.40	3.61	.40	4.56
30	.40	1.72	.40	2.31	.40	2.88	.40	3.40	.40	3.91	.40	4.96
31	.40	1.87	.40	2.53	.40	3.15	.40	3.71	.40	4.26	.40	5.37
32	.40	2.03	.40	2.74	.40	3.40	.40	4.01	.40	4.61	.40	5.82
33	.40	2.18	.40	2.96	.40	3.66	.40	4.32	.40	4.97	.40	6.28
34	.40	2.34	.40	3.20	.40	3.97	.40	4.67	.40	5.34	.40	6.75
35	.40	2.52	.40	3.43	.40	4.24	.40	4.99	.40	5.75	.40	7.27

Table 48. — Yellow-poplar; butt log grade I

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)																						
	16			24			32			40			48			56			64				
	TQI	TVCS		TQI	TVCS		TQI	TVCS		TQI	TVCS		TQI	TVCS		TQI	TVCS		TQI	TVCS		TQI	TVCS
16	0.75	\$ 5.97		0.74	\$ 8.19		0.73	\$ 9.83		0.73	\$ 11.40		0.72	\$ 12.94		0.71	\$ 14.05		0.71	\$ 14.05		0.71	\$ 14.80
17	.76	7.27		.76	10.05		.75	12.36		.74	14.28		.74	16.07		.73	17.61		.73	17.61		.72	18.69
18	.78	8.97		.77	12.28		.76	15.09		.76	17.54		.75	19.84		.74	21.91		.74	21.91		.74	23.90
19	.79	10.83		.79	14.87		.78	18.29		.77	21.32		.77	24.04		.76	26.60		.76	26.60		.75	29.05
20	.81	12.93		.80	17.68		.80	21.78		.79	25.45		.78	28.64		.78	31.72		.77	34.68		.77	34.68
21	.82	15.28		.82	20.89		.81	25.79		.80	30.23		.80	34.37		.79	38.01		.79	38.01		.78	40.79
22	.84	17.90		.83	24.51		.83	30.20		.82	35.39		.81	40.19		.81	44.44		.80	48.17		.80	48.17
23	.85	20.63		.85	28.24		.84	34.95		.83	40.96		.83	46.45		.82	51.80		.82	56.98		.82	56.98
24	.87	23.79		.86	32.28		.86	39.64		.85	46.45		.84	53.53		.84	59.53		.83	64.92		.83	64.92
25	.89	26.92		.88	36.39		.87	44.97		.87	52.48		.86	60.27		.85	67.40		.85	73.89		.85	73.89
26	.90	30.28		.89	40.93		.89	50.34		.88	59.04		.87	67.53		.87	75.34		.86	82.94		.86	82.94
27	.92	33.72		.91	45.17		.90	55.85		.90	65.28		.89	75.48		.88	83.47		.88	92.23		.88	92.23
28	.93	37.06		.93	50.59		.92	62.04		.91	72.21		.91	82.66		.90	92.86		.89	101.82		.89	101.82
29	.95	41.29		.94	55.68		.93	68.48		.93	80.48		.92	91.16		.91	102.63		.91	112.81		.91	112.81
30	.96	45.89		.96	60.94		.95	75.14		.94	87.95		.94	99.94		.93	112.73		.93	124.18		.92	124.18
31	.98	50.43		.97	67.53		.97	83.16		.96	96.81		.96	110.16		.95	124.31		.94	135.99		.94	135.99
32	.99	55.13		.99	73.78		.98	90.90		.97	105.98		.97	120.74		.96	135.19		.95	149.33		.95	149.33
33	1.01	59.99		1.00	80.83		1.00	98.91		.99	115.47		.98	131.70		.98	147.59		.97	163.15		.97	163.15
34	1.03	65.01		1.02	88.12		1.01	108.39		1.01	126.48		1.00	143.03		.99	161.59		.99	177.45		.99	177.45
35	1.04	70.82		1.03	95.66		1.03	116.96		1.02	136.65		1.01	155.95		1.01	174.88		1.00	193.43		1.00	193.43

Table 49. — Yellow-poplar; butt log grade 2

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16		24		32		40		48		56	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
14	0.70	\$ 3.57	0.68	\$ 4.45	0.65	\$ 5.01	0.62	\$ 5.07	0.59	—	—	—
15	.71	4.49	.68	5.65	.66	6.32	.63	6.54	.60	—	0.57	—
16	.72	5.51	.69	7.03	.67	7.76	.64	8.19	.61	\$ 8.34	.58	—
17	.73	6.63	.70	8.55	.67	9.74	.65	10.32	.62	10.52	.59	—
18	.74	8.08	.71	10.37	.68	11.86	.66	12.73	.63	13.15	.60	—
19	.75	9.65	.72	12.47	.69	14.34	.66	15.53	.64	16.12	\$ 16.24	—
20	.76	11.42	.73	14.74	.70	17.05	.67	18.59	.65	19.37	.62	19.69
21	.76	13.38	.74	17.33	.71	20.16	.68	22.14	.65	23.44	.63	23.94
22	.77	15.57	.75	20.24	.72	23.57	.69	25.99	.66	27.60	.64	28.35
23	.78	17.82	.75	23.22	.73	27.25	.70	30.14	.67	32.11	.64	33.41
24	.79	20.41	.76	26.40	.74	30.79	.71	34.11	.68	37.04	.65	38.57
25	.80	22.91	.77	29.57	.74	34.76	.72	38.45	.69	41.67	.66	43.74
26	.81	25.57	.78	33.02	.75	38.69	.73	43.06	.70	46.55	.67	48.83
27	.82	28.25	.79	36.18	.76	42.65	.73	47.37	.71	51.83	.68	53.98
28	.83	30.80	.80	40.24	.77	47.09	.74	52.13	.72	56.53	.69	59.90
29	.84	31.06	.81	43.99	.78	51.68	.75	57.81	.72	62.11	.70	66.04
30	.84	37.58	.82	47.84	.79	56.37	.76	62.87	.73	67.83	.71	72.35
31	.85	41.01	.83	52.68	.80	62.05	.77	68.88	.74	74.49	.71	79.58
32	.86	44.54	.83	57.20	.81	67.46	.78	75.07	.75	81.36	.72	86.34
33	.87	48.15	.84	62.30	.82	73.03	.79	81.44	.76	88.44	.73	94.04
34	.88	51.86	.85	67.55	.82	79.64	.80	88.84	.77	95.75	.74	102.74
35	.89	56.16	.86	72.93	.83	85.53	.81	95.60	.78	104.07	.75	110.95
												116.24
												\$ 34.06
												39.14
												44.74
												50.28
												55.89
												61.64
												68.23
												75.01
												82.06
												90.01
												98.24
												106.75
												116.24

Table 50. — Yellow-poplar; butt log grade 3

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)											
	16		24		32		40		48		56	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.50	\$ 0.21	0.49	—	—	—	—	—	—	—	—	—
12	.51	.47	.50	—	—	—	—	—	—	—	—	—
13	.52	.81	.51	—	—	—	—	—	—	—	—	—
14	.53	1.24	.52	—	—	—	—	—	—	—	—	—
15	.54	1.80	.53	—	—	—	—	—	—	—	—	—
16	.55	2.45	.54	—	—	—	—	—	—	—	—	—
17	.56	3.20	.55	—	—	—	—	—	—	—	—	—
18	.57	4.17	.56	—	—	—	—	—	—	—	—	—
19	.58	5.26	.57	—	—	—	—	—	—	—	—	—
20	.59	6.53	.58	—	—	—	—	—	—	—	—	—
21	.60	7.97	.59	—	—	—	—	—	—	—	—	—
22	.61	9.60	.60	—	—	—	—	—	—	—	—	—
23	.62	11.35	.61	—	—	—	—	—	—	—	—	—
24	.62	13.27	.62	—	—	—	—	—	—	—	—	—
25	.63	15.16	.63	—	—	—	—	—	—	—	—	—
26	.64	17.14	.63	—	—	—	—	—	—	—	—	—
27	.65	19.16	.64	—	—	—	—	—	—	—	—	—
28	.66	21.11	.65	—	—	—	—	—	—	—	—	—
29	.67	23.57	.66	—	—	—	—	—	—	—	—	—
30	.68	26.25	.67	—	—	—	—	—	—	—	—	—
31	.69	28.90	.68	—	—	—	—	—	—	—	—	—
32	.70	31.65	.69	—	—	—	—	—	—	—	—	—
33	.71	34.50	.70	—	—	—	—	—	—	—	—	—
34	.72	37.45	.71	—	—	—	—	—	—	—	—	—
35	.73	40.86	.72	—	—	—	—	—	—	—	—	—

Table 51. — Yellow-poplar; butt log grade 4

Dbh (inches)	Merchantable height to an 8-inch dib top (feet)													
	16		24		32		40		48		56		64	
	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS	TQI	TVCS
11	0.40	\$-0.62	0.40	—	0.40	—	0.40	—	0.40	—	0.40	—	0.40	—
12	.40	— .61	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
13	.40	— .58	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
14	.40	— .50	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
15	.40	— .38	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
16	.40	— .21	.40	—	.40	—	.40	—	.40	—	.40	—	.40	—
17	.40	.02	.40	\$ 0.03	.40	\$ 0.04	.40	\$ 0.04	.40	\$ 0.05	.40	\$ 0.05	.40	\$ 0.06
18	.40	.31	.40	.44	.40	.55	.40	.65	.40	.75	.40	.84	.40	.93
19	.40	.68	.40	.95	.40	1.19	.40	1.41	.40	1.62	.40	1.82	.40	2.02
20	.40	1.13	.40	1.57	.40	1.97	.40	2.33	.40	2.67	.40	3.00	.40	3.33
21	.40	1.67	.40	2.31	.40	2.90	.40	3.44	.40	3.97	.40	4.46	.40	4.86
22	.40	2.30	.40	3.19	.40	3.98	.40	4.73	.40	5.44	.40	6.10	.40	6.71
23	.40	3.01	.40	4.17	.40	5.23	.40	6.20	.40	7.13	.40	8.05	.40	8.98
24	.40	3.65	.40	5.02	.40	6.23	.40	7.39	.40	8.63	.40	9.71	.40	10.73
25	.40	4.22	.40	5.77	.40	7.21	.40	8.52	.40	9.90	.40	11.21	.40	12.43
26	.40	4.72	.40	6.46	.40	8.03	.40	9.53	.40	11.02	.40	12.44	.40	13.86
27	.40	5.18	.40	7.02	.40	8.77	.40	10.37	.40	12.12	.40	13.56	.40	15.15
28	.40	5.59	.40	7.70	.40	9.55	.40	11.23	.40	13.00	.40	14.77	.40	16.37
29	.40	6.10	.40	8.32	.40	10.34	.40	12.27	.40	14.05	.40	15.99	.40	17.76
30	.40	6.64	.40	8.91	.40	11.10	.40	13.12	.40	15.07	.40	17.17	.40	19.12
31	.40	7.15	.40	9.67	.40	12.03	.40	14.15	.40	16.26	.40	18.54	.40	20.49
32	.40	7.67	.40	10.36	.40	12.88	.40	15.17	.40	17.45	.40	19.73	.40	22.02
33	.40	8.18	.40	11.12	.40	13.74	.40	16.20	.40	18.65	.40	21.10	.40	23.56
34	.40	8.70	.40	11.90	.40	14.77	.40	17.39	.40	19.86	.40	22.65	.40	25.11
35	.40	9.30	.40	12.67	.40	15.64	.40	18.43	.40	21.23	.40	24.03	.40	26.83

Table 52.—Conversion costs for hardwood trees

Dbh (inches)	Cost per M board feet		
	\$60.00 level	\$70.00 level	\$80.00 level
11	\$70.84	\$80.84	\$90.84
12	68.67	78.67	88.67
13	66.50	76.50	86.50
14	64.34	74.34	84.34
15	62.17	72.17	82.17
16	60.00	70.00	80.00
17	57.83	67.83	77.83
18	55.67	65.67	75.67
19	53.50	63.50	73.50
20	51.33	61.33	71.33
21	49.17	59.17	69.17
22	47.00	57.00	67.00
23	44.80	54.80	64.80
24	43.50	53.50	63.50
25	42.65	52.65	62.65
26	42.25	52.25	62.25
27	42.05	52.05	62.05
28	41.95	51.95	61.95
29	41.85	51.85	61.85
30	41.80	51.80	61.80
31	41.74	51.74	61.74
32	41.69	51.69	61.69
33	41.64	51.64	61.64
34	41.59	51.59	61.59
35	41.54	51.54	61.54

Table 53.—Gross volume in board feet
(International 1/4-inch rule)

Dbh (inches)	Merchantable height in feet							
	8	16	24	32	40	48	56	64
8	15	24	35	46	—	—	—	—
9	18	32	44	54	63	—	—	—
10	21	39	54	68	76	81	—	—
11	25	48	68	82	91	98	—	—
12	30	57	80	100	114	124	130	—
13	36	68	96	118	134	149	161	171
14	42	79	110	140	163	184	194	205
15	50	92	128	160	188	214	232	250
16	59	105	147	180	213	247	274	295
17	66	118	166	208	245	281	314	340
18	74	135	188	235	278	320	360	400
19	83	152	212	265	314	360	405	450
20	92	170	236	295	350	400	450	500
21	102	189	262	328	390	450	505	550
22	112	209	290	362	430	495	555	610
23	122	228	316	396	470	540	610	680
24	133	252	346	430	510	595	670	740
25	145	275	376	470	555	645	730	810
26	158	300	410	510	605	700	790	880
27	172	325	440	550	650	760	850	950
28	187	348	480	595	700	810	920	1,020
29	203	378	515	640	760	870	990	1,100
30	220	410	550	685	810	930	1,060	1,180
31	237	440	595	740	870	1,000	1,140	1,260
32	254	470	635	790	930	1,070	1,210	1,350
33	270	500	680	840	990	1,140	1,290	1,440
34	291	530	725	900	1,060	1,210	1,380	1,530
35	311	565	770	950	1,120	1,290	1,460	1,630

Source: Composite volume tables for timber and their application in the Lake States, by S. R. Gevorkiantz and L. P. Olsen. USDA Tech. Bull. 1104, 1955.

APPENDIX B

COMPUTER PROGRAM AND DOCUMENTATION

Tree value conversion standards may be computed or adjusted very easily by computer using the program given here. This program, written in Fortran IV, was developed primarily for simplicity of use. It is quite flexible in that (1) you can punch the data deck in any format you want and use any two-digit species code; (2) you have the option of using whatever conversion costs and lumber prices best suit your particular conditions; and (3) you have a variety of options for different printouts.

The program was tested on an IBM 370/158; however, it should work on most computers that accept standard Fortran. The Job Control Language (JCL) cards are not listed here with the program because they differ for different computer installations. Complete instructions for the user are included as comment cards.

The program was tested with data from a 1-acre sawtimber stand of upland oak in southeastern Ohio. Figures 2 through 8 illustrate the type of computer output one would get if he ordered the conversion value of sawtimber printed by species, grade, and dbh class. This information is given in figure 6. Figures 4 and 5 follow the same general form; Figure 4 gives the number of sawtimber trees while Figure 5 illustrates the board-foot volume.

Figure 7 illustrates the form of summary that can be printed when the user requests it. This is a summary over all dbh classes of the number of trees, board-foot volume, and conversion value by grade and species. Figure 8 is similar except that the summary is over all species and shows the same type of information by 2-inch diameter classes.

Figure 2 illustrates part of the listing of individual sawtimber trees from our 1-acre test stand. For each sawtimber tree in the stand, it shows both measured and computed information, such as TQI, board-foot volume, and TVCS. The user may suppress the printing of this list if he so desires.

Figure 3 shows the list of individual trees

in the test stand that did not qualify for inclusion in the sawtimber list. There are four reasons why individual trees may appear on this list: (1) tree diameter is less than sawtimber size (11.0 inches dbh); (2) no merchantable height is recorded for the tree or its merchantable height exceeds 96 feet, which may indicate a recording error; (3) no log grade is assigned to the tree or it is not one of the standard log grades 1, 2, or 3; or (4) the tree species is not one of the 12 species for which we have developed tree value conversion standards. This listing of excluded trees could be useful in editing the data for possible punching or recording errors. Printing of this list may also be suppressed if the user so desires.

There is one minor discrepancy between the values one obtains with the computer and those given by the desk calculator and table. This is because different methods were used to determine the board-foot volume of the trees. With the desk calculator, board-foot volume is determined by 1-inch dbh classes and 8-foot log classes, using the composite gross volume table (International 1/4-inch rule) by Gevorkiantz and Olsen (1955). In the computer program we use a volume equation derived by Beers (1964). The equation is more flexible and better suited to computer computations, and it has the added advantage that dbh may be specified to the nearest 0.1 inch, rather than to the nearest inch. In his paper Beers discusses the size of the differences between the volumes in the original table and those given by his equation.

TQI values and conversion costs are also computed to the nearest 0.1 inch dbh rather than by 1-inch classes as they were in the tables.

As part of our test, we compared board-foot volume and tree value conversion estimates given by the desk calculator with those given by the computer program, using data from the 1-acre test stand. Total board-foot volume of sawtimber, using the composite

table, was 11,147 board feet, compared to 11,124 board feet by equation; a difference of only 0.2 percent. The desk calculator and table gave a total tree value conversion of \$442.21, compared to \$440.97 for the computer program; a difference of \$1.24 which is 0.3 percent. Estimates for individual trees will differ more, of course, but generally the

total stand volumes and value conversions obtained by the two methods are very close.

NOTE: The program reproduced here is available on punched cards from the authors. Address requests to Project 4202, Northeastern Forest Experiment Station, P.O. Box 365, Delaware, Ohio 43015.

PROGRAM TVCS --- TREE VALUE CONVERSION STANDARDS

PURPOSE :

THIS PROGRAM IS DESIGNED TO COMPUTE AND TABULATE THE INDIVIDUAL SAWTIMBER VOLUME AND VALUE FOR EACH OF 12 TREE SPECIES. THE BASIC CONCEPTS AND TECHNIQUES USED IN DEVELOPING THE TREE VALUE CONVERSION STANDARDS REPORTED IN THIS RESEARCH PAPER ARE USED IN THE COMPUTER PROGRAM, AND THE USER SHOULD BE FAMILAR WITH THESE TECHNIQUES. THE SAME TECHNIQUES PROBABLY COULD BE APPLIED TO OTHER HARDWOOD SPECIES, BUT THE BASIC RESEARCH NEEDED TO DEVELOP THE REGRESSION COEFFICIENTS IN THE LOG EQUATIONS HAS NOT BEEN COMPLETED. THE USER HAS OPTIONS TO USE THE STANDARD CONVERSION COSTS AND PRICES OF NO 1 COMMON LBR AS GIVEN IN THIS PAPER, OR HE MAY USE HIS OWN CONVERSION COSTS AND LBR PRICE DATA.

TYPE OF STAND DATA NECESSARY FOR PROGRAM OPERATION:

THE USER NEEDS A DECK OF DATA CARDS WITH THE FOLLOWING DATA PUNCHED ON A CARD FOR EACH SAWTIMBER TREE IN THE STAND:

1. SPECIES CODE NUMBER

SPECIES MAY BE CODED USING ANY TWO-DIGIT NUMBER FROM 1 THRU 99. SEE INSTRUCTIONS UNDER USER-SPECIFIED OPTIONS CARD 2.

2. DIAMETER BREAST HEIGHT

IT IS PREFERABLE TO RECORD DIAMETER TO THE NEAREST 0.1 INCH. HOWEVER, THE NEAREST ONE OR TWO INCHES WOULD NOT AFFECT THE OPERATION OF THE PROGRAM. THE PROGRAM WILL LIST TREES SMALLER THAN 11 INCHES DBH IN A DIFFERENT LIST FROM THE SAWTIMBER TREES.

3. U.S. FOREST SERVICE STANDARD LOG GRADES FOR HARDWOOD FACTORY LUMBER.

BUTT LOG GRADES 1, 2, OR 3. ALL TREES WITH LOG GRADES OTHER THAN THESE WILL BE LISTED IN A DIFFERENT LIST FROM THE SAWTIMBER TREES.

4. MERCHANTABLE HEIGHT TO AN 8-INCH VARIABLE TOP DIAMETER INSIDE BARK, IN FEET.

MERCHANTABLE HEIGHT IS RECORDED IN FEET, AND USUALLY THIS HEIGHT IS RELATED TO MULTIPLES OF 8 FOOT LOG LENGTHS. I.E. 16, 24, 32, 40, 48, 56 ETC. HOWEVER, THE PROGRAM IS WRITTEN TO ACCEPT AND USE ANY MERCHANTABLE HEIGHT BETWEEN 1 AND 96 FEET. TREES THAT HAVE LESS THAN 1 FOOT OR MORE THAN 96 FEET MERCHANTABLE HEIGHT WILL BE LISTED SEPARATELY FROM THE SAWTIMBER TREES.

IN CASE DATA ARE NOT ALREADY PUNCHED WE SUGGEST PUNCHING AS

SHOWN BELOW UNDER CARD 1 OF THE USER-SPECIFIED OPTIONS SECTION.
THIS SECTION ALSO GIVES INSTRUCTIONS ON WHAT TO DO IF DATA ARE
ALREADY PUNCHED IN SOME DIFFERENT FORMAT.

USER-SPECIFIED OPTIONS:

ALL THE INSTRUCTIONS FOR USING THIS PROGRAM ARE INCLUDED HERE.
SEVEN CARDS PRECEEDING THE STAND DATA DECK ARE MANDATORY. THEY ARE
USED TO SPECIFY THE VARIOUS OPTIONS AND ALL SEVEN CARDS MUST BE
PRESENT, ALTHOUGH ALL EXCEPT THE FORMAT CARD (CARD NO 1) COULD
BE BLANK.

CARD 1 (FORMAT CARD THAT SPECIFIES THE FORMAT OF THE STAND DATA
DECK TO BE READ). THIS CARD IS NEVER BLANK.

TO ILLUSTRATE HOW THE FORMAT CARD IS PUNCHED WE ARE SHOWING
BELOW AN EXAMPLE OF HOW THE INDIVIDUAL TREE INFORMATION COULD
BE PUNCHED ON THE DATA CARDS AND THE APPROPRIATE FORMAT CARD
ASSOCIATED WITH THIS PARTICULAR DATA SET-UP.

COL

1-3 IDENT --- TREE NUMBER, IF TREES HAVE NO NUMBER OR IDENTIFI-
CATION, THE PROGRAM ASSIGNS A NUMBER IN THE ORDER
THE DATA CARDS ARE READ.

4-5 ISP --- SPECIES CODE NUMBER

01	WHITE ASH	07	SUGAR MAPLE
02	BEECH	08	BLACK OAK
03	BLACK CHERRY	09	CHESTNUT OAK
04	ELM	10	RED OAK
05	HICKORY	11	WHITE OAK
06	RED MAPLE	12	YELLOW POPLAR

6-9 DBH --- TREE DIAMETER BREAST HEIGHT

10 IGRAD--- FOREST SERVICE STANDARD LOG GRADES FOR HARDWOOD
FACTORY LUMBER, BUTT LOG GRADES 1, 2, OR 3.

11-12 HT --- MERCHANTABLE HEIGHT IN FEET TO AN 8-INCH
VARIABLE TOP DIAMETER INSIDE BARK.

IF THE ORDER OF THE VARIABLES READ IN IS THE SAME AS ABOVE AND
THE VARIABLES ARE LOCATED IN THE COLUMNS INDICATED, THEN THE
CORRECT FORMAT CARD (DATA CARD 1) IS:

(I3,I2,F4.1,I1,F2.0)

IF THE ORDER OF VARIABLES READ IS THE SAME AS ABOVE BUT THE DATA
ARE IN DIFFERENT COLUMNS, THEN YOU MUST CHANGE DATA CARD 1 TO
REFLECT THE CORRECT FORMAT.

IF THE NORMAL ORDER OF VARIABLES ABOVE IS NOT USED, THEN YOU MUST:
(1) CHANGE THE ORDER OF VARIABLES ON THE DATA READ STATEMENT LABELED
NO 50 IN THE PROGRAM, AND ALSO (2) SPECIFY THE CORRECT FORMAT ON
DATA CARD 1.

\

CARD NO 2 (TRANSFORMATION OF SPECIES CODES)

IF THE SPECIES CODES IN YOUR DATA DECK AGREE EXACTLY WITH OUR SPECIES CODES INDICATED ABOVE, THEN DATA CARD 2 IS BLANK.

IF YOUR SPECIES CODES ARE DIFFERENT YOU MUST PUNCH A 1 IN COL 1 ON CARD 2, AND PUNCH THE TWO-DIGIT CODE YOU USE FOR WHITE ASH IN COLS 5 AND 6, PUNCH YOUR CODE FOR BEECH IN COLS 7 AND 8, AND CONTINUE FOR ALL TWELVE SPECIES. CARD 2 IS PUNCHED FOLLOWING FORMAT 501. ANY SPECIES EXCEPT THOSE ABOVE WILL AUTOMATICALLY BE ASSIGNED TO THE MISC GROUP AND LISTED SEPARATELY FROM THE SAWTIMBER STAND.

CARD NO 3 (LBR PRICE CONTROL CARD)

IF YOU WISH TO USE THE LBR PRICES LISTED IN TABLE 2 OF THIS PAPER, CARD 3 IS BLANK, OTHERWISE PUNCH A 1 IN COL 1 AND ENTER THE NEW PRICE DATA ACCORDING TO FORMAT 505. THE ORDER OF THE LBR PRICES LISTED ON CARD 3 IS ASSOCIATED WITH THE ORDER OF SPECIES.

CARD NOS 4, 5, AND 6 (CONVERSION COST OPTION CARDS)

IF YOU WISH TO USE OUR STANDARD CONVERSION COSTS AT THE \$70.00 LEVEL AS GIVEN IN TABLE 52, ALL THREE CARDS ARE BLANK.

IF YOU WISH TO CHANGE THE CONVERSION COST LEVEL, SAY, FROM \$70.00 TO \$80.00, BUT MAINTAIN THE SAME GENERAL CURVE FORM IMPLICIT IN TABLE 52, THEN PUNCH A 1 IN COL 1 DATA CARD 4 AND THE NEW CONVERSION COST FOR THE 16-INCH DBH CLASS (\$80.00) IN COLS 5-10 DATA CARD 4 (RIGHT-HAND ADJUSTED), AND LEAVE CARDS 5 AND 6 BLANK.

IF YOU WISH TO CHANGE THE CURVE FORM OR USE YOUR OWN SET OF DIFFERENT CONVERSION COSTS, PUNCH A 2 IN COL 1 CARD 4, THEN THE 26 NEW CONVERSION COSTS STARTING WITH THE CONVERSION COST FOR THE 11-INCH CLASS IN COLS 21-26 AND CONTINUING THROUGH THE 36-INCH CLASS BY ONE-INCH CLASSES. HENCE, YOU WILL BE PUNCHING THE CONVERSION COSTS FOR THE 11- THRU 18-INCH DBH CLASSES ON CARD 4, THE 19- THRU 30-INCH CLASSES ON CARD 5, AND THE 31- THRU 36-INCH CLASSES ON CARD 6. SEE FORMAT 510.

CARD NO 7 (OUTPUT CONTROL CARD)

THERE ARE 7 TYPES OF OUTPUT TABLES AVAILABLE. IF YOU WISH ANY OF THESE TABLES, PUNCH A 1 IN THE APPROPRIATE COLUMN AS SHOWN BELOW. IF YOU DO NOT WISH A PARTICULAR TABLE, LEAVE THE APPROPRIATE COLUMN BLANK.

NOTE -- REGARDLESS OF THE CODE PUNCHED IN COL 7 THE USER WILL ALWAYS GET A STATEMENT INDICATING THE TOTAL NUMBER OF TREES AND THE NUMBER OF TREES EXCLUDED FROM THE SAWTIMBER LIST. ALSO HE SHOULD ALWAYS GET A TABLE OF CONVERSION COSTS AND LBR PRICES USED IN THAT PARTICULAR COMPUTER RUN. THE LATTER TWO TABLES ARE OMITTED IN THE FOLLOWING COMPUTER OUTPUT BECAUSE THEY ARE ILLUSTRATED IN TABLES 2 AND 52.

COL	TYPE OF TABLE
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C      ---
C      1      NUMBER OF SAWTIMBER TREES
C      2      BOARD FOOT VOLUME OF SAWTIMBER
C      3      VALUE OF SAWTIMBER TREES
C      4      SUMMARY OF SAWTIMBER STAND BY SPECIES
C              AND GRADE
C      5      SUMMARY OF SAWTIMBER STAND BY DBH AND GRADE
C      6      LIST OF SAWTIMBER TREES SHOWING THE TREE
C              QUALITY INDEX, BOARD FOOT VOLUME, CUBIC
C              FEET, CORDS, AND TREE VALUE.
C      7      LIST OF TREES EXCLUDED FROM SAWTIMBER LIST
C              BECAUSE OF SIZE, PECIES, LOG GRADE, OR
C              MERCH HT.
C
C      *****
C
C      THIS COMPLETES THE LIST OF USER INSTRUCTIONS.  REMEMBER ALL
C      SEVEN OPTION CARDS MUST PRECEED THE DATA DECK
C
C      *****
C
C      DIMENSION ALPHA(36),BETA(36),GAMMA(36),CCOST(26),NUM(13,12,3),
C      1VALUE(13,12,3),NOTOT(12),TOTVAL(12),DUMMY(12),USERCC(26),FMT(20),
C      2NOXSP(12),VALXSP(12),ISMAIL(500,3),SMALL(500,2),PRICE(12),
C      3ISPCD(12)
C      INTEGER VOLUME(13,12,3),TOTVOL(12),TOTBF,VOLXSP(12),OPT1,OPT2,OP3,
C      1SP(99)
C      REAL SPNAME*8(26),SPNAM*8(24)
C
C      LIST OF TREE SPECIES NAMES FOR WHICH WE HAVE DEVELOPED TREE VALUE
C      CONVERSION STANDARDS
C
C      DATA SPNAME/' WHITE','ASH      ',' BEE','CH      ',' BLACK '
C      1,'CHERRY ',' FL','LM      ',' HICK','ORY      ',' RED M'
C      2,'MAPLE   ',' SUGAR ','MAPLE  ',' BLACK','OAK      ',' CHESTN'
C      3,'UT OAK  ',' RED  ','OAK     ',' WHITE','OAK      ',' YELLOW '
C      4,'POPLAR  ',' MI','SC      '/'
C      DATA SPNAM/'WHITE ','ASH      ',' BEECH ','BLACK  ','
C      1'CHERRY ','ELM      ',' HICKORY ','RED     ','
C      2'MAPLE   ','SUGAR  ','MAPLE   ','BLACK  ','OAK     ','CHESTNUT',
C      3'OAK     ','RED     ','OAK     ','WHITE  ','OAK     ','YELLOW  ',
C      4'POPLAR  '/'
C
C      LIST OF STANDARD CONVERSION COSTS FROM TABLE 52 OF PAPER, USED IF
C      COL 1 CARD 4 IS BLANK OR ZERO. LIST STARTS WITH 11-INCH DBH CLASS
C      AND CONTINUES THRU THE 36-INCH CLASS. CONVERSION COSTS ARE IN
C      DOLLARS PER M BD FT.
C
C      DATA CCOST/80.84,78.67,76.50,74.34,72.17,70.00,67.83,
C      165.67,63.50,61.33,59.17,57.00,54.80,53.50,52.65,52.25,52.05,51.95,
C      251.85,51.80,51.74,51.69,51.64,51.59,51.54,51.49/
C
C      LIST OF STANDARD HARDWOOD LBR PRICES FROM TABLE 2 OF PAPER.
C      THESE PRICES ARE USED IF DATA CARD 3 IS BLANK. PRICES ARE FOR 4/4
C      INCH NO 1 COMMON LBR IN DOLLARS PER M.
C

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C      DATA PRICE/195.,142.,175.,145.,140.,190.,185.,155.,140.,155.,140.,
1170./
C
C      LIST OF REGRESSION COEFFICIENTS USED TO SOLVE FOR THE APPROPRIATE
C      TREE QUALITY INDEX
C      WHERE:
C      TQI = ALPHA + BETA*DBH + GAMMA*HT
C      THE FIRST THREE NUMBERS IN EACH LIST APPLY TO LOG GRADES 1, 2, AND
C      3, RESPECTIVELY FOR THE SPECIES 1 WHICH IS WHITE ASH, AND THE
C      PATTERN IS REPEATED FOR ALL TWELVE SPECIES.
C
C      DATA ALPHA/.52016,.42017,.19192,.63384,.56182,.43325,
1.62909,.41975,.20834,.70931,.51667,.43276,.57123,.51371,.45999,
2.54256,.70533,.46333,.59368,.43199,.36873,.79449,.52900,.55305,
3.85192,.55315,.46905,.69524,.59992,.53211,.56518,.33601,.38063,
4.51132,.63478,.41512/
C      DATA BETA/.02554,.02779,.01458,.01341,.00840,.00825,
1.02316,.02264,.02347,.01151,.01113,.00797,.01550,.00667,.00000,
2.02047,.00202,.00008,.02170,.01369,.00952,.01372,.00994,.00354,
3.00747,.00874,.00722,.01869,.01144,.00574,.02548,.02089,.01206,
4.01549,.00880,.00946/
C      DATA GAMMA/.00063,.00153,-.00666,.00383,.00267,.00169,
1.00319,.00227,.00083,.0043,.00186,-.00003,.00476,.00224,.00000,
2.00535,.00383,.00010,.00616,.00155,.00200,.00535,.00150,.00157,
3.00406,.00181,.00061,.00418,.00242,.00189,.00464,.00177,.00065,
4.00082,.00344,.00110/
C
C      LIST OF FORMATS FOR INPUT OF DATA
C      500 FORMAT(20A4)
C      501 FORMAT(I1,3X,I2I2)
C      505 FORMAT(I1,I2F4.0)
C      510 FORMAT(I1,3X,F6.2,10X,8F6.2/12F6.2/6F6.2)
C      515 FORMAT(7I1)
C
C      LIST OF FORMATS FOR OUTPUT OF RESULTS AND TABLES
C      600 FORMAT('1',40X,'SAMPLE LIST OF SAWTIMBER TREES LARGER THAN 11 INCH
1ES DBH'//) '1',3X,'TREE',8X,'SPECIES',8X,'DBH',3X,'CONVERSION',6X,
2'PRICE',4X,'GRADE',3X,'MERCH',3X,'TREE QUALITY',2X,'CUBIC',3X,'COR
3DS',3X,'RD FT',6X,'VALUE'/'1',3X,'NUMBER',27X,'COST PER M',4X,'#1
4C LBR',12X,'HT',8X,'INDEX',6X,'FEET'/'1',52X,'PER M'/'1',130('1'))
C      610 FORMAT('1',2X,'OUT OF A TOTAL OF '1,I5,' TREES, THERE WERE '1,I5,'
1TREES EXCLUDED FROM THE SAWTIMBER LIST BECAUSE OF'/'1',2X,'SMALL D
2DBH, NO STANDARD LOG GRADE, NO MERCHANTABLE HEIGHT, OR SPECIES CODE
3 OUTSIDE OF ACCEPTABLE SPECIES LIST'//)
C      611 .FORMAT('0',14X,'TREES EXCLUDED FROM THE SAWTIMBER LIST:'
1//) '0',10X,'TREE NUMBER',10X,'SPECIES',10X,'DBH',10X,'GRADE',10X,'M
2ERCH HEIGHT'//)
C      615 FORMAT('1',13X,I5,8X,2A8,5X,F4.1,12X,I1,20X,F3.0)
C      620 FORMAT('1',20X,'TABLE OF CONVERSION COSTS AND PRICES OF NO 1 COMMON
1N LBR USED IN THIS OUTPUT'//) '1',20X,'CONVERSION COST PER M',45X,'P
2RICE OF #1 COMMON PER M'/'1',13X,'DBH',4X,'COST',10X,'DBH',4X,'COS
3T',37X,'SPECIES',13X,'PRICE'/'1',12X,'CLASS',16X,'CLASS'/'1',10X,4
40('1'),26X,38('1'))//)
C      625 FORMAT('1',4X,2(10X,I2,3X,F5.2),33X,2A8,8X,F6.2)
C      630 FORMAT('1',3X,I4,3X,2A8,3X,F4.1,3X,F7.2,8X,F7.2,5X,I1,5X,F4.0,6X,
1F8.5,2X,F7.1,2X,F6.2,2X,F7.1,3X,F8.2)

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635 FORMAT('1',30X,'NUMBER OF SAWTIMBER TREES OF EACH SPECIES, GRADE,
      2AND DBH CLASS')
640 FORMAT('0',130('*'))/' ',2X,'SPECIES',2X,'GRADE',35X,'DIAMETER CLAS
      1S'/' ',21X,'12',7X,'14',7X,'16',7X,'18',7X,'20',7X,'22',7X,'24',7X
      2,'26',7X,'28',7X,'30',7X,'32+',6X,'TOTAL'/' ',130('*'))
645 FORMAT('0',1X,A8,4X,'1',11(I9),I12)
650 FORMAT(' ',1X,A8,4X,'2',11(I9),I12)
655 FORMAT(' ',13X,'3',11(I9),I12)
665 FORMAT('0',130('*'))/' ',1X,'TOTAL',7X,'1',11(I9),I12/' ',13X,'2',
      11I9,I12/' ',13X,'3',11I9,I12/' ',130('*'))
670 FORMAT('0',1X,'GRAND TOTAL',2X,11I9,I12)
675 FORMAT('1',30X,'BOARD-FOOT VOLUME OF SAWTIMBER TREES BY SPECIES, G
      1RADE, AND DBH CLASS')
680 FORMAT('0',1X,A8,4X,'1',2X,11I9, I12/' ', 1X,A8,4X,'2',2X,11I9,
      1I12/' ',13X,'3',2X,11I9,I12)
686 FORMAT('0',130('*'))/' ',1X,'TOTAL',7X,'1',2X,11I9,I12/' ',13X,
      1'2',2X,11I9,I12/' ',13X,'3',2X,11I9,I12/' ',130('*'))
687 FORMAT('0',1X,'GRAND TOTAL',4X,11I9,I12)
688 FORMAT('1',30X,'VALUE OF SAWTIMBER TREES BY SPECIES, GRADE, AND DB
      1H CLASS')
689 FORMAT('0',1X,A8,4X,'1',2X,11F9.2,F12.2/' ',1X,A8,4X,'2',2X,11F9.2
      1,F12.2/' ',13X,'3',2X,11F9.2,F12.2)
691 FORMAT('0',130('*'))/' ',1X,'TOTAL',7X,'1',2X,11F9.2,F12.2/' ',13X
      1,'2',2X,11F9.2,F12.2/' ',13X,'3',2X,11F9.2,F12.2/' ',130('*'))
692 FORMAT('0',1X,'GRAND TOTAL',4X,11F9.2,F12.2)
693 FORMAT('1',57X,'SPECIES SUMMARY'/' ',21X,'NUMBER OF TREES, VOLUME
      1, AND VALUE OF SAWTIMBER (F ALL DBH CLASSES, BY SPECIES AND GRADE'
      2)
694 FORMAT('0',130('-'))/' ',1X,'SPECIES',4X,'*',3X,'NUMBER OF SAWTIMBE
      1R TREES',10X,'*',9X,'BOARD FOOT VOLUME',12X,'*',9X,'VALUE OF SAWTI
      2MBER',11X,'*')
695 FORMAT(' ',12X,'*',1X,3('GRADE GRADE GRADE TOTAL * ')
      1/' ',12X,'*',3X,2('1',9X,'2',9X,'3',14X,'*',3X),'1',9X,'2',9X,'3',
      214X,'*')/' ',130('-'))
696 FORMAT('0',1X,A8/' ',1X,A8,2X,4(I6,4X),4(I6,4X),F6.2,3(4X,F6.2))
697 FORMAT('0',130('*'))/'0',2X,'TOTAL',4X,4(I6,4X),4(I6,4X),F6.2, 3(
      14X,F6.2))
698 FORMAT('1',56X,'DIAMETER SUMMARY'/' ',22X,'NUMBER OF TREES, VOLUM
      1E, AND VALUE OF SAWTIMBER OF ALL SPECIES, BY DBH CLASS AND GRADE')
699 FORMAT('0',130('-'))/' ',1X,'DBH ',4X,'*',3X,'NUMBER OF SAWTIMBE
      1R TREES',10X,'*',9X,'BOARD FOOT VOLUME',12X,'*',9X,'VALUE OF SAWTI
      2MBER',11X,'*')
700 FORMAT('0',3X,12,6X,4(I6,4X),4(I6,4X), F6.2,3(4X,F6.2))

```

C
C

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      READ(5,500) (FMT(I),I=1,20)
      READ(5,501) OP3, (ISPCD(J),J=1,12)
      IF(OP3.EQ.0) GO TO 6
      DO 7 J=1,99
7 SP(J)=13
      DO 8 I=1,12
      K=ISPCD(I)
      SP(K)=I
6 READ(5,505) OPT1, (DUMMY(J),J=1,12)
      IF(OPT1.EQ.0) GO TO 10
      DO 9 J=1,12
9 PRICE(J)=DUMMY(J)
10 READ(5,510) OPT2,COST, (USERCC(J),J=1,26)
      IF(OPT2.EQ.0) GO TO 25
      IF(OPT2.EQ.1) GO TO 20
      DO 15 J=1,26
15 CCOST(J)=USERCC(J)

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      GO TO 25
20 DIFF=CCOST-70.00
   DO 18 J=1,26
18 CCOST(J)=CCOST(J)+DIFF
25 CONTINUE
   READ(5,515) ITAB1,ITAB2,ITAB3,ITAB4,ITAB5,ILIST,LSMT
   IF(ILIST.NE.0) WRITE(6,600)
   DO 30 J=1,12
   NOXSP(J)=0
   VOLXSP(J)=0
   VALXSP(J)=0.0
   NOTOT(J)=0
   TOTVOL(J)=0
   TOTVAL(J)=0.0
   DO 30 I=1,13
   DO 30 K=1,3
   NUM(I,J,K)=0
   VOLUME(I,J,K)=0
30 VALUE(I,J,K)=0.0
   ICOUNT=0
   TOTBF=0
   SUMVAL=0.0
   JJ=0
   JK=0
   GO TO 50
32 JK=JK+1
   ISMALL(JK,1)=IDENT
   ISMALL(JK,2)=ISP
   ISMALL(JK,3)=IGRAD
   SMALL(JK,1)=DBH
   SMALL(JK,2)=HT
   GO TO 50
34 WRITE(6,610) JJ,JK
   IF(LSMT.EQ.0) GO TO 35
   WRITE(6,611)
   DO 36 I=1,JK
   K=ISMALL(I,2)
36 WRITE(6,615) ISMALL(I,1), SPNAME(2*K-1),SPNAME(2*K),SMALL(I,1),
   ISMALL(I,3), SMALL(I,2)
35 WRITE(6,620)
   DO 37 I=1,12
   KK=I+10
   JK=KK+12
37 WRITE(6,625) KK,CCOST(I),JK,CCOST(I+12),SPNAME(2*I-1),SPNAME(2*I),
   PRICE(I)
   GO TO 58
50 READ(5,FMT,END=34) IDENT,ISP,DBH,IGRAD,HT
   IF(OP3.EQ.0) GO TO 53
   K=SP(ISP)
   ISP=K
53 JJ=JJ+1
   BFV=CORD*V3
   IF(IDENT.EQ.0) IDENT=JJ
   IF(HT.LT.1.0.OR.HT.GT.96.) GO TO 32
   IF(ISP.LT.1.OR.ISP.GT.12) GO TO 32
   V1=((DBH*DBH)*(DBH+190))/100000.
   V2=((HT*(168.-HT))/6400.)+(32./(100*HT))
   V3=475.+(3.*HT*HT)/128
   CORD=V1*V2
   CFV=92.*CORD
   IBFV=BFV+.5
   IDBH=DBH+.001

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DIA=IDBH
N=IDBH-10
IF(N.LT.1) GO TO 32
FRAC=DBH-DIA
DIFF=CCOST(N)-CCOST(N+1)
CONV=CCOST(N)-FRAC*DIFF
IF(IGRAD.LT.1.OR.IGRAD.GT.3) GO TO 32
K=ISP*3-3+IGRAD
TOI=BETA(K)*DBH-GAMMA(K)*H1+ALPHA(K)
VAL=(TOI*PRICE(ISP)-CONV)*BFV/1000.
IVAL=VAL*100+.5
VAL=IVAL/100.
J=(IDBH-9)/2
IF(J.GT.11) J=11
NUM(ISP,J,IGRAD)=NUM(ISP,J,IGRAD)+1
NUM(13,J,IGRAD)=NUM(13,J,IGRAD)+1
NUM(ISP,12,IGRAD)=NUM(ISP,12,IGRAD)+1
NUM(13,12,IGRAD)=NUM(13,12,IGRAD)+1
NOTOT(J)=NOTOT(J)+1
ICOUNT=ICOUNT+1
VOLUME(ISP,J,IGRAD)=VOLUME(ISP,J,IGRAD)+IBFV
VOLUME(13,J,IGRAD)=VOLUME(13,J,IGRAD)+IBFV
VOLUME(ISP,12,IGRAD)=VOLUME(ISP,12,IGRAD)+IBFV
VOLUME(13,12,IGRAD)=VOLUME(13,12,IGRAD)+IBFV
TOTVOL(J)=TOTVOL(J)+IBFV
TOTBF=TOTBF+IBFV
VALUE(ISP,J,IGRAD)=VALUE(ISP,J,IGRAD)+VAL
VALUE(13,J,IGRAD)=VALUE(13,J,IGRAD)+VAL
VALUE(ISP,12,IGRAD)=VALUE(ISP,12,IGRAD)+VAL
VALUE(13,12,IGRAD)=VALUE(13,12,IGRAD)+VAL
TOTVAL(J)=TOTVAL(J)+VAL
SUMVAL=SUMVAL+VAL
IF(ILIST.EQ.0) GO TO 50
WRITE(6,630) IDENT,SPNAME(2*ISP-1),SPNAME(2*ISP),DBH,CONV,PRICE(ISP),IGRAD,HT,TOI,CFV,CURD,BFV,VAL
GO TO 50
58 DO 56 I=1,12
DO 56 J=1,3
NOXSP(I)=NOXSP(I)+NUM(I,12,J)
VOLXSP(I)=VOLXSP(I)+VOLUME(I,12,J)
56 VALXSP(I)=VALXSP(I)+VALUE(I,12,J)
60 IF(ITAB1.LT.1) GO TO 70
WRITE(6,635)
WRITE(6,640)
DO 55 I=1,12
IF(NOXSP(I).EQ.0) GO TO 55
WRITE(6,645) SPNAM(2*I-1),(NUM(I,J,1),J=1,12)
WRITE(6,650) SPNAM(2*I),(NUM(I,J,2),J=1,12)
WRITE(6,655) (NUM(I,J,3),J=1,12)
55 CONTINUE
WRITE(6,665) (NUM(13,J,1),J=1,12),(NUM(13,K,2),K=1,12),(NUM(13,L,3),L=1,12)
WRITE(6,670) (NOTOT(J),J=1,11),ICOUNT
70 IF(ITAB2.LT.1) GO TO 80
WRITE(6,675)
WRITE(6,640)
DO 65 I=1,12
IF(NOXSP(I).EQ.0) GO TO 65
WRITE(6,680) SPNAM(2*I-1),(VOLUME(I,J,1),J=1,12),SPNAM(2*I),(VOLUME(I,K,2),K=1,12),(VOLUME(I,L,3),L=1,12)
65 CONTINUE
WRITE(6,686) (VOLUME(13,J,1),J=1,12),(VOLUME(13,K,2),K=1,12),(VOLUME(13,L,3),L=1,12)

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```

1ME(13,L,3),L=1,12)
WRITE(6,687)(TOTVOL(J),J=1,11),TOTBF
80 IF(ITAR3.LT.1) GO TO 90
WRITE(6,688)
WRITE(6,640)
DO 75 I=1,12
IF(NQXSP(I).EQ.0) GO TO 75
WRITE(6,689) SPNAM(2*I-1),(VALUE(I,J,1),J=1,12),SPNAM(2*I),(VALUE(
1I,K,2),K=1,12),(VALUE(J,L,3),L=1,12)
75 CONTINUE
WRITE(6,691) (VALUE(13,J,1),J=1,12),(VALUE(13,K,2),K=1,12),(VALUE(
113,L,3),L=1,12)
WRITE(6,692) (TOTVAL(J),J=1,11),SUMVAL
90 IF(ITAR4.LT.1) GO TO 96
WRITE(6,693)
WRITE(6,694)
WRITE(6,695)
DO 94 I=1,12
IF(NQXSP(I).EQ.0) GO TO 94
WRITE(6,696)SPNAM(2*I-1),SPNAM(2*I),(NUM(I,12,K),K=1,3),NQXSP(I),
1(VOLUME(I,12,J),J=1,3),VOLXSP(I),(VALUE(I,12,L),L=1,3),VALXSP(I)
94 CONTINUE
WRITE(6,697) (NUM(13,12,J),J=1,3),ICOUNT,(VOLUME(13,12,K),K=1,3),
1TOTBF,(VALUE(13,12,L),L=1,3),SUMVAL
96 IF(ITAR5.LT.1) GO TO 99
WRITE(6,698)
WRITE(6,699)
WRITE(6,695)
DO 98 J=1,12
IF(J.LT.12) GO TO 97
WRITE(6,697) (NUM(13,J,K),K=1,3),ICOUNT,(VOLUME(13,J,L),L=1,3),TOT
1BF,(VALUE(13,J,M),M=1,3),SUMVAL
GO TO 98
97 JJ=J*2+10
WRITE(6,700) JJ,(NUM(13,J,K),K=1,3),NOTOT(J),(VOLUME(13,J,L),L=1,3
1),TOTVOL(J),(VALUE(13,J,M),M=1,3),TOTVAL(J)
98 CONTINUE
99 STOP
END

```

Figure 2

SAMPLE LIST OF SAWTIMBER TREES LARGER THAN 11 INCHES DBH

TREE NUMBER	SPECIES	DBH	CONVERSION COST PER M	PRICE #1 C LBR PER M	GRADE	MERCH HT	TREE QUALITY INDEX	CUBIC FEET	CORDS	BD FT	VALUE
7	WHITE OAK	11.7	79.32	140.00	3	16.	0.51133	10.2	0.11	53.1	-0.40
8	WHITE OAK	12.6	77.37	140.00	3	40.	0.50659	23.9	0.26	133.2	-0.85
10	CHESTNUT OAK	12.3	78.02	140.00	3	24.	0.54322	15.6	0.17	82.7	-0.15
11	BLACK OAK	14.7	72.82	155.00	2	32.	0.62712	28.1	0.31	152.3	3.71
12	BLACK OAK	17.3	67.18	155.00	2	40.	0.64096	46.1	0.50	256.9	8.26
13	BLACK OAK	13.2	76.07	155.00	3	32.	0.54954	22.5	0.24	121.9	1.11
14	WHITE OAK	11.1	80.62	140.00	3	24.	0.49890	12.6	0.14	67.0	-0.71
15	WHITE OAK	13.4	75.64	140.00	3	32.	0.52143	23.2	0.25	125.8	-0.32
17	WHITE OAK	15.3	71.52	140.00	2	32.	0.59899	30.5	0.33	165.5	2.04
18	WHITE OAK	13.0	76.50	140.00	3	32.	0.51661	21.8	0.24	118.1	-0.48
21	WHITE OAK	14.7	72.82	140.00	3	32.	0.53711	28.1	0.31	152.3	0.36
22	WHITE OAK	15.0	72.17	140.00	2	40.	0.57856	34.3	0.37	191.0	1.69
23	RED OAK	18.2	65.24	155.00	2	40.	0.71133	51.3	0.56	285.6	12.86
24	WHITE OAK	14.4	73.47	140.00	2	40.	0.56603	31.5	0.34	175.5	1.01
25	WHITE OAK	13.4	75.64	140.00	3	24.	0.52663	18.6	0.20	98.7	-0.18
26	CHESTNUT OAK	12.6	77.37	140.00	3	24.	0.54538	16.4	0.18	86.9	-0.08
27	CHESTNUT OAK	14.6	73.04	140.00	3	24.	0.55982	22.2	0.24	117.9	0.63
28	BLACK OAK	18.0	65.67	155.00	1	48.	0.78465	56.2	0.61	323.2	18.08
31	CHESTNUT OAK	16.1	69.78	140.00	2	40.	0.62146	39.7	0.43	221.2	3.81
32	CHESTNUT OAK	13.9	74.56	140.00	2	32.	0.61672	25.0	0.27	135.6	1.60
33	BLACK OAK	16.7	68.48	155.00	1	40.	0.80961	42.9	0.47	238.7	13.61
34	CHESTNUT OAK	15.0	72.17	140.00	2	24.	0.64081	23.5	0.26	124.7	2.19
36	CHESTNUT OAK	12.4	77.80	140.00	3	16.	0.54882	11.5	0.12	59.9	-0.05
37	CHESTNUT OAK	16.0	70.00	140.00	2	32.	0.63507	33.5	0.36	181.6	3.43
42	CHESTNUT OAK	12.1	78.45	140.00	3	16.	0.54665	10.9	0.12	56.9	-0.10
43	CHESTNUT OAK	12.8	76.93	140.00	3	16.	0.55171	12.2	0.13	63.9	0.02
44	RED OAK	25.1	52.61	155.00	1	40.	0.99716	100.7	1.09	561.2	57.21
45	CHESTNUT OAK	13.1	78.28	140.00	3	24.	0.54899	17.7	0.19	94.2	0.05
49	WHITE OAK	12.0	78.67	140.00	3	24.	0.50975	14.8	0.16	78.6	-0.56
50	WHITE OAK	18.3	65.02	140.00	2	40.	0.64750	51.9	0.56	288.9	7.40
51	WHITE OAK	15.6	70.87	140.00	2	40.	0.59109	37.2	0.40	207.2	2.46
54	WHITE OAK	17.6	66.53	140.00	1	56.	0.75379	58.3	0.63	347.7	13.56
55	WHITE OAK	11.2	80.41	140.00	3	16.	0.50530	9.3	0.10	48.6	-0.46
57	BLACK OAK	20.2	60.90	155.00	1	48.	0.81483	71.5	0.78	411.4	26.90
58	RED OAK	19.6	62.20	155.00	1	48.	0.78692	67.2	0.73	386.2	27.51
59	WHITE OAK	17.4	66.97	140.00	1	48.	0.78581	52.4	0.57	301.2	12.96
60	BLACK OAK	11.9	78.89	155.00	3	24.	0.55750	14.6	0.16	77.3	0.58
61	CHESTNUT OAK	12.7	77.15	140.00	3	24.	0.54610	16.6	0.18	88.4	-0.05
62	WHITE OAK	18.8	63.93	140.00	1	40.	0.85860	54.9	0.60	305.6	17.20
63	WHITE OAK	13.9	74.56	140.00	2	40.	0.55558	29.3	0.32	163.1	0.53
64	BLACK OAK	17.9	65.89	155.00	2	24.	0.67093	33.9	0.37	180.1	6.86
67	WHITE OAK	11.0	80.84	140.00	3	24.	0.49769	12.4	0.13	65.7	-0.72
69	WHITE OAK	14.0	74.34	140.00	2	32.	0.57183	25.4	0.28	137.7	0.79
70	BLACK OAK	22.7	55.46	155.00	1	40.	0.89193	81.5	0.89	453.9	37.58
71	WHITE OAK	21.2	58.74	140.00	1	56.	0.84552	86.1	0.94	513.2	30.61
72	WHITE OAK	13.2	76.07	140.00	3	24.	0.52385	18.0	0.20	95.7	-0.25
74	WHITE OAK	13.6	75.20	140.00	3	32.	0.51420	23.9	0.26	129.7	-0.23
75	WHITE OAK	12.8	76.93	140.00	3	32.	0.51420	21.1	0.23	114.4	-0.56
76	BLACK OAK	17.1	67.61	155.00	1	40.	0.81510	45.0	0.49	250.8	14.73
78	WHITE OAK	13.7	74.99	140.00	3	32.	0.52505	24.3	0.26	131.6	-0.18
79	CHESTNUT OAK	17.9	65.89	140.00	1	24.	0.88819	33.9	0.37	180.1	10.53
80	RED OAK	25.0	52.65	155.00	1	32.	1.02873	85.3	0.93	462.7	49.41
81	BLACK OAK	19.7	61.98	155.00	1	48.	0.80797	67.9	0.74	390.3	24.69
82	BLACK OAK	13.7	74.99	155.00	3	24.	0.56387	19.5	0.21	103.3	1.28
83	WHITE OAK	17.0	67.83	140.00	2	48.	0.60618	49.9	0.54	286.9	4.89
87	BLACK OAK	19.7	61.98	155.00	1	32.	0.89357	51.7	0.56	280.2	21.44
89	WHITE OAK	16.6	68.70	140.00	2	32.	0.62614	36.1	0.39	196.0	3.72

Figure 3

OUT OF A TOTAL OF 89 TREES, THERE WERE 32 TREES EXCLUDED FROM THE SAWTIMBER LIST BECAUSE OF SMALL DBH, NO STANDARD LOG GRADE, NO MERCHANTABLE HEIGHT, OR SPECIES CODE OUTSIDE OF ACCEPTABLE SPECIES LIST

TREES EXCLUDED FROM THE SAWTIMBER LIST:

TREE NUMBER	SPECIES	DBH	GRADE	MERCH HEIGHT
1	RED OAK	14.7	0	24.
2	RED OAK	19.3	0	48.
3	CHESTNUT OAK	7.6	0	0.
4	CHESTNUT OAK	12.1	0	24.
5	WHITE OAK	7.1	0	0.
6	RED OAK	17.9	0	40.
9	WHITE OAK	9.2	0	0.
16	HICKORY	6.6	0	0.
19	WHITE OAK	9.6	0	0.
20	WHITE OAK	9.4	0	0.
29	CHESTNUT OAK	12.0	0	24.
30	CHESTNUT OAK	9.4	0	0.
35	WHITE OAK	8.7	0	0.
38	RED MAPLE	6.6	0	0.
39	WHITE OAK	10.4	0	0.
40	RED MAPLE	5.4	0	0.
41	CHESTNUT OAK	9.1	0	0.
46	HICKORY	5.7	0	0.
47	WHITE ASH	10.9	0	0.
48	CHESTNUT OAK	8.0	0	0.
52	WHITE OAK	9.8	0	0.
53	WHITE OAK	9.2	0	0.
56	YELLOW POPLAR	7.6	0	0.
65	WHITE OAK	10.9	0	0.
66	WHITE OAK	16.5	0	24.
68	WHITE OAK	7.4	0	0.
73	WHITE OAK	10.7	0	0.
77	WHITE OAK	7.6	0	0.
84	CHESTNUT OAK	10.9	0	0.
85	WHITE OAK	8.9	0	0.
86	WHITE OAK	8.3	0	0.
88	YELLOW POPLAR	7.6	0	0.

Figure 4

NUMBER OF SAWTIMBER TREES OF EACH SPECIES, GRADE, AND DBH CLASS

SPECIES GRADE		12	14	16	18	20	22	24	26	28	30	32+	TOTAL
		DIAMETER CLASS											
BLACK OAK	1	0	0	1	2	3	1	0	0	0	0	0	7
	2	0	1	0	2	0	0	0	0	0	0	0	3
	3	1	2	0	0	0	0	0	0	0	0	0	3
CHESTNUT OAK	1	0	0	0	1	0	0	0	0	0	0	0	1
	2	0	1	3	0	0	0	0	0	0	0	0	4
	3	6	2	0	0	0	0	0	0	0	0	0	8
RED OAK	1	0	0	0	0	1	0	0	2	0	0	0	3
	2	0	0	0	1	0	0	0	0	0	0	0	1
	3	0	0	0	0	0	0	0	0	0	0	0	0
WHITE OAK	1	0	0	0	3	0	1	0	0	0	0	0	4
	2	0	3	4	2	0	0	0	0	0	0	0	9
	3	7	7	0	0	0	0	0	0	0	0	0	14
TOTAL		0	0	1	6	4	2	0	2	0	0	0	15
		0	5	7	5	0	0	0	0	0	0	0	17
		14	11	0	0	0	0	0	0	0	0	0	25
GRAND TOTAL		14	16	8	11	4	2	0	2	0	0	0	57

Figure 5

BOARD-FOOT VOLUME OF SAWTIMBER TREES BY SPECIES, GRADE, AND DBH CLASS

SPECIES GRADE		12	14	16	18	20	22	24	26	28	30	32+	TOTAL
		DIAMETER CLASS											
BLACK OAK	1	0	0	239	574	1081	454	0	0	0	0	0	2348
	2	0	152	0	437	0	0	0	0	0	0	0	589
	3	77	225	0	0	0	0	0	0	0	0	0	302
CHESTNUT OAK	1	0	0	0	180	0	0	0	0	0	0	0	180
	2	0	136	528	0	0	0	0	0	0	0	0	664
	3	439	212	0	0	0	0	0	0	0	0	0	651
RED OAK	1	0	0	0	0	386	0	0	1024	0	0	0	1410
	2	0	0	0	286	0	0	0	0	0	0	0	286
	3	0	0	0	0	0	0	0	0	0	0	0	0
WHITE OAK	1	0	0	0	955	0	513	0	0	0	0	0	1468
	2	0	477	759	576	0	0	0	0	0	0	0	1812
	3	561	853	0	0	0	0	0	0	0	0	0	1414
TOTAL		0	0	239	1709	1467	967	0	1024	0	0	0	5406
		0	765	1287	1299	0	0	0	0	0	0	0	3351
		1077	1290	0	0	0	0	0	0	0	0	0	2367
GRAND TOTAL		1077	2055	1526	3008	1467	967	0	1024	0	0	0	11124

Figure 6

VALUE OF SANTIMBER TREES BY SPECIES, GRADE, AND DBH CLASS

SPECIES GRADE		12	14	16	18	20	22	24	26	28	30	32+	TOTAL
		DIAMETER CLASS											
BLACK OAK	1	0.0	0.0	13.61	32.81	73.03	37.58	0.0	0.0	0.0	0.0	0.0	157.03
	2	0.0	3.71	0.0	15.12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.83
	3	0.58	2.39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.97
CHESTNUT OAK	1	0.0	0.0	0.0	10.53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.53
	2	0.0	1.60	9.43	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.03
	3	-0.41	0.68	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.27
RED OAK	1	0.0	0.0	0.0	0.0	27.51	0.0	0.0	106.62	0.0	0.0	0.0	134.13
	2	0.0	0.0	0.0	12.86	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.86
	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WHITE OAK	1	0.0	0.0	0.0	43.72	0.0	30.61	0.0	0.0	0.0	0.0	0.0	74.33
	2	0.0	2.33	9.91	12.29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.53
	3	-4.26	-1.28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-5.54
TOTAL		0.0	0.0	13.61	87.06	100.54	68.19	0.0	106.62	0.0	0.0	0.0	376.02
		0.0	7.64	19.34	40.27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	67.25
		-4.09	1.79	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.30
GRAND TOTAL		-4.09	9.43	32.95	127.33	100.54	68.19	0.0	106.62	0.0	0.0	0.0	440.97

Figure 7

SPECIES SUMMARY
NUMBER OF TREES, VOLUME, AND VALUE OF SAWTIMBER OF ALL DBH CLASSES, BY SPECIES AND GRADE

SPECIES	NUMBER OF SAWTIMBER TREES			BOARD FOOT VOLUME			VALUE OF SAWTIMBER		
	* * * GRADE 1 2 3	* * * GRADE 1 2 3	TOTAL * * *	* * * GRADE 1 2 3	* * * GRADE 1 2 3	TOTAL * * *	* * * GRADE 1 2 3	* * * GRADE 1 2 3	TOTAL * * *
BLACK OAK	7	3	3	2348	589	302	157.03	18.83	2.97
CHESTNUT OAK	1	4	8	180	664	651	10.53	11.03	0.27
RED OAK	3	1	0	1410	286	0	134.13	12.86	0.0
WHITE OAK	4	9	14	1468	1812	1414	74.33	24.53	-5.54
TOTAL	15	17	25	57	5406	3351	376.02	67.25	-2.30
									440.97

Figure 8

DIAMETER SUMMARY

NUMBER OF TREES, VOLUME, AND VALUE OF SAWTIMBER OF ALL SPECIES, BY DBH CLASS AND GRADE

DBH	* #	* #	NUMBER OF SAWTIMBER TREES	TOTAL	* #	* #	GRADE	BOARD FOOT VOLUME	TOTAL	* #	* #	GRADE	VALUE OF SAWTIMBER	TOTAL	* #	* #
			GRADE					GRADE					GRADE			
			2	3			1	2	3			1	2	3		
12	0	0	0	14	14	0	0	0	1077	1077	0.0	0.0	0.0	-4.09	-4.09	
14	0	5	5	11	16	0	0	765	1290	2055	0.0	0.0	7.64	1.79	9.43	
16	1	7	7	0	8	239	1287	1287	0	1526	13.61	19.34	0.0	0.0	32.95	
18	6	5	5	0	11	1709	1299	1299	0	3008	87.06	40.27	0.0	0.0	127.33	
20	4	0	0	0	4	1467	0	0	0	1467	100.54	0.0	0.0	0.0	100.54	
22	2	0	0	0	2	967	0	0	0	967	68.19	0.0	0.0	0.0	68.19	
24	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	
26	2	0	0	0	2	1024	0	0	0	1024	106.62	0.0	0.0	0.0	106.62	
28	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	
30	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	
32	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	
TOTAL	15	17	25	57	5406	3351	2367	11124	376.02	67.25	-2.30	440.97				

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