

II. INTRODUCTION

A. Objective

The objective of this inventory is to: 1) estimate merchantable timber volumes; 2) verify growth rate with existing manager; 3) verify forest types and land uses; 4) verify the acres of various forest types and land uses; and 5) achieve a statistical accuracy of $\pm 7\%$ on the mean dollars per acre estimate at the 95% confidence level.

B. Function

The function of this inventory report is to provide 5-year current volume updates.

did not contain a similar stand type from which to predict, the nearest compartment containing that stand type was used.

2. *Volume and Weight Calculations*

Volumes were calculated using published volume equations appropriate for the species and physiographic region, if available. If appropriate equations were not available for the particular species and physiographic region, equations for similar species and physiographic regions were substituted.

3. *Growth*

- a) Growth in merchantable stands is generally obtained using radial growth data measured in the field (Pine only). Because of the low quantity of pine, there was insufficient growth data to accurately estimate the growth rates. Also, we do not believe it is feasible to take growth on the hardwood trees. This is very time consuming and may reduce the grade of the hardwood by doing so. Because of this we used growth rates, which are common in that area. These rates were derived from various sources in that area and verified by Less Ott and Associates operating in the subjects' geographic area and dealing in products of this type on a daily basis.

4. *Mortality*

Mortality is estimated using published mortality equations.

5. *Ice Damaged Trees*

During the current inventory, trees, which had ice damage, were assigned codes to estimate the casualty loss and make the appropriate adjustment to the property value. All ice-damaged trees are included in the inventory and are designated by the grade codes listed below.

Grade:	Description:
1	Ice damaged lying on the ground.
2	Ice damaged broken top.
3	Ice damaged lying on ground and broken top.
7	Ice damaged leaning.

100 Pine	222 Western Larch	512 Water Oak	586 Sassafras
110 Southern Yellow Pine	223 Alpine Larch	513 Laurel Oak	587 Mulberry
101 Slash Pine	230 Douglas-fir	514 Willow Oak	588 Osage-orange
102 Loblolly Pine	231 Douglas-fir	515 Live Oak	589 Oregon Myrtle
103 Longleaf Pine	240 Hemlock	516 Shingle Oak	591 Holly
104 Shortleaf Pine	241 Eastern Hemlock	520 White Oak	600 Soft Hardwood
105 Virginia Pine	242 Carolina Hemlock	521 White Oak	610 Poplar/Bay/Magnolia
106 Spruce Pine	243 Western Hemlock	522 Post Oak	611 Yellow-poplar
107 Pond Pine	244 Mountain Hemlock	523 Bur Oak	612 Redbay
108 Sand Pine	250 Fir	524 Overcup Oak	613 Sweetbay
109 Table-mountain Pine	251 Balsam Fir	525 Swamp Chestnut Oak	614 Magnolia
120 Northeastern Yellow Pine	252 Fraser Fir	526 Chestnut Oak	620 Willow, Aspen, Cottonwood
121 Red Pine	253 Pacific Silver Fir	527 Oregon White Oak	621 Willow
122 Jack Pine	254 California Red Fir	528 Valley Oak	622 Aspen
123 Pitch Pine	255 Noble Fir	530 Hickory	623 Cottonwood
130 Western Yellow Pine	256 Grand Fir	531 Shagbark Hickory	630 Maple
131 Ponderosa Pine	257 White Fir	532 Shellbark Hickory	631 Red Maple
132 Jeffrey Pine	258 Alpine Fir	533 Mockernut Hickory	632 Silver Maple
133 Lodgepole Pine	259 Bristlecone Fir	534 Red Hickory	633 Sugar Maple
134 Arizona Pine	300 Cypress and Redwood	535 Pignut Hickory	634 Black Maple
135 Couter Pine	310 Cypress	536 Pecan	635 Bigleaf Maple
136 Digger Pine	311 Baldcypress	537 Bitternut Hickory	635 Boxelder
137 Monterey Pine	312 Pondcypress	538 Water Hickory	640 Elm
138 Knobcone Pine	320 Sequoia	539 Nutmeg Hickory	641 American Elm
139 Torrey Pine	321 Redwood	540 Walnut	642 Slippery Elm
141 Bishop Pine	322 Giant Sequoia	541 Black Walnut	643 Rock Elm
142 Apache Pine	400 Miscellaneous Conifer	550 Birch	644 Winged Elm
143 Chihuahuan Pine	410 Cedar	551 Yellow Birch	650 Gum
150 White Pine	411 Eastern Redcedar	552 Sweet Birch	651 Water Tupelo
151 Eastern White Pine	412 Western Junipers	553 Paper Birch	652 Blackgum
152 Western White Pine	421 Atlantic White-cedar	554 River Birch	650 Miscellaneous Soft Hardwood
153 Sugar Pine	422 Port-Orford-cedar	555 Bluebeech (Ironwood)	661 Sweetgum
160 Stone Pine	423 Alaska-cedar	556 Eastern Hophornbeam	662 Sycamore
161 Umbel Pine	431 Northern White-cedar	560 Beech	663 Buckeye
162 Whitebark Pine	432 Western Redcedar	561 American Beech	664 Black Cherry
170 Pinyon	441 Incense-cedar	562 Chestnut	665 Basswood
171 Pinyon	451 Arizona Cypress	563 Giant Chinkapin	666 Alder
180 Foxtail Pine	460 Yew	564 Tanoak	700 Miscellaneous Hardwood
181 Foxtail Pine	461 Pacific Yew	570 Ash	
182 Bristlecone Pine	500 Hard Hardwood	571 White Ash	
200 Spruce, Fir, Hemlock, Larch	510 Red Oak	572 Green Ash	
210 Spruce	501 Northern Red Oak	573 Black Ash	
211 Red Spruce	502 Southern Red Oak	574 Pumpkin Ash	
212 White Spruce	503 Charybark Oak	575 Blue Ash	
213 Black Spruce	504 Black Oak	576 Oregon Ash	
214 Sitka Spruce	505 Shumard Oak	580 Miscellaneous Hard Hardwood	
215 Englemann Spruce	506 Scarlet Oak	581 Sugarberry/ Hackberry	
216 Blue Spruce	507 Pin Oak	582 Persimmon	
220 Larch	508 Nuttall Oak	583 Dogwood	
221 Eastern Larch (Tamarack)	509 Blackjack Oak	584 Honeylocust	
		585 Black Locust	

Stand Maps

<u>Code</u>	<u>Forest Cover Type (site characteristics and associated species)</u>
OG	Oak-Hickory Good Site – white, black, red, and chestnut oaks; hickory, Yellow poplar
OP	Oak-hickory Poor Site - south and west aspects – scarlet oak, chestnut Oak, white oak, sourwood, blackgum, etc.
SO	Scarlet Oak – south/west aspects, poor sites – mostly scarlet oak and Associated species
MH	Mixed Hardwoods – north and east aspects – oaks, yellow poplar, Basswood, maple, ash, etc.
CH	Cove Hardwoods – very good site – more than 50% yellow poplar and Associated species
NP	Natural Pine – Virginia, Pitch, and Shortleaf Pines
PP	Pine Plantation – planted white or other pines

<u>Code</u>	<u>Size Class (Majority of volume)</u>
1	Seedlings and saplings – regeneration – seedlings to 5.0” DBH
2	Poletimber – 5.1” to 11.0” DBH
3	Sawtimber – 11.1” and larger DBH

KENTUCKY PURCHASE UNIT PRODUCT SPECIFICATIONS: TABLE 1

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PINE PRODUCT	DBH MINIMUM (in.)	DBH MAXIMUM (in.)	HEIGHT CRUISE TO:		MINIMUM TOP DOB (in.)	MINIMUM LENGTH (ft)	COMMENTS
			MERCH (in.)	TOTAL (in.)			
PULPWOOD	5.60	22.59	-	Tip	3.00	16'	WHOLE TREE MUST BE REASONABLY STRAIGHT. FIRST 20' MUST BE STRAIGHT AND CLEAR OF ANY DEFECT > 2" DEEP. CRUISE TO SPECIFIED TOP, UNLESS SEVERE CROOK, SWEEP, OR DEFECT FORCES AN EARLIER CUTOFF. WHOLE TREE MUST BE REASONABLY STRAIGHT. DEDUCT FOR DEFECT, ANY SWEEP > 6" IN A 12' SECTION, AND CROOK. STOP AT FIRST LIVE WHORL THAT HAS LESS THAN 8' OF CLEAR MATERIAL ABOVE IT. SINGLE BRANCHES AND KNOTS DO NOT AFFECT POLES, UNLESS THERE ARE 4 BRANCHES WITHIN A 4" SECTION OF STEM. ALSO EXCLUDE TREES THAT HAVE A FUSIFORM CANKER OR A SPIKE KNOT W/IN THE POLE SECTION, OR THAT HAVE EXCESSIVE TAPER (YOUNG OR OPEN GROWN TREES).
SMALL SAWTIMBER	8.60	12.59	-	Tip	5.00	20'	
LARGE SAWTIMBER	12.60	+	9.00	Tip	9.00	16'	

HARDWOOD PRODUCT	DBH MINIMUM (in.)	DBH MAXIMUM (in.)	HEIGHT CRUISE TO:		MINIMUM TOP DIB (in.)	MINIMUM LENGTH (ft)	COMMENTS
			MERCH (in.)	TOTAL (in.)			
HARD HDWD PULPWOOD	5.60	22.59	-	4.00	3.00	16'	MUST BE FREE OF ROTTEN BRANCHES, HOLES AT STUMP, BAD SWEEP OR CROOK. CRUISE GRADE 2 LOGS AND BETTER. MUST BE FREE OF ROTTEN BRANCHES, HOLES AT STUMP, BAD SWEEP OR CROOK. CRUISE GRADE 2 LOGS AND BETTER. MUST BE FREE OF ROTTEN BRANCHES, HOLES AT STUMP, BAD SWEEP OR CROOK. CRUISE GRADE 2 LOGS AND BETTER. MUST BE FREE OF ROTTEN BRANCHES, HOLES AT STUMP, BAD SWEEP OR CROOK. CRUISE GRADE 3 LOGS AND BETTER.
SOFT HDWD PULPWOOD	5.60	22.59	-	4.00	3.00	16'	
HARD HDWD SAWTIMBER	13.60	+	10.00	4.00	10.00	8'	
SOFT HDWD SAWTIMBER	11.60	+	9.00	4.00	9.00	8'	
GRADE 1 OAK SAWTIMBER	11.60	+	9.00	4.00	9.00	8'	
CHERRY/WALNUT/ASH SAWTIMBER	9.60	+	9.00	4.00	9.00	8'	

- 1 POLES ARE TREES OF ABOVE AVERAGE STRAIGHTNESS AND QUALITY THAT HAVE 2.75 TO 3 TIMES THEIR DBH IN CLEAR, STRAIGHT STEM. ONCE THEY ARE CLASSIFIED AS A POLE, CRUISE THEM TO THE SMALL OR LARGE SAWTIMBER SPEC'S, WHICHEVER IS APPROPRIATE.
- 2 JUMP BUTTING IS PERMISSIBLE IF DEFECT IS W/IN 1st 10 FEET OF STEM.
- 3 LOGS MUST BE STRAIGHT ENOUGH TO SQUARE INTO A CANT IN 8, 10, 12, 14, 16, OR 18' SECTIONS.
- 4 IF DEFECT IS LESS THAN 4' OF THE STEM, DEDUCT NO LENGTH. IF > 4', ROUND TO NEAREST 1/2 LOG.
- 5 CRUISE THE DOMINANT FORK OF A TREE IF THE STEM IS >=75% OF THE TREE BEFORE THE FORK. OTHERWISE, TOP THE TREE AT THE FORK.

GLOSSARY

Basal Area – The cross-sectional area in square feet at breast height on a tree, used as a measure of stocking. A well stocked planted pine stand ranges from 60-120 square feet of basal area per acre; a well stocked natural pine stand ranges from 50-100 square feet of basal area per acre.

Bottomland – Stands that cannot be regenerated to pine using conventional methods.

Chain – Unit of measure commonly used in forestry. 1 chain = 66 feet.

Confidence Level – A statistical term that refers to the probability of the true mean falling within a certain percentage of the predicted mean. In this case it would be the predicted weight or value falling within a certain percentage of the true weight or value.

DBH -- Diameter in inches at breast height (4.5') on a tree.

Fixed Plot Radius – A circular sample plot with a consistent radius. Fixed radius plots measure trees based on their frequency of occurrence.

Form Class – This is the ratio between stem diameter inside bark at the top of the first 16 foot log to the diameter outside bark at breast height, 4.5 feet.

Grade – Another way of referring to the quality of a sawtimber log. The more defects a log has, such as rot or sweep, the lower its grade.

Handheld Data Recorder – Computerized field data collection device, used to collect, store, correct, and transfer field inventory data.

Lowland – Low, wet stands that can be regenerated to pine only if bedded or ditched.

MBF – Thousand board feet. One board foot is 1" by 12" by 12". Used as a measure of volume in sawtimber, poles, and veneer.

Merchantable Height – The height of a tree in feet or logs, (16 feet), to a predetermined upper diameter inside bark. The top diameter is determined by the product being measured.

Product – Refers to the different end products for which a tree can be used. Some examples are pulpwood for paper, sawtimber for construction lumber, and poles for utility poles.

Stick Scaled – A method of determining the volume in a log by measuring the diameter at the small end and the overall length as well as making deductions for defects.

Site Index -- A measure of the productivity of a natural pine site based on the projected height of a dominant tree at age 50. The Site Indexes in the South range from 60-110 with the average being 80.

Site Quality -- A measure of the productivity of a planted pine site based on the projected total height of a dominant tree at age 25. The range is from 45 to 80, with the average being 60.

Slope – Stands that can be regenerated to pine only with minimal soil disturbance resulting from site prep techniques.

Total Height – The height of a tree in feet, measured from the ground to the tip of its highest stem.

Upland – Stands that are regenerated to pine using standard site preparation techniques and in which the selection of technique is not influenced by drainage or slope.

Variable Plot Radius - Variable plots, point sampling, or “prism cruising”, is a method of selecting trees to be sampled based on their sizes rather than by their frequency of occurrence as in fixed radius plots. In point sampling, larger trees are more likely to be sampled, putting the emphasis of the inventory on the higher value trees.