SITE INDEX AND GROWTH EVALUATION

KLINKER - WILLIS PROPERTY

Sections 19, 22 and 30 Beaver Township, Pike County, Ohio

July 2021

Area A Carr's Run

METHODOLOGY AND BACKGROUND

This report captures a reasonable evaluation of the Klinker-Willis property ownership in parcels located along Carr's Run and Straight Creek Road in Sections 19, 22 and 30 Beaver Township, Pike County, Ohio. It is designed to create an unbiased review of the soils found upon the sites and something called site index. Site index represents the potentials of the various stands of timber found upon the property and their potentials for growth and productivity. The major site index determination factors include type of soil, slope and steepness of the ground, aspect and measures an indicator variable based upon tree height at an index age. The tree species used for this evaluation would be upland oak. Once site index is determined one can predict growth, volume and potentials for the stand upon that specific site. Compiling the history of the area beginning in 2006 one can determine a reasonable picture of the current stand conditions. Field reconnaissance was conducted upon the various stands to check on the stand predictions and to see if the stands correlated with the site index data.

The total acres upon the various parcels are 253.2 and are based upon the Woodland Stewardship plans generated by Forester Lee Crocker in December of 2018. These plans will provide the base acreage statistics for evaluating each portion of the ownership. The history of the property is an important aspect of this evaluation. At one time the property reflected a working Southeast Ohio hill farm. Over the years the home place came to be a joint ownership between the Klinker-Willis families. In May of 2006 consulting forester Stan Swierz conducted a comprehensive timber inventory and appraisal of the property. The data from this 2006 work provided a baseline volume per acre for the various parcels involved. Events that affected this baseline beginning volume information included a timber trespass in Area C (2007 Carr's Run) that impacted some volume here. A series of timber harvests then occurred beginning in 2014. The first two harvests occurred in Area A. The next harvest occurred in Area C (Carr's Run) and in Area E (Straight Creek) in 2016. In 2017 Area B received a timber harvest also in 2017 a pine plantation in Area D was completely removed. The timber harvests addressed all the timber in all the parcels with an intermediate cutting leaving a fully stocked residual of timber going forward. The only other type of harvesting was the removal of mature pine in Area D that was clearcut on 5.8 acres.

Each and every harvest was conducted in a fashion that all timber removed is documented and tallied including any additional timber from harvest damages assessed at the conclusion of the harvest. This data is also available for the 2007 trespass that occurred in Area C. Regarding this report based upon site index and the forest growth one can literally project or grow the forest from the initial data in 2006 to the point of the harvests. The timber volume of the harvests can be deducted from the volumes at the time of harvest and then based upon site index the new stand following the timber harvest can be grown to now (2021). The site index and growth projections will account for this. Field evaluations of the various areas indicate that this is not an unreasonable approach to determine the value of the various areas and conditions found within each stand or area. A more detailed evaluation of each area will follow and illustrate this methodology.

It should be noted that in the Crocker management plans some areas are listed as open. These "open" areas are on rich sites in bottomland locations and were probably part of farming operations at one time. The majority of these open areas should now be considered forest and are rapidly regenerating into very desirable woodland exhibiting excellent growth. To qualify as woodland for the Ohio Forest Tax Law one needs 300 trees per acre of commercial species. These areas easily qualify for that standard with a nice mix of tulip poplar, walnut and sycamore. A few small patches or openings can be found in the mix that served as log loading areas or agricultural impact zones but the openings are not

significant to the overall forest condition occurring on the property. In addition a few structures can be found in Area C along Carr's Run Road. One structure is severely damaged from a large pine tree that hit the barn around 2016. The other larger structure is deteriorating but still significant. This report does not evaluate these structures and it is not certain if they can be fixed up and become assets or if they are possible liabilities going forward.

Structures along Carr's Run in Area C

A few observations while conducting field reconnaissance might be worth noting. Some nice timber can be found in all areas. Stocking levels of the various stands is good meaning that trees have plenty of room to grow and spacing between trees is good. The species mix is excellent with a good mixture of oaks and other commercial species being found. Logging debris and a massive flush of vegetation including desirable new tree regeneration makes hiking and traversing the properties quite difficult. Some blowdown has occurred. Blowdown is not unexpected following timber harvests however it can be distressing to see nice trees on the ground. The blowdown that has and is occurring is found across all areas on the property so its more of a uniform condition than specific to one particular spot. Boundary lines are marked in some areas better than in other spots. Marking the boundary lines and keeping them maintained is a really good management practice. Along and near the property is a major cut across ATV corridor that follows the ridgeline between Straight Creek and Carr's Run. Erosion, trespass and especially litter and dumping is horrendous within this corridor. User developed trails and access often occurs along corridors such as this. Some user developed incursions were observed and

they are very close to this property. This would be a good activity to discourage. The heavy vegetation and blowdown impeding access and travel upon the property is a good thing in this regard. Most all logging impacts have stabilized and rehab has been positive from the logging operations. Undesirable invasive species observed included ailanthus, multi-flora rose, paulownia, autumn olive, bush honeysuckle, garlic mustard, stilt grass and barberry. Planned openings from the logging operations were very successful and are regenerating to desirable trees quite nicely. Ticks and chiggers can and are to be found in all locations take prudent precautions accordingly. Some human entry activity here and there was observed but its minor with no dumping or serious problems observed. Hunting is definitely an important part of these ownerships.

Major ATV corridor along boundary Straight Creek parcel

Nice opening regeneration Carr's Run

AREA STATISTICS AND CALCULATIONS

Area A - Carr's Run 140.4 Acres

Area A represents a large uniform block of land along the west side of Carr's Run Road. The first two timber harvests that occurred in 2014 occurred upon this portion of the ownership. These two harvests are separate from each other (removing different volumes) thus the statistics for Area A are presented as two separate calculations Area A-1 and Area A-2 to reflect this.

AREA A-1 - 75 ACRES FIRST HARVEST DOYLE SCALE

Volume in Area A-1 in 2006	427,500 BF
Volume in Area A-1 prior to harvest in 2014(eight growing seasons)	504,824 BF
Site index 1 = 36.8 Acres x eight growing seasons x156.25 BF/Acre = 46,000 BF	
Site index 2 = 38.2 Acres x eight growing seasons x102.50 BF/Acre = 31,324 BF	
2014 Timber harvest removed marked tally	230,078 BF
2014 Additional removals from actual timber operation	6,546 BF
TOTAL removals for 2014 A-1 timber harvest	236,624 BF
Volume of A-1 following timber harvest in 2014 (504,824BF – 236,624BF)	268,200 BF
Growth from 2015 to 2021 seven growing seasons	75,978 BF
Site index 1 = 36.8 Acres x seven growing seasons x 160.00 BF/Acre = 41,216 BF	
Site index 2 = 38.2 Acres x seven growing seasons x 130.00 BF/Acre = 34,762 BF	
TOTAL VOLUME IN 2021 FOR AREA A-1- 75 ACRES (4,589 BF Acre)	**344,178 BF**

Area A Carr's Run

AREA A-2 – 65.4 ACRES SECOND HARVEST DOYLE SCALE

Volume in Area A-2 in 2006	372,780 BF
Volume in Area A-2 prior to harvest in 2014 (eight growing seasons)	442,877 BF
Site index 1 = 38.3 Acres x eight growing seasons x 156.25 BF/Acre = 47,875 BF	
Site index 2 = 27.1 Acres x eight growing seasons x 102.50 BF/Acre = 22,222 BF	
2014 Timber harvest removed marked tally	219,321 BF
2014 Additional removals from actual timber operation	8,063 BF
TOTAL removals for 2014 A-2 timber harvest	227,384 BF
Volume of A-2 following timber harvest in 2014 (442,877BF – 227,384 BF)	215,493 BF
Growth from 2015 to 2021 seven growing seasons	67,557 BF
Site index 1 = 38.3 Acres x seven growing seasons x 160.00 BF/Acre = 42,896 BF	
Site index 2 = 27.1 Acres x seven growing seasons x 130.00 BF/Acre = 24,661 BF	
TOTAL VOLUME IN 2021 FOR AREA A-2 – 65.4 ACRES (4,328 BF/Acre)	**283,050 BF**
TOTAL VOLUME IN 2021 FOR AREA A -140.4 ACRES (4,467 BF/ACRE)	**627,228 BF**

Carr's Run Area A

2029 15 years

AREA B – 47.4 ACRES FOURTH HARVEST DOYLE SCALE

Volume in Area B in 2006	191,686 BF
Volume in Area B in 2017 prior to harvest in 2017 (eleven growing seasons)	250,155 BF

Site index 1 = 8.5 Acres x eleven growing seasons x 156.25 BF/Acre =14,609 BF
Site index 2 =38.9 Acres x eleven growing seasons x 102.50 BF/Acre =43,860 BF

2017 Timber harvest removed marked tally	122,525 BF
2017 additional removals from actual timber operation	3,734 BF
TOTAL removals for 2017 Area B timber harvest	126,259 BF

Volume of Area B following timber harvest in 2017(250,155 BF – 126,259 BF)	123,896 BF

Growth from 2018 to 2021 four growing seasons	25,668 BF

Site index 1 = 8.5 Acres x four growing seasons x 160.00 BF/Acre = 5,440 BF
Site index 2 = 38.9 Acres x four growing seasons x 130.00 BF/Acre = 20,228 BF

TOTAL VOLUME IN 2021 FOR AREA B – 47.4 ACRES (3,155 BF/ACRE) 149,564 BF

Area B Carr's Run

AREA C AND D – 36.5 ACRES THIRD AND FIFTH HARVEST DOYLE SCALE/TONS

Volume in Area C in 2006	142,862 BF
Timber trespass in 2007 estimated removals of 13,774 BF	
Volume in Area C in 2007	129,088 BF
Volume in Area C prior to harvest three in 2016	167,288 BF

Site index 1 = 12.9 Acres x ten growing seasons x 156.25 BF/Acre = 20,160 BF
Site index 2 = 17.6 Acres x ten growing seasons x 102.50 BF/Acre = 18,040 BF

*Site index 1 = 4.9 Acres x eleven growing seasons (clearcut pine plantation fifth harvest)
*Site index 2 = 0.9 Acres x eleven growing seasons (clearcut pine plantation fifth harvest)
*Site index 3 = 0.2 non timber (building footprint)

2016 Timber harvest removed 52,110 BF marked tally Area C	52,110 BF
2016 Additional timber removals from actual timber operation	0 BF
TOTAL removals for 2016 Area C timber harvest	52,110 BF

Volume of Area C following timber harvest in 2016	115,178 BF
Growth from 2016 to 2021 five growing seasons Area C	21,760 BF

Site index 1 = 12.9 Acres x five growing seasons x 160 BF/Acre = 10,320 BF
Site index 2 = 17.6 Acres x five growing seasons x 130 BF/Acre = 11,440 BF

Growth from 2017 to 2021 four growing seasons Area D	3,604 BF

Site index 1 = 4.9 Acres x four growing seasons x 160 BF/Acre = 3,136 BF
Site index 2 = 0.9 Acres x four growing seasons x 130 BF/Acre = 468 BF

***TOTAL VOLUME POTENTIALS FOR AREA C&D -36.5 ACRES (3,850 BF/ACRE) 140,542 BF**

* The above total number (140,542 BF) reflects growth of timber following the third and fifth timber harvests for the combined 36.5 acre parcel based upon the growth rates of the site indices found upon the C and D parcels. The 2017 pine harvest (clearcut and the building footprint change the volume for the Area C and D parcel for **2021**). While the 140,542 BF reflects the site potential and the actual growth of volume upon Areas C and D it does not take into account the clearcut and the building footprints thus the actual volume for Area C and D will need to be reduced accordingly when looking at the year **2021**.

The impacts upon the current forest condition as a result of the pine clearcut harvest and the building footprint would reduce the total volume in the year **2021** by an estimated 23,100 BF so a more reasonable estimate of the current **2021** volume in Areas C and D would be (3,218 BF/Acre) **117,442 BF**

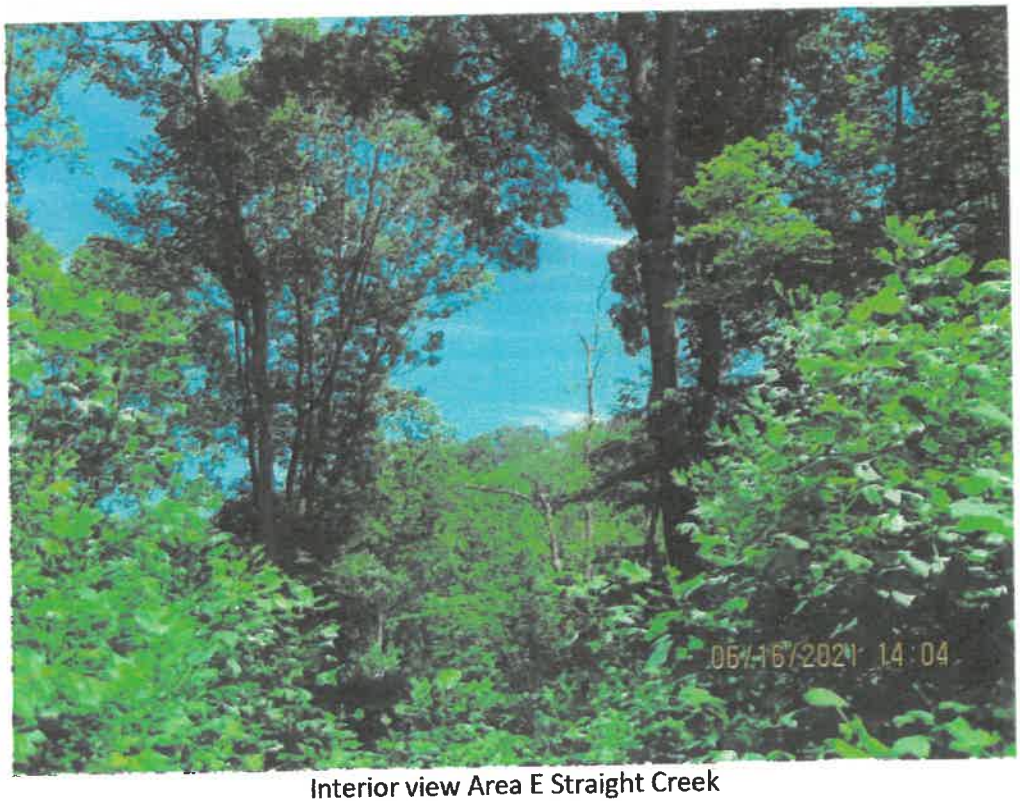
For clarification one should be aware that the growth rate on Area C and D for site index 1 is 160 BF per acre and for site index 2 is 130 BF per acre even thou the trees in the clearcut are only non- commercial saplings and seedlings this is the rate of growth and increment they are developing at. As they mature they will become merchantable and commercially valuable and in 80 years they will constitute a very nice stand of timber.

The pine clearcut harvest in 2017 removed 678.757 tons of cabin logs and pulpwood and 5,341 BF of mixed hardwoods. The 2017 harvest reduces the growing season to four years from five years on 5.8 acres reflecting Area D.

Pine clearcut Area D Carr's Run

AREA E – 28.9 ACRES THIRD HARVEST DOYLE SCALE

Volume in Area E in 2006	127,825 BF
Volume in Area E prior to harvest in 2016 (ten growing seasons)	171,535 BF
Site index 1 = 26.2 Acres x ten growing seasons x 156.25 BF/Acre = 40,940 BF	
Site index 2 = 2.7 Acres x ten growing seasons x 102.50 BF/Acre = 2,770 BF	
2016 Timber harvest removed marked tally	105,977 BF
2016 Additional removals from actual timber harvest	3,392 BF
TOTAL removals for 2016 timber harvest	109,369 BF
Volume of Area E following timber harvest in 2016 (171,535BF – 109,369BF)	62,166 BF
Growth from 2017 to 2021 five growing seasons	22,715BF
Site index 1 = 26.2 Acres x five growing seasons x 160.00 BF/Acre = 20,960 BF	
Site index 2 = 2.7 Acres x five growing seasons x 130.00 BF/Acre = 1,755 BF	
TOTAL VOLUME IN 2021 FOR AREA E – 28.9 ACRES (2,937 BF/ACRE)	**84,881 BF**



Interior view Area E Straight Creek

AREA AND OWNERSHIP SUMMARY

Total Acres in all Areas			253.2 Acres
Area A	Volume per Acre 4,467 BF Doyle per Acre	(627,228 BF)	140.4 Acres
Area B	Volume per Acre 3,155 BF Doyle per Acre	(149,564 BF)	47.4 Acres
Area C	Volume per Acre 3,850 BF Doyle per Acre	(117,442 BF)	30.5 Acres
Area D	Volume per Acre 0 BF Doyle per Acre	(0 BF)	5.8 Acres
Area C	Non Forest		0.2 Acres
Area E	Volume per Acre 2,937 BF Doyle per Acre	(84,879 BF)	28.9 Acres
Totals/Avg - Vol per Acre 3,867 BF Doyle per Acre		**(979,113 BF)**	**253.2 Acres**

Over the entire 253.2 Acres Site index 1 consists of 127.6 Acres or 50.3% of the area.
Site index 2 consists of 125.4 Acres or 49.5% of the area. The building footprint contains 0.2 Acres of non-timber ground.

Interior timber Area B Carr's Run

979

Table 1.---Yields per acre for upland oak; First thinning at age 20

Age	Residual Stand					Cut Stand				Cumulative total yields (cut stand plus residual stand)		
	Basal Area	Average Tree Diameter	Yield			Basal Area	Yield					
Years	Square Feet	Inches	Cubic Feet	Cords	Board Feet	Square Feet	Cubic Feet	Cords	Board Feet	Cubic Feet	Cords	Board Feet
SITE INDEX 55												
20	34	2.3	60	0.6	----	---	----	----	----	60	0.6	----
30	49	4.2	600	5.1	----	15	----	0.9	----	600	6.0	----
40	58	6.1	1,220	12.2	880	16	300	2.9	----	1,520	16.0	880
50	66	8.6	1,750	16.0	2,350	15	300	3.2	150	2,350	23.0	2,500
60	71	10.6	1,980	18.6	3,960	15	360	3.2	570	2,940	28.8	4,680
70	74	12.1	2,170	20.0	5,810	14	370	3.8	820	3,500	34.0	7,350
SITE INDEX 65												
20	37	2.8	160	1.6	----	----	18	----	----	178	1.6	----
30	50	4.6	750	7.4	----	20	132	1.2	----	900	8.6	----
40	63	7.7	1,760	16.0	1,320	15	290	3.2	----	2,200	20.4	1,320
50	69	9.8	2,150	19.7	3,500	19	625	4.1	400	3,215	28.2	3,900
60	73	12.0	2,460	22.5	6,120	18	515	4.4	1,160	4,040	35.4	7,680
70	77	14.6	2,730	24.2	9,030	16	520	4.9	2,010	4,830	42.0	12,600
SITE INDEX 75												
20	46	3.6	476	4.4	----	----	218	2.0	----	694	6.4	----
30	57	5.6	1,275	13.0	----	26	307	3.6	----	1,800	18.6	----
40	66	8.4	2,140	19.8	2,160	21	535	4.8	240	3,200	30.2	2,400
50	71	10.8	2,600	24.7	6,450	21	665	5.4	1,160	4,325	40.5	7,850
60	76	13.4	3,060	28.5	10,680	19	615	4.9	2,020	5,400	49.2	14,100
70	79	16.3	3,465	31.5	13,720	19	635	5.2	2,740	6,440	57.4	19,880

Table 2.---Yields per acre for upland oak; No thinning

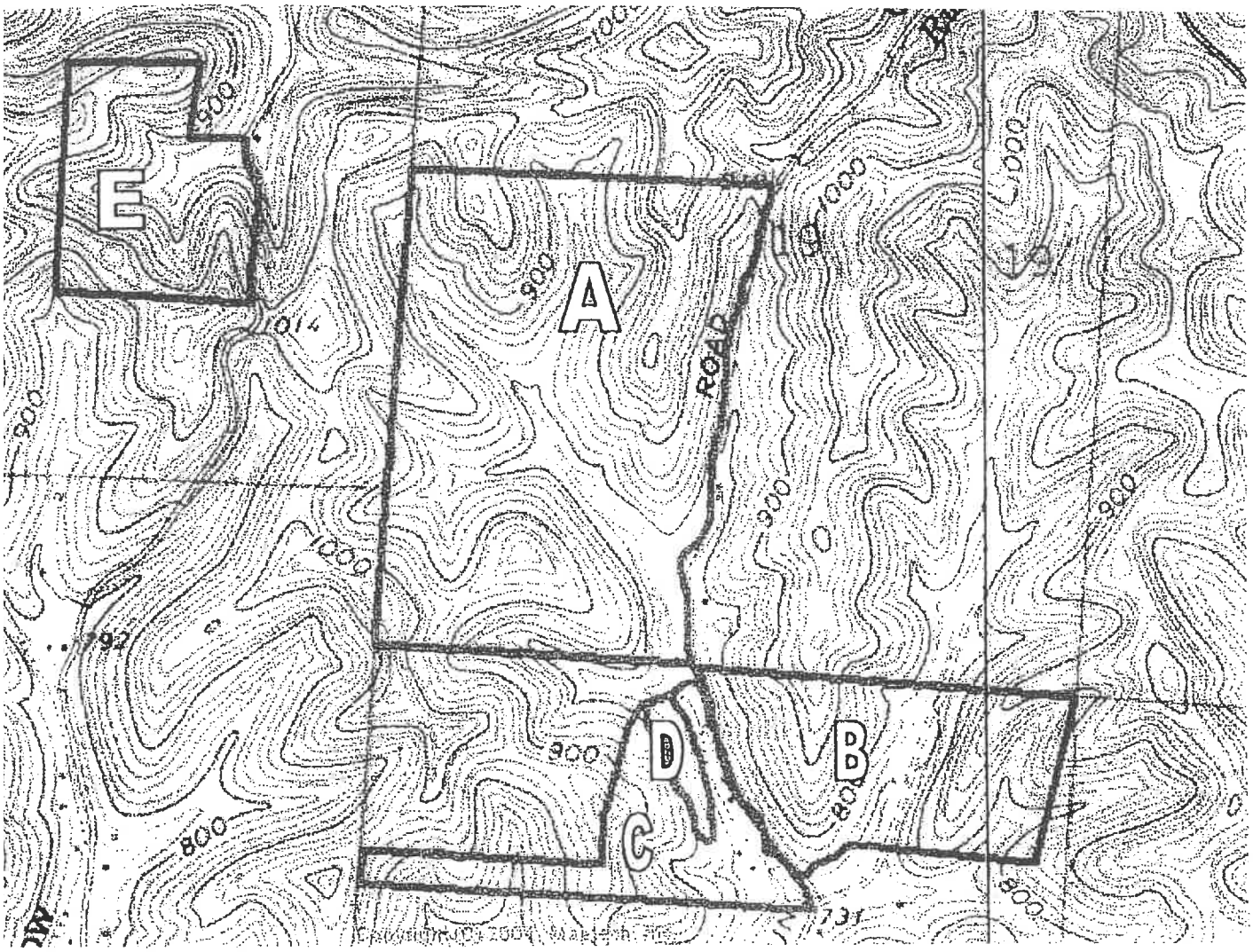
Age	Basal Area	Trees	Average Tree Diameter 1/	Yields		
Years	Square Feet	No.	Inches	Cubic Feet	Cords	Board Feet
SITE INDEX 55						
20	55	2,500	2.0	60	0.6	----
30	75	1,260	3.3	583	5.3	----
40	87	790	4.5	1,320	12.1	----
50	97	480	6.1	2,150	19.7	400
60	104	357	7.3	2,520	22.9	900
70	108	295	8.2	2,730	24.4	2,800
80	112	242	9.2	2,880	25.6	5,400
SITE INDEX 65						
20	59	1880	2.4	178	1.6	----
30	81	930	4.0	1,200	10.6	----
40	96	505	5.9	1,840	18.2	440
50	105	342	7.5	2,800	26.9	2,150
60	111	262	8.8	3,300	30.8	5,160
70	115	215	9.9	3,700	33.3	7,200
80	117	187	10.7	3,950	35.6	8,200
SITE INDEX 75						
20	70	1,425	3.0	694	6.4	----
30	89	680	4.9	1,670	16.7	----
40	101	400	6.8	2,440	23.7	1,380
50	110	279	8.5	3,315	30.1	4,100
60	114	222	9.7	4,140	37.7	9288
70	117	187	10.7	4,760	43.0	11,200
80	120	166	11.5	5,160	46.5	12,500

1/ The diameter of the tree of average basal area

UPLAND OAKS
ESTIMATED POTENTIAL YIELDS PER ACRE
WELL-STOCKED EVEN-AGED MANAGED STANDS- SITE CLASSES 50, 60, 70, 80
TABLE 1: AGE, VOLUME, AND YEARLY GROWTH 1/

Average Stand Diam.	Average Stand Age	Average Volume Per Acre – Standard Cords and Board Feet (Doyle) Before Cut	After Cut	This Cut	Cumulative Cut	Cumulative Yield	Average Yearly Growth
SITE 80 (CUTTING CYCLE – 6 YEARS)							
6	24	18 CDS	12 CDS	6 CDS"	6 CDS	18 CDS	0.8 CDS
8	30	24 "	17 "	7 "	13 "	32 "	1.1 "
10	36	29 "	21 "	8 "	21 "	42 "	1.2 "
12	42	3,500 BF	2,700 BF	800 BF	800 BF	3,500 BF	80 BF
14	48	4,700 "	3,700 "	1,000 "	1,800 "	5,500 "	110 "
16	54	7,000 "	5,800 "	1,200 "	3,000 "	8,800 "	160 "
18	60	9,100 "	7,600 "	1,500 "	4,500 "	12,100 "	200 "
20	66	10,900 "	9,300 "	1,600 "	6,100 "	15,400 "	230 "
22	72	12,800 "	11,100 "	1,700 "	7,800 "	18,900 "	260 "
24	80	14,300 "		14,300 "	22,100 "	22,100 "	280 "
SITE 70 (CUTTING CYCLE – 7 YEARS)							
6	28	18 CDS	12 CDS	6 CDS	6 CDS	18 CDS	0.6 CDS
8	35	22 "	15 "	7 "	13 "	28 "	0.8 "
10	42	28 "	20 "	8 "	21 "	41 "	1.0 "
12	49	3,500 BF	2,700 BF	800 BF	800 BF	3,500 BF	70 BF
14	56	4,400 "	3,500 "	900 "	1,700 "	5,200 "	90 "
16	63	6,600 "	5,500 "	1,100 "	2,800 "	8,300 "	130 "
18	70	8,800 "	7,400 "	1,400 "	4,,200 "	11,600 "	170 "
20	77	9,900 "	-----	9,900 "	14,100 "	14,100 "	180 "
SITE 60 (CUTTING CYCLE – 8 YEARS)							
6	32	14 CDS	9 CDS	5 CDS	5 CDS	14 CDS	0.4 CDS
8	40	22 "	16 "	6 "	11 "	27 "	0.7 "
10	48	27 "	20 "	7 "	18 "	38 "	0.8 "
12	56	3,000 BF	2,300 BF	700 BF	700 BF	3,000 BF	50 BF
14	64	4,100 "	3,300 "	800 "	1,500 "	4,800 "	70 "
16	72	6,100 "	5,100 "	1,000 "	2,500 "	6,600 "	90 "
18	80	7,900 "	-------	7,900 "	10,400 "	10,400 "	130 "
SITE 50 (CUTTING CYCLE –9 YEARS)							
6	36	11 CDS	7 CDS	4 CDS	4 CDS	11 CDS	0.3 CDS
8	45	19 "	14 "	5 "	9 "	23 "	0.5 "
10	54	26 "	19 "	7 "	16 "	35 "	0.6 "
12	63	2,700 BF	2,000 BF	700 BF	700 BF	2,700 BF	40 BF
14	72	3,900 "	3,100 "	800 "	1,500 "	4,600 "	60 "
16	81	5,400 "	-------	5,400 "	6,900 "	6,900 "	90 "

1/ Adapted from USDA Technical Bulletin 560 by S.E. Gingrich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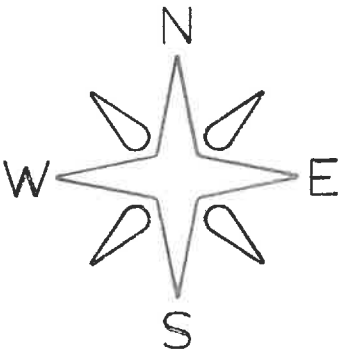
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