



Landmark Forestry LLC

McKenna Tract

TIMBER INVENTORY

of

McKenna Tract
Kanawha County – West Virginia
840 Taxed Acres
761 Gis Acres



Landmark Forestry LLC

November 18, 2021

David McKenna
158 Mara Lane
Winchester, VA 22603

Dear Mr. McKenna:

Upon request **Landmark Forestry, LLC** has inventoried the commercial timber located on the McKenna Tract in Kanawha County, West Virginia, further described as being in the Elk District Map 64 Parcel 6, (refer to attached topographical map). The following is a summation of the timber inventory of the above-described tract.

The inventory completed on November 12th, 2021 was implemented as a point sample cruise utilizing a basal area factor 20 prism. This inventory was designed utilizing 5X5 chain intersections, a total of 304 sample points were located using a Geographical Information System (GIS). All commercial timber was included within the "inventory point" and within the 761 gis acres parcel boundaries were measured for commercial timber volume. A Global Positioning System (GPS) was utilized in the field to aid in the location of all inventory points.

Timber quality is considered fair across all the property and the volume across all stands is below average. About all of the property has been harvested in the past resulting in low volume per acre. A fair residual timber stand in the smaller diameter class exists throughout the property. The predominate species on the property is made up of yellow poplar (14%), eastern hemlock (13%), white oak (12%), soft maple (10%) and chestnut oak (10%). The overall volume per acre is 2,180 board feet and is lower than average for this region.

Access into most of the property is good with a county road leading onto the north end of the property up Morris Creek. Once on the tract, other numerous gas well roads and atv trails access all the property.

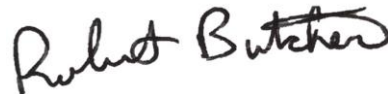
The only boundaries lines of the property encountered was on the western end. A red hacked and surveyed boundary line was found.

Additional information and maps supplied in this report are.

- Cruise Plot Map
- Topographical Map
- Aerial Map
- Map Showing Potential Timber Sale Area
- Sawtimber & Pulpwood Volume Summary
- Sawtimber Stand and Stock Tables
- Pulpwood Stand and Stock Tables
- Species Codes
- Cruise Specifications

If you have any questions regarding this inventory, please contact me at (304) 871-0181. We truly appreciate the opportunity to be of service.

Sincerely,

A handwritten signature in black ink that reads "Robert Butcher". The script is cursive and fluid, with the first name "Robert" and last name "Butcher" clearly distinguishable.

Robert Butcher
WV RFT #36

Cruise Details

Tract Name:	McKenna
Client Name:	McKenna
Inventory Type:	Point Sample
Cruise Acres:	761
Total Acres:	761
Number of Plots:	304
BAF:	20
DBH Class:	2
Volume Scale:	Doyle
Form Class:	78
Cruise Date:	11/2021
Date of Report:	11/18/2021

Cruise Summary | Sawtimber

McKenna | McKenna | 11/18/2021 | S1044 | Point Sample

Species	Trees	Total BFV	Avg. BF/Tree	BFV/Acre	% of BFV	Avg. DBH	Avg. MHT	BA/Acre
AB	840	69,122	82	91	4.2	14.9	1.3	1.4
BB	433	15,029	35	20	0.9	13	0.8	0.5
BC	311	17,346	56	23	1	14.2	1	0.5
BG	100	5,182	52	7	0.3	13.4	1	0.1
BL	64	1,850	29	2	0.1	12	1	0.1
BO	454	45,525	100	60	2.7	15.4	1.6	0.8
BSW	547	59,172	108	78	3.6	15.1	1.8	0.9
BW	162	12,504	77	16	0.8	14.8	1.3	0.3
CO	1,850	168,380	91	221	10.1	15.3	1.4	3.2
CUC	591	39,485	67	52	2.4	13.6	1.6	0.8
HE	2,178	225,064	103	296	13.6	15.1	1.7	3.7
HI	1,536	92,530	60	122	5.6	13.5	1.4	2
HM	1,288	91,587	71	120	5.5	14.5	1.3	2
POP	3,019	244,444	81	321	14.7	13.9	2.1	4.3
PP	23	9,271	403	12	0.6	20	5.5	0.1
RO	807	77,299	96	102	4.7	15.2	1.5	1.4
SM	2,553	172,715	68	227	10.4	14.2	1.3	3.8
SO	192	18,455	96	24	1.1	15.3	1.4	0.3
SYC	189	22,713	120	30	1.4	15.2	1.7	0.3
WO	2,639	211,579	80	278	12.7	14.4	1.5	4
WP	290	60,531	209	79	3.6	16.4	2.8	0.6
TOTAL	20,066	1,659,783	83	2,180	100	14.5	1.6	31

Cruise Summary | Pulpwood

McKenna | McKenna | 11/18/2021 | S1044 | Point Sample

Species	Trees	Total Tons	Avg. Tons/Tree	Tons/Acre	% of Tons	Avg. DBH	Avg. PHT	BA/Acre
AB	5,729	1168.9	0.2	1.5	7.4	7.6	2.5	2.7
BB	4,009	875.1	0.22	1.1	5.5	7.7	3.4	1.8
BC	1,270	282.4	0.22	0.4	1.8	8.3	2.8	0.7
BG	635	281.2	0.44	0.4	1.8	9.4	3.7	0.5
BO	92	27.9	0.3	0	0.2	10	3	0.1
BSW	184	68.2	0.37	0.1	0.4	10	4	0.1
CO	1,956	715.3	0.37	0.9	4.5	9.6	4.2	1.3
CUC	1,171	377.5	0.32	0.5	2.4	8.3	4.7	0.6
EL	144	19.7	0.14	0	0.1	8	2	0.1
HE	5,758	1159.1	0.2	1.5	7.3	8.1	2.7	2.8
HI	6,799	1457.6	0.21	1.9	9.2	7.8	3.2	3.1
HM	7,540	1679.8	0.22	2.2	10.6	7.9	3.3	3.6
MXH	3,734	648	0.17	0.9	4.1	7.5	2.6	1.6
POP	13,493	2607.5	0.19	3.4	16.4	7.5	3	5.7
PP	380	101.2	0.27	0.1	0.6	8.5	3.9	0.2
RO	871	182.4	0.21	0.2	1.1	7.8	3.2	0.4
SAS	510	39.2	0.08	0.1	0.2	6	2	0.1
SM	10,862	2508.1	0.23	3.3	15.8	8.2	3.1	5.5
SO	300	100	0.33	0.1	0.6	9.5	3.4	0.2
SYC	1,240	172.9	0.14	0.2	1.1	6.9	2.3	0.5
WO	4,812	1409.8	0.29	1.9	8.9	8.9	3.6	2.8
WP	144	19.7	0.14	0	0.1	8	2	0.1
TOTAL	71,633	15,902	0.2	20.9	100	7.9	3.1	34

Stand Table | Sawtimber

McKenna | McKenna | 11/18/2021 | S1044 | Point Sample

DBH Class (inches)

Species	12	14	16	18	20	22	24	26	Total
AB	320	188	108	140	46	38	-	-	840
BB	256	141	36	-	-	-	-	-	433
BC	128	47	108	28	-	-	-	-	311
BG	64	-	36	-	-	-	-	-	100
BL	64	-	-	-	-	-	-	-	64
BO	128	47	144	112	23	-	-	-	454
BSW	192	94	108	84	69	-	-	-	547
BW	64	47	-	28	23	-	-	-	162
CO	384	470	648	168	161	19	-	-	1,850
CUC	256	235	72	28	-	-	-	-	591
HE	512	705	468	308	115	38	32	-	2,178
HI	896	188	396	56	-	-	-	-	1,536
HM	320	517	288	140	23	-	-	-	1,288
POP	1,088	1,222	540	112	-	57	-	-	3,019
PP	-	-	-	-	23	-	-	-	23
RO	256	94	252	140	46	19	-	-	807
SM	960	846	468	196	69	-	-	14	2,553
SO	64	-	72	56	-	-	-	-	192
SYC	64	47	36	28	-	-	-	14	189
WO	896	799	576	280	69	19	-	-	2,639
WP	64	94	36	-	23	57	16	-	290
TOTAL	6,976	5,781	4,392	1,904	690	247	48	28	20,066

Stock Table | Sawtimber

McKenna | McKenna | 11/18/2021 | S1044 | Point Sample

DBH Class (inches)

Species	12	14	16	18	20	22	24	26	Total
AB	8,036	10,917	9,327	19,645	11,159	10,038	-	-	69,122
BB	4,910	6,747	3,372	-	-	-	-	-	15,029
BC	2,870	1,406	9,328	3,742	-	-	-	-	17,346
BG	1,020	-	4,162	-	-	-	-	-	5,182
BL	1,850	-	-	-	-	-	-	-	1,850
BO	3,700	2,249	15,247	19,163	5,166	-	-	-	45,525
BSW	4,720	5,342	15,247	14,485	19,378	-	-	-	59,172
BW	1,850	2,905	-	4,649	3,100	-	-	-	12,504
CO	7,780	24,880	67,379	29,906	30,997	7,438	-	-	168,380
CUC	7,846	16,165	8,898	6,576	-	-	-	-	39,485
HE	12,756	45,732	49,331	57,742	30,629	13,056	15,818	-	225,064
HI	22,642	11,573	46,353	11,962	-	-	-	-	92,530
HM	8,420	27,129	25,974	23,245	6,819	-	-	-	91,587
POP	38,588	93,430	73,615	19,247	-	19,564	-	-	244,444
PP	-	-	-	-	9,271	-	-	-	9,271
RO	6,570	4,498	24,396	24,321	14,212	3,302	-	-	77,299
SM	24,430	46,480	51,123	26,959	18,805	-	-	4,918	172,715
SO	1,020	-	5,955	11,480	-	-	-	-	18,455
SYC	1,850	2,905	4,162	5,386	-	-	-	8,410	22,713
WO	21,750	54,633	61,815	49,805	17,978	5,598	-	-	211,579
WP	1,850	7,872	5,345	-	7,393	27,420	10,651	-	60,531
TOTAL	184,458	364,863	481,029	328,313	174,907	86,416	26,469	13,328	1,659,783

Stand Table | Pulpwood

McKenna | McKenna | 11/18/2021 | S1044 | Point Sample

DBH Class (inches)

Species	6	8	10	12	14	16	18	20	22	Total
AB	3,060	1,872	368	192	47	-	56	115	19	5,729
BB	1,785	1,296	736	192	-	-	-	-	-	4,009
BC	510	144	552	64	-	-	-	-	-	1,270
BG	255	144	-	128	-	108	-	-	-	635
BO	-	-	92	-	-	-	-	-	-	92
BSW	-	-	184	-	-	-	-	-	-	184
CO	-	864	644	448	-	-	-	-	-	1,956
CUC	255	576	276	64	-	-	-	-	-	1,171
EL	-	144	-	-	-	-	-	-	-	144
HE	1,530	2,592	1,472	128	-	36	-	-	-	5,758
HI	2,295	3,024	1,380	64	-	36	-	-	-	6,799
HM	2,805	2,592	1,932	192	-	-	-	-	19	7,540
MXH	2,040	864	736	-	94	-	-	-	-	3,734
POP	6,630	3,744	2,944	128	47	-	-	-	-	13,493
PP	-	288	92	-	-	-	-	-	-	380
RO	255	432	184	-	-	-	-	-	-	871
SAS	510	-	-	-	-	-	-	-	-	510
SM	2,550	5,184	2,668	320	94	-	-	46	-	10,862
SO	-	144	92	64	-	-	-	-	-	300
SYC	1,020	-	92	128	-	-	-	-	-	1,240
WO	765	1,296	2,576	128	47	-	-	-	-	4,812
WP	-	144	-	-	-	-	-	-	-	144
TOTAL	26,265	25,344	17,020	2,240	329	180	56	161	38	71,633

Stock Table | Pulpwood

McKenna | McKenna | 11/18/2021 | S1044 | Point Sample

DBH Class (inches)

Species	6	8	10	12	14	16	18	20	22	Total
AB	235.2	320.1	97	107.4	35.1	-	98.4	229.8	45.9	1,169
BB	161	278.8	316	119.3	-	-	-	-	-	875.1
BC	39.2	19.7	178.1	45.4	-	-	-	-	-	282.4
BG	19.6	26.7	-	78.6	-	156.3	-	-	-	281.2
BO	-	-	27.9	-	-	-	-	-	-	27.9
BSW	-	-	68.2	-	-	-	-	-	-	68.2
CO	-	190.2	242.5	282.6	-	-	-	-	-	715.3
CUC	19.6	170.6	134.9	52.4	-	-	-	-	-	377.5
EL	-	19.7	-	-	-	-	-	-	-	19.7
HE	117.6	418.1	502.1	80	-	41.3	-	-	-	1,159
HI	217	586.7	567.2	34.6	-	52.1	-	-	-	1,458
HM	240.8	548.6	757	95	-	-	-	-	38.4	1,680
MXH	156.8	132.2	278.6	-	80.4	-	-	-	-	648
POP	550.2	712.7	1,236	63.4	45.3	-	-	-	-	2,608
PP	-	60.9	40.3	-	-	-	-	-	-	101.2
RO	19.6	87.6	75.2	-	-	-	-	-	-	182.4
SAS	39.2	-	-	-	-	-	-	-	-	39.2
SM	221.2	930.20000000 00001	1,037	173.9	58.6	-	-	87.3	-	2,508
SO	-	19.7	27.9	52.4	-	-	-	-	-	100
SYC	78.4	-	20.6	73.9	-	-	-	-	-	172.9
WO	58.8	241.3	989.9	84.7	35.1	-	-	-	-	1,410
WP	-	19.7	-	-	-	-	-	-	-	19.7
TOTAL	2,174	4,784	6,596	1,344	254.5	249.7	98.4	317.1	84.3	15,901

Cruise Statistics

McKenna | McKenna | 11/18/2021 | S1044 | Point Sample

Sawtimber Statistics (based on 304 sample points)

Coefficient of Variation (CV)?: 107

Confidence Level	% of Mean	(BFV/Acre)				(Total BFV)			
		+/-	Lower CL	Mean	Upper CL	+/-	Lower CL	Total	Upper CL
99%	15.8	344	1,837	2,180	2,524	261,922	1,492,275	1,659,783	1,921,705
95%	12	262	1,919	2,180	2,442	199,487	1,460,296	1,659,783	1,859,270
90%	10.1	220	1,961	2,180	2,400	167,508	1,492,275	1,659,783	1,827,291
80%	7.8	171	2,009	2,180	2,351	130,199	1,529,584	1,659,783	1,789,982
70%	6.3	138	2,042	2,180	2,319	105,073	1,554,710	1,659,783	1,764,856
68%	6.1	133	2,047	2,180	2,314	101,266	1,558,517	1,659,783	1,761,049

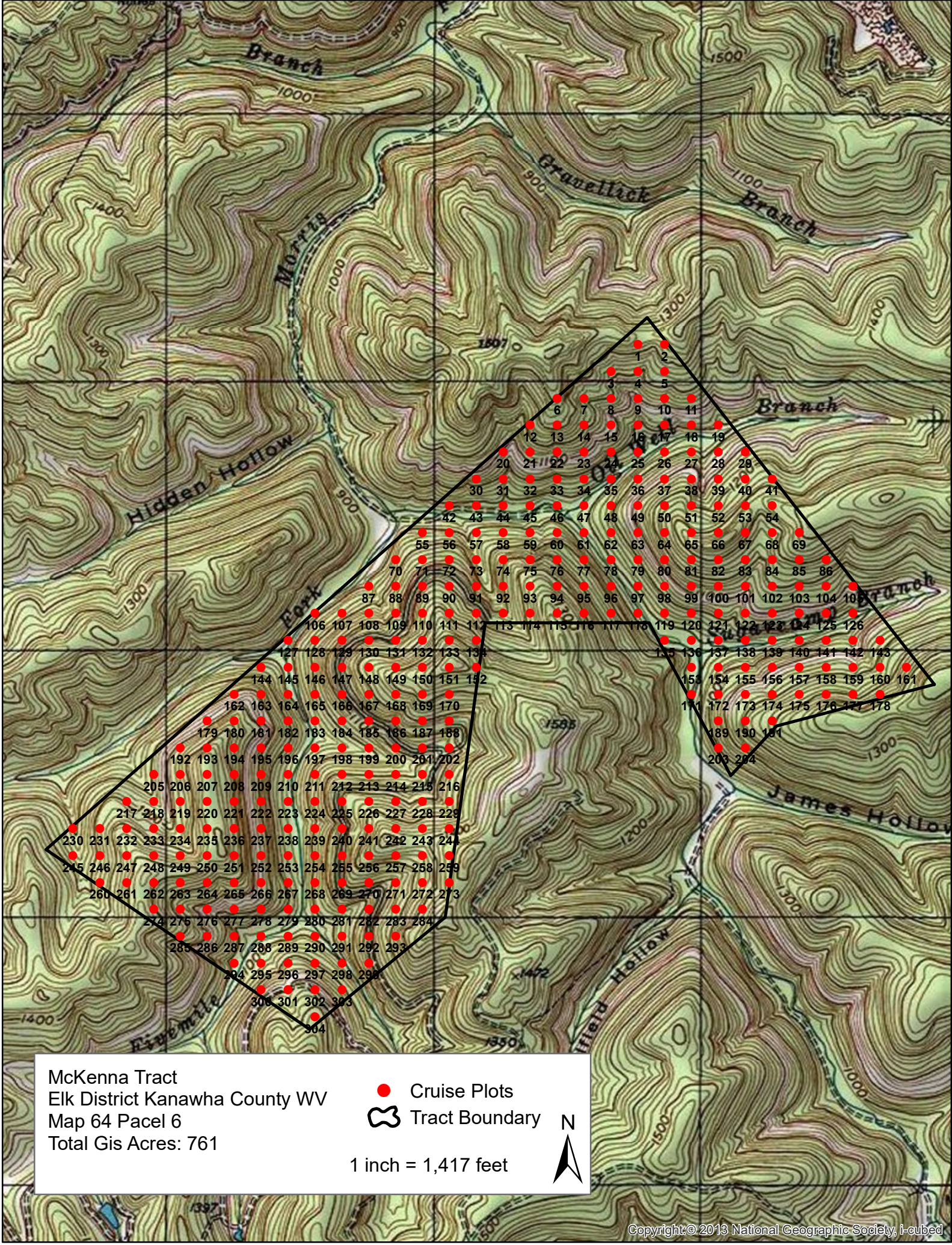
Pulpwood Statistics (based on 304 sample points)

Coefficient of Variation (CV)?: 87

Confidence Level	% of Mean	(Tons/Acre)				(Total Tons)			
		+/-	Lower CL	Mean	Upper CL	+/-	Lower CL	Total	Upper CL
99%	12.8	3	18	21	24	2,056	13,846	15,902	17,957
95%	9.8	2	19	21	23	1,523	14,379	15,902	17,424
90%	8.2	2	19	21	23	1,294	14,607	15,902	17,196
80%	6.4	1	20	21	22	990	14,912	15,902	16,891
70%	5.2	1	20	21	22	838	15,064	15,902	16,739
68%	5	1	20	21	22	761	15,140	15,902	16,663

Species Codes

Code	Common Name	Scientific Name	Form Class
AB	American beech	Fagus grandifolia	78
BB	sweet birch	Betula lenta	78
BC	black cherry	Prunus serotina	78
BG	blackgum	Nyssa sylvatica	78
BL	black locust	Robinia pseudoacacia	78
BO	black oak	Quercus velutina	78
BSW	American basswood	Tilia americana	78
BW	black walnut	Juglans nigra	78
CO	chestnut oak	Quercus prinus	78
CUC	cucumbertree	Magnolia acuminata	78
EL	elm	Ulmus spp.	78
HE	eastern hemlock	Tsuga canadensis	78
HI	hickory	Carya spp.	78
HM	sugar maple	Acer saccharum	78
MXH	hardwoods		78
POP	yellow-poplar	Liriodendron tulipifera	82
PP	pitch pine	Pinus rigida	78
RO	northern red oak	Quercus rubra	78
SAS	sassafras	Sassafras albidum	78
SM	red maple	Acer rubrum	78
SO	scarlet oak	Quercus coccinea	78
SYC	sycamore	Platanus occidentalis	78
WO	white oak	Quercus alba	78
WP	eastern white pine	Pinus strobus	78

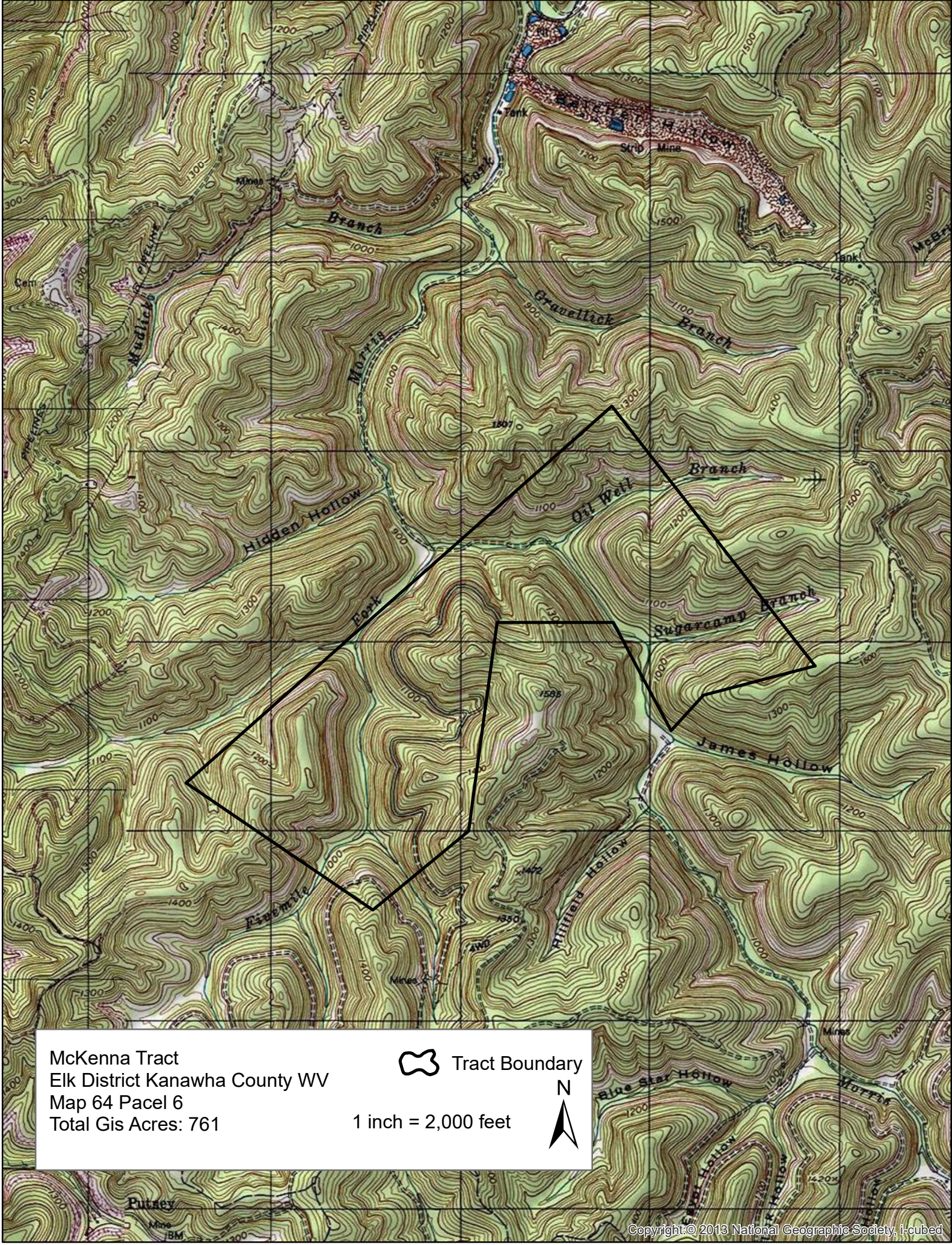


McKenna Tract
Elk District Kanawha County WV
Map 64 Pancel 6
Total Gis Acres: 761


● Cruise Plots
Tract Boundary

1 inch = 1,417 feet





McKenna Tract
Elk District Kanawha County WV
Map 64 Pancel 6
Total Gis Acres: 761

 Tract Boundary
N
1 inch = 2,000 feet

McKenna Tract
Elk District Kanawha County WV
Map 64 Pancel 6
Total Gis Acres: 761



Tract Boundary

1 inch = 2,000 feet



CRUISE SPECIFICATIONS FOR THE MCKENNA PROPERTY

INTRODUCTION

In Fall of 2021 a timber inventory will be conducted on approximately 761gis acres (840 assessed acres) on the McKenna Property (Elk District - Map 64 Parcel 6) in Kanawha County, WV.

The purpose of this timber cruise is to obtain detailed quantitative data that can be used for evaluation purposes. This data will include: total board feet volume (as predicted by Doyle Form Class 78 and 82 tree rule), total board feet volume by species, board feet volume per acre, sawtimber volume/species and DBH, total pulpwood volume, pulpwood volume/acre, and total wooded acres.

There are approximately 304 sample points (BAF 20) located systematically by GIS on the entire tract throughout the subject property on a 5 chain by 5 chain grid.

FIELD DATA COLLECTION

This is an explanation of the data entry that will be made on handheld data collectors using the forest inventory program *Cruise Control*.

CRUISER----This is the cruisers' initials.

PLOT #-----The plot number will be obtained from the cruise map generated from GIS.

PLOT LEVEL DATA

Last Harvest – How many years it has been since the last harvest.
0-5, 6-10, 10-20, 20+

Next Harvest Date- How many years to the next harvest.
0-5, 6-15, 16+ years

TREE LEVEL DATA

*All live trees found within a sample point will be given the following data.

SPECIES (SPP)

Each tree entered in the data collector will be given a species according to the following criteria:

Northern Red Oak	RO	White Oak	WO
Black Oak	BO	Chestnut Oak	CO
Scarlet Oak	SO	Black Cherry	BC
Sugar Maple	HM	White Ash	WA
Red Maple	SM	Yellow Poplar	POP
Basswood	BSW	Elm	EL
Cucumber	CUC	Black Walnut	BW
Sycamore	SYC	Black Birch	BB
Hickory	HI	Black Gum	BG
American Beech	AB	Hemlock	EH
Black Locust	BL	Misc. Hardwoods	MXH
White Pine	WP		

DIAMETER BREAST HEIGHT (DBH)

- All live trees 5.0” DBH and greater will be given a DBH value.
- Diameter measurements for each tree will be obtained from a diameter tape and recorded to the nearest 2 inch DBH class. Example 11.0 – 12.9 is within a 12 inch DBH class.

MERCHANTABLE HEIGHT (MHT)

This refers to the portion of the tree that could be sold and utilized for sawtimber.

- For hardwoods the minimum top diameter is 10” (DIB). However the upper limits in stem merchantability is often dictated by tree form and merchantability may end where form dictates. For pine the sawtimber height should be recorded strictly to an 8” top (DIB).
- For hardwoods only trees in the 12” diameter class and greater will be given a sawtimber height value with the exception of peelers, which can be in the 10” diameter class.
- For pine trees only trees in the 10” diameter class and greater will be given a saw height value.
- Saw height will be recorded to the nearest half log and entered as follows: 15 for a 1.5 log tree.
- Yellow-poplar & cucumber may have “Peeler” designations; these have to be at least 8” DIB for top diameter & should be relatively straight & free of defect.

PULP HEIGHT

- This refers to the portion of a tree that could be utilized as pulpwood.
- This is recorded to a minimum top diameter of 4 inches (DOB).

- Pulp height is recorded for all hardwood trees within the 6 – 10” DBH range and for all pine within the 6 – 8” DBH range.
- Pulp height will be recorded in 8’ bolts.
- Minimum pulp height is two 8’ bolts
- Pulp maximum DBH is 22 inches

GENERAL FIELD INSTRUCTIONS

- **PLOT LOCATIONS**

- Plots will be located with GPS according to where they have been designated by GIS.
- Satellite position greatly affects the accuracy of the position report that you get from your GPS unit.
- You should always double-check your topographic map for final position if distinguishable topographic features are present.
- Establish plots where they are located by GPS, no moving plots.

- **PLOT PROCEDURES**

- Each plot will begin due North of the plot center and tallied in a clockwise manner.
- Care should be given to plots in high basal area stands, particularly homogenous stands. A good practice is to double-check the plot with your prism just before leaving the plot.