NEWTON CENTRAL APPRAISAL DISTRICT

AGRICULTURE, TIMBER AND RURAL LAND

VALUATION REPORT

2020 APPRAISAL YEAR

MODEL

LAND VALUE MODEL

VALUE = ACRES X UNIT PRICE .... X SIZE ADJ.....X ROAD FACTOR

AG VALUE MODEL

$$\text{VALUE} = \frac{\text{RENT... - EXPENSES... - TAX RATE..}}{\text{CAP RATE}}$$

TIMBER VALUE MODEL

$$\text{VALUE} = \frac{\text{(PRICE PER ACRE X GROWTH RATES X SOIL TYUPES) – COST}}{\text{CAP RATE}}$$

SUMMARY

OPEN-SPACE VALUATION

Agriculture Values for 2020 were calculated after pasture rental information was obtained from the Agricultural Advisory Board. Rents of $20.00 for pasture land were used. The capitalization rate furnished by the State Comptroller's office was 10%. This capitalization rate is set in Section 23.53 of the Property Tax Code. The Manual for Appraisal of Agriculture was used to calculate the productivity value. The resulting values for 2020 for pasture are the same as 2019. There are approximately 30,200 acres in pasture land.

TIMBER VALUATION

To calculate the 2020 Timber Productivity Values, we used the Timber Production Value Spreadsheet and Capitalization Rate of 7.28% that we received from the State Comptroller's office. This Capitalization Rate is set in Section 23.74 of the Property Tax Code. The 2019 cap rate was 7.42%

Management costs have remained level. Futhermore, the Capitalization Rate for 2020 decreased .14%

Overall, there is approximately 548,000 acres in Timber use. Timber is the primary industry in Newton County. We also have the best soil in the state to produce and grow Pine trees.

The Texas Property Tax Division contracts with the Texas Forest Service to develop the management and production costs the P.T.D. uses to determine value. Changes to growth rates and other factors based on on-going updates to the Forest Inventory and Analysis are conducted by the U.S. Forest Service.

2014 Calculations for Productivity Values

School district	2014 Tax Rate
Newton ISD	1.29
Burkeville ISD	1.1835
Deweyville ISD	1.2457
Total	3.7192
Average ISD Tax Rate	1.2397
Newton County + Lateral Road	.643721

Tax Rate Calculation for Ag Productivity Calculations:

$$\text{Taxes} = \frac{(\text{Av. Tax Rate for ISD} + \text{County Rate}) * \text{Previous Year Productivity Value}}{100}$$

Pasture Tax Calculation 3.3901578

2015 Calculations for Productivity Values

School district	2015 Tax Rate
Newton ISD	1.31
Burkeville ISD	1.2809
Deweyville ISD	1.2457
Total	3.8366
Average ISD Tax Rate	1.2789
Newton County + Lateral Road	.694814

Tax Rate Calculation for Ag Productivity Calculations:

$$\text{Taxes} = \frac{(\text{Av. Tax Rate for ISD} + \text{County Rate}) * \text{Previous Year Productivity Value}}{100}$$

Pasture Tax Calculation 3.552685

2016 Calculations for Productivity Values

School district	2016 Tax Rate
Newton ISD	1.33
Burkeville ISD	1.3027
Deweyville ISD	1.19752
Total	3.83022
Average ISD Tax Rate	1.27674
Newton County + Lateral Road	.719769

Tax Rate Calculation for Ag Productivity Calculations:

$$\text{Taxes} = \frac{(\text{Av. Tax Rate for ISD} + \text{County Rate}) * \text{Previous Year Productivity Value}}{100}$$

Pasture Tax Calculation 3.5937

2017 Calculations for Productivity Values

School district	2017 Tax Rate
Newton ISD	1.35
Burkeville ISD	1.30020
Deweyville ISD	1.195828
Total	3.846028
Average ISD Tax Rate	1.28200
Newton County + Lateral Road	.713246

Tax Rate Calculation for Ag Productivity Calculations:

$$\text{Taxes} = \frac{(\text{Av. Tax Rate for ISD} + \text{County Rate}) * \text{Previous Year Productivity Value}}{100}$$

Pasture Tax Calculation 3.59144

2018 Calculations for Productivity Values

School district	2018 Tax Rate
Newton ISD	1.38
Burkeville ISD	1.28861
Deweyville ISD	1.190824
Total	3.859434
Average ISD Tax Rate	1.286478
Newton County + Lateral Road	.690735

Tax Rate Calculation for Ag Productivity Calculations:

$$\text{Taxes} = \frac{(\text{Av. Tax Rate for ISD} + \text{County Rate}) * \text{Previous Year Productivity Value}}{100}$$

Pasture Tax Calculation 3.5589834

2020 AG PRODUCTIVITY VALUES

PASTURE 180

2019 AG CALUCLATIONS

PASTURE	YEAR	RENT	MGMT. FEE	R.E. TAXES	NET TO LAND	
	2014	$25.00	$ 1.75	$3.28	$19.86	
	2015	$25.00	$ 1.75	$3.55	$19.70	
	2016	$25.00	$1.75	$3.59	$19.66	
	2017	$20.00	$1.75	$3.59	$14.91	5 yr Av. net
	2018	$20.00	$1.50	$3.56	$14.94	$17.81
					$89.35	
			Capitalized $ 178.14		$ 180.00/acre	

Ag Land Capitalization Rate used for 2020 10.00%

Management Fee is equal to 7% of Revenue

MODEL

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TIMBER VALUE MODEL

$$\text{VALUE} = \frac{\text{(PRICE PER ACRE X GROWTH RATES X SOIL TYUPES) – COST}}{\text{CAP RATE}}$$

2020 TIMBER VALUES

TYPE	SOIL I	SOIL II	SOIL III
PINE	499	316	234
MIXED	283	170	96
HARDWOOD	163	75	45
PINE RGT & SMZ	250	158	117
MIXED RGT & SMZ	142	85	48
HARDWOOD RGT & SMZ	82	38	23

PASTURE 180/PER ACRE

2020 RESTRICTED-USED TIMBER VALUES

CLASS	CLASS	VALUE
SMZ-P1	RGT-P1	250
SMZ-P2	RGT-P2	158
SMZ-P3	RGT-P3	1157
SMZ-M1	RGT-M1	142
SMZ-M2	RGT-M2	85
SMZ-M3	RGT-M3	48
SMZ-H1	RGT-H1	82
SMZ-H2	RGT-H2	38
SMZ-H3	RGT-H3	23

SMZ = STREAMSIDE MANAGEMENT ZONE

RGT = REFORESTATION

TIMBER CAPITALIZATION RATE HISTORY

YEAR	CAP RATE	YEAR	CAP RATE
1986	14.00%	2018	7.42%
1987	13.25%	2019	7.45%
1988	12.75%	2020	7.28%
1989	12.45%		
1990	12.75%		
1991	12.45%		
1992	12.00%		
1993	11.00%		
1994	10.00%		
1995	10.75%		
1996	10.75%		
1997	10.35%		
1998	10.60%		
1999	9.65%		
2000	10.90%		
2001	10.85%		
2002	6.90%		
2003	6.40%		
2004	6.40%		
2005	7.17%		
2006	9.05%		
2007	10.13%		
2008	9.86%		
2009	8.74%		
2010	8.60%		
2011	8.72%		
2012	8.44%		
2013	8.02%		
2014	8.00%		
2015	7.72%		
2016	7.53%		
2017	7.39%		

Tax Year

2020

Five Year Period

2015
2016
2017
2018
2019

Cap Rate

7.28%

Stumpage Prices

	Large Pine Sawtimber		Small Pine Sawtimber		Hardwood Sawtimber		Pine Pulpwood		Hardwood Pulpwood	
	Unweighted	Weighted	Unweighted	Weighted	Unweighted	Weighted	Unweighted	Weighted	Unweighted	Weighted
2015	$35.29	$29.95	$14.70	$14.53	$39.82	$40.02	$9.06	$9.39	$14.40	$16.27
2016	$29.35	$26.99	$13.37	$12.70	$37.54	$39.78	$8.94	$9.14	$9.69	$10.62
2017	$26.43	$25.54	$10.92	$9.75	$27.80	$30.95	$7.91	$7.91	$8.71	$9.38
2018	$23.91	$28.74	$12.41	$13.80	$29.96	$29.86	$6.95	$7.16	$10.21	$9.81
2019	$26.57	$30.42	$13.16	$14.47	$35.41	$35.36	$8.37	$9.95	$13.77	$13.21

Management Costs East Texas

	Pine				Mixed				Hardwood			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
2015	41.15	35.00	22.56	13.01	31.26	26.48	19.48	14.48	25.19	23.22	16.22	12.56
2016	40.76	34.87	22.90	13.03	29.86	25.33	19.03	13.86	24.70	21.97	15.59	12.13
2017	41.72	35.71	23.52	13.38	29.46	25.22	18.95	13.75	24.02	21.30	15.09	11.84
2018	43.01	36.88	24.26	13.97	29.93	25.84	19.40	14.34	24.25	21.53	15.47	12.29
2019	43.01	36.88	24.26	13.97	29.93	25.84	19.40	14.34	24.25	21.53	15.47	12.29

PLEASE NOTE: THESE SPREADSHEETS ARE A WORK IN PROGRESS.
The Comptroller's Property Tax Assistance Division contracts with the Texas A&M Forest Service (TFS) to develop the management costs for use in determining timberland productivity values for the Property Value Study (PVS). TFS will not have completed its work in developing management costs for the 2019 tax year until November or December 2020. As as result, these spreadsheets use the 2018 management costs for the 2019 tax year. Values to be used in the 2020 PVS will be somewhat different when TFS's management costs for the 2019 tax year are incorporated into the 2020 PVS.

TABLE 1.
Net Average Annual Growth Per Acre by Forest Type and Site Class for Private Timberland

Forest Type	Site Class	Number of Plots	Average Large Pine Sawtimber Growth/Acre (Board Feet)*	Average Small Pine Sawtimber Growth/Acre (Board Feet)*	Average Hardwood Sawtimber Growth/Acre (Board Feet)*	Average Pine Pulpwood Growth/Acre (Cubic Feet)*	Average Hardwood Pulpwood Growth/Acre (Cubic Feet)*
Pine	120 +	209	341.29	99.75	21.91	28.74	4.31
	85 - 119	336	257.67	70.42	16.92	31.31	4.14
	50 - 84	151	175.04	67.84	5.49	25.92	3.91
	< 50	8	147.11	9.27	7.05	34.67	1.10
Mixed	120 +	52	177.79	26.91	90.91	6.16	6.98
	85 - 119	112	130.87	19.78	61.91	7.86	8.24
	50 - 84	75	98.64	21.59	31.87	7.26	7.92
	< 50	8	15.35	12.78	31.79	5.62	2.88
Hardwood	120 +	100	63.96	7.82	135.16	2.60	7.52
	85 - 119	260	32.71	7.81	102.25	2.25	8.53
	50 - 84	193	15.33	6.06	60.83	1.21	6.32
	< 50	60	12.84	1.34	47.76	0.94	5.01

*Board feet are expressed in terms of International 1/4 inch log rule.
Source: Texas A&M Forest Service, from the U.S. Department of Agricultural Forest Service Survey of Texas Timber

TABLE 2. Calculation of Average Annual Growth, Per Acre, by Forest Type and Forest Product

FOREST TYPE: PINE

		Large Pine Sawtimber		Small Pine Sawtimber		Hardwood Sawtimber		Pine Pulpwood		Hardwood Pulpwood	
Site Class	Number of Plots	Average Growth/Acre (board feet)*	Total Growth per Site Class	Average Growth/Acre (board feet)*	Total Growth per Site Class	Average Growth/Acre (board feet)*	Total Growth per Site Class	Average Growth/Acre (cubic feet)*	Total Growth per Site Class	Average Growth/Acre (cubic feet)*	Total Growth per Site Class
120 +	209.31	341.29	71,435.41	99.75	20,878.67	21.91	4,585.98	28.74	6,015.57	4.31	902.13
85-119	335.82	257.67	86,530.74	70.42	23,648.44	16.92	5,682.07	31.31	10,514.52	4.14	1,390.29
50-84	150.56	175.04	26,354.02	67.84	10,213.99	5.49	826.57	25.92	3,902.52	3.91	588.69
<50	7.52	147.11	1,106.27	9.27	69.71	7.05	53.02	34.67	260.72	1.10	8.27
Totals	703.21		185,426.44		54,810.81		11,147.64		20,693.33		2,889.38
			÷ 703.21		÷ 703.21		÷ 703.21		÷ 703.21		÷ 703.21
			= 263.69 bd. ft.		= 77.94 bd. ft.		= 15.85 bd. ft.		= 29.43 cu. ft.		= 4.11 cu. ft.

FOREST TYPE: MIXED

		Large Pine Sawtimber		Small Pine Sawtimber		Hardwood Sawtimber		Pine Pulpwood		Hardwood Pulpwood	
Site Class	Number of Plots	Average Growth/Acre (board feet)*	Total Growth per Site Class	Average Growth/Acre (board feet)*	Total Growth per Site Class	Average Growth/Acre (board feet)*	Total Growth per Site Class	Average Growth/Acre (cubic feet)*	Total Growth per Site Class	Average Growth/Acre (cubic feet)*	Total Growth per Site Class
120 +	51.75	177.79	9,200.63	26.91	1,392.59	90.91	4,704.59	6.16	318.78	6.98	361.22
85-119	111.52	130.87	14,594.62	19.78	2,205.87	61.91	6,904.20	7.86	876.55	8.24	918.92
50-84	74.51	98.64	7,349.67	21.59	1,608.67	31.87	2,374.63	7.26	540.94	7.92	590.12
<50	8.32	15.35	127.71	12.78	106.33	31.79	264.49	5.62	46.76	2.88	23.96
Totals	246.1		31,272.63		5,313.46		14,247.91		1,783.03		1,894.22
			+ 246.1		+ 246.1		+ 246.1		+ 246.1		+ 246.1
			= 127.07 bd. ft.		= 21.59 bd. ft.		= 57.89 bd. ft.		= 7.25 cu. ft.		= 7.70 cu. ft.

FOREST TYPE: HARDWOOD

		Large Pine Sawtimber		Small Pine Sawtimber		Hardwood Sawtimber		Pine Pulpwood		Hardwood Pulpwood	
Site Class	Number of Plots	Average Growth/Acre (board feet)*	Total Growth per Site Class	Average Growth/Acre (board feet)*	Total Growth per Site Class	Average Growth/Acre (board feet)*	Total Growth per Site Class	Average Growth/Acre (cubic feet)*	Total Growth per Site Class	Average Growth/Acre (cubic feet)*	Total Growth per Site Class
120 +	100.46	63.96	6,425.42	7.82	785.60	135.16	13,578.17	2.60	261.20	7.52	755.46
85-119	259.64	32.71	8,492.82	7.81	2,027.79	102.25	26,548.19	2.25	584.19	8.53	2,214.73
50-84	193.47	15.33	2,965.90	6.06	1,172.43	60.83	11,768.78	1.21	234.10	6.32	1,222.73
<50	60.45	12.84	776.18	1.34	81.00	47.76	2,887.09	0.94	56.82	5.01	302.85
Totals	614.02		18,660.32		4,066.82		54,782.23		1,136.31		4,495.77
			÷ 614.02		+ 614.02		+ 614.02		+ 614.02		+ 614.02
			= 30.39 bd. ft.		= 6.62 bd. ft.		= 89.22 bd. ft.		= 1.85 cu. ft.		= 7.32 cu. ft.

*Board feet are expressed in terms of International 1/4 inch log rule.

TABLE 3.
Average Annual Timber Growth, Measured in Terms of Forest Products, on an Average Acre of Timberland, by Forest Type

	Board Feet* per Acre per Year			Cubic Feet per Acre per Year	
Forest Type	Large Pine Sawtimber	Small Pine Sawtimber	Hardwood Sawtimber	Pine Pulpwood	Hardwood Pulpwood
Pine	263.69	77.94	15.85	29.43	4.11
Mixed	127.07	21.59	57.89	7.25	7.70
Hardwood	30.39	6.62	89.22	1.85	7.32

* Million board feet are expressed in terms of International 1/4 inch log rule.

TABLE 4.
Calculation of the Weighted Conversion Factors
Used to Change the Volume of Large Pine Sawtimber and Hardwood Sawtimber
Measured in International 1/4 inch Long Rule to Doyle Log Rule

Diameter Class	Volume in Million bd. ft. International 1/4" Log Rule		Total Volume		Percent of Total Volume		Conversion Factor		Weighted Contribution
PINE									
11 - 12.9	5,258.7	÷	30,921.1	=	17.007%	x	0.49037	=	0.08340
13 - 14.9	5,202.7	÷	30,921.1	=	16.826%	x	0.52460	=	0.08827
15 - 16.9	5,077.2	÷	30,921.1	=	16.420%	x	0.59120	=	0.09708
17 - 18.9	4,294.9	÷	30,921.1	=	13.890%	x	0.65273	=	0.09066
19 - 20.9	3,538.4	÷	30,921.1	=	11.443%	x	0.70653	=	0.08085
21 - 28.9	6,110.1	÷	30,921.1	=	19.760%	x	0.81153	=	0.16036
29+	1,439.2	÷	30,921.1	=	4.654%	x	0.92181	=	0.04290
	30,921.1				100.00%				0.64352
Weighted Conversion Factor for Large Pine Sawtimber = 0.64352									
HARDWOOD									
11 - 12.9	2,470.2	÷	18,605.7	=	13.276%	x	0.46377	=	0.06157
13 - 14.9	2,878.9	÷	18,605.7	=	15.473%	x	0.52923	=	0.08189
15 - 16.9	2,633.8	÷	18,605.7	=	14.156%	x	0.59130	=	0.08370
17 - 18.9	2,488.4	÷	18,605.7	=	13.375%	x	0.64600	=	0.08640
19 - 20.9	2,126.7	÷	18,605.7	=	11.430%	x	0.69327	=	0.07924
21 - 28.9	4,639.9	÷	18,605.7	=	24.938%	x	0.78412	=	0.19554
29+	1,367.8	÷	18,605.7	=	7.351%	x	0.87323	=	0.06419
	18,605.7				100.00%				0.65253
Weighted Conversion Factor for Hardwood Sawtimber = 0.65253									

Volume Data from United States Forest Service, Forest Inventory and Analysis
Conversion Factors for International 1/4 Inch Log Rule to Doyle Log Rule from Mississippi State Study conducted by Thomas Matney
Conversion Factors for Doyle Log Rule to Tons from Texas A&M Forest Service

Table 5.
Converting Sawtimber Volumes Measured in International 1/4 Inch Rule and Pulpwood Cubic Foot Volumes to Tons, by Forest Type

FOREST TYPE: PINE

Forest Product	MBF International 1/4" Rule*		Weighted Doyle Conversion Factor**		MBF Doyle Rule		MBF Conversion		Growth in Board Feet		Ton Conversion Factor		Growth In Tons
Large Pine Sawtimber	263.69	x	0.64352	=	169.69	÷	1,000	=	0.16969	x	8.00	=	1.3575
Hardwood Sawtimber	15.85	x	0.65253	=	10.34	÷	1,000	=	0.01034	x	9.00	=	0.0931

	Cubic Feet*	MBF International 1/4" Rule*		Cord Conversion Factor		Growth in Cords		Ton Conversion Factor		Growth In Tons
Small Pine Sawtimber		77.94	÷	500	=	0.15588	x	2.70		0.4209
Pine Pulpwood	29.43		÷	81	=	0.36333	x	2.70		0.9810
Hardwood Pulpwood	4.11		÷	80	=	0.05138	x	2.80		0.1439

FOREST TYPE: MIXED

Forest Product	MBF International 1/4" Rule*		Weighted Doyle Conversion Factor**		MBF Doyle Rule		MBF Conversion		Growth in Board Feet		Ton Conversion Factor		Growth In Tons
Large Pine Sawtimber	127.07	x	0.64352	=	81.77	÷	1,000	=	0.08177	x	8.00	=	0.6542
Hardwood Sawtimber	57.89	x	0.65253	=	37.77	÷	1,000	=	0.03777	x	9.00	=	0.3399

	Cubic Feet*	MBF International 1/4" Rule*		Cord Conversion Factor		Growth in Cords		Ton Conversion Factor		Growth In Tons
Small Pine Sawtimber		21.59	÷	500	=	0.04318	x	2.70	=	0.1166
Pine Pulpwood	7.25		÷	81	=	0.08951	x	2.70	=	0.2417
Hardwood Pulpwood	7.70		÷	80	=	0.09625	x	2.80	=	0.2695

FOREST TYPE: HARDWOOD

Forest Product	MBF International 1/4" Rule*		Weighted Doyle Conversion Factor**		MBF Doyle Rule		MBF Conversion		Growth in Board Feet		Ton Conversion Factor		Growth In Tons
Large Pine Sawtimber	30.39	x	0.64352	=	19.56	÷	1,000	=	0.01956	x	8.00	=	0.1565
Hardwood Sawtimber	89.22	x	0.65253	=	58.22	÷	1,000	=	0.05822	x	9.00	=	0.5240

	Cubic Feet*	MBF International 1/4" Rule*		Cord Conversion Factor		Growth in Cords		Ton Conversion Factor		Growth In Tons
Small Pine Sawtimber		6.62	÷	500	=	0.01324	x	2.70	=	0.0357
Pine Pulpwood	1.85		÷	81	=	0.02284	x	2.70	=	0.0617
Hardwood Pulpwood	7.32		÷	80	=	0.09150	x	2.80	=	0.2562

*From Table 3
**From Table 4
Conversion Factors for International 1/4 Inch Log Rule to Doyle Log Rule from Mississippi State Study conducted by Thomas Matney

Conversion Factors for Doyle Log Rule to Tons & for International 1/4" Rule to Cord from Texas A&M Forest Service, Timber Price Trends

TABLE 6.
Average Annual Timber Growth, Measured in Tons per Acre per Year, by Forest Type and Forest Product

Forest Type	Large Pine Sawtimber	Small Pine Sawtimber	Hardwood Sawtimber	Pine Pulpwood	Hardwood Pulpwood
Pine	1.3575	0.4209	0.0931	0.9810	0.1439
Mixed	0.6542	0.1166	0.3399	0.2417	0.2695
Hardwood	0.1565	0.0357	0.5240	0.0617	0.2562

TABLE 7.
Average Stumpage Prices Measured in Price per Ton for Forest Products

	Large Pine Sawtimber			Small Pine Sawtimber			Hardwood Sawtimber		
Year	Unweighted Average Prices	Weighted Average Prices	Average of Unweighted and Weighted Prices	Unweighted Average Prices	Weighted Average Prices	Average of Unweighted and Weighted Prices	Unweighted Average Prices	Weighted Average Prices	Average of Unweighted and Weighted Prices
2015	$35.29	$29.95	$32.62	$14.70	$14.53	$14.62	$39.82	$40.02	$39.92
2016	$29.35	$26.99	$28.17	$13.37	$12.70	$13.04	$37.54	$39.78	$38.66
2017	$26.43	$25.54	$25.99	$10.92	$9.75	$10.34	$27.80	$30.95	$29.38
2018	$23.91	$28.74	$26.33	$12.41	$13.80	$13.11	$29.96	$29.86	$29.91
2019	$26.57	$30.42	$28.50	$13.16	$14.47	$13.82	$35.41	$35.36	$35.39

	Pine Pulpwood			Hardwood Pulpwood		
Year	Unweighted Average Prices	Weighted Average Prices	Average of Unweighted and Weighted Prices	Unweighted Average Prices	Weighted Average Prices	Average of Unweighted and Weighted Prices
2015	$9.06	$9.39	$9.23	$14.40	$16.27	$15.34
2016	$8.94	$9.14	$9.04	$9.69	$10.62	$10.16
2017	$7.91	$7.91	$7.91	$8.71	$9.38	$9.05
2018	$6.95	$7.16	$7.06	$10.21	$9.81	$10.01
2019	$8.37	$9.95	$9.16	$13.77	$13.21	$13.49

Unweighted averages are arithmetic means of reported transactions.
Weighted averages are equal to the total value of reported transactions divided by the total volume of reported transactions.
Source: Texas A&M Forest Service

TABLE 8.
Calculation of the Annual Average Gross Income of an Acre of Timber Growth, by Forest Product

PINE

Year	Sawtimber Growth (tons)											Pulp Growth (tons)							Average Annual Gross Income
	Large Pine*	x	Price **	+	Small Pine*	x	Price **	+	Hardwood*	x	Price **	Pine*	x	Price **	+	Hardwood*	x	Price **	
2015	1.3575	x	$32.62	+	0.4209	x	$14.62	+	0.0931	x	$39.92	0.9810	x	$9.23	+	0.1439	x	$15.34	$65.41
2016	1.3575	x	$28.17	+	0.4209	x	$13.04	+	0.0931	x	$38.66	0.9810	x	$9.04	+	0.1439	x	$10.16	$57.66
2017	1.3575	x	$25.99	+	0.4209	x	$10.34	+	0.0931	x	$29.38	0.9810	x	$7.91	+	0.1439	x	$9.05	$51.43
2018	1.3575	x	$26.33	+	0.4209	x	$13.11	+	0.0931	x	$29.91	0.9810	x	$7.06	+	0.1439	x	$10.01	$52.41
2019	1.3575	x	$28.50	+	0.4209	x	$13.82	+	0.0931	x	$35.39	0.9810	x	$9.16	+	0.1439	x	$13.49	$58.73

MIXED

Year	Sawtimber Growth (tons)											Pulp Growth (tons)							Average Annual Gross Income
	Large Pine*	x	Price **	+	Small Pine*	x	Price **	+	Hardwood*	x	Price **	Pine*	x	Price **	+	Hardwood*	x	Price **	
2015	0.6542	x	$32.62	+	0.1166	x	$14.62	+	0.3399	x	$39.92	0.2417	x	$9.23	+	0.2695	x	$15.34	$42.97
2016	0.6542	x	$28.17	+	0.1166	x	$13.04	+	0.3399	x	$38.66	0.2417	x	$9.04	+	0.2695	x	$10.16	$38.01
2017	0.6542	x	$25.99	+	0.1166	x	$10.34	+	0.3399	x	$29.38	0.2417	x	$7.91	+	0.2695	x	$9.05	$32.55
2018	0.6542	x	$26.33	+	0.1166	x	$13.11	+	0.3399	x	$29.91	0.2417	x	$7.06	+	0.2695	x	$10.01	$33.34
2019	0.6542	x	$28.50	+	0.1166	x	$13.82	+	0.3399	x	$35.39	0.2417	x	$9.16	+	0.2695	x	$13.49	$38.13

HARDWOOD

Year	Sawtimber Growth (tons)											Pulp Growth (tons)							Average Annual Gross Income
	Large Pine*	x	Price **	+	Small Pine*	x	Price **	+	Hardwood*	x	Price **	Pine*	x	Price **	+	Hardwood*	x	Price **	
2015	0.1565	x	$32.62	+	0.0357	x	$14.62	+	0.5240	x	$39.92	0.0617	x	$9.23	+	0.2562	x	$15.34	$31.05
2016	0.1565	x	$28.17	+	0.0357	x	$13.04	+	0.5240	x	$38.66	0.0617	x	$9.04	+	0.2562	x	$10.16	$28.30
2017	0.1565	x	$25.99	+	0.0357	x	$10.34	+	0.5240	x	$29.38	0.0617	x	$7.91	+	0.2562	x	$9.05	$22.65
2018	0.1565	x	$26.33	+	0.0357	x	$13.11	+	0.5240	x	$29.91	0.0617	x	$7.06	+	0.2562	x	$10.01	$23.26
2019	0.1565	x	$28.50	+	0.0357	x	$13.82	+	0.5240	x	$35.39	0.0617	x	$9.16	+	0.2562	x	$13.49	$27.52

* From Table 6
**From Table 7

TABLE 9.
Calculation of the Potential Growth of an Average Acre of Timber, East Texas

County	Number of Privately Owned Acres (000's) by Site Class					
	165+	120-165	85-120	50-85	<50	All Classes
Anderson	15.7	70.6	155.8	117.5	15.7	375.3
Angelina	20.2	95.2	172.7	27.5	2.3	317.7
Bowie	11.3	22.6	118.1	67.3	11.2	230.6
Camp	2.8	8.0	17.9	11.7	0.0	40.5
Cass	14.9	92.2	216.8	88.1	13.7	425.8
Chambers	0.0	1.8	7.0	17.1	3.0	28.9
Cherokee	13.4	95.2	193.2	89.7	3.7	395.2
Franklin	2.1	1.2	28.3	36.6	14.9	83.1
Gregg	3.3	11.9	53.4	17.6	0.0	86.2
Grimes	0.0	8.8	27.6	79.1	28.8	144.3
Hardin	12.7	82.7	194.1	142.3	15.1	446.8
Harris	3.6	14.8	62.0	62.8	8.8	152.1
Harrison	13.0	93.7	207.9	51.6	3.1	369.2
Henderson	0.7	4.5	36.4	71.8	68.7	182.1
Houston	4.1	46.5	156.1	96.1	9.3	312.1
Jasper	28.3	91.4	183.5	151.5	13.2	468.0
Jefferson	4.3	10.7	25.0	18.2	7.2	65.4
Leon	0.0	6.7	64.0	135.2	94.5	300.5
Liberty	21.7	61.2	130.3	127.6	22.8	363.6
Madison	2.0	2.3	24.0	34.3	10.1	72.7
Marion	4.7	52.1	114.3	31.0	1.2	203.4
Montgomery	5.2	48.6	166.5	90.4	24.7	335.4
Morris	1.2	7.9	26.4	21.5	0.6	57.6
Nacogdoches	27.4	132.0	199.2	35.0	4.3	397.9
Newton	21.4	117.9	226.6	151.4	6.5	523.8
Orange	2.5	21.6	42.5	35.6	4.4	106.6
Panola	19.4	108.3	187.1	41.9	2.4	359.1
Polk	38.9	113.7	227.5	136.9	11.9	528.9
Red River	4.3	12.3	118.5	159.1	30.2	324.4
Rusk	16.9	83.1	145.1	79.7	6.1	330.9
Sabine	14.2	67.8	102.0	8.2	0.0	192.1
San Augustine	16.7	63.8	112.7	6.1	1.0	200.4
San Jacinto	8.6	41.5	103.3	58.9	10.5	222.8
Shelby	24.6	76.0	134.3	25.1	0.0	259.9
Smith	4.2	36.5	123.7	70.5	12.6	247.6
Titus	0.0	12.0	39.3	37.6	9.5	98.4
Trinity	20.9	61.8	122.6	57.0	3.9	266.3
Tyler	16.1	104.8	219.4	143.7	8.7	492.8
Upshur	8.2	37.1	106.0	47.5	5.7	204.6
Van Zandt	0.0	0.0	48.5	56.3	34.7	139.5
Walker	8.1	45.2	117.4	79.1	12.0	261.7
Waller	0.6	3.2	27.9	25.6	11.7	69.1
Wood	0.2	24.2	128.4	61.1	13.7	227.5
All Counties	**438.6**	**2,093.6**	**4,913.1**	**2,902.6**	**562.6**	**10,910.6**

TABLE 9.
Calculation of the Potential Growth of an Average Acre of Timber, East Texas
(continued)

	Potential Cubic Feet of Growth x Number of Acres (000's)					
Growth Potentials	163	163	123	85	60	
County / Soil Type	165+	120-165	85-120	50-85	<50	Total
Anderson	2,560.0	11,502.6	19,160.8	9,986.7	943.4	44,153.5
Angelina	3,288.6	15,510.2	21,237.5	2,334.0	136.8	42,507.1
Bowie	1,848.7	3,688.6	14,529.3	5,718.9	674.4	26,460.0
Camp	449.9	1,312.1	2,206.0	995.8	0.0	4,963.7
Cass	2,424.2	15,030.8	26,665.6	7,491.9	824.1	52,436.5
Chambers	0.0	289.7	861.8	1,453.4	179.2	2,784.1
Cherokee	2,181.4	15,519.5	23,757.6	7,627.8	223.2	49,309.5
Franklin	339.0	197.9	3,485.1	3,106.8	895.2	8,024.1
Gregg	537.0	1,935.8	6,562.2	1,498.7	0.0	10,533.7
Grimes	0.0	1,435.7	3,390.8	6,726.4	1,728.1	13,281.0
Hardin	2,076.3	13,472.3	23,873.8	12,093.2	903.1	52,418.6
Harris	593.5	2,410.0	7,627.3	5,342.1	530.7	16,503.7
Harrison	2,111.4	15,275.7	25,567.9	4,386.8	184.3	47,526.0
Henderson	117.4	741.0	4,471.6	6,100.6	4,122.7	15,553.3
Houston	664.5	7,586.7	19,194.8	8,169.5	560.6	36,176.0
Jasper	4,618.6	14,893.2	22,573.4	12,879.8	792.6	55,757.7
Jefferson	707.4	1,743.3	3,069.0	1,550.5	431.3	7,501.5
Leon	0.0	1,096.8	7,874.5	11,491.6	5,672.8	26,135.7
Liberty	3,536.2	9,979.2	16,029.1	10,845.5	1,369.1	41,759.2
Madison	332.5	368.5	2,955.3	2,913.9	603.5	7,173.7
Marion	773.8	8,500.0	14,064.5	2,633.9	72.0	26,044.2
Montgomery	855.0	7,914.0	20,478.2	7,681.3	1,483.1	38,411.7
Morris	198.3	1,284.2	3,248.2	1,828.0	36.0	6,594.7
Nacogdoches	4,474.2	21,508.3	24,496.9	2,976.7	259.2	53,715.2
Newton	3,482.7	19,222.6	27,874.9	12,865.2	391.5	63,836.9
Orange	404.2	3,526.4	5,231.2	3,024.8	261.3	12,447.9
Panola	3,155.4	17,656.6	23,018.9	3,559.8	141.6	47,532.2
Polk	6,336.9	18,532.0	27,979.9	11,638.9	714.3	65,202.0
Red River	705.0	2,005.1	14,573.8	13,519.3	1,812.5	32,615.5
Rusk	2,754.0	13,549.4	17,841.3	6,776.8	364.8	41,286.3
Sabine	2,316.2	11,049.2	12,542.4	693.4	0.0	26,601.2
San Augustine	2,730.1	10,402.7	13,864.0	516.7	62.4	27,575.9
San Jacinto	1,395.9	6,772.5	12,705.6	5,007.0	628.3	26,509.2
Shelby	4,012.1	12,384.7	16,513.3	2,132.0	0.0	35,042.1
Smith	688.3	5,947.3	15,219.0	5,994.1	756.8	28,605.4
Titus	0.0	1,962.5	4,829.4	3,196.4	568.1	10,556.4
Trinity	3,399.8	10,075.4	15,084.2	4,848.3	236.0	33,643.8
Tyler	2,631.8	17,075.8	26,989.5	12,213.7	524.7	59,435.5
Upshur	1,343.0	6,053.9	13,036.5	4,033.8	344.1	24,811.2
Van Zandt	0.0	0.0	5,967.9	4,782.4	2,083.8	12,834.2
Walker	1,325.2	7,371.0	14,434.3	6,721.9	717.9	30,570.3
Waller	102.6	525.8	3,437.7	2,173.6	701.8	6,941.5
Wood	26.1	3,942.0	15,789.9	5,191.0	823.3	25,772.3
All Counties	**71,497.2**	**341,251.0**	**604,314.9**	**246,722.8**	**33,758.4**	**1,297,544.3**

1,297,544.3 ÷ 10,910.6 = 118.93 cubic feet per acre per year

Data from the United States Forest Service, Forest Inventory and Analysis
Growth potentials based on the 1975 Boyce Study

TABLE 10.
Calculation of Soil Productivity Multipliers

Soil Productivity Class	Average Maximum Potential Productivity in Southern United States (cu. ft. / acre / yr.)		Average Maximum Potential Productivity (cu. ft. / acre / yr.)		Productivity Multiplier
I	163	÷	118.93	=	1.37
II	123	÷	118.93	=	1.03
III	85	÷	118.93	=	0.71
IV	60	÷	118.93	=	0.50

Source: Average Maximum Potential Productivity from Boyce Study

TABLE 11. Calculation of Average Annual Potential Growth Income by Forest Type and Soil Productivity Class

PINE

Soil Productivity Class	I				II				III				IV			
Year	Gross Income*		Prod. Mult.**	Potential Gross Income	Gross Income*		Prod. Mult.**	Potential Gross Income	Gross Income*		Prod. Mult.**	Potential Gross Income	Gross Income*		Prod. Mult.**	Potential Gross Income
2015	$65.41	x	1.37	= $89.61	$65.41	x	1.03	= $67.37	$65.41	x	0.71	= $46.44	$65.41	x	0.50	= $32.71
2016	$57.66	x	1.37	= $78.99	$57.66	x	1.03	= $59.39	$57.66	x	0.71	= $40.94	$57.66	x	0.50	= $28.83
2017	$51.43	x	1.37	= $70.46	$51.43	x	1.03	= $52.97	$51.43	x	0.71	= $36.52	$51.43	x	0.50	= $25.72
2018	$52.41	x	1.37	= $71.80	$52.41	x	1.03	= $53.98	$52.41	x	0.71	= $37.21	$52.41	x	0.50	= $26.21
2019	$58.73	x	1.37	= $80.46	$58.73	x	1.03	= $60.49	$58.73	x	0.71	= $41.70	$58.73	x	0.50	= $29.37

MIXED

Soil Productivity Class	I				II				III				IV			
Year	Gross Income*		Prod. Mult.**	Potential Gross Income	Gross Income*		Prod. Mult.**	Potential Gross Income	Gross Income*		Prod. Mult.**	Potential Gross Income	Gross Income*		Prod. Mult.**	Potential Gross Income
2015	$42.97	x	1.37	= $58.87	$42.97	x	1.03	= $44.26	$42.97	x	0.71	= $30.51	$42.97	x	0.50	= $21.49
2016	$38.01	x	1.37	= $52.07	$38.01	x	1.03	= $39.15	$38.01	x	0.71	= $26.99	$38.01	x	0.50	= $19.01
2017	$32.55	x	1.37	= $44.59	$32.55	x	1.03	= $33.53	$32.55	x	0.71	= $23.11	$32.55	x	0.50	= $16.28
2018	$33.34	x	1.37	= $45.68	$33.34	x	1.03	= $34.34	$33.34	x	0.71	= $23.67	$33.34	x	0.50	= $16.67
2019	$38.13	x	1.37	= $52.24	$38.13	x	1.03	= $39.27	$38.13	x	0.71	= $27.07	$38.13	x	0.50	= $19.07

HARDWOOD

Soil Productivity Class	I				II				III				IV			
Year	Gross Income*		Prod. Mult.**	Potential Gross Income	Gross Income*		Prod. Mult.**	Potential Gross Income	Gross Income*		Prod. Mult.**	Potential Gross Income	Gross Income*		Prod. Mult.**	Potential Gross Income
2015	$31.05	x	1.37	= $42.54	$31.05	x	1.03	= $31.98	$31.05	x	0.71	= $22.05	$31.05	x	0.50	= $15.53
2016	$28.30	x	1.37	= $38.77	$28.30	x	1.03	= $29.15	$28.30	x	0.71	= $20.09	$28.30	x	0.50	= $14.15
2017	$22.65	x	1.37	= $31.03	$22.65	x	1.03	= $23.33	$22.65	x	0.71	= $16.08	$22.65	x	0.50	= $11.33
2018	$23.26	x	1.37	= $31.87	$23.26	x	1.03	= $23.96	$23.26	x	0.71	= $16.51	$23.26	x	0.50	= $11.63
2019	$27.52	x	1.37	= $37.70	$27.52	x	1.03	= $28.35	$27.52	x	0.71	= $19.54	$27.52	x	0.50	= $13.76

*From Table 8
**From Table 10

TABLE 12.
Average Annual Timber Production Costs

Year	Production Cost
2015	$35.00
2016	$34.87
2017	$35.71
2018	$36.88
2019	$36.88

Texas A&M Forest Service develops production costs used in the Comptroller's annual Property Value Study for each of the twelve classes of timberlands. See Texas Timberland Management Cost Studies. Costs listed above are those developed by the Texas A&M Forest Service for Pine II, the most common class in East Texas.

PLEASE NOTE: THESE SPREADSHEETS ARE A WORK IN PROGRESS. The Comptroller's Property Tax Assistance Division contracts with the Texas A&M Forest Service (TFS) to develop the management costs for use in determining timberland productivity values for the Property Value Study (PVS). TFS will not have completed its work in developing management costs for the 2019 tax year until November or December 2020. As a result, these spreadsheets use the 2018 management costs for the 2019 tax year. Values to be used in the 2020 PVS will be somewhat different when TFS's management costs for the 2019 tax year are incorporated into the 2020 PVS.

TABLE 13.
Production Costs Adjusted for Soil Productivity by Forest Type and Soil Productivity Class

PINE

Soil Productivity Class	I			II			III			IV		
Year	Cost	Factor	Prorated Cost	Cost	Factor	Prorated Cost	Cost		Prorated Cost	Cost	Factor	Prorated Cost
2015		x	= $41.15		x	= $35.00		x	$22.56		x	= $13.01
2016		x	= $40.76		x	= $34.87		x	$22.90		x	= $13.03
2017		x	= $41.72		x	= $35.71		x	$23.52		x	= $13.38
2018		x	= $43.01		x	= $36.88		x	$24.26		x	= $13.97
2019		x	= $43.01		x	= $36.88		x	$24.26		x	= $13.97

MIXED

Soil Productivity Class	I			II			III			IV		
Year	Cost	Factor	Prorated Cost	Cost	Factor	Prorated Cost	Cost		Prorated Cost	Cost	Factor	Prorated Cost
2015		x	= $31.26		x	= $26.48		x	$19.48		x	= $14.48
2016		x	= $29.86		x	= $25.33		x	$19.03		x	= $13.86
2017		x	= $29.46		x	= $25.22		x	$18.95		x	= $13.75
2018		x	= $29.93		x	= $25.84		x	$19.40		x	= $14.34
2019		x	= $29.93		x	= $25.84		x	$19.40		x	= $14.34

HARDWOOD

Soil Productivity Class	I			II			III			IV		
Year	Cost	Factor	Prorated Cost	Cost	Factor	Prorated Cost	Cost	Factor	Prorated Cost	Cost	Factor	Prorated Cost
2015		x	= $25.19		x	= $23.22		x	= $16.22		x	= $12.56
2016		x	= $24.70		x	= $21.97		x	= $15.59		x	= $12.13
2017		x	= $24.02		x	= $21.30		x	= $15.09		x	= $11.84
2018		x	= $24.25		x	= $21.53		x	= $15.47		x	= $12.29
2019		x	= $24.25		x	= $21.53		x	= $15.47		x	= $12.29

Texas A&M Forest Service develops production costs used in the Comptroller's annual Property Value Study for each of the twelve classes of timberlands. Proration no longer necessary.

PLEASE NOTE: THESE SPREADSHEETS ARE A WORK IN PROGRESS.

The Comptroller's Property Tax Assistance Division contracts with the Texas A&M Forest Service (TFS) to develop the management costs for use in determining timberland productivity values for the Property Value Study (PVS). TFS will not have completed its work in developing management costs for the 2019 tax year until November or December 2020. As a result, these spreadsheets use the 2018 management costs for the 2019 tax year. Values to be used in the 2020 PVS will be somewhat different when TFS's management costs for the 2019 tax year are incorporated into the 2020 PVS.

TABLE 14.
Calculation of Average Annual Net Income

PINE

Soil Productivity Class	I			II			III			IV		
Year	Potential Gross Income*	Annual Costs**	Net Income	Potential Gross Income*	Annual Costs**	Net Income	Potential Gross Income*	Annual Costs**	Net Income	Potential Gross Income*	Annual Costs**	Net Income
2015	$89.61 -	41.15 =	$48.46	$67.37 -	35.00 =	$32.37	$46.44 -	22.56	$23.88	$32.71 -	13.01 =	$19.70
2016	$78.99 -	40.76 =	$38.23	$59.39 -	34.87 =	$24.52	$40.94 -	22.90	$18.04	$28.83 -	13.03 =	$15.80
2017	$70.46 -	41.72 =	$28.74	$52.97 -	35.71 =	$17.26	$36.52 -	23.52	$13.00	$25.72 -	13.38 =	$12.34
2018	$71.80 -	43.01 =	$28.79	$53.98 -	36.88 =	$17.10	$37.21 -	24.26	$12.95	$26.21 -	13.97 =	$12.24
2019	$80.46 -	43.01 =	$37.45	$60.49 -	36.88 =	$23.61	$41.70 -	24.26	$17.44	$29.37 -	13.97 =	$15.40
5 Year Average			**$36.33**			**$22.97**			**$17.06**			**$15.10**

MIXED

Soil Productivity Class	I			II			III			IV		
Year	Potential Gross Income*	Annual Costs**	Net Income	Potential Gross Income*	Annual Costs**	Net Income	Potential Gross Income*	Annual Costs**	Net Income	Potential Gross Income*	Annual Costs**	Net Income
2015	$58.87 -	31.26 =	$27.61	$44.26 -	26.48 =	$17.78	$30.51 -	19.48	$11.03	$21.49 -	14.48 =	$7.01
2016	$52.07 -	29.86 =	$22.21	$39.15 -	25.33 =	$13.82	$26.99 -	19.03	$7.96	$19.01 -	13.86 =	$5.15
2017	$44.59 -	29.46 =	$15.13	$33.53 -	25.22 =	$8.31	$23.11 -	18.95	$4.16	$16.28 -	13.75 =	$2.53
2018	$45.68 -	29.93 =	$15.75	$34.34 -	25.84 =	$8.50	$23.67 -	19.40	$4.27	$16.67 -	14.34 =	$2.33
2019	$52.24 -	29.93 =	$22.31	$39.27 -	25.84 =	$13.43	$27.07 -	19.40	$7.67	$19.07 -	14.34 =	$4.73
5 Year Average			**$20.60**			**$12.37**			**$7.02**			**$4.35**

HARDWOOD

Soil Productivity Class	I			II			III			IV		
Year	Potential Gross Income*	Annual Costs**	Net Income	Potential Gross Income*	Annual Costs**	Net Income	Potential Gross Income*	Annual Costs**	Net Income	Potential Gross Income*	Annual Costs**	Net Income
2015	$42.54 -	25.19 =	$17.35	$31.98 -	23.22 =	$8.76	$22.05 -	16.22 =	$5.83	$15.53 -	12.56 =	$2.97
2016	$38.77 -	24.70 =	$14.07	$29.15 -	21.97 =	$7.18	$20.09 -	15.59 =	$4.50	$14.15 -	12.13 =	$2.02
2017	$31.03 -	24.02 =	$7.01	$23.33 -	21.30 =	$2.03	$16.08 -	15.09 =	$0.99	$11.33 -	11.84 =	-$0.51
2018	$31.87 -	24.25 =	$7.62	$23.96 -	21.53 =	$2.43	$16.51 -	15.47 =	$1.04	$11.63 -	12.29 =	-$0.66
2019	$37.70 -	24.25 =	$13.45	$28.35 -	21.53 =	$6.82	$19.54 -	15.47 =	$4.07	$13.76 -	12.29 =	$1.47
5 Year Average			**$11.90**			**$5.44**			**$3.29**			**$1.06**

*From Table 11
** From Table 13

PLEASE NOTE: THESE SPREADSHEETS ARE A WORK IN PROGRESS.

The Comptroller's Property Tax Assistance Division contracts with the Texas A&M Forest Service (TFS) to develop the management costs for use in determining timberland productivity values for the Property Value Study (PVS). TFS will not have completed its work in developing management costs for the 2019 tax year until November or December 2020. As a result, these spreadsheets use the 2018 management costs for the 2019 tax year. Values to be used in the 2020 PVS will be somewhat different when TFS's management costs for the 2019 tax year are incorporated into the 2020 PVS.

TABLE 15.
Calculation of Timber Productivity Values

CAPITALIZATION RATE 7.28% 2020 Value

	Productivity Class							
	I		II		III		IV	
Forest Type	Net Income	Productivity Value	Net Income	Productivity Value	Net Income	Productivity Value	Net Income	Productivity Value
Pine	$36.33	$499.04	$22.97	$315.52	$17.06	$234.34	$15.10	$207.42
Mixed	$20.60	$282.97	$12.37	$169.92	$7.02	$96.43	$4.35	$59.75
Hardwood	$11.90	$163.46	$5.44	$74.73	$3.29	$45.19	$1.06	$14.56

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The Comptroller's Property Tax Assistance Division contracts with the Texas A&M Forest Service (TFS) to develop the management costs for use in determining timberland productivity values for the Property Value Study (PVS). TFS will not have completed its work in developing management costs for the 2019 tax year until November or December 2020. As a result, these spreadsheets use the 2018 management costs for the 2019 tax year. Values to be used in the 2020 PVS will be somewhat different when TFS's management costs for the 2019 tax year are incorporated into the 2020 PVS.