2012 Pine Timber Supply Study for Crossett, Arkansas

A Study for the Crossett Economic Development Foundation by M.H. Pelkki and Associates

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INTRODUCTION AND OBJECTIVES OF STUDY

Crossett, Arkansas is located in Ashley County, in the Southeast corner of Arkansas. Ashley County and the surrounding counties in Arkansas and Louisiana are home to numerous large forest products enterprises. Ashley County and the surrounding region are ideally suited for the forest products industry, with abundant timber resources, excellent access to road, water, and rail transport, abundant labor supply and a favorable tax environment for the forestry sector. Within 70 miles of Crossett are 5,570,628 acres of productive timberland. Of this, 5,222,547 acres (94%) are privately owned. Within this 70 mile radius, there are 2,540,609 acres of privately-owned pine forests and 576,411 acres of privately-owned pine-hardwood forests. The remainder of the forest resource, 2,453,608 acres, is in private and public hardwood forests (2,398,905 acres) and publicly owned pine and pine-hardwood forests (54,703 acres).

The objectives of this study were to determine, for pine sawtimber and pulpwood within a 70 mile radius of Crossett the following information:
 (1) Volume of standing timber that is harvestable (growing stock)
 (2) Growth of growing stock
 (3) Current removals of growing stock
 (4) Pricing for delivered pine to Crossett Arkansas (a timber supply curve)

METHODS AND ASSUMPTIONS OF THIS STUDY

The major data source for this study came from the USDA Forest Service Forest Inventory and Analysis Program which maintains a national forest inventory (FIA, 2012). The FIA data was accessed online via software provided by the Forest Service. The datasets were the most current available for Arkansas (2010) and Louisiana (2009). The procurement zone for the study extended 70 miles from the center of Crossett, Arkansas, and excluded Mississippi. As can be seen from a road-satellite image of the procurement area, the land area in Mississippi within 70 miles of Crossett is largely agricultural with some bottomland hardwoods in the Delta National Forest north of Vicksburg, MS (Figure 1).

The 70-mile procurement zone was separated into four distinct zones based on linear ("as the crow flies") radii of 0-25 miles, 25-35 miles, 35-50 miles, and 50-70 miles. These zones corresponded to different haul prices and competition areas as described below.

All FIA data are based on privately owned lands. Supply contributions from state and federal timberland were considered to be negligible in the region due to the fact that they represent 2% of the total pine and pine-hardwood forest in the region. Wood tops in the FIA database are to a 4" merchantable top, and so the reported numbers are likely an underestimation. However, the difference between a 4" top
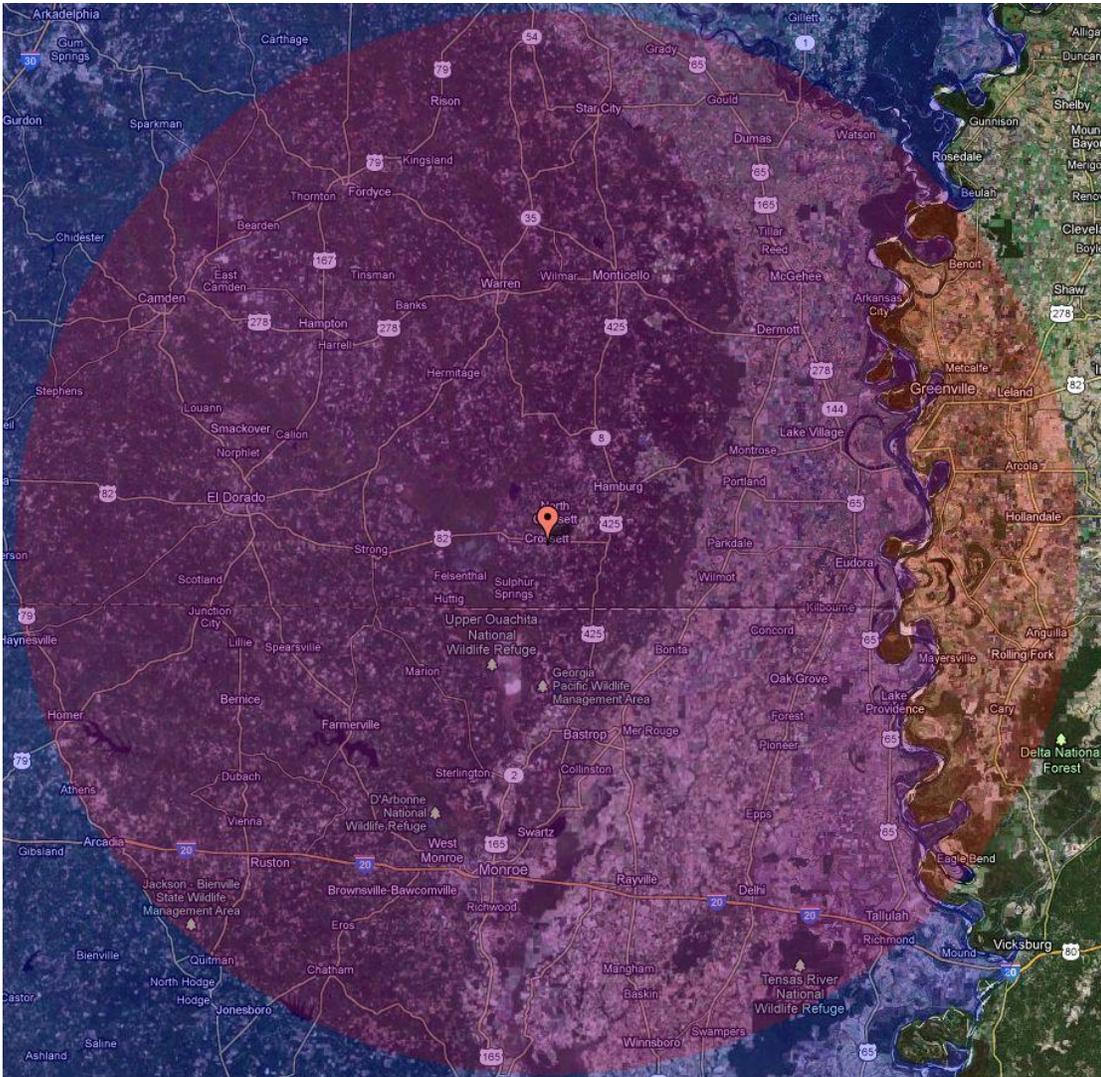
Figure 1. Hybrid Satellite Image with 70 mile radius from Crossett, Arkansas.

and a 2" top is less than 1% based on volume equations studies by Pienaar and others (1987) at the University of Georgia. All volumes reported are green tons.

Prices for the current industry consumption in the region are based on 2011 Timber Mart-South stumpage and delivered prices for sawtimber, chip-n-saw (CNS), and pulpwood. Average cut and haul rates for pine roundwood are $19 a ton within an "average" haul distance of < 40 miles (one way). Price premiums based on a cost of $0.40 per loaded ton-mile were assumed for hauls outside of the 35 mile procurement zone (> 40 mile one-way haul radius). All transportation was assumed to be truck-transport, no modeling of rail or barge transport of roundwood or chips was included in this study.

Timber prices in the procurement area with growth to drain ratios of more than 1.5 are considered to be stable at current rates. However, as existing and new wood-using facilities start to draw more wood from the forest, the growth to drain ratio

will drop, and as this happens, stumpage prices will increase. When growth to drain ratios approach 1.0 (net growth = harvest) timber prices are assumed to reach levels reported in south Arkansas by Timber Mart South in 2005-2006.

Three price scenarios were completed in the study. One is based on current markets and consumption levels with only one new wood using facility entering the region and drawing approximately 2.2 million green tons of pine roundwood per year. A moderate growth projection was made assuming that, in addition to the new facility, existing facilities would increase regional wood consumption by 3 million green tons for a total increase of 5.2 million green tons. A third projection assumed strong markets where in addition to the proposed facility, new facilities and existing facilities would increase harvest by 7.2 million green tons per year and growth to drain ratios would approach 1.0 for the entire region. These projections should be reasonable for 10 years.

CURRENT PINE GROWING STOCK VOLUME

Table 1 provides the current tonnage of pine growing stock by product class. Allowable cut formulas suggest that this amount of growing stock could sustain a harvest of 18-19 million tons annually within the 70-mile procurement zone. This level should be considered a maximum possible harvest level that could be sustained in the region.

Table 1. Pine Growing Stock Volume around Crossett Arkansas.

Radius (miles)	Pulpwood Tons	CNS Tons	Sawtimber Tons	Total Tons
0 to 25	7,385,271	5,002,730	14,665,498	27,053,500
25 to 35	5,119,668	4,240,277	9,292,328	18,652,273
35 to 50	8,815,262	8,927,023	22,411,208	40,153,492
50 to 70	14,575,264	12,207,146	35,368,291	62,150,701
Total	35,895,464	30,377,176	81,737,325	148,009,966

CURRENT PINE GROWTH AND REMOVALS

Current pine net growth and removals around Crossett is reported in tables 2 and 3, below. Total growth is 13.7 million tons annually in the 70-mile procurement region. The amount of growing stock and area of forest suggest that the region could increase growth by as much as 5 million tons as increasing timber harvests encourage landowner investment and more intensive management of forest lands. Total current removals of pine timber in the region are 8.5 million tons, or less than 50% of maximum sustainable capacity.

Table 2. Pine Growth around Crossett, Arkansas.

Radius (miles)	Pulpwood tons	CNS tons	Sawtimber tons
0-25	1,299,296	657,846	705,347
25-35	1,057,543	482,431	409,993
35-50	1,045,748	1,048,973	1,993,422
50-70	1,588,240	1,411,325	2,004,912
Total	4,990,827	3,600,574	5,113,674

Table 3. Pine Removals around Crossett, Arkansas.

Radius (miles)	Pulpwood Tons	CNS Tons	Sawtimber Tons
0-25	573,612	611,070	751,138
25-35	197,489	292,405	484,510
35-50	273,359	327,713	792,456
50-70	241,887	1,171,892	2,829,106
Total	1,286,347	2,403,081	4,857,209

The strong market growth projection discussed above assumes a 2.2 million green ton per year facility in Crossett, with other existing and new consumption increasing by 5 million tons per year, for a total removal level of 15.7 million tons in the Crossett wood basin. This is still 17% less than the maximum allowable harvest value determined from forest area and growing stock. The ability of the region to sustain additional pine timber consumption is more than sufficient to meet projected needs.

Table 4 (below) shows the current surplus of net growth minus removals for each zone in the procurement region around Crossett. Note that within each zone, pulpwood and chip-n-saw (small sawtimber) surplus exists. However, within 35 miles of Crossett and beyond 50 miles, current removals of sawtimber actually exceed current growth. Additional consumption of sawtimber will cause prices to increase at a much faster rate for this fiber source than for pulpwood and chip-n-was sized trees.

Table 4. Surplus pine growth (net growth minus removals) around Crossett, Arkansas.

Radius (miles)	Pulpwood Tons	CNS Tons	Sawtimber Tons
0-25	725,684	46,776	-45,791
25-35	860,054	190,025	-74,516
35-50	772,389	721,260	1,200,966
50-70	1,346,353	239,433	-824,194
Total	3,704,480	1,197,493	256,465

EXPECTED DELIVERED STUMPAGE PRICES TO CROSSETT (SUPPLY CURVE)

The supply curves for the three market projections are given in figures 3 and 4. Figure 3 provides the supply curve for the entire 70-mile procurement region, while figure 4 restricts the supply curve to 2.5 million tons of wood delivered to Crossett. The supply tables from which figures 3 and 4 are derived are provided in table 5.
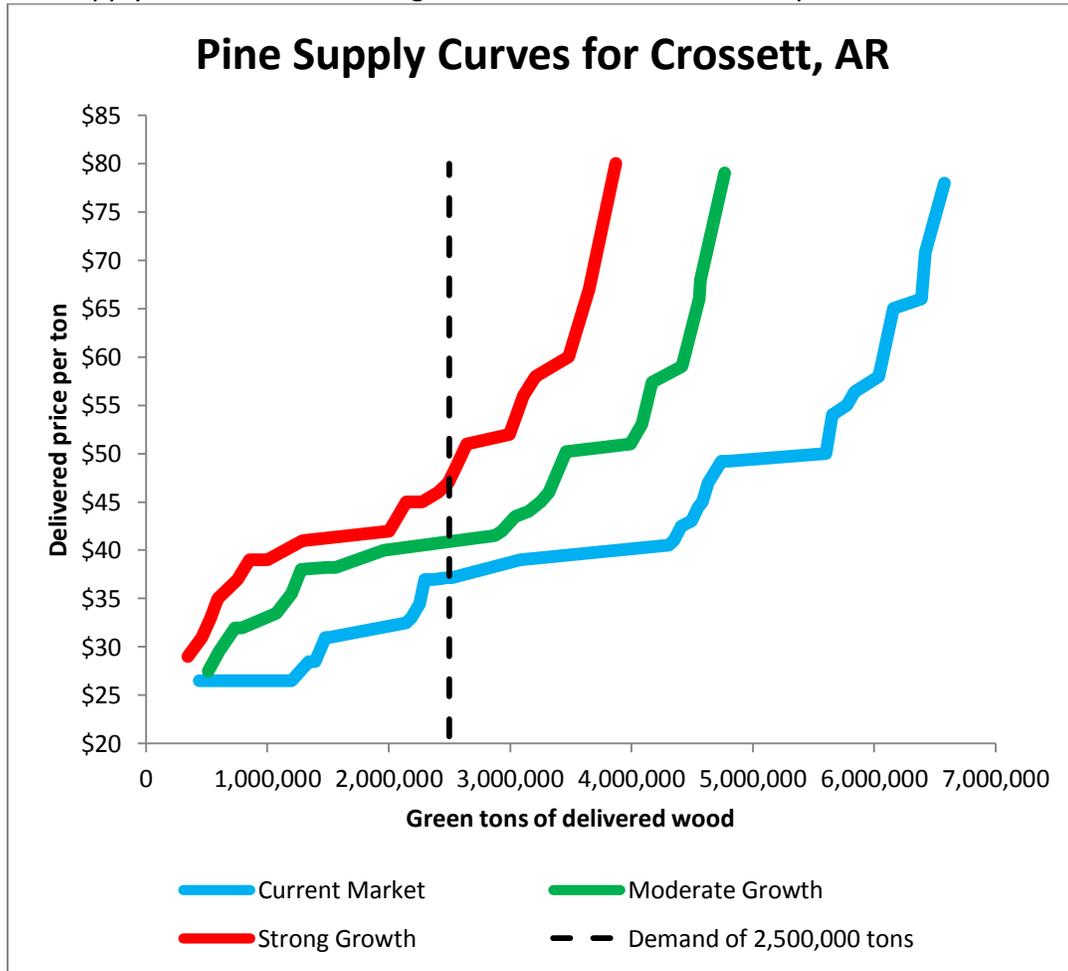

Figure 2. Supply Curves for 70-mile radius from Crossett, Arkansas.

For a facility drawing 2.2 million tons of pine roundwood to Crossett, the expected price of delivered wood will range from $33 to $47 per green ton (Figures 2 and 3). The lowest cost fiber resource is pulpwood, and most of this will be found in the zone between 25 and 50 miles from Crossett (Table 5). A small amount of chip-n-saw will also be part of the supply chain. Sawtimber, because of a higher stumpage price and the current demand close to Crossett, sawtimber is not likely to be part of the supply chain for a facility that can utilize pulpwood.
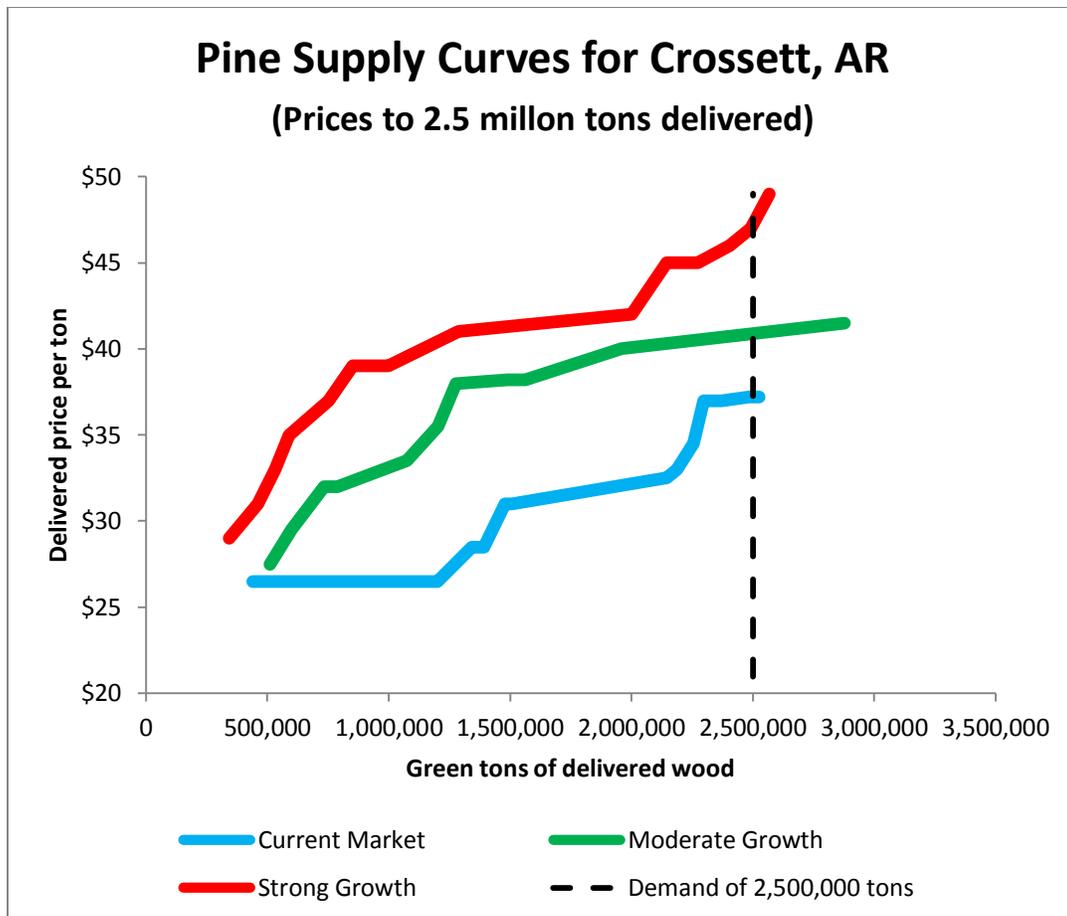
Figure 3. Supply Curves for 2.5 million tons of pine roundwood delivered to Crossett, Arkansas.

In conclusion, the addition of a facility drawing 2.2 million tons per year in the Crossett wood basin is likely to have immediate price effects unless the entire forest economy remains depressed. If wood consumption were only reliant on the U.S. economy's demand, then it may be that for 2-4 years the "current market" prices might be maintained. However, global demand for fiber strongly suggests that the "moderate growth" supply curve is a more reasonable and likely prediction of wood supply costs in the Crossett wood basin. New wood-using facilities and the expansion of production at existing facilities will result in delivered pulpwood prices rising to $30-35 per ton. While barge and rail imports of pine into the region were not part of this study, it is likely that they could offset some of the procurement costs should moderate to strong market growth occur.

In all cases, the Crossett wood basin has the biological capacity to sustain substantial growth in timber harvests. In fact, without some additional harvesting, natural agents such as diseases, insects, and fire will start to claim a greater amount of pine growing stock in the region.

Table 5. Supply Chart for Delivered Pine Roundwood to Crossett, AR, 2012.

Current Market Conditions				Moderate Market Growth				Strong Market Growth			
Radius	Roundwood type	Price	Cumulative Volume	Radius	Roundwood type	Price	Cumulative Volume	Radius	Roundwood type	Price	Cumulative Volume
0-25	Pulp	$26.50	438,878	25-35	PULP	$27.50	509,723	25-35	PULP	$29.00	341,998
25-35	Pulp	$26.50	1,200,188	25-35	PULP	$29.50	601,026	25-35	PULP	$31.00	461,255
0-25	Pulp	$28.50	1,343,591	0-25	PULP	$32.00	733,472	25-35	PULP	$33.00	532,810
25-35	Pulp	$28.50	1,392,963	25-35	PULP	$32.00	788,254	35-50	PULP	$35.00	588,119
0-25	Pulp	$31.00	1,479,005	35-50	PULP	$33.50	1,075,723	35-50	PULP	$37.00	753,192
25-35	Pulp	$31.00	1,508,628	35-50	PULP	$35.50	1,202,103	35-50	PULP	$39.00	852,236
35-50	Pulp	$32.50	2,144,337	35-50	PULP	$38.00	1,277,931	0-25	PULP	$39.00	904,540
25-35	CNS	$33.00	2,188,160	0-25	PULP	$38.20	1,490,085	25-35	PULP	$39.00	999,946
35-50	Pulp	$34.50	2,256,500	25-35	PULP	$38.20	1,563,128	35-50	CNS	$41.00	1,288,643
35-50	Pulp	$37.00	2,297,504	35-50	CNS	$40.00	1,959,307	50-70	PULP	$42.00	2,000,473
25-35	CNS	$37.00	2,370,605	50-70	PULP	$41.50	2,876,569	50-70	PULP	$45.00	2,146,542
25-35	Pulp	$37.20	2,485,327	25-35	CNS	$42.00	2,931,862	35-50	CNS	$45.00	2,273,254
25-35	Pulp	$37.20	2,524,825	50-70	PULP	$43.50	3,043,691	35-50	PULP	$46.00	2,405,313
35-50	CNS	$39.00	3,082,228	35-50	CNS	$44.00	3,152,490	50-70	PULP	$47.00	2,492,954
50-70	Pulp	$40.50	4,307,637	35-50	PULP	$45.00	3,253,594	35-50	CNS	$49.00	2,568,982
25-35	CNS	$41.00	4,351,498	50-70	PULP	$46.00	3,320,692	25-35	CNS	$51.00	2,644,394
50-70	Pulp	$42.50	4,411,970	35-50	CNS	$48.00	3,385,971	35-50	SAW	$52.00	2,992,569
35-50	CNS	$43.00	4,493,898	25-35	CNS	$50.20	3,463,633	50-70	PULP	$56.00	3,109,424
35-50	Pulp	$44.40	4,548,570	35-50	SAW	$51.00	3,994,433	35-50	CNS	$58.00	3,210,794
50-70	Pulp	$45.00	4,584,853	50-70	PULP	$53.00	4,083,897	35-50	SAW	$60.00	3,485,002
35-50	CNS	$47.00	4,634,010	35-50	CNS	$57.40	4,170,936	35-50	SAW	$67.00	3,649,526
0-25	CNS	$49.20	4,741,893	35-50	SAW	$59.00	4,414,706	35-50	SAW	$80.00	3,868,892
25-35	CNS	$49.20	4,800,374	35-50	SAW	$66.00	4,560,969				
35-50	SAW	$50.00	5,605,113	50-70	CNS	$68.00	4,571,672				
50-70	Pulp	$54.00	5,653,490	35-50	SAW	$79.00	4,766,689				
50-70	CNS	$55.00	5,775,734								
35-50	CNS	$56.40	5,841,276								
35-50	SAW	$58.00	6,039,390								
35-50	SAW	$65.00	6,158,258								
50-70	CNS	$66.00	6,392,637								
0-25	SAW	$70.80	6,421,960								
35-50	SAW	$78.00	6,580,451								

LITERATURE CITED

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