

October 24, 2008

**Biomass & Feedstock Resource Study for Fulton, Mississippi  
Prepared for  
The Price Companies, Inc.  
And  
Bluefire Ethanol Fuels, Inc.  
By  
Ward Consulting Services, Inc.**

**In response to your direction regarding preparation of a feedstock resource study for the Fulton, MS (Itawamba County) area I offer the following.**

**As was previously done for the Pensacola, FL and Ball ground, GA sites this evaluation will be made up of the following components:**

- **Site location and description**
- **Forest Inventory Assessment with Mississippi data provided by MIFI (Mississippi Institute of Forest Inventory) and Alabama data sourced from the US Forest Service**
- **Competitor review and impacts**
- **Wood cost estimates**
- **Summary and recommendations**

**The Fulton, MS site lies in northeast Mississippi in Itawamba County adjoining the Alabama/Mississippi State line. The area is generally considered rural with a preponderance of primarily mixed pine and hardwood forest stands.**

**Fulton is geographically bracketed by the following cities:**

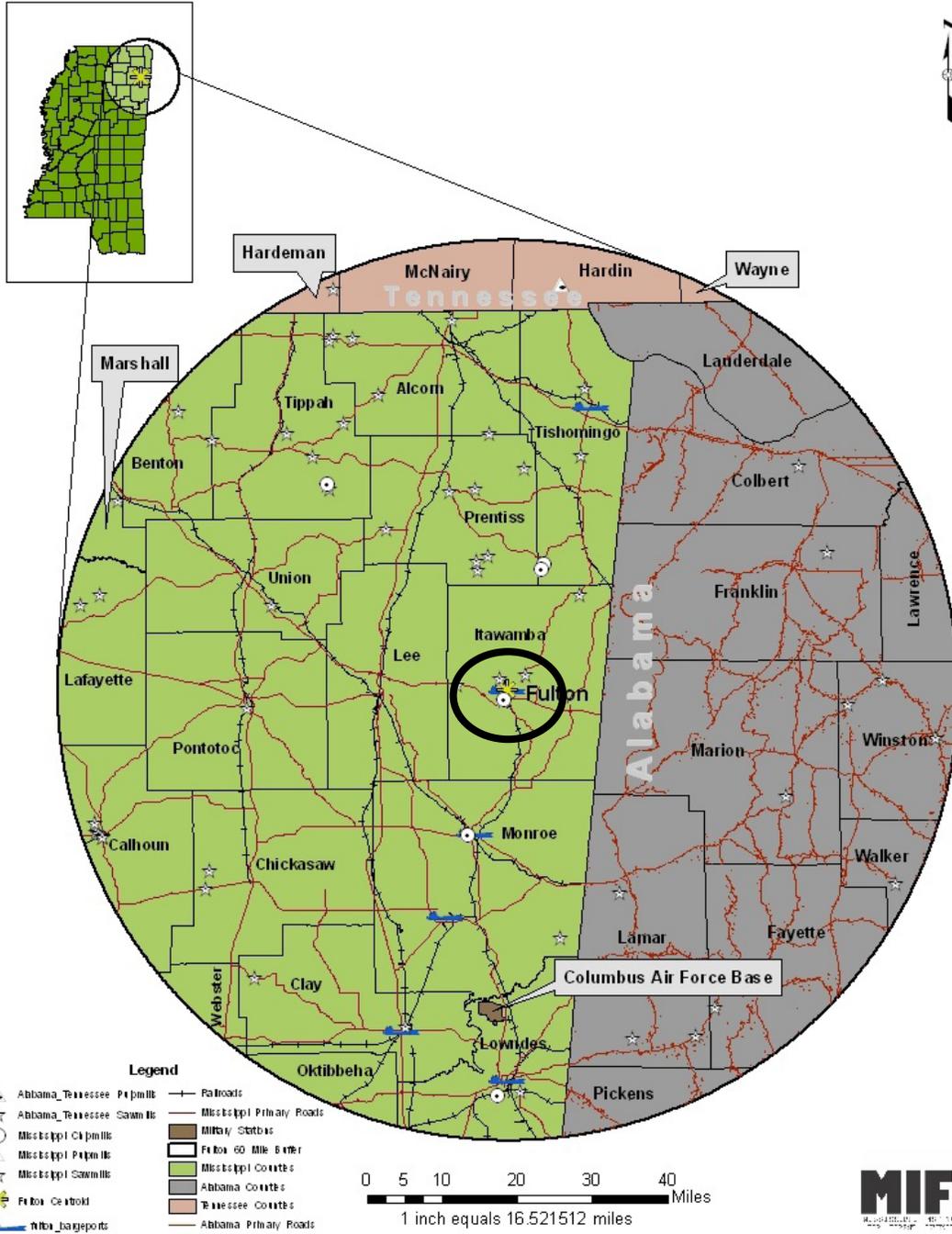
**Columbus, MS to the south – 94 miles  
Tupelo, MS to the west – 25 miles  
Corinth, MS to the north – 69 miles  
Florence, AL to the Northeast – 67 miles  
Jasper, AL to the southeast – 78 miles**

**IP's Courtland, AL bleached pulp and paper mill is located 98 miles to the northeast of Fulton.**

**US Highway 78 traverses the area from the southeast to the northwest while US Highway 45 crosses it from the south to the north in Tupelo, 25 miles to the west.**

**A site location map is provided on the next page.**

# LOCATION MAP FOR FULTON, MS RESOURCE STUDY



## Forest Inventory Assessment

A standard 75 mile drain radius has been employed when analyzing the Fulton site with approximately 60% of the drain's land area falling in Mississippi and 40% in Alabama. The drain area includes 18 Mississippi counties and 9 Alabama counties.

Inventory information as well as removals data is drawn from the MIFI system and the USFS FIA database. The results have been combined for this assessment.

Land statistics and ownership patterns for the drain area are shown in the table below.

Table 1

LAND STATISTICS		
STUDY AREA (# COUNTIES)	27	
TOTAL LAND AREA (ACS)	9,777,759	
TOTAL TIMBERLAND (ACS)	6,188,241	63.3%
<u>TIMBERLAND OWNERSHIP</u>		
FEDERAL LANDS (ACS)	493,629	8.0%
STATE LANDS (ACS)	139,910	2.3%
PRIVATE LANDS (ACS)	5,554,702	89.8%

The following tables serve to provide information on the actual fiber inventory present within the drain area. These numbers do not reflect unmerchantable biomass volumes which will be presented in a later section of this report.

**Also please note that the G/D ratio shown (TABLE 4) is for pulpwood volume only; i.e., that volume present in merchantable trees measuring 5.0" to 8.9" in dbh only.**

**Table 2**

<b><u>TOTAL GROWING STOCK ON TIMBERLANDS</u></b>		
	<b><u>TONS</u></b>	<b><u>%</u></b>
<b>SOFTWOOD</b>	<b>110,145,655</b>	<b>36.5%</b>
<b>HARDWOOD</b>	<b><u>191,310,008</u></b>	<b>63.5%</b>
<b>TOTAL</b>	<b>301,455,663</b>	

**Table 3**

<b><u>PULPWOOD SIZED GROWING STOCK ON TIMBERLANDS</u></b>			
<b><u>SPECIES</u></b>	<b><u>DIAMETER</u></b>	<b><u>TONS</u></b>	<b><u>% OF TOTAL SPECIES VOLUME</u></b>
<b>SOFTWOOD</b>	<b>5.0" - 8.9"</b>	<b>48,342,497</b>	<b>43.9%</b>
<b>HARDWOOD</b>	<b>5.0" - 8.9"</b>	<b><u>43,110,549</u></b>	<b>22.5%</b>
<b>TOTAL</b>		<b>91,453,046</b>	

**Table 4**

<b><u>PULPWOOD GROWTH VS REMOVALS</u></b>			
	<b><u>GROWTH</u></b>	<b><u>TONS</u></b>	<b><u>G/D RATIO</u></b>
		<b><u>REMOVALS</u></b>	
	-	-	-
<b>SOFTWOOD</b>	<b>3,133,751</b>	<b>2,383,664</b>	<b>1.31</b>
<b>HARDWOOD</b>	<b>1,709,627</b>	<b>1,424,998</b>	<b>1.20</b>

**Conclusions and inferences drawn from the inventory data:**

- **Timberland represents 63.3% of the total land within the drain area. This can be considered lower than desired but within an acceptable operating**

range when other factors are considered. When compared to Newton, MS @ 77%, Pensacola, FL @ 69% and Ball Ground, GA @ 57% it falls out at number 3 for these 4 particular sites.

- Federal & State/Local ownership @ 10.3% would not appear to be an issue.
- As a result the presence of the highly desirable private ownership is quite good @ 89.7%. Comparing it to the other 3 sites of interest shows the following:

Newton, MS @ 94.3%  
Pensacola, FL @ 86.4%  
Ball Ground, GA @ 85.8%

Obviously all four sites are very good when examining this ownership characteristic.

- 60% of the forest land is mixed pine and hardwood and pure hardwood stands. This translates into a dominant position for hardwood within the drain area @ 63.5% of the total growing stock.
- Total hardwood growing stock volume = 191,310,008 tons.
- Softwood does however provide a strong presence in the drain with 110,145,655 tons of inventory.
- Total softwood and hardwood pulpwood growing stock volume is very good @ 14.8 tons per forested acre.
- The growth to drain ratios for both softwood and hardwood pulpwood are very good for this drain with softwood being very impressive @ 1.31 while hardwood is also very positive @ 1.20. This bodes well for the introduction of additional consumption within the drain.
- To further amplify the impact of these G/D ratios for pulpwood I wish to isolate the following numbers for emphasis:

**Pine excess volume over removals = 750,870 tons annually.**

**Hardwood excess volume over removals = 284,629 tons annually.**

In addition to the merchantable volumes of both softwood and hardwood MIFI has provided an estimate of residual biomass left post harvest within the Mississippi counties contained within the Fulton drain area. Table 5 below outlines the measureables of annual harvested acres within the Fulton drain area and the estimated residual biomass left post harvest.

Table 5

<b>ANNUAL HARVEST ACRES</b>	<b>PINE</b>	<b>48,440</b>
	<b>HDW</b>	<b>21,844</b>
<b>TOTAL BIOMASS</b>		
	<b>PINE</b>	<b>3,395,946</b>
	<b>HDW</b>	<b>1,739,008</b>
<b>BIOMASS REMOVALS</b>		
	<b>PINE</b>	<b>2,682,311</b>
	<b>HDW</b>	<b>1,321,938</b>
<b>BIOMASS RESIDUALS</b>		
	<b>PINE</b>	<b>713,635</b>
	<b>HDW</b>	<b>417,070</b>

Based on annual harvested acreage estimates of approximately 70,284 (both pine & hardwood), these numbers indicate that an average of 16.1 tons per acre remains in the forest post harvest. Whether this volume can be economically harvested in some manner is yet to be determined.

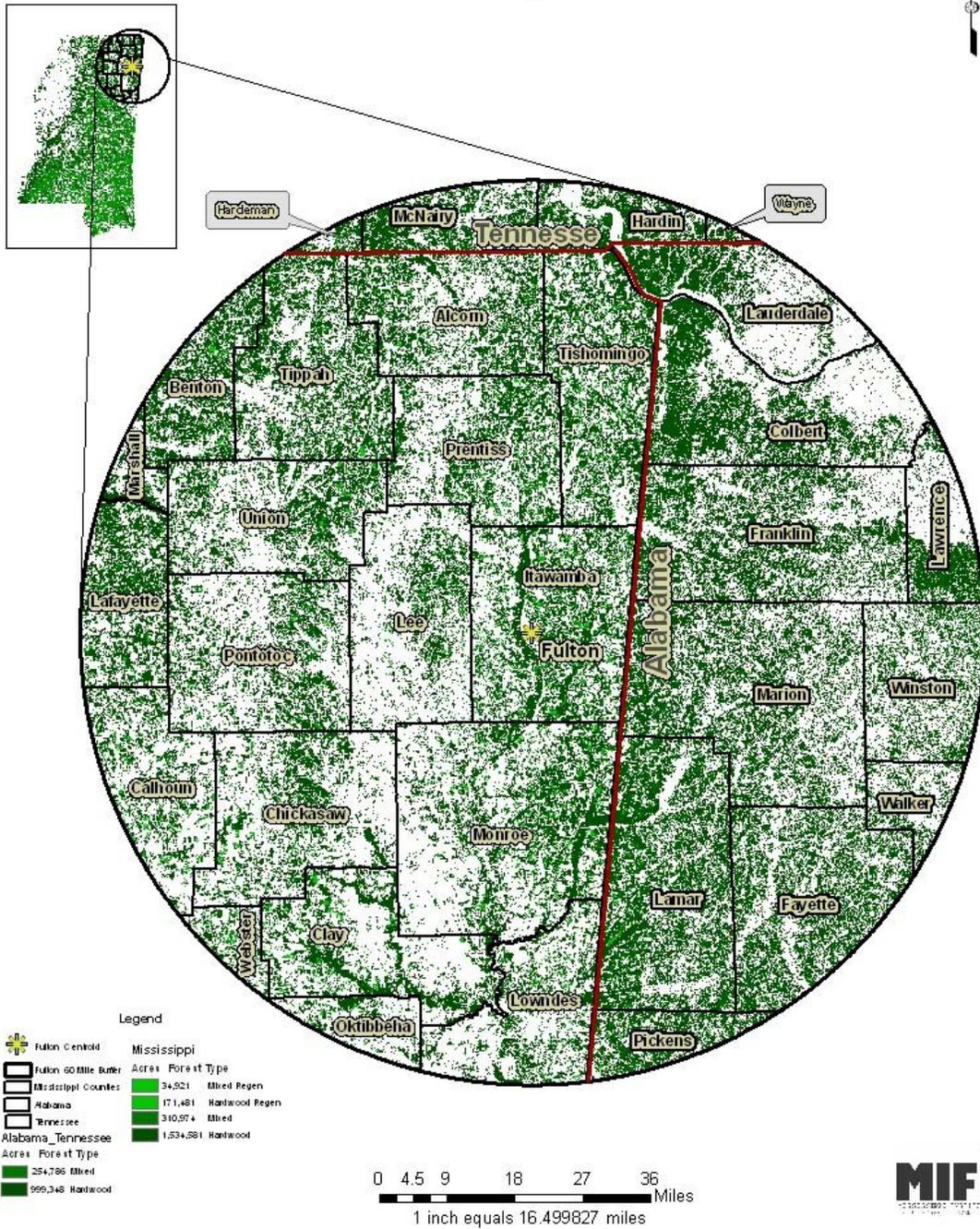
It is difficult to assess the opportunity this residual material affords in terms of recoverable volume, cost to recover, utility within a given plant process, etc. However, it does appear that an opportunity could exist to consider at least some portion of this material as an eventual fiber source. I would caution not to use it to make a determination as to the viability of a Fulton site or to compare the Fulton site to others based solely on residual biomass. There are too many unknowns regarding its eventual value as a fiber resource.

**Hardwood Dominance:**

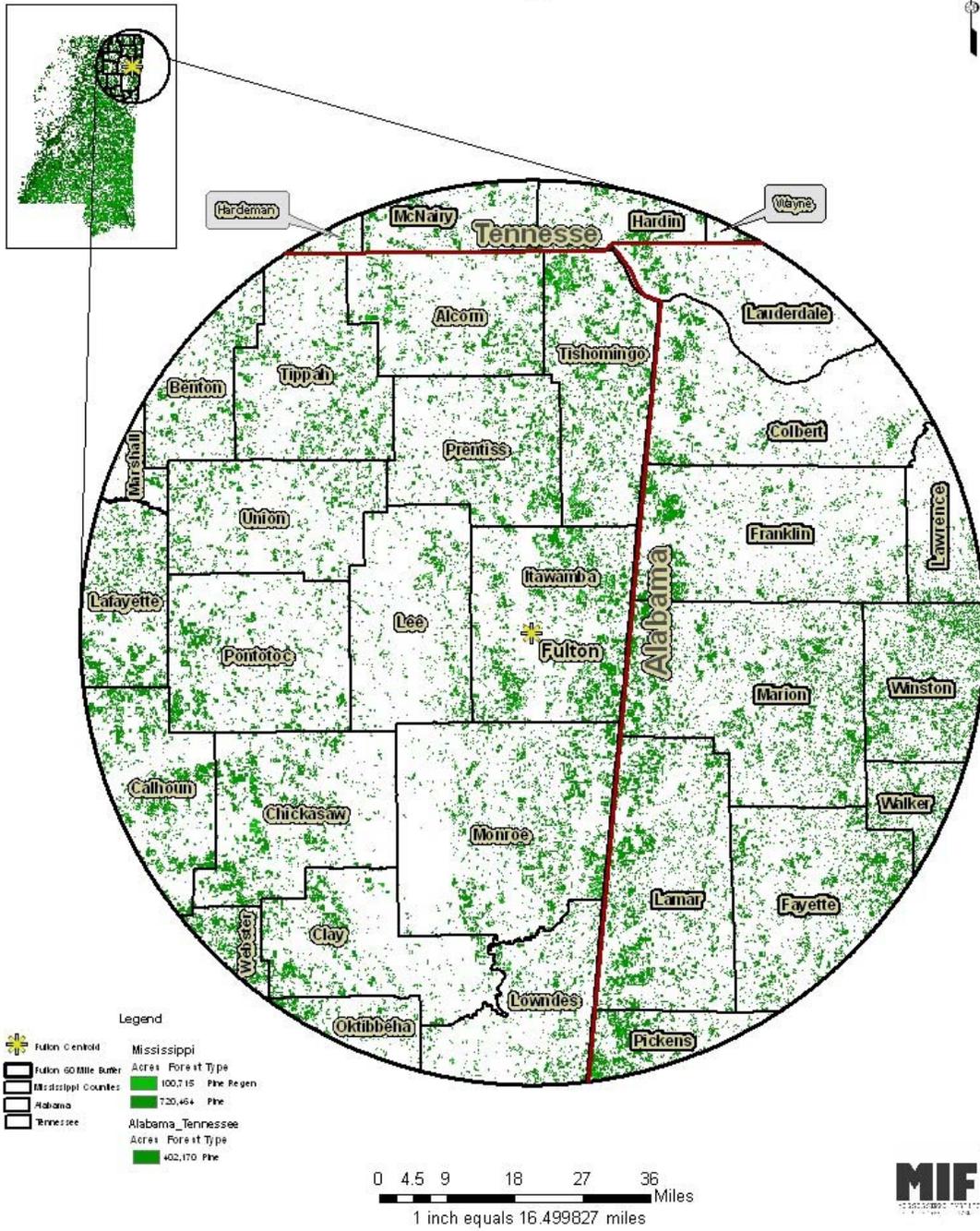
To further demonstrate the pronounced position hardwood maintains as the dominant stand component versus softwood within the Fulton drain please review the following maps which graphically demonstrate the large preponderance of hardwood forest stands within the proposed Fulton drain area.

To reiterate, 60% of the forested lands are mixed pine and hardwood or pure hardwood stands and 63.5% of the total growing stock on those lands are hardwood species.

# Hardwood Acreage for the Mississippi Fulton Area & Surrounding State Areas



# Pine Acreage for the Mississippi Fulton Area & Surrounding State Areas



**Competitor Review & Assessment:**

The Fulton, MS proposed drain area provides fiber to three (3) major pulp and paper mills, one medium sized OSB plant and several chipmill operations. Table 6 below identifies the primary consuming facilities by location and provides an estimate of their annual consumption.

In addition, Table 7 identifies the major chipmill operations located in and immediately adjacent to the Fulton drain area. There are other facilities that supply relatively small volumes of roundwood, via rail, to at least one mill in Louisiana (Smurfit/Stone @ Hodge) from this area.

**Table 6**

<b><u>COMPETITORS &amp; CONSUMPTION</u></b>			<b>Roundwood &amp; Chips M Tons (All Species)</b>	<b>Distance To Fulton</b>
<b><u>Mill Type</u></b>	<b><u>Company</u></b>	<b><u>Location</u></b>		
Pulp/Paper	IP	Courtland, AL	3,200	98
"	Weyco	Columbus, MS	2,400	94
"	PCA	Counce, TN	3,100	94
OSB	Norboard	Guntown, MS	450	33
<b>TOTAL</b>			<b>9,150</b>	

Annual Pulpwood Removals from Fulton drain estimated @ 3,800 tons ~ 41% of the above Referenced consumption.

**Table 7**

<b><u>Fulton Drain Area Chipmills</u></b>		<b>Distance To Fulton</b>
American Cellulose*	Fulton, MS	NA
Weyco	Amory, MS	26
Shuqualak Lumber	Dennis, MS	27
PCA	Ackerman, MS	99

\* Closed at this time - previously an IP contract chipmill

### **Competitive Assessment and Wood Costs:**

As evidenced by my earlier findings in The Ball Ground, GA and Pensacola, FL sites, competition for fiber to supply pulp and paper mill operations in the Fulton, MS drain area is relatively intense at this time. A number of circumstances are driving these results including the very poor lumber market which directly impacts residual supply. Additionally, high production and freight costs brought on by unprecedented fuel prices have driven many logging operations to downsize, consolidate their operations to a smaller operating drain or simply to exit the business. Many landowners are also not realizing an income stream that they have become accustomed to in the past, primarily due to the lumber markets, and therefore have resisted bringing volume to the marketplace.

Within the Fulton drain area delivered wood costs are at or near peak highs and are well above what is considered to be a normal operating range. Weyco @ Columbus, MS and PCA @ Counce, TN are driving the markets at this time with many prices for pine in the mid to upper \$30's and delivered rates to PCA in the low \$40's for pine truckwood back to Counce. It is believed that these rates will soften considerably but will not attain the low points that were achieved a couple of years ago (low \$20's). Prices should stabilize in the mid to upper \$20's for pine and upper \$20's to lower \$30's for hardwood.

As previously mentioned a lot of the delivered cost escalation is due to production and freight rates. FOB harvesting rates range from the \$17 to \$19 per ton with hardwood conventional clearcuts and pine thinnings slightly higher @ \$18 to \$20 per ton. Diesel costs have softened recently into the \$3.60+ per gallon range but there is no assurance that they will not climb back to previous high levels.

The market is experiencing a period of uncertainty on many fronts including:

- **Unknown recovery in the lumber markets.** I have heard estimates as far out as 2011 + before things can turnaround to any real extent. New home sales for September were at a level not seen since 1945, with existing home sales equivalent to those of 1953. This does not bode well for landowner sales activity or the renewed production of residual by-products.
- **The impacts of fuel prices on production and freight costs continue to be dramatic and unresolved for the longterm.** An extended period of high fuel rates can mean the continued shrinkage of the logging force.
- **Reluctance to invest in infrastructure, new processing equipment and wood inventories can be considered an issue in today's market place.** There are those who wish to expand their businesses, replace roundwood woodyards with chipping facilities, and make other improvements in their operations. However, they often cannot justify the investment and further are very reluctant to do so in today's economic environment.

### **Summary and Recommendation:**

**The Fulton site appears to be an excellent opportunity for consideration of a new fiber based operation for Bluefire and Price. Fiber is plentiful, infrastructure relatively stable and competition within acceptable limits when compared to many other sites in the southeast. In my estimation, the Fulton area would be preferable to both the Ball Ground, GA or Pensacola, FL areas. Although wood costs are roughly the same at this time in all three areas, the resource is in much better shape in the Fulton area, competition not as consistently intense, urbanization not a major concern and costs should eventually stabilize at a somewhat more favorable position than either the Ball Ground or Pensacola sites.**

**One additional plus for the Fulton site is the preponderance of hardwood fiber in the total mix found throughout the drain area. This can lend itself to the potential recovery of significant volumes of additional understory fiber and previously unused fiber from tops, limbs, etc. In - woods chipping operations may be an appropriate approach to dealing with this unused fiber source. Please reference the residual understory figures supplied by MIFI as shown in Table 5 above.**

**When making a comparative evaluation of multiple sites in Mississippi and contrasting them to Ball Ground, GA and Pensacola, FL it may be expedient to take the Fulton/Newton/Ackerman areas into consideration as one large geographic area of interest. The Newton area is very appealing (see Newton, MS report) and the connected geography from Newton north to Fulton including the Ackerman area should fit well with Bluefire's and Price's long term view. With the exception of Ackerman's proximity to Columbus and the Weyerhaeuser pulp and paper mill it should provide an interesting opportunity when considering sites in Mississippi. Ackerman is 99 miles from Fulton and 76 miles from Newton and may be able to play a key role in supplying multiple sites if that is desirable from a procurement point of view.**

**I have not done a specific site study in and around Ackerman. Perhaps Price's long history of operations in that area can lend some insight into its real promise as a possible site.**

**My conclusion is that the Fulton area can be considered a viable opportunity for Price and Bluefire to actively pursue.**



# *Forest Resource Availability Analysis Developed for Bluefire Ethanol*



*Fulton, Mississippi*



## Introduction

Northeast Mississippi possesses an abundance of forest land totaling more than 3.6 million acres. This portion of the state is very diverse in topography ranging from the Black Belt Prairie that offers production farming opportunities, to the steep wooded slopes of the southern Cumberland Plateau in Tishomingo County. Pine forests in this region of the state are comprised mostly of Loblolly and Shortleaf Pine and occupy approximately 900,000 acres. Hardwoods forests are extremely rich in species diversity including upland Oak-Hickory forests and bottomland Oaks covering almost 2 million acres. Fifteen percent of the forested area currently contains forest regeneration that will become the base for future forest production. Table 1 depicts the land cover for each of the Mississippi counties influencing the availability of forest resources within a 60 mile radius of Fulton, Mississippi.

Table 1. Land cover composition for 18 Mississippi counties surrounding Fulton.

COUNTY	WATER	OPEN	REGEN	PINE	MIXED	HARDWOOD	FORESTED	TOTAL
ALCORN	2,622	88,756	28,484	35,188	15,317	86,489	165,479	256,857
BENTON	2,470	75,296	23,581	33,326	18,566	108,223	183,695	261,462
CALHOUN	2,546	134,255	26,938	76,720	29,141	106,590	239,390	376,191
CHICKASAW	4,268	150,255	24,403	47,533	19,238	76,979	168,153	322,676
CLAY	3,507	107,177	18,647	33,765	13,804	89,318	155,534	266,218
TAWAMBA	6,956	73,534	40,532	66,394	32,773	125,706	265,406	345,896
LAFAYETTE	27,050	106,017	37,668	70,844	37,323	155,703	301,538	434,605
LEE	5,313	163,818	30,281	26,467	9,859	54,249	120,855	289,986
LOWNDES	9,946	142,146	30,858	37,023	13,139	97,427	178,447	330,540
MARSHALL	4,179	175,783	51,361	36,354	24,006	162,455	274,175	454,137
MONROE	11,003	184,245	46,182	67,196	31,814	153,678	298,870	494,119
OKTIBBEHA	2,018	81,899	25,297	69,607	27,366	89,385	211,654	295,571
PONTOTOC	3,440	149,801	31,016	42,975	15,770	77,568	167,329	320,570
PRENTISS	3,894	97,731	26,380	42,820	19,285	77,563	166,048	267,673
TIPPAH	2,545	92,639	31,836	44,079	20,802	102,428	199,146	294,329
TISHOMINGO	13,984	53,469	28,275	62,383	26,069	100,366	217,093	284,546
UNION	2,336	110,678	23,048	34,093	15,421	81,169	153,730	266,744
WEBSTER	872	60,402	21,281	79,472	33,604	75,232	209,589	270,863
<b>Total</b>	<b>108,949</b>	<b>2,047,903</b>	<b>546,067</b>	<b>906,239</b>	<b>403,298</b>	<b>1,820,527</b>	<b>3,676,131</b>	<b>5,832,984</b>



# Infrastructure

Primary surface transportation is available for north-south commerce via US Highway 45, and east-west transportation corridors include US Highways 78 and 82. Rail transport is provided by several spurs including the Mississippian Railway Cooperative operated by Homan Industries which is a 25 mile short line connecting to the Burlington Northern Santa Fe main line at Amory, Mississippi. Commerce traveling via waterways has direct access to the Tennessee -Tombigbee waterway through 6 ports located at Aberdeen, Amory, Columbus, Fulton, Iuka and West Point. Figure 1 shows the transportation, municipal infrastructure and forest industry within the Fulton area.

Transportation Infrastructure, Military Bases, & Mills for the Mississippi Fulton Area & Surrounding States

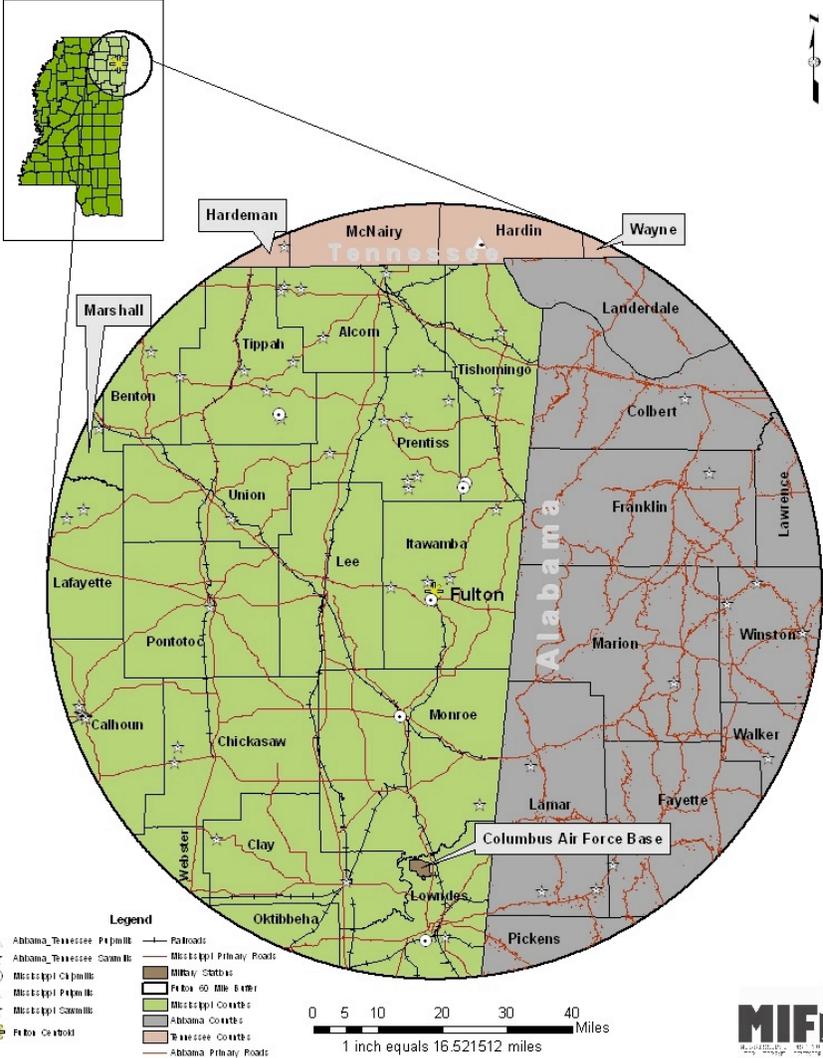
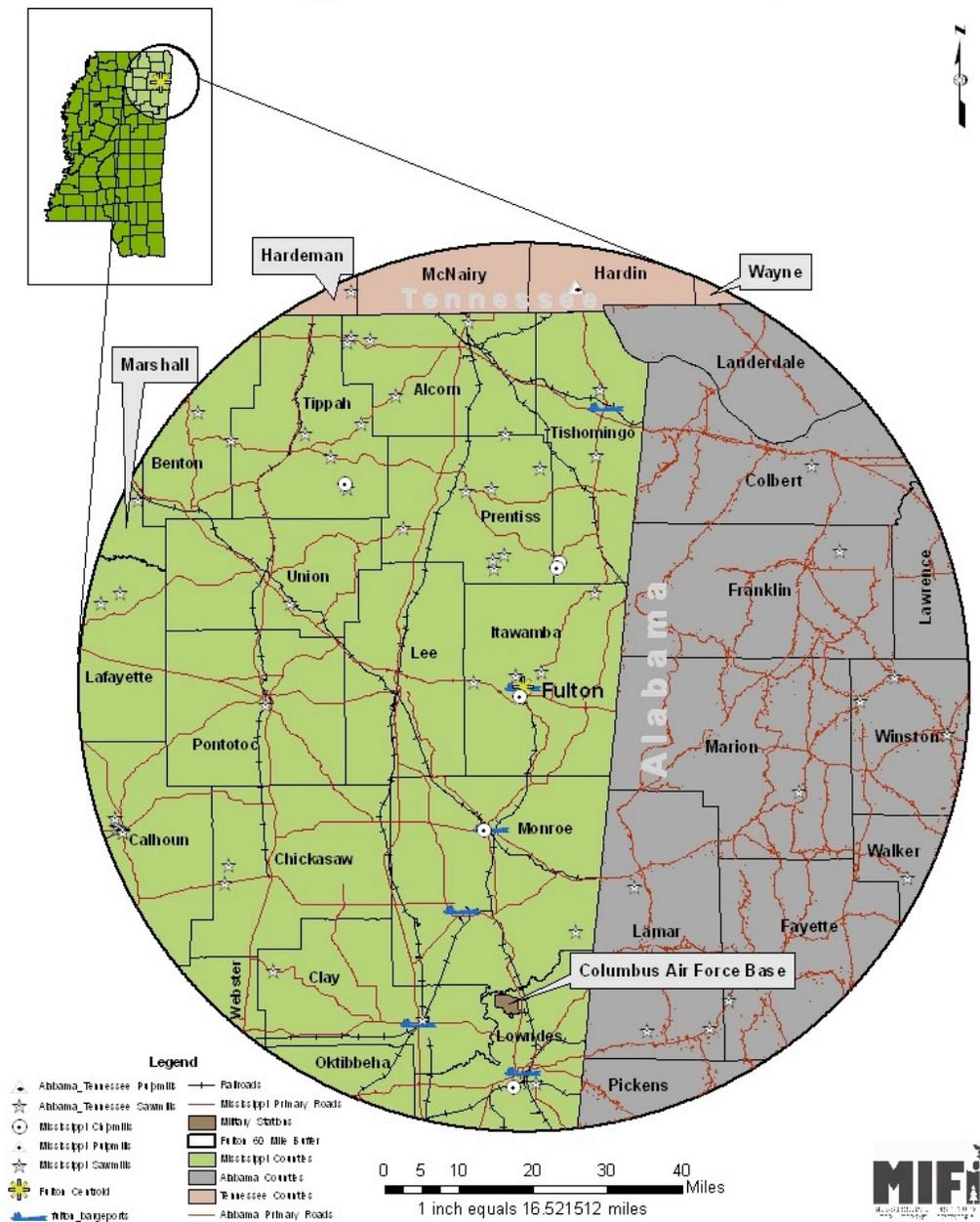


Figure 2 illustrates the cities that have barge port facilities and their relationship to the primary surface transport network.

Transportation Infrastructure, Military Bases, Barges & Mills for the Mississippi Fulton Area & Surrounding States

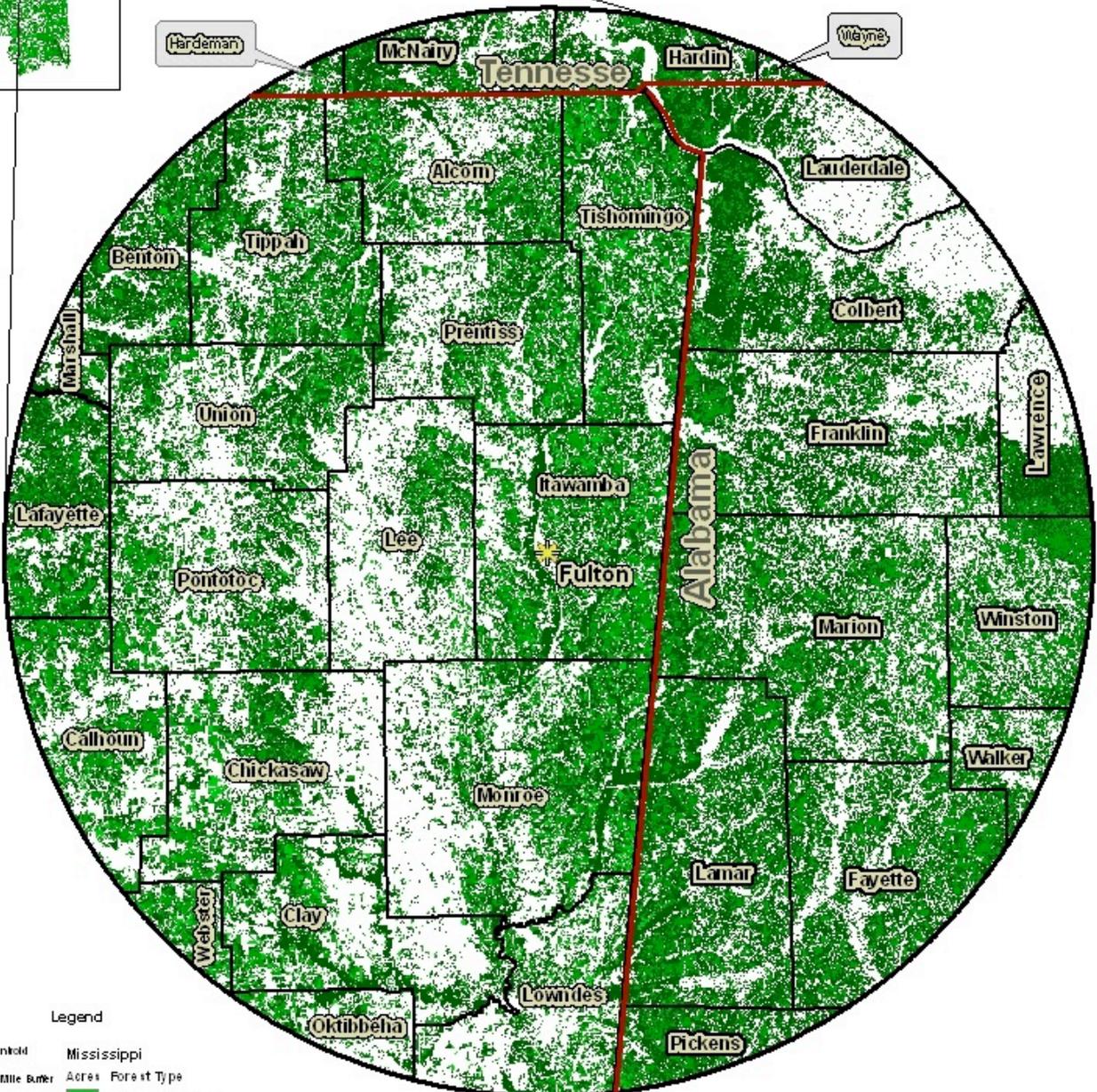
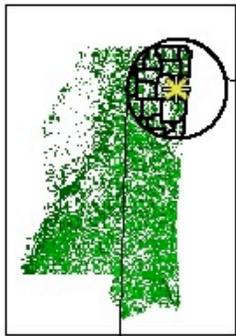


## Forest Distribution

The following maps depict the distribution of the forest cover within the 60 mile radius of Fulton. When compared it is obvious that the hardwood forest distribution is twice as dense as the pine forest. However, when the total forest distribution is viewed it becomes apparent that over 60% of the land area is covered by forest.

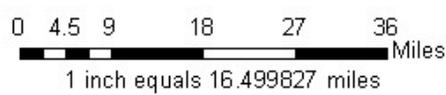


# Forest Acreage for the Mississippi Fulton Area & Surrounding State Areas

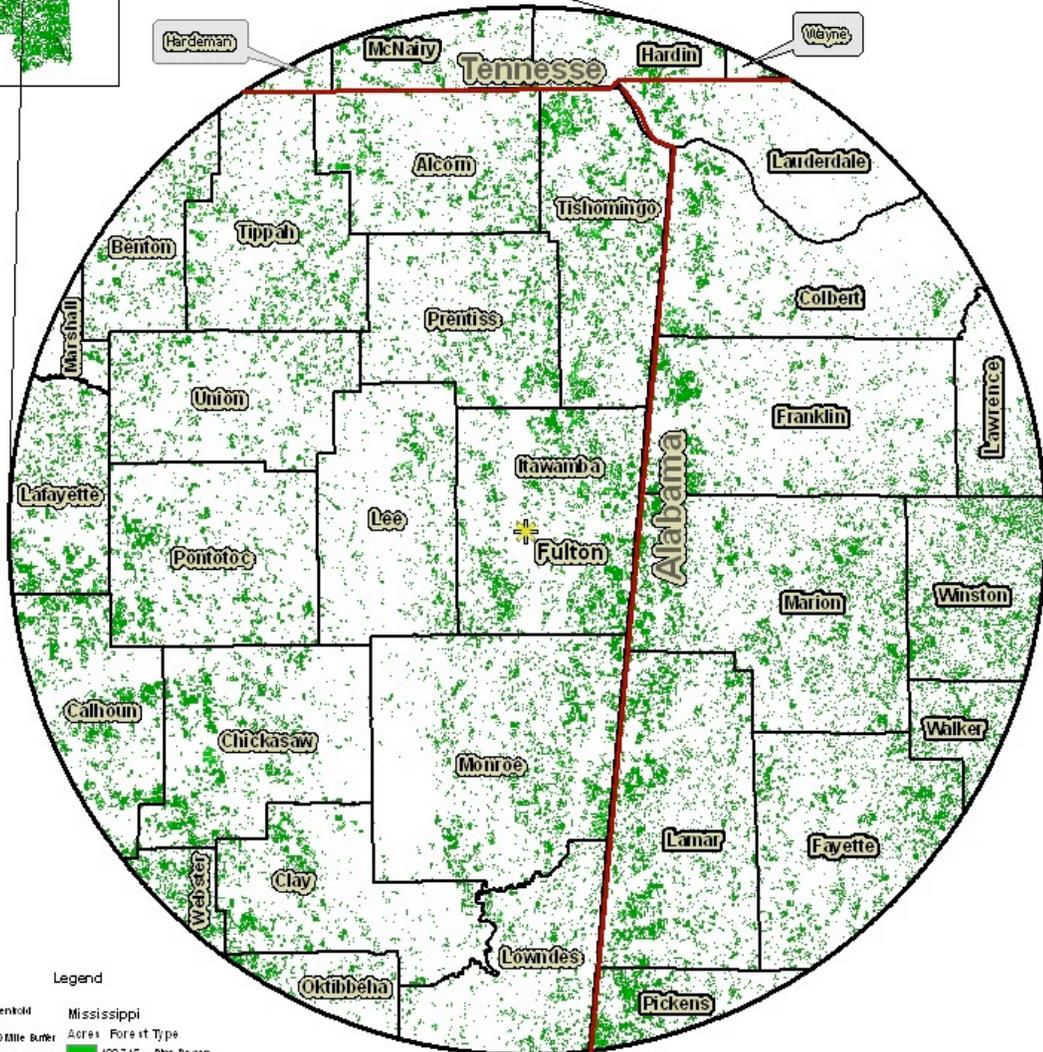
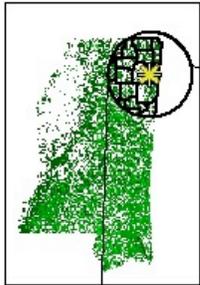


**Legend**

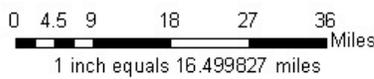
Fulton Centroid	<b>Mississippi</b>
Fulton 50 Mile Buffer	<b>Acres: Forest Type</b>
Mississippi Counties	34,921 Mixed Regen
Alabama	100,715 Pine Regen
Tennessee	171,481 Hardwood Regen
Alabama_Tennessee	310,574 Mixed
<b>Acres: Forest Type</b>	720,464 Pine
254,786 Mixed	1,534,581 Hardwood
402,170 Pine	
999,348 Hardwood	



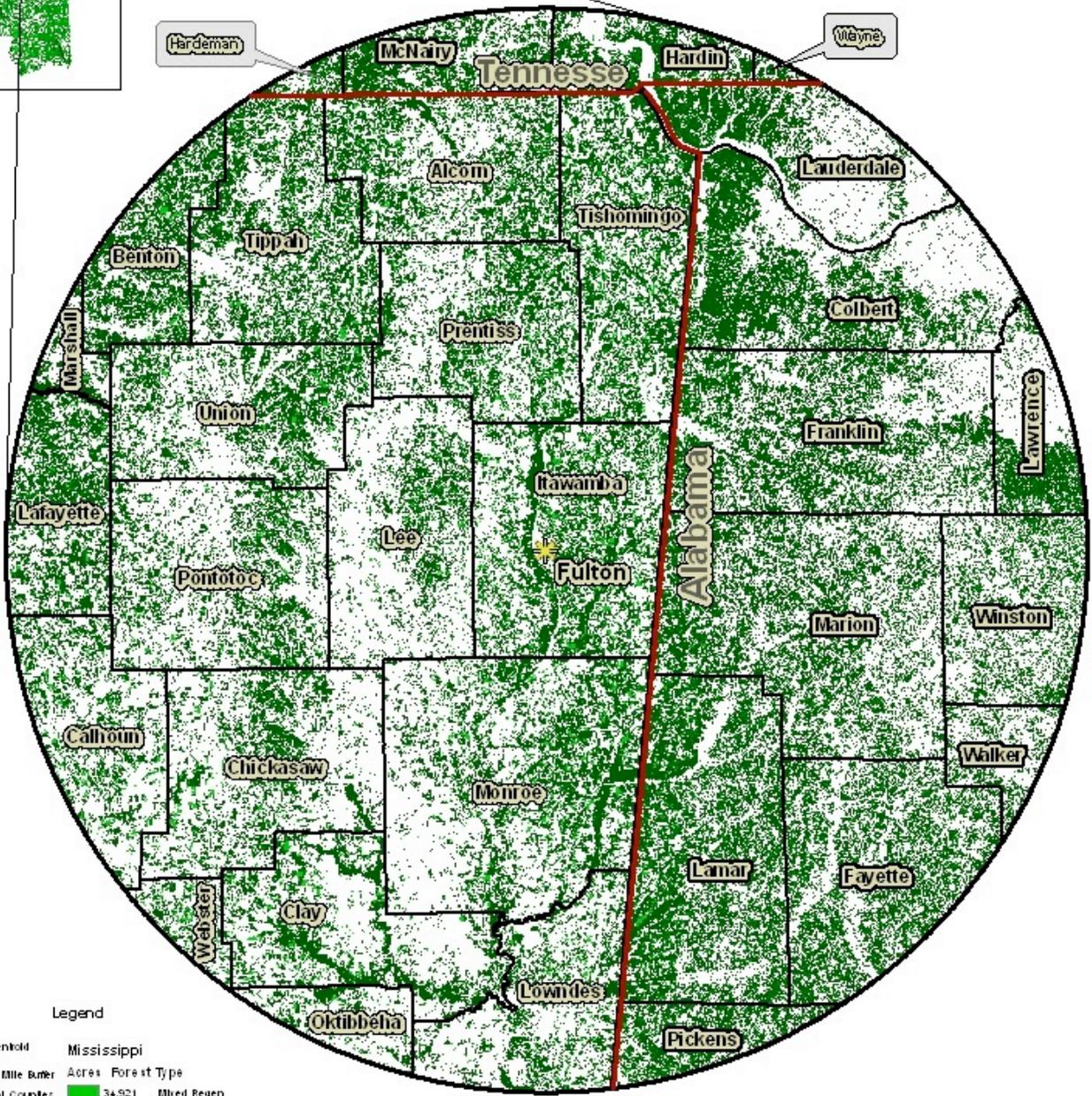
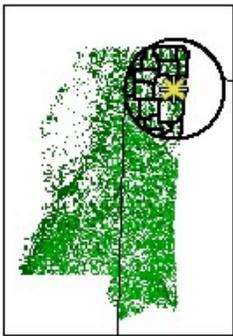
# Pine Acreage for the Mississippi Fulton Area & Surrounding State Areas



- Legend**
- Fulton Centroid
  - Fulton 60 Mile Buffer
  - Mississippi Counties
  - Alabama
  - Tennessee
  - Acres: Forest Type
  - 100,715 Pine Region
  - 720,464 Pine
  - Alabama\_Tennessee
  - Acres: Forest Type
  - 402,170 Pine

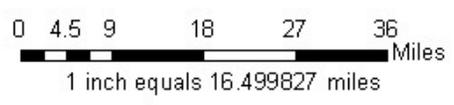


# Hardwood Acreage for the Mississippi Fulton Area & Surrounding State Areas



**Legend**

	Fulton Centroid		
	Fulton 60 Mile Buffer		
	Mississippi Counties		
	Alabama		
	Tennessee		
	Alabama_Tennessee		
	Acres	Forest Type	
	34,921	Mixed Regen	
	171,481	Hardwood Regen	
	310,574	Mixed	
	1,534,881	Hardwood	
	254,796	Mixed	
	999,348	Hardwood	



## Forest Volumes

The Mississippi Institute for Forest Inventory conducted the forest inventory for this region of Mississippi during the 2007-2008 winter dormancy period. Table 2 shows the volumes on a per acre and total county basis for Mississippi Counties within a 60 mile radius of Fulton, Mississippi.

Table 2. Per acre and total county volumes by major species group for Mississippi Counties.

County	Pine						Hardwood					
	Per Acre Volumes			Total County Volumes			Per Acre Volumes			Total County Volumes		
	Pulpwood	Sawtimber	Total	Pulpwood	Sawtimber	Total	Pulpwood	Sawtimber	Total	Pulpwood	Sawtimber	Total
Alcorn	12	17	29	519,033	779,607	1,298,640	15	23	39	885,399	1,347,940	2,233,339
Benton	15	41	56	603,685	1,647,007	2,250,692	19	56	75	1,883,516	5,477,225	7,360,741
Calhoun	21	26	47	1,573,817	1,996,327	3,570,144	42	21	63	2,782,875	1,406,088	4,188,963
Chickasaw	27	35	62	1,518,231	1,999,794	3,518,025	36	48	84	1,612,045	2,142,591	3,754,636
Clay	28	26	54	954,999	902,871	1,857,870	40	26	66	2,839,987	1,865,068	4,705,055
Itawamba	19	21	40	1,503,575	1,632,371	3,135,946	38	44	82	4,190,182	4,945,498	9,135,680
Lafayette	28	41	70	2,402,339	3,521,045	5,923,384	36	41	77	6,033,972	6,969,471	13,003,443
Lee	28	35	62	767,413	960,167	1,727,580	40	36	76	1,877,758	1,707,727	3,585,485
Lowndes	13	31	44	477,317	1,107,722	1,585,039	16	62	78	1,643,167	6,329,141	7,972,308
Monroe	21	21	42	1,630,133	1,629,495	3,259,628	41	47	87	4,537,173	5,164,903	9,702,076
Oktibbeha	15	35	49	1,161,612	2,749,207	3,910,819	18	64	82	1,538,125	5,538,178	7,076,303
Pontotoc	16	25	41	652,406	1,004,064	1,656,470	16	37	53	1,095,642	2,442,938	3,538,580
Prentiss	16	20	36	835,758	1,019,122	1,854,880	22	29	51	1,511,656	2,042,088	3,553,744
Tippah	17	27	45	974,312	1,552,463	2,526,775	18	45	63	1,476,239	3,649,338	5,125,577
Tishomingo	16	20	35	1,189,875	1,502,301	2,692,176	40	37	77	2,266,955	2,122,766	4,389,721
Union	16	34	49	654,602	1,412,471	2,067,073	17	50	67	1,175,456	3,456,267	4,631,723
Webster	14	45	59	1,469,638	4,740,541	6,210,179	22	50	72	1,248,371	2,899,396	4,147,767
<b>Avg/Totals</b>	<b>19</b>	<b>29</b>	<b>48</b>	<b>18,888,745</b>	<b>30,156,575</b>	<b>49,045,320</b>	<b>28</b>	<b>42</b>	<b>70</b>	<b>38,598,518</b>	<b>59,506,623</b>	<b>98,105,141</b>

**Disclaimer:** Although this information is derived from sampling estimation techniques the presumed precision of  $\pm 15\%$  sampling error with 95% confidence, it is a statistical estimation and not a 100% census of the forest resources within the targeted procurement zones. These estimates are subject to change reflecting changes to the analysis procedures or the data. These estimates are also temporally static and events and circumstances occurring within the procurement zone that physically alter the forest resource will not be reflected.

Table 3. Distribution of forest covertypes and harvest activity by major species group for Mississippi counties.

County	Regeneration (acres)	Pine (acres)	Mixed (acres)	Hardwood (acres)	Forested (acres)	Annual Hardwood Harvest (tons)	Annual Hardwood Harvest (acres)	Hardwood Harvest Residual (tons)	Annual Pine Harvest (tons)	Annual Pine Harvest (acres)	Pine Harvest Residual (tons)
Alcorn	28,484	35,188	15,317	86,489	165,479	53,779	746	20,775	117,573	1,335	37,202
Benton	23,581	33,326	18,566	108,223	183,695	41,268	559	18,193	49,050	442	14,398
Calhoun	26,938	76,720	29,141	106,590	239,390	73,850	1,716	31,686	312,062	4,066	75,081
Chickasaw	24,403	47,533	19,238	76,979	168,153	28,067	600	12,294	133,371	1,451	29,740
Clay	18,647	33,765	13,804	89,318	155,534	65,052	1,025	24,389	128,553	1,380	32,845
Itawamba	40,532	66,394	32,773	125,706	265,406	179,171	1,596	42,202	262,435	2,682	70,919
Lafayette	37,668	70,844	37,323	155,703	301,538	33,044	397	8,421	155,143	1,787	37,955
Lee	30,281	26,467	9,859	54,249	120,855	45,618	503	7,061	77,489	1,915	26,895
Lowndes	30,858	37,023	13,139	97,427	178,447	84,940	1,337	24,462	69,069	5,332	15,843
Monroe	46,182	67,196	31,814	153,678	298,870	163,545	2,071	32,765	176,984	2,612	41,313
Oktibbeha	25,297	69,607	27,366	89,385	211,654	73,159	1,545	20,069	205,146	7,083	42,817
Pontotoc	31,016	42,975	15,770	77,568	167,329	40,763	763	13,771	148,951	2,157	38,947
Prentiss	26,380	42,820	19,285	77,563	166,048	102,712	1,549	34,032	162,501	2,442	53,643
Tippah	31,836	44,079	20,802	102,428	199,146	60,339	1,021	32,821	125,918	1,181	37,963
Tishomingo	28,275	62,383	26,069	100,366	217,093	150,631	2,960	58,546	215,516	4,866	96,259
Union	23,048	34,093	15,421	81,169	153,730	48,308	999	12,422	89,249	1,415	17,590
Webster	21,281	79,472	33,604	75,232	209,589	77,692	2,459	23,160	253,300	6,293	44,225
<b>Total</b>	<b>494,706</b>	<b>869,885</b>	<b>379,292</b>	<b>1,658,072</b>	<b>3,401,956</b>	<b>1,321,938</b>	<b>21,844</b>	<b>417,070</b>	<b>2,682,311</b>	<b>48,440</b>	<b>713,635</b>

Table 4. Distribution of biomass for merchantable and residual volumes for counties in Alabama and Tennessee.

State	County	Merchantable Biomass (tons)		Residual Biomass (tons)	
		Pine	Hardwood	Pine	Hardwood
Alabama	Colbert	2,312,022	9,348,816	549,792	3,522,688
	Fayette	7,108,460	8,817,718	3,030,135	4,470,087
	Franklin	2,963,332	9,779,725	1,336,835	4,475,804
	Lamar	5,067,903	9,073,304	1,620,805	4,446,756
	Lauderdale	1,529,753	7,464,845	670,390	3,209,308
	Lawrence	3,988,763	11,156,452	740,445	4,538,543
	Marion	8,298,401	6,002,362	3,149,545	3,883,954
	Pickens	10,090,374	10,840,897	2,500,387	5,914,788
	Walker	7,729,440	10,201,731	2,987,294	5,691,399
	Winston	7,234,949	9,971,749	2,066,911	5,162,416
	Tennessee	Hardeman	2,712,356	12,234,521	502,567
Hardin		1,891,622	13,024,188	496,037	5,545,763
McNairy		3,941,791	8,928,584	898,972	4,105,807
Wayne		2,914,111	20,672,889	731,177	7,631,491

Table 5. Distribution of ownership within Mississippi National Forests within a 60 mile radius of Fulton, Mississippi

Owner	National Forest		Grand Total
	Holly Springs	Tombigbee	
USFS	102,518	26,765	129,283
Private	3,304	277	3,581
Total	105,822	27,042	132,864