

Chapter 11. Background Assessment

HISTORY OF HARRISON COUNTY

Harrison County was first settled in 1699, when Pierre Le Moyne d'Iberville established a new colony for France at Biloxi.¹ Bounded by water on three sides, Biloxi's strategic location allowed for the operation of a port. D'Iberville commissioned Fort Maurepas to defend the port. Biloxi quickly became a provincial capital for the French Empire in North America, which stretched from the Rocky Mountains to the Alleghenies. In consequent battles for global dominance, France lost Biloxi and a great portion of its territory to the English in 1763.² At this point, the importance of Biloxi as a provincial capital ceased.

When the English assumed control of Biloxi and the French territory, Captain George Johnston moved the capital to the Natchez District along the Mississippi River.³ The move allowed the Governor to oversee the production of cotton and tobacco in the middle to northern sections of Mississippi. With Biloxi and the surrounding region no longer an economic center, residents shifted to fishing and harvesting timber from oak trees that lined the coast and extended inland for 100 miles.⁴

Harrison County was officially designated as a county in 1841, when land was reapportioned from Hancock County because of increasing population. The County's namesake is the ninth President of the United States, General William Henry Harrison. Although the county seat was originally in Mississippi City, today it is shared by the cities of Gulfport and Biloxi, the two largest cities in Harrison County. After becoming a political entity, Harrison County was commissioned to have a state university in Mississippi City. This was contested, however, by officials from the middle and northern parts of the State, and the university was located in Oxford instead.

The late 1800s and early 1900s saw communities across Harrison County thriving as the result of the wool industry. Open-range sheep grazing was common throughout the forests of Harrison County, prospering in Woolmarket and Saucier during the time period. Woolmarket served as the shipping point for wool from sheep raised in the northern part of the county. Wool was sent to the coast along the Biloxi River from Stiglets Landing. Stiglets Landing employed 500 people and was the center of the wool trade in south Mississippi. The wool industry declined in the 1930s when Mississippi banned open-range grazing.

In the 1850s, a railroad was surveyed for the State of Mississippi, but the Civil War prevented its construction. In 1869 and 1870, the Louisville and Nashville Railroad was constructed through the southernmost section of Harrison County. Located along the coast, the railroad connected New Orleans, Louisiana; Mobile, Alabama; and Cincinnati, Ohio. The railroad carried freight and passengers between each city. In 1895, the Gulf & Ship Island Railroad was completed from Gulfport to Hattiesburg.⁵ Captain J.T. Jones later expanded the railroad in order to connect the channel and the pier that he had constructed at Gulfport. This new port facility along the coast allowed commercial barges to come in and out of Gulfport and facilitated growth in timber and other industries around the County. In 1912, the Batson and Hatten Lumber Company established adjacent to the Gulf and Ship Island Railroad in Lyman. By 1917, the company had the largest sawmill in the world, employing 650 people.⁶ The community of Saucier, another major stop on the railroad line, shipped lumber and turpentine. In 1901, Saucier incorporated to keep taverns out of the community. The community unincorporated in 1907, when Mississippi adopted prohibition.⁷

In 1914, growth in the northern portion of the County led to the division of a portion of Harrison County into the new Stone County. Over the next few decades, structural improvements were made to Harrison County's transportation network.⁸ Incorporated communities also began to provide sewer and wastewater services. In 1926, a

Figure B-1. Open-range grazing of sheep was common in Northern Harrison County in the 1800s.



Source: Dixie Press Collection, Mississippi Gulf Coast Community College

Figure B-2. The Batson and Hatten Lumber Company was the largest sawmill in the world.



Source: Dixie Press Collection, Mississippi Gulf Coast Community College

seawall was constructed along portions of Harrison County's coastline. The seawall was designed to shield communities like Pass Christian, Long Beach, Gulfport, and Biloxi from tidal surges and tropical disturbances. This allowed Harrison County to become a popular resort destination by the 1920s. For example, the Inn-by-the-Sea in Henderson Point and the Pine Hills Hotel in the DeLisle area served tourists with luxurious experiences. By the 1930s, many of these resorts closed due to the Great Depression.⁹

By the 1930s, there was significant deforestation as a result of the lumber industry. In 1936, the De Soto National Forest was established as the largest national forest in Mississippi. Throughout the 1930s and 1940s the Civilian Conservation Corps undertook massive reforestation efforts.¹⁰ During World War II, German prisoners of war were housed in the De Soto National Forest and charged with planting trees.¹¹ Harrison County has long been known for its longleaf yellow-pine forest, as timber is the state's number one crop.¹² In 1954, the Southern Institute of Forest Genetics was formed in the De Soto National Forest. The Institute is focused on genetic and molecular research to improve southern pines and other tree species.¹³

In the 1950s, the Harrison County Shore Protection Project reconstructed the seawall and created the world's largest man-made beach, stretching nearly the entire length of the coastline.¹⁴ The project raised nearly 13 miles of the Coast to the mean sea level or above, providing communities with an additional buffer from the Gulf of Mexico. Tourists came back to the Mississippi Gulf Coast between the 1940s and 1960s, drawn by its beaches and entertainment.¹⁵ Hurricane Camille devastated Harrison County in 1969 and resulted in more than two decades of rebuilding.

After the passage of the Mississippi Gaming Control Act, on January 29, 1990 which permitted certain Mississippi counties to develop casinos in waterfront areas, as long as the casinos were "floating" rather than "on land", the employment base in Harrison County changed. The original intent of the legislation was to allow river-boat-type gaming activities, but the casino industry took advantage of a loophole in the language and installed huge floating barges with buildings constructed on top.

Language in the law gave each county the right to

entertain or reject the construction of casinos in their communities. The City of Biloxi was one of the first to capitalize on the new measure, and it opened three casinos within six months of the law going into effect. As a result, the shoreline rapidly changed in Biloxi.¹⁶ The cities of Bay Saint Louis and Gulfport were quick to follow Biloxi's lead. Since 1992, gaming has become a major industry in Harrison County.

Hurricane Katrina came ashore on August 29th, 2005. Although devastation along the Coast was immense, it did not stop the casinos from rebuilding. Two years after the storm, ten casinos had reopened and more planned to build on the coast. Outside of Hinds County, which contains the State Capital, Harrison County is the second most populous county in the State of Mississippi, and it continues to grow. While hurricanes have regularly impacted Harrison County, its citizens have had a strong will that has helped the county grow and thrive.

Figure B-4. The Pine Hills Resort in the community of DeLisle on the Saint Louis Bay attracted tourists to this resort destination.



Source: CC Tex Hamill Collection, Mississippi Gulf Coast Community College

Figure B-3. The Saucier family moved from the coast to create a settlement further inland.



Source: From the collection of Mary Ann Saucier

THE POPULATION AND THE ECONOMY

Population

Demographics are a description of the population characteristics of an area. Long-term demographic studies help local elected officials identify trends and show how the population is changing. A clear understanding of these trends, the characteristics of the current population, and the effects of Hurricane Katrina are necessary to understand the community's needs. Identifying population characteristics of Harrison County is an important element in the planning process. The current and projected population establishes the type of facilities and services needed in the future. The following data was compiled from the US Census Bureau and estimates generated by state and regional agencies.

The information in Table B-1 reveals Harrison County's population loss following Hurricane Katrina,

beginning in 2006. The population decline following Hurricane Katrina is similar to what happened following Hurricane Camille. The population following Camille rebounded and the same is expected for Harrison County after this most recent storm.

The population from past Census reports highlights municipal annexation patterns. Annexation increases the land size and the population of a jurisdiction. D'Iberville incorporated in 1988 in the far eastern portion of the county.¹⁷ In the 1990s, Biloxi, Gulfport and Long Beach annexed adjacent land, thus increasing each city's land mass and population.¹⁸ Biloxi annexed the Woolmarket community, significantly increasing the city's land area.¹⁹ The annexation of Orange Grove in 1994 helped make Gulfport the second largest city in Mississippi.²⁰ As part of the ongoing planning efforts throughout Harrison County all of the cities are evaluating potential future annexations, potentially impacting the population distribution between the unincorporated county and the cities.²¹

There are a mix of races and ethnicities in Harrison County. The population is 12.4 percent African-American, 2.9 percent Asian, and 2.9 percent Hispanic, based on US Census estimates for 2006.

Households

Household composition has changed significantly between 2000 and 2006, as seen in Table B-2. The total number of households has decreased by 9.7 percent, while the number of family households has decreased by 6 percent. Since 2000, there has been a substantial increase in male-headed households, with a decrease in female-headed households. These declines in households can be attributed to the impact of Hurricane Katrina and the displacement of individuals to other areas of the state and country. Harrison County has primarily family households with an average household size of 2.65. Twenty-one percent of households have persons 65 or older.

There has been a shift from family to non-family households, which affects the housing needed for residents. This shift is due to households doubling up and forming in non-traditional ways after the storm in order to meet

immediate housing needs.

Population Projections

Before Hurricane Katrina, the county was experiencing modest growth. Based on 2005 Census estimates (pre-storm), the county as a whole experienced 1.9 percent growth between 2000 and 2005. The unincorporated county grew more quickly at 6.6 percent for the five-year period. Hurricane Katrina caused a serious disruption in growth with significant loss of population in some communities and growth in the unincorporated county.

Pre-Katrina there was a modest growth rate in the unincorporated county. Hurricane Katrina resulted in the loss of approximately 400 housing units in Henderson Point, 250 in DeLisle, approximately 100 in Pineville, and a smaller number of homes in other parts of the unincorporated county. As a result of Hurricane Katrina, there was a total loss of more than 750 housing units and significant damage of many more units.²² While the unincorporated county lost housing

Table B-2. Households by Type

Households by Type	2000	2006	Difference	Percent Change
Family households (families)	48,605	45,647	-2,958	-6.09%
Married-couple family:	34,410	31,881	-2,529	-7.35%
Nonfamily households	4,461	18,942	14,481	324.61%
Male householder, no wife present:	3,390	3,735	345	10.18%
Female householder, no husband present:	10,805	10,031	-774	-7.16%
Total households	71,538	64,589	-6,949	-9.71%

Source: Census of Population and Housing, US Census Bureau, 2000 and American Community Survey 2006

Table B-1. Historic Population in Harrison County

Cities	Population Estimates											
	1960	1970	1980	1990	2000	2001	2002	2003	2004	2005	2006	2007
Biloxi	44,053	48,486	49,311	46,319	50,644	49,803	49,551	49,604	50,185	49,904	44,342	42,984
D'Iberville	N/A	N/A	N/A	6,566	7,608	7,905	7,871	7,787	8,009	8,146	7,064	7,185
Gulfport	N/A	N/A	39,676	40,775	71,127	71,391	72,101	71,031	71,769	72,304	64,316	69,925
Long Beach	N/A	N/A	7,967	15,804	17,320	16,931	16,961	16,908	17,218	17,234	15,372	14,258
Pass Christian	3,881	2,979	5,014	5,557	6,579	6,545	6,655	6,669	6,794	6,861	5,999	4,158
Unincorporated	71,555	83,117	55,697	115,021	36,323	36,937	36,857	37,190	38,154	38,738	34,782	42,903
Net Change	N/A	15,093	23,083	7,700	24,236	-89	484	-807	2,940	1,058	-21,312	9,538
Percent Change	N/A	11.21%	14.64%	4.66%	12.78%	-0.05%	0.25%	-0.43%	1.53%	0.55%	-12.40%	5.26%
County Total	119,489	134,582	157,665	165,365	189,601	189,512	189,996	189,189	192,129	193,187	171,875	181,413

Source: US Census Bureau, Census 1990 and 2000*, American Community Survey, ACS Demographic, Housing Estimates 2001-2006 and Center For Population Studies, University of Mississippi and Mississippi Home Corporation, 2007+

Table B-3. Population projections through 2030

Cities	Harrison Co. Estimate 2007	MHC 2007	Harrison Co. Estimate 2010	GRWWP 2010	MHC 2012	Harrison Co. Estimate 2015	GRWWP 2015	Harrison Co. Estimate 2020	GRWWP 2020	GRWWP 2025	Harrison Co. Estimate 2030	GRPC 2030
Biloxi		42,984		31,300	41,661		34,719		33,339	32,001		67,282
D'Iberville		7,185		13,280	6,786		14,530		14,700	14,674		26,689
Gulfport		69,925		52,861	66,687		56,880		60,586	63,055		119,054
Long Beach		14,258		4,125	14,052		6,553		6,202	5,887		24,520
Pass Christian		4,158		3,093	4,280		4,473		4,234	4,018		12,653
Unincorporated	45,408	42,903	51,077	108,762	41,257	62,145	118,480	75,608	134,786	148,483	96,784	85,767
Net Change from 2007		N/A	11,774	32,009	-6,690	39,282	54,222	59,905	72,433	86,705	94,507	136,765
Percent Change from 2007		N/A	6.5%	17.6%	-3.69%	21.6%	29.9%	33.0%	39.9%	47.7%	52.1%	75.4%
County Total		181,413	193,187	213,422	174,723	220,695	235,635	241,318	253,846	268,118	275,920	318,178

Source: Mississippi Home Corporation, Gulf Regional Planning Commission, Gulf Region Water and Wastewater Plan

units, the incorporated cities lost even more. As a result, the unincorporated county had an increase in residential construction to replace destroyed housing with new housing north of Interstate Highway 10. A total of 2,420 housing units were permitted between 2005 and 2007.²³ In addition, there have been a significant number of permits for both temporary and permanent manufactured housing. Based on the 2000 estimate that 36 percent of housing in the unincorporated county is manufactured housing, it is estimated that 847 manufactured homes located in the unincorporated county post-Katrina through 2007. The result is a net gain of approximately 2,517 units between the loss of housing units, new construction, and new manufactured home placements.²⁴

Prior to Hurricane Katrina in 2005, the Census estimated the population of the unincorporated county to be 38,738. Assuming the average household size of 2.65 from the 2000 Census is still relevant, the unincorporated county is likely to have gained 6,670 people from the storm through 2007 for a total population of 45,408. This represents an approximately 8 percent growth rate per year from 2005 to 2007.

By the end of 2007 the building permit issuance rate and the manufactured home permit issuance rate declined as residents have been able to make permanent living arrangements. In 2008, the building permit issuance rate continued to slow. From this data, the key question is: Now that there is growing stability for existing residents in Harrison County, how quickly is the economy and population projected to grow from this point forward?

The current, critical factors inhibiting growth in the unincorporated county are a lack of water and wastewater infrastructure, insurance prices, and employment. It is expected that wastewater extensions will begin in the unincorporated county by 2015. In the interim, there is one casino project that is expected to be completed in 2010 or 2011. Another project is expected to start construction in the near future with completion in 2011 at the earliest. There are other proposed casinos in Biloxi and D'Iberville, but none with fixed construction dates. This means that these casinos would likely be complete between 2012 and 2015 at the earliest.

While the planned casinos are touted as major engines for population growth, the 1990s resulted in a large

number of casinos in Harrison County with a population growth rate of 12.8 percent, or approximately 1.3 percent per year. Currently casinos in Harrison County average approximately 1,120 employees per casino. The largest casino, Beau Rivage, employs just under 2,900 people and Imperial Palace employs 2,300.²⁵

Casinos are currently the primary driver of employment growth. There are two casinos to be completed in Biloxi by 2012: Margaritaville and Bacaran Bay. These casinos are likely to be large employers. The casinos have estimated that they will have thousands of employees and for the purposes of this analysis 5,000 jobs are estimated will be created as a direct result of the two new casinos. The Bureau of Economic Analysis has employment multipliers for gaming and estimates that for every job in gaming an additional 0.5 jobs are created.²⁶ The result is 7,525 jobs created in the Harrison County economy if two casinos open. The Mississippi Department of Employment Security estimates that 21,880 jobs will be created in the Biloxi-Gulfport MSA by 2014.²⁷ Based on historic jobs share, this means that Harrison County should receive 55 percent of these new

jobs, or 12,034 jobs by 2014. These figures appear to be reasonable estimates as it is likely that new casinos will open by 2014, as well as jobs in other industries.

Based on 2002 estimates by the Gulf Regional Planning Commission, for every job in Harrison County there are 2.06 people. If 12,034 jobs were created between 2008 and 2014, Harrison County as a whole could expect approximately 24,790 new residents. This represents a 3 percent growth rate per year between 2008 and 2014. The growth rate for the unincorporated county is expected to be 4 percent, absorbing more of the county growth, as the cities will still experience rebuilding through this time period.

What is expected to happen from 2015 forward? It is difficult to effectively project population and employment growth over the long term given the current challenges of rebuilding. Based on estimates of when wastewater infrastructure will be available in the unincorporated county, significant development could occur between 2015 and 2020. Availability of water and wastewater along growth corridors would open up tracts of land for urban development. It is expected that during

Figure B-5. Saucier Elementary School is one school expected to have an increase in enrollment as growth occurs.



Source: Amy Miller

this period the growth rate in the unincorporated county would continue to be 4 percent per year. However, the growth rate of the county as a whole is expected to slow to pre-Katrina levels of between 1 and 2 percent due to the high insurance price and limited availability. Even with new casino development, the growth patterns are expected to return to the same levels experienced during the casino boom of the 1990s.

Beyond 2020, the county is expected to continue to grow at a rate of 1 to 2 percent per year, with the unincorporated county growing slightly faster at 2 percent per year. This is based on the greater availability of land for development in the unincorporated county as compared to the incorporated cities. The resulting county population by 2030 is expected to be 275,920 people, with 96,784 living in today's unincorporated boundaries.

This estimation varies from numbers generated by the Mississippi Home Corporation, *Gulf Region Water and Wastewater Plan*, and Gulf Regional Planning Commission. The estimation for 2007 from the Mississippi Home Corporation is similar to the plan estimation, with the Harrison County estimate being approximately 2,500 people higher than MHC. From 2010 forward, the Harrison County estimates are substantially different from MHC and the *Gulf Regional Water and Wastewater Plan*. In 2010, Harrison County does not believe it is possible for the population of Biloxi to further decline while the county would gain a population of over 50,000 people. While rezonings could theoretically support this, the lack of building permit issuance and availability of water/wastewater make this highly unlikely to be achieved. The estimates for 2012 from

Table B-4. Existing and Project Enrollment in Harrison County Schools by Grade Level and District

Harrison County Schools: Total Enrollment											
	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Grade Level											
Elementary	7,113	7,316	7,396	7,521	7,699	7,828	7,909	7,950	8,012	8,091	8,122
Middle School	2,067	2,074	2,086	2,066	2,000	2,047	2,203	2,334	2,375	2,355	2,361
High School	3,493	3,626	3,661	3,604	3,549	3,583	3,562	3,586	3,681	3,839	4,001
Development Center	101	101	101	101	101	101	101	101	101	101	101
Total Enrollment	12,774	13,117	13,244	13,292	13,349	13,559	13,775	13,971	14,169	14,386	14,585
Woolmarket	426	449	469	492	523	532	555	556	560	571	581
D'Iberville Elem. & Middle	1,148	1,164	1,158	1,167	1,183	1,196	1,222	1,234	1,241	1,245	1,251
D'Iberville High	953	984	1,060	1,021	1,023	1,028	994	1,019	1,043	1,106	1,159
N Woolmarket	834	924	928	946	950	985	1,010	1,050	1,083	1,084	1,065
Harrison Central/Orange Grove	1,324	1,360	1,382	1,400	1,421	1,432	1,440	1,438	1,431	1,424	1,410
North Gulfport	898	932	966	929	921	936	965	1,006	1,048	1,036	1,031
Harrison Central HS	2,540	2,624	2,601	2,583	2,526	2,555	2,568	2,567	2,638	2,733	2,842
Pineville	202	216	228	230	235	236	237	230	224	220	217
Three Rivers	822	811	804	798	783	770	759	753	747	739	726
BelAire	717	707	701	692	697	692	689	674	663	655	646
Lyman	513	520	539	563	601	633	669	683	696	711	727
Lizana	560	583	587	608	643	663	671	677	688	699	713
Saucier	509	529	538	545	553	565	572	592	616	642	670
West Wortham	1,227	1,195	1,182	1,208	1,189	1,235	1,323	1,391	1,390	1,420	1,446
CDC	101	101	101	101	101	101	101	101	101	101	101
Change	N/A	343	127	48	57	210	216	196	198	217	199
Percentage	N/A	2.7%	1.0%	0.4%	0.4%	1.6%	1.6%	1.4%	1.4%	1.5%	1.4%
District Total	12,774	13,117	13,244	13,292	13,349	13,559	13,775	13,971	14,169	14,386	14,585

Source: Harrison County School District

Table B-5. Educational Attainment of individuals 25 years or older for Harrison County

School Enrollment	County		Biloxi		D'Iberville		Gulfport		Long Beach		Pass Christian		Unincorporated	
	Total	Percent	Total	Percent	Total	Percent	Total	Percent	Total	Percent	Total	Percent	Total	Percent
Population 3 years and over enrolled in school	48,256	100	12,284	100	1,962	100	18,387	100	5,178	100	1,541	100	8,904	18.4
Nursery school, preschool	3,635	7.5	854	7	106	5.4	1,477	8	425	8.2	172	11.2	601	16.5
Kindergarten	3,070	6.4	914	7.4	96	4.9	1,170	6.4	237	4.6	116	7.5	537	17.5
Elementary school (grades 1-8)	22,426	46.5	5,240	42.7	1,043	53.2	8,531	46.4	2,518	48.6	687	44.6	4,407	19.6
High school (grades 9-12)	10,258	21.3	2,428	19.8	453	23.1	3,800	20.7	1,015	19.6	400	26	2,162	21.1
College or graduate school	8,867	18.4	2,848	23.2	264	13.5	3,409	18.5	983	19	166	10.8	1,197	13.5

Educational Attainment	County		Biloxi		D'Iberville		Gulfport		Long Beach		Pass Christian		Unincorporated	
	Total	Percent	Total	Percent	Total	Percent	Total	Percent	Total	Percent	Total	Percent	Total	Percent
Population 25 years and over	119,169	100	31,052	100	4,850	100	44,790	100	11,215	100	4,574	100	22,688	19
Less than 9th grade	7,448	6.2	1,985	6.4	402	8.3	2,818	6.3	561	5	273	6	1,409	18.9
9th to 12th grade, no diploma	16,082	13.5	3,634	11.7	640	13.2	6,478	14.5	981	8.7	404	8.8	3,945	24.5
High school graduate (includes equivalency)	33,808	28.4	8,240	26.5	1,715	35.4	12,622	28.2	2,925	26.1	1,044	22.8	7,262	21.5
Some college, no degree	30,907	25.9	8,508	27.4	1,369	28.2	11,358	25.4	3,135	28	1,294	28.3	5,243	17
Associate degree	9,011	7.6	2,733	8.8	334	6.9	2,957	6.6	887	7.9	290	6.3	1,810	20.1
Bachelor's degree	14,062	11.8	3,719	12	271	5.6	5,529	12.3	1,824	16.3	825	18	1,894	13.5
Graduate or professional degree	7,851	6.6	2,233	7.2	119	2.5	3,028	6.8	902	8	444	9.7	1,125	14.3
Percent high school graduate or higher		80.3	81.9	(X)	78.5	(X)	79.2	(X)	86.3	(X)	85.2	(X)	86.4	(X)
Percent bachelor's degree or higher		18.4	19.2	(X)	8	(X)	19.1	(X)	24.3	(X)	27.7	(X)	27.8	(X)

Source: *Census of Population and Housing, US Census Bureau, 2000*

MHC are also believed to be inaccurate. For 2015, 2020, and 2025, Harrison County does not believe there will be ongoing population loss in some of the cities with extreme population growth in the unincorporated county. The population estimates for 2030 by the GRPC project a higher growth rate than Harrison County does. Harrison County estimates a slightly higher growth rate in the unincorporated county, with a slightly lower growth rate in the cities over time. The GRPC estimates expect 136,000 new people in Harrison County over the next 22 years. As it took 270 years for Harrison County to reach 130,000 people, in the last forty years the county has gained just

70,000 people, and during the casino boom of the 1990s gained just 24,000 people, it is unlikely that the county will experience a 75 percent increase in population. The final projected population of 96,784 represents in the current unincorporated land area. It is possible that a portion of this land could be incorporated, impacting the population of the cities.

Education

There are five school districts located within Harrison County. Students living in unincorporated Harrison County attend schools in the Long Beach, Pass

Christian or Harrison County School District.

The Long Beach School District has provided education to students since 1884. The School District has three elementary schools including Reeves Elementary School, Harper McCaughan Elementary School and Quarles Elementary School. The district serves middle school aged children at Long Beach Middle School. Students from Long Beach attend Long Beach High School. Prior to Hurricane Katrina, the district had an enrollment of 3,200 students.²⁸ According to the Long Beach School District website, the 2006-2007 District Report, "No schools in the Long Beach School District

have been identified for school improvement."²⁹

The Pass Christian School District has provided services to the citizens of Harrison County since 1887. In 1933, students from DeLisle, Dubisson, and portions of Pineville joined the school district.³⁰ Pass Christian School District has two elementary schools including DeLisle Elementary School and Pass Christian Elementary School. Middle school aged children within this district attend Pass Christian Middle school, while high school students attend Pass Christian High School. Prior to Hurricane Katrina, the district had 1,965 students.³¹ The Pass Christian School District ranks as a high quality district according to the

Table B-6. 2007 Population and Housing Estimates

	2007 Harrison County	2007 Biloxi	2007 D'Iberville	2007 Gulfport	2007 Long Beach	2007 Pass Christian	2007 Unincorporated
Population	181,413	42,984	7,185	69,925	14,258	4,158	42,903
Households	70,143	17,189	2,784	27,060	5,440	1,714	15,956
Family Households	46,457	10,449	1,838	17,259	3,883	1,081	11,947
Average Household Size	2.48	2.31	2.58	2.46	2.58	2.35	N/A
Owner-occupied	44,452	8,540	1,977	15,890	3,739	1,214	13,092
Renter-occupied	25,691	8,649	806	11,170	1,701	500	2,865
Median Household Income	\$39,312	\$39,299	\$38,081	\$36,236	\$47,286	\$44,361	N/A
Median Family Income	\$44,404	\$45,703	\$41,732	\$41,668	\$53,904	\$50,139	N/A
Average Household Income	\$51,706	\$51,501	\$46,080	\$49,176	\$58,072	\$65,815	N/A
Average Family Income	\$58,064	\$60,113	\$50,277	\$55,272	\$65,733	\$74,106	N/A
Per Capita Income	\$20,372	\$21,265	\$17,845	\$19,473	\$22,407	\$28,083	N/A

Source: ESRI, 2007 Estimates and Projections

Mississippi Department of Education.³²

In the 2008 academic year, Harrison County School District had 13,117 students enrolled in first through 12th grade. In addition, the 2000 Census reports 1,197 of the population between the ages of 18 and 24 were enrolled in college or graduate studies. Table B-4 provides a more detailed description of school enrollment.

The Harrison County School District is the largest in the county and has a wide range of educational facilities that accommodate students from kindergarten through 12th grade. Table B-4 shows the total enrollment of Harrison County schools from 2001-2017. Prior to Hurricane Katrina, modest enrollment growth occurred. Immediately following Hurricane Katrina enrollments declined, but they have since rebounded.

Table B-5 summarizes the educational attainment for the incorporated and unincorporated county. According to the 2000 Census, 28.4 percent of county residents held a high school diploma or equivalent, 7.6 percent held an associate's degree, 11.8 percent held a bachelor's degree, and 6.6 percent held a graduate or professional degree. In comparing the unincorporated and incorporated

county, the unincorporated area of Harrison County had the highest high school graduation attainment rate. Pass Christian has the highest attainment of bachelor's degree or higher in the county with 27.8 percent.

Housing

Housing plays an important role in defining Harrison County's quality of life. Housing availability is directly linked to the County's ability to attract employers and provide homes for employees. Unincorporated Harrison County consists of primarily single-family and manufactured homes. Of those housing units, 58.2 percent were owner-occupied in 2006 (see Table B-6). The majority of housing in the county experienced wind and/or flood damage due to Hurricane Katrina in 2005. Many of the damaged housing units have been repaired or rebuilt. In addition, new homes and subdivisions are either under construction or have been proposed throughout the county. Housing information is based on the 2000 and 2006 Census, along with the 2007 Mississippi Home Corporation estimates. This information is important in assessing the effects of Hurricane Katrina on the county

and the existing housing stock.

As shown in Table B-8, there are an estimated 70,143 housing units in Harrison County. The estimates below detail the housing demographics for 2007 in terms of owner-occupied, renter-occupied, and median household income statistics. Gulfport had the greatest number of owner-occupied units. Long Beach had the highest median household income of \$47,286. Pass Christian had the highest average family income of \$74,106.

Table B-7 shows single unit, multi-family units, and mobile home comparisons for Biloxi, D'Iberville, Gulfport, Long Beach, and Pass Christian according to the 2000 US Census. As illustrated in Table B-8, Harrison County Housing Types 2000 and 2006, there has been a decrease in the number of one-unit detached homes, but an increase in the number of one-unit attached and mobile homes.

Based upon the 2006 American Fact Finder, the majority of housing, 63 percent, was classified as single-family detached units (see Table B-8). Mobile homes accounted for 12,515 units in the county. There were 13,492 multi-family homes in the county. The Census

Bureau estimates a net loss of almost 11,000 housing units between 2000 and 2006.³³

Age of Housing

Based on the 2000 Census, 60 percent of existing housing in Harrison County was constructed within the last 30 years. The largest group of houses was constructed between 1970 and 1979, following Hurricane Camille.³⁴ The next significant number of homes constructed was between 1990 and 1999. With the wide scale destruction of housing in Harrison County following Hurricane Katrina, a significant number of housing units are expected to be constructed between 2005 and 2010. More than 1,800 housing units have been constructed in unincorporated Harrison County since Hurricane Katrina (see Table B-9).

Occupancy and Vacancy Rates

Occupancy and vacancy rates are important in determining the adequacy of existing housing stock. Vacant houses and apartments are necessary for seasonal workers and students, and they provide options for future homeowners. The portion of vacant housing units increased significantly as a result of Hurricane Katrina. It is expected that many of these housing units will become occupied once they are repaired. In 2000, 2 percent of the housing was seasonal in nature. Many of these units were near the beach and were destroyed during the hurricane. Some of these homes are currently being rebuilt and additional seasonal housing units have been added in the form of condominiums.

Harrison County had 62.7 percent owner-occupied units, and 37.3 percent renter-occupied units in 2006. As shown in Table B-11, the 2006 Harrison County housing occupancy details 82 percent owner-occupied units and 18 percent renter-occupied units. The change in statistics demonstrates the effect of Hurricane Katrina on the housing stock.

Housing Values

Housing values presented in this section represent owner-occupied units within cities and the unincorporated

Table B-7. Housing Types, 2000

Area Statistics	Biloxi		D'Iberville		Gulfport		Long Beach		Pass Christian		Harrison County		Unincorporated	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Units in Structure														
1-unit, detached	11,941	53.9	2,069	67.4	19,349	65.4	5,260	72.1	2,526	76.2	49,754	62.5	8,609	60.5
1-unit, attached	1,248	5.6	25	0.8	624	2.1	116	1.6	54	1.6	2,150	2.7	83	0.58
2 units	753	3.4	55	1.8	1,000	3.4	293	4	66	2	2,308	2.9	141	1
3 or 4 units	1,407	6.4	46	1.5	1,289	4.4	500	6.9	202	6.1	3,498	4.4	54	0.38
5 to 9 units	1,567	7.1	83	2.7	1,838	6.2	565	7.7	191	5.8	4,324	5.4	80	0.56
10 to 19 units	1,066	4.8	49	1.6	1,131	3.8	130	1.8	21	0.6	2,422	3.0	25	0.2
20 or more units	2,359	10.7	114	3.7	2,091	7.1	368	5	186	5.6	5,204	6.5	86	0.6
Mobile home	1,770	8	605	19.7	2,240	7.6	63	0.9	67	2	9,843	12.4	5,098	35.9
Boat, RV, van, etc.	36	0.2	23	0.7	31	0.1	0	0	0	0	133	0.2	133	0.94
Total housing units	22,147	100	3,069	100	29,593	100	7,295	100	3,313	100	79,636	100	14,219	100

Source: Census of Population and Housing, US Census Bureau, 2000

Table B-8. Housing types within Harrison County, 2000 and 2006¹

Year	2000	2006
1-unit, detached	49,754	49,398
1-unit, attached	2,150	2,464
2 units	2,308	1,038
3 or 4 units	3,498	1,768
5 or more units	4,324	4,528
Mobile home	9,843	12,515
Boat, RV, van, etc.	133	368
Total housing units	79,636	78,687

Source: 2006 American Community Survey

Table B-9. Harrison County Residential Building Permits, 2004-2007

Year	Residential Permits	(\$) ^{Value in Million}
2004	482	67.4
2005	591	79.86
2006	1,016	130.4
2007	813	104.8

Source: Harrison County Code Administration Office

area of Harrison County. The median housing value of owner-occupied units increased from \$87,200 in 2000 to \$120,700 in 2006 (See Table B-12). Following Hurricane Katrina, there was an immediate increase in home prices due to the limited supply. As new homes are completed, prices have slightly reduced.

Effects of Hurricane Katrina

Hurricane Katrina will have lingering effects on Harrison County. The environmental conditions and the economic forces have not been conducive to a broad range of housing choices. The production of housing has also been slowed by the high cost of land, construction materials, and lack of infrastructure.

Since Hurricane Katrina, new subdivisions have been constructed throughout Harrison County. Many have been built north of Interstate Highway 10 to accommodate residents moving farther inland.

Housing Affordability

Housing affordability is a growing problem nationwide that affects the number of people who can live in a community. Hurricane Katrina left a significant number of people unable to afford rent or rebuild their homes. Rebuilding a home often requires a settlement from an insurance company and large sums of upfront capital. Individuals who have lost their former jobs and are working lower-paying jobs will experience difficulty in affording a new or existing house, residential land for rebuilding, or the rental of a unit. The gap in housing affordability hampers reinvestment in an area due to the lack of infrastructure, lack of health and safety services, and decreased ability to attract new business and industry.

This plan defines affordable housing for the residents of Harrison County as any housing options that meet

Figure B-6. Regency Modular Home Unit in Saucier.



Figure B-7. In 2008, there were several FEMA trailer parks in operation across Harrison County.



Source: Amy Miller (top), Eric Lowry (bottom)

minimum building codes and require no more than 30 percent of a household's income for rental or mortgage payments. Housing, so defined, encompasses households of all income levels. The housing may or may not be subsidized and it may be owner-occupied or rental units. Implicit in this broad definition is the assumption that the housing is physically adequate and not overcrowded.

An affordable housing objective involves the private, public, and non-profit sectors. Encouraging the long-term development housing that is affordable to moderate or lower income brackets in the vicinity of employment centers is also referred to as Regional Fair Share Housing. The data includes households earning 80 percent or less of the Area Median Income, which is estimated at \$41,239 in 2007. If every community with employment centers allows for housing that is affordable for employees that work in the area, the region as a whole can meet housing needs.

Table B-10. Harrison County Residential Additions/Repairs, 2004-2007

Year	Residential Additions/Repairs	(\$)Value in Millions
2004	79	3.2
2005	140	4.5
2006	687	19.89
2007	157	5.7

Source: Harrison County Code Administration Office

Table B-11. Housing Occupancy, 2000 and 2006

Housing Characteristics	2000	2006
		Estimate
Housing Occupancy		
Occupied housing units	71,538	64,589
Vacant housing units	8,098	14,098
Owner occupied housing units	35,664	45,769
Renter occupied housing units	26,568	18,820
Homeowner vacancy rate	1.9	2.1
Rental vacancy rate	10.6	9.2
Seasonal	1,673	N/A
Total housing units	79,636	78,687

Source: US Census 2000 and US Census Bureau American Community Survey 2006

Rental Housing

There are rental units county-wide. Following the hurricane, the number of rental units decreased by 9,306 units. This loss represents a third of the total available units, negatively affecting the ability of individuals to secure housing. The number of rental units in Harrison County increased from 2005 to 2006, as shown in Table B-13. Following the storm, rents increased significantly as a result of the decline in units, increased demand, and increased insurance costs. The number of individuals paying \$1,000 to \$1,499 in monthly rent increased by 1,114, or 40.6 percent. Thirty-two percent of renters were paying 35 percent or more of their monthly household income on rent in 2006.

Hurricane Katrina destroyed many of the apartment units in the county. In 2004, the county had more than 11,500 apartment units and after the storm this number fell to under 9,000. In an apartment survey conducted for the Gulf Regional Planning Commission in 2007, the vacancy rate for apartments was 6.6 percent across approximately 9,000 apartment units.³⁵ The vast majority of the apartment units are located in the county's incorporated cities, with less than 100 units in the unincorporated county. The many apartment units damaged due to Hurricane Katrina resulted in a significant change in the price of rental housing.³⁶ Harrison County's average rent for one-bedroom apartments was \$676.78 and \$767.69 for two-bedroom apartments in 2007.^{37,38}

The vacancy rate in financial assistance apartments is 0.1 percent. Across the Mississippi Gulf Coast, 1,476 units have been approved for construction under the Low Income Housing Tax Credit Program and 368 were under construction in 2007. Most of the financial assistance units are in the form of Low Income Housing Tax Credit projects which accept Section 8 Housing Choice Vouchers. There were six public housing projects in Harrison County in the jurisdiction of MS Regional Housing Authority No. VIII. The W.M. Ladnier Homes are located just outside the city limits of Gulfport and five public housing projects are located inside the city of Gulfport.³⁹ These communities are in various stages of redevelopment and new construction. Some have been converted to the Housing Choice Voucher Project Based Program.

Public Health

Harrison County is part of Public Health District IX for the state of Mississippi. Other counties in District IX are George, Hancock, Jackson, Pearl River, and Stone counties. Harrison County ranks eighth out of the 82 counties in the state in overall health capacity. The county's capacity is measured by indicators making up four primary categories: access to health care, populations at higher risk of disease and/or death, quality of care, and health outcomes. Figure B-8 illustrates the indicators relating directly to chronic disease and

Table B-12. Harrison County 2000 and 2006 Housing Values

	2000		2006	
	Number	Percent	Number	Percent
Owner-occupied units	35,664	100	45,769	100
Value				
Less than \$50,000	4,118	11.5	5,119	11.2
\$50,000 to \$99,999	17,934	50.3	12,273	26.8
\$100,000 to \$149,999	7,558	21.2	10,901	23.8
\$150,000 to \$199,999	3,068	8.6	6,749	14.7
\$200,000 to \$299,999	1,877	5.3	5,329	11.6
\$300,000 to \$499,999	769	2.2	4,026	8.8
\$500,000 to \$999,999	232	0.7	1,239	2.7
\$1,000,000 or more	108	0.3	133	0.29
Median (dollars)	\$87,200	N/A	\$120,700	N/A

Source: US Census 2000 and American Community Survey and 2006

Table B-14. Harrison County Employment (by Place of Residence), 2000

	Cities	Unincorporated Harrison County
Agriculture, forestry, fishing, hunting, and mining	696	285
Construction	4,553	2,285
Manufacturing	4,633	1,856
Wholesale trade	1,566	430
Retail trade	8,352	2,033
Transportation, warehousing, and utilities	2,709	1,121
Information	1,352	294
Finance, insurance, real estate, and rental and leasing	3,545	747
Professional, scientific, management, administrative, and waste management services	3,767	1,183
Educational, health, and social services	12,431	2,507
Arts, entertainment, recreation, accommodation, and food services	14,297	2,234
Other services (except public administration)	2,852	789
Public administration	4,450	977
Totals	65,203	16,741

Source: US Census Bureau

Table B-13. Specified renter-occupied units and rent as a percentage of household income in Harrison County

	2000	2005	2006
Renter-occupied units	26,568	28,126	18,820
Gross Rent			
Less than \$200	1,504	394	239
\$200 to \$299	1,444	722	887
\$300 to \$499	6,589	4,989	1,646
\$500 to \$749	10,734	9,828	4,680
\$750 to \$999	2,883	7,249	5,503
\$1,000 to \$1,499	499	1,629	2,743
\$1,500 or more	88	0	0
No cash rent	2,827	3,315	3,122
Median (dollars)	543	659	762

Source: US Census, 2005 and 2006 American Community Survey

accessibility to health care in Harrison County.⁴⁰

Harrison County had higher rates of persons diagnosed with diabetes than other counties in the region, the state, and the nation, as measured by the Behavioral Risk Factor Surveillance System (BRFSS), see Figure B-8. The current number of smokers in the county is also higher than the state and national average, although lower than the District IX total. Harrison County and District IX each had 28.3 percent of the sampled population respond that they had not exercised in a time period of 30 days. This percentage is lower than the state's 31 percent, yet higher than the national total of 22.6 percent. Harrison County has a higher rate of obesity, a state that is defined as an adult with a body mass index (BMI) of 30 or greater, than the nation at 27.8 percent. This percentage was lower than that of District IX and the state's obesity rate.^{41,42}

The U.S. Surgeon General recommends that adults engage in 30 minutes of moderate physical activity daily three or more times per week.⁴³ The Let's Go Walkin' Mississippi program is sponsored by Blue Cross & Blue Shield of Mississippi and is one of the key initiatives of Mississippi First Lady Marsha Barbour.⁴⁴ The program promotes the benefits of walking, provides a guide of places to walk in the state, and promotes personal and school walking programs.⁴⁵ The program website lists Edgewater Mall as

a place to walk in Harrison County. Counties adjacent to Harrison have parks and jogging trails listed as places to walk.⁴⁶

In terms of respiratory health, 12.3 percent of Harrison County residents sampled have been diagnosed with asthma. This percentage is lower in comparison to that of the public health district and national totals, but higher than the Mississippi state total. Harrison County has a higher percentage of residents without health insurance coverage (26.1 percent) than the District IX, state, and national BRFSS results. Harrison County's indicators of heart attack, heart disease, and stroke were higher than both state and national rates but lower than District IX rates. The results of the 2006 BRFSS for Harrison County serve as an indicator of the susceptibility of the county to leading causes of chronic disease and obesity. According to the 2006 BRFSS, Harrison County's non-white population rate of no health insurance is 11.6 percent greater than the county's white population rate.⁴⁷

Other demographic features to consider are the county's age distribution and the amount of the population residing in the unincorporated, rural areas. Rural residents often face barriers to high quality care, as do low income and minority populations. Nineteen percent of the county's residents reside in the unincorporated areas of the county, based on the 2000 Census. Harrison County's health facilities are primarily located within the incorporated cities of Biloxi, Gulfport, and Pass Christian.⁴⁸

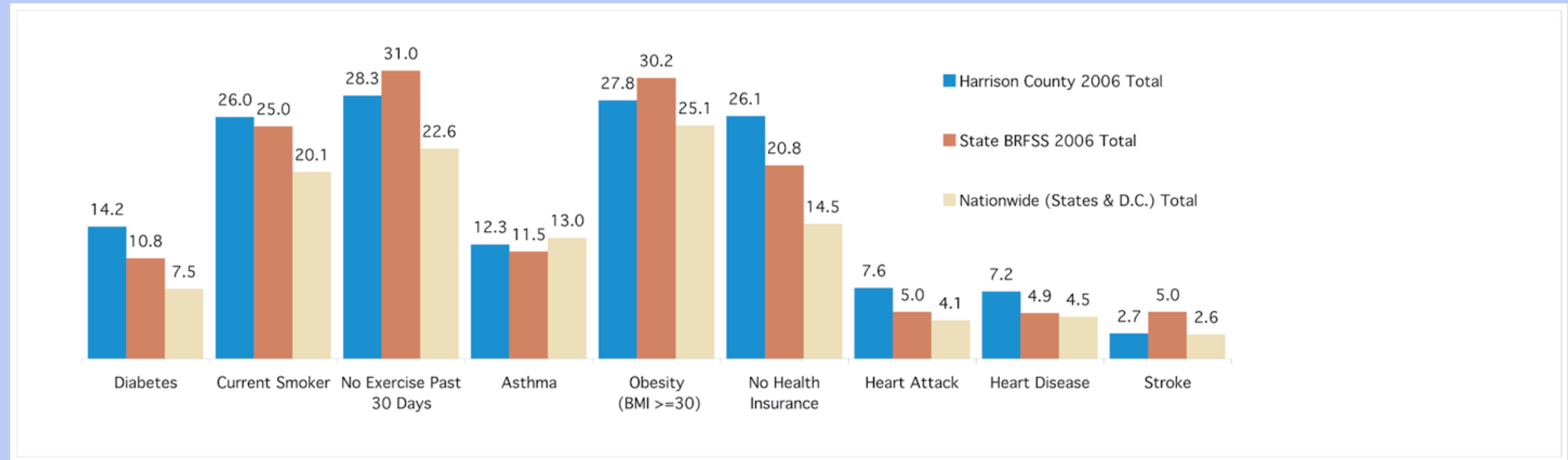
Economics

Harrison County is part of a multi-county regional economy made up of Harrison, Hancock, and Stone Counties in the Gulfport-Biloxi Metropolitan Statistical Area (MSA) and Jackson and George Counties in the Pascagoula MSA.^{49,50} Harrison County is the major center for population and employment in the region. In 2005, it contained 68 percent of all regional employment, and in 2006, approximately 45 percent of the regional population resided within the county.^{51,52}

As part of the Gulfport-Biloxi MSA, the Harrison County economy continues to expand; yet business output from 2001 to 2005 was slower than that of the Pascagoula MSA, the state, and the nation. The Gulfport-Biloxi MSA market value of goods and services, commonly referred to as the Gross Domestic Product (GDP), increased 15.2 percent, while the GDP of Pascagoula MSA increased 28.3 percent, the GDP of Mississippi increased 21 percent, and the GDP of the United States increased 23 percent.⁵³

Recent projections of economic growth estimate that the Gulfport-Biloxi MSA will experience a 23.1 percent increase in Gross Metropolitan Product (GMP) between 2007 and 2012, placing it ninth in the nation among small metropolitan areas.⁵⁴

Figure B-8. 2006 Behavioral Risk Factor Surveillance System Results



Source: Mississippi State Department of Health

Figure B-9. The Biloxi Regional Medical Center



Source: Amy Miller

Regional Differences

The Gulfport-Biloxi MSA economy functions very differently than the Pascagoula MSA, as one can see by examining GDP in top industry sectors. In the Gulfport-Biloxi MSA, the top two industry sectors by GDP in 2005 were government (\$2.36 billion in value, 68 percent from the federal sector) and leisure and hospitality (\$1,243 million in value). By contrast, the top two industry sectors by GDP in 2005 in the Pascagoula MSA were manufacturing (\$1,285 million in value) and government (\$728 million, 35 percent from the federal sector).⁵⁵

The same differences can be seen when looking at employment distribution. In 2005, the Gulfport-Biloxi MSA had 23,106 more leisure and hospitality jobs than the Pascagoula MSA, while the Pascagoula MSA had 10,199 more manufacturing jobs.⁵⁶

The numbers bear themselves out on the ground. The Gulfport-Biloxi MSA boasts a strong tourism industry, with numerous

gaming and recreational businesses as well as the presence of a number of federal facilities. In the Pascagoula MSA, large industrial facilities, such as Northrop Grumman Ship Systems and Chevron, point to its dominance as the regional industrial center.

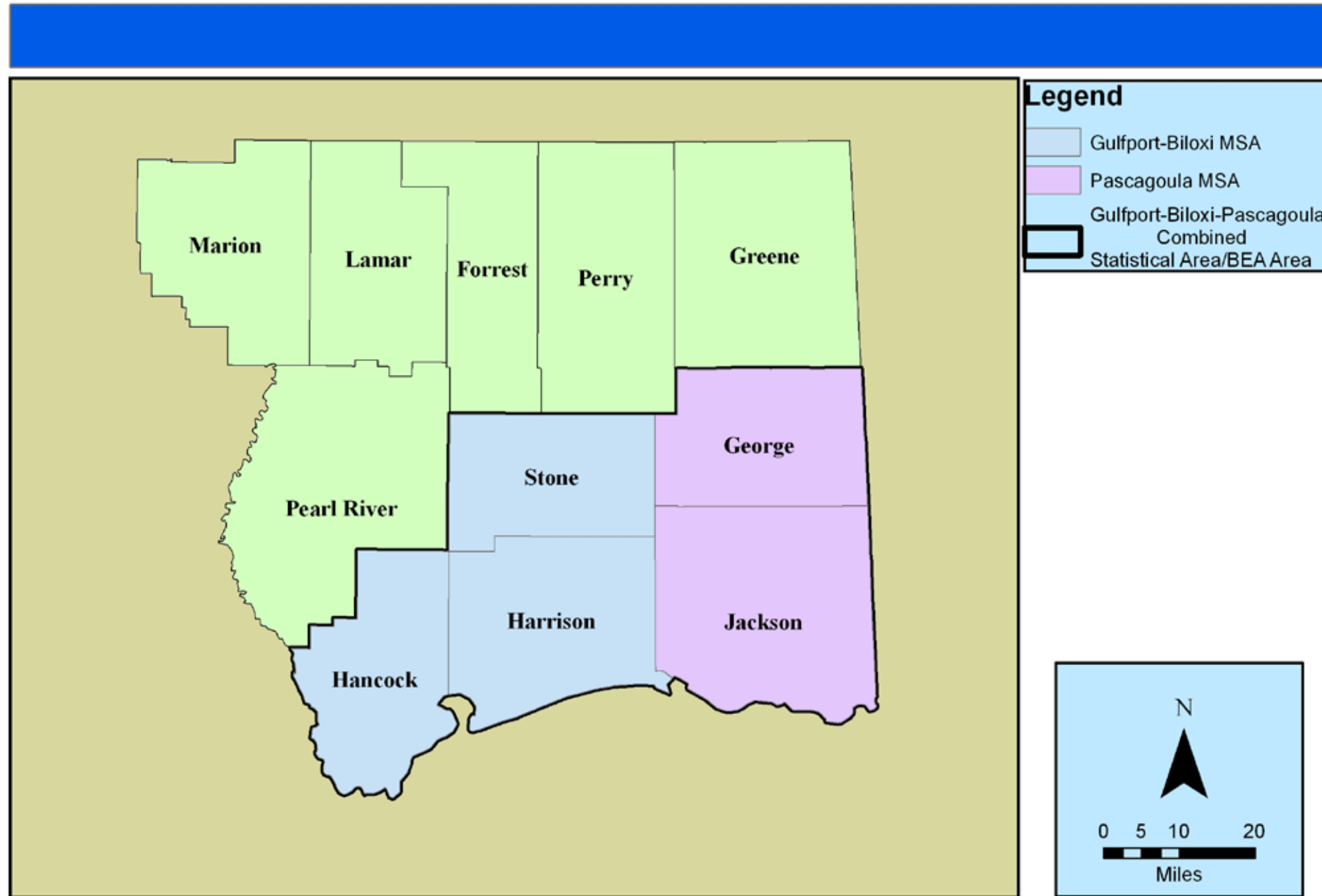
Harrison County’s Role in the MSA

Employment

As Table B-14 illustrates, employment is concentrated within the municipalities of Harrison County. In 2000, 80 percent of Harrison County’s workforce resided in cities within the county.

Labor Force Trends

From 1995-2005, Harrison County, the Gulfport-Biloxi MSA, and the region as a whole experienced faster rates of labor force growth than the state of Mississippi. From 1995 to 2005, the region experienced a 9.9 percent growth rate, the Gulfport-Biloxi MSA experienced a 18.3 percent growth rate, and Harrison County experienced a 14.4 percent growth



Map B-1. The Regional Economy
 Source: The Ohio State University

rate.^{57,58}

The labor force declined by 8.5 percent in Harrison County and by 7.3 percent in the region between 2005 and 2007. Harrison County lost 7,900 members of its resident labor force, while Gulfport lost 2,760, Biloxi lost 2,110, and the balance of the county lost 3,030.⁵⁹

Unemployment

As Figure B-10 illustrates, from 2001 to 2004, the unemployment rate in Harrison County tracked slightly lower than state and national rates. Immediately after the hurricane, unemployment was 5.8 percent higher than it was in the state and the nation. By 2007, Harrison County rates had dropped closer to the state unemployment rate of 6.4 percent; however, Harrison County unemployment rates are still 1.4 percent higher than the 2007 national rate of 4.6 percent. Regional unemployment followed this same general pattern from 2001 to 2007.

Commuting Patterns

Very few members of Harrison County’s resident labor force have to leave the county for employment. In fact, Harrison County is a net importer of labor outside its borders. In 2000, 70.2 percent of the resident labor force worked in the county, 21.1 percent of the people working in Harrison County commuted from outside the county, and only a small percentage of county residents (8.7 percent) worked outside of the county.⁶⁰

Industry Employment Projections

In addition to the 108,650 jobs in the Gulfport-Biloxi MSA in December 2007, the Mississippi Department of Employment Security projects that the Gulfport-Biloxi MSA will add an additional 21,880 jobs between 2004 and 2014—projections that state professionals think will remain valid in the long-term, post-Katrina environment.^{61,62,63}

Over 19,000 of the new jobs will be in service industry sectors. The industry sectors with the greatest employment gains are projected to be in the accommodation and food service and health care and social assistance sectors, each adding over 3,000 jobs. The government and retail trade sectors are projected to add more than 2,400 jobs each. Educational services, information, and utilities project the lowest employment growth, with less than 200 jobs projected in each sector.

In the goods-producing industry sectors, the construction sector is projected to add 1,680 jobs. Manufacturing is projected to add just 730 jobs to the Gulfport-Biloxi MSA.

Table B-15 provides more detail on projections within all industry sectors of the MSA.

Occupational Employment Projections

The preceding employment projections detail what industries are expected to add jobs between 2004 and 2014. Table B-16 illustrates occupational employment projections that provide details on what types of jobs may be added, regardless of industry sector.⁶⁴ As mentioned earlier, between 2004 and 2014 the Gulfport-Biloxi MSA is expected to add an additional 21,880 jobs, a projection that the Mississippi Department of Employment Security believes will remain valid post-Katrina. To put these figures in context, the MSA in December of 2007 had 108,650 jobs, 84 percent of them located in Harrison County.⁶⁵ The greatest employment growth is projected in food preparation and serving-related occupations (2,520 or 12 percent), sales and related occupations (2,140 or 10 percent), and healthcare practitioners and technical occupations (2,100 or 10 percent). In 2006, all of these occupational classifications paid less than the average annual wage of \$32,530.⁶⁶

Industry Concentrations and Performance

Harrison County's role in the Gulfport-Biloxi MSA can be seen in the concentration of employment by industry sector. Using averages from 2001-2005 to offset the effects of any one event, one finds industry concentrations (with averages of 1 or greater in Table B-17) exist in military and civilian federal employment, local government, utilities, accommodation and food service, arts, entertainment and recreation, and retail trade. By contrast, concentrations do not exist in the farm, educational services, manufacturing, wholesale trade, and professional and technical services industry sectors (averages of less than 1 in Table B-17).⁶⁷

From 2001 to 2005, employment did not grow as fast in seven Harrison County industry sectors as it did in national employment in those industries. Four of these lagging industries have high concentrations in the county: the arts, entertainment and recreation sector; retail trade sector; utilities sector; and federal military and civilian industry sectors (negative employment growth figures in Table B-17). Accommodation and food service

and administrative and waste management services had the greatest amount of positive employment growth compared to their counterparts across the US from 2001 to 2005.⁶⁸

Business Establishments

In 2006, 4,822 business establishments operated in the Gulfport-Biloxi MSA, and 3,848 (80 percent) of these were located within Harrison County. The majority of businesses are located in Harrison County's cities. Between 2005 and 2006, the MSA lost 253 businesses, primarily in the leisure and hospitality and retail trade sectors. Losses in Harrison County accounted for 73 percent of this decline. The construction sector experienced a net gain of 134 establishments in the MSA between 2005 and 2006, and 116 (87 percent) of these were in Harrison County.^{69,70,71}

Average Earnings

Many jobs in Harrison County pay less than the average earnings per job across all industries statewide. In 2005, average earnings across all industries in the county was \$36,629, and 56.7 percent of all jobs fell within industry sectors whose average earnings per job were less than this amount.⁷²

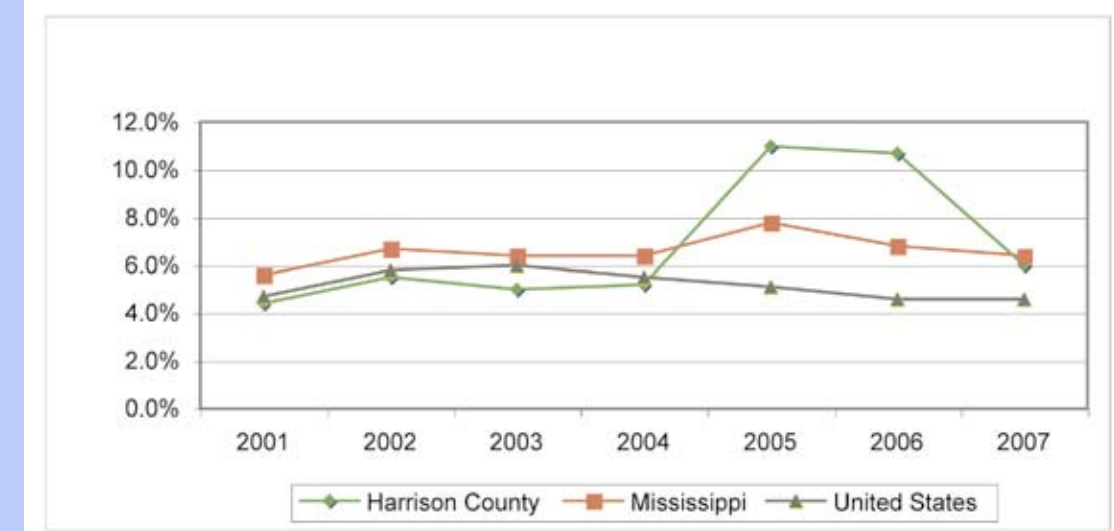
Average earnings in the leisure and hospitality industry sector illustrate the fact that Harrison County pays less. The two industry subsectors that comprise leisure and hospitality are the accommodation and food service sector and the arts, entertainment, and recreation sector. In 2005, the accommodation and food service sector paid average earnings per job of \$25,900 and the arts, entertainment, and recreation sector paid \$35,694.⁷³

Only 42.4 percent of jobs fell within industry sectors whose average earnings per job are higher than the average across industry sectors. The government sector is one of these. The average earnings per job in this sector were \$60,675; this is \$24,046 higher than the average earnings per job across all other industries.⁷⁴

Significant Harrison County Industry Sectors

As Table B-18 illustrates, the civilian and military federal industry sectors contribute significantly to the Harrison County economy in market value, earnings, and

Figure B-10. Unemployment Rates, 2001-2007



Source: Mississippi Department of Employment Security, US Department of Labor: Bureau of Labor Statistics

employment. Harrison County has four federal facilities: Kessler Air Force Base (AFB), Mississippi Air National Guard, Mississippi Army National Guard, and the Naval Construction Battalion Center. Stennis Space Center, located in Hancock County, is also part of the Gulfport-Biloxi MSA.

New federal activity in the region includes a \$950 million base-wide rebuilding project at Kessler AFB, a NASA Shared Services Center to house civil employees and contractors, and a \$42.5 million 171,000-square-foot Navy Ocean Science Building at Stennis Space Center.⁷⁵

In 2005, 90 percent of employment in the leisure and hospitality sector of the Gulfport-Biloxi MSA was in Harrison County. Harrison County employment in this sector made up 20 percent of all employment, or one in every five jobs.⁷⁶ Leisure and hospitality areas within Harrison County are concentrated south of Interstate Highway 10 within the municipalities.

From 2005 to 2006, the MSA employment in the leisure and hospitality sector declined by 8,000 jobs as a result of Hurricane Katrina. By 2007, the MSA

employment had begun to recover but still remained at 86 percent of its 2005 level of 25,810.^{77,78,79} Table B-19 provides additional detail on this industry sector.

A significant portion of economic activity in the Harrison County leisure and hospitality sector comes from gaming activities. The legalization of gaming in 1990 by the State of Mississippi had a significant impact on tourism development in Harrison County. The tourism and service industry has historically been a driving force for the economy of the county, and since the legalization of gaming, Harrison County has become the gaming center of the Gulf Coast. The casinos and affiliated services in the county have generated significant employment growth, increased visitors to Harrison County, and increased tax revenues. Between 1992 and 1996, the number of visitors to the Mississippi Gulf Coast increased by 83 percent, while the number of hotel rooms increased by 46.7 percent.⁸⁰ The gaming revenues in Harrison and Hancock Counties were \$749.3 million during 1996.⁸¹ By 2005, there were 12 casinos along the Gulf Coast, including one proposed casino, with a combined investment of \$1.5 billion.⁸²

Table B-15. Gulfport-Biloxi MSA Industry Employment Projections, Year 2004 Projected to Year 2014

Industry Sector	Number	Percent Growth
Good Producing	1,680	13.7%
<i>Construction</i>	920	18.9%
<i>Manufacturing</i>	730	11.0%
<i>Agriculture, forestry, fishing, and hunting</i>	40	5.3%
<i>Mining</i>	0	0.0%
Services-Providing	19,710	18.5%
<i>Accommodation and food services</i>	3,870	15.2%
<i>Health care and social assistance</i>	3,060	33.7%
<i>Government</i>	2,540	10.7%
<i>Retail trade</i>	2,430	17.8%
<i>Administrative, support, waste management, and remediation services</i>	1,940	37.8%
<i>Arts, entertainment, and recreation</i>	1,530	28.2%
<i>Professional, scientific, and technical services</i>	1,480	34.7%
<i>Other services (except government)</i>	750	15.0%
<i>Transportation and warehousing</i>	510	17.3%
<i>Total self employed and unpaid family workers, all jobs</i>	490	3.2%
<i>Finance and insurance</i>	440	15.9%
<i>Real estate, rental, and leasing</i>	290	18.2%
<i>Wholesale trade</i>	270	15.2%
<i>Educational services</i>	190	30.6%
<i>Information</i>	180	13.8%
<i>Utilities</i>	130	5.4%
<i>Management of companies and enterprises</i>	100	9.7%
Total employment, all jobs	21,880	16.4%

Source: Mississippi Department of Employment Security

From 2000 to 2004, there was a 4.5 percent increase in gross revenue from the coastal region casinos (see Figure B-13), while during the same time period there was a 16.5 decrease in the number of patrons visiting these casinos.⁸³ Figure B-14 provides details on the number of visitors to the Gulf Coast casinos.

In the early 2000s, pre-Katrina Harrison County saw increases in tourism. Hurricane Katrina, in 2005,

resulted in the loss of all of Harrison County's casinos and the devastation of the tourism industry. By the beginning of 2006, two casinos in Harrison County had re-opened. This was followed by the rebuilding of many more casinos and proposals for new casino development. There are currently nine casinos open along the Mississippi Gulf Coast, one new casino is under construction, and five more have been proposed.⁸⁴ Table B-20 and Map B-3 give

Table B-16. Gulfport-Biloxi MSA Occupational Employment Projections, Year 2004 Projected to Year 2014

	Growth 2004-2014	Average Annual Job Openings
Food preparation and serving-related occupations	2,520	845
Sales and related occupations	2,140	710
Healthcare practitioners and technical occupations	2,100	365
Personal care and service occupations	1,790	420
Office and administrative support occupations	1,780	650
Building and grounds cleaning and maintenance occupations	1,300	280
Transportation and material moving occupations	1,200	320
Management occupations	1,150	250
Education, training, and library occupations	1,050	225
Installation, maintenance, and repair occupations	1,010	235
Construction and extraction occupations	970	230
Healthcare support occupations	810	125
Protective service occupations	730	190
Business and financial operations occupations	690	135
Production occupations	680	220
Farming, fishing, and forestry occupations	540	15
Community and social services occupations	480	85
Architecture and engineering occupations	460	95
Computer and mathematical occupations	390	55
Arts, design, entertainment, sports, and media occupations	280	60
Legal occupations	180	30
Life, physical, and social science occupations	140	45
Total all occupations	21,880	5,585

Source: Mississippi Department of Employment Security

details on the casinos in Harrison County.

The rebuilt casinos offer more amenities than were previously provided, such as restaurants with celebrity chefs and spas. By the end of 2007, the gross revenue generated from gaming had recovered to pre-storm levels. The number of tourists visiting the casinos has steadily increased, from 3,729,843 in the third quarter of 2006 to 4,441,941 in the last quarter of 2007, a 19

percent increase.⁸⁵

These statistics illustrate that Harrison County is a popular destination for tourists interested in gaming. Figure B-15 shows that most visitors come from places that are within a six to eight hour drive. In-state tourists represent the highest percentage of tourists (21-25 percent), followed by tourists from Louisiana (20-23 percent), Florida (18-23 percent), Alabama (14-22 percent), Georgia (8-9 percent),

Texas (2-3 percent), and Tennessee (1 percent).⁸⁶ For 50 percent of visitors, the primary purpose of a trip to the Gulf Coast is to participate in gaming.

In 2007, Mississippi gaming activities generated almost \$3 billion in gross revenue.⁸⁷ Gaming is concentrated in Mississippi Gulf Coast counties and in counties along the Mississippi River. Since 1997, gaming revenues in Gulf Coast counties have fluctuated between a low of \$757 million in 1997 to a high of \$1.3 billion in 2007.⁸⁸ Examining revenues from 2004 to 2007 in Gulf Coast counties reveals a significant increase in gaming revenues after Hurricane Katrina (see Figure B-13). After the hurricane, coastal casinos reinvested in rebuilding, enhancing their facilities, and in proposing new construction. Not surprisingly, based upon this level of activity, the coastal casinos experienced their highest revenues to date in 2007.

The Retail Trade Sector

Harrison County serves as the main commercial center for the coastal counties. Commercial employment areas in the county are generally located near major roadways. Retail areas south of Interstate Highway 10 are composed of strip shopping centers along major roadways, within the casinos, and at the restored Edgewater Mall. Large retail developments are located along US Highway 49, close to Interstate Highway 10. Smaller retail establishments in rural western and eastern unincorporated Harrison County are concentrated at crossroads in established unincorporated communities such as Saucier, Lizana, and Woolmarket.

Prior to Katrina, commercial development was also concentrated along US Highway 90. According to local real estate professionals, commercial space prior to Katrina experienced a 15 to 20 percent vacancy rate. Costs for leased space ran between \$12 and \$18 a square foot.⁸⁹

Hurricane Katrina destroyed most of the commercial and professional spaces in downtown Gulfport and Biloxi and along US Highway 90. As a result, vacancy rates dropped to approximately 5 percent and rental rates increased upwards of 20 percent. Available commercial spaces were leased quickly.⁹⁰

Table B-17. Harrison County Employment Structure and Growth, 2001-2005

Industry Sector	Industry Concentration Averages	Employment Growth
Federal military	7.73	-1.56
Utilities	3.77	-0.45
Federal civilian	3.12	0.38
Accommodation and food services	2.67	2
Arts, entertainment, and recreation	2.43	-5.02
Local government	1.01	0.8
Retail trade	1	-0.11
Construction	0.92	0.57
Other services, except public administration	0.87	0.38
Management of companies and enterprises	0.77	0.1
Real estate, rental, and leasing	0.76	0.55
Transportation and warehousing	0.73	0.3
Administrative and waste services	0.72	1.82
Health care and social assistance	0.67	0.73
State government	0.55	-0.06
Unreported	0.54	-0.04
Information	0.53	0.04
Finance and insurance	0.51	0.01
Professional and technical services	0.5	0.36
Wholesale trade	0.43	0.17
Manufacturing	0.42	-1.04
Educational services	0.26	0.06
Farm employment	0.17	0.01

Note: Industry concentrations=location quotient, employment growth=share shift

Source: Mississippi Regional Economic Analysis Project, January 2008

New developments are concentrating near or north of Interstate Highway 10 and around its interchanges. The Interstate Highway 10/Interstate 110 interchange and the Interstate Highway 10/Lorraine Cowan interchange have seen increased commercial development activity.

In January 2008, vacancy rates increased to between 5 and 10 percent, but rental rates remained high. New lease space rates are in excess of \$20 a square foot. Harrison County could absorb an additional 40 acres per

year of land to fill demand for commercial space.⁹¹

Since 2000, over 70 percent of the retail sales generated in the region come from the Gulfport-Biloxi MSA and over 80 percent of the retail trade in the Gulfport-Biloxi MSA occurs in Harrison County.⁹² The majority of Harrison County retail sales occur in the cities; however, retail sales grew in unincorporated Harrison County after Hurricane Katrina because many of the coast retail businesses located within the municipalities

Figure B-11. The state port plays an important role in economic development in the county.



Source: Ellen Cowell

Figure B-12. The Hard Rock Casino is one of nine casinos located in Harrison County in 2008.



Source: Mississippi Gulf Coast Convention Visitors Bureau

were destroyed.

The majority of municipal retail sales occur within the City of Gulfport, a consistent pattern before and after Hurricane Katrina. From 2000 to 2005, Gulfport generated retail sales over \$1 billion; this figure increased to over \$2 billion after the hurricane. D'Iberville's retail base has grown over time and retail sales have increased in the city as a result. Table B-21 provides additional information on the retail sector.

Table B-22 provides retail sales information for Harrison County and its municipalities between 2000 and 2007. Hurricane Katrina's effects on retail sales can be clearly seen in the percent changes between 2005 and

2007.

Other Harrison County Industry Sectors

The Harrison County economy is dominated by the federal, leisure and hospitality, and retail trade sectors. Consequently, other industrial sectors, such as manufacturing and wholesale trade, play smaller roles within the county. For example, from 2001-2005 manufacturing contributed \$560 million per year on average to the MSA's GDP, less than half that of the leisure and hospitality average of \$1.2 billion per year.⁹³ In 2005, the 27,653 leisure and hospitality sector jobs dwarfed manufacturing employment of 5,808.⁹⁴

So what roles do these other industry sectors play within Harrison County? Why are they important to examine? While small in employment, these industry sectors offer wage diversity to the Harrison County economy. Many sectors pay higher wages than those in the retail trade and leisure and hospitality sectors. In 2005, average earnings per job in manufacturing were \$55,271, almost \$30,000 higher than average earnings per job in the accommodation and food services sector and \$31,168 higher than in the retail trade sector.⁹⁵

Other industry sectors with higher 2005 average earnings include utilities, mining, information, wholesale trade, management of companies, professional and technical services, and health care and social assistance.⁹⁶

Additionally, these industry sectors provide diversity across the economy and their presence softens the effects of downturns in any one industry sector. Industry sectors serving different customer bases and following different business cycles can strengthen the resilience of the economy as a whole. As an example, from 2004 to 2006, 251 establishments closed after Hurricane Katrina in the retail trade and leisure and hospitality industry sectors. During this same period, 144 establishments in the construction industry sector opened and the manufacturing sector only lost 17 establishments.^{97,98,99}

Industrial Land Overview

Twenty industrial parks are located in the region, 13 in the Pascagoula MSA and seven in the Gulfport-Biloxi MSA.¹⁰⁰ In addition to these industrial park areas,

each county may have individual parcels of land suitable for industrial use that are available and marketed privately. As of December 2007, approximately 9,000 acres of land is being marketed for industrial use in the region by local economic development organizations, and 356 of these acres are in Harrison County.¹⁰¹ This figure represents the acreage currently being marketed to potential industrial tenants, not necessarily land with all infrastructure improvements in place.

The Harrison County Development Commission's (HCDC) serves as the lead economic development organization for Harrison County. Industrial activity concentrates within the HCDC's four industrial parks, located in a broad corridor along Interstate Highway 10 and southwards. The locations of these parks are shown in Map B-2.

Biloxi Commerce Park: The Biloxi Commerce Park is

located in the eastern part of Harrison County within Biloxi's city limits, adjacent to Interstate Highway 10. The 107-acre park is approaching build out—only 11.2 acres were available for sale by HCDC as of December 2007.¹⁰² The park, which is zoned for light industrial uses, has developed into a center for office and professional services. After Hurricane Katrina, many medical offices relocated to the park. HCDC staff anticipates build out for office and flex space tenants within the next several years.¹⁰³

Bernard Bayou Industrial District: The Bernard Bayou Industrial District (BBID) is Harrison County's largest industrial area. Since Hurricane Katrina, many industrial tenants have relocated to it.¹⁰⁴ BBID stretches along Interstate Highway 10 from the Lorraine Cowan exit, westward toward US Highway 49, and south to the Industrial Seaway. At 1,696 acres, parcel configurations

within the District allow for a mixture of businesses, including traditional manufacturing, warehousing and distribution, and professional and office services.¹⁰⁵

The Harrison County Development Commission markets two areas of the BBID separately: Intraplex 10 and Port Intraplex.¹⁰⁶ The HCDC does not market the remaining acreage of the BBID as a specific sub area. Along Seaway Road, parcels and buildings serve office/showroom tenants, flex space users, and light industries. Secondary roads within the District also have a mixture of tenants. Most heavy industrial users are located near the Industrial Seaway or on the eastern side of the district across Lorraine Cowan Road. Several institutional users are located in the district, including the Harrison County Correctional Facility, the Harrison County Department of Human Services, the Mississippi Gulf Coast Community College Community Campus, Advanced Manufacturing and Technology Center, and the non-profit office center

Table B-18. The Federal Sector in Harrison County

2005 MSA Gross Domestic Product (gdp) from the federal sector	\$1.6 billion
Percent of total MSA GDP	19 percent
Change from 2001 GDP	\$483 million
Average earnings per job	\$73,184
Difference from average earnings across industries	\$36,555
County employment since 1995	Ranges from 15,000 to 20,000

Source: US Bureau of Economic Analysis, Mississippi Regional Economic Analysis Project

Table B-19. The Leisure and Hospitality Sector in Harrison County

2005 MSA Gross Domestic Product (GDP) from leisure and hospitality	\$1.2 billion	
Percent of total MSA GDP	14 percent average	
Change from 2001 GDP	Negligible change	
Average county employment since 2001	20,000 to 30,000	
	Accommodation and food service	Arts, entertainment and recreation
Average earnings per job	\$24,576	\$33,919
Difference from average earnings across industries	-\$12,053	-\$2,710

Source: US Bureau of Economic Analysis, Mississippi Regional Economic Analysis Project

recently developed by the Gulf Coast Business Council.

HCDC's portfolio of available sites within the district as of December 2007, including those in the Port Intraplex and Intraplex 10, is 119.5 acres. This figure does not include future acreage that will be gained through mitigated wetlands. With mitigated acreage 191.5 acres would be available.¹⁰⁷

Intraplex 10: Intraplex 10 offers parcels for warehouse, distribution, research and development, and flexible office/industry tenants who can operate within a light industrial zone district. This area comprises 133 acres of land near Interstate Highway 10 and Lorraine Road. Intraplex 10 is approaching build out. Consequently, the HCDC is currently working to mitigate wetlands adjacent to the Intraplex 10 area to create additional useable acreage. HCDC staff estimates that 72 additional acres will be available through their mitigation efforts.¹⁰⁸

Port Intraplex: Available parcels in the 317-acre Port Intraplex area are designed for traditional industrial users. Rail service and adjacent access to the Industrial Seaway offer the amenities that a heavy manufacturer would deem essential. The HCDC has less than 100 acres available for prospective tenants in the Port Intraplex area.¹⁰⁹

Long Beach Industrial Park: The 405 acres comprising the Long Beach Industrial Park are located four miles from Interstate Highway 10, near the City of Long Beach. Currently, the park hosts a mixture of industrial tenants that provide services for the gaming, construction, and consumer products industries.¹¹⁰ The Mississippi Gulf Coast Community College West Harrison County Occupational Training Center is also located in the park. As of December 2007, there are 62.6 acres of Long Beach Industrial Park remaining in the HCDC's portfolio.¹¹¹

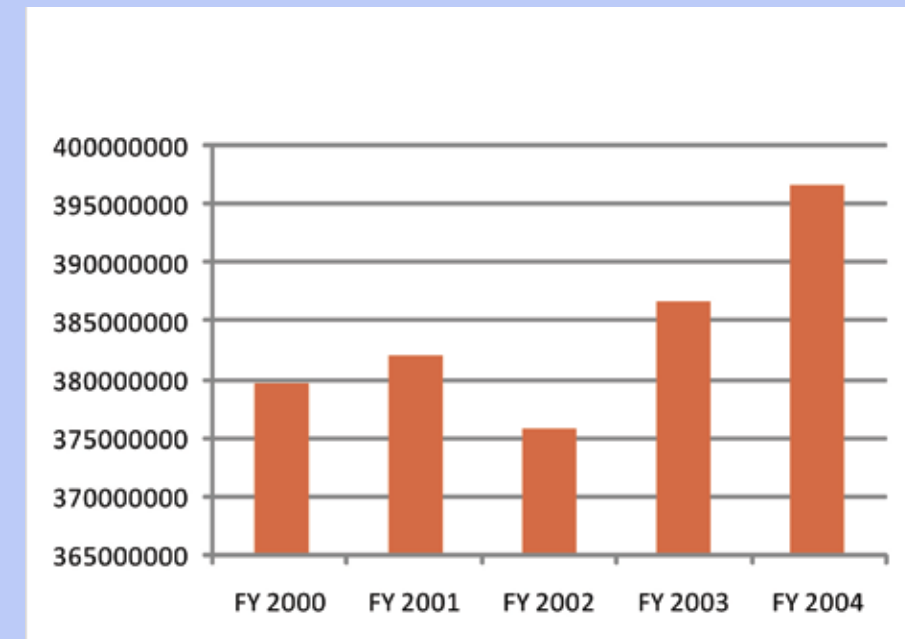
Pass Christian Industrial Park: The Pass Christian Industrial Park is located in far western Harrison County along the Industrial Seaway. A concrete fabricator is the main industrial tenant in the park. No parcels remain in the HCDC portfolio.¹¹² As of December 2007, 20.75

Table B-20. Casinos in Harrison County

Casinos Pre-Katrina		
1	Beau Rivage Resort & Casino	Biloxi
2	Casino Magic Biloxi	Biloxi
3	Grand Casino	Biloxi
4	Grand Casino	Gulfport
	Hard Rock Hotel & Casino (was scheduled to open in September 2005)	Biloxi
5		
6	Imperial Palace Hotel & Casino	Biloxi
7	Isle of Capri Casino Resort	Biloxi
8	Palace Casino Resort	Biloxi
9	President Casino Broadwater Resort	Biloxi
10	Treasure Bay Casino Resort	Biloxi
11	Boomtown Casino	Biloxi
12	Copa Casino	Gulfport
Casinos Post-Katrina (Operating in 2008)		
1	Beau Rivage Resort & Casino	Biloxi
2	Boomtown Casino	Biloxi
3	Grand Casino Biloxi	Biloxi
4	Hard Rock Casino	Biloxi
5	IP Casino Hotel Spa	Biloxi
6	Island View Casino Resort	Gulfport
7	Isle of Capri Casino Resort	Biloxi
8	Palace Casino Resort	Biloxi
9	Treasure Bay Casino	Biloxi
10	Isle of Capri Casinos Inc.	Biloxi
Casinos Under Construction in 2008		
1	Margaritaville Casino	Biloxi
2	Broadwater Casino	Biloxi
Proposed Casinos/Resorts in 2008		
1	Bacaran Bay Casino Resort	Biloxi
2	Bayview Ventures LLC	Biloxi
3	Margaritaville Casino & Resort	Biloxi
4	Royal D'Iberville Casino & Hotel	D'Iberville
5	West D'Iberville Development LLC	D'Iberville

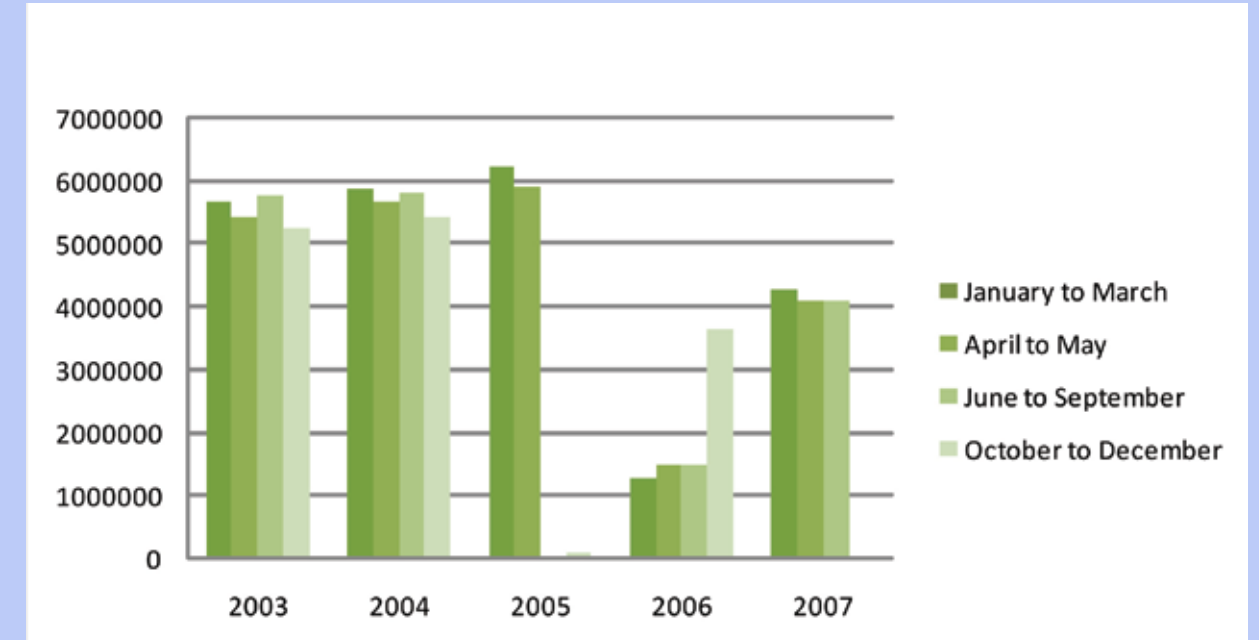
Source: Mississippi Gulf Coast Convention Visitors Bureau²

Figure B-13. Average Annual Yearly Gross Revenue from Gulf Coast Casinos

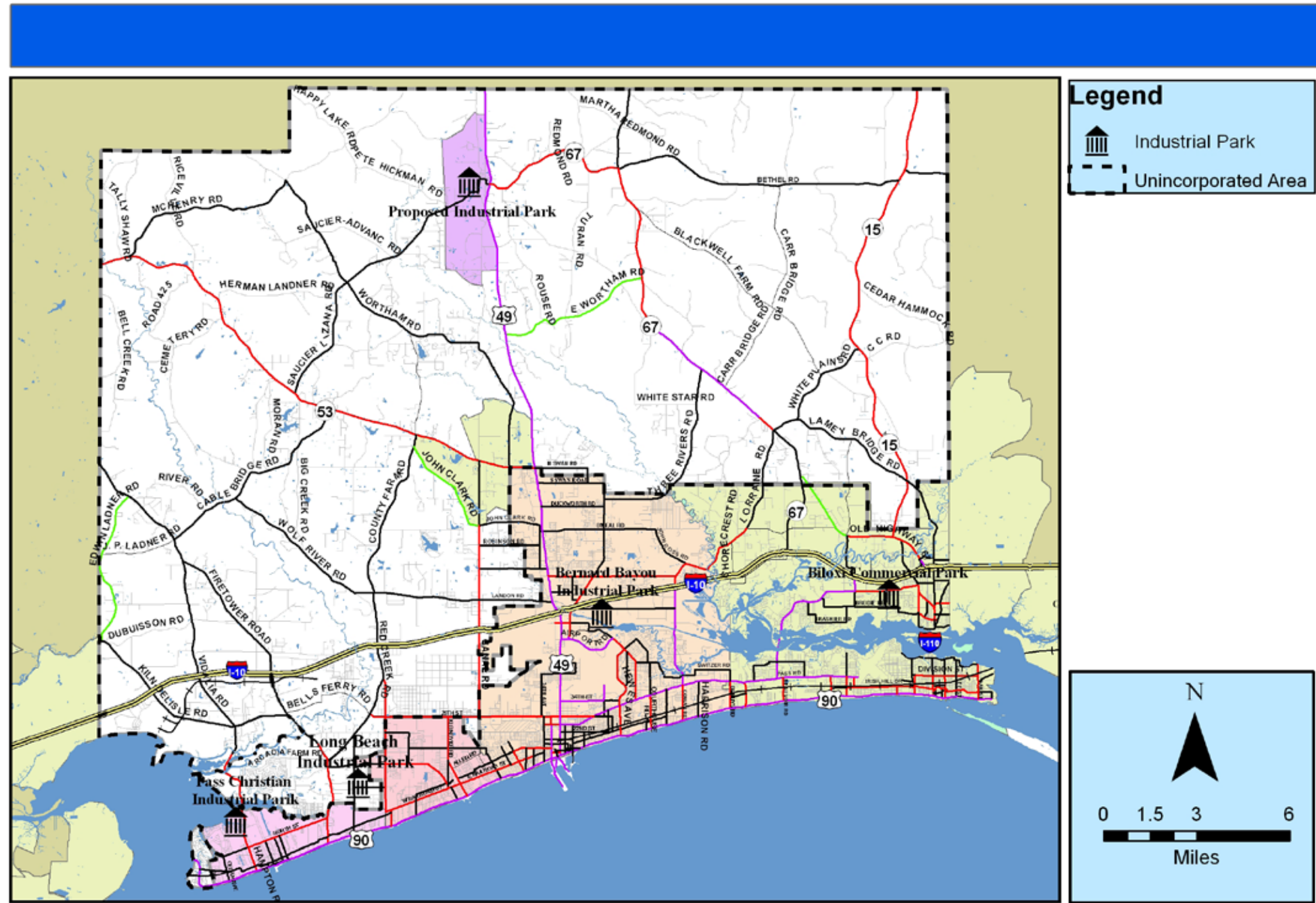


Source: Mississippi Gaming Commission

Figure B-14. Average number of patrons to Gulf Coast casinos



Source: Mississippi Gaming Commission



Map B-2. Industrial Park locations in Harrison County
 Source: The Ohio State University

acres are being marketed privately.¹¹³

Privately Marketed Land: The Harrison County Development Commission makes information available about privately available land on its website. As of December 2007, 72.6 acres in or near Gulfport were being marketed.¹¹⁴

New Commercial and Industrial Developments

Since 2004, commercial building permit activity has increased 137 percent in unincorporated Harrison County as shown in Table B-24. Valuation of commercial activity has increased by 1,788 percent.

Harrison County currently has several industrial projects by public and private developers in the development process.

Publicly driven developments include the HCDC's efforts to secure approximately 600 acres for a new light industrial park in the Saucier community, efforts to work with the airport on a maintenance facility area, and plans by the University of Southern Mississippi to dedicate 200 acres of land within its new 1,700-acre site north of Interstate Highway 10 to research endeavors.^{115,116,117}

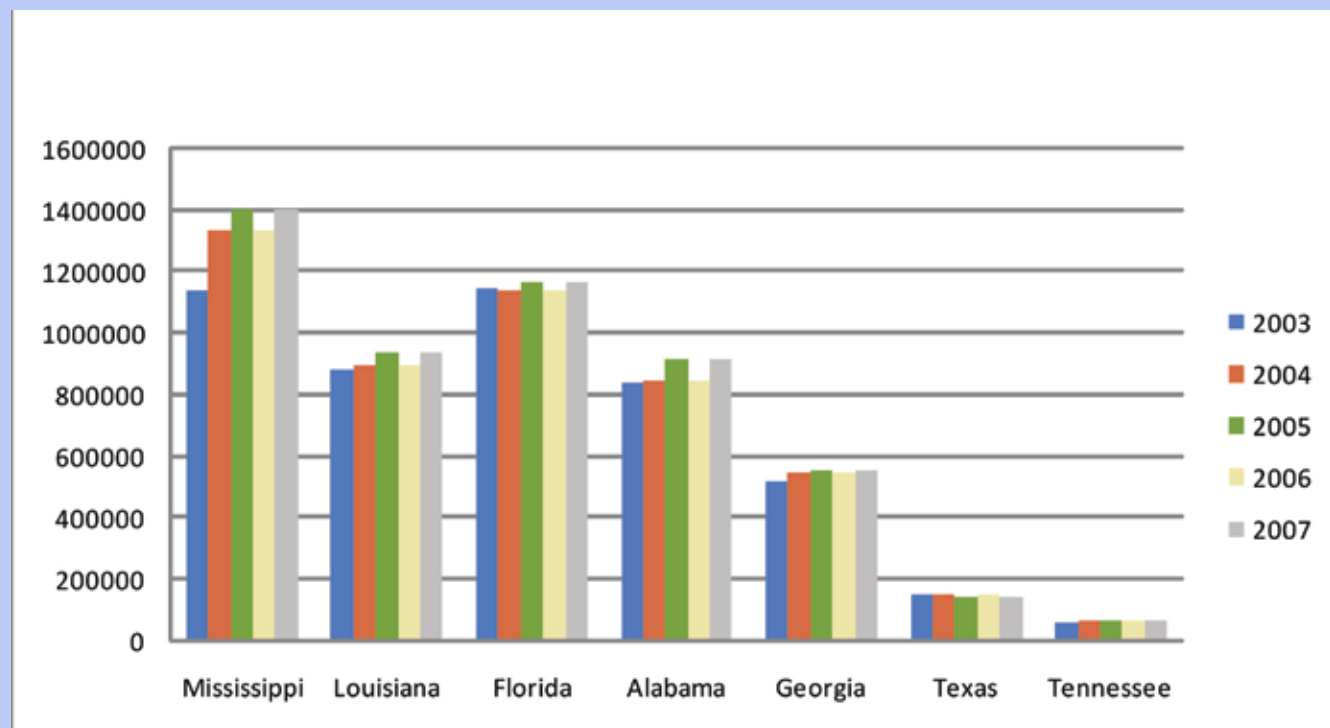
Privately driven development includes the Corporex Airport Business Center across from the Gulfport-Biloxi International Airport. When completed, this 120- to 270-acre aviation park will complement the airport's most recent expansion.¹¹⁸ Additionally, the developers of Tradition, a master planned community in Eastern Harrison County on State Highway 67, have included plans for an office/research complex within its boundaries.¹¹⁹

Harrison County Industrial Land Market Dynamics

Before Hurricane Katrina, Harrison County vacancy rates for industrial land and buildings varied between 25 and 30 percent, and vacancy rates in other coastal counties were around 30 percent. Most available industrial space was concentrated in local economic development organization owned or managed industrial parks. Industrial tenants generally preferred to build new buildings according to their needs rather than lease space, flex or warehouse space being the most common building type. Leases were generally taken by small tenants who needed less than 25,000 square feet of industrial space.¹²⁰

Immediately after the hurricane, demand for industrial space increased and the vacancy rate in Harrison County dropped to around 5 percent. Industrial tenants secured parcels in many

Figure B-15. Number of Visitors to the Mississippi Gulf Coast by State of Origin



Source: Mississippi Convention and Visitors Bureau

Figure B-16. Katrina paralyzed the tourism industry for a short period of time. This picture shows a casino barge washed inland.



Source: Matthew Hinkle

Figure B-17. The new casinos built since the storm serve a wider market, with a number catering to the high-end tourists and others, like the Hard Rock Casino, target younger tourists.



Source: Mississippi Gulf Coast Convention Visitors Bureau

of the HCDC industrial parks. This practice occurred in other Mississippi Gulf Coast industrial parks as well.¹²¹

As of 2008, vacancy rates have increased to 10 percent and prices for leased space have leveled off. A large percentage of available land in HCDC industrial parks has been filled. Local professionals believe that Harrison County could absorb between 30 and 150 acres of industrial land each year, easily absorbing up to 1,000 acres over 10 to 20 years.^{122,123,124}

LAND USE

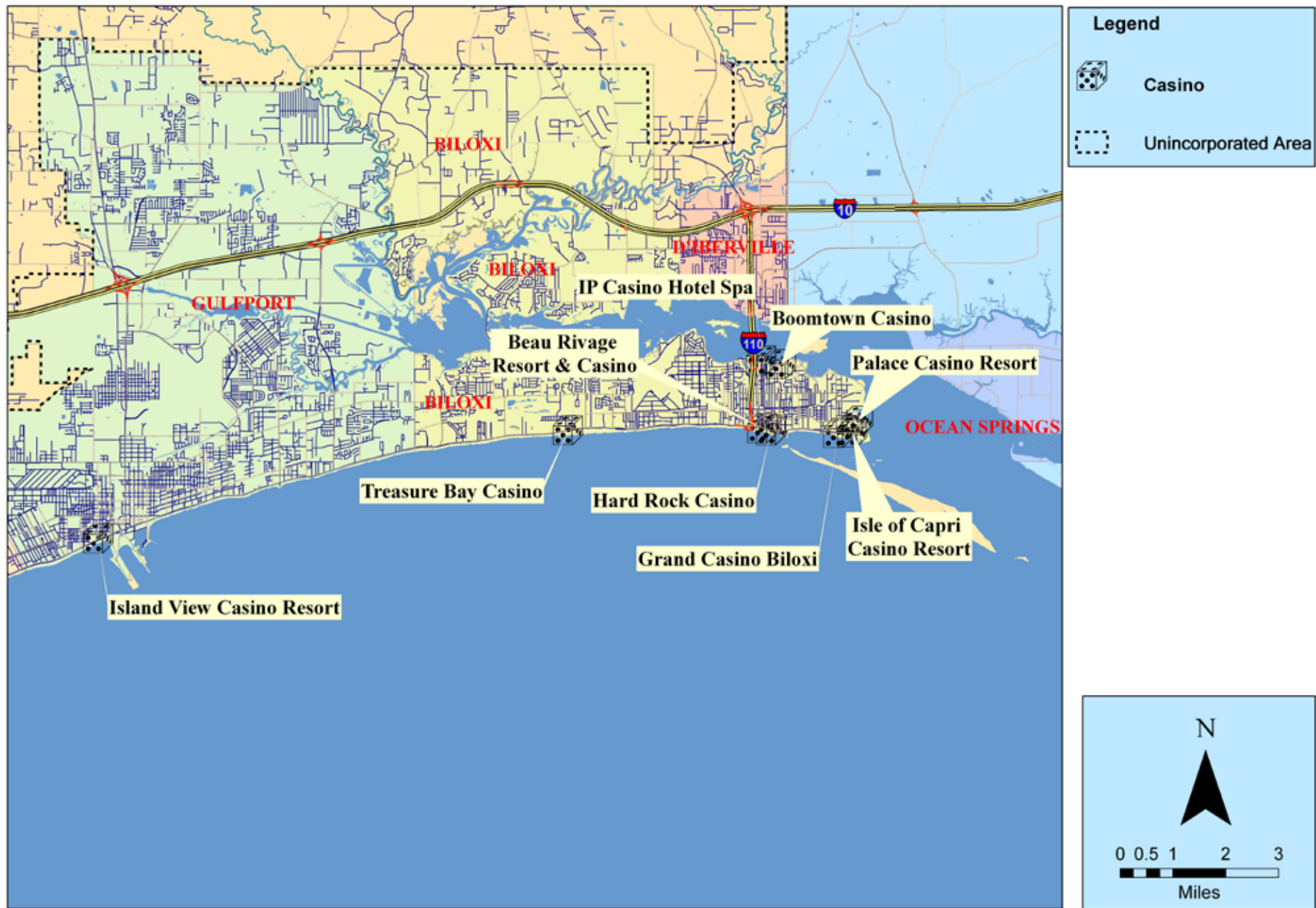
County development patterns emerged from original settlements along waterfronts in Harrison County. These first settlements facilitated development around transportation and trade to support local economies. In later years, development occurred around Interstate Highway 10 and US Highway 49. Changes in land use have occurred due to the development of unincorporated areas adjacent to existing communities.

Prior to 1990, population growth had been focused in or near long-existing communities, some of which were incorporated into or annexed by municipalities as development occurred. Development then continued outward into the unincorporated areas of Harrison County and, in the early 1990s, the introduction of the casino gaming industry accelerated development. Currently, unincorporated Harrison County is experiencing growth pressure from developers and people moving north from the immediate coastal areas. Development is primarily occurring along transportation routes and in locations where wastewater infrastructure will be located.

Table B-21. The Retail Trade Sector in Harrison County

2005 MSA Gross Domestic Product (GDP) from retail trade	617 million
Percent of total MSA GDP	8 percent
Change from 2001 GDP	120 million
Average earnings per job	\$24,482
Difference from average earnings across industries	-\$12,147
County employment since 2001	Averaging 14,000

Source: US Bureau of Economic Analysis, Mississippi Regional Economic Analysis Project



Map B-3. Map showing gaming destinations in Harrison County

Source: Mississippi Gulf Coast Convention Visitors Bureau

Existing Land Use

Harrison County, Mississippi is comprised of a total of 349,041 acres, or 545 square miles of land. The five incorporated cities of Biloxi, D'Iberville, Gulfport, Long Beach, and Pass Christian make up 62,266 acres, or 97 square miles of land, which is roughly 17.8 percent of the total land area. The other 82.2 percent of the county's total land area is unincorporated. Unincorporated land accounts for roughly 286,775 acres, or 448 square miles. These unincorporated areas remain largely rural but are experiencing significant growth pressures. Most of the unincorporated land area is located to the north of the five incorporated cities. There are communities located adjacent to the 26 miles of beach along the southern portion of the county along the Gulf Coast.

In order to create an inventory of land uses in Harrison County, GIS, aerial photography, and field observations were utilized. Land uses were divided into 11 categories: agriculture, open space, vacant land, low density residential, institutional, retail/services, industrial, school, parking, high residential, and right-of-way.

Existing Zoning

The Harrison County Zoning Ordinance governs land use in the unincorporated county. Zoning, which began in 2000, governs the physical development of land in the unincorporated county.

Approximately 74.6 percent of the land in the county is zoned for General Agriculture. The A-1 General Agriculture District is intended to provide an area primarily for farming, agriculture, silviculture, dairy operations, livestock, poultry, forestry, and other similar uses. The regulations permit single-family dwellings associated with the agricultural uses. Forestry is the largest agricultural use in Harrison County.

The E-1 Very Low Density Residential District is the next largest zoning district in the county, with 11.2 percent of the land area. The E-1 district accommodates very low density residential development and associated hobby farming activities.

The R-1 Low Density Residential District accounts for 5.2 percent of the area. The principal use of land is single-family dwellings on lots as small as 6,000 square feet. The R-2 Medium Density Residential District accounts for 3.4 percent of land in the county. This district designation is to provide for medium density residential uses on smaller lots.

The C-1 Neighborhood Commercial and C-2 General Commercial Districts accommodate retail and service uses and account for 0.2 and 1.2 percent of the land area in the county, respectively. The C-3 Resort Commercial District is on two sites that are zoned to allow for future casino

Table B-22. Retail Sales in Harrison County and Its Municipalities, 2000-2007 (millions of dollars)

Year	Biloxi	% Chg	D'Iberville	% Chg	Gulfport	% Chg	Long Beach	% Chg	Pass Christian	% Chg	Unincorporated	% Chg
2000	945		196		1,370		127		35		682	
2001	947	0.2%	218	11.2%	1,380	0.7%	128	0.8%	37	5.7%	534	-21.7%
2002	924	-2.4%	264	21.1%	1,380	0.0%	127	-0.8%	35	-5.4%	479	-10.3%
2003	898	-2.8%	273	3.4%	1,410	2.2%	134	5.5%	37	5.7%	521	8.8%
2004	982	9.4%	283	3.7%	1,490	5.7%	126	-6.0%	88	137.8%	583	11.9%
2005	1,010	2.9%	297	4.9%	1,510	1.3%	122	-3.2%	95	8.0%	614	5.3%
2006	791	-21.7%	435	46.5%	2,110	39.7%	133	9.0%	47	-50.5%	1,220	98.7%
2007	913	15.4%	416	-4.4%	2,070	-1.9%	134	0.8%	46	-2.1%	1,910	56.6%
Total	7,410		2,382		12,720		1,031		420		6,543	

Source: Mississippi State Tax Commission

Table B-23. Land Use in Unincorporated Harrison County

Land Use	Total (Acres)	Percent
Agriculture	178,858	62.37%
Open Space	76,417	26.65%
Vacant	13,627	4.75%
Low Residential	11,545	4.03%
Institutional	3,664	1.28%
Retail/Services	1,678	0.59%
Industrial	867	0.30%
School	58	0.02%
Parking	28	0.01%
High Residential	27	0.01%
Right-of-Way	5	0.002%
Total	286,775	100.00%

Source: Southern Mississippi Planning and Development District

Figure B-18. Quail Creek is an example of a subdivision with townhome-style residential units that will be served by water and sewer.

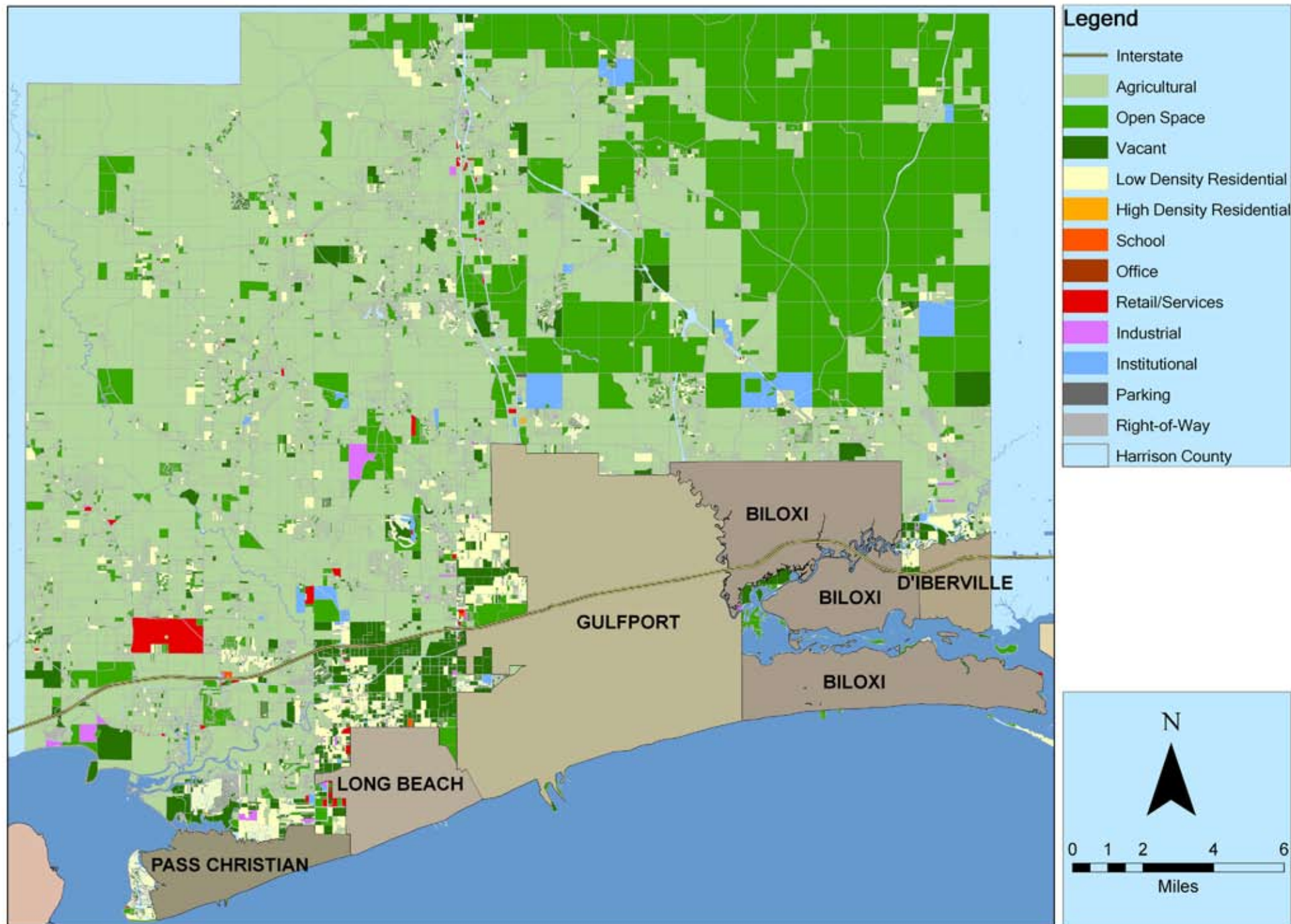


Source: Sarah Landers

Figure B-19. Tradition is an example of a Master Planned Community.



Source: Amber Cackler



Map B-4. Existing land use as of October 2007
 Source: The Ohio State University

development.

Approximately 1.5 percent of land is designated for I-1 and I-2 General Industrial Districts. Both allow for manufacturing, distribution, and storage. Much of the industrially zoned land is located in the county's industrial parks.

The Master Planned Community District is intended for large planned developments. Tradition, along State Highway 67, is an example of a Master Planned Community.

Future Development

Table B-24. Commercial Building Permits, Unincorporated Harrison County

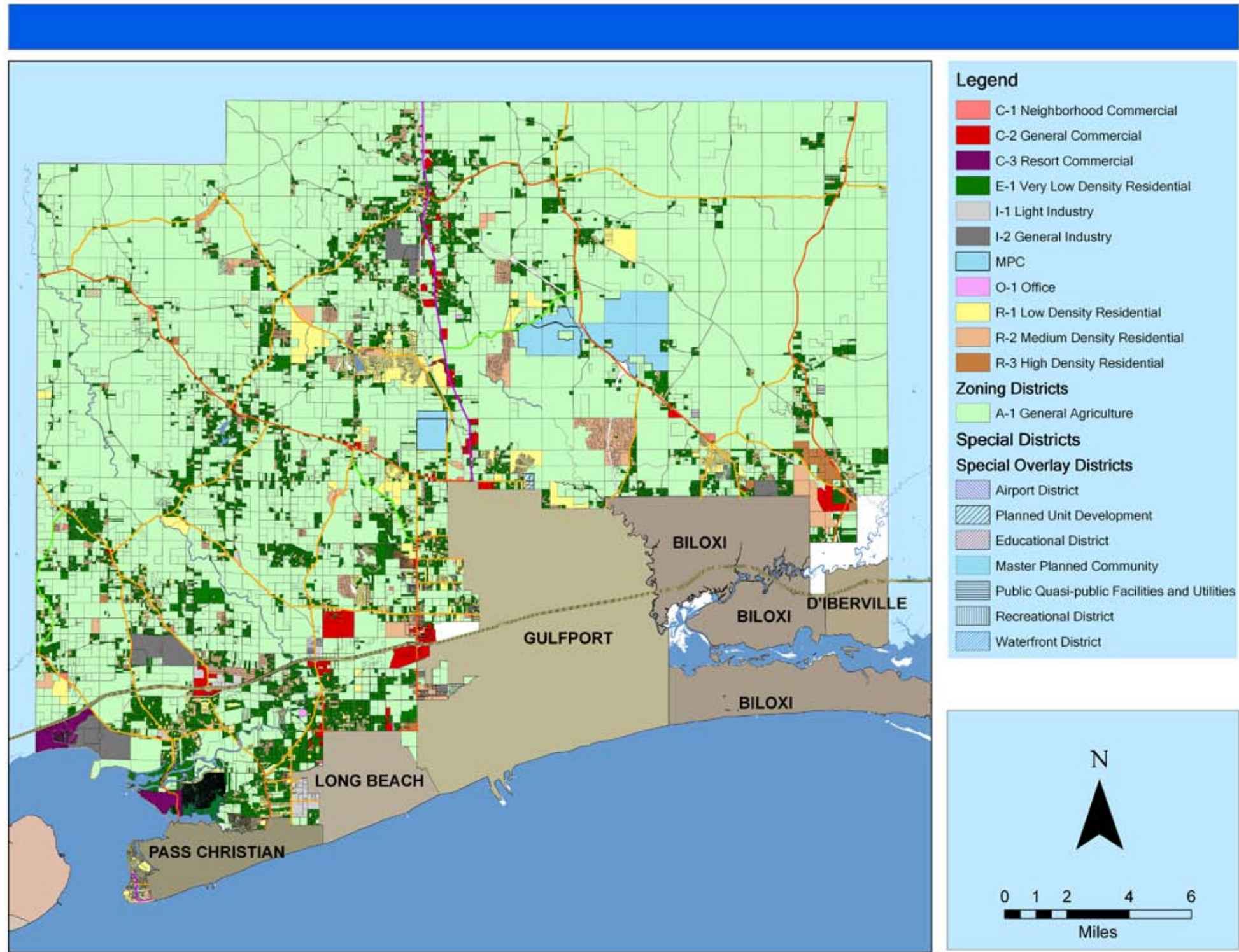
Year	Permits	Valuation	Increase from Prior Year
2004	24	\$6,935,592	NA
2005	25	\$9,964,428	\$3,028,836
2006	40	\$50,813,160	\$40,848,732
2007	57	\$131,004,812	\$80,191,652

Source: Harrison County Code Office

Table B-25. Zoning Classifications, 2007

Zoning Category	Acres	Percent
A-1 General Agriculture	213,401	74.58%
C-1 Neighborhood Commercial	603	0.21%
C-2 General Commercial	3,450	1.21%
C-3 Resort Commercial	1,144	0.40%
E-1 Very Low Density Residential	32,047	11.20%
I-1 Light Industry	1,310	0.46%
I-2 General Industry	3,076	1.07%
O-1 Office and Institutional	119	0.04%
R-1 Low Density Residential	14,779	5.17%
R-2 Medium Density Residential	9,776	3.42%
R-3 High Density Residential	971	0.34%
MPC Master Planned Community	5,273	1.84%
Total	286,122	100.00%

Source: Harrison County Zoning Office



Map B-5. Existing Zoning as of October 2007

Source: The Ohio State University

Hurricane Katrina destroyed housing units and businesses throughout Harrison County, but especially in DeLisle, Henderson Point-Pass Christian Isles, and Pineville. Rebuilding of properties in these communities has happened since the storm. In order to accommodate the demand for new housing and businesses north of Interstate Highway 10, numerous development proposals have been approved by Harrison County. Map B-6 illustrates the land rezoned for development purposes between 2005 and 2007. The proposals range from single-family subdivisions to multifamily projects and commercial development. The community plans for Harrison County identify the preferred land use patterns for future development to follow, including specific nodes for commercial development. The Land Use chapter of this plan presents the future land use map for Harrison County.

NATURAL RESOURCES

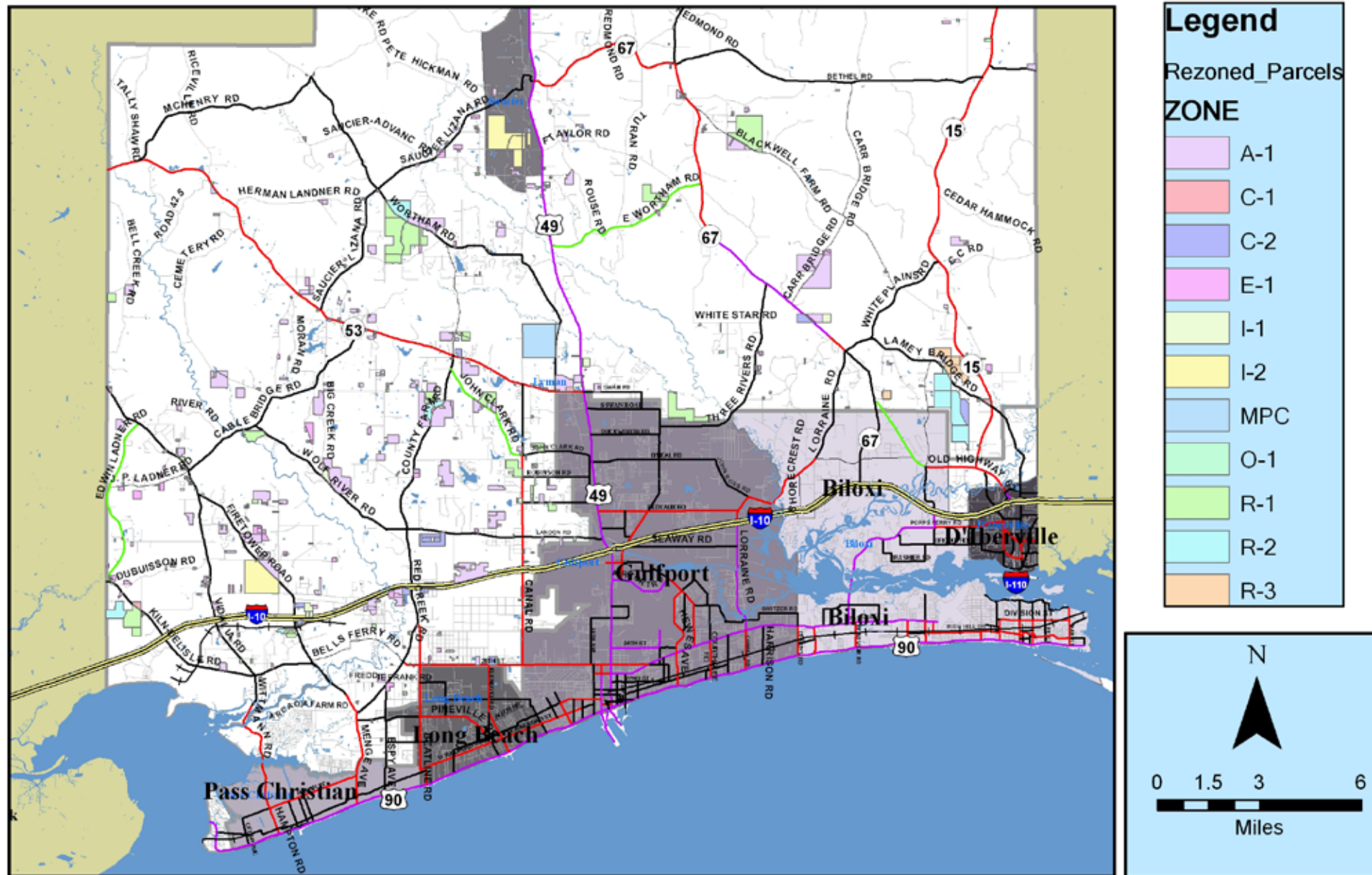
As a result of Harrison County’s geographic location on the coast, a portion of the land area is defined as coastal land. Coastal land is any area of seawater, including “any low-tide elevation, land, beach, islet, reefs, and/or rocks lying between the baseline and the high water mark.”¹²⁵ Along with its coastal land, Harrison County is home to a myriad of natural resources. Two of its valued natural resources are its abundant supply of wetland acreage along with its coniferous and deciduous trees.

Hydrology

Harrison County waterways are used for a variety of recreational purposes, including fishing, boating, and birding. The Mississippi Department of Environmental Quality reports on the use of water for drinking and recreational use. Harrison County has several impaired water bodies, as measured as part of the Environmental Planning Agency 393 program.

Sound and Bays

Harrison County lies entirely in the Coastal Stream Drainage Basin. The water bodies of the Coastal Stream Drainage Basin ultimately flow into the Mississippi Sound through either the Bay of Saint Louis or the Back Bay of Biloxi. Harrison County is bordered on the south by three water bodies: the Mississippi Sound, the Bay of Saint Louis, and the Back Bay of Biloxi. The Mississippi Sound, which leads into the Gulf of Mexico, is separated by a series of narrow islands and extends from Lake Borgne, Louisiana to Mobile Bay, Alabama, spanning the entire Gulf Coast of the state of Mississippi.¹²⁶ The Bay of Saint Louis borders Harrison County to the west. A bay is an inlet body of water that is normally smaller than a gulf and is set inward from a larger body of water. The Bay of Saint Louis and adjoining water bodies are known for their plentiful supply of bass, striped bass, barfish, crappie, perch, catfish, redfish, speckled trout,



Map B-6. Parcels rezoned for development following Hurricane Katrina through February 2008

Source: The Ohio State University

flounder, croaker, sheepshead, and black drum. The Back Bay of Biloxi is located on the eastern side of Harrison County. Along with water bodies of the coastal stream drainage basin flowing into the Back Bay of Biloxi, Bayou Bernard drains into the Back Bay of Biloxi. Turkey Creek empties either into the Saint Louis Bay or the Back Bay of Biloxi.

Rivers

Along with the sound and bays, Harrison County has a number of rivers, including the Biloxi, Little Biloxi, Tchoutacabouffa, and Wolf Rivers. These rivers are fed by many tributaries, including creeks and bayous. The Wolf River and the forested areas that align its banks are recognized by many as a regional resource. It is 60 miles long and begins at Mississippi Highway 26 in Pearl River County, then meanders through western Harrison County and turns west before entering the Bay of Saint Louis. When the Scenic Streams Stewardship Act was passed in March of 1999, the Wolf River was designated as a state scenic stream, and it is included in the State Scenic Streams Stewardship Program.¹²⁷ Several organizations have been engaged in protecting the Wolf River. The Conservation Fund, the Wolf River Conservation Society, the State of Mississippi, the Little Biloxi Wetland Trust, and the Harrison County School Board have preserved thousands of acres.¹²⁸ The Land Trust for the Mississippi Coastal Plain (LTMCP) has identified sand and gravel mining as a major threat to the Wolf River.¹²⁹ The river is primarily used by private landowners, boaters, and anglers that visit the area occasionally and seasonally for fishing and waterfowl hunting.

The Biloxi River is located north of Interstate Highway 10 and empties into the Back Bay of Biloxi. It is fed by several streams, including Saucier Creek, Palmer Creek, Tiger Creek, Loya Branch, Rudy Branch, Walker Creek, Mill Creek, and Fitz Creek. The Biloxi River begins in the area of Smithtown in Stone County. It takes a winding course in a roughly southeasterly direction before emptying into the Big Lake on the Back Bay in Biloxi.

The Tchoutacabouffa River is another meandering river in Harrison County. Its headwaters are in the De Soto National Forest. The Tchoutacabouffa River meets the Biloxi River at Big Lake in the Back Bay of Biloxi. Several tributaries, including Cypress Creek, Railroad Creek, Ramsey Creek, Hurricane Creek, Bud Branch, Bridge Branch, Raymond Branch, Boggy Branch, Bigfoot Creek, Choctaw Creek, Reed Branch, Long Branch, Hester Creek, Howard Creek, Parker Creek, and Cypress Creek, feed the Tchoutacabouffa.¹³⁰ The Land Trust for the Mississippi Coastal Plain (LTMCP), through its Building a Partnership for the Tchoutacabouffa River Watershed Action Plan, proposes conservation and protection of

open spaces along the Tchoutacabouffa Watershed. LTMCP received funding from the Environmental Protection Agency (EPA) Region IV to advance their efforts. Working with stakeholders in the Tchoutacabouffa Watershed, LTMCP intends to protect the watershed from encroaching development from the south. LTMCP efforts include working to establish setbacks on the riverbank, restoration of riverbank plant life, and improving education.¹³¹

The Little Biloxi River begins in Stone County at the confluence of small streams in the area. It flows from southeast Stone County, roughly parallel to the Biloxi River, and drains into the Biloxi River behind Harrison Central High School on US Highway 49.

Bayous

In addition to the sounds, bays, rivers, streams, and creeks Harrison County has numerous bayous. Harrison County bayous include Bayou Delisle, Bayou Portage, Rotten Bayou, and Turkey Creek-Old Fort Bayou.

Watersheds

There are multiple watersheds found in Harrison County. A watershed is the area drained by a stream and its tributaries.¹³² Harrison County watersheds include: the Biloxi River, the Rotten Bayou, the Tchoutacabouffa River, the Lower Tuxachanie Creek, and Turkey Creek. The Biloxi River is fed by several streams, including Saucier Creek, Palmer Creek, Tiger Creek, Loya Branch, Rudy Branch, Walker Creek, Mill Creek, and Fitz Creek. These creeks and branches feeding the Biloxi River watershed are intertwined with wetlands.

The Rotten Bayou Watershed includes the Bayou La Terre, which drains into the Rotten Bayou. The Rotten Bayou then empties into the Jourdan River before it meets the Saint Louis Bay.¹³³

The Tchoutacabouffa River Watershed is another watershed in Harrison County. The entire watershed includes several sub-basins: Bigfoot Creek, Cypress Creek, Hester Creek, Hog Creek, Hurricane Creek, Railroad Creek, Tuxachanie Creek, Tchoutacabouffa River, Bayou Billie, and Bayou Castopia.¹³⁴

Another watershed in Harrison County is the

Lower Tuxachanie Creek Watershed, which is a tributary of the larger Tchoutacabouffa River. State Highway 67 roughly divides the Tuxachanie Creek Watershed and the Biloxi River Watershed.¹³⁵

The final watershed is the Turkey Creek Watershed. This watershed is located in the East Gulf Coastal Plain eco-region of the southwestern United States and is part of the Mississippi Coastal Basin and Streams.¹³⁶ The topography of the watershed is relatively flat creating a slow-moving coastal stream and tidal creek.¹³⁷

Flood Plains

The flood plains of Harrison County are generally flat, low-lying lands adjacent to rivers and streams. When water bodies overflow, the floodplains collect, store, and soak up the water that exceeds the water channels' capacity. As shown in Map B-7, the flood zones are located primarily near major water bodies. The Federal Emergency Management Agency (FEMA) issued revised flood-elevation maps as part of the National Flood Insurance Program (NFIP) in 2007. The delineation of the new floodplain boundaries occurred because of changes that have altered the physical environment and changed the flow of streams and rivers.¹³⁸

Impaired Bodies of Water

The following bodies of waters are “impaired”, or polluted: Gulfport Harbor Beach, Gulfport West Beach, Pass Christian East Beach, and Turkey Creek. These bodies of water are all located in the Coastal Streams Basin.¹³⁹ Gulfport Harbor Beach is located in Gulfport from 20th Avenue to Hewes Avenue.¹⁴⁰ Gulfport West Beach is located in Gulfport from Cleveland Avenue east to 33rd Avenue.¹⁴¹ Pass Christian East Beach is located in Pass Christian from Market Street east to Markham Drive.¹⁴² Turkey Creek is located near Long Beach from Confluence with Canal Number Two to US Highway 49.¹⁴³ The pollutant cause for Gulfport Harbor Beach, Gulfport West Beach, and Pass Christian East Beach are pathogens.¹⁴⁴ The pollutant cause for Turkey Creek is biological impairment.¹⁴⁵

Figure B-20. Approximately three-quarters of the land in unincorporated Harrison County is forested.



Source: Joseph Kitchen

Figure B-21. The Little Biloxi River flows parallel to the Biloxi River.



Source: Rickie Yeager

Table B-26. Soil Types in Harrison County

Soil	Acres in Harrison County	Corrosion of Concrete Rating	Roads Rating	Septic Tank Absorption Fields
Atmore silt loam	18,911.70	high	very limited	very limited
Coastal beach	954.6	high	very limited	very limited
Escambia silt loam	1,260.70	high	somewhat limited	very limited
Eustis loamy sand,0-5% slope	10,338.40	high	not limited	very limited
Eustis and Poarch soils,8-17% slope	8,381.90	high	somewhat limited	very limited
Handsboro association	7,690.10	high	very limited	very limited
Harleston fine sandy loam,0-2% slope	13,994.60	high	not limited	very limited
Harleston fine sandy loam,2-5% slope	17,429.40	high	not limited	very limited
Hyde silt loam	786.8	high	very limited	very limited
Lakeland fine sand	2,417.10	moderate	not limited	very limited
Latonia loamy sand	7,921.60	moderate	not limited	very limited
McLaurin fine sandy loam, 2-5% slope	6,914.30	moderate	not limited	somewhat limited
McLaurin fine sandy loam, 5-8% slope	544.5	moderate	not limited	somewhat limited
Nahunta silt loam	6,217.40	moderate	somewhat limited	very limited
Nugent and Jena soils	12,555.20	moderate	very limited	very limited
Ocilla loamy sand	4,732.70	moderate	somewhat limited	very limited
Plummer loamy sand	10,106.70	high	very limited	very limited
Poarch fine sandy loam,0-2% slope	5,780.40	high	not limited	very limited
Poarch fine sandy loam, 2-5% slope	73,337.70	high	not limited	very limited
Poarch fine sandy loam, 5-12% slope	19,935.20	high	somewhat limited	very limited
Ponzer and Smithton soils	26,918.80	high	very limited	very limited
Ruston fine sandy loam, 0-2% slope	355.4	moderate	not limited	somewhat limited
Ruston fine sandy loam, 2-5% slope	17,683.00	moderate	not limited	somewhat limited
Ruston fine sandy loam, 5-8% slope	7,599.60	moderate	not limited	somewhat limited
Ruston fine sandy loam, 8-12% slope	7,809.20	moderate	somewhat limited	very limited
Saucier fine sandy loam, 2-5% slope	11,945.10	high	not limited	very limited
Saucier fine sandy loam, 5-8% slope	2,852.80	high	not limited	very limited
Saucier, Smithton, and Susquehanna soils	20,517.40	high	somewhat limited	very limited
Saucier-Susquehanna complex, 2-5% slope	7,699.10	high	not limited	very limited
Smithdale fine sandy loam,12-17% slope	3,523.70	moderate	very limited	very limited
Smithton fine sandy loam	26,226.50	high	very limited	very limited
St. Lucie sand	951.3	moderate	somewhat limited	very limited
St. Lucie sand, hummocky	812.4	moderate	somewhat limited	very limited
Sulfaquepts	3,048.70	high	somewhat limited	very limited
Water	255,879.20	not rated	not rated	not rated
Total Acreage	624,033.30			

Source: National Resource Conservation Service³

Groundwater and Supply Sources

Residents of Harrison County receive their drinking water from underground aquifers. There are two primary aquifers that service Harrison County: the Mississippi Embayment Aquifer and the Coastal Lowlands Aquifer. The Mississippi Embayment Aquifer system ranges in thickness from zero to 6,000 feet deep, and recharge occurs through porous marine sediments. The aquifer is capable of yielding water to wells at a rate from 100 to 300 gallons per minute. Water is replenished by infiltration through recharge areas, which typically range from 100 to 400 feet deeper than the terrain where the water discharges.¹⁴⁶ The Mississippi Embayment Aquifer system covers most of Mississippi and Louisiana, half of Arkansas, and extends into portions of Alabama, Missouri, Tennessee, Kentucky, Florida, and Illinois. At its deepest point, the aquifer is more than 5,000 feet deep, but the portion under the planning area is between 2,000 and 3,000 feet deep. The Coastal Lowlands Aquifer system ranges in thickness from zero to 14,000 feet deep.¹⁴⁷ Depending on the area, it is capable of yielding wells at rate of 100 to 4000 gallons per minute.¹⁴⁸ The Coastal Lowlands Aquifer system extends eastward from Texas across southern and central Louisiana into southern Mississippi, and a very small part of it extends into southern Alabama and the western part of the Florida Panhandle. It also extends southward and southwestward across Texas and the Rio Grande.¹⁴⁹

Wetlands

Harrison County’s abundant supply of wetland acreage is a valued natural resource. Wetlands are important for the environment because they execute environmentally vital functions. According to a study conducted by DuPont, “The coastal wetland habitats of Mississippi are among the most ecologically diverse systems in the country. These systems provide for ecological functions including pollution filtering, sediment trapping, flood control as well as serving as important nursery areas which increase the productivity of an abundant fishery resource. These ecological functions also provide economic benefits in the form of commercial and recreational fisheries, hunting, trapping, and many other forms of recreation and commerce.”¹⁵⁰

One-third of unincorporated Harrison County is comprised of wetlands (130,347 acres), see Map B-8. Wetlands play an important role in Harrison County, absorbing flood waters and gradually releasing them into streams. Wetlands also improve water quality by filtering pollution and sediment.

Wetlands are controlled by the US Army Corps of Engineers, the US Environmental Protection Agency, the US Fish and Wildlife Service, the Natural Resource Conservation Service, and the Mississippi Department of Environmental Quality. In recent years, wetlands have become highly regulated environmental areas. Due to the significant community benefits of protecting

wetlands, the Mississippi Department of Environmental Quality has put in place regulatory and incentive programs to help protect remaining wetlands.

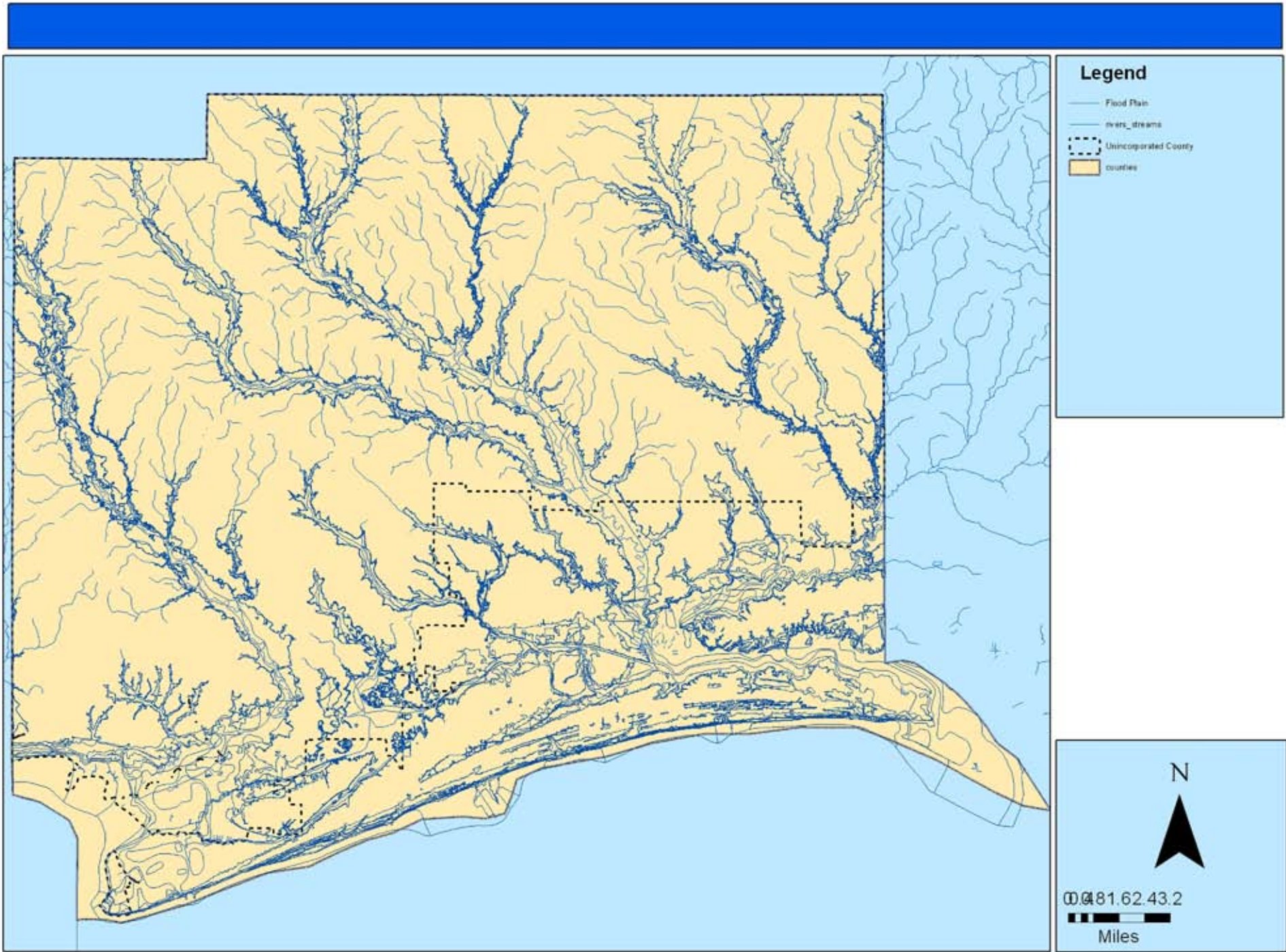
Soils

Knowledge of the soil types in a given area is important, soil suitability dictates the type of development possible. Harrison County has a significant amount of hydric soil, a soil with anaerobic conditions in its upper soil layer. Hydric soil is formed under conditions of saturation or flooding that occur for substantially long periods during the growing season. Hydric and partially hydric soils are found near rivers, streams, and wetlands. They are generally unsuitable for septic tank location. There is a high risk of breach with concrete in all major soils except Nugent, Ruston, or Smithdale. Construction materials must be properly coated to prevent corrosion.¹⁵¹ Harrison County soils are rated on the risk of corrosion, their ability to support a local road, and their suitability for septic tanks in Table B-26.

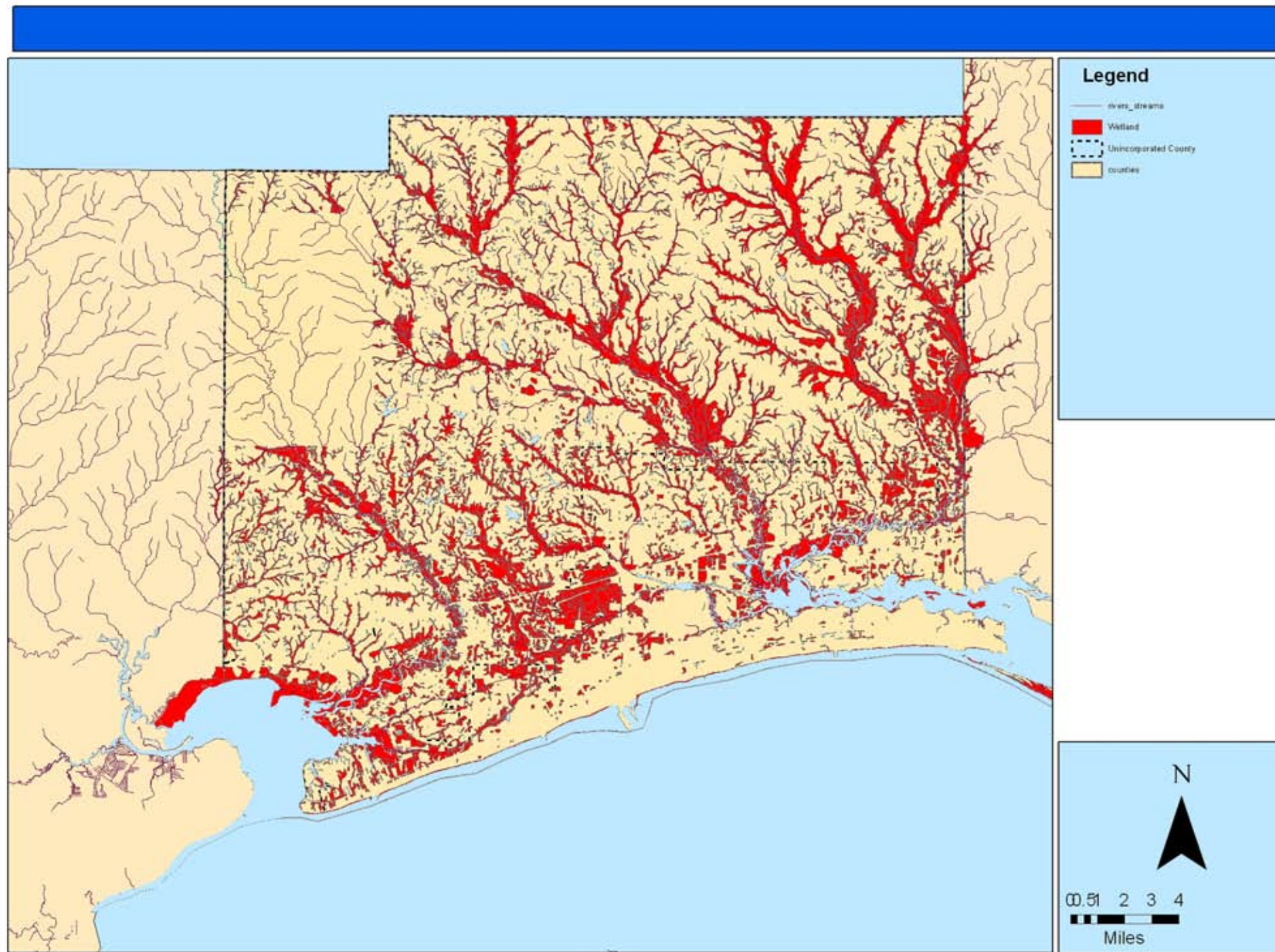
The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil.¹⁵² Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete.¹⁵³ The risk of corrosion is expressed as “low,” “moderate,” or “high.”¹⁵⁴ Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year.¹⁵⁵ The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity.¹⁵⁶ The soils are rated as “Not Limited,” “Somewhat Limited,” and “Very Limited”. “Not limited” indicates that the soil has features that are very favorable for the specified use.¹⁵⁷ “Somewhat limited” indicates that the soil has features that are moderately favorable for the specified use.¹⁵⁸ “Very limited” indicates that the soil has one or more features that are unfavorable for the specified use.¹⁵⁹ The last column in the soil chart ranks the soils in Harrison County by their suitability for septic tank absorption fields. Septic tank absorption fields are areas in which effluent from septic tanks is distributed into the soil through subsurface tiles or perforated pipe.¹⁶⁰ Only the part of the soil between depths of 24 and 60 inches is evaluated.¹⁶¹ The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health.¹⁶²

Forestry

Forestry is a major natural resource industry in Harrison County. In Harrison County, forestland represents 74 percent (213,401 acres) of the total unincorporated land area. Tree types found in Harrison County



Map B-7. Harrison County Floodplains
Source: The Ohio State University



Map B-8. Wetland areas in Harrison County

Source: The Ohio State University

include slash pine, long leaf pine, live oak, water oak, southern magnolia, swamp tupelo, red maple, and sweetbay magnolia. The majority of the forested areas include pine trees (58 percent), oak (22 percent), and other types of hardwoods (20 percent). Approximately 31 percent (89,800 acres) of forested land in Harrison County is owned by the public. Forestry companies own 24 percent of the forested land and the remainder is owned by private land owners.¹⁶³ Hurricane Katrina caused serious damage to the county's forests. Almost 90 percent of the forestland in Harrison County sustained long-term damage.¹⁶⁴ Eight percent of the trees in Harrison County were leaning, 28.7 percent experienced blow-down, and 12.7 percent were sheared.¹⁶⁵ The deciduous trees were affected by blow-down, while conifers experienced the majority of shearing. The storm damage increased the susceptibility of the forests to insects, disease, and invasive plant growth.¹⁶⁶

The De Soto National Forest is one of six national forests in the state of Mississippi and it is the largest, with 378,538 acres.¹⁶⁷ The De Soto National Forest extends into Jackson, Stone, George, Pearl, Forrest, Perry and Greene Counties. It is characterized by its variety of trees and tea-colored streams.¹⁶⁸ There are a range of recreational activities, from bird watching to horseback riding.¹⁶⁹

Agriculture and Aquaculture

In 2002, the land area in farm production in Harrison County equaled 25,258 acres, roughly 7 percent of the total land area in the county. The average farm size is 60 acres, with the total market value of production for all farms at \$3.3 million. Of the 418 farms in the county, 197 listed farming as their principal occupation. The average value per farm was listed as being \$240,000.¹⁷⁰ Mississippi State University Extension reports that there are no full-time farms in operation in Harrison County since Hurricane Katrina.¹⁷¹ According to the Agricultural Census, no one in the county reports relying upon farming as their main source of income.¹⁷² The county includes many part-time farms, including sod farms, pecan orchards, hay fields, grazing pastures, and fruit orchards.¹⁷³

The National Agriculture Statistic Service reported that, in 2002, Harrison County had the highest value of farm products in nursery and sod; milk and dairy; fruits, nuts, and berries; horses and ponies; vegetables; poultry and eggs; and hay. The value livestock sales, from largest to smallest, were quail, cattle and calves, ducks, horses and ponies, and pheasants. The value of crop sales, from largest to smallest, were hay, pecans, field and grass seed crops, and all vegetables.¹⁷⁴ Updated data for the 2007 Census of Agriculture will be available in 2009.

Aquaculture is another natural resource industry. The aquaculture

industry in coastal Mississippi produces fish, baitfish, crawfish, and oysters.¹⁷⁵ In past years Mississippi was the leading state in the US in aquaculture, producing almost 50 percent of the country's farm-raised fish.¹⁷⁶ Its aquaculture industry is largely dependent on intact coastal wetlands along with clean coastal waters.¹⁷⁷ If wetlands are able to migrate inland as sea level continues to rise, the yield of estuarine-dependent fisheries, such as shrimp, will increase or decrease depending on the size and quality of the new habitat over time.¹⁷⁸ Shrimping is common on the Mississippi Sound, as is harvesting oysters from beds off the coast. Mississippi is an ideal location for shrimp production because wetlands provide the necessary environment for harvesting shrimp.¹⁷⁹ Brown, white, and pink shrimp are the three major types of shrimp harvested on the coast.¹⁸⁰ Brown shrimp are most abundant from June to October and can be found in inshore and offshore waters.¹⁸¹ White shrimp, found in more shallow waters with mud bottoms, are caught mostly during daylight hours during the fall months.¹⁸² Pink shrimp are usually found in higher salinity waters and are generally caught at night.¹⁸³

Wildlife

Wildlife can be found throughout the county's forests and the wetlands. Common large mammals are white tail deer and gray foxes. Common small mammals of Harrison County include possums, raccoons, gray squirrels, skunks, nutria rats, armadillos, muskrats, beavers, swamp rabbits, and hogs. The forests and wetlands of Harrison County are also home to game birds. The game birds found in the county include the northern bobwhite quails, mourning doves, and turkeys. The final groups of animals that can be found in Harrison County are reptiles, snakes, and amphibians. Known reptiles include the eastern mud turtles, eastern box turtles, and green anoles. Snakes that can be found in Harrison County are southern black racers, black snakes, milk snakes, cottonmouths, copperheads, eastern corals, eastern diamondback rattlesnakes, and various water snakes. Known amphibians are lesser siren, green tree frog, southern toad, and bullfrog.

Air Pollution

Compared with other counties in Mississippi, Harrison County's air quality had a somewhat lower ranking. This statement is based on Harrison County's Air Quality Index (AQI), a scale from 0 to 500 developed by the EPA that measures concentrations of particulate matter, sulfur dioxide, carbon monoxide, nitrogen dioxide, and ozone. In 2003, Harrison County's maximum AQI value was measured at 135. A score of 135 falls in the range of "unhealthful" air quality in which minor irritation is prevalent in the population. However, the 2003 median score measured 35, which is in the range of "good" air quality.¹⁸⁴

COMMUNITY FACILITIES AND RECREATION

Harrison County offers community facilities and services to meet the basic requirements of its citizens. The community development needs of a region of this size are many and varied. The unincorporated cities and towns are mainly serviced by the facilities Harrison County provides. The necessary public facilities providing safety and promoting the general welfare are the Harrison

County Sheriff's and Fire Departments. There are also several regional hospitals that provide healthcare for residents. The children of Harrison County attend one of the five school districts in the area. The Harrison County Library System, which encourages education and provides resources for all, has 11 branches. As with any community, the provision of local opportunities for community gathering, recreation, and entertainment is important. County-wide community centers and the Harrison County park system provide avenues for such leisure and recreation. Schools, parks, libraries, and community centers are vital to a community because they help sustain neighborhoods and provide opportunities to gather and interact. The social community amenities play a critical role in establishing community identity. The police service, fire service, and hospitals are also necessary in creating security and sustaining the moral fabric of a neighborhood. These public services support the strong foundation that is undeniably important to a healthy community.

Public Safety

The Harrison County Sheriff's Department has five regional facilities: the County Courthouse, an adult detention center, the County Farm, the Lorraine Road Work Center, and the D'Iberville office.¹⁸⁵ The trustees in the County Jail provide labor throughout the county, including inmates working on the County Farm to produce food for the themselves. The Harrison County Sheriff's Department has substations at every fire station located within the county, including a room with Internet access, a computer, a telephone, and other amenities for the sheriff's deputies.¹⁸⁶ Each deputy can stop at any of the fire stations within the area and utilize those facilities at any time. The department has approximately 403 employees, with the majority serving as deputies. There are also 49 reserve officers. The main headquarters and administrative offices are located in the Gulfport County Courthouse. The Department operates 46 patrol cars and 84 other vehicles for various uses.¹⁸⁷

The Harrison County Fire Service covers all areas located outside of the incorporated cities of D'Iberville,

Figure B-23. The Harrison County Sheriff's Office patrols throughout the unincorporated county.



Source: Megan Dunton

Biloxi, Gulfport, Long Beach, and Pass Christian. The rural area that is primarily protected is approximately 408 square miles in area. The Harrison County Fire Services has 15 paid employees and 140 volunteers who operate 29 trucks. The area is divided into six fire districts: North Woolmarket, Saucier, Lizana, Cuevas, West Harrison, and Henderson Point.¹⁸⁸

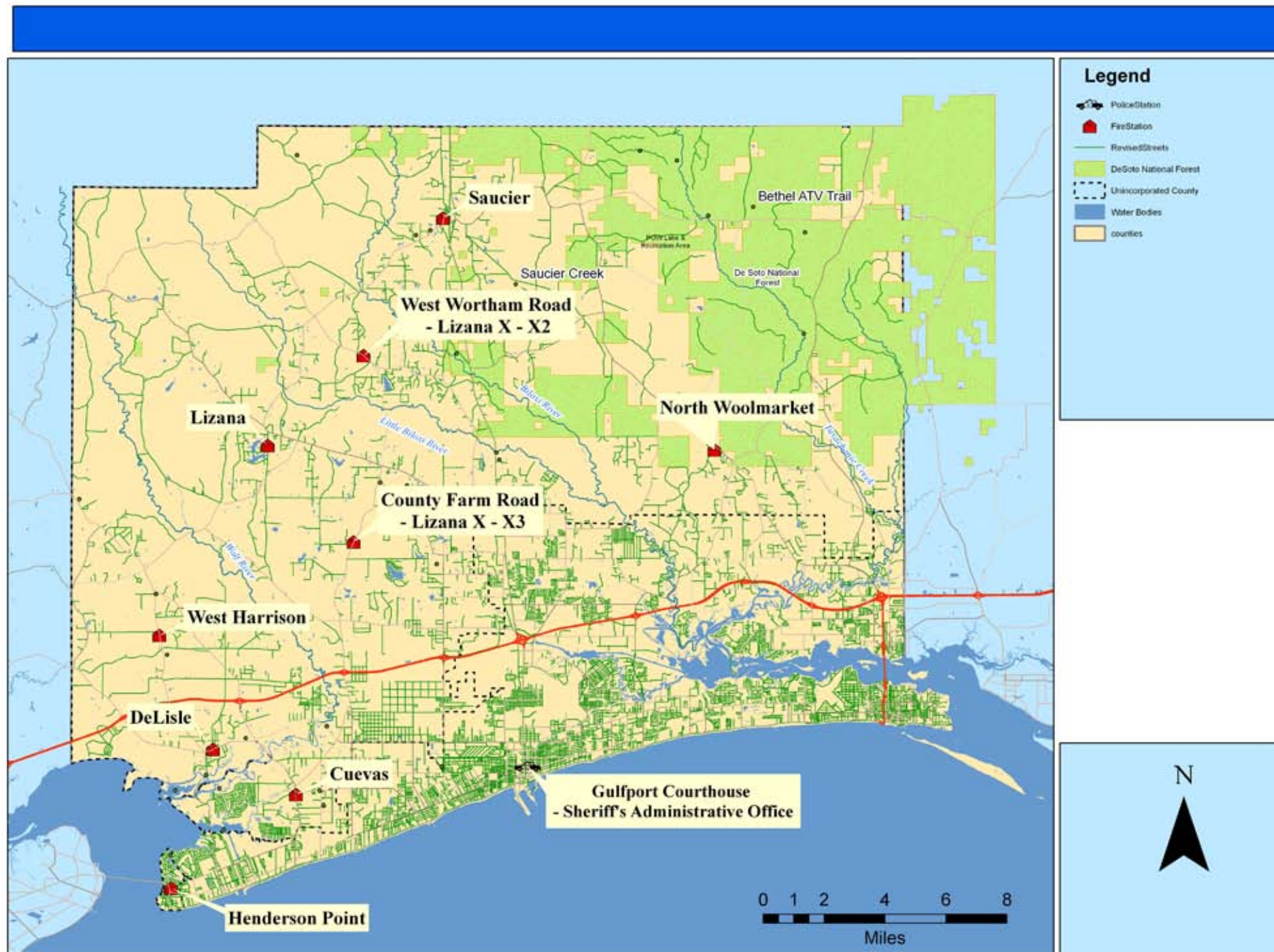
Hurricane Katrina washed away the Henderson Point fire station. The fire truck that was stationed at Henderson Point has been loaned to the City of Pass Christian. In return, Pass Christian is providing fire service to Henderson Point until the Henderson Point fire station can be restored.¹⁸⁹ The fire station at Henderson Point is now under construction and will begin operation in spring 2008.¹⁹⁰

To provide for the growing rural communities, Harrison County Fire Services has obtained land on County Farm Road to build a new station for Lizana. Also, land is currently being assembled for purchase to plan for an additional fire station in northeast Harrison County. This station will be located on Bethel Road and will service Saucier and Success.¹⁹¹

Figure B-22. The Lyman State Fish Hatchery supports the aquaculture industry in Harrison County.



Source: Chris Cunningham



Map B-9. Public Safety Facilities for Harrison County

Source: The Ohio State University

Volunteers are the backbone of Harrison County Fire Services. They offer security and stability during inevitable disasters. The incorporated areas have fire protection through municipal fire departments. These departments will also respond to nearby unincorporated areas when called upon, providing adequate protection can be maintained in the city during the absence of the assisting units.

Health Facilities

Harrison County residents have access to healthcare provisions through a total of eight hospital facilities and six clinics.¹⁹² These agencies include the two County Health Departments in Biloxi and Gulfport and the Coastal Family Health Centers.^{193,194} The County Health Departments are designed to provide preventative care, while the Coastal Clinics function as primary care providers. There are also state and federally funded health care providers.

According to the *Mississippi State Health Plan for Fiscal Year 2007*, 158 doctors practice in Harrison County. This number includes practitioners of Family Practice, General Practice, Internal Medicine, Obstetrics and Gynecology, and Pediatrics. There are also 82 dentists in Harrison County.¹⁹⁵ Table B-28 shows Harrison County licensed hospitals and beds.

Harrison County is part of Public Health District IX for the state of Mississippi. Other counties in District IX are George, Hancock, Jackson, Pearl River, and Stone counties. The District IX office is located in Gulfport. Basic public services are available on the district and county level from the Mississippi Department of Health (MDH). The extent of services offered by the MDH is dependent upon the availability of services of the public and private sector health providers within the county and district structure. The Harrison County Health Department is located in Gulfport, with an additional clinic located in Biloxi.¹⁹⁶ Harrison County also has three Women with Infants and Children (WIC) program distribution centers, two located in Gulfport and one in Biloxi.¹⁹⁷

The Mississippi State Department of Health's desired physician to population ratio is one primary care provider for 3,500 populations. As of 2002, Harrison County had 168 primary care physicians, thus leading to a primary care physician to population ratio of one primary care provider for every 1,128.6 persons, which is much lower than the state-preferred ratio.¹⁹⁸

Schools

The Harrison County area is divided into five school districts, with Harrison County School District being the largest. The five school districts displayed in Map B-10 are Harrison County School District, Pass Christian

Table B-27. Harrison County Volunteer Fire Service

Fire Response Area	Area of District (square miles)	Population Covered in District	Number of Volunteers	Fire Departments	Station Location(s)	Equipment Type
Cuevas Grading District	24	3,880	17	<i>Cuevas</i>	22338 Fire Station Road, Pass Christian	Tanker 64, 1800 gallon; Engine 62, 1000 gallon; Engine 61, 1000 gallon; Ambulance; Tanker 63, 2000 gallon
West Harrison Grading District	65	5,736	27	<i>DeLisle</i>	25242 Cuevas-DeLisle Road, Pass Christian	Engine 12, 1000 gallon, Engine 11, 1000 gallon, Engine, 1000 gallon
				<i>West Harrison</i>	10071 Vidalia Road, Pass Christian	Tanker 16, 1800 gallon; Engine 12, 1000 gallon; Engine 15, 1000 gallon; Tanker 17, 2000 gallon; Rescue Truck*
				<i>Henderson Point (destroyed)</i>	300 Livingston Street, Pass Christian	
Lizana Grading District	109	7,616	23	<i>Lizana</i>	16445 Lizana School Road, Gulfport	Engine 74, 1000 gallon; Tanker 76, 2000 gallon; Tanker 77, 2000 gallon; Engine 71, 2000 gallon
				<i>West Wortham Rd. - Lizana X-X2</i>	20121 West Wortham Road, Saucier	Engine 72, 1000 gallon; Tanker 78, 2000 gallon; Truck, 1000 gallon; SUV;
				<i>County Farm Road- Lizana X-X3</i>	13242 County Farm Road, Gulfport	Tanker 79, 1000 gallon; Pumper 73, 1000 gallon
Saucier Grading District	151	5,778	33	<i>Saucier</i>	23560 Old Still Road, Saucier	Truck**; Engine 43, 1000 gallon*; Engine 2, 1000 gallon; Tanker 45, 2000 gallon; Engine 41, 2000 gallon; Tanker 47, 1000 gallon
				<i>Success</i>	12342 School Road, Saucier	Engine 42, 1000 gallon; Tanker 44, 2000 gallon; Truck**
North Woolmarket Grading District	44	4,640	26	<i>North Woolmarket</i>	16520 Switzer Park Road, Biloxi	Tanker 53, 1800 gallon; Engine 52, 1000 gallon; Tanker 54, 2000 gallon; Engine 51, 2000 gallon
				<i>East Harrison</i>	15445 Hwy 15, Biloxi	Tanker 34, 1800 gallon; Engine 31, 1000 gallon; Tanker 35, 2000 gallon; Engine 33, 1000 gallon; Rescue Truck 3*; Pumper , 1000 gallon
Total			126	10		43

*Loan from West Wortham Station, ** Loan from Henderson Point Station

Source: Harrison County Wildfire Protection Plan (2007)

School District, Long Beach School District, Gulfport School District, and Biloxi Public School District. Gulfport School District has ten schools: one high school, two middle schools, and six elementary schools.¹⁹⁹ There are about 5,500 students enrolled in this district.²⁰⁰ Biloxi Public School District has 10 schools: one high school, two middle schools, and seven elementary schools. This district has about 4,700 students enrolled.²⁰¹ While Gulfport School District and Biloxi Public School District serve their respective municipalities, Harrison

County School District, Pass Christian School District, and Long Beach School District provide education to those living in the unincorporated areas.²⁰²

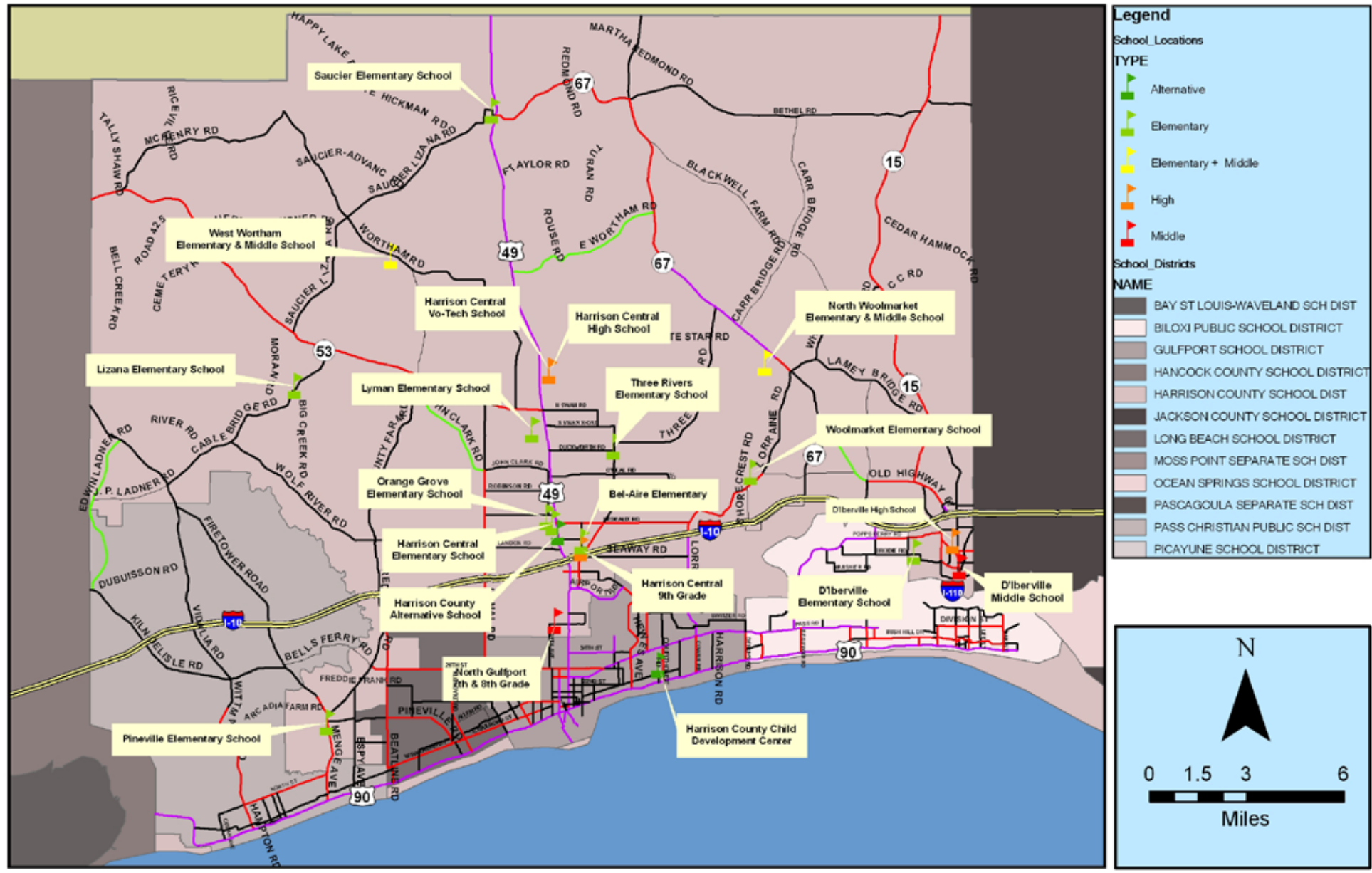
Long Beach School District has five schools: one high school, one middle school, and three elementary schools. This district educates approximately 2,800 children.²⁰³

Pass Christian School District has four schools: one high school, one middle school, and two elementary schools. This district has an enrollment of about 1,500

students.²⁰⁴ The schools in Pass Christian were damaged during Hurricane Camille and had to be renovated. Hurricane Katrina completely destroyed the Pass Christian Elementary and Middle Schools and washed out the first floor of the Pass Christian High School. Presently, DeLisle Elementary School (located north of Henderson Point in the city of DeLisle) acts as the site for all Kindergarten through eighth grade students in the Pass Christian School District. The Pass Christian Elementary and Middle Schools are to be combined into

one K-8 school on the site of the old middle school. The site is at a higher elevation and is safer for the students. The new school is scheduled to open as early as August of 2008.

The Harrison County School District is the fourth largest district in student population in the State of Mississippi. The district is comprised of all of the remaining unincorporated areas outside of the municipalities located in Harrison County. This area is made of approximately 450 square miles, with a



Map B-10. School Districts in Harrison County
 Source: The Ohio State University

student body of about 12,700.²⁰⁵ While the district is large and diverse, the community school concept is still maintained and promoted. There are a total of 20 schools in this neighborhood-type setting. The Harrison County School District is constructing a new D'Iberville High School in the Eastern Planning Area to address overcrowding at Harrison Central High School. When completed, the student body at Harrison Central High will be reduced and the school will then serve Saucier, West Wortham, East Orange Grove, Three Rivers, and Bel-Aire. The new high school is located approximately 3.5 miles southeast of North Woolmarket Elementary and Middle School, at the intersection of Lamey Bridge Road and Big John Road. The high school will serve students from D'Iberville and the easternmost portions of the Harrison County. The West Harrison High School is scheduled to open in 2009 to accommodate students on the west side of the county. The School District has future plans to build two additional elementary schools.

In general, Harrison County school districts rank above state averages. The Harrison County School District has six schools at the level five rating (the highest obtainable score) according to the 2007 Mississippi Statewide Accountability System. The remaining 14 schools in the district have either a three or four level rating. All schools in the Long Beach School District and the Pass Christian School District have a level five rating. The majority of the schools in the Gulfport School District have a level five rating, but three schools have a level three rating and one has a level four rating. The Biloxi Public School District has an overall average of a level five rating according to the 2007 Mississippi Statewide Accountability System.²⁰⁶

Libraries

The Harrison County Library System was created to link all of the local libraries within the county except the Long Beach Library. Currently, the mission of the library system is to provide library services to all citizens within the region. It strives to meet the needs of the growing population through its technology, outreach, and reference services, as well as its free newsletter.

The Harrison County Library System has a total of nine branches, along with an administrative building in Gulfport. There are four branches in Biloxi, two in Gulfport, and one each in Pass Christian, D'Iberville, and Saucier. These library branches are displayed in Map B-11. Hurricane Katrina caused many of the branches to temporarily close. Both Gulfport and Biloxi have two branches still out of commission due to the damages. Since the storm, the Harrison County Library System has opened all available locations to provide library services to the communities of the

Mississippi Gulf Coast. In May 2007, the library system opened three temporary trailers for library services in Gulfport, Biloxi, and Woolmarket.

Library materials are available in the following media: printed, audio-visual, micrographic, and machine-readable. The library services acquire, store, preserve, and loan materials to provide opportunities and contribute to community educational, informational, and cultural goals.²⁰⁷

Community Centers

Social services throughout Harrison County are provided by the Harrison County Human Resources Agency (HCHRA). HCHRA has constructed community centers to meet the current needs of the population. The centers can be used for social events, neighborhood meetings, and other events. There are seven centers located throughout the county.²⁰⁸

HCHRA also manages five senior citizen

centers to assist older citizens. These centers provide opportunities for personal development and satisfaction by providing volunteer programs for older adults. Of the five facilities, two were completed in 2008. The Woolmarket Senior Center, which opened in January 2008, was newly constructed as an 8,000-square-foot addition to the Woolmarket Civic Center. The D'Iberville Senior Center opened in March 2008.²⁰⁹ HCHRA may also provide transportation to eligible individuals to and from community services, medical appointments, grocery stores, and recreation activities.

HCHRA also provides home-delivered meals and adult day care. Home-delivered meals provide a nutritionally balanced meal for those disabled elderly who are in need of this service. Adult day care services seniors who live on a fixed income and have an array of health problems. Day care serves clients who are frail and disabled, as well as those with physical and mental disabilities.²¹⁰

Food Access

Food access issues play a large role in the health of communities. Good nutrition, in combination with physical activity and access to health care, is a preventative measure against chronic diseases such as obesity, heart disease, and diabetes. The United States Department of Agriculture (USDA) My Pyramid Program recommends that average adults have five servings of fruits and vegetables daily.²¹¹ According to the 2005 District IX Behavioral Risk Factor Surveillance System (BRFSS), only 18.7 percent of the Public Health District IX residents (including Harrison County) eat five or more servings of fruits and vegetables daily. This percentage is lower than the 2005 National BRFSS average of 23.2 percent.²¹²

Harrison County has 80 retailers selling groceries, 19 seafood markets, and five farmers' markets, with the majority located in the incorporated sections of the county.²¹³ Statistically, there is one retailer selling grocery items for approximately every 2,370 Harrison County residents and one farmers' market for approximately every 37,920 residents.²¹⁴

The Mississippi Department of Agriculture and Commerce (MDAC) provides programming linking agriculture and public health to increase food access to low-income residents. The Mississippi Farmers' Market Nutrition Program, administered by MDAC and other state partners, is a two-program initiative connecting local farmers to low-income groups. The Women with Infants and Children Farmers' Market Nutrition Program (WIC FMNP) and the Senior Farmers' Market Nutrition Program (SFMNP) are designed to provide nutrition benefits to WIC clients and low-income senior citizens in certain areas of Mississippi. The program "promotes the purchase of Mississippi grown fruits and vegetables from farmers at local farmers' markets throughout Mississippi."²¹⁵ The Coach Hegwood Farmers' Market, located in Biloxi, is Harrison County's authorized WIC FMNP and SFMNP market.²¹⁶

The MDAC's Market Development campaign, "Make Mine Mississippi," was launched in 1999 with the goal of promoting and heightening awareness of the state's

agricultural commodities and producers. Agriculture is Mississippi's largest industry, supplying \$5.8 billion to the state economy. The program is open to "any manufacturer, processor, or producer that adds at least 51 percent of the value of a product in Mississippi."²¹⁷ Participants receive free, voluntary use of the "Make Mine Mississippi" logo and funding options for advertising and promotion.²¹⁸

Parks

Harrison County has almost 20 parks and boat launches located within the region and organized by the Board of Supervisors. The parks offer various activities, such as softball, football, soccer fields, playgrounds, tennis courts, and walking trails. The Harrison County Park Department is primarily responsible for the parks in the unincorporated areas, but it may conduct special programs within the major cities. The county has an estimated park per capita ratio of one park per 9,100 persons.²¹⁹ The Department manages the daily maintenance and beautification of the parks year round. It works closely with the Harrison County Schools to supply recreational facilities for students. During youth sports seasons, it works closely with the youth tournaments to provide fields that are in satisfactory condition. Organizational sports provide individuals and families opportunities for physical activity.

One of the largest parks created and implemented by the County is the County Fairgrounds. The Fairgrounds include a multi-purpose covered arena. The activities that are held there include horse shows, team penning, rodeos, and festivals. The front ground of the Fairgrounds currently has 14 soccer fields that are utilized during the soccer season, lasting from October through April. There are future plans to relocate these fields to establish a large Soccer Complex.

The Fairgrounds is used all week long for practices as well as festivals.²²⁰ The Winter Classic, a horse exposition hosted by Harrison County in the County Fairgrounds arena, is a six-week event that brings 3,500 tourists to the area. Since 1999, the Winter Classic has been an economic success for Harrison County. In 2008, it produced \$40 million and employed 40 horse experts.²²¹

Table B-28. Licensed Hospital Beds in Harrison County

Hospital/ Clinic	Address	Beds
Keesler Medical Center	301 Fisher Street, Keesler Airforce Base	n/a
Sand Hill Hospital (Psychiatric)	11150 HWY 49 South, Gulfport,	n/a
VA Gulf Coast Veterans Hospital	400 Veterans Avenue, Biloxi	n/a
Biloxi Regional Medical Center	150 Reynoir Street, Biloxi	153
Garden Park Medical Center	15200 Community Road, Gulfport	130
Gulf Coast Medical Center	180 DeBuys Road, Biloxi	189
Memorial Hospital at Gulfport	4500 13th Street, Gulfport	445
Select Specialty Hospital Gulfport	1520 Broad Avenue, Gulfport	61
Biloxi Clinic	1046 Division Street, Biloxi	n/a
Mobile Dental Unit	1001 Division St, Biloxi	n/a
Gulfport Clinic	15024 MLK Jr. Blvd, Gulfport	n/a
Biloxi Clinic (trailer unit)	739 Division St, Biloxi	n/a
Saucier Clinic	23453 Central Drive, Saucier	n/a
Pass Christian Mobile Unit	295 Fleitas Ave, Pass Christian	n/a
Total		978

Source: Report on Hospitals, MDH 2006

Table B-29. Community Centers and Senior Citizen Centers in Harrison County, 2008

Center	Address	Community
D'Iberville Civic Center	10395 Automall Parkway, D'Iberville	D'Iberville
Good Deeds Community Center	15101 Madison Street, Gulfport	Gulfport
Isiah Fredericks Community Center	3312 Martin Luther King Dr, Gulfport	Gulfport
Saucier Community Center	24006 1st Street, Saucier	Saucier
Success Community Center	12361 School Road, Saucier	Saucier
West Harrison Civic Center	4670 West Espy Avenue, Long Beach	Long Beach
Woolmarket Community Center	16320 Old Woolmarket Rd, Biloxi	Biloxi
D'Iberville Senior Citizen Center	10450 Lamey Bridge Road, D'Iberville	D'Iberville
Lyman Senior Citizens Center	14592 County Farm Road, Gulfport	Gulfport
North Gulfport Senior Citizens Center	3312 Martin Luther King Drive, Gulfport	Gulfport
Saucier Senior Citizens Center	24006 1st Street, Saucier	Saucier
Woolmarket Senior Citizen Center	16320 Old Woolmarket Road, Biloxi	Biloxi

Source: Harrison County Human Resources

Table B-30. Public parks managed by Harrison County

Park	Address	Services
Bruce Ladner Memorial Park	Hwy. 53 in Gulfport	t-ball field, 2 baseball fields, playground
Woolmarket Community Park	Hwy. 67 in Biloxi	4 baseball fields, football field, tennis court, Walking Track, Community Center
Audubon Park	Audubon Lane, Ponce De Leon Boulevard, Havana Boulevard	pond, walking trails, benches
Saint Stephen's Park	Lobouy Avenue just south of St. Stephen's Catholic Church, DeLisle	softball field, basketball court, pavilion
Lizana Community Park	Firetower and Vidalia Rd, Lizana	3 baseball fields, playground, walking track
Three Rivers Park	Three Rivers Road, Gulfport	4 baseball fields, concession stand
North Gulfport Community Park	Jackson, Gulfport	softball field, baseball field, concession stand
Saucier Community Park	Saucier -Lizana Rd, Saucier	2 baseball fields, softball field, t-ball field, pond, walking track, tennis court
West Harrison Community Park	Vidalia Rd	2 baseball fields, walking track, playground, pavilion
Espy Avenue Soccer fields	Espy Avenue, Pineville Road, Pineville	3 soccer fields
Harrison County Fairgrounds	County Farm Road, Gulfport	16 soccer fields, covered arena, bleachers, lighting & PA system, stalls, RV sites, 3 outdoor arenas

Source: Harrison County Parks and Recreation 2008

Figure B-24. A beautiful Oak Tree in Eastern Harrison County



Source: Joshua Anderson

Figure B-25. A farm in Eastern Harrison County



Source: Sarah Landers

Outdoor Recreation

Harrison County is abundant in natural resources that lend themselves to various forms of outdoor recreation, for both residents and tourists. These include the De Soto National Forest, water bodies, and the beach.

The De Soto National Forest

In addition to the parks managed by Harrison County, one of the major open spaces for recreation is the De Soto National Forest, which has trails for hikers, mountain bikers, equestrian riders, and all terrain vehicle riders. Within the De Soto Ranger District, which is comprised of the Black Creek area and the Biloxi River/Tuxachanie Creek area, one can find a number of resources, such as trees, birds, and other wildlife.²²² This makes it an ideal setting for bird watchers and nature enthusiasts. The De Soto National Forest also supports camping and has several permanent picnic and shelter facilities intended for large group gatherings. Hunting is permitted in the surrounding forestland. The Bethel ATV Trail, which is located in the Red Creek Wildlife Management Area, includes a northern 38-mile loop and a southern 31-mile loop.²²³ The Big Foot Horse Trail is 21 miles long and is excellent for beginners as well as expert equestrians. The Bethel Bicycle Trail is 25 miles long and offers differing skill levels for mountain bikers. Another popular trail is the Tuxachanie Hiking Trail, which is 23 miles long and is recognized as a National Hiking Trail. Free parking is provided for most trails at the trailheads.²²⁴ In addition, Mississippi offers bike trails throughout the state. The Southern Tier of the Adventure Cycling Association's National Bicycle Route Network stretches horizontally across southern Mississippi through Harrison County.²²⁵

Several rivers and streams flowing through the county have their headwaters in the De Soto National Forest. Facilities exist to support a variety of activities, such as swimming, canoeing, kayaking, boating, and recreational fishing. Airey Lake is an attraction that is located along the Tuxachanie Trail. It covers three acres and has facilities for fishing, group camping, and picnics.

Figure B-26. The Saucier Clinic provides health services to local residents.



Source: Amber Cackler

Figure B-27. The Saucier Children's Library provides books for local children.



Source: Amy Miller

Figure B-28. The D'Iberville and Woolmarket Senior Centers were completed in 2008 to serve the seniors of Harrison County.



Source: Sarah Landers

Figure B-29. The new D'Iberville High School will serve students living in Eastern Harrison County.



Source: Sarah Landers

Figure B-30. Neco's Family Market



Source: Amber Cackler

Figure B-31. Roadside Farmers' Market



Source: Neetika Wahi

Other facilities such as toilets and drinking water are also provided.²²⁶

Water bodies

Water bodies and rivers are abundant in Harrison County. They are a valuable natural resource both from an environmental perspective and as a source of recreation and beauty to surrounding communities.

The most prominent recreational rivers of the county are the Wolf River, the Tchoutacabouffa River, the Biloxi River, and their accompanying tributaries. Freshwater wetlands are dispersed throughout the watersheds, helping to clean runoff and absorb floodwaters.

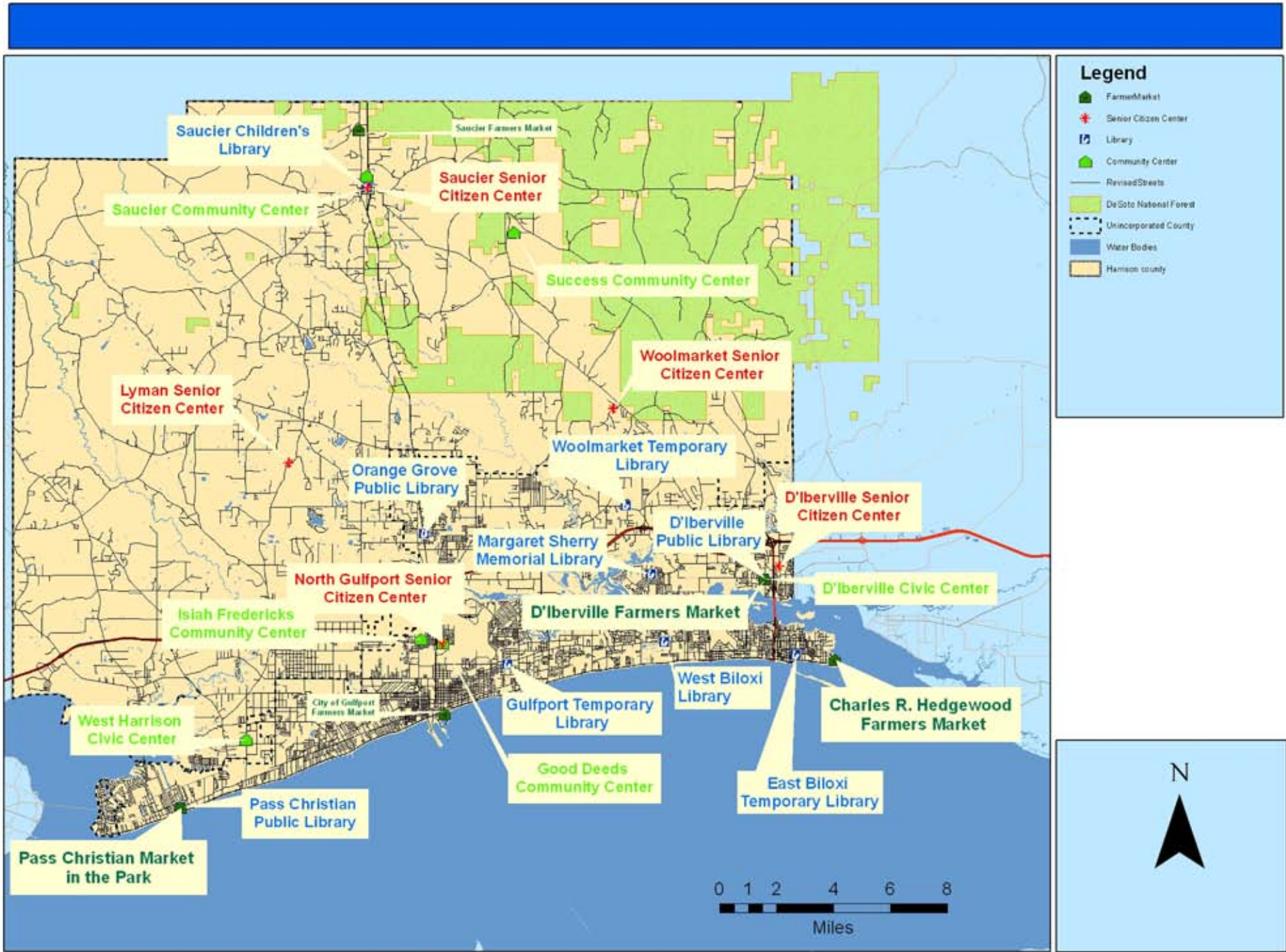
The Wolf River, seen in Figure B-36, meanders through the western side of the county, providing significant recreational opportunities for fishing, boating, birding, camping, and canoeing/kayaking. Access to the river is limited due to private land ownership along the river. The main outfitter of recreational facilities along the river is Wolf River Canoes and Kayaks. They offer several types of tours, including ten- and four-mile tours by kayak or canoe, as well as one-mile “float fun” trips on inner tubes. Equipment is available to rent and parking and shuttle provisions are available.

The Biloxi River is another destination that has great potential for recreational activities. Presently, the river is obstructed by fallen trees from Hurricane Katrina. The main outfitter of equipment for recreation along the river is Sacred Grounds Canoe & Kayak Rental.

The county has several important bodies of water, including the Bayou Arcadian, Bayou DeLisle, Johnson’s Bayou, Mallini Bayou, Bayou Portage, the Bay of Saint Louis, and three canals. The waterways provide opportunities for canoeing and fishing.

Sand Beach

The sand beach is one of the prime attractions of Harrison County, especially for tourists. The 26-mile-long beach was devastated by Hurricane Katrina and recreational activities along the beach could not take place due to debris on the beach and in the water. The beach has been cleared and activity has resumed, especially due to the close proximity of casinos to the coast. Reconstruction of boardwalks is taking place and facilities such as parking and restrooms are also in the process of being installed. Previously destroyed piers used for fishing have been restored and are widely used by residents and tourists alike. Vendors are also back on the beach, renting kayaks, jet skis, aqua cycles, and other equipment. Charters such as the Biloxi Bay Charter allow visitors to enjoy picnics, nature tours, fishing, crabbing, and sightseeing along the secluded Back Bay Islands and sandbars. Deep sea fishing is also a very popular family activity for which shared or private charters are available. There are many who enjoy canoeing



Map B-11. Community facilities for Harrison County including libraries, community centers, senior centers, and farmer’s markets
 Source: The Ohio State University

or kayaking from the coast to the coastal Barrier Islands as well.

Plans for the Future of Recreation

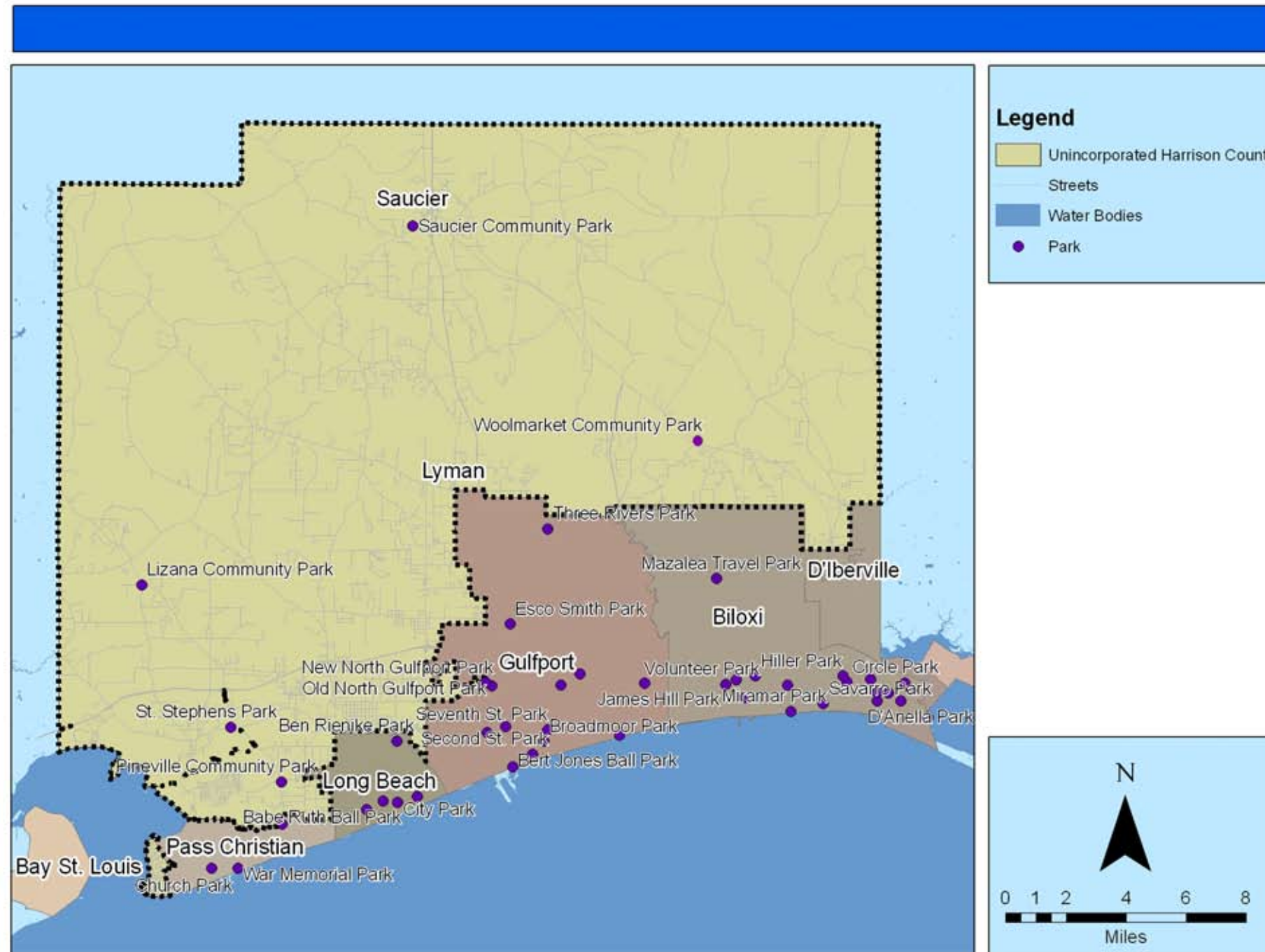
The Mississippi Statewide Comprehensive Outdoor Recreation Plan (SCORP) presents information that will help guide park development in the southern Mississippi region. As part of the plan, citizens were asked which outdoor recreation activities they were most interested in. The top ten rankings are as follows:

1. Canoeing, Kayaking, Rafting, Tubing
2. Hunting, Bow hunting
3. Fishing (Bank or Pier)
4. Swimming (Competitive)
5. Picnicking
6. Volleyball/Badminton
7. Tennis
8. Outdoor drama, Cultural events
9. Fishing (Boat)
10. Collecting (Rocks)²²⁷

These results, along with the National Recreation and Park Association's facility standards, illustrate the park deficit in Harrison County. Many of the desired recreational activities are available through the county, but the community has expressed an interest in providing spaces for swimming, volleyball/badminton, and leisure activities, such as picnicking. Also, while canoeing/kayaking and hiking are available through the county, these activities could be expanded.

Hiking, fishing, birding, canoeing, and kayaking are some of the most popular activities for locals and tourists.²²⁸ Fishing is available on almost all of the waterways in Harrison County. The Wolf River, as an example, provides excellent habitats for sport fishing and hunting. Common game fish include Bluegill, Sunfish, Crappie, Largemouth and Smallmouth Bass, Walleye, Sauger, Yellow Perch, and Pickerel.²²⁹

Harrison County has many types of birds, making birding a popular recreational activity. There are six public locations in the region for birding, including the De Soto National Forest. The birds of the region include Bachman's Sparrow, Brown Creeper, Brown-headed Nuthatch, Dark-eyed Junco, Fox Sparrow, Hooded Warbler, Prairie Warbler, Red-breasted Nuthatch, Winter Wren, Yellow-breasted Cat, and Yellow-throated Warbler.²³⁰ The Wolf River marsh provides feeding, resting, and wintering habitat for numerous types of migratory bird species, such as the Brown Pelican, White Pelican, Osprey, and Cormorants. Wolf River is also habitat for many rare or endangered bird species, like Mottled Duck and Osprey, as well as other species like the Yellow Rail, Black Rail, Coastal Shiner,



Map B-12. Parks in Harrison County

Source: The Ohio State University

Diamondback Terrapin, American Alligator, Gulf Salt March Snake, and Southern Red Cedar. The abundance of species renders this region unique.

Tourism

Historically, tourism has played a major role in the development of Harrison County and it continues to do so today. The gaming industry has helped to attract tourists to the county in large numbers. In the year 2006-2007, up to 3.6 million visitors visited the Biloxi/Gulfport area.²³¹

Currently, 50 percent of visitors to Gulfport/Biloxi participate in gaming, making it the most popular activity among tourists.²³² Casinos and resort/spas offer high-end services, including fine dining featuring celebrity chefs. The average age of casino resort/spa customers is 50. Most casinos are located in close proximity to the beach, making the beach well-visited by tourists. Seventeen percent of visitors enjoy beach activities, including simply relaxing on the beach, fishing from piers, deep sea fishing on charter boats, and jet skiing. Rental equipment is provided by vendors for the various beach activities.²³³

In 2006-2007, 16 percent of tourists in Biloxi/Gulfport took part in ecotourism activities, such as wildlife viewing, visiting State/National Parks, or rural sightseeing.²³⁴ Harrison County has an abundance of resources for outdoor recreation. Trails in the De Soto National Forest are present for hiking, biking and ATV riding, and horseback riding. Rivers, their tributaries, and bayous are used for water sports like canoeing, kayaking, tubing, fishing, and birding. Tourists also enjoy trips to the Barrier Islands, including Ship Island and Cat Island, by charter boats. Fort Massachusetts, on Ship Island, is also an attraction. Visitors also enjoy going aboard the Sailfish for shrimping expeditions.

Nationally, 20 percent of tourists are seeing ecotourism attractions.²³⁵

Seven percent of visitors to Biloxi/Gulfport in 2006-2007 showed some interest in learning about the local culture.²³⁶ This includes interest in trips to museums and historic locations. Harrison County has several such sites, including Beauvoir, the Biloxi beachfront museum devoted to the life and times of Jefferson Davis; the

Figure B-32. The County Fairgrounds includes a multi-purpose arena.



Source: Nathan Leppo

Figure B-33. The De Soto National Forest; Airey Lake is a 3-acre lake that offers visitors scenic views and other recreational opportunities.



Source: Joseph Kitchen

Table B-31. Tourist Activities in Biloxi/Gulfport

Activity	Total US travelers	Biloxi/Gulfport
Shopping	22%	20%
Visiting relatives	20%	12%
Fine dining	15%	20%
Family reunion	12%	8%
Visiting friends	12%	12%
Rural sightseeing	10%	11%
Beach	9%	17%
Casino/gaming	7%	50%
Urban sightseeing	7%	8%
State/National Park	6%	3%
Historic sites/churches	6%	5%
Museums	5%	2%
Nightclub/dancing	5%	5%
Theme park	4%	1%
Wildlife viewing	4%	2%

Source: Biloxi/Gulfport, Mississippi Travels America Visitor Profile Report., November 2007

Katrina Museum, which is a collection of Katrina-related and/or inspired photographs and artwork; the Lynn Meadows Discovery Center, which is one of the United States' top 50 children's museums; the Seabee Heritage Center exhibit, which is a collection of artifacts from all the events in which the Seabees and the Navy Civil Engineer Corps have participated; the West End Hose Company No. 3 Museum & Fire Educational Center, which depicts the 120-year history of the Biloxi Fire Department; and the Maritime and Seafood Industry Museum.²³⁷ Historic attractions such as St. Michael's Catholic Church are also visited by tourists. Prior to the storm, the Biloxi train tour, a 90-minute narrated tour through Biloxi's Historical District, was very popular.²³⁸ The Ohr-O'Keefe Museum of Art, which features the works of "the mad potter of

Biloxi," is another popular destination. The significance of this jovial and unique historic individual, who is often credited as being the first clay artist in the United States, cannot be overstated. The site from which he collected clay off the shores of the Tchoutacabouffa River lies beneath Tchoutacabouffa Bridge, which is part of State Highway 67. This could be a potential destination for tourists.

Twenty-three percent of tourists to Biloxi/Gulfport travel with an average of two children, which means that there is some potential for family-based tourist activities, such as theme parks.²³⁹ In addition to ecotourism and beach activities, there are several facilities that cater specifically to children visiting the county. The Gulf Islands Waterpark is popular, as is the Fun Factory, a 36,000-square-foot indoor facility for families where

Figure B-34. Woolmarket Community Park.



Source: Rickie Yeager

Figure B-35. The Bethel Trail provides recreational access for ATVs.



Source: Amy Miller

children are entertained with video games, a giant jungle gym, mini-racer tracks, and more.²⁴⁰ The Gulf Coast Motor Sports Park and the Gulfport Dragway provide go-karting facilities and drag strips. Children can be dropped off at Kidspace Play & Party Planet, which offers fun for children ages infant through 11 years old.²⁴¹

Special events held at the County Fairgrounds attract crowds bringing in tourists worldwide. The Winter Classic, a horse exposition hosted by Harrison County in the County Fairgrounds arena, is a six-week event that brings 3,500 tourists to the area. Since 1999, the Winter Classic has been very successful for Harrison County. In 2008, it produced \$40 million and employed 40 horse experts.²⁴² The success of this event tells us that Harrison County can play host to other large competitive sporting events, thus giving the county more exposure on a national and international level.

Most visitors to the Mississippi Gulf Coast (60 percent) stayed for one to three nights in the county.²⁴³ With the provision of a greater variety of unique activities, Harrison County may be able to encourage visitors to extend their visit from a weekend stay to a weeklong stay. Currently, tourists who stay for longer than a weekend usually take trips to neighboring areas. Many include a trip to Ship Island. Some travel east to the Old Town area of Ocean Springs in adjacent Jackson County, where they visit the many boutiques, galleries, and restaurants of the quaint artisan town. The Walter Anderson Museum of Art is another attraction. A visit to Bay Saint Louis in adjacent Hancock County usually includes a beautiful, Gulf-view drive across the Bay of Saint Louis into the area's main shopping and dining center, which is also famous for the galleries of its resident artists. Golf is another favorite activity, and there are over 20 golf courses in the county, including the Grand Bear, rated by Golf Digest Magazine as one of the top five golf courses in Mississippi.

HAZARDS

Hazard mitigation includes those actions done before, during, and after a disaster to minimize its impacts. Mitigation policies and requirements benefit both the community and individual property owners through

Figure B-36. The Wolf River.



Source: Brandon Mark

Figure B-37. A sunrise at low tide on the Sand Beach.



Source: Ryan Pilewski

Figure B-41. The site on the shores of the Tchoutacabouffa River from which Ohr-O’Keefe collected clay can be a potential destination for tourists.



Historic Photos from MGCCC

increased protection of persons, property, and the environment. Harrison County faces a number of hazards; the most commonly identified are tropical storms, flooding, and wildfires. Other hazards include those identified in the 2001 *Harrison County Hazard Mitigation Plan*:

- Hurricanes
- Flooding
- Terrorism/Sabotage
- Tornadoes
- Erosion
- Railroad Accidents
- Roadways
- Roadway Accidents
- Hazardous Materials
- Lightning

Hurricanes

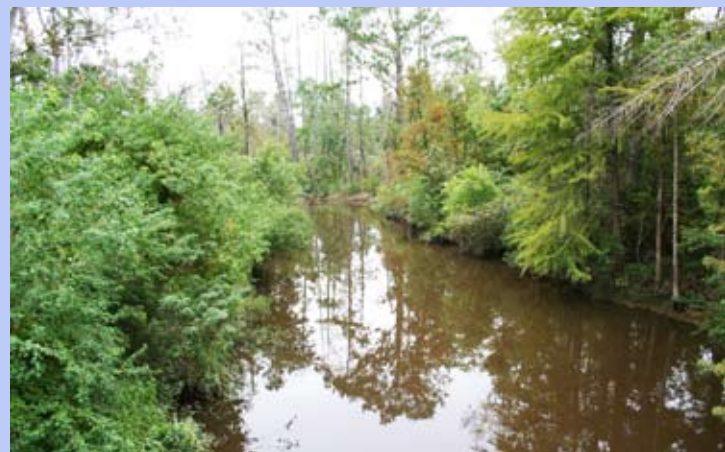
As with other coastal communities, Harrison County and its municipalities face threats of flooding, property damage, and loss of life from hurricanes and tropical storms. Harrison County has a long history of hurricane activity. Eleven hurricanes have affected Harrison County and the Mississippi Gulf Coast since 1900. Prior to Katrina, Hurricane Camille, a category five hurricane that hit the coast in 1969, resulted in the most widespread damage to the area.²⁴⁴ Hurricanes that have impacted Harrison County from 1901-2005 are shown in Table B-32.

Those along the Gulf Coast will never forget August 29, 2005. Hurricane Katrina was both the costliest and one of the five deadliest hurricanes to ever strike the United States. The maximum high water mark observation of storm surge was 27.8 feet at Pass Christian.²⁴⁵ It is difficult to determine the storm surge from Katrina, because many tide gauges failed along the coast.²⁴⁶ The Federal Emergency Management Agency (FEMA) estimates that the storm surge was 24 to 28 feet along a 20-mile-wide path on the Mississippi Coast. The eastern coast, roughly Gulfport to Pascagoula, experienced a 17-to-22-foot surge reaching six miles inland.²⁴⁷ The surge penetrated 12 miles inland along bays, rivers, and bayous and crossed north of Interstate Highway 10 in many locations. Katrina left many Mississippi coastal communities almost entirely destroyed. The strong winds caused a substantial amount of damage to the trees and structures, as shown in Figure B-42. Beach erosion also occurred along the coast. There were 238 deaths in the state of Mississippi as a direct or indirect result of Katrina, with 97 deaths in Harrison County alone.²⁴⁸ The majority of these deaths were caused by the storm surge.²⁴⁹

The hurricanes of 2005 were the source of “unprecedented destruction,” beginning with Hurricane Cindy on July 6th; peaking with Katrina, on August 29th; and ending with Hurricane Rita, on September 24th. According to the United States Army Corp of Engineers, coastal Mississippi was impacted by the greatest tidal surge that has hit the mainland of the United States in recorded history.²⁵⁰ The extent of the storm surge is shown in Map B-13.

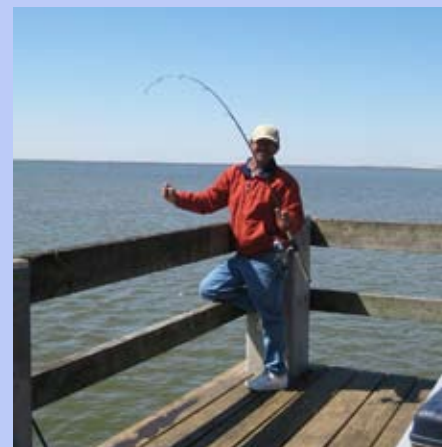
The Harrison County coast stretches 26 miles between the Bay of Saint Louis and the Bay of Biloxi. The shore is protected by a concrete

Figure B-38. Bayou Portage has strong potential for recreational canoeing.



Source: Jung-Chen Huang

Figure B-39. Tourist fishing on a beach pier.



Source: Remya Kumar

Figure B-40. Canoeing is a popular activity for tourists.



Source: Jerry Landrum

step-type seawall, constructed between 1926 and 1928. The seawall is typically eight to 11 feet above sea level, except for 13 miles where it is five feet above sea level. In 1951, an artificial beach was constructed as well. Cat Island, West Ship Island, East Ship Island, and other portions of the Gulf Islands National Seashore are located 10 miles offshore. Deer Island is just offshore from Biloxi and shelters both Biloxi and Biloxi Bay. A peninsula separates the Back Bay of Biloxi and the Mississippi Sound. The Back Bay of Biloxi is a landlocked, mile-wide westward continuation of Biloxi Bay that parallels the coast for 10 miles. The islands provide protection from hurricane winds and storm surges and are essential to maintain the quality of the estuarine conditions in the Mississippi Sound.²⁵¹

The Barrier Islands have lost land mass from both natural and man-made causes. West Ship Island and East Ship Island, especially, suffered from Hurricane Camille and the dredging of two ship channels from Pascagoula and Gulfport. The islands lost further land mass as a result of Hurricane Katrina. The majority of the islands are in the boundaries of the Gulf Islands National Sea Shore.²⁵² East Ship Island is shown in Figure B-43. If the islands are destroyed, the sound will take on marine characteristics and threaten the viability of the estuarine seafood industry.²⁵³

Existing Hurricane Mitigation Plans

In response to Hurricane Katrina, the Mobile District of the United States Army Corp of Engineers released an Interim Plan with near-term recommendations in 2006. These recommendations are focused on the restoration of critical infrastructure and the protection of critical environmental resources in Hancock, Jackson, and Harrison counties. All of the projects have been accepted and funded. There are three near-term improvement projects in Harrison County: the Long Beach canals flood damage reduction, the Harrison county beaches and ecosystem restoration and hurricane storm damage reduction, and the Courthouse Road flood damage reduction and ecosystem restoration.²⁵⁴ Surveying of the first project

Figure B-42. Hurricane Katrina caused catastrophic damage.



Source: Jennifer Evans-Cowley

Figure B-43. East Ship Island.



Source: Elise Yablonsky

in Jackson County began in late February. The next project to begin in Harrison County is the Long Beach project, for which the start date is not yet known.²⁵⁵

The Long Beach project includes replacing the 28th Street Bridge, modifying the geometry of canals two and three, and constructing an earthen berm and diversion channel at the upper limit of canal two. At an estimated cost of \$23.4 million, these actions are expected to improve flood water conveyance, improve the aesthetics of the area, and increase circulation for improved water quality and aquatic habitat.²⁵⁶

The Harrison County beaches and ecosystem restoration and hurricane storm damage reduction calls for the restoration of 26 miles of dune systems. The beach will also be reconstructed with an estimated 681,000 cubic yards of dune sand, fencing along a 134,000-foot perimeter, and planting of roughly 125 acres of native vegetation. The project will provide scarce dune habitat, generate an estimated \$4.7 million in average annual recreation benefits, stabilize the beach from erosion, and provide secondary storm damage reduction. The estimated cost is \$13.6 million.²⁵⁷

The Courthouse Road flood damage reduction and ecosystem restoration project includes replacing 14 stormwater wall braces along 235 feet of the Courthouse Road drainage channel and restoring one-third of an acre of marshland adjacent to the channel. The bracing will prevent collapse of the channel's concrete walls. Marsh restoration will provide stormwater management benefits through improved water quality with nutrient uptake and stabilization. It will also provide valuable habitat. The cost is estimated to be \$520,000.²⁵⁸

The Mobile District of the Army Corps of Engineers is also currently considering a plan to restore the Barrier Islands to Pre-Camille conditions. If the Barrier Islands are restored, Army Corps of Engineers modeling predicts a 5 to 10 percent reduction of storm surge in Gulfport and Biloxi. The Army Corps is also considering ecological restoration on the islands, including restoration of the marshlands and sounds.²⁵⁹

Floods

Flooding is another primary risk for Harrison County. The principal flood problems are found on the coastal areas along the Mississippi Sound, Bay of Saint Louis, and the Back Bay of Biloxi. These areas experience coastal storm surge, flooding, and wave action from hurricanes and tropical storms. Figure B-44 illustrates residential development along the Bay of Saint Louis. The lower portions of the Biloxi River, Wolf River, Tchoutacabouffa River, and other small streams and drainage ways also flood as a result of coastal storm surges. Properties along the coastal bayous are the most susceptible to flooding. Harrison County rivers are also subject to flooding as a result of heavy rainfall. Harrison County has four principle river systems: the Tchoutacabouffa, Tuxachanie, Biloxi, and Wolf Rivers.²⁶⁰ Low-lying areas and areas with inadequate drainage may also flood during heavy rainfall as a result of ponding.²⁶¹

Harrison County and its five municipalities participate in the National Flood Insurance Program (NFIP). The Federal Emergency Management Agency (FEMA) publishes Flood Insurance Rate Maps (FIRM) and requires homeowners to elevate their homes in Special Flood Hazard Areas (SFHAs) to qualify for the NFIP. FEMA divides SFHAs into several insurance zones based on the level of flood risk. The two main zones are “V” and “A.” “V” zones identify Coastal High Hazard Areas that have greater restrictions on building than “A” zones, which are lower hazard areas. Restrictions are dependent upon Base Flood Elevations (BFEs), as determined by FEMA. The NFIP requires flood proofing, or retrofitting to reduce flood damage, when losses exceed 50 percent of the economic value of the property.²⁶² The floodplain map for Harrison County is shown in Map B-7.

Another component of the NFIP is the designation of repetitive flood loss properties. The NFIP describes a repetitive flood loss property as “one from which two or more claims for flood damages exceeding \$1,000 have been paid in the previous ten years.”²⁶³ FEMA estimates that repetitive flood losses account for approximately 40 percent of all flood insurance claims. In 2001, approximately 27 percent of the privately owned parcels in Harrison County were located in recognized flood hazard areas. The majority of repetitive flood loss properties are the result of flooding along the Tchoutacabouffa River and its tributary, the Tuxachanie Creek; the Wolf River; and Johnson and Mallini Bayous.²⁶⁴ Most NFIP payments for flood losses in Harrison County have come from freshwater flooding in the wake of a hurricane.²⁶⁵

The current, effective FIRMs for Harrison County were adopted August 4, 1988 and revised October 4, 2002 to reflect the updated corporate limits of the City of Gulfport, due to annexations. Hurricane Katrina caused such extensive damage that FEMA is reevaluating the Base Flood Elevations (BFEs), which are used to determine the various insurance zones, and it will also revise its FIRMs. The project is being performed as part of a national Flood Map Modernization effort. The endeavor is an effort of FEMA, the Mississippi Emergency Management Agency (MEMA), the Mississippi Department of Environmental Quality (MDEQ), county and local governments, and contractors. The major phases of the flood mapping process are the mapping needs assessment, project scoping, data development and floodplain mapping, and preliminary/post-preliminary processing.²⁶⁶

The preliminary Digital Flood Insurance Rate Maps (DFIRMS) and Flood Insurance Study (FIS) delivery occurred in November of 2007. The DFIRMS for Harrison County are currently in review. At the time this plan was prepared, FEMA had not finalized post-Katrina FIRMs. The start

Table B-32. Hurricanes Affecting Harrison County, 1901-2005

Year	Name	Saffir-Simpson Rating	Deaths	Wind Speed	Property Damage	Height Surge
1901	Unnamed	4	350	131+	Severe	12.0'
1915	Unnamed	4	275	131+	Severe	11.8'
1947	Unnamed	4	51	131+	Severe	15.0'
1965	Betsy	3	75	111+	Considerable	12.0'
1969	Camille	5	256	190+	Catastrophic	24.2'
1979	Bob	1	0	75	Minor	6.3'
1979	Frederick	3	0	128	Considerable	(-) 3.0'
1985	Elena	3	0	125	Considerable	5.0'
1985	Juan	1	0	75 +/-	Minor	(0.0)
1998	George	2	0	96+	Considerable	10.0'
2005	Katrina	3	238	117	Catastrophic	27.8'

Source: National Hurricane Center- Historic Hurricane Data

Table B-33. Critical Infrastructure, 2007

Infrastructure	Risk	Reason
Emergency Communications Towers	Low	There is good buffer at all site and nominal smoke and fire risk.
Water Towers	Low	The structures have a low potential for ignitability, because they are well-maintained and have good buffers.
All Volunteer Fire Departments	Low	There is little risk for smoke or fire at the station locations.
Kansas City Southern Railroad	Medium	The right-of-ways are cleared regularly along the Kansas City Southern Line, but should a wildfire occur, there is potential for severe damage.

Source: Southern Mississippi Planning and Development District, 2007

Table B-34. Vulnerable Facilities, 2007

Facility	Risk	Reason
High Pressure Gas Stacked Line	Low	The site has some grass, but little underbrush.
Fazzio Feed Store	Medium-High	There is a large amount of hazardous material on site and there is near a wooded area.
Propane Storage (West of CC Camp Road on Highway 53)	Medium-High	The tanks are old and have a high risk of leakage.
Propane Storage (J.P. Ladner Road, west of Vidalia Road)	Medium-High	The site is surrounded by a wooded area.
Propane Storage (West side of Highway 49, north of Saucier)	Medium-High	No reason given.
Advance Disposal	Low	There is a low ignitability factor. Despite the 10,000-15,000 gallons of diesel stored there, and there is a buffer between the site and the forest.

Source: Southern Mississippi Planning and Development District, 2007

Figure B-44. Residential Development along Saint Louis Bay.



Source: Megan Dunton

Figure B-45. The Wildland-Urban Interface in the De Soto National Forest.



Source: Jay Boykin, De Soto National Forest

Figure B-46. Aerial photograph of a prescribed burn in the De Soto National Forest.



Source: Jay Boykin, De Soto National Forest

Table B-35. Areas of Community Importance, 2007

Facility	Risk	Reason
Harrison Central High School	Medium	There is a slight smoke risk, with no fire risk; because the school functions as a shelter it is at medium risk.
Lizana Elementary	Medium	There is a slight smoke risk, with no fire risk; because the school functions as a shelter it is at medium risk.
West Wortham Elementary and Middle School	Medium	There is a slight smoke risk, with no fire risk; because the school functions as a shelter it is at medium risk.
North Woolmarket Elementary and Middle School	Low	The school has little smoke or fire risk.
St. Patrick High School	Low	The school has little smoke or fire risk.
De Soto National Forest	Low	The forest is well-maintained and undergrowth is removed by the Mississippi Forestry Commission.

Source: Southern Mississippi Planning and Development District, 2007

Table B-36. Elderly, Disabled, and Low-Income Populations in Harrison County

	2000	Percent	2006	Percent
65 years and over	21,002	11.10	21,773	12.70
Disability Status, 5 years or older (includes sensory, physical, mental, self-care, or go-outside-home disabilities)	40,495	24.40	27,491	18.00
Individuals Below Poverty Level	26,597	14.60	24,922 ⁴	14.50

Source: US Census Bureau (2000) and US Census Bureau, American Community Survey (2006)

Table B-37. Limited Mobility Populations in Harrison County

	2000	Percent	2007	Percent
0 Vehicles Available	4,709	6.60	2,511	3.30

Source: Experiean/ Applied Geographic Solutions, SRC, LLC

of the 90-day community appeal dates were January 26, 2008 to April 25, 2008.²⁶⁷ The DFIRMS are currently in review. When the DFIRMS become effective, they will supersede the current FIRMS.

Wildfires

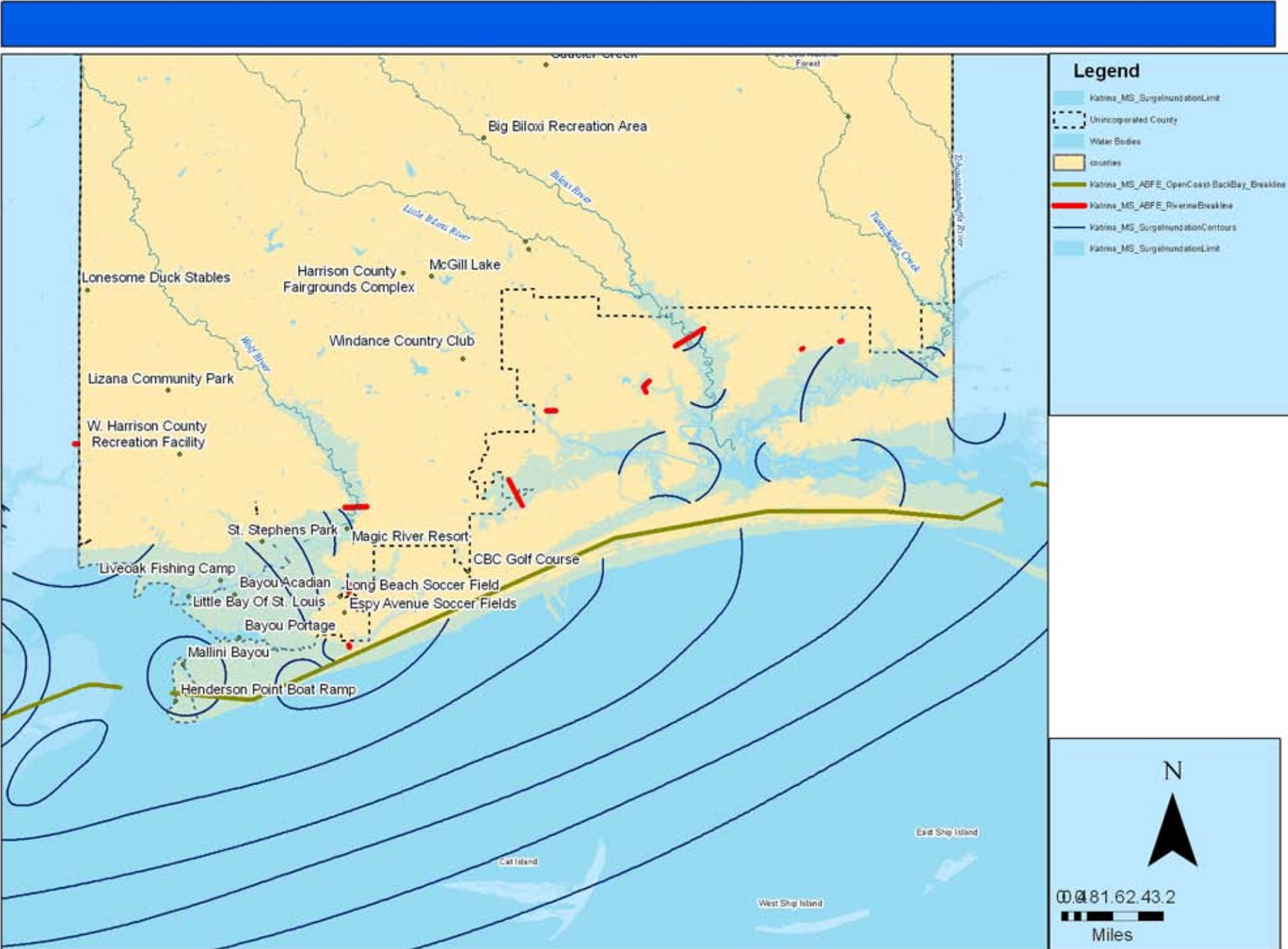
Harrison County experienced a total of 243 fires in 2000, 116 fires in 2001, 87 fires in 2002, 87 fires in 2003, 67 fires in 2004, 105 fires in 2005, and 206 fires in 2006, as shown in Map B-14. By mapping fire and fire causes from 2000-2006, there are clear areas with a high occurrence of wildfires. The high occurrence wildfire areas are based on a computer calculation to compare fire occurrences with the surrounding area.²⁶⁸ Approximately 47 percent of Harrison County fires, or 279 of the 600 fires from 2000-2004 were caused by arson.²⁶⁹

Climate conditions, debris, and certain industrial operations and facilities can increase the threat of fire. Harrison County has relatively high annual precipitation amounts, receiving between 55 and 64 inches annually; however, December 2006 through May 2007 was the driest December through May in the 113 years of recorded data for Harrison County. Further, the December through May period has been drier than average for seven of the past nine years. In addition to arson and natural fires, major transportation arteries, including Interstate Highway 10, Interstate Highway 110, US Highway 49, and US Highway 90, transport flammable, toxic, and explosive materials daily, exposing the county to potential transportation incidents involving hazardous materials.

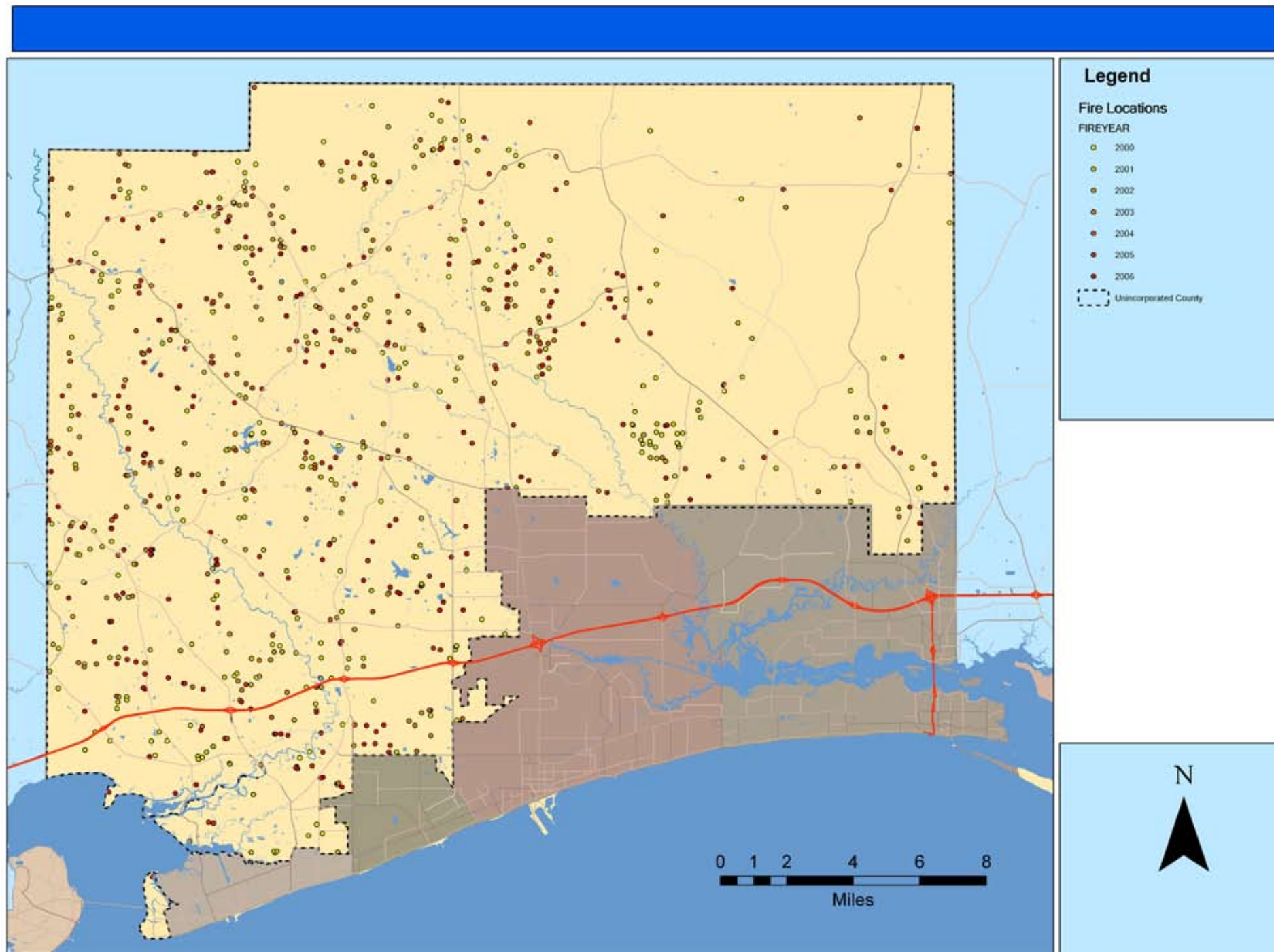
Wildfire Mitigation Plans

In late 2006, the Mississippi Forestry Commission and the Nature Conservancy commissioned the preparation of wildfire protection plans for the fifteen southern counties in Mississippi. The plans are an effort to address the impacts of Hurricane Katrina and increasing development on the Wildland-Urban Interface (WUI).

The WUI represents the area where structures and development merge with undeveloped wildland or vegetative fuels. Figure B-45 shows residential development in the De Soto National Forest as an example of the WUI. Harrison County has developed a *County Wildfire Protection Plan* (CWPP) that identifies priorities for the protection of life, property, and critical infrastructure in the WUI. The WUI extends a half mile from existing municipal boundaries and includes other developed areas within the county not adjacent to municipalities. The *Plan* includes Geographic Information System-produced maps, a County Risk Assessment, a Mitigation Projects List, Structure Ignitability Recommendations, and an Action Plan and Assessment Strategy.²⁷⁰



Map B-13. Hurricane Katrina Storm Surge
 Source: The Ohio State University



Map B-14. Harrison County wildfires, 2000-2006
 Source: Southern Mississippi Planning and Development District

The CWPP identifies county areas at risk of wildfire, including critical infrastructure, facilities, and areas of community importance. The County Risk Assessment considers fuel hazards, frequency of fire occurrence, vulnerability of development and infrastructure, and emergency preparedness. The wildfire risk levels for critical infrastructure, vulnerable facilities, and areas of community importance are shown in Table B-33, Table B-34, and Table B-35 respectively.

Figure B-46 shows an aerial photograph of a prescribed burn conducted by the De Soto National Forest to reduce vegetated fuels at risk for wildfire. In addition to the areas above, the Canal Road area, north and south of Interstate Highway 10, is an area of concern at medium risk. The CWPP also recommends three county-level goals: developing a homeowner education program, encouraging large developments to become Firewise USA Communities, and implementing a maintenance program to eradicate and control Cogon grass.²⁷¹

County Hazard Mitigation Resources

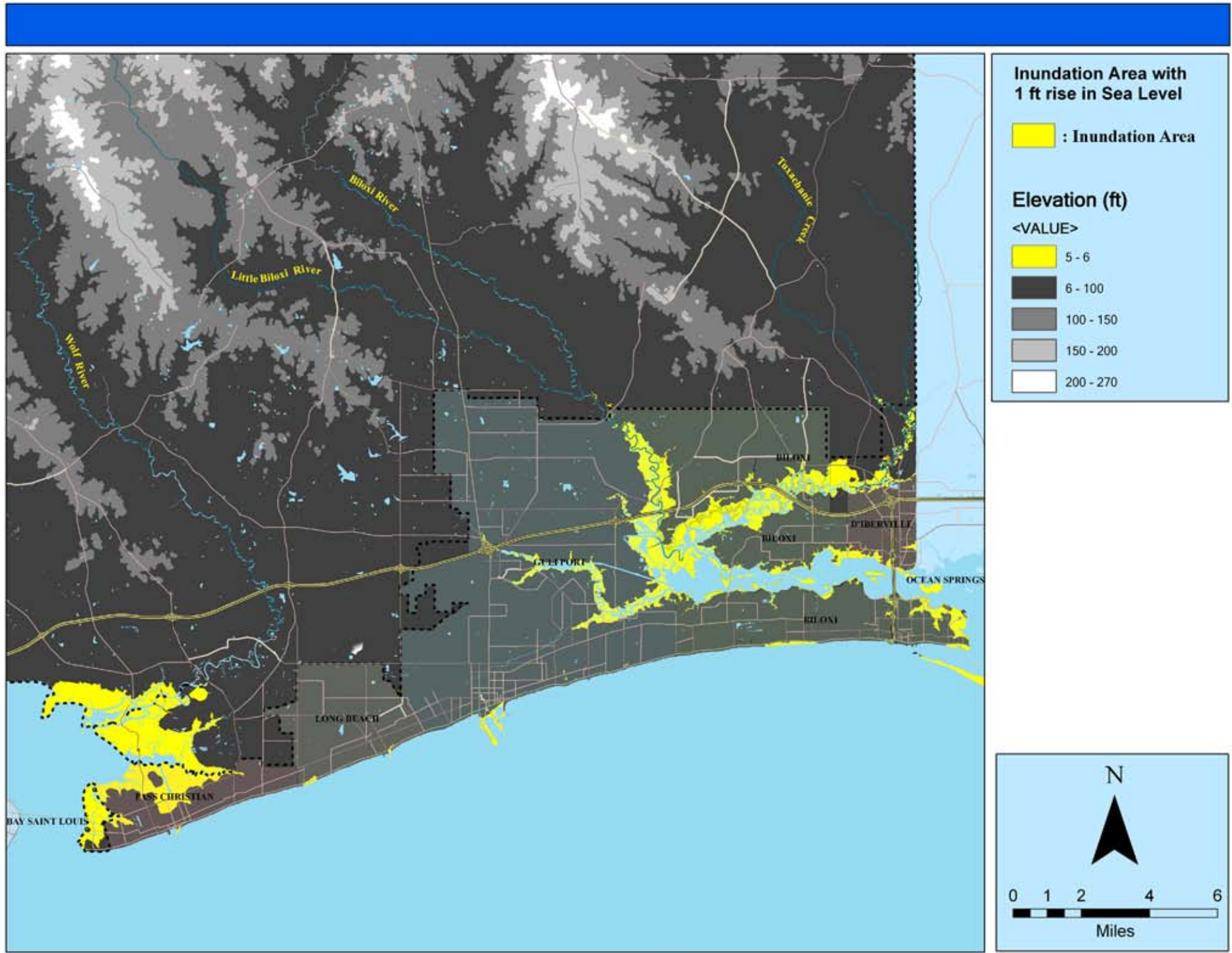
Harrison County Health Resources

The Mississippi Department of Health (MDH) offers many resources in the event of an emergency. The MDH Family Preparedness Guide and the Disaster Plan template are both available at their website.²⁷² The MDH also maintains a Volunteer Registry of all health professional volunteers willing to respond to public health emergencies.

Emergency Shelters

In response to lessons learned from Hurricane Katrina, the Federal Emergency Management Agency (FEMA) has developed a new set of design standards for certified emergency shelters, known as FEMA 361. To meet FEMA 361 criteria, shelters must have a wind resistance rating of 150 miles per hour. Harrison County will build its shelters to withstand 200-mile-per-hour winds. There is a minimum space requirement of 10 square feet a person for a short-term shelter and 20 square feet a person for a long-term shelter. The structures must also include on-site water management, waste management, and power generator capabilities.

Harrison County is currently building six FEMA 361 shelters. Two will primarily serve Gulfport and Long Beach and the other four will be dispersed throughout unincorporated Harrison County. Two will be stand-alone shelters, which are reserved for shelter use only. The locations of the stand-alone shelters are Old Egg Farm and Success Community Center. The two stand-alone shelters are projected to serve 2,000 residents each. The other FEMA 361 shelters will be school shelters. West Harrison High



Map B-15. Potential Impact of a One-Foot Rise in Sea Level

Source: Ohio State University

School and D'Iberville High School, both scheduled to open in 2008, will serve 5,000 people each. The County predicts that the new shelters will serve up to 20,000 residents in the case of an emergency.²⁷³

At-Risk Populations

In the event of hazards, the health and safety of Harrison County residents is of utmost importance. There are vulnerable populations that may be of particular concern during emergency operations, specifically, the elderly, disabled, persons of lower income, military personnel and their dependents, tourists and visitors, and those with limited mobility, such as persons without cars (shown in Tables B-36, B-37, and B-38, respectively).

The elderly and the disabled are considered especially vulnerable due to mobility limitations. Lower income persons are at risk because of limited financial resources available for preparations to protect property, evacuate, or recover. Further, the housing conditions of low-income residents are often substandard and cannot withstand high winds. Military personnel and their dependents are also considered at risk. Thousands of military personnel are stationed at the Harrison County military installations, and many have never experienced the hazards specific to Mississippi, including hurricanes. Harrison County is home to the Keesler Air Force Base, the Air National Guard Base in Gulfport, and the Naval Construction Battalion Center in Gulfport. Temporary populations, like tourists and visitors, are often unaware of risks and may not learn about the threats as quickly as full-time residents.²⁷⁴ The Biloxi-Gulfport area receives 3.6 million visitors annually.²⁷⁵

Climate Change

The variability and extremes of the Mississippi climate may intensify with climate change. There is considerable uncertainty as to whether or not climate change will bring about wetter or drier conditions. There is a consensus that sea level rise will have significant impacts on the Mississippi coastline. Global sea level rose at an average rate of 0.07 inches per year from 1961 to 2003, with a 0.12 inches rise per year from 1993 to 2003. The Intergovernmental Panel on Climate Change (IPCC) estimates that the global sea level will rise 7.2 to 23.6 inches by the end of the century.²⁷⁶ Local subsidence along the Gulf Coast makes sea level rise more dramatic than the global average.²⁷⁷ In Mississippi, sea level is expected to rise 15 inches by 2100, considering average subsidence rates and using a mid-range sea level rise scenario.²⁷⁸ Map B-15 shows the predicted effect of a one foot rise in sea level for Harrison County. A rise in sea level could contribute to loss of coastal wetlands, erosion of beaches, and saltwater contamination

of drinking water.²⁷⁹ In 2001, coastal areas in Mississippi were predicted to be at a greater risk of hazards, especially coastal storms, due to climate change.²⁸⁰ Sea level rise is expected to generate higher storm surges from all storms, including storms that are currently classified as minor.²⁸¹

Climate change will likely carry economic implications for both natural resources and tourism. The managed shortleaf and loblolly pine tree forests industry is particularly susceptible to climate change in the case of both drier or wetter conditions. Drier conditions will bring about higher vulnerability to drought and fires, as well as the expansion of savannas and grasslands at the expense of forest areas. In the case of wetter conditions, there would be decreased productivity of hardwoods; an increased risk of forestry pests, such as the southern pine bark beetle; and the spread of invasive species, such as Cogon grass and tropical soda apple, due to disturbance from storms.²⁸²

Climate change may also impact the economic health of Mississippi by affecting the tourism industry. Sea level rise will likely increase coastal erosion and require significant investment to maintain beaches. A rise in sea level is also expected to contribute to wetland loss, reducing the habitat for wildlife and impacting hunting, trapping, and recreational fishing.²⁸³ Input from local rivers flowing into estuaries, bays, and lagoons may decrease in the future due to decreased precipitation. The drop in fresh water input, combined with the expected increase of demand for fresh water with increased population, will likely result in problems with extreme salt concentrations, less nutrient input, less frequent fishing, and, thus, overall lower water quality in near-shore resources. If coastal wetlands are able to migrate inland as sea levels rise, estuarine-dependent fisheries will either increase or decrease as the habitat changes over time.²⁸⁴ Coastal development lessens the ability of wetlands to migrate inland, which may lead to drastic reductions in wetlands as sea levels rise.²⁸⁵ Harrison County's freshwater resources will likely be stressed by residential and industrial needs, irrigation, and prevention of salt water intrusion on coastal aquifers.²⁸⁶

TRANSPORTATION

The manner in which Harrison County residents live, work, shop, and recreate is changing significantly. Energy supply, household composition, age of the population, and employment opportunities have affected the way the county has grown and developed. It is expected that these growth and development trends will continue into the foreseeable future, impacting transportation within and beyond Harrison County.

This chapter will discuss the existing and planned transportation network and modes of transportation within Harrison County. The extent of the study area will include all areas of the county with the exception of those areas within the corporate limits of Biloxi, D'Iberville, Gulfport, Long Beach, and Pass Christian. This Plan encourages coordination with surrounding

Table B-38. Keesler Air Force Base Populations

	2007
Keesler Military/Civillian Employees	10,305
Keesler Military Family Members	4,600
Military Retirees in Catchment Area	29,516
Military Retiree Family Members	44,274
Total	88,695

Source: Keesler 2007 Economic Impact Statement

communities, the Gulf Regional Planning Commission, and the Mississippi Department of Transportation.

Roadway Classification

The Mississippi Department of Transportation (MDOT) provides separate roadway functional classification systems: urban and rural. The urban system is designated for use in large urbanized areas with populations exceeding 50,000. It can also be used in small urban areas with a minimum population of 5,000. All other areas, such as the unincorporated areas of Harrison County, fall under the rural classification system (see Map B-16).

The rural classification system consists of four main roadway categories: rural principal arterials, rural minor arterials, rural collectors, and local roads. Rural principal arterials are sub-divided into interstate highways and principal arterials.

Interstate Highway 10 is a four-lane divided highway with limited access that crosses Harrison County approximately five miles north of US Highway 90. The only rural classified section of Interstate Highway 10 runs between the Hancock County Line and the western city limit of Gulfport; the remainder is classified as an urban section. State Highway 67 and US Highway 49 are the two other rural principal arterials within the unincorporated areas of Harrison County. US Highway 49 is a four-lane divided highway with at-grade access that traverses north-south, dividing the county roughly in half. State Highway 67 runs from US Highway 49 to State Highway 15 through the eastern part of the county. It is also a four-lane divided highway and it crosses through the De Soto National Forest. State Highway 67 is in the State Scenic Byways program.

The only urban classified roadway within the study area is the two-and-one-half miles of US Highway 90 between the Hancock County line and the western border of Pass Christian. US Highway 90 is a four-lane divided highway

that runs east-west along the Mississippi coast. It is an important connection from Harrison County across the Bay of Saint Louis to New Orleans and the Biloxi Bay to Pascagoula.

Travel Demand

Harrison County has recently experienced considerable growth in its residential, commercial, and entertainment sectors. This growth is expanding northward, transforming the county from a rural setting to an area bursting with development. Travel within Harrison County is affected by the type, intensity, and distribution of land use. Population, employment, and tourism are important elements of demand on county roadways.

Over 90 percent of Harrison County residents travel to work in a personal vehicle alone, or as part of a carpool.²⁸⁷ Two-thirds of Harrison County residents commute more than 15 minutes to work. Keesler Air Force Base, the Naval Construction Battalion Center, and Beau Rivage Casino are the county's three biggest employers,²⁸⁸ and they encourage a significant amount of travel to and from Biloxi and Gulfport. This also results in a considerable amount of traffic present on Interstate Highway 10, as well as on US Highway 49, State Highway 15, State Highway 53, and State Highway 67 (see Map B-16). With the continued growth and further expansion northward, significant increases in daily traffic numbers can be expected.

Transportation Improvements

In anticipation of growth, the Mississippi Department of Transportation (MDOT) has undertaken several projects in northern Harrison County. These include new highways, upgrades of existing highways, and planning for future construction. Following Hurricane Katrina, MDOT is also in the process of rebuilding several key structures throughout the Harrison County transportation network, including the Biloxi-Ocean Springs Bridge and the Saint Louis Bay Bridge.

One project of major importance is the reconstruction of US Highway 90. MDOT made emergency repairs to the roadway to address damages caused by Hurricane Katrina, including the installation of temporary traffic signals at various locations. Projects currently underway will replace the temporary signals with permanent, state-of-the-art signals, mill and overlay the roadway, and remove and replace the curb and sidewalk (see Figure B-47). In February 2006, MDOT awarded the project to replace the US Highway 90 bridge over the Bay of Saint Louis which was completed in January 2008 (see Figure B-48).

Another substantial project is the completion of State Highway 67 (see Figure B-51), scheduled for 2009, which has been designated as a State Scenic Byway. Also, MDOT's 2007-2012 Statewide Transportation Improvement

Program includes improvements to US Highway 49. MDOT plans to add two lanes to US Highway 49 from O'Neal Road to north of School Road, with construction scheduled to commence in 2009.

The East Harrison County Connector Highway is planned to help relieve some of the congestion on Harrison County roads. The project will begin at Interstate Highway 10 at the Woolmarket/State Highway 67 Interchange, joining at the mid-point between Cowan-Lorraine Road and the Interstate Highway 110 Interchange, and end at US Highway 90.

MDOT is in the early stages of planning for the Central Harrison Connector, the eventual State Highway 601, as part of Vision 21 (see Table B-39). Vision 21 is a needs-based highway program passed by the Mississippi Legislature during the 2002 session.²⁸⁹ State Highway 601 is proposed to be a four-lane, divided, limited-access facility between the State Port at Gulfport in Harrison County and Wiggins in Stone County. Located within the southern portion of the state, the proposed State Route 601 Corridor would parallel and/or utilize existing segments of US Highway 49, providing a bypass of US Highway 49 at its most heavily congested areas. The project will be broken into three phases. The first two phases are to build the section of the highway from Interstate Highway 10 to Pass Road, and the third phase is to build the section from Pass Road to US Highway 49. It is predicted that this roadway will alleviate traffic on US Highway 49, remove truck traffic from local streets, and provide better access to the port and the Gulfport central business district by making a new connection between Gulfport and Interstate Highway 10.²⁹⁰

The Gulf Regional Planning Commission (GRPC) and local communities are also considering opportunities for a new corridor that would run east and west through Pass Christian and Long Beach, eventually connecting to the planned Mississippi Route 601. This new corridor would aid in moving industrial traffic associated with the Pass Christian and Long Beach industrial parks onto the new Route 601 and relieve traffic pressure from Menge Avenue.

The GRPC is working with communities to

identify a potential location for the West Harrison County Connector between US Highway 90 and Interstate Highway 10. This corridor would be east of Canal Road, and it would improve traffic flow north and south through Harrison County. The plans are for a four-lane highway with portions elevated.

The GRPC is responsible for the institution of a transportation planning process. The Transportation Improvement Program (TIP) is the process by which transportation resources are divided among the various operational needs. Several transportation projects in unincorporated Harrison County have funding allocated or earmarked in the current for fiscal years 2007-2012 (see Table B-40), and many more are programmed for Harrison County municipalities.

The Gulf Regional Planning Commission has also developed the *2030 Long Range Transportation Plan*. Embodied in the plan is the 2030 Mississippi Gulf Coast Area Transportation Study (GCATS). GCATS has established a list of potential projects to be evaluated for development, a number of which are included in the *2030 Roadway Project Staged Improvements Plan* (see Table B-41).²⁹¹

Transit

Coast Transit Authority (CTA) provides transit service along the Gulf Coast in Biloxi, Gulfport, and Ocean Springs, with limited service in unincorporated Harrison County. Eight fixed routes are provided, two of which only operate in the evenings and on weekends. A trolley service was also available prior to Hurricane Katrina, although its intended use was mainly for beachfront tourists. Two specialized services are also offered for Keesler Air Force Base, which is designed for shopping trips for base personnel in the evenings and on weekends. CTA also provides senior citizen service in Hancock and Harrison Counties, funded by these two county governments. The service was non-emergency, curb-to-curb service that was limited to such specific trip purposes as medical appointments, grocery shopping, and travel to and from senior centers.²⁹² Following Hurricane Katrina, it became obvious that public transportation

Table B-39. Harrison County Vision 21 projects

Route	Termini	Stage of construction
State Highway 67	Interstate 110 to Cowan-Lorraine Extension	Under construction
State Highway 601	Interstate 10 to US 49 near Saucier	Preliminary engineering
State Highway 601	Interstate 10 to State Route 26	Preliminary engineering
State Highway 605	US 90 to I-10	Preliminary engineering

Source: Mississippi Department of Transportation

needed to be a higher priority for the community. Public transportation is a necessity for a mobile labor force, senior citizens, people with disabilities, low-income families, and others relying on transit. Public transportation service enhancements and infrastructure improvements are needed to allow the Gulf Coast to compete with other communities and resort destinations across the United States for businesses, jobs, and tourism. The *Gulf Coast Transit Development Plan*, completed in April 2007, was developed to actively address these needs.

The first goal of this plan is recovery from Hurricane Katrina. Several additions and modifications will be made to routes as ridership returns to pre-Katrina levels. CTA will be replacing its entire fleet of buses with new ADA-accessible, low-floor buses. In the interim, a timed-transfer system has been put into action to reduce long wait times between connecting buses.²⁹³ The Gulfport Transit Center sustained a great deal of damage due to Hurricane Katrina and has been closed for repairs. It is scheduled to re-open in April 2008. The new Biloxi Transit Center was under construction before Hurricane Katrina and has been re-opened (see Figure B-52).²⁹⁴

The second goal of the *Plan* is rebuilding. Immediate steps in the rebuilding effort include improving service frequencies on key routes; expanding service coverage to un-served, transit-supportive areas; introducing demand-response services to outlying rural areas; and expanding the worker van pool and ride-sharing programs. Route performance will be examined regularly to assess efficiency, service effectiveness, cost effectiveness, and revenue effectiveness.²⁹⁵ Beach comfort

stations are waiting on additional funding from the state to replace the old structures with stations incorporating sturdier design elements. New trolleys are also being purchased for the Casino Hopper and Beach Comber routes intended for tourists. These improvements will be in place by 2009 at the earliest.²⁹⁶

Renewal is the final, long-term goal of the *Transit Development Plan*. These goals represent a strong community desire to implement a multimodal network of transit services. These services would include streetcars or historic trolleys along Beach Boulevard (US Highway 90), rapid transit providing east-west service between Waveland and Pascagoula, and regional high-speed rail service along the CSX Transportation railroad alignment. Substantial community support and local funding from various sources would be required to put these renewal plans into place.²⁹⁷

Bicycle/Pedestrian Facilities

There are currently limited pedestrian and bicycle facilities. A majority of the roads are two-lane with no paved shoulders, which present access and safety issues. It is evident that non-motorized transportation modes, such as cycling and walking, are becoming viable alternatives to motor vehicles and there are several opportunities for pedestrian and bicycle activity in Harrison County. State Route 605 includes the Gulf Coast's first designated bicycle lane (see Figure B-55). Some subdivisions in Harrison County include sidewalks. Prior to Hurricane Katrina, an eight-mile wooden boardwalk ran along the beach from Henderson Point eastward. In addition to these officially

Table B-40. Harrison County transportation improvement projects

NEED ID/Earmark	Roadway	Extent	Responsible Agency
31	MLK Jr. Ave	US 49 to Kentucky Ave.	Harrison County
Earmark 2008	ITS Deployment	County wide	Harrison County Sheriff's Department
Earmark 2008	Tri County Automated System	County wide	USM
Earmark 2008	Harrison County Multimodal Facility	County wide	Coast Transit Authority
Earmark 2008	STP demo		Coast Transit Authority
Anticipated Earmark 2008	Harrison County East-West Multi-modal Connector	Environmental Study	Gulf Regional Planning Commission

Source: Mississippi Gulf Coast Metropolitan Planning Organization

Table B-41. GCATS projects in unincorporated Harrison County

Roadway	Limits	Suggested Improvements	Evaluation
Landon Road	Canal Road to County Farm Road	Super 2-lane or 3-lane/ 2-lane divided avenue	Minimal existing congestion, minor future congestion concerns
Beatline Road	County Farm Road to Railroad Street	4-lane boulevard	Provides congestion relief on adjacent corridors, access to economic district and intermodal facility, helps area with evacuation and roadway safety concerns
County Farm Road	I-10 to Beatline Road	4-lane boulevard	Provides congestion relief on adjacent corridors, access to economic district and intermodal facility
Canal Road	I-10 to 56 th	Super 2-lane or 4-lane boulevard	Major future capacity concerns, significant regional impact
Canal Road	56 th to 28 th	Super 2-lane or 3-lane/ 2-lane divided avenue or 4-lane boulevard	Major future capacity concerns, significant regional impact

Source: Gulf Regional Planning Commission

designated pedestrian and bicycle facilities, bicyclists regularly use the county's roads; examples include Menge Avenue (see Figure B-54), Beatline Road, and US Highway 90.

In unincorporated Harrison County, the 2030 Long Range Transportation Plan calls for a bicycle route on Beach Boulevard from Henderson Point to Pass Christian. The plan also calls for bicycle connections between Biloxi and the De Soto National Forest.

Access to Markets

Roads

Interstate Highway 10 is a major economic corridor that stretches coast to coast across the southern

United States. The corridor spans eight states: California, Arizona, New Mexico, Texas, Louisiana, Mississippi, Alabama, and Florida. According to information from the National I-10 Freight Corridor Study, the economic impact of freight transported along the corridor is \$1.38 trillion dollars.⁶²

Seventy-seven miles of Interstate Highway 10 traverse the Mississippi Gulf Coast through Hancock, Harrison, and Jackson counties. This roadway connection provides access to markets across the United States for regional businesses. Maps of truck flows through Mississippi from Interstate Highway 10 correspond to the region's market area, showing the majority of freight moving from the state heads to locations within a 500 mile market area around the region.⁶³ Louisiana, Arkansas,

Tennessee, and Alabama are entirely located within this radius as are portions of Texas, Missouri, Illinois, Indiana, Kentucky, North Carolina, South Carolina, Georgia, and Florida.

Airport

Several airports and airfields serve the Mississippi Gulf Coast. Five of the six counties in the region have general aviation airports. George County is the only county in the region that does not. Commercial air service is provided at Gulfport-Biloxi International and at Trent Lott International in Jackson County (air taxi service). According to recent operations data, military flights take place from Kessler Air Force Base, Stennis International, and Gulfport-Biloxi International.²⁹⁸

Seven airlines provide flight services at the Gulfport-Biloxi International Airport, with an eighth airline scheduled to begin service in May of 2008.²⁹⁹ The airport completed its latest expansion in late 2007. The expansion project was completed to better position the airport for additional flights and to support regional economic development strategies focused on improving the attractiveness of the Mississippi Gulf Coast to national business and tourist markets.³⁰⁰

General improvements to the terminal have been done to enhance the airport experience of visitors, businesses, and area citizens. The project expands the terminal from 92,000 square feet to 165,000 square feet, adding room for two new gates an expanded lobby and ticket area, and larger baggage claim and security areas. The airport also gained added space for two new airlines and improved roads to and from the terminal.³⁰¹

Improvements geared to the business community better position the airport to provide faster access to markets for services and high-value or perishable products. Air cargo services have been improved by the construction of a new 40,000 facility with a 20,000 square feet chiller space, a 20,000 cargo sorting and distribution space, and office space.³⁰² In Spring 2008, the Corporex Airport Business Center will provide 100,000 square feet of Class A office space directly across from the Airport. The development will provide flex space, office-R&D and retail space for businesses who desire a near-airport location.³⁰³

Gulfport-Biloxi International is also part of Foreign Trade Zone 92. This zone offers tax advantages for imports and exports at the airport and also at the Port of Gulfport.³⁰⁴

As Figure B-49 illustrates, passenger traffic at the airport increased significantly between 1997 and 2000. Traffic declined slightly from 2000-2003, increased slightly in 2004 and decreased again after Hurricane Katrina in 2005. In 2006 traffic began to increase again. General aviation flights make up the majority of air service using the airport. Commercial air services by carrier and taxi have increased, while military flights have declined.

Figure B-47. Construction continues along US Highway 90.



Source: Megan Dunton

Figure B-48. The new US Highway 90 bridge over the Bay of Saint Louis.



Source: Megan Dunton

Rail

All of the six Gulf Coast counties are crossed by at least one Class I railway. CSX Transportation traverses the three coastal counties from Mobile in the east toward New Orleans in the west. It is one of three Class I railways serving the eastern portion of the United States. Kansas City Southern runs from the Mississippi State Port at Gulfport northwards through Harrison and Stone counties. This Class I railway provides services in 12 central and southeastern states. The Canadian National Railway, formerly Illinois Central, runs through George County between Hattiesburg and Mobile; while Norfolk Southern runs through Pearl River County heading to New Orleans. The Canadian National runs along the Mississippi River up into most of Canada; Norfolk Southern operates in 22 eastern states.³⁰⁵

Local railroads and switching/terminal railroads provide access between these Class I lines and local economic assets. Port Bienville Rail is a switching and terminal railroad that offers services from CSX to the Port Bienville Industrial Park. Mississippi Export provides local railroad service between George and Jackson Counties and Pearl River Valley railway provides local railroad access to the Norfolk line.³⁰⁶

In general, Class I railways are used to transport up to 42 percent of freight (measured in ton-miles) that moves throughout the United States. Railways transport a myriad of commodities—from lumber to food, coal to chemicals, and orange juice to automobiles.³⁰⁷

As shown in Table B-42, coal is the top commodity shipped to Mississippi. In 1999 and 2000, coal shipments to the state accounted for over 20 percent of all shipments. Chemicals and farm products were in second and third place, respectively.

Lumber and wood products are the top commodity shipped from Mississippi. In 1999 and 2000, lumber and wood products accounted for over 30 percent of all commodity shipments originating in the state. Chemicals (just over 20 percent) and pulp and paper products (just under 20 percent) were second and third respectively.

Hurricane Katrina severely damaged the CSX

Transportation (CSXT) railway which runs near the coast through Hancock, Harrison, and Jackson counties. After the Hurricane, railways able to quickly restore service were used to move supplies into the region. CSXT's rail service through the region was restored by spring of 2006.

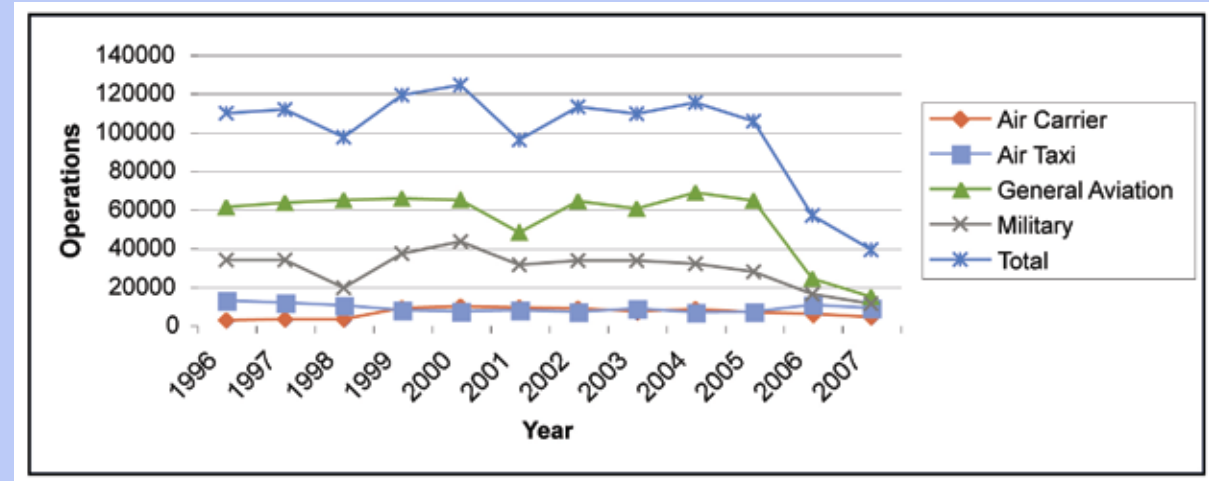
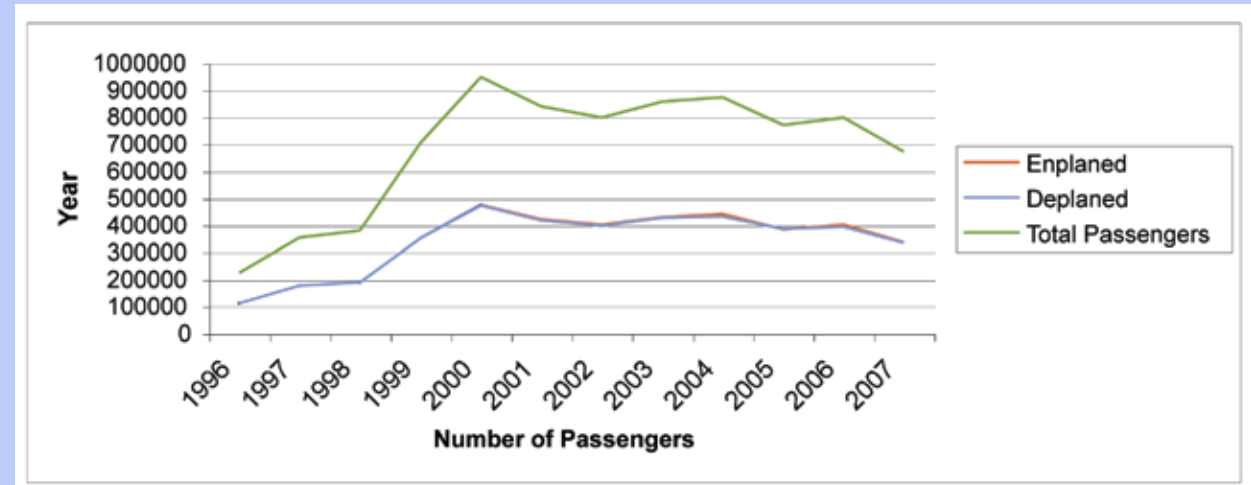
National trends in freight transportation point to a possible increase in rail shipments as companies seek to minimize their transportation costs.³⁰⁸ These trends could benefit the Class I railways serving Mississippi and offer additional opportunities for the Mississippi Gulf Coast businesses to access their markets.

Ports

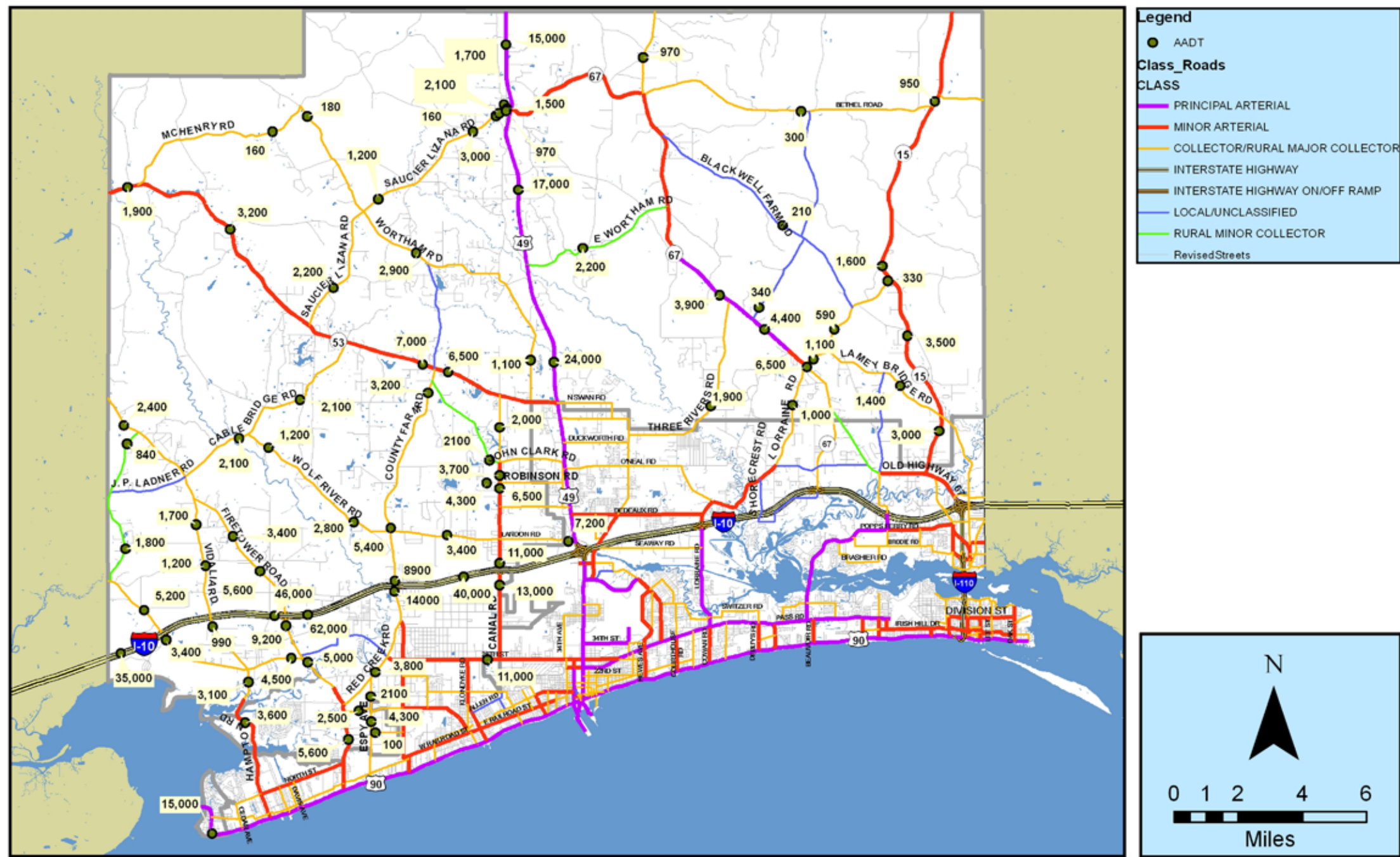
Four ports operate on the Mississippi Gulf Coast. From east to west these include the Port of Pascagoula in Jackson County, the Ports of Biloxi and Gulfport in Harrison County, and Port Bienville in Hancock County. The State of Mississippi operates the Port of Gulfport; the three others are locally owned and operated.³⁰⁹

The Mississippi State Port at Gulfport and Jackson County's Port of Pascagoula are deepwater ports. The

Figure B-49. Airport enplanement (top), Airport Transport Type (bottom)



Source: Gulfport-Biloxi International Airport



Map B-16. 2005 Estimated Annual Average Daily Traffic for Roadways in Harrison County

Source: Mississippi Department of Transportation

Port of Gulfport, located five miles south of Interstate Highway 10, is a bulk, break-bulk, and container seaport. Port Bienville serves tenants of the Port Bienville Industrial Park in Hancock County. The Port of Biloxi serves recreational users and small commercial businesses.³¹⁰

Since the mid-1990s, the Port of Gulfport has been the third busiest container port on the US Gulf of Mexico behind Houston and New Orleans. The port is close to deepwater shipping lanes that provide access to international markets. The port specializes in importing perishable products from Latin America for distribution throughout the region's market area.³¹¹

The Port of Gulfport was severely damaged by Hurricane Katrina, losing covered storage space and the majority of its berths. The destruction of its cold storage facilities meant that the port lost the capability to serve the poultry and forest-products markets. As a result, cargo tonnage declined 20 percent from 2005 to 2006.³¹²

Operations at the Port of Gulfport continue to recover. The port remains the third busiest container port on the US Gulf. The data in Table B-43 illustrates the amount of container volume in Twenty-foot Equivalent Units (TEU's), a standard measurement used in quantifying container traffic flows. The port's most recent master plan recommends expansion of port facilities including a new shipping terminal and channel, additional warehouse space, and a near-dock rail yard during the next ten years.³¹³

Highway access to the port will also improve with the construction of the State Route 601 Central Harrison County Connector Highway, also known as the Interstate 310 Port Connector. This new facility will connect the port to Interstate Highway 10 at Canal Road using limited access elevated roadway constructed to interstate standards. This project is currently in the survey, design, and right of way acquisition phase.

Table B-42. Rail Shipments in Mississippi (expressed in percent of total)

Year	1999	2000
Terminating in State		
<i>Coal</i>	25.0%	U
<i>Coal and petroleum</i>	U	21.0%
<i>Chemicals</i>	14.0%	13.0%
<i>Farm Products</i>	14.0%	18.0%
<i>Lumber and wood products</i>	10.0%	9.0%
<i>Nonmetallic minerals</i>	9.0%	10.0%
<i>All other commodities</i>	27.0%	29.0%
Total (short tons)	16,304,997	17,840,881
Originating in State	1999	2000
<i>Lumber and wood products</i>	35.0%	33.0%
<i>Chemicals</i>	20.0%	21.0%
<i>Pulp and paper products</i>	19.0%	18.0%
<i>Food products</i>	5.0%	6.0%
<i>Glass and stone</i>	5.0%	U
<i>Petroleum</i>	U	5.0%
<i>All other commodities</i>	16.0%	17.0%
Total (short tons)	14,090,708	14,649,670

U=data unavailable, Unit of measurement: millions of short tons, totals are rounded
 Source: Mississippi State Transportation Profile, Bureau of Transportation Statistics, page c-8

Table B-43. Container Traffic in TEUs

Gulf Coast Container Ports	2004	2005	2006
Freeport	68,568	76,294	73,614
Galveston	10,291	7,308	10,755
Greater Baton Rouge	11,061	10,479	1,826
Gulfport	213,108	187,384	197,428
Houston	1,437,585	1,594,366	1,606,360
Lake Charles	6,524	5,531	5,535
Manatee	8,414	6,498	5,418
Mobile	37,375	42,443	80,051
New Orleans	258,468	200,766	175,957
Panama City	0	16,828	57,480
Tampa	17,277	26,519	24,273
TOTAL GULF	2,068,671	2,174,416	2,238,697

Source: American Association of Port Authorities, www.aapa-ports.org

Table B-44. Listing of recommended potable water projects for unincorporated Harrison County

Name of Program	Description	Cost
Central Harrison County Regional Water Supply	Provide water supply system to serve Saucier and US 49/MS 67 area including East Wortham Rd.	\$11,300,000
Eastern Harrison County Regional Water Supply	Provide water supply system along MS 67 beginning in the East Central Harrison Utility District through Biloxi-Woolmarket area to MS67/I-110 at the City of D'Iberville	\$29,200,000
Western Harrison County Regional Water Supply	Provide water supply system to serve area north of I-10 in the West Harrison Utility District, Delisle, Pass Christian, and Long Beach	\$23,100,000

Source: Mississippi Department of Environmental Quality

Table B-45. Listing of recommended wastewater projects for unincorporated Harrison County

Name of Program	Description	Cost
DeLisle WWTF and Long Beach/Pass Christian Transmission System	0.2 MGD Expansion of DeLisle WWTF, North Long Beach Interceptor, and transmission system to serve area north of INTERSTATE HIGHWAY 10	\$23,450,000
East Central Harrison County Regional WWTF	2.0 MGD WWTF to serve East Central Harrison County Public Utility District and North Woolmarket	\$19,000,000
Saucier WWTF and Riverbend/ Robinwood Forest Transmission System	Two 0.2 MGD Interim WWTFs and transmission system to transport wastewater from Saucier and Riverbend/ Robinwood to the East Central Harrison County WWTF	\$13,300,000

Source: Mississippi Department of Environmental Quality

Intermodal

Intermodal connections in Harrison County focus on the transfers made between three main transportation assets: the Port of Gulfport, the Gulfport-Biloxi International Airport, and Interstate Highway 10. Intermodal connections at the port offer transport to/from container, barge, rail, and truck. Intermodal connections at the airport offer transport to/from air, rail, and truck. The port is three miles south of the airport and Interstate Highway 10 is one mile north.³¹⁴

In the current port master plan, an inland port will be constructed two miles from the Port of Gulfport.³¹⁵ The inland port will expand storage facilities and offer rail access. Also the Mississippi Department of Transportation will soon upgrade the port's access to Interstate Highway 10 with the I-310 Port Connector project discussed previously.

UTILITIES

The existing utilities within Harrison County include water, stormwater, wastewater, and solid waste. The Harrison County Utility Authority was created in 2006 when Governor Haley Barbour signed into law a bill creating the Gulf Region Water Utility Authority Act. The purpose of the Utility Authority is to coordinate, consolidate, plan, and acquire water, wastewater, storm water, and solid waste services to promote resilience and reduce the cost of these services within Harrison County. Draft rules and regulations have been created to help standardize construction, maintenance, and operation of these utilities.³¹⁶ Water, stormwater, and wastewater infrastructure throughout the Gulf Region suffered extensive damage as a result of Hurricane Katrina. The *Mississippi Gulf Region Water and Wastewater Plan*, discussed further in this section, represents a collaborative effort between Mississippi's public and private sectors to provide new or enhanced infrastructure and to locate new facilities away from at risk areas. Telecommunications, electric, and natural gas are also included in this section.

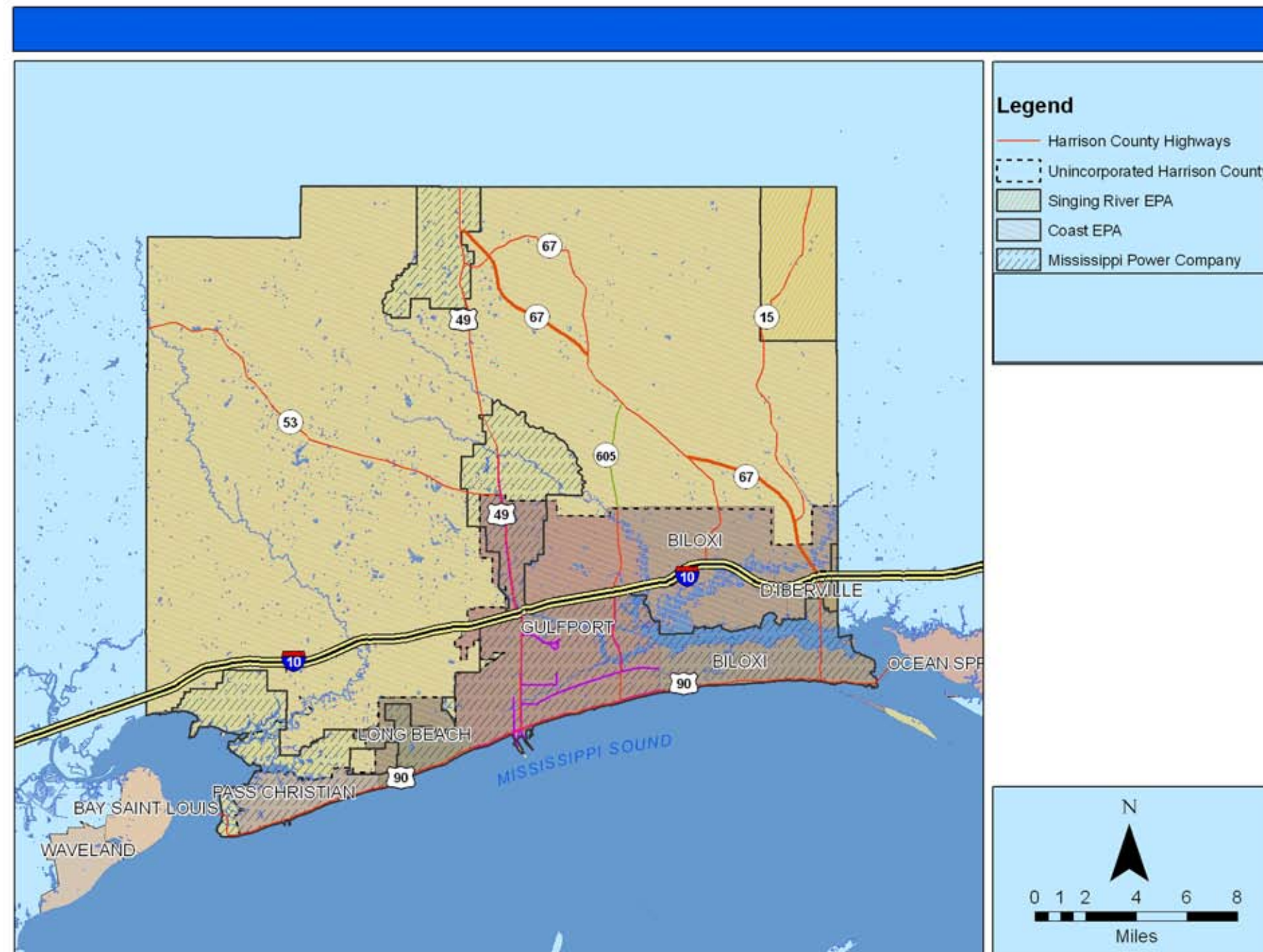
Water

Potable water is supplied to customers in Harrison County by one of four types of entities: municipalities, utility service districts, non-profit rural water associations (see Table B-44), or private entities. There are 22 different service providers in the county. Those systems that provide potable water service to at least 25 people or 15 separate connections in an area are monitored by the Mississippi Department of Health (MDH).³¹⁷

Data on historical water consumption (see Figure B-50) shows that groundwater provides the major source of potable water for domestic demands in Harrison County. Groundwater aquifers currently in use include the Citronelle Formation and the Miocene aquifer system, consisting of the Graham Ferry and Pascagoula and Hattiesburg formations. Harrison County has 22 percent of the Gulf Region's total of private water wells; this is second only to Jackson County.³¹⁸

The Biloxi River is the main source of surface water in Harrison County used to provide certain process water supplies for industrial activities. Water treatment is limited due to the good quality and quantity of groundwater; however, water treatment processes may be monitored more closely as federal regulations on drinking water become stricter. Large-scale water treatment is only performed in a few cases in the Gulf Region, none of which are in Harrison County.

Harrison County experienced noticeable growth in water use prior to Hurricane Katrina, and growth is expected to continue as rebuilding occurs. A Harrison County regional water supply and transmission system is



Map B-17. Electric service in Harrison County

Source: Southern Mississippi Planning and Development District

proposed to manage the increased demand for potable water associated with this growth. In addition to supplementing the available supply from cities, communities, and current water service providers in Harrison County, the proposed regional water system would be able to handle anticipated demands in areas of projected growth within the county. The proposed system would provide supply and transmission along the major transportation corridors and the principal county transportation routes. Several projects across the county, including projects in unincorporated areas (see Table B-45), have been recommended for allocation as part of the *Mississippi Gulf Region Water and Wastewater Plan*.³¹⁹

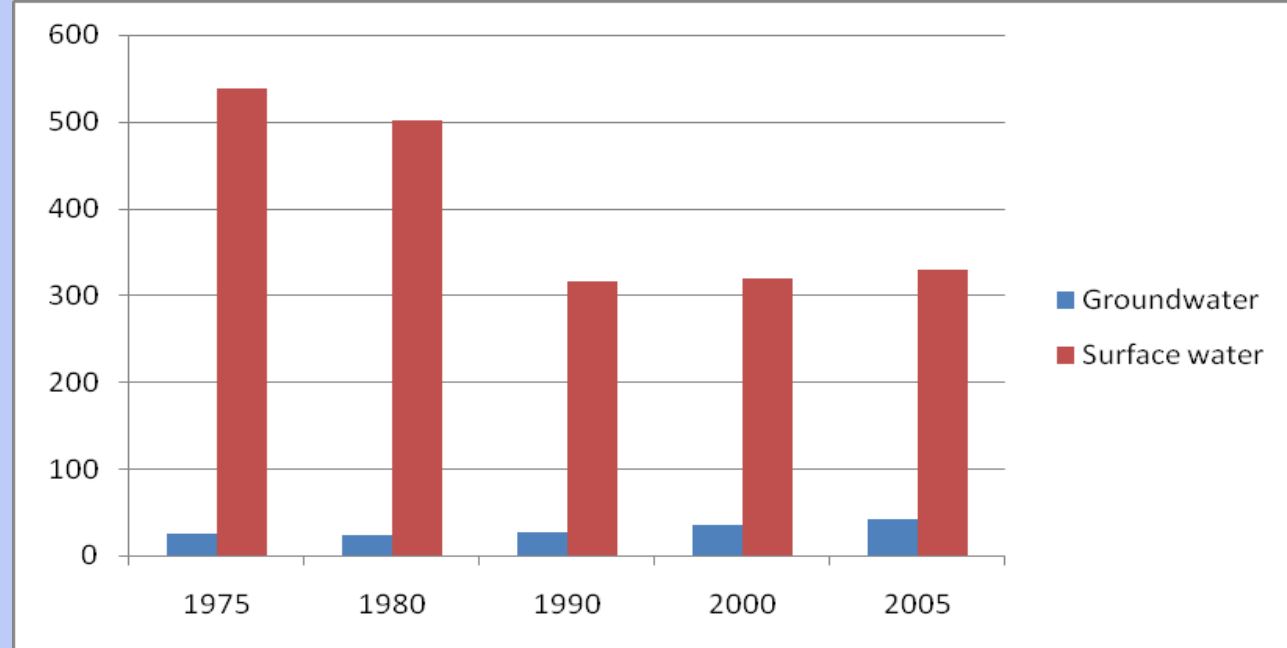
Stormwater

Flood control, drainage, and stormwater management within the county are accomplished by means of various man-made and natural channels, basins, reservoirs, and dams. There is no centralized or connected

storm sewer system. Approximately 800 miles of streams and open channels and 1,600 miles of roadside ditches and swales, compared to only 11 miles of pipes, carry water from land to various receiving bayous (see Figure B-57), streams, and rivers. Harrison County is drained by the Coastal Rivers drainage area, which includes portions of seven different watersheds. Most of the Coastal Streams drainage basin drains into the Wolf River (see Figure B-58), which discharges into the Bay of Saint Louis, and the Biloxi River, which discharges into the Biloxi Bay.

As rebuilding proceeds post-Katrina, an increase in population is expected due to various types of development occurring throughout Harrison County. This development will lead to more impervious surface area and, thus, an increase in stormwater runoff. The Harrison County Utility Authority has outlined stormwater system requirements in regards to issuance

Figure B-50. Harrison County historical water consumption (million gallons per day).



Source: Mississippi Department of Environmental Quality

Figure B-51. State Highway 67 is currently under construction.



Source: Nate Leppo

Figure B-52. The new Biloxi transit center.



Source: Megan Dunton

Figure B-53. A CTA bus and trolley are making a stop at Lighthouse Station



Source: Coast Transit Authority

Figure B-54. This bicyclist is heading south on Menge Avenue in DeLisle.



Source: Megan Dunton

Figure B-55. The Gulf Coast's first bicycle lane is located on State Highway 605.



Source: Dottie Machen

of permits; stormwater system design, construction, installation, and operation; storm water quality and quantity; flood management design; and implementation of best management practices to control runoff.³²⁰ Enforcement assistance, facility maintenance, debris clearing, and less encroachment into the floodplains can increase the efficiency and effectiveness of the existing and natural stormwater system.

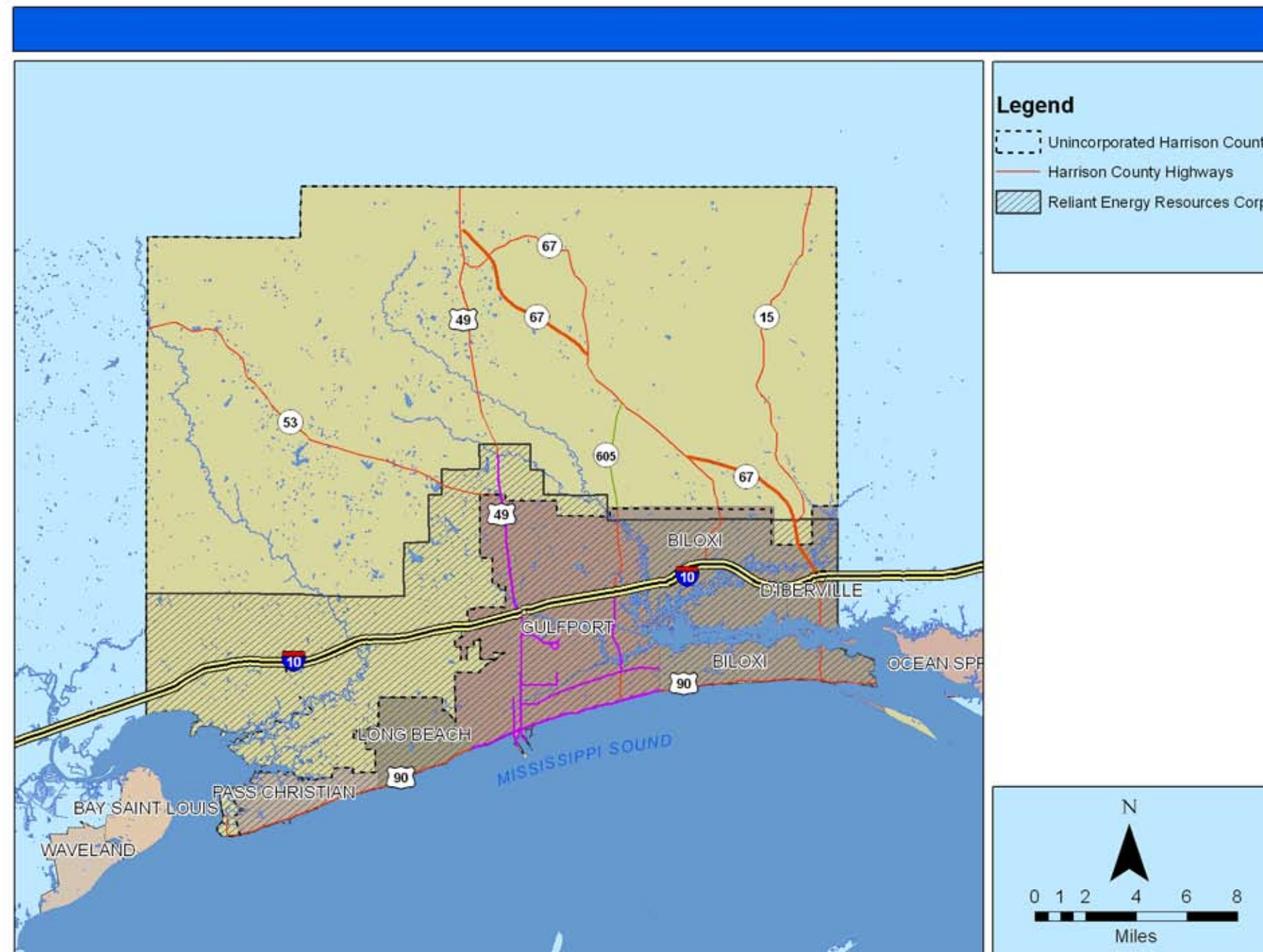
Wastewater

The Harrison County Utility Authority operates nine wastewater treatment facilities: D'Iberville, West Biloxi, Keegan Bayou, Gulfport South, Gulfport North, Long Beach/Pass Christian, West Harrison (see Figure B-59), Eagle Point Lagoon, and East Central Harrison County. Discharge at these plants ranges from 0.2 to 11.7 million gallons per day.

In areas where sewer service is not available, residents and businesses must install and operate individual on-site wastewater treatment and disposal systems, usually consisting of septic tanks and absorption fields located on the property and regulated by the Mississippi Department of Health (MDH). MDH specifies how large a site must be to support septic based on the condition of the land and the land's ability to filter effluent. These systems fail when not maintained properly, when absorption fields become clogged, or when used in areas with unsuitable soils or high water tables. When soil conditions will not support effective operation of septic tanks and absorption fields, residents must use aerobic treatment systems, which are more complicated to operate and often fail due to lack of maintenance by homeowners.³²¹

Prior to installation of onsite systems in subdivisions of 30 lots or greater, developers are required to demonstrate that sanitary sewers are not economically feasible. The standard of proof for infeasibility of sewer systems is often low, and the feasibility of constructing sewers for a particular subdivision is often considered independently of other neighboring subdivisions. The result is an overabundance of individual systems concentrated in particular areas; however, had these areas been evaluated as an entire development instead of independent subdivisions, sewers likely would have been considered feasible. Harrison County has more than 24,000 operating on-site treatment units. It is estimated that more than 40 percent, or just over 9,600, of these individual systems fail, leading to a discharge of 1.9 million gallons per day of untreated sewage into the environment.³²²

Wastewater infrastructure needs in Harrison County have to be met before growth can be expected to continue at rates comparable to those prior to Hurricane Katrina. The *Mississippi Gulf Region Water and Wastewater Plan* recommends several improvements in Harrison County,



Map B-18. Natural gas service in Harrison County
 Source: Southern Mississippi Planning and Development District

including projects in unincorporated areas for immediate rebuilding and future sustainable growth and development (see Table B-45).

Solid Waste

The Harrison County Utility Authority is responsible for solid waste management. The Utility Authority contracts with Waste Management for solid waste collection and transport to the Pecan Grove Landfill and Recycling Center. This is the only active Municipal Solid Waste Landfill in Harrison County, and it is used to collect both commercial and residential solid waste. The Pecan Grove Landfill is currently 177 acres, which is not expected to reach capacity for approximately 15 years. Recycling services are performed by Advanced Disposal.³²³

Telecommunications

Bell South is the primary provider of land line telephone service in Harrison County. It owns most of the Wireless Communication Service bands and offers Fast Access Internet service, including wireless broadband Internet access, Wi-Fi, and WiMAX. These services, as well as digital television, are not available in all areas of Harrison County.

Cable One also provides telecommunication services in portions of Harrison County. These services include cable television, digital telephone service, and high-speed, broadband internet. Broadband services are available to residential and business customers within its entire service area. Voice-over-Internet Protocol (VoIP) service is offered to a smaller portion of the Cable One service area. This technology allows voice calls to be made using a broadband internet connection instead of a regular phone line.

Other telecommunication services offered are T-carriers, or high-speed digital networks, which are more often used by medium-sized to large companies. This type of network is a cost-effective way of linking voice and data, both inter- and intra-office. In Harrison County, AT&T is one of the leading companies that offers this service and others, such as Point-to-Point (PPP) and Point-to-Point over Ethernet (PPPoE) services.³²⁴

Electric

Harrison County receives its electricity from Mississippi Power Company or one of its electric cooperatives, either Coast Electric Power Association or Singing River Electric Power Association (see Map B-17). Residential rates range from 3.17 cents to 6.45 cents per kWh depending on the service area, season, and usage.^{325,326} Electricity is not provided to all individual properties, but it is readily available in commercial and residential development settings.

Natural Gas

CenterPoint Energy, Inc. (formerly Reliant Energy), headquartered in Houston, Texas, services a 203-square-mile area in the southern portion of Harrison County (see Map B-18).³²⁷

(Endnotes)

Figure B-57. Bayou Acadian.



Source: Megan Dunton

Figure B-56. Water in Saucier is provided by Saucier Utilities, a non-profit rural water association.



Source: Megan Dunton

Figure B-58. The Wolf River.



Source: Megan Dunton

Figure B-59. West Harrison wastewater treatment facility.



Source: Megan Dunton

1 Iberville was the brother of Bienville, who founded New Orleans in 1718.

2 The treaty of Paris on June 1, 1763 ended war over disputed territory between the England and France. Ultimately, land was ceded to England. T.J. Buchanan Heiss, *Harrison County Mississippi, Facts About the Gulf Coast of Harrison County, Mississippi*; W.A. Cox & E.F. Martin, Observer Publishing Co., Gulfport, MS: 1985, 8.

3 Captain George Johnstone was the first English governor to preside over what is now Harrison County.

4 Buchanan Heiss, T.J. (1985). *Harrison County Mississippi, Facts About the Gulf Coast of Harrison County, Mississippi*. W.A. Cox & E.F. Martin, Observer Publishing Co., Gulfport, MS: page 8.

5 Ibid.

6 Thompson, R.ay M. (1959, March 16). A flashback to Lyman. *Biloxi Sun Herald*, (pg number).

7 Connelly, Blanche. (n.d.). Saucier, Unpublished manuscript courtesy of Wayne Jones.

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11 Skates, J. R. (2001). *German prisoners of war in Mississippi, 1943-1946*. Retrieved December 16, 2005, from http://mshistory.k12.ms.u.

12 Lang, John H. (n.d.). *History of Harrison County, Mississippi*. Retrieved March 7, 2008 from www.frogbellies.com

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15 Ellis, Dan. (2006). *Gulf Coast mansions*. Retrieved January 4, 2007, from http://wateringplaces.publish-now.com

16 Ellis, Dan. (2006). *Public Schools – Pass Christian*. Retrieved February 7, 2008, from http://school.passchristian.net/pass_christian_public_schools.htm

17 City of D'Iberville. (n.d.). *History of D'Iberville*. Retrieved April 6, 2008, from http://diberville.ms.us/index.php?id=56

18 Harrison County. (2007). *Community Plan for Eastern Harrison County*. Retrieved April 6, 2008, from http://co.harrison.ms.us/departments/zoning/downloads/Community_Plans/Final_Plans/

19 Ibid.

20 LaFontaine, Ryan (2007, July 17). Gulfport offers fine dining, recreation and a great business climate. *Biloxi Sun Herald*, p. A1. Retrieved April 6, 2008, from http://www.sunherald.com/181/v-print/100019.html

21 Harrison County. (2007). *Community Plan for Western Harrison County*. Retrieved April 6, 2008, from http://co.harrison.ms.us/departments/zoning/downloads/Community_Plans/Final_Plans/

22 It is impossible to estimate the number of units that are damaged, but not completely destroyed but are unoccupied, so this estimate of housing unit loss is likely to be low.

23 Note that not all of the building permits issued result in a constructed home and there is some lag time so permits pulled towards the end of the 2007 are not likely to have a completed house until into 2008.

24 This does not include manufactured homes. There have been a significant number of temporary use permits for manufactured homes in the unincorporated county as well as rezonings for the permanent placement of manufactured homes.

25 Mississippi Gaming Commission. (2008). Quarterly Survey Information, October 1-December 31, 2007. Retrieved from, http://www.mgc.state.ms.us.

26 US Department of Commerce Bureau of Economic Analysis. 2006. RIMS II Multipliers 1997/2005.

27 Mississippi Department of Employment Security, Labor Market Information Department. (June 2006). *Gulfport-Biloxi MSA Occupational Employment Projections Year 2004 Projected to Year 2014*. Jackson:Author.

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31 Garziano, M. (2006). Administrative Assistant, Pass Christian School District. Personal communication. January 5.

32 Mississippi Department of Education. (2006). *Mississippi assessment and accountability*. Retrieved February 7, 2006, from http://www.mde.k12.ms.us/acad/osa/testdata.html

33 This figure is calculated by taking the total number of units in 2000 and adding the number units built between 2000 and 2004 to

get the estimated pre-Katrina housing count. Then the 2006 housing estimates were subtracted from the total pre-Katrina housing count.

34 The US Census and American Community Survey use slightly different age profiles of residential structures in Harrison County. The 2000 Census provides information on the age of housing countywide. The recent American Community Surveys taken in 2005 and 2006 are included here to illustrate the housing trends before and after Hurricane Katrina.

35 Gulf Regional Planning Commission. (2007). *Mississippi Gulf Coast apartment survey*. Retrieved March 27, 2008, from http://www.grpc.com/PDF/MGC%202007%20Apartment%20Survey.pdf

36 (2007, November 4). Cost of living going up: Housing, insurance taking ever larger bite. *Biloxi Sun Herald*, A2.

37 Gulf Regional Planning Commission. (2007). *Mississippi Gulf Coast apartment survey*. Retrieved March 27, 2008, from http://www.grpc.com/PDF/MGC%202007%20Apartment%20Survey.pdf

38 Assumes 6.25 percent interest on a 30 year conventional fixed mortgage. Property taxes and insurance rates consists of estimates.

39 Region VIII Housing Authority. (2007). Written material on the location of public housing sites in Harrison County.

40 Mississippi State Department of Health. (2004). *County health profiles 2003: Harrison County*. Retrieved January 15, 2008, from http://www.msdh.state.ms.us/county/CountyPlanningModule/CPM.htm

41 The assessment of Harrison County's overall public health can be measured using the Mississippi State Department of Health and the National Center for Chronic Disease Prevention and Health Promotion's Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is a program designed to provide public health indicator results and analysis tools to assess a state or county's risk of chronic disease, and measure the effectiveness of its public health services. The Mississippi State Department of Health conducts an annual BRFSS report sampling on a state, public health district, and individual county population level.

42 Mississippi State Department of Health. (2007). *Mississippi behavioral risk factor surveillance system (BRFSS): Annual report 2005 & 2006*. Retrieved February 15, 2008, from http://www.msdh.state.ms.us/brfss/

43 National Center for Chronic Disease Prevention and Health Promotion. (1999). *Physical activity and health: A report of the Surgeon General (summary)*. Retrieved April 6, 2008, from http://www.cdc.gov/nccdphp/sgr/summ.htm

44 Marsha Barbour, First Lady of Mississippi. (2007). Mrs. Barbour's key initiatives: Let's get walkin' Mississippi. *Marsha Barbour: First Lady of Mississippi*. Retrieved January 15, 2008, from http://www.governorbarbour.com/firstlady/

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46 Harrison County Department of Zoning. (n.d.) *Smart growth resource guide*. Retrieved January 15, 2008, from http://co.harrison.ms.us/departments/zoning/downloads/Smart_Growth/Smart%20Growth%20Resourse%20Guide%20Highlights.pdf

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48 Mississippi State Department of Health. (2007). *Directory of Mississippi health facilities*. Retrieved February 15, 2008, from www.msdh.state.ms.us

49 United States Bureau of Economic Analysis. (n.d.) BEA economic areas (EAs). *Bureau of Economic Accounts*. Retrieved February 1, 2008, from http://www.bea.gov/regional/docs/econlist.cfm

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(Table Endnotes)

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- 3 Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. (n.d.). Harrison County. *Web Soil Survey*. Retrieved March 26, 2008, from <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
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