



HALEY BARBOUR  
GOVERNOR

STATE OF MISSISSIPPI  
OFFICE OF THE GOVERNOR

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March 3, 2009

Mr. A. Stanley Meiburg  
Acting Regional Administrator  
U.S. Environmental Protection Agency  
Region 4  
61 Forsyth Street, S.W.  
Atlanta, Georgia 30303

Re: Attainment/Nonattainment Recommendations for the 2008 Ozone Standard

Dear Mr. Meiburg:

In accordance with the Federal Clean Air Act, I am writing to provide the State of Mississippi's recommendations for the designation of attainment or nonattainment in accordance with Environmental Protection Agency's new national ambient air quality standard for ground-level ozone.

The air quality data for the last three years (2006 through 2008) indicate ground-level ozone levels have exceeded the new standard in three Mississippi counties. These counties are DeSoto, Harrison, and Jackson.

In addition to DeSoto County, there are three more Mississippi counties in the Memphis Metropolitan Statistical Area. The three counties are Marshall, Tate, and Tunica. Mississippi does not have ozone monitoring sites in those three counties. The attached technical analysis shows that the three counties have low population densities, few emission sources, and low emission rates. Mississippi recommends that Marshall, Tate, and Tunica Counties not be included in the Memphis, Tennessee, nonattainment area.

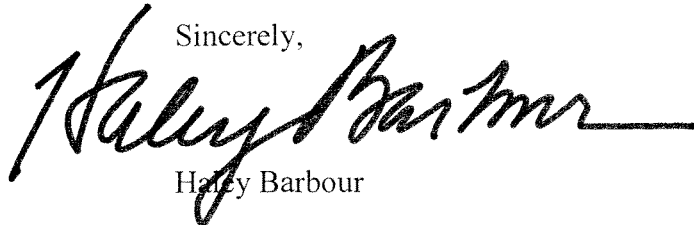
There are three Mississippi counties, in addition to Harrison and Jackson Counties, in the Gulfport-Biloxi-Pascagoula Combined Statistical Area (CBSA): George, Hancock, and Stone. Mississippi does not have ozone monitoring sites in George and Stone Counties. Mississippi recently completed the rebuilding of the Hancock County monitoring site which was destroyed by Hurricane Katrina in 2005. The attached technical analysis shows that George, Hancock, and Stone Counties have relatively low population densities, few emission sources, and low emission rates. Mississippi recommends that

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George, Hancock, and Stone Counties not be included in a Gulf Coast nonattainment area.

The only Mississippi counties that have not attained the new ozone standard are DeSoto, Harrison and Jackson Counties. Based on ozone air quality data for 2006 through 2008, the remaining Mississippi counties should be designated as being in attainment. If you have any questions, please contact Ms. Trudy Fisher, Executive Director of the Mississippi Department of Environmental Quality, at 601-961-5000.

Sincerely,

A handwritten signature in black ink, appearing to read "Haley Barbour", with a horizontal line extending from the end of the signature.

Haley Barbour

HB:ps:dhc

cc: Ms. Trudy Fisher, Executive Director, MDEQ

**Technical Support for the 2008 Ozone Standard Designation  
Recommendation for the State of Mississippi**

**Mississippi Department of Environmental Quality  
Air Division  
March 2009**

## Executive Summary

DeSoto, Harrison and Jackson Counties in Mississippi are the only counties in the state with monitors that are reading above the 2008 National Ambient Air Quality Standard (NAAQS). Therefore, Mississippi is recommending that only DeSoto, Harrison and Jackson Counties be designated as non-attainment for the 2008 ozone NAAQS. Figure 1 below shows the location of all of the monitors in the state.

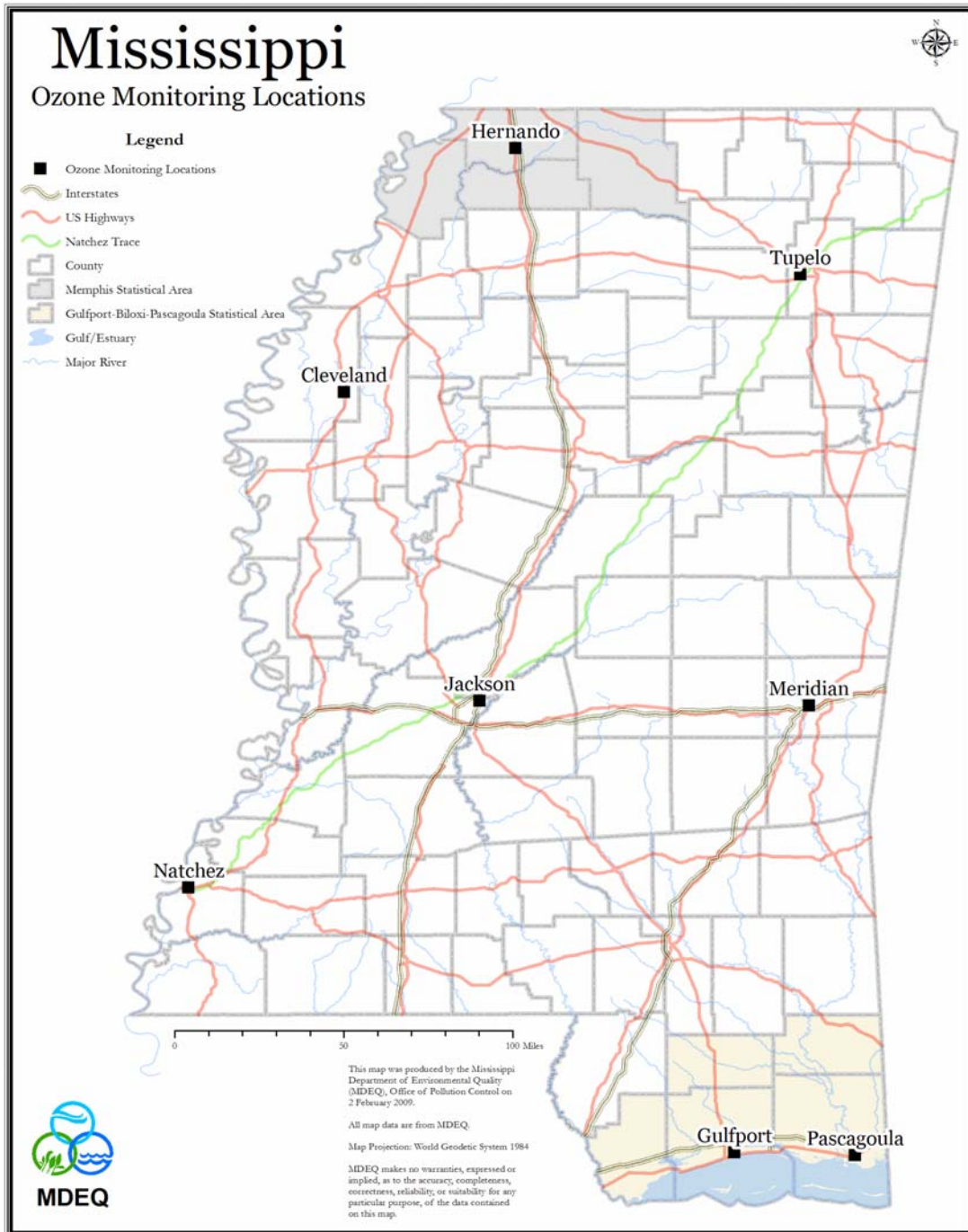


Figure 1. Mississippi Ozone Monitoring Locations

EPA recommends that the Metropolitan Statistical Area (MSA) or Combined Statistical Area (CSA) serve as the starting point for determining the geographic boundaries of an ozone non-attainment area. Additionally, there are nine factors to be evaluated in making the boundary determination. These factors are:

- Factor 1: Air quality data
- Factor 2: Emission data (location of sources and contribution to ozone concentrations)
- Factor 3: Population density and degree of urbanization (including commercial development)
- Factor 4: Traffic and commuting patterns
- Factor 5: Growth rates and patterns
- Factor 6: Meteorology (weather/transport patterns)
- Factor 7: Geography/topography (mountain ranges or other air basin boundaries)
- Factor 8: Jurisdictional boundaries (e.g., counties, air districts, Reservations, metropolitan planning organizations)
- Factor 9: Level of control of emission sources

DeSoto, Marshall, Tate, and Tunica Counties are all in the Memphis, Tennessee MSA. The Gulfport-Biloxi-Pascagoula CSA consists of George, Hancock, Harrison, Jackson and Stone Counties. An analysis of the nine factors determined that only DeSoto, Harrison and Jackson Counties should be designated as non-attainment for the 2008 ozone NAAQS. The surrounding counties should be excluded from these non-attainment areas.

## Mississippi Counties in the Memphis MSA

DeSoto, Marshall, Tate and Tunica Counties are all part of the Memphis, Tennessee MSA. Mississippi is recommending that only DeSoto County be designated as non-attainment for the 2008 ozone NAAQS. Current monitoring data indicate that the Hernando monitor, located in Desoto County, is not attaining the standard of 0.075 ppm. Figure 2 below shows the location of the Hernando monitor in DeSoto County. Marshall, Tate, and Tunica Counties do not have monitors. They contribute little to the overall emissions in the area, and have significantly lower populations and traffic; therefore, based on an analysis of the nine factors, Marshall, Tate, and Tunica Counties should not be included in the non-attainment designation.



**Figure 2. Mississippi Counties and Monitoring Locations in the Memphis MSA**

## Nine Factor Analysis for Mississippi Counties in Memphis MSA

### Factor 1: Air Quality Analysis

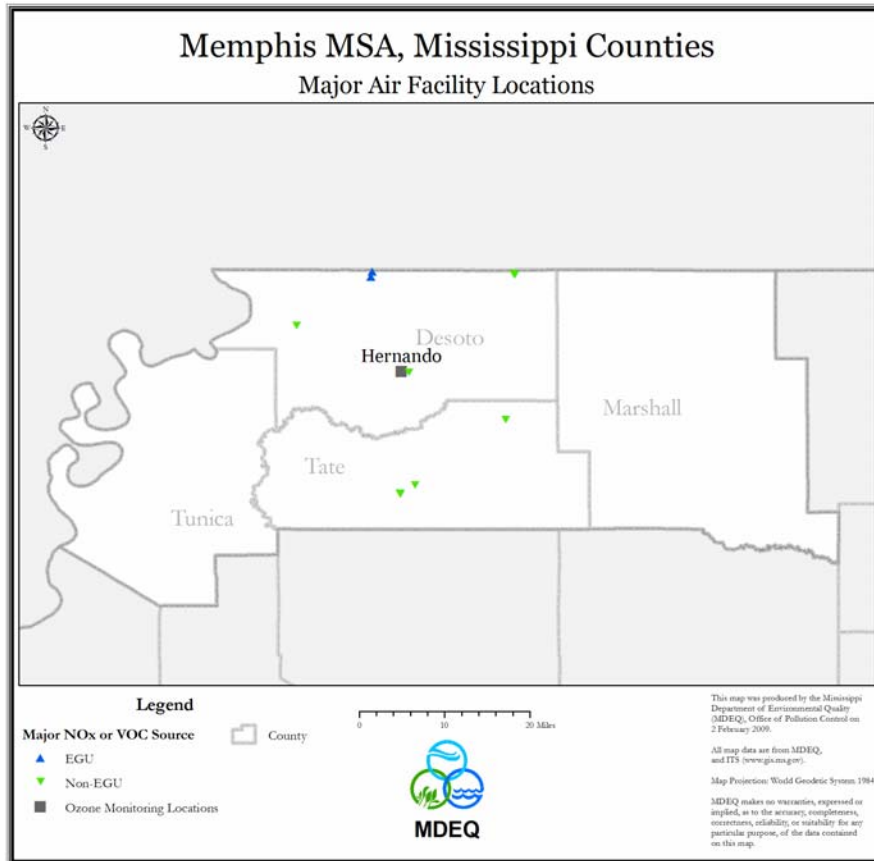
The following table is data collected from the Hernando monitor in DeSoto County, Mississippi. The surrounding counties of Marshall, Tate, and Tunica do not have monitors.

County	AIRS ID	Site	4 <sup>th</sup> Annual Maximum 8-Hour Ozone			3-Year Average 2006-2008
			2006	2007	2008	
DeSoto	28-033-0002	Hernando	87	84	74	81

**Table 1. Hernando, MS Monitor Data**

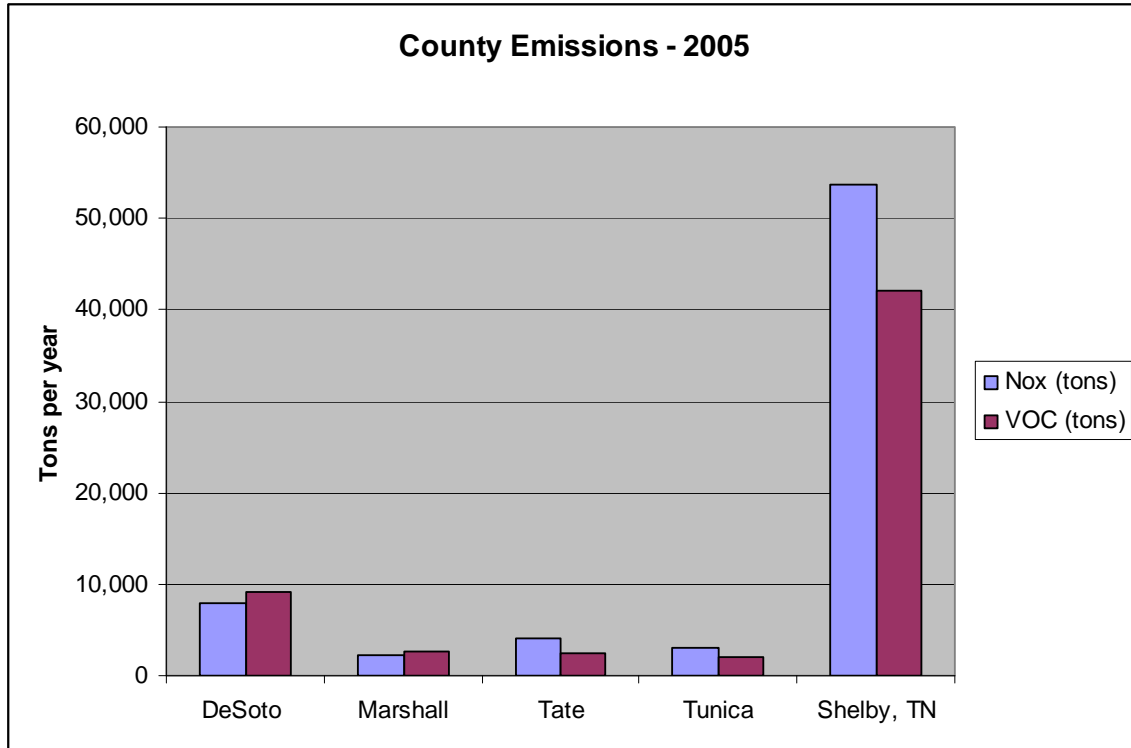
### Factor 2: Location of Emissions Sources and Contribution to Ozone Concentrations

The Mississippi counties in the Memphis MSA have a small number of major emission sources as shown in Figure 3. DeSoto County has two facilities that are classified as major sources of Nitrogen Oxides (NO<sub>x</sub>) and three facilities classified as major sources of Volatile Organic Compounds (VOCs). Tate County has one major source of NO<sub>x</sub> and three major sources of VOCs. However, there are no major sources in Marshall or Tunica counties.



**Figure 3. Mississippi Major Emission Sources in the Memphis MSA**

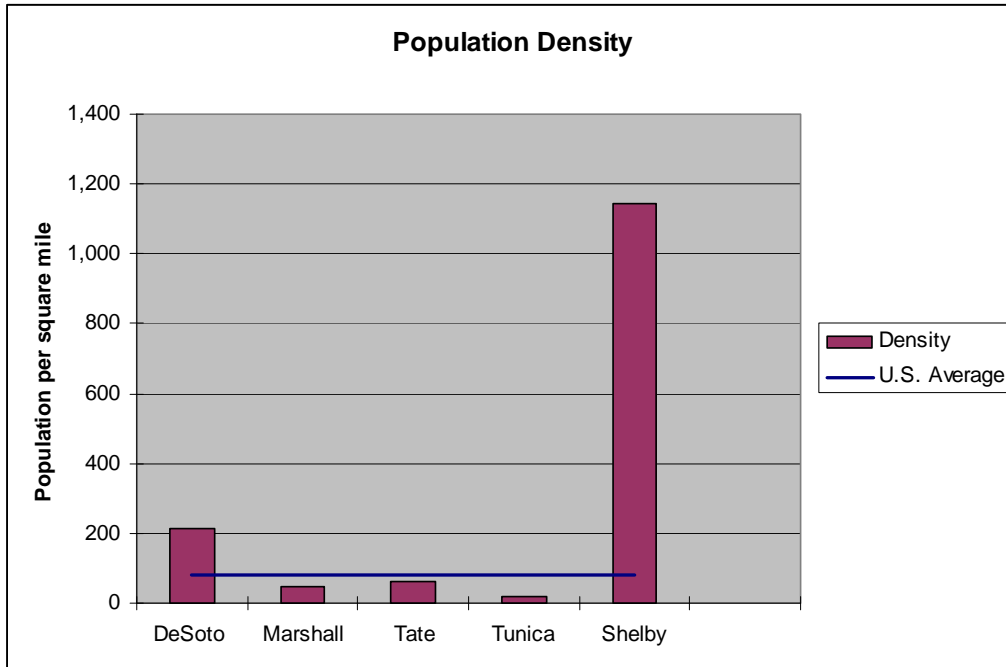
The largest contributor of ozone precursor emissions in the area is Shelby County, Tennessee. Chart 1 gives a comparison of NOx and VOC emissions from all source categories in the four Mississippi counties and Shelby County, Tennessee. The total emissions from Marshall, Tate and Tunica Counties are small in comparison to DeSoto County's emissions and very small in comparison to Shelby County, Tennessee's emissions. Based on the emission data, Marshall, Tate, and Tunica County would not have a significant contribution to the Hernando monitor.



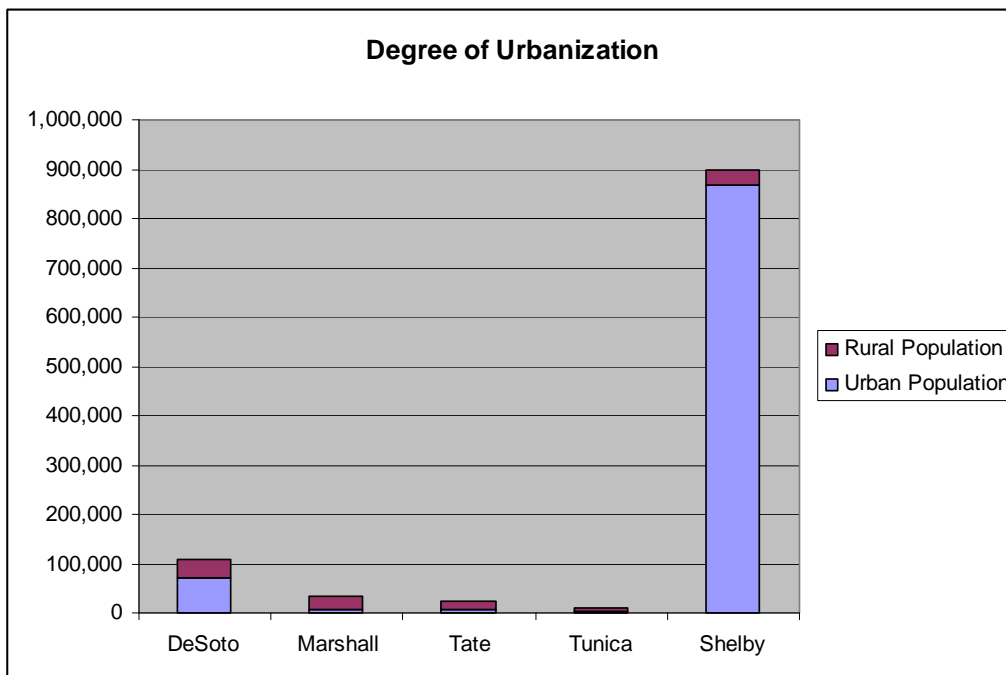
**Chart 1. NOx and VOC emission comparison for Memphis MSA (2005 NEI)**

**Factor 3: Population Density and Degree of Urbanization**

Marshall, Tate and Tunica Counties are below the national average for population density with little or no urbanized areas. They are much lower than DeSoto County's population density and degree of urbanization. Chart 2 compares population densities and Chart 3 compares degrees of urbanization for the Memphis MSA.



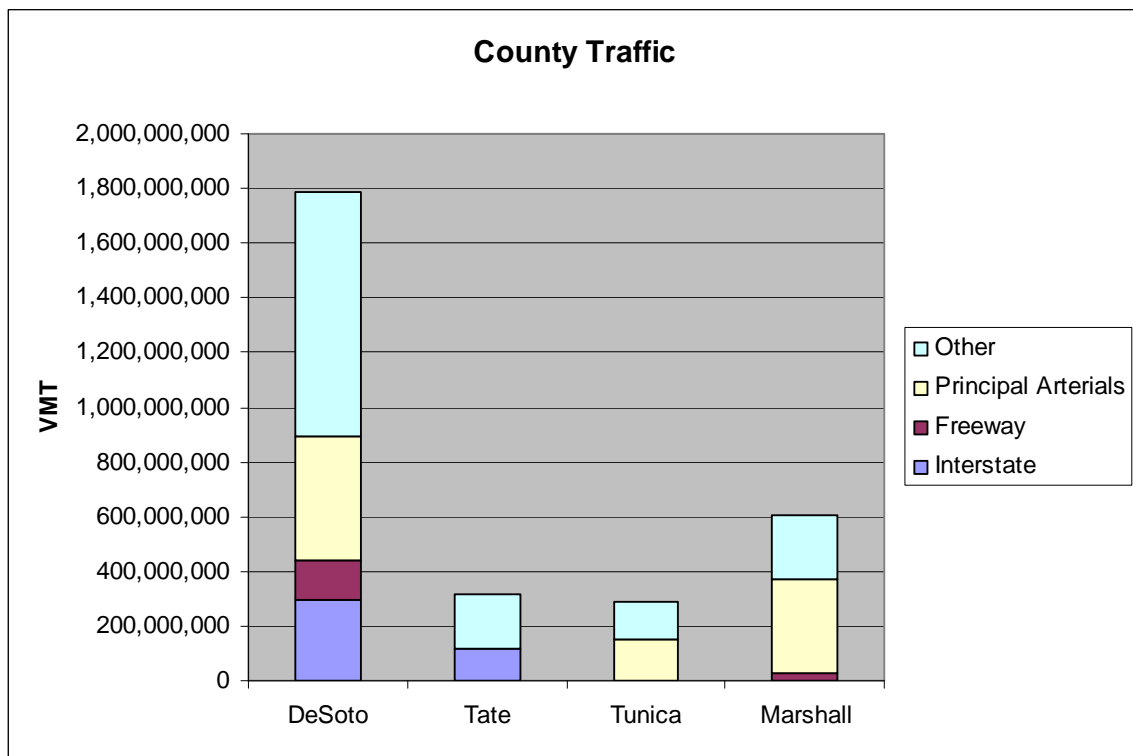
**Chart 2. Population Density of Memphis MSA (2000 census data)**



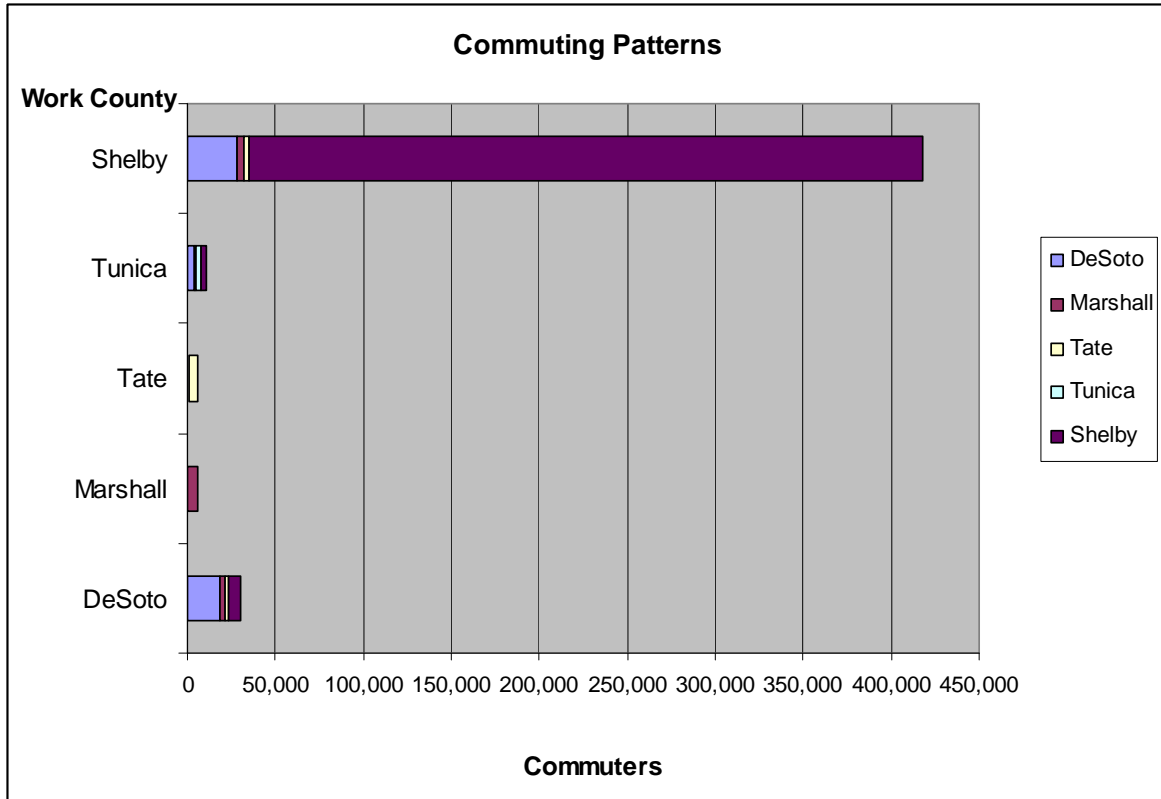
**Chart 3. Degree of Urbanization for Memphis MSA (2000 census data)**

**Factor 4: Traffic and Commuting Patterns**

The overall amount of traffic is minor in Marshall, Tate, and Tunica Counties and their commuting patterns do not indicate an impact on the DeSoto County monitor. The amount of traffic is measured Vehicle Miles Traveled (VMT) and is developed by the Mississippi Department of Transportation. Chart 4 compares the traffic data for the Mississippi Counties in the Memphis MSA. Data from the 2000 census was used to determine the commuting patterns. Chart 5 summarizes this information and demonstrates that the residents in Marshall, Tate and Tunica counties commute primarily within their own county. Consequently, the traffic from these counties would have no substantial impact on the monitor in Hernanado.



**Chart 4. Traffic Data for the Mississippi Counties in the Memphis MSA (2005 HPMS Data)**



**Chart 5. Commuting Patterns for Memphis MSA (2000 Census)**

***Factor 5: Growth Rates and Patterns***

Growth rates were determined for DeSoto, Marshall, Tate, and Tunica Counties using the 2000 census figures and the 2007 census estimates. Table 2 shows that Marshall, Tate and Tunica counties have not experienced significant growth since the 2000 census data.

<b>County</b>	<b>2000 Census Population</b>	<b>2007 Census Estimate</b>	<b>Increase</b>	<b>% annual Growth</b>
DeSoto	107,199	149,393	42,194	5.6%
Marshall	34,993	36,695	1,702	0.7%
Tate	25,370	26,910	1,540	0.9%
Tunica	9,227	10,453	1,226	1.9%

**Table 2. Population Growth Rates for Mississippi Counties in the Memphis MSA**

***Factor 6: Meteorology (Weather and Transport)***

Backward trajectories were created using the National Weather Service’s HYSPLIT program to examine the path air parcels followed for the 24 hours prior to midnight for each day that the maximum 8-hour ozone concentration exceeded 75 ppb for the period 1999 - 2008 in DeSoto County. The results from this backward trajectory analysis show that 76% of the non-stagnant back trajectories that ended in Hernando originated from the north or northeast. This indicates emissions from Marshall, Tate, and Tunica counties contribute little to the Hernando monitor on the higher ozone days.

***Factor 7: Geography and Topography***

The Mississippi counties in the Memphis MSA are located in northwestern Mississippi. DeSoto and Tunica counties border the Mississippi River. DeSoto and Marshall Counties border Tennessee while Tate is directly south of DeSoto County. The topography of the area ranges from the flat lowland of the Mississippi Delta in the west to rolling hills in the central and eastern part of the MSA.

***Factor 8: Jurisdictional Boundaries***

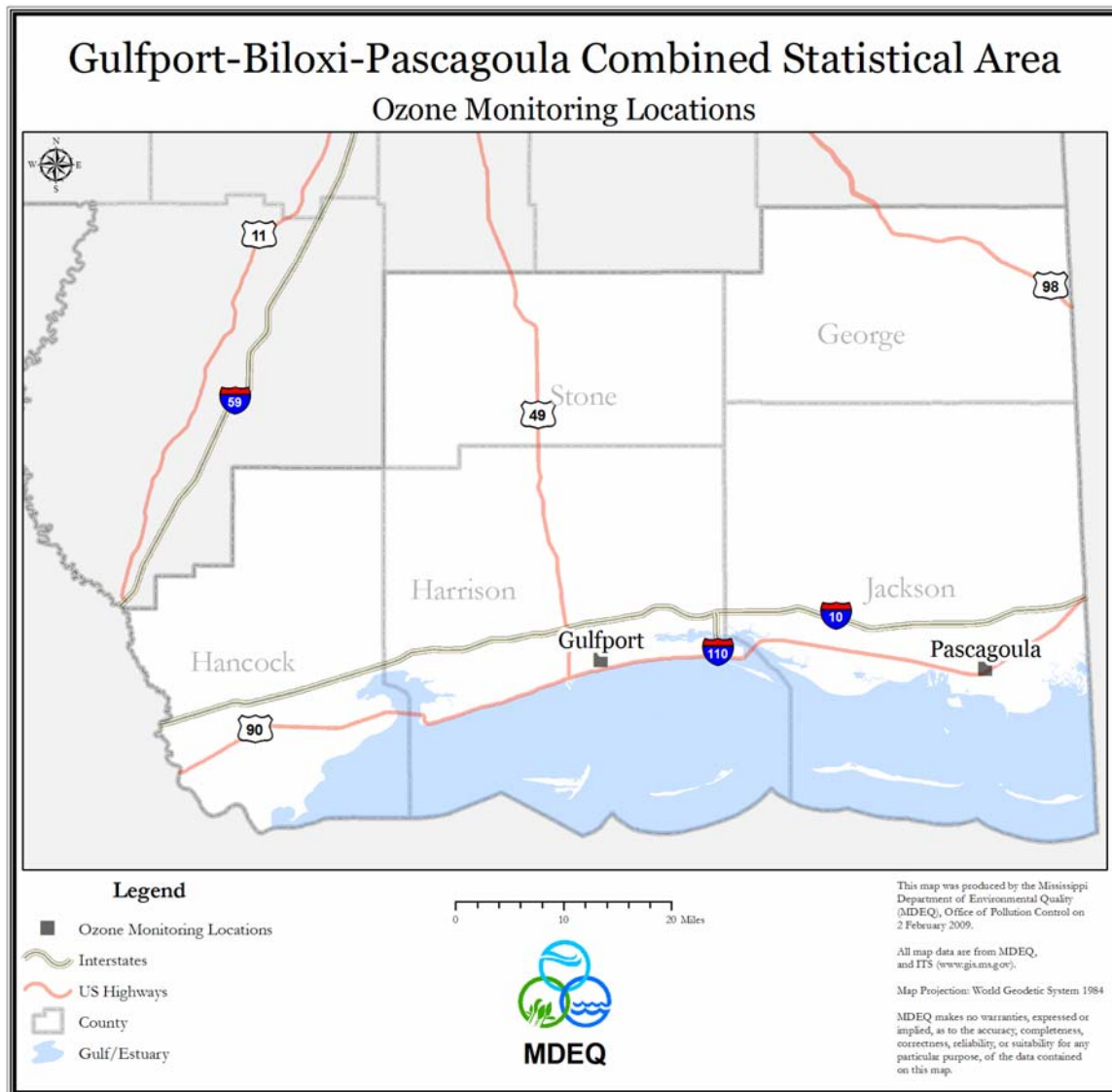
DeSoto, Marshall, Tate, and Tunica Counties are within the Memphis MSA. DeSoto County is within the Memphis Metropolitan Air Quality Control Region. Tunica County is within the Mississippi Delta Air Quality Control Region. Marshall and Tate counties are within the Northeast Mississippi Air Quality Control Region. The Mississippi Department of Environmental Quality is responsible for monitoring air quality in these counties.

***Factor 9: Level of Control of Emissions***

No additional emissions standards apply to this area beyond federal and state standards. Considering the low air emissions in Marshall, Tate, and Tunica Counties, there are no specific measures that could be applied that would yield significant reductions.

## Gulfport-Biloxi-Pascagoula CSA

Mississippi is recommending that only Jackson and Harrison Counties in the Gulfport-Biloxi-Pascagoula CSA be designated as non-attainment for the 2008 ozone NAAQS. Current monitoring data indicates that the Pascagoula monitor in Jackson County and the Gulfport monitor in Harrison County are not attaining the standard of 0.075 ppm. The surrounding counties of George and Stone do not have monitors. The Hancock County monitor has not been in operation since it 2005, but should be in operation for the 2009 ozone season. Based on an analysis of the nine factors, George, Hancock and Stone Counties should not be included in the non-attainment designation. These counties contribute little to the overall emissions in the area and have significantly lower populations and traffic. Figure 4 below shows the monitoring locations in the Gulfport-Biloxi-Pascagoula CSA.



**Figure 4. Gulfport-Biloxi-Pascagoula CSA Monitoring Locations**

## Nine Factor analysis for Gulfport-Biloxi-Pascagoula CSA

### *Factor 1: Air Quality Analysis*

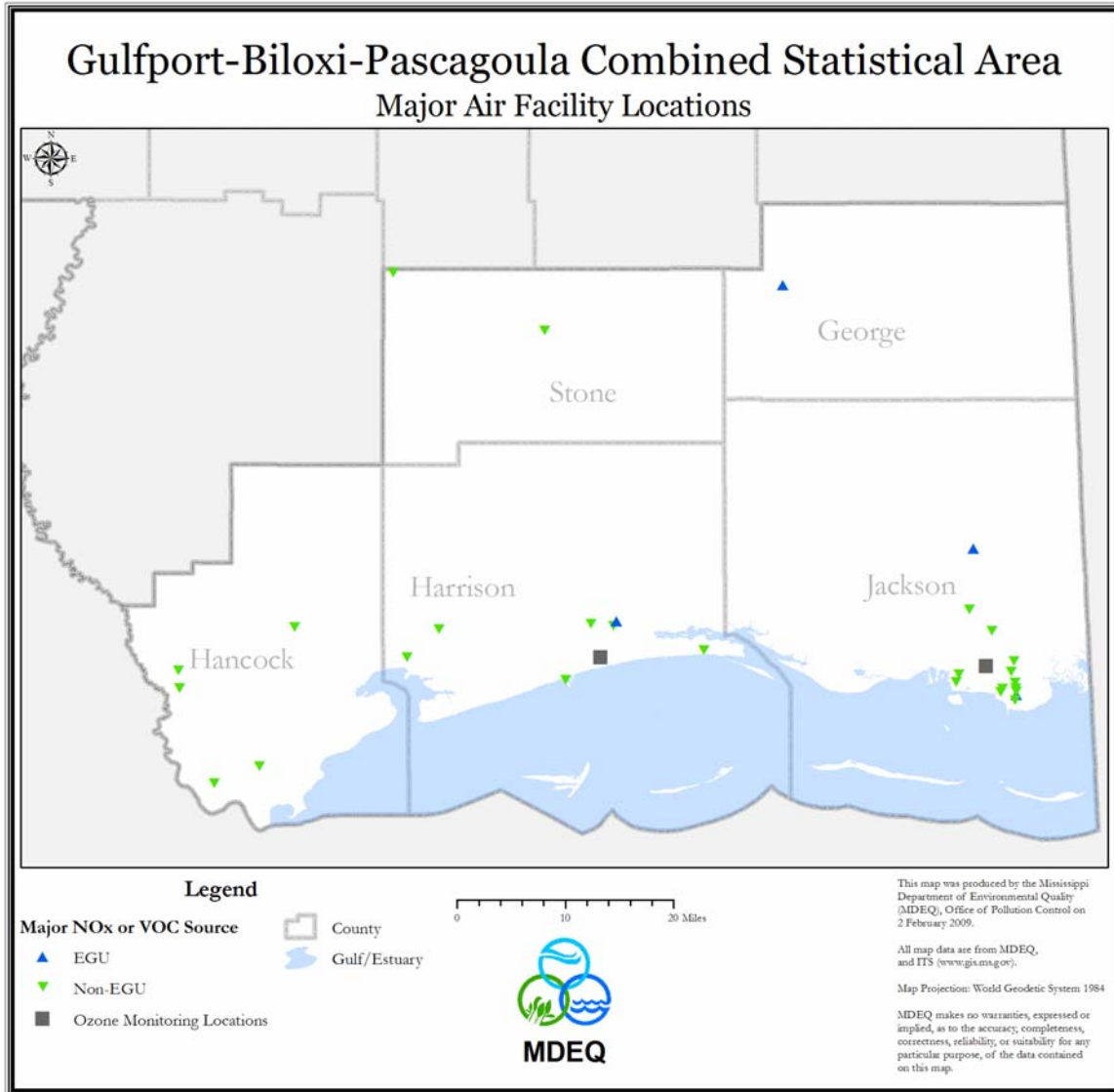
The following table is data collected from the Gulfport and Pascagoula monitors in Mississippi. The surrounding counties of George and Stone do not have monitors. The Hancock County monitor has not operated since 2005 due to damage caused by Hurricane Katrina. This monitor will resume operation for the 2009 ozone season.

<i>County</i>	<i>AIRS ID</i>	<i>Site</i>	<i>4<sup>th</sup> Annual Maximum 8-Hour Ozone</i>			<i>3-Year Average 2006-2008</i>
			2006	2007	2008	
Harrison	28-047-0008	Gulfport	84	81	78	81
Jackson	28-059-0006	Pascagoula	82	78	76	78

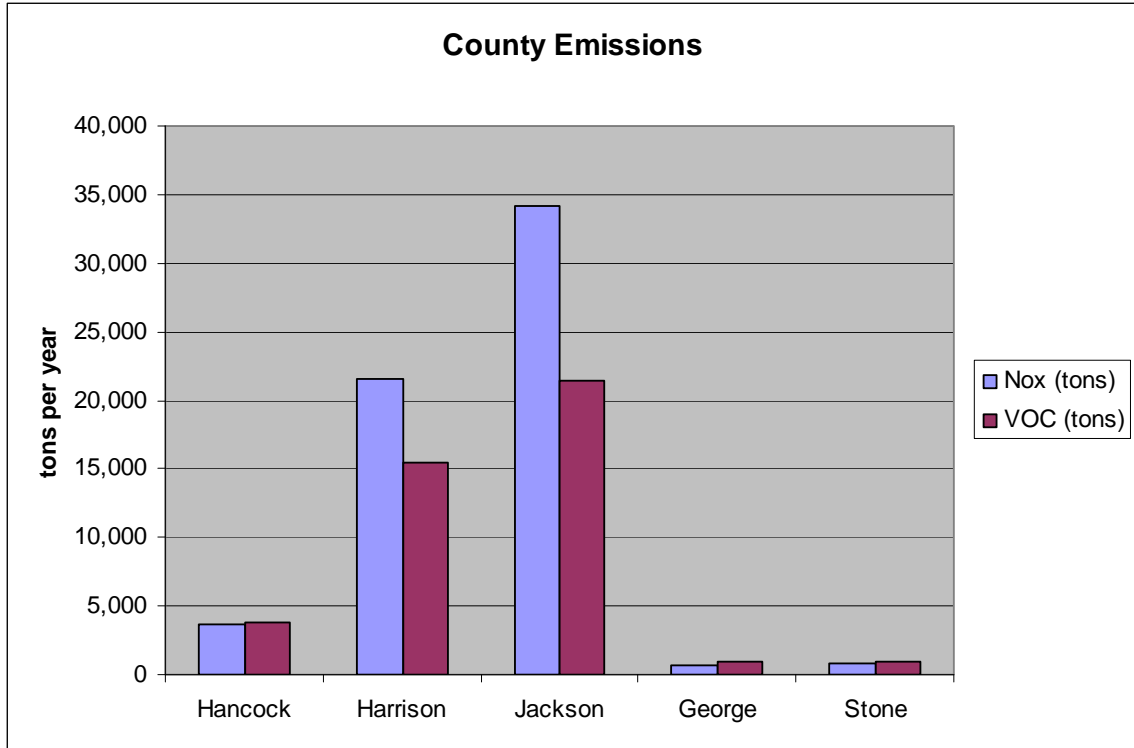
**Table 3. Gulfport and Pascagoula, MS Monitoring Data**

**Factor 2: Location of Emissions Sources and Contribution to Ozone Concentrations**

Figure 4 shows the location of the major point sources of NO<sub>x</sub> or VOC in the Gulfport-Biloxi-Pascagoula CSA. Chart 6 gives the total emissions from all sources in each county. The total emissions in Hancock, George and Stone Counties are much less than the emissions in Jackson and Harrison Counties. Due to the location and size of the sources in Hancock, George and Stone Counties, they would not contribute significantly to the ambient ozone levels in Harrison or Jackson Counties.



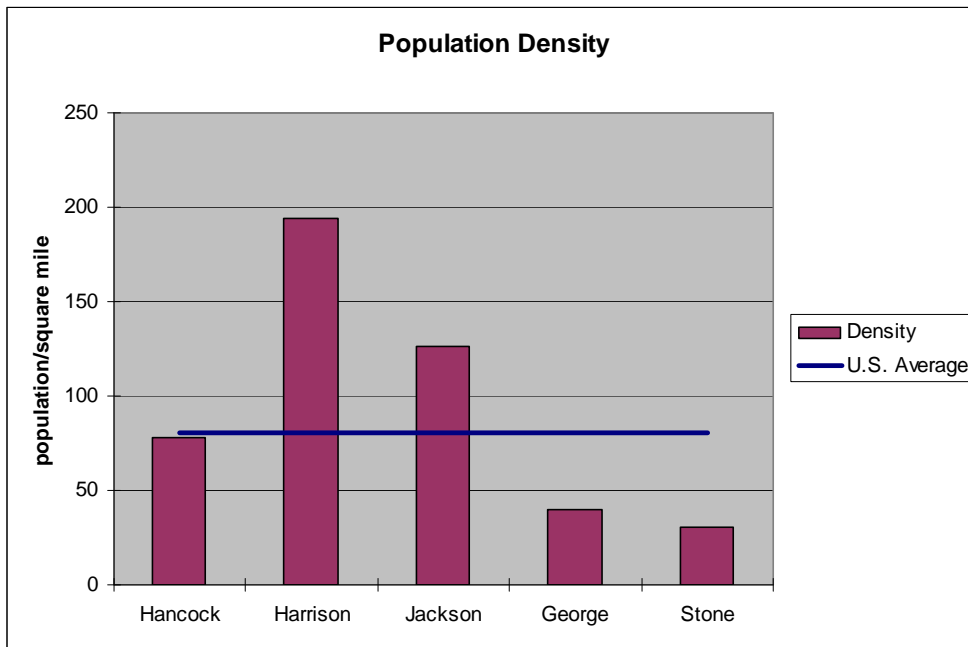
**Figure 5. Major Emission Sources in the Gulfport-Biloxi-Pascagoula CSA**



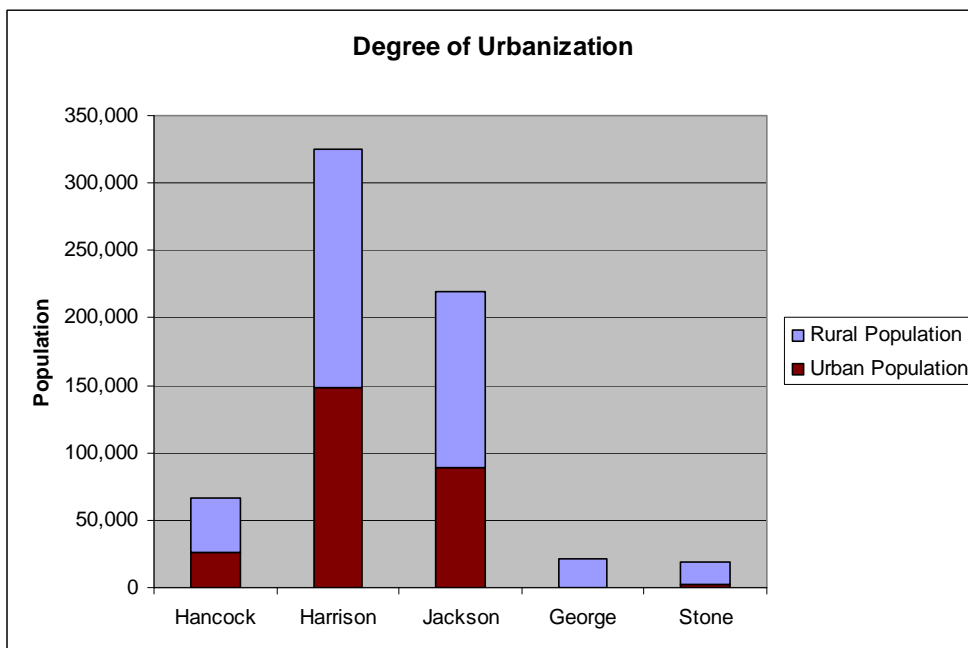
**Chart 6. NOx and VOC emission comparison for Gulfport-Biloxi-Pascagoula CSA (2005 NEI)**

### Factor 3: Population Density and Degree of Urbanization

Hancock, George and Stone Counties are below the national average for population density with little or no urbanized areas. They are much lower than Harrison and Jackson Counties' population density and degree of urbanization. Chart 7 compares population densities and Chart 8 compares degrees of urbanization for the Gulfport-Biloxi-Pascagoula CSA.



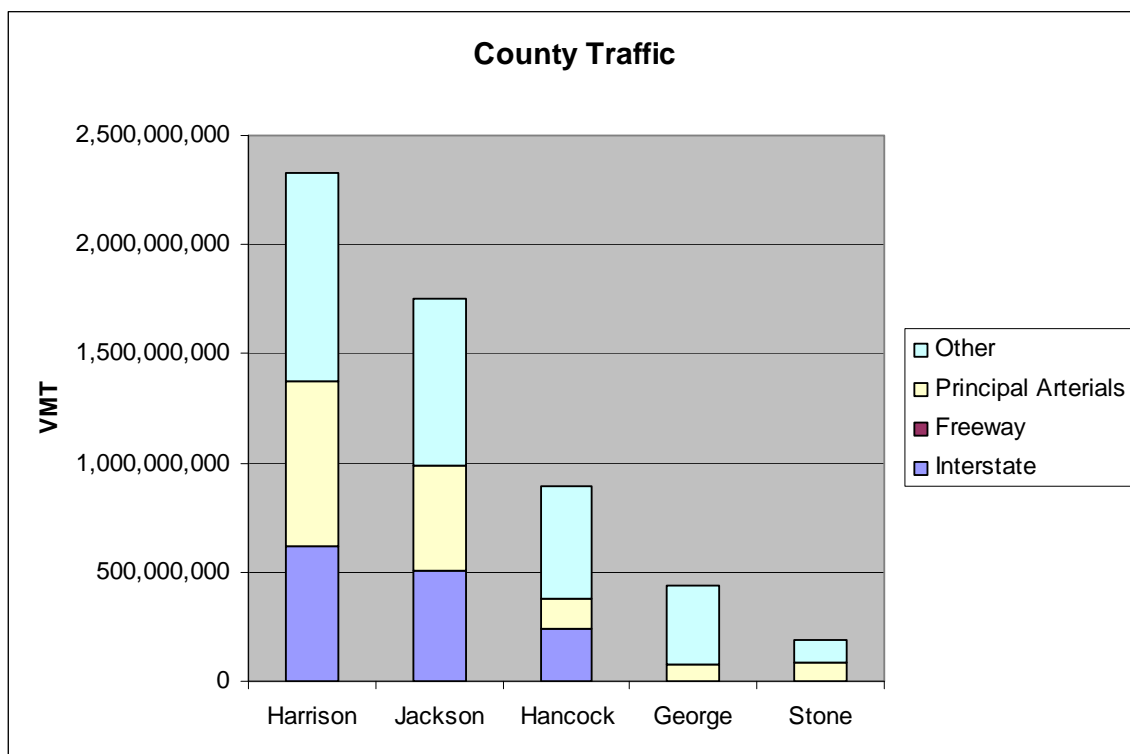
**Chart 7. Population Density of Gulfport-Biloxi-Pascagoula CSA (2000 Census)**



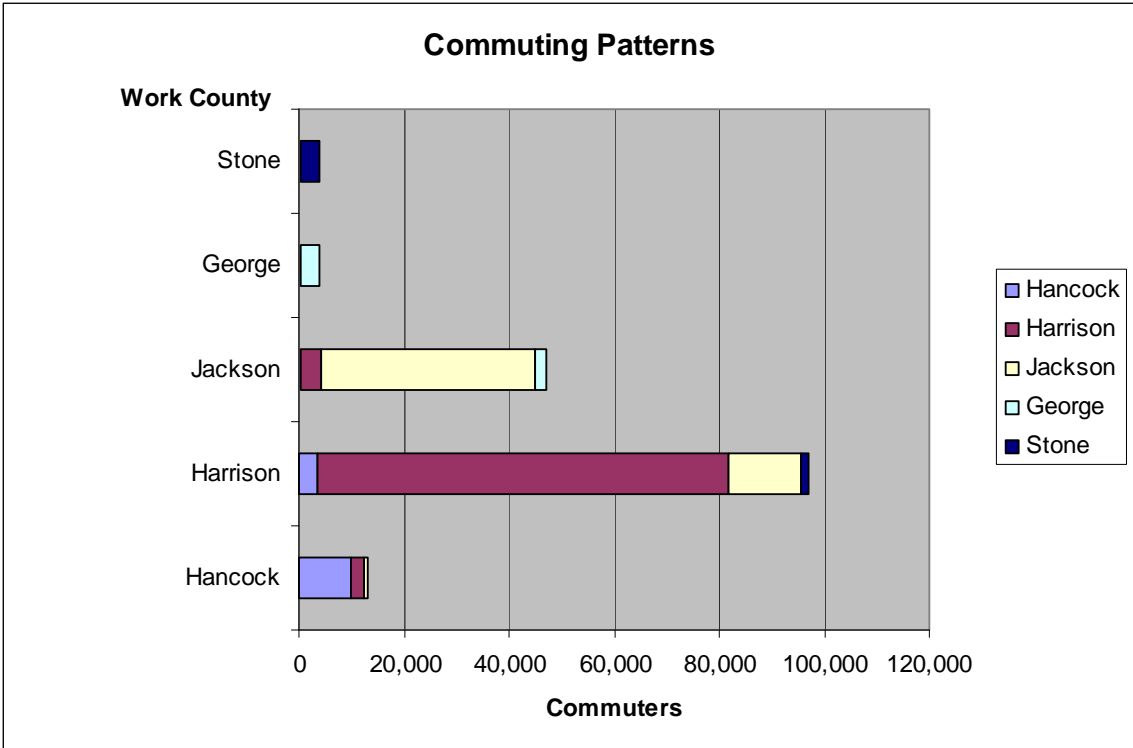
**Chart 8. Degree of Urbanization for Gulfport-Biloxi-Pascagoula CSA (2000 Census)**

#### ***Factor 4: Traffic and Commuting Patterns***

The overall amount of traffic in Hancock, George and Stone Counties is significantly lower than the VMT in Harrison and Jackson Counties. The amount of traffic is measured in Vehicle Miles Traveled (VMT) and is developed by the Mississippi Department of Transportation. Chart 9 compares the traffic data for the Gulfport-Biloxi-Pascagoula CSA. Data from the 200 Census was used to determine the commuting patterns. Chart 10 summarizes this information and demonstrates that the residents in Hancock, George, and Stone Counties commute primarily within their own county. Consequently, the traffic from these counties would have no substantial impact on the monitors in Gulfport and Pascagoula.



**Chart 9. Traffic Data for Gulfport-Biloxi-Pascagoula CSA (2005 HPMS Data)**



**Chart 10. Commuting Patterns for Gulfport-Biloxi-Pascagoula CSA (2000 Census)**

***Factor 5: Growth Rates and Patterns***

Comparing the 2000 census and 2007 census estimates, there has been negative growth in Hancock, Harrison and Jackson Counties due to the devastation from Hurricane Katrina. There has been positive growth in George and Stone Counties; however, the growth is minimal and these counties have low populations.

<b>County</b>	<b>Population (2000 census)</b>	<b>2007 Census Estimate</b>	<b>Increase</b>	<b>% Annual Growth</b>
Hancock	42,967	39,687	-3,280	-1.1%
Harrison	189,601	176,105	-13,496	-1.0%
Jackson	131,420	130,098	-1,322	-0.1%
George	19,144	21,937	2,793	2.1%
Stone	13,622	15,731	2,109	2.2%

**Table 4. Population Growth Rates for Gulfport-Biloxi-Pascagoula CSA**

***Factor 6: Meteorology (Weather and Transport)***

Backward trajectories were created using the National Weather Service’s HYSPLIT program to examine the path air parcels followed for the 24 hours prior to midnight for each day that the maximum 8-hour ozone concentration exceeded 75 ppb for the period 1999 - 2008 in Harrison and Jackson counties. The results from this backward trajectory analysis show that 40-45% of the back trajectories that ended in Gulfport or Pascagoula demonstrated a diurnal land/sea breeze circulation along the coast. Only 9-14% of the back trajectories originated from the north or northwest. This indicates emissions from George, Hancock and Stone Counties contribute little to the Gulfport and Pascagoula monitors on the higher ozone days.

***Factor 7: Geography and Topography***

The Gulfport-Biloxi-Pascagoula Combined Statistical Area is located in southeastern Mississippi. Hancock, Harrison, and Jackson Counties border the Gulf of Mexico. George and Jackson Counties border Alabama while Hancock County borders Louisiana. The topography ranges from rolling hills in the northern portion of this region to the beach in the southern portion.

The diurnal land-sea breeze recirculation, caused by the proximity of the Gulf of Mexico and by weather conditions with light steering winds, results in higher ozone concentrations generally along the coastline. Historical inland monitoring data (5-10 miles) in the coastal counties revealed little effect on ozone concentrations from this recirculation.

***Factor 8: Factor Jurisdictional Boundaries***

George, Hancock, Harrison, Jackson, and Stone counties are within the Biloxi-Gulfport-Pascagoula Combined Statistical Area. These counties are also located within the Mobile – Pensacola - Panama City - Southern Mississippi Air Quality Control Region. The Mississippi Department of Environmental Quality is responsible for monitoring air quality in these counties.

***Factor 9: Level of Control of Emissions***

No additional emissions standards apply to this area beyond federal and state standards. Considering the low air emissions in George, Hancock and Stone Counties, there are no specific measures that could be applied that would yield significant reductions.