



Assessing the Long-term Impact of Subsidence and Global Climate Change on Emergency Evacuation Routes in Coastal Louisiana

Report of Findings

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Friday, December 21, 2012

Subsidence forecast models for coastal Louisiana were developed to estimate the change in surface elevations of evacuation routes for the years 2015, 2025, 2050, and 2100. Geophysical and anthropogenic subsidence estimates were derived from on-going empirical studies published in contemporary scientific literature. Forecasted elevation changes were subtracted from road surface elevation surveys. Individual road segments estimated to have surfaces at or below 0m in elevation (NAVD-88) were quantified by road class and parish. Additionally, the threshold for climate change susceptibility was evaluated relative to storm surge models published by the National Weather Service, which were used to identify and quantify evacuation routes vulnerable to surge inundation. The results from this analysis are presented by parish and reveal the modeled subsidence risks for the forecast years. Findings from this research can provide transportation engineers and emergency managers with data previously unavailable, which are applicable to evacuation modeling, hazard mitigation, environmental sustainability research, costal restoration efforts, and more.

Assessing the Long-term Impact of Subsidence and Global Climate Change on Emergency Evacuation Routes in Coastal Louisiana

**A Report of Findings for the Gulf Coast Center for Evacuation and
Transportation Resiliency (GCCETR)**

Category 3: Strategies to Improve Resiliency of Transportation Infrastructure to Climate Change

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Introduction

It is widely understood from geological studies that the southern Louisiana landscape of the late Holocene was primarily dominated by the interaction between sedimentary accretion, geologic subsidence, oceanographic tides and waves, and global sea level rise (Coleman & Roberts, 1998). These alternating cycles of flood induced deposition and naturally eroding landforms resulted in a relative equilibrium from which the coastal wetlands were sustained. It is also recognized that contemporary human manipulation of the landscape has severely disrupted the natural sedimentation and hydrology that had previously sustained the area for hundreds of centuries. Consequently, many coastal wetlands have been deprived of sediment-laden floodwaters that naturally replenished the subsiding coastal plain, thus making the landscape more vulnerable to storm surge, seasonal flooding, and global sea level rise. Studies performed across coastal Louisiana have measured relative sea level rise with values between 5-10mm yr⁻¹ and more in some areas (Dixon, et al., 2006; Gonzalez & Tornqvist, 2006; Meckel, ten Brink, & Williams, 2006; Shinkle & Dokka, 2004; Tornqvist, et al., 2008; Dokka, 2011). Indeed, subsidence exerts enormous influence on Louisiana's coastal wetlands, which has significant consequences for the long-term sustainability of the coastal ecologies and human settlement.

Subsidence is the downward movement of the Earth's surface with respect to a reference point or datum (Dokka, 2006). There are numerous contributing processes of subsidence that have been observed across coastal Louisiana; each of which are measured relative to distinct spatial and temporal scales. As depicted in Table 1, these processes can be organized into environmental and human-induced factors. Environmental, or geologic, subsidence is that which occurs in the absence of human intervention (i.e., non-anthropogenic). There are numerous

Table 1: Causative processes of subsidence and their rates.

Description of Natural Processes	Rate
Faulting	$\leq 40 \text{ mm yr}^{-1}$ Spatiotemporally discrete values observable over the entire coastal plain (Dokka, 2006; Dokka, et al., 2006).
Holocene Sediment Compaction & Consolidation	$\leq 5 \text{ mm yr}^{-1}$ Constant value applied over the coastal plain (Dokka, 2006; Meckel, et al., 2006; Törnqvist, et al., 2008).
Sediment Loading of the Lithosphere	$0 - 8 \text{ mm yr}^{-1}$ Subsidence rates radially decrease away from southern Lafourche parish (Ivins, et al., 2007).
Glacial Isostatic Adjustment	$\leq 6 \text{ mm yr}^{-1}$ Viscoelastic rebound of the lithosphere following the melting glacial ice.
Description of Anthropogenic Processes	Rate
Oil and Gas Extraction	$8 - 12 \text{ mm yr}^{-1}$ Observed with discrete maxima possible throughout the LCZ (Morton, et al., 2006).
Water Pumping / Aquifer Discharge	$0.25 - 30 \text{ mm yr}^{-1}$ Observed in all manipulated landscapes (Kolb & Saucier, 1982; Dixon, et al., 2006).
Surface Water Drainage / Land Reclamation	$10 - 40 \text{ mm yr}^{-1}$ Compaction, Consolidation, and Organic Oxidization / Decomposition due to dewatering (Kolb & Saucier, 1982; Dixon, et al., 2006).

sources for geologic subsidence, including tectonic (i.e., faults), sediment compaction and consolidation, sediment loading on the lithospheric, and glacial isostatic adjustment (i.e., post-glacial lithospheric rebound). Attributable human-induced (i.e., anthropogenic) subsidence factors include petroleum extraction, fluid withdrawal from aquifers, and surface water drainage (i.e., land reclamation). These include sediment compaction, fluid extraction, faulting, load-

induced flexure, forced drainage, organic decomposition, and more. Studies have revealed that the twenty-six parishes comprising Louisiana's coastal zone (LCZ) are experiencing collective subsidence at rates as much as 60 mm yr^{-1} , with discrete extremes observed throughout the region (Dokka, 2006; Ivins, et al., 2007; Meckel, et al., 2006; Morton, et al., 2006; Shinkle & Dokka, 2004; Törnqvist, et al., 2008). When combined with the predicted effects of future global climate change, the subsiding coastal plain will present significant design challenges for the State's emergency evacuation strategies, including more frequent and widespread seasonal flooding, sea level rise (i.e., eustasy), deeper penetration of storm surge into the coastal zone, and substantial retreat of low-lying coastal wetlands.

Indeed, these consequences are visible today. An examination of benchmarks located along LA Highway 1, a hurricane evacuation route, found that long stretches of the road subsided approximately 1 foot (30.48 cm) between 1982 and 2002 (Shinkle & Dokka, 2004). This example foreshadows the long-term implications for the LCZ that will undoubtedly complicate existing emergency evacuation policies (Frazier, et al., 2010 (in press); Suarez, et al., 2005). Despite these obvious implications, there has been a conspicuous absence of research examining these issues on the State's emergency evacuation routes. Accordingly, this research examined the long-term impact of subsidence on evacuation routes across the coastal zone of Louisiana.

Project Objectives

Four subsidence rate forecast models were developed for coastal Louisiana to estimate the change in the surface elevations of evacuation routes in the years 2015, 2025, 2050, and

2100. Geophysical and anthropogenic subsidence estimates were derived from on-going empirical studies and hypothetical models published in contemporary scientific literature. Modeled elevation changes were subtracted from elevation surveys and used to quantify individual road segments that have surfaces at or below 0m in elevation (NAVD-88). Additionally, the threshold for climate change susceptibility was evaluated relative to storm surge models published by the National Weather Service, which were used to identify evacuation routes vulnerable to surge inundation. The results from this analysis are presented by parish and reveal the modeled subsidence risks for the forecast years. Findings from this research can provide transportation engineers and emergency managers with data previously unavailable, which are applicable to evacuation modeling, hazard mitigation, environmental sustainability research, coastal restoration efforts, and more.

Project Methodology

The Center for GeoInformatics (C4G) at Louisiana State University (LSU) examined the combined effects of long-term subsidence on State designated emergency evacuation routes within the twenty-six parish of the LCZ. The project workflow was organized into key steps: *data collection, subsidence estimations, and road vulnerability classification*. First, an elevation inventory of State designated emergency evacuation routes in southern Louisiana was performed using high-precision global positioning systems (GPS) technologies enhanced by the GULFNet real-time kinematic (RTK) network maintained by the C4G. Identification of the State designated evacuation routes was facilitated using a geospatial database obtained from the Cartographic/GIS section of the Louisiana Department of Transportation & Development (Figure 1). The surface elevations of evacuation routes were surveyed between 2007 and 2011 and to

positional accuracies of ± 5 cm horizontal and ± 15 cm vertical. To ensure positional accuracy and quality, the survey vehicle was equipped with a distance sensor used to measure the pitch, yaw, and roll of the GPS antenna mounted to the vehicle's roof. A maximum calibration threshold of 63.5mm (2.5in) of movement from the center of the GPS antenna (i.e., phase center) was used to reduce bias and error of the observations. Additionally, settings within the Trimble Business Center™ software package was used to further reject surveyed observations that had confidence values below 95%. Table 2 details the class and number of miles of evacuation routes successfully surveyed by the C4G. In all, more than 90% of the evacuation routes in the coastal zone were captured and used for this study.

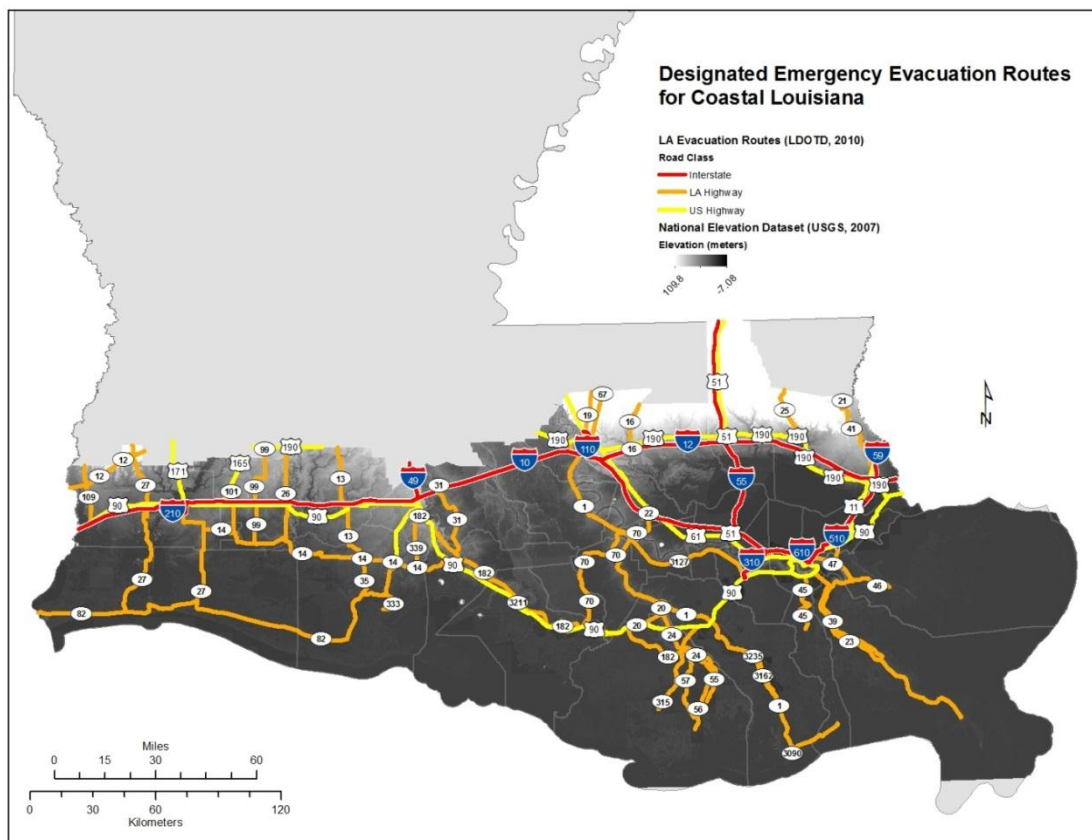


Figure 1: Designated Emergency Evacuation Routes for Coastal Louisiana (LADOTD, 2010)

Table 2: Inventory of C4G survey points of emergency evacuation route elevations.

Interstate	462 miles (94% of total)
State Highway	1,182 miles (91.5% of total)
US Highway	610 miles (92% of total)

Next, estimates of vertical displacement were derived from empirical values published in contemporary scientific literature (e.g., Kulp, 2000; and Shinkle & Dokka, 2004). These predicted subsidence rates were used to forecast surface elevations for the years 2015, 2025, 2050, and 2100. As noted earlier, the spatial and temporal domains associated with the causative process of subsidence have been classified into two general categories: geologic and anthropogenic (Dokka R., 2009). Despite the extensive research and numerous theories (see Table 1), there has been widespread discord within the research community as to the contributing factors impacting contemporary subsidence (e.g., Dokka, 2009; Meckel et al., 2006; Morten et al., 2006; and Tornqvist et al., 2008;). Consequently, there is a conspicuous lack of agreement for a single rate of subsidence in the region. Accordingly, this research employed two different approaches for estimating the rate of vertical change across the Mississippi River delta. The first source for subsidence rates were obtained using peat chronostratigraphic estimates derived from 60 years of radiocarbon dated measurements of late Quaternary sedimentary deposits and borehole core samples collected across coastal Louisiana (Kulp, 2000; Kulp et al., 2002). The borehole samples provide measurements on the age and depth of peat deposits that formed during the Holocene. The combined estimates on age and thickness of the Holocene topstratum (i.e., the sediment and material that deposited across the landscape since the Pleistocene period) was used to estimate vertical change over time (i.e., subsidence rates). Kulp (2000) used the

values at each borehole location to develop a conservative estimate of subsidence ($\mu=0.40$ mm yr^{-1} , $\sigma=0.37$ mm) over the coastal zone of Louisiana (Figure 2). This rate was applied as a steady-state value over the temporal extent of this study.

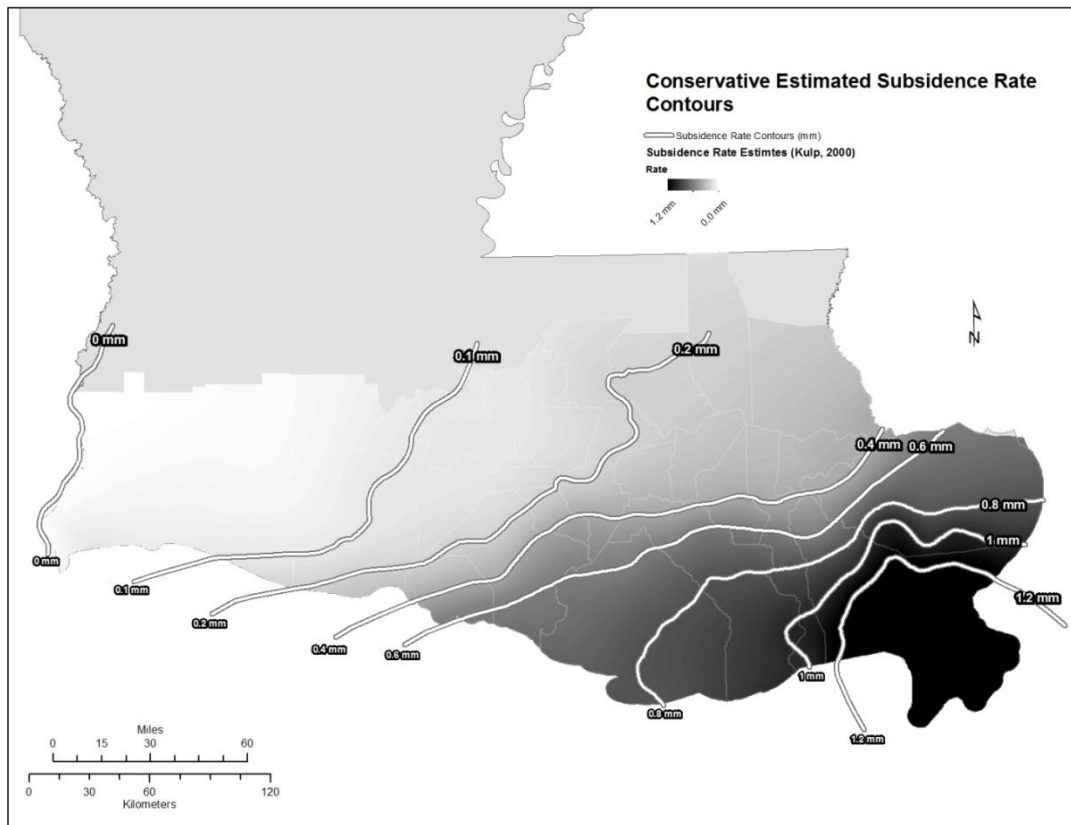


Figure 2: Conservative subsidence rate contours estimated by Kulp (2000).

The second source of subsidence rate estimates were empirically derived from first-order geodetic leveling surveys data published by the National Geodetic Survey (NGS) and water level (i.e., tide gauge) observation data (Shinkle & Dokka, 2004). Using more than 2,700 NGS benchmarks, the rate and spatial distribution of subsidence was calculated based on geodetic leveling data collected between 1920 and 1995. Because benchmarks are set at varying depths within the lithosphere (between 0m – 250m, depending on class), the measured vertical

displacement at each location represents either shallow or deep subsidence causative factors, respectively, which can account for natural and anthropogenic sources. These rates, which are substantially higher than those reported elsewhere, indicate increases across many areas during the latter half of the 20th century (Shinkle & Dokka, 2004; Dokka R. , 2009). To represent the spatial variability of these rates, the data were digitized and converted to a raster surface using an ordinary kriging method of spatial interpolation (Figure 3). The average estimated subsidence rate of 9.4mm per year ($\sigma=2.7 \text{ mm yr}^{-1}$) was calculated over this study area. This rate was applied as a steady-state value over the time period of this study.

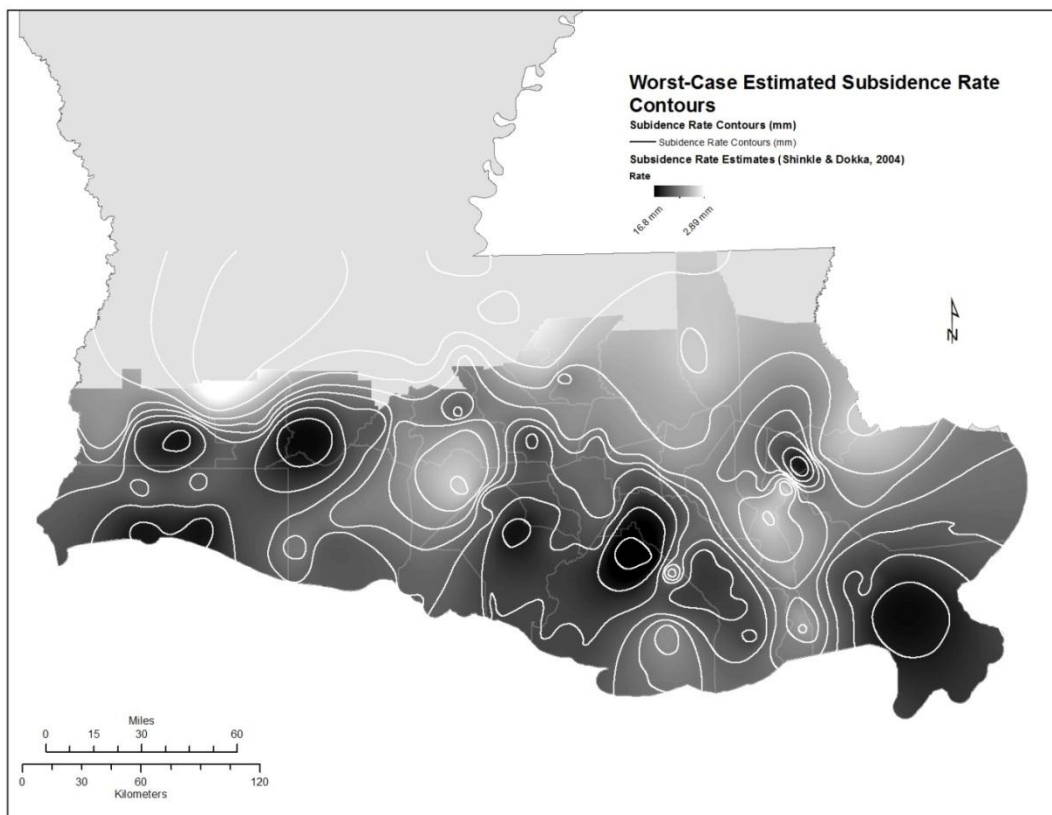


Figure 3: Worst-case subsidence rates contours estimated for Shinkle & Dokka (2004).

In accordance with research published by Dokka (2006), Deverel and Rojstaczer (1996), and Dixon et al. (2006), rates of elevation change were further adjusted and modeled to account for long-term land use practices occurring within areas surrounded by natural and man-made levees (i.e., constrained wetlands). A surface contour map of 1890's New Orleans, Louisiana, (Brown, 1895) was digitized and transformed to compute the difference in surface elevation between 1895 and 1992 (Figure 4). From this analysis, a maximum (i.e., worst case scenario) subsidence rate of 15.85 mm yr^{-1} ($\mu = 10.61 \text{ mm yr}^{-1}$, $\sigma=4.87 \text{ mm}$) was estimated. This rate represents the effects of subsidence on the topography of urban settlement bounded by natural or man-made levees. The premise for this additional factor is founded on the wide-spread observation that long-term developed landscapes across the LCZ that are surrounded by levees, such as New Orleans and communities within Lafourche parish, will subside at rates faster than the surrounding and unconstrained wetlands. Although such rates are most likely to be spatially and temporally variable, it is assumed that the century-long estimate for New Orleans represents the maximum rate within the region. Thus, when applied to all leveed LCZ communities, this constrained subsidence rate will impose the maximum vulnerability to the evacuation routes within the State.

Results

Subsidence rate estimates for the years 2015, 2025, 2050, and 2100 were interpolated over the extent of the Louisiana coastal zone (Figures 5a – 5d). Forecasted estimates of vertical change were subtracted from each of the surveyed emergency evacuation route elevation observations collected by the C4G. Road segments were classified as vulnerable if the predicted surface elevations was equal to or less than 0m, relative to the North American Vertical Datum

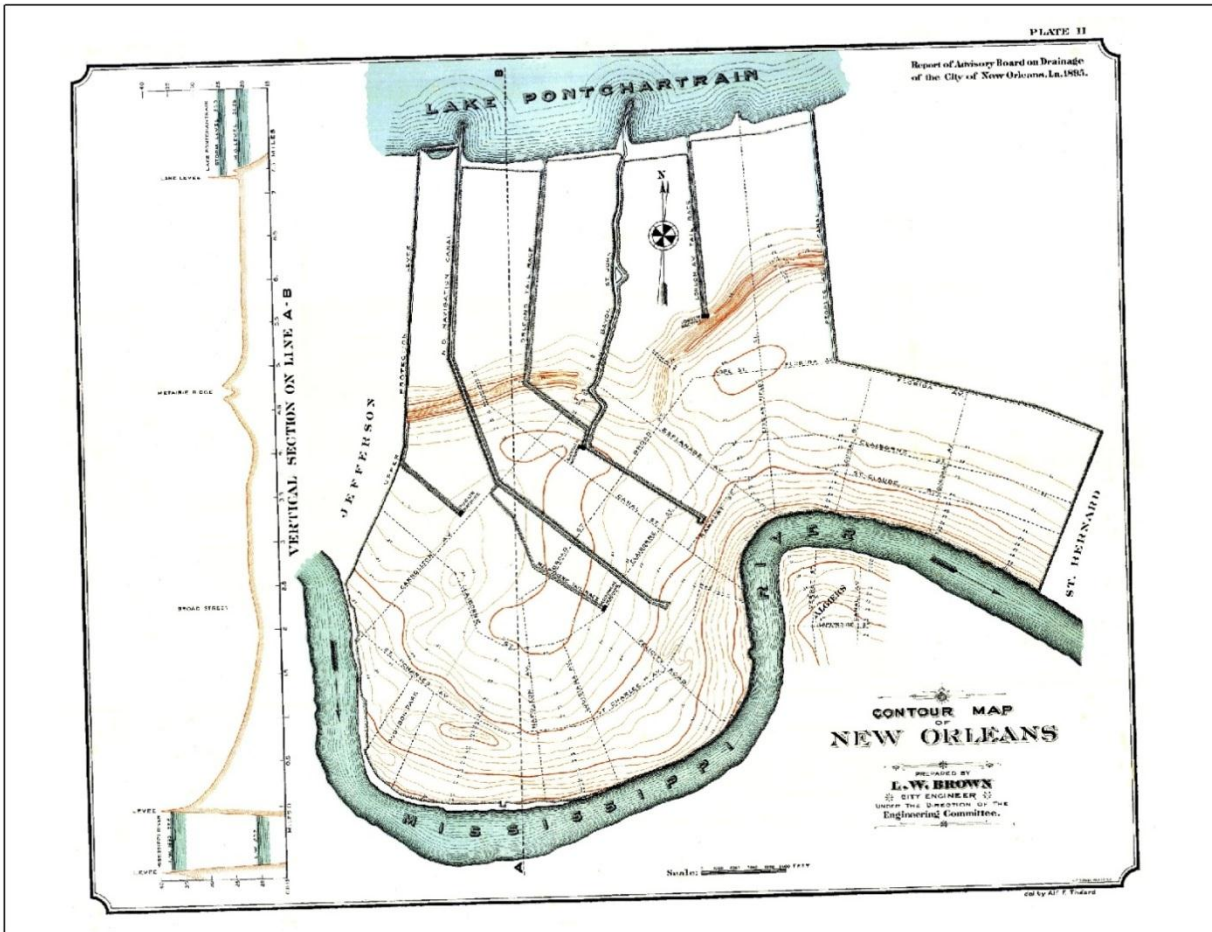


Figure 4: Contours of surface elevation of late 19th century New Orleans, LA (Brown, 1895).

of 1988 (NAVD-1988). This subset of vulnerable road segments were exported and saved as a new dataset. The tables in Appendix A quantify the length of vulnerable evacuation routes by road class (i.e., Interstate, LA Highway, and US Highway) within each LCZ parish. Summaries provided in Figures 6a – 6d and 7a – 7d depict the length of vulnerable evacuation routes by road-class and by parish, respectively.

In order to identify and quantify the threshold for climate change susceptibility, the flood vulnerabilities for the forecasted subsidence rates were assessed relative to the surge heights published in the *Sea, Lake, and Overland Surges from Hurricanes Display* (SLOSH) software

package (NWS, 2011). First, the SLOSH surge heights were rasterized and interpolated as a surface for each hurricane category. Next, the surge model heights were altered relative to the four subsidence estimate models for the four years of this study (e.g., 2015, 2025, 2050, and 2100). For each hurricane category, the current and predicted surge inundation height of the current and predicted road surface elevations were identified, quantified, and subset from the evacuation route dataset (see Appendix B). Figures 8a – 8d depict the average length (in miles) of evacuation routes impacted by subsidence adjusted storm surge.

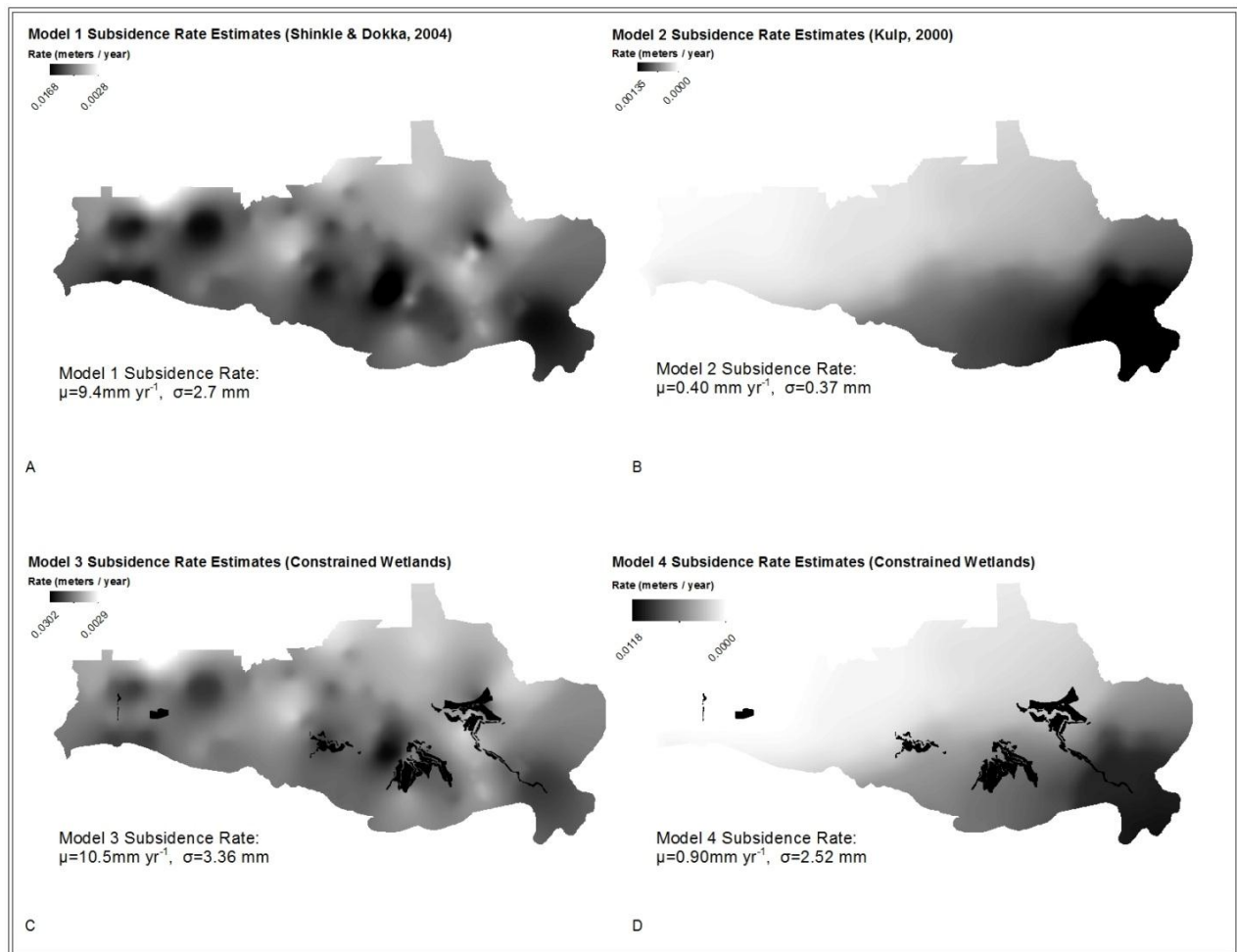


Figure 5a – 5d: The four subsidence forecast models used for this study.

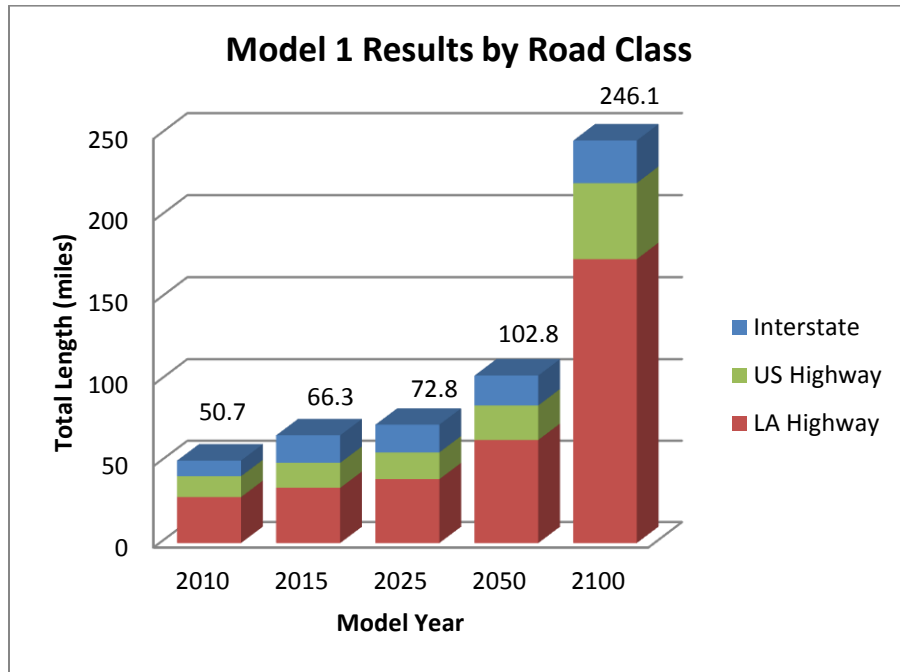


Figure 6a: Vulnerable evacuation routes by road class for Model 1.

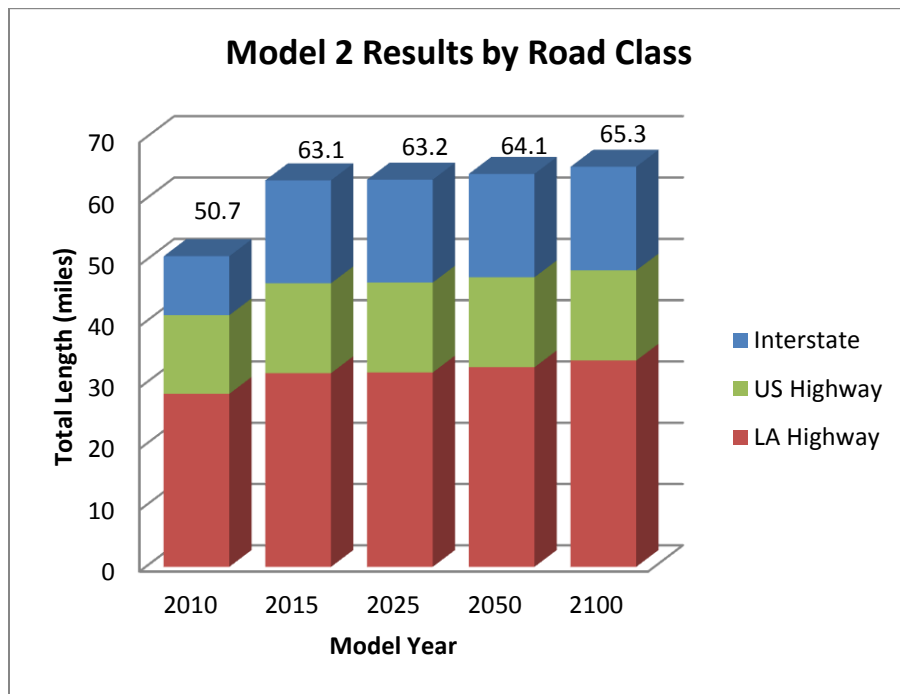


Figure 6b: Vulnerable evacuation routes by road class for Model 1.

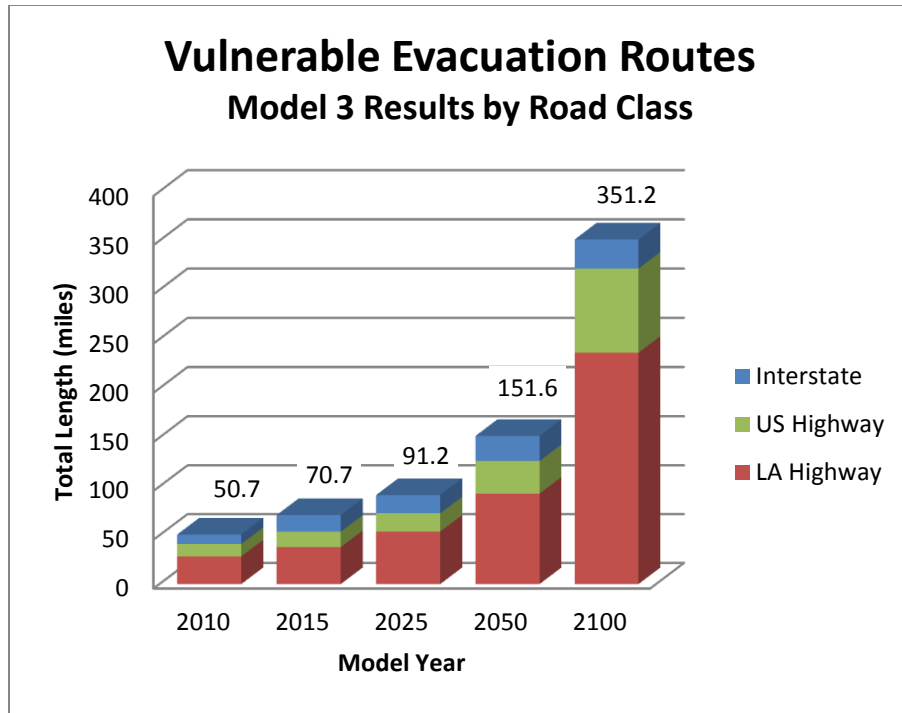


Figure 6c: Vulnerable evacuation routes by road class for Model 3.

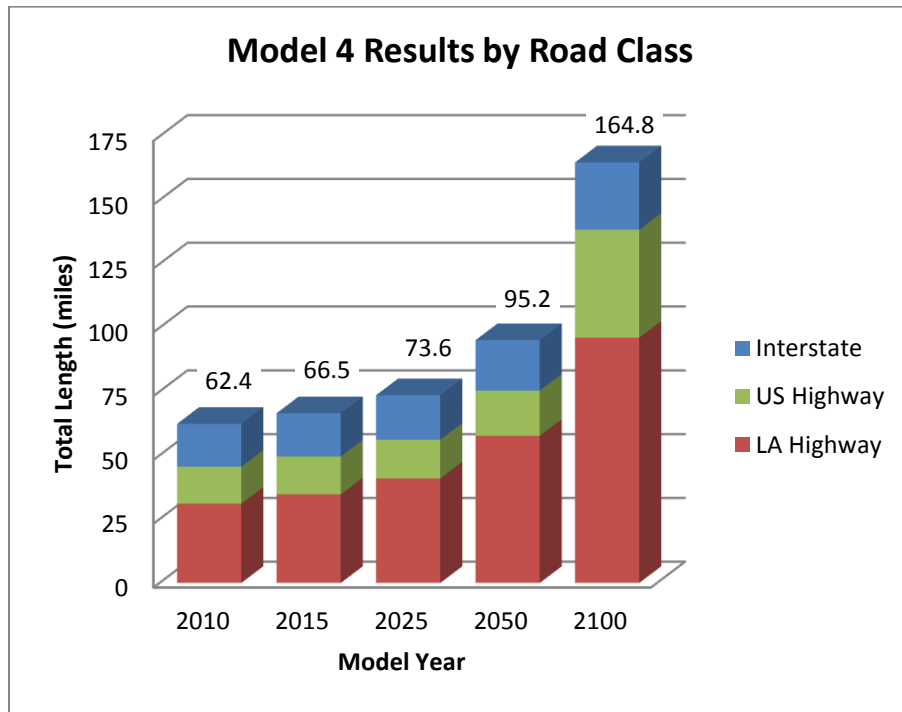


Figure 6d: Vulnerable evacuation routes by road class for Model 4.

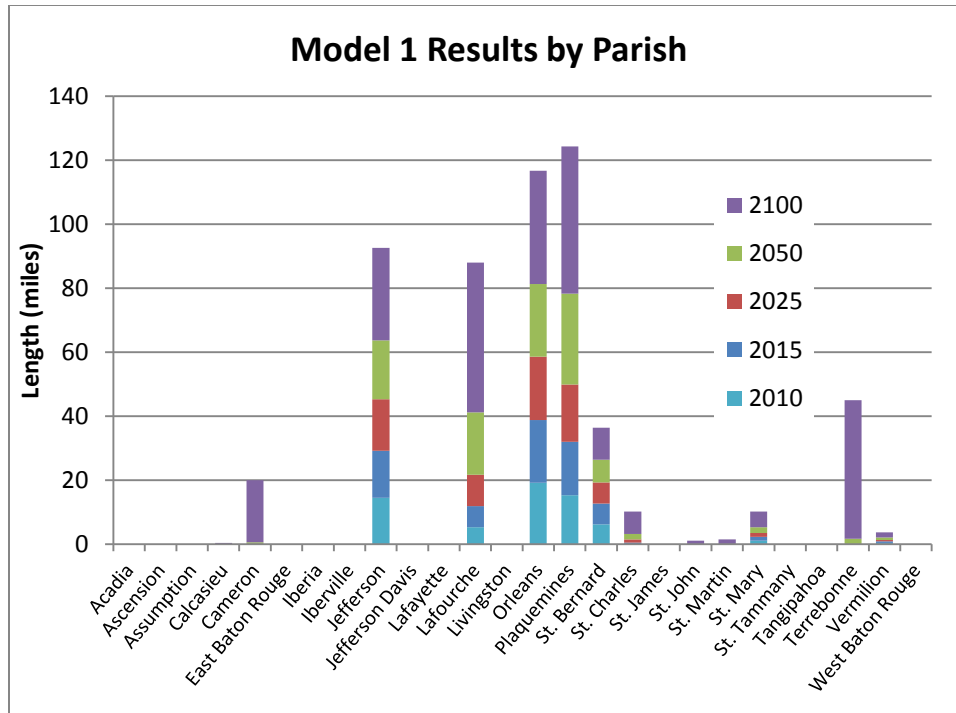


Figure 7a: Vulnerable evacuation routes by parish for Model 1.

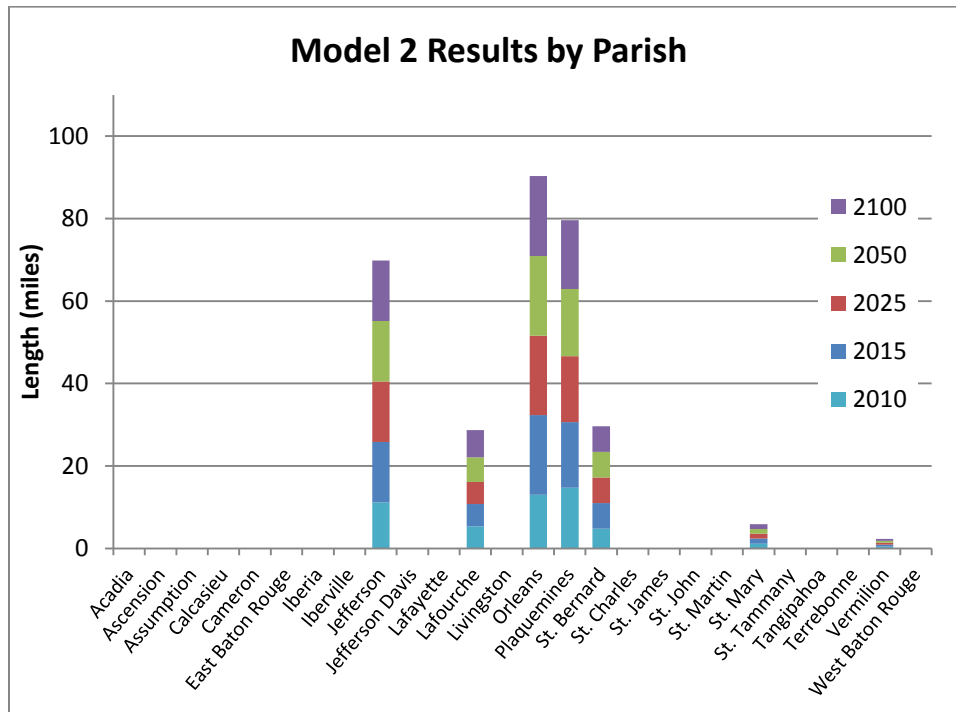


Figure 7b: Vulnerable evacuation routes by parish for Model 2.

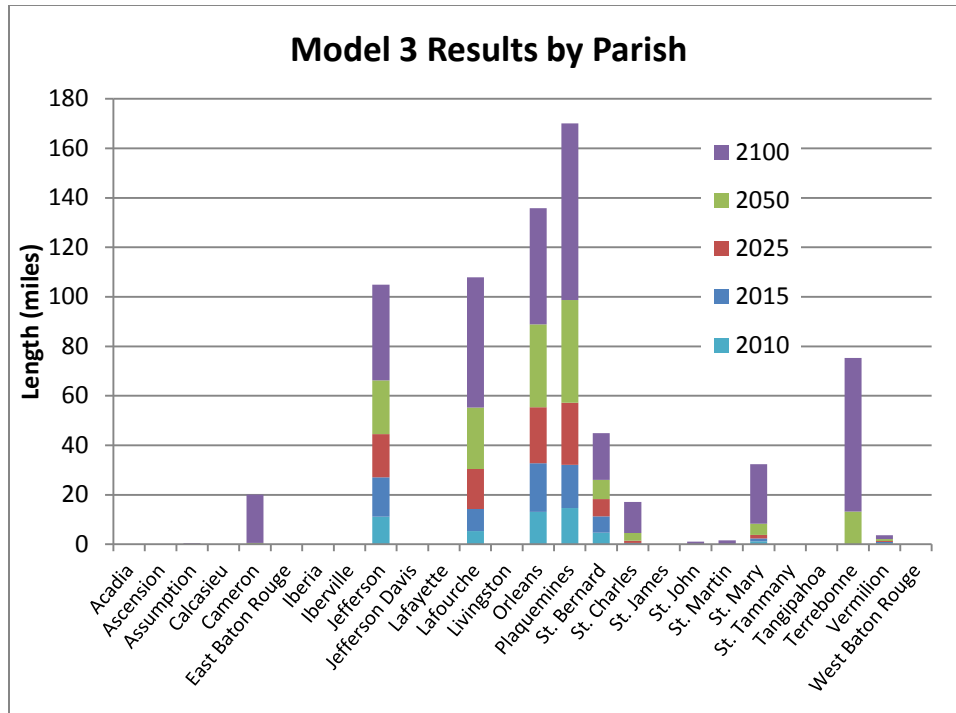


Figure 7c: Vulnerable evacuation routes by parish for Model 3.

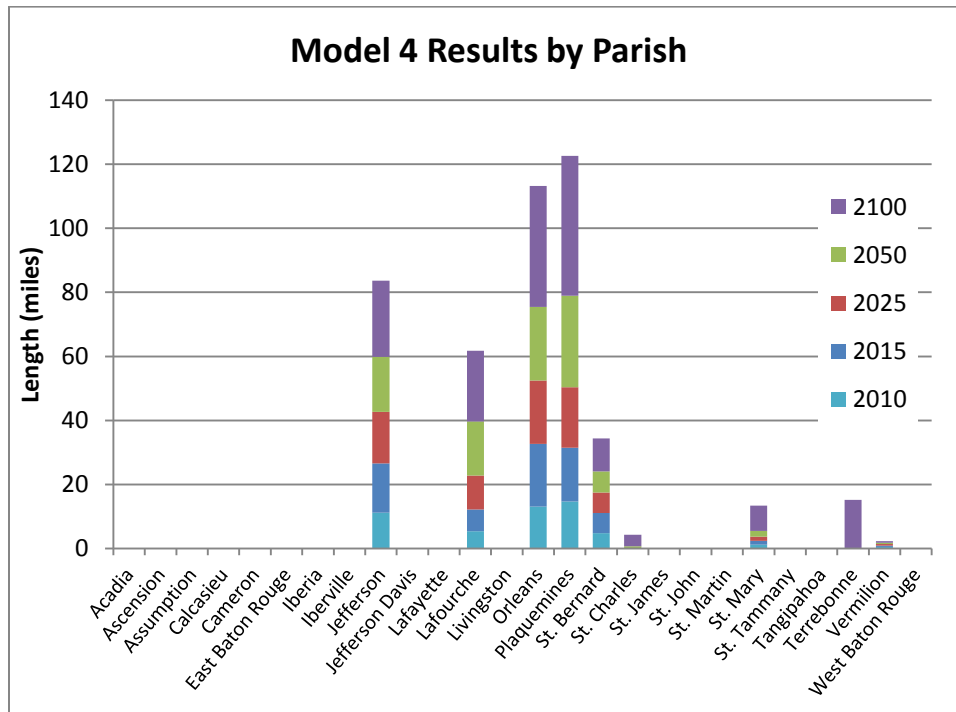


Figure 7d: Vulnerable evacuation routes by parish for Model 4.

Discussion

Findings from this research reveal that the majority of predicted vulnerable roads are currently vulnerable. Figure 6a-6d illustrates the slight differences between vulnerable roads in 2010 and 2015. Table 3 depicts the differences (in miles of road segments) by road class and between modeled year and 2010. These differences change little between 2010 and 2025, suggesting that mitigating these vulnerable routes now can have long-term benefits to evacuation planning. This is especially true for the routes vulnerable to storm surge from hurricanes.

Table 3: Differences between forecasted and current vulnerable evacuation routes (in miles).

Year Difference	Road Class	Model 1	Model 2	Model 3	Model 4
2015-2010	Interstate	7.32	7.17	7.44	7.36
	LA Highway	5.71	3.37	9.59	6.43
	US Highway	2.55	1.84	2.97	2.03
2025-2010	Interstate	7.43	7.17	9.10	7.79
	LA Highway	11.00	3.49	25.47	12.66
	US Highway	3.68	1.84	5.96	2.43
2050-2010	Interstate	8.60	7.24	15.85	10.16
	LA Highway	35.15	4.33	64.41	29.36
	US Highway	8.38	1.85	20.68	4.95
2100-2010	Interstate	16.28	7.28	19.86	16.78
	LA Highway	145.58	5.43	207.88	67.85
	US Highway	33.59	1.87	72.76	29.48

As illustrated in Figures 8a-8d, there is only a slight difference between the average length of vulnerable evacuation route in 2010 and 2015. When examined for the modeled surge depth, the Category 1 surge height above road surface rarely exceeds an average of 0.85 meters (2.8ft) in elevation, (Tables 4 -7). In fact, the average inundation doesn't exceed 0.9 meters (2.95ft) until after the year 2025. And while maximum surge heights do exceed 5 meters for some locations, these averages indicate a manageable that many of these vulnerabilities can be

mitigated with a smaller investment than what might be required in the latter half of the century.

In all, these findings support the recommendation that each the vulnerable evacuation routes identified in this study should be further assessed and mitigated within the next few years.

Multiple assumptions were employed for the creation of these models. First, each model was developed using a steady-state (i.e., un-changing) rate of vertical change. That is, while the rates of subsidence are spatially variable, there was no assumption of positive or negative acceleration. Indeed, these models also assumed no change in land use practices over the remaining century. This second assumption must be further considered when interpreting the results for models 3 and 4, which employ a steady-state subsidence rate within constrained

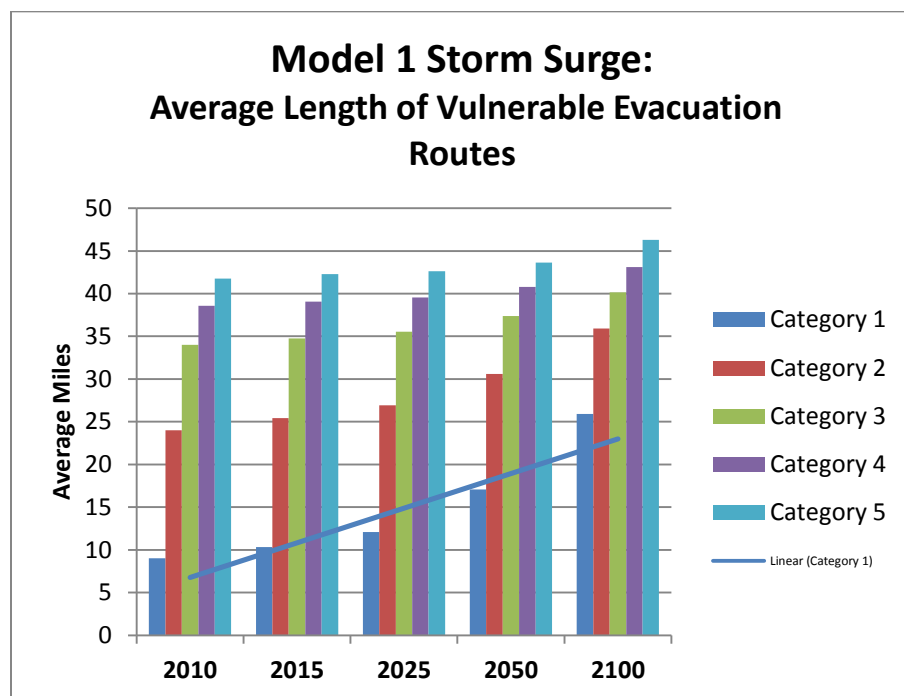


Figure 8a: Average length of vulnerable evacuation routes due to storm surges for Model 1.

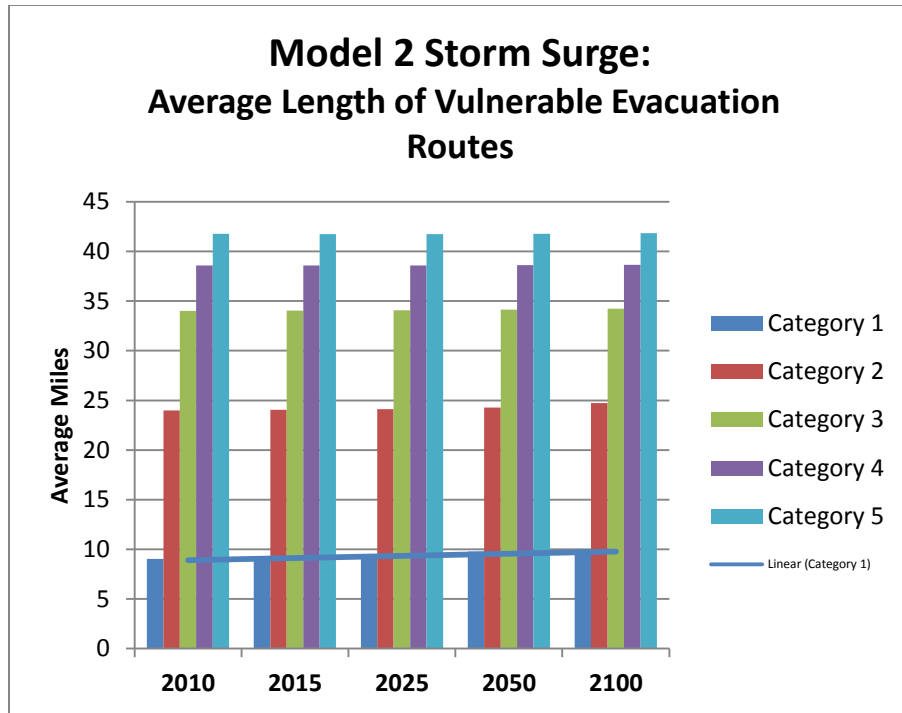


Figure 8b: Average length of vulnerable evacuation routes due to storm surges for Model 2.

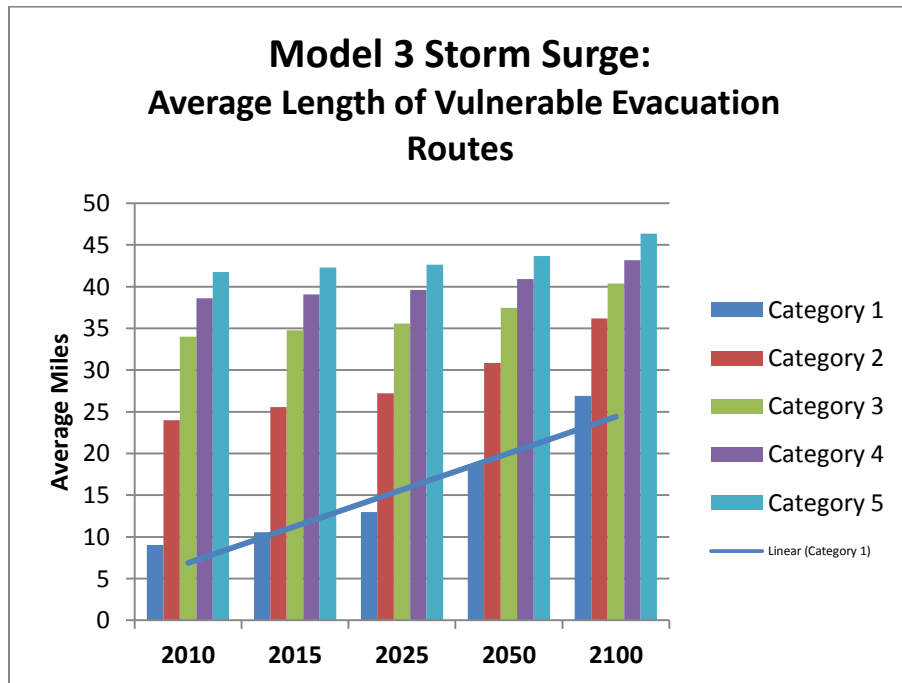


Figure 8c: Average length of vulnerable evacuation routes due to storm surges for Model 3.

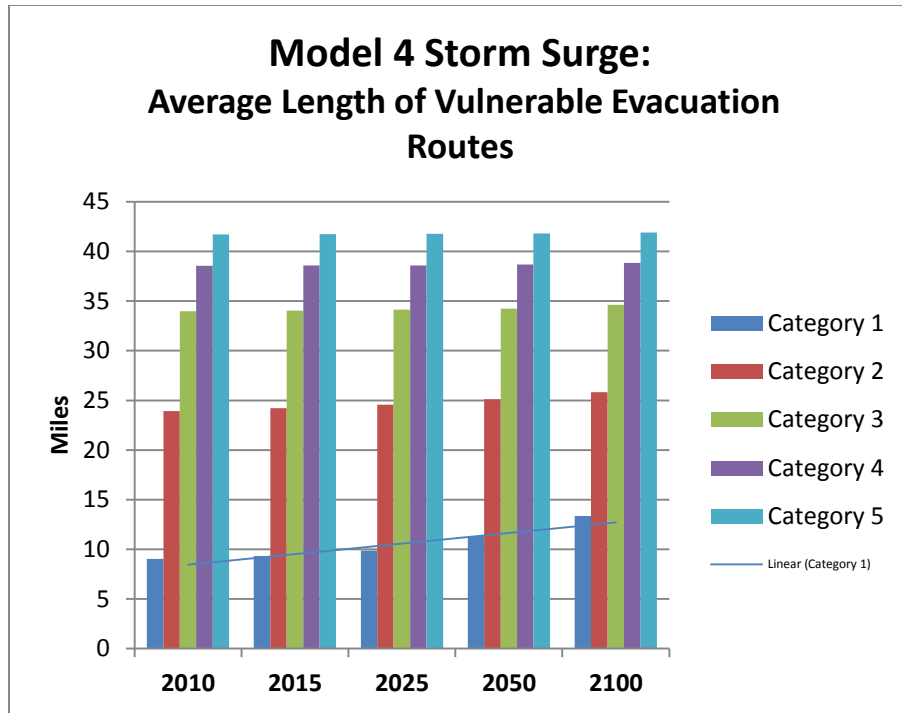


Figure 8d: Average length of vulnerable evacuation routes due to storm surges for Model 4.

wetlands (i.e., developed land bound by natural and man-made levees). The maximum rate of 15.85 mm yr^{-1} was universally applied to all developed landscapes. Though applicable to the New Orleans area, there is no evidence that this rate is applicable to other areas within the LCZ. However, the 100-year time period used to derive the constrained subsidence is believed to be an accurate representation of shallow compaction and consolidation of the Holocene sediments due to long-term occupation of the land. A fourth assumption relates to the interpolation techniques used to convert the discrete subsidence rates into a continuous raster. Rates published by Kulp (2000; Kulp et al., 2002) and Shinkle & Dokka (2004) were generalized and thus introduced error within the interpolated rate surface. Without additional observations, these errors are

Table 4: Modeled Storm Surge Depth Statistics (meters) – Model 1

<i>Surge Statistics</i>	<i>2010</i>	<i>2015</i>	<i>2025</i>	<i>2050</i>	<i>2100</i>	<i>CATEGORY</i>
<i>Minimum:</i>	0.00	0.00	0.00	0.00	0.00	Model 1 Category 1
<i>Maximum:</i>	5.63	5.58	5.86	6.57	8.00	
<i>AVG Mean Depth:</i>	0.80	0.80	0.80	0.87	1.26	
<i>AVG Standard Deviation:</i>	0.82	0.81	0.81	0.81	0.95	
<i>Minimum:</i>	0	0	0	0	0	Model 1 Category 2
<i>Maximum:</i>	0	8.73	8.92	9.41	10.39	
<i>AVG Mean Depth:</i>	1.14	1.2	1.27	1.45	1.98	
<i>AVG Standard Deviation:</i>	1.13	1.14	1.15	1.2	1.38	
<i>Minimum:</i>	0	0	0	0	0	Model 1 Category 3
<i>Maximum:</i>	11.34	10.77	10.95	11.41	12.58	
<i>AVG Mean Depth:</i>	1.64	1.74	1.86	2.18	2.94	
<i>AVG Standard Deviation:</i>	1.29	1.32	1.34	1.43	1.61	
<i>Minimum:</i>	0	0	0	0	0	Model 1 Category 4
<i>Maximum:</i>	14.03	12.88	13.15	13.81	15.14	
<i>AVG Mean Depth:</i>	2.55	2.67	2.82	3.23	4.03	
<i>AVG Standard Deviation:</i>	1.57	1.6	1.63	1.7	1.9	
<i>Minimum:</i>	0.00	0.00	0.00	0.00	0.00	Model 1 Category 5
<i>Maximum:</i>	14.91	14.05	14.23	14.71	16.04	
<i>AVG Mean Depth:</i>	3.45	3.57	3.73	4.13	4.97	
<i>AVG Standard Deviation:</i>	1.76	1.80	1.84	1.93	2.12	

Table 5: Modeled Storm Surge Depth Statistics (meters) – Model 2

<i>Surge Statistics</i>	<i>2010</i>	<i>2015</i>	<i>2025</i>	<i>2050</i>	<i>2100</i>	<i>CATEGORY</i>
<i>Minimum:</i>	0.00	0	0	0	0	Model 2 Category 1
<i>Maximum:</i>	5.63	5.65	5.67	5.74	5.86	
<i>AVG Mean Depth:</i>	0.80	0.81	0.8	0.8	0.8	
<i>AVG Standard Deviation:</i>	0.82	0.81	0.82	0.82	0.82	
<i>Minimum:</i>	0	0.00	0.00	0.00	0.00	Model 2 Category 2
<i>Maximum:</i>	0	8.41	8.42	8.43	8.47	
<i>AVG Mean Depth:</i>	1.14	1.15	1.16	1.16	1.17	
<i>AVG Standard Deviation:</i>	1.13	1.14	1.14	1.14	1.14	
<i>Minimum:</i>	0	0	0	0	0	Model 2 Category 3
<i>Maximum:</i>	11.34	11.39	11.4	11.41	11.45	
<i>AVG Mean Depth:</i>	1.64	1.65	1.66	1.67	1.7	
<i>AVG Standard Deviation:</i>	1.29	1.3	1.3	1.3	1.31	
<i>Minimum:</i>	0	0	0	0	0	Model 2 Category 4
<i>Maximum:</i>	14.03	14.03	14.04	14.06	14.09	
<i>AVG Mean Depth:</i>	2.55	2.56	2.57	2.58	2.62	
<i>AVG Standard Deviation:</i>	1.57	1.57	1.57	1.58	1.58	
<i>Minimum:</i>	0.00	0.00	0.00	0.00	0.00	Model 2 Category 5
<i>Maximum:</i>	14.91	14.91	14.92	14.94	14.97	
<i>AVG Mean Depth:</i>	3.45	3.46	3.47	3.49	3.52	
<i>AVG Standard Deviation:</i>	1.76	1.77	1.77	1.78	1.78	

Table 6: Modeled Storm Surge Depth Statistics (meters) – Model 3

<i>Surge Statistics</i>	<i>2010</i>	<i>2015</i>	<i>2025</i>	<i>2050</i>	<i>2100</i>	<i>CATEGORY</i>
<i>Minimum:</i>	0.00	0.00	0.00	0.00	0.00	Model 3 Category 1
<i>Maximum:</i>	5.63	5.73	6.23	7.50	10.04	
<i>AVG Mean Depth:</i>	0.80	0.85	0.88	1.11	1.86	
<i>AVG Standard Deviation:</i>	0.82	0.85	0.91	1.06	1.53	
<i>Minimum:</i>	0	0	0	0	0	Model 3 Category 2
<i>Maximum:</i>	0	8.92	9.42	10.65	13.13	
<i>AVG Mean Depth:</i>	1.14	1.24	1.36	1.68	2.45	
<i>AVG Standard Deviation:</i>	1.13	1.18	1.24	1.45	1.93	
<i>Minimum:</i>	0	0.00	0.00	0.00	0.00	Model 3 Category 3
<i>Maximum:</i>	11.34	10.97	11.47	12.72	15.48	
<i>AVG Mean Depth:</i>	1.64	1.77	1.94	2.38	3.35	
<i>AVG Standard Deviation:</i>	1.29	1.35	1.43	1.66	2.13	
<i>Minimum:</i>	0	0.00	0.00	0.00	0.00	Model 3 Category 4
<i>Maximum:</i>	14.03	13.08	13.67	15.13	18.04	
<i>AVG Mean Depth:</i>	2.55	2.70	2.90	3.40	4.42	
<i>AVG Standard Deviation:</i>	1.57	1.63	1.71	1.93	2.40	
<i>Minimum:</i>	0.00	0.00	0.00	0.00	0.00	Model 3 Category 5
<i>Maximum:</i>	14.91	14.25	14.75	16.02	18.94	
<i>AVG Mean Depth:</i>	3.45	3.60	3.80	4.31	5.36	
<i>AVG Standard Deviation:</i>	1.76	1.83	1.91	2.11	2.55	

Table 7: Modeled Storm Surge Depth Statistics (meters) – Model 4

<i>Surge Statistics</i>	<i>2010</i>	<i>2015</i>	<i>2025</i>	<i>2050</i>	<i>2100</i>	<i>CATEGORY</i>
<i>Minimum:</i>	0.00	0	0	0	0	Model 4 Category 1
<i>Maximum:</i>	5.63	5.83	6.16	6.97	8.59	
<i>AVG Mean Depth:</i>	0.80	0.85	0.9	1.06	1.48	
<i>AVG Standard Deviation:</i>	0.82	0.86	0.92	1.08	1.4	
<i>Minimum:</i>	0	0.00	0.00	0.00	0.00	Model 4 Category 2
<i>Maximum:</i>	0	8.60	8.91	9.67	11.23	
<i>AVG Mean Depth:</i>	1.14	1.19	1.26	1.43	1.82	
<i>AVG Standard Deviation:</i>	1.13	1.17	1.23	1.40	1.79	
<i>Minimum:</i>	0	0.00	0.00	0.00	0.00	Model 4 Category 3
<i>Maximum:</i>	11.34	11.59	11.92	12.73	14.35	
<i>AVG Mean Depth:</i>	1.64	1.68	1.74	1.88	2.18	
<i>AVG Standard Deviation:</i>	1.29	1.33	1.39	1.55	1.91	
<i>Minimum:</i>	0	0.00	0.00	0.00	0.00	Model 4 Category 4
<i>Maximum:</i>	14.03	14.24	14.56	15.37	16.99	
<i>AVG Mean Depth:</i>	2.55	2.59	2.65	2.79	3.06	
<i>AVG Standard Deviation:</i>	1.57	1.60	1.66	1.80	2.14	
<i>Minimum:</i>	0.00	0.00	0.00	0.00	0.00	Model 4 Category 5
<i>Maximum:</i>	14.91	15.12	15.44	16.25	17.87	
<i>AVG Mean Depth:</i>	3.45	3.49	3.53	3.66	3.92	
<i>AVG Standard Deviation:</i>	1.76	1.80	1.85	1.97	2.26	

difficult to constrain. Comprehensively, these assumptions were employed for the purpose of forecasting worst-case scenarios of subsidence in the LCZ. These worst-case values were further exaggerated by the low resolution of the SLOSH grids, which are very coarse and thus incapable of accounting for micro-scale topographic change. Consequently, this coarseness will bias the estimated storm surge heights with the forecasted subsidence rates.

Multiple assumptions were employed for the creation of these models. First, each model was developed using a steady-state (i.e., un-changing) rate of vertical change. That is, while the rates of subsidence are spatially variable, there was no assumption of positive or negative acceleration. Indeed, these models also assumed no change in land use practices over the remaining century. This second assumption must be further considered when interpreting the results for models 3 and 4, which employ a steady-state subsidence rate within constrained wetlands (i.e., developed land bound by natural and man-made levees). The maximum rate of 15.85 mm yr^{-1} was universally applied to all developed landscapes. Though applicable to the New Orleans area, there is no evidence that this rate is applicable to other areas within the LCZ. However, the 100-year time period used to derive the constrained subsidence is believed to be an accurate representation of shallow compaction and consolidation of the Holocene sediments due to long-term occupation of the land. A fourth assumption relates to the interpolation techniques used to convert the discrete subsidence rates into a continuous raster. Rates published by Kulp (2000; Kulp et al., 2002) and Shinkle & Dokka (2004) were generalized and thus introduced employed for the purpose of forecasting worst-case scenarios of subsidence in the LCZ. These worst-case values were further exaggerated by the low resolution of the SLOSH grids, error within the interpolated rate surface. Without additional observations, these errors are difficult to

constrain. Comprehensively, these assumptions were which are very coarse and thus incapable of accounting for micro-scale topographic change. Consequently, this coarseness will bias the estimated storm surge heights with the forecasted subsidence rates.

Terrain resolution is an important factor for emergency planning and response during flood events. The spatial variability of terrain, at any scale, is much larger than a water surface. Local emergency managers typically have extensive knowledge and information of elevation within their jurisdiction. These include local land features, levees, building foundations and floor elevations, road surfaces, flood control structures, etc. Subsequent forecasts might better be served at larger scales (i.e., smaller spatial extents) in order to leverage this information, and thus be less dependent upon coarse surge estimates. Small cell size, local terrain can be used to “clip” very large cell size water surface elevations.

Conclusion & Deliverables

These findings from this research are expected to have significant implications for transportation engineers and emergency planners who design the State’s highways and ensure the safety of the citizens of Louisiana, respectively. With guidance from the Gulf Coast Center for Evacuation and Transportation Resiliency (GCCETR), the C4G will publish results in relevant professional journals and make our findings accessible to stakeholder groups. Deliverables also include a geospatially enabled datasets stored in an ESRI ArcGIS™ version 10 file geodatabase as line features (representing the vulnerable roads) and point features (representing the road survey and modeled subsidence values). Also available are raster datasets depicting the modeled subsidence rates calculated for this study. Each dataset will be made available upon request.

Because the findings from this research will have far-reaching implications, the elevation forecast model is expected to become a spring-board for research in related fields, including transportation modeling, coastal restoration and hazard mitigation, environmental sustainability studies, regional planning, and more. The C4G looks to collaborate with multiple disciplines (e.g., geologic/geomorphology, emergency management, coastal restoration, and others) to further refine these road elevation forecast models and ensure applicability for future research. Indeed, the C4G will seek participation in future, synergistic cooperatives with the GCCETR to examine and develop strategies for ensuring the safety and resiliency of Louisiana's transportation and evacuation infrastructure.

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Appendix A: Length of Vulnerable Evacuation Routes by Parish and Road Class

MODEL #1		Length of Vulnerable Road Segments (meters)				
PARISH	ROAD CLASS	2010	2015	2025	2050	2100
Acadia Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Ascension Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Assumption Parish	Interstate					655.32
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	655.32
Calcasieu Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Cameron Parish	Interstate				1,008.02	31,246.50
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	1,008.02	31,246.50
East Baton Rouge Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Iberia Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Iberville Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Jefferson Parish	Interstate	8,610.01	12,893.07	13,025.73	14,026.97	14,560.37
	LA Highway	4,344.52	4,984.60	6,280.00	7,017.21	16,937.41
	US Highway	5,008.89	5,821.65	6,629.37	8,524.13	14,970.79
	SUM	17,963.42	23,699.32	25,935.10	29,568.32	46,468.57
Jefferson Davis Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Lafayette Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Lafourche Parish	Interstate					
	LA Highway	5,801.08	7,797.52	12,820.98	28,467.62	64,802.69
	US Highway	2,825.66	2,825.66	2,901.86	2,932.34	10,428.98
	SUM	8,626.74	10,623.18	15,722.84	31,399.96	75,231.66
Livingston Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00

Orleans Parish	Interstate	6,858.92	14,353.39	14,399.11	15,290.06	23,742.94
	LA Highway	2,131.84	2,680.48	2,741.44	2,741.44	2,741.44
	US Highway	12,023.39	14,439.40	14,652.76	18,583.35	30,397.29
	SUM	21,014.15	31,473.27	31,793.31	36,614.85	56,881.67
Plaquemines Parish	Interstate					
	LA Highway	23,668.85	26,892.92	28,794.81	45,699.86	73,928.87
	US Highway					
	SUM	23,668.85	26,892.92	28,794.81	45,699.86	73,928.87
St. Bernard Parish	Interstate					
	LA Highway	7,667.17	10,449.93	10,663.29	11,394.81	16,085.65
	US Highway					
	SUM	7,667.17	10,449.93	10,663.29	11,394.81	16,085.65
St. Charles Parish	Interstate					15.24
	LA Highway					
	US Highway		868.68	1,584.96	2,787.56	11,225.99
	SUM	0.00	868.68	1,584.96	2,787.56	11,241.23
St. James Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
St. John the Baptist Parish	Interstate					1,828.80
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	1,828.80
St. Martin Parish	Interstate					1,524.00
	LA Highway					990.60
	US Highway					
	SUM	0.00	0.00	0.00	0.00	2,514.60
St. Mary Parish	Interstate					
	LA Highway	1,125.43	1,125.43	1,140.67	1,536.91	1,647.29
	US Highway	777.24	777.24	792.48	1,295.40	6,309.36
	SUM	1,902.67	1,902.67	1,933.15	2,832.31	7,956.65
St. Tammany Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Tanipahoa Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Terrebonne Parish	Interstate					
	LA Highway				2,860.34	68,236.82
	US Highway					1,356.36
	SUM	0.00	0.00	0.00	2,860.34	69,593.18
Vermilion Parish	Interstate					
	LA Highway	731.52	731.52	731.52	1,310.64	2,484.12
	US Highway					
	SUM	731.52	731.52	731.52	1,310.64	2,484.12
West Baton Rouge Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00

MODEL #4		Length of Vulnerable Road Segments (meters)				
PARISH	ROAD CLASS	2010	2015	2025	2050	2100
Acadia Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
Ascension Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
Assumption Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
Calcasieu Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
Cameron Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
East Baton Rouge Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
Iberia Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
Iberville Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
Jefferson Parish	Interstate LA Highway US Highway SUM	8,610.01 4,344.52 5,008.89 17,963.42	12,923.55 6,020.92 5,852.13 24,796.60	13,376.25 6,280.00 6,309.33 25,965.58	14,164.13 6,676.24 6,766.53 27,606.90	14,529.89 6,767.68 17,007.95 38,305.52
Jefferson Davis Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
Lafayette Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
Lafourche Parish	Interstate LA Highway US Highway SUM	5,801.08 2,825.66 8,626.74	8,209.00 2,825.66 11,034.66	14,015.44 2,901.86 16,917.30	24,275.48 2,932.34 27,207.81	29,880.97 5,675.54 35,556.51
Livingston Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
Orleans Parish	Interstate LA Highway US Highway SUM	6,858.92 2,131.84 12,023.39 21,014.15	14,383.87 2,680.48 14,439.40 31,503.75	14,627.71 2,726.20 14,546.08 31,899.99	17,649.08 2,741.44 16,571.67 36,962.19	27,930.73 4,397.43 28,490.95 60,819.11
Plaquemines Parish	Interstate LA Highway US Highway SUM	23,668.85 23,668.85	26,892.92 26,892.92	30,481.09 30,481.09	46,013.99 46,013.99	70,235.80 70,235.80
St. Bernard Parish	Interstate LA Highway US Highway SUM	7,667.17 7,667.17	10,160.37 10,160.37	10,236.57 10,236.57	10,678.53 10,678.53	16,600.58 16,600.58
St. Charles Parish	Interstate					15.24

	LA Highway US Highway SUM	0.00	0.00	0.00	1,036.32 1,036.32	5,886.82 5,902.06
St. James Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
St. John the Baptist Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
St. Martin Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
St. Mary Parish	Interstate LA Highway US Highway SUM	1,125.43 777.24 1,902.67	1,125.43 777.24 1,902.67	1,369.27 792.48 2,161.75	1,601.57 1,295.40 2,896.97	1,693.01 11,021.15 12,714.17
St. Tammany Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
Tangipahoa Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00
Terrebonne Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	24,349.48 24,349.48
Vermilion Parish	Interstate LA Highway US Highway SUM	731.52 731.52	731.52 731.52	731.52 731.52	731.52 731.52	731.52 731.52
West Baton Rouge Parish	Interstate LA Highway US Highway SUM	0.00	0.00	0.00	0.00	0.00

Appendix 2: Storm Surge Modeled Results

The following tables present the modeled output detailing the length of storm surge vulnerable evacuation routes in each parish and by road class. Results are organized by Model number and hurricane category, starting with Model 1, Category 1. There are twenty (20) tables in all, one for each category hurricane (5) and subsidence model (4).

CATEGORY 1 - MODEL #1		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate					
	LA Highway					640.08
	US Highway					640.08
	SUM	0.00	0.00	0.00	0.00	807.72
Ascension Parish	Interstate					
	LA Highway					4,371.80
	US Highway					5,179.52
	SUM	0.00	0.00	0.00	0.00	
Assumption Parish	Interstate					
	LA Highway			960.12	2,804.16	7,651.36
	US Highway			144.33	144.33	875.85
	SUM	0.00	0.00	1,104.45	2,948.49	8,527.21
Calcasieu Parish	Interstate				518.16	518.16
	LA Highway					6,322.20
	US Highway					
	SUM	0.00	0.00	0.00	518.16	6,840.36
Cameron Parish	Interstate					
	LA Highway	78547.67	94,826.60	114,851.96	153,611.65	189,149.16
	US Highway					
	SUM	78,547.67	94,826.60	114,851.96	153,611.65	189,149.16
East Baton Rouge Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Iberia Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Iberville Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Jefferson Parish	Interstate	13863.83	14,240.33	14,270.81	14,377.49	14,682.29
	LA Highway	13592.82	17,545.54	21,429.30	30,853.15	40,921.52
	US Highway	12688.34	13,635.19	14,015.27	19,921.58	30,378.03
	SUM	40,145.00	45,421.06	49,715.37	65,152.22	85,981.85
Jefferson Davis Parish	Interstate					
	LA Highway					5,953.24
	US Highway					563.88
	SUM	0.00	0.00	0.00	0.00	6,517.12
Lafayette Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Lafourche Parish	Interstate					
	LA Highway	32205.92	43,913.13	60,316.74	80,116.96	111,151.57
	US Highway	6056.54	6,330.86	6,376.58	16,078.57	30,767.28
	SUM	38,262.46	50,243.99	66,693.32	96,195.53	141,918.85
Livingston Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Orleans Parish	Interstate	17521.32	17,512.96	17,650.12	21,171.77	29,526.81
	LA Highway	2558.56	2,680.48	2,680.48	2,741.44	4,641.27
	US Highway	20355.32	24,347.00	29,741.96	38,506.28	52,791.93
	SUM	40,435.20	44,540.44	50,072.56	62,419.48	86,960.01
Plaquemines	Interstate					

Parish	LA Highway	86310.02	89,424.24	92,282.03	105,845.63	129,277.36
	US Highway					
	SUM	86,310.02	89,424.24	92,282.03	105,845.63	129,277.36
St. Bernard Parish	Interstate					
	LA Highway	11956.41	13,010.25	14,292.68	19,346.52	27,081.20
	US Highway					3,338.83
	SUM	11,956.41	13,010.25	14,292.68	19,346.52	30,420.03
St. Charles Parish	Interstate	30.48	45.72	45.72	76.20	3,338.83
	LA Highway					3,312.31
	US Highway	7858.63	9,870.31	10,708.51	16,198.65	30,547.43
	SUM	7,889.11	9,916.03	10,754.23	16,274.85	37,198.57
St. James Parish	Interstate					
	LA Highway					
	US Highway					1,124.80
	SUM	0.00	0.00	0.00	0.00	1,124.80
St. John the Baptist Parish	Interstate	1965.96	1,752.60	3,611.88	10,256.52	19,766.28
	LA Highway					1,036.32
	US Highway				702.00	2,960.78
	SUM	1,965.96	1,752.60	3,611.88	10,958.52	23,763.38
St. Martin Parish	Interstate					
	LA Highway			518.16	2,926.08	15,957.36
	US Highway					
	SUM	0.00	0.00	518.16	2,926.08	15,957.36
St. Mary Parish	Interstate					
	LA Highway	5017.43	4,852.83	5,093.63	7,726.52	11,805.74
	US Highway	5008.22	5,907.38	10,368.70	21,196.79	42,230.34
	SUM	10,025.65	10,760.20	15,462.33	28,923.31	54,036.08
St. Tammany Parish	Interstate					
	LA Highway					
	US Highway	518.16	1,584.96	2,301.24	4,403.77	7,808.97
	SUM	518.16	1,584.96	2,301.24	4,403.77	7,808.97
Tangipahoa Parish	Interstate	1463.04	2,484.12	4,312.92	8,488.68	14,244.28
	LA Highway					
	US Highway					
	SUM	1,463.04	2,484.12	4,312.92	8,488.68	14,244.28
Terrebonne Parish	Interstate					
	LA Highway	59333.19	65,198.70	73,761.41	107,550.94	179,278.48
	US Highway					9,764.25
	SUM	59,333.19	65,198.70	73,761.41	107,550.94	189,042.73
Vermilion Parish	Interstate					
	LA Highway	579.12	2,727.96	6,598.92	28,550.91	53,718.63
	US Highway					
	SUM	579.12	2,727.96	6,598.92	28,550.91	53,718.63
West Baton Rouge Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00

CATEGORY 2 - MODEL #1		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate					
	LA Highway					655.32
	US Highway					
	SUM	0.00	0.00	0.00		655.32
Ascension Parish	Interstate	11873.36	12,269.60	12,437.24	13,123.04	13,382.12
	LA Highway	945.33	1,631.13	3,033.21	6,520.75	7,130.35
	US Highway	10322.80	10,719.04	10,719.04	11,862.04	13,736.56
	SUM	23,141.49	24,619.77	26,189.49	31,505.82	34,249.02
Assumption Parish	Interstate					
	LA Highway	3032.76	3,870.96	6,160.55	9,007.72	19,426.07
	US Highway	662.49	677.73	708.21	1,407.85	1,976.49
	SUM	3,695.25	4,548.69	6,868.76	10,415.57	21,402.56
Calcasieu Parish	Interstate					
	LA Highway	2280.33	3,316.65	3,331.89	6,049.87	2,727.96
	US Highway					14,936.72
	SUM	2,280.33	3,316.65	3,331.89	6,049.87	17,664.68
Cameron Parish	Interstate					
	LA Highway	175458.82	181,132.92	185,628.72	190,779.84	198,216.96
	US Highway					
	SUM	175,458.82	181,132.92	185,628.72	190,779.84	198,216.96
East Baton Rouge Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Iberia Parish	Interstate					
	LA Highway					3,108.96
	US Highway					
	SUM	0.00	0.00	0.00	0.00	3,108.96
Iberville Parish	Interstate					
	LA Highway					291.42
	US Highway					
	SUM	0.00	0.00	0.00	0.00	291.42
Jefferson Parish	Interstate	14682.29	14,682.29	14,682.29	14,728.01	14,865.17
	LA Highway	34936.18	35,681.94	36,794.46	42,296.10	50,903.51
	US Highway	31539.55	31,781.62	32,848.42	37,729.99	39,782.42
	SUM	81,158.03	82,145.85	84,325.17	94,754.10	105,551.09
Jefferson Davis Parish	Interstate					
	LA Highway	853.44	1,798.32	3,609.47	6,529.04	18,500.58
	US Highway					960.12
	SUM	853.44	1,798.32	3,609.47	6,529.04	19,460.70
Lafayette Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Lafourche Parish	Interstate					
	LA Highway	94018.08	101,186.59	107,506.50	116,581.15	121,794.23
	US Highway	19143.50	25,116.44	29,216.24	32,564.23	34,133.95
	SUM	113,161.59	126,303.02	136,722.74	149,145.38	155,928.18
Livingston Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Orleans Parish	Interstate	30695.39	30,741.11	31,452.96	32,260.68	36,497.40
	LA Highway	2741.44	2,741.44	3,366.28	4,488.87	4,686.99
	US Highway	52587.21	53,867.37	54,278.85	59,490.93	65,724.09
	SUM	86,024.04	87,349.92	89,098.09	96,240.48	106,908.48
Plaquemines	Interstate					

Parish	LA Highway US Highway SUM	147714.12	149,425.17	150,491.97	151,557.52	152,428.65
		147,714.12	149,425.17	150,491.97	151,557.52	152,428.65
St. Bernard Parish	Interstate LA Highway US Highway SUM	32138.52	34,863.33	38,396.02	42,137.45	44,444.54
		32,138.52	34,863.33	38,396.02	42,137.45	44,444.54
St. Charles Parish	Interstate	3254.61	5,664.54	6,197.94	13,941.46	24,457.06
	LA Highway	2169.31	4,077.12	5,235.36	13,358.28	15,933.84
	US Highway	31778.36	34,003.84	34,643.92	37,861.30	39,979.66
	SUM	37,202.29	43,745.50	46,077.22	65,161.04	80,370.56
St. James Parish	Interstate	9637.58	10,414.82	10,460.54	10,506.26	10,506.26
	LA Highway		579.12	1,173.48	4,598.22	13,452.66
	US Highway	10726.45	10,695.97	10,695.97	11,453.20	12,489.52
	SUM	20,364.03	21,689.91	22,329.99	26,557.68	36,448.44
St. John the Baptist Parish	Interstate	29978.94	30,481.86	31,990.62	34,379.61	39,587.68
	LA Highway	2072.64	2,346.96	2,941.32	9,379.63	14,119.27
	US Highway	4817.81	5,000.69	5,625.53	7,979.97	11,328.33
	SUM	36,869.39	37,829.51	40,557.47	51,739.21	65,035.27
St. Martin Parish	Interstate					
	LA Highway US Highway SUM	2148.84	3,063.24	5,645.55	11,796.84	20,255.04
St. Mary Parish	Interstate					
	LA Highway					
	US Highway	7753.48	8,363.08	8,816.41	12,520.61	18,273.71
	SUM	24711.20	24,895.24	29,680.60	40,744.84	53,287.17
St. Tammany Parish	Interstate					
	LA Highway					
	US Highway				1,073.80	3,557.92
	SUM	12874.79	15,994.46	16,924.10	23,337.19	27,118.77
Tangipahoa Parish	Interstate	12,874.79	15,994.46	16,924.10	24,410.99	30,676.69
	LA Highway					
	US Highway	14244.28	15,250.12	15,250.12	15,436.64	16,076.72
	SUM	14,244.28	15,250.12	15,250.12	15,436.64	16,076.72
Terrebonne Parish	Interstate					
	LA Highway	145873.37	156,085.11	165,520.14	186,648.19	210,098.70
	US Highway	6015.21	5,984.73	9,672.81	14,522.20	24,521.48
	SUM	151,888.58	162,069.83	175,192.95	201,170.40	234,620.18
Vermilion Parish	Interstate					
	LA Highway	30671.45	35,479.90	41,221.83	51,959.76	87,099.04
	US Highway SUM					121.92
West Baton Rouge Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00

CATEGORY 3 - MODEL #1		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate					579.12
	LA Highway					
	US Highway				548.64	1,188.72
	SUM	0.00	0.00		548.64	1,767.84
Ascension Parish	Interstate	13,123.04	14,266.04	14,555.60	16,873.40	17,803.04
	LA Highway	6,490.27	6,581.71	6,581.71	6,581.71	6,581.71
	US Highway	14,772.88	14,544.28	14,803.36	15,434.94	17,357.33
	SUM	34,386.18	35,392.02	35,940.66	38,890.05	41,742.08
Assumption Parish	Interstate					
	LA Highway	20,531.99	21,156.83	21,766.43	22,452.23	22,956.43
	US Highway	1,793.61	1,900.29	1,961.25	2,006.97	4,937.11
	SUM	22,325.60	23,057.12	23,727.68	24,459.20	27,893.54
Calcasieu Parish	Interstate	2,547.76	2,407.92	3,032.76	3,825.24	6,202.76
	LA Highway	13,382.24	14,296.64	15,179.58	18,281.44	27,597.47
	US Highway				1,158.24	1,554.48
	SUM	15,930.00	16,704.56	18,212.34	23,264.91	35,354.71
Cameron Parish	Interstate					
	LA Highway	195,168.96	195,885.24	197,013.00	198,811.32	199,965.74
	US Highway					
	SUM	195,168.96	195,885.24	197,013.00	198,811.32	199,965.74
East Baton Rouge Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Iberia Parish	Interstate					
	LA Highway	5,028.83	5,943.23	5,943.23	6,888.11	8,834.00
	US Highway					518.16
	SUM	5,028.83	5,943.23	5,943.23	6,888.11	9,352.16
Iberville Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Jefferson Parish	Interstate	14,865.17	14,865.17	14,865.17	14,865.17	14,865.17
	LA Highway	50,629.19	51,040.67	51,406.43	51,452.15	51,452.15
	US Highway	40,163.42	40,346.30	40,346.30	40,407.26	40,955.90
	SUM	105,657.77	106,252.13	106,617.89	106,724.57	107,273.21
Jefferson Davis Parish	Interstate					
	LA Highway	15,438.81	18,559.82	19,944.63	24,435.37	30,540.32
	US Highway					1,302.46
	SUM	15,438.81	18,559.82	19,944.63	24,435.37	31,842.78
Lafayette Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Lafourche Parish	Interstate					
	LA Highway	115,327.89	116,172.34	118,714.75	121,062.71	127,383.64
	US Highway	32,000.35	32,640.43	32,975.71	34,133.95	34,362.55
	SUM	147,328.24	148,812.77	151,690.46	155,196.66	161,746.19
Livingston Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Orleans Parish	Interstate	36,476.40	36,705.00	36,857.40	37,467.00	37,756.56
	LA Highway	3,244.36	3,559.23	3,787.83	4,595.55	5,037.51
	US Highway	65,480.25	65,846.01	66,425.13	67,095.69	67,141.41
	SUM	105,201.01	106,110.24	107,070.36	109,158.24	109,935.48
Plaquemines	Interstate					

Parish	LA Highway US Highway SUM	153,129.69	153,129.69	153,129.69	153,236.37	153,236.37
		153,129.69	153,129.69	153,129.69	153,236.37	153,236.37
St. Bernard Parish	Interstate LA Highway US Highway SUM					
		38,269.88	40,845.48	41,897.04	42,887.64	45,475.45
		38,269.88	40,845.48	41,897.04	42,887.64	45,475.45
St. Charles Parish	Interstate LA Highway US Highway SUM	20,441.23	22,933.06	23,512.18	25,142.86	27,550.78
		16,269.64	16,543.96	16,543.96	16,787.80	17,062.12
		39,552.94	39,918.70	39,918.70	39,949.18	40,116.82
		76,263.81	79,395.72	79,974.84	81,879.84	84,729.72
St. James Parish	Interstate LA Highway US Highway SUM	10,567.22	10,536.74	10,582.46	10,643.42	10,689.14
		18,497.10	19,426.74	21,438.42	25,583.70	29,184.97
		12,032.32	12,580.96	12,657.16	12,955.57	13,595.65
		41,096.64	42,544.44	44,678.04	49,182.70	53,469.77
St. John the Baptist Parish	Interstate LA Highway US Highway SUM	41,428.96	42,404.32	42,899.71	43,753.15	44,342.86
		12,823.87	12,961.03	13,052.47	13,601.11	14,225.95
		12,715.17	12,562.77	14,025.81	15,321.21	19,864.32
		66,968.00	67,928.12	69,977.99	72,675.47	78,433.13
St. Martin Parish	Interstate LA Highway US Highway SUM					
		11,116.71	11,924.42	13,875.14	18,670.08	21,696.96
		11,116.71	11,924.42	13,875.14	18,670.08	21,696.96
St. Mary Parish	Interstate LA Highway US Highway SUM					
		21,640.68	21,655.92	21,716.88	24,703.92	30,597.41
		51,154.88	52,099.76	52,800.80	56,905.23	60,502.36
		72,795.56	73,755.68	74,517.68	81,609.15	91,099.77
St. Tammany Parish	Interstate LA Highway US Highway SUM	3,481.72	4,045.60	4,579.00	4,700.92	8,907.16
		26,798.73	27,423.57	27,636.93	29,069.49	32,915.99
		30,280.45	31,469.17	32,215.93	33,770.41	41,823.15
Tangipahoa Parish	Interstate LA Highway US Highway SUM	16,046.24	16,046.24	16,122.44	16,198.64	16,229.12
		16,046.24	16,046.24	16,122.44	16,198.64	16,229.12
Terrebonne Parish	Interstate LA Highway US Highway SUM					
		184,715.85	188,604.66	193,448.33	204,501.63	222,286.95
		16,701.52	16,533.88	16,640.56	21,852.64	28,141.41
		201,417.37	205,138.54	210,088.89	226,354.28	250,428.36
Vermilion Parish	Interstate LA Highway US Highway SUM					
		69,540.36	75,258.90	84,236.16	98,514.46	116,681.13
		121.92	121.92	121.92	121.92	213.36
		69,662.28	75,380.82	84,358.08	98,636.38	116,894.49
West Baton Rouge Parish	Interstate LA Highway US Highway SUM					
		0.00	0.00	0.00	0.00	0.00

CATEGORY 4 - MODEL #1		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate			533.40	579.12	2,585.34
	LA Highway					570.82
	US Highway	548.64	548.64	594.36	1,188.72	2,567.10
	SUM	548.64	548.64	1,127.76	1,767.84	5,723.26
Ascension Parish	Interstate	18,184.04	18,290.72	18,443.12	18,864.07	21,180.55
	LA Highway	6,581.71	6,581.71	6,581.71	6,581.71	8,609.20
	US Highway	17,803.38	17,803.38	18,931.14	19,159.74	19,235.94
	SUM	42,569.13	42,675.81	43,955.97	44,605.51	49,025.68
Assumption Parish	Interstate					
	LA Highway	21,370.19	21,979.79	22,863.71	24,068.95	28,747.63
	US Highway	4,276.61	4,937.11	4,937.11	4,967.59	5,074.27
	SUM	25,646.80	26,916.90	27,800.82	29,036.54	33,821.90
Calcasieu Parish	Interstate	4,620.40	5,375.05	6,370.40	7,715.79	10,986.96
	LA Highway	22,548.64	23,859.10	26,347.79	29,929.19	40,462.93
	US Highway		548.64	548.64	1,750.36	3,316.91
	SUM	27,169.03	29,782.79	33,266.83	39,395.34	54,766.79
Cameron Parish	Interstate					
	LA Highway	199,386.62	199,432.34	199,691.42	199,965.74	200,983.21
	US Highway					
	SUM	199,386.62	199,432.34	199,691.42	199,965.74	200,983.21
East Batpm Rouge Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Iberia Parish	Interstate					
	LA Highway	9,396.08	9,396.08	9,563.72	9,929.48	10,798.16
	US Highway	518.16	518.16	518.16	1,036.32	1,036.32
	SUM	9,914.24	9,914.24	10,081.88	10,965.80	11,834.48
Iberville Parish	Interstate					
	LA Highway					291.42
	US Highway					
	SUM	0.00	0.00	0.00	0.00	291.42
Jefferson Parish	Interstate	14,865.17	14,865.17	14,865.17	14,865.17	14,865.17
	LA Highway	51,452.15	51,452.15	51,452.15	51,452.15	51,452.15
	US Highway	40,605.38	40,696.82	40,971.14	42,210.30	42,347.46
	SUM	106,922.69	107,014.13	107,288.45	108,527.62	108,664.78
Jefferson Davis Parish	Interstate					
	LA Highway	28,103.95	28,759.27	29,978.47	31,929.19	35,770.27
	US Highway	570.94	525.22	616.66	1,302.46	2,216.86
	SUM	28,674.89	29,284.49	30,595.13	33,231.65	37,987.12
Lafayette Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Lafourche Parish	Interstate					
	LA Highway	121,276.07	121,276.07	121,963.71	127,307.44	136,373.56
	US Highway	33,219.55	33,874.87	34,118.71	34,316.83	34,530.19
	SUM	154,495.62	155,150.94	156,082.42	161,624.27	170,903.75
Livingston Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Orleans Parish	Interstate	38,015.64	38,046.12	38,046.12	38,198.52	38,213.76
	LA Highway	5,037.51	5,067.99	5,067.99	5,083.23	5,128.95
	US Highway	67,263.33	67,507.17	67,507.17	67,842.45	68,216.86
	SUM	110,316.48	110,621.28	110,621.28	111,124.20	111,559.57
Plaquemines Parish	Interstate					
	LA Highway	153,236.37	153,236.37	153,236.37	153,236.37	153,236.37
	US Highway					
	SUM	153,236.37	153,236.37	153,236.37	153,236.37	153,236.37
St. Bernard Parish	Interstate					
	LA Highway	44,792.83	45,951.07	46,347.31	46,621.63	46,713.07
	US Highway					
	SUM	44,792.83	45,951.07	46,347.31	46,621.63	46,713.07
St. Charles Parish	Interstate	27,398.38	27,550.78	27,642.22	27,794.62	31,040.74

	LA Highway	17,290.72	17,290.72	17,473.60	17,595.52	17,610.76
	US Highway	40,098.36	40,116.82	40,116.82	40,147.30	40,946.38
	SUM	84,787.46	84,958.32	85,232.64	85,537.44	89,597.88
St. James Parish	Interstate	10,689.14	10,689.14	10,689.14	10,689.14	10,689.14
	LA Highway	29,352.61	30,145.09	30,358.45	32,339.65	34,503.73
	US Highway	13,880.61	13,880.61	13,880.61	13,880.61	13,880.61
	SUM	53,922.36	54,714.84	54,928.20	56,909.40	59,073.48
St. John the Baptist Parish	Interstate	45,302.98	45,302.98	45,302.98	45,302.98	45,302.98
	LA Highway	14,271.67	14,271.67	14,271.67	14,271.67	14,271.67
	US Highway	21,041.12	21,403.56	22,302.72	23,125.68	25,829.42
	SUM	80,615.76	80,978.21	81,877.37	82,700.33	85,404.06
St. Martin Parish	Interstate					
	LA Highway	18,182.40	18,182.40	19,868.16	21,224.52	21,757.92
	US Highway					
	SUM	18,182.40	18,182.40	19,868.16	21,224.52	21,757.92
St. Mary Parish	Interstate					
	LA Highway	27,626.36	29,272.28	30,537.20	33,584.61	40,394.90
	US Highway	58,301.76	58,973.59	60,014.68	61,111.96	64,516.27
	SUM	85,928.12	88,245.87	90,551.88	94,696.57	104,911.17
St. Tammany Parish	Interstate	9,372.24	9,372.24	10,439.04	12,344.04	16,011.50
	LA Highway					
	US Highway	32,761.02	33,266.51	33,454.19	34,094.27	36,195.86
	SUM	42,133.26	42,638.75	43,893.23	46,438.31	52,207.36
Tangipahoa Parish	Interstate	16,351.04	16,351.04	16,351.04	16,412.00	16,457.72
	LA Highway					
	US Highway					
	SUM	16,351.04	16,351.04	16,351.04	16,412.00	16,457.72
Terrebonne Parish	Interstate					
	LA Highway	201,537.08	206,090.27	208,863.83	219,375.55	229,997.48
	US Highway	17,890.24	22,599.40	23,422.36	25,969.28	28,943.36
	SUM	219,427.32	228,689.68	232,286.19	245,344.83	258,940.84
Vermilion Parish	Interstate					
	LA Highway	106,142.70	108,991.42	110,271.58	117,245.01	129,045.09
	US Highway	121.92	121.92	121.92	182.88	858.37
	SUM	106,264.62	109,113.34	110,393.50	117,427.89	129,903.46
West Baton Rouge Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00

CATEGORY 5 - MODEL #1		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate	579.12	579.12	579.12	2,097.66	3,194.94
	LA Highway				768.94	768.94
	US Highway	1,112.52	1,188.72	1,203.96	2,536.62	3,070.02
	SUM	1,691.64	1,767.84	1,783.08	5,403.22	7,033.90
Ascension Parish	Interstate	21,409.15	21,652.99	21,957.79	23,222.71	25,417.27
	LA Highway	7,369.52	7,979.12	8,101.04	9,051.16	10,057.00
	US Highway	19,159.74	19,235.94	19,235.94	19,357.86	19,418.82
	SUM	47,938.41	48,868.05	49,294.77	51,631.72	54,893.08
Assumption Parish	Interstate					
	LA Highway	25,775.83	25,775.83	26,842.63	28,458.07	31,954.83
	US Highway	4,967.59	4,967.59	4,967.59	5,074.27	5,119.99
	SUM	30,743.42	30,743.42	31,810.22	33,532.34	37,074.82
Calcasieu Parish	Interstate	9,249.35	9,285.51	9,300.75	11,002.20	16,784.19
	LA Highway	32,546.04	34,087.63	36,556.51	40,310.53	50,568.38
	US Highway	2,125.22	3,220.25	3,921.29	5,308.13	7,260.75
	SUM	43,920.60	46,593.39	49,778.55	56,620.86	74,613.32
Cameron Parish	Interstate					
	LA Highway	200,163.86	200,285.78	200,377.22	201,028.93	201,973.81
	US Highway					
	SUM	200,163.86	200,285.78	200,377.22	201,028.93	201,973.81
East Baton Rouge Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Iberia Parish	Interstate					
	LA Highway	10,188.56	10,569.56	10,569.56	10,798.16	11,917.48
	US Highway	1,036.32	1,036.32	1,036.32	1,036.32	2,346.96
	SUM	11,224.88	11,605.88	11,605.88	11,834.48	14,264.44
Iberville Parish	Interstate		518.16	518.16	518.16	1,905.00
	LA Highway	4,771.98	5,703.06	6,396.83	7,756.19	9,985.68
	US Highway					
	SUM	4,771.98	6,221.22	6,914.99	8,274.35	11,890.68
Jefferson Parish	Interstate	14,865.17	14,865.17	14,865.17	14,865.17	14,865.17
	LA Highway	51,452.15	51,452.15	51,452.15	51,452.15	51,452.15
	US Highway	42,195.06	42,347.46	42,347.46	42,347.46	42,347.46
	SUM	108,512.38	108,664.78	108,664.78	108,664.78	108,664.78
Jefferson Davis Parish	Interstate					794.90
	LA Highway	32,188.27	33,603.56	34,200.55	35,328.31	42,613.03
	US Highway	1,332.94	1,866.34	2,155.90	2,216.86	2,704.54
	SUM	33,521.21	35,469.90	36,356.44	37,545.16	46,112.46
Lafayette Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Lafourche Parish	Interstate					
	LA Highway	128,525.89	129,822.04	130,218.28	135,520.12	154,681.17
	US Highway	34,240.63	34,332.07	34,423.51	34,438.75	34,621.63
	SUM	162,766.52	164,154.11	164,641.79	169,958.87	189,302.80
Livingston Parish	Interstate					30.48
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	30.48
Orleans Parish	Interstate	38,198.52	38,198.52	38,198.52	38,213.76	38,808.97
	LA Highway	5,067.99	5,083.23	5,083.23	5,098.47	5,144.19
	US Highway	68,216.86	68,216.86	68,247.34	68,247.34	68,247.34
	SUM	111,483.37	111,498.61	111,529.09	111,559.57	112,200.50
Plaquemines Parish	Interstate					
	LA Highway	153,236.37	153,236.37	153,236.37	153,236.37	153,236.37
	US Highway					
	SUM	153,236.37	153,236.37	153,236.37	153,236.37	153,236.37
St. Bernard Parish	Interstate					
	LA Highway	46,271.11	46,682.59	46,682.59	46,697.83	46,713.07
	US Highway					
	SUM	46,271.11	46,682.59	46,682.59	46,697.83	46,713.07
St. Charles Parish	Interstate	30,888.34	31,223.62	31,238.86	31,421.74	31,528.42

	LA Highway	17,610.76	17,610.76	17,610.76	17,610.76	17,610.76
	US Highway	40,809.22	41,449.30	42,165.58	43,020.52	43,127.20
	SUM	89,308.32	90,283.68	91,015.20	92,053.02	92,266.38
St. James Parish	Interstate	10,948.22	10,948.22	10,948.22	10,948.22	10,948.22
	LA Highway	33,040.26	33,939.42	33,969.90	35,051.94	37,017.90
	US Highway	13,880.61	13,880.61	13,880.61	13,880.61	13,880.61
	SUM	57,869.09	58,768.25	58,798.73	59,880.77	61,846.73
St. John the Baptist Parish	Interstate	45,302.98	45,333.46	45,333.46	45,333.46	45,333.46
	LA Highway	14,271.67	14,271.67	14,271.67	14,271.67	14,271.67
	US Highway	26,873.97	27,468.33	27,468.33	27,529.29	27,803.61
	SUM	86,448.62	87,073.46	87,073.46	87,134.42	87,408.74
St. Martin Parish	Interstate				562.63	593.11
	LA Highway	21,544.56	21,544.56	21,712.20	21,757.92	21,773.16
	US Highway					
	SUM	21,544.56	21,544.56	21,712.20	22,320.54	22,366.26
St. Mary Parish	Interstate					
	LA Highway	35,504.85	36,708.81	37,867.05	39,785.30	42,748.15
	US Highway	61,005.28	62,590.24	62,757.88	64,516.27	70,963.09
	SUM	96,510.13	99,299.05	100,624.93	104,301.57	113,711.24
St. Tammany Parish	Interstate	14,873.88	15,727.32	15,818.76	16,971.62	17,931.74
	LA Highway					
	US Highway	36,561.62	36,317.78	36,668.30	37,831.85	41,804.89
	SUM	51,435.50	52,045.10	52,487.06	54,803.47	59,736.64
Tangipahoa Parish	Interstate	16,549.16	16,457.72	16,610.12	16,671.08	16,671.08
	LA Highway					
	US Highway					
	SUM	16,549.16	16,457.72	16,610.12	16,671.08	16,671.08
Terrebonne Parish	Interstate					
	LA Highway	223,693.16	225,913.16	227,604.80	230,246.36	236,986.29
	US Highway	26,632.65	26,632.65	27,790.89	28,882.40	29,674.88
	SUM	250,325.82	252,545.81	255,395.69	259,128.76	266,661.17
Vermilion Parish	Interstate					
	LA Highway	118,457.47	122,635.10	124,319.08	128,323.32	142,569.50
	US Highway	629.77	629.77	645.01	858.37	1,254.61
	SUM	119,087.24	123,264.87	124,964.10	129,181.69	143,824.11
West Baton Rouge Parish	Interstate	1,417.32	2,042.16	2,651.76	5,090.16	12,728.80
	LA Highway					1,686.45
	US Highway					
	SUM	1,417.32	2,042.16	2,651.76	5,090.16	14,415.25

CATEGORY 1 - MODEL #2		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate					
	LA Highway					
Ascension Parish	US Highway					
	SUM		0.00	0.00	0.00	0.00
Assumption Parish	Interstate					
	LA Highway					
Calcasieu Parish	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Cameron Parish	Interstate					
	LA Highway					
Iberia Parish	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Iberville Parish	Interstate					
	LA Highway					
Jefferson Parish	US Highway					
	SUM	78,425.75	78,425.75	78,425.75	79,233.47	79,233.47
Jefferson Davis Parish	Interstate					
	LA Highway					
Lafourche Parish	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Orleans Parish	Interstate	13,863.83	14,286.05	14,286.05	14,286.05	14,286.05
	LA Highway	12,861.30	12,861.30	12,983.22	14,928.89	16,342.90
Plaquemines Parish	US Highway	12,536.86	12,536.86	12,536.86	12,643.54	13,512.22
	SUM	39,261.99	39,684.21	39,806.13	41,858.49	44,141.18
St. Bernard Parish	Interstate					
	LA Highway					
St. Charles Parish	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
St. James	Interstate					
	LA Highway					
	US Highway					
	SUM	32,205.92	31,017.20	33,166.04	35,293.03	44,537.97
	US Highway	6,056.54	5,797.46	5,980.34	6,208.94	6,208.94
	SUM	38,262.46	36,814.66	39,146.38	41,501.97	50,746.91
	Interstate	16,683.12	16,683.12	16,683.12	16,683.12	16,875.19
	LA Highway	2,558.56	2,573.80	2,573.80	2,573.80	2,573.80
	US Highway	20,355.32	20,522.96	20,522.96	20,629.64	21,681.20
	SUM	39,597.00	39,779.88	39,779.88	39,886.56	41,130.18
	Interstate					
	LA Highway	86,310.02	86,480.91	87,852.51	88,538.31	89,780.66
	US Highway					
	SUM	86,310.02	86,480.91	87,852.51	88,538.31	89,780.66
	Interstate					
	LA Highway	11,956.41	12,063.09	12,078.33	12,169.77	12,718.41
	US Highway					
	SUM	11,956.41	12,063.09	12,078.33	12,169.77	12,718.41
	Interstate	30.48	30.48	30.48	30.48	30.48
	LA Highway					
	US Highway	7,858.63	7,370.95	7,370.95	7,873.87	8,071.99
	SUM	7,889.11	7,401.43	7,401.43	7,904.35	8,102.47

Parish	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
St. John the Baptist Parish	Interstate	1,463.04	1,463.04	1,463.04	1,463.04	1,463.04
	LA Highway					
	US Highway					
	SUM	1,463.04	1,463.04	1,463.04	1,463.04	1,463.04
St. Martin Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
St. Mary Parish	Interstate					
	LA Highway	4,788.83	4,788.83	4,788.83	4,788.83	5,017.43
	US Highway	4,581.50	4,581.50	4,733.90	4,992.98	5,221.58
	SUM	9,370.33	9,370.33	9,522.73	9,781.81	10,239.01
St. Tammany Parish	Interstate					
	LA Highway					
	US Highway	518.16	518.16	518.16	548.64	548.64
	SUM	518.16	518.16	518.16	548.64	548.64
Tangipahoa Parish	Interstate	1,463.04	1,463.04	1,463.04	1,463.04	1,463.04
	LA Highway					
	US Highway					
	SUM	1,463.04	1,463.04	1,463.04	1,463.04	1,463.04
Terrebonne Parish	Interstate					
	LA Highway	59,333.19	62,560.46	63,139.58	63,916.82	67,902.34
	US Highway					
	SUM	59,333.19	62,560.46	63,139.58	63,916.82	67,902.34
Vermilion Parish	Interstate					
	LA Highway	579.12	1,097.28	1,097.28	1,097.28	1,097.28
	US Highway					
	SUM	579.12	1,097.28	1,097.28	1,097.28	1,097.28
West Baton Rouge Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00

CATEGORY 2 - MODEL #2		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010	2015	2025	2050	2100
Acadia Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Ascension Parish	Interstate	11,873.36	11,736.20	11,736.20	11,736.20	11,736.20
	LA Highway	945.33	945.33	945.33	945.33	945.33
	US Highway	10,322.80	10,840.96	10,840.96	10,840.96	10,840.96
	SUM	23,141.49	23,522.49	23,522.49	23,522.49	23,522.49
Assumption Parish	Interstate					
	LA Highway	3,032.76	3,032.76	3,032.76	3,093.72	3,093.72
	US Highway	662.49	662.49	662.49	662.49	692.97
	SUM	3,695.25	3,695.25	3,695.25	3,756.21	3,786.69
Calcasieu Parish	Interstate					
	LA Highway	2,280.33	2,295.57	2,295.57	2,295.57	2,813.73
	US Highway					
	SUM	2,280.33	2,295.57	2,295.57	2,295.57	2,813.73
Cameron Parish	Interstate					
	LA Highway	175,458.82	174,544.42	174,544.42	175,062.58	175,916.02
	US Highway					
	SUM	175,458.82	174,544.42	174,544.42	175,062.58	175,916.02
Iberia Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Iberville Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Jefferson Parish	Interstate	14,682.29	14,682.29	14,682.29	14,682.29	14,682.29
	LA Highway	34,936.18	35,180.02	35,195.26	35,195.26	35,225.74
	US Highway	31,539.55	31,842.58	31,842.58	31,842.58	31,949.26
	SUM	81,158.03	81,704.90	81,720.14	81,720.14	81,857.30
Jefferson Davis Parish	Interstate					
	LA Highway	853.44	853.44	853.44	853.44	853.44
	US Highway					
	SUM	853.44	853.44	853.44	853.44	853.44
Lafourche Parish	Interstate					
	LA Highway	94,018.08	93,911.40	95,572.56	96,700.32	99,611.16
	US Highway	19,143.50	19,661.66	19,737.86	20,485.17	22,009.17
	SUM	113,161.59	113,573.07	115,310.43	117,185.49	121,620.33
Orleans Parish	Interstate	30,695.39	30,771.59	30,771.59	30,771.59	30,786.83
	LA Highway	2,741.44	2,741.44	2,741.44	2,741.44	2,741.44
	US Highway	52,587.21	53,408.26	53,408.26	53,408.26	53,438.74
	SUM	86,024.04	86,921.30	86,921.30	86,921.30	86,967.02
Plaquemines Parish	Interstate					
	LA Highway	146,845.44	146,845.44	146,845.44	146,982.60	148,373.61
	US Highway					
	SUM	146,845.44	146,845.44	146,845.44	146,982.60	148,373.61
St. Bernard Parish	Interstate					
	LA Highway	32,138.52	33,190.08	33,190.08	34,226.40	34,820.76
	US Highway					
	SUM	32,138.52	33,190.08	33,190.08	34,226.40	34,820.76
St. Charles Parish	Interstate	3,254.61	3,346.05	3,346.05	3,346.05	4,351.89
	LA Highway	2,169.31	2,702.71	2,702.71	2,702.71	3,388.51
	US Highway	31,778.36	31,717.40	31,717.40	31,808.84	31,991.72
	SUM	37,202.29	37,766.17	37,766.17	37,857.61	39,732.13
St. James	Interstate	9,637.58	9,546.14	9,546.14	9,637.58	9,637.58

Parish	LA Highway		518.16	518.16	518.16	518.16
	US Highway	10,726.45	10,726.45	10,726.45	10,726.45	10,726.45
	SUM	20,364.03	20,790.75	20,790.75	20,882.19	20,882.19
St. John the Baptist Parish	Interstate	29,978.94	30,253.26	30,253.26	30,253.26	30,359.94
	LA Highway	1,554.48	1,554.48	1,661.16	1,722.12	2,255.52
	US Highway	4,726.37	4,726.37	4,726.37	4,787.33	4,992.93
	SUM	36,259.79	36,534.11	36,640.79	36,762.71	37,608.40
St. Martin Parish	Interstate					
	LA Highway	2,148.84	1,112.52	1,112.52	1,127.76	1,920.24
	US Highway					
	SUM	2,148.84	1,112.52	1,112.52	1,127.76	1,920.24
St. Mary Parish	Interstate					
	LA Highway	7,753.48	7,723.00	7,723.00	7,738.24	7,844.92
	US Highway	24,711.20	24,741.68	24,741.68	24,741.68	25,717.04
	SUM	32,464.68	32,464.68	32,464.68	32,479.92	33,561.96
St. Tammany Parish	Interstate					
	LA Highway					
	US Highway	12,874.79	13,072.91	13,164.35	13,164.35	13,438.67
	SUM	12,874.79	13,072.91	13,164.35	13,164.35	13,438.67
Tangipahoa Parish	Interstate	14,244.28	14,792.92	14,792.92	14,792.92	14,792.92
	LA Highway					
	US Highway					
	SUM	14,244.28	14,792.92	14,792.92	14,792.92	14,792.92
Terrebonne Parish	Interstate					
	LA Highway	145,873.37	146,818.25	146,863.97	148,801.55	154,781.14
	US Highway	6,015.21	6,137.13	6,137.13	6,518.13	6,975.33
	SUM	151,888.58	152,955.38	153,001.10	155,319.68	161,756.47
Vermilion Parish	Interstate					
	LA Highway	29,894.21	29,894.21	30,351.41	30,351.41	30,458.09
	US Highway					
	SUM	29,894.21	29,894.21	30,351.41	30,351.41	30,458.09
West Baton Rouge Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00

CATEGORY 3 - MODEL #2		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010	2015	2025	2050	2100
Acadia Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Ascension Parish	Interstate	13,123.04	13,793.60	13,793.60	13,793.60	13,824.08
	LA Highway	6,490.27	6,581.71	6,581.71	6,581.71	6,581.71
	US Highway	14,772.88	14,772.88	14,772.88	14,772.88	14,818.60
	SUM	34,386.18	35,148.18	35,148.18	35,148.18	35,224.38
Assumption Parish	Interstate					
	LA Highway	20,531.99	20,577.71	20,577.71	20,577.71	20,577.71
	US Highway	1,793.61	1,793.61	1,793.61	1,793.61	1,808.85
	SUM	22,325.60	22,371.32	22,371.32	22,371.32	22,386.56
Calcasieu Parish	Interstate	2,547.76	2,563.00	2,563.00	2,563.00	2,563.00
	LA Highway	13,382.24	14,129.00	14,129.00	14,129.00	14,129.00
	US Highway					
	SUM	15,930.00	16,692.00	16,692.00	16,692.00	16,692.00
Cameron Parish	Interstate					
	LA Highway	195,153.72	195,153.72	195,153.72	195,153.72	195,184.20
	US Highway					
	SUM	195,153.72	195,153.72	195,153.72	195,153.72	195,184.20
Iberia Parish	Interstate					
	LA Highway	4,998.35	4,998.35	5,089.79	5,425.07	5,470.79
	US Highway					
	SUM	4,998.35	4,998.35	5,089.79	5,425.07	5,470.79
Iberville Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Jefferson Parish	Interstate	14,865.17	14,865.17	14,865.17	14,865.17	14,865.17
	LA Highway	50,492.03	50,492.03	50,492.03	50,492.03	51,055.91
	US Highway	40,163.42	40,239.62	40,239.62	40,239.62	40,239.62
	SUM	105,520.62	105,596.81	105,596.81	105,596.81	106,160.69
Jefferson Davis Parish	Interstate					
	LA Highway	15,438.81	15,484.53	15,484.53	15,484.53	15,484.53
	US Highway					
	SUM	15,438.81	15,484.53	15,484.53	15,484.53	15,484.53
Lafourche Parish	Interstate					
	LA Highway	115,327.89	115,327.89	115,327.89	115,343.13	116,729.97
	US Highway	31,773.12	31,773.12	31,773.12	31,773.12	31,818.84
	SUM	147,101.01	147,101.01	147,101.01	147,116.25	148,548.81
Orleans Parish	Interstate	36,476.40	36,476.40	36,476.40	36,476.40	36,476.40
	LA Highway	3,244.36	3,244.36	3,244.36	3,244.36	3,274.84
	US Highway	65,251.65	65,251.65	65,251.65	65,251.65	65,754.57
	SUM	104,972.41	104,972.41	104,972.41	104,972.41	105,505.81
Plaquemines Parish	Interstate					
	LA Highway	153,129.69	153,129.69	153,129.69	153,129.69	153,129.69
	US Highway					
	SUM	153,129.69	153,129.69	153,129.69	153,129.69	153,129.69
St. Bernard Parish	Interstate					
	LA Highway	38,269.88	38,803.28	38,818.52	38,940.44	38,955.68
	US Highway					
	SUM	38,269.88	38,803.28	38,818.52	38,940.44	38,955.68
St. Charles Parish	Interstate	20,441.23	20,471.71	20,532.67	20,898.43	20,989.87
	LA Highway	16,269.64	16,269.64	16,269.64	16,269.64	16,269.64
	US Highway	39,431.02	39,431.02	39,431.02	39,431.02	39,431.02
	SUM	76,141.89	76,172.37	76,233.33	76,599.09	76,690.53
St. James	Interstate	10,567.22	10,567.22	10,567.22	10,567.22	10,567.22

Parish	LA Highway	18,497.10	18,954.30	18,954.30	18,954.30	19,137.18
	US Highway	12,032.32	12,032.32	12,032.32	12,078.04	12,245.68
	SUM	41,096.64	41,553.84	41,553.84	41,599.56	41,950.08
St. John the Baptist Parish	Interstate	41,428.96	41,246.08	41,276.56	41,550.88	41,611.84
	LA Highway	12,823.87	12,823.87	12,884.83	12,884.83	12,884.83
	US Highway	12,715.17	12,959.01	12,959.01	13,050.45	13,080.93
	SUM	66,968.00	67,028.96	67,120.40	67,486.16	67,577.60
St. Martin Parish	Interstate					
	LA Highway	9,958.47	9,958.47	10,187.07	10,202.31	10,202.31
	US Highway					
	SUM	9,958.47	9,958.47	10,187.07	10,202.31	10,202.31
St. Mary Parish	Interstate					
	LA Highway	21,640.68	21,473.04	21,488.28	21,564.48	21,594.96
	US Highway	51,154.88	51,474.92	51,474.92	51,490.16	51,490.16
	SUM	72,795.56	72,947.96	72,963.20	73,054.64	73,085.12
St. Tammany Parish	Interstate	3,481.72	3,481.72	3,481.72	3,527.44	3,527.44
	LA Highway					
	US Highway	26,737.77	26,737.77	26,737.77	26,737.77	27,225.45
	SUM	30,219.49	30,219.49	30,219.49	30,265.21	30,752.89
Tangipahoa Parish	Interstate	16,046.24	16,046.24	16,046.24	16,046.24	16,046.24
	LA Highway					
	US Highway					
	SUM	16,046.24	16,046.24	16,046.24	16,046.24	16,046.24
Terrebonne Parish	Interstate					
	LA Highway	184,715.85	184,669.82	185,279.42	186,056.66	187,226.45
	US Highway	16,701.52	16,762.48	16,808.20	16,808.20	16,899.64
	SUM	201,417.37	201,432.31	202,087.63	202,864.87	204,126.10
Vermilion Parish	Interstate					
	LA Highway	69,540.36	69,494.64	69,494.64	69,692.76	69,799.44
	US Highway	121.92	121.92	121.92	121.92	121.92
	SUM	69,662.28	69,616.56	69,616.56	69,814.68	69,921.36
West Baton Rouge Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00

CATEGORY 4 - MODEL #2		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate					
	LA Highway					
	US Highway	594.36	594.36	594.36	594.36	594.36
	SUM	594.36	594.36	594.36	594.36	594.36
Ascension Parish	Interstate	18,184.04	18,138.32	18,138.32	18,138.32	18,260.24
	LA Highway	6,581.71	6,581.71	6,581.71	6,581.71	6,581.71
	US Highway	18,184.38	18,291.06	18,291.06	18,306.30	18,321.54
	SUM	42,950.13	43,011.09	43,011.09	43,026.33	43,163.49
Assumption Parish	Interstate					
	LA Highway	21,370.19	22,086.47	22,086.47	22,086.47	22,086.47
	US Highway	4,276.61	4,368.05	4,383.29	4,383.29	4,754.23
	SUM	25,646.80	26,454.52	26,469.76	26,469.76	26,840.70
Calcasieu Parish	Interstate	4,620.40	4,620.40	4,620.40	4,620.40	4,620.40
	LA Highway	22,548.64	22,548.64	22,548.64	22,548.64	22,548.64
	US Highway					
	SUM	27,169.03	27,169.03	27,169.03	27,169.03	27,169.03
Cameron Parish	Interstate					
	LA Highway	199,386.62	199,386.62	199,386.62	199,386.62	199,386.62
	US Highway					
	SUM	199,386.62	199,386.62	199,386.62	199,386.62	199,386.62
Iberia Parish	Interstate					
	LA Highway	9,441.80	9,716.12	9,716.12	9,716.12	9,716.12
	US Highway					
	SUM	9,441.80	9,716.12	9,716.12	9,716.12	9,716.12
Iberville Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Jefferson Parish	Interstate	14,865.17	14,865.17	14,865.17	14,865.17	14,865.17
	LA Highway	51,452.15	51,452.15	51,452.15	51,452.15	51,452.15
	US Highway	40,605.38	40,605.38	40,605.38	40,605.38	40,666.34
	SUM	106,922.69	106,922.69	106,922.69	106,922.69	106,983.65
Jefferson Davis Parish	Interstate					
	LA Highway	28,103.95	28,515.43	28,515.43	28,515.43	28,515.43
	US Highway	570.94	570.94	570.94	570.94	570.94
	SUM	28,674.89	29,086.37	29,086.37	29,086.37	29,086.37
Lafourche Parish	Interstate					
	LA Highway	121,486.40	121,486.40	121,486.40	121,486.40	121,547.36
	US Highway	33,219.55	33,219.55	33,219.55	33,219.55	33,234.79
	SUM	154,705.95	154,705.95	154,705.95	154,705.95	154,782.15
Orleans Parish	Interstate	38,015.64	38,015.64	38,015.64	38,015.64	38,015.64
	LA Highway	5,037.51	5,037.51	5,037.51	5,037.51	5,037.51
	US Highway	67,263.33	67,507.17	67,507.17	67,507.17	67,507.17
	SUM	110,316.48	110,560.32	110,560.32	110,560.32	110,560.32
Plaquemine s Parish	Interstate					
	LA Highway	153,236.37	153,236.37	153,236.37	153,236.37	153,236.37
	US Highway					
	SUM	153,236.37	153,236.37	153,236.37	153,236.37	153,236.37
St. Bernard Parish	Interstate					
	LA Highway	45,219.55	45,219.55	45,219.55	45,219.55	45,341.47
	US Highway					
	SUM	45,219.55	45,219.55	45,219.55	45,219.55	45,341.47
St. Charles Parish	Interstate	27,398.38	27,520.30	27,520.30	27,520.30	27,550.78
	LA Highway	17,366.92	17,366.92	17,366.92	17,366.92	17,366.92
	US Highway	40,071.10	40,071.10	40,071.10	40,071.10	40,086.34
	SUM	84,836.40	84,958.32	84,958.32	84,958.32	85,004.04
St. James	Interstate	10,689.14	10,689.14	10,689.14	10,689.14	10,689.14

Parish	LA Highway	29,352.61	29,764.09	29,764.09	30,114.61	30,114.61
	US Highway	13,880.61	13,880.61	13,880.61	13,880.61	13,880.61
	SUM	53,922.36	54,333.84	54,333.84	54,684.36	54,684.36
St. John the Baptist Parish	Interstate	45,302.98	45,302.98	45,302.98	45,302.98	45,302.98
	LA Highway	14,271.67	14,271.67	14,271.67	14,271.67	14,271.67
	US Highway	21,041.12	21,312.12	21,312.12	21,327.36	21,357.84
	SUM	80,615.76	80,886.77	80,886.77	80,902.01	80,932.49
St. Martin Parish	Interstate					
	LA Highway	18,450.84	16,749.84	16,749.84	16,780.32	17,130.84
	US Highway					
	SUM	18,450.84	16,749.84	16,749.84	16,780.32	17,130.84
St. Mary Parish	Interstate					
	LA Highway	27,321.56	27,321.56	27,336.80	27,534.92	27,550.16
	US Highway	58,073.16	58,073.16	58,256.04	58,256.04	58,256.04
	SUM	85,394.72	85,394.72	85,592.84	85,790.96	85,806.20
St. Tammany Parish	Interstate	11,429.64	11,429.64	11,429.64	11,429.64	11,475.36
	LA Highway					
	US Highway	32,761.02	32,761.02	32,761.02	32,761.02	32,761.02
	SUM	44,190.66	44,190.66	44,190.66	44,190.66	44,236.38
Tangipahoa Parish	Interstate	16,351.04	16,305.32	16,305.32	16,305.32	16,305.32
	LA Highway					
	US Highway					
	SUM	16,351.04	16,305.32	16,305.32	16,305.32	16,305.32
Terrebonne Parish	Interstate					
	LA Highway	201,537.08	201,638.31	201,653.55	201,714.51	202,141.23
	US Highway	17,372.08	17,372.08	17,387.32	17,387.32	17,387.32
	SUM	218,909.16	219,010.40	219,040.88	219,101.84	219,528.56
Vermilion Parish	Interstate					
	LA Highway	106,142.70	106,340.82	106,371.30	106,523.70	106,645.62
	US Highway	121.92	121.92	121.92	121.92	121.92
	SUM	106,264.62	106,462.74	106,493.22	106,645.62	106,767.54
West Baton Rouge Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00

CATEGORY 5 - MODEL #2		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate	594.36	579.12	579.12	579.12	579.12
	LA Highway					
	US Highway	1,112.52	1,112.52	1,112.52	1,112.52	1,112.52
	SUM	1,706.88	1,691.64	1,691.64	1,691.64	1,691.64
Ascension Parish	Interstate	21,409.15	21,470.11	21,470.11	21,485.35	21,485.35
	LA Highway	7,369.52	7,369.52	7,369.52	7,369.52	7,369.52
	US Highway	19,159.74	19,159.74	19,159.74	19,159.74	19,159.74
	SUM	47,938.41	47,999.37	47,999.37	48,014.61	48,014.61
Assumption Parish	Interstate					
	LA Highway	25,791.07	24,952.87	24,952.87	24,952.87	24,952.87
	US Highway	4,967.59	4,967.59	4,967.59	4,967.59	4,967.59
	SUM	30,758.66	29,920.46	29,920.46	29,920.46	29,920.46
Calcasieu Parish	Interstate	9,249.35	9,782.75	9,782.75	9,782.75	9,782.75
	LA Highway	32,546.04	32,957.52	32,957.52	32,957.52	32,957.52
	US Highway	2,125.22	2,125.22	2,125.22	2,125.22	2,125.22
	SUM	43,920.60	44,865.48	44,865.48	44,865.48	44,865.48
Cameron Parish	Interstate					
	LA Highway	200,163.86	200,163.86	200,163.86	200,163.86	200,163.86
	US Highway					
	SUM	200,163.86	200,163.86	200,163.86	200,163.86	200,163.86
Iberia Parish	Interstate					
	LA Highway	10,188.56	10,188.56	10,188.56	10,188.56	10,188.56
	US Highway	1,051.56	518.16	518.16	518.16	518.16
	SUM	11,240.12	10,706.72	10,706.72	10,706.72	10,706.72
Iberville Parish	Interstate					
	LA Highway	4,771.98	4,856.14	4,856.14	4,856.14	4,993.30
	US Highway					
	SUM	4,771.98	4,856.14	4,856.14	4,856.14	4,993.30
Jefferson Parish	Interstate	14,865.17	14,865.17	14,865.17	14,865.17	14,865.17
	LA Highway	51,452.15	51,452.15	51,452.15	51,452.15	51,452.15
	US Highway	41,916.02	41,916.02	41,916.02	41,916.02	41,916.02
	SUM	108,233.33	108,233.33	108,233.33	108,233.33	108,233.33
Jefferson Davis Parish	Interstate					
	LA Highway	32,173.03	32,173.03	32,173.03	32,173.03	32,340.67
	US Highway	1,332.94	1,332.94	1,332.94	1,332.94	1,332.94
	SUM	33,505.97	33,505.97	33,505.97	33,505.97	33,673.61
Lafourche Parish	Interstate					
	LA Highway	128,007.73	128,007.73	128,022.97	128,600.41	128,600.41
	US Highway	34,240.63	34,286.35	34,286.35	34,286.35	34,301.59
	SUM	162,248.36	162,294.08	162,309.32	162,886.76	162,902.00
Orleans Parish	Interstate	38,198.52	38,198.52	38,198.52	38,198.52	38,198.52
	LA Highway	5,067.99	5,067.99	5,067.99	5,067.99	5,067.99
	US Highway	68,201.62	68,201.62	68,201.62	68,201.62	68,201.62
	SUM	111,468.13	111,468.13	111,468.13	111,468.13	111,468.13
Plaquemine s Parish	Interstate					
	LA Highway	153,236.37	153,236.37	153,236.37	153,236.37	153,236.37
	US Highway					
	SUM	153,236.37	153,236.37	153,236.37	153,236.37	153,236.37
St. Bernard Parish	Interstate					
	LA Highway	46,271.11	46,271.11	46,347.31	46,453.99	46,453.99
	US Highway					
	SUM	46,271.11	46,271.11	46,347.31	46,453.99	46,453.99
St. Charles Parish	Interstate	30,812.14	30,812.14	30,842.62	30,888.34	31,010.26
	LA Highway	17,610.76	17,610.76	17,610.76	17,610.76	17,610.76
	US Highway	40,793.98	40,793.98	40,793.98	41,312.14	41,312.14
	SUM	89,216.88	89,216.88	89,247.36	89,811.24	89,933.16
St. James	Interstate	10,932.98	10,932.98	10,932.98	10,932.98	10,932.98

Parish	LA Highway	33,040.26	33,040.26	33,040.26	33,040.26	33,040.26
	US Highway	13,880.61	13,880.61	13,880.61	13,880.61	13,880.61
	SUM	57,853.85	57,853.85	57,853.85	57,853.85	57,853.85
St. John the Baptist Parish	Interstate	45,302.98	45,302.98	45,302.98	45,302.98	45,302.98
	LA Highway	14,271.67	14,271.67	14,271.67	14,271.67	14,271.67
	US Highway	26,843.49	26,843.49	26,843.49	26,843.49	26,873.97
	SUM	86,418.14	86,418.14	86,418.14	86,418.14	86,448.62
St. Martin Parish	Interstate	516.91	516.91	516.91	516.91	516.91
	LA Highway	21,651.24	21,651.24	21,651.24	21,651.24	21,651.24
	US Highway					
	SUM	22,168.14	22,168.14	22,168.14	22,168.14	22,168.14
St. Mary Parish	Interstate					
	LA Highway	35,489.61	35,489.61	35,489.61	35,672.49	35,672.49
	US Highway	61,005.28	61,051.00	61,051.00	61,340.56	61,340.56
	SUM	96,494.89	96,540.61	96,540.61	97,013.05	97,013.05
St. Tammany Parish	Interstate	14,873.88	14,919.60	14,919.60	14,919.60	14,950.08
	LA Highway					
	US Highway	36,515.90	36,515.90	36,515.90	36,515.90	36,592.10
	SUM	51,389.78	51,435.50	51,435.50	51,435.50	51,542.18
Tangipahoa Parish	Interstate	16,549.16	16,549.16	16,549.16	16,549.16	16,549.16
	LA Highway					
	US Highway					
	SUM	16,549.16	16,549.16	16,549.16	16,549.16	16,549.16
Terrebonne Parish	Interstate					
	LA Highway	223,632.20	223,632.20	223,723.64	223,952.24	224,866.64
	US Highway	26,861.25	26,967.93	26,967.93	26,967.93	26,967.93
	SUM	250,493.46	250,600.14	250,691.58	250,920.18	251,834.58
Vermilion Parish	Interstate					
	LA Highway	118,411.75	118,411.75	118,411.75	118,442.23	118,775.16
	US Highway	629.77	629.77	629.77	629.77	629.77
	SUM	119,041.52	119,041.52	119,041.52	119,072.00	119,404.93
West Baton Rouge Parish	Interstate	1,417.32	1,600.20	1,600.20	1,600.20	1,600.20
	LA Highway					
	US Highway					
	SUM	1,417.32	1,600.20	1,600.20	1,600.20	1,600.20

CATEGORY 1 - MODEL #3		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate					
	LA Highway					
	US Highway					594.36
	SUM	0.00	0.00	0.00	0.00	594.36
Ascension Parish	Interstate					807.72
	LA Highway					
	US Highway					4,371.80
	SUM	0.00	0.00	0.00	0.00	5,179.52
Assumption Parish	Interstate			960.12	2,804.16	7,651.36
	LA Highway					
	US Highway			144.33	144.33	875.85
	SUM	0.00	0.00	1,104.45	2,948.49	8,527.21
Calcasieu Parish	Interstate					518.16
	LA Highway				518.16	6,078.36
	US Highway					
	SUM	0.00	0.00	0.00	518.16	6,596.52
Cameron Parish	Interstate					
	LA Highway	78,547.67	94,826.60	114,851.96	154,830.85	187,015.56
	US Highway					
	SUM	78,547.67	94,826.60	114,851.96	154,830.85	187,015.56
Iberia Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Jefferson Parish	Interstate	13,863.83	14,240.33	14,377.49	14,682.29	14,865.17
	LA Highway	13,592.82	17,987.50	21,993.18	30,990.31	41,869.17
	US Highway	12,688.34	13,863.79	16,624.73	26,417.41	33,968.93
	SUM	40,145.00	46,091.62	52,995.40	72,090.01	90,703.28
Jefferson Davis Parish	Interstate					
	LA Highway					5,831.32
	US Highway					563.88
	SUM	0.00	0.00	0.00	0.00	6,395.20
Lafourche Parish	Interstate					
	LA Highway	32,205.92	45,772.41	64,159.19	83,750.35	112,435.87
	US Highway	6,056.54	6,330.86	6,376.58	18,501.73	31,026.36
	SUM	38,262.46	52,103.27	70,535.77	102,252.08	143,462.24
Orleans Parish	Interstate	17,521.32	17,650.12	19,230.06	29,862.09	32,072.04
	LA Highway	2,558.56	2,680.48	2,741.44	4,641.27	5,067.99
	US Highway	20,355.32	25,611.92	32,575.27	46,582.90	54,004.53
	SUM	40,435.20	45,942.52	54,546.77	81,086.26	91,144.56
Plaquemines Parish	Interstate					
	LA Highway	86,310.02	91,580.99	100,603.07	115,177.54	139,507.33
	US Highway					
	SUM	86,310.02	91,580.99	100,603.07	115,177.54	139,507.33
St. Bernard Parish	Interstate					
	LA Highway	11,956.41	13,698.32	17,721.68	26,319.20	38,950.27
	US Highway					
	SUM	11,956.41	13,698.32	17,721.68	26,319.20	38,950.27
St. Charles Parish	Interstate	30.48	45.72	76.20	518.16	3,963.67
	LA Highway					3,312.31
	US Highway	7,858.63	10,037.95	13,729.77	20,459.37	33,064.79
	SUM	7,889.11	10,083.67	13,805.97	20,977.53	40,340.78
St. James Parish	Interstate					
	LA Highway					
	US Highway					1,124.80
	SUM	0.00	0.00	0.00	0.00	1,124.80
St. John the Baptist	Interstate	1,752.60	1,752.60	3,611.88	10,256.52	19,766.28

Parish	LA Highway					1,036.32
	US Highway				702.00	2,960.78
	SUM	1,752.60	1,752.60	3,611.88	10,958.52	23,763.38
St. Martin Parish	Interstate					
	LA Highway			518.16	2,926.08	15,957.36
	US Highway					
	SUM	0.00	0.00	518.16	2,926.08	15,957.36
St. Mary Parish	Interstate					
	LA Highway	5,017.43	5,093.63	6,754.79	8,339.90	15,307.78
	US Highway	5,008.22	7,919.06	15,005.12	27,910.77	48,532.29
	SUM	10,025.65	13,012.69	21,759.91	36,250.67	63,840.06
St. Tammany Parish	Interstate					
	LA Highway					
	US Highway	518.16	1,584.96	2,301.24	4,403.77	7,808.97
	SUM	518.16	1,584.96	2,301.24	4,403.77	7,808.97
Tangipahoa Parish	Interstate	1,463.04	2,484.12	4,312.92	8,488.68	14,244.28
	LA Highway					
	US Highway					
	SUM	1,463.04	2,484.12	4,312.92	8,488.68	14,244.28
Terrebonne Parish	Interstate					
	LA Highway	59,333.19	66,734.61	78,500.53	116,172.61	181,015.84
	US Highway					9,764.25
	SUM	59,333.19	66,734.61	78,500.53	116,172.61	190,780.09
Vermilion Parish	Interstate					
	LA Highway	579.12	2,727.96	6,598.92	28,550.91	49,253.31
	US Highway					
	SUM	579.12	2,727.96	6,598.92	28,550.91	49,253.31

CATEGORY 2 - MODEL #3		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010	2015	2025	2050	2100
Acadia Parish	Interstate					
	LA Highway					655.32
	US Highway					
	SUM	0.00	0.00	0.00		655.32
Ascension Parish	Interstate	11,873.36	12,269.60	12,437.24	13,123.04	13,382.12
	LA Highway	945.33	1,631.13	3,033.21	6,520.75	7,130.35
	US Highway	10,322.80	10,719.04	10,719.04	11,862.04	13,736.56
	SUM	23,141.49	24,619.77	26,189.49	31,505.82	34,249.02
Assumption Parish	Interstate					
	LA Highway	3,032.76	3,870.96	6,160.55	9,007.72	19,426.07
	US Highway	662.49	677.73	708.21	1,407.85	1,976.49
	SUM	3,695.25	4,548.69	6,868.76	10,415.57	21,402.56
Calcasieu Parish	Interstate					2,727.96
	LA Highway	2,280.33	3,316.65	3,331.89	8,345.44	14,936.72
	US Highway					
	SUM	2,280.33	3,316.65	3,331.89	8,345.44	17,664.68
Cameron Parish	Interstate					
	LA Highway	175,458.82	181,132.92	185,872.56	366,665.38	198,216.96
	US Highway					
	SUM	175,458.82	181,132.92	185,872.56	366,665.38	198,216.96
Iberia Parish	Interstate					
	LA Highway					3,108.96
	US Highway					
	SUM	0.00	0.00	0.00	0.00	3,108.96
Iberville Parish	Interstate					
	LA Highway					291.42
	US Highway					
	SUM	0.00	0.00	0.00	0.00	291.42
Jefferson Parish	Interstate	14,682.29	14,682.29	14,728.01	14,865.17	14,865.17
	LA Highway	34,936.18	35,681.94	36,870.66	42,799.02	50,903.51
	US Highway	31,539.55	32,330.26	34,143.82	38,262.19	40,091.94
	SUM	81,158.03	82,694.49	85,742.49	95,926.38	105,860.62
Jefferson Davis Parish	Interstate					
	LA Highway	853.44	1,798.32	3,609.47	7,382.48	18,500.58
	US Highway					960.12
	SUM	853.44	1,798.32	3,609.47	7,382.48	19,460.70
Lafourche Parish	Interstate					
	LA Highway	94,018.08	101,913.31	108,384.36	116,626.87	121,864.17
	US Highway	19,143.50	25,360.28	29,563.32	32,594.71	34,255.87
	SUM	113,161.59	127,273.59	137,947.69	149,221.58	156,120.05
Orleans Parish	Interstate	30,695.39	31,279.41	31,544.40	32,367.36	37,787.04
	LA Highway	2,741.44	3,274.84	4,443.15	4,656.51	5,067.99
	US Highway	52,587.21	53,958.81	54,370.29	59,551.89	66,912.81
	SUM	86,024.04	88,513.06	90,357.84	96,575.76	109,767.84
Plaquemines Parish	Interstate					
	LA Highway	147,714.12	149,623.29	150,613.89	152,017.17	152,428.65
	US Highway					
	SUM	147,714.12	149,623.29	150,613.89	152,017.17	152,428.65
St. Bernard Parish	Interstate					
	LA Highway	32,138.52	36,250.17	40,005.56	43,804.46	44,947.46
	US Highway					
	SUM	32,138.52	36,250.17	40,005.56	43,804.46	44,947.46
St. Charles Parish	Interstate	3,254.61	5,664.54	6,243.66	14,017.66	28,007.98
	LA Highway	2,169.31	4,077.12	5,235.36	13,358.28	15,933.84
	US Highway	31,778.36	34,415.32	34,948.72	37,907.02	40,071.10
	SUM	37,202.29	44,156.98	46,427.74	65,282.96	84,012.92
St. James	Interstate	9,637.58	10,414.82	10,460.54	10,506.26	10,506.26

Parish	LA Highway		579.12	1,173.48	4,598.22	13,452.66
	US Highway	10,726.45	10,695.97	10,695.97	11,453.20	12,489.52
	SUM	20,364.03	21,689.91	22,329.99	26,557.68	36,448.44
St. John the Baptist Parish	Interstate	29,978.94	30,481.86	31,990.62	34,379.61	39,587.68
	LA Highway	2,072.64	2,346.96	2,941.32	9,379.63	14,119.27
	US Highway	4,817.81	5,000.69	5,625.53	7,979.97	11,328.33
	SUM	36,869.39	37,829.51	40,557.47	51,739.21	65,035.27
St. Martin Parish	Interstate					
	LA Highway	2,148.84	3,063.24	5,645.55	11,796.84	20,255.04
	US Highway					
	SUM	2,148.84	3,063.24	5,645.55	11,796.84	20,255.04
St. Mary Parish	Interstate					
	LA Highway	7,753.48	8,363.08	10,378.47	13,084.49	20,160.31
	US Highway	24,711.20	25,763.92	33,018.16	46,233.63	55,969.41
	SUM	32,464.68	34,127.01	43,396.63	59,318.12	76,129.71
St. Tammany Parish	Interstate				1,073.80	3,557.92
	LA Highway					
	US Highway	12,874.79	15,994.46	16,924.10	23,337.19	27,118.77
	SUM	12,874.79	15,994.46	16,924.10	24,410.99	30,676.69
Tangipahoa Parish	Interstate	14,244.28	15,250.12	15,250.12	15,436.64	16,076.72
	LA Highway					
	US Highway					
	SUM	14,244.28	15,250.12	15,250.12	15,436.64	16,076.72
Terrebonne Parish	Interstate					
	LA Highway	145,873.37	156,969.03	166,160.22	186,678.67	210,098.70
	US Highway	6,015.21	5,984.73	9,672.81	14,522.20	24,521.48
	SUM	151,888.58	162,953.76	175,833.03	201,200.88	234,620.18
Vermilion Parish	Interstate					
	LA Highway	30,671.45	35,479.89	41,221.82	82,311.17	87,099.03
	US Highway					121.9199852
	SUM	30,671.45	35,479.90	41,221.83	82,311.17	87,220.96

CATEGORY 3 - MODEL #3		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate					579.12
	LA Highway					
	US Highway				548.64	1,188.72
	SUM	0.00	0.00	0.00	548.64	1,767.84
Ascension Parish	Interstate	13,123.04	14,266.04	14,555.60	16,873.40	17,803.04
	LA Highway	6,490.27	6,581.71	6,581.71	6,581.71	6,581.71
	US Highway	14,772.88	14,544.28	14,803.36	15,434.94	17,357.33
	SUM	34,386.18	35,392.02	35,940.66	38,890.05	41,742.08
Assumption Parish	Interstate					
	LA Highway	20,531.99	21,156.83	21,766.43	22,452.23	22,956.43
	US Highway	1,793.61	1,900.29	1,961.25	2,006.97	4,937.11
	SUM	22,325.60	23,057.12	23,727.68	24,459.20	27,893.54
Calcasieu Parish	Interstate	2,547.76	2,407.92	3,032.76	3,825.24	6,202.76
	LA Highway	13,382.24	14,296.64	15,179.58	18,281.44	27,597.47
	US Highway				1,158.24	1,554.48
	SUM	15,930.00	16,704.56	18,212.34	23,264.91	35,354.71
Cameron Parish	Interstate					
	LA Highway	195,168.96	195,885.24	197,013.00	198,811.32	199,965.74
	US Highway					
	SUM	195,168.96	195,885.24	197,013.00	198,811.32	199,965.74
Iberia Parish	Interstate					
	LA Highway	5,028.83	5,943.23	5,943.23	6,888.11	8,834.00
	US Highway					518.16
	SUM	5,028.83	5,943.23	5,943.23	6,888.11	9,352.16
Iberville Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Jefferson Parish	Interstate	14,865.17	14,865.17	14,865.17	14,865.17	14,865.17
	LA Highway	50,629.19	51,040.67	51,406.43	51,452.15	51,452.15
	US Highway	40,163.42	40,346.30	40,407.26	40,422.50	41,600.70
	SUM	105,657.77	106,252.13	106,678.85	106,739.81	107,918.02
Jefferson Davis Parish	Interstate					
	LA Highway	15,438.81	18,559.82	19,944.63	24,435.37	30,540.32
	US Highway					1,302.46
	SUM	15,438.81	18,559.82	19,944.63	24,435.37	31,842.78
Lafourche Parish	Interstate					
	LA Highway	115,327.89	116,202.82	118,714.75	121,154.15	127,886.56
	US Highway	32,000.35	32,640.43	32,975.71	34,240.63	34,393.03
	SUM	147,328.24	148,843.25	151,690.46	155,394.78	162,279.59
Orleans Parish	Interstate	36,476.40	36,705.00	36,903.12	37,467.00	38,763.25
	LA Highway	3,244.36	3,787.83	4,046.91	5,037.51	5,128.95
	US Highway	65,480.25	65,846.01	66,425.13	67,095.69	67,888.17
	SUM	105,201.01	106,338.84	107,375.16	109,600.20	111,780.37
Plaquemine s Parish	Interstate					
	LA Highway	153,129.69	153,129.69	153,236.37	153,236.37	153,343.05
	US Highway					
	SUM	153,129.69	153,129.69	153,236.37	153,236.37	153,343.05
St. Bernard Parish	Interstate					
	LA Highway	38,269.88	41,104.56	42,643.80	44,896.33	46,545.43
	US Highway					
	SUM	38,269.88	41,104.56	42,643.80	44,896.33	46,545.43
St. Charles Parish	Interstate	20,441.23	22,948.30	23,527.42	25,219.06	30,705.46
	LA Highway	16,269.64	16,543.96	16,543.96	16,787.80	17,062.12
	US Highway	39,552.94	39,918.70	39,918.70	40,040.62	40,189.80
	SUM	76,263.81	79,410.96	79,990.08	82,047.48	87,957.38
St. James	Interstate	10,567.22	10,536.74	10,582.46	10,643.42	10,689.14

Parish	LA Highway	18,497.10	19,426.74	21,438.42	25,583.70	29,184.97
	US Highway	12,032.32	12,580.96	12,657.16	12,955.57	13,595.65
	SUM	41,096.64	42,544.44	44,678.04	49,182.70	53,469.77
St. John the Baptist Parish	Interstate	41,428.96	42,404.32	42,899.71	43,753.15	44,342.86
	LA Highway	12,823.87	12,961.03	13,052.47	13,601.11	14,225.95
	US Highway	12,715.17	12,562.77	14,025.81	15,321.21	19,864.32
	SUM	66,968.00	67,928.12	69,977.99	72,675.47	78,433.13
St. Martin Parish	Interstate					
	LA Highway	11,116.71	11,924.42	13,875.14	18,670.08	21,696.96
	US Highway					
	SUM	11,116.71	11,924.42	13,875.14	18,670.08	21,696.96
St. Mary Parish	Interstate					
	LA Highway	21,640.68	21,655.92	21,732.12	24,703.92	30,597.41
	US Highway	51,154.88	52,099.76	53,075.12	57,834.87	61,549.30
	SUM	72,795.56	73,755.68	74,807.24	82,538.79	92,146.71
St. Tammany Parish	Interstate	3,481.72	4,045.60	4,579.00	4,700.92	8,907.16
	LA Highway					
	US Highway	26,798.73	27,423.57	27,636.93	29,069.49	32,915.99
	SUM	30,280.45	31,469.17	32,215.93	33,770.41	41,823.15
Tangipahoa Parish	Interstate	16,046.24	16,046.24	16,122.44	16,198.64	16,229.12
	LA Highway					
	US Highway					
	SUM	16,046.24	16,046.24	16,122.44	16,198.64	16,229.12
Terrebonne Parish	Interstate					
	LA Highway	184,715.85	188,604.66	193,448.33	204,501.63	222,286.95
	US Highway	16,701.52	16,533.88	16,640.56	21,852.64	28,141.41
	SUM	201,417.37	205,138.54	210,088.89	226,354.28	250,428.36
Vermilion Parish	Interstate					
	LA Highway	69,540.36	75,258.90	84,236.16	98,514.46	116,681.13
	US Highway	121.92	121.92	121.92	121.92	213.36
	SUM	69,662.28	75,380.82	84,358.08	98,636.38	116,894.49

CATEGORY 4 - MODEL #3		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate			533.40	579.12	2,585.34
	LA Highway					570.82
	US Highway	594.36	548.64	594.36	1,188.72	2,567.10
	SUM		548.64	1,127.76	1,767.84	5,723.26
Ascension Parish	Interstate	18,184.04	18,290.72	18,443.12	18,864.07	21,180.55
	LA Highway	6,581.71	6,581.71	6,581.71	6,581.71	8,609.20
	US Highway	18,184.38	17,803.38	18,931.14	19,159.74	19,235.94
	SUM	42,950.13	42,675.81	43,955.97	44,605.51	49,025.68
Assumption Parish	Interstate					
	LA Highway	21,370.19	21,979.79	22,863.71	24,068.95	28,747.63
	US Highway	4,276.61	4,937.11	4,937.11	4,967.59	5,074.27
	SUM	25,646.80	26,916.90	27,800.82	29,036.54	33,821.90
Calcasieu Parish	Interstate	4,620.40	5,375.05	6,370.40	7,715.79	10,986.96
	LA Highway	22,548.64	23,859.10	26,347.79	29,929.19	40,462.93
	US Highway		548.64	548.64	1,750.36	3,316.91
	SUM	27,169.03	29,782.79	33,266.83	39,395.34	54,766.79
Cameron Parish	Interstate					
	LA Highway	199,386.62	199,432.34	199,691.42	199,965.74	200,983.21
	US Highway					
	SUM	199,386.62	199,432.34	199,691.42	199,965.74	200,983.21
Iberia Parish	Interstate					
	LA Highway	9,396.08	9,396.08	9,563.72	9,929.48	10,798.16
	US Highway	518.16	518.16	518.16	1,036.32	1,036.32
	SUM	9,914.24	9,914.24	10,081.88	10,965.80	11,834.48
Iberville Parish	Interstate					
	LA Highway					291.42
	US Highway					
	SUM	0.00	0.00	0.00	0.00	291.42
Jefferson Parish	Interstate	14,865.17	14,865.17	14,865.17	14,865.17	14,865.17
	LA Highway	51,452.15	51,452.15	51,452.15	51,452.15	51,452.15
	US Highway	40,605.38	40,696.82	41,280.66	42,210.30	42,362.70
	SUM	106,922.69	107,014.13	107,597.98	108,527.62	108,680.02
Jefferson Davis Parish	Interstate					
	LA Highway	28,103.95	28,759.27	29,978.47	31,929.19	35,770.27
	US Highway	570.94	525.22	616.66	1,302.46	2,216.86
	SUM	28,674.89	29,284.49	30,595.13	33,231.65	37,987.12
Lafourche Parish	Interstate					
	LA Highway	121,547.36	121,276.07	121,978.95	127,917.04	136,495.48
	US Highway	33,219.55	33,874.87	34,133.95	34,332.07	34,575.91
	SUM	154,766.91	155,150.94	156,112.90	162,249.11	171,071.39
Orleans Parish	Interstate	38,015.64	38,046.12	38,198.52	38,213.76	39,037.57
	LA Highway	5,037.51	5,067.99	5,067.99	5,098.47	5,235.63
	US Highway	67,263.33	67,507.17	68,162.49	68,162.49	68,216.86
	SUM	110,316.48	110,621.28	111,429.00	111,474.72	112,490.06
Plaquemine s Parish	Interstate					
	LA Highway	153,236.37	153,236.37	153,236.37	153,236.37	153,343.05
	US Highway					
	SUM	153,236.37	153,236.37	153,236.37	153,236.37	153,343.05
St. Bernard Parish	Interstate					
	LA Highway	44,792.83	46,027.27	46,469.23	46,652.11	46,804.51
	US Highway					
	SUM	44,792.83	46,027.27	46,469.23	46,652.11	46,804.51
St. Charles Parish	Interstate	27,398.38	27,550.78	27,687.94	30,796.90	31,086.46
	LA Highway	17,366.92	17,290.72	17,473.60	17,595.52	17,610.76
	US Highway	40,098.36	40,116.82	40,116.82	40,281.24	40,946.38
	SUM	84,863.66	84,958.32	85,278.36	88,673.66	89,643.60
St. James	Interstate	10,689.14	10,689.14	10,689.14	10,689.14	10,689.14

Parish	LA Highway	29,352.61	30,145.09	30,358.45	32,339.65	34,503.73
	US Highway	13,880.61	13,880.61	13,880.61	13,880.61	13,880.61
	SUM	53,922.36	54,714.84	54,928.20	56,909.40	59,073.48
St. John the Baptist Parish	Interstate	45,302.98	45,302.98	45,302.98	45,302.98	45,302.98
	LA Highway	14,271.67	14,271.67	14,271.67	14,271.67	14,271.67
	US Highway	21,041.12	21,403.56	22,302.72	23,125.68	25,829.42
	SUM	80,615.76	80,978.21	81,877.37	82,700.33	85,404.06
St. Martin Parish	Interstate					
	LA Highway	18,450.84	18,182.40	19,868.16	21,224.52	21,757.92
	US Highway					
	SUM	18,450.84	18,182.40	19,868.16	21,224.52	21,757.92
St. Mary Parish	Interstate					
	LA Highway	27,626.36	29,302.76	30,537.20	33,599.85	40,410.14
	US Highway	58,301.76	59,065.03	60,304.24	61,813.00	65,852.77
	SUM	85,928.12	88,367.79	90,841.44	95,412.85	106,262.91
St. Tammany Parish	Interstate	9,372.24	9,372.24	10,439.04	12,344.04	16,011.50
	LA Highway					
	US Highway	32,761.02	33,266.51	33,454.19	34,094.27	36,195.86
	SUM	42,133.26	42,638.75	43,893.23	46,438.31	52,207.36
Tangipahoa Parish	Interstate	16,351.04	16,351.04	16,351.04	16,412.00	16,457.72
	LA Highway					
	US Highway					
	SUM	16,351.04	16,351.04	16,351.04	16,412.00	16,457.72
Terrebonne Parish	Interstate					
	LA Highway	201,537.08	206,090.27	208,863.83	219,375.55	229,997.48
	US Highway	17,890.24	22,599.40	23,422.36	25,969.28	28,943.36
	SUM	219,427.32	228,689.68	232,286.19	245,344.83	258,940.84
Vermilion Parish	Interstate					
	LA Highway	106,142.70	108,991.42	110,271.58	117,245.01	129,045.09
	US Highway	121.92	121.92	121.92	182.88	858.37
	SUM	106,264.62	109,113.34	110,393.50	117,427.89	129,903.46

CATEGORY 5 - MODEL #2		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate	579.12	579.12	579.12	2,097.66	3,194.94
	LA Highway				768.94	768.94
	US Highway	1,112.52	1,188.72	1,203.96	2,536.62	3,070.02
	SUM	1,691.64	1,767.84	1,783.08	5,403.22	7,033.90
Ascension Parish	Interstate	21,409.15	21,652.99	21,957.79	23,222.71	25,417.27
	LA Highway	7,369.52	7,979.12	8,101.04	9,051.16	10,057.00
	US Highway	19,159.74	19,235.94	19,235.94	19,357.86	19,418.82
	SUM	47,938.41	48,868.05	49,294.77	51,631.72	54,893.08
Assumption Parish	Interstate					
	LA Highway	25,775.83	25,775.83	26,842.63	28,458.07	31,954.83
	US Highway	4,967.59	4,967.59	4,967.59	5,074.27	5,119.99
	SUM	30,743.42	30,743.42	31,810.22	33,532.34	37,074.82
Calcasieu Parish	Interstate	9,249.35	9,285.51	9,300.75	11,002.20	16,784.19
	LA Highway	32,546.04	34,087.63	36,556.51	40,310.53	50,568.38
	US Highway	2,125.22	3,220.25	3,921.29	5,308.13	7,260.75
	SUM	43,920.60	46,593.39	49,778.55	56,620.86	74,613.32
Cameron Parish	Interstate					
	LA Highway	200,163.86	200,285.78	200,377.22	201,028.93	201,973.81
	US Highway					
	SUM	200,163.86	200,285.78	200,377.22	201,028.93	201,973.81
Iberia Parish	Interstate					
	LA Highway	10,188.56	10,569.56	10,569.56	10,798.16	11,917.48
	US Highway	1,051.56	1,036.32	1,036.32	1,036.32	2,346.96
	SUM	11,240.12	11,605.88	11,605.88	11,834.48	14,264.44
Iberville Parish	Interstate		518.16	518.16	518.16	1,905.00
	LA Highway	4,771.98	5,703.06	6,396.83	7,756.19	9,985.68
	US Highway					
	SUM	4,771.98	6,221.22	6,914.99	8,274.35	11,890.68
Jefferson Parish	Interstate	14,865.17	14,865.17	14,865.17	14,865.17	14,865.17
	LA Highway	51,452.15	51,452.15	51,452.15	51,452.15	51,452.15
	US Highway	42,195.06	42,347.46	42,347.46	42,347.46	42,362.70
	SUM	108,512.38	108,664.78	108,664.78	108,664.78	108,680.02
Jefferson Davis Parish	Interstate					794.90
	LA Highway	32,188.27	33,603.56	34,200.55	35,328.31	42,613.03
	US Highway	1,332.94	1,866.34	2,155.90	2,216.86	2,704.54
	SUM	33,521.21	35,469.90	36,356.44	37,545.16	46,112.46
Lafourche Parish	Interstate					
	LA Highway	128,525.89	129,822.04	130,218.28	135,550.60	154,818.33
	US Highway	34,240.63	34,332.07	34,423.51	34,438.75	34,652.11
	SUM	162,766.52	164,154.11	164,641.79	169,989.35	189,470.44
Livingston Parish	Interstate					30.48
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	30.48
Orleans Parish	Interstate	38,198.52	38,198.52	38,213.76	38,808.97	39,052.81
	LA Highway	5,067.99	5,083.23	5,098.47	5,144.19	5,266.11
	US Highway	68,216.86	68,216.86	68,247.34	68,247.34	68,868.32
	SUM	111,483.37	111,498.61	111,559.57	112,200.50	113,187.24
Plaquemine s Parish	Interstate					
	LA Highway	153,236.37	153,236.37	153,236.37	153,236.37	153,449.73
	US Highway					
	SUM	153,236.37	153,236.37	153,236.37	153,236.37	153,449.73
St. Bernard Parish	Interstate					
	LA Highway	46,271.11	46,682.59	46,697.83	46,713.07	46,819.75
	US Highway					
	SUM	46,271.11	46,682.59	46,697.83	46,713.07	46,819.75
St. Charles	Interstate	30,888.34	31,238.86	31,254.10	31,452.22	31,528.42

Parish	LA Highway	17,610.76	17,610.76	17,610.76	17,610.76	17,610.76
	US Highway	40,809.22	41,449.30	42,165.58	43,020.52	43,127.20
	SUM	89,308.32	90,298.92	91,030.44	92,083.50	92,266.38
St. James Parish	Interstate	10,948.22	10,948.22	10,948.22	10,948.22	10,948.22
	LA Highway	33,040.26	33,939.42	33,969.90	35,051.94	37,017.90
	US Highway	13,880.61	13,880.61	13,880.61	13,880.61	13,880.61
	SUM	57,869.09	58,768.25	58,798.73	59,880.77	61,846.73
St. John the Baptist Parish	Interstate	45,302.98	45,333.46	45,333.46	45,333.46	45,333.46
	LA Highway	14,271.67	14,271.67	14,271.67	14,271.67	14,271.67
	US Highway	26,873.97	27,468.33	27,468.33	27,529.29	27,803.61
	SUM	86,448.62	87,073.46	87,073.46	87,134.42	87,408.74
St. Martin Parish	Interstate	516.91			562.63	593.11
	LA Highway	21,712.20	21,544.56	21,712.20	21,757.92	21,773.16
	US Highway					
	SUM	22,229.10	21,544.56	21,712.20	22,320.54	22,366.26
St. Mary Parish	Interstate					
	LA Highway	35,504.85	36,708.81	37,867.05	39,785.30	42,763.39
	US Highway	61,005.28	62,712.16	62,818.84	64,968.85	71,694.61
	SUM	96,510.13	99,420.97	100,685.89	104,754.15	114,458.00
St. Tammany Parish	Interstate	14,873.88	15,727.32	15,818.76	16,971.62	17,931.74
	LA Highway					
	US Highway	36,561.62	36,317.78	36,668.30	37,831.85	41,804.89
	SUM	51,435.50	52,045.10	52,487.06	54,803.47	59,736.64
Tangipahoa Parish	Interstate	16,549.16	16,457.72	16,610.12	16,671.08	16,671.08
	LA Highway					
	US Highway					
	SUM	16,549.16	16,457.72	16,610.12	16,671.08	16,671.08
Terrebonne Parish	Interstate					
	LA Highway	223,693.16	225,913.16	227,604.80	230,246.36	236,986.29
	US Highway	26,861.25	26,632.65	27,790.89	28,882.40	29,674.88
	SUM	250,554.42	252,545.81	255,395.69	259,128.76	266,661.17
Vermilion Parish	Interstate					
	LA Highway	118,457.47	122,635.10	124,319.08	128,323.32	142,569.50
	US Highway	629.77	629.77	645.01	858.37	1,254.61
	SUM	119,087.24	123,264.87	124,964.10	129,181.69	143,824.11
West Baton Rouge Parish	Interstate	1,417.32	2,042.16	2,651.76	5,090.16	12,728.80
	LA Highway					1,686.45
	US Highway					
	SUM	1,417.32	2,042.16	2,651.76	5,090.16	14,415.25

CATEGORY 1 - MODEL #4		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Ascension Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Assumption Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Calcasieu Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Cameron Parish	Interstate					
	LA Highway	78,425.75	78,425.75	78,425.75	78,578.15	79,233.47
	US Highway					
	SUM	78,425.75	78,425.75	78,425.75	78,578.15	79,233.47
Iberia Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Jefferson Parish	Interstate	13,863.83	14,286.05	14,286.05	14,407.97	14,712.77
	LA Highway	13,592.82	12,891.78	13,790.94	15,995.69	17,531.62
	US Highway	12,688.34	13,100.74	14,319.94	18,248.86	24,988.37
	SUM	40,145.00	40,278.57	42,396.93	48,652.53	57,232.76
Jefferson Davis Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Lafourche Parish	Interstate					
	LA Highway	32,205.92	33,547.04	37,534.18	45,132.33	58,647.39
	US Highway	6,056.54	6,208.94	6,224.18	6,285.14	8,918.22
	SUM	38,262.46	39,755.98	43,758.36	51,417.47	67,565.61
Orleans Parish	Interstate	17,521.32	17,515.27	18,424.65	24,095.77	29,095.19
	LA Highway	2,558.56	2,619.52	2,741.44	2,741.44	4,656.51
	US Highway	20,355.32	22,107.92	25,125.44	32,836.88	41,277.93
	SUM	40,435.20	42,242.70	46,291.53	59,674.09	75,029.64
Plaquemines Parish	Interstate					
	LA Highway	86,310.02	89,041.23	94,002.14	102,841.34	114,980.02
	US Highway					
	SUM	86,310.02	89,041.23	94,002.14	102,841.34	114,980.02
St. Bernard Parish	Interstate					
	LA Highway	11,956.41	12,108.81	12,748.89	16,589.37	24,292.28
	US Highway					
	SUM	11,956.41	12,108.81	12,748.89	16,589.37	24,292.28
St. Charles Parish	Interstate	30.48	30.48	45.72	76.20	518.16
	LA Highway					
	US Highway	7,370.95	7,370.95	8,590.15	12,647.73	17,426.61
	SUM	7,401.43	7,401.43	8,635.87	12,723.93	17,944.77
St. James Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
St. John the	Interstate	1,965.96	1,463.04	1,463.04	1,463.04	1,463.04

Baptist Parish	LA Highway					
	US Highway					
	SUM	1,965.96	1,463.04	1,463.04	1,463.04	1,463.04
St. Martin Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
St. Mary Parish	Interstate					
	LA Highway	5,017.43	5,017.43	5,017.43	6,998.63	8,370.38
	US Highway	5,008.22	6,090.26	10,281.26	16,754.85	22,609.83
	SUM	10,025.65	11,107.69	15,298.69	23,753.48	30,980.21
St. Tammany Parish	Interstate					
	LA Highway					
	US Highway	518.16	518.16	518.16	548.64	548.64
	SUM	518.16	518.16	518.16	548.64	548.64
Tangipahoa Parish	Interstate	1,463.04	1,463.04	1,463.04	1,463.04	1,463.04
	LA Highway					
	US Highway					
	SUM	1,463.04	1,463.04	1,463.04	1,463.04	1,463.04
Terrebonne Parish	Interstate					
	LA Highway	59,333.19	64,648.34	66,324.04	74,256.81	86,550.93
	US Highway					
	SUM	59,333.19	64,648.34	66,324.04	74,256.81	86,550.93
Vermilion Parish	Interstate					
	LA Highway	579.12	1,097.28	1,097.28	1,097.28	1,097.28
	US Highway					
	SUM	579.12	1,097.28	1,097.28	1,097.28	1,097.28

CATEGORY 2 - MODEL #4		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010	2015	2025	2050	2100
Acadia Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Ascension Parish	Interstate	11,873.36	11,736.20	11,736.20	11,736.20	11,736.20
	LA Highway	945.33	945.33	945.33	945.33	945.33
	US Highway	10,322.80	10,840.96	10,840.96	10,840.96	10,840.96
	SUM	23,141.49	23,522.49	23,522.49	23,522.49	23,522.49
Assumption Parish	Interstate					
	LA Highway	3,032.76	3,032.76	3,032.76	3,093.72	3,093.72
	US Highway	662.49	662.49	662.49	662.49	692.97
	SUM	3,695.25	3,695.25	3,695.25	3,756.21	3,786.69
Calcasieu Parish	Interstate					
	LA Highway	2,280.33	2,295.57	2,295.57	2,295.57	2,813.73
	US Highway					
	SUM	2,280.33	2,295.57	2,295.57	2,295.57	2,813.73
Cameron Parish	Interstate					
	LA Highway	175,001.62	175,001.62	175,001.62	175,519.78	176,617.06
	US Highway					
	SUM	175,001.62	175,001.62	175,001.62	175,519.78	176,617.06
Iberia Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Jefferson Parish	Interstate	14,682.29	14,682.29	14,728.01	14,865.17	14,865.17
	LA Highway	34,936.18	35,210.50	35,240.98	35,286.70	35,896.30
	US Highway	31,539.55	32,040.70	32,817.94	33,869.50	35,793.31
	SUM	81,158.03	81,933.50	82,786.94	84,021.38	86,554.78
Jefferson Davis Parish	Interstate					
	LA Highway	853.44	853.44	853.44	853.44	853.44
	US Highway					
	SUM	853.44	853.44	853.44	853.44	853.44
Lafourche Parish	Interstate					
	LA Highway	94,018.08	94,703.88	97,200.42	99,318.78	102,753.30
	US Highway	19,143.50	19,707.38	20,530.34	21,411.37	23,148.73
	SUM	113,161.59	114,411.27	117,730.76	120,730.15	125,902.03
Orleans Parish	Interstate	30,695.39	30,771.59	31,021.35	31,559.64	32,239.68
	LA Highway	2,741.44	2,741.44	3,015.76	4,356.88	4,686.99
	US Highway	52,587.21	53,440.65	53,532.09	53,654.01	53,760.69
	SUM	86,024.04	86,953.68	87,569.20	89,570.53	90,687.36
Plaquemines Parish	Interstate					
	LA Highway	146,845.44	146,845.44	147,946.89	150,401.73	151,575.21
	US Highway					
	SUM	146,845.44	146,845.44	147,946.89	150,401.73	151,575.21
St. Bernard Parish	Interstate					
	LA Highway	32,138.52	35,027.96	37,859.61	40,599.92	42,189.02
	US Highway					
	SUM	32,138.52	35,027.96	37,859.61	40,599.92	42,189.02
St. Charles Parish	Interstate	3,254.61	3,346.05	3,346.05	3,391.77	4,489.05
	LA Highway	2,169.31	2,702.71	2,702.71	2,702.71	3,388.51
	US Highway	31,778.36	33,180.88	33,211.36	33,607.60	33,851.44
	SUM	37,202.29	39,229.64	39,260.12	39,702.08	41,729.00
St. James Parish	Interstate	9,637.58	9,546.14	9,546.14	9,637.58	9,637.58
	LA Highway		518.16	518.16	518.16	518.16
	US Highway	10,726.45	10,726.45	10,726.45	10,726.45	10,726.45
	SUM	20,364.03	20,790.75	20,790.75	20,882.19	20,882.19
St. John the	Interstate	29,978.94	30,253.26	30,253.26	30,253.26	30,359.94

Baptist Parish	LA Highway	1,554.48	1,554.48	1,661.16	1,722.12	2,255.52
	US Highway	4,726.37	4,726.37	4,726.37	4,787.33	4,992.93
	SUM	36,259.79	36,534.11	36,640.79	36,762.71	37,608.40
St. Martin Parish	Interstate					
	LA Highway	1,112.52	1,112.52	1,112.52	1,127.76	1,920.24
	US Highway					
	SUM	1,112.52	1,112.52	1,112.52	1,127.76	1,920.24
St. Mary Parish	Interstate					
	LA Highway	7,753.48	7,844.92	8,088.76	8,286.88	10,387.86
	US Highway	24,711.20	25,976.12	29,520.17	33,269.21	38,096.87
	SUM	32,464.68	33,821.04	37,608.94	41,556.10	48,484.73
St. Tammany Parish	Interstate					
	LA Highway					
	US Highway	12,874.79	13,072.91	13,164.35	13,164.35	13,438.67
	SUM	12,874.79	13,072.91	13,164.35	13,164.35	13,438.67
Tangipahoa Parish	Interstate	14,244.28	14,792.92	14,792.92	14,792.92	14,792.92
	LA Highway					
	US Highway					
	SUM	14,244.28	14,792.92	14,792.92	14,792.92	14,792.92
Terrebonne Parish	Interstate					
	LA Highway	145,873.37	147,153.53	148,875.65	155,162.14	159,947.50
	US Highway	6,015.21	6,137.13	6,137.13	6,518.13	6,975.33
	SUM	151,888.58	153,290.66	155,012.78	161,680.27	166,922.83
Vermilion Parish	Interstate					
	LA Highway	29,894.21	29,894.21	30,351.41	30,351.41	30,458.09
	US Highway					
	SUM	29,894.21	29,894.21	30,351.41	30,351.41	30,458.09

CATEGORY 3 - MODEL #4		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Ascension Parish	Interstate	13,123.04	13,793.60	13,793.60	13,793.60	13,824.08
	LA Highway	6,490.27	6,581.71	6,581.71	6,581.71	6,581.71
	US Highway	14,772.88	14,772.88	14,772.88	14,772.88	14,818.60
	SUM	34,386.18	35,148.18	35,148.18	35,148.18	35,224.38
Assumption Parish	Interstate					
	LA Highway	20,531.99	20,577.71	20,577.71	20,577.71	20,577.71
	US Highway	1,793.61	1,793.61	1,793.61	1,793.61	1,808.85
	SUM	22,325.60	22,371.32	22,371.32	22,371.32	22,386.56
Calcasieu Parish	Interstate	2,547.76	2,563.00	2,563.00	2,563.00	2,563.00
	LA Highway	13,382.24	14,129.00	14,129.00	14,129.00	14,129.00
	US Highway					
	SUM	15,930.00	16,692.00	16,692.00	16,692.00	16,692.00
Cameron Parish	Interstate					
	LA Highway	195,153.72	195,153.72	195,153.72	195,153.72	195,184.20
	US Highway					
	SUM	195,153.72	195,153.72	195,153.72	195,153.72	195,184.20
Iberia Parish	Interstate					
	LA Highway	4,998.35	4,998.35	5,089.79	5,425.07	5,470.79
	US Highway					
	SUM	4,998.35	4,998.35	5,089.79	5,425.07	5,470.79
Iberville Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Jefferson Parish	Interstate	14,865.17	14,865.17	14,865.17	14,865.17	14,865.17
	LA Highway	50,492.03	50,492.03	50,492.03	50,492.03	51,055.91
	US Highway	40,163.42	40,239.62	40,239.62	40,300.58	40,671.06
	SUM	105,520.61	105,596.81	105,596.81	105,657.77	106,592.14
Jefferson Davis Parish	Interstate					
	LA Highway	15,438.81	15,484.53	15,484.53	15,484.53	15,484.53
	US Highway					
	SUM	15,438.81	15,484.53	15,484.53	15,484.53	15,484.53
Lafourche Parish	Interstate					
	LA Highway	115,327.89	115,343.13	115,419.33	116,300.58	117,565.50
	US Highway	31,788.36	31,788.36	31,788.36	31,879.80	31,985.11
	SUM	147,116.25	147,131.49	147,207.69	148,180.38	149,550.61
Orleans Parish	Interstate	36,476.40	36,476.40	36,522.12	36,537.36	37,146.96
	LA Highway	3,244.36	3,381.52	3,924.99	4,077.39	5,067.99
	US Highway	65,251.65	65,251.65	65,251.65	65,251.65	66,806.13
	SUM	104,972.41	105,109.57	105,698.76	105,866.40	109,021.08
Plaquemine s Parish	Interstate					
	LA Highway	153,129.69	153,129.69	153,236.37	153,236.37	153,236.37
	US Highway					
	SUM	153,129.69	153,129.69	153,236.37	153,236.37	153,236.37
St. Bernard Parish	Interstate					
	LA Highway	38,269.88	38,940.44	40,007.24	41,167.74	43,786.03
	US Highway					
	SUM	38,269.88	38,940.44	40,007.24	41,167.74	43,786.03
St. Charles Parish	Interstate	20,441.23	20,471.71	20,547.91	20,944.15	24,144.55
	LA Highway	16,269.64	16,269.64	16,269.64	16,269.64	16,269.64
	US Highway	39,431.02	39,431.02	39,431.02	39,491.98	39,583.42
	SUM	76,141.89	76,172.37	76,248.57	76,705.77	79,997.61
St. James	Interstate	10,567.22	10,567.22	10,567.22	10,567.22	10,567.22

Parish	LA Highway	18,497.10	18,954.30	18,954.30	18,954.30	19,137.18
	US Highway	12,032.32	12,032.32	12,032.32	12,078.04	12,245.68
	SUM	41,096.64	41,553.84	41,553.84	41,599.56	41,950.08
St. John the Baptist Parish	Interstate	41,428.96	41,246.08	41,276.56	41,550.88	41,611.84
	LA Highway	12,823.87	12,823.87	12,884.83	12,884.83	12,884.83
	US Highway	12,715.17	12,959.01	12,959.01	13,050.45	13,080.93
	SUM	66,968.00	67,028.96	67,120.40	67,486.16	67,577.60
St. Martin Parish	Interstate					
	LA Highway	9,958.47	9,958.47	10,187.07	10,202.31	10,202.31
	US Highway					
	SUM	9,958.47	9,958.47	10,187.07	10,202.31	10,202.31
St. Mary Parish	Interstate					
	LA Highway	21,640.68	21,488.28	21,534.00	21,564.48	21,610.20
	US Highway	51,154.88	51,520.64	51,596.84	52,115.00	52,816.04
	SUM	72,795.56	73,008.92	73,130.84	73,679.48	74,426.24
St. Tammany Parish	Interstate	3,481.72	3,481.72	3,481.72	3,527.44	3,527.44
	LA Highway					
	US Highway	26,798.73	26,737.77	26,737.77	26,737.77	27,225.45
	SUM	30,280.45	30,219.49	30,219.49	30,265.21	30,752.89
Tangipahoa Parish	Interstate	16,046.24	16,046.24	16,046.24	16,046.24	16,046.24
	LA Highway					
	US Highway					
	SUM	16,046.24	16,046.24	16,046.24	16,046.24	16,046.24
Terrebonne Parish	Interstate					
	LA Highway	184,715.85	184,883.18	185,325.14	186,209.06	188,110.37
	US Highway	16,701.52	16,762.48	16,808.20	16,808.20	16,899.64
	SUM	201,417.37	201,645.67	202,133.35	203,017.27	205,010.02
Vermilion Parish	Interstate					
	LA Highway	69,540.36	69,494.64	69,494.64	69,692.76	69,799.44
	US Highway	121.92	121.92	121.92	121.92	121.92
	SUM	69,662.28	69,616.56	69,616.56	69,814.68	69,921.36

CATEGORY 4 - MODEL #4		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate					
	LA Highway					
	US Highway	594.36	594.36	594.36	594.36	594.36
	SUM		594.36	594.36	594.36	594.36
Ascension Parish	Interstate	18,184.04	18,138.32	18,138.32	18,138.32	18,260.24
	LA Highway	6,581.71	6,581.71	6,581.71	6,581.71	6,581.71
	US Highway	18,184.38	18,291.06	18,291.06	18,306.30	18,321.54
	SUM	42,950.13	43,011.09	43,011.09	43,026.33	43,163.49
Assumption Parish	Interstate					
	LA Highway	21,370.19	22,086.47	22,086.47	22,086.47	22,086.47
	US Highway	4,276.61	4,368.05	4,383.29	4,383.29	4,754.23
	SUM	25,646.80	26,454.52	26,469.76	26,469.76	26,840.70
Calcasieu Parish	Interstate	4,620.40	4,620.40	4,620.40	4,620.40	4,620.40
	LA Highway	22,548.64	22,548.64	22,548.64	22,548.64	22,548.64
	US Highway					
	SUM	27,169.03	27,169.03	27,169.03	27,169.03	27,169.03
Cameron Parish	Interstate					
	LA Highway	199,386.62	199,386.62	199,386.62	199,386.62	199,386.62
	US Highway					
	SUM	199,386.62	199,386.62	199,386.62	199,386.62	199,386.62
Iberia Parish	Interstate					
	LA Highway	9,441.80	9,716.12	9,716.12	9,716.12	9,716.12
	US Highway					
	SUM	9,441.80	9,716.12	9,716.12	9,716.12	9,716.12
Iberville Parish	Interstate					
	LA Highway					
	US Highway					
	SUM	0.00	0.00	0.00	0.00	0.00
Jefferson Parish	Interstate	14,865.17	14,865.17	14,865.17	14,865.17	14,865.17
	LA Highway	51,452.15	51,452.15	51,452.15	51,452.15	51,452.15
	US Highway	40,605.38	40,605.38	40,666.34	41,021.58	41,280.66
	SUM	106,922.69	106,922.69	106,983.65	107,338.90	107,597.98
Jefferson Davis Parish	Interstate					
	LA Highway	28,103.95	28,515.43	28,515.43	28,515.43	28,515.43
	US Highway	570.94	570.94	570.94	570.94	570.94
	SUM	28,674.89	29,086.37	29,086.37	29,086.37	29,086.37
Lafourche Parish	Interstate					
	LA Highway	121,547.36	121,486.40	121,486.40	121,608.32	121,638.80
	US Highway	33,219.55	33,219.55	33,219.55	33,250.03	33,326.23
	SUM	154,766.91	154,705.95	154,705.95	154,858.35	154,965.03
Orleans Parish	Interstate	38,015.64	38,046.12	38,046.12	38,198.52	38,778.49
	LA Highway	5,037.51	5,067.99	5,067.99	5,083.23	5,144.19
	US Highway	67,263.33	67,507.17	67,507.17	68,162.49	68,162.49
	SUM	110,316.48	110,621.28	110,621.28	111,444.24	112,085.17
Plaquemine s Parish	Interstate					
	LA Highway	153,236.37	153,236.37	153,236.37	153,236.37	153,236.37
	US Highway					
	SUM	153,236.37	153,236.37	153,236.37	153,236.37	153,236.37
St. Bernard Parish	Interstate					
	LA Highway	44,792.83	45,234.79	45,295.75	45,371.95	45,646.27
	US Highway					
	SUM	44,792.83	45,234.79	45,295.75	45,371.95	45,646.27
St. Charles Parish	Interstate	27,398.38	27,550.78	27,550.78	29,577.70	30,674.98
	LA Highway	17,366.92	17,366.92	17,366.92	17,366.92	17,366.92
	US Highway	40,098.36	40,071.10	40,071.10	40,086.34	40,144.08
	SUM	84,863.66	84,988.80	84,988.80	87,030.96	88,185.98
St. James	Interstate	10,689.14	10,689.14	10,689.14	10,689.14	10,689.14

Parish	LA Highway	29,352.61	29,764.09	29,764.09	30,114.61	30,114.61
	US Highway	13,880.61	13,880.61	13,880.61	13,880.61	13,880.61
	SUM	53,922.36	54,333.84	54,333.84	54,684.36	54,684.36
St. John the Baptist Parish	Interstate	45,302.98	45,302.98	45,302.98	45,302.98	45,302.98
	LA Highway	14,271.67	14,271.67	14,271.67	14,271.67	14,271.67
	US Highway	21,041.12	21,312.12	21,312.12	21,327.36	21,357.84
	SUM	80,615.76	80,886.77	80,886.77	80,902.01	80,932.49
St. Martin Parish	Interstate					
	LA Highway	16,749.84	16,749.84	16,749.84	16,780.32	17,130.84
	US Highway					
	SUM	16,749.84	16,749.84	16,749.84	16,780.32	17,130.84
St. Mary Parish	Interstate					
	LA Highway	27,626.36	27,321.56	27,336.80	27,550.16	27,626.36
	US Highway	58,301.76	58,240.80	58,301.76	58,454.16	60,298.35
	SUM	85,928.12	85,562.36	85,638.56	86,004.32	87,924.71
St. Tammany Parish	Interstate	11,902.08	11,429.64	11,429.64	11,429.64	11,475.36
	LA Highway					
	US Highway	32,761.02	32,761.02	32,761.02	32,761.02	32,761.02
	SUM	44,663.10	44,190.66	44,190.66	44,190.66	44,236.38
Tangipahoa Parish	Interstate	16,351.04	16,305.32	16,305.32	16,305.32	16,305.32
	LA Highway					
	US Highway					
	SUM	16,351.04	16,305.32	16,305.32	16,305.32	16,305.32
Terrebonne Parish	Interstate					
	LA Highway	201,537.08	201,638.31	201,653.55	201,714.51	202,141.23
	US Highway	17,890.24	17,372.08	17,387.32	17,387.32	17,387.32
	SUM	219,427.32	219,010.40	219,040.88	219,101.84	219,528.56
Vermilion Parish	Interstate					
	LA Highway	106,142.70	106,340.82	106,371.30	106,523.70	106,645.62
	US Highway	121.92	121.92	121.92	121.92	121.92
	SUM	106,264.62	106,462.74	106,493.22	106,645.62	106,767.54

CATEGORY 5 - MODEL #4		Length of Vulnerable Road Segments				
PARISH	ROAD CLASS	2010 (M0)	2015	2025	2050	2100
Acadia Parish	Interstate	579.12	579.12	579.12	579.12	579.12
	LA Highway					
	US Highway	1,112.52	1,112.52	1,112.52	1,112.52	1,112.52
	SUM	1,691.64	1,691.64	1,691.64	1,691.64	1,691.64
Ascension Parish	Interstate	21,409.15	21,470.11	21,470.11	21,485.35	21,485.35
	LA Highway	7,369.52	7,369.52	7,369.52	7,369.52	7,369.52
	US Highway	19,159.74	19,159.74	19,159.74	19,159.74	19,159.74
	SUM	47,938.41	47,999.37	47,999.37	48,014.61	48,014.61
Assumption Parish	Interstate					
	LA Highway	24,952.87	24,952.87	24,952.87	24,952.87	24,952.87
	US Highway	4,967.59	4,967.59	4,967.59	4,967.59	4,967.59
	SUM	29,920.46	29,920.46	29,920.46	29,920.46	29,920.46
Calcasieu Parish	Interstate	9,249.35	9,782.75	9,782.75	9,782.75	9,782.75
	LA Highway	32,546.04	32,957.52	32,957.52	32,957.52	32,957.52
	US Highway	2,125.22	2,125.22	2,125.22	2,125.22	2,125.22
	SUM	43,920.60	44,865.48	44,865.48	44,865.48	44,865.48
Cameron Parish	Interstate					
	LA Highway	200,163.86	200,163.86	200,163.86	200,163.86	200,163.86
	US Highway					
	SUM	200,163.86	200,163.86	200,163.86	200,163.86	200,163.86
Iberia Parish	Interstate					
	LA Highway	10,188.56	10,188.56	10,188.56	10,188.56	10,188.56
	US Highway	518.16	518.16	518.16	518.16	518.16
	SUM	10,706.72	10,706.72	10,706.72	10,706.72	10,706.72
Iberville Parish	Interstate					
	LA Highway	4,771.98	4,856.14	4,856.14	4,856.14	4,993.30
	US Highway					
	SUM	4,771.98	4,856.14	4,856.14	4,856.14	4,993.30
Jefferson Parish	Interstate	14,865.17	14,865.17	14,865.17	14,865.17	14,865.17
	LA Highway	51,452.15	51,452.15	51,452.15	51,452.15	51,452.15
	US Highway	41,916.02	41,916.02	41,931.26	42,347.46	42,347.46
	SUM	108,233.33	108,233.33	108,248.57	108,664.78	108,664.78
Jefferson Davis Parish	Interstate					
	LA Highway	32,173.03	32,173.03	32,173.03	32,173.03	32,340.67
	US Highway	1,332.94	1,332.94	1,332.94	1,332.94	1,332.94
	SUM	33,505.97	33,505.97	33,505.97	33,505.97	33,673.61
Lafourche Parish	Interstate					
	LA Highway	128,007.73	128,007.73	128,022.97	128,600.41	128,600.41
	US Highway	34,240.63	34,301.59	34,301.59	34,316.83	34,332.07
	SUM	162,248.36	162,309.32	162,324.56	162,917.24	162,932.48
Orleans Parish	Interstate	38,198.52	38,198.52	38,198.52	38,213.76	38,808.97
	LA Highway	5,067.99	5,067.99	5,083.23	5,098.47	5,174.67
	US Highway	68,216.86	68,201.62	68,201.62	68,216.86	68,216.86
	SUM	111,483.37	111,468.13	111,483.37	111,529.09	112,200.50
Plaquemine s Parish	Interstate					
	LA Highway	153,236.37	153,236.37	153,236.37	153,236.37	153,236.37
	US Highway					
	SUM	153,236.37	153,236.37	153,236.37	153,236.37	153,236.37
St. Bernard Parish	Interstate					
	LA Highway	46,271.11	46,301.59	46,377.79	46,499.71	46,713.07
	US Highway					
	SUM	46,271.11	46,301.59	46,377.79	46,499.71	46,713.07
St. Charles Parish	Interstate	30,888.34	31,086.46	31,086.46	31,132.18	31,177.90
	LA Highway	17,610.76	17,610.76	17,610.76	17,610.76	17,610.76
	US Highway	40,809.22	40,793.98	40,793.98	41,327.38	41,327.38
	SUM	89,308.32	89,491.20	89,491.20	90,070.32	90,116.04
St. James	Interstate	10,932.98	10,932.98	10,932.98	10,932.98	10,932.98

Parish	LA Highway	33,040.26	33,040.26	33,040.26	33,040.26	33,040.26
	US Highway	13,880.61	13,880.61	13,880.61	13,880.61	13,880.61
	SUM	57,853.85	57,853.85	57,853.85	57,853.85	57,853.85
St. John the Baptist Parish	Interstate	45,302.98	45,302.98	45,302.98	45,302.98	45,302.98
	LA Highway	14,271.67	14,271.67	14,271.67	14,271.67	14,271.67
	US Highway	26,843.49	26,843.49	26,843.49	26,843.49	26,873.97
	SUM	86,418.14	86,418.14	86,418.14	86,418.14	86,448.62
St. Martin Parish	Interstate	516.91	516.91	516.91	516.91	516.91
	LA Highway	21,651.24	21,651.24	21,651.24	21,651.24	21,651.24
	US Highway					
	SUM	22,168.14	22,168.14	22,168.14	22,168.14	22,168.14
St. Mary Parish	Interstate					
	LA Highway	35,489.61	35,489.61	35,489.61	35,687.73	35,702.97
	US Highway	61,005.28	61,416.76	61,569.16	61,706.32	62,387.50
	SUM	96,494.89	96,906.37	97,058.77	97,394.05	98,090.46
St. Tammany Parish	Interstate	14,873.88	14,919.60	14,919.60	14,919.60	14,950.08
	LA Highway					
	US Highway	36,561.62	36,515.90	36,515.90	36,515.90	36,592.10
	SUM	51,435.50	51,435.50	51,435.50	51,435.50	51,542.18
Tangipahoa Parish	Interstate	16,549.16	16,549.16	16,549.16	16,549.16	16,549.16
	LA Highway					
	US Highway					
	SUM	16,549.16	16,549.16	16,549.16	16,549.16	16,549.16
Terrebonne Parish	Interstate					
	LA Highway	223,693.16	223,632.20	223,723.64	223,952.24	224,866.64
	US Highway	26,861.25	26,967.93	26,967.93	26,967.93	26,967.93
	SUM	250,554.42	250,600.14	250,691.58	250,920.18	251,834.58
Vermilion Parish	Interstate					
	LA Highway	118,411.75	118,411.75	118,411.75	118,442.23	118,775.16
	US Highway	629.77	629.77	629.77	629.77	629.77
	SUM	119,041.52	119,041.52	119,041.52	119,072.00	119,404.93
West Baton Rouge Parish	Interstate	1,417.32	1,600.20	1,600.20	1,600.20	1,600.20
	LA Highway					
	US Highway					
	SUM	1,417.32	1,600.20	1,600.20	1,600.20	1,600.20