HAZARD MITIGATION PLAN

2014

GEORGETOWN COUNTY
CITY OF GEORGETOWN
TOWN OF ANDREWS
TOWN OF PAWLEYS ISLAND

Photographs (left to right, top to bottom):

Hurricane Hugo, www.ssec.wisc.edu
City of Georgetown Flooding, Georgetown City Fire Department
Andrews 2002 Tornado: En.wikipedia.org
Charleston Earthquake 1886: Charleston Museum
Wildfires: California Conservation Center
Severe Storms/Hail/Wind: wallsave.com
Winter Storm Pax, Andrews: www.efabula.com
Santee North Dam: web.ftc-i.net
Drought in SC: archive.wltx.com

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Record of Changes

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Executive Summary

Planning Process

The Georgetown County Hazard Mitigation Plan represents a combined effort of individuals, public, and private agencies to identify and address the various types of natural hazards that have the potential to threaten Georgetown County. Georgetown County Emergency Management Division (GCEMD) was tasked with completing the five-year update of this plan. Other agencies, municipalities, and County departments also contributed to the update of the plan, and public hearings were held to solicit input into the recommended contents of the plan. The plan includes the following jurisdictions: Georgetown County, the City of Georgetown, the Town of Andrews, and the Town of Pawleys Island. The plan has been drafted in such a manner that the local governments within Georgetown County are able to prepare an action plan for their respective entities and adopt this plan for their use. This cooperative approach enables the County to have a more standardized method of addressing hazards which face all four (4) of the governmental entities, and also avoids a duplication of effort that would occur if all of the governmental entities individually undertook this type of planning initiative. Every part of the 2014 plan was reviewed and updated.

Hazard Assessment

The Georgetown County Hazard Mitigation Plan includes in Appendix A an updated assessment of the natural hazards that have the potential of effecting Georgetown County. Natural hazards addressed in the assessment include hurricanes/tropical storms, flooding, tornadoes, earthquakes, wildfires, severe storms/hail/wind events, winter storms, dam failure, and drought. Additional hazards for which the possibility of occurrence is unlikely (e.g., tsunamis, volcanoes, and landslides) are discussed in the assessment to meet the Disaster Mitigation Act of 2000[1] requirements. The hazard description section of the assessment provides a brief description of the nature of the hazard for Georgetown County. The plan contains probability data for each of the identified hazards as well as data regarding the vulnerable population residing within the County. Local hazard events, such as the October, 2002, tornado in the City of Georgetown and large-scale hazards such as Hurricane Hugo in September, 1989 are discussed in the plan.

Community Vulnerability Assessment

Appendix B of the Mitigation Plan contains information concerning the Georgetown County community. Population data is presented (historical, current, and projected) as well as a profile of the local economy. The County's natural, historic, and cultural resources are discussed. The County's hazard-prone locations are identified, including properties in the National Flood Insurance Program's (NFIP) repetitive loss inventory. The assessment also includes an analysis of the "critical facilities" in Georgetown County. These are buildings and structures from which essential services and functions for the continuation of public safety actions and disaster recovery are performed or provided. The last portion of the assessment addresses development trends and implications for the future. When planning for hazard mitigation, it is very helpful to have an idea of what Georgetown County will look like in 15-20 years.

[1] Disaster Mitigation Act of 2000 (11/30/00). Federal Public Law 106-390.

Problem Assessment

In Section 2, Problem Assessment, the Georgetown County Hazard Mitigation Plan addresses each of the major types of hazards facing the County. Each of the major hazard types are discussed in terms of which types of buildings are most vulnerable to which type of hazard, with an estimation of the number of vulnerable buildings within the County to both flood and hurricane damage. Estimated potential building and property losses due to earthquakes and tornadoes are also discussed. The types of hazards that pose a threat to the infrastructure to the County as well as the impacts of hazards on critical facilities are also reviewed.

Goals

The goals of the Georgetown County Hazard Mitigation Plan (Section 3) complement the following FEMA mitigation grant programs: Pre-Disaster Mitigation (PDM) Grant Program authorized under §203 of the Robert T. Stafford Disaster and Emergency Assistance Act (42 U.S.C); the Hazard Mitigation Grant Program (HMGP) authorized under §404 of the Robert T. Stafford Disaster and Emergency Assistance Act; and the Flood Mitigation Assistance (FMA) Program authorized by the National Flood Insurance Reform Act of 1994 (42 U.S.C. 4101). In general, these goals are intended to minimize future losses of life and property associated with hazard events facing Georgetown County. Since this plan is a multi-jurisdictional plan intended for adoption by the local governmental entities, the plan enables local governmental entities to provide specific goals for inclusion into this section.

Review of Possible Activities

The Mitigation Actions section of the Georgetown County Hazard Mitigation Plan (Section 3) provides prioritization factors to be utilized in selecting projects to be performed as well as a description of the on-going activities currently being performed within the County. This section also lists suggested activities that possibly could be performed to enhance hazard mitigation within Georgetown County. This section discusses mitigation activities (e.g., primarily regulatory activities designed to provide improved resistance of development to hazard events), property protection activities (e.g., activities designed to improve ability of citizens or the existing building stock/infrastructure to withstand hazard events), natural and beneficial functions of floodplains/resource preservation activities (e.g., activities geared towards the preservation of the natural and historic resources of the County), emergency services (e.g., activities geared towards hazard event warning and government response), structural projects (e.g., activities which are infrastructure improvements designed to enhance hazard resistance in the County), and public information activities (e.g., activities geared towards educating the citizens of the region regarding hazards preparation and response). The overall view provided within this section is that the County is already doing many activities for the enhancement of hazard mitigation; however, there are also additional activities which may be done to further prepare residents for the hazard events to which the County is vulnerable. This section has been utilized by the respective governmental entities to draft their individual action plans regarding which types of activities they intend to pursue in the future to reduce their hazard vulnerability. The prioritization factors within these sections also play a major role in additional project determination under the PDM, HMGP, and FMA programs as new possible activities are considered under this initiative.

Adopting Resolution

As each governmental entity adopts this updated plan, the adopting Resolution will be included in the plan. This plan is intended to be a working document which may be subject to revision as the decision making committees request revisions that would enhance their ability to perform their functions.

Action Plan

Each governmental entity has included within the plan, for their entity, a specific action plan regarding activities that they propose to be undertaken or continued during 2010, 2011, 2012, 2013, and 2014. This action plan includes activities from several of the types of activities discussed within Section 3. While it is the intention of the governmental entities to undertake the activities included within the action plan, it is also recognized that circumstances may change, and the activities listed may not be able to be accomplished within the time frame indicated, depending upon the circumstances encountered. The action plan for each jurisdiction will be periodically updated to reflect changes and to indicate activities for the time period beyond the year 2009.

Conclusion

The Georgetown County Hazard Mitigation Plan is the result of a cooperative effort of both the public and private sectors, intended to enhance the ability of all of the local jurisdictions within the County to prepare for the response to hazard events. The plan is comprehensive and complements other initiatives currently being undertaken throughout Georgetown County, to help make the County more resistant to disasters. Additional information regarding this plan is available through the local jurisdictions or the office of Emergency Management for Georgetown County.

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Acronyms

AICP	American Institute of Certified Planners
ARC	American Red Cross
CABO	Council of American Building Officials
CAR	Capability Assessment for Readiness
CCD	County Census Division
CERT	Community Emergency Response Team
CG	Cloud to Ground
Co.	County
COG	Council of Governments
Corp.	Corporation
CRS	Community Rating System
Dept.	Department
DHEC	Department of Health and Environmental Control
DMA 2000	Disaster Mitigation Act of 2000
DNR	Department of Natural Resources
DOQ	Digital Orthophoto Quads
DOT	Department of Transportation
DSS	Department of Social Services
E.	East
EMD	Emergency Management Department
Eng.	Engineer
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance
FPI	Fire Potential Index
GCEMD	Georgetown County Emergency Management Division
GCHMP	Georgetown County Hazard Mitigation Plan
GIS	Geographic Information System
g.p.m.	Gallons Per Minute
GPS	Global Positioning System
HAZMAT	Hazardous materials

HAZUS	Hazards United States (Earthquake Loss Estimation Methodology Software)
HMGP	Hazard Mitigation Grant Program
ICC	Increased Costs of Compliance
IP	Internet Protocol
IPCC	Intergovernmental Panel on Climate Change
kA	kiloamperes
MOMs	Maximum of Maximum Envelope of High Water
mph	Miles Per Hour
msec	microseconds
MSL	Mean Sea Level
N.	North
NCDC	National Climatic Data Center
NERR	National Estuarine Research Reserve
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service
OCRM	Office of Ocean and Coastal Resource Management
ORW	Outstanding Resource Waters
PDSI	Palmer Drought Severity Index
PRT	Parks, Recreation and Tourism
Q3	FEMA flood zone mapping software
S.	South
SC	South Carolina
SCADA	Supervisory Control and Data Acquisition
SCDOT	South Carolina Department of Transportation
SCEMD	South Carolina Emergency Management Division
SCPSA	South Carolina Public Service Authority
SCSN	South Carolina Seismic Network
SFHA	Special Flood Hazard Area
SFI	Sustainable Forestry Initiative
SHMO	State Hazard Mitigation Officer
SLOSH	Sea, Lake, Overland, Surges from Hurricanes
TIGER	Topologically Integrated Geographic Encoding and Referencing
UPS	Uninterrupted Power Supply

US	United States
USACE	United States Army Corps of Engineers
USC	University of South Carolina
USCHRL	University of South Carolina Hazards Research Lab
USDA	United States Department of Agriculture
USFS	United States Forest Service
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
W.	West
WRCOG	Waccamaw Regional Council of Governments

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Section 1: Introduction, Purpose, Organization, and Background Information

1.1 Introduction

Natural disasters are responsible for deaths and injuries throughout the United States. In addition, these events result in damage to property and infrastructure, as well as the interruption of services in the public and private sectors. Funds and efforts to recover from these disasters exhaust government and private resources. The Federal Emergency Management Agency (FEMA) encourages local governments to become proactive and initiate mitigation actions designed to reduce or eliminate the risks to humans and property from natural hazards. Mitigation projects should be carefully evaluated to ensure they are cost effective and long-term in nature. The purpose of mitigation is to prevent hazards from becoming disasters.

The Georgetown County Hazard Mitigation Plan (GCHMP) has been prepared to identify pro-active efforts that can be taken to lessen the impacts of the multitude of natural hazards that have a significant probability of occurring within the County. The plan covers the entire County, including the municipalities of Georgetown, Andrews, and Pawleys Island. Of the participating jurisdictions, there have been none added and none removed during this update. The plan incorporates a 2008 hazards assessment as well as updated assessment data from the SC Hazard Mitigation Plan 2013[2]. Based on the capabilities of the County and its three (3) incorporated municipalities, the plan proposes actions designed to avoid or minimize the identified hazards. The GCHMP is intended to help make the County more resistant to disasters, while at the same time respecting the needs of the residents and the funding capabilities of local government and private businesses.

Cindy Grace, Coordinator with GCEMD, provided direction and guidance regarding the planning process that was utilized to produce this plan. The planning process used in the initial production of the plan will be utilized to periodically revise the plan. Revisions to the plan will be overseen and supervised by the Coordinator, GCEMD.

1.2 Purpose

The purpose of the GCHMP is to assist Georgetown County and its three (3) incorporated areas in their efforts to utilize State and Federal funding for eligible hazard mitigation projects. The DMA 2000 requires that local governments develop plans according to the regulations published on February 26, 2002, as amended (Section 201.6)[3] in order to qualify for Federal aid for technical assistance and post-disaster funding. The GCHMP has been developed to address the hazard mitigation planning requirements as promulgated by FEMA. These criteria address each of the primary planning requirements contained in the Federal legislation, and identifies where in the plan they are addressed. The planning process in Georgetown County was designed to enhance public awareness and understanding about disasters and how the County could shield itself from the impacts of such events.

The plan is intended to be used by local elected officials, department heads, business and industry, and other community associations and organizations to make decisions regarding the best way to address the vulnerabilities to hazards in Georgetown County using existing authorities, policies, programs, and resources. It proposes specific projects and programs that are designed to minimize or eliminate the exposure of the County to the various hazards identified in

[2] SC Emergency Management Division. *SC Hazard Mitigation Plan, 2013*. West Columbia, SC.
[3] 44 CFR Section 201.6

the document. Part of the planning process included an assessment of existing policies, programs, and regulations for managing growth and development in Georgetown County. Local comprehensive plans, zoning ordinances, floodplain regulations, development regulations, building codes, and other applicable regulations were examined to determine how they hinder or support hazard mitigation initiatives. Existing mitigation-related policies of municipal and County government were also examined in order to ensure that programs and regulations are focused on creating a more disaster-resistant community for the residents of Georgetown County. A summary of the plans and ordinances that were reviewed is provided in Table 1-1 below:

Table 1-1 - Summary of Review of Jurisdictional Plans and Ordinances

Jurisdiction	Plan/Ordinance Reviewed	Purpose
Georgetown County	Comprehensive Plan	Data for Appendix B, natural resource protection
	Zoning Ordinance	mobile home park requirements, lot coverage limit, tree protection requirement
	Development Regulations	pervious surface limitations
	Flood Damage Prevention Ordinance	"no-rise" amendment, "cumulative" damage and freeboard requirement, anchoring requirements
	Building Codes	seismic and wind-resistant design requirements
City of Georgetown	Comprehensive Plan	Data for Appendix B
	Zoning Ordinance	lot coverage limits, tree protection
	Development Regulations	drainage infrastructure requirements
	Flood Damage Prevention Ordinance	"no-rise" amendment, "cumulative" damage and freeboard requirements, anchoring requirements
	Building Codes	seismic and wind-resistant design requirements
Town of Andrews	Comprehensive Plan	Data for Appendix B
	Zoning Ordinance	lot coverage limits
	Building Codes	seismic and wind-resistant design requirements
Town of Pawleys Island	Comprehensive Plan	Data for Appendix B
	Zoning Ordinance	lot coverage limits
	Flood Damage Prevention Ordinance	FEMA compliance
	Building Codes	seismic and wind-resistant design requirements
	Dune Protection Ordinance	standards for dune protection

Local Governments are encouraged to incorporate the GCHMP into their respective comprehensive plans, which are required to be updated every 10 years, according to State Statute. Additionally, local ordinances dealing with flood damage, drainage, lot coverage, etc. should be amended to incorporate the recommendations contained in this plan. The jurisdictions represented on the Planning Committee shall be responsible for submitting the proposed amendments to local plans/ordinances to the appropriate agency for consideration.

1.3 Existing Hazard Mitigation Programs

To address applicable hazards, Georgetown County is involved in numerous programs that cover the spectrum from public education and outreach to direct public safety measures.

1.3.1 Critical Facilities

Critical facilities generally refer to those entities that, if put out of commission by any cause, would have a widespread, adverse impact on the community overall. Georgetown County further defines these facilities as ones that need to be operating in 72 hours or less post-event.

FEMA includes shelters, Emergency Operations Centers (EOCs), hospitals, police and fire stations, schools, childcare centers, senior citizen centers, disability centers, vehicle and equipment storage facilities, sewer and wastewater treatment facilities, communications facilities, power facilities, water facilities, and city halls in their listing of critical facilities. Banks and financial institutions were added as a result of the terrorist activity of 9/11/01. Georgetown County's critical facilities are listed in Appendix B, Section 7.

In general, FEMA divides critical facilities into five (5) categories:

- Essential facilities are essential to the health and welfare of the entire population and are especially important following hazard events. The potential consequences of losing them are so great that they should be carefully inventoried. They include hospitals and other medical facilities, police and fire stations, EOCs, and schools.
- Transportation systems include airways (airports), highways (bridges, overpasses, and roadbeds), railways (trackage, bridges, rail yards, and depots), and waterways (canals, locks, and ports).
- Lifeline utility systems include potable water, wastewater, oil, natural gas, electric power, and communication systems.
- High potential loss facilities are those that would have high financial costs associated with their loss, such as power plants, dams, and military installations.
- Hazardous materials facilities include facilities housing industrial and hazardous materials (HAZMAT) such as corrosives, explosives, flammable materials, radioactive materials, and toxins.

1.3.2 Weather Warning Devices

With the assistance of US Department of Agriculture (USDA) and FEMA grants, Georgetown County has installed National Oceanic and Atmospheric Administration (NOAA) weather radios in the EOC, senior citizen centers, and all schools and libraries throughout the County. In addition, a NOAA weather transmitter purchased in 2003 is operational.

1.3.3 StormReady / TsunamiReady

According to NOAA[4], StormReady…helps arm America's communities with the communication and safety skills needed to save lives and property--before and during the event. StormReady communities are better prepared to save lives from the onslaught of severe weather through advanced planning, education and awareness.

[4] "NWS StormReady Program, Weather Safety, Disaster, Hurricane, Tornado, Tsunami, Flash Flood, Lightning, Heat, Cold." *NWS StormReady Program*, *Weather Safety*, *Disaster*, *Hurricane*, *Tornado*, *Tsunami*, *Flash Flood*, *Lightning*, *Heat*, *Cold*. N.p., n.d. Web. 08 Apr. 2014. http://www.stormready.noaa.gov/.

The National Weather Service TsunamiReady Program is designed to help cities, towns, counties, universities and other large sites in coastal areas reduce the potential for disastrous tsunami-related consequences. Since June 20, 2001, TsunamiReady has helped community leaders and emergency managers strengthen their local operations.[5]

Both Georgetown County and DeBordieu Colony are StormReady and TsunamiReady. Georgetown County is up for renewal of both in October, 2014, and DeBordieu Colony is up for renewal of both in November, 2015.

1.3.4 FireWise Communities

The Firewise Communities/USA Recognition Program is a process that empowers neighbors to work together in reducing their wildfire risk. Georgetown County Council passed a Resolution on February 12, 2014, recognizing the communities of Prince George, Camden Creek at Allston Plantation, and DeBordieu Colony as nationally recognized Firewise Communities. These local communities are three of only 23 communities in the state of South Carolina that are nationally recognized Firewise Communities working toward the common goal of reducing loss of life, property, and resources to wildland fire. County Council encourages community responsibility for planning in the design of safe communities as well as effective emergency response, individual responsibility for safe home construction and design, landscaping, and maintenance.

1.4 Organization of the Plan

The following sections of the Georgetown County Hazard Mitigation Plan present the detailed information to support the purposes of the plan beginning with providing important background information for the County. Section Two describes the planning process in detail. This section includes information on Committee organization, public involvement, interagency coordination, hazard assessment, vulnerability analysis, as well as establishing goals, reviewing possible mitigation measures, drafting an action plan, adopting the plan, and finally implementing, evaluating, and reviewing the plan.

Supporting documentation and information is provided in five (5) appendices. Appendix A contains the updated risk assessment for Georgetown County. A community vulnerability assessment and analysis may be found as Appendix B. Appendix C contains a glossary of hazard mitigation terms. Appendix D contains Committee meeting minutes and sign-in sheets. Appendix E contains notices of public hearings.

1.5 Background Information on Georgetown County

Georgetown County is situated on the coast of South Carolina between Marion and Horry Counties to the north and Charleston and Berkeley Counties to the south (see Figure 1-1 below). It is bordered on the west by Williamsburg County. The Pee Dee River forms the major portion of the County's northern border, while the Santee River forms the southern border. The land area is 813.55 square miles, or approximately 520,672 acres, and 221.10 square miles is water.[6] Total area of the County is 1,035 square miles.

[5] "TsunamiReady Information from NWS." *TsunamiReady Information from NWS*. N.p., n.d. Web. 08 Apr. 2014. <http://www.tsunamiready.noaa.gov/>.
[6] USA.com (n.d.). *Georgetown County*. Retrieved October 17, 2012, from <http://www.usa.com/georgetown-county-sc.htm>.

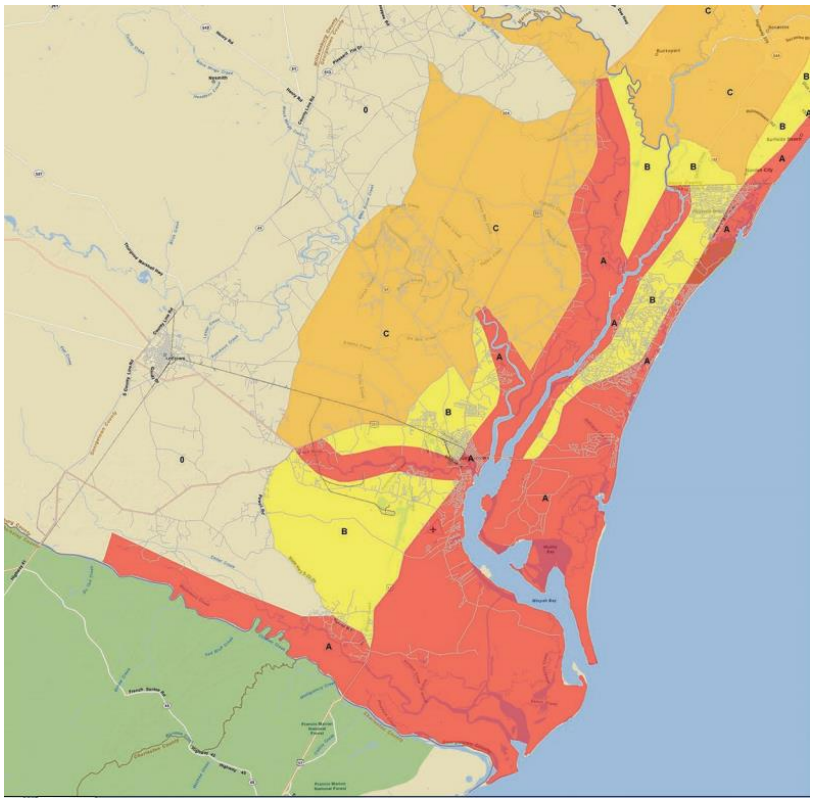
Figure 1-1 - Map Showing Location of Georgetown County

The County is located in the Atlantic Lower Coastal Plain. The northwestern one-third of the County is located in the Atlantic Coast Flatlands Land Resource Area. The remaining portion of the County is in the Tidewater Area. Relief generally is slight except in areas adjacent to the five (5) major rivers in the County. The elevation ranges from along the coast to about 60 feet in the mainland part of the County and to a high point of 76 feet on Sandy Island. About 70 percent of the County is less than 40 feet above sea level.

In 2011, the US Army Corps of Engineers (USACE) conducted a Hurricane Evacuation Study, the first of its kind since Hurricane Hugo in 1989. After completion of the study, Georgetown County changed its evacuation surge zones which are now based on a hurricane's storm surge potential, not the wind speed. The new study, based on better topography data, current road networks, and the latest population growth, shows more people who have not been required to evacuate during past hurricanes will have to do so now due to coastal and riverine flooding due to storm surge. With the updated zones, 75% of the population will be asked to evacuate if an order is given for all three (3) zones (A, B, and C). Figure 1-2 below is the updated evacuation surge map for Georgetown County[7]:

[7] Hodge, Sam M. "Emergency Evacuation Zones Georgetown County South Carolina Government." *Emergency Evacuation Zones Georgetown County South Carolina Government*. N.p., n.d. Web. 07 Apr. 2014. <http://www.georgetowncountysc.org/Emergency_Management/evacuationzones.html>.

Figure 1-2 - Evacuation Surge Map of Georgetown County



Source: Emergency Evacuation Zones Georgetown County South Carolina Government.

Wetlands and forestlands represent the principal natural features of the County. Forests account for 377 square miles, or almost one-half of the land area in the County. Evergreen forests cover 46 percent of the land, mixed forests cover 12 percent, and saturated bottomland forests cover 13 percent. Almost one-half of the soils found in Georgetown County are classified as hydric soils. The wetlands and forests provide food and cover for a variety of wildlife such as the eastern cottontail rabbit, gray squirrel, white-tailed deer, wild turkey, bobcat, bobwhite quail, and mourning dove. The County also lies within the Atlantic Flyway, which accounts for the large population of waterfowl in the fall and spring.

Georgetown County is predominantly rural. The economy is based on a combination of agriculture, manufacturing, and tourism. In the early 1990's, wholesale and retail trade employment surpassed manufacturing employment as the main employment sector. The most dominant manufacturing employer in the County is the International Paper Company. Because of the presence of the paper mill, silvaculture is an extremely important industry. In addition to trees, tobacco, corn, and soybeans are major crops produced in the County.

The population of Georgetown County was 60,158 in 2010, a 7.8 percent increase from the 2000 population figure of 55,797. The County's growth since 1970 has been localized to the Waccamaw Neck area and, to a lesser extent, the areas around the City of Georgetown and Town of Andrews. The number of persons residing within the corporate limits of Georgetown, Andrews, and Pawleys Island totaled 12,127 in 2010. This represents 20.15 percent of the County population. Georgetown, the County seat, had a population of 9,163 persons in 2010, followed by the Town of Andrews (2,861), and the Town of Pawleys Island (103). The 2010 population was 64.7 percent white, 33.6 percent African-American, and 4.7 percent other races. Georgetown

County's population density was 73.9 persons per square mile in 2010, compared with the State average of 153.9 persons per square mile. In 2010, 19.7 percent of the County's population earned incomes below the poverty level.[8]

Georgetown County has experienced seasonally high unemployment rates in the past. Typically, unemployment rates are highest in the late winter and lowest during the summer. The unemployment rate for 1990 was 7.45 percent. The most recent figure available for July 2012, was a 9.8 percent unemployment rate, according to the South Carolina Department of Employment and Workforce[9]. This figure is down from 10.0 since December 2007.

The supply of housing in Georgetown County has increased considerably since 1970. In 1970, there were 10,306 total housing units in the County, according to the U.S. Census figures. In 1990, there were 21,134 total units, an increase of 105 percent in 20 years. In 2000, there were a total of 28,282 housing units, an increase of almost 34 percent in the 10-year period. From 2000 to 2009, the total housing stock rose to reach 33,672 total housing units. The median value for housing has also increased significantly from $63,800 in 1990 to $174,700 in 2010. This represents nearly a 173 percent increase for the 15-year period. Home values for the Waccamaw Neck are more than double the average values for the remainder of the County.[10]

This background information is intended to provide a snapshot of the County for those readers who are not familiar with the local situation. This information will also assist those who are familiar with the County in maintaining a proper perspective during the planning process for hazard mitigation.

Table 1-2 is a listing of Presidential Disaster Declarations for South Carolina of which Georgetown was an applicant[11]:

[8] U.S. Census Bureau, State and County Quickfacts (2012, September 18). Retrieved October 17, 2012, from <http://quickfacts.census.gov/qfd/states/45/45043.html>.

[9] SC Dept. of Employment & Workforce. Labor Market Information. *Community Profile Georgetown County*. N.p., 4 Apr. 2014. Web. 7 Apr. 2014. <http://lmi.dew.sc.gov/lmi%20site/Documents/CommunityProfiles/04000043.pdf>.

[10] USA.com (n.d.). *Georgetown County*. Retrieved October 17, 2012, from <http://usa.com/georgetown-county-sc.htm>.

[11] "Disaster Declarations for South Carolina | FEMA.gov." *Disaster Declarations for South Carolina | FEMA.gov*. N.p., n.d. Web. 07 Apr. 2014. <http://www.fema.gov/disasters/grid/state-tribal-government/52?field_disaster_type_term_tid_1=All>.

Table 1-2 - Presidential Declarations

Major Disaster Declarations

Number	Date	State/Tribal Government	Incident Description
4166	03/12/2014	South Carolina	Severe Winter Storm
1566	10/07/2004	South Carolina	Tropical Storm Frances
1543	09/01/2004	South Carolina	Hurricane Charley
1299	09/21/1999	South Carolina	Hurricane Floyd
843	09/22/1989	South Carolina	Hurricane Hugo

Emergency Declaration

3145	9/15/1999	South Carolina	Hurricane Floyd

SBA Disaster Declaration

States	Declaration #	Incident	Incident Period	Effective
South Carolina	13792 and 13793	Main Street Fires	09/25/2013	10/04/2013

1.6 NFIP Compliance Information

All four of the local governments in Georgetown County participate in the National Flood Insurance Program. The Town of Andrews received a map exemption because there are no identified flood hazard areas within the Town Limits. The other jurisdictions are Georgetown County, which entered the program in 1978; the Town of Pawleys Island, which entered the program in 1986; and the City of Georgetown, which entered the program in 1978. See Table B-7 on page B-20 which displays data related to each jurisdiction's participation in the NFIP.

Other natural hazards which pose risks to portions or all of Georgetown County include dam failure, drought, severe storm and/or hail and wind, tornadoes, earthquakes, wildfires, and winter storms. These disasters and the county's risk probabilities are discussed in the Risk Assessment found in Appendix A.

Each jurisdiction is in good standing with the NFIP. Below are the jurisdictions' Floodplain Manager POCs[12]:

[12] "Participating NFIP Community Floodplain Manager Contacts." *SCDNR Flood Mitigation Program*. N.p., 1 Apr. 2014. Web. 14 July 2014. <https://www.dnr.sc.gov/water/flood/documents>.

Jurisdiction	Contact	Title	Phone	Email Address
Andrews	Robert Cox	Building Official	843-545-3116	rcox@gtcounty.org
Georgetown Co.	Robert Cox	Building Official	843-545-3116	rcox@gtcounty.org
Georgetown	Rick Martin	Building Official	843-545-4017	rmartin@cogsc.com
Pawleys Island	Ryan Fabbri	Assistant Administrator	843-237-1698	asstadmin@townofpawleysisland.com

See the following actions in Section 3 for each jurisdiction which explains how the NFIP program will be continued in the future:

Georgetown County Actions (FIRM Map reference # 450085IND0):

6A	page 3-46
6C	page 3-48

Town of Andrews Actions (FIRM Map exemption):

There are no actions because there are no identified flood hazard areas within the Town Limits

Town of Pawleys Island Actions (FIRM Map reference # 450255IND0):

2D	page 3-73
6A	page 3-84
6C	page 3-86
6G	page 3-90

City of Georgetown Actions (FIRM Map reference # 450087IND0):

6C	page 3-119

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Section 2: Planning Process

The Planning Process can be summarized in nine (9) basic steps:

- Organize to Prepare the Plan
- Involve the Public
- Coordinate with other Agencies and Organizations
- Assess the Hazard
- Assess the Problem
- Establish Goals
- Review Possible Mitigation Measures
- Draft an Action Plan
- Implement, Evaluate and Revise the Plan

Each of the nine (9) steps listed above is described in the narrative below.

2.1 Committee Organization

Two (2) committees have been involved in the development of the GCHMP - the Steering Committee and the Mitigation Planning Committee – which were formed early in the planning process. Each Committee is discussed below in detail regarding their composition, role, and responsibilities in the planning process.

2.1.1 Steering Committee

The planning process was initiated with the creation of a small, select Steering Committee comprised of staff members from the GCEMD and South Carolina Emergency Management Division (SCEMD).

The Mitigation Planning Committee provided the bulk of the data related to critical facility locations, descriptions, and vulnerability. In addition, Committee members reviewed the draft plan prior to submission. No outside contractors were involved in the development of the plan. GCEMD staff compiled the data received from the Mitigation Planning Committee, solicited data from outside agencies, and assembled the plan under the guidance of the Steering Committee.

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Table 2-1 - Georgetown County Hazard Mitigation -- Planning Committee

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS
Karen Anderson, Disaster Specialist	American Red Cross	3531 Pampas Drive Myrtle Beach SC 29577	(843) 546-5422	Karen.Anderson@redcross.org
Mayor Rodney Giles	Town of Andrews	PO Box 378 Andrews, SC 29510	(843) 264-8666	rgiles@townofandrews.org
Carissa Medeiros, Emergency Manager	Coastal Carolina University	470 Allied Drive Conway, SC 29526	(843) 349-5088	cmedeiros@coastal.edu
Nancy Cave, North Coast Director	Coastal Conservation League	PO Box 603 Georgetown, SC 29442	(843) 545-0403	nancyc@scccl.org
Mindy Taylor, District Manager	Duke Energy	1755 Mechanicsville Rd. Florence, SC 29501	(843) 661-4180	Mindy.taylor@duke-energy.com
Brad Loar, Mitigation Division Director	FEMA	3003 Chamblee Tucker Road Atlanta, GA 30341	(770) 220-5406	brad.loar@dhs.gov
Jonathan Heald, Director	City of Georgetown Public Services	2377 Maybank Dr. Georgetown, SC 29440	(843) 545-4501	jheald@cogsc.com
Chief Joey Tanner	City of Georgetown Fire Department	1405 Prince Street Georgetown, SC 29440	(843) 545-4200	jktanner@cogsc.com
Jackie Broach, Public Information Officer	Georgetown County	716 Prince Street Georgetown, SC 29440	(843) 545-3164	jbroach@gtcounty.org
Sel Hemingway, Administrator	Georgetown County	716 Prince St. Georgetown, SC 29440	(843) 545-3006	shemingway@gtcounty.org
Jeff Smith, President & CEO	Georgetown County Chamber of Commerce	531 Front Street Georgetown, SC 29440	(843) 546-8436	jsmith@visitgeorge.com
Lauren Joseph, Tourism Marketing Director	Georgetown County Chamber of Commerce	531 Front Street Georgetown, SC 29440	(843) 546-8436	ljoseph@hammockcoastsc.com
Robert Cox, Building Official	Georgetown County Building Division and Permits	129 Screven St., Rm. 249 Georgetown, SC 29440	(843) 545-3116	rcox@gtcounty.org
Cindy Grace, Coordinator	Georgetown County Emergency Management Division	2222-C Highmarket St. Georgetown, SC 29440	(843) 545-3136	cgrace@gtcounty.org
Sam Hodge, Manager	Georgetown County Emergency Management Division	2222-C Highmarket St. Georgetown, SC 29440	(843) 545-3545	shodge@gtcounty.org

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS
Mack Reed, Chief	Georgetown County Fire EMS	3605 Highmarket St. Georgetown, SC 29440	(843) 545-3133	mreed@gtcounty.org
Tony Hucks, Assistant Chief	Georgetown County Fire EMS.	3605 Highmarket St. Georgetown, SC 29440	(843) 545-3139	ahucks@gtcounty.org
Boyd Johnson, Director	Georgetown County Planning & Code Enforcement	129 Screven St., Room 222 Georgetown, SC 29440	(843) 545-3162	bjohnson@gtcounty.org
Ray Funnye, Director	Georgetown County Public Services	108 Screven St. Georgetown, SC 29440	(843) 545-3325	rcfunnye@gtcounty.org
Fred Davis, Environmental Services Superintendent	Georgetown County Public Services	201 Landfill Rd. Georgetown, SC 29440	(843) 545-3449	fdavis@gtcounty.org
Beth Goodale, Director	Georgetown County Recreation and Community Services	2030 Church Street Georgetown, SC 29440	(843) 545-3550	bgoodale@gtcounty.org
Bill Crompton, Director of Facilities	Georgetown County School District	2018 Church St. Georgetown, SC 29440	(843) 527-1338	bcrompton@gcsd.k12.sc.us
T.L. Staub, Lieutenant	Georgetown County Sheriff's Office	PO Box 1292 Georgetown, SC 29442	(843) 436-6054	tstaub@georgetowncountysc.org
John Buck, Finance/Administrative Services Director	Georgetown County Water & Sewer District	PO Box 2748 Georgetown, SC 29442	(843) 237-9727	johnb@gcwsd.com
Bruce Scott, Safety and Emergency Management Director	Georgetown Hospital System	606 Black River Road Georgetown, SC 29440	(843) 527-7338	brscott@georgetownhospitalsystem.org
Chief Doug Eggiman	Midway Fire Rescue	69 St. Paul's Place Pawleys Island, SC 29585	(843) 545-3603	Deggiman@gtcounty.org
Chief Norman Knight	Murrell's Inlet-Garden City Fire Department	Post Office Box 648 Murrells Inlet, 29576	(803) 651-5143	chiefknight@migcfd.org
Steve Pfaff, Warning Coordination Meteorologist	National Weather Service	2015 Gardner Drive Wilmington, NC 28405	(910) 762-0524 ext. 223	Steven.Pfaff@noaa.gov
Ryan Fabbri, Assistant Town Administrator	Town of Pawleys Island	PO Box 1350 Pawleys Island, SC 29585	(843) 237-1698	asstadmin@townofpawleysisland.com
Mayor Bill Otis	Town of Pawleys Island	PO Box 1350 Pawleys Island, SC 29585	(843) 237-8005	BillOtisJr@aol.com
Chief Mike Fanning	Town of Pawleys Island Police Department	321 Myrtle Avenue Pawleys Island, SC 29585	(843) 237-1698	policechief@townofpawleysisland.com

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS
Capt. Loren Wallace, Carolinas Area Manager	The Salvation Army	2401 Anthuan Maybank Georgetown, SC 29440	(843) 527-4479	christopher_wallace@uss.salvationarmy.org
O.J. Jansky, Distribution SCADA/ Control	Santee Cooper	1 Riverwood Drive Moncks Corner, SC 29461	(843) 347-3399	Otto.jansky@santeecooper.com
Rob Higbe, Vice President of Engineering & Operations	Santee Electric Cooperative	PO Box 548 Kingstree, SC 29556	(843) 355-0533	rhigbe@santee.org
Stan Gailey, R.A., Architect	SC Budget & Control Board, Division of General Services Office of State Engineer	1201 Main St., Ste. 600 Columbia, SC 29201	(803) 734-0774	sgailey@mmo.sc.gov
Matt Maxwell, Mining Field Staff	SC Department of Health and Environmental Control	927 Shine Ave. Myrtle Beach, SC 29577	(843) 238-4378	maxwelmc@dhec.sc.gov
Tanitra Marshall, Myrtle Beach Office Team Leader, OCRM	SC Department of Health and Environmental Control	927 Shine Ave. Myrtle Beach, SC 29557	(843) 238-4528	marshats@dhec.sc.gov
Maria Cox Lamm, State Coordinator, Flood Mitigation Program	SC Department of Natural Resources, Flood Mitigation Program	PO Box 167 Columbia, SC 29202	(803) 734-9103	coxm@dnr.sc.gov
Richard Pope, Engineering Associate	SC Department of Transportation	PO Box 593 Georgetown, SC 29442	(843) 661-4710	rpope@scdot.org
Bethany Morton, Regional Emergency Manager	SC Emergency Management Division	2779 Fish Hatchery Rd. W Columbia, SC 29172	(803) 225-9210	bmorton@emd.sc.gov
Charlotte Foster, PDM Mitigation Specialist	SC Emergency Management Division	2779 Fish Hatchery Rd. W Columbia, SC 29172	(803) 737-8500	cfoster@emd.sc.gov
Aaron Johnson, Regional Emergency Coordinator	SC Emergency Management Division	2779 Fish Hatchery Rd. W Columbia, SC 29172	(803) 360-7708	ajohnson@emd.sc.gov
Ron Holt, Unit Forester	SC Forestry Commission	596 IM Graham Rd. Kingstree, SC 29556	(843) 382-8761	rholt@ftc-i.net
Mike Ney, Regional Forester	SC Forestry Commission	113 Forestry Comm. Dr. Florence, SC 29501	(843) 662-5571	mney@ftc-i.net
Capt. Robert Woods IV, Emergency Traffic Management Unit Commander	SC Highway Patrol	10311 Wilson Blvd. Blythewood, SC 29016	(803) 896-8722	rgwoods@schp.org

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS
Capt. Kevin McClure, Commander of Bravo Battery, 1st Battalion, 178th Field Artillery Regiment	SC National Guard	HQ 4-178 FA, 3777 S Fraser Georgetown, SC 29440	(843) 546-4341	Kevin.mcclure@us.army.mil
David Schronce, Director	SC State Ports Authority	PO Box 601 Georgetown, SC 29442	(843) 527-4476	dschronce@scspa.com
Anne Sheehan, Editor	*South Strand News*	615 Front St. Georgetown, SC 29440	(843) 546-4148	asheehan@southstrandnews.com
Robin Kirby, Sr. Chief Boatswain	U.S. Coast Guard	355 Marine Drive Georgetown, SC 29440	(843) 546-2742	Robin.N.Kirby@uscg.mil
LTJG Matthew Kahley, Marine Environmental Response	U.S. Coast Guard	196 Tradd St. Charleston, SC 29401-1899	(843) 740-7088	matthew.r.kahley@uscg.mil
Sharon Abbott, Watershed Manager	U.S. Army Corps of Engineers Charleston District	1949 Industrial Park Rd., Rm. 140 Conway, SC 29526	(843) 365-4239	sharon.j.abbott@usace.army.mil
Craig Aubrey, Supervisor	U.S. Fish & Wildlife Service	176 Crogahan Spur Rd. #200 Charleston, SC 29407	(843) 727-4707	Craig_aubrey@fws.gov
Kim Crutchfield, Administrative Officer	U.S. Geological Survey	720 Gracern Rd. Columbia, SC 29210	(803) 750-6123	kcrutch@usgs.gov
Linwood Altman, President	Waccamaw Neck Council of Property Owners Associations	88 North Causeway Road Pawleys Island, SC 29585	(843) 237-2431	linalt1@aol.com
Sarah Smith, Executive Director	Waccamaw Regional Council of Governments	1230 Highmarket Street Georgetown, SC 29440	(843) 436-6135	ssmith@wrcog.org

2.1.2 Mitigation Planning Committee

The Mitigation Planning Committee was established early in the planning process. The Committee included representatives from a variety of agencies and the general public that had an interest in hazard mitigation planning. These citizens and professionals that are actively involved in disaster planning, response, and mitigation provided important input in the development of the plan, and recommended goals and objectives, mitigation measures, and priorities for actions. The Committee consisted of 55 members displayed in Table 2-1. The Committee contained representatives from the four (4) local jurisdictions (Georgetown County, City of Georgetown, Town of Andrews, and the Town of Pawleys Island) that are addressed by the plan.

The Mitigation Planning Committee met on April 30, 2014, and reviewed and analyzed each section of the Plan. During this meeting, GCEMD staff discussed the framework for the plan with the Committee members, and solicited input from the Committee regarding critical facility locations and issues. Committee members were asked to review the plan for needed corrections, and/or updates and to provide GCEMD staff with any post-meeting comments for review and discussion. The listing of hazards identified by the 2009 plan was reviewed by the Committee to determine if additional hazards should be considered by the plan update. The Committee members also completed a hazards questionnaire. GCEMD staff reviewed with the Committee a listing of changes to Sections 1, 2, and 3 and Appendices A, B, and C. Changes included items identified per previous requests, items identified by the individual Committee members or jurisdictions, and items identified by GCEMD during plan scoping. A copy of amended Mitigation Actions (Section 3), as submitted to date by the various jurisdictions, were distributed for review and discussion by Committee.

The Committee met again on May 7, 2014, to discuss updates, and a draft of the plan was discussed. The Committee discussed setting up public hearings with preliminary date set. (Planning Committee meeting minutes and sign-in sheets are included in Appendix D.)

The four (4) jurisdictions' level of participation in the development of the plan is summarized in the Table below:

Activity / Date	Georgetown County	City of Georgetown	Town of Pawleys Island	Town of Andrews
Attend 4/30/14 Planning Committee Meeting	X	X	X	
Attend 5/7/14 Planning Committee Meeting	X	X	X	
Updated Mitigation Actions 10/10	X	X	X	X
Updated Mitigation Actions 10/11	X	X	X	X
Updated Mitigation Actions 10/12	X	X	X	X
Updated Mitigation Actions 10/13	X	X	X	X
Completed Plan Questionnaire	X		X	
Attended 5/15/14 Public Hearing	X			

Below is documentation of how stakeholders were invited to participate in Planning Committee meetings and the Public Hearing:

Hazard Mitigation Plan Survey - Message (HTML)

From: Cindy Grace
Sent: Thu 3/27/2014 5:28 PM
To: Bill Crompton; Bill McCallum; Mayor Otis; Boyd Johnson; Brad Loar; Bruce Scott (GHS); Capt. Kevin McClure; Loren Wallace; Carissa Medeiros; 'Chief Tanner'; Craig Aubrey; David Schronce; Doug Eggiman; Jeff Smith; Karen Anderson; Kim Crutchfield; Larry Dickerson; Lauren Joseph; Linwood Altman; 'Lisa Jones'; Lt. Robert Woods; LTC Matthew Kahley; Rodney Giles; Michael Fanning; Mike Ney; Mindy Taylor; Nancy Cave; Chief Knight; O. J. Jarsky; Jonathan Heald; Ray C. Funnye; Richard Pope; Robert Cox; Robert Higbe; Robin Kirby; Ron Holt; Sarah Smith; Scott harper; Sel Hemingway; Sharon Abbott; Steve Pfaff; T. L. Staub; Tanita Marshall; Ted Ambrose; Anthony Hucks; Beth Goodale
Cc: Sam Hodge; Charlotte Foster; Aaron Johnson; Tracey Howle
Subject: Hazard Mitigation Plan Survey

Message | HAZARD MITIGATION PLAN QUESTIONNAIRE 2014.doc (167 KB)

As a part of the 5-year Hazard Mitigation Plan update for Georgetown County and municipalities, Georgetown County Emergency Management Division is requesting your attendance at the Initial Planning Conference (IPC) scheduled for Wednesday, April 30, 2014 at 2:00 p.m. in the Georgetown County Emergency Operations Center located at 2222-C Highmarket Street, Georgetown, SC 29440.

In preparation for the meeting, I ask that you provide your feedback on the attached questionnaire. Please return the questionnaire by fax, email, or bring it to the meeting on the 30th.

If you have any questions, please contact me at (843) 545-3273.

Thank you in advance for your assistance. I look forward to seeing you on April 30th.

Cindy Grace

Cindy Tarte Grace

Cindy Tarte Grace, SCCEM
Coordinator
Georgetown County Emergency Management Division
2222-C Highmarket Street
Georgetown, SC 29440
843-545-3273 (office)
843-545-3327 (fax)
gcrace@gtcounty.org

Start 9:43 AM 7/11/2014

Hazard Mitigation Planning Committee - Message (HTML)

Message Developer

Message Tracking | Reply Reply to All Forward | Delete Move to Folder Create Rule Other Actions | Block Sender Safe Lists Not Junk | Categorize Follow Up Mark as Unread | Find Related Select

Show | Respond | Actions | Junk E-mail | Options | Find

This message was sent with High importance.

From: Cindy Grace

Sent: Thu 5/1/2014 8:33 AM

To: Aaron Johnson; Beth Goodale; Bethany Morton (bmorton@emd.sc.gov); Bill Crompton; Bill McCallum; Mayor Otis; Boyd Johnson; Brad Loar; Bruce Scott (GHS); Capt. Kevin McClure; Loren Wallace; Carissa Medeiros; Charlotte Foster; 'Chief Tanner'; Craig Aubrey; David Schronce; Doug Eggiman; Fred Davis; Jeff Smith; Karen Anderson; Kim Crutchfield; Lauren Joseph; Linwood Altman; Lt. Robert Woods; LTJG Matthew Kahley; CoxM@dnr.sc.gov; Matt Maxwell; Rodney Giles; Michael Fanning; Mike Ney; Mindy Taylor; Nancy Cave; Chief Knight; O. J. Jansky; Jonathan Heald; Ray C. Funnye; Ray Gagnon; Richard Pope; Robert Cox; Robert Higbe; Robin Kirby; Ron Holt; Ryan Fabbri; Sarah Smith; Scott Harper; Sel Hemingway; Sharon Abbott; Steve Pfaff; T. L. Staub; Tanita Marshall; Anthony Hucks

Cc: Sam Hodge

Subject: Hazard Mitigation Planning Committee

Message | Agenda for 5-7-14 FPC.pdf (11 KB)

The next meeting of the Georgetown Hazard Mitigation Plan Planning Committee will be held Wednesday, May 7, 2014 at 2:00 p.m. in the Georgetown County EOC at 2222-C Highmarket Street, Georgetown, SC. The agenda is attached. Our conference call line, (843) 545-3510, will be open for those who cannot attend in person.

Please join us as we review the draft of the plan before submission to the State and FEMA for final approval.

Thanks, and hope to see you on the 7th.

==========

Cindy Tarte Grace

Cindy Tarte Grace, SCCEM
Coordinator
Georgetown County Emergency Management Division
2222-C Highmarket Street
Georgetown, SC 29440
843-545-3273 (office)
843-545-3527 (fax)
cgrace@gtcounty.org

Find something you're passionate about and keep tremendously interested in it. ~Julia Child

Start | 9:15 AM 7/11/2014

Hazard Mitigation Planning Committee - Message (HTML)

Message Developer

Reply Reply to All Forward | Delete Move to Folder Create Rule Other Actions | Block Sender Safe Lists Not Junk | Categorize Follow Up Mark as Unread | Find Related Select

Respond | Actions | Junk E-mail | Options | Find

From: Cindy Grace

Sent: Tue 5/13/2014 2:41 PM

To: 'Aaron Johnson'; 'asheehan@southstrandnews.com'; Beth Goodale; 'Bethany Morton (bmorton@emd.sc.gov)'; 'Bill Crompton'; 'Mayor Otis'; Boyd Johnson; 'Brad Loar'; 'Bruce Scott (GHS)'; 'Capt. Kevin McClure'; 'Loren Wallace'; 'Carissa Medeiros'; 'Charlotte Foster'; 'Chief Tanner'; 'David Schronce'; Doug Eggiman; Fred Davis; Jackie Broach; 'Jeff Smith'; 'John Buck'; 'Karen Anderson'; 'Kim Crutchfield'; 'Lauren Joseph'; 'Linwood Altman'; 'Lt. Robert Woods'; 'LTJG Matthew Kahley'; 'CoxM@dnr.sc.gov'; 'Matt Maxwell'; 'Rodney Giles'; 'Michael Fanning'; 'Mike Ney'; 'Mindy Taylor'; 'Nancy Cave'; 'Chief Knight'; 'O. J. Jansky'; 'Jonathan Heald'; Ray C. Funnye; 'Ray Gagnon'; 'Richard Pope'; Robert Cox; 'Robert Higbe'; 'Robin Kirby'; 'Ron Holt'; 'Ryan Fabbri'; 'Sarah Smith'; 'Scott Harper'; Sel Hemingway; 'Sharon Abbott'; 'Stan Gailey'; 'Steve Pfaff'; T. L. Staub; 'Tanita Marshall'; Anthony Hucks

Cc:

Subject: Hazard Mitigation Planning Committee

Clarification:

A Public Hearing to review the Hazard Mitigation Plan is scheduled for Thursday, May 15, 2014 at 2:00 P.M. in the EOC. This hearing is for the public to give input/suggestions on the plan before the final draft is sent to State EMD for review and then FEMA for final approval.

No other meetings are scheduled for the Hazard Mitigation Planning Committee at this time.

Cindy Grace

==========
Cindy Grace, SCCEM
Coordinator
Georgetown Co. Emergency Management
2222-C Highmarket Street
Georgetown, SC 29440
(843) 545-3273

Start 9:44 AM 7/11/2014

2.2 Public Involvement

Throughout the process, the Steering Committee and the Mitigation Planning Committee undertook initiatives to inform and involve the public and solicit input. All meetings of the Mitigation Planning Committee were publicly posted. A representative of the local newspaper, *The Georgetown Times*, was asked to serve on the Committee. A public meeting was held on May 15, 2014, to review the draft document. The final public hearing was held on September 9, 2014 at which time Georgetown County Council approved Resolution #2014-14 adopting the Georgetown County Hazard Mitigation Plan. See Appendix E for notices of public hearings. Continued public involvement will be achieved through notices of Committee meetings and notices of public hearings during the annual review process (see Appendix E).

2.3 Coordination with Other Agencies and Organizations

There are many public agencies and non-profit organizations that must address natural hazards. Georgetown County provided an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation, agencies that have the authority to regulate development, as well as other interests to be involved in the planning process. These agencies/organizations were contacted to collect information on the hazards, and determine how their programs could best support Georgetown County's mitigation program. The GCEMD develops and maintains the EOP which deals with responses to multiple hazards, both natural and man-made. Among the organizations and agencies contacted were:

<u>Federal</u>
Federal Emergency Management Agency
U.S. Army Corps of Engineers
National Weather Service
U.S. Fish and Wildlife Service
U.S. Geological Survey
U.S. Coast Guard

<u>State</u>
S.C. Emergency Management Division
S.C. State Ports Authority
S.C. Department of Health and Environmental Control
S.C. Department of Natural Resources
S.C. Budget and Control Board
S.C. Department of Forestry
S.C. Department of Public Safety
S.C. Department of Transportation
S.C. Adjutant General's Office

<u>County</u>
Georgetown County Sheriff's Office
Georgetown County Fire Department
Georgetown County Emergency Medical Services
Georgetown County Planning and Code Enforcement
Georgetown County Emergency Management Division

Municipal

City of Georgetown
Town of Andrews
Town of Pawleys Island

Non-Profit

American Red Cross
Georgetown Memorial Hospital
S.C. Coastal Conservation League
Salvation Army

Other

Santee Cooper
Santee Electric Cooperative
Georgetown County Water and Sewer District
Georgetown County School District
Coastal Carolina University
Georgetown County Chamber of Commerce
The Georgetown Times
University of South Carolina, Hazards and Vulnerability Research Institute

2.4 Assess the Hazards

During this plan update, we reviewed and incorporated existing plans, studies, reports, and technical information. The Hazard and Vulnerability Research Institute (formerly the University of South Carolina Hazard Research Lab) prepared and published "A GIS-Based Hazards Assessment for Georgetown County, South Carolina" in November, 1997, which was the first County-wide assessment prepared by USC following the methodology detailed in the "Handbook For Conducting A GIS-Based Hazards Assessment at The County Level", also published by USC. The USC handbook is the model for all County-level hazard assessments in South Carolina. There has been no subsequent update since the original 1997 effort, although GCEMD utilized the Integrated Hazard Assessment Tool (IHAT) which is under construction for research purposes.

In 2004, the 1997 assessment was updated by the WRCOG as part of the Georgetown County Hazard Mitigation Plan, 2004. This update included 2000 Census data and an inventory of events post-1997. The 2004 assessment also made formatting and analysis modifications to comply with the Disaster Mitigation Act of 2000.

The 2009 assessment, contained in Appendix A of this plan, is an update to previous assessments performed in 1997 and 2004. The 2009 assessment utilizes the mythology of the original 1997 assessment and the general formatting of the 2004 plan; however storm events, mapping, supporting documentation and analysis have been updated based on the latest available data sources (i.e., the SC Hazard Mitigation Plan, 2013 and SC Hazards Assessment, 2008).

Table 2-2 - Hazard by Jurisdiction

Hazard	Location	Extent	Further Detail (page #)
Hurricane/Tropical Storm	Pawleys Island City County	Saffir-Simpson	2-12, 2-27
Flood	Pawleys Island City County	Flood Depth Grids	2-18, 2-28
Tornado	Andrews Pawleys Island City County	Enhanced Fujita Scale	2-19, 2-28
Earthquake	Andrews Pawleys Island City County	Richter Scale	2-22, 2-29
Wildfire	Andrews Pawleys Island City County	Wildland Urban Interface Hazard Scale	2-22, 2-29
Dam Failure	County	Duration and Speed	2-24, 2-31
Severe Storms/Hail/Wind	Andrews Pawleys Island City County	Duration and Speed	2-23, 2-30
Winter Storms	Andrews Pawleys Island City County	Duration and Speed	2-24, 2-30
Drought	Andrews Pawleys Island City County	Palmer Drought Severity Index	2-23, 2-30

2.5 Assess the Problems

Summary of Risk Assessment

The *State of South Carolina Hazards Assessment* (2008)[13] evaluates the hazard vulnerability of each of the counties in South Carolina utilizing an index calculated from hazard event frequency and a "social vulnerability score" (p. 15). This social vulnerability score utilizes data from the U.S. Census Bureau to determine the social vulnerability of each county in South Carolina. Georgetown County ranks 18th out of 46 counties on "social vulnerability score". The summary table provided on the following page in Table 2-3 provides the vulnerability scores for Georgetown County for each of the types of hazards evaluated in the *State of South Carolina Hazards Assessment*[13]. Georgetown County ranks 17th in the State in terms of overall hazard vulnerability, based upon the methodology utilized in this hazards assessment, and 15th for hurricanes/tropical storms, 29th for tornadoes. Georgetown County ranks 19th in the State for flood, 18th for wildfire, 29th for drought, 31st for winter storms, and 20th for earthquakes. Considering the State ranking, the *State of South Carolina Hazards Assessment* analysis methodology indicates that the hurricane hazard and flooding are among the greatest potential risks to the County, which is in agreement with the risk assessments determined through the other methodologies utilized in this plan to determine building vulnerability.

The Hazards Assessment contained in Appendix A addresses hurricanes/tropical storms, tornadoes, severe storms/hail/wind events, floods, earthquakes, wildfires, winter storms, drought, and dam failures. The hazard events, listed in descending order of probability are: wildfire; severe storms/hail/wind events; drought; Category 1 hurricane; Category 2 hurricane; tornado; earthquake; Category 4 hurricane; Category 3 hurricane; dam failure; and Category 5 hurricane. The reason earthquakes received a higher probability ranking in the Hazard Assessment in Appendix A is most likely due to "felt" earthquake events being used as a criteria instead of damaging seismic events. The "top three" most probable events are the least likely of all the hazards to cause significant damage to buildings and structures in Georgetown County. Based purely on the vulnerability score, wildfire is the highest scoring hazard facing Georgetown County per the *State of South Carolina Hazards Assessment*[13]. This plan considers the wildfire hazard to be low, due mostly to the relatively small number of buildings located in the wildfire-prone areas compared to the number of buildings that could be damaged by other hazard events. While Georgetown County has experienced frequent drought conditions, these droughts have not caused damage to buildings, as previously indicated. Consequently, the risk posed by the drought hazard is justifiably considered lower than the other hazards.

[13] SC Emergency Management Division. *State of South Carolina Hazards Assessment.* Columbia: Hazard and Vulnerability Research Institute, Dept. of Geography, USC, 2008. Web. 10 Mar. 2014. <http://webra.cas.sc.edu/hvri/docs/SCEMD_Report_2008.pdf>.

Table 2-3 - Risk Assessment by Selected Type Based on "Vulnerability Score"

Hazard Type	Vulnerability Score[1]	Ranking by Hazard Frequency	State Ranking[2]
Hurricane/Tropical Storm	10.76	17	15
Flood	28.81	17	19
Tornado	22.03	13	29
Earthquake	.65	2	20
Wildfire	11523.81	2420	18
Drought	11.86	7	29
HAZMAT[3]	1550	341	17
Winter Storms	5.08	5	31
Overall	16153		18

The State of South Carolina Hazards Assessment[13] *utilizes a "Vulnerability Score", which is an index of the frequency of hazard events multiplied by the "Social Vulnerability Score" to assess the hazard vulnerability of each County in South Carolina. Following are the "Vulnerability Scores" for Georgetown County, SC for several of the hazards included in this report:*

[1]Vulnerability Score (is the product of the frequency of the hazard event and the social vulnerability score for the County (based on U. S. Census data for total population, age of population, gender of population, racial composition of population, and housing types in the County).
[2]State Ranking is the ranking of Georgetown County, based on the vulnerability score, compared to the other 45 counties in South Carolina.
[3]HAZMAT is included in this table; however, it has been omitted from further analysis. Although a hazard, it is not a natural hazard.

The overall determination from all of the risk assessment methodologies utilized in the Georgetown County Hazard Mitigation Plan is that Georgetown County is potentially vulnerable to multiple types of hazards. While slight variations in terms of which hazards may pose the greatest risk exist depending upon the analysis method utilized to assess the risk, all of the methodologies suggest that potential vulnerability to multiple types of hazards exists in the County, including hurricanes/tropical storms, floods, tornadoes, earthquakes, wildfires, drought, severe storms/hail/wind events, winter storms, and dam failure. The jurisdictions will continue to seek public participation in the plan maintenance process as well as participation from all other state, county, and municipal agencies as required.

2.5.1 Hurricane/Tropical Storm

The *SC State Hazards Assessment*[13] ranked the County 20th out of 46 for hurricane/tropical storm vulnerability, and shows there have been 25 hurricanes/tropical storm events (using the entire period of record where available). Building codes have been in effect in Georgetown County for over 40 years. The City of Georgetown has had some form of building code for over 100 years. Only since 1980, however, did building codes contain requirements for high winds and seismic events. Table 2-4-A provides a comparison of the age of housing stock in each of the local jurisdictions. Table 2-4-B provides building values by Tax District.

Table 2-4-A - Comparison of Age of Housing Stock for Georgetown County, Georgetown, Andrews and Pawleys Island

	Georgetown County, SC		Andrews, SC		Georgetown, SC		Pawleys Island, SC	
	Total Number	% of Total	Total Number	% of Total	Total Number	% of Total	Total Number	% of Total
Built 2000 to Present	11,869	90.4	385	2.9	782	5.9	95	.7
Built 1999 to March 2000	1,188	5.3	15	1.1	26	0.7	43	7.9
Built 1995 to 1998	4,830	21.6	131	9.5	129	3.3	21	3.8
Built 1990 to 1994	3,356	15.0	119	8.7	194	4.9	255	46.7
Built 1980 to 1989	5,362	23.9	231	16.8	535	13.5	61	11.2
Built 1970 to 1979	4,038	18.0	230	16.8	716	18.1	83	15.2
Built 1960 to 1969	1,647	7.4	228	16.6	622	15.7	7	1.3
Built 1950 to 1959	1,056	4.7	190	13.8	717	18.1	20	3.7
Built 1940 to 1949	407	1.8	98	7.1	447	11.3	21	3.8
Built 1939 or earlier	524	2.3	131	9.5	569	14.4	35	6.4

Source: Georgetown County Assessor's Office, 2014
Note: The figures for Georgetown County are for the unincorporated area.

Table 2-4-B - Comparison of Value of Buildings by Tax District, 2014

Location	Tax District	Total Building Count	Value	Average
Sampit/Santee [u]	1	1,830	$227,628,100	$124,386
Georgetown North [u]	2	3,253	366,311,900	112,607
Pleasant Hill [u]	3	1,486	106,373,010	71,583
Waccamaw Neck* [u]	4	9,923	2,553,892,965	257,371
Murrells Inlet* [u]	41	4,626	840,984,460	181,785
Total (Unincorporated)	1,2,3,4, & 41	21,118	$4,095,190,435	$193,919
Town of Pawleys Island*	42	504	$140,170,300	$278,116
City of Georgetown	5	2,833	254,459,820	89,820
Town of Andrews	6	754	45,408,685	60,224
	Grand Total	**25,209**	**$4,535,229,240**	**$179,905**

Source: Georgetown County Tax Assessor, March 2014.

Note: Total building count excludes manufactured housing and tax exempt properties. An estimate of critical facility values (many exempt) is provided in Table 2-13. {*} denotes areas on the Waccamaw Neck. {U} denotes an unincorporated area of Georgetown County.

The year 1980 has been selected as a point at which most new construction in Georgetown County was designed to withstand the effects of moderate hurricane events.

In September, 1982, a countywide building code was adopted. In September, 1994, Georgetown County rescinded the Council of American Building Officials (CABO) code and adopted the Standard Building Code. In June, 2001, the County adopted the 2000 International Residential Code for 1 & 2 family dwellings. In June, 2002, the International Building Code for Commercial and 3+ family dwellings was enacted in Georgetown County. A total of 11,786 housing units were built prior to 1980 which represents almost 42 percent of the County's total year 2000 housing stock. The Town of Pawleys Island had the smallest percentage of pre-1980 houses (30.4%). This is due to the massive rebuilding effort after Hurricane Hugo. The City of Georgetown had the highest percentage of pre-1980 houses (77.6%), probably due to the City's age (270 years) and lack of annexation activity. Unincorporated Georgetown County has 34.2% of its overall housing stock built prior to 1980. The figure for the Town of Andrews is 63.9%.

Table 2-5 below displays data that compares the number of manufactured homes in each jurisdiction with the total number of housing units.

Table 2-5 - Comparison of Manufactured Homes and Total Housing Units

Name of Jurisdiction	Total Number of Housing Units	Number of Manufactured Homes	Percent of Total
City of Georgetown	3,148	315	10.0
Town of Andrews	1,096	342	31.2
Town of Pawleys Island	504	0	0.0
Georgetown County (unincorporated)	27,056	5,938	21.9
Total	**31,804**	**6,595**	**20.7**

Source: Georgetown Co. Assessor's Office, 2014.

The Town of Andrews had the highest percentage of its housing stock represented by manufactured homes (31.2%) with the unincorporated portion of Georgetown County following t 21.9 percent. The City of Georgetown's 315 units represented 10 percent of the City's total housing stock. The Town of Pawleys Island does not have any manufactured homes within its jurisdiction. The average market value of manufactured homes, according to the Tax Assessor is $13,928. Table 2-6 denotes the total value of manufactured housing by jurisdiction.

Table 2-6 - Estimated Value of Manufactured Homes By Jurisdiction, 2014

Jurisdiction	Estimated Value
City of Georgetown	$3,846,000
Town of Andrews	3,765,900
Town of Pawleys Island	0
Unincorporated Georgetown County	110,241,400
Total	**$117,853,300**

Source: Georgetown County Assessor's Office, 2014.

Note: Total building counts were provided by the Georgetown County Assessor's Office, and includes manufactured housing (2014). SFHA estimates for Pawleys Island were based on the total building count and an assumed 100% coverage. SFHA information for the City of Georgetown was

provided by the City's Geographic Information System (GIS) Department utilizing aerial photographs and building footprints.

Approximately eight (8) percent of the buildings in Georgetown County are located within "special flood hazard areas (SFHA)". Table 2-7 below displays detailed data by jurisdiction for the type and number of buildings that are situated within SFHA's.
In order to further refine the potential vulnerability of buildings in Georgetown County to storm surge and wind damage, it is necessary to determine the value of buildings that are subject to the effects of wind hazard. Table 2-8 below provides building value estimates by jurisdiction for residential buildings, commercial buildings, and mobile homes.

Table 2-7 - Estimated Number of Buildings Located in Areas of Special Flood Hazard By Jurisdiction

Jurisdiction	Total Buildings	Estimated % in SFHA	No. Mobile Homes in SFHA	No. Residential in SFHA	No. Commercial in SFHA	No. Total Structures in SFHA
Town of Pawleys Island	630	100	0	467	0	650
City of Georgetown	4,711	12	17	438	161	599
Town of Andrews	751	0	0	0	0	0
Unincorporated Area	27,720	6	195	5,082	168	5,445
Total Georgetown County	33,812	8	212	5,987	329	6,694

Source: City of Georgetown GIS Department, Town of Pawleys Island Assistant Administrator's Office, Georgetown County GIS Department, 2014.

Table 2-8 - Building Value Estimates by Jurisdiction, 2014

Jurisdiction	Avg. Residential Building Value	Avg. Commercial Building Value	Avg. Mobile Home Value
Town of Pawleys Island	278,116	419,450	-----
Pre-1980	174,327	-----	-----
City of Georgetown	89,820	192,089	12,209
Pre-1980	48,584	159,078	5,711
Town of Andrews	60,224	84,036	11,011
Pre-1980	36,448	87,972	5,008
Unincorporated Area	193,919	249,346	18,565
Pre-1980	80,318	267,846	7,833
Total Georgetown County	179,905	236,230	13,928
Pre-1980	75,607	208,232	7,581

Source: Georgetown Co. Tax Assessor, 2014 and the Georgetown County Building Dept.

The building values shown in the above Table are estimated market value, not replacement value, nor do the figures include land values. Hurricane wind speed is measured using the Saffir Simpson Hurricane Wind Scale, which is shown in Table 2-9 below:

Table 2-9 - Saffir Simpson Hurricane Wind Scale

Category	Pressure	Winds	Damage
1	>28.93 inches	74 – 95 mph	Minimal
2	28.50 – 28.91 inches	96 – 110 mph	Moderate
3	27.91 -28.47 inches	111 – 130 mph	Extensive
4	27.17 – 27.88 inches	131 – 155 mph	Extreme
5	<27.17 inches	>155 mph	Catastrophic

2.5.2 Flood

Georgetown County's relatively flat terrain (about 90% of the County is less than 40' above mean sea level (msl)), coastal location and abundance of water bodies contribute to its vulnerability to flooding. The *SC State Hazards Assessment*[13] ranked the County 19th out of 46 for flood vulnerability. There have been 22 flood events (1993-2013).[14] The area is particularly susceptible to flooding from rain events associated with tropical storms and/or hurricanes. Heavy rains totaling 10 inches fell in the City of Georgetown and portions of Georgetown County in September, 2000, as a result of Hurricane Gordon which tracked approximately 30 miles west of Georgetown County. Floodwater forced the evacuation of numerous homes and a day care center in the City of Georgetown and closed roads in rural Georgetown County. Occasional flooding occurs due to significant rainfall associated with thunderstorms. Portions of the County were impacted by flooding from these types of storms in April, 1997, and February, 1998. In July, 2011, a slow-moving frontal boundary produced torrential rainfall in the City of Georgetown, producing 5-7" of rain with property damage totaling $20,000.[13] More localized flooding has occurred along the Santee River in the southern portion of the County, most likely due to the re-diversion of water from Lake Moultrie that occurred in the 1980's. Santee Cooper, owner of the Santee North Dam which could cause problems for residents if breached, works closely with residents in the North Santee area and GCEMD providing maps of affected homes as well as their Emergency Action and Site-Specific Plan. To date, there has been no dam breach which has affected County residents. Since the completion of the Hwy. 17 Drainage Project (see Action #4A), flooding in the City of Georgetown has decreased significantly.

Floodplain management guidelines came into effect in Georgetown County in 1978. The City of Georgetown and the Town of Pawleys Island were also covered by these regulations. (Note: Pawleys Island incorporated as a municipality in October, 1985. Prior to then, the island was covered as an unincorporated community of Georgetown County.) The Town of Andrews does not have flood regulations in effect. The County adopted a Flood Damage Prevention Ordinance for the Waccamaw Neck portion of the County in May, 1978. These regulations were expanded County-wide in February, 1984. Within the past year, local floodplain ordinances have been updated to incorporate changes prescribed by FEMA. The latest update to the County's ordinance was November, 2009. The latest update to the City's ordinance was March, 2014.

Based on the dates listed above, 1980 was chosen as an appropriate benchmark year for building construction that incorporates flood damage prevention standards. As stated in the previous section, approximately 34.2 of the County's unincorporated area housing stock was built prior to 1980. Pawleys Island pre-1980 housing is 30.4%, which is significantly lower than the figures for Georgetown and Andrews (77.6% and 63.9% respectively). Table 2-7 on page 2-14 lists the number and type of structures located in SFHAs by jurisdiction. Table 2-8 displays building value estimates for structures located in SFHAs by jurisdiction. The data in Tables 2-7 and 2-8 provide a rough estimate of potential flood losses by jurisdiction if a severe flood event occurred. It should be noted that the Town of Andrews does not have any designated flood hazard areas. Its inland location and topography combine to lessen the Town's vulnerability to flooding.

2.5.3 Tornado

Tornado vulnerability exists for almost any structure in the County since building-related codes generally do not address designing for winds of the speed often associated with tornadoes. The *SC State Hazards Assessment*[13] ranked the County 29th out of 46 for tornado vulnerability. There have been 17 tornado events between 1950 and 2013 which caused $3.681 million dollars in damage, caused 10 tornado-related injuries, and six tornado-related deaths.[14] The major vulnerability regarding tornadoes is that most structures in the County do not have basements or below-grade shelter areas due to the area's relatively high water table and flood zone restrictions on basements. Manufactured housing is especially vulnerable to tornadoes since these structures are built to a different code than site-built structures. Tables 2-5 and 2-6 on the previous pages provide data on the number and value of manufactured homes by jurisdiction. The estimated total market value of manufactured homes in Georgetown County is $117,853,300. Researcher Harold Brooks of the NOAA National Severe Storms Laboratory has indicated that mobile home residents are killed at a rate 20 times greater than permanent home residents in tornadoes[15]. Tornadoes of a severe magnitude are capable of damaging any type of structure in their path. The Enhanced Fujita Scale for Tornadoes is shown below:

[14] "South Carolina State Climatology Office." *South Carolina Department of Natural Resources.* N.p., n.d. Web. 07 May 2014. http://www.dnr.sc.gov/climate/sco/ClimateData/countyData/county_georgetown.php.
[15] NOAA News Online, Story 894.

Table 2-10 - Enhanced Fujita Scale for Tornadoes

F-SCALE NUMBER	WIND SPEED (mph)	TYPE OF DAMAGE DONE
EF0	65 - 85	Minor damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees push over.
EF1	86 – 110	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111 – 135	Considerable damage. Roofs torn off well-constructed houses; foundations of frame houses shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136 – 165	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166 – 200	Devastating damage. Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	>200	Extreme damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m; steel reinforced concrete structure badly damaged; high-rise buildings have significant structural deformation.

Source: SC Hazard Mitigation Plan, Oct. 2013.

Figure 2-1 - Percentage of All Tornadoes, 1950-2012

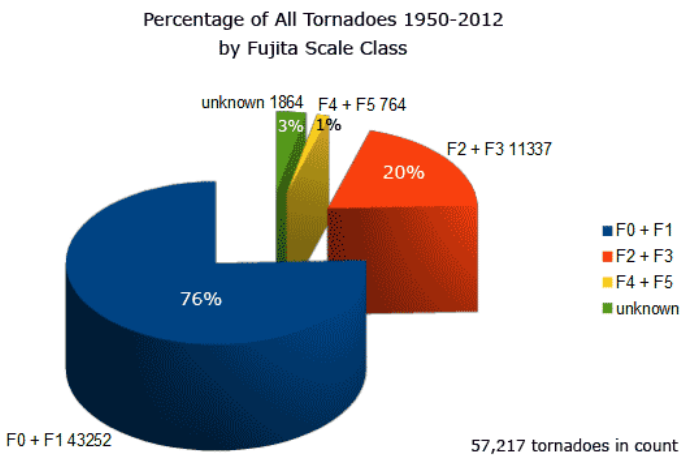
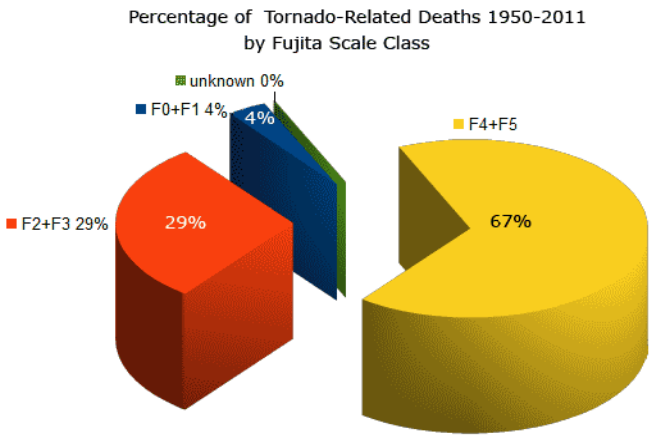


Figure 2-2 - Percentage of Tornado-Related Deaths, 1950-2011



Source: "The Fujita Scale." *The Fujita Scale*. n.p., 2013. Web. 11 Apr. 2014. <http://www.tornadoproject.com/fscale/fscale.htm

The tornado that touched down in the City of Georgetown on October 11, 2002, was an F-2 tornado[16]. It damaged or destroyed 125 homes and businesses, causing an estimated $800,000 in damages. The probability of Georgetown County being hit by a stronger tornado are low according to the National Weather Service (NWS). The marine influence layer along the southeastern coast tends to be less conducive to the development of tornadoes beyond the F-2 level. Figures 2-1 and 2-2 suggest that while a majority of the tornadoes in the U.S. are weaker storms (F0 – F1), the percent of tornado-related deaths from the weaker storms is far less significant than their frequency (4%).

Although no building or structure is "tornado-proof," certain building techniques can make structures more resistant to tornadoes:

[16] Dugan, L. (2004). (Georgetown County EMD Director). Meeting held at EOC/EMD office on 2/10/04.

- Attachment of the walls and floor to the foundation of the building
- Attachment of the roof to the rafters and walls
- Installing steel reinforcing rods in concrete or cinderblock walls
- Placing mortar between cinder blocks

These construction techniques are required by the building codes currently in effect in Georgetown County and the three (3) municipalities.

2.5.4 Earthquake

Building code amendments for the inclusion of seismic design parameters are relatively recent additions to the building codes in effect in Georgetown County. Buildings constructed prior to the year 2000 do not have the same level of earthquake resistance as structures built since that date. In addition, structures erected on reclaimed land will respond with differing characteristics than those on non-reclaimed land in the event of an earthquake. The hazard assessment in Appendix A identified 9-12 "felt" seismic events in 312 years of record. Felt events are not significant enough to cause structural damage. Georgetown County has no recorded epicenters and, therefore, has a low "place vulnerability" designation for earthquakes. The Richter Scale, which is used to describe the magnitude of earthquakes, is shown below:

Table 2-11 - The Richter Scale

Richter Magnitude Scale	Effects of the Quake
<3.5	Generally not felt, but recorded.
3.5 – 5.4	Often felt, but rarely causes damage.
<6.0	At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1 – 6.9	Can be destructive in areas up to about 100 kilometers across where people live.
7.0 – 7.9	Major earthquake. Can cause serious damage over larger areas.
8<	Great earthquake. Can cause serious damage in areas several hundred kilometers across.

2.5.5 Wildfire

Wildfires are frequent in the rural portions of Georgetown County. Arson and unauthorized burning are the main causes for wildfires in the County. The *SC State Hazards Assessment* ranked the County 18th out of 46 for wildfire vulnerability, and shows there have been 2,420 wildfire events (using the entire period of record where available).[13] Georgetown County ranks as the County with the 9th highest acreage burned by wildfire. The fire occurrence map for 2008 shows locations where fires were reported in the last calendar year. Fires are generally spread throughout the County, except there has been a lower wildfire occurrence in the eastern portion of the County. Due to the construction of new homes adjacent to forested areas and on tracts that are isolated, the risk of wildfire is County-wide. The large forested tracts in the County are at the highest risk for wildfires. The Community Vulnerability Assessment states that forested land accounts for three-fourths of the land area in the County. These large tracts are susceptible to wildfire due to lack of access, lack of water supply, and the abundance

of fuel for fire in these densely forested areas. Most of these tracts are located in sparsely populated rural areas, placing structures and people in these areas in the highest risk of fire damage. The number of buildings in these high risk areas is estimated at 5,339. Applying the average residential building valuation to this figure results in approximately $552,970,908 of unincorporated Georgetown County's building stock being at risk of wildfires. Activities such as controlled burning and maintenance of firebreaks has helped to minimize the threat to structures. The website, www.firewise.org, provides information for making sensible choices in the wild land/urban interface. The municipalities of Georgetown, Andrews, and Pawleys Island are less susceptible to wildfires due to their location.

2.5.6 Drought

Drought conditions are not uncommon in the coastal areas of South Carolina. In 107 years of record keeping, a total of 27 droughts have impacted Georgetown County. The latest significant droughts occurred in 2001 and 2007. The impacts of drought conditions on infrastructure and other property are usually mild. The most significant impacts are the loss of agricultural products and the increased risk for wildfires.

2.5.7 Severe Storms/Hail/Wind Events

Severe storms are relatively common in the southeastern United States. These storms can produce lightning, hail, and/or damaging winds. There have been 68 thunderstorm winds events (1955-2013), 55 hail events (1955-2013), and 18 lightning events (1993-2013).[14] Lightning has killed one (1) person and injured five (5) people in Georgetown County between 1959 and 2013, resulting in $629,000 in damages. Hail and high winds usually result in damage to property and agricultural crops, but rarely result in loss of human life. Severe storms also often result in localized flooding, in addition to the other effects listed above. Property damage related to severe storms/hail/wind events since 1995 have accounted for approximately $890,000 in loss[17].

2.5.8 Winter Storm

Severe winter storms are very rare in the coastal areas of South Carolina. Winter storm events are relatively short-term in nature (1 – 3 days) and are more often an inconvenience rather than a hazard to local residents. Effects from winter storms include downed power and telephone lines, icy roads and bridges, and often mild to severe beach erosion. Georgetown County has experienced 12 winter storms since 1973. The 1973 storm (February 8 – 11) dumped 11" of snow on the County. According to a NOAA Technical memorandum (EDS NCC-2), "the storm was the greatest to occur in central South Carolina during the 75 years that detailed records have been kept." There were eight (8) fatalities in the state due to the storm. None of the fatalities occurred in Georgetown County. The County has experienced several winter storms that produced snow and/or ice since 2009. In February, 2010, significant snow fell across the County with the highest snowfall reported as 7" eight miles north of Oatland. In January, 2014, Winter Storm Leon produced ice and ½" of snow in the County. Also in 2014, Winter Storm Pax was a significant ice storm which produced .25"-.75" of accumulated freezing rain; downed power lines; major icing on roads, bridges, and trees; school and

[17] National Climatic Data Center (NCDC). (2014). NOAA Georgetown County, South Carolina Storm Search 2014. U.S. Department of Commerce.

government office closings; and activation of the Emergency Operations Center. The estimated damages from Pax are over $4 million.

2.5.9 Dam Failure

The failure of the earthen dam on the eastern edge of Lake Marion would result in building losses and damage to infrastructure (primarily roads and bridges) primarily along the Santee River Floodplain. The "Emergency Action Plan for Dam Failure", (SCPSA, 2013) provides maps of areas projected to experience flooding as a result of a breach of the dam. Flooding from a breach in the dam could potentially affect 961 residents in the Santee Community of Georgetown County.

2.5.10 Infrastructure Vulnerability

Infrastructure is defined as "the public services of a community that have a direct impact on the quality of life. Infrastructure includes communication technology such as phone lines and internet access; vital services such as fuel supplies, public water supplies, drainage facilities, and sewage treatment facilities; and transportation components such as airports, seaports, highways, bridges, railways, and waterways." The following discussion focuses on Georgetown County's infrastructure vulnerability to natural hazards. We expect a population growth rate of 25% between 2000 and 2025; therefore, we estimate that future buildings, infrastructure, and critical facilities will grow at the same rate.

2.5.10.1 Hurricane/Tropical Storm

The infrastructure most vulnerable to hurricane activity is likely to be the above-ground electrical, telephone, liquefied petroleum gas, and cable television service. Wastewater treatment facilities may also be vulnerable to tropical storm activity, particularly if inundated by storm surge often associated with hurricane activity. Older bridges may also be vulnerable to hurricane damage if these bridges were not originally designed to withstand the high winds (minimum 130 mph 3 second gust wind speeds) generally associated with hurricanes or are in deteriorated structural condition. Shipping port facilities are also potentially vulnerable to hurricanes due to the close proximity of these facilities to the water. Roads, while generally not vulnerable to high wind conditions directly, could experience damage (washout) from flooding as well as obstruction/damage from fallen debris generally associated with hurricanes. Roads in coastal areas are also vulnerable to sand obtrusion as a result of hurricane activity. Drainage ways may also be vulnerable to damage from hurricanes if they become obstructed by debris or are unable to carry the volume of water generated by the flooding often associated with this type of event. The Town of Pawleys Island and the coastal sections of the County are most susceptible to hurricane hazards. The City of Georgetown is also susceptible because of its location adjacent to Winyah Bay.

2.5.10.2 Flood

The most highly vulnerable infrastructure to flood is likely to be roads in low-lying areas and bridges which are close to the water level of the body of water over which they cross. Liquefied petroleum gas tanks that are above-ground are also vulnerable to uplift and floatation if not adequately anchored to withstand hydrostatic forces associated with high flood water levels. Grade-level utility boxes (e.g., telephone

cable television, electrical transformers, etc.) in low-lying areas are also likely to be made inoperable/insecure during high water levels unless the boxes are flood proofed or the equipment is designed to be operated in a submerged state. Wastewater treatment plants are also vulnerable in the event of a flood as a result of the operational necessity for this type of facility to be located close to sea level. The Georgetown Seaport is also potentially vulnerable to flood damage due to the close proximity to the water.

2.5.10.3 Tornado

Tornado infrastructure vulnerability is likely to be greatest for those utilities located above ground (electrical, telephone, and cable service). Bridges which may be in the path of a tornado are also vulnerable to damage as a result of a direct strike by one of these storms. Roads are also vulnerable to damage as a result of fallen debris associated with tornadic activity. Any buildings in the direct path of a tornado which may be operation centers for utility or emergency services (e.g., power transmitting stations, wastewater treatment facilities, water utility control buildings, police stations, fire stations, EOCs, etc.) would also be vulnerable to a direct strike by a tornado.

2.5.10.4 Earthquake

Earthquake infrastructure vulnerability is dependent upon the magnitude of the earthquake, the location of the earthquake epicenter, soil type and conditions, and duration of ground shaking. If an earthquake should cause a failure of the Santee Cooper dam, infrastructure damages associated with flooding, as will be discussed in the following section, would also apply to earthquake vulnerability. If a dam failure is not associated with an earthquake, the most vulnerable infrastructure to an earthquake would likely be underground water and natural or liquefied petroleum gas utility lines. Based upon information obtained from Charleston Southern University Earthquake Education Center (1999), older bridges may be vulnerable to collapse in an earthquake of magnitude 5 or greater on the Richter Scale, particularly if they are in deteriorated structural condition. Roads and bridges that are in areas subject to liquefaction are also highly vulnerable in the event of an earthquake of significant magnitude to result in soil liquefaction (magnitude 6 or greater on the Richter Scale). Roads in areas not subject to liquefaction may also still be vulnerable to damage/obstruction by fallen debris in earthquakes large enough to cause buildings to shed masonry veneer/appendages, or experience actual structural failure (magnitude 6 or greater on the Richter scale). Roads on reclaimed land (filled marsh, old landfill, etc) will respond with differing characteristics in the event of an earthquake than roads on non-reclaimed land.

According to the *Comprehensive Seismic Risk and Vulnerability Study* for the State of South Carolina (URS Corp., et al., 2001), a Hazards United States (HAZUS)-based study produced for the SCEMD, an earthquake of the magnitude of the 1886 Charleston earthquake (magnitude 7.3 on the Richter Scale) would be expected to potentially cause the following infrastructure-related losses:

- Direct economic losses to lifeline (transportation and utility) systems state-wide is expected.

- An estimated 800 bridges state-wide are expected to suffer damage to the extent that they will be inaccessible. Georgetown County communities accessible only by bridge routes could be left without access until bridges are repaired or replaced.
- Damage to electric power facilities is expected to be mostly limited to major substation equipment, with 63 electric power facilities state-wide to be damaged, leaving approximately 300,000 households without electric service. Distribution lines are also expected to need repairs so that restoration of electrical service may take days to weeks to complete.
- Damage to water systems is expected primarily to pipelines, storage tanks or reservoirs, treatment facilities and pumping plants. Pipeline damage is expected to be most critical in determining when water service can be restored to the general public. Since liquefaction could occur in Georgetown County if an earthquake of this magnitude occurs, damage to the water distribution system is expected requiring weeks to months to complete repairs.
- Water failures are expected to drain water reserves and create issues for water availability for fighting fires that are expected.
- Environmental damage is expected due to the wastewater treatment facilities or pipelines being damaged.
- Natural gas and oil systems are expected to receive moderate to minor damage, particularly gas transmission lines where gas-welded joints are present.
- All elevated above-ground storage tanks are potentially vulnerable, particularly if ground shaking is intense.
- Communications system damages are expected primarily with equipment inside communication buildings. Replacing this equipment may take days to weeks.

2.5.10.5 Wildfire

The most vulnerable infrastructure to localized fire would likely be gas utility services (particularly above–ground, liquefied petroleum gas). In the event of wildfire, any utility lines crossing through forested areas would be potentially vulnerable to damage. Roads or bridges located in forested areas may also be vulnerable to damage from fire, either directly as a result of proximity to intense heat or as a result of damage/obstruction due to fallen debris.

2.5.10.6 Drought

Drought conditions typically do not affect infrastructure. In Georgetown County, the most significant impact to infrastructure is the potential for a severe drought to cause saltwater intrusion inland near the county's surface water intakes.

2.5.10.7 Severe Storms/Hail/Wind Events

Damage is possible as a result of severe storms/hail/winds events. Typically, these events result in minor, localized damage and, in most cases, do not pose a significant threat to the county's infrastructure. Infrastructure damage is usually limited to above ground utilities (power lines, phone and cable). In the extreme, these events can produce tornados or flooding (see discussion of Flood and Tornado events).

2.5.10.8 Winter Storm

The most vulnerable infrastructure to winter storms is the above-ground communications and the electrical distribution system. Downed power lines from ice buildup or falling limbs are likely to occur. Roads and bridges are also subject to icing, creating problems for motorists.

2.5.10.9 Dam Failure

In the highly unlikely event of a Santee Cooper dam failure, infrastructure damages are possible. However, since a dam failure is not likely to occur without a major earthquake preceding the dam failure, infrastructure damages as discussed in the earthquake section of this plan are likely to accompany damages projected to occur as a result of any dam failure in Georgetown County.

2.5.11 Critical Facility Analysis

Table B-10 on pages 31-36 in the Community Vulnerability Assessment (Appendix B) lists a total of 200 critical facilities in the County. Critical facilities are defined as buildings or structures from which essential services and functions for the continuation of public safety actions and disaster recovery are performed or provided. The list is further refined by delineating three (3) levels of critical facilities. Level 1 facilities must remain operational before, during and after a disaster event. There are a total of 35 level 1 critical facilities in Georgetown County.

Level 2 facilities must be operational within 24 hours following a disaster event. A total of 29 facilities are designated as level 2.

Level 3 facilities must be operational within 72 hours after a disaster event. A total of 136 level 3 facilities are located in the County.

The 35 level 1 facilities include two schools that are designated shelters by the ARC, 21 fire stations and/or headquarters, five (5) law enforcement offices, the EOC/EMD/911 facility, two (2) hospitals, and three (3) communications facilities. Only three (3) of the level 1 facilities are located in an SFHA: the Georgetown Fire Station #1 (AE 9′); the Georgetown County Fire Department Headquarters (X and AE 9′); and, the Pawleys Island Police Department (AE 14′). The Pawleys Island Police Department was extensively damaged by flooding and storm surge from Hurricane Hugo in September 1989. The Georgetown Fire Department, Station #1, was flooded in September 2000 by remnants of tropical storm Gordon. Repairs and recovery costs were almost $250,000. Total building value for these three (3) structures is $1.24 million. The Pawleys Island Police Department and the communications tower on Front Street in Georgetown could be impacted by storm surge from a Category 1 hurricane. Category 2 storm surges could impact the Midway Fire Rescue Station 83, Murrells Inlet-Garden City Fire Station, and Midway Fire Rescue Station #82. A Category 3 storm surge could affect Georgetown County Fire Station #2 in the Santee Community. A Category 4 storm surge could impact the City of Georgetown Fire Stations # l and 2, Georgetown County Fire/EMS Stations #10 and 11; EOC/EMD/911; Georgetown County Fire Department Headquarters; Georgetown County Sheriff's Office; S.C. Highway Patrol Office; Georgetown Memorial Hospital; and Central Dispatch communications tower at the EMD office. An additional four (4) level 1 facilities would be impacted by a Category 5 hurricane: the Midway Fire Rescue Station #81, Georgetown County Fire/EMS Station #9, Waccamaw Community Hospital, and the Georgetown County radio transmission tower. Georgetown County Fire Station #2 could be impacted by the failure of the Santee Dam. Total value for buildings in the storm surge impact areas is approximately $31 million.

No level 2 facilities are located within flood zones, with the exception of bridges. Only two (2) facilities could be impacted by a Category 5 hurricane: the Winyah Steam Plant and the Armory located on U.S. 17 south of Georgetown. These facilities have a replacement cost of over $598 million. Four (4) bridge structures on U.S. 17 over the North and South Santee Rivers would be impacted by the failure of the Santee Dam. These bridges are valued at over $103 million.

Of the 136 level 3 facilities in the County, only two (2) are located within floodplains: the Port of Georgetown (X/AE 10′/AE 11′) and the Georgetown County Courthouse (X/AE 9′). These facilities have a value of over $31 million. The North Santee water tower could be impacted by the Santee Dam failure. All critical facilities are vulnerable to hazards associated with tornadoes, wind and severe storms/hail/wind events, and earthquakes. Due to location and individual site characteristics, none of the critical facilities are subject to damage from drought or wildfire. Table B-10 lists the critical facilities by type. Table 2-13 provides cost estimates and other pertinent data for current conditions and projected future conditions in the year 2020.

Table 2-13 - Georgetown County Critical Facilities Inventory

Priority Level	Type of Facility	Current Conditions (2009)			Potential Future Conditions (2020)		
		Number of Existing Buildings/Facilities	$ Current Value	Current Number of People	Projected Number of Buildings/ Facilities	$ Projected Replacement Value *	Projected Number of People
1	County EOC (1)	1	2,500,000	12	1	3,000,000	12
1	Communications (3)	3	1,167,753	0	6	5,875,569	0
1	Schools (Used as Shelters) (2)	2	23,169,845	790	3	30,011,900	2,370
1	Fire Stations (21)	21	7,423,716	83	21	9,616,354	83
1	Police Stations (5)	5	8,431,176	110	5	10,921,373	110
1	Hospitals (2)	2	97,724,882	2,643	2	125,726,211	2,643
Sub-Total for Priority 1 Facilities		**34**	**140,417,372**	**3,638**	**38**	**181,151,407**	**5,218**
2	Winyah Steam Plant and Switchyard (1)	1	590,969,406	200	1	765,515,612	200
2	Response Staging Areas (2)	2	15,654,728	0	2	20,278,446	0
2	Transportation (Bridges) (20)	20	494,088,046	0	20	640,019,760	0
2	Landfill (1)	6	613,578	18	6	794,802	18
Sub-Total for Priority 2 Facilities		**29**	**1,101,325,758**	**218**	**29**	**1,426,608,620**	**218**
3	Schools (17)	17	191,568,027	11,600	17	248,148,691	13,867
3	Courthouse (1)	1	7,114,324	180	1	9,215,582	180
3	Jail (1)	6	14,719,210	218	6	45,279,369	450
3	Emergency Services (4)	4	2,403,109	7	4	2,744,590	7
3	Electric Utilities (12)	12	12,614,316	0	12	16,340,022	0
3	Seaport (1)	13	16,585,370	7	13	21,483,956	7
3	Airports (2)	37	2,666,251	0	37	3,445,440	0
3	Water Treatment Plants (2)	18	21,903,866	0	18	28,373,287	0
3	Water Storage Tanks (27)	27	13,415,105	0	27	17,925,935	0
3	Sewage Treatment Plants (4)	4	17,388,472	56	4	23,235,346	56
Sub-Total for Priority 3 Facilities		**138**	**300,378,060**	**12,068**	**138**	**416,192,216**	**14,567**
GRAND TOTAL		**201**	**1,542,121,190**	**16,652**	**205**	**2,023,952,243**	**22,187**

Note: "Current value" for the critical facilities was estimated based on 2013 valuations adjusted by the Consumer Price Index of 14.21%.

Section 3: Mitigation Strategy

3.1 Introduction

This portion of the Hazard Mitigation Plan outlines Georgetown County's overall strategy to reduce their community's vulnerability to the effects of natural hazards. It has been separated into the following three (3) distinct sections:

3.1 Hazard Mitigation Goals

3.2 Mitigation Objectives

3.3 Mitigation Actions

The **Hazard Mitigation Goals** are long-term in nature. They represent ideals for the various jurisdictions to strive to attain and are based on the risk assessment findings.

The **Mitigation Objectives** are designed to support and correspond directly with the *General Goals*, and were developed to provide the local jurisdictions with some measurable, mid-range targets (2-5 years). Each objective is numbered (i.e., "1.1"), with the digit(s) to the left of the decimal point representing the corresponding General Goal.

The **Mitigation Actions** are short-term, specific measures to be undertaken by the three (3) municipalities and Georgetown County in order to achieve the identified objectives. Most of these actions are also hazard-specific. Each action identifies the objective(s) it is intended to achieve, includes some general background information to justify the proposed action, and provides measures to assure successful and timely implementation. Under the Target Completion Date section, we have included "continuous" or "ongoing," "completed," "deleted," and a year to be completed. Continuous and ongoing means we review the action annually, and it is determined a viable action and continued. Completed means the action was completed by the original target date. An explanation of deleted actions is included at the beginning of each jurisdiction's actions. If a specific year is given, that year may change based on extenuating circumstances such as a lack of funding.

Also important to note is that each Mitigation Objective and Mitigation Action is designed to be performance-based, making it easier for the local governments to measure the plan's progress over time and during the plan's future evaluations. It is expected that while the *General Goals* may remain the same for an extended period of time, the objectives and actions included in this *Mitigation Strategy* will be updated and/or revised through regular enhancements to this plan. Each local jurisdiction shall perform an annual review of the plan and their respective "Action Plans" in order to keep the plan up-to-date.

In accordance with 44 CFR 201.6(c)(4)(i), this plan shall be monitored, evaluated, and updated as often as necessary to give the plan full force and effect. This plan must be updated within five (5) years of adoption by the participating local jurisdictions and thereafter within a five (5)-year cycle, or within six (6) months from the date of any major natural disaster affecting Georgetown County.

The method of monitoring, evaluating, and updating the plan is described below:

As stated in the 2009 Hazard Mitigation Plan, a Disaster Resistant Communities Advisory Board was formed in 2002; however, they did not hold meetings after May 3, 2003. Therefore, the four (4) local governments included in this multi-jurisdictional Hazard Mitigation Plan (Georgetown County, City of Georgetown, Town of Andrews, and the Town of Pawleys Island) gathered a representative from each jurisdiction to be a member of the Steering and/or Planning Committees. The Planning Committee (see pages 2-2 through 2-5, Table 2-1, Georgetown County Hazard Mitigation - Planning Committee) is charged with the responsibility of monitoring and evaluating the Hazard Mitigation Plan, and will review the Georgetown County Hazard Mitigation Plan annually. If changes are warranted, such changes shall be drafted under the direction of the GCEMD and reviewed by the Planning Committee, giving adequate notice (15 days minimum) in the local newspaper for public review and comment. Copies of the proposed changes will be available at the four (4) County libraries for public review. The plan will also be posted on the County website where the public can review and email in questions, concerns, and suggestions. Any changes to the approved plan shall be submitted to each of the local governing bodies affected by the proposed changes for their approval. Proposed changes shall also be submitted to the SCEMD and to FEMA, Region IV, to ensure compliance with State and Federal requirements. Each October, GCEMD will update mitigation actions received from the County and municipalities. Each October, the Planning Committee will meet to evaluate the current mitigation goals and actions and determine if they are sufficient to meet the needs of the community.

Local governments will integrate the requirements of the Hazard Mitigation Plan into other planning mechanisms when appropriate by assisting and creating mitigation action items, citing the plan in the Emergency Operations Plan, obtaining a Resolution by County/City/Town Council to adopt the Hazard Mitigation Plan, and by working hand-in-hand with each jurisdictions' Building and Zoning Department to review actions and follow them through to completion.

The risk assessment was utilized when strategizing during the writing of the County Comprehensive Plan and County Recovery Plan. A full review and update will be conducted every five (5) years.

The steps used to evaluate the plan are as follows:

a. Identify staffing changes that may warrant altering the membership of the two (2) Committees;
b. Review the various elements of the planning process to assess effectiveness
c. Planning Team
d. Public Participation
e. New Data Development
f. Coordination with Other Agencies;
g. Analyze the hazard mitigation actions, determining if completed actions helped achieve stated goals and objectives, if the achieved actions were cost effective, and determining why certain actions were not implemented; and
h. Identify methods of informing the community concerning the results of the evaluation.

The method to be followed in updating the plan shall be basically the same as the procedures used to develop the Plan, including the following:

- Review and update the risk assessment noting any observed shifts in development patterns, areas affected by recent disasters, new studies or technological developments in hazard mitigation, and revised estimates for losses.
- Modify the community vulnerability assessment to incorporate changes in laws, authorities, community and State resources, and availability of financial and technical tools that may improve hazard mitigation efforts in Georgetown County.
- Determine whether new information or changed conditions in the above-mentioned activities warrant revisions to the planning process or mitigation strategy.
- Incorporate changes into the Plan, allowing for public review and comment as well as input from affected agencies and local jurisdiction covered by the Plan.

In addition to the annual reviews, a major update of the plan shall be conducted in 2019, using the same process described above.

3.2 Georgetown County Hazard Mitigation Goals

Goal 1.1.	Minimize loss of life and property from natural hazard events.
1.2.	Protect public health and safety.
1.3.	Increase public awareness of risk from natural hazards.
1.4.	Reduce risk and effects of natural hazards.
1.5.	Identify hazards and assess risk for local area.
1.6.	Ascertain historical incidence and frequency of occurrence.
1.7.	Determine increased risk from specific hazards due to location and other factors.
1.8.	Improve disaster prevention.
1.9.	Improve forecasting of natural hazard events.
1.10.	Limit building in high-risk areas.
1.11.	Improve building construction to reduce the dangers of natural hazards.
1.12.	Improve government and public response to natural hazard disasters.

3.3 Mitigation Objectives

Objective 1.1	Preserve the natural and beneficial functions of the County's floodplain, wetlands, beaches and dunes through continued support of natural resource protection policies and by discouraging growth in environmentally-sensitive areas.
1.2	Encourage insurance companies to offer premium incentives for purchase of affordable carports by people without garages.
1.3	Require better roof construction and materials to withstand hailstorms.
1.4	Encourage wind resistant construction techniques and materials in areas subject to high winds.
1.5	Acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners.
1.6	Encourage "fire-resistant" materials in building construction.
1.7	Experiment with controlled burns of native vegetation to minimize the accumulation of forest fuels that lead to uncontrollable fires.
1.8	Encourage the use of hail-resistant composite material in automobile manufacture.

Objective	2.1	Maximize the use of available hazard mitigation grant programs (HMGP) to protect the County's most vulnerable populations and structures.
	2.2	Ensure that all vital/critical facilities are protected from the effects of natural hazards to the maximum extent possible.
Objective	3.1	Increase the level of knowledge and awareness for Georgetown County residents on the hazards that routinely threaten the area.
	3.2	Educate property owners on the affordable, individual mitigation and preparedness measures that can be taken before the next hazard event.
	3.3	Inform the public of earthquakes in areas where they are frequent but unrecognized.
	3.4	Publicize and promote general awareness of earthquake emergency action plans.
	3.5	Advise the public and developers of the danger of building homes in remote areas where fire protection is not available.
	3.6	Alert homeowners when fire risk is great in rural and remote areas.
	3.7	Involve the public in finding new ways to conserve water.
	3.8	Promote awareness of importance and value of water.
	3.9	Promote public awareness of dangers of high winds and storm surge and what can be done to prevent/reduce personal injury and property damage.
Objective	4.1	Participate in the National Flood Insurance Program (NFIP)/Community Rating System (CRS).
	4.2	Increase the number of County residents that maintain an active NFIP flood insurance policy by 10% by the year 2016 (currently 8,887 residents).
	4.3	Buy properties that flood most frequently, clear the land, and put in green space or build detention ponds.
	4.4	Inform residents who refuse to vacate the floodplain of flood proofing alternatives.
Objective	5.1	Decrease the number of FEMA-identified "repetitive loss properties" located in Georgetown County by 25% by the year 2016 (currently showing 195 properties in Georgetown County).
	5.2	Determine the risk rating of dams affecting Georgetown County.
	5.3	Identify homes and businesses vulnerable to flooding from dam failure.
	5.4	Identify buildings at risk from 100- and 500-year floods.
Objective	6.1	Maintain and update the Georgetown County Hazard Mitigation Plan.
Objective	7.1	Improve GIS database to integrate natural hazard risk areas with existing data.
	7.2	Identify Georgetown County's most vulnerable critical facilities, and evaluate the potential mitigation techniques for protecting each facility to the maximum extent possible.
	7.3	Identify homes and buildings vulnerable to loss from high winds, and suggest ways that their owners can prepare them for storms.
	7.4	Identify suitable sites for intermediate housing units.

Objective	8.1	Enhance the County's capability to conduct hazard risk assessments, demonstrate funding needs, and track mitigation activities throughout the County.
	8.2	Promote water-free landscaping.
	8.3	Encourage water re-use or gray-water recycling for lawn irrigation.
	8.4	Ensure privately owned dams in the local area are complying with relevant inspection and maintenance codes.
Objective	9.1	Evaluate and assess Georgetown County's hazard mitigation capabilities.
	9.2	Investigate HAZUS to estimate earthquake damage in Georgetown County.
	9.3	Continue to improve tornado forecasting.
	9.4	Investigate HAZUS to estimate hurricane damage.
	9.5	Investigate HAZUS to estimate flood damages.
Objective	10.1	Increase the County's control over development in the floodplain to ensure lives and property are not at risk to future flood conditions.
	10.2	Limit additional building in flood zone areas.
Objective	11.1	Ensure that all new construction is completed using wind-resistant design techniques that will limit damage caused by high winds and reduce the amount of wind-borne debris.
	11.2	Institute measures that will improve resistance of new buildings to high winds.
	11.3	Require better roof construction and materials to withstand high winds.
	11.4	Increase building code standards to build stronger houses.
	11.5	Build safe-rooms in new homes.
Objective	12.1	Ensure that current emergency services are adequate to protect public health and safety.

3.4 Mitigation Actions

In formulating this Mitigation Strategy, a wide range of activities were considered in order to help achieve the goals of the community and to lessen the vulnerability of the local jurisdictions to the effects of natural hazards. Continued compliance with the NFIP was one of the factors used to analyze and prioritize actions. In general, all of these activities fall into one of the following broad categories of mitigation techniques:

3.4.1 Available Mitigation Techniques

Prevention (1)

Preventative activities are intended to keep hazard problems from getting worse. They are particularly effective in reducing a community's future vulnerability, especially in areas where development has not occurred or capital improvements have not been substantial. Examples of preventative activities include:

- Planning and Zoning

- Open space preservation
- Floodplain regulations
- Stormwater management
- Drainage system maintenance
- Capital improvements programming
- Shoreline/riverine/fault zone setbacks

Property Protection (2)

Property protection measures protect existing structures by modifying the building to withstand hazardous events, or removing structures from hazardous locations. Examples include:

- Acquisition
- Relocation
- Building elevation
- Critical facilities protection
- Retrofitting (i.e., windproofing, floodproofing, seismic design standards, etc.)
- Insurance
- Safe rooms

Natural Resource Protection (3)

Natural resource protection activities reduce the impact of natural hazards by preserving or restoring natural areas and their mitigative functions. Such areas include floodplains, wetlands, and dunes. Parks, recreation, or conservation agencies and organizations often implement these measures. Examples include:

- Floodplain protection
- Beach and dune preservation
- Riparian buffers
- Fire resistant landscaping
- Fuel Breaks
- Erosion and sediment control
- Wetland preservation and restoration
- Habitat preservation
- Slope stabilization

Structural Projects (4)

Structural mitigation projects are intended to lessen the impact of a hazard by modifying the environmental natural progression of the hazard event. They are usually designed by engineers and managed or maintained by public works staff. Examples include:

- Reservoirs
- Levees/Dikes/Floodwalls/Seawalls
- Diversions/Detention /Retention
- Channel modification
- Beach nourishment
- Storm sewers

Emergency Services (5)

Although not typically considered a "mitigation technique," emergency service measures do minimize the impact of a hazard event on people and property. These commonly are

actions taken immediately prior to, during, or in response to a hazard event. Examples include:

- Warning systems
- Evacuation planning and management
- Sandbagging for flood protection
- Installing shutters for wind protection
- Provide intermediate housing to affected citizens

Public Information and Awareness (6)

Public information and awareness activities are used to advise residents, business owners, potential property buyers, and visitors about hazards, hazardous areas, and mitigation techniques they can use to protect themselves and their property. Examples of measures to educate and inform the public include:

- Outreach projects
- Speaker series/demonstration events
- Hazard map information
- Real estate disclosure
- Library materials
- School children education
- Hazard expositions

3.4.2 Mitigation Techniques for Georgetown County

In considering the appropriate mitigation techniques for the local governments in Georgetown County to undertake, the Steering Committee reviewed the two (2) background studies provided as appendices to this plan. Following this review and a group discussion, the following matrix was completed by the Committee in order to target the plan's priorities for proposed mitigation actions:

Table 3-1 Matrix Targeting Plan's Priorities

Mitigation Technique	HIGH RISK HAZARDS		MODERATE RISK HAZARDS		LOW RISK HAZARDS				
	Hurricanes & Tropical Storms	Flooding	Tornadoes	Severe Storms/Hail /Wind Events	Earthquake	Drought	Wildfire	Dam Failure	Winter Storms
Prevention		X					X		
Property Protection	X	X	X	X	X	X	X	X	X
Natural Resource Protection		X					X		X
Structural Projects		X							
Emergency Services	X	X	X	X	X	X	X	X	X
Public Information & Awareness	X	X	X	X	X	X	X	X	X

Mitigation actions were prioritized by the Steering Committee based on consideration of the following:

- Input from the four (4) local jurisdictions.
- The cost of the proposed action compared to the benefits resulting from the activity.
- The risk rating (high, moderate, low) of the hazard that the proposed mitigation action is designed to address.
- The degree of benefit of the proposed mitigation action on the jurisdictions' populations.

Goals for the four municipalities did not change since 2009. However, one new objective and mitigation technique, Temporary Housing, was added. Due to the growing concern about where to house our citizens after shelters are closed or they have reentered the area only to find they need to do major repairs or rebuilding to make their home habitable, it was decided that adding Temporary Housing as an objective and technique, and then creating actions to identify that housing, was important.

3.5 Georgetown County Mitigation Actions

The mitigation actions proposed for Georgetown County to undertake are listed on the pages that follow. Each has been designed to achieve the goals and objectives identified through this Hazard Mitigation Plan. Each proposed action includes:

a. the appropriate category for the mitigation technique;
b. the hazard it is designed to mitigate;
c. the objective(s) it is intended to help achieve;
d. some general background information;
e. the priority level for its implementation (high, moderate, or low);
f. potential funding sources, if applicable;
g. the agency/person assigned responsibility for carrying out the strategy; and
h. a target completion date.

Again, it is important to note that these mitigation actions are short-term, specific measures to be undertaken by Georgetown County. It is expected that this component of the plan will be the most dynamic. It will be used as the primary indicator to measure the plan's progress over time, and will be routinely updated and/or revised through future planning efforts.

Individual jurisdictional action plans shall be reviewed and updated, if necessary, in October of each year. The Hazard Mitigation Plan shall be reviewed and updated every five (5) years in accordance with FEMA guidelines.

Prior to implementation of any prioritized mitigation actions, a cost-benefit review will be conducted in order to maximize the benefits of any proposed activity.

The following actions included in the 2014 plan were deleted during this update. The Action Number and reason for deletion follow:

Action #	Reason for Deletion
5C	Completed
5F	Completed
5I	Completed

The following actions were added in the 2014 plan:
1I
2H
5P

ACTION #1C

Expand the current Geographic Information System (GIS) to incorporate current cadastral (building/parcel) data for purposes of conducting more detailed hazard risk assessments and for tracking permitting / land use patterns.

Category:	Prevention
Hazard:	All
Objective(s) Addressed:	7.1, 8.1, 9.1
Background:	An enhanced GIS system will greatly improve the County's technical capability to collect, manage, analyze and display spatially-referenced data. Georgetown County currently has GIS capability, but the expansion has been identified as a needed enhancement for both the Planning Department and the Building Inspections office to further hazard mitigation goals.
Priority:	Moderate
Funding Sources:	SCEMD
Responsibility Assigned to:	GIS
Target Completion Date:	Continuous
Status:	As GIS and Information Technology evolve, new software, hardware, and emergency-related GIS data are constantly being incorporated into the County's Geographic Information System, so this action is ongoing.

ACTION #1D

Identify the County's most at-risk vital / critical facilities, and evaluate the potential mitigation techniques for protecting each facility to the maximum extent possible.

Category:	Prevention
Hazard:	All
Objective(s) Addressed:	2.1, 2.2, 6.1, 9.1
Background:	A thorough evaluation of potential mitigation opportunities for Georgetown County's critical facilities must still be completed. Currently, there is very little available data on these facilities. An inventory/database on critical facilities should be created and maintained by the County and shared with the SC Emergency Management Division. This inventory should include information on the location and risk to each facility, and should also document any cost-effective mitigation techniques to consider when funding becomes available. As new facilities are added, we will complete an evaluation annually.
Priority:	Moderate
Funding Sources:	SCEMD
Responsibility Assigned to:	EMD
Target Completion Date:	Continuous
Status:	Updated annually.

ACTION #1G

Sponsor educational programs for design professionals, contractors, building code officials, insurance agents, etc. on regulations and codes.

Category:	Prevention
Hazard:	Hurricane, Earthquake, Tornado, Flood
Objective(s) Addressed:	3.1, 11.1
Background:	Building codes, floodplain regulations and other codes are subject to frequent review and modification. Providing information to key personnel in the development chain will help ensure that new requirements are included in the design of development.
Priority:	Moderate
Funding Sources:	Local Government
Responsibility Assigned to:	Planning & Development, Building Official
Target Completion Date:	Continuous
Status:	Education is ongoing. The Director of Planning meets with the local realtors association each year to go over new requirements and provide a status update of planning and code issues. Public hearings are regularly held when building and zoning codes are updated. In addition, educational materials regarding flood insurance rates and flood prevention were placed in local libraries for review by the real estate profession and the general public.

ACTION #1H

Encourage the development of a standardized system to collect data on flood events throughout the County for future flood studies.

Category:	Prevention
Hazard:	Flood
Objective(s) Addressed:	7.1, 8.1
Background:	Information on local flooding events is scarce and often anecdotal. Accurate, verifiable data on floods would be valuable for future flood studies.
Priority:	Moderate
Funding Sources:	Local Government, FEMA
Responsibility Assigned to:	GIS
Target Completion Date:	By the end of 2015.
Status:	Public Works now collects photographs and other data for flood events.

ACTION #2A

Acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners.

Category:	Property Protection
Hazard:	Flood
Objective(s) Addressed:	1.1, 2.1, 5.1, 10.1
Background:	Land acquisition is an effective mitigation technique to permanently eliminate the potential for damages from future flood events.
Priority:	Moderate
Funding Sources:	FEMA, SCEMD
Responsibility Assigned to:	Planning & Development
Target Completion Date:	Continuous
Status:	This is an ongoing process. The County recently purchased several large tracts of land to be used for passive and active parks. Some of the tracts contain wetlands areas that will be preserved as part of the overall park development. In addition, Planning staff regularly assesses a project's impact on wetlands and flood prone areas when reviewing subdivisions and rezoning requests.

ACTION #2B

Incorporate the inspection and management of hazardous trees in the vicinity of critical facilities into the County's routine drainage system maintenance process.

Category:	Property Protection
Hazard:	Hurricanes and Tropical Storms
Objective(s) Addressed:	1.1
Background:	A significant amount of property damage during high wind events results from tree failure. Facilities Services inspects each County structure on bi-annual bases to determine the overall condition of each structure. During these inspections, conditions involving trees and large vegetation are noted to insure that during extreme weather events the possibility of damage to any of the structures is minimized. This includes, but is not limited to, any possible damage to roofs, windows, building structures, as well as electrical and communication lines. The County has also established a web based service request application so that anyone in the County can instantaneously report any condition that needs repair or could damage a county structure. This application is called "At Your Request," and is part of the County's Electronic Government Services available on the County Web page at: http://secure.georgetowncountysc.org:8080/atyourrequest
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	Department of Public Services Facility Services
Target Completion Date:	Continuous
Status:	Facilities Services collects monthly safety inspection reports from all County facilities which include any potentially damaging trees or limbs that threaten County property. There has been no severe weather recently but inspections continue looking for potential threats.

ACTION #2C

Augment the enforcement of the Georgetown County Building Code and related County ordinances by encouraging wind-resistant design techniques for new residential construction during the County's permit process.

Category:	Property Protection
Hazard:	Hurricanes and Tropical Storms, Tornadoes
Objective(s) Addressed:	11.1
Background:	Although the State Building Code and local ordinances require certain building practices for wind loss reduction, experts agree that structures built to exceed high wind provisions have a much greater chance of surviving violent wind storms. Additional techniques include adding protection for windows (i.e., shutters), anchoring door frames with multiple hinges, stiffening garage doors with additional bracing, reinforcing masonry chimneys with vertical steel, and strengthening connections between walls and the roof with hurricane straps and ties. These techniques should be promoted to building contractors and homebuyers by the County for all new residential construction, to the maximum extent possible during the building permit process.
Priority:	High
Funding Sources:	N/A
Responsibility Assigned to:	Building Official
Target Completion Date:	Continuous
Status:	Additional measures are taken by our field inspectors to ensure all openings (windows, doors) are strapped from studs to headers to provide additional strengthening in these areas. Additional blocking is required at corners and rafters and trusses are required to be blocked on eaves and two bays into the roof system. Continuous ties from foundation to ridge are an important part of the enforcement procedures in Georgetown County. Georgetown County continues to promote wind loss reduction

	throughout our county, through stringent enforcement of adopted codes and require additional techniques to assure that residential and commercial buildings withstand hurricane force winds on all building components.

ACTION #2D

Amend the County's Zoning Ordinance to require tornado shelters for any new major manufactured/mobile home park with more than 30 mobile home spaces.

Category:	Property Protection
Hazard:	Tornadoes
Objective(s) Addressed:	2.1
Background:	Mobile homes are particularly vulnerable to damage from high winds. Residents, even those who live in mobile homes with tie-downs, should seek safe shelter when a tornado threatens. Tornado shelters should be constructed in major mobile home parks to ensure a safe place for residents to go during a tornado event. The shelter structure, which should be designed to withstand a minimum of 120mph winds, could easily serve an alternate purpose such as a community center, laundry facility, etc. Tornado shelters should be for last minute protection for high wind events but not serve as emergency shelters for other events such as hurricanes and tropical storms. The Zoning Ordinance should be amended to require tornado shelters in the mobile home park zoning districts.
Priority:	Moderate
Funding Sources:	N/A
Responsibility Assigned to:	Planning & Development, EMD
Target Completion Date:	2015 for Ordinance Amendment. Continuous for existing mobile home parks.
Status:	The County plans to propose an ordinance amendment for inclusion in the Zoning Ordinance by January of 2015. Efforts to construct shelters in existing parks will be on-going and based on funding.

ACTION #2E

Amend the Flood Damage Prevention Ordinance for Georgetown County to require that new construction and substantial improvements have finished floor elevations at least one (1) foot above the base flood elevation in "A" Zones and lowest horizontal supporting members at least one (1) foot above the base flood elevation in "V" Zones.

Category:	Property Protection
Hazard:	Flood
Objective(s) Addressed:	5.1, 10.1
Background:	FEMA encourages local governments to go beyond minimum requirements to provide extra protection for structures from flood hazards. Requiring structures to elevate an additional foot above the base flood elevation could reduce individual flood insurance premiums.
Priority:	Low
Funding Sources:	N/A
Responsibility Assigned to:	Planning & Development
Target Completion Date:	2015
Status:	Georgetown County currently enforces a 1 ft. freeboard on all VE zone new construction and substantial improvements. It is our intent to add a 1 ft. freeboard to AE zones by February 1, 2015.

ACTION #2G

Educate citizens regarding safe interior room construction.

Category:	Property Protection
Hazard:	Hurricane, Tornado, Earthquake
Objective(s) Addressed:	2.1, 3.1, 3.2
Background:	The design and construction of "safe rooms" is especially important for the most vulnerable population segments – those with limited mobility and resources. Providing a secure location as an alternative to evacuation is important for the safety of these persons.
Priority:	Moderate
Funding Sources:	Local Government, FEMA
Responsibility Assigned to:	EMD
Target Completion Date:	Continuous
Status:	EMD includes a discussion on safe room construction, as well as other mitigation measures, during our public education meetings throughout the year, so this action is ongoing.

ACTION #2H

Equip critical facilities with transfer switches, generators, and communications equipment.

Category:	Property Protection
Hazard:	All
Objective(s) Addressed:	2.2. 7.2
Background:	To ensure critical facilities are operable during and following a disaster..
Priority:	High
Funding Sources:	Federal grant funds
Responsibility Assigned to:	EMD
Target Completion Date:	Continuous
Status:	Critical facilities have been identified. Propose to purchase generators and communications equipment, as well as install transfer switches when grant funds become available.

ACTION #3A

Research and design an appropriate stream buffer ordinance to further protect Georgetown County's water resources and to limit future flood damages adjacent to inland waterways.

Category:	Natural Resource Protection
Hazard:	Flood
Objective(s) Addressed:	1.1
Background:	Riparian buffers serve as natural boundaries between local waterways and existing development and help protect resources by filtering pollutants, providing flood control, alleviating streambank erosion, mitigating stream warming, and providing room for lateral movement of the stream channel. Buffer widths can vary greatly depending upon stream channel size and the intended purpose of the buffer, but 50-100 feet is generally considered to be sufficient for purposes of bank stabilization and sediment control. Many communities require 200 feet for flood control purposes. Special consideration should be given to exempting Georgetown County's agricultural and silvacultural operations from buffer regulations.
Priority:	Moderate
Funding Sources:	Clean Water Management Trust Fund
Responsibility Assigned to:	Planning & Development
Target Completion Date:	2015
Status:	The Planning and Stormwater Departments will work together to consider a stream buffer ordinance for the County. Staff will review ordinances from other jurisdictions such as Richland County, Lexington County, and Florence County that have similar requirements. In addition, the recently passed revisions to the County's tree protection ordinance specifically protect trees along rivers, streams, and other water bodies from removal.

ACTION #3B

Renourish public beaches at Litchfield and Garden City.

Category:	Natural Resource Protection, Property Protection
Hazard:	Storm Surge, Flooding
Objective(s) Addressed:	1.1
Background:	Georgetown County has established a "Beachfront Management Plan" which addresses erosion rates, hurricanes and storms, inlet dynamics, littoral transport of sand, sediment budgets and erosion analysis. The plan encompasses Litchfield Beach, Huntington Beach State Park, DeBordieu Beach, and the area of Garden City Beach. A separate plan has been completed for Pawleys Island. Since 2004 the County has spent over $1,177,190 on beach renourishment and the reconstruction/upgrade of beach groins to provide additional buffer from coastal storms and flooding. Since 2002 over 415,000 cubic yards of beach sand has been applied to Garden City and Pawleys Island beaches
Priority:	Moderate
Funding Sources:	USACE, Local Government
Responsibility Assigned to:	Department of Public Services Capital Projects
Target Completion Date:	Continuous
Status:	No target date due to this being a continuous action. This action must be taken each time erosion occurs within Georgetown County's public beaches. Erosion is caused by high winds, waves, and storms which are continual and unpredictable.

ACTION #3C

Create new beachfront dunes through "Build A Dune" projects.

Category:	Natural Resource Protection
Hazard:	Hurricane, Flood
Objective(s) Addressed:	1.1, 3.2, 5.1
Background:	Sand dunes serve as the first line of defense from storm surge for coastal communities. Educating coastal residents about the natural methods of encouraging sand dune development will save money and increase the public's awareness concerning the value of sand dunes.
Priority:	Moderate
Funding Sources:	FEMA, SCEMD, Local Government
Responsibility Assigned to:	EMD
Target Completion Date:	Continuous
Status:	EMD includes a discussion on the merits of sand dunes, as well as other mitigation measures, during our public education meetings throughout the year, so this action is ongoing.

ACTION #4A

Update the Georgetown County Master Drainage Plan.

Category:	Structural Projects
Hazard:	Hurricane, Flood
Objective(s) Addressed:	2.2
Background:	Proper design for drainage facilities is vital to the continued development of Georgetown County. The Public Works Division has recently updated its automated drainage O&M database which encompasses over 500 miles of drainage structures County-wide. This data is currently being used to update the County's GIS database and made available for stormwater and drainage management and upgrade initiatives. The County has also automated the trouble call and service request associated with the upkeep and expansion of the County's drainage ways and control structures.
Priority:	Moderate
Funding Sources:	Local Government
Responsibility Assigned to:	Department of Public Services Public Works
Target Completion Date:	Continuous
Status:	No target date due to this being a continuous action. This action is taken once a month at the Georgetown Co. Watershed Management / Capital Improvement Projects Meeting. During this meeting, the Georgetown Co. Master Drainage Plan is reviewed, and the list of drainage projects is re-prioritized.

ACTION #4B

Implement drainage improvement projects consistent with results from drainage studies.

Category:	Structural Projects
Hazard:	Flood
Objective(s) Addressed:	2.1, 2.2
Background:	Improved drainage facilities are important to maintaining proper stormwater protection to existing and future development.
Priority:	Moderate
Funding Sources:	FEMA, Revenue Bonds, Local Government
Responsibility Assigned to:	Department of Public Services Stormwater Engineering
Target Completion Date:	Ongoing
Status:	Utilizing funding from the Georgetown County Stormwater Utility Fee, the County has moved ahead on several Capital Projects to improve drainage. As problem areas are uncovered, repairs are coordinated with Public Works and SCDOT.

ACTION #4C

Develop a schedule for replacing above-ground utilities underground where feasible, particularly along evacuation routes, major arteries and highly congested areas.

Category:	Structural Projects
Hazard:	Hurricane, Earthquake
Objective(s) Addressed:	2.2
Background:	Above-ground utilities are some of the most vulnerable structures and facilities that are impacted by high winds and/or earthquakes. There is a need to evaluate the possibilities to relocate these facilities in critical locations. New developments are putting utilities under ground.
Priority:	Moderate
Funding Sources:	FEMA, Local Government
Responsibility Assigned to:	EMD, Utility Providers
Target Completion Date:	2019
Status:	Most new developments are installing utilities underground.

ACTION #4D

Educate residents on procedures to follow to route the utilities to their individual properties underground.

Category:	Structural Projects
Hazard:	Hurricane, Earthquake, Tornado
Objective(s) Addressed:	3.2
Background:	Underground utilities can minimize power and service disruption and also speed recovery efforts. Many residents and citizens are unaware that underground service is an option. Working with local utility providers, increasing the number of underground service customers by 10 percent could be achieved.
Priority:	Moderate
Funding Sources:	N/A
Responsibility Assigned to:	EMD, Local Utility Providers
Target Completion Date:	Continuous
Status:	We continue to work with local utility providers to educate residents on the merits of underground utilities.

ACTION #4E

Continue the installation of "dry" hydrants in the rural portion of Georgetown County.

Category:	Structural Projects
Hazard:	Wildfire
Objective(s) Addressed:	12.1
Background:	Georgetown County is blessed with surface water resources (rivers, ponds, etc.). The County has been installing dry hydrants that can draw water from these sources to help fight fires in the rural portion of the County. Since 2004, in partnership with the County Fire Department and USDA, the Public Works Division has installed 10 new dry hydrants within Georgetown County. Funding for the materials used for installing these dry hydrants was provided from local funds.
Priority:	Moderate
Funding Sources:	SCEMD, Local Government
Responsibility Assigned to:	Public Works
Target Completion Date:	Continuous
Status:	In the past year, 2 new dry hydrants have been installed. Using local funding, Public Works, in addition with the Fire Department and USDA, continues to offer the installation of dry hydrants to help firefighting efforts in rural areas.

ACTION #5B

Coordinate local emergency evacuation plans for the City of Georgetown, Town of Andrews, and Town of Pawleys Island in coordination with the South Carolina Department of Transportation, South Carolina Emergency Management Division, and other appropriate agencies.

Category:	Emergency Services
Hazard:	Hurricanes and Tropical Storms
Objective(s) Addressed:	2.1, 12.1
Background:	The three (3) municipal governments and Georgetown County annually update the emergency evacuation plan. The Georgetown County EMD assists these local governments in the preparation of the plan for orderly evacuation of the municipalities and procedures for re-entry when the emergency is over.
Priority:	Moderate
Funding Sources:	N/A
Responsibility Assigned to:	EMD, in coordination with municipal representatives
Target Completion Date:	Continuous
Status:	Updated annually at our Traffic Control Point meetings.

ACTION #5C

Provide emergency generators and hurricane shutters for Courthouse.

Category:	Emergency Services, Property Protection
Hazard:	Hurricanes
Objective(s) Addressed:	2.1, 2.2, 12.1
Background:	The Georgetown County Courthouse contains many functions that are necessary to the residents of the County, including, but not limited to, Tax Assessor, Auditor, and Treasurer in addition to court functions. These services will be moved into the newly constructed Judicial Center. This move will allow the facility to remain operational during and after hurricanes. GIS mapping will remain in the former Courthouse, but generators and shutters for windows have been provided.
Priority:	Low
Funding Sources:	FEMA, SCEMD, Local Government
Responsibility Assigned to:	Facilities Management
Target Completion Date:	2009
Status:	The judicial (court) offices have now moved into the new Judicial Center. The GIS mapping office is scheduled to move to the old courthouse building once renovations are completed. The target date for this move is February 2011. This was completed March 2011.

ACTION #5E

Maintain a UPS system for the County's computer server.

Category:	Emergency Services
Hazard:	Hurricanes
Objective(s) Addressed:	2.1, 2.2, 12.1
Background:	Providing a battery backup system for the computer server for the County's computer network will enable the system to remain operational during and after a hurricane.
Priority:	Moderate
Funding Sources:	FEMA, SCEMD, Local Government
Responsibility Assigned to:	MIS
Target Completion Date:	Continuous
Status:	UPS is backed up daily. In an emergency power outage, the systems depend on a generator.

ACTION #5F

Install hurricane shutters on classroom windows at the two (2) emergency shelters to expand capacity of the shelters from 790 to 2,370.

Category:	Emergency Services, Property Protection
Hazard:	Hurricanes
Objective(s) Addressed:	2.1, 2.2, 9.1, 12.1
Background:	The two shelters in Georgetown County are not currently capable of providing space for the percentage of the vulnerable population established by SCEMD. Tripling the capacity of the shelters from 790 to 2,370 will meet future needs through 2025.
Priority:	Moderate
Funding Sources:	FEMA, SCEMD
Responsibility Assigned to:	EMD
Target Completion Date:	2009
Status:	Completed.

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ACTION #5G

Continue to equip shelters with emergency generators, blankets, cots, flashlights, and communications equipment.

Category:	Emergency Services
Hazard:	All
Objective(s) Addressed:	2.1, 2.2, 9.1, 12.1
Background:	The two (2) existing shelters in Georgetown County have been prewired to accept electrical generators, and have installed HAM radio equipment. The ARC continues to supply bedding, flashlights, and cots communications equipment in order to adequately accommodate evacuees.
Priority:	Moderate
Funding Sources:	FEMA, SCEMD
Responsibility Assigned to:	EMD
Target Completion Date:	Continuous
Status:	Ongoing. Have antennas for HAM radios. American Red Cross provides cots, blankets, etc. Issues are discussed at our annual shelter coordination meetings.

ACTION #5H

Ensure safe and passable evacuation routes throughout the County.

Category:	Emergency Services
Hazard:	All
Objective(s) Addressed:	2.2, 12.1
Background:	The County's key evacuation routes (U.S. 521, S.C. 51 and U.S. 17) need to be evaluated for possible tree removal in certain locations. It is important that these routes remain open and unencumbered during and after a disaster event.
Priority:	Moderate
Funding Sources:	FEMA, SCDOT, Local Government
Responsibility Assigned to:	EMD, SCDOT
Target Completion Date:	Continuous
Status:	Dept. of Transportation rides routes every year to make sure signs are in place. They maintain the roadways. They have a Debris Management Plan to remove debris from State roads. The County Public Services also has a debris removal contract to have debris removed from County roads.

ACTION #5I

Initiate the planning process to identify at least two (2) additional emergency evacuation shelters within the County.

Category:	Emergency Services
Hazard:	All
Objective(s) Addressed:	2.1, 9.1, 12.1
Background:	The current capacity of the County's two (2) shelters (790) is woefully inadequate. There is a need to triple the capacity in order to meet the State recommended percentage of the County's vulnerable population. This, coupled with future growth, will require the identification and equipping of at least two (2) new shelter locations. The ARC will continue to work with churches to add capacity.
Priority:	High
Funding Sources:	FEMA, SCEMD, Red Cross, Local Government
Responsibility Assigned to:	EMD, Red Cross, School District, DSS
Target Completion Date:	2010
Status:	Completed. Two (2) shelters, with a combined capacity of 1,233, have been identified as reserve shelters.

ACTION #5K

Develop GIS use throughout the Emergency Services groups.

Category:	Emergency Services
Hazard:	All
Objective(s) Addressed:	7.1, 8.1, 9.1
Background:	Geographic Information Systems (GIS) is underutilized by many emergency service providers for a variety of reasons including technical limitations of staff and funding constraints. The value of GIS in hazard mitigation planning is immense and should be expanded to all emergency service providers throughout the County. A designated trainer within the Emergency Services group should be appointed to conduct GIS training for emergency personnel.
Priority:	Moderate
Funding Sources:	FEMA, SCEMD Local Government
Responsibility Assigned to:	GIS, EMD
Target Completion Date:	By end of 2016
Status:	Flood, seismic, wind zone, and hurricane surge data are now being utilized. We are working with County GIS to have the maps provided as needed.

ACTION #5L

Use HAZUS-MH software to aid in strategic planning for disasters.

Category:	Emergency Services
Hazard:	All
Objective(s) Addressed:	2.1, 3.1, 7.1, 8.1
Background:	HAZUS is a natural hazard loss estimation methodology developed by FEMA under a contract with the National Institute of Building Science. HAZUS-MH is a multi-hazard methodology that will estimate potential losses from wind and flood, in addition to earthquakes.
Priority:	Moderate
Funding Sources:	FEMA, SCEMD
Responsibility Assigned to:	EMD
Target Completion Date:	Continuous
Status:	Prior to our yearly exercises, EMD works closely with SCEMD who provides HAZUS data specific to Georgetown County which we use to look at damage probabilities when creating the exercise scenario.

ACTION #5N

Convert county street signage to a new, larger font format to make street signs easier to read by emergency responders.

Category:	Property Protection & Emergency Services
Hazard:	Hurricanes, Tropical Storms, & Tornadoes
Objective(s) Addressed:	2.2, &, 8.1
Background:	To improve emergency responders' ability to identify locations and reduce response time Georgetown County Council approved increasing the height of all County-installed street signage in 2005. To accommodate large font sizes of 5" in height for street signs and improve sign brightness, a multi-year signage upgrade program was instituted. Today, the County has replaced over 727 street signs, and we currently have another 250 signs programmed. New Federal standards that go into effect in 2009 will increase reflectivity standards for all traffic signage; these requirements are also being phased in via a multi-year funding program.
Priority:	Moderate
Funding Sources:	Local & Sign Grant Program
Responsibility Assigned to:	Public Works
Target Completion Date:	2018
Status:	Georgetown County is in the process of implementing sign upgrades to improve visibility. New Federal reflectivity standards are now also being integrated into these improved visibility upgrades. Since September of 2010, over 250 street signs have been upgraded with both the height and lettering standards as well as the retro-reflectivity standards.

ACTION #5O

Collect street signage coordinates in a GIS for emergency responders.

Category:	Property Protection & Emergency Services
Hazard:	Hurricanes, Tropical Storms, & Tornadoes
Objective(s) Addressed:	2.2, &, 8.1
Background:	To improve emergency responders' ability to identify locations after an event, street sign coordinates will be collected in a GIS.
Priority:	Moderate
Funding Sources:	Georgetown County
Responsibility Assigned to:	GIS
Target Completion Date:	Continuous
Status:	GPS coordinates for any road junction can be derived from GIS.

ACTION #5P

Determine and equip areas to provide intermediate housing after a disaster to include required infrastructure.

Category:	Emergency Services
Hazard:	All
Objective(s) Addressed:	7.4
Background:	To provide intermediate housing to those affected by a disaster until the time they can return to their homes if repairing/rebuilding or find suitable housing elsewhere. Intermediate housing consists of providing safe, sanitary, and functional conditions for individuals within a reasonable distance to schools, services, and businesses. Whenever possible, affected individuals will be placed in available rental units within or near the disaster area (generally 30 miles). If FEMA, in conjunction with the State, determines there may not be a sufficient supply of available rental units to meet disaster housing needs, FEMA will survey those applying for Housing Assistance to determine if a Direct Housing mission is appropriate. Direct Housing can take several forms, and will depend on the needs of the community and available resources. The only type of currently approved FEMA direct housing is factory made housing including mobile homes. The preferred method is to place housing units in locations where services and utilities are already established. This includes the placement of units on land owned by eligible applicants, and can also include utilizing existing manufactured housing parks and filling in vacant areas with disaster housing units given the appropriate infrastructure. This can be accomplished in as few as 24 hours and can remain operational for months.
Priority:	Moderate
Funding Sources:	FEMA, SCEMD, County
Responsibility Assigned to:	EMD, Georgetown County Planning and Zoning Department, FEMA, SCEMD
Target Completion Date:	2019
Status:	Working to determine locations for intermediate housing sites throughout the County.

ACTION #6A

Advertise and promote the availability of flood insurance to county property owners by direct mail at least twice a year.

Category:	Public Information and Awareness
Hazard:	Flood
Objective(s) Addressed:	3.1, 3.2, 4.2
Background:	Georgetown County joined the National Flood Insurance Program (NFIP) on May 9, 1978. As of December 31, 2008, there were 8,748 policies in effect, with a total coverage amount of $2,235,377,100. Since 1978, there have been 3,508 claims paid for a total loss amount of $78,399,394.28 (Source: FEMA, 2009). NFIP flood insurance policies protect property owners by offering affordable rates for protection of structures and contents.
Priority:	High
Funding Sources:	Local
Responsibility Assigned to:	Building Official, Planning & Development
Target Completion Date:	Continuous
Status:	Georgetown County currently sends out direct mail to all property owners in the SFHA, and will continue to do so, so this action is ongoing.

ACTION #6B

Collect educational materials on individual and family preparedness/mitigation measures for property owners, and display at both the library and routinely-visited County offices.

Category:	Public Information & Awareness
Hazard:	All
Objective(s) Addressed:	2.1, 3.1, 3.2
Background:	FEMA, the South Carolina Emergency Management Division, the National Weather Service, and other agencies provide informational brochures and pamphlets on property protection measures at no cost to local governments.
Priority:	High
Funding Sources:	N/A
Responsibility Assigned to:	EMD
Target Completion Date:	Continuous
Status:	EMD distributes informational brochures and pamphlets during our public education meetings, at special events, and at the Library branches throughout the year.

ACTION #6C

Distribute educational flyers targeting NFIP policyholders on the Increased Costs of Compliance (ICC) coverage to be disseminated following a flood event that results in substantial damage determinations by the County.

Category:	Public Information and Awareness
Hazard:	Flood
Objective(s) Addressed:	5.1
Background:	Increased Cost of Compliance (ICC) under the NFIP provides for the payment of a claim to help pay for the cost to comply with State or community floodplain management laws or ordinances from a flood event in which a building has been declared substantially damaged. When an insured building is damaged by a flood and the State or community declares the building to be substantially damaged, ICC will help pay for the cost to elevate, floodproof, demolish or relocate the building up to $20,000. This coverage is in addition to the building coverage for the repair of actual physical damages from the flood.
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	Building Official, EMD
Target Completion Date:	Continuous
Status:	A flyer was mailed out to all property owners in SFHA. Located in this flyer is a section indicating what the ICC coverage is and how it could benefit the property owners in the event their property is declared substantially damaged. Ongoing.

ACTION #6D

On an annual basis, contact all owners of FEMA-identified repetitive loss properties and inform them of the assistance available through the federal Flood Mitigation Assistance (FMA) program, in addition to other flood protection measures.

Category:	Public Information & Awareness
Hazard:	Flood
Objective(s) Addressed:	5.1
Background:	Georgetown County's listing of FEMA-identified repetitive loss properties is maintained and regularly updated by the Building Inspector. Each of these properties are targeted by FEMA and the State of South Carolina for Flood Mitigation Assistance (FMA) funding, which will fund up to 75% of a mitigation project to eliminate future flood risk (usually through elevation or acquisition or relocation). FMA funds are awarded on an annual basis by the South Carolina Emergency Management Division. Eligible property owners should be contacted every year to promote the availability of the FMA funding and to determine their level of interest in applying for the program.
Priority:	High
Funding Sources:	Local
Responsibility Assigned to:	Building Official, Planning & Development
Target Completion Date:	Continuous
Status:	Flyers that are mailed out to all SFHA property owners will include a section to all identified repetitive loss properties educating them on FMA funding and how it could eliminate future flooding problems.

ACTION #6E

Annually host a public hazards workshop for the residents of Georgetown County, in combination with the Wooden Boat Show, Winyah Bay Heritage Festival, and other appropriate community events.

Category:	Public Information & Awareness
Hazard:	All
Objective(s) Addressed:	3.1, 3.2
Background:	A hazard workshop for county residents should be added to an established community event drawing large crowds. The workshop should be geared toward educating them on the hazards which threaten Georgetown County, and the mitigation and preparedness measures available to protect them. Guest speakers from the National Weather Service, the South Carolina Emergency Management Division, and other relevant agencies should be invited to attend, and educational displays/handouts should be provided such as Flood Insurance Rate Maps, storm surge inundation maps, FEMA publications, hurricane tracking charts, safety tips, etc.
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	EMD
Target Completion Date:	Continuous
Status:	On-going. We participate in an annual WPDE Hurricane Program, and other events are held throughout the year.

ACTION #6F

Participate in contractor hazard resistant building techniques workshops.

Category:	Public Information & Awareness
Hazard:	All
Objective(s) Addressed:	2.1, 3.1, 11.1
Background:	Local building contractors are often unaware of or unwilling to embrace new techniques to achieve hazard resistance in building construction. Getting contractors together in a workshop format will allow them to hear about and see demonstrations of new ideas.
Priority:	Moderate
Funding Sources:	FEMA, SCEMD, Local Government
Responsibility Assigned to:	Building Official
Target Completion Date:	Continuous
Status:	Georgetown County continues to educate contractors, architects, and engineers on new techniques to achieve hazard resistant construction. Georgetown County Building Official meets monthly with local architects, engineers, and home builders association to discuss new ideas, code changes, and material new to the construction industry. Meetings continue to occur on a monthly basis along with two annual events. We promote and are involved with our local home builders association, and recently had an event where flood insurance information was given out to contractors and the public.`

ACTION #6G

Use a mobile hazard-related educational display.

Category:	Public Information & Awareness
Hazard:	All
Objective(s) Addressed:	2.1, 3.1, 11.1
Background:	Informing the general public about natural hazards in a local setting is one of the most effective methods of education. The mobile display could be used at various events throughout the year to educate local residents and visitors about hazard-related issues.
Priority:	Moderate
Funding Sources:	FEMA, SCEMD, Local Government
Responsibility Assigned to:	EMD
Target Completion Date:	Continuous
Status:	EMD utilizes a stormwater display, tornado simulator, and other educational displays throughout the year at special events and during our public education meetings.

ACTION #6H

Work with media outlets to provide hazard-related information to local citizens.

Category:	Public Information & Awareness
Hazard:	All
Objective(s) Addressed:	2.1, 3.1, 11.1
Background:	Local newspapers, radio stations, and cable television providers are capable of reaching a vast audience in Georgetown County. Integrating a public education program concerning natural hazards through these outlets would provide beneficial exposure to all segments of the County's population.
Priority:	Moderate
Funding Sources:	FEMA, SCEMD, Local Government
Responsibility Assigned to:	EMD, Media Representatives
Target Completion Date:	Continuous
Status:	EMD works closely with media outlets to provide hazard-related information to the public year-round, as well as before, during, and after an event. We also utilize social media daily to provide this information to those with access.

3.6 Town of Andrews Mitigation Actions

The mitigation actions proposed for the Town of Andrews to undertake are listed on the pages that follow. Each has been designed to achieve the goals and objectives identified through this Hazard Mitigation Plan. Each proposed action includes:

a. the appropriate category for the mitigation technique;
b. the hazard it is designed to mitigate;
c. the objective(s) it is intended to help achieve;
d. some general background information;
e. the priority level for its implementation (high, moderate, or low);
f. potential funding sources, if applicable;
g. the agency/person assigned responsibility for carrying out the strategy; and
h. a target completion date.

Again, it is important to note that these mitigation actions are short-term, specific measures to be undertaken by the Town of Andrews. It is expected this component of the plan will be the most dynamic. It will be used as the primary indicator to measure the plan's progress over time, and will be routinely updated and/or revised through future planning efforts.

Individual jurisdictional action plans shall be reviewed and updated, if necessary, in October of each year. The Hazard Mitigation Plan shall be reviewed and updated every five years in accordance with FEMA guidelines.

Prior to implementation of any prioritized mitigation actions, a cost-benefit review will be conducted in order to maximize the benefits of any proposed activity.

ACTION #1A

Study of the emergency response plan for the Town of Andrews.

Category:	Prevention
Hazard:	All
Objective(s) Addressed:	12.1
Background:	Currently, the Town of Andrews is operating under an outdated emergency response plan. The Town could benefit by an emergency response plan that is up-to-date, and has specific plans as to what needs to be done and how to accomplish those requirements after a natural disaster.
Priority:	Moderate
Funding Sources:	
Responsibility Assigned to:	Administrator
Target Completion Date:	2015
Status:	Will continue to work with Police Chief and Georgetown County to update plan.

ACTION #2A

Augment the enforcement of the Andrews Building Code and related ordinances by encouraging wind-resistant design techniques for new construction.

Category:	Property Protection
Hazard:	Hurricanes/Tropical Storms and Tornadoes
Objective(s) Addressed:	11.1
Background:	Although the State Building Code and local ordinances require certain building practices for wind loss reduction, experts agree that structures built to exceed high wind provisions have a much greater chance of surviving violent wind storms. Additional techniques include adding protection for windows (i.e., shutters), anchoring door frames with multiple hinges, stiffening garage doors with additional bracing, reinforcing masonry chimneys with vertical steel, and strengthening connections between walls and the roof with hurricane straps and ties. These techniques should be promoted to building contractors and homebuyers by the County for all new residential construction, to the maximum extent possible, during the building permit process.
Priority:	High
Funding Sources:	N/A
Responsibility Assigned to:	Building Official
Target Completion Date:	Continuous
Status:	Town of Andrews has entered into an agreement with SAFEbuilt. 2012 International Building Codes have been adopted.

ACTION #2B

Educate citizens regarding safe interior room construction.

Category:	Property Prevention
Hazard:	Hurricane, Tornado, Earthquake
Objective(s) Addressed:	2.1, 3.1, 3.2
Background:	The design and construction of "safe rooms" is especially important for the most vulnerable population segments – those with limited mobility and resources. Providing a secure location as an alternative to evacuation is important for the safety of these persons.
Priority:	Moderate
Funding Sources:	Local Government, FEMA
Responsibility Assigned to:	Building Official
Target Completion Date:	December 2015
Status:	Coordinate quarterly meetings in 2015 throughout the Town to address the concern.

ACTION #4A

Develop a schedule for replacing above-ground utilities underground where feasible, particularly along evacuation routes, major arteries, and highly congested areas.

Category:	Structural Projects
Hazard:	Hurricane, Earthquake
Objective(s) Addressed:	2.2
Background:	Above-ground utilities are some of the most vulnerable structures and facilities that are impacted by high winds and/or earthquakes. There is a need to evaluate the possibilities to relocate these facilities in critical locations. Undergrounding of utilities on Main Street Phase I has been completed, and the Town expects to continue with a second phase.
Priority:	Moderate
Funding Sources:	FEMA, Local Government
Responsibility Assigned to:	Utility Providers
Target Completion Date:	June 2016
Status:	Schedule with utility companies to assess what remains to be done regarding above-ground utilities on Main Street. The Town will seek funding from USDA to finance the project.

ACTION #4B

Educate residents on procedures to follow to route the utilities to their individual properties underground.

Category:	Structural Projects
Hazard:	Hurricane, Earthquake, Tornado
Objective(s) Addressed:	3.2
Background:	Underground utilities can minimize power and service disruption and also speed recovery efforts. Many residents and citizens are unaware that underground service is an option. Working with local utility providers, increasing the number of underground service customers by 10 percent could be achieved.
Priority:	Moderate
Funding Sources:	N/A
Responsibility Assigned to:	Local Utility Providers
Target Completion Date:	December 2015
Status:	Coordinate quarterly meetings with Building Official and utility providers to discuss this matter with citizens throughout the Town.

ACTION #6A

Participate in contractor hazard-resistant building techniques workshops.

Category:	Public Information & Awareness
Hazard:	All
Objective(s) Addressed:	2.1, 3.1, 11.1
Background:	Local building contractors are often unaware of or unwilling to embrace new techniques to achieve hazard resistance in building construction. Getting contractors together in a workshop format will allow them to hear about and see demonstrations of new ideas.
Priority:	Moderate
Funding Sources:	FEMA, SCEMD, Local Government
Responsibility Assigned to:	Building Official
Target Completion Date:	December 2015
Status:	Include this in the quarterly Town education meeting.

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3.7 Town of Pawleys Island Mitigation Actions

The mitigation actions proposed for the Town of Pawleys Island to undertake are listed on the pages that follow. Each has been designed to achieve the goals and objectives identified through this Hazard Mitigation Plan. Each proposed action includes:

1) the appropriate category for the mitigation technique;
2) the hazard it is designed to mitigate;
3) the objective(s) it is intended to help achieve;
4) some general background information;
5) the priority level for its implementation (high, moderate, or low);
6) potential funding sources, if applicable;
7) the agency/person assigned responsibility for carrying out the strategy; and
8) a target completion date.

Again, it is important to note that these mitigation actions are short-term, specific measures to be undertaken by the Town of Pawleys Island. It is expected this component of the plan will be the most dynamic; it will be used as the primary indicator to measure the plan's progress over time and will be routinely updated and/or revised through future planning efforts.

Individual jurisdictional action plans shall be reviewed and updated, if necessary, in October of each year. The Hazard Mitigation Plan shall be reviewed and updated every five (5) years in accordance with FEMA guidelines.

Prior to implementation of any prioritized mitigation actions, a cost-benefit review will be conducted in order to maximize the benefits of any proposed activity.

The following actions included in the 2014 plan were deleted during this update. The Action Number and reason for deletion follow:

Action #	Reason for Deletion
4B	Completed

The following actions were added in the 2014 plan:

1E	3C	4C	5C	6H
1F	3D			
1G				

ACTION #1A

Continue to enforce a "no-rise (in base flood elevation)" clause for the Town's Flood Damage Prevention Ordinance.

Category:	Prevention
Hazard:	Flood
Objective(s) Addressed:	10.1
Background:	The Town has joined many floodplain permitting systems, including those that meet National Flood Insurance Program standards, and will allow projects outside the floodway to increase base flood elevations by up to one (1) foot. While this may not represent a significant increase for just one (1) project, the cumulative impact of a number of projects in the same floodplain can be significant. By prohibiting any rise throughout the 100-year floodplain, a "no rise" clause ensures that the cumulative impact of multiple permitted projects will not cause flood elevations to rise to unacceptable levels.
Priority:	Low
Funding Sources:	N/A
Responsibility Assigned to:	Building Official
Target Completion Date:	Continuous
Status:	Town prohibits the use of fill material for any new construction.

ACTION #1B

Work with the County to continue to update the County's Geographic Information System (GIS) to ensure that Town-specific information is incorporated into the system as necessary, and to incorporate current cadastral (building/parcel) data for purposes of conducting more detailed hazard risk assessments and for tracking permitting/land use patterns.

Category:	Prevention
Hazard:	All
Objective(s) Addressed:	7.1, 8.1, 9.1
Background:	An enhanced GIS system will greatly improve the Town's technical capability to collect, manage, analyze and display spatially-referenced data. The Town uses the County GIS system and there have been several additions for Pawleys' properties to support the CRS program
Priority:	Moderate
Funding Sources:	Town and County
Responsibility Assigned to:	Mayor
Target Completion Date:	2017
Status:	Ongoing.

ACTION #1C

Continue to enforce the Town's Flood Damage Prevention Ordinance that includes <u>cumulative</u> substantial damage or improvement requirements.

Category:	Prevention
Hazard:	Flood
Objective(s) Addressed:	5.1, 10.1
Background:	Town Council recently amended the Flood Ordinance by counting improvement and repair projects cumulatively, so that buildings will be brought into compliance with flood protection standards earlier in their life cycle.
Priority:	Moderate
Funding Sources:	N/A
Responsibility Assigned to:	Building Official
Target Completion Date:	Continuous
Status:	The Town maintains permit history so when cumulative repairs or improvements equal 50% of the building value, the building must be brought up to current codes for floodplain development.

ACTION #1D

Continue to sponsor educational programs for design professionals, contractors, building code officials, insurance agents, etc. on regulations and codes.

Category:	Prevention
Hazard:	Hurricane, Earthquake, Tornado, Flood
Objective(s) Addressed:	3.1, 11.1
Background:	Building codes, floodplain regulations and other codes are subject to frequent review and modification. Providing information to key personnel in the development chain helps ensure that new requirements are included in the design of development.
Priority:	Moderate
Funding Sources:	Local Government, County
Responsibility Assigned to:	Building Official
Target Completion Date:	Continuous
Status:	Annual September Seminar by Robert Cox, Senior Building Inspector, Georgetown County.

ACTION #1E

Recommend adoption of building standards for single family residences to exceed Town's already stringent building code requirements for flood mitigation.

Category:	Prevention
Hazard:	Flood, Hurricane
Objective(s) Addressed:	5.1, 10.1
Background:	Minimize future flood damage; minimize future hurricane damage; protect the lives of our citizens from natural and man-made hazards.
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	Administrative, Building, Planning & Development
Target Completion Date:	Continuous
Status:	Town continues to adopt new building standards to minimize future flood and hurricane damage.

ACTION #1F

Participate in training workshops regarding flood mitigation and regulations. Educating staff regarding vulnerability to natural hazards and steps to reduce vulnerability; minimize future flood damage.

Category:	Prevention
Hazard:	Flood, Hurricane
Objective(s) Addressed:	
Background:	Educating employees & citizens regarding vulnerability to natural hazards and steps to reduce vulnerability; minimize future flood damage; minimize future earthquake damage; improve hazard resistance of infrastructure; minimize hurricane damage; preserve environmental resources.
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	Administration
Target Completion Date:	Continuous
Status:	Town routinely pays for its employees to attend training events in order to better prepare for future hazard events.

ACTION #1G

Continue prohibiting manufactured homes to be installed on the Island.

Category:	Prevention
Hazard:	Flood, Hurricane, Earthquake
Objective(s) Addressed:	10.1, 11.1, 11.2, 11.3, 11.4
Background:	Minimize future flood damage; minimize future earthquake damage; minimize future hurricane damage; protecting lives of citizens from natural and man-made hazards.
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	Administration, Building, Planning & Development
Target Completion Date:	Continuous
Status:	Town has ordinance that prohibits the installation of manufactured homes within Town limits.

ACTION #2A

Augment the enforcement of the Pawleys Island Building Code and related County ordinances by encouraging wind-resistant design techniques for new residential construction during the Town's permit process.

Category:	Property Protection
Hazard:	Hurricanes and Tropical Storms, Tornadoes
Objective(s) Addressed:	11.1
Background:	Although the State Building Code and local ordinances require certain building practices for wind loss reduction, experts agree that structures built to exceed high wind provisions have a much greater chance of surviving violent wind storms. Additional techniques include adding protection for windows (i.e., shutters), anchoring door frames with multiple hinges, stiffening garage doors with additional bracing, reinforcing masonry chimneys with vertical steel, and strengthening connections between walls and the roof with hurricane straps and ties.
Priority:	High
Funding Sources:	N/A
Responsibility Assigned to:	Building Official
Target Completion Date:	Continuous
Status:	Wind-resistant building techniques are promoted to building contractors and homebuyers by the Town for all new residential construction, to the maximum extent possible during the building permit process.

ACTION #2B

Continue to enforce the Flood Damage Prevention Ordinance for Pawleys Island to require that new construction and substantial improvements have finished floor elevations at least three (3) feet above the base flood elevation in "A" Zones and lowest horizontal supporting members at least three (3) feet above the base flood elevation in "V" Zones.

Category:	Property Protection
Hazard:	Flood
Objective(s) Addressed:	5.1, 10.1
Background:	FEMA encourages local governments to go beyond minimum requirements to provide extra protection for structures from flood hazards. Requiring structures to elevate an additional foot above the base flood elevation could reduce individual flood insurance premiums. The Town recently adopted such an amendment
Priority:	Low
Funding Sources:	N/A
Responsibility Assigned to:	Building Official
Target Completion Date:	Continuous
Status:	Town recently increased its freeboard requirement from one (1) foot to three (3) feet. Town continues to strictly enforce this ordinance.

ACTION #2C

Continue to enforce Article V of the Pawleys Island Flood Damage Prevention Ordinance to require pilings or columns to "extend vertically below a grade of sufficient depth and the zone of potential scour, and securely anchored to the subsoil strata".

Category:	Property Protection
Hazard:	Flood
Objective(s) Addressed:	5.1, 10.1
Background:	FEMA recommends that local ordinances include structural requirements that will withstand wave action in velocity zones. The Town recently adopted such an amendment.
Priority:	Low
Funding Sources:	N/A
Responsibility Assigned to:	Building Official
Target Completion Date:	Continuous
Status:	Building officials strictly enforce this for all new development.

ACTION #2D

Manage and maintain the drainage and outfalls keeping drain pipes and ditches clear and effective.

Category:	Property Protection
Hazard:	Flooding
Objective(s) Addressed:	1.1, 5.1
Background:	Adequate maintenance of outfall ditches is a critical need. The Town documents these activities as part of its participation in the NFIP/CRS. Drainage systems will only work properly if the downstream outfall ditches and pipes are maintained and are clear.
Priority:	High
Funding Sources:	SCDOT, Town
Responsibility Assigned to:	SCDOT, CRS Coordinator, Mayor
Target Completion Date:	Continuous, May and September review
Status:	Reviewed/cleaned out necessary ditches/pipes.

ACTION #3A

Renourish public beaches.

Category:	Natural Resource Protection, Property Protection
Hazard:	Storm Surge, Flooding
Objective(s) Addressed:	1.1
Background:	Sand renourishment is essential to maintaining the beach as the first line of defense from coastal storms and flooding. Corps of Engineers' project approved by Congress but not yet funded. State and Local funding of the local share is available for two (2) years. New target 2009-2010 depending on Congress. Cost is $8,300,000. 30,000 yards added to the beach as a result of the 2008 creek dredging project
Priority:	High
Funding Sources:	USACE, Local Government
Responsibility Assigned to:	Mayor
Target Completion Date:	2019
Status:	Re-applied for congressional funding in 2010. Building Town's financial reserve for beaches. Defending Georgetown County's groin permit for public parking area on south end.

ACTION #3B

Create new beachfront dunes through "Build A Dune" projects.

Category:	Natural Resource Protection
Hazard:	Hurricane, Flood
Objective(s) Addressed:	1.1, 3.2, 5.1
Background:	Sand dunes serve as the first line of defense from storm surge for coastal communities. Educating coastal residents about the natural methods of encouraging sand dune development will save money and increase the public's awareness concerning the value of sand dunes. The Town currently has a cost-sharing plan with residents to encourage sand fence installation.
Priority:	Moderate
Funding Sources:	OCRM, SCEMD, Local Government
Responsibility Assigned to:	Mayor
Target Completion Date:	Continuous
Status:	Based on guidance from the Permit Extension Joint Resolution of 2013 (H.3774), DHEC/ OCRM has determined the expiration date on our sand fencing permit to be 2022; matching funding for property owners is ongoing.

ACTION #3C

Continue enforcing the shore protection line ordinance, which was established to protect sand dunes and critical habitat areas (Article 6 of Unified Development Code).

Category:	Natural Resource Protection
Hazard:	Hurricane
Objective(s) Addressed:	1.1
Background:	Minimize future flood damage; reduce existing flood damage; preserve environmental resources; improve hazard resistance of infrastructure; minimize future hurricane damage.
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	Administration, Building, Planning & Development
Target Completion Date:	Continuous
Status:	Town continues to enforce its shore protection line which limits seaward construction beyond that of the OCRM critical lines.

ACTION #3D

Continue maintaining permanent open space.

Category:	Natural Resource Protection
Hazard:	Flood, Hurricane
Objective(s) Addressed:	1.1, 10.1, 10.2
Background:	Preserve environmental resources; promote long-term economic prosperity; encourage recreational activities; minimize future flood damages.
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	Administration, Planning & Development
Target Completion Date:	Continuous
Status:	Town constantly looking into acquiring additional property to designate as permanent open space.

ACTION #4A

Develop a schedule for replacing above-ground utilities underground where feasible, particularly along evacuation routes, major arteries, and highly congested areas.

Category:	Structural Projects
Hazard:	Hurricane, Earthquake, Tornado
Objective(s) Addressed:	2.2
Background:	Above-ground utilities are some of the most vulnerable structures and facilities that are impacted by high winds and/or earthquakes. There is a need to evaluate the possibilities to relocate these facilities underground in critical locations. The first project (South Causeway to Hazard Street) has been designed, and easements will be obtained this winter for construction in the fall of 2009.
Priority:	High
Funding Sources:	SCDOT, Local Government
Responsibility Assigned to:	Mayor
Target Completion Date:	2014
Status:	Construction to begin in 2014.

ACTION #4B

Educate residents on procedures to follow to route the utilities to their individual properties underground.

Category:	Structural Projects
Hazard:	Hurricane, Earthquake, Tornado
Objective(s) Addressed:	3.2
Background:	Underground utilities can minimize power and service disruption and also speed recovery efforts. Many residents and citizens are unaware that underground service is an option. Working with local utility providers, increasing the number of underground service customers by ten percent could be achieved.
Priority:	Moderate
Funding Sources:	N/A
Responsibility Assigned to:	Building Official
Target Completion Date:	Continuous
Status:	Completed.

ACTION #4C

Complete construction project to transition the Town's above-ground utility lines underground.

Category:	Structural Projects
Hazard:	Flood, Hurricane, Earthquake, Severe Storms, Winter Storm
Objective(s) Addressed:	2.2
Background:	This improvement will make the Town's power lines more disaster resistant and redundant.
Priority:	Moderate
Funding Sources:	Partnership between the Town & individual property owners
Responsibility Assigned to:	Administration
Target Completion Date:	2019
Status:	Construction scheduled to begin Fall of 2014

ACTION #5A

Periodically conduct inventory/survey for the Town's emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment, or required resources.

Category:	Emergency Services
Hazard:	All
Objective(s) Addressed:	9.1, 12.1
Background:	A survey should be completed in order to ensure the Town's current emergency services are adequate to protect public health and safety from anticipated hazard events. Any identified needs or shortfalls should become documented and result in specific recommendations to the Town Council for emergency service enhancements. Emergency plans have been established for storm notification and evacuation. All Town emergency plans are coordinated with the County and State Emergency services and Law Enforcement.
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	Chief of Police
Target Completion Date:	Ongoing
Status:	Town constantly revises its disaster preparedness plan and participates in County and State hazard exercises to assess its needs and shortfalls.

ACTION #5B

Continue to coordinate local emergency evacuation plans for the Town of Pawleys Island in coordination with the South Carolina Department of Transportation, South Carolina Emergency Management Division, and other appropriate agencies.

Category:	Emergency Services
Hazard:	Hurricanes and Tropical Storms
Objective(s) Addressed:	2.1, 12.1
Background:	The Town has prepared a plan for orderly evacuation and procedures for re-entry when emergencies are over.
Priority:	Low
Funding Sources:	N/A
Responsibility Assigned to:	EMD, in coordination with municipal representatives, Mayor
Target Completion Date:	Continuous
Status:	Town routinely reviews its disaster preparedness plan in coordination with SCDOT, SCEMD, and GCEMD.

ACTION #5C

Continue coordinating Emergency Operations Center activities in the event of a hazard event by participating in drills and offering and encouraging disaster preparedness among citizens.

Category:	Emergency Services
Hazard:	All
Objective(s) Addressed:	12.1
Background:	Protecting lives of citizens from natural and man-made hazards; establishing cooperative relationships between public, private and non-profit sectors to enhance response for hazard events; educating citizens regarding vulnerability to hazards and steps to reduce vulnerability; and preserve environmental resources.
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	Administration, Police, EMD
Target Completion Date:	Continuous
Status:	Town participates in County's annual hurricane exercise.

ACTION #6A

Advertise and promote the availability of flood insurance to Town property owners by direct mail at least twice a year.

Category:	Public Information and Awareness
Hazard:	Flood
Objective(s) Addressed:	3.1, 3.2, 4.2
Background:	Pawleys Island was covered by the National Flood Insurance Program on May 9, 1998, when Georgetown County entered the emergency program. Presently, there are 625 policies in effect, with a total coverage amount of over $124 million. Since 1978, there have been 103 claims paid for a total of $737,328. NFIP flood insurance policies protect property owners by offering affordable rates for protection of structures and contents.
Priority:	High
Funding Sources:	Local
Responsibility Assigned to:	CRS Coordinator, Mayor
Target Completion Date:	Continuous
Status:	Town sends brochure twice a year to all property owners educating them on their vulnerability to flooding and the importance of obtaining flood insurance.

ACTION #6B

Collect educational materials on individual and family preparedness/mitigation measures for property owners, and display at both the library and Town Hall.

Category:	Public Information & Awareness
Hazard:	All
Objective(s) Addressed:	2.1, 3.1, 3.2
Background:	FEMA, the South Carolina Emergency Management Division, the National Weather Service, and other agencies provide information brochures and pamphlets on property protection measures at no cost to local governments.
Priority:	High
Funding Sources:	FEMA
Responsibility Assigned to:	CRS Coordinator, Mayor
Target Completion Date:	Continuous
Status:	Town delivers set of required FEMA publications to Library twice a year. The publications aim to educate and prepare residents for potential hazard events.

ACTION #6C

Distribute educational flyers targeting NFIP policyholders on the Increased Costs of Compliance (ICC) coverage, to be disseminated following a flood event that results in substantial damage determinations by the Town.

Category:	Public Information and Awareness
Hazard:	Flood
Objective(s) Addressed:	5.1
Background:	Increased Cost of Compliance (ICC) under the NFIP provides for the payment of a claim to help pay for the cost to comply with State or community floodplain management laws or ordinances from a flood event in which a building has been declared substantially damaged. When an insured building is damaged by a flood and the State or community declares the building to be substantially damaged, ICC will help pay for the cost to elevate, floodproof, demolish or relocate the building up to $20,000. This coverage is in addition to the building coverage for the repair of actual physical damages from the flood.
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	CRS Coordinator, Mayor
Target Completion Date:	Continuous
Status:	Town sends out brochure twice a year educating property owners about public funds available to help bring their property into compliance.

ACTION #6D

On an annual basis, contact all owners of FEMA-identified repetitive loss properties and inform them of the assistance available through the federal Flood Mitigation Assistance (FMA) program, in addition to other flood protection measures.

Category:	Public Information & Awareness
Hazard:	Flood
Objective(s) Addressed:	5.1
Background:	Pawleys Island's listing of FEMA-identified repetitive loss properties is maintained and regularly updated by the Building Inspector. Each of these properties are targeted by FEMA and the State of South Carolina for Flood Mitigation Assistance (FMA) funding, which will fund up to 75% of a mitigation project to eliminate future flood risk (usually through elevation or acquisition or relocation). FMA funds are awarded on an annual basis by the South Carolina Emergency Management Division. Eligible property owners should be contacted every year to promote the availability of the FMA funding and to determine their level of interest in applying for the program.
Priority:	High
Funding Sources:	Local
Responsibility Assigned to:	CRS Coordinator, Mayor
Target Completion Date:	Ongoing
Status:	Ongoing contact with RL properties through outreach activities and updating database. Submitted applications for removal, received updated tentative list of RL properties pending final approval. Town contacts owners of repetitive loss properties on an annual basis to promote availability of Federal funding to mitigate future flood risk.

ACTION #6E

Participate with the County in contractor hazard-resistant building techniques workshops.

Category:	Public Information & Awareness
Hazard:	All
Objective(s) Addressed:	2.1, 3.1, 11.1
Background:	Local building contractors are often unaware of or unwilling to embrace new techniques to achieve hazard resistance in building construction. Getting contractors together in a workshop format will allow them to hear about and see demonstrations of new ideas.
Priority:	Moderate
Funding Sources:	County and Local Government
Responsibility Assigned to:	Building Official
Target Completion Date:	Continuous
Status:	Annual September Seminar by Robert Cox, Senior Building Inspector, Georgetown County.

ACTION #6F

Work with media outlets to provide hazard-related information to local citizens.

Category:	Public Information & Awareness
Hazard:	All
Objective(s) Addressed:	2.1, 3.1, 11.1
Background:	Local newspapers, radio stations and cable television providers are capable of reaching a vast audience in Georgetown County. Integrating a public education program concerning natural hazards through these outlets would provide beneficial exposure to all segments of the Town's population.
Priority:	Moderate
Funding Sources:	FEMA, SCEMD, Local Government
Responsibility Assigned to:	Mayor
Target Completion Date:	2017
Status:	Ongoing

ACTION #6G

Continue to participate in the NFIP/CRS program, and work towards improving the Town's current rating to a "5".

Category:	Public Information and Awareness
Hazard:	Flood
Objective(s) Addressed:	3.1, 3.2, 4.2, 5.1
Background:	The City has been an active participant in this program for several years. Each year, we increase our awareness activities. We mail letters to banks, insurance companies, realtors and property owners in flood zones. We have placed relevant information in the Library, and have provided links to FEMA, the SC Climatology Office, Georgetown County, and the NOAA on our webpage.
Priority:	High
Funding Sources:	Town, Budget $5000 per year
Responsibility Assigned to:	Building & Planning, CRS Coordinator, Mayor
Target Completion Date:	2017
Status:	Class 6 achieved in 2009; working toward Class 5.

ACTION #6H

Continue providing hazard-related literature/information to citizens at Town offices and posting signs and warnings when potential hazards are threatening or exists.

Category:	Public Information
Hazard:	All
Objective(s) Addressed:	3.1, 12.1
Background:	Protecting the lives of citizens from natural hazards; educating citizens regarding their vulnerability to natural hazards and steps to take to reduce vulnerability; minimize future flood damage; minimize future earthquake damage; minimize future tornado-related loss of life; minimize future hurricane damage;
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	Administration, Police, EMD
Target Completion Date:	Continuous
Status:	Town stocks display rack located at Town Hall that offers information on natural hazards and steps that can help reduce their vulnerability.

3.8 City of Georgetown Mitigation Actions

The mitigation actions proposed for the City of Georgetown to undertake are listed on the pages that follow. Each has been designed to achieve the goals and objectives identified through this Hazard Mitigation Plan. Each proposed action includes:

a. the appropriate category for the mitigation technique;
b. the hazard it is designed to mitigate;
c. the objective(s) it is intended to help achieve;
d. some general background information;
e. the priority level for its implementation (high, moderate or low);
f. potential funding sources, if applicable;
g. the agency/person assigned responsibility for carrying out the strategy; and
h. a target completion date.

Again, it is important to note that these mitigation actions are short-term, specific measures to be undertaken by the City. It is expected this component of the plan will be the most dynamic. It will be used as the primary indicator to measure the plan's progress over time, and will be routinely updated and/or revised through future planning efforts.

Individual jurisdictional action plans shall be reviewed and updated, if necessary, in October of each year. The Hazard Mitigation Plan shall be reviewed and updated every five (5) years in accordance with FEMA guidelines.

Prior to implementation of any prioritized mitigation actions, a cost-benefit review will be conducted in order to maximize the benefits of any proposed activity.

The following actions included in the 2014 plan were deleted during this update. The Action Number and reason for deletion follow:

Action #	Reason for Deletion
1D	Completed
3A	Completed
4A	Completed

The following actions were added in the 2014 plan:
3B
5H
6G

ACTION #1A

Investigate expansion of SCADA system to include distribution automation and remote operation of electrical breakers and key protective devices.

Category:	Prevention
Hazard:	All
Objective(s) Addressed:	2.2, 12.1
Background:	More sophisticated protection schemes could reduce the effects of events on the electric distribution system and reduce recovery time after the event. The City has implemented major upgrades to the substation equipment, which will allow better monitoring of the status of feeder exits and remote operation of feeder breakers. Any upgrades on the distribution system will be evaluated on a cost/benefit basis.
Priority:	Moderate
Funding Sources:	City of Georgetown Electric Utility Fund
Responsibility Assigned to:	Utility
Target Completion Date:	2017
Status:	In the past couple of years, the City of Georgetown Electric Utility Department has replaced old, oil-filled circuit breakers with new vacuum breakers in both the Georgetown and Maryville substations. These breakers, with new programmable controls, allow single-phase tripping to reduce the number of "blinks" seen by customers. The SCADA system has also been replaced, and remote operation of circuit breakers is now available at both substations. Future consideration will be given to distribution automation and remote operation of selected line switching devices. These options can be very expensive, and may not be cost effective given the relatively small size of our distribution system. Higher priority will be given to reviewing tap fusing and evaluating the coordination of all protective devices to minimize the effects of blinks and outages.

ACTION #1B

Continue to strictly enforce the City's Flood Damage Prevention and Control Ordinance.

Category:	Prevention
Hazard:	Flood
Objective(s) Addressed:	2.2, 5.1, 10.1
Background:	The City first adopted its Flood Damage Prevention and Control Ordinance in 1984. In 2000, the City amended the ordinance to require that variance requests be taken to Circuit Court as opposed to the Board of Zoning Appeals. Enforcement of this important ordinance is ongoing.
Priority:	Moderate
Funding Sources:	None
Responsibility Assigned to:	Housing and Community Development
Target Completion Date:	Continuous / Ongoing
Status:	The City of Georgetown Flood Damage Prevention Ordinance was amended on March 20, 2014. This was to correct errors and to model the State Flood Ordinance. Also, the variance procedure was changed in the event the City needs to help with the rebuilding of Historic Front Street, 700 block, which was destroyed by fire in late 2013. This ordinance must be enforced on a continuous basis because there is constant development and renovation taking place throughout the Special Flood Hazard Areas (SFHA). The City currently has 11 Repetitive Loss Properties, two (2) were mitigated by demolition a few years ago, and one (1) of those was rebuilt to code from our Flood Damage Prevention Ordinance and FEMA's regulations. We also continue to receive and thoroughly check Elevation Certificates on new and substantially renovated homes or businesses in the SFHA.

ACTION #1C

Continue to monitor special flood hazard areas for building improvements not permitted which may violate the City's flood ordinance as well as FEMA regulations.

Category:	Prevention
Hazard:	Flood
Objective(s) Addressed:	3.1, 3.2, 5.1
Background:	Despite our best efforts, occasionally property owners may enclose portions of structures, thus violating the requirements of the flood ordinance. We will continue to investigate these situations and remedy them.
Priority:	High
Funding Sources:	None
Responsibility Assigned to:	Housing and Community Development
Target Completion Date:	Continuous / Ongoing
Status:	To keep our good Credit Rating System (CRS) score, the City must continue to monitor the construction in the SFHA by surveying our area with a Building Official/Inspector and a Code Enforcement Officer on a daily basis. The City continues to monitor the construction in the SFHA by surveying our area with a Building Inspector and a Code Enforcement Officer on a weekly basis. They check job sites for compliance as well as for the proper permits. Stop works are issued and enforced for work without a City permit. We routinely educate the awareness of floods and other hazards to residents and property owners in the City of Georgetown with our annual outreach projects in the form of letters, newspapers, bills, home shows, and the City website. Plus, we hold an after-hours Flood Prevention and Mitigation Meeting for the public and local businesses to learn more about flood mitigation, insurance, and the National Insurance Flood Insurance Program (NFIP).

ACTION #1D

Strictly enforce 2009 building codes regarding high winds and wind borne debris when adopted by the State of South Carolina.

Category:	Prevention
Hazard:	Hurricane, Tornado, Tropical Storm
Objective(s) Addressed:	2.2, 11.1
Background:	The City has currently adopted the 2003 International Residential Building Codes and all other 2006 International Building Codes. We expect the State to adopt the 2006 codes in July 2009 with residential sections included so enforcement can begin.
Priority:	Moderate
Funding Sources:	None
Responsibility Assigned to:	Building & Planning
Target Completion Date:	Completed.
Status:	The City has adopted the 2012 International Residential Code as well as all other 2012 International Building Codes. We continue daily enforcement as well as education classes for certification and possible code changes. The Building Official/Inspector has obtained CBO and CFM certifications. All new critical facilities, as well as any other new structures, must be built by these adopted 2012 codes which include the high winds and wind borne debris.

ACTION #1F

Maintain the City's wastewater systems so overflows from flooding are minimized.

Category:	Prevention
Hazard:	Flooding, Hurricane
Objective(s) Addressed:	2.1, 2.2, 12.1
Background:	Maintenance of sanitary waste disposal systems is critical to the protection of public health after any natural disaster.
Priority:	High
Funding Sources:	City Water/Wastewater Utilities
Responsibility Assigned to:	Water Utilities
Target Completion Date:	Continuous / Ongoing
Status:	Continual maintenance was performed on the wastewater system this past year. SSOs were limited, and occurrence has greatly reduced from previous years. Preventative maintenance is performed twice per week on each wastewater lift station and routine line cleaning is ongoing throughout the year. Annual maintenance was performed at the wastewater treatment plant as usual. The City also has a comprehensive map of the wastewater collection system which helps identify trouble spots. In 2013, the City established a two-man crew dedicated to daily cleaning and monitoring of the wastewater collection system. No changes are recommended for this action item.

ACTION #1G

Continue to assess and coordinate with the critical facilities located within the City limits during major hazard events.

Category:	Prevention
Hazard:	All
Objective(s) Addressed:	2.1, 2.2, 6.1, 9.1, 12.1
Background:	The City of Georgetown Police Department has identified several facilities within the City that could be considered potentially critical at-risk facilities. These are: Georgetown Steel, Georgetown Memorial Hospital, Georgetown City Water & Sewer, and the largest on-going major attraction – Wal-Mart. The Police Department is in contact with the directors and managers of all these locations whenever an unusual occurrence happens or threatens. We maintain updated mobilization plans and contact numbers for all personnel including emergency contact personnel from local businesses.
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	Chief of Police
Target Completion Date:	Continuous / As natural disaster event happens
Status:	As major hazard events occur, the Police Department maintains regular contact with our core commercial and infrastructure components during a hazard event and throughout the year via our crime/business watch program. The department's ongoing crime/business watch program was new last year, and it helps us with this coordination between major/critical businesses like the Steel Mill, International Paper Mill, and Wal-Mart. Plus the Police Department itself is a vital/critical facility because their building contains our Emergency Operations Center and E-911 which helps ensure the public's health and safety.

ACTION #1H

Remove debris from the drainage system generated by flooding events.

Category:	Prevention
Hazard:	Flood
Objective(s) Addressed:	1.2, 1.12
Background:	Post-event cleanup and hauling of debris. Proper disposal of this material. It is essential that debris be removed from the drainage system so the system will work properly during subsequent events.
Priority:	Moderate
Funding Sources:	Local government
Responsibility Assigned to:	Water Utilities
Target Completion Date:	Continuous / Ongoing
Status:	Every day small debris can gather to clog up the drainage system generated by a flood, so ongoing removal of debris is critical. Debris was consistently removed from the drainage system after rain events in the City of Georgetown during the past year. Because of the excessive tree cover within the City, leaves in particular can clog catch basin tops and cause damaging flooding. City stormwater crews clear the system the best they can after each rain event and maintenance records are recorded along with the outfall ditch maintenance. In 2013, the City established a two-man crew dedicated to daily cleaning and monitoring of the wastewater collection system. There are no changes to this action item at this time.

ACTION #2A

Continue the inspection and maintenance of tree clearance around overhead power lines.

Category:	Property Protection
Hazard:	Hurricane, Tornado, Ice Storm
Objective(s) Addressed:	2.2
Background:	The City's Electric Department attempts to maintain adequate clearance around power lines within the City's jurisdiction. Every few years, the City brings in a contractor crew to conduct a full sweep of the City to ensure proper line clearances are maintained. This program must be continuous to ensure clearance is maintained.
Priority:	High
Funding Sources:	Electric Utility Enterprise fund
Responsibility Assigned to:	Electric Utility Manager
Target Completion Date:	Continuous / Ongoing
Status:	The City of Georgetown Electric Utility Department has a tree crew consisting of a supervisor and three tree trimmers that is charged with maintaining clearance around overhead power lines, and regularly inspects clearances and responds to customer inquiries. This crew is also charged with maintaining all public trees, and must deal with trees that become liabilities to the City, regardless of whether power line clearance is an issue. With the density of mature live oaks in Georgetown, this is a daunting task which prevents the crew from being able to devote its full attention to power line clearance. Every few years, an outside contractor is brought in to assist the City's tree crew in ensuring line clearances are adequate. The City had a contractor on-site during the Fall and Winter of 2013/2014. Their efforts were devoted entirely to electric line clearance.

ACTION #2B

Review and update City's stormwater ordinance to ensure property and/or roadways are protected from flooding or drainage impacts.

Category:	Property Protection
Hazard:	Flooding
Objective(s) Addressed:	1.1, 10.1
Background:	The City of Georgetown established a stormwater utility by ordinance on 4/1/93. A City drainage ordinance was also established to address stormwater issues associated with construction activities. Updating this ordinance to address stormwater management issues for tracts smaller than one (1) acre will go far in addressing drainage problems.
Priority:	High
Funding Sources:	Stormwater fee, local government
Responsibility Assigned to:	Water Utilities Department
Target Completion Date:	2015
Status:	The City hired a consultant to do a thorough review of the Stormwater Ordinance in 2013. This review should be complete by the end of next year and any recommended changes should be adopted by City Council. The main purpose for the review of the Stormwater Ordinance was to evaluate the stormwater rate the City is charging its customers, but we also wanted to evaluate whether the structure of the Ordinance should be changed to provide better property protection from flooding events. We do feel that the Ordinance should discuss in more detail the development in floodplains to make sure lives and property are not at risk for future flood events.

ACTION #2C

Maintain the City's potable water systems so water is available after hazard events.

Category:	Property Protection
Hazard:	All
Objective(s) Addressed:	2.1, 2.2, 12.1
Background:	Maintenance of water supply and distribution is critical after natural disasters.
Priority:	High
Funding Sources:	Water Utility
Responsibility Assigned to:	Water Utilities
Target Completion Date:	Continuous/Ongoing
Status:	The City has continuously maintained the potable water system. All water valves are exercised every 3 years, and the distribution system is completely flushed annually. Annual maintenance is also performed at the water treatment plant. Maintenance at the plant involves the chemical feed systems and all moving parts (gears, pumps, motors, etc.). No changes are recommended for this action item.

ACTION #2E

Reduce the potential for property damage from floating and flying debris.

Category:	Property Protection
Hazard:	Hurricane, Flood
Objective(s) Addressed:	1.2, 1.4
Background:	All roll-out carts and commercial garbage dumpsters will be emptied prior to a weather event.
Priority:	Moderate
Funding Sources:	Local Government
Responsibility Assigned to:	Sanitation Department
Target Completion Date:	Continuous / As natural disaster event happens
Status:	The City's Sanitation Department has revised its plan for action both before and after a weather/ flood event. This includes emptying all dumpsters and roll-outs, if adequate time is available, prior to an event. The previous year had no events which required implementation of the plan. After a review of Sanitation Department objectives, no revision or change in the current plan is recommended.

ACTION #2F

Maintain City outfall ditches adequately so drainage systems function properly.

Category:	Property Protection
Hazard:	Flooding
Objective(s) Addressed:	1.1, 5.1
Background:	Adequate maintenance of outfall ditches is a critical need. The City documents these activities as part of its participation in the NFIP/CRS. Drainage systems will only work properly if the downstream outfall ditches are clear.
Priority:	High
Funding Sources:	City
Responsibility Assigned to:	Water Utilities
Target Completion Date:	Continuous / Ongoing
Status:	The City continued its program of maintaining outfall ditches this past year as always. Maintenance logs have been provided through July 2014 (Sec 504). Staff is updating the logs continuously to include maintenance through each month. Back in 2013, the City established a two-man crew dedicated to daily cleaning and monitoring of the wastewater collection system. None of our outfall ditches are anywhere near our Repetitive Loss properties so it should affect them in any way. No changes are recommended for the action item.

ACTION #2G

Investigate the feasibility of providing adequate facilities for the Fire Department in a non-flood prone location.

Category:	Property Protection
Hazard:	Hurricanes, Tropical Storms, Earthquakes
Objective(s) Addressed:	2.1, 2.2, 12.1
Background:	Current facilities for the Fire Department are not adequate for such disasters. Fire Station #1 is susceptible to flooding. Fire Station #2 is leaking and has structural cracks. A feasibility study for relocating and/or rebuilding these facilities should be undertaken and issues addressed that would assure that this vital service would remain available to the public.
Priority:	High
Funding Sources:	Local FEMA
Responsibility Assigned to:	Fire Department, Administration, EMD, Grant Sources
Target Completion Date:	2015
Status:	Station #1 was renovated in 2005 but does still reside in the AE9 zone of the SFHA. Its location is vital to the core of the City for adequate response time to emergencies for the health and safety of residents or visitors. Completed Hwy. 17 drainage project should help. Preliminary plans are in place for a new fire substation facility in the Maryville area at a recently purchased Municipal Complex that the City is undertaking. It will be located outside the 500-year floodplain. Use of available Hazard Mitigation Grant Programs (HMGP) should be used in completing this project. Projected to begin construction in FY 2014.

ACTION #3A

Prevent additional pollutants from stormwater runoff entering Sampit River.

Category:	Natural Resources
Hazard:	Flooding
Objective(s) Addressed:	1.1
Background:	The City of Georgetown is installing approximately 15 oil/gas separator catch basins in its current City Hall drainage basin project. These catch basins collect gas/oil runoff products and will be maintained by the City's Stormwater Staff. Cost is $400,000.00
Priority:	High
Funding Sources:	City, DOT, Federal Highway Administration, Department of Commerce, City Stormwater Fees
Responsibility Assigned to:	Water Utilities
Target Completion Date:	Completed
Status:	The oil/gas separators or BMPs have been ordered by the City of Georgetown, and construction has begun on the U.S. Highway 17 Drainage Project. Most all the stormwater that enters the Sampit River will run through the new pipes of this drainage project. Plans are to have the BMPs fully operational by end of 2012. This should reduce additional pollutants from entering the Sampit River and help the City achieve its objective in minimizing the amount of oil/gas that gets to the River.

ACTION #4A

Complete construction of the U.S. Highway 17 Drainage Project to facilitate property protection and hurricane evacuations.

Category:	Structural Projects
Hazard:	Flood
Objective(s) Addressed:	2.2, 5.1, 12.1
Background:	The City is in the design phase for a $20 million drainage project in the U.S. Highway 17 area. This is a major traffic artery and is often blocked by flooding. There have been repetitive losses to several properties in this area including critical facilities, e.g., the City's main fire station and City Hall, as well as the main sewer pump station. This project will prevent property damage and facilitate use of an established hurricane evacuation route. Further properties may need acquisition in order to facilitate the drainage project. The City has completed construction on the outfall ditch that flows through the Steel Mill as Phase I of the construction project.
Priority:	High
Funding Sources:	SCDOT, Federal Highway Admin., SC Dept. of Commerce, City of Georgetown, City Stormwater Fund
Responsibility Assigned to:	SCDOT and City of Georgetown
Target Completion Date:	Early 2013
Status:	Completed

ACTION #5A

Continue oversight and funding of the City's fleet and equipment/supplies to ensure emergency services pre- and post-hazard.

Category:	Emergency Services
Hazard:	All
Objective(s) Addressed:	12.1
Background:	The City's fleet is critical during any event. We renew vendor agreements for continuous supplies prior to events and ensure departmental supplies for all departments are maintained. The City maintains a "restricted" fund of $1 million for emergency use in disaster situations.
Priority:	High
Funding Sources:	City
Responsibility Assigned to:	City Administrator
Target Completion Date:	Continuous / Ongoing
Status:	The City continues to monitor elements such as emergency power generation at its critical facilities. The City has continued an ongoing deal with Nash Oil to supply gas during emergency events. All departments are funded in the City's budget for emergency supplies in preparation for emergency events. We also continue to maintain a "restricted" fund of $1 million for an emergency disaster situation. This is budgeted and controlled by the City Administrator.

ACTION #5B

Remove debris generated from storms or tornados in a timely, efficient manner.

Category:	Emergency Services
Hazard:	All except dam failure
Objective(s) Addressed:	1.2, 1.4, 1.12
Background:	Post-event cleanup and hauling of debris. Proper disposal of this material. The City has signed a contract with International Paper to use a site located within the City to temporarily store debris which will later be transferred to the County landfill.
Priority:	Moderate
Funding Sources:	City
Responsibility Assigned to:	Street Department
Target Completion Date:	Continuous / As natural disaster event happens
Status:	The City of Georgetown Public Works Department has reviewed its action plan for post-incident/natural hazard work. No major storm or flood event occurred the previous year. Implementation of objectives after a weather or flood events has not changed. The Public Works Department has no revised recommendations for the coming season. The Georgetown County Public Works Department will assist the City Public Works Department with debris removal after a natural disaster event.

ACTION #5C

Maintain the City of Georgetown's Internet Protocol (IP) Telephony integration with Georgetown County.

Category:	Emergency Services
Hazard:	All
Objective(s) Addressed:	2.2
Background:	Maintain a connection between the City of Georgetown and Georgetown County's IP Telephony networks. This allows the City and County communication within their own network thereby reducing the usage of the PRI or public telephone network. This will provide the citizens with more available phone lines to contact the City or County. The City and County utilize the same equipment which provides for quicker setup of joint emergency operations.
Priority:	High
Funding Sources:	Local Government
Responsibility Assigned to:	Information Technology Director
Target Completion Date:	Continuous / Ongoing
Status:	The IP Telephony integration with Georgetown County's IP system is still a functioning entity. We initiate this action item as a continuous process, and Council just voted to upgrade the same system for improved communication. We use the same CISCO IP phones as the County so we can communicate in a more efficient manner. Of course, this system is hooked up to all vital/critical facilities in the City to maintain the upmost communication with Fire, Police, EMS, etc. The system is still functioning well. We are upgrading to newer equipment (server) and software version in 2014. We will be upgrading the backend VoIP server, but will not affect the current setup. The upgrade should be completed by the end of August.

ACTION #5D

Maintain a generator and UPS backup system for the City of Georgetown's IP Telephony and data network.

Category:	Emergency Services
Hazard:	All Hazards
Objective(s) Addressed:	2.2, 12.1
Background:	Provide routine maintenance for the generator and UPS backup system for the City of Georgetown's IP Telephony and data network which will enable the system to remain operational during and after a disaster.
Priority:	High
Funding Sources:	Local Government
Responsibility Assigned to:	Information Technology Director
Target Completion Date:	Continuous / Ongoing
Status:	The generators at City Hall and the Electric Department are constantly maintained by the City Electric Department and are checked monthly for any maintenance needed. The other generators at the Fire, Police, and Water Utilities Department are checked by a certified group via a monthly maintenance contract. The backup system for the City of Georgetown's IP Telephony and data network is maintained by the Network Administrator. The network is located in a central room at City Hall, but we also have a backup system at the Police Department on Highmarket Street. There is a recovery center out on the edge of Georgetown County away from all flood possibilities just in case of total devastation.

ACTION #5E

Complete recommendations from review of emergency service functions to ensure adequate resources, equipment and personnel are available to respond to the needs of the public during an event.

Category:	Emergency Services
Hazard:	All
Objective(s) Addressed:	9.1, 12.1
Background:	A survey was conducted to identify any shortfalls in personnel, equipment, or resources that would hinder adequate response to any hazardous event. These items were documented, and recommendations were forwarded to the City Administrator for future enhancements. Fire Station 1 was completely restored in 2005, and Station 2 is proposed for replacement. Police and EMD have a new facility. Police facility was relocated out of the flood zone in 2003 and the EMD just did an addition to this facility in 2013.
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	Fire, Police, EMD
Target Completion Date:	2016
Status:	The Fire stations are set up in the City so as to provide an adequate response for the health and safety of the citizens in the case of an emergency/disaster. Preliminary plans are in place to construct a new fire substation facility on the recently purchased Maryville Municipal Complex property at 2928 South Fraser Street FY 2014/2015. Projected to begin construction in FY 2014.

ACTION #5G

Maintain sufficient power to critical emergency facilities during a hurricane.

Category:	Emergency Services
Hazard:	Hurricane
Objective(s) Addressed:	2.1, 2.2, 12.1
Background:	The City of Georgetown Law Enforcement & County Emergency/911 Departments have an emergency generator that provides full power for all electrical needs including heat/air and hot water for the Police Department, Municipal Court, and the County Emergency Operations Center. This facility was relocated from the flood plain to higher ground and serves as the EOC for local government, Emergency Services, and City Law Enforcement. The generator is tested weekly for proper running service.
Priority:	High
Funding Sources:	Local
Responsibility Assigned to:	Chief of Police
Target Completion Date:	Continuous / Ongoing
Status:	We have done significant repairs and maintenance this year to continually maintain a dependable backup power supply. The Police department has two generators, one for EMD/EOC and one for Police. The two departments take care of the ongoing maintenance for their own separate generators. They ensure that these valuable pieces of equipment are compliant with all standards. Continued research into the availability of Hazard Mitigation Grant Programs (HMGP) to fund this equipment is ongoing.

ACTION #6A

Continue to review and update the City's Drought Ordinance when needed.

Category:	Public Information and Awareness
Hazard:	Drought
Objective(s) Addressed:	3.1
Background:	The City has a Drought Ordinance which specifies Water Utility Department and public response during periods of drought. The plan was revised in 2003, and must be reviewed and updated annually to address the changing water supply and consumption needs of City and County residents. The City maintains constant contact with affected parts and upstream regulators. The City Hall continues to use available sources to notify citizens of the drought status.
Priority:	Moderate
Funding Sources:	City Water Utility
Responsibility Assigned to:	Water Utilities
Target Completion Date:	Ongoing
Status:	The Drought Ordinance did not have to be implemented this past year because the water levels at our intake structures in the Pee Dee River never dropped to the level needed to implement the Ordinance. The Drought Ordinance is up-to-date and, no changes are recommended at this time for this action item.

ACTION #6B

Continue to maintain a website for emergency information and public awareness.

Category:	Public Information & Awareness
Hazard:	All Hazards
Objective(s) Addressed:	2.2
Background:	Provide offsite hosting of a website to ensure availability of emergency information and public awareness in the event of an emergency. The City currently provides weather data through its link to the Fire Department.
Priority:	Moderate
Funding Sources:	Local Government
Responsibility Assigned to:	Information Technology Director
Target Completion Date:	Continuous / Ongoing
Status:	Being a part of the NFIP/CRS, one of the major public awareness outreach projects we do is our Emergency and Flood Information web pages on the City's website. With help from the Network Administrator, the CRS Coordinator maintains and updates the City's website with all types of different informative brochures and documents both current and historical. The links to the Fire Department pages also give accurate weather data in real time. This Information was added to our City's website, but improvements to the web pages/data and a consistent update have helped many residents get quick and easy emergency information. Also, City website is now being hosted offsite in the "Cloud" for ongoing backup protection.

ACTION #6C

Continue to participate in the NFIP/CRS program and work towards improving the City's current rating of "8".

Category:	Public Information and Awareness
Hazard:	Flood
Objective(s) Addressed:	3.1, 3.2, 4.2, 5.1
Background:	The City has been an active participant in this program for several years. Each year we increase our awareness activities. We mail letters to banks, insurance companies, realtors and property owners in flood zones. We have placed relevant information in the Library, and have provided links to FEMA, the SC Climatology Office, and the NOAA on our webpage.
Priority:	High
Funding Sources:	None
Responsibility Assigned to:	Building & Planning
Target Completion Date:	Continuous / Ongoing
Status:	The City has participated in the National Flood Insurance Program & Credit Rating System for over a decade now. We continue to follow the newest CRS Coordinator's Manual in increasing the awareness activities to gain points for informing the public both inside and outside the Special Flood Hazard Area (SFHA) on the risk and mitigation of flooding. We do this in a number of ways, including but not limited to: outreach projects to citizens and banking/real estate/ insurance agencies; website pages with information and links to flood preventative ideas and organizations; and on-site visits to homes and businesses. Flood insurance is also addressed to let every property owner within the City limits know that they can get flood insurance since the City is part of the NFIP. Calls, emails, and walk-ins asking about their location to the SFHA and what they can do about getting insurance has definitely increased in the past years (Sec 320). The outreach projects seem to be doing their job informing the public.

	The Building Official/Inspector and the GIS/ Planner have received a Certified Floodplain Manager (CFM) certificate. We continue to enforce the regulations of our Flood Ordinance as well as the NFIP. We continue to receive the continued education credits (CEC's) required to keep our CFMs. We are participating in the CRS program and working towards improving our City's current rating of seven (7) officially obtained in May of 2014.

ACTION #6D

Continue to provide up-to-date weather information to City of Georgetown residents and City of Georgetown Departments.

Category:	Public Information
Hazard:	Hurricanes, Tropical Storms, Tornados, Wind, Hail
Objective(s) Addressed:	31., 12.1
Background:	The Fire Department has installed a weather center at Fire Station #1 and #2, and subscribes to live radar and weather information that is used to prepare and respond to natural hazards. Utilization of these products ensures current and accurate information is available to decision makers and the public at www.georgetowncityfire.org. Preparation steps and immediate mitigation effects can be achieved much more efficiently and more effectively through the use of all of this equipment.
Priority:	High
Funding Sources:	Local
Responsibility Assigned to:	Fire, Administration
Target Completion Date:	Continuous / Ongoing
Status:	The Fire Department continues in its role as a public information release point for public information regarding Hurricanes, Tropical Systems, Tornados, High Winds, Hail, and other Natural Disasters. We continue to use public and private broadcast media: the City's FM broadcast radio station, internet access sites, and social media points to disseminate public information and up-to-date weather to residents and City of Georgetown Departments. The broadcasts are updated regularly and run constantly to ensure that the current emergency services are adequate to protect public health and safety. The radio station has been updated, and is now streaming via the Internet. Facebook and websites for the Fire, Police, and City are also used.

ACTION #6E

Use City of Georgetown owned radio station, WGED 105.7, to inform and update residents of conditions and current information during a natural disaster event.

Category:	Public Information & Awareness
Hazard:	All
Objective(s) Addressed:	3.1
Background:	The City-owned FM radio station is capable of getting out up-to-date information to all City residents 24 hours a day. This station, WGED 105.7, is used during all immediate threats and during the recovery after the event. Residents can tune in to find information about evacuation routes, City contracts, services, storm potential, and actions to take.
Priority:	High
Funding Sources:	Local
Responsibility Assigned to:	Fire, Administration
Target Completion Date:	Continuous / Ongoing
Status:	In addition to our weather dissemination in 6D, we continue to update hazardous weather events in real time via the City radio station, social media, and the Fire, Police, and City of Georgetown's official website.

ACTION #6F

Educate City residents about the possibility and probability that emergency services will not be available to them if they wait too long to decide to evacuate.

Category:	Public Information
Hazard:	Floods, Hurricanes, Tropical Storms
Objective(s) Addressed:	3.1, 3.2, 12.1
Background:	Many residents rely on the Fire Department to evacuate them from their residence after the flooding, hurricane, etc. has arrived. Educating them about their survival and the fact that the Fire Department may not be able to respond to them at such a late time will be beneficial. Utilize FM radio station to educate about risks. Additionally, if these residents are removed, a safe location to deliver will have to be identified. Continue to work with the local EOC and ARC officials about shelters and locations. Distribute evacuation information through utility billings for the City.
Priority:	High
Funding Sources:	Local
Responsibility Assigned to:	Fire, Administration, EMD
Target Completion Date:	Continuous/Ongoing
Status:	This is done through the use of WGEO 105.7, the City's emergency operations radio station as well as our social media outlets. Continuous broadcasts when an evacuation is underway helps notify people when and where to evacuate. This would include routes to take and shelters that are open. Efforts to stay in contact with the Emergency Operations Center (EOC) for updates during a disaster are also highly prioritized. This is the best way for the emergency services to know what is going on and transfer this information out to the community. The radio station has been updated, and is now streaming via the Internet. Facebook and websites for the Fire, Police, and City are also used.

ACTION #6G

Continue to work with the owners of the buildings on Front Street that were destroyed by fire, and make sure the rebuilding process is completed in compliance with our Flood Damage and Prevention Ordinance.

Category:	Prevention, Public Information and Awareness, and Property Protection
Hazard:	Flooding
Objective(s) Addressed:	3.2
Background:	On September 25, 2013, the south side of the 700 block of Front Street caught fire destroying seven (7) buildings on eight (8) parcels. These once historic buildings were substantially damaged so they lose all historical significance which would exempt them from some parts of the City of Georgetown Flood Damage and Prevention Ordinance.
Priority:	Moderate
Funding Sources:	None
Responsibility Assigned to:	Housing & Community Development
Target Completion Date:	2015
Status:	Cleanup of the asbestos-laced building rubble is almost complete. The City is working with the building owners as well as Waccamaw Regional COG and Georgetown County to develop a plan for rebuilding. Because of the lowest grade elevation and this area being within the Special Flood Hazard Area (AE9), the buildings must be elevated at or above Base Flood Elevation (BFE) to meet current regulations. This may include a variance to the additional two feet freeboard that is part of the City flood ordinance. Floodproofing the building up to one foot above BFE is the only other option for flood mitigation, but it is extremely expensive and may take away from the historic building look that they want.

Section 4: Resolutions

RESOLUTION No. 2014-14

CALLING FOR THE ADOPTION OF THE GEORGETOWN COUNTY HAZARD MITIGATION PLAN BY GEORGETOWN COUNTY COUNCIL

WHEREAS, the County of Georgetown has experienced the effects of natural hazard events; and

WHEREAS, the Georgetown County Hazard Mitigation Planning Committee has prepared a recommended Georgetown County Hazard Mitigation Plan; and

WHEREAS, the recommended Georgetown County Hazard Mitigation Plan has been widely circulated for review by residents/business organizations/professional organizations of the unincorporated and incorporated areas of Georgetown County, state, federal, regional and local government agencies and has been supported by those reviewers; and

NOW THEREFORE Be It Resolved:

a. The Georgetown County Hazard Mitigation Plan is hereby adopted as an official plan of the County of Georgetown, and

b. The Georgetown County Hazard Mitigation Planning Committee is recognized as a continuing entity charged with reviewing, maintaining and periodically reporting on the progress towards and revisions to the plan to the Georgetown County Council.

This Resolution becomes effective as of the 9th day of September, 2014.

Johnny Morant, Chairman
Georgetown County Council

ATTEST:

Theresa E. Floyd, Clerk
Georgetown County Council

Resolutions by the City of Georgetown, Town of Andrews, and Town of Pawleys will be included under separate cover once approved.

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APPENDIX A: GEORGETOWN COUNTY HAZARD ASSESSMENT

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HISTORY AND METHODOLOGY OF HAZARD ASSESSMENTS GEORGETOWN COUNTY, SOUTH CAROLINA

The Hazards Research Laboratory of the Department of Geography at the University of South Carolina prepared and published "A GIS-Based Hazards Assessment For Georgetown County, South Carolina" in November, 1997. This was the first County-wide assessment prepared by USC following the methodology detailed in the "Handbook for Conducting a GIS-Based Hazards Assessment at the County Level", also published by USC. The USC handbook is the model for all County-level hazard assessments in South Carolina.

In 2004, the 1997 assessment was updated by the Waccamaw Regional Council of Governments and was incorporated into the *Georgetown County Hazard Mitigation Plan*, 2004. Much of the data in this iteration of the updated assessment was gathered from the *SC Hazard Mitigation Plan*2 and includes 2010 Census data and an inventory of events post-2004. For the majority of the analyses, and where it was available, data was collected through 2011. Sections that discuss 'recent' events use the time frame of 2009 through 2011 although some data as available through 2013 through NCDC which is cited as required. Data concerning social vulnerability was gathered from the U.S. Army Corps of Engineers and Dewberry *Vulnerability Analysis for South Carolina Hurricane Events, Northern Conglomerate Counties-Final Report, January 2012.*

Storm events, mapping, supporting documentation and analysis have been updated based on the latest available data sources.

A GIS-BASED ALL-HAZARDS ASSESSMENT FOR GEORGETOWN COUNTY, SOUTH CAROLINA

Introduction

Purpose for Assessment

The South Carolina Hazard Mitigation Plan is the result of the systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards present in the State of South Carolina and includes the actions needed to minimize future vulnerability to those hazards. In order to evaluate the success of mitigation and preparedness programs an assessment of existing or baseline conditions is required. This document intends to assess, illustrate and propose proper mitigation actions for the most vulnerable areas in Georgetown County, South Carolina.

This updated hazards assessment for Georgetown County, South Carolina follows a methodology which utilizes a geographic information system. This methodology is detailed in the *Handbook for Conducting a GIS-Based Hazards Assessment at the County Level*. It contains four (4) primary elements: hazards identification and occurrence, identification of vulnerable populations, the integration of these two (2) elements in some geographic or spatial context, and the identification of the social and infrastructure context. The primary goal of this assessment is to identify those areas most physically and socially vulnerable to hazards. Identification of the most hazard-susceptible locations will allow citizens, county leaders, and policy-makers to make more informed decisions leading to more effective mitigation strategies.

Vulnerability is the susceptibility of resources to negative impacts from hazard events. Vulnerability and risk assessments attempt to answer the fundamental question that faces the hazard mitigating process: How can we better handle and/or prevent hazard events from occurring in Georgetown County. Risk assessment then becomes the process by which we measure the potential loss of life, economic investments, and property damage as a result of hazards. By assessing the vulnerability of land, people, buildings, and infrastructure to natural hazards, risk assessment provides the foundation for the rest of the mitigation process.

Assessments of vulnerability usually involves the determination of the occurrence probability of a given hazard event, the delineation of areas likely to be adversely affected, and the quantification of the value of property likely to be damaged or the number of lives lost within those areas. Assessment results are used for assisting in making risk-based decisions in order to reduce damages to lives, property, and the economy from future disasters (FEMA, 2009).

Inherent in this typical vulnerability assessment method is the assumption that vulnerability is primarily a function of proximity to the hazard and its effects. However, research suggests that the causal structure of vulnerability may be the underlying social conditions which are often remote from the initiating hazard event. A social vulnerability analysis helps to identify areas to best suited for outreach and mitigation efforts. The primary purpose for defining these special consideration areas in a vulnerability assessment is to identify locations for targeting effective hazard mitigation strategies. The term social vulnerability defines the susceptibility of social groups to potential losses from hazard events. By using geographic location as the unit of analysis for both social and biophysical vulnerability, one can study how they interact and intersect to create the vulnerability of a given place.

A key component of any vulnerability assessment is the acquisition of systematic baseline data, particularly at the local level. These data provide inventories of hazard areas and vulnerable populations, information that is essential for pre-impact mitigation planning, damage assessments, and post-disaster response. One goal of this assessment was to create a method of identifying the risk posed by multiple hazards for the purpose of promoting mitigation. Utilizing a geographic information system allows for detailed analysis of hazard events which will help in implementing more efficient mitigation planning strategies.

Boundaries of Study Area

Georgetown County is located on the coastal plain of South Carolina. It is bounded on the east entirely by the Atlantic Ocean and on the north and south primarily by the Great Pee Dee and Santee Rivers, respectively. Its western political edge follows SC-41 (See Figure 1). This hazards assessment considers natural hazards originating within these boundaries, and those that derive from outside the study area but also threaten the property and population of the county.

Characteristics of Physical Environment

Georgetown County occupies part of the outer coastal plain and coastal zone of South Carolina. The Sampit, Black, Pee Dee, and Waccamaw Rivers flow into the Winyah Bay. The Santee River flows at the southern edge of the county. The annual precipitation of the county is between 48 and 50 inches of rain. The northwestern edge of the county experiences 240+ growing days, while the Santee river area has 260+. The average temp in July is 81.2^{0}F; in January it is 46.8^{0}F. The vegetation primarily consists of open coastal pinelands with pines, oaks, gums, and hickory. Grasslands are scattered throughout while the coastal zone contains salt marshes, maritime forests and swamps. This region is relatively flat without significant variation in topography. The county's dominant physical feature is the Waccamaw Neck, separated from the county proper by Winyah Bay and the Black and Pee Dee Rivers.

Hazard History of Study Area

Historically, Georgetown County has been exposed to several recurring types of natural hazards. Primarily meteorological in nature, these include hurricanes, tornadoes, hail, floods, winter storms, and severe thunderstorm and wind events. In terms of lives lost, Georgetown County has been relatively fortunate. To date there have been 54 deaths attributed to natural hazards, 41 prior to 1900 and six in one tornado in 1974. Additionally, in 1995 two lives were lost due to lightning and severe thunderstorm winds. Three lives were taken as a result of strong rip currents in 1997, 2004 and 2007. One small stream flood claimed a life in 2001 and heavy rain took another life in 2008. There have also been 18 injuries directly caused by natural hazards. Injuries to date include one in 2000 due to flash flooding; eight due to lightning in 1997, 1998, 2001, and 2008; eight due to a tornado in 2002; and one due to thunderstorm wind in 2011[17].

The potential for loss has changed over time given the economic and social changes in the county. While rice crop losses were once prominent, a greater threat exists now to forested land in terms of economic losses. Three fourths of the county's total land area is forested with

substantial acreage used by the forest and paper industry. Figure B-4 (Appendix B) denotes commercial timber holdings in Georgetown County (Waccamaw, 2009). Additionally, the growing tourist trade and its accompanying infrastructure, both commercial and residential, along the Waccamaw Neck places more property and people in areas vulnerable to a host of hazards. Significant food crop losses have been replaced by a potential for damage to motels, rental homes, and support infrastructure as a result of changes in Georgetown County land-use.

The majority of the damage caused by natural hazards near the turn of the century was due to crop loss from storm events. In the 1840s, Georgetown produced almost half of the rice grown in the United States. Although the amount of rice grown in Georgetown County decreased drastically after the Civil War, rice was the primary agricultural crop grown until the early 1900's. As a consequence of both the hazards that occurred at this time (primarily hurricanes) and the geophysical location of the rice fields (coastal riverine), rice crop failures were commonplace around the turn of the century. Crop losses have varied from a 25% rice crop loss in 1893 to a 90% loss in 1928, both due to hurricanes. As people shifted away from agriculture to other sources of economic gain, there has been less crop damage. For example, rice fields and plantations have been abandoned and are no longer an important component of losses from hazards.

The shift away from agriculture to tourism in Georgetown County, beginning in the 1950s, changes the nature of exposure and risk for some hazards. Additionally, the arrival of industry adds another dimension. Where a hurricane may have once washed out a rice field, it may now disrupt production and employment at industrial facilities, which introduces the potential for severe financial disruption if the facility is incapacitated during a hazard event. Georgetown's International Paper facility, for example, employed as many as 1,675 workers in 1960, representing 61% of Georgetown's manufacturing employment (*South Carolina Industrial Directory*, 1960-61). Currently International Paper employs more than 600 workers (Georgetown Mill, 2012)[18]. This figure represents more than a 60% decrease in 52 years.

[18] "International Paper – Georgetown." *International Paper – Georgetown.* N.p., n.d. Web. 12 Apr. 2014. http://www.internationalpaper.com/US/EN/Company/Facilities/Georgetown.html.

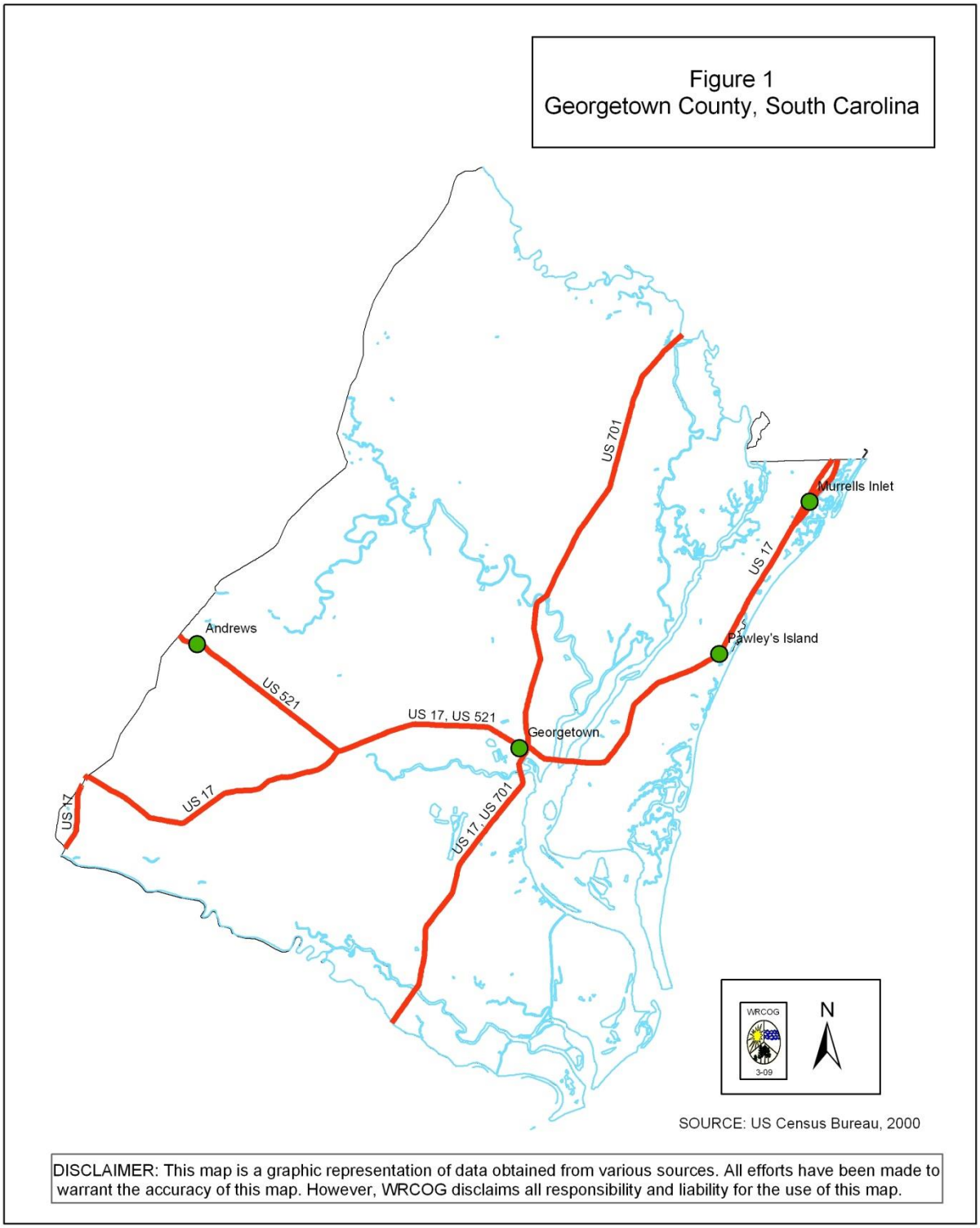


Figure 1
Georgetown County, South Carolina
US 701
Murrells Inlet
US 17
Pawley's Island
Andrews
US 521
US 17, US 521
Georgetown
US 17
US 17
US 17, US 701
WRCOG
3-09
N
SOURCE: US Census Bureau, 2000
DISCLAIMER: This map is a graphic representation of data obtained from various sources. All efforts have been made to warrant the accuracy of this map. However, WRCOG disclaims all responsibility and liability for the use of this map.

Selecting the Appropriate Scale and Base Map

Before continuing with a description of the hazards assessment, scale is an important issue that must be discussed. Since the world must be necessarily simplified in order for it to be represented on a map, features must be generalized. The degree of this generalization depends on the scale of the map, or the ratio of distance on the map to distance on the ground. Maps with large scales (1 inch on the map equals 100 inches on the ground or parcel-level maps) can depict much more detail than maps with small scales (1 inch on the map equals 1,000,000 inches on the ground or country-level maps). Inherent in this capture of detail is often the movement of point, line, and area features from their "true" position in order to include all pertinent information clearly. Due to this combination of simplification and generalization, it is important to recognize the limitations of given scales for certain types of analysis.

The assessment of base map information raises issues of appropriate scale. Many different sources of base map information are available ranging from features extracted from Digital Orthophoto Quads (DOQ) to TIGER features to Digital Chart of the World, among others. Each has positive and negative aspects. For instance, the DOQ data delivers a high level of detail (building footprints) yet the attributes of each feature (number of people living in each house) is not known since DOQ has no polygon features. TIGER data, while containing the boundary files for the US Census divisions which can be related to many types of social data, is sometimes inaccurate. Since we were interested in a county-wide analysis of vulnerability, the use of TIGER files for our base map seemed appropriate. This selection of scale also permits us to utilize US Census information at the block level in our assessment of social vulnerability.

This hazards assessment is organized into five main topical areas. These include identifying those hazards with the potential to affect Georgetown County, determining the specific locations within the county that are subject to those hazards' affects, identifying vulnerable social groups, confirming vulnerable areas through the intersection of hazard areas and areas of vulnerable people, and establishing context through the addition of infrastructure and lifelines data.

Hazard Potential Determination

In general, there are three main steps in the individual hazard potential determination. These include hazard identification, data acquisition, and calculation of hazard frequency of occurrence.

Identification of Hazards

A hazard vulnerability analysis identifies all hazards that potentially threaten a defined area and analyzes then in the context of that area, to determine the degree of threat that each poses. The vulnerability analysis consists of the following three steps:

1. Identify the hazards.
2. Profile the hazards and their potential consequences.
3. Weigh, compare, and analyze the risks.

Using this standard risk assessment approach, the following section details the hazards identified for this assessment of Georgetown County.

Assessed Hazards Impacting Georgetown County, South Carolina

Hurricanes

Of the hazards impacting South Carolina, hurricanes have proven the most costly monetarily and in terms of lives lost. As a coastal county, Georgetown is among the most vulnerable, especially to storm surge and the high winds that eventually diminish farther inland. Hurricanes are massive low pressure systems bringing heavy rain and rotating winds in excess of 74 miles per hour. They are categorized by the intensity of their wind speed using the Saffir-Simpson Hurricane Wind Scale. Storm surge is the water that is thrust toward the shore due to the pressure and force of the winds surrounding the storm.

The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating based on a hurricane's sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous, however, and require preventative measures[19].

In 2012, the National Hurricane Center made the decision to separate wind speed and storm surge; therefore, the Saffir-Simpson Scale now represents wind speeds only, not storm surge. Also in 2012, FEMA and the US Army Corps of Engineers (USACE) conducted a Hurricane Evacuation Study for the Northern Conglomerate. This study found that Georgetown County was at a lower elevation than previously thought. It also showed that storm surge could possibly move farther inland through the County's river system; therefore, many more residents would need to evacuate than in the past.

Hurricanes Hazel and Hugo caused significant damage to the Town of Pawleys Island and other beach communities such as Litchfield and Garden City. Downtown areas of Georgetown were flooded. The Town of Andrews suffered less damage than the other three jurisdictions due to its inland location.

The historical tie between the hurricane hazard and Georgetown County is extensive. As such, only a selection of events is detailed in Table 1. Historical documentation for each event is from *The Georgetown Times* and the National Climatic Data Center. Hurricane tracks (1886-2014) for hurricanes within 150 miles of the county boundary are shown in Figure 2.

[19]"Saffor-Simpson Hurricane Wind Scale." NHC, NOAA, n.d. Web. 12 Nov. 2013. http://www.nhc.noaa.gov/aboutsshws.php.

Table 1 Selected Historic Hurricanes for Georgetown County

Hurricane	Year	Damage	Cost ($)
Unnamed	1894	25% of rice crop destroyed	*
Unnamed	1894	unspecified; child killed during clean-up	*
Unnamed	1906	building/tree damage; 75% rice destroyed	$100,000
Unnamed	1928	90% crop loss of rice, corn, cotton	$25,000 minimum
Unnamed	1935	roof and tree damage	*
Hazel	1954	600 homes destroyed/damaged; pier damaged	$45,000 (pier only)
Helene	1958	some roof damage; damaged bridge	*
Gracie	1959	tornado and flood damage to homes	$65-$75,000
Donna	1960	damage to trees/buildings	$60,000
David	1979	damage to homes	$500,000
Hugo	1989	hundreds of homes damaged	Millions
Bertha	1996	unspecified	*
Fran	1996	minor to buildings/trees	$170,000
Floyd	1999	minimal damage	*
Charley	2004	downed trees, roof damage, flooding	$2.5 million

Source: *The Georgetown Times* and NCDC 2014. * no data

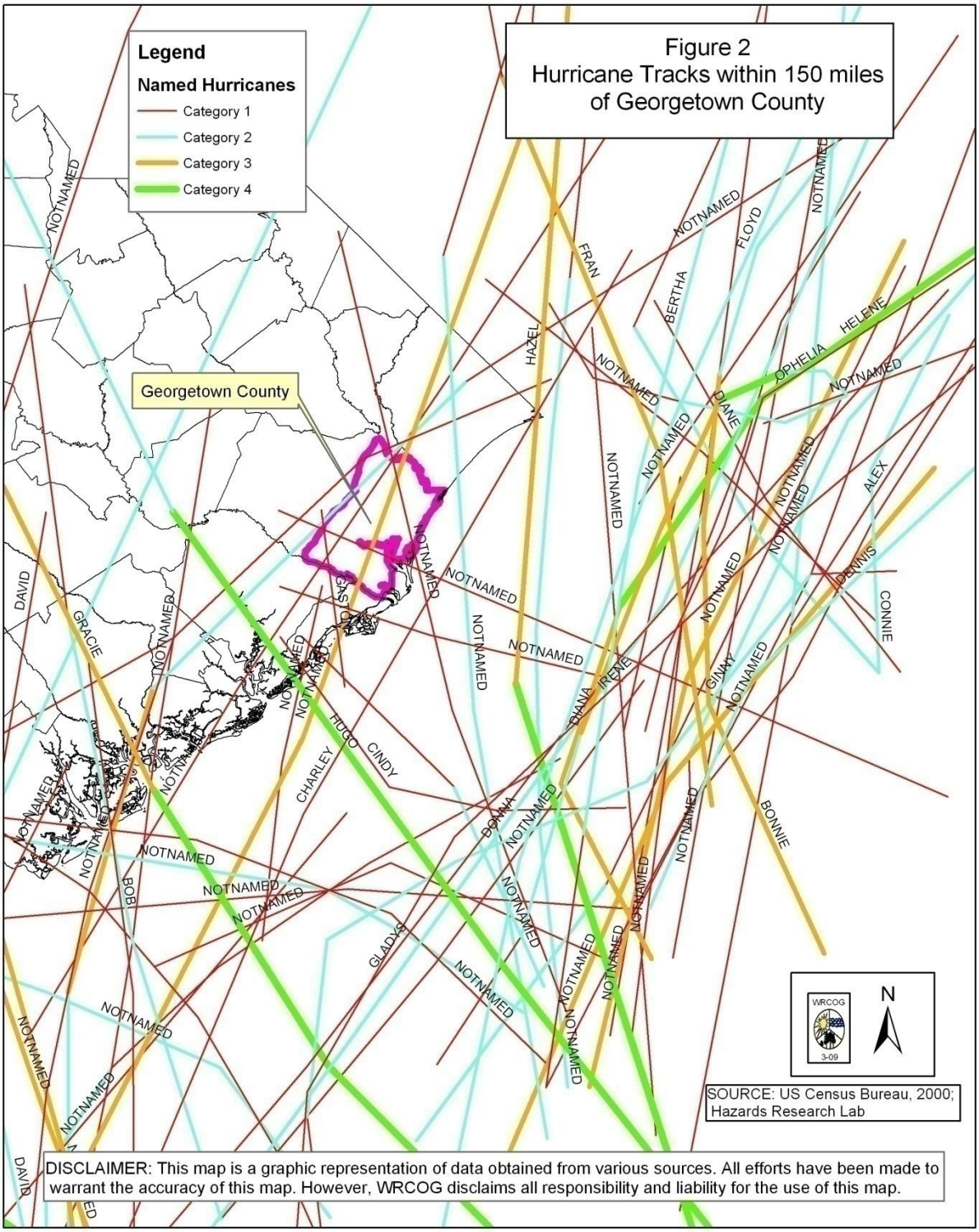


Figure 2
Hurricane Tracks within 150 miles of Georgetown County
Legend
Named Hurricanes
Category 1
Category 2
Category 3
Category 4
Georgetown County
NOTNAMED
FRAN
FLOYD
BERTHA
HAZEL
OPHELIA
HELENE
DIANE
ALEX
DENNIS
CONNIE
DAVID
GRACIE
HUGO
CINDY
CHARLEY
DIANA
IRENE
GINNY
BONNIE
BOB
GLADYS
N
WRCOG
3-09
SOURCE: US Census Bureau, 2000; Hazards Research Lab
DISCLAIMER: This map is a graphic representation of data obtained from various sources. All efforts have been made to warrant the accuracy of this map. However, WRCOG disclaims all responsibility and liability for the use of this map.

Tornadoes

Tornadoes are generated within severe thunderstorms or may appear in concert with the severe weather associated with hurricanes. Both sources are of concern for Georgetown County. In terms of absolute international tornado counts, the United States leads the list, with an average of over 1,000 tornadoes recorded each year[20] . Georgetown County's past experience with tornadoes has resulted in five fatalities, all in one 1974 incident (Table 2). Property damage to roofs, trees, and other vegetation, as well as power outages, stemmed from the remaining seven incidents. Historical documentation for each is from *The Georgetown Times*. Tornado touchdowns and paths are shown in Figure 3. An F-1 tornado touched down in the City of Georgetown on October 11, 2002, causing $750,000 in damages to businesses and homes. In 2004, a tornado touched down seven miles north-west of the Carvers Bay area in Georgetown County, extending nearly two miles while snapping power lines, uprooting trees, and moving one mobile home off its foundation. On April 16, 2011, a tornado touched down in Oatland, Oceda, Olin, and Puncheon Creek, causing $228,000 in damages. No deaths were reported during these two most recent tornado events. The remaining tornadoes were in the unincorporated area of the County, and two were offshore waterspouts.

Table 2 Tornado Events for Georgetown County

Date	Year	Damage	Cost ($)
September 17	1945	damage to trees/crops	*
August 7	1953	damage downtown Georgetown	$35,000
May 26	1974	boat capsized; five drown	*
May 7	1976	heavy rains and flooding	*
September 4	1979	nine homes severely damaged; 15 roofs blown off	*
June 22	1993	three homes damaged near Garden City	*
November 7	1995	one house damaged; tree damage	*
September 24	1997	North Santee	$50,000
September 3	1998	Choppee	*
July 23	2000	Georgieville	$2,000
September 18	2000	Georgetown	$8,000
October 11	2002	125 homes and businesses damaged or destroyed	$750,000
September 27	2004	Power outages, tree and home damage	$30,000
March 15	2008	One home damaged by uprooted tree in Oatland Community	*
April 16	2011	EF0 tornado uprooted trees; caused minor damage to	$60,000
April 16	2011	EF0 tornado 4 miles south of Andrews damaged two trailers, uprooted trees, tossed boats	$28,000
April 16	2011	EF1 tornado 7 miles east/SE of Andrews snapped more than 400 trees	$100,000
April 16	2011	EF1 tornado snapped and uprooted over 50 trees, damaged 2 sheds, and a pickup truck	$40,000

Source: *The Georgetown Times*, NCDC, 2014. **Storm Data Publication published by the National Climatic Data Center and severe weather reports issued by the National Weather Service**. * no data

[20] "U.S. Tornado Climatology." *National Climatic Data Center (NCDC)*. NOAA, n.d. Web. 23 Apr. 2014. <http://www.ncdc.noaa.gov/climate-information/extreme-events/us-tornado-climatology>.

Hail/Severe Storm/Wind Events

Hail consists of ice particles that fall from thunderstorms. Most hail is produced in thunderstorms with strong vertical movement. These hailstorms often result from strong surface heating, a characteristic of the common convectional thunderstorms in the southeastern United States. Although rarer, hailstorms may be produced by cold fronts that wedge under warm, moist air. Although potentially life-threatening if large hail falls, most of the main damage is to property such as cars and to standing crops. Georgetown County's hail experience has been similar to that of other southeastern areas. Historical documentation for each event is from *The Georgetown Times*. Georgetown County has also experienced damage from heavy rains and wind with localized flooding. Minor structural and tree damage have occurred with power outages as well. This disruption has been relatively minor; however, historical documentation for each event is in Table 3. The hailstorm on April 27, 1982 hit the City of Georgetown and the Belle Isle area with baseball-sized hail, causing extensive damage to vehicles and roofs. There have been 59 other severe storm, wind, and hail events that have registered $1,000 or more in property damages since 1995, including two tropical storms: Gaston and Hanna[17].

A secondary storm hazard is lightning. Lightning constitutes a hazard that strikes with a randomness similar to tornadoes, although both appear in the presence of severe thunderstorms. More than 100 people are killed by lightning in the United States each year (Ebert, 1989). While the overall probability of being struck by lightning is low, most strikes prove fatal. In Georgetown County, however, between 1959 and 2008, eight people were injured and one killed (1987) due to lightning. On August 25, 1996, there were 52 cloud to ground (CG) lightning strikes in the Plantersville area. The highest strength was 84.7 kA (kiloamperes) lasting 93 msec (microseconds). During this storm, there were scattered power and telephone outages along Highways 701 and 521, and phone and cable service outages were more widespread during the late afternoon. On August 13, 2001, there was one (1) CG lightning strike at 19 kA lasting 259 msec that struck a 100- year-old home in downtown Georgetown, severely damaging it. On July 15, 2006, there were 75 CG lightning strikes near Choppee. The highest strength was 69.4 kA lasting 253 msec. A home was destroyed by fire due to this lightning strike. On June 22, 2008, there were four (4) CG lightning strikes in Sunny Side with the highest strength recorded at 49.3 kA lasting 984 msec. Lightning struck the roof of a house and started a fire, completely destroying it. Figure 3 shows the annual number of lightning strikes in Georgetown County between 1996 and 2009.

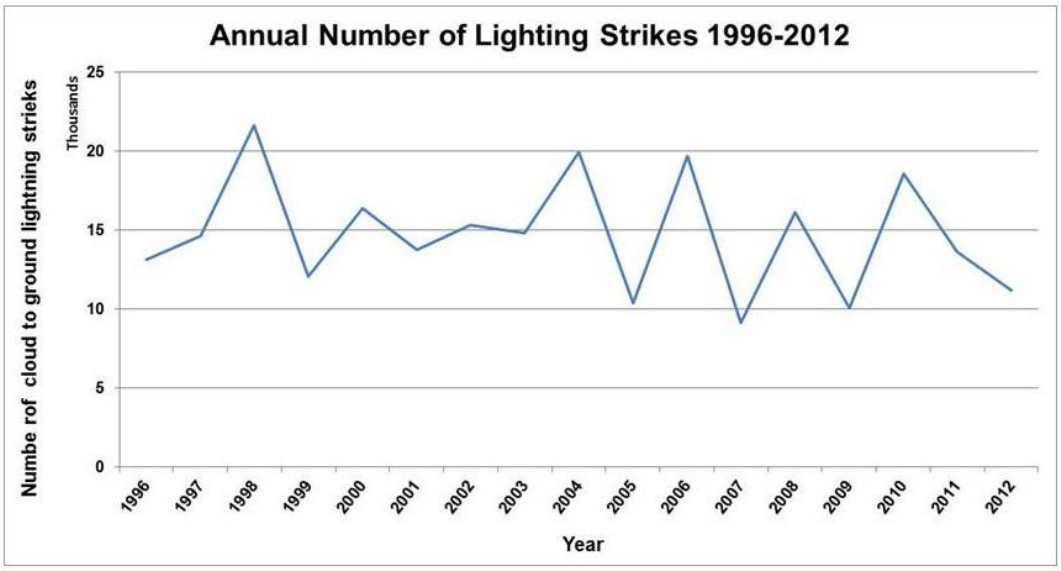
South Carolina's humid climate and hot summers contribute to the number and severity of storms in the state. Lightning strikes, along with human carelessness, are also the primary agents responsible for wildfires. Although data is available on lightning strikes in the past, it is difficult to determine its likelihood to strike, so establishing its potential for Georgetown County is difficult.

Table 3 Hail/Severe Storm/Wind Events for Georgetown County, 1890-2013 (list not inclusive)

Date	Year	Damage	Cost ($)
October 15	1893	Bridge, rice crop destroyed; 40 dead	*
September 30	1896	Tree and minor structural damage	*
April 27	1982	Baseball sized hail (2.75”); damage to crops/cars; killed 8 cows	*
August 6	1991	Flooding and high winds (no data on wind speed)	*
January 7	1995	Thunderstorm winds (no data on wind speed)	$60,000
April 22	1995	Thunderstorm winds (no data on wind speed) and 2” hail	$25,000
May 19	1995	Thunderstorm winds (no data on wind speed)	$6,000
July 11	1995	Heavy rains and flooding	*
August 25	1996	Lightning, 52 CG strikes in Plantersville	$50,000
August 27	1996	Flash flooding, 8” in Murrells Inlet	$100,000
June 10	1998	Hail, 75 kts wind, minor structural damage	$300,000
June 19	1998	Thunderstorm winds 60 kts	$10,000
September 8	1998	Thunderstorm winds 60 kts	$15,000
July 21	2000	Thunderstorm winds 55 kts	$5,000
September 18	2000	Flash flood in Georgetown, one direct injury	$750,000
August 13	2001	Lightning, 1 CG strike in the City of Georgetown	$50,000
August 25	2002	Thunderstorm winds 65 kts	$25,000
May 6	2003	Thunderstorm winds 65 kts	$30,000
August 14	2004	Hurricane Charley	$2,500,000
August 29	2004	Tropical Storm Gaston, flooding	$320,000
October 6	2005	Heavy rain, >12” in areas of the City of Georgetown	$1,500,000
July 15	2006	Lightning, 75 CG strikes near Choppee	$150,000
June 22	2008	Lightning, 4 CG strikes in Sunny Side	$350,000
September 5	2008	Tropical Storm Hanna, 40 mph wind, 6” rain, road closures	*
June 11	2009	Thunderstorm Wind 52 kts.	$10,000
July 13	2009	Flash flood in Georgetown, 4” in City of Georgetown	$5,000
May 23	2010	Hail 1” Wedgefield Plantation	$10,000
April 5	2011	Thunderstorm Wind 56 kts.	$21,000
April 16	2011	Thunderstorm Wind 61 kts.	$32,000
May 10	2011	Hail 2.75” Andrews	$20,000
July 9	2011	Thunderstorm Wind up to 55 kts.	$10,000
June 13	2012	Thunderstorm Wind 54 kts.	$22,000
November 4	2012	Hail 1.75” Wachesaw Plantation	$25,000
September 3	2013	Thunderstorm Wind 52 kts.	$17,000

Source: *The Georgetown Times*, Vaisala, U.S. Air Force, and NCDC, 2014.
* no data

Figure 3



Source: NCDC, 2014.

Floods

Given the geophysical location of the City of Georgetown on Winyah Bay, it has been repeatedly flooded by both rain and storm surge with up to four feet of water downtown. Other localized flooding has occurred from thunderstorms. Widespread flooding has been a result of hurricane associated storm surge.

The Town of Pawleys Island was devastated by the storm surge from Hurricane Hugo in 1989. Significant flooding to the Town occurred again on January 1, 1990, as a result of high tides from a syzygy, coupled with a strong northeast wind. The unincorporated coastal sections of the County were also hard hit from these two events. Georgetown County experienced severe coastal flooding in October of 1994 resulting in $25 million in property damage and $50,000 in crop damages. Again, in December of 1994, Georgetown sustained heavy rains and flooding causing over $50,000 in property damage. In 1996, Murrells Inlet had $100,000 in damages due to flash flooding, while four years later, Georgetown got hit again with nearly $750,000 worth of flood-inflicted property damages[17]. In March, 2001, flooding in downtown Georgetown caused $25,000 worth of damages. On July 13, 2009, between the hours of 4:00 and 5:30 p.m., flash flooding caused $5,000 worth of damages to downtown Georgetown. On July 9, 2011, a slow moving frontal boundary produced torrential rainfall in the City of Georgetown producing 5" – 7" of rain. Flooding was reported at City Hall, Duke Street, South Congdon, Hazard Street, Wood Street, and Kaminski Street. Two people had to be rescued from their cars. Property damage was estimated at $20,000.[17] On May 16, 2012, flooding caused $20,000 damages in the Parkersville community.

These past trends show the high likelihood of floods to strike in the coastal areas of the county while inland towns have not experienced any significant flooding problems in the past.

Earthquakes

South Carolina's seismic activity is lower than other areas, such as the western United States, but is still considered to be one of the most vulnerable states on the east coast (South Carolina Seismic Network, 1996; Livingston, 1996). South Carolina experiences approximately ten earthquakes each year (Berke and Beatley, 1992), the last major event being in 1886 in Charleston. Geologic investigations have determined that most of Georgetown County is subject to some degree of liquefaction. Liquefaction occurs when seismic activity causes the movement of water upward through sediment. The sediment is able to shift and becomes incapable of bearing certain loads resulting in the subsidence and collapse of some structures. The vast majority of earthquake deaths are related to structural collapse (Smith, 1992); thus, it is the intersection of liquefaction zones and poorly built structures that is of significant interest. Liquefaction potential for Georgetown County is shown in Figure 4. As can be seen, most of the county is at risk from liquefaction.

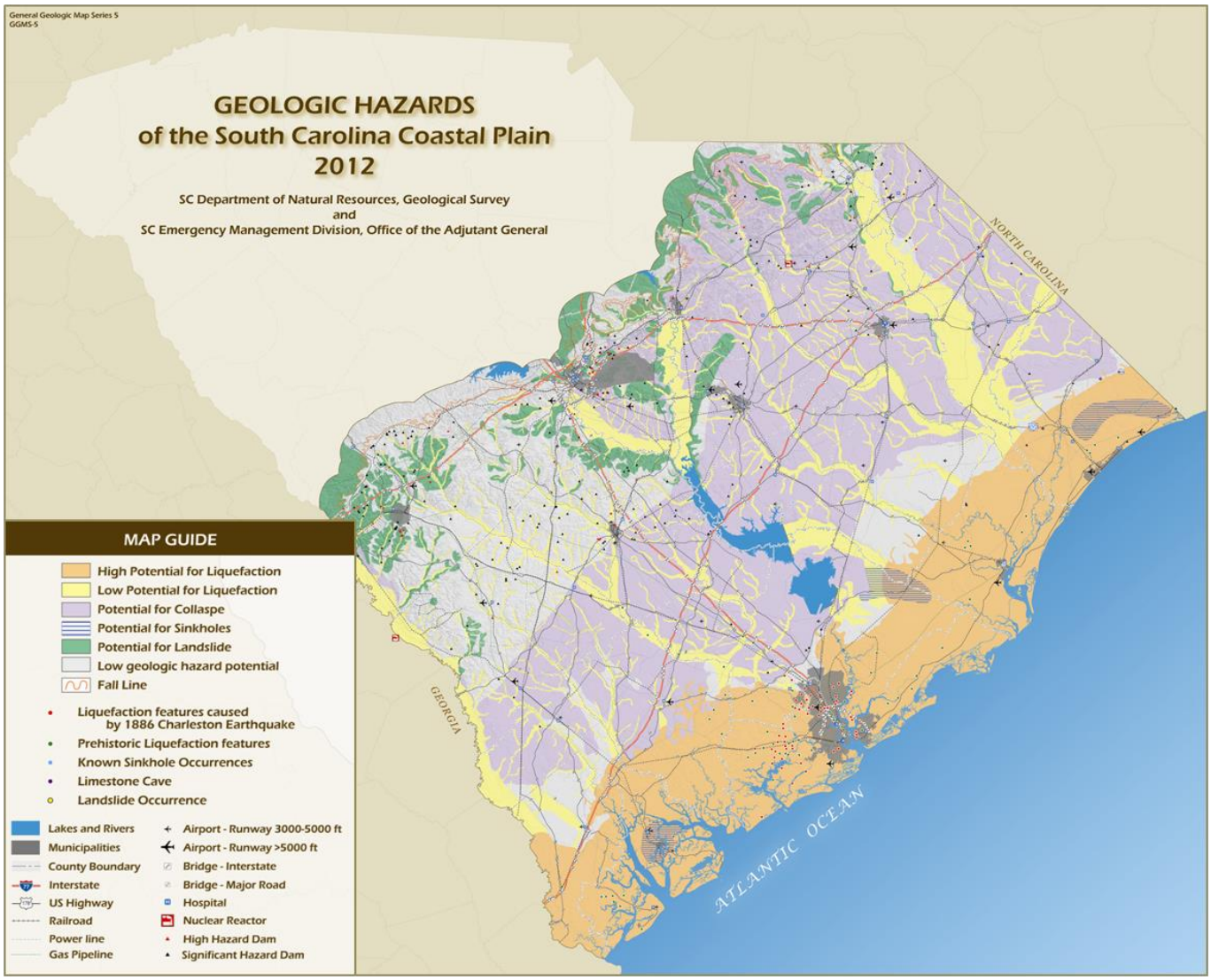
The coastal counties in the coastal plain consist primarily of young (<2 million years) surficial sediments. Areas of potential activity include the Summerville/Middleton Place area and places near Georgetown and Bluffton (based on paleo-liquefaction evidence). Along the coastline, there is a high liquefaction and tsunami hazard potential. South Carolina Geological Survey conducts studies to evaluate the geologic response to earthquake-induced motion in an attempt to help reduce the risk to lives and property (SCNDR, 2008). Seismic records dating back to 1698 indicate 10 felt earthquakes in Georgetown County.

The U.S. Geological Survey confirmed that a 3.6 magnitude earthquake occurred in Dorchester County on December 16, 2008, with waves being felt into Charleston and Berkeley Counties. In May 2009, questions of an earthquake arose due to unusual noise reports although conclusions were drawn that the suspicious sounds were the result of a sonic boom (Georgetown Times, 2009). The August 23, 2011, magnitude 5.8 major earthquake in central Virginia was felt widespread in South Carolina, with reports of buildings shaking in Greenville, Georgetown, Myrtle Beach, and Rock Hill. Several buildings in downtown Columbia were evacuated. On February 14, 2014, at 10:23 p.m., many residents of South Carolina, North Carolina, and elsewhere in the United States felt the magnitude 4.1 earthquake with epicenter in Edgefield, SC. Several residents reported their houses shaking and dishes falling to the floor.

Earthquake occurrences on the East Coast are felt over a greater distance because the energy from earthquakes is easily transferred over a greater distance due to the condensed and old rocks found on the East Coast versus the West Coast.[21]

[21] Wells, Tammie D. "Hazard Mitigation Plan." Message to Cindy Grace. 5 May 2014. E-mail.

Figure 4: Geologic Hazards of South Carolina, SCDNR & SCEMD



Source: SC Dept. of Natural Resources, 2012

Wildfire

Georgetown County has averaged approximately 149 fires yearly on forested land over the last 27 recorded years (*South Carolina Statistical Abstract*, 1981-2008). See Table 4. Wildfires may be caused naturally by lightning or through human actions. In general, a period of drought and high temperatures provide the most volatile conditions. The fires in Georgetown County have been rather small in size (acreage), but as population pressures continue residential areas may become threatened more often. The municipalities do not have significant risks associated with wildfires.

Table 4 Wildfires Reported in Georgetown County[22]

Fiscal Year (July 1 to June 30)	**Number of Fires**	**Acres Burned**
1979-1980	212	792.4
1980-1981	535	5,527.3
1981-1982	269	1,049.2
1982-1983	101	311.8
1983-1984	236	1,860.0
1984-1985	530	8,689.6
1985-1986	234	989.5
1986-1987	158	842.7
1987-1988	260	1,432.4
1988-1989	215	1,468.6
1989-1990	141	493.2
1990-1991	145	1,311.2
1991-1992	169	998.5
1992-1993	80	224.4
1993-1994	156	1,372.6
1994-1995	94	556.6
1995-1996	85	762.8
1996-1997	74	3,593.0
1997-1998	40	686.6
1998-1999	155	919.3
1999-2000	114	948.2
2000-2001	161	822.4
2001-2002	154	2,327.3
2002-2003	35	425.0
2003-2004	89	922.45
2004-2005	66	806.7
2005-2006	49	196
2006-2007	79	757.9
2007-2008	83	885.7
2008-2009	46	1,725.2
2009-2010	25	204.3
2010-2011	72	402.9
2011-2012	64	799.3
2012-2013	44	201.6
2013-2014*	27	225.1
Total	**4,997**	**45,332.25**

*through March 30, 2014

** 5 year avg 58 fires, 803.5 acres
10 year avg 61 fires, 711.1 acres
20 year avg 86 fires, 966.2 acres

[22]"Wildfire Statistics." *SCFC SC.* N.p., n.d. Web. 28 Apr. 2014. http://www.state.sc.us/forest/firestats.htm.

Drought

Hazardous droughts develop slowly over time but its duration can become lengthy and harmful to the environment in a multitude of ways. In the most general sense, drought originates from a deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity, group, or environmental sector (National Drought Mitigation Center, 2009). A prolonged drought can have a serious economic impact on a community. Increased demand for water may result in shortages and a higher cost for these resources (FEMA, 2005). The definition of when a 'drought' occurs depends largely on how water is used in an area and the area in which the activity takes place (Dagel, 1997). Due in part to this variability, it is difficult to make an accurate assessment of the impacts of drought (Heathcote, 1969). The degree of drought can be assessed, however tenuous, by indices such as the Palmer Drought Severity Index (Palmer, 1965).

Historically Georgetown County had 31 years of at least moderate drought between 1895 to 2008. In 2001, the South Carolina Drought Response Committee declared many parts of the state in a moderate drought. The below normal rainfall actually began in 1999 and continued through 2001. During that time the Pee Dee and the Grand Strand area were about 20 inches below normal. The main result of the lack of precipitation was above normal wildfires scorching 2,500 acres in November alone, verses 950 acres on average. A few years later, in 2007 there was a continued lack of rainfall which exacerbated already dry conditions with the United States Drought Monitor classifying most of the region as Extreme (D3), with areas near the coast as Severe (D2). For the year, most areas had only received between 40-70 percent of normal rainfall, with daily stream flows dropping to only the 5th percentile. Most of the water systems in the region were under restrictions, with burning bans in place. Most of northeastern South Carolina saw virtually no rainfall for the month of November, deepening a lingering drought across the region. Ongoing drought conditions lingered into January 2008. Northeast South Carolina continued to be classified in the Severe (D2) category. Stream flows remained between the fifth and tenth percentile of normal. January rainfall was near or above normal for most areas, improving drought conditions slightly toward the end of the month. For the county, drought has the potential to contribute to the wildfire hazard as well as impact the remaining agricultural sector.

The municipalities of Georgetown and Pawleys Island rely on surface water as their principal source of potable water. They are, therefore, more susceptible to being effected by long-term drought than other areas.

Dam Failure

The South Carolina Public Service Authority (S.C.P.S.A.) owns and maintains the Santee Dam on the eastern edge of Lake Marion in Clarendon and Berkeley Counties. The dam is an earthen structure over 7.5 miles in length. It is located approximately 35 miles upstream from the southwest corner of Georgetown County. The Santee River serves as the southern boundary of Georgetown County and over twenty-seven miles of the river's length is located in the County. The dam failure hazard zone was provided by the South Carolina Public Service Authority (Santee Cooper). The dam failure hazard zone is shown in Figure 5.

Winter Storms

Winter storms are not an uncommon occurrence in coastal Georgetown County; however, the impact of the storms is relatively short-term in nature. Problems attributed to winter storms include power outages, traffic accidents, and slight interruptions in commerce. Some storms also include beach erosion. Since 1973, Georgetown County has experienced a total of 12 winter

storms. Most impacted the area from 1 – 3 days. A record snowfall of 12″ – 16″ fell in Georgetown County on December 22 – 24, 1989. Only one winter weather registered property lost around $100,000 mostly contributed to car accidents. On February 12 and 13, 2010, significant snow fell across Georgetown County with reports of 7″ eight (8) miles north of Oatland, 6.8″ four (4) miles south of Outland, and 2.5 - 4.5″ across the city of Georgetown. On December 26, 2010, small amounts of snow fell with 0nly a trace recorded in Georgetown, although Hemingway picked up 0.3″. On January 10, 2011, a trace of sleet and freezing rain fell across most of Georgetown County. Between January 28 and 29, 2014, up to ½″ of snow fell in Georgetown County due to Winter Storm Leon. On February 12 and 13, 2014, Winter Storm Pax was a significant ice storm. Although reports are sketchy, reports of 0.25 to 0.75″ of freezing rain accumulated across the County, with the highest amounts inland against the Williamsburg County line. This storm caused over $3 million dollars in damages due to debris and power outages.[23]

[23] Armstrong, Timothy. "Winter Storm History-Georgetown, SC." Message to Cindy Grace. 10 Apr. 2014. E-mail.

Figure 5
North Santee Dam Potential
Hazard Area
US 701
Murrells Inlet
US 17
Andrews
Pawley's Island
US 521
US 17, US 521
Georgetown
US 17
US 1
US 17, US 701
Probability
County Boundary
0.0159
WRCOG
3-09
N
SOURCE: US Census Bureau, 2000;
Hazards Research Lab
DISCLAIMER: This map is a graphic representation of data obtained from various sources. All efforts have been made to warrant the accuracy of this map. However, WRCOG disclaims all responsibility and liability for the use of this map.

Table 5 Data Acquisition Matrix for Georgetown County Hazards

Category	Theme	Attributes	Sources	Initial Record Date
Hurricane	events	maximum wind, minimum pressure, date and time	National Hurricane Center	1886
	storm surge	storm category	SLOSH	n/a
	wind			n/a
Floods	Q3 flood data	Zone	FEMA and NADC	
Earthquakes	epicenters	Magnitude, intensity	South Carolina Seismic Network	1698
	felt intensities	Area	South Carolina Seismic Network	
Tornadoes	events	damage, injuries, deaths	National Severe Storms Lab and NCDC	1950
Severe Storms-Wind/Hail	events	damage, injuries, deaths	National Severe Storms Lab Vaisala U.S. Air Force	1955
Drought	events	Severity	Palmer Drought Severity Index and NCDC	1895
Wildfire	events	acres burned	SC Statistical Abstract	1981
Dam Failure	events	Zone	South Carolina Public Service Authority	1988
Winter Storms	events	damage, injuries, deaths	Georgetown County EPD	1973

Hazard Frequency of Occurrence and Hazard Zone Delineation

The estimated occurrence of the hazard is a useful element in the hazards assessment so one can distinguish between infrequent hazards like earthquakes from frequent hazards such as wildfires. This calculation provides a useful indicator of the relative importance of each of these hazards as they affect Georgetown County.

The frequency of occurrence is a straight-forward calculation from the historical data and the length of that record in years. The number of hazard occurrences divided by the number of years in the record yields the probability of the event occurring in any given year. For instance, if a hypothetical hazard "A" occurred 17 times in the county over the past 23 years, the probability of occurrence for that hazard "A" in any given year is 17/23 or .739, or less than once per year. Since some hazards are geographically specific, such as flooding, this probability of occurrence is assigned to a specific area or hazard zone. In this way portions of Georgetown County can be differentiated based on these varying levels of hazard occurrences. For those hazards that are non-geographically specific and thus have no clearly defined geography, such as tornadoes, the frequency of occurrence is assigned to the entire county area. Once the hazard zones were determined, the probability of occurrence was calculated and assigned to the appropriate geographical area. As the last step, a composite hazards layer was created in the GIS; this is discussed in the Conclusions section.

Table 6 provides hazard occurrences per year for Georgetown County. Note that in Georgetown, wildfires occur almost 5,000 times per year, the highest frequency event. This table of hazard occurrence

is a necessary step in determining the overall hazards vulnerability. It helps to define more clearly what types of events are more frequent and their potential impact on the community.

Table 6 Hazard Frequencies for Georgetown County

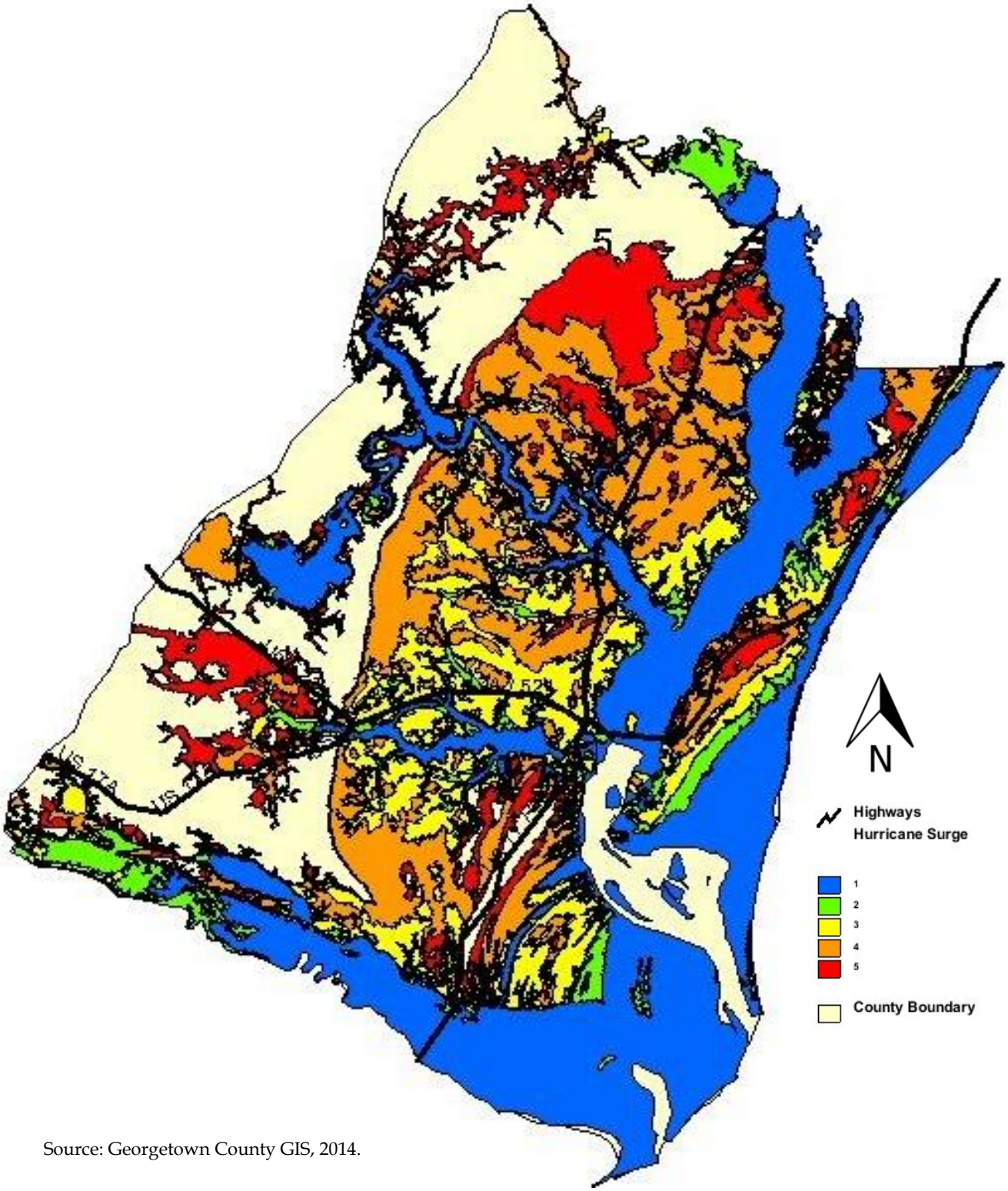
Hazard	Number of Events	Years in Record	Recurrence Interval (years)
Hurricane/Tropical Storm Wind	45	117	2.6
Floods	101	51	.51
Earthquake (felt)	25 (state)	312	12.48
Tornado	12	58	4.83
Thunderstorm/Hail/Wind	60	47	.78
Drought	27	107	3.96
Wildfire	4,997	35	.007
Dam Failure	0	68	0
Winter Storms	9	38	4.22

Hurricane

This hazard has two main components: storm surge and wind. In order to identify the hurricanes that were a potential threat to Georgetown County, we selected those hurricanes from the *Tropical Cyclones of the North Atlantic Basin 1886-2007* data set that were within 150 miles of the county boundary. The approximate average diameter of hurricanes is 150 miles. This required creating a buffer of 150 miles surrounding the county and intersecting that area with the tropical cyclone wind observations. Once a subset of those observations is obtained, we reselected those observations with a maximum sustained wind speed of greater than or equal to 64 knots. After summing the number of events for each category, the probability of occurrence was determined. It was also necessary to determine the probability of occurrence from hurricane winds. For all counties, the hazard zones for hurricane wind occurrences are output from a model at the Hazards Research Lab.

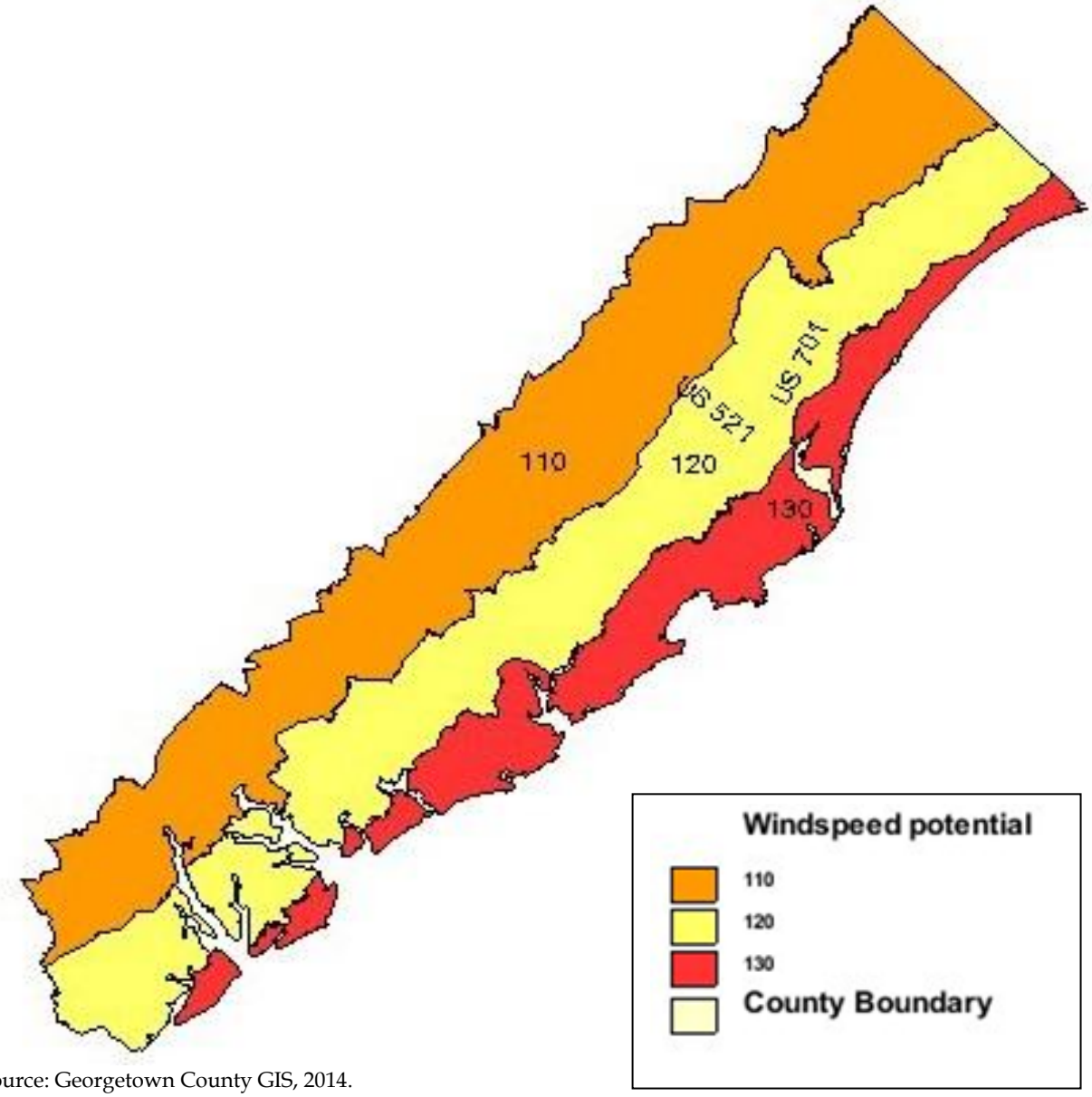
For those counties on the coast, the NOAA National Hurricane Center has calculated the areas that will potentially be inundated by storm surge in each Saffir-Simpson Hurricane Wind scale category. These hazard zones, output from the National Hurricane Center's SLOSH model, represent the worst-case scenario for each hurricane category. The storm surge inundation for Georgetown is shown in Figure 6. The hurricane hazard wind zones are shown in Figure 7. Since 2009, there have been no landfall hurricanes/tropical storms in Georgetown County.

Figure 6 Storm Surge



Source: Georgetown County GIS, 2014.

Figure 7 Wind Speed Probabilities



Source: Georgetown County GIS, 2014.

Tornado

While tornadoes happen in a specific place and at a specific time, they have the potential to occur anywhere. Therefore, the hazards zone encompasses the entire county. The probability of occurrence is simply the number of reported tornadoes divided by the number of recorded years. Eleven tornados are on record for Georgetown County according to the National Climatic Data Centers 2014 records, which date back to 1996. Since 2009, there have been four tornado touchdowns in Georgetown County, all occurring on the same date: April 16, 2011. No injuries or deaths were reported; however, property damages were reported totaling $228,000.[17]

Hail/Severe Storm/Wind Events

While thunderstorm wind events also happen in a specific place and at a specific time, they have the potential to occur anywhere. Therefore, the hazards zone encompasses the entire county. The probability of occurrence is simply the number of reported thunderstorm wind events divided by the number of recorded years. Since 2009, there have been 27 hail events totaling $122,750 in property damage; five high wind events totaling $6,000 in property damage; and 28 thunderstorm events totaling $138,000 in property damage. On April 5, 2011, one person suffered indirect injury from a severe thunderstorm in Pelersfield.[17]

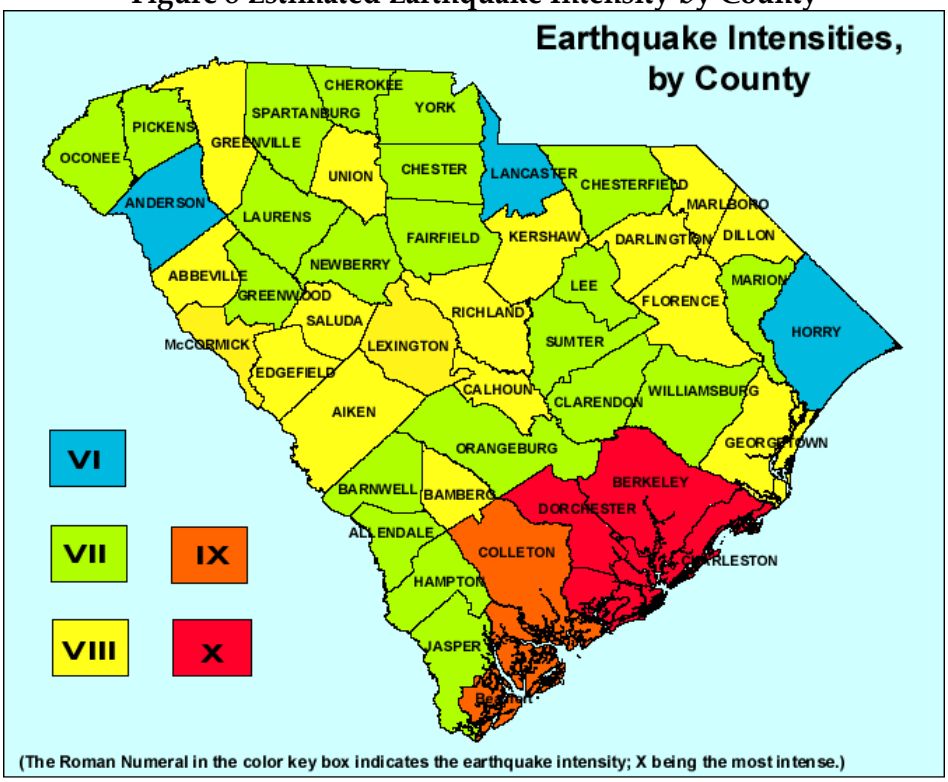
Earthquake

The occurrence probability for earthquakes was determined by dividing the number of felt earthquakes by the number of years in the historical record. Since Georgetown County had no recorded earthquake epicenters, felt earthquakes were utilized. Approximately 10 to 15 earthquakes are recorded annually in South Carolina with 3 to 5 of them felt or noticed by people. About 70 percent of South Carolina earthquakes are located in the Middleton Place-Summerville Seismic Zone according to the South Carolina Emergency Management Division (2013).

In May 2009, county residents reported earthquake-like motions and noise although nothing was registered on local seismometers. Conclusions were drawn connecting the event to a possible sonic boom (Georgetown Times, 2009). The August 23, 2011, magnitude 5.8 major earthquake in central Virginia was felt widespread in South Carolina, with reports of buildings shaking in Greenville, Georgetown, Myrtle Beach, and Rock Hill. Several buildings in downtown Columbia were evacuated. On February 14, 2014, at 10:23 p.m., many residents of South Carolina, North Carolina, and elsewhere in the United States felt the magnitude 4.1 earthquake with epicenter in Edgefield, SC. Several residents reported their houses shaking and dishes falling to the floor.

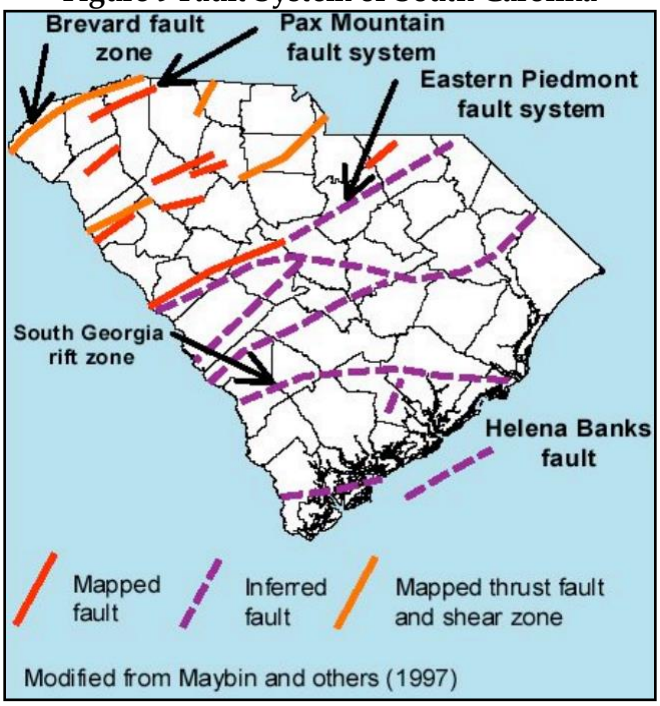
Earthquake occurrences on the East Coast are felt over a greater distance because the energy from earthquakes is easily transferred over a greater distance due to the condensed and old rocks found on the East Coast versus the West Coast.[21]

Figure 8 Estimated Earthquake Intensity by County



Source: SC Hazard Mitigation Plan, 2013.

Figure 9 Fault System of South Carolina



Source: SC Hazard Mitigation Plan, 2013.

Floods

Once the Q3 flood data were obtained, the flood hazard zone was reselected using the designated 100-year and 500-year floodplains. These indicate the probability of a flood occurrence of 1% and 0.25% respectively. The 100-year floodplain is designated by the zone code 'A' and its derivations. Zone code 'V' and its derivations similarly signify areas of 100-year flood combined with wave action. Zone 'B' represents the 500-year floodplain. The flood hazard zones are shown in Figure 10. Since 2009, there have been nine flood events in Georgetown County totaling $40,000 in property damage.[17]

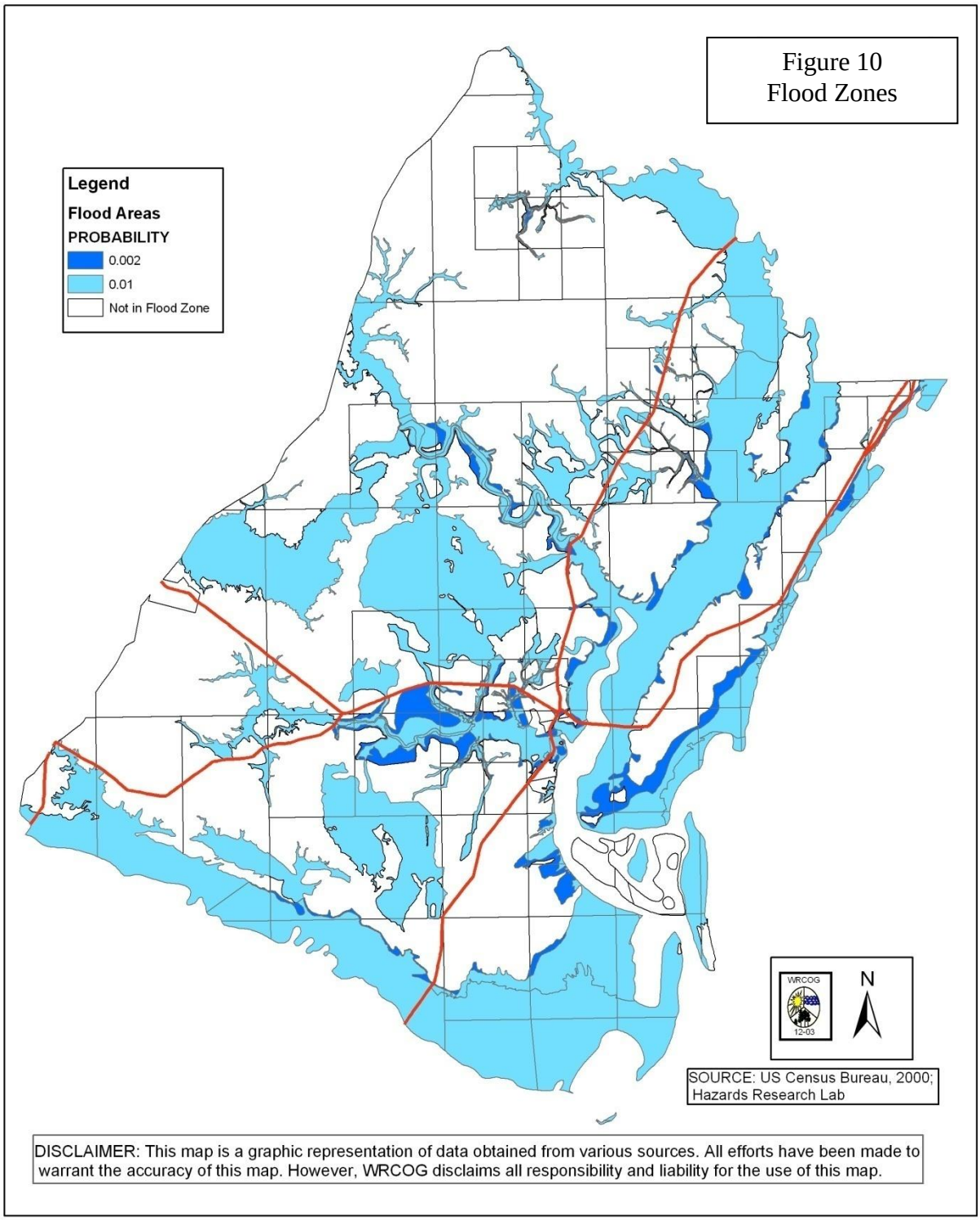


Figure 10
Flood Zones
Legend
Flood Areas
PROBABILITY
0.002
0.01
Not in Flood Zone
WRCOG
12-03
N
SOURCE: US Census Bureau, 2000;
Hazards Research Lab
DISCLAIMER: This map is a graphic representation of data obtained from various sources. All efforts have been made to warrant the accuracy of this map. However, WRCOG disclaims all responsibility and liability for the use of this map.

Wildfires

While wildfires happen in a specific place and at a specific time, they have the potential to occur nearly anywhere. Therefore, the hazard zone encompasses the entire county. The probability of occurrence is simply the number of wildfire events divided by the number of recorded years. From 2009 to 2012, there have been 161 total wildfire events burning 1,406.5 acres in Georgetown County.[22]

Figure 11 Total Wildfire Events

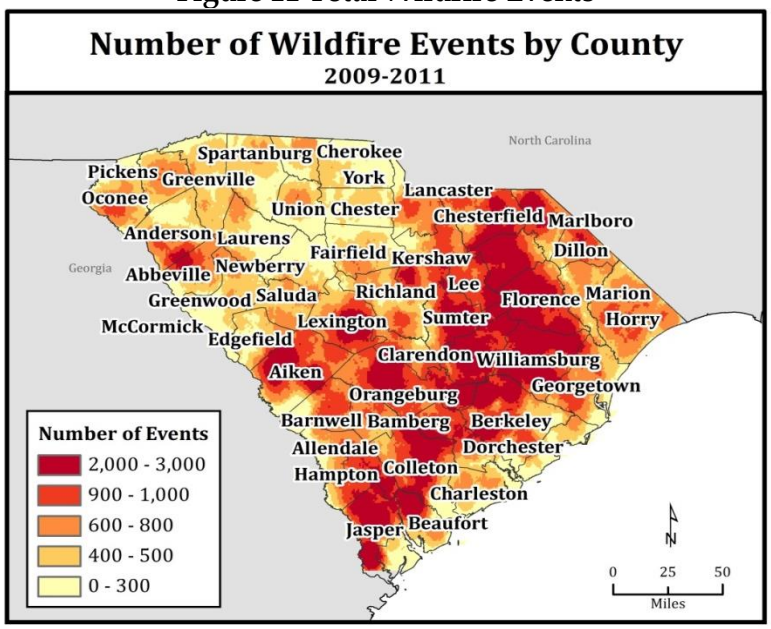
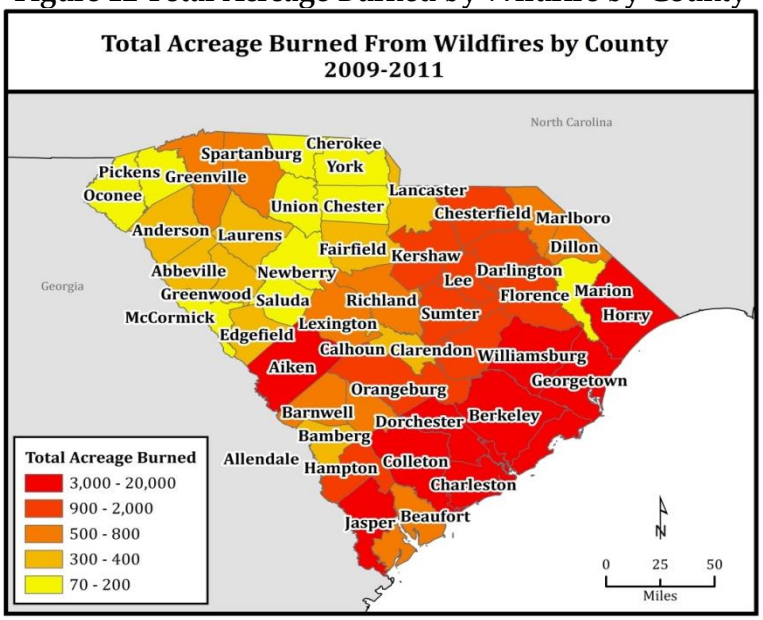


Figure 12 Total Acreage Burned by Wildfire by County



Source: SC Hazard Mitigation Plan, 2013.

Drought

The occurrence probability for drought was constructed using data from the Palmer Drought Severity Index (PDSI). The PDSI is calculated from the weighted differences between actual precipitation and evapotranspiration (Palmer, 1965). Its scale ranges from +4.0 (very moist spell) to near zero (near normal) to -4.0 (extreme drought). Georgetown County is within South Carolina Climatic Region 4 and data were acquired from the Southeast Regional Climate Center. A drought year was defined as being any year in which the PDSI exceeded the moderate drought level of -2.0 for any three consecutive months. Unfortunately, since a true definition of drought should include both physical and human systems, this method still is deficient in assessing the impacts of drought accurately, although accessing crop damage has become the baseline on measurements of drought and its local impact. The drought hazard zone includes the entire county because no region, including Georgetown County, is immune to the possibility of drought (SC State Climatology Office, 2014). From June 2-14, 2011, Georgetown County experienced incipient drought meaning there was a threat of a drought as demonstrated by drought indices. From June-March 2012, Georgetown County experienced a moderate drought. From June-early September 2012, an incipient drought was experienced. In late September 2012, Georgetown County experienced no drought conditions (normal). From December 2012 through March 2013, the County experienced an incipient drought, and in April 2013, the conditions returned to normal.[24]

Dam Failure

The South Carolina Public Service Authority (S.C.P.S.A.) has mapped the potential hazard area for the land adjacent to the Santee River. The dam was constructed in 1941. The probability of occurrence of a dam failure is determined to be 1.59. The dam failure hazard zone is depicted in Figure 5. No dam failures have been observed.

Winter Storms

Winter storms have the potential to occur between December – March and usually impact the entire County; therefore, the hazard zone encompasses the entire County. The probability occurrence is the number of events divided by the number of recorded years. Georgetown County has experienced two winter storms listed on the NCDC site since 2009: Winter Storm Leon in January 2014, and Winter Storm Pax in February 2014. Winter Storm Pax created icing of roads and bridges, downed trees, a week-long power outage in areas of the County, and over 100,000 cubic yards of debris resulting in over $4 million worth of damage. The President issued a Major Disaster Declaration for 22 counties in South Carolina due to Winter Storm Pax of which Georgetown was included.[17]

Hazards Considered But Not Assessed

Several types of natural hazards were considered for this hazard assessment, but were not included in the assessment, due to the absence of probability of such hazard occurring in Georgetown County. Each is described below. The primary basis for the decision to "not assess" the hazard for Georgetown County was based on Dr. Mark Monmonier's book "Cartographies of Danger: Mapping Hazards In America" (Chicago, 1997).

[24] "Status Reports." *News Releases - South Carolina Drought Response Committee Reports*. SC State Climatology Office, n.d. Web. 14 July 2014. <http%3A%2F%2Fwww.dnr.sc.gov%2Fclimate%2Fsco%2FDrought%2Fdrought_press_release.php>.

- *Tsunami*

  Tsunami is a Japanese word for "harbor wave" (Monmonier, 1997, p. 67). This term refers to waves resulting from vertical faulting beneath the sea, underwater landslides, or volcanic explosions near a coast (Monmonier, 1997). These waves may travel as fast as 500 miles per hour (Monmonier, 1997). Tsunamis have generally been considered to be a significant hazard threat primarily for land areas near the Pacific Ocean. Tsunamis are considered to be a very rare phenomenon in the Atlantic Ocean, and when they have occurred, have generally not been waves of significant height, and have not typically resulted in loss of life, to the same extent as their Pacific Ocean counterparts (Monmeier, 1997). According to Lockridge, Whiteside, and Lander (2002), the Georgetown County area is not an "at-risk" (p. 122) area for a significant type of Atlantic Ocean tsunamis. Consequently, the Georgetown County area would not be expected to experience a tsunami.

- *Landslide/Mudslide*

  The Georgetown County area is generally flat with only gradual changes in elevation occurring over relatively large areas. The highest point in the County is 76 feet above mean sea level. Consequently, there are no above ground mountains, hills, or other natural areas where landslides or mudslides would be expected to occur. *Refer to the tsunami hazard description for a discussion on underwater landslides.*

- *Volcano*

  According to Monmonier (1997), there are no "remotely active volcanoes" (p. 52) located east of the Rocky Mountains. Therefore, the Georgetown County area is not expected to experience a volcano hazard.

Two other hazards, one man-made and one natural, are listed below. They are not included in this plan due to lack of information and study. They are also not included in the Risk Assessment for Georgetown County. Hopefully they will be included in the updated Risk Assessment, and if so, will be included in the next iteration of this plan (2019). These are described below.

- Sinkholes:
  - Sinkholes occurred in Georgetown in 2011; however, they were man-made due to the Highway 17 drainage project that was completed in 2013. There is a low probability of sinkholes forming as a natural hazard in the future although the possibility is there.

- Sea Level Rise:
  - It is difficult to predict the amount of sea level rise along the coast, but there are numerous factors related to this hazard including land subsidence, groundwater depletion, wave action, hurricanes, and natural climate variation. The EPA suggests that sea level rise may increase the impact of coastal storms. The IPCC released a climate change and sea level rise report in 2007 that stated for the coastal regions of the United States, it is estimated that we will see at least .6m of sea level rise, and more likely up to 2.0m rise.

Determining Social Vulnerability

In 2012, the US Army Corps of Engineers (USACE) and Dewberry conducted a Hurricane Evacuation Study of the Northern Conglomerate – the first of its kind since Hurricane Hugo. Although the 2004 Hazard Mitigation Plan compiled data utilizing the USC Hazard Assessment, the 2014 iteration of the plan will utilize the USACE/Dewberry Social Vulnerability Analysis since the data is more current.

The identification of vulnerable population is a critical component of any vulnerability analysis. For the purpose of this study, the vulnerable population is defined as persons residing within the evacuation zones subject to storm surge and the residents of mobile homes within the coastal counties. Mobile home residents countywide and all tourists are advised to evacuate for any storm scenario when an evacuation has been ordered.

South Carolina population figures were obtained from the U.S. Center Bureau's 2010 Census (by Census Block) through American FactFinder (factfinder2.census.gov). The vulnerable population was determined from an overlay of the 2010 population at the block level with storm surge and evacuation zone shapefiles. A spatial analysis was performed to calculate the percentage of the population in each block group that was located in each storm surge area and evacuation zone. Parcel data from the County tax assessor was used to determine the number of mobile homes and their location within the county. The mobile home population in each evacuation zone and storm surge area was calculated by multiplying the number of mobile homes by the average household size for that county.

Tourist data was gathered from a database of hotel/motel, timeshares and campground locations provided by the Myrtle Beach Area Chamber of Commerce and from the Statistical Abstract for the Myrtle Beach Area of South Carolina[25] prepared by the Chamber's Marketing Research Department. Additional accommodations providers in Georgetown County were provided by the Tourism Manager at the Georgetown County Chamber of Commerce. These data sources were used to identify and locate the vulnerable populations within the coastal counties. The tourist population was calculated based on available room counts and occupancy rates of the tourist units. High and low occupancy rates assumptions were based on research contacted by Clay Brittain, Jr. Center for Resort Tourism at Coastal Carolina University and presented in the 2011 Statistical Abstract.

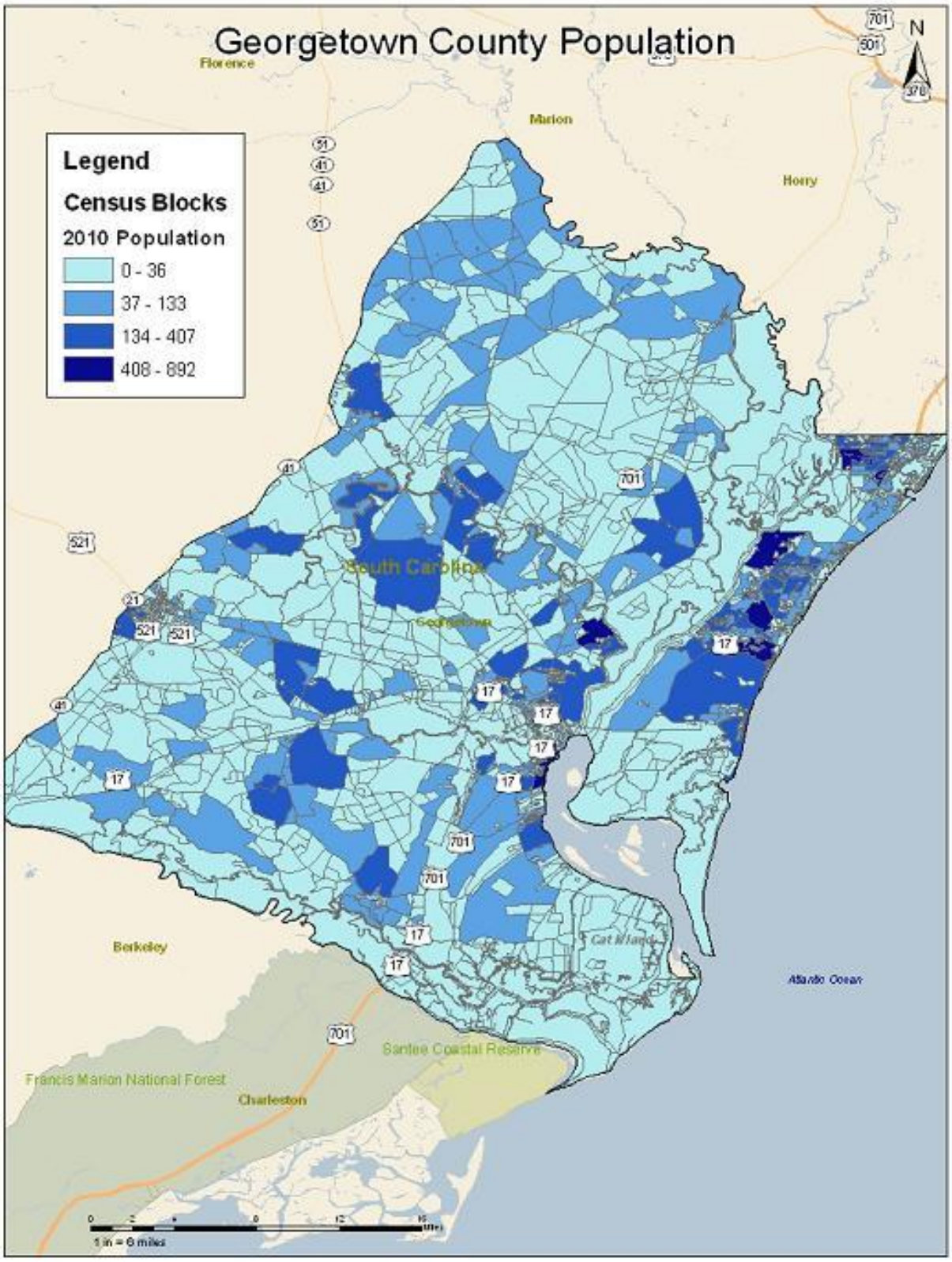
Table 7 provides estimates of the vulnerable population in Georgetown County by storm surge areas and evacuation zone. The total population, mobile home population, and the tourist population (at low, high, and 100% occupancy) are calculated for each surge area, evacuation zone, and for areas outside of these regions. The values listed are cumulative and not independent by storm category and evacuation zone. Figure 13 depicts the spatial distribution of the population at the Census block level for Georgetown County.

[25] Statistical Abstract for the Myrtle Beach Area of South Carolina, 20th Edition. Marketing Research Department, Myrtle Beach Chamber of Commerce, January 2011. http://www.myrtlebeachareachamber.com/research/docs/20statabstract.pdf.

Table 7 Vulnerable Population in Georgetown County

GEORGETOWN COUNTY			
	Total Population	**Mobile Home Population**	**Tourist Population**
EVAC ZONE			**100% OCC**
A	14,862	2,260	22,205
A & B	41,406	7,803	23,435
A, B & C	47,247	11,300	23,435
OUT	12,911	5,266	1,085
TOTAL	60,158	16,565	24,520
SURGE AREA			
1	6,010	1,456	17,200
1-2	12,941	3,609	22,290
1-3	31,792	8,189	23,075
1-4	44,312	10,673	23,435
1-5	48,503	11,863	23,435
OUT	11,655	4,702	1,085
TOTAL	60,158	16,565	24,520

Figure 13 Georgetown Population by Census Block



Source: U.S. Army Corps of Engineers-Charleston District and Dewberry *Vulnerability Analysis for South Carolina Hurricane Events Northern Conglomerate Counties National Hurricane Program Final Report, January 2012.*

The vulnerable population in Georgetown County consists of all those residing in a potential storm surge area, residents of mobile homes, and all tourists. In Georgetown County, nearly 80% of the population is located within a surge area (~48,000 people). The largest percent increase in the vulnerable population occurs between the Category 2 and Category 3 surge areas. The largest population is located in the Category 3 surge area (~19,000). The Waccamaw Neck communities (Murrells Inlet, Litchfield, Pawleys Island, and DeBordieu) have exploded with development in recent years. Above the Category 3 surge area, the percent increase in the vulnerable population declines. The inland areas of Georgetown County are relatively rural, and consequently much less densely populated that the coastal areas. However, the inland communities located outside of an evacuation zone contain 30% of the mobile home population in the County, and will need to be evacuated for high wind hazards, regardless of storm category. Tourist locations in Georgetown County are primarily located in the Category 1 surge area. So, although the tourist population is smaller in Georgetown County relative to Horry County, a larger percentage of tourists would be impacted by smaller Category storms.

In terms of evacuation zones, significant variability in the vulnerable population is evident from one evacuation zone to the next. The vulnerable population nearly triples from Zone A to Zone B in Georgetown County (a 179% increase from 14,862 to 41,406). There is less than 15% increase in vulnerable population when Zone C is added to the evacuation order. Calling for a Zone B evacuation will significantly increase the number of evacuees. When Zone C is added to the evacuation order, the evacuating population will only increase slightly in Georgetown County.

From the vulnerable population tables, it is evident that the tourist population is primarily located along the coast and declines significantly as you move inland. The tourist population in Georgetown County is primarily located within a Category 1 surge area. Table 8 shows the total population and the mobile home population for the Northern Conglomerate counties. The vulnerable population of the inland counties is considered to be all mobile home residents. Residents living in manufactured housing have the potential to be severely impacted by the winds of a tropical system. The vulnerable population located in a storm surge was not determined for the inland counties that had storm surge areas depicted. It was determined that these areas are well represented by the FEMA flood zone areas, and therefore, are not considered in this phase of the vulnerability analysis. No evacuation zones were determined for these inland county surge areas.

Table 8 Mobile Home Population in the Northern Conglomerate

COUNTY	TOTAL POPULATION	AVERAGE HOUSEHOLD SIZE	# OF MOBILE HOMES	MOBILE HOME POPULATION
Clarendon	34,971	2.54	6,529	16,584
Darlington	68,681	2.54	8,553	21,725
Dillon	32,062	2.65	4,547	12,050
Florence	136,885	2.54	12,205	31,001
Georgetown	60,158	2.43	6,817	16,565
Horry	269,291	2.37	24,121	57,167
Lee	19,220	2.54	3,047	7,739
Marion	33,062	2.52	4,698	11,839
Marlboro	28,933	2.47	3,152	7,785
Sumter	107,456	2.59	11,807	30,580
Williamsburg	34,423	2.53	5,483	13,872
TOTAL	825,142		90,959	226,907

Vulnerable Structures and Evacuating Vehicles

Along with the vulnerable population, the number of structures within the community that are vulnerable to storm surge is imperative information for emergency management and a crucial piece of knowledge from the evacuation, response, and recovery standpoint. Another crucial piece of knowledge is the number of vehicles that may be utilized in the evacuation process. Those two components of the Vulnerability Analysis have been developed to assist emergency managers in determining the number and characteristics of vulnerable properties within their communities.

Vulnerable Structures

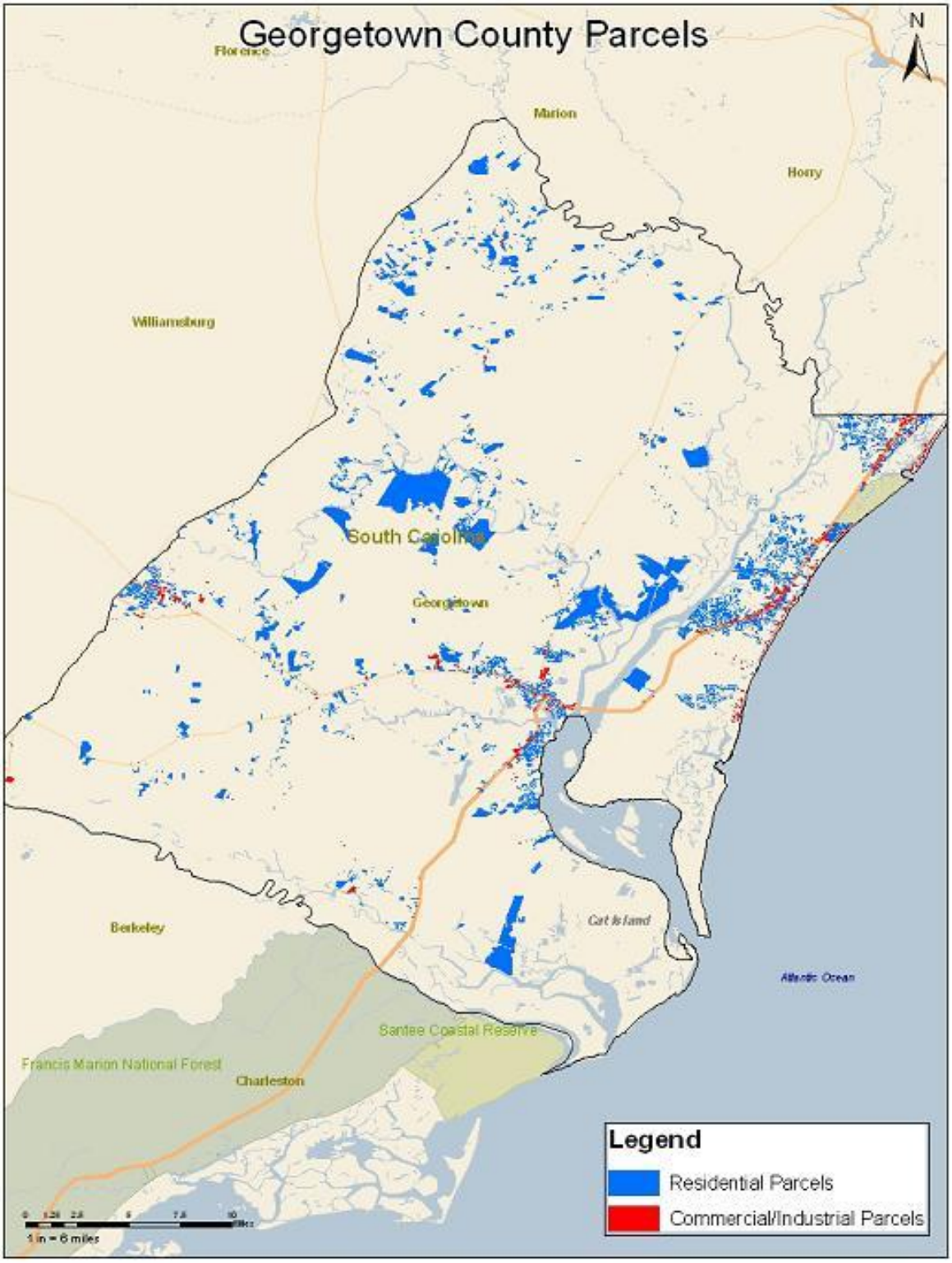
Parcel data from the Georgetown County Tax Assessor was utilized in a spatial analysis to classify and select the residential, commercial, and industrial structures and mobile homes in the county that are vulnerable to the five hurricane storm surge categories. From the tourist databases provided by the Myrtle Beach and Georgetown County Chambers of Commerce, the location of hotels, motels, Bed and Breakfasts (B&Bs), and campgrounds were mapped and classified by storm surge area and evacuation zone.

Table 10 shows the number and type of vulnerable structures in each surge area and evacuation zone as well as those that are located outside of these areas. The values listed are cumulative and not independent by storm category. Georgetown County parcel designations did not include an independent use code for industrial sites. Figure 14 illustrates the distribution of residential, commercial, and industrial parcels in Georgetown County.

Table 9 Vulnerable Structures in Georgetown County

GEORGETOWN				
	Mobile Homes	Residential	Commercial/ Industrial	Tourist
SURGE AREA				
1	599	3,722	1,591	3,440
1-2	1,485	7,678	2,129	4,458
1-3	3,370	15,179	2,689	4,615
1-4	4,392	19,409	2,841	4,687
1-5	4,882	20,883	2,918	4,687
N/A	1,935	3,444	324	217
TOTAL	6,817	24,327	3,242	4,904
EVAC ZONE				
A	930	8,667	2,299	4,441
A & B	3,211	19,569	2,889	4,687
A, B & C	4,650	20,541	2,917	4,687
N/A	2,167	3,786	325	217
TOTAL	6,817	24,327	3,242	4,904

Figure 14 Georgetown County Parcels



Source: U.S. Army Corps of Engineers-Charleston District and Dewberry *Vulnerability Analysis for South Carolina Hurricane Events Northern Conglomerate Counties National Hurricane Program Final Report, January 2012.*

Residential Properties

An assessment of vulnerable structures reveals that Georgetown County has a higher percentage of its residential structures in a surge area (80%) than outside the surge area. The highest amount of residential structures is located in the Category 3 surge area (~7,500).

Commercial/Industrial Properties

A large number of commercial structures would be affected by storm surge. In general, the distribution of commercial properties mirrors the distribution of residential properties. Ninety percent of commercial and industrial structures are located in a surge area. Of the commercial properties that are vulnerable to storm surge, the highest percent are located in a Category 1 storm surge area (50%).

Tourist Properties

The economy relies heavily on the tourism industry whose livelihood depends on the occupancy of its tourist structures and the operation of its businesses along the coast. Georgetown County has over 95% of its tourist properties in a surge area, with all located in Category 1 to Category 3 surge areas. A significant portion of commercial activity is located along the beaches making these areas extremely vulnerable to storm surge and increasing their potential for serious economic losses in the aftermath of a hurricane.

Mobile Homes

Seventy percent of mobile homes are located in a surge area. A higher percentage of mobile homes are located in the inland communities within the county which are only likely to experience storm surge in a major hurricane.

Mobile home and tourist data from the Census estimates compared to the best available data from the Northern Conglomerate coastal counties are presented in Table 10. Census estimates slightly overestimate the number of mobile homes and tourist units but generally provide a good estimate of these populations. The number of mobile homes and tourist units for the remaining counties in the Northern Conglomerate were estimated from Census estimates and are shown in Table 11. Outside of Horry and Georgetown counties along the coast, the next largest tourist population exists in Clarendon County. This is likely due to high volume of seasonal and second homes located along the popular Lake Marion, the largest lake in South Carolina.

Table 10 Vulnerable Structure Comparison

VULNERABLE STRUCTURE COMPARISON				
	MOBILE HOMES		TOURIST/SEASON UNITS	
CDUNTY	COUNTY	CENSUS	COUNTY	CENSUS
GEORGETOWN	6,817	6,932	4,904	5,112
HORRY	24,121	29,055	48,385	49,862

Table 11 Mobile Homes and Tourist Units in the Northern Conglomerate

COUNTY	MOBILE HOMES	TOURIST UNITS
Clarendon	6,529	2,261
Darlington	8,553	345
Dillon	4,547	153
Florence	12,205	416
Georgetown	6,817	4,904
Horry	24,121	48,385
Lee	3,047	123
Marion	4,698	320
Marlboro	3,152	176
Sumter	11,807	352
Williamsburg	5,483	458
TOTAL	**90,959**	**57,893**

Evacuating Vehicles

Based on the vulnerable population, the number of evacuating vehicles in each evacuation zone was calculated by first dividing the total number of evacuees by the county's average household size, resulting in the number of evacuating households. For planning purposes, a 100% evacuation participation rate of the vulnerable population is assumed. The number of evacuating households was multiplied by the average number of vehicles each household will take to evacuate. Similarly, the number of evacuating tourist vehicles was calculated by dividing the tourist population by the size of the average tourist party, assuming that the tourist population takes one vehicle per party during an evacuation. Table 12 illustrates the potential number of evacuating vehicles in each evacuation zone and potential shadow evacuees outside of an evacuation zone.

Table 12 Evacuating Vehicles in Georgetown County

GEORGETOWN COUNTY EVACATING VEHICLES		
	PERMANENT POPULATION	**AT 100% TOURIST OCCUPANCY**
EVAC ZONE		
A	7,951	12,392
A & B	22,151	26,838
A, B & C	25,276	29,963
OUT	6,907	7,124
COUNTYWIDE TOTAL	**32,183**	**37,087**

In Georgetown County, the number of evacuating vehicles doubles from Zone A to Zone B (from 12,392 to 26,838). The order to evacuate the second evacuation zone targets more of the county's permanent population. Evacuation Zone C does not include a significantly greater portion of the vulnerable population. Furthermore, there is a smaller portion of the population outside of the evacuation zones, so there is less potential for impacts from shadow evacuations.

As noted earlier in the vulnerable evacuation tables, tourist populations generally decline above a Category 3 surge area. Applied to evacuating vehicles, there is not a significant increase in evacuating vehicles with the addition of evacuation Zone C to an evacuation order. The largest increase in the number of vehicles on evacuation roadways lies in the decision to evacuate Zone B.

Societal Analysis

Vulnerable populations may also be defined by the social characteristics of a community. Having in-depth knowledge of the local population and its social characteristics, such as demographics, age, income, housing tenancy, language, etc., can greatly enhance the effectiveness of evacuation planning and management. Census data can provide useful information to identify societal features of the counties. Two key vulnerability factors, mobile home residents and households without vehicles, are illustrated in Figures 15 and 16. The racial breakdown of Georgetown County is displayed on Figure 17.

Compared to the national averages, the population of Georgetown County has: a higher poverty level (19.3% compared to 15.3%) and more elderly residents (19.8% compared to 13.0%). There are far fewer renters (22.2% compared to 34.9%), and a lower population density (73.9 people per square mile compared to 88.4). About 17% of Georgetown County residents have less than a high school education, higher than the national and state average There are far more mobile homes than the national average (21.0% compared to 6.6%), all which would be ordered to evacuate, regardless of storm category. Nearly 9% of Georgetown County households report having no vehicles. Although this figure is similar to the national average of 9.1%, it should be considered a major factor in the county's evacuation planning considering its vulnerability to hurricane hazards. Given the number of elderly and mobile home residents, as well as those living below the poverty level, Georgetown County may have more transportation-dependent residents that the average community. The racial profile is more diverse than the state, with a larger percentage of African American residents.

Figure 15 Percent of Mobile Home Residents

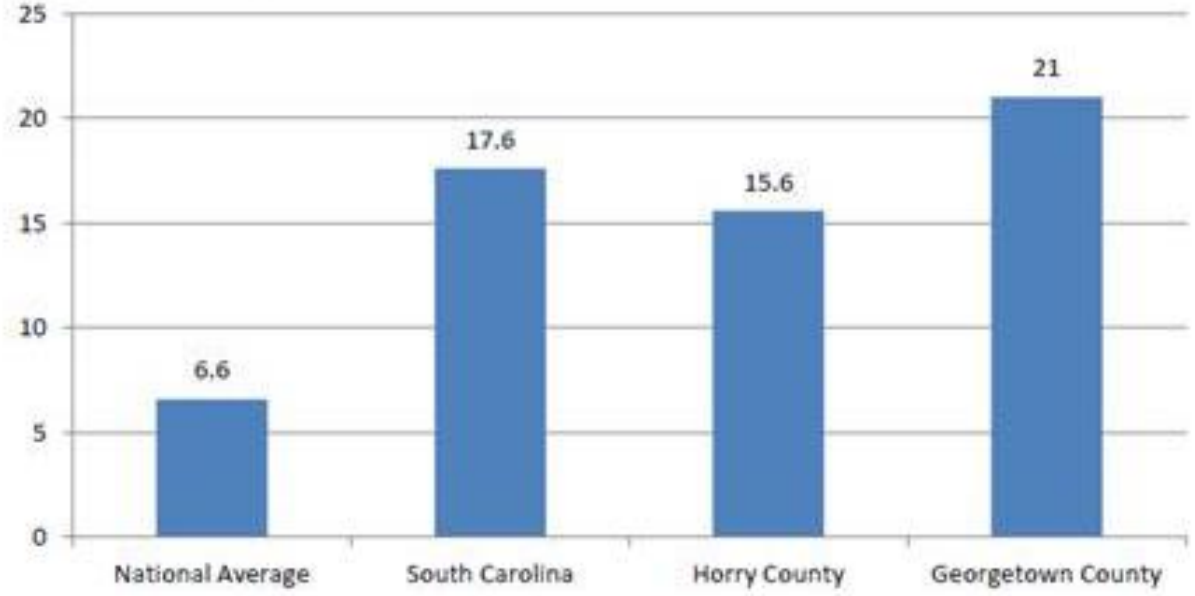


Figure 16 Percent of Households without Vehicles

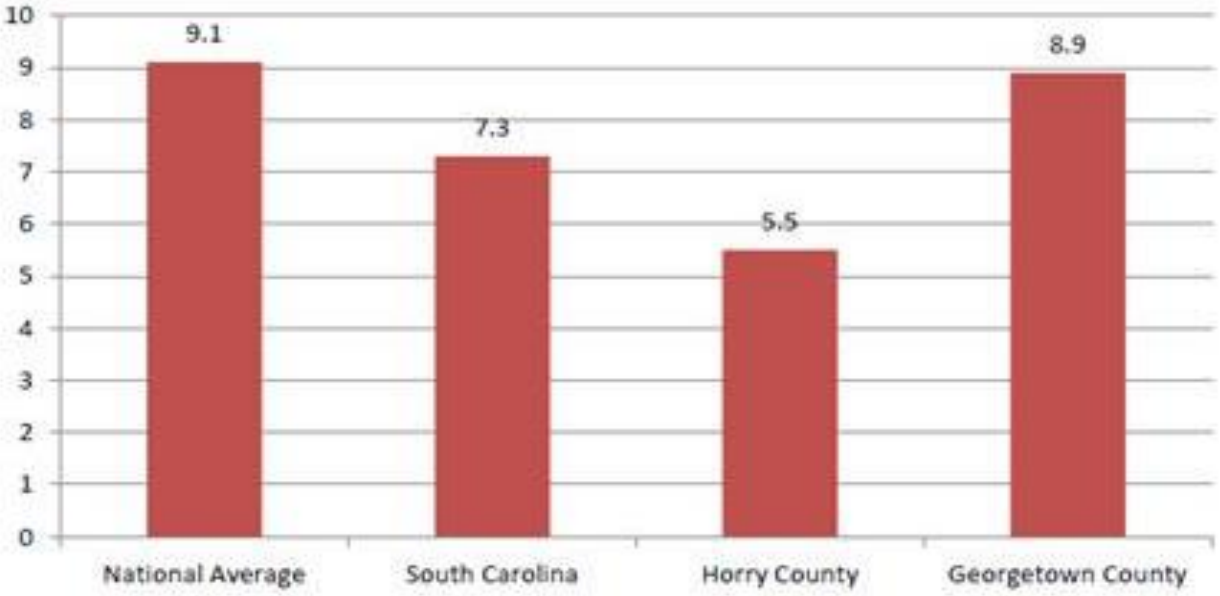
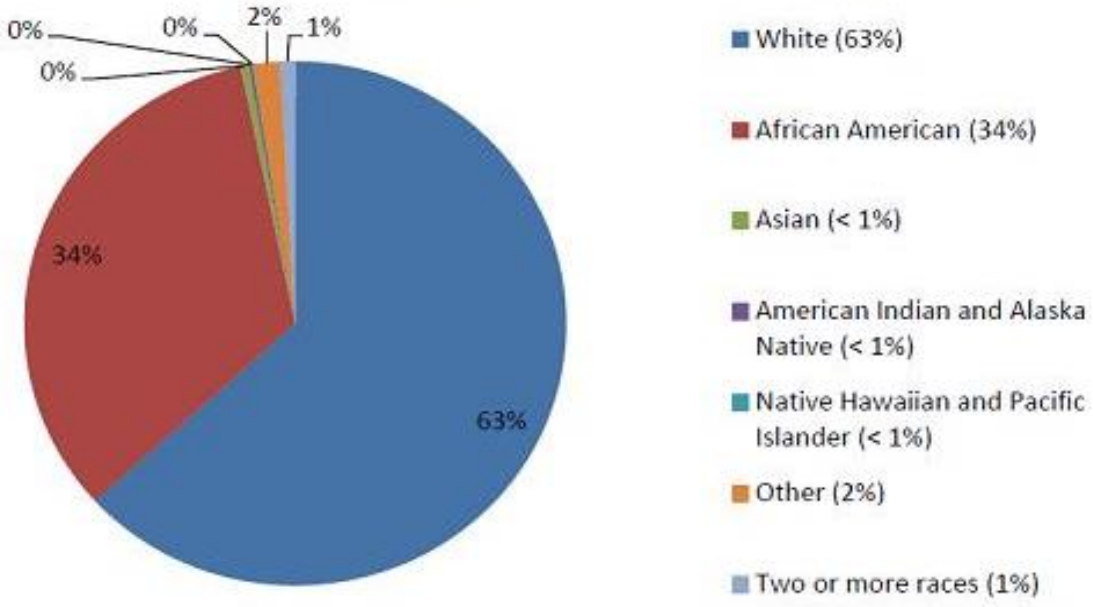


Figure 17 Georgetown County Race Breakdown



Evacuation Implications

The population is generally older than the state and national average. The age breakdown of the population reflects a larger number of retired and elderly populations in the Grand Strand. With age comes the potential for prior hurricane experience, depending on the length of residence in the area. This experience could positively or negatively impact their evacuation decision making and behavior. Past behavioral studies have shown that the older populations are sometimes more reluctant to evacuate than younger populations.

Of particular concern to evacuation planning are the relatively high poverty levels and the number of mobile home residents. The low income segment of the population may not have access to resources, whether physical or fiscal, necessary to facilitate an evacuation. There is a high percentage of households living in mobile homes. These residents may need assistance in locating and securing safe shelter for themselves and their families in the event of a hurricane. Additionally, the median income of the general population is below the national average and a significant portion of the population is living below the poverty level. A significant portion (9%) of the population does not own a vehicle. These critical transportation needs residents may need transportation assistance from the government in order to evacuate. Transportation assistance may also be necessary for the relatively high percentage of the population living below poverty level. Adequate planning should be conducted to evaluate the availability of transportation resources to assist in this effort.

Summary

In Georgetown County, 80% of the population is located within a surge area, and more than 78% reside in one of the County's evacuation zones. The largest population is located in the Category 3 surge area. The Waccamaw Neck communities of Murrells Inlet, Litchfield, Pawleys Island, and DeBordieu, have exploded with development in recent years. Above the Category 3 surge area, the percent increase in the vulnerable population declines. The inland areas of Georgetown County are relatively rural, and consequently much less densely populated than the coastal areas. However, inland areas outside of an evacuation zone have a significant mobile home population (30% of all mobile home residents) that will need to be evacuated for any evacuation scenario. Tourist locations in Georgetown County are primarily located in the Category 1 surge area. Although the tourist population is smaller in Georgetown County relative to Horry County, a larger percentage of tourists would be impacted by smaller category storms.

In the evacuation zones, a significant variability in the vulnerable population exists from one evacuation zone to the next. The vulnerable population nearly triples from Zone A to Zone B in Georgetown County (a 179% increase from 14,862 to 41,406). There is less than a 15% increase in vulnerable population when Zone C is added to the evacuation order. When Zone C is added to the evacuation order, the evacuating population will only increase slightly in Georgetown County.

Establishing the Social and Infrastructure Context

*Note: The Hazard Assessment Procedures (Figure 1) from the *Handbook for Conducting a GIS-Based Hazards Assessment at the County Level* indicates that this step takes place after overlaying the hazards zones with the social vulnerability zones. This data collection step may actually take place concurrently with the other data collection. It is presented in this order in the final assessment to allow for greater clarity when presenting examples for Georgetown County in the Conclusions section.

The intersection of hazard and social vulnerability is not sufficient to completely portray the hazard scenario for Georgetown County. The social and infrastructure context must also be established. There are certain elements of each that can contribute to the attenuation or amplification of the vulnerable areas. For instance, vulnerable groups that are distant from evacuation routes or downstream from a dam will be at greater risk. Overlaying the infrastructure over the place vulnerability may yield valuable information for mitigation planning. For example, an area ranking high in place vulnerability may be found to also contain two daycare centers and be near a known 'choke' point on an evacuation route. This information would alert emergency managers that a vulnerable population, children, may need to be evacuated and special steps taken to avert the congestion associated with that particular evacuation route. Two steps are involved in establishing context: 1) the identification and collection of special needs population data; and 2) the determination of key infrastructure and lifelines.

Infrastructure includes roads, structures, utilities, railroads, bridges, dams, airfields, ports, and response facilities. Platt (1995) states that many of these fall under the definition of a 'lifeline,' the networks which "provide for the circulation of people, goods, services, and information upon which health, safety, comfort, and economic activity depend" (p. 173). There also exist "special needs" locations that require careful consideration for hazard and emergency response.

Identification of Special Needs Populations

There exist special needs locations that require careful consideration for hazard and emergency response due to the need for advanced evacuation lead time and difficulty in relocation. These include day care centers, nursing homes, health centers, hospitals, and schools. These are identified in Figure 18.

Child Care Facilities

While this group of children is likely to be with their families at the time of a forecasted evacuation, such as for a hurricane, knowledge of their location remains essential due to hazards with a sudden rate of onset, such as an earthquake. These facilities were identified using a digital phone book, a conventional phonebook, and by contacting the local U.S. post office. Child care facilities were accurately located by using address matching software or global positioning systems (GPS).

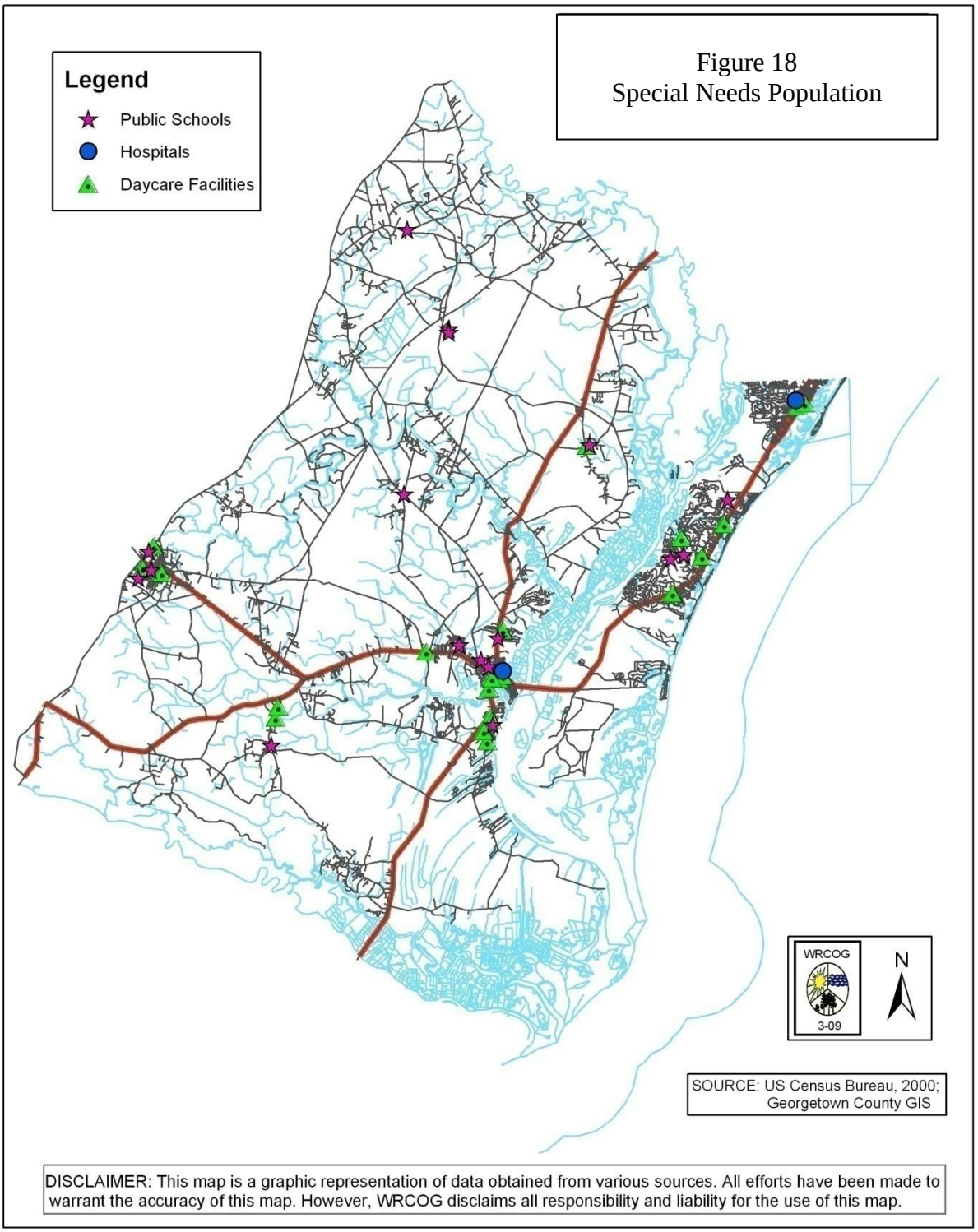


Figure 18
Special Needs Population

Adult Care facilities

This population is more vulnerable because of medical and mobility constraints. These facilities were identified using a digital phonebook, a conventional phonebook, or by contacting the local U.S. post office. Adult care facilities were accurately located by using address matching software or global positioning systems (GPS).

Medical Facilities

This population is more vulnerable because of medical and mobility constraints. These facilities were identified using a digital phonebook, a conventional phonebook, or by contacting the local U.S. post office. Primary care facility locations were collected taking care to not overlook other clinics that may provide important services such as dialysis. Medical facilities were accurately located by using address matching software or global positioning systems (GPS).

Schools

Similar to day care facilities, this group of children is likely to be with their families at the time of a forecasted evacuation, such as for a hurricane, but knowledge of their location remains essential due to hazards with a sudden rate of onset, such as an earthquake. These facilities were identified using a digital phone book, a conventional phone book, or by contacting the local U.S. post office. The local public school boards were also contacted, but an effort was made to make sure the private schools were not overlooked. Schools were accurately located by using address matching software or global positioning systems (GPS).

Identification of Key Infrastructure and Lifelines

Infrastructure includes roads, structures, utilities, railroads, bridges, dams, airfields, ports, and response facilities. Many of these fall under the definition of a lifeline, the networks which provide for the circulation of people, goods, services, and information upon which health, safety, comfort, and economic activity depend. All of the lifeline data are represented as either point or line coverages in the GIS.

The crucial infrastructure variables necessary are roads, railroads, airports, bridges, and waterways. These variables are not only infrastructure, but also lifelines. If any one or more is to fail during an emergency, serious complications could arise. It is very important, therefore, to understand these variables and how they might collapse under different stressors. A subset of transportation lifelines is the emergency evacuation routes. These usually consist of the major arterial highways leading out of the county toward shelters and safer areas. Consequently, the location of evacuation shelters was determined as well. Both shelter and evacuation route information were obtained from the county emergency manager. An example of lifelines for Georgetown County is provided in Figure 19.

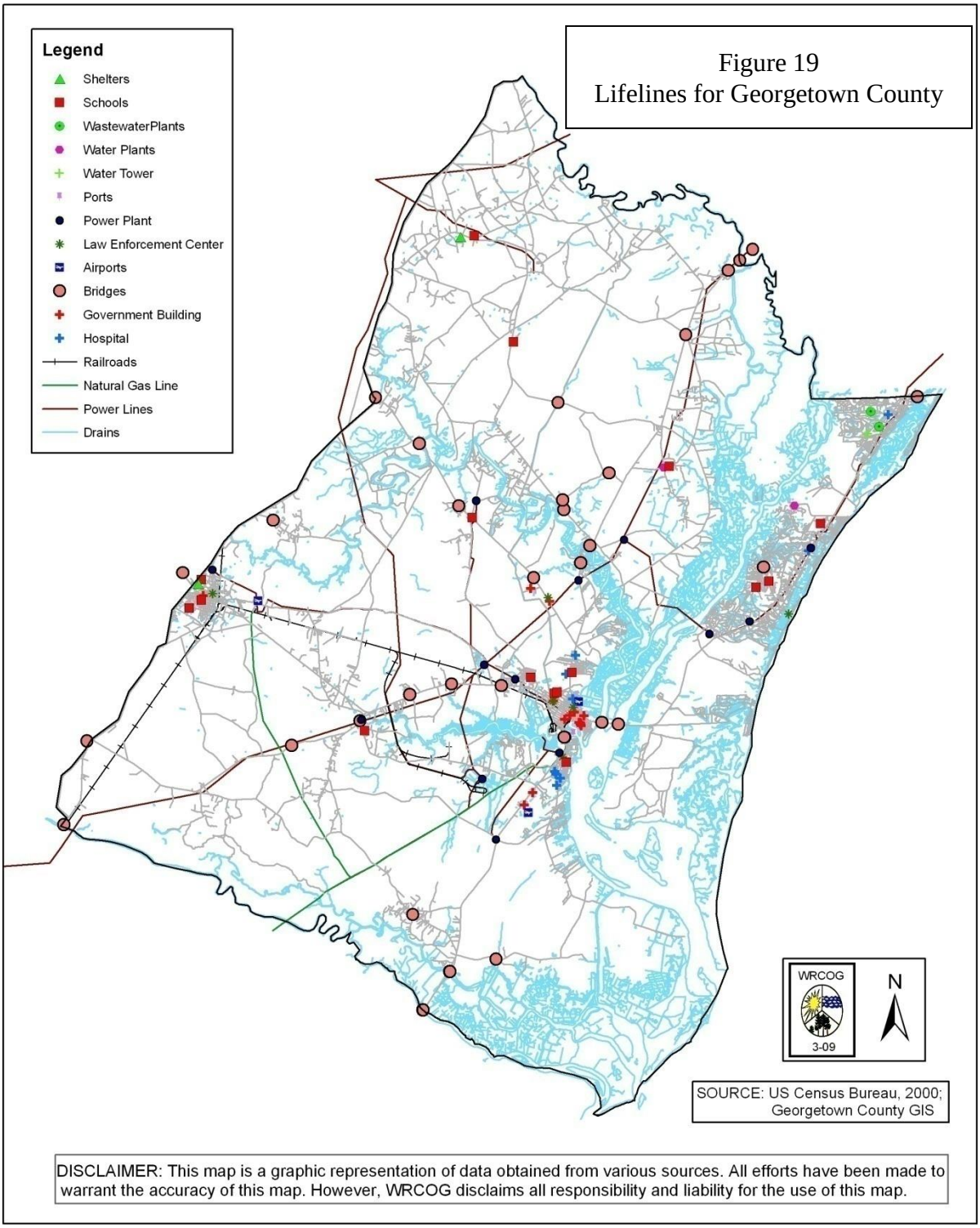


Figure 19
Lifelines for Georgetown County

Where possible, it is helpful to identify the location of dams, power lines, power substations, water treatment facilities, fire/police stations, and other community service facilities. Be aware that some variables fall into more than one category. For example, hospitals not only represent a special needs population, but are also crucial lifeline nodes during an emergency. Dam data was obtained by contacting DHEC. Fire/police stations were garnered by contacting those agencies. Table 13summarizes the data sources for lifelines and infrastructure. A complete list of critical facilities is located in Appendix B, Table 10.

Table 13 Data Sources for Lifelines and Infrastructure, Georgetown County

Category	Theme	Attribute	Sources
Special Needs	daycare centers	name, address, phone number	SelectPhone CD, U.S. Post Office, phonebook
	nursing homes	name, address, phone number	SelectPhone CD, U.S. Post Office, phonebook
	health centers	name, address, phone number	SelectPhone CD, U.S. Post Office, phonebook
	hospitals	name, address, phone number	SelectPhone CD, U.S. Post Office, phonebook
	schools	name, address, phone number	SelectPhone CD, U.S. Post Office, phonebook, school district
	military bases		Phonebook
	jails/prisons		Police Department
	homeless shelters		Phonebook
Roads	interstates	ID number	College of Liberal Arts Computing Lab - USC
	evacuation routes		Local EMD
	major roads		College of Liberal Arts Computing Lab - USC
	minor roads		College of Liberal Arts Computing Lab - USC
Railroads	lines		College of Liberal Arts Computing Lab - USC
Bridges	bridges		SCDOT
Dams	dams	Failure potential, ownership	South Carolina DHEC South Carolina Public Service Authority
Airfields	airfields	Runway length	College of Liberal Arts Computing Lab - USC
Response Facilities	fire stations		Fire Department
	police stations		Police Department
	emergency shelters		Local EMD

Conclusions

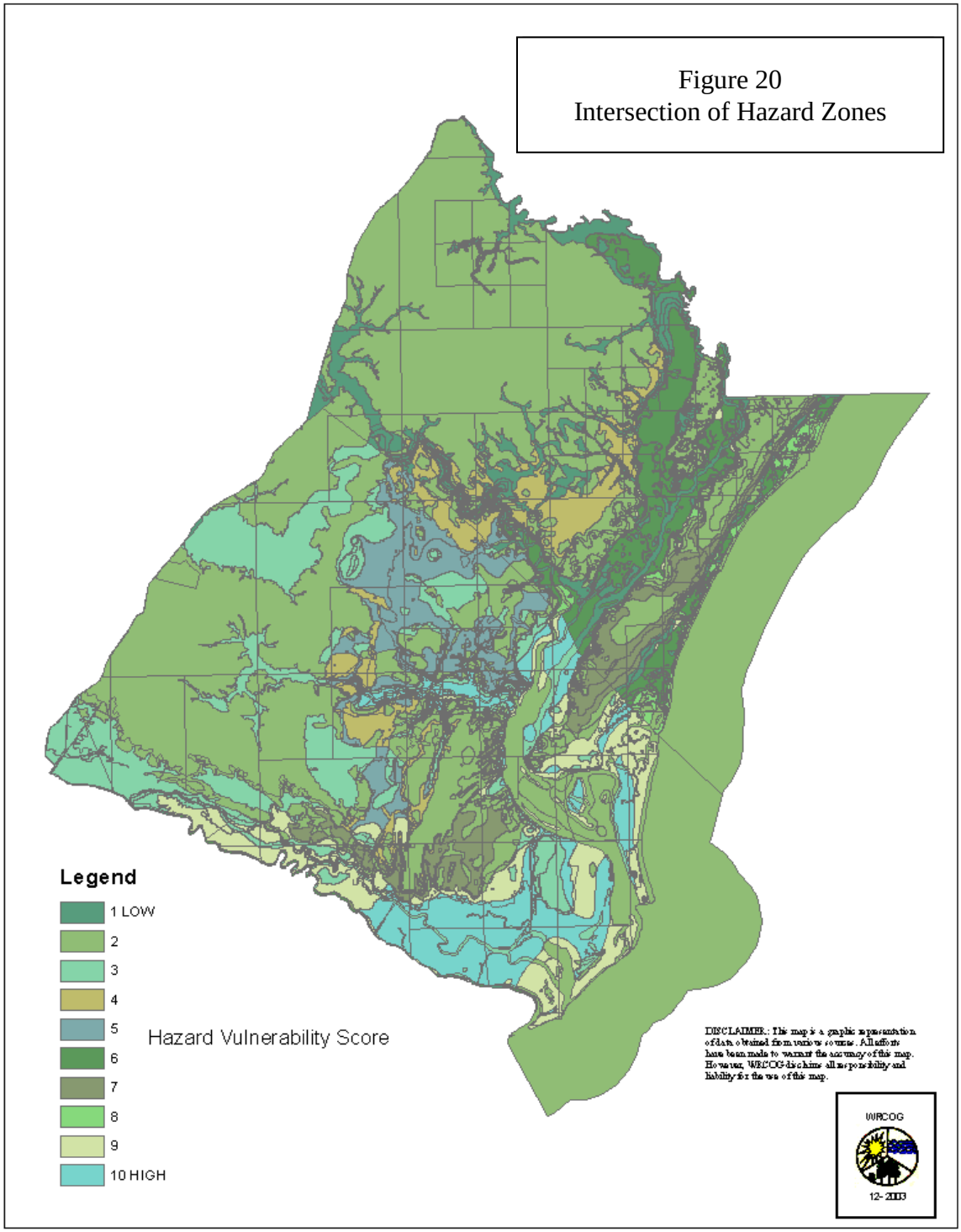
The Intersection of Hazard Zones and Social Vulnerability

The determination of both the composite hazard zones and composite social vulnerability areas required several steps which are outlined below. First, each hazard zone layer was overlayed with all other hazard zone layers creating a composite hazard zone coverage. The new resultant polygons have a hazard zone score equal to a summation of the probability for each hazard within that polygon (Figure 20). Second, the percentages of each social variable for every block were summed to arrive at a composite social vulnerability score for each block (Figure 21). The final step in the procedure is to combine the hazards coverage and social vulnerability coverage to produce the overall hazards assessment. This was accomplished by multiplying the score from each layer together to arrive at a final place vulnerability score. Figure 22 illustrates the place vulnerability for Georgetown County.

The effects of storm surge and flooding are also noticeable. Those hazards that are more geographically diffuse, such as earthquakes, or those that encompass the entire county, such as tornadoes, are not individually discernible. They still contribute, however, to the overall level of vulnerability where they intersect with the other hazards zones.

The most socially vulnerable areas in Georgetown County appear in Figure 21. The more darkly-shaded areas in the center of the county and near the southern end represent a lower-income demographic which becomes a more vulnerable area due to the concentration of minority communities. Pawleys Island stands out because of large numbers of people, young and old, and higher numbers of housing units particularly during the height of tourist season. The vulnerable block near Murrells Inlet results from a combination of very high numbers of elderly people and mobile homes. For obvious reasons, many of the rural portions of the county are less vulnerable because of a lack of people, congestion, density and structures. Generally, low density areas become easier to mitigate due to less physical and environmental constraints. Because the less dense areas tend to be located further inland, their risk of experiencing hazards affiliated with coastal areas, such as erosion, storm surge flooding and other coastal hazards becomes lower.

In addition to a spatial representation of place vulnerability, GIS allows the calculation of the true number of vulnerable people and their residences in each hazard zone (Tables 8 and 9) or composite hazard zones (Table 10). To calculate the number of vulnerable persons and structures in each hazard zone, areal interpolation employing proportionate areas (assuming uniform densities of phenomena) is utilized. Interpolation is the process for estimating the value for missing points or areas. These are not necessarily the 'true' values, but rather a mathematical best estimate. In areal interpolation, this procedure finds the area of a new polygon resulting from the union operation. The attributes of the social vulnerability layer are allocated proportionally to the percentage area occupied by the resulting polygon. It is important to remember that the calculation of these missing values from neighboring areas is only an approximation. We assume, for instance, that population is uniformly distributed across a census block group when in reality there may be a clustering of the phenomena in one or more parts of the block group.



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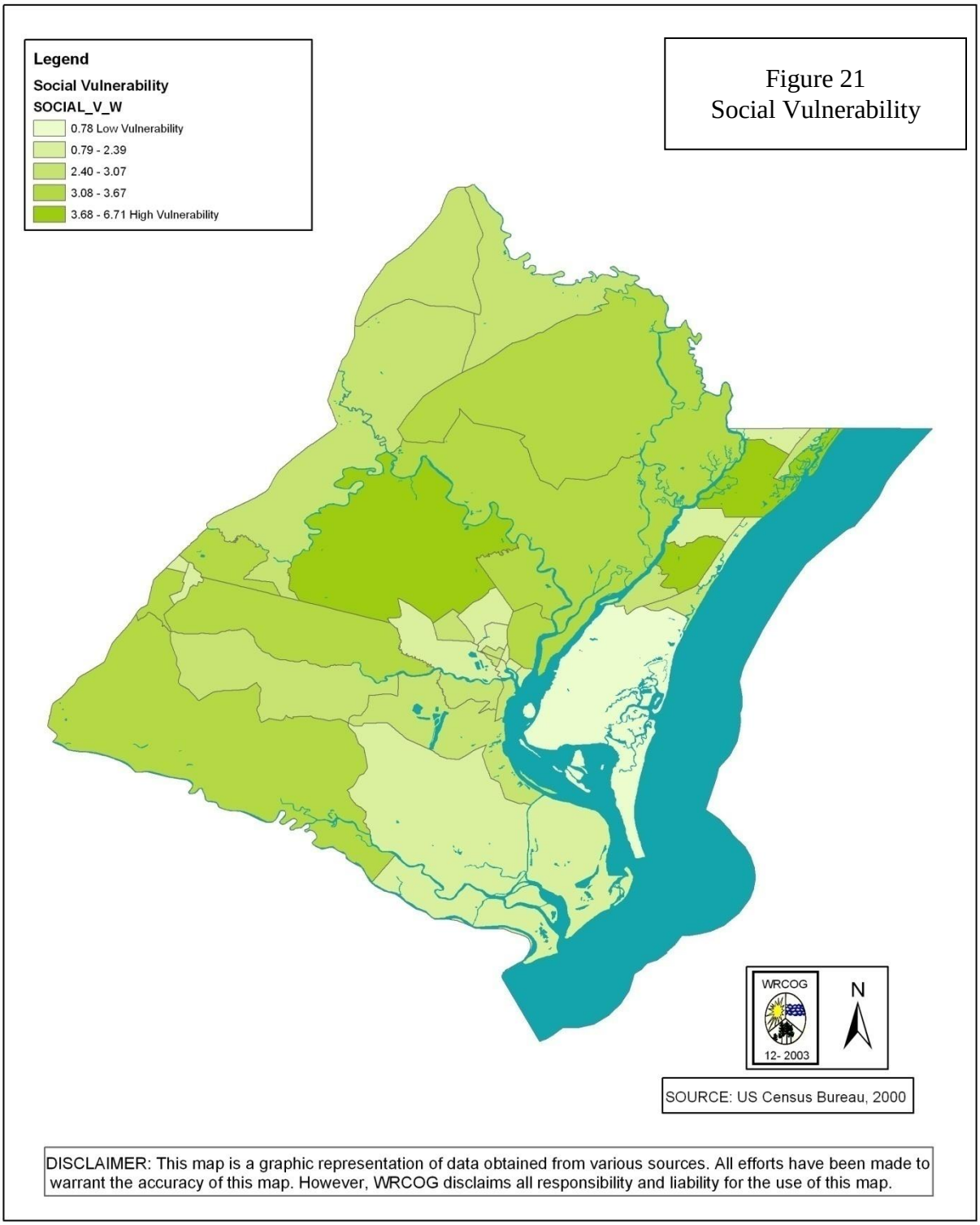
Legend
Social Vulnerability
SOCIAL_V_W
0.78 Low Vulnerability
0.79 - 2.39
2.40 - 3.07
3.08 - 3.67
3.68 - 6.71 High Vulnerability
Figure 21
Social Vulnerability
WRCOG
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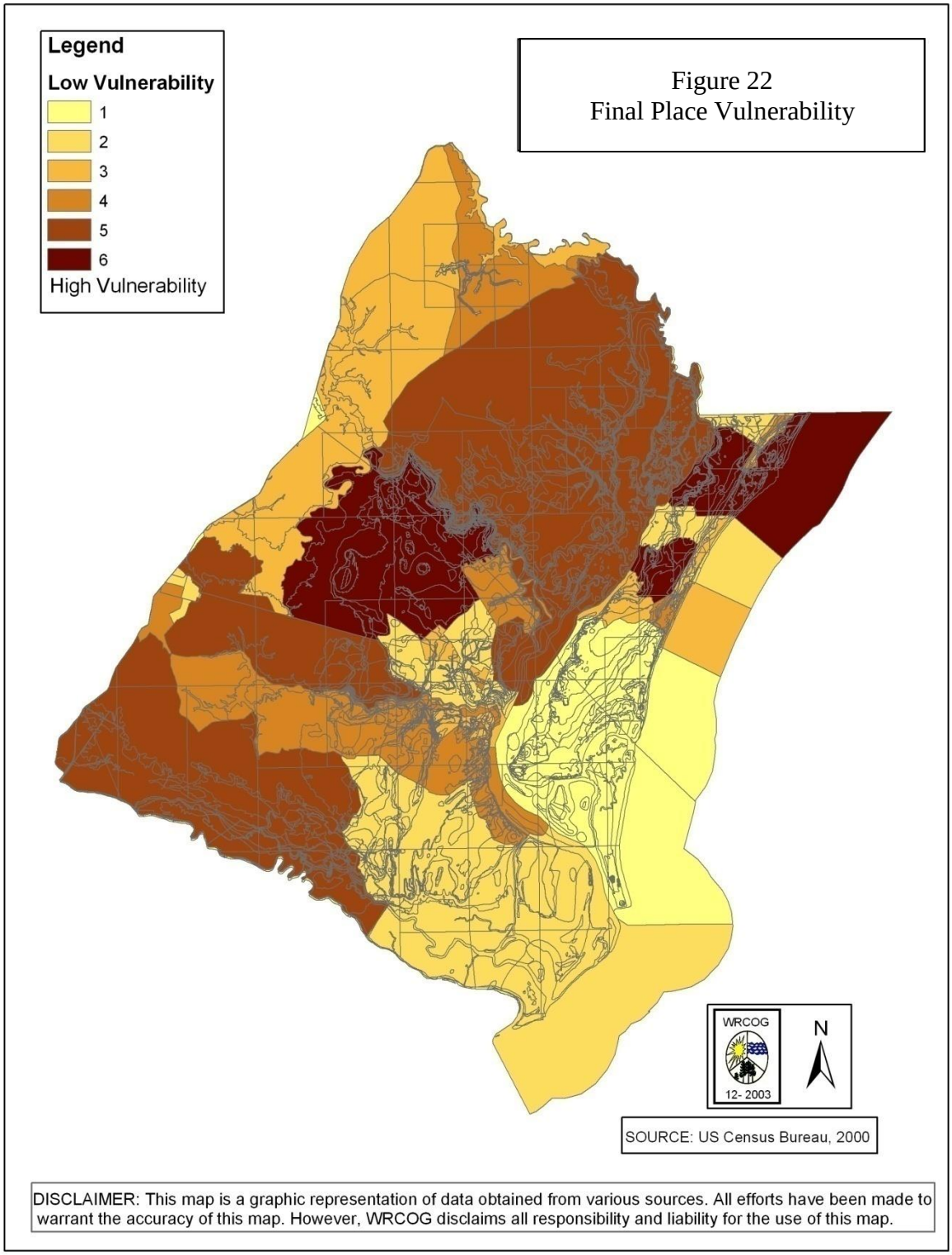
SOURCE: US Census Bureau, 2000
DISCLAIMER: This map is a graphic representation of data obtained from various sources. All efforts have been made to warrant the accuracy of this map. However, WRCOG disclaims all responsibility and liability for the use of this map.


Legend
Low Vulnerability
1
2
3
4
5
6
High Vulnerability
Figure 22
Final Place Vulnerability
WRCOG
12- 2003
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SOURCE: US Census Bureau, 2000
DISCLAIMER: This map is a graphic representation of data obtained from various sources. All efforts have been made to warrant the accuracy of this map. However, WRCOG disclaims all responsibility and liability for the use of this map.

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Tab 1 to Appendix 1 Data Sources

Individual Hazards Zone Data Specifics

Floods

Data Sources

The area at risk from flooding is provided by the SC Department of Natural Resources (2014) and SCEMD.

Limitations of Data

It is important to recognize the limitations of the digital flood data. No individual parcel flooding determination should be inferred from these maps. Additionally, the terminology referring to the 100-year and 500-year floodplains should not be misunderstood. The 100-year flood recurrence interval refers to a probability of at least 1 percent that an area will be flooded in any given year. This corresponds to the flood levels expected on the long-term average of once every one hundred years, hence the often misinterpreted term '100-year flood'. It is important to note that only the outermost edges of the 100-year floodplain have a risk as low as 1 percent per year. As one moves closer to the stream channel or tide line, the risk increases progressively. Because of floodplain development (leading to water displacement) and other factors, flooding is often more frequent than the 100 or 500-year floodplain line would indicate.

Wildfire

Data Sources

Data on the number of fires on forested land is freely available in the *South Carolina Statistical Abstract* (1981-2008) produced yearly by the SC Budget and Control Board, although the database has not been updated since 2008. This information is provided by the SC Forestry Commission (2014) and reports only those fires responded to by the forest service. Data was also received from SCEMD.

Data Limitations

While data on the number of fires and their average size is given, the specific location is not provided. This dataset is limited because only fires that occur on protected forested land are reported, the fires are reported by fiscal year not calendar year, and only fires responded to by the forest service are listed. It should be cautioned that there is often a large number of fires, but these fires do not necessarily occur near residential populations and vulnerable structures. This fact makes this dataset suspect in determining the true level of risk from wildfire. It is the best available source, however, at present.

Severe Storm/Thunderstorm Wind/Hail Events

Data Sources

Data on thunderstorm wind events for South Carolina is available from 1955 to 2013. This data was retrieved from the NCDC and SCEMD. Additional data from the National Climatic Data Center was utilized to further examine storm hazard events in the County. The determining criteria for inclusion in this dataset are wind gusts greater than 50 knots. The data include location (latitude and longitude), date and time, fatalities and injuries, and an index of damage. Data on hail events for South Carolina is available from 1955 to 2013. These data were retrieved from the National Climatic Data Center. Also retrieved data concerning the frequency and severity of hail events. The determining criteria for inclusion in this dataset are hailstones 1.75 inches in diameter or greater. The data include location (latitude and longitude), date and time, fatalities and injuries, and an index of damage.

Data Limitations

This dataset is limited because only damaging events and those witnessed by people are listed. The true frequency of the risk, therefore, is understated. The hail dataset is limited because smaller hail events are missing and only damaging events and those witnessed by people are listed. The true scope of the risk, therefore, is likely understated.

Hurricane

Data Sources

Hurricanes are complex hazards with both a water and wind component. Data on all hurricane tracks and wind observations was drawn from the dataset *Tropical Cyclones of the North Atlantic Basin 1886-2008*. These data are originally from the *Atlantic Basin Best Tracks* dataset created and distributed by the National Hurricane Center, Miami, Florida. This data is used as the input to a probabilistic model developed by Dr. Michael Hodgson at USCHRL. This model calculated the number of hurricane wind events occurring at each point in the state. Data was also obtained from the SCEMD.

Storm surge is an elevation of the ocean surface resulting from the compound effects of water being pushed shoreward by wind across decreasing depths on a continental shelf, low pressure at the sea surface, tides raising the water level, and winds raising the ocean surface. The SLOSH model (**S**ea, **L**ake, **O**verland **S**urges from **H**urricanes) is a computer simulation developed by the National Weather Service used to predict the height of hurricane storm surge. The U.S. Army Corps of Engineers and U.S. FEMA contracted with the NOAA National Hurricane Center to calculate the worst case inundation zones for coastal South Carolina using SLOSH model output. These zones are based upon the Saffir-Simpson Hurricane Wind Scale magnitude and intensity categories that range from 1 (winds greater than 64 knots/74 mph) to 5 (winds greater than 137 knots/157 mph).

Data Limitations

The SLOSH model output is still model-based and represents an approximation of what might occur given a particular hurricane. The SLOSH model is run multiple times and its output is combined into the Maximum of Maximum Envelope of High Water (MOMs) for all storms from various directions of the same Saffir/Simpson Hurricane Wind scale. Depending on the specifications or parameters used in developing the "idealized" storm, there may be subtle changes in the inundation contours. The MOMs used in the Georgetown study were for a fast moving storm (>25 mph). MOMs maps have been designed for use in planning operations for those areas affected by the high water produced by a hurricane. The USCHRL wind probability model is also based on standard hurricane parameters with each storm potentially having a larger or smaller wind field than predicted.

Earthquake

Data Sources

Data was gathered from the SCEMD. A map of the liquefaction and soil hazards from earthquakes has also been devised by SCEMD and USGS, but it is inadequate for determining earthquake potential.

Data Limitations

The liquefaction and landslide potentials are unknown at a county scale of analysis, and thus cannot be included in the probability calculation.

Tornado

Data Sources

Tornado strikes in South Carolina are available from 1950 to 2013. This data was obtained from the NCDC and the SCEMD.

Data Limitations

This dataset is limited because only damaging events and those witnessed by people are listed. The true scope of the risk, therefore, is likely understated.

Drought

Data Sources

Data on the occurrence of drought (1895-2013) is available from the NCDC and SCEMD. This data is provided by climate division in South Carolina. There are 7 climate divisions in South Carolina. The data is provided in the form of the Palmer Drought Severity Index (PDSI). The PDSI is derived from the weighted differences between actual precipitation and evapotranspiration. The PDSI index runs from 4.0 and above (extreme moist spell) to zero (near normal) to -4.0 and below (extreme drought). For this assessment, a drought is

considered to have occurred in any year with three or more consecutive months of a rating -2.0 or below (moderate drought).

Data Limitations

This represents a generalized view of drought conditions for the entire county. The drought hazard is often a function of water use and conservation practices as much as a lack of precipitation versus the rate of evapotranspiration.

Dam Failure

Data Sources

Data on the occurrence of dam failure was derived from a report prepared by the South Carolina Public Service Authority entitled "Emergency Action Plan for Dam Failure" and published in 2013.

Data Limitations

This dataset is limited because no damaging events have been documented. It is likely that the potential for dam failure will be related to a significant seismic event. The North Santee Dam is located in Seismic Zone 3.

Winter Storms

Data Sources

Data on winter storm events was obtained from a file labeled "Storms-Winter Storms" that is maintained in the Georgetown County Emergency Operations Center (EOC). Additional winter weather data was analyzed from the NCDC, 2014.

Data Limitations

The dataset consists of personal notes from Mr. Eddie Carraway (former Civil Defense Director), NOAA weather advisories, and newspaper clippings.

APPENDIX B: COMMUNITY VULNERABILITY ASSESSMENT

COMMUNITY VULNERABILITY ASSESSMENT

1. Geographic Profile

Georgetown County is located in the northeastern portion of South Carolina's coastal plain region adjacent to the Atlantic Ocean. The county's water resources are abundant and represent the most significant geographical feature. Five rivers (Santee, Sampit, Black, Pee Dee and Waccamaw), the Atlantic Intracoastal Waterway, Winyah Bay, North Inlet and Murrells Inlet, along with the Atlantic Ocean have played important roles in Georgetown County's development for almost three hundred years. Figure B-1 displays the location of Georgetown County.

Georgetown County is one of South Carolina's largest with a total of 1,035 square miles. The county ranks seventh in total area. Only 815 square miles of the total area is land area. The topography is very flat, with elevations ranging from sea level to a maximum of 75 feet on Sandy Island. Only 3 percent of the county exceeds 50 feet in elevation and 70 percent of the land is less than 25 feet above sea level.

There are three incorporated municipalities in Georgetown County. Georgetown, the county seat, had a population of 9,163 persons in 2010. The Town of Andrews (pop. 2,861) is located in the western section of the County and the Town of Pawleys Island (pop. 103) is located on the eastern edge on the Atlantic Ocean.

Georgetown County's climate is characterized by hot, humid summers with temperatures occasionally exceeding 95°F and moderate winters with temperatures rarely going below 20°F. The annual average precipitation is 48 inches with heavier rainfall from July through September. Snowfall is rare and seldom exceeds 2 inches.

2. Demographic Profile

Georgetown County's population in 2010 was 60,158 persons. This represents a .9% decrease from the 2008 population. The Waccamaw Neck portion of the county has seen a 25.4% decrease in population since 2000 although during peak tourist season, tens of thousands of tourists visit each year. This area is bounded on the south by Winyah Bay, the west by the Waccamaw River/Intracoastal Waterway, the north by the Horry County line and on the east by the Atlantic Ocean. Table B-1 on page B-3 shows the census divisions in the county. Historical population and population projections by County Census Division is shown below.

TABLE B-1 Georgetown County Population Projections by CCD

County Census Division	1970	1980	1990	2000	2010	2015	2020	2025	Percent Growth Rate 2000-2025
Andrews	5,174	6,914	7,433	7,929	8,728	9,133	9,538	9,945	25.4%
Georgetown	15,638	19,281	19,662	20,111	21,330	21,949	22,570	23,195	15.3%
Plantersville	2,499	2,706	2,661	3,199	3,338	3,447	3,557	3,667	14.6%
Pleasant Hill	3,059	3,518	3,568	3,994	4,212	4,353	4,493	4,634	16.0%
Sampit	3,977	3,519	3,455	3,918	3,734	3,735	3,735	3,737	-4.6%
Waccamaw	3,153	6,523	9,721	16,646	20,428	22,623	24,816	27,011	62.3%
County Total	**33,500**	**42,461**	**46,500**	**55,797**	**62,610**	**66,130**	**69,650**	**73,180**	**31.2%**

Source Notes: Actual population numbers from U.S. Census 1970, 1980, 1990 and 2000
Population projection for county totals provided by South Carolina Budget and Control Board, Office of Research and Statistics, 2009.

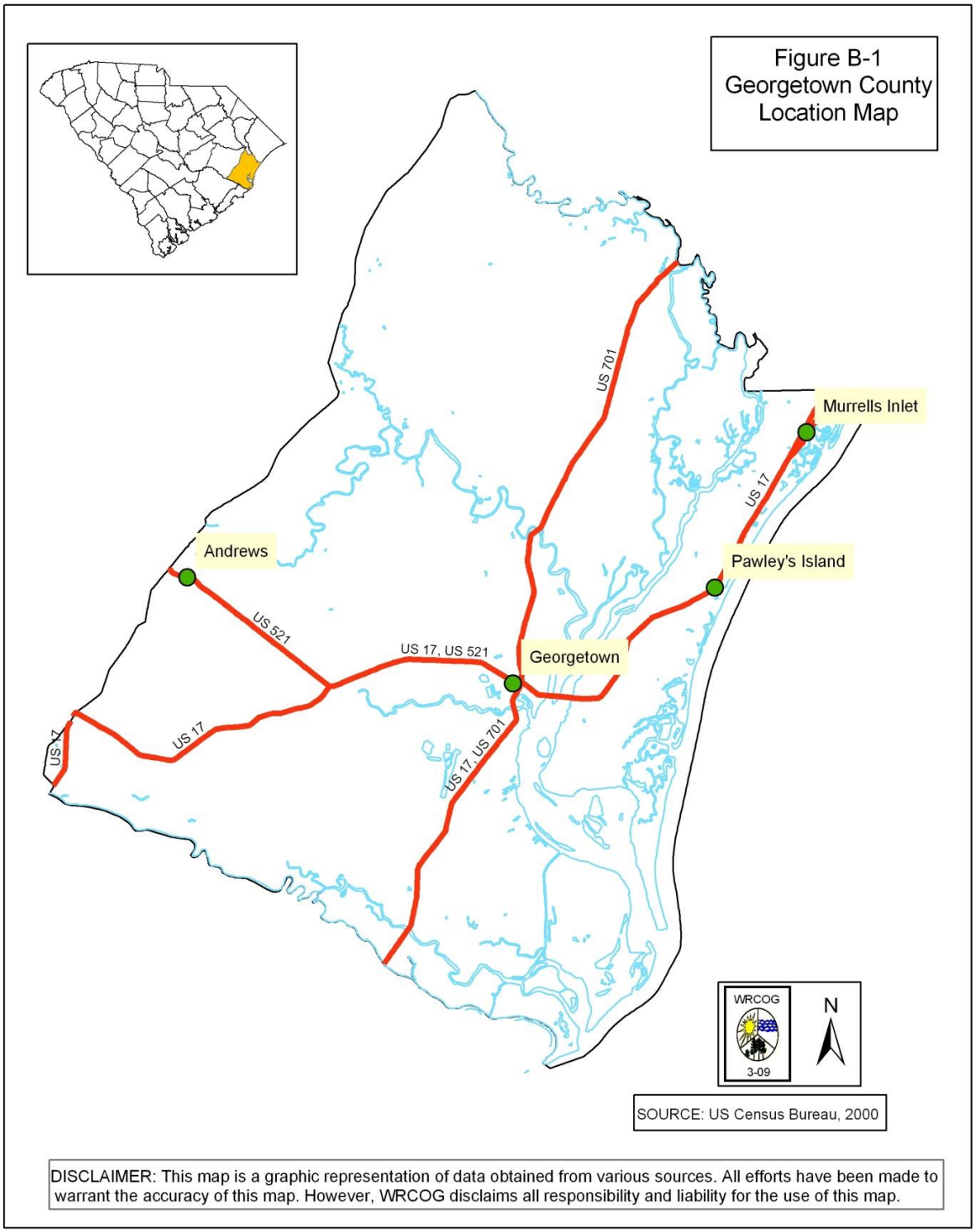
Figure B-1
Georgetown County
Location Map
Murrells Inlet
Pawley's Island
Andrews
Georgetown
US 701
US 17
US 521
US 17, US 521
US 17, US 701
US 17
US 17
WRCOG
3-09
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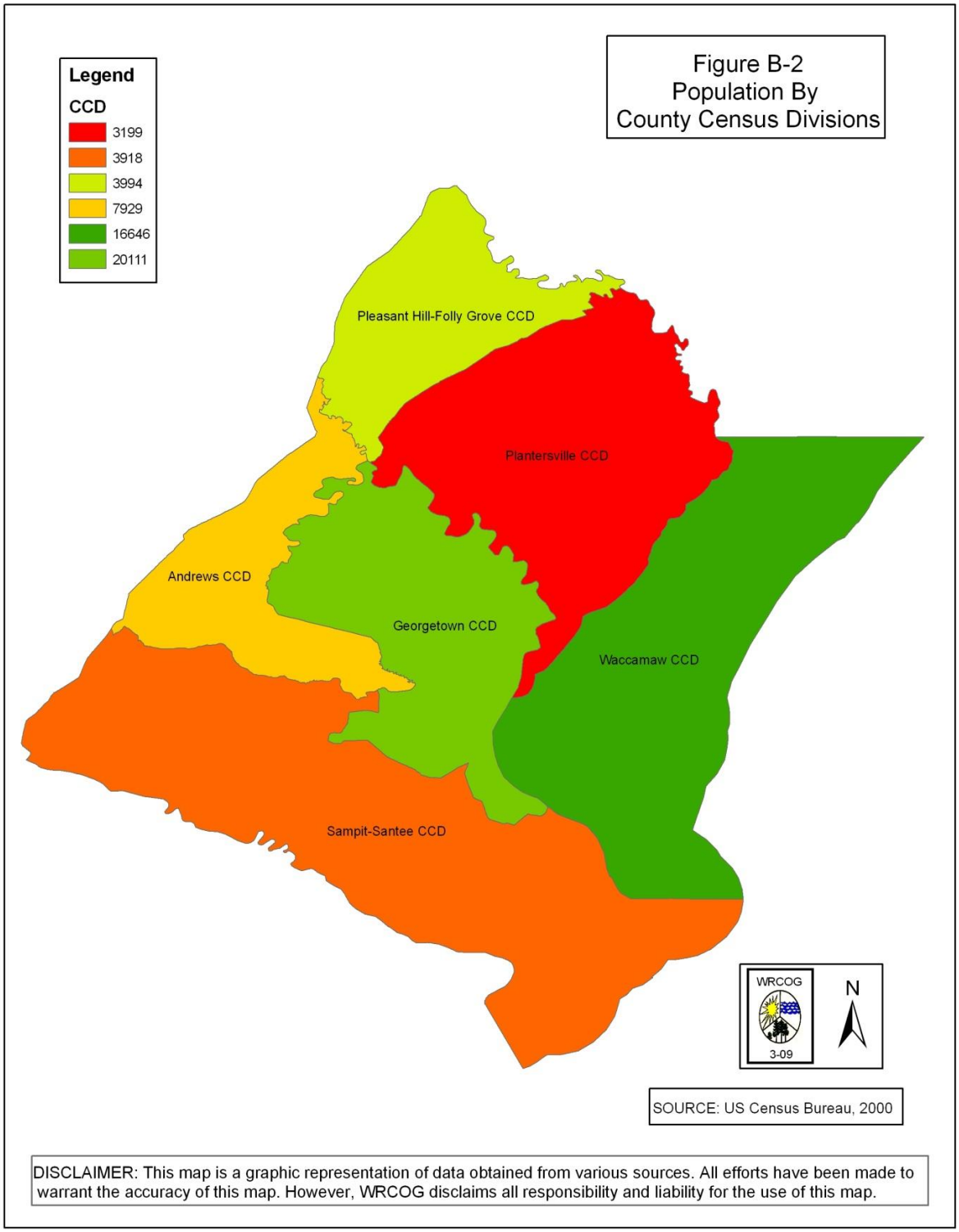
SOURCE: US Census Bureau, 2000
DISCLAIMER: This map is a graphic representation of data obtained from various sources. All efforts have been made to warrant the accuracy of this map. However, WRCOG disclaims all responsibility and liability for the use of this map.



Selected census data comparisons between Georgetown County and South Carolina are displayed in Table B-2 below.

TABLE B-2 Comparison of Selected Census Data[26]

People QuickFacts	Georgetown County	South Carolina
Population, 2013 estimate	60,440	4,774,839
Population, 2012 estimate	60,240	4,723,417
Population, 2010 (April 1) estimates base	60,158	4,625,360
Population, percent change, April 1, 2010 to July 1, 2013	0.5%	3.2%
Population, percent change, April 1, 2010 to July 1, 2012	0.1%	2.1%
Population, 2010	60,158	4,625,364
Persons under 5 years, percent, 2012	5.1%	6.3%
Persons under 18 years, percent, 2012	20.7%	22.9%
Persons 65 years and over, percent, 2012	22.2%	14.7%
Female persons, percent, 2012	52.4%	51.4%
White alone, percent, 2012 (a)	65.0%	68.4%
Black or African American alone, percent, 2012 (a)	33.3%	28.0%
American Indian and Alaska Native alone, percent, 2012 (a)	0.3%	0.5%
Asian alone, percent, 2012 (a)	0.6%	1.4%
Native Hawaiian and Other Pacific Islander alone, percent, 2012 (a)	Z	0.1%
Two or More Races, percent, 2012	0.8%	1.6%
Hispanic or Latino, percent, 2012 (b)	3.0%	5.3%
White alone, not Hispanic or Latino, percent, 2012	62.5%	64.0%
Living in same house 1 year & over, percent, 2008-2012	89.1%	84.7%
Foreign born persons, percent, 2008-2012	2.8%	4.8%
Language other than English spoken at home, pct age 5+, 2008-2012	3.7%	6.8%
High school graduate or higher, percent of persons age 25+, 2008-2012	84.7%	84.0%
Bachelor's degree or higher, percent of persons age 25+, 2008-2012	22.9%	24.6%
Veterans, 2008-2012	6,113	396,873
Mean travel time to work (minutes), workers age 16+, 2008-2012	24.6	23.4
Housing units, 2012	33,766	2,156,705
Homeownership rate, 2008-2012	78.0%	69.5%
Housing units in multi-unit structures, percent, 2008-2012	17.8%	17.7%
Median value of owner-occupied housing units, 2008-2012	$165,700	$137,400
Households, 2008-2012	22,361	1,768,255
Persons per household, 2008-2012	2.67	2.54
Per capita money income in past 12 months (2012 dollars), 2008-2012	$24,513	$23,906
Median household income, 2008-2012	$42,472	$44,623
Persons below poverty level, percent, 2008-2012	20.1%	17.6%

[26] U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, American Community Survey, Census of Population and Housing, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits. Last Revised: Thursday, 27-Mar-2014 09:57:39 EDT

Business QuickFacts	Georgetown County	South Carolina
Private nonfarm establishments, 2011	1,716	100,481
Private nonfarm employment, 2011	17,585	1,521,123
Private nonfarm employment, percent change, 2010-2011	-0.5%	1.2%
Nonemployer establishments, 2011	5,087	301,675
Total number of firms, 2007	6,934	360,397
Black-owned firms, percent, 2007	9.9%	12.1%
American Indian- and Alaska Native-owned firms, percent, 2007	F	0.5%
Asian-owned firms, percent, 2007	0.4%	1.8%
Native Hawaiian and Other Pacific Islander-owned firms, percent, 2007	F	0.1%
Hispanic-owned firms, percent, 2007	S	1.7%
Women-owned firms, percent, 2007	29.7%	27.6%
Manufacturers shipments, 2007 ($1000)	1,046,220	93,977,455
Merchant wholesaler sales, 2007 ($1000)	D	40,498,047
Retail sales, 2007 ($1000)	702,159	54,298,410
Retail sales per capita, 2007	$11,634	$12,273
Accommodation and food services sales, 2007 ($1000)	136,648	8,383,463
Building permits, 2012	230	18,708
Geography QuickFacts	Georgetown County	South Carolina
Land area in square miles, 2010	813.55	30,060.70
Persons per square mile, 2010	73.9	153.9
FIPS Code	43	45
Metropolitan or Micropolitan Statistical Area	Georgetown, SC Micro Area	
(a) Includes persons reporting only one race.		
(b) Hispanics may be of any race, so also are included in applicable race categories.		
FN: Footnote on this item for this area in place of data		
NA: Not available		
D: Suppressed to avoid disclosure of confidential information		
X: Not applicable		
S: Suppressed; does not meet publication standards		
Z: Value greater than zero but less than half unit of measure shown		
F: Fewer than 100 firms		

3. Economic Profile

Prior to World War II, agriculture was Georgetown County's major economic base. After the war, manufacturing replaced agriculture. Since the mid 1980's, wholesale and retail trade have increased significantly. By the mid 1990's, the number of employees in the wholesale and retail trade surpassed the number of employees in manufacturing. In 2005, all sectors leveled out and some begin to experience the first signs of a recession. By mid-2008 the steel mill, a major manufacturing employer in the county, significantly reduced its production and laborers. Table B-3 compares the number of Georgetown County residents employed in each of the employment sectors over the period of 1985 to 2013.

TABLE B-3
1985-2013Number of Georgetown County Residents in Each Employment Sector

EMPLOYMENT SECTOR	1985	1989	1995	1999	2005	2013
Manufacturing	4,210	4,460	4,672	3,590	3,331	2,279
Wholesale/Retail	3,420	3,720	4,790	5,730	3,298	3,528
Service	1,790	2,550	3,484	5,180	4,647	3,685

Source: SC Department of Employment and Workforce Quarterly Census of Employment and Wages (QCEW) – 2013.

The forestry industry has a tremendous presence in the region, creating not only many jobs directly but many more are created indirectly. Table B-4 below lists the top 15 employers in Georgetown County.

TABLE B-4
Major Employers in Georgetown County

Company Name	Type of Business	Employees
1) Georgetown Hospital Systems	Medical Services	1,589
2) Georgetown County Schools	Education	1,450
3) International Paper Company	Paper Products / Containers	669
4) Georgetown County	Government	582
5) Santee Cooper Winyah	Electric Generating Plant	250
6) Arcelor Mittal	Steel Mill	200
7) City of Georgetown	Government	191
8) 3V Inc.	Detergent Auxiliaries	183
9) Screen Tight	Extruded Composites	140
10) Agru-America	Corrosion Resistant Liners	100
11) Sid Harvey	Machine Parts / Fabricating	94
12) Simpson Lumber	Lumber	89
13) American Gypsum	Wallboard	69
14) Mercom Corporation	Information Technology	65
15) Envirosep	Fluid and Heat Recovery Systems	50

Source: Georgetown County Economic Development, 2011.

According to figures released by the Grand Strand Tourism Commission in The Economic Impact of Tourism on the Grand Strand dated May 2012, visitor spending and its indirect and induced impact support 73,500 jobs in Horry and Georgetown Counties. These jobs represent 53% of total employment across the Grand Strand and $1.9 billion of labor income. Direct visitor spending on the Grand Strand (Horry and Georgetown Counties combined) totaled an estimated $4.3 billion in the fiscal year-ending 2011. Total employment has been falling since the recession took hold. The retail sector employment picked up considerably in 2011, and the leisure and hospitality sector never showed the pronounced downward trend that would reflect substantial job loss. The tourism economy has maintained the majority of its activity which is reflected in employment and income statistics.[27]

Table B-5 compares local, state, and national per capita income figures for 1983 to 2012.

TABLE B-5
1985 – 2012 Average Per Capita Income

	1985	1995	1998	2002	2005	2012
Georgetown	$9,479	$16,134	$21,207	$26,193	$30,399	24,513
South Carolina	$10,734	$16,861	$22,372	$25,370	$28,285	23,906
United States	$13,896	$20,800	$24,203	$30,795	$34,471	28,051

Source: U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, American Community Survey, Census of Population and Housing, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits Last Revised: Thursday, 27-Mar-2014 09:57:39 EDT.

Looking at trends in employment and labor force figures, it is clear that the number of people expected to be in the labor force over the next 20 years will be increasing significantly. Table B-6 shows the labor force and employment trends and projections through the year 2012. The unemployment rates are particularly dubious due to the current recession and uncommonly high unemployment numbers. It becomes a challenge to provide reliable linear projections during unstable economic times.

TABLE B-6
1985 – 2020 Labor Force and Employment for Georgetown County

	1985	1990	1999	2008	2010	2012	2020*
Labor Force	20,640	22,160	25,150	29,788	30,032	31,856	33,681
Employment	18,130	20,550	22,980	24,045	26,701	26,106	27,889
% of Unemployment	12%	7%	8.6%	11.8%	11%	12.5%	12.2%

Source: SC Department of Employment and Workforce, 2014.
*Projected

4. Natural, Historic and Cultural Resources

Georgetown County is rich in botanical resources. Chief among these resources are the forests, which account for 377 square miles or about three fourths of the total land area in the County. The multi-functional forests provide food and shelter for wildlife and they also provide economic wealth to the County's population. According to satellite imagery, there are three types of forests

[27] Salvino, Robert F. *The Economic Impact of Tourism on the Grand Strand*. Rep. Conway: BB&T Center for Economic and Community Development, 2014. Web. 21 Mar. 2014.

in Georgetown County. Evergreen forests cover 46 percent of the land in Georgetown County, mixed forests cover 12 percent and saturated bottomland forests cover 13 percent. Georgetown County forests commonly include slash pine, loblolly pine, oak, bald cypress, tupelo gum, black willow, red maple and sweet gum trees.

In Georgetown County, there are 104 square miles of forest which are owned and used by the forest and paper industry. This accounts for 28 percent of the County's forest land. The owners generally use a best management practice approach to managing the forests called Sustainable Forestry Initiative. The SFI balances the growing and harvesting of trees with the protection of wildlife habitat, soil, air and water quality. Figure B-4 shows the locations of the commercial timber holdings in the County. Other important types of vegetation found in the County include grasses, legumes, herbaceous plants and wetland plants. Examples of these include the wetland plants wild rice and cord grass, the herbaceous plants bluestem and goldenrod, and the grass plant fescue.

Georgetown County has a wide variety of wildlife habitat, which supports many different kinds of wildlife. Man's activities, as well as soil characteristics and natural moisture conditions, have influenced vegetative patterns. Habitat varies from dry upland ridges that have sparse plant cover to upland deciduous forest that provides a variety of food and cover for wildlife. Bottom lands afford another kind of habitat. Farm ponds, lakes, and streams provide favorable conditions for many species of fish. The southeastern part of the County includes large areas of marshland that extend inland for many miles along the major streams. These marsh areas are suited to ducks, geese, and other wetland wildlife.

The major game species in the County are eastern cottontail rabbit, gray squirrel, white-tailed deer, wild turkey, bobwhite quail, and mourning dove. The wild turkey population is increasing because of restocking carried out by the South Carolina Department of Natural Resources. The Region also lies within the Atlantic Flyway, which accounts for the tremendous population of waterfowl in the fall and spring. State-approved shellfish harvesting areas and oyster beds exist along the coast. Due to discharges from oxidation ponds, treatment plants, malfunctioning septic tanks, and urban runoff, some shellfishing areas are periodically closed.

Wildlife Management Areas in the County provide open public lands to the sportsman and non-hunter alike. Public hunting and year-round recreation can be found in the scenic spots of these lands. These areas include: Santee Delta, Samworth, and Santee Coastal Reserve Wildlife Management Areas. These areas are subject to regulations and special schedules of the South Carolina Department of Natural Resources. Cat Island and the southern tip of North Island are included in a heritage trust preserve known as the Yawkey Center. These areas are shown in Figure B-5.

The critical areas of the County include beaches, dunes, coastal and riverine wetlands and waterfowl nesting areas. These are environmentally sensitive areas which merit special consideration for future development. Riverine wetlands are wooded swamps along rivers and streams. The bottomland hardwoods and cypress trees of these wetlands are nourished by a layer of water which usually covers the surface area. Coastal wetlands consist of tidal, salt, brackish, and fresh water marshes. Because these wetlands harbor, nourish and produce a wide variety of wildlife, they are the most unique of all the wildlife habitats. The major types of coastal wetlands include the shallow fresh marshes, deep fresh marshes, open fresh water, irregularly flooded salt marshes, regularly flooded salt marshes, and sounds and bays.

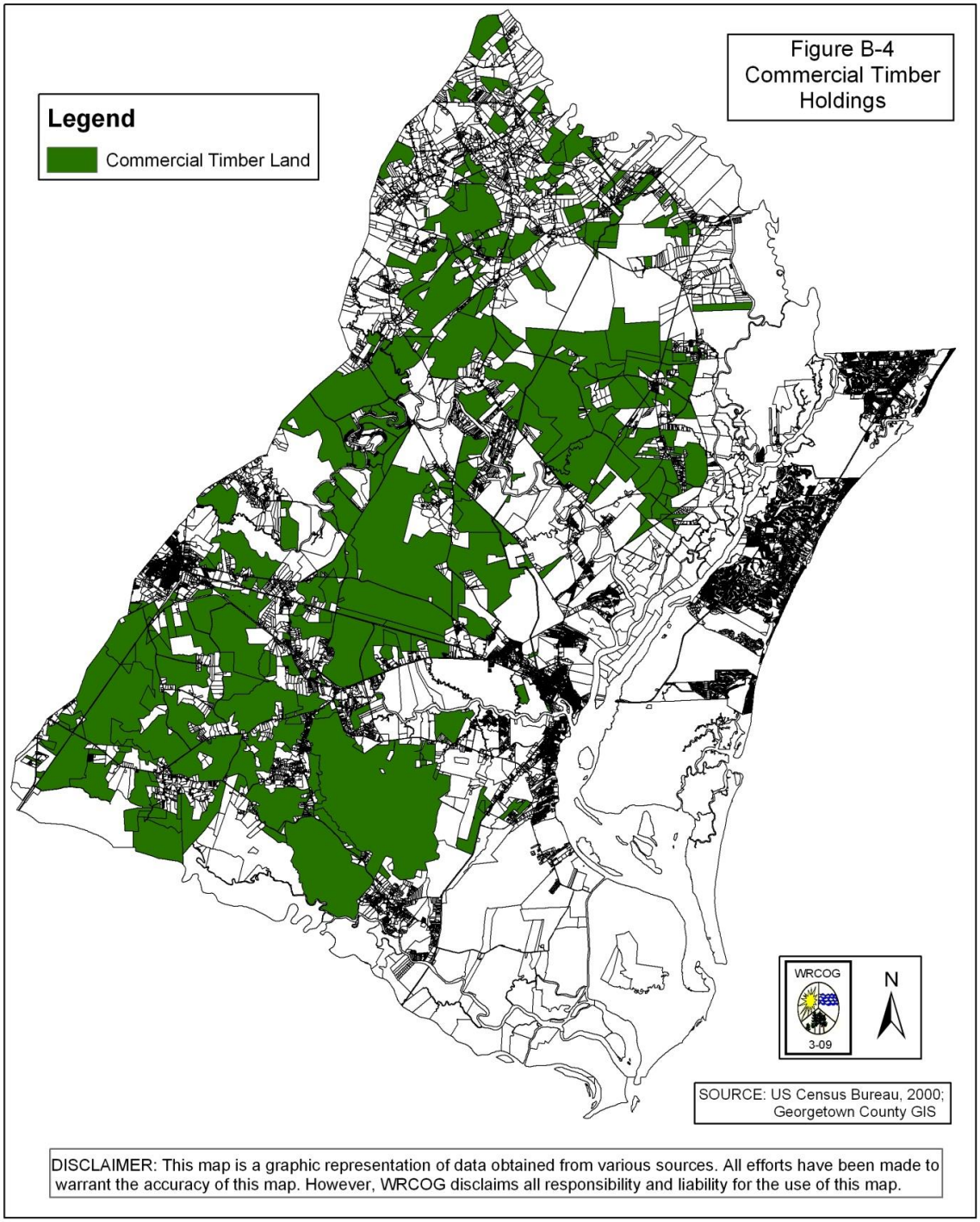
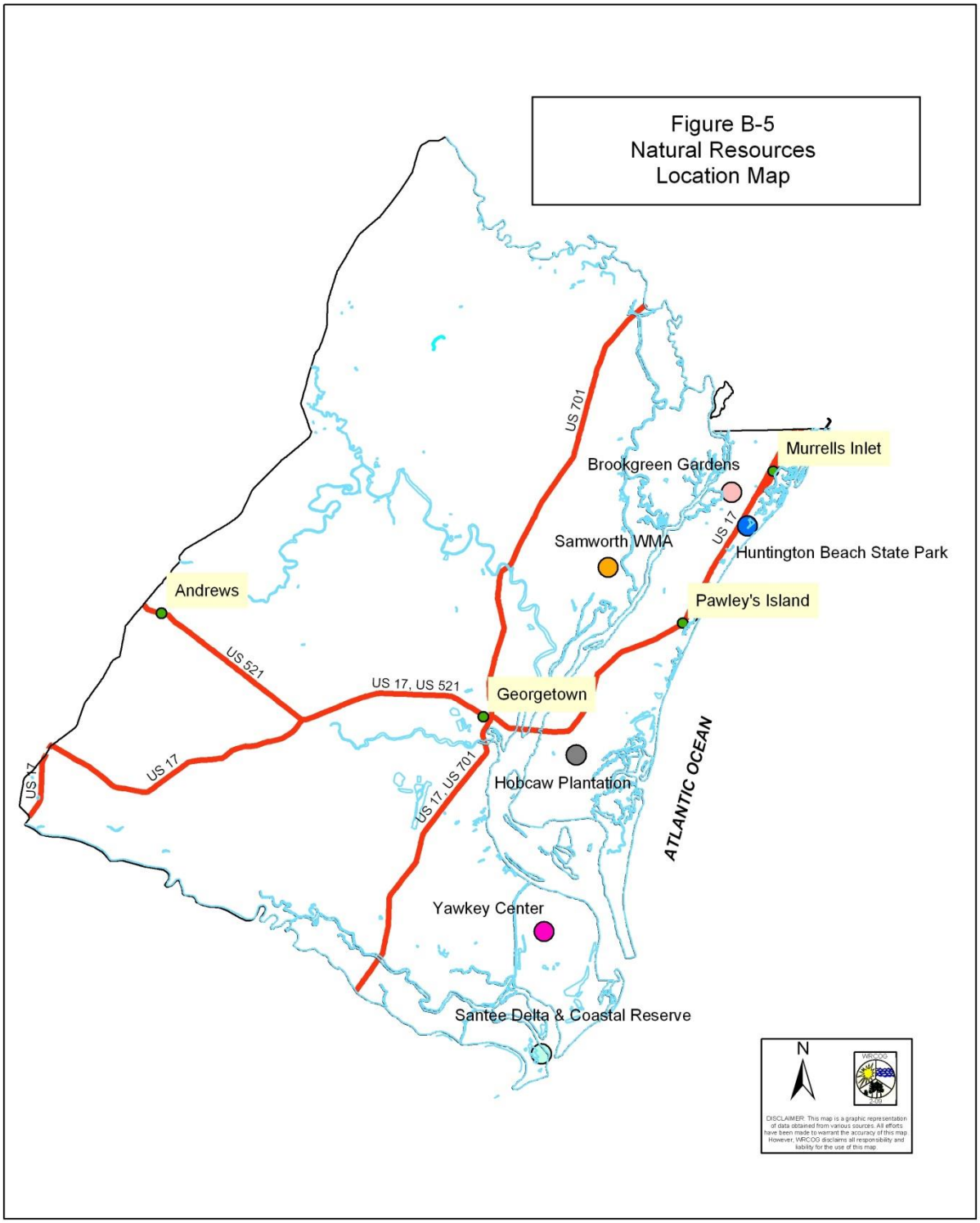


Figure B-4
Commercial Timber
Holdings
Legend
Commercial Timber Land
WRCOG
3-09
N
SOURCE: US Census Bureau, 2000;
Georgetown County GIS
DISCLAIMER: This map is a graphic representation of data obtained from various sources. All efforts have been made to warrant the accuracy of this map. However, WRCOG disclaims all responsibility and liability for the use of this map.



DISCLAIMER: This map is a graphic representation of data obtained from various sources. All efforts have been made to warrant the accuracy of this map. However, WRCOG disclaims all responsibility and liability for the use of this map.

Several specific areas of the environment which merit special consideration include:

- Beaches - Georgetown County contains almost thirty-five miles of beaches. Beach segments include Garden City Point (3 miles), Huntington Beach (3 miles), Litchfield (4 miles), Pawleys Island (4 miles), DeBordieu/Arcadia (5 miles), North Island (8 miles), South Island (5 miles) and Cedar Island (3 miles). Only 40% of the County's beach areas possess general access to the public.

- Brookgreen Gardens - A 9,100 acre privately owned botanical garden in Murrells Inlet. Entrance fee required.

- Hobcaw Barony - A 16,000 acre region owned by the Belle Baruch Foundation and used by Clemson University and the University of South Carolina for research in forestry, wildlife, and marine resource management. The North Inlet-Winyah Bay National Estuarine Research Reserve, designated in 1992, and encompassing over 18,000 acres of tidal marshes, beach, and coastal waters, is located here. There are now 28 National Estuarine Research Reserves established around the country committed to coastal stewardship through research and education. Reserves are a partnership between NOAA and a state or private entity, and they receive Federal dollars matched by the State to carry out their programs. The University of South Carolina operates the North Inlet-Winyah Bay NERR in Georgetown County.[28]

- Huntington Beach State Park - A 2,500 acre public park maintained by the State. Entrance fee required.

- Yawkey Center - A 20,000 acre wildlife preserve managed by the South Carolina Department of Natural Resources. Public access is limited.

- Santee Delta and Santee Coastal Reserve Wildlife Management Areas - State managed areas of coastal marsh consisting of 6,275 acres.

- Waccamaw National Wildlife Refuge - This area is located between the Great Pee Dee and the Waccamaw Rivers and includes Sandy Island. Portions of the refuge are also located in Horry and Marion County.

The topography of Georgetown County is generally level to gently sloping, with elevations ranging from sea level to a maximum of 75 feet on Sandy Island. For the most part, the County is flat with gradual changes in elevation. Marshy or low-lying regions are quite characteristic of the terrain. Only 3 percent of the County exceeds 50 feet in elevation, and 70 percent of the land is less than 25 feet above sea level.

Georgetown County is located in the Atlantic Coastal Plain, which consists chiefly of unconsolidated rock material approximately 1,200 feet thick.

The major soils in the County have loamy sand or sandy loam surface textures and sandy loam to sandy clay subsoils. Drainage varies from moderately to very poorly drained. Along the coast where development pressures are greatest, the soils are thick beds of level or duned sand. The capabilities and limitations of soils in the County have a pronounced influence on how land is used for both urban and rural purposes. Primary emphasis is placed on the limitations for

[28] Allen, Wendy. "Comments on Draft Hazard Mitigation Plan for Georgetown County." Message to Cindy Grace. 22 May 2014. E-mail.

drainage, septic tanks and building foundations. In 1980, the Soil Conservation Service of the U.S. Department of Agriculture published a Soil Survey of Georgetown County, South Carolina. This survey contains detailed maps locating individual soil series. There are 28 soil series present within the County's boundaries and they are categorized into the thirteen soil associations listed below:

- **Craven-Coxville-Lenoir** — Broad level areas; gradients 0-6%.
- **Capers** — Level tidal flats; subject to daily salt water flooding.
- **Norfolk-Goldsboro-Coxville** — Broad; level or gently sloping areas; gradients 0-2%.
- **Lynchburg-Coxville** — Broad; nearly level areas; gradients 0-2%.
- **Bayboro-Portsmouth** — Level, oval shaped depressions (Carolina Bays); subject to wetness or periodic flooding.
- **Chastain-Chewacca** — Flood plains on Santee, Waccamaw, Great Pee Dee Rivers, old river channels; subject to flooding.
- **Troup-Wagram-Rutlege** — Level or gently sloping areas; gradients 0-10%.
- **Wando-Coastal Beach** — Beach areas and broad level areas around inlets; sand dunes formed naturally adjacent to the sea.
- **Lakeland-Chipley** — Broad, level or gently sloping areas; gradients 0-10%.
- **Kershaw-Rutlege** — Restricted to Sandy Island; high, nearly level or sloping areas; low level areas; gradients 0-10%.
- **Chipley-Scranton-Rutlege** — Broad nearly level or gently sloping areas; gradients 0-10%.
- **Leon-Rutlege** — Broad nearly level areas; gradients 0-6%.
- **Swamp-Fresh Water Marsh** — Flat swamp land along Black River and Mingo Creek.

Each of the major soil associations above is rated in accordance with the following categories:

- **Slight to Moderate Limitations.** Development should present few soil related problems. Isolated soil deposits within the associations may, however, be unsuitable for certain applications, and an on-site investigation is recommended.

- **Moderate to Severe Limitations.** Development can be economically feasible, but should not be considered without extensive on-site soil investigation.

- **Severe to Very-Severe Limitations.** Development is extremely hazardous and will be difficult and costly. Development should be generally discouraged and absolutely prohibited without extensive investigation.

Prime farmland soils are included in some of the major soil associations in the County. These soils, as defined by the U.S. Department of Agriculture, are the soils best suited to producing food, feed, forage, fiber and oilseed crops. These soils have properties that are favorable for the economic production of sustained high yields of crops. About 115,000 acres, or 22 percent of the county is considered prime farmland. The areas are scattered throughout the County and almost all of the areas are now used as woodlands.

Drainage in Georgetown County for the most part is poor due to its low elevation, soil composition and a high water table. The region receives an average of 48 inches of rainfall annually. Rainfall that is not absorbed by earth and vegetation is drained by an extensive system of natural and man-made streams and canals. Most of Georgetown County is in the Pee Dee River Basin, with only the extreme southwest portion of the County located in the Santee River Basin. Drainage in the Pee Dee River Basin is southeastward from sections of North Carolina and

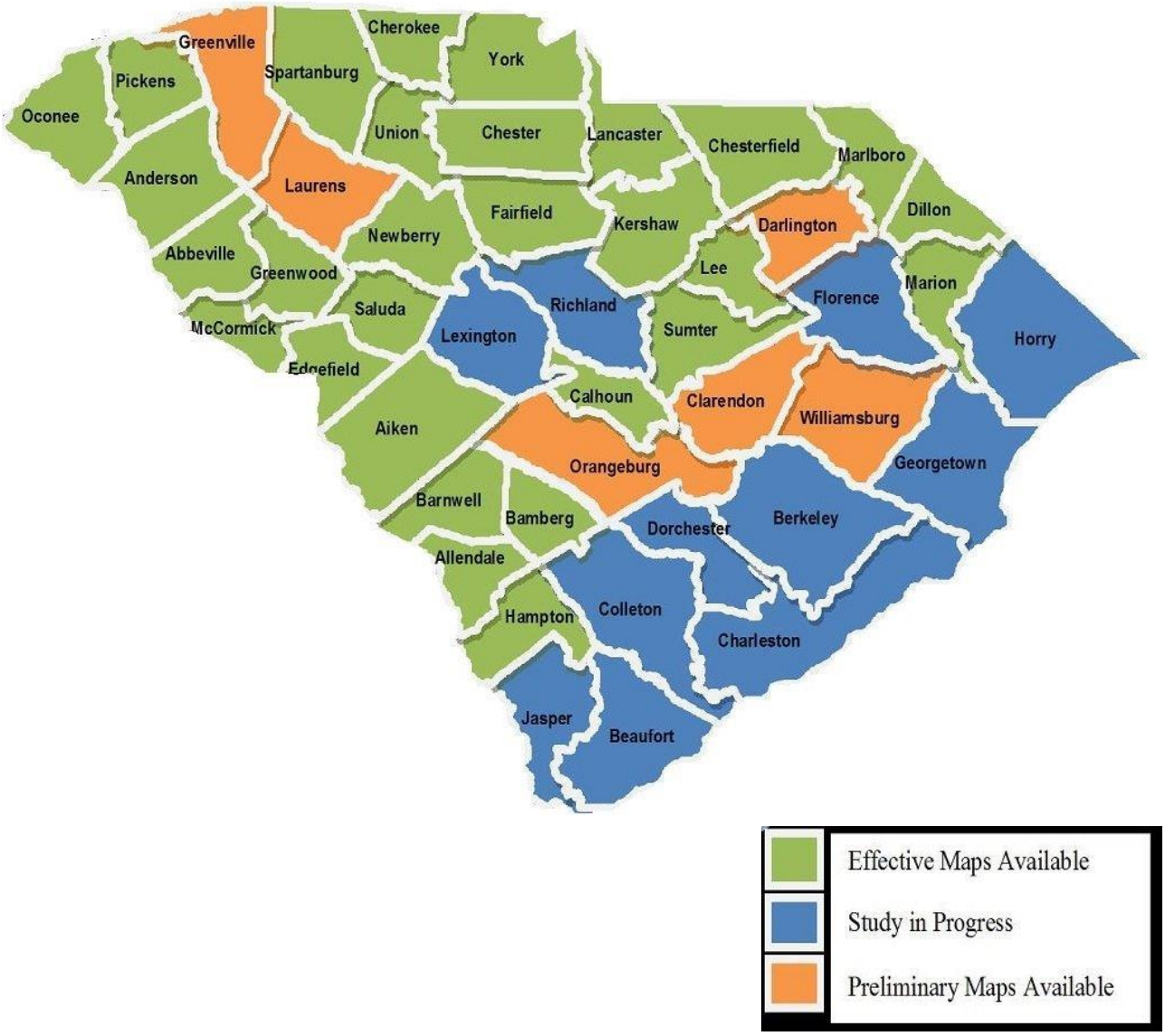
the eastern portion of South Carolina. Principal drainage within the County is provided by several meandering streams which traverse or border the County (Waccamaw, Pee Dee, Black, Sampit and Santee Rivers and their tributaries, the Intracoastal Waterway, and Winyah Bay). Georgetown County is also in the Santee, Waccamaw, Pee Dee and Black River sub-basins. The County also contains a number of fresh water swamps which accept surface drainage. Extensive areas of tidal marshlands occur along the coast and extend about twenty miles up the larger rivers. As a result of the low topography and poor drainage, large land areas are unsuitable for urban development. There are few openings in the coastline because the Waccamaw, Pee Dee, Black, and Sampit Rivers combine in Winyah Bay forming a single outlet to the Atlantic Ocean.

Studies of flood-prone areas in the County have been made by the Federal Emergency Management Agency. A reevaluation of the County was conducted to determine the impacts of flooding generated by waves. Flood Insurance Rate Maps (FIRM's) are available which show various flood zones and base flood elevation data. These maps were last revised on December 20, 2000.

A Digital Flood Insurance Rate Map (DFIRM) is not included in the 2014 plan. According to the SC Department of Natural Resources, the study is in progress to update Georgetown County's map.

The following map shows the Status of Flood Insurance Rate Map Studies for South Carolina.

Status of Flood Insurance Rate Map Studies



Source: "Flood Maps." *SCDNR*. N.p., n.d. Web. 0 Mar. 2014. <http://www.dnr.sc.gov/water/flood/floodmaps.html>.

An abundance of both surface and ground water exists in the County. The wise use of this resource is essential to the long-term development of the County. The County has abundant quantities of ground water of good quality available from a number of principal and secondary aquifers. Principal aquifers are encountered at depths of 500 to 900 feet with secondary aquifers encountered at depths of 70 feet or less. Yields from the principal aquifers range from 150 to 900 gallons per minute (g.p.m.) and from 50 to 100 g.p.m. in the secondary aquifers. Both the principal and secondary aquifers are subject to salt water intrusion near the coast and probably do not contain a sufficient quantity of water to support concentrated development.

Surface water in Georgetown County is available from five locations. These are the Pee Dee, Waccamaw, Santee, Sampit and Black Rivers. Surface waters of the County have not been greatly developed as a water supply because of the high cost of construction and operation of facilities as compared to ground water supply. This is changing, however, as the Georgetown County Water and Sewer District has constructed a water treatment plant on the Waccamaw Neck that draws water from the Waccamaw River. There is one industrial surface water intake in the County and it is located on the Great Pee Dee River.

A surface water sampling program has resulted in the development of a water quality model for the Pee Dee/Waccamaw/Intracoastal Waterway. This model assesses the impacts of existing and proposed treated wastewater discharges on water quality. This is vitally important since this area will serve as the potable water supply for the Waccamaw Neck area of the County.

Water quality has become a significant physical factor in the environment of Georgetown County. The various water systems that will be looked at in this section are: Winyah Bay, Sampit River, Waccamaw River, Pee Dee River, Black River, Santee River and North Inlet.

Winyah Bay is considered the number one priority problem in the County by the 208 Water Quality Management Program. The Bay is closed to shellfishing due to fecal coliform bacteria contamination. Similar water quality problems exist for the lower Sampit and the lower Santee Rivers.

The lower Black River has some of the best quality water in the County and the Waccamaw Region, however, the water suffers from low dissolved oxygen levels and organic enrichment on occasion. This is believed to be due to the flushing of swamps and marsh waters with low dissolved oxygen levels and stormwater runoff from agricultural areas upstream. Similar problems also exist for the Waccamaw River.

The Pee Dee River has generally good quality water, with all uses associated with its "Freshwater" classification fully supported (i.e. suitable for primary and secondary recreation; a source of drinking water after conventional treatment in accordance with DHEC requirements; for fishing and support of aquatic life; and for agricultural and industrial uses).

The North Inlet was reclassified by DHEC as "ORW" or "Outstanding Resource Waters" because of its significance as an outstanding ecological resource. This represents the highest classification which may be assigned to surface waters. Ocean waters adjoining the Waccamaw Neck are good with the exception of several areas where the shellfish harvesting is conditionally prohibited after excessive rains. It is thought that non-point source pollution associated with stormwater run-off from this rapidly expanding area is partly responsible for current water quality problems.

Development generally brings several changes to the quality of water unless steps are taken to protect it. First of all, paving and building construction decrease surface area for water absorption, and the compaction of soil during construction decreases permeability, resulting in

increased run-off. Greatly increased sediment loads are characteristic during construction activities without mandatory controls. Nutrients, oxygen-demanding materials, and coliform levels in stormwater runoff from urbanized areas are all greatly increased during development. These are all major problems which should be considered before development is begun.

Georgetown County has many tangible symbols of its historic heritage remaining intact. Most of these structures continue to be a part of daily life. The historic areas of Georgetown County are kept alive by their constant use. For example, the City of Georgetown Historic District includes both the Central Business District and surrounding residential areas. Although some of the County's historic structures have received adaptive uses, many have continued to be used for their original purposes. Most are private residences, and the owners provide for upkeep and preservation.

Most of the significant historic sites are found in the coastal areas of the County, especially in Georgetown and its environs. The current preservation logic is to incorporate the remaining aspects of the past into any future area wide development. New development plans should be designed to preserve and protect positive historic features, while allowing the historic elements to enhance development. Another major concern is to protect the physical heritage from such external forces as pollution. Careful consideration should be given to the location and intensity of new development in regards to Georgetown County's historical sites.

Museums

The Rice Museum is located in the City of Georgetown on the Sampit River on Front Street. Approximately 15,000 persons visit the Rice Museum per year. The policy-making body for the museum is the Georgetown County Historical Commission, a seven (7) member board appointed by the County Council. The museum is administered by a full-time director. Georgetown County currently budgets salary expenses in support of the museum. The Commission finances museum programs, collections, building restorations, and expansion through grant support, donations, and admissions.

The Rice Museum building, also known as the Town Clock, was constructed in 1842 for use as a town hall. While the main floor was used by the town council, the arcaded basement was an open air market. The building consists of 2,000 square feet. The second floor houses the museum's permanent collection. Lafayette Park, a small one-quarter acre park, is located behind the Rice Museum on the banks of the Sampit River.

The Kaminski Building, located at 633 Front Street and adjacent to the Rice Museum, was purchased by the Historical Commission in 1973 to be used in the expansion of the Museum. The three-story brick building consists of 8,800 square feet. The building was constructed in 1769 with a major addition made in 1878. The first floor was renovated in 1989 and houses the gallery and museum shop. The third floor houses the Browns Ferry Vessel. This 1730's ferry is on public display.

The Kaminski House Museum is one of Georgetown's pre-Revolutionary landmarks. It was built on a bluff overlooking historic Front Street and the Sampit River. Over the past 200 years the house has been home to interesting occupants. The great appeal of the museum is its collection of fine antiques.

The Town of Andrews maintains the Old Town Hall Museum located on Main Street. This 80 year old brick structure contains exhibits that depict early farming life in Andrews.

Historic Landmarks

Many tangible symbols of Georgetown County's historic heritage remain intact and today serve as physical reminders of the County's history. Among the numerous structures, plantation homes and complexes that give evidence to this legacy are thirty-four sites in Georgetown County which are listed on the National Register of Historic Places. The following is a list of these sites along with the date that they were listed on the National Register:

1. Old Market Building (a.k.a. Georgetown County Rice Museum) 12/2/69
2. Hopsewee 1/25/71
3. Prince George Winyah Church (Episcopal) and Cemetery 5/6/71
4. Georgetown Historic District 10/14/71
5. Pawleys Island Historic District 11/15/72 (c. 21 properties)
6. Chicora Wood Plantation 4/11/73
7. Annandale Plantation 10/25/73
8. Prince Frederick's Chapel Ruins 8/28/74
9. Georgetown Lighthouse 12/30/74
10. Battery White 11/16/77
11. Mansfield Plantation 12/6/77
12. Arcadia Plantation 1/3/78
13. Brookgreen Gardens 4/15/78
14. Wicklow Hall Plantation 8/29/78
15. Murrells Inlet Historic District 11/25/80
16. China Grove 3/25/82
17. Minim Island Shell Midden (38GE46) (RESTRICTED) 8/18/82
18. Joseph H. Rainey House (a.k.a. Rainey-Camlin House) 4/20/84
19. Atalaya 9/7/84
20. Belle Isle Rice Mill Chimney 10/3/88 (Georgetown County Rice Culture c.1750-c.1910 MPS)
21. Beneventum Plantation House 10/3/88 (Georgetown County Rice Culture c.1750-c.1910 MPS)
22. Fairfield Rice Mill Chimney 10/3/88 (Georgetown County Rice Culture c.1750-c. 1910 MPS)
23. Keithfield Plantation 10/3/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
24. Nightingale Hall Rice Mill Chimney 10/3/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
25. Pee Dee River Rice Planters Historic District 10/3/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
26. Richmond Hill Plantation Archaeological Sites (Restricted) 10/6/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
27. Rural Hall Plantation 10/3/88 (Georgetown County Rice Culture c. 1750 - c.1910 MPS)
28. Summer Chapel Rectory, Prince Frederick's Episcopal Church 10/3/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
29. Summer Chapel, Prince Frederick's Episcopal Church 10/3/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
30. Weehaw Rice Mill Chimney 10/3/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
31. Milldam Rice Mill and Rice Barn 10/3/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
32. Winyah Indigo School 11/3/88
33. All Saints Episcopal School 3/13/91
34. Cedar Grove Plantation Chapel 3/13/91

5. Hazard Prone Locations

Due to Georgetown County's location along the north coast of South Carolina, all of the county is at risk of effects from hurricanes and tropical storms. The National Hurricane Center's Inland Wind Model suggests that all of Georgetown County is equally susceptible to the wind effects of even a slow moving storm. The exception to this is the extreme eastern portion of the county, which is susceptible to higher winds.

Over 30 percent of Georgetown County is prone to flooding from 100 year storms. Such rain events can be caused by intense rainfall, tropical storms, and hurricanes. Areas along the immediate coast are additionally at risk from storm surges and tidal flooding. These areas have been delineated in the Risk Assessment provided in Appendix A. All four of the local governments in Georgetown County participate in the National Flood Insurance Program. The Town of Andrews received a map exemption because there are no identified flood hazard areas within the Town Limits. The other jurisdictions are Georgetown County, which entered the program in 1978; the Town of Pawleys Island, which entered the program in 1986; and the City of Georgetown, which entered the program in 1978. The table below displays data related to each jurisdiction's participation in the NFIP:

TABLE B-7
Selected Data for Each Jurisdiction's Participation in the NFIP

Name of Local Governments	# Policies In Force	Insurance In Force	Premiums In Force	Total Losses	Total Payments	# Rep Loss Properties
Georgetown County	7,853	$2,165,214,000	$7,615,183	2,360	$72,700,934.88	128
City of Georgetown	561	145,243,600	556,298	179	3,027,561	10
Town of Pawleys Island	471	135,738,600	1,229,011	42	783,508.76	57
Town of Andrews	2	280,000	613	0	0	0

Source: SC Department of Natural Resources, Apr. 7, 2014.

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Other natural hazards which pose risks to portions or all of Georgetown County include dam failure, drought, severe storm and/or hail and wind, tornadoes, earthquakes, wildfires, and winter storms. These disasters and the county's risk probabilities are discussed in the Risk Assessment found in Appendix A.

6. Repetitive Loss Inventory

The Federal Emergency Management Agency (FEMA) has identified 195 "repetitive loss properties" that are situated in the unincorporated areas of Georgetown County. FEMA classifies a property as "repetitive loss" if the National Flood Insurance Program has paid two or more flood claims of $1,000 or more in any given ten-year period since 1978. There are likely many more properties that have suffered repetitive losses, but are not included in the list because the losses were not covered by the NFIP flood insurance policy or because an insurance claim was not filed with the National Flood Insurance Administration.

Data from 1978 through 2008 shows that Georgetown County has 7,853 flood insurance policies in force. Total coverage amount of flood insurance policies totals over two billion while premiums paid totals near 7.6 million. The total amount of losses submitted (regardless of status)

is 2,581, and the total payment amount on losses is over seventy-six million according to FEMA data.

Table B-8-A displays information concerning the 195 properties listed in FEMA's repetitive loss inventory for unincorporated Georgetown County. Specific owner names and addresses have not been included in this Plan, due to privacy concerns. The complete listing is maintained in the Geographic Information System office and will be utilized for future mitigation activities. Additional repetitive loss property information may be found in Table B-8-B and B-8-C for the Town of Pawleys Island and the City of Georgetown, respectively. Of the 195 total repetitive loss properties listed, only five were documented as being non-residential.

TABLE B-8-A
Georgetown County Repetitive Loss Inventory

Ref. #	Insured?	City	Zone	Building Value	Losses	Total Paid	Average Pay
1	YES	GARDEN CITY	A	212,800	2	32,284	16,142
2	YES	PAWLEYS ISLAND	AE	75,224	2	63,723	31,862
3	YES	PAWLEYS ISLAND	AE	155,520	3	13,137	4,379
4	NO	PAWLEYS ISLAND	A14	135,000	2	8,629	4,314
5	YES	PAWLEYS ISLAND	A14	124,380	2	20,997	10,499
6	YES	PAWLEYS ISLAND	A16	203,400	2	25,885	12,943
7	YES	MURRELLS INLET	AE	175,000	2	48,015	24,008
8	NO	GEORGETOWN	A14	180,000	2	57,036	28,518
9	NO	GEORGETOWN	V21	312,432	2	266,675	133,338
10	YES	GEORGETOWN	VE	410,400	3	246,669	82,223
11	NO	MURRELLS INLET	AE	83,000	2	42,616	21,308
12	YES	MURRELLS INLET	AE	99,180	2	18,340	9,170
13	YES	MURRELLS INLET	AE	313,736	4	284,480	71,120
14	YES	MURRELLS INLET	AE	171,420	4	57,334	14,333
15	YES	MURRELLS INLET	A16	220,620	7	155,945	22,278
16	YES	MURRELLS INLET	A14	128,250	4	72,919	18,230
17	YES	MURRELLS INLET	VE	89,100	2	40,146	20,073
18	NO	GARDEN CITY	A	580,000	2	29,949	14,974
19	YES	MURRELLS INLET	AE	5,000	2	4,638	2,319
20	YES	MURRELLS INLET	A16	117,000	2	33,498	16,749
21	YES	MURRELLS INLET	A16	135,000	3	41,651	13,884
22	YES	GARDEN CITY	AE	224,700	4	38,208	9,552
23	NO	GARDEN CITY	A16	172,800	2	92,752	46,376
24	YES	GARDEN CITY	A14	192,000	2	65,029	32,514
25	YES	MURRELLS INLET	A14	136,500	2	28,934	14,467
26	NO	GARDEN CITY	A16	87,900	2	20,737	10,368
27	YES	PAWLEY ISLAND	A16	124,950	3	11,791	3,930
28	NO	PAWLEYS ISLAND	AE	255,000	4	21,217	5,304
29	YES	PAWLEYS ISLAND	AE	133,100	2	14,349	7,174
30	YES	PAWLEYS ISLAND	A14	82,700	2	56,905	28,453
31	YES	PAWLEYS ISLAND	A14	105,800	2	33,220	16,610

Ref. #	Insured?	City	Zone	Building Value	Losses	Total Paid	Average Pay
32	NO	PAWLEYS ISLAND	A16	92,800	2	66,573	33,286
33	YES	PAWLEYS ISLAND	A	100,000	2	32,358	16,179
34	SDF	PAWLEYS ISLAND	A16	190,067	5	61,291	12,258
35	YES	PAWLEYS ISLAND	AE	264,857	4	66,645	16,661
36	YES	PAWLEYS ISLAND	A14	195,074	3	39,764	13,255
37	YES	PAWLEYS ISLAND	A14	150,000	2	50,882	25,441
38	YES	PAWLEYS ISLAND	A16	92,820	2	42,336	21,168
39	YES	LITCHFIELD	AE	1,850,000	2	353,177	176,589
40	YES	PAWLEYS ISLAND	AE	185,000	2	57,996	28,998
41	YES	PAWLEYS ISLAND	AE	185,000	2	9,781	4,891
42	YES	PAWLEYS ISLAND	A14	88,875	2	9,662	4,831
43	NO	PAWLEYS ISLAND	A16	30,000	2	28,954	14,477
44	NO	PAWLEYS ISLAND	A16	883,320	2	104,858	52,429
45	NO	PAWLEYS ISLAND	A16	883,320	2	105,350	52,675
46	NO	PAWLEYS ISLAND	A16	883,320	2	94,969	47,485
47	NO	PAWLEYS ISLAND	A16	883,320	2	95,317	47,659
48	NO	PAWLEYS ISLAND	A16	883,320	2	103,004	51,502
49	NO	PAWLEYS ISLAND	A16	883,300	2	105,200	52,600
50	NO	PAWLEYS ISLAND	A16	883,320	2	95,284	47,642
51	NO	WACCAMAW NECK	A16	122,000	2	19,289	9,644
52	YES	PAWLEYS ISLAND	A16	1,250,000	2	42,546	21,273
53	YES	PAWLEYS ISLAND	A14	105,360	2	33,765	16,883
54	YES	PAWLEYS ISLAND	AE	123,800	2	120,022	60,011
55	YES	PAWLEYS ISLAND	V21	134,480	2	65,272	32,636
56	YES	PAWLEYS ISLAND	A14	114,440	2	28,741	14,370
57	NO	PAWLEYS ISLAND	A16	120,000	2	45,722	22,861
58	YES	PAWLEYS ISLAND	VE	82,080	2	35,671	17,836
59	YES	PAWLEYS ISLAND	V21	150,000	2	32,173	16,087
60	YES	PAWLEYS ISLAND	AE	177,100	3	67,623	22,541
61	YES	PAWLEYS ISLAND	A16	2,570,000	2	107,997	53,998
62	NO	PAWLEYS ISLAND	V21	120,880	2	38,320	19,160
63	NO	GARDEN CITY	A16	150,000	2	26,481	13,241
64	NO	WATERFORD HGHTS	A14	165,000	2	12,628	6,314
65	YES	MURRELLS INLET	A14	195,000	2	56,742	28,371
66	YES	MURRELLS INLET	A14	147,875	2	77,352	38,676
67	NO	GARDEN CITY	A14	200,000	2	110,002	55,001
68	YES	GEORGETOWN	AE	250,000	3	74,276	24,759
69	YES	PAWLEYS ISL	X	172,700	2	58,480	29,240
70	YES	GEORGETOWN	VE	301,320	2	227,886	113,943
71	YES	PAWLEYS ISLAND	V21	299,900	2	48,973	24,487
72	NO	N LITCHFIELD	A16	210,000	2	10,536	5,268
73	NO	N LITCHFIELD	A16	175,000	2	22,370	11,185

Ref. #	Insured?	City	Zone	Building Value	Losses	Total Paid	Average Pay
74	NO	N LITCHFIELD	A16	83,700	2	29,965	14,983
75	YES	N LITCHFIELD BCH	VE	177,100	2	144,478	72,239
76	YES	PAWLEYS ISLAND	A16	153,600	2	48,321	24,160
77	NO	PAWLEYS ISLAND	A14	400,000	2	30,591	15,296
78	NO	PAWLEYS ISLAND	A16	220,000	2	62,998	31,499
79	YES	N LITCHFIELD	A14	1,250,000	2	11,019	5,509
80	YES	PAWLEYS ISLAND	A16	218,000	2	20,766	10,383
81	YES	PAWLEYS ISLAND	A16	88,000	2	6,724	3,362
82	NO	PAWLEYS ISLAND	V21	110,880	2	16,722	8,361
83	YES	N. LITCHFIELD	A16	195,000	2	19,880	9,940
84	YES	PAWLEYS ISLAND	V21	68,400	2	40,803	20,402
85	YES	PAWLEYS ISLAND	A16	135,000	2	6,857	3,429
86	YES	LITCHFIELD	AE	76,950	2	5,897	2,948
87	YES	PAWLEYS ISLAND	A16	120,000	2	7,241	3,621
88	YES	PAWLEYS ISLAND	A16	63,829	2	11,910	5,955
89	YES	PAWLEYS ISLAND	V21	16,388	2	15,703	7,852
90	YES	PAWLEYS ISLAND	V21	63,000	2	24,093	12,047
91	YES	PAWLEYS ISLAND	V21	155,000	2	38,294	19,147
92	NO	PAWLEYS ISLAND	A14	101,630	2	33,158	16,579
93	NO	S LITCHFIELD BE	A14	100,000	2	45,324	22,662
94	YES	PAWLEYS ISLAND	AE	165,000	2	62,956	31,478
95	YES	PAWLEYS ISLAND	A14	130,000	2	19,491	9,746
96	NO	PAWLEYS ISLAND	A14	87,400	2	50,127	25,063
97	NO	PAWLEYS ISLAND	AE	105,952	2	19,865	9,933
98	YES	S LITCHFIELD BEACH	A16	100,000	2	40,838	20,419
99	YES	PAWLEY ISLAND	AE	1,850,000	2	8,251	4,125
100	YES	GARDEN CITY	VE	167,375	2	111,524	55,762
101	NO	PAWLEYS ISLAND	A16	266,000	2	171,264	85,632
102	NO	PAWLEYS ISLAND	A16	312,984	2	154,007	77,003
103	YES	LITCHFIELD BEACH	A14	127,200	2	31,470	15,735
104	YES	PAWLEYS ISLAND	A16	145,000	2	28,542	14,271
105	NO	S LITCHFIELD BC	A14	54,500	2	3,265	1,633
106	YES	PAWLEYS ISLAND	A16	86,800	2	17,907	8,954
107	YES	PAWLEYS ISLAND	A14	53,504	2	27,733	13,867
108	YES	PAWLEYS ISLAND	A14	106,600	2	21,014	10,507
109	YES	PAWLEYS ISLAND	A14	55,000	2	5,246	2,623
110	YES	PAWLEYS ISLAND	A14	50,400	2	16,063	8,031
111	YES	PAWLEYS ISLAND	A14	101,255	2	28,113	14,056
112	YES	PAWLEYS ISLAND	A14	108,000	2	17,099	8,549
113	YES	PAWLEYS ISLAND	A16	107,400	3	158,260	52,753
114	YES	PAWLEYS ISLAND	A14	110,000	2	10,808	5,404
115	YES	PAWLEYS ISLAND	A	196,700	3	45,015	15,005

Ref. #	Insured?	City	Zone	Building Value	Losses	Total Paid	Average Pay
116	YES	PAWLEYS ISLAND	A16	80,000	2	18,400	9,200
117	YES	LITCHFIELD	A14	151,905	2	29,539	14,770
118	YES	GEORGETOWN	X	190,119	2	10,997	5,499
119	YES	PAWLEYS ISLAND	A16	208,000	2	14,413	7,206
120	YES	MURRELLS INLET	A14	90,000	2	22,813	11,406
121	YES	GARDEN CITY	A16	140,000	2	75,031	37,516
122	YES	MURRELLS INLET	A16	114,537	2	77,846	38,923
123	YES	GARDEN CITY	V21	228,800	2	61,299	30,649
124	YES	GARDEN CITY	A16	115,700	2	21,411	10,706
125	NO	GARDEN CITY		81,081	2	31,444	15,722
126	NO	GARDEN CITY	V21	131,717	2	90,163	45,081
127	YES	PAWLEYS ISLAND	A14	77,400	2	90,132	45,066
128	NO	GEORGETOWN	V21	266,400	2	52,880	26,440
129	NO	GEORGETOWN	A14	75,822	2	34,964	17,482
130	YES	GEORGETOWN	A14	120,000	2	100,993	50,497
131	YES	GEORGETOWN	X	100,000	7	97,324	13,903
132	YES	GEORGETOWN	A14	43,150	3	48,228	16,076
133	YES	GEORGETOWN	AE	260,000	2	40,712	20,356
134	YES	GEORGETOWN	A14	9,999,999,999	4	54,069	13,517
135	NO	GEORGETOWN	X	35,152	2	26,511	13,256
136	YES	GEORGETOWN	X	125,000	3	23,797	7,932
137	NO	GEORGETOWN	X	60,000	2	5,911	2,955
138	NO	GEORGETOWN	X	77,168	2	8,382	4,191
139	NO	PAWLEYS ISLAND	A16	40,950	2	7,760	3,880
140	YES	PAWLEYS ISLAND	V21	159,050	2	55,631	27,816
141	YES	PAWLEYS ISLAND	A14	75,000	2	22,905	11,453
142	YES	PAWLEYS ISLAND	V14	166,000	2	36,680	18,340
143	YES	PAWLEYS ISLAND	A16	89,800	2	50,680	25,340
144	YES	PAWLEYS ISLAND	A14	123,750	3	29,229	9,743
145	YES	PAWLEYS ISLAND	A16	52,000	2	33,930	16,965
146	NO	PAWLEYS ISLAND	A16	70,000	2	34,309	17,154
147	YES	PAWLEYS ISLAND	A16	86,200	2	28,057	14,028
148	YES	PAWLEYS ISLAND	A14	144,300	2	29,834	14,917
149	NO	PAWLEYS ISLAND	AE	9,999,999,999	5	175,366	35,073
150	YES	PAWLEYS ISLAND	V21	120,000	2	127,081	63,541
151	YES	PAWLEYS ISLAND	AE	146,000	3	66,753	22,251
152	NO	PAWLEYS ISLAND	V21	190,000	2	56,615	28,307
153	NO	PAWLEYS ISLAND	V14	88,000	2	51,898	25,949
154	NO	PAWLEYS ISL		51,800	2	44,204	22,102
155	NO	PAWLEYS ISLAND	A14	116,533	2	145,332	72,666
156	YES	PAWLEYS ISLAND	AE	85,680	2	17,003	8,502
157	NO	PAWLEYS ISLAND	A16	37,055	2	42,541	21,270

Ref. #	Insured?	City	Zone	Building Value	Losses	Total Paid	Average Pay
158	NO	PAWLEYS ISLAND	A16	71,573	3	35,669	11,890
159	YES	PAWLEYS ISLAND	A16	70,000	2	6,730	3,365
160	YES	PAWLEYS ISLAND	A16	45,000	2	5,290	2,645
161	SDF	PAWLEYS ISLAND	AE	257,523	4	109,213	27,303
162	YES	PAWLEYS ISLAND	A16	90,000	2	65,288	32,644
163	NO	PAWLEYS ISLAND	A16	100,000	3	43,629	14,543
164	YES	PAWLEYS ISLAND	A16	1,071,000	2	250,447	125,224
165	YES	PAWLEYS ISLAND	V21	117,600	2	32,003	16,001
166	YES	PAWLEYS ISLAND	A	103,200	2	37,013	18,507
167	NO	PAWLEYS ISLAND	A16	64,400	2	33,349	16,674
168	NO	WACCAMAW	VE	144,700	2	130,076	65,038
169	YES	PAWLEYS ISLAND	AE	78,700	2	17,172	8,586
170	YES	PAWLEYS ISLAND	AE	134,200	2	93,748	46,874
171	YES	PAWLEYS ISLAND	V21	200,000	2	175,427	87,713
172	YES	PAWLEYS ISLAND	A14	83,725	2	29,208	14,604
173	YES	PAWLEYS ISLAND	VE	93,776	2	71,175	35,587
174	NO	PAWLEYS ISLAND	B	90,900	4	69,382	17,345
175	YES	PAWLEYS ISLAND	A16	105,800	2	72,027	36,013
176	NO	PAWLEYS ISLAND	B	71,400	2	72,924	36,462
177	YES	PAWLEYS ISLAND	A16	70,000	2	73,581	36,791
178	NO	PAWLEYS ISLAND	A	200,000	2	112,017	56,009
179	YES	PAWLEYS ISLAND	V21	115,200	2	30,314	15,157
180	YES	PAWLEYS ISLAND	V21	201,000	2	141,617	70,808
181	YES	PAWLEYS ISLAND	V21	132,000	2	53,145	26,572
182	NO	PAWLEYS ISLAND	V21	9,999,999,999	2	98,209	49,105
183	YES	PAWLEYS ISLAND	A14	255,500	2	74,321	37,160
184	YES	PAWLEYS ISLAND	V21	90,000	2	60,757	30,378
185	NO	PAWLEYS ISLAND	V21	93,600	2	54,951	27,476
186	YES	PAWLEYS ISLAND	A14	120,000	2	33,259	16,630
187	YES	PAWLEYS ISLAND	V21	87,200	2	81,582	40,791
188	YES	PAWLEYS ISLAND	V21	100,000	2	68,271	34,135
189	YES	PAWLEYS ISLAND	V21	9,999,999,999	3	235,905	78,635
190	YES	PAWLEYS ISLAND	V21	110,000	2	74,013	37,006
191	NO	PAWLEY ISLAND	VE	174,825	2	62,404	31,202
192	YES	PAWLEYS ISLAND	VE	50,000	3	42,461	14,154
193	NO	PAWLEYS ISLAND	A14	158,000	4	104,056	26,014
194	YES	PAWLEYS ISLAND	V21	644,700	2	118,192	59,096
195	YES	PAWLEYS ISLAND	V21	77,600	2	7,919	3,959
		Yes / 133 **No / 62**		**$40,040,957,294**			**$26,420**

TABLE B-8-B
Town of Pawleys Island Repetitive Loss Inventory

Ref. #	Insured?	Zone	Total Paid	Losses	Average Pay
58	YES	A16	1,791	3	3,930
59	YES	AE	8,251	2	4,125
60	NO	VE	62,404	2	31,202
61	NO		44,204	2	22,102
62	YES	X	58,480	2	29,240
63	YES	A	32,358	2	16,179
64	YES	A	45,015	3	15,005
65	YES	A	37,013	2	18,507
66	NO	A	112,017	2	56,009
67	NO	A14	8,629	2	4,314
68	YES	A14	20,997	2	10,499
69	YES	A14	56,905	2	28,453
70	YES	A14	33,220	2	16,610
71	YES	A14	39,764	3	13,255
72	YES	A14	50,882	2	25,441
73	YES	A14	9,662	2	4,831
74	YES	A14	33,765	2	16,883
75	YES	A14	28,741	2	14,370
76	NO	A14	30,591	2	15,296
77	NO	A14	33,158	2	16,579
78	YES	A14	19,491	2	9,746
79	NO	A14	50,127	2	25,063
80	YES	A14	27,733	2	13,867
81	YES	A14	21,014	2	10,507
82	YES	A14	5,246	2	2,623
83	YES	A14	16,063	2	8,031
84	YES	A14	28,113	2	14,056
85	YES	A14	17,099	2	8,549
86	YES	A14	10,808	2	5,404
87	YES	A14	90,132	2	45,066
88	YES	A14	22,905	2	11,453
89	YES	A14	29,229	3	9,743
90	YES	A14	29,834	2	14,917
91	NO	A14	145,332	2	72,666
92	YES	A14	29,208	2	14,604
93	YES	A14	74,321	2	37,160
94	YES	A14	33,259	2	16,630
95	NO	A14	104,056	4	26,014
96	YES	A16	25,885	2	12,943
97	NO	A16	66,573	2	33,286
98	SDF	A16	61,291	5	12,258

Ref. #	Insured?	Zone	Total Paid	Losses	Average Pay
99	YES	A16	42,336	2	21,168
100	NO	A16	28,954	2	14,477
101	NO	A16	104,858	2	52,429
102	NO	A16	105,350	2	52,675
103	NO	A16	94,969	2	47,485
104	NO	A16	95,317	2	47,659
105	NO	A16	103,004	2	51,502
106	NO	A16	105,200	2	52,600
107	NO	A16	95,284	2	47,642
108	YES	A16	42,546	2	21,273
109	NO	A16	45,722	2	22,861
110	YES	A16	107,997	2	53,998
111	YES	A16	48,321	2	24,160
112	NO	A16	62,998	2	31,499
113	YES	A16	20,766	2	10,383
114	YES	A16	6,724	2	3,362
115	YES	A16	6,857	2	3,429
116	YES	A16	7,241	2	3,621
117	YES	A16	11,910	2	5,955
118	NO	A16	171,264	2	85,632
119	NO	A16	154,007	2	77,003
120	YES	A16	28,542	2	14,271
121	YES	A16	17,907	2	8,954
122	YES	A16	158,260	3	52,753
123	YES	A16	18,400	2	9,200
124	YES	A16	14,413	2	7,206
125	NO	A16	7,760	2	3,880
126	YES	A16	50,680	2	25,340
127	YES	A16	33,930	2	16,965
128	NO	A16	34,309	2	17,154
129	YES	A16	28,057	2	14,028
130	NO	A16	42,541	2	21,270
131	NO	A16	35,669	3	11,890
132	YES	A16	6,730	2	3,365
133	YES	A16	5,290	2	2,645
134	YES	A16	65,288	2	32,644
135	NO	A16	43,629	3	14,543
136	YES	A16	250,447	2	125,224
137	NO	A16	33,349	2	16,674
138	YES	A16	72,027	2	36,013
139	YES	A16	73,581	2	36,791
140	YES	AE	63,723	2	31,862
141	YES	AE	13,137	3	4,379

Ref. #	Insured?	Zone	Total Paid	Losses	Average Pay
142	NO	AE	21,217	4	5,304
143	YES	AE	14,349	2	7,174
144	YES	AE	66,645	4	16,661
145	YES	AE	57,996	2	28,998
146	YES	AE	9,781	2	4,891
147	YES	AE	120,022	2	60,011
148	YES	AE	67,623	3	22,541
149	YES	AE	62,956	2	31,478
150	NO	AE	19,865	2	9,933
151	NO	AE	175,366	5	35,073
152	YES	AE	66,753	3	22,251
153	YES	AE	17,003	2	8,502
154	SDF	AE	109,213	4	27,303
155	YES	AE	17,172	2	8,586
156	YES	AE	93,748	2	46,874
157	NO	B	69,382	4	17,345
158	NO	B	72,924	2	36,462
159	YES	V14	36,680	2	18,340
160	NO	V14	51,898	2	25,949
161	YES	V21	65,272	2	32,636
162	YES	V21	32,173	2	16,087
163	NO	V21	38,320	2	19,160
164	YES	V21	48,973	2	24,487
165	NO	V21	16,722	2	8,361
166	YES	V21	40,803	2	20,402
167	YES	V21	15,703	2	7,852
168	YES	V21	24,093	2	12,047
169	YES	V21	38,294	2	19,147
170	YES	V21	55,631	2	27,816
171	YES	V21	127,081	2	63,541
172	NO	V21	56,615	2	28,307
173	YES	V21	32,003	2	16,001
174	YES	V21	175,427	2	87,713
175	YES	V21	30,314	2	15,157
176	YES	V21	141,617	2	70,808
177	YES	V21	53,145	2	26,572
178	NO	V21	98,209	2	49,105
179	YES	V21	60,757	2	30,378
180	NO	V21	54,951	2	27,476
181	YES	V21	81,582	2	40,791
182	YES	V21	68,271	2	34,135
183	YES	V21	235,905	3	78,635
184	YES	V21	74,013	2	37,006

Ref. #	Insured?	Zone	Total Paid	Losses	Average Pay
185	YES	V21	118,192	2	59,096
186	YES	V21	7,919	2	3,959
187	YES	VE	35,671	2	17,836
188	YES	VE	71,175	2	35,587
189	YES	VE	42,461	3	14,154
	Yes / 41		**$7,316,749**		**$25,479**
	No / 91				

TABLE B-8-C
Repetitive Loss Inventory for the City of Georgetown

Ref. #	Insured?	Zone	Total Paid	Losses	Average Pay
15	NO	A14	57,036	2	28,518
16	NO	A14	34,964	2	17,482
17	YES	A14	100,993	2	50,497
18	YES	A14	48,228	3	16,076
19	YES	A14	54,069	4	13,517
20	YES	AE	74,276	3	24,759
21	YES	AE	40,712	2	20,356
22	NO	V21	266,675	2	133,338
23	NO	V21	52,880	2	26,440
24	YES	VE	246,669	3	82,223
25	YES	VE	227,886	2	113,943
26	YES	X	10,997	2	5,499
27	YES	X	97,324	7	13,903
28	NO	X	26,511	2	13,256
29	YES	X	23,797	3	7,932
30	NO	X	5,911	2	2,955
31	NO	X	8,382	2	4,191
195	NO	A14	12,628	2	6,314
	Yes / 10		**$1,389,938**		**$32,289**
	No / 8				

Source: National Flood Insurance Program, 2014.

7. Critical Facilities Inventory

An essential component of the Georgetown County Hazard Mitigation Plan is the identification and inventory of the critical facilities that are located in the County. The purpose of the critical facilities inventory is to provide information and location data on buildings and infrastructure that are vital to the response and recovery of the community from a natural disaster. While all buildings and structures have value, certain types of structures have a higher priority for protection because damage to them can directly impact the delivery of vital services, thereby delaying response and/or recovery efforts. Loss or damage to critical facilities can also put special populations at risk.

For purposes of this Mitigation Plan, Georgetown County considers critical facilities to be those buildings and structures from which essential services and functions for the continuation of public safety actions and disaster recovery are performed or provided. These facilities include supporting infrastructure essential to the mission of critical facilities.

An inventory of Georgetown County's critical facilities has been compiled using best available data and is provided in Table B-9. Most of these facilities are shown on Figure B-6. For mitigation planning purposes, all critical facilities are classified according to the following categories:

- Level 1 Facilities (must remain operational)
- Level 2 Facilities (must be operational within 24 hours following disaster event)
- Level 3 Facilities (must be operational within 72 hours following disaster event)

TABLE B-9		
Georgetown County Critical Facilities		
LEVEL 1		
SCHOOLS		
Andrews Elementary School	13072 County Line Rd.	Andrews
Pleasant Hill Elementary School	127 Schoolhouse Dr.	Hemingway
EMERGENCY SERVICES		
Georgetown City Fire Sta. #2	2014 S. Island	Georgetown
Georgetown City Police Dept.	2222 Highmarket Street	Georgetown
Georgetown City Fire Dept. Sta. #1	1405 Prince St.	Georgetown
Andrews City Police	101 N. Morgan Ave.	Andrews
Midway Fire Rescue Station #83	56 Firehouse Rd	Georgetown
Midway Fire Rescue Station #81	67 St. Paul's Place	Pawleys Island
County Fire Station #8	14296 N. Fraser St.	Georgetown
County Fire Station #3	1960 Dunbar Rd.	Georgetown
Andrews City Fire Dept.	101 N. Morgan Ave.	Andrews
County Fire Station #12	444 Postfoot Circle	Georgetown
County Fire Station #14	10287 Carvers Bay Rd.	Hemingway
County Fire/EMS Station #4	11309 Pleasant Hill Dr.	Hemingway
Murrells Inlet-Garden City Fire Dept.	3641 US Hwy. 17 Bus.	Murrells Inlet
County Fire/EMS Station #11	614 Pringles Ferry Rd.	Georgetown
County Fire/EMS Station #10	3605 Highmarket St.	Georgetown
County Fire/EMS Station #9	32 Aviation Rd.	Georgetown
County Fire Station #7	290 Windum Dr.	Andrews
County Fire/EMS Station #5	303 Georgetown Highway	Georgetown
Georgetown County EOC/EMD/911	2222-C Highmarket Street	Georgetown
Midway Fire Rescue Station #82	112 Beaumont Dr.	Pawleys Island
County Fire Station #6	29 Sandy Island Rd.	Pawleys Island
County Fire Station #13	11525 Browns Ferry Rd.	Georgetown
County Fire Station #2	10391 Powell Rd.	Georgetown
County Fire Dept. HQ	3605 Highmarket St.	Georgetown

County Fire/EMS Station #15	109 N Morgan Ave.	Andrews
Pawleys Island Police Dept.	321 Myrtle Avenue	Pawleys Island
Georgetown County Sheriff's Office	333 Cleland St.	Georgetown
South Carolina Highway Patrol Office	220 Ridge Street	Georgetown
HOSPITALS		
Georgetown County Memorial Hospital	606 Black River RD	Georgetown
Waccamaw Community Hospital	4070 Highway 17S. Bypass	Murrells Inlet
COMMUNICATIONS		
Verizon Tel Lec Sw, Georg	1113 Front Street	Georgetown
Georgetown Co. Central Dispatch	2222-C Highmarket Street	Georgetown
County Radio Transmission Tower	Browns Ferry Rd Near Public Works Area	Georgetown
LEVEL 2		
ELECTRIC		
Winyah Power Generating Plant	661 Steam Plant Dr.	Georgetown
DISASTER RECOVERY FACILITIES		
SC Army National Guard Armory	3777 S. Fraser St.	Georgetown
SC Army National Guard Armory	401 W. Main Street	Andrews
Landfill	203 Landfill Road	Georgetown
BRIDGES		
North Bound Over South Santee River		
South Bound Over South Santee River		
South Bound Over North Santee River		
North Bound Over North Santee River		
South Bound Over Sampit River		
North Bound Over Sampit River		
Over Pee Dee River		
Over Waccamaw River		
Over Six Mile Creek		
Over Black River		
Over Yauhannah Creek		
Over Yauhannah Lake		
Over Pee Dee River		
Over Six Mile Creek		
Over Lanes Creek		
Over Black River		
Over Mcginney Hill Swamp		
Over Peters Creek		
Over Choppee Creek		
Over Big Dam Creek		

LEVEL 3		
SCHOOLS		
Georgetown High School	2500 Anthuan Maybank Drive	Georgetown
Georgetown Middle School	2400 Anthuan Maybank Drive	Georgetown
Kensington Elementary	86 Kensington Blvd.	Georgetown
Waccamaw Elementary	1364 Waverly Rd.	Pawleys Island
Waccamaw High School	2412 Kings River Road	Pawleys Island
Sampit Elementary	69 Woodland Ave.	Georgetown
Andrews High School	12890 County Line Road	Andrews
Rosemary Middle School	12804 County Line Road	Andrews
Carver's Bay Middle School	13000 Choppee Road	Hemingway
Plantersville Elementary	1668 Exodus Dr.	Georgetown
Carver's Bay High School	13002 Choppee Road	Hemingway
Maryville Elementary	2125 Poplar St.	Georgetown
McDonald Road Elementary	532 McDonald Rd.	Georgetown
Waccamaw Middle School	247 Wildcat Way	Pawleys Island
Waccamaw Intermediate	320 Wildcat Way	Pawleys Island
Browns Ferry Elementary	7292 Browns Ferry Rd.	Georgetown
Howard Adult Center	500 S Kaminski St.	Georgetown
EMERGENCY SERVICES		
Georgetown County Detention Center	2394 Browns Ferry Rd.	Georgetown
Choppee Complex*	8189 Choppee Rd.	Georgetown
* Alternate EOC		
GOVERNMENT SERVICES		
Georgetown County Courthouse	333 Cleland St.	Georgetown
ELECTRIC		
Litchfield Electric Substation	Crooked Oak Dr. @ US. Hwy 17	Pawleys Island
Pawleys Island Substation	Tyson Dr. @ Silver Hill Ln.	Pawleys Island
Sampit Electric Substation	St. Delight @ Pennyroyal Rd.	Georgetown
Greenfield Electric Substation	N. Fraser St.	Georgetown
Georgetown Switching Station	Gapway Rd.	Georgetown
Georgetown Substation	Greentown Road	Georgetown
Belle Isle Substation	Us Hwy 17 S. @ Whitehall Rd.	Georgetown
Dunbar Substation	Dunbar Road	Georgetown
Plantersville Substation	Jackson Village Road	Hemingway
Arcadia Electric Substation	Overland Dr.	Pawleys Island
Carter Crossroads Substation		Hemingway
Andrews Substation	County Line Road	Andrews

PORT		
Port of Georgetown	P. O. Box 601	Georgetown
AIRPORTS		
222 Andrews Municipal	11920 Gapway Road	Andrews
11866 Georgetown County	129 Airport Rd	Georgetown
POTABLE WATER		
Georgetown City Water Plant	2355 Anthuan Maybank Blvd.	Georgetown
Waccamaw Neck Water Treatment Plant	1975 Sandy River Road	Pawleys Island
Andrews Airport Water Tower	S. Side Of Gapway Rd @ Insteel Dr.	Andrews
Andrews Water Tank	E. Ashland St. @ RR	Andrews
Andrews Water Tower	Hazel Ave. @ W. Elmwood St.	Andrews
Dunbar Area Water Tower	Dunbar Rd. @ Rural Hall Dr.	Georgetown
Choppee Mini Park Water Tower	Whitmire Ave. @ Postfoot Cir.	Georgetown
Georgetown Water Tank	Washington St. @ Lincoln St.	Georgetown
Sampit River Water Tower	Dock Street	Georgetown
Maryville Water Tower	Peachtree St. @Sycamore Dr.	Georgetown
Kensington Area Water Tower	Jacobs Ave.	Georgetown
North Santee Elevated Storage Tank	10948 Powell Rd.	Georgetown
Power Plant Area Water Storage Tank	Pennyroyal Behind Power Plt.	Georgetown
Airport Industrial Park Elevated Storage Tank	Beechcraft Ln.	Georgetown
Plantersville Elevated Storage Tank	1408 Exodus Dr.	Georgetown
Red Hill Water Storage Tank	12074Browns Ferry Rd.	Andrews
Rose Hill Water Storage Tank	3315 Rose Hill Rd.	Georgetown
Sampit Elevated Storage Tank	27 Powell Rd.	Georgetown
Graves Area Water Tower	High Market St. @ Garrison Rd	Georgetown
Murrells Inlet Water Storage Tank	Old Kings Hwy @ Luther Ct.	Murrells Inlet
Litchfield Elevated Storage Tank	42 Wisteria Plantation Drive	Pawleys Island
Pawleys Island Elevated Storage Tank	Waverly Rd.	Pawleys Island
DeBordieu Colony Elevated Storage Tank	Firehouse Street	DeBordieu
Andrews Industrial Park Elevated Storage Tank	Georgetown Highway	Georgetown
Wedgefield Plantation Elevated Storage Tank	242 Governor Johnson Rd.	Georgetown
Yauhannah Elevated Storage Tank	10313 Carvers Bay Rd.	Georgetown
Carvers Bay Elevated Storage Tank	Carvers Bay Rd.	Georgetown

WASTE WATER		
Georgetown City Waste Water Treatment Plant	126 Ridge St.	Georgetown
Pawleys Island Waste Water Treatment Plan	456 Clearwater Dr.	Pawleys Island
DeBordieu Colony Waste Water Treatment Plant	Firehouse St.	DeBordieu
North Santee Waste Water Treatment Plant	Earl Rd.	Georgetown

8. Development Trends and Implications

According to the *Georgetown County Comprehensive Plan, Land Use Element* (August 2012)[29], the industrial and recreational potential of Georgetown County has been closely tied to its geographic location on the coast. Improved transportation and communications has allowed industry to seek sites outside metropolitan areas, allowing Georgetown County to be a competitive location for business and industry. Georgetown County has and still is experiencing an increase in development because of its proximity to the ocean and waterways, due to its convenient location between the established resort area around Myrtle Beach and the City of Charleston. Many people, especially retirees, are finding Georgetown County is an attractive place to live.

Other physical characteristics of Georgetown County continue to pose challenges to development. The flat topography, excessive amounts of both fresh and salt water and poor soil associated with these features have made development costly for both private developers and the community. Poor drainage, flood conditions, and unstable building foundations are located throughout the study area. For these reasons, development through the County has been sporadic. Growth is occurring where there is the least physical resistance. This is not to say that development has not occurred in critical development areas where land values justify expensive construction (i.e., waterfront areas). These growth areas continually present development problems.

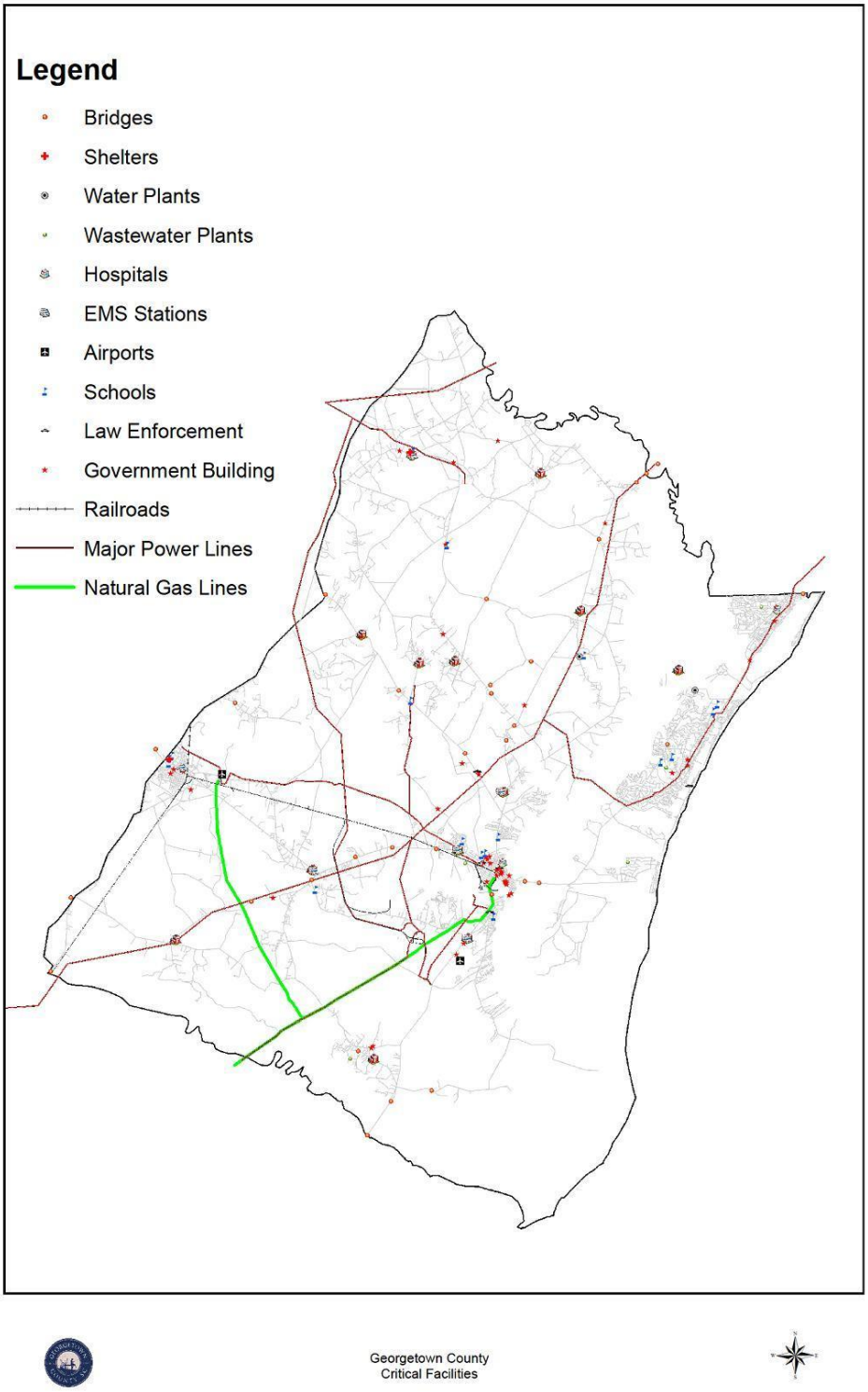
With the exception of the Waccamaw Division and portions of the Georgetown Rural Division, the growth and development of unincorporated Georgetown County can only be classified as sparse. An examination of the total land area tabulations, Table B-11 shows that of the total 495,699 acres in Georgetown County, excluding the City of Georgetown, the Town of Andrews, and the Town of Pawleys Island, only 15.5 percent or 77,050 acres is devoted to residential, commercial, public, industrial, institutional, transportation/utilities, streets and rights-of-way uses. The remaining 418,649 acres is vacant or undeveloped land which includes forest, agriculture, wetlands, beaches and vacant land.

Population for Georgetown County has increased from 60,158 in 2010 to 60,440 in 2013 (see Table B-2 on page B-5). Building permit fees have increased from $598,346 for FY2010 to $751,850 for FY2013. There were 230 building permits issued in 2012.[30] There has also been new building construction throughout the county to include, but not limited to:

[29] *Georgetown County Comprehensive Plan*, 2012. Georgetown, South Carolina-USA.
[30] Johnson, Boyd. "Key Revenue Trends January 2014 with Marriage Licenses.xls." Message to Cindy Grace. 15 July 2014. E-mail.

Lowe's Food Store	Several Dollar General Stores	Goodwill Thrift Store
Publix Supermarket	Several Parks and Recreation Centers	Dollar Tree Store
New Library in Litchfield	Fresh Market	New Housing Developments in Murrells Inlet
New Housing Developments in Pawleys Island	New Homes in Litchfield Plantation	New Homes in DeBordieu Colony

Figure B-6 Critical Facilities in Georgetown County, SC



Source: Georgetown County GIS, April 2014.

TABLE B-10
Existing Land Use in Georgetown County*

Land Use	Acreage	% of Total Land in Georgetown County Study Area*	% of Developed Land in Georgetown County Study Area*
Residential	59,472	11.74%	79.72%
Commercial	2,961	.58%	3.96%
Public/Semi-public	1,348	.26%	1.80%
Industrial	2,169	.42%	2.90%
Recreational	8,752	1.72%	11.73%
Utility	1,856	.36%	2.42%
Total Developed	76,558	15.11%	100.0%
Vacant and Undeveloped	429,783	84.88%	
Total Land Area in County Study Area*	506,341	100.0%	

*Excludes the City of Georgetown, the Town of Andrews, and the Town of Pawleys Island.
Source: *Georgetown County Comprehensive Plan*, Land Use Element (Aug. 2012).

The Land Use Map (Figure B-7) helps illustrate where the population of Georgetown County resides. As shown on the map, major concentrations of population are found along U.S. 17 on the Waccamaw Neck, around the Georgetown urban area, and along U.S. 521. Two noticeable features are the distribution of population and the fact that large tracts of land have no population at all. There are two major factors which are the cause for this distribution. First, much of the undeveloped land in the county is considered marginal for development due to physical characteristics such as wetlands, floodplain and poor soils. Second, more than one third of forest land is being used for timber holdings.

The majority of development in Georgetown County is still rural in nature. High density development has occurred primarily in the City of Georgetown, the Town of Andrews, the Town of Pawleys Island, and other areas in the Waccamaw Division. Development is expected to increase within the next twenty-one years as the population of Georgetown County should increase by 17,399 people or approximately 23 percent. While all divisions are expected to have some growth, the Waccamaw Division is expected to have the largest increase with an expected increase of 10,986 people by the year 2030. The Sampit Division is expected to show only a small increase in population with an additional 6 people in the Plantersville Division and 357 people in the Pleasant Hill/Folly Grove Division over the next twenty-one years.

Residential Land Use

Residential uses occupy the largest portion of developed land for the county as a whole and within most of the Census Divisions. This land use category represents 11.74 percent of the total study area and 79.72 percent of the developed land. Of the total land use surveyed, 45,770.73 acres are single family units, while 12,076.05 acres are devoted to mobile homes, and 625.47 acres are multi-family and high-rise units. Single family homes and mobile homes are a primary type of residential structure in Georgetown County. Multi-family uses are primarily found in the Waccamaw Division. Here, condominium complexes, apartments, and mobile home parks have been built to satisfy the permanent and seasonal population needs. Residential land use concentrations are at their greatest near the City Limits of Georgetown and Andrews and on some areas of the Waccamaw Neck. Smaller communities located throughout each of the Divisions also have concentrations of residential developments. Some of these communities include: Kent, Lamberttown, Choppee, Dunbar, Kensington, Oatland, Plantersville, Pleasant Hill,

Sampit, Sandy Island, North Santee and Yauhannah. There are also many residential uses located along the major highways throughout the Divisions.

Figure B-8

Residential Structures

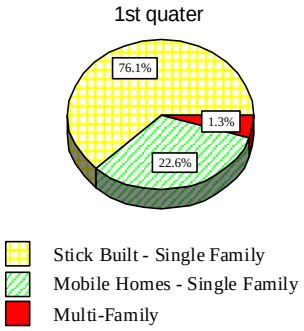
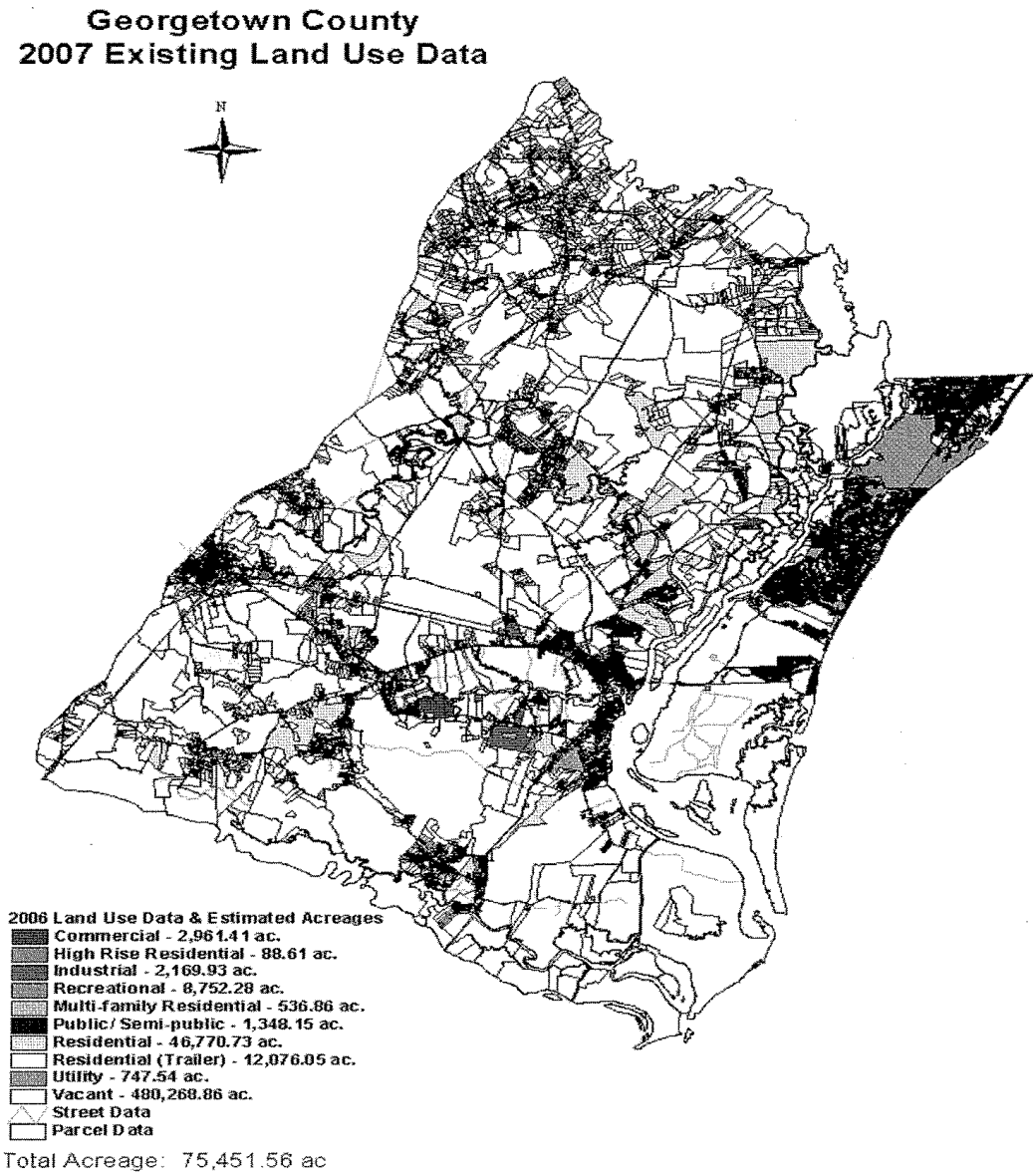


Figure B-7 Land Use Map

Final 8/21/2007
Page 6



Source: *Georgetown County Comprehensive Plan*, *Land Use Element* (Aug. 2012).

For the most part, residential development in the county is experiencing a slow, but progressive rate of growth typical of most rural areas. The Waccamaw Division, on the other hand, is experiencing rapid growth due to its location in close proximity to the Atlantic Ocean and its attraction for residential development. Thirty years ago, over half of the residential units in the Waccamaw Division were used only seasonally. Now this area is witnessing rapid expansion of residential developments of both permanent and seasonal nature. Many residential units are used as vacation rentals. While the Waccamaw Division is expected to continue to develop at a high rate of growth (population is expected to increase by 60 percent by the year 2030), the amount of land that can be developed is dwindling.

Residential Land Use Issues

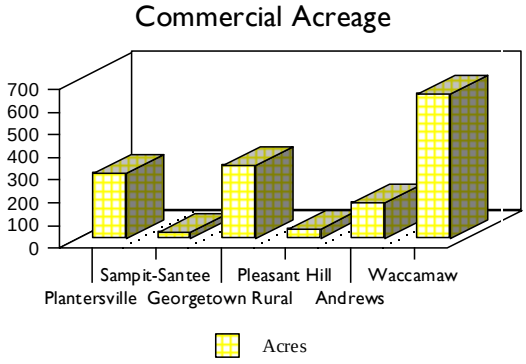
From a traditional planning standpoint, fragmented residential development creates problems. Small isolated residential areas are scattered throughout the County and can be observed in each of the planning areas. Large tracts of undeveloped land separate these entities presenting difficulties in providing services. The lack of concentration or the physical separation of residential development is detrimental to orderly growth. It not only complicates public and private land development decisions, it greatly increases the overall cost of services.

Other issues associated with residential land uses include incompatibility of land uses and hasty development. Incompatibility of land uses is a problem common in areas lacking zoning. For example, incompatibility occurs when residential and industrial uses develop near each other. Noise, smoke, and traffic congestion, which can be caused by some industry, are detrimental to a good living environment. Hasty or premature development occurs usually when speculation has resulted in a subdivision in areas where proper utilities are not provided. These areas eventually require utility extensions, the costs of which are passed on to the public.

The residential development issues that presently confront Georgetown County are somewhat typical of rural and tourist areas. These predicaments and others are expected to continue unless proper land use planning is applied county wide.

Commercial Land Use

Figure B-9



Commercial land uses occupy 2,961.41 acres of land in the study area. This is 0.58 percent of the entire study area and 3.96 percent of the developed land in the study area. Commercial establishments are scattered throughout the county primarily along major highways serving both vehicular traffic and residential areas. The amount of commercial land use has nearly tripled over the past 30 years. Of the six planning areas, Waccamaw Division shows the highest amount of commercial use with the Georgetown Rural Division not far behind. In fact, 65 percent of all of the commercial development in the unincorporated area of the county is located in either the Waccamaw Division or the Georgetown Rural Division. Many of the commercial land uses are tourist oriented and include restaurants, gift and novelty shops, art galleries, motels, service stations, and other similar uses. Commercial development has occurred primarily along U.S. Highway 17, Business Highway 17, and U.S. Highway 521. Much of Highway 17 in Pawleys Island and Murrells Inlet is presently zoned for commercial use.

Commercial Land Use Issues

Throughout the county, there is a lack of commercial land use centralization. When this situation is allowed to continue, it results in commercial sprawl. The strip development along Highway 17 in the Waccamaw Division has commercial areas interspersed with residential property. Commercial uses, in an urban setting, benefit from a close proximity to other compatible commercial uses. Rural areas are better served by conveniently located commercial development at cross road locations.

Public and Institutional Land Use

Public land uses occupy 10,023 acres of land in the county. This is 2.5 percent of the entire unincorporated area and 10.4 percent of the developed land in the county. Although public uses occupy a large portion of the developed land, approximately 84 percent of this acreage is devoted to golf courses and the developed areas of large parks and preserves, located almost exclusively in the Waccamaw Division. The large parks and preserves include Brookgreen Gardens, Huntington Beach State Park and Hobcaw Barony. There are entrance fees charged for Brookgreen Gardens and Huntington Beach State Park. Hobcaw Barony is not open to the general public. Other surveyed uses included in the category were schools, libraries, county parks and tennis courts, marinas and boat landings.

Aside from the golf courses, large preserves and several regional parks, there are limited public uses for the population of Georgetown County. In the Census Divisions, excluding Waccamaw, there are only 1,288 acres of public land use. While there are some public land uses in each of the Divisions, those uses are inadequate to service the existing population. There is a series of parks currently under construction in many communities as part of the Georgetown County Recreation Plan. It must be noted that there are other areas used by the public that are not included in the public land use category. These areas are usually forest land and rivers that are privately owned and used for fishing and hunting by the public.

Institutional land uses are also categorized as Public. They occupy 533 acres of land in the county. This is 0.1 percent of the entire area and 0.7 percent of the developed land in the county. Churches were the overwhelming majority of the institutional uses surveyed. The location of churches has stemmed from the development of small rural residential developments. Other uses surveyed were cemeteries, lodges, clubs, nursing homes and other similar institutional uses. Institutional land uses are basically distributed equally among the six Census Divisions. This indicates a functional relationship between this type use and population rather than land characteristics or availability of infrastructure.

Public Land Use Issues

The majority of the public land use in the Georgetown County study area is devoted to parks and golf courses. Most public land uses do not present any major development or land use problems. However, future development of this land use should not be located near railroads, industrial and commercial areas and other areas unsuitable for this type of use.

Beach access is the one serious public land use problem. Currently there are 35 miles of beach segments in Georgetown County. At this time, only forty percent of the county's beaches have general access to the public. Many of the areas where there is public access have limited public parking available.

The cost to purchase public land is a concern. The cost will greatly affect the amount and location of public land that the county purchases in the future; therefore, land should be acquired before the costs become prohibitive.

There are similar concerns are for public river access. Public access is fairly limited now. There are public boat landings located on the North Santee River, the Black River, the Intracoastal Waterway and the Pee Dee River; however, these rivers are used not only by County residents but they are now an ecotourist destination, with anglers, canoers, and kayakers from all over.

There are also a few concerns caused by institutional land uses. Future development of this land use should not be located near railroads, industrial and commercial areas and other areas unsuitable for this type of use. Hospitals, churches, nursing homes and day care facilities are sensitive to noise. Surrounding uses should be compatible.

Institutional land uses can generate a large volume of traffic. These uses should be located in the immediate vicinity of a collector street, at the very least, which can handle traffic they generate.

Industrial Land Use

Industrial land uses occupy 2,169.93 acres of land in the study area. This is 2.90 percent of the developed land in the study area. The industrial land use in the Georgetown Rural Division and the Andrews Division together comprise 87 percent of all of the industrial land in the Georgetown County study area. The majority of the industry is located near the incorporated areas where infrastructure including water, sewer, rail and highway, and support facilities exist. For the most part, industrial uses are manufacturers, saw mills, automotive repair, and salvage yards. The Pleasant Hill Division shows the least amount of industrial land use. These areas are considered less desirable locations for industrial growth due to soil conditions, topography, environmental factors, and especially a lack of infrastructure including sewage and transportation facilities.

There are several existing Industrial Parks. Each of the existing areas have paved roads, utilities and various on-site improvements. Three of the areas are located south of The City of Georgetown. They include the publicly owned Georgetown County Industrial Park on U.S. 521, the Airport Industrial Park and a privately owned park - Shannon Industrial Park. The Andrews Airport Industrial Park is publicly owned and located just outside of the City of Andrews and the publicly owned Highway 51 Research/Recycling Park is located northwest of the City of Georgetown. Several additional small and privately owned industrial parks are located throughout the County.

Industrial Land Use Issues

The majority of industrial development in Georgetown County is located in and around the City of Georgetown and in areas surrounding the Town of Andrews. There are additional industrial land uses in various locations throughout the County. Many industries have located along major highways or near railways in the areas which are less desirable for residential development. Encroachment by residential use has occurred near some of the industrial land uses, presenting problems for both land use types. This has occurred because of a lack of concentration of industrial land use. Future industries should be encouraged to locate in one of the existing industrial parks so that adequate transportation and utilities can be provided while sufficient buffers can protect industry and residential areas from encroachment.

One issue associated with industrial development is potential negative environmental impacts, especially to water and air quality. While industry is subject to environmental and health regulations, the potential for negative environmental impact still exist. For example, Winyah Bay and the Sampit River register high organic content and Winyah Bay has been closed to shellfishing because it does not meet health standards. The water quality problems result partly from industrial and municipal wastes which are compounded by tidal action problems hindering

the self-purification process. Water quality can definitely be affected by industrial uses and this should be a factor of serious consideration in the locational process of industries. The degradation of air quality in Georgetown County is also partly attributable to industrial development in Georgetown County.

Recreational Land Use.

Recreational land use occupies 8,752 acres of land in the study area. This is 1.72 percent of the entire study area, and 11.73 percent of the developed land in the study area. Recreational land uses are not distributed equally among Divisions. The Waccamaw Division includes 8,303.66 areas of recreational land which is 11.13 percent of the developed land in the study area and 49.20 percent of the developed land in the Waccamaw Division. This acreage is primarily devoted to golf courses and large parks and preserves, located almost exclusively in the Waccamaw Neck. Other recreational facilities available to the public on the Waccamaw Neck include bike paths, the Marsh Walk, and Veterans Pier. Aside from golf courses, large preserves, regional parks, and bike paths, there are limited recreational uses for the general public. For other areas of the county excluding the Waccamaw Division, there are only 448.62 areas of recreational land use.

Recreational Land Use Issues

There are few concerns caused by recreational land use. Future development of this land use should not be located near railroads, industrial, and commercial areas, and other areas unsuitable for this type of use. Parks and recreational facilities are sensitive to noise and air pollution. Surrounding uses should be compatible. Recreational uses have the potential to generate a large volume of traffic. These uses should be located in the immediate vicinity of a collector street, at the very least, which can handle traffic that is generated.

Utility Land Use

Utility land uses occupy 1,856 acres of land in the study area. This is 0.36 percent of the entire study area and 2.42 percent of the developed land in the study area. The rural areas of the county, excluding the Waccamaw Division, comprises the largest percentage of all of the utility land use in the study area. Some of the large uses surveyed include the Georgetown County Airport, the Andrews Airport, and the Winyah Generating Station. For most of the Divisions, there was very little land in this category. Utility sub-stations for electricity and sewage were the most common type of usage.

Utility Land Use Issues

While there are few concerns associated with this land use, the encroachment of residential land uses by structures such as cellular towers is becoming a greater concern as the towers can create visual impacts.

A lack of convenient interstate highway access in Georgetown County is a problem. The closest Interstate to the population center of Georgetown County is approximately 60 miles away. This ongoing obstacle has been detrimental to the economic development of the County. Trucks are required to travel through the County on rural highways which are much slower than interstate highways.

Streets and Right-of-Way Land Use Issues

One concern is the traffic congestion. Georgetown County has recently approved a Transportation Plan that identifies possible solutions to this issue. It is also being addressed in the Long Range Transportation Plans for the Grand Strand Area Transportation Study and the Waccamaw Regional Council of Governments.

A second problem is that many rural areas are not located in a convenient vicinity of roadway access or throughways. In these areas, it is common to travel more than twice the distance the crow flies to get from one point to another. Other Factors include large amount of wetlands in the County and the large undeveloped tracts managed for silvacultural purposes.

Future Land Use Requirements

As the population of Georgetown County increases, additional land will be required for residential (both permanent and vacation), commercial, public, industrial, institutional, transportation and utility purposes. The following section will discuss future spatial requirements for each of these land use types, and will show recommended development areas.

The projection of space requirements for each land use type is essential to the development of a realistic land use plan. The standards and criteria used for these projections vary depending upon the type of use and the available data. These projections, based on accepted standards and acreage conditions are subject to error when applied to smaller areas. For this reason, the calculations presented indicate reasonable estimates of additional land required and are intended only as guidelines for the development of the overall land use plan and its components.

According to the land use projections, approximately 4,849 acres will be required to accommodate anticipated development within the Georgetown County study area by 2025. This is a 6.3 percent increase in the total developed land. An additional 3,828 acres will be needed to accommodate new residential development, and an estimated 789 acres will be needed for new commercial development. If projection is realized, it will bring the total developed acreage to 81,407 acres or 16 percent of the Georgetown County study area. The land use projections for the study area are summarized in Table B-12. Projections for each of the Census Divisions are also tabulated and they accompany the discussion of each planning area.

Table B-11
Future Land Use Georgetown County Study Area*

Land Use	Existing Acreage	Additional Acreage by 2025	Total 2025 Acreage	% of Change
Residential	59,472	3,828	63,300	6.0%
Commercial	2,961	789	3,750	21.0%
Public/Semi-public	1,348	32	1,380	2.3%
Industrial	2,169	175	2,344	7.5%
Utility	1,856	25	1,881	1.3%
Total Developed	**76,558****	**4,849**	**81,407**	**5.9%**
Vacant and Undeveloped	429,783			
Total Land Area in County Study Area*	**506,341**			

Source: *Georgetown County Comprehensive Plan*, Land Use Element, Aug. 2012.
*Excludes the City of Georgetown, the Town of Andrews, and the Town of Pawleys Island.
**Total developed existing land use also includes 8,752 acres of recreational land uses not reflected in the table.

APPENDIX C: GLOSSARY OF HAZARD MITIGATION TERMS

***Anchoring*:** Special connections made to ensure that a building will not float off, blow off, or be pushed off its foundation during a flood or storm.

***Base Flood*:** Flood that has a one (1) percent probability of being equaled or exceeded in any given year. Also known as the 100-year flood.

***Base Flood Elevation*:** Elevation of the base flood in relation to a specified datum, such as the National Geodetic Vertical Datum of 1929 (NGVD). The Base Flood Elevation is used as the standard for the National Flood Insurance Program.

***Basement*:** Any floor level below grade.

***Building*:** A structure that is walled and roofed, principally above-ground and permanently affixed to a site. The term includes a manufactured home on a permanent foundation on which the wheels and axles carry no weight.

***Community Rating System (CRS)*:** A National Flood Insurance Program (NFIP) that provides incentives for NFIP communities to complete activities that reduce flood hazard risk. When the community completes specified activities, the insurance premiums of policyholders in these communities are reduced.

***Consequences*:** The damages, injuries, and loss of life, property, environment, and business that can be quantified by some unit of measure, often in economic or financial terms.

***Contour*:** A line of equal ground elevation on a topographic (contour) map.

***Critical Facility*:** Facilities that are critical to the health and welfare of the population and that are especially important during and following hazard events. Critical facilities include shelters, police and fire stations, schools, childcare centers, senior citizen centers, hospitals, disability centers, vehicle and equipment storage facilities, emergency operations centers, and city halls. The term also includes buildings or locations that, if damaged, would create secondary disasters, such as hazardous materials facilities, vulnerable facilities, day care centers, nursing homes, and housing likely to contain occupants who are not very mobile. Other critical city infrastructure such as telephone exchanges and water treatment plants are referred to as lifelines. *See Lifelines*.

***Dam Breach Inundation Area*:** The area flooded by a dam failure or programmed release.

***Debris*:** The scattered remains of assets broken or destroyed in a hazard event. Debris caused by a wind or water hazard event can cause additional damage to other assets.

***Development*:** Any man-made change to real estate.

Digitize: To convert electronically points, lines, and area boundaries shown on maps into x, y coordinates (e.g., latitude and longitude, Universal Transverse Mercator (UTM), or table coordinates) for use in computer applications.

***Duration*:** How long a hazard event lasts.

***Earthquake*:** A sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of earth's tectonic plates.

***Emergency*:** Any hurricane, tornado, storm, flood, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, drought, fire, explosion, or other catastrophe in any part of the United States which requires Federal emergency assistance to supplement State and local efforts to save lives and protect property, public health and safety, or to avert or lessen the threat of a disaster. Defined in Title V of Public Law 93-288, Section 102(1).

***Emergency Operations Center (EOC)*:** A facility that houses communications equipment that is used to coordinate the response to a disaster or emergency.

***Emergency Operations Plan (EOP)*:** Sets forth actions to be taken by State or local governments for response to emergencies or major disasters.

***Emergency Response Plan*:** A document that contains information on the actions that may be taken by a governmental jurisdiction to protect people and property before, during, and after a disaster.

***Extent*:** The size of an area affected by a hazard or hazard event.

***Fault*:** A fracture in the continuity of a rock formation caused by a shifting or dislodging of the earth's crust, in which adjacent surfaces are differentially displaced parallel to the plane of fracture.

***Federal Emergency Management Agency (FEMA)*:** The independent agency created in 1978 to provide a single point of accountability for all Federal activities related to disaster mitigation and emergency preparedness, response, and recovery. FEMA is currently under the Department of Homeland Security (DHS)

***Flood*:** A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land.

***Flood Elevation*:** Elevation of the water surface above an established datum, e.g., National Geodetic Vertical Datum of 1929 (NGVD), North American Vertical Datum of 1988, or Mean Sea Level.

***Flood Hazard Area*:** The area shown to be inundated by a flood of a given magnitude on a map.

***Flood Insurance Rate Map (FIRM)*:** Map of a community, prepared by the Federal Emergency Management Agency, which shows both the special flood hazard areas and the risk premium zones applicable to the community.

***Flood Mitigation Assistance Program (FMA)*:** A planning and project implementation grant program funded by the National Flood Insurance Program. Provides pre-disaster grants to State and local governments for both planning and implementation of mitigation strategies. Grant funds are made available from NFIP insurance premiums, and therefore are only available to communities participating in the NFIP.

***Floodplain*:** Any land area, including watercourse, susceptible to partial or complete inundation by water from any source.

***Floodproofing*:** Protective measures added to or incorporated in a building to prevent or minimize flood damage. “Dry floodproofing” measures are designed to keep water from entering a building. “Wet floodproofing” measures minimize damage to a structure and its contents from water that is allowed into a building.

***Floodway*:** The stream channel and that portion of the adjacent floodplain which must remain open to permit conveyance of the base flood. Floodwaters are generally the swiftest and deepest in the floodway. The floodway should remain clear of buildings and impediments to the flow of water.

***Freeboard*:** A margin of safety added to a protection measure to account for waves, debris, miscalculations, lack of scientific data, floodplain fill, or upstream development.

***Frequency*:** A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a one (1) percent chance – its probability – of happening in any given year. The reliability of this information varies depending on the kind of hazard being considered.

***Fujita Scale of Tornado Intensity*:** Rates tornadoes with numeric values from F0 to F5 based on tornado wind speed and damage sustained. An F0 indicates minimal damage such as broken tree limbs or signs, while an F5 indicates severe damage sustained.

***Geographic Information System (GIS)*:** A computer software application that relates physical features on the Earth to a database to be used for mapping and analysis.

***Ground Motion*:** The vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released, and decreases with distance from the causative fault or epicenter, but soft soils can further amplify ground motions.

***Hazard*:** A source of potential danger or adverse condition. An event or physical condition that has the potential to cause fatalities, injuries, property and infrastructure damage, agriculture loss, damage to the environment, interruption of business, or other types of harm or loss. Hazards, as defined in this study, will include naturally occurring events such as floods, dam failures, levee failures, tornadoes, high winds, hailstorms, lightning, winter storms, extreme heat, drought, expansive soils, urban fires, wildfires that strike populated areas, and earthquakes. A natural event is a hazard when it has the potential to harm people or property. For purposes of this study, hazardous materials events are also included.

***Hazard Event*:** A specific occurrence of a particular type of hazard.

***Hazard Identification*:** The process of defining and describing a hazard, including its physical characteristics, magnitude and severity, probability and frequency, causative factors, and locations or areas affected.

***Hazard Mitigation*:** Sustained actions taken to reduce or eliminate long-term risk to human life and property from natural and technological hazards and their effects. Note that this emphasis on long-term risk distinguishes mitigation from actions geared primarily to emergency preparedness and short-term recovery.

***Hazard Mitigation Grant Program (HMGP)*:** Authorized under Section 404 of the Stafford Act; a FEMA disaster assistance grant program that funds mitigation projects in conformance with post-disaster mitigation plans required under Section 409 of the Stafford Act. The program is available only after a Presidential disaster declaration.

***Hazard Mitigation Plan*:** The plan resulting from a systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards present in society that includes the actions needed to minimize future vulnerability to hazards. Section 409 of the Stafford Act requires the identification and evaluation of mitigation opportunities, and that all repairs be made to applicable codes and standards, as condition for receiving Federal disaster assistance. Enacted to encourage identification and mitigation of hazards at all levels of government.

***Hazard Profile*:** A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability, and extent. In most cases, a community can most easily use these descriptors when they are recorded and displayed as maps.

***HAZUS (Hazards U.S.)*:** A GIS-based nationally standardized earthquake loss estimation tool developed by FEMA.

***Infrastructure*:** The public services of a community that have a direct impact on the quality of life. Infrastructure includes communication technology such as phone lines or Internet access, vital services such as public water supplies and sewer treatment facilities, and includes an area's transportation system such as airports, heliports, highways, bridges, tunnels, roadbeds, overpasses, railways, bridges, rail yards, depots, and waterways, canals, locks, and regional dams.

***Intensity*:** A measure of the effects of a hazard event at a particular place.

***Intermediate Housing*:** Consists of providing safe, sanitary, and functional conditions for individuals within a reasonable distance (30 miles) to schools, businesses, and services. The intermediate period of housing assistance that covers the gap between sheltering and the return of disaster survivors to permanent housing. Generally, this period may span from the day after the disaster is declared through up to 18 months.

***Landslide*:** Downward movement of a slope and materials under the force of gravity.

***Lifelines*:** Transportation and utility systems that are essential to the function of a region and to the well-being of its inhabitants. Transportation systems include highways, air, rail, and waterways, ports, and harbors. Utility systems include electric power, gas and liquid fuels, telecommunications, water, and wastewater.

***Liquefaction*:** The phenomenon that occurs when ground shaking causes loose soils to lose strength and act like viscous fluid. Liquefaction causes two (2) types of ground failure: lateral spread and loss of bearing strength.

***Magnitude*:** A measure of the strength of a hazard event. The magnitude (also referred to as severity) of a given hazard event is usually determined using technical measures specific to the hazard.
***Mitigation*:** Sustained action taken to reduce or eliminate the long-term risk to human life and property from natural and technological hazards and their effects. Note that this emphasis on long-term risk distinguishes mitigation from actions geared primarily to emergency preparedness and short-term recovery (Burby, 1998).

***National Flood Insurance Program (NFIP)*:** A federal program created by Congress in 1968 that provides the availability of flood insurance to communities in exchange for the adoption and enforcement of a minimum floodplain management ordinance specified in 44 CFR §60.3. The ordinance regulates new and substantially damaged or improved development in identified flood hazard areas.

***National Geodetic Vertical Datum of 1929 (NGVD)*:** Datum established in 1929 and used in the NFIP as a basis for measuring flood, ground, and structural elevations, previously referred to as Sea Level Datum or Mean Sea Level. The Base Flood Elevations shown on most of the Flood Insurance Rate Maps issued by the Federal Emergency Management Agency are referenced to NGVD.

***National Weather Service (NWS)*:** Prepares and issues flood, severe weather, and coastal storm warnings, and can provide technical assistance to Federal and State entities in preparing weather and flood warning plans.

***Planning*:** The act or process of making or carrying out plans; the establishment of goals, policies, and procedures for a social or economic unit.

***Planning for Post-Disaster Reconstruction*:** The process of planning (preferably prior to an actual disaster) those steps the community will take to implement long-term reconstruction with one of the primary goals being to reduce or minimize its vulnerability to future disasters. These measures can include a wide variety of land-use planning tools, such as acquisition, design review, zoning, and subdivision review procedures. It can also involve coordination with other types of plans and agencies but is distinct from planning for emergency operations, such as restoration of utility services and basic infrastructure.

***Preparedness*:** Activities to ensure that people are ready for a disaster and respond to it effectively. Preparedness requires figuring out what will be done if essential services break down, developing a plan for contingencies, and practicing the plan.

***Probability*:** A statistical measure of the likelihood that a hazard event will occur.

***Reconstruction*:** The long-term process of rebuilding the community's destroyed or damaged buildings, public facilities, or other structures.

***Recovery*:** The process of restoring normal public or utility services following a disaster, perhaps starting during but extending beyond the emergency period to that point when the vast majority of such services, including electricity, water, communications, and public transportation have resumed normal operations. Recovery activities necessary to rebuild after a disaster include rebuilding homes, businesses and public facilities, clearing debris, repairing roads and bridges, and restoring water, sewer and other essential services. Short-term recovery does not include the reconstruction of the built environment, although reconstruction may commence during this period.

***Recurrence Interval*:** The time between hazard events of similar size in a given location. It is based on the probability that the given event will be equaled or exceeded in any given year.

***Repetitive Loss Property*:** A property that is currently insured for which two or more National Flood Insurance Program losses (occurring more than 10 days apart) of at least $1,000 each have been paid within any 10-year period since 1978. While Repetitive Loss Properties constitute only 2% of insured properties, they account for 40% of flood damage claims against the NFIP.

***Replacement Value*:** The cost of rebuilding a structure usually expressed in terms of cost per square foot, and reflects the present-day cost of labor and materials to construct a building of a particular size, type, and quality.

***Retrofitting*:** Modifications to a building or other structure to reduce its susceptibility to damage by a hazard.

***Richter Scale*:** A numerical scale of earthquake magnitude devised by seismologist C.F. Richter in 1935.

***Risk*:** The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate, or low likelihood of sustaining damage above a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

***Risk Assessment*:** A process or method for evaluating risk associated with a specific hazard and defined in terms of probability and frequency of occurrence, magnitude and severity, exposure, and consequences. Also defined as: "The process of measuring the potential loss of life, personal property, housing, public facilities, equipment, and infrastructure; lost jobs, business earnings, and lost revenues, as well as indirect losses caused by interruption of business and production; and the public cost of planning, preparedness, mitigation, response, and recovery. (Burby, 1998).

***Riverine*:** Of or produced by a river.

***Scale**:* A proportion used in determining a dimensional relationship; the ratio of the distance between two (2) points on a map and the actual distance between the two (2) points on the Earth's surface.

***Scour*:** Removal of soil or fill material by the flow of flood waters. The term is frequently used to describe storm-induced, localized conical erosion around pilings and other foundation supports where the obstruction of flow increases turbulence.

***Seismicity*:** Describes the likelihood of an area being subject to earthquakes.

***South Carolina Emergency Management Division (SCEMD)*:** The State office responsible for hazard mitigation, community preparedness, emergency response, and disaster recovery.

***Special Flood Hazard Area (SFHA)*:** An area within a floodplain having a one (1) percent or greater chance of flood occurrence in any given year (100-year floodplain); represented on Flood Insurance Rate Maps by darkly shaded areas with zone designations that include the letter A or V.

***Stafford Act*:** The Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 100-107 was signed into law November 23, 1988 and amended the Disaster Relief Act of 1974, PL 93-288. The Stafford Act is the statutory authority for most Federal disaster response activities, especially as they pertain to FEMA and its programs.

***State Hazard Mitigation Officer (SHMO)*:** The representative of State government who is the primary point of contact with FEMA, other state and Federal agencies, and local units of government in the planning and implementation of pre- and post-disaster mitigation activities.

***Stormwater Management*:** Efforts to reduce the impact of stormwater or snowmelt runoff on flooding and water quality.

***Stormwater Detention*:** The storing of stormwater runoff for release at a restricted rate after the storm subsides, or the flood crest passes.

***Substantial Damage*:** Damage of any origin sustained by a structure in a Special Flood Hazard Area whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage.

***Tectonic Plate*:** Torsionally rigid, thin segments of the Earth's lithosphere that may be assumed to move horizontally and adjoin other plates. It is the friction between plate boundaries that cause seismic activity.

***Topographic*:** Characterizes maps that show natural features and indicate the physical shape of the land using contour lines. These maps may also include man-made features.

***Tornado*:** A violently rotating column of air extending from a thunderstorm to the ground.

***Vulnerability*:** Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power – if an electric substation is flooded, it will affect not only the substation itself, but a number of businesses as well. Often, indirect effects can be much more widespread and damaging than direct ones.

***Vulnerability Assessment*:** The extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability assessment should address impacts of hazard events on the existing and future built environment.

***Wildfire*:** An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

***Zone*:** A geographical area shown on a Flood Insurance Rate Map (FIRM) that reflects the severity or type of flooding in the area.

APPENDIX D: PLANNING COMMITTEE MINUTES AND SIGN-IN SHEETS

Hazard Mitigation Planning Committee IPC Minutes
April 30, 2014
Georgetown County Emergency Operations Center

Attendees:
Sam Hodge – Georgetown Co. EMD
Cindy Grace – Georgetown Co. EMD
Jeff Smith - Georgetown Co. Chamber
Mack Reed – Georgetown Co. Fire/EMS
Ryan Fabbri – Town of Pawleys Island
Aaron Johnson – SCEMD
Ron Holt – SC Forestry Commission
Fred Davis – Georgetown Co. Public Services
Doug Eggiman – Midway Fire Rescue
Jonathan Heald – City of Georgetown Public Services
Karen Anderson – American Red Cross

- Meeting called to order by Sam Hodge at 2:05 p.m.
- Sam Hodge discussed the following:
  - Definition of mitigation
  - Why we have a plan
  - Planning Committee makeup
  - Mr. Hodge said this is a multi-jurisdictional plan which is why we have the city/towns included. Mr. Hodge said Pawleys and the others could do their own plan, but since we share the same hazards, it is easier to bring resources together with one plan.
- Cindy Grace discussed the following:
  - Updates to the Plan
  - Agency Actions
    - Agencies are to review their Agency's actions in Section 3 of the 2014 Plan.
    - Agencies are to update those actions (or add new actions if needed) by looking at the following:
      - Is the action still valid?
      - What has happened with the action?
      - Is the action completed or ongoing?
      - The cost estimate to complete the action.
      - The implementation/time schedule for completion of the action.
  - Need updated/new actions to the Cindy Grace by **May 7, 2014** (next meeting)
  - Future meeting will be held at 2:00 in the EOC on Wednesday, May 7; public hearing will be held at 2:00 in the EOC on Thursday, May 15.
  - Ms. Grace will send Committee members copies of the Critical Facilities list and jurisdiction actions for review. Will need updates to those lists by **May 7th** also.
  - Ms. Grace will send Ms. Anderson, Mr. Johnson, and Mr. Fabbri an electronic copy of the Hurricane Evacuation studies.
- For added action ref: temporary housing, Mr. Heald suggested a definition of the three types of temporary housing be added so the objective/technique/action are not so vague.
- Mr. Hodge requested we add FireWise and those communities to the Basic Plan after StormReady and TsunamiReady communities.
- Mr. Hodge and Ms. Grace reiterated we are on a tight time schedule, so please get the updated actions and critical facilities back with changes by the deadline.

- The meeting was adjourned at 3:23 p.m.

- The next meeting is scheduled for Wednesday, May 7, 2014 at 2:00 p.m. in the Georgetown County EOC.

Georgetown Co. EOC

Hazard Mitigation Planning Committee IPC

April 30, 2014

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS	INITIALS
Karen Anderson	American Red Cross	3531 Pampas Drive Myrtle Beach SC 29577	(843) 546-5422	Karen.Anderson@redcross.org	KA
Mayor Rodney Giles	Town of Andrews	PO Box 378 Andrews, SC 29510	(843) 264-8666	rgiles@townofandrews.org	
Carissa Medeiros	Coastal Carolina University	470 Allied Drive Conway, SC 29526	(843) 349-5088	cmedeiros@coastal.edu	
Nancy Cave	Coastal Conservation League	PO Box 603 Georgetown, SC 29442	(843) 545-0403	nancyc@scccl.org	
Mindy Taylor	Duke Energy	1755 Mechanicsville Rd. Florence, SC 29501	(843) 661-4180	Mindy.taylor@duke-energy.com	
Brad Loar	FEMA	3003 Chamblee Tucker Road Atlanta, GA 30341	(770) 220-5406	brad.loar@dhs.gov	
Jonathan Heald	City of Georgetown Public Services	2377 Maybank Dr. Georgetown, SC 29440	(843) 545-4501	jheald@cogsc.com	
Chief Joey Tanner	City of Georgetown Fire Department	1405 Prince Street Georgetown, SC 29440	(843) 545-4200	jktanner@cogsc.com	
Sel Hemingway	Georgetown County Administrator	716 Prince St. Georgetown, SC 29440	(843) 545-3006	shemingway@gtcounty.org	
Jeff Smith	Georgetown County Chamber of Commerce	531 Front Street Georgetown, SC 29440	(843) 546-8436	jsmith@visitgeorge.com	
Lauren Joseph	Georgetown County Chamber of Commerce	531 Front Street Georgetown, SC 29440	(843) 546-8436	ljoseph@hammockcoastsc.com	
Robert Cox	Georgetown County Building Division and Permits	129 Screven St., Rm. 249 Georgetown, SC 29440	(843) 545-3116	rcox@gtcounty.org	
Cindy Grace	Georgetown County Emergency Management Division	2222-C Highmarket St. Georgetown, SC 29440	(843) 545-3136	cgrace@gtcounty.org	CG
Sam Hodge	Georgetown County Emergency Management Division	2222-C Highmarket St. Georgetown, SC 29440	(843) 545-3545	shodge@gtcounty.org	SH
Mack Reed ~~Tony Hucks~~	Georgetown County Fire Dept.	3605 Highmarket St. Georgetown, SC 29440	(843) 545-3139	mreed ~~ahucks~~@gtcounty.org	
Bruce Scott	Georgetown Hospital System	606 Black River Road Georgetown, SC 29440	(843) 527-7338	brscott@georgetownhospitalsystem.org	

Georgetown Co. EOC

Hazard Mitigation Planning Committee IPC

April 30, 2014

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS	INITIALS
Boyd Johnson	Georgetown County Planning & Code Enforcement	129 Screven St., Room 222 Georgetown, SC 29440	(843) 545-3162	bjohnson@gtcounty.org	
Fred Davis ~~Ray Funnye~~	Georgetown County Public Services	108 Screven St. Georgetown, SC 29440	(843) 545-3325	fdavis ~~rcfunnye~~@gtcounty.org	FD
Beth Goodale	Georgetown County Recreation and Community Services	2030 Church Street Georgetown, SC 29440	(843) 545-3550	bgoodale@gtcounty.org	
Bill Crompton	Georgetown County School District	2018 Church St. Georgetown, SC 29440	(843) 527-1338	bcrompton@gcsd.k12.sc.us	
T.L. Staub	Georgetown County Sheriff's Office	PO Box 1292 Georgetown, SC 29442	(843) 436-6054	tstaub@georgetowncountysc.org	
Ray Gagnon	Georgetown County Water & Sewer District	PO Box 2730 Pawleys Island, SC 29585	(843) 237-9727	rayg@gcwsd.com	
Scott Harper	*The Georgetown Times*	615 Front St. Georgetown, SC 29440	(843) 546-4148	sharper@gtowntimes.com	
Chief Doug Eggiman	Midway Fire Rescue	69 St. Paul's Place Pawleys Island, SC 29585	(843) 545-3603	Deggiman@gtcounty.org	DE
Chief Norman Knight	Murrell's Inlet-Garden City Fire Department	Post Office Box 648 Murrells Inlet, 29576	(803) 651-5143	chiefknight@migcfd.org	
Steve Pfaff	National Weather Service	2015 Gardner Drive Wilmington, NC 28405	(910) 762-0524 ext. 223	Steven.Pfaff@noaa.gov	
RYAN FABBRI ~~Mayor Bill Otis~~	Town of Pawleys Island	PO Box 1350 Pawleys Island, SC 29585	(843) 237-8005	BillOtisJr@aol.com	RF
Chief Mike Fanning	Town of Pawleys Island Police Department	321 Myrtle Avenue Pawleys Island, SC 29585	(843) 237-1698	policechief@townofpawleysisland.com	
Capt. Loren Wallace	The Salvation Army	2401 Anthuan Maybank Dr. Georgetown, SC 29440	(843) 527-4479	christopher_wallace@uss.salvationarmy.org	
O.J. Jansky	Santee Cooper	1 Riverwood Drive Moncks Corner, SC 29461	(843) 347-3399	Otto.jansky@santeecooper.com	
Rob Higbe	Santee Electric Cooperative	PO Box 548 Kingstree, SC 29556	(843) 355-0533	rhigbe@santee.org	
Stan Gailey	SC Budget & Control Board Division of General Services, Office of State Engineer	1201 Main St., Ste. 600 Columbia, SC 29201	(803) 734-0774	sgailey@mmo.sc.gov	

Georgetown Co. EOC

Hazard Mitigation Planning Committee IPC

April 30, 2014

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS	INITIALS
Matt Maxwell	SC Department of Health and Environmental Control	927 Shine Ave. Myrtle Beach, SC 29577	(843) 238-4378	maxwelmc@dhec.sc.gov	
Tanita Marshall	SC Department of Health and Environmental Control	927 Shine Ave. Myrtle Beach, SC 29557	(843) 238-4528	marshats@dhec.sc.gov	
Maria Cox Lamm	SC Department of Natural Resources, Flood Mitigation Prog.	PO Box 167 Columbia, SC 29202	(803) 734-9103	coxm@dnr.sc.gov	
Richard Pope	SC Department of Transportation	PO Box 593 Georgetown, SC 29442	(843) 661-4710	rpope@scdot.org	
Bethany Morton	SC Emergency Management Division	2779 Fish Hatchery Rd. W Columbia, SC 29172	(803) 225-9210	bmorton@emd.sc.gov	
Charlotte Foster	SC Emergency Management Division	2779 Fish Hatchery Rd. W Columbia, SC 29172	(803) 737-8500	cfoster@emd.sc.gov	
Aaron Johnson	SC Emergency Management Division	2779 Fish Hatchery Rd. W Columbia, SC 29172	(803) 360-7708	ajohnson@emd.sc.gov	AJ
Ron Holt	SC Forestry Commission	596 IM Graham Rd. Kingstree, SC 29556	(843) 382-8761	rholt@ftc-i.net	R.H.
Mike Ney	SC Forestry Commission	113 Forestry Commission Dr. Florence, SC 29501	(843) 662-5571	mney@ftc-i.net	
Lt. Robert Woods IV	SC Highway Patrol	10311 Wilson Blvd. Blythewood, SC 29016	(803) 896-8722	rgwoods@schp.org	
Capt. Kevin McClure	SC National Guard	HQ 4-178 FA, 3777 S Fraser Georgetown, SC 29440	(843) 546-4341	Kevin.mcclure@us.army.mil	
David Schronce	SC State Ports Authority	PO Box 601 Georgetown, SC 29442	(843) 527-4476	dschronce@scspa.com	
Robin Kirby	U.S. Coast Guard	355 Marine Drive Georgetown, SC 29440	(843) 546-2742	Robin.N.Kirby@uscg.mil	
LTJG Matthew Kahley	U.S. Coast Guard, Marine Environmental Response	196 Tradd St. Charleston, SC 29401-1899	(843) 740-7088	matthew.r.kahley@uscg.mil	
Sharon Abbott	U.S. Army Corps of Engineers Charleston District	1949 Industrial Park Rd., Rm. 140 Conway, SC 29526	(843) 365-4239	sharon.j.abbott@usace.army.mil	
Craig Aubrey	U.S. Fish & Wildlife Service	176 Crogahan Spur Rd. #200 Charleston, SC 29407	(843) 727-4707	Craig_aubrey@fws.gov	
Kim Crutchfield	U.S. Geological Survey	720 Gracern Rd. Columbia, SC 29210	(803) 750-6123	kcrutch@usgs.gov	

Georgetown Co. EOC

Hazard Mitigation Planning Committee IPC

April 30, 2014

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS	INITIALS
Linwood Altman	Waccamaw Neck Council of Property Owners Associations	88 North Causeway Road Pawleys Island, SC 29585	(843) 237-2431	linalt1@aol.com	
Sarah Smith	Waccamaw Regional Council of Governments	1230 Highmarket Street Georgetown, SC 29440	(843) 436-6135	ssmith@wrcog.org	

Hazard Mitigation Planning Committee FPC Minutes
May 7, 2014
Georgetown County Emergency Operations Center

Attendees:
Cindy Grace – Georgetown Co. EMD
Mack Reed – Georgetown Co. Fire/EMS
Tony Hucks – Georgetown Co. Fire EMS
Ryan Fabbri – Town of Pawleys Island
John Buck – Georgetown Co. Water & Sewer District
Bruce Scott – Georgetown Hospital System
Jackie Broach – Georgetown Co. Public Information Officer

- Meeting called to order by Cindy Grace at 2:07 p.m.

- Cindy Grace discussed the following:
  - Updates to the Plan
    - Added FireWise Community information on p. 1-4
    - Specified Intermediate Housing for Georgetown Co. Action 5P, p. 3-43
    - Deleted critical facilities' inventory priority numbers (Table B-10, p. B-31 – B-35)
    - Critical Facilities Inventory:
      - Added Andrews Substation (Electric) per Duke Energy's request
      - Removed three Level 3 County Fire stations per Asst. Chief Hucks
      - Added /EMS to Level 1 County Fire stations 4, 5, 9, 10, 11, and 15
      - Updated verbiage to match new numbers after additions/deletions
  - Ran Spellcheck
  - Fixed Footnotes / Cross References

  - Waiting on sinkhole action from Georgetown County (Fred Davis) and Town of Pawleys Island new actions (Ryan Fabbri) by **noon on May 9, 2014.**

- Ms. Broach sent out Press Release ref: today's meeting and Public Hearing.

- Will put hardcopy of plan at four County Library branches and on the Georgetown County website on May 9th for public viewing. Need public's feedback by noon on May 22nd.

- Will send final draft to SCEMD for approval on May 23rd.

- The meeting was adjourned at 2:53 p.m.

- A public hearing is scheduled for May 15, 2014 at 2:00 p.m. in the Georgetown County EOC.

Georgetown Co. EOC **Hazard Mitigation Planning Committee** **May 7, 2014, 2:00 p.m.**

Firstname	Lastname	Agency	Address	City	ST	Zip	Phone	Email	Initials
Sharon	Abbott	U.S. Army Corps of Engineers Charleston District	1949 Industrial Park Rd., Rm.	Conway	SC	29526	(843) 365-4239	sharon.j.abbott@usace.army.mil	
Linwood	Altman	Waccamaw Neck Council of POA	88 North Causeway Road	Pawleys Island	SC	29585	(843) 237-2431	linalt1@aol.com	
Karen	Anderson	American Red Cross	3531 Pampas Drive	Myrtle Beach	SC	29577	(843) 546-5422	Karen.Anderson@redcross.org	
Craig	Aubrey	U.S. Fish & Wildlife Service	176 Crogahan Spur Rd. #200	Charleston	SC	29407	(843) 727-4707	Craig_aubrey@fws.gov	
John	Buck	Georgetown County Water & Sewer District	PO Box 2730	Pawleys Island	SC	295885	(843) 237-9727	johnb@gcwsd.com	
Nancy	Cave	Coastal Conservation League	PO Box 603	Georgetown	SC	29422	(843) 545-0403	nancyc@scccl.org	
Maria	Cox	SC Dept. of Natural Resources, Flood Mitigation Prog.	PO Box 167	Columbia	SC	29202	(803) 734-9103	coxm@dnr.sc.gov	
Robert	Cox	Georgetown County Building Division and Permits	129 Screven St., Rm. 249	Georgetown	SC	29440	(843) 545-3116	rcox@gtcounty.org	
Bill	Crompton	Georgetown County School District	2018 Church St.	Georgetown	SC	29440	(843) 527-1338	bcrompton@gcsd.k12.sc.us	
Kim	Crutchfield	U.S. Geological Survey	720 Gracern Rd.	Columbia	SC	29210	(803) 750-6123	kcrutch@usgs.gov	
Fred	Davis	Georgetown County Public Services	201 Landfill Rd.	Georgetown	SC	29440	(843) 545-3449	fdavis@gtcounty.org	
Doug	Eggiman	Midway Fire Rescue	69 St. Paul's Place	Pawleys Island	SC	29585	(843) 545-3603	Deggiman@gtcounty.org	
Ryan	Fabbri	Town of Pawleys Island	PO Box 1350	Pawleys Island	SC	29585	(843) 237-1698	asstadmin@townofpawleysisland.com	RF
Mike	Fanning	Town of Pawleys Island Police Department	321 Myrtle Avenue	Pawleys Island	SC	29585	(843) 237-1698	policechief@townofpawleysisland.com	
Charlotte	Foster	SC Emergency Management Division	2779 Fish Hatchery Rd.	West Columbia	SC	29172	(803) 737-8500	cfoster@emd.sc.gov	
Ray	Funnye	Georgetown County Public Services	108 Screven St.	Georgetown	SC	29440	(843) 545-3325	rcfunnye@gtcounty.org	
Stan	Gailey	SC Budget & Control Board, Office of State Engineer	1201 Main St., Ste. 600	Columbia	SC	29201	(803) 734-0774	sgailey@mmo.sc.gov	
Rodney	Giles	Town of Andrews	PO Box 378	Andrews	SC	29510	(843) 264-8666	rgiles@townofandrews.org	
Beth	Goodale	Georgetown County Recreation and Community Servi	2030 Church Street	Georgetown	SC	29440	(843) 545-3550	bgoodale@gtcounty.org	

Georgetown Co. EOC **Hazard Mitigation Planning Committee** **May 7, 2014, 2:00 p.m.**

Firstname	Lastname	Agency	Address	City	ST	Zip	Phone	Email	Initials
Cindy	Grace	Georgetown Co. Emergency Management Division	2222-C Highmarket St.	Georgetown	SC	29440	(843) 545-3136	cgrace@gtcounty.org	
Jonathan	Heald	City of Georgetown Public Services	2377 Maybank Dr.	Georgetown	SC	29440	(843) 545-4501	jheald@cogsc.com	
Sel	Hemingway	Georgetown County Adnibnistrator	716 Prince St.	Georgetown	SC	29440	(843) 545-3006	shemingway@gtcounty.org	
Rob	Higbe	Santee Electric Cooperative	PO Box 548	Kingstree	SC	29556	(843) 355-0533	rhigbe@santee.org	
Sam	Hodge	Georgetown Co. Emergency Management Division	2222-C Highmarket St.	Georgetown	SC	29440	(843) 545-3545	shodge@gtcounty.org	
Ron	Holt	SC Forestry Commission	596 IM Graham Rd.	Kingstree	SC	29556	(843) 382-8761	rholt@ftc-i.net	
Tony	Hucks	Georgetown County Fire EMS	3605 Highmarket St.	Georgetown	SC	29440	(843) 545-3139	ahucks@gtcounty.org	
O.J.	Jansky	Santee Cooper	1 Riverwood Drive	Moncks Corner	SC	29461	(843) 347-3399	Otto.jansky@santeecooper.com	
Aaron	Johnson	SC Emergency Management Division	2779 Fish Hatchery Rd.	West Columbia	SC	29172	(803) 360-7708	ajohnson@emd.sc.gov	
Boyd	Johnson	Georgetown County Planning & Code Enforcement	129 Screven St., Room 222	Georgetown	SC	29440	(843) 545-3162	bjohnson@gtcounty.org	
Lauren	Joseph	Georgetown County Chamber of Commerce	531 Front Street	Georgetown	SC	29440	(843) 546-8436	ljoseph@hammockcoastsc.com	
Matthew	Kahley	U.S. Coast Guard, Marine Environmental Responjse	196 Tradd St.	Charleston	SC	29401	(843) 740-7088	matthew.r.kahley@uscg.mil	
Robin	Kirby	U.S. Coast Guard	355 Marine Drive	Georgetown	SC	29440	(843) 546-2742	Robin.N.Kirby@uscg.mil	
Norman	Knight	Murrell's Inlet-Garden City Fire Department	Post Office Box 648	Murrells Inlet	SC	29576	(803) 651-5143	chiefknight@migcfd.org	
Brad	Loar	FEMA	3003 Chamblee Tucker Road	Atlanta	GA	30341	(770) 220-5406	brad.loar@dhs.gov	
Tanita	Marshall	SC Department of Health and Environmental Control	927 Shine Ave.	Myrtle Beach	SC	29577	(843) 238-4528	marshats@dhec.sc.gov	
Matt	Maxwell	SC Department of Health and Environmental Control	927 Shine Ave.	Myrtle Beach	SC	29577	(843) 238-4378	maxwelmc@dhec.sc.gov	
Kevin	McClure	SC National Guard	HQ 4-178 FA, 3777 S Fraser	Georgetown	SC	29440	(843) 546-4341	Kevin.mcclure@us.army.mil	
Carissa	Medeiros	Coastal Carolina University	470 Allied Drive	Conway	SC	29526	(843) 349-5088	cmedeiros@coastal.edu	

Georgetown Co. EOC

Hazard Mitigation Planning Committee

May 7, 2014, 2:00 p.m.

Firstname	Lastname	Agency	Address	City	ST	Zip	Phone	Email	Initials
Bethany	Morton	SC Emergency Management Division	2779 Fish Hatchery Rd.	West Columbia	SC	29172	(803) 225-9210	bmorton@emd.sc.gov	
Mike	Ney	SC Forestry Commission	113 Forestry Commission Dr.	Florence	SC	29501	(843) 662-5571	mney@ftc-i.net	
Bill	Otis	Town of Pawleys Island	PO Box 1350	Pawleys Island	SC	29585	(843) 237-8005	BillOtisJr@aol.com	
Steve	Pfaff	National Weather Service	2015 Gardner Drive	Wilmington	NC	28405	(910) 762-0524 ext.	Steven.Pfaff@noaa.gov	
Richard	Pope	SC Department of Transportation	PO Box 593	Georgetown	SC	29442	(843) 661-4710	rpope@scdot.org	
Mack	Reed	Georgetown County Fire EMS	3605 Highmarket St.	Georgetown	SC	29440	(843) 545-3133	mreed@gtcounty.org	
David	Schronce	SC State Ports Authority	PO Box 601	Georgetown	SC	29442	(843) 527-4476	dschronce@scspa.com	
Bruce	Scott	Georgetown Hospital System	606 Black River Road	Georgetown	SC	29440	(843) 527-7338	brscott@georgetownhospitalsystem.org	
Anne	Sheehan	South Strand News	615 Front St.	Georgetown	SC	29440	(843) 546-4148	asheehan@southstrandnews.com	
Jeff	Smith	Georgetown County Chamber of Commerce	531 Front Street	Georgetown	SC	29440	(843) 546-8436	jsmith@visitgeorge.com	
Sarah	Smith	Waccamaw Regional Council of Government	1230 Highmarket Street	Georgetown	SC	29440	(843) 436-6135	ssmith@wrcog.org	
T.L.	Staub	Georgetown County Sheriff's Office	PO Box 1292	Georgetown	SC	29442	(843) 436-6054	tstaub@georgetowncountysc.org	
Joey	Tanner	City of Georgetown Fire Department	1405 Prince Street	Georgetown	SC	29440	(843) 545-4200	jktanner@cogsc.com	
Mindy	Taylor	Duke Energy	1755 Mechanicsville Rd.	Florence	SC	29501	(843) 661-4180	Mindy.taylor@duke-energy.com	
Loren	Wallace	The Salvation Army	2401 Anthuan Maybank Dr.	Georgetown	SC	29440	(843) 527-4479	christopher_wallace@uss.salvationarmy.org	
Robert	Woods	SC Highway Patrol	10311 Wilson Blvd.	Blythewood	SC	29016	(803) 896-8722	rgwoods@schp.org	

Georgetown Co. EOC

Hazard Mitigation Planning Committee

May 7, 2014, 2:00 p.m.

Firstname	Lastname	Agency	Address	City	ST	Zip	Phone	Email
Jackie	Broach	GC PIO						

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APPENDIX E: PUBLIC HEARING NOTICES

Georgetown County, South Carolina

NEWS RELEASE

May 5, 2014

Contact:
Jackie Broach, public information officer
Phone: (843) 545-3164
E-mail: jbroach@gtcounty.org

FOR IMMEDIATE RELEASE

Public meetings will address hazard mitigation plan update

GEORGETOWN COUNTY — Georgetown County government will hold two public meetings this month to seek input on updates to its hazard mitigation plan. The plan outlines the processes and policies for reducing and/or eliminating long-term risks associated with hazard events for all parts of Georgetown County, including incorporated areas.

The plan, which covers risks to life as well as property, must be updated and submitted to the Federal Emergency Management Agency every five years.

A Hazard Mitigation Planning Committee Meeting is set for 2 p.m. Wednesday, May 7, to discuss what potential updates may be needed to the plan. A public hearing on proposed updates will follow on Thursday, May 15, at 2 p.m. Both meetings will take place at the Georgetown County Emergency Management Division headquarters, 2222-C Highmarket St., Georgetown. A copy of the plan will be posted on the county's website, www.gtcounty.org, and made available in the Georgetown County Library's main branch on Cleland Street prior to the public hearing.

For directions or more information, contact Cindy Grace, (843) 545-3136.

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Georgetown County, South Carolina

NEWS RELEASE

May 13, 2014

Contact:
Jackie Broach, public information officer
Phone: (843) 545-3164
E-mail: jbroach@gtcounty.org

FOR IMMEDIATE RELEASE

Public meetings will address hazard mitigation plan update

GEORGETOWN COUNTY — Georgetown County government will hold a public hearing this week to gain input on updates to its hazard mitigation plan. The plan outlines the processes and policies for reducing and/or eliminating long-term risks associated with hazard events for all parts of Georgetown County, including incorporated areas.

The plan, which covers risks to life as well as property, must be updated and submitted to the Federal Emergency Management Agency every five years.

The public hearing will take place on Thursday, May 15, at 2 p.m. at the Georgetown County Emergency Management Division headquarters, 2222-C Highmarket St., Georgetown. A copy of the plan is available on the county's website, www.gtcounty.org, and at the Georgetown County Library's main branch on Cleland Street.

For directions or more information, contact Cindy Grace, (843) 545-3136.

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Georgetown County
South Carolina

GEORGETOWN COUNTY COUNCIL
AMENDED AGENDA
SEPTEMBER 9, 2014
COUNTY COUNCIL CHAMBERS
5:30 PM

1. INVOCATION

2. PLEDGE OF ALLEGIANCE

3. APPROVAL OF AGENDA

4. PUBLIC COMMENT

5. APPROVAL OF MINUTES
   5a. Regular Council Session – August 12, 2014

6. CONSENT AGENDA
   6a. Ordinance No. 2014-30 - An amendment to Article XXI Designated Overlay Zones Section 2100.6 Building Design Specifications of the Georgetown County Zoning Ordinance to clarify the application of the 50% pitched roof requirement in the Waccamaw Neck Commercial Corridor – Third reading.
   6b. Ordinance No. 2014-33 – To rezone 1 parcel on the west side of Ocean Highway (Hwy 17) in Pawleys Island from General Residential to Neighborhood Commercial – Third reading.
   6c. Procurement #14-056, Frazer Type I, Generator Powered Ambulance - CERP FY15 (Quantity 1 for County EMS District)
   6d. Procurement #14-060, John Deere 670G Motor Grader (Qty-2) CERP
   6e. Procurement #14-067, Wheeled Tractor Equipped with Boom and Rotary Mower, CERP
   6f. Contract #12-054, Storm Debris Renewal Monitors – Renewal
   6g. Contract #14-001, Task Order 06 - Parsons Garden Drainage Improvements, Phase II

7. PUBLIC HEARINGS
   7a. Ordinance No. 2014-31 - An Amendment to the Future Land Use Map for a portion of a five-acre tract (TMS# 41-0401-005-03-04) located North side of Pond Road in Murrells Inlet from Low Density Residential to Medium Density Residential
   7b. Ordinance No. 2014-37 – An Ordinance Authorizing the Lease of Certain Real Property Located at 901-909 Front Street in the City of Georgetown, to Coastal Carolina University.

8. APPOINTMENTS TO BOARDS AND COMMISSIONS
   8a. Forestry Board
   8b. Sheriff's Advisory Board

9. RESOLUTIONS / PROCLAMATIONS
   9a. Resolution No. 2014-14 – To adopt a Hazard Mitigation Plan

10. THIRD READING OF ORDINANCES
   10a. Ordinance No. 2014-29 - An amendment to Article X Sign Regulations, Article XX Requirements by Overlay Zone and Article XXI Designated Overlay Zones regarding signage requirements for the Waccamaw Neck Commercial Corridor Overlay Zone dealing with height, illumination, materials, and sign types.
   10b. Ordinance No. 2014-31 - An Amendment to the Future Land Use Map for a portion of a five-acre tract (TMS# 41-0401-005-03-04) located North side of Pond Road in Murrells Inlet from Low Density Residential to Medium Density Residential.
   10c. Ordinance No. 2014-32 - To rezone a portion of a 5 acre tract located on the north side of Pond Road in Murrells Inlet from FA to R-10.

11. SECOND READING OF ORDINANCES
   11a. Ordinance No. 2014-35 – An Amendment to the Zoning Ordinance, Article III, Exceptions and Modifications, Section 812.3, Temporary Uses of the Zoning Ordinance to address special events such as festivals that last only one day.

PUBLIC HEARING – HAZARD MITIGATION PLAN

GEORGETOWN COUNTY EOC

MAY 15, 2014 **2:00 P.M**

Name (PLEASE PRINT)	Agency	Phone	Email
Cindy Grace	Georgetown Co. EMO	843-545-3273	cgrace@gtcounty.org
Sam Hodge	GCEMD	843-545-3273	shodge@gtcounty.org
Tracey Howle	Georgetown Co. Emergency Svcs	843-545-3273	thowle@gtcounty.org
Aaron Johnson	SCEMD	803-360-7708	ajohnson@emd.sc.gov

ATTENDEES AT COUNTY COUNCIL MEETING
SEPTEMBER 9, 2014
FINAL PUBLIC HEARING

Name	Title	Agency
Cindy Grace	EM Coordinator	Georgetown County Emergency Management
Katie Norris	State Hazard Mitigation Officer	SC Emergency Management Division
Sel Hemingway	County Administrator	Georgetown County
Theresa Floyd	Clerk to Council	Georgetown County
Wesley Bryant	County Attorney	Georgetown County
Jackie Broach	Public Information Officer	Georgetown County
Boyd Johnson	Director	Georgetown Co. Planning & Code Enforcement
Holly Richardson	Chief Planner	Georgetown Co. Planning & Code Enforcement
Johnny Morant	Chairman	Georgetown Co. Council
Ron Charlton	Council Member	Georgetown Co. Council
Leona Myers-Miller	Council Member	Georgetown Co. Council
Lillie Johnson	Council Member	Georgetown Co. Council
Jerry Oakley	Council Member	Georgetown Co. Council

APPENDIX F: REFERENCES AND NEWSPAPERS

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