

HAZARD MITIGATION PLAN



2019

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

Photographs (left to right, top to bottom):

Hurricane Hugo 1989, <https://www.ssec.wisc.edu/mcidas/gallery-historical/hurricaneimages.html>

Severe Flooding Event, Georgetown County, October 2015

Andrews 2002 Tornado: [En.wikipedia.org](http://en.wikipedia.org)

Charleston Earthquake 1886: Charleston Museum

Wildfires: California Conservation Center

Severe Storms/Hail/Wind: wallsave.com

Winter Storm Pax, Andrews

Santee North Dam: web.ftc-i.net

Drought in SC: archive.wltx.com

Georgetown Sinkhole 2011: <https://thesinkhole.org/>

Sea Level Rise: plan.risingsea.net/statewide/sc_statewide

TABLE OF CONTENTS

Table of Contents

Table of Contents.....	i
List of Tables and Figures	iii
Record of Changes	v
Executive Summary	vii
Acronyms.....	xi
Section 1: Introduction, Purpose, Organization, and Background Information.....	1-1
1.1 Introduction	1-1
1.2 Purpose	1-1
1.3 Existing Hazard Mitigation Programs.....	1-2
1.3.1 Critical Facilities	1-3
1.3.2 Weather Warning Devices	1-3
1.3.3 StormReady / TsunamiReady.....	1-3
1.3.4 Firewise Communities.....	1-5
1.4 Organization of the Plan.....	1-5
1.5 Background Information on Georgetown County	1-5
NFIP Compliance Information.....	1-9
Section 2: Planning Process.....	2-1
2.1 Committee Organization.....	2-1
2.1.1 Steering Committee	2-1
2.1.2 Mitigation Planning Committee.....	2-8
2.2 Public Involvement	2-14
2.3 Coordination with Other Agencies and Organizations	2-15
2.4 Assess the Hazards.....	2-17
2.5 Assess the Problems	2-18
2.5.1 Hurricane/Tropical Storm.....	2-19
2.5.2 Flood	2-23
2.5.3 Tornado	2-24
2.5.4 Earthquake	2-26
2.5.5 Wildfire.....	2-27
2.5.6 Drought	2-27
2.5.7 Severe Storms/Hail/Wind Events	2-28
2.5.8 Winter Storm.....	2-28
2.5.9 Dam Failure	2-28
2.5.10 Sinkholes	2-29
2.5.11 Sea Level Rise	2-30
2.5.12 Infrastructure Vulnerability.....	2-35
2.5.12.1 Hurricane/Tropical Storm.....	2-35
2.5.12.2 Flood	2-36
2.5.12.3 Tornado	2-36
2.5.12.4 Earthquake.....	2-36
2.5.12.5 Wildfire	2-38

TABLE OF CONTENTS

2.5.12.6 Drought	2-38
2.5.12.7 Severe Storms/Hail/Wind Events	2-38
2.5.12.8 Winter Storm	2-38
2.5.12.9 Dam Failure	2-38
2.5.12.10 Sinkholes	2-38
2.5.12.11 Sea Level Rise	2-38
2.5.13 Critical Facility Analysis	2-39
Section 3: Mitigation Strategy	3-1
3.1 Introduction	3-1
3.2 Georgetown County Hazard Mitigation Goals	3-3
3.3 Mitigation Objectives	3-3
3.4 Mitigation Actions	3-5
3.4.1 Available Mitigation Techniques	3-5
3.4.2 Mitigation Techniques for Georgetown County	3-7
3.5 Georgetown County Mitigation Actions	3-11
3.6 Town of Andrews Mitigation Actions	3-51
3.7 Town of Pawleys Island Mitigation Actions	3-59
3.8 City of Georgetown Mitigation Actions	3-91
Section 4: Resolutions	4-1
Appendix A: Georgetown County Hazard Assessment	A-1
Appendix B: Community Vulnerability Assessment	B-1
Appendix C: Glossary of Hazard Mitigation Terms	C-1
Appendix D: Planning Committee Minutes and Sign-In Sheets	D-1
Appendix E: Public Hearing Notices	E-1
Appendix F: References and Newspapers	F-1

TABLE OF CONTENTS

List of Figures and Tables

Table 1-1 - Summary of Review of Jurisdictional Plans and Ordinances	1-2
Figure 1-1 - Map Showing Location of Georgetown County.....	1-6
Figure 1-2 - Evacuation Surge Map of Georgetown County	1-7
Table 1-2 - Presidential Declarations	1-8
Table 2-1 - Georgetown County Hazard Mitigation -- Planning Committee	2-1
Table 2-2 - Hazard by Jurisdiction.....	2-18
Table 2-3-A - Comparison of Age of Housing Stock for Georgetown County, Georgetown, Andrews and Pawleys Island.....	2-20
Table 2-3-B - Comparison of Value of Buildings by Tax District, 2019	2-20
Table 2-4 - Comparison of Manufactured Homes and Total Housing Units	2-21
Table 2-5 - Estimated Value of Manufactured Homes by Jurisdiction, 2018.....	2-21
Table 2-6 - Estimated Number of Buildings Located in Areas of Special Flood Hazard by Jurisdiction.....	2-22
Table 2-7 - Building Value Estimates by Jurisdiction, 2019.....	2-22
Table 2-8 - Saffir-Simpson Hurricane Wind Scale	2-23
Table 2-9 - Enhanced Fujita Scale for Tornadoes.....	2-25
Figure 2-1 - Percentage of All Tornadoes, 1950-2012	2-25
Figure 2-2 - Percentage of Tornado-Related Deaths, 1950-2011	2-26
Table 2-10 - The Richter Scale.....	2-27
Table 2-11 - Sinkhole Locations.....	2-30
Figure 2-3 - Estimated Impact of a .6 Meter Sea Level Rise on the SC Coast	2-31
Figure 2-4 - Estimated Impact of a 1.0 Meter Sea Level Rise on the SC Coast	2-32
Figure 2-5 - Estimated Impact of a 2.0 Meter Sea Level Rise on the SC Coast	2-32
Figure 2-6 - Sea Level Rise Risk.....	2-33
Figure 2-7 - Shore Protection Georgetown County	2-34
Table 2-12 - Projected Inundation from Modeled Sea Level Rise Scenarios.....	2-35
Table 2-13 - Georgetown County Critical Facilities Inventory	2-41
Table 3-1 Matrix Targeting Plan's Priorities.....	3-8

TABLE OF CONTENTS

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RECORD OF CHANGES

Record of Changes

SECTION CHANGED	PAGE(S) CHANGED	DATE OF CHANGE	CHANGE(S) MADE BY
Cover/Inside		3/27/18	Cindy Grace
Table of Contents	i-iii	3/27/18, 4/18/18, 12/13/18, 3/11/19, 5/3/19, 5/16/19	Cindy Grace
Record of Changes	v-vi	3/28/18, 3/29/18, 1/16/19, 2/8/19, 3/20/19, 3/25/19, 4/10/19, 4/25/19, 5/3/19, 5/7/19, 5/14/19, 5/17/19	Cindy Grace
Executive Summary	vii-viii, ix, xiv	3/28/18, 3/25/19	Cindy Grace
Acronyms	xi, xii-xiii	3/28/18, 8/29/18	Cindy Grace
Section 1	1, 3-10	3/29/18, 2/11/19, 3/6/19, 3/11/19, 3/12/19, 3/13/19, 3/20/19, 3/22/19, 3/29/19, 4/30/19, 5/1/19, 5/16/19, 5/17/19	Cindy Grace, William Furman
Section 2	1-42	3/18/18, 3/29/18, 4/18/18, 6/20/18, 8/24/18, 8/29/18, 8/30/18, 11/1/18, 1/16/19, 2/4/19, 2/8/19, 2/11/19, 2/12/19, 2/14/19, 2/27/19, 3/5/19, 3/7/19, 3/12/19, 3/13/19, 3/25/19, 3/26/19, 3/27/19, 3/29/19, 4/25/19, 4/30/19, 5/1/19, 5/16/19, 5/17/19, 9/10/19	Cindy Grace, Chip Balthis, Zoe Bergamo, James Coley, Janet Combs, Susan Edwards, Steven Elliott, Tim Holt, Tracey Howle, Lindsey McCoy, Matt Millwood, Chad Taylor, Beth Thomas, Derek Underwood, Stephen Williams
Section 3	2, 4, 9, 11, 13-15, 17-18, 21-34, 37-38, 40-43, 46-49, 51-57, 59, 63-66, 68, 70, 72-74, 77-79, 83-89, 91-116, 118-121	3/29/18, 7/17/18, 2/4/19, 2/5/19, 2/8/19, 2/11/19, 2/14/19, 4/29/19, 5/7/19, 5/9/19, 5/14/19, 5/16/19	Cindy Grace, Chip Balthis, Charlie Cribb, Mauretta Dorsey, Steven Elliott, Ryan Fabbri, Ray Funnye, Sam Hodge, Boyd Johnson, Matt Millwood, Mack Reed, Mike Young
Section 4			Cindy Grace
Appendix A	2-5, 7--68, A-1-2 - A-1-4, A-1-7	3/19/18, 4/18/18, 6/20/18, 8/24/18, 8/29/18, 8/30/18, 2/11/19, 2/12/19, 2/13/19, 2/14/19, 2/26/19, 2/27/19, 3/6/19, 3/7/19, 3/13/19, 3/14/19, 3/15/19, 3/18/19, 3/25/19, 3/26/19, 3/28/19, 4/10/19, 4/22/19, 5/1/19, 5/2/19, 5/3/19, 5/16/19, 5/17/19	Cindy Grace, Chip Balthis, Steven Elliott, Glenda Long, Matt Millwood
Appendix B	2-5, 7-10, 12-14, 16-24, 27, 30-46	3/28/18, 8/30/18, 12/12/18, 12/13/18, 1/11/19, 1/16/19, 1/24/19, 1/25/19, 2/6/19, 2/7/19, 2/8/19, 2/11/19, 2/13/19, 2/26/19, 3/13/19, 3/14/19, 3/26/19, 3/28/19, 4/10/19, 5/1/19, 5/1/19, 5/17/19	Cindy Grace, Chip Balthis, James Coley, Steven Elliott, Ryan Fabbri, Rob Higbe, Otto Jansky, Michelle LaRocco, Mary Grace McGee, Matt Millwood, Holly Richardson, Stephen Williams
Appendix D	2-16	1/16/19	Cindy Grace
Appendix E	2-4	5/6/19, 5/7/19	Cindy Grace, Aubrey Hipp
Appendix F	3-5, 7, 9	3/29/18, 8/29/18, 1/16/19, 2/26/19, 4/10/19, 4/20/19	Cindy Grace

RECORD OF CHANGES

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EXECUTIVE SUMMARY

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. The 2019 plan was reviewed and updated as needed.

Hazard Assessment

The Georgetown County Hazard Mitigation Plan (GCHMP) 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, drought, sinkholes, and sea level rise (SRL). 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 (DMA) of 2000¹ 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 discussed in this plan include the October, 2002, tornado in the City of Georgetown and large-scale hazards such as Hurricane Hugo in September, 1989, and severe flooding in October 2015.

Community Vulnerability Assessment

Appendix B 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.

EXECUTIVE SUMMARY

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 goals of the Georgetown County “Project Impact” initiative. 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 “Project Impact” 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.

EXECUTIVE SUMMARY

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 2019, 2020, 2021, 2022, and 2023. 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 2019.

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, such as “Project Impact” 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 GCEMD.

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ACRONYMS

Acronyms

ARC	American Red Cross
Avg.	Average
B&B	Bed & Breakfast
BFE	Base Flood Elevation
BZA	Board of Zoning Appeals
CABO	Council of American Building Officials
CAR	Capability Assessment for Readiness
CFM	Certified Floodplain Manager
CFR	Code of Federal Regulations
Co.	County
COG	Council of Governments
Corp.	Corporation
CRS	Community Rating System
Dept.	Department
DFE	Design Flood Elevation
DMA 2000	Disaster Mitigation Act of 2000
DOQ	Digital Orthophoto Quads
EMS	Emergency Medical Service
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
EPA	Environmental Protection Agency
F&ME	Foundation and Materials Engineering Consultants
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance

ACRONYMS

FY	Fiscal Year
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
HAM Radio	Amateur Radio
HAZMAT	Hazardous materials
HAZUS	Hazards United States (Earthquake Loss Estimation Methodology Software)
HMGP	Hazard Mitigation Grant Program
HOA	Homeowners' Association
HVRI	Hazards and Vulnerability Research Institute (USC)
ICC	Increased Costs of Compliance
ID	Identification
IP	Internet Protocol
IPCC	Intergovernmental Panel on Climate Change
LCBMP	Local Comprehensive Beachfront Management Plan
MOMs	Maximum of Maximum Envelope of High Water
mph	Miles Per Hour
msl	Mean Sea Level
N/A	Not Applicable
NCDC	National Climatic Data Center
NCEI	National Centers for Environmental Information
NCRS	Natural Resources Conservation Service
n.d.	No Date
NERR	National Estuarine Research Reserve

ACRONYMS

NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NGVD	National Geodetic Vertical Datum
NHC	National Hurricane Center
NOAA	National Oceanic and Atmospheric Administration
N.p.	No Page
NTHMP	National Tsunami Hazard Mitigation Program
NWS	National Weather Service
O&M	Operations and Maintenance
OCRM	Office of Ocean and Coastal Resource Management
ORW	Outstanding Resource Waters
PDSI	Palmer Drought Severity Index
POC	Point of Contact
PPI	Program for Public Information
Q3	FEMA flood zone mapping software
SC	South Carolina
SCADA	Supervisory Control and Data Acquisition
SCDHEC	South Carolina Department of Health & Environmental Control
SCDNR	South Carolina Department of Natural Resources
SCDOT	South Carolina Department of Transportation
SCDSS	South Carolina Department of Social Services
SCEMD	South Carolina Emergency Management Division
SCPSA	South Carolina Public Service Authority
SFHA	Special Flood Hazard Area
SFI	Sustainable Forestry Initiative
SLOSH	Sea, Lake, Overland, Surges from Hurricanes

ACRONYMS

SLR	Sea Level Rise
SSOs	Sanitary Sewer Overflows
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
USGS	United States Geological Survey
UTM	Universal Transverse Mercator
WMAs	Wildlife Management Areas
WRCOG	Waccamaw Regional Council of Governments

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 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 2017 hazards assessment as well as updated assessment data from the SC Hazard Mitigation Plan 2018². 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 the document. Part of the planning process included an assessment of existing policies, programs,

² SC Emergency Management Division. *SC Hazard Mitigation Plan, 2018*. West Columbia, SC.

³ 44 CFR Section 201.6

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 September 11, 2001. Georgetown County's critical facilities are listed in Appendix B, Table 8, pages 32 through 37.

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 the National Weather Service (NWS), StormReady®...helps arm America's communities with the communication and safety skills needed to save lives and property—before, during and after the event. StormReady® communities...are better prepared to save lives from the onslaught of severe weather through advanced planning,

education and awareness. No community is storm proof, but StormReady® can help communities save lives.

To be StormReady®, a community must:

- Establish a 24-hour warning point and emergency operations center.
- Have more than one (1) way to receive severe weather warnings and forecasts and to alert the public
- Create a system that monitors weather conditions locally
- Promote the importance of public readiness through community seminars
- Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises.⁴

The NWS TsunamiReady® Program is designed to improve public safety before, during and after tsunami emergencies. It aims to do this by establishing guidelines for a standard level of capability to mitigate, prepare for and respond to tsunamis and working with communities to help them meet the guidelines and ultimately become recognized as TsunamiReady® by the NWS. Although tsunamis cannot be prevented, becoming TsunamiReady® can help communities minimize their losses. Other incentives to becoming TsunamiReady® include:

- Access to technical support from the NWS and National Tsunami Hazard Mitigation Program (NTHMP) partners
- Eligibility for credit points from the FEMA's Community Rating System (CRS) which provides discounts on flood insurance in participating communities
- Justification for costs associated with tsunami preparedness
- Improved positioning to receive state/territorial and federal financial support
- Improved preparedness for other hazards⁴

In South Carolina, there are 58 StormReady® and/or TsunamiReady® sites including 42 counties, two (2) communities, two (2) government entities, one (1) university, one (1) commercial entity,, and seven (7) supporters.⁵ Both Georgetown County and DeBordieu Colony are StormReady® and TsunamiReady®. Georgetown County received re-recognition in October, 2017, and DeBordieu Colony received re-recognition in April 2019.

⁴ "NWS StormReady® Program, Working Toward a Weather-Ready Nation." N.p., n.d. Retrieved February 1, 2018 from <http://www.weather.gov/stormready/>.

⁵ National Weather Service, *StormReady® and TsunamiReady® in South Carolina*. N.p. n.d.. Retrieved March 11, 2019, from <https://www.weather.gov/stormready/sc-sr> .

1.3.4 Firewise Communities

Through the National Fire Protection Association (NFPA), the Firewise USA Program teaches people how to adapt to living with wildfire and encourages neighbors to work together and take action now to prevent losses.⁶ 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 (3) of only 35 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 six (6) 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. Appendix F lists references and newspaper articles cited in this plan.

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.⁷ Total area of the County is 1,035 square miles.

⁶ "Firewise USA: Residents Reducing Wildfire Risks." N.p., n.d. Retrieved February 1, 2018 from <https://www.nfpa.org/Public-Education/By-topic/Wildfire/Firewise-USA>.

⁷ 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



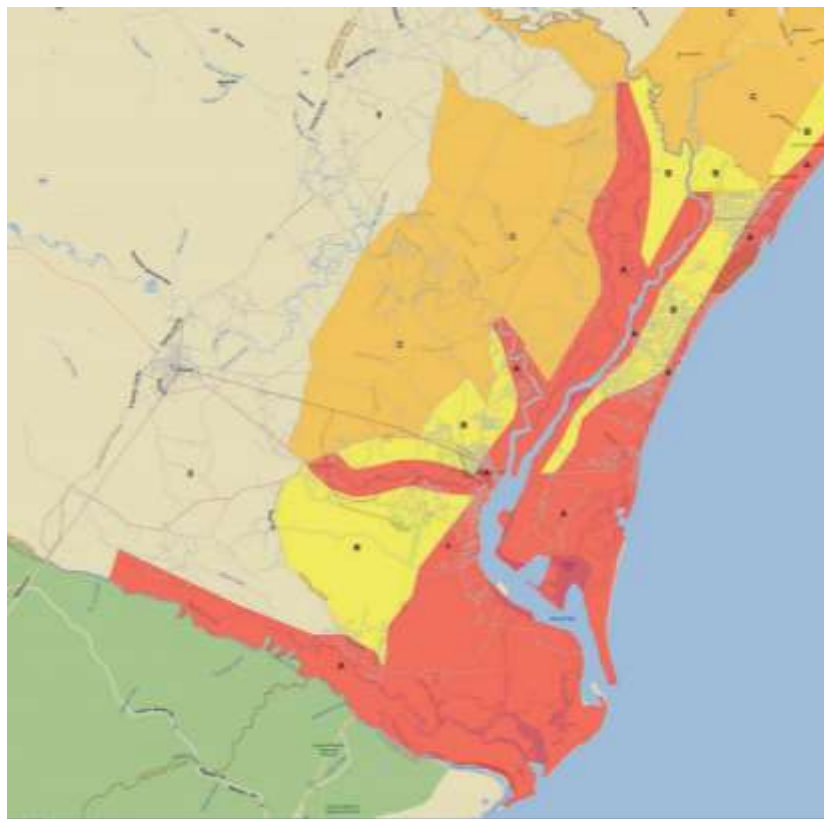
The County is located in the Atlantic Lower Coastal Plain. The northwestern 1/3 of the County is located in the Atlantic Coast Flatlands Land Resource Area. The remaining portion of the County is in the Tidewater Area. Relief generally is slight except in areas adjacent to the five (5) major rivers in the County. The elevation ranges from along the coast to about 60' in the mainland part of the County and to a high point of 76' on Sandy Island. About 70% of the County is less than 40' above sea level.

In 2011, the U.S. Army Corps of Engineers (USACE) conducted a Hurricane Evacuation Study⁸, 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 evacuation surge map for Georgetown County⁹:

⁸ 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, 2011.

⁹ 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 $\frac{1}{2}$ of the land area in the County. Evergreen forests cover 46% of the land, mixed forests cover 12%, and saturated bottomland forests cover 13%. Almost $\frac{1}{2}$ 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 61,607 in 2017, a 2.41% increase from the 2010 population figure of 60,158. 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 11,842 in 2017. This represents 19.22% of the County population. Georgetown, the County seat, had a population of 8,860 persons in 2017, followed by the Town of Andrews (2,876), and the Town of Pawleys Island (106). The 2017 population was

66.4% white, 31.5% African-American, and 5.1% other races. Georgetown County's population density was 73.9 persons per square mile in 2017, compared with the State average of 153.9 persons per square mile. In 2017, 17.1% of the County's population earned incomes below the poverty level.¹¹

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%. The most recent figure available as of December 2017 was a 5.6% unemployment rate, according to the SC Department of Employment and Workforce¹⁰. This figure is down from 8.6% in December 2014.

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% in 20 years. In 2000, there were a total of 28,282 housing units, an increase of almost 34% in the 10-year period. From 2013-2017, the owner-occupied housing unit rate was 76.5% compared with 68.6% for the state and the median value of owner-occupied housing units was \$178,600 compared to \$148,600 for the state. Housing units as of July 1, 2017 was 35,238.¹¹

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 applicant¹²:

Table 1-2 - Presidential Declarations

Major Disaster Declarations			
Number	Date	State/Tribal Government	Incident Description
4394	9/15/2018	South Carolina	Hurricane Florence
4346	10/16/2017	South Carolina	Hurricane Irma
4286	10/11/2016	South Carolina	Hurricane Matthew
4241	10/5/2015	South Carolina	SC Severe Storms and Flooding
4166	3/12/2014	South Carolina	SC Severe Winter Storm
1566	10/7/2004	South Carolina	Tropical Storm Frances
1543	9/1/2004	South Carolina	Hurricane Charley
1313	1/31/2000	South Carolina	SC Winter Storms
1299	9/21/1999	South Carolina	Hurricane Floyd
1140	9/30/1996	South Carolina	Hurricane Fran
843	9/22/1989	South Carolina	Hurricane Hugo

¹⁰SC Dept. of Employment & Workforce. Labor Market Information. *Community Profile Georgetown County*. N.p., 21 Dec. 2017. Retrieved January 18, 2018 from <http://lmi.dew.sc.gov/lmi%20site/Documents/CommunityProfiles/04000043.pdf>.

¹¹ U.S. Census Bureau, State and County QuickFacts (6 Dec. 2018). Retrieved February 11, 2019 from <https://www.census.gov/quickfacts/fact/table/sc.georgetowncountysouthcarolina/RHI825217>.

¹² "Disaster Declarations for South Carolina | FEMA.gov." *Disaster Declarations for South Carolina | FEMA.gov*. N.p., n.d. Retrieved January 18, 2018 from <https://www.fema.gov/disasters/state-tribal-government/0/SC>.

Emergency Declarations

Number	Date	State/Tribal Government	Incident Description
3400	9/10/2018	South Carolina	Hurricane Florence
3386	9/7/2017	South Carolina	Hurricane Irma
3378	10/6/2016	South Carolina	Hurricane Matthew
3373	10/3/2015	South Carolina	SC Severe Storms and Flooding
3369	2/12/2014	South Carolina	SC Severe Winter Storm
3233	9/10/2005	South Carolina	Hurricane Katrina Evacuations
3145	9/15/1999	South Carolina	Hurricane Floyd

SBA Disaster Declaration¹³

State	Declaration #	Incident	Incident Period	Effective
South Carolina	15698, 15699	Hurricane Florence	9/8/2018 – 10/8/2018 Amended 9/26/2018 to include Georgetown County for both physical damage loans and economic injury loans ¹⁴	9/21/2018
South Carolina	14921, 14922	Hurricane Matthew	10/4/2016 and continuing	10/14/2016
South Carolina	14544, 14545	Severe Storms and Flooding	11/4/2015	11/19/2015
South Carolina	14495, 14496	Severe Storms and Flooding	10/1/2015 and continuing	10/5/2015
South Carolina	14460, 14461	Severe Storms and Flooding	8/30 - 8/31/2015	9/10/2015
South Carolina	13792, 13793	Main Street Fires	09/25/2013	10/04/2013

1.6 NFIP Compliance Information

All four (4) of the local governments in Georgetown County participate in the NFIP. 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-27 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, winter storms, sinkholes, and sea level rise (SLR). These disasters and the county's risk probabilities are discussed in the Risk Assessment found in Appendix A. As stated previously, sinkholes and SLR were not included in the hazard analysis in 2009 or 2014. Man-made hazards are not normally included in the plan, but were mentioned in this iteration due to the monetary damage caused by the sinkholes in 2011, although they are not considered a high frequency risk for the area. SLR is a natural-occurring phenomenon, and there is a potential that its extent along the coast will be seen in the future. However, it is difficult to determine that extent along the Georgetown coast without further study.

¹³ Small Business Administration, *Current Disaster Declarations*. N.p., n.d. Retrieved January 18, 2018 from <https://www.sba.gov/node/11426>

¹⁴ Furman, William H., Small Business Administration, Email dated 2/11/2019.

Section 1

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

Jurisdiction	Contact	Title	Phone	Email Address
Andrews	Steven Elliott	Building Official	843-545-3120	selliott@gtcounty.org
Georgetown Co.	Steven Elliott	Building Official	843-545-3120	selliott@gtcounty.org
Georgetown	Rick Martin	Building Official	843-545-4017	rmartin@cogsc.com
Pawleys Island	Ryan Fabbri	Town Administrator	843-237-1698	rfabbri@townofpi.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 3-42
6C page 3-44

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 3-70
6A page 3-83
6C page 3-85
6G page 3-89

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

1C page 3-94
6B page 3-115
6C page 3-116

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 Hazard 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.

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

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS
Bob Anderson		49 Woodmont Lane Pawleys Island, SC 29585	(843) 543-2503	bobanderson@sc.rr.com
Scott McNair, Vice President, Plant Management	3V Sigma USA	888 Woodstock St. Georgetown, SC 29440	(843) 520-5146	s.mcnaair@3vsigmausa.com
Todd Musselman, Disaster Specialist	American Red Cross	Lowcountry SC Chapter 2424-A City Hall Lane N Charleston, SC 29406	(843) 764-2323	Todd.musselman@redcross.org
Mauretta Dorsey, Town Administrator	Town of Andrews	101 N Morgan Ave. Andrews, SC 29510	(843) 264-8666	mdorsey@townofandrews.sc.gov
Frank McClary, Mayor	Town of Andrews	101 N Morgan Ave. Andrews, SC 29510	(843) 359-3355	fmmclary@townofandrews.sc.gov
Yolanda McCray, President/CEO	Black River United Way	515 Front St. Georgetown, SC 29440	(843) 546-6317	Yolanda@blackriveruw.org
Deacon Gabriel Cuervo, Dir. Of Disasters	Catholic Charities/WBLTRG	2294 Technology Blvd. Conway, SC 29526	(843) 531-5540	gcuervo@charlestandiocese.org
Carissa Medeiros, Emergency Manager	Coastal Carolina University	470 Allied Drive Conway, SC 29526	(843) 349-5088	cmedeiros@coastal.edu
Nancy Appel, North Coast Director	Coastal Conservation League	PO Box 603 Georgetown, SC 29442	(843) 723-8035	nancya@ccccl.org
Mindy Taylor, District Manager	Duke Energy	1755 Mechanicsville Rd. Florence, SC 29501	(843) 661-4180	Mindy.taylor@duke-energy.com
Jesse Munoz, Mitigation Division Director	FEMA	3003 Chamblee Tucker Rd. Atlanta, GA 30341	(770) 220-5200	jesse.munoz@fema.dhs.gov
Carey Smith, Administrator	City of Georgetown	1134 N Fraser St. Georgetown, SC 29440	(843) 545-4175	csmith@cogsc.com
Brendon Barber, Mayor	City of Georgetown	1134 N Fraser St. Georgetown, SC 29440	(843) 545-4002	bbarber@gcsd.k12.sc.us
Alan Loveless, Dept. Head	City of Georgetown Electric Utility Department	800 Church St. Georgetown, SC 29440	(843) 545-4600	aloveless@cogsc.com

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS
Charlie Cribb, Chief	City of Georgetown Fire Department	1405 Prince Street Georgetown, SC 29440	(843) 545-4200	ccribb@cogsc.com
Matt Millwood, Community Planner/GIS	City of Georgetown Housing and Community Development	1134 N Fraser St. Georgetown, SC 29440	(843) 545-4016	mmillwood@cogsc.com
Captain Nelson Brown	City of Georgetown Police Department	2222 Highmarket St. Georgetown, SC 29440	(843) 545-4392	brownn@cogsc.com
Kelvin Waites, Chief	City of Georgetown Police Department	2222 Highmarket St. Georgetown, SC 29440	(843) 545-4390	kwaites@cogsc.com
Tim Chatman, Director	City of Georgetown Public Works	125 N Kaminski St. Georgetown, SC 29440	(843) 545-4702	jtchatman@cogsc.com
William Gunter, Jr., Manager	City of Georgetown Water Utilities Department	2377 Anthuan Maybank Dr. Georgetown, SC 29440	(843) 545-4505	wqunter@cogsc.com
Sel Hemingway, Administrator	Georgetown County	716 Prince St. Georgetown, SC 29440	(843) 545-3006	shemingway@gtcounty.org
Susan Edwards, Assessor	Georgetown County Assessor's Office	129 Screven St. Georgetown, SC 29440	(843) 545-3010	sedwards@gtcounty.org
Tim Holt, Deputy Assessor	Georgetown County Assessor's Office	129 Screven St. Georgetown, SC 29440	(843) 545-3010	tholt@gtcounty.org
Jackie Elliott, Manager	Georgetown County Bureau of Aging	2104 Lincoln St. Georgetown, SC 29440	(843) 545-3185	jelliott@gtcounty.org
Steven Elliott, Building Official	Georgetown County Building Division and Permits	129 Screven St. Georgetown, SC 29440	(843) 545-3123	selliott@gtcounty.org
Mark Stevens, Dir. of Tourism Development	Georgetown County Chamber of Commerce	531 Front Street Georgetown, SC 29440	(843) 546-8436	mstevens@hammockcoastsc.com
Kenny Johnson, Coroner	Georgetown County Coroner's Office	129 Screven St. Georgetown, SC 29440	(843) 545-3056	kjohnson@gtcounty.org
Brian Tucker, Director	Georgetown County Office of Economic Development	716 Prince St. Georgetown, SC 29440	(843) 545-3163	btucker@gtcounty.org
Cindy Grace, Coordinator	Georgetown County Emergency Management	2222-C Highmarket St. Georgetown, SC 29440	(843) 545-3136	cgrace@gtcounty.org
Sam Hodge, Manager	Georgetown County Emergency Management	2222-C Highmarket St. Georgetown, SC 29440	(843) 545-3545	shodge@gtcounty.org

Section 2

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS
Herb Puckett, Superintendent	Georgetown County Facility Services	1918 Church St. Georgetown, SC 29440	(843) 545-3328	hpuckett@gtcounty.org
Scott Proctor, Director	Georgetown County Finance Department	129 Screven St. Georgetown, SC 29440	(843) 545-3066	sproctor@gtcounty.org
Tony Hucks, Assistant Chief	Georgetown County Fire EMS	3605 Highmarket St. Georgetown, SC 29440	(843) 545-3139	ahucks@gtcounty.org
Mack Reed, Chief	Georgetown County Fire EMS	3605 Highmarket St. Georgetown, SC 29440	(843) 545-3271	mreed@gtcounty.org
Dwight McInvaill, Director	Georgetown County Library System	405 Cleland St. Georgetown, SC 29440	(843) 545-3304	dmcinvaill@gtcounty.org
Beth Goodale, Director	Georgetown County Parks and Recreation Department	2030 Church Street Georgetown, SC 29440	(843) 545-3550	bgoodale@gtcounty.org
Boyd Johnson, Director	Georgetown County Planning & Code Enforcement	129 Screven St., Room 222 Georgetown, SC 29440	(843) 545-3162	bjohnson@gtcounty.org
Jackie Broach-Akers	Georgetown County PIO	716 Prince Street Georgetown, SC 29440	(843) 545-3164	jbroach@gtcounty.org
Ray Funnye, Director	Georgetown County Public Services	108 Screven St. Georgetown, SC 29440	(843) 545-3325	rcfunnye@gtcounty.org
Art Baker, Director Capital Projects	Georgetown County Public Services	1918 W Church St. Georgetown, SC 29440	(843) 545-3255	abaker@gtcounty.org
James Coley, Capital Projects	Georgetown County Public Services	1918 W Church St. Georgetown, SC 29440	(843) 545-3243	jcoley@gtcounty.org
James Taylor, Airport Manager	Georgetown County Public Services	129 Airport Rd. Georgetown, SC 29440	(843) 545-3638	jtaylor@gtcounty.org
Stephen Williams, Public Works Manager/GIS Specialist	Georgetown County Public Services	2236 Browns Ferry Rd. Georgetown, SC 29440	(843) 545-3436	swilliams@gtcounty.org
Nancy Silver, Purchasing Officer	Georgetown County Purchasing	129 Screven Street Georgetown, SC 29440	(843) 545-3076	nsilver@gtcounty.org
Randall Dozier, Superintendent	Georgetown County School District	2018 Church St. Georgetown, SC 29440	(843) 436-7175	rdozier@gcsd.k12.sc.us
Alan Walters, Director of Safety and Risk Management	Georgetown County School District	2018 Church St. Georgetown, SC 29440	(843) 436-7161	awalters@gcsd.k12.sc.us

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS
Lane Cribb, Sheriff	Georgetown County Sheriff's Office	430 N Fraser St. Georgetown, SC 29440	(843) 436-6030	acribb@gtcounty.org
Major T.L. Staub	Georgetown County Sheriff's Office	2222-C Highmarket St. Georgetown, SC 29440	(843) 436-6054	tstaub@gtcounty.org
Carver Weaver, Assistant Sheriff	Georgetown County Sheriff's Office	430 N Fraser St. Georgetown, SC 29440	(843) 436-6033	cweaver@gtcounty.org
Joseph Williamson	Georgetown County Sheriff's Office/911 Manager	2222-C Highmarket St. Georgetown, SC 29440	(843) 436-6110	jwilliamson@gtcounty.org
Michael Yip, Operations Director	Georgetown County Water & Sewer District	456 Clearwater Dr. Pawleys Island, SC 29585	(843) 436-6270	michaely@gcwsd.com
Rose Anne O'Reilly, Executive Vice President	Horry Georgetown Homebuilders Association	728 Hwy. 501 E Conway, SC 29526	(843) 438-4124	rao@hghba.com
Marion Moore, Safety & Training Coordinator	HTC, Inc.	9400 Hwy. 17 Bypass Murrells Inlet, SC 29576	(843) 369-8648	Marion.moore@htcinc.net
Doug Eggiman, Chief	Midway Fire Rescue	69 St. Paul Place Pawleys Island, SC 29585	(843) 545-3620	Deggiman@gtcounty.org
Norman Knight, Chief	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, Town Administrator	Town of Pawleys Island	321 Myrtle Avenue Pawleys Island, SC 29585	(843) 237-1698	rfabbri@townofpi.com
Mike Fanning, Chief	Town of Pawleys Island Police Department	321 Myrtle Avenue Pawleys Island, SC 29585	(843) 237-1698	policechief@townofpawleysisland.com
Captain Tim Scott, Carolinas Area Manager	The Salvation Army	2401 Anthuan Maybank Georgetown, SC 29440	(843) 527-4479	Tim.scott@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
Barry Brock, Fixed Base Operator	Seven Rivers Aviation LLC	129 Airport Blvd. Georgetown, SC 29440	(843) 527-7516	barrybrock@gmail.com

Section 2

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS
Alexandra Whitehill, Rapid Response Team	SC Department of Agriculture	123 Ballard Court West Columbia, SC 29172	(803) 737-1911	awhitehill@scda.sc.gov
Mark Hendrix, Director of PHP Pee Dee Region	SC Department of Health and Environmental Control	145 E Cheves St. Florence, SC 29501	(843) 673-6546	hendriml@dhec.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
Christopher Stout, OCRM	SC Department of Health and Environmental Control	132 McMillan Ave. #400 N Charleston, SC 29405	(843) 9530691	stoutcm@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	coxmc@dnr.sc.gov
F/Sgt. B.W. Tyler	SC Department of Public Safety/SC Highway Patrol	214 Ridge St. Georgetown, SC 29440	(843) 546-7300	bwtyler@scdps.gov
Ned Moore, Director Georgetown Office	SC Department of Social Services	330 Dozier St. Georgetown, SC 29440	(843) 904-9197	Ned.moore@dss.sc.gov
Christopher Borque, Resident Construction Engineer	SC Department of Transportation	1007 Merriman Rd. Georgetown, SC 29442	(843) 527-6719	bourqueCD@scdot.org
Brandon Ellis, Regional Emergency Manager	SC Emergency Management Division	2779 Fish Hatchery Rd. W Columbia, SC 29172	(803) 509-1677	bellis@emd.sc.gov
Lindsey McCoy, Mitigation Planner	SC Emergency Management Division	2779 Fish Hatchery Rd. W Columbia, SC 29172		lmccoy@emd.sc.gov
Ron Holt, Unit Forester	SC Forestry Commission	596 IM Graham Rd. Kingstree, SC 29556	(843) 382-8761	rholt@scfc.gov
SGT Chad Taylor, SC JOC/ESF-19	SC Army National Guard	2779 Fish Hatchery Rd. W Columbia, SC 29172	(803) 360-6091	Chad.g.taylor4.mil@mail.mil
David Kerr, Terminal Manager	SC State Ports Authority	1324 Dock St. Georgetown, SC 29440	(843) 296-0401	dkerr@scspa.com
Clayton Stairs, Staff Writer	<i>South Strand News</i>	615 Front St. Georgetown, SC 29440	(843) 546-4148	cstairs@southstrandnews.com
Devon Smith, Executive Director	St. Frances Animal Center	125 N Ridge St. Georgetown, SC 29440	(843) 546-0780	dsmith@sfanimals.org
Stan Gailey, Architect	State Fiscal Accountability Authority Procurement Services Office of State Engineer	1201 Mai St., Ste. 600 Columbia, SC 29201	(803) 734-0774	sgailey@mno.sc.gov

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS
Patrick Devlin, Safety and Emergency Management Director	Tidelands Health	606 Black River Road Georgetown, SC 29440	(843) 652-1803	pdevlin@tidelandshealth.org
Justin Pickler, Officer in Charge	U.S. Coast Guard	355 Marina Dr. Georgetown, SC 29440	(843) 546-2742	Justin.f.pickler@uscg.mil
Michael Hind, Natural Disaster PM CESAC-EM	U.S. Army Corps of Engineers Charleston District	69A Hagood Ave. Charleston, SC 29403	(843) 329-8106	Michael.b.hind@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
Clark Cooper, Virtual CIO	VC3	1301 Gervais St. #1800 Columbia, SC 29201	(803) 978-2699	ccooper@gtcounty.org
Sarah Smith, Executive Director	Waccamaw Regional Council of Governments	1230 Highmarket Street Georgetown, SC 29440	(843) 436-6135	ssmith@wrcog.org
Tom Stickler, President	Waccamaw Neck Council of Property Owners Association	Box 1415 Pawleys Island, SC 29585	(843) 237-7547	stickler@compuserve.com

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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 86 members displayed in Table 2-1, and contained representatives from the four (4) local jurisdictions that are addressed by the plan.

The Mitigation Planning Committee met on August 27, 2018, 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 2014 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, was distributed for review and discussion by Committee.

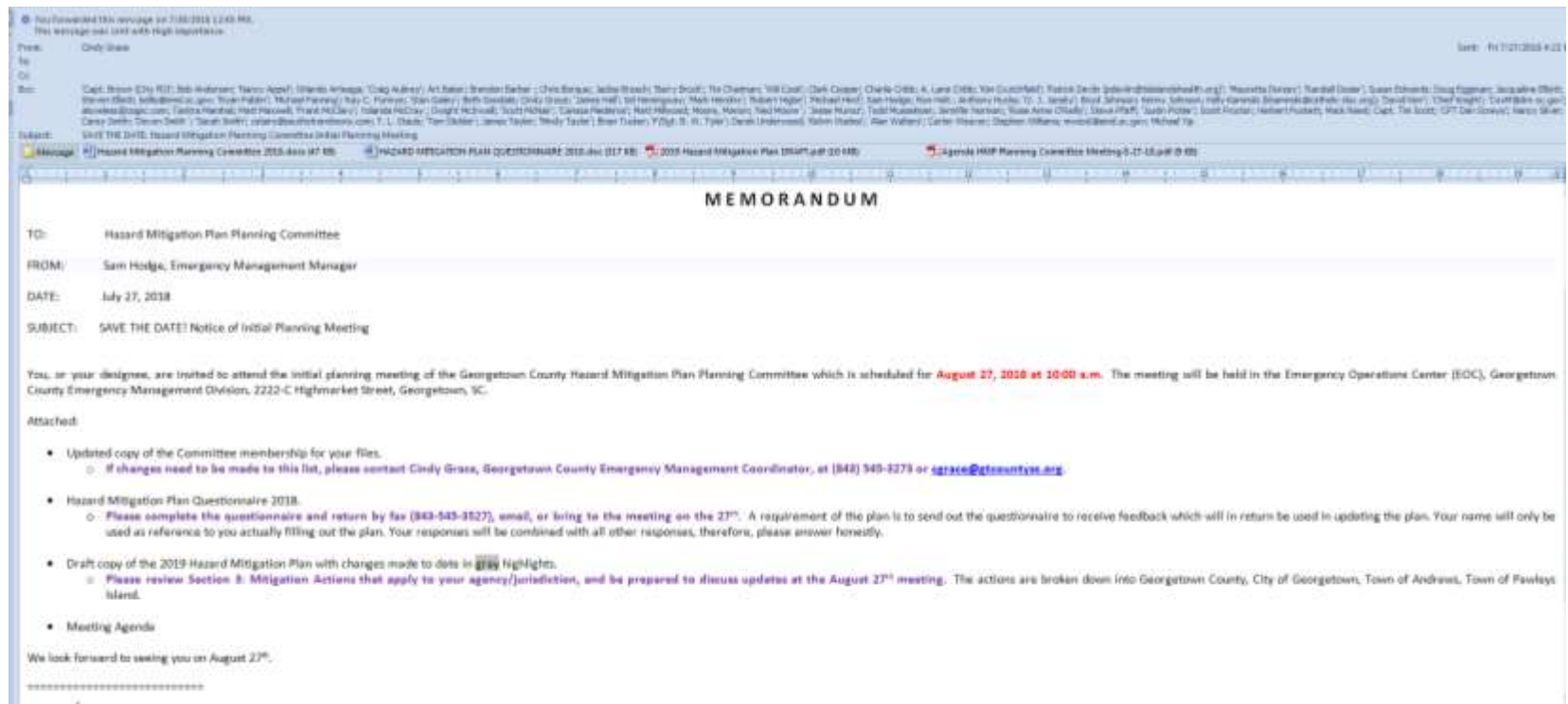
The Committee met again on November 13, 2018, to discuss updates, and a draft of the plan was discussed. The Committee met on February 12, 2019 to discuss updates to the plan as well as the public hearings which is scheduled for May 7, 2019. (Planning Committee meeting minutes and sign-in sheets are included in Appendix D.)

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

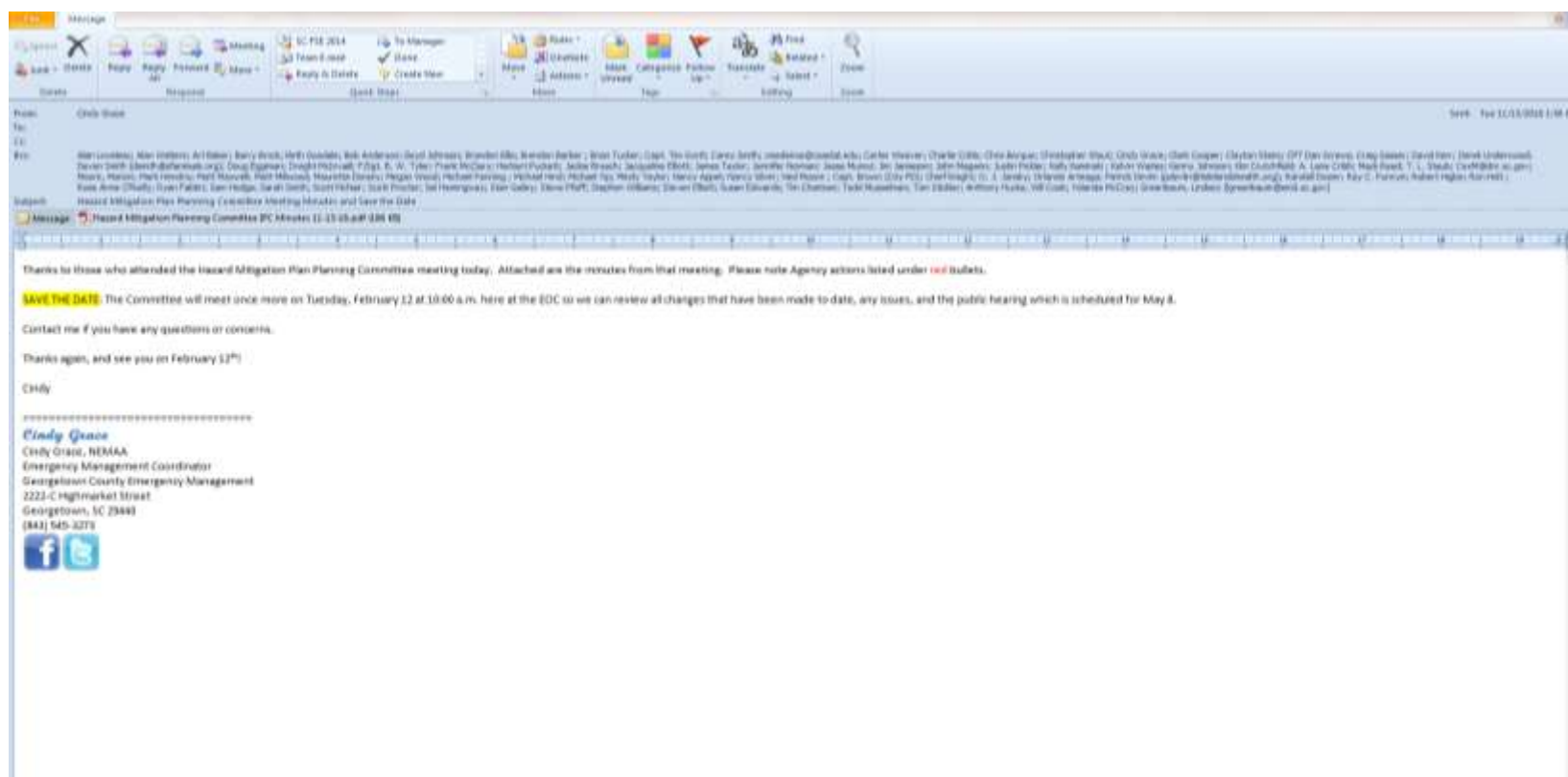
Activity / Date	Georgetown County	City of Georgetown	Town of Pawleys Island	Town of Andrews
Attended 8/27/18 Planning Committee Mtg.	X	X	X	
Attended 11/13/18 Planning Committee Mtg.	X	X		
Attended 2/12/19 Planning Committee Mtg.	X	X		
Updated Mitigation Actions 10/15	X	X	X	X
Updated Mitigation Actions 10/16	X	X	X	X
Updated Mitigation Actions 10/17	X	X	X	X
Updated Mitigation Actions 10/18	X	X	X	
Completed Plan Questionnaire	X	X	X	X
Attended 5/7/19 Public Hearing	X			

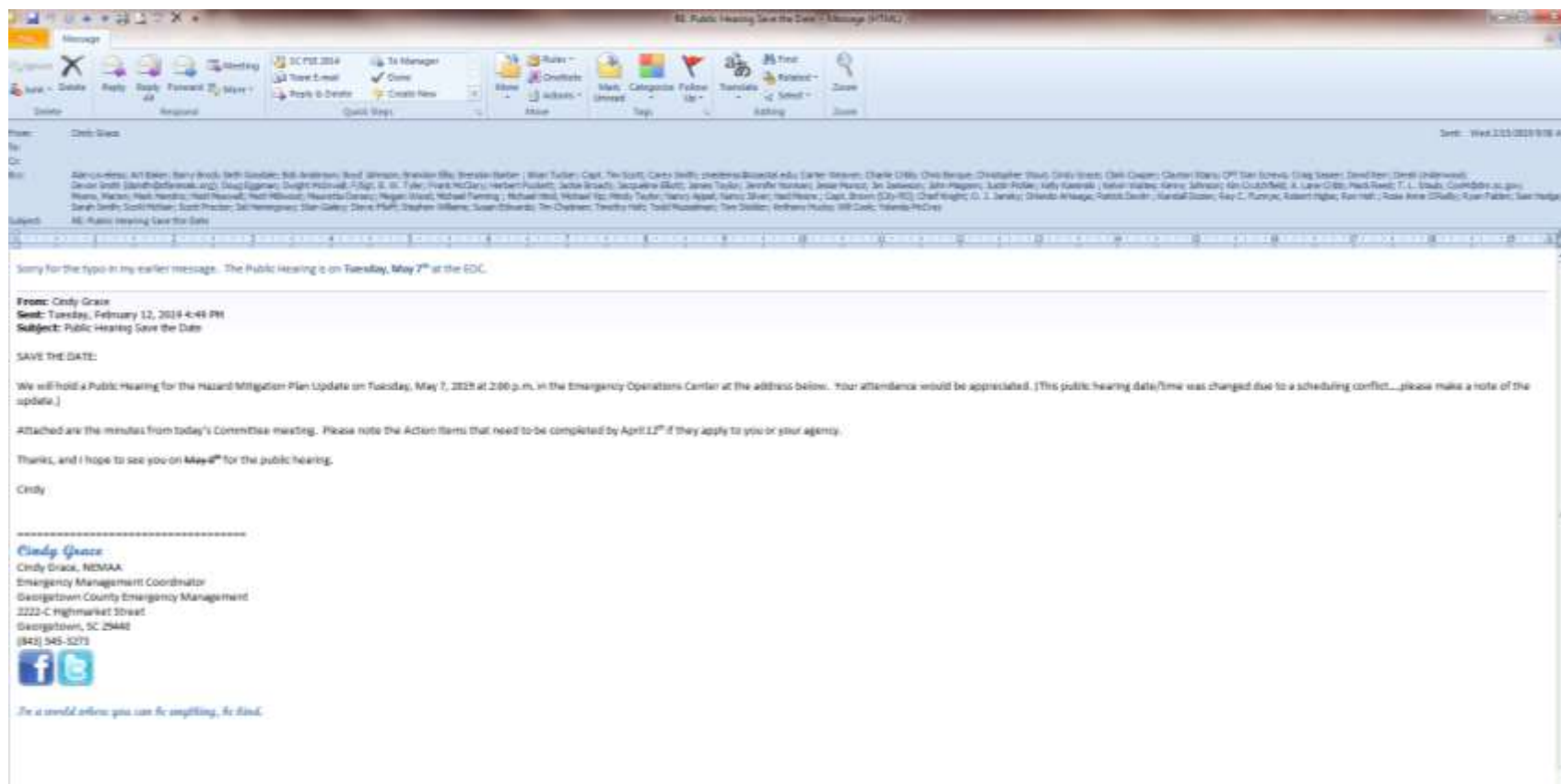
Section 2

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









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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 7, 2019, to review the draft document. The final public hearing will be held as the plan is being adopted by County and Municipal Councils. 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 Emergency Operations Plan (EOP) which deals with responses to multiple hazards, both natural and man-made. Among the organizations and agencies contacted were:

County

Administration
Bureau of Aging Services
Assessor's Office
Coroner's Office
Office of Economic Development
Emergency Management Division
Finance Department
Fire/EMS
Human Resources
Information Technology/GIS
Library System
Midway Fire Rescue
Murrells Inlet-Garden City Fire Department
Parks and Recreation Department
Planning and Code Enforcement
Public Information Officer
Public Services Department
Sheriff's Office/9-1-1 Communications

Federal

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

Municipal

Town of Andrews
Administration
City of Georgetown
Administration
Electric Utility Department
Engineering Department
Fire Department
Housing and Community Development
Mayor
Police Department
Public Works Department
Water Utilities Department
Town of Pawleys Island
Administration
Police Department

Non-Profit

American Red Cross (ARC)
Black River United Way
Catholic Charities
Coastal Conservation League
The Salvation Army
Tidelands Health

Other

3V Inc.
Coastal Carolina University
Georgetown County Chamber of Commerce
Georgetown County School District
Georgetown County Water and Sewer District
Horry Georgetown Homebuilders Association
HTC, Inc.
Private Citizen
Seven Rivers Aviation LLC
South Strand News
St. Frances Animal Center
University of South Carolina, Hazards and Vulnerability Research Institute
VC3
Waccamaw Regional Council of Governments
Waccamaw Neck Council of Property Owners Association

State

S.C. Department of Agriculture
S.C. Department of Health and Environmental Control
S.C. Department of Natural Resources
S.C. Department of Public Safety/S.C. Highway Patrol
S.C. Department of Social Services
S.C. Department of Transportation
S.C. Emergency Management Division
S.C. Forestry Commission
S.C. National Guard

S.C. State Ports Authority
State Fiscal Accountability Authority

Utilities

Duke Energy
Santee Cooper
Santee Electric Cooperative

2.4 Assess the Hazards

During this plan update, we reviewed and incorporated existing plans, studies, reports, and technical information. The Hazards and Vulnerability Research Institute (formerly the University of South Carolina Hazard Research Lab (USCHRL)) 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.

In 2004, the 1997 assessment was updated by the Waccamaw Regional Council of Governments (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 DMA 2000.

The assessment contained in Appendix A of this plan is an update to previous assessments performed in 1997, 2004, and updated maps, tables, and verbiage from the 2014 FEMA-approved GCHMP. The assessment utilizes the methodology of the original 1997 assessment, the general formatting of the 2004 plan, and updated maps and tables of the 2014 plan. Storm events, mapping, tables, supporting documentation and analysis have been updated based on the latest available data sources including the SC Hazard Mitigation Plan, 2018; NOAA’s National Center for Environmental Information (NCEI) (formerly the National Climatic Data Center (NCDC)); and SC Hazard Assessment, 2017, by the Hazards and Vulnerability Research Institute (HVRI). For planning purposes, all jurisdictions in the County are assumed to be similarly situated, therefore, will experience similar impacts as a result of the assessed natural hazards.

Table 2-2 - Hazard by Jurisdiction

Hazard	Location	Extent	Further Detail (page #)
Hurricane/Tropical Storm	Pawleys Island, City, County	Saffir-Simpson	2-22, A-11, A-29, A-1-5
Flood	Pawleys Island, City, County	Flood Depth Grids	2-22 – 2-23, 2-32. A-12, A-21 – A-23, A-34 – A-36,
Tornado	Andrews, Pawleys Island, City, County	Enhanced Fujita Scale	2-23 – 2-25
Earthquake	Andrews, Pawleys Island, City, County	Richter Scale	2-26, 2-32 – 2-33
Wildfire	Andrews, Pawleys Island, City, County	Wildland Urban Interface Hazard Scale	2-26, 2-34
Dam Failure	County	Duration and Speed	2-27 – 2-28, A-26 – A-27
Severe Storms/Hail/Wind	Andrews, Pawleys Island, City, County	Duration and Speed	2-27, 2-23, A-26, A-37
Winter Storms	Andrews, Pawleys Island, City, County	Duration and Speed	2-27, A-37
Drought	Andrews, Pawleys Island, City, County	Palmer Drought Severity Index	2-26, A-37
Sinkholes	City, County	Duration and Speed	2-28 – 2-29, 2-34, A-26, A-38
Sea Level Rise	Pawleys Island, City, County	Sediment cores, tidal gauges, satellite measurements	2-29 – 2-31, 2-34, A-39

2.5 Assess the Problems

Summary of Risk Assessment

The *State of South Carolina Hazards Assessment* included in Section IV of the 2018 SC Hazard Mitigation Plan analyzes the major hazards that impact South Carolina. For the majority of the analyses, and where it was available, data was collected through 2015. More recent data was collected where available. Sections that discuss ‘recent’ events use the time frame of 2012 through 2017. Data from the risk assessment derive primarily from the Spatial Hazard Events and Loss Database for the United States (SHELDUS) and the Storm Events Database from the National Climatic Data Center (NCDC), as well as from a variety of other sources from state and local agencies. From these data sources, the historical hazard frequency of occurrence (risk) and losses are examined. Additionally, HAZUS, FEMA’s loss estimation software was used to model and provide estimates of potential impact.²

The Hazards Assessment contained in Appendix A of this plan addresses hurricanes/tropical storms, tornadoes, severe storms/hail/wind events, floods, earthquakes, wildfires, winter storms, drought, dam failures, sinkholes, and SLR. The hazard events, listed in descending order of probability are: wildfire; severe storms/hail/wind events; drought; winter weather; hurricane/tropical cyclone; tornado; flood; earthquake; sinkholes; and dam failure. 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. Two (2) hazards that were not contained in the Hazards Assessment are sinkholes and SLR. Sinkholes were a major issue in the City of Georgetown in 2011. SLR can also exacerbate

flooding and damage from storm surge and high tides. Although these hazards have a low probability of occurring, their monetary damage can be very high. 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 on the State’s risk assessment, wildfire is the highest scoring hazard facing Georgetown. 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.

According to the SC Hazard Mitigation Plan², Horry, Georgetown, Berkeley, and Sumter Counties round out the top five (5) most hazardous counties. These five (5) counties have incurred over \$118 million in hazard event losses since 1960, accounting for 50% of the state’s total hazard losses.

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, dam failure, sinkholes, and SLR. 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

There have been 31 hurricanes/tropical storm events since 1851 that have landed in South Carolina; 14 of those affecting Georgetown County. 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 2-3-A provides a comparison of the age of housing stock in each of the local jurisdictions. Table 2-3-B provides building values by Tax District.

Table 2-3-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 #	Total #	Total #	Total #
Built 2000 to Present	25,402	762	2,922	640
Built 1999 to March 2000	1,188	15	26	43
Built 1995 to 1998	4,830	131	129	21
Built 1990 to 1994	3,356	119	194	255
Built 1980 to 1989	5,362	231	535	61
Built 1970 to 1979	4,038	230	716	83
Built 1960 to 1969	1,647	228	622	7
Built 1950 to 1959	1,056	190	717	20
Built 1940 to 1949	407	98	447	21
Built 1939 or earlier	524	131	569	35

Source: Georgetown County Assessor's Office, 2019

Note: The figures for Georgetown County are for the unincorporated area.

Table 2-3-B - Comparison of Value of Buildings by Tax District, 2019

Location	Tax District	Total Building Count	Value	Average
Sampit/Santee [u]	1	1,889	\$260,186,400	\$137,738
Georgetown North [u]	2	3,484	449,157,600	112,607
Pleasant Hill [u]	3	1,750	158,487,500	90,564
Waccamaw Neck* [u]	4	12,670	3,707,732,375	292,639
Murrells Inlet* [u]	41	5,609	1,186,395,700	211,516
Total (Unincorporated)	1,2,3,4, & 41	25,402	\$5,761,959,575	\$226,831
Town of Pawleys Island*	42	640	\$211,943,700	\$331,162
City of Georgetown	5	2,922	285,102,100	97,570
Town of Andrews	6	762	53,702,700	70,476
Grand Total		29,726	\$6,312,708,075	\$212,363

Source: Georgetown County Assessor's Office, February 2019.

Note: Total building count excludes manufactured housing and tax exempt properties. An estimate of critical facility values (many exempt) is provided in Table 2-14. {*} 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% 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 2-4 below displays data that compares the number of manufactured homes in each jurisdiction with the total number of housing units.

Table 2-4 - 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	2,922	308	10.54
Town of Andrews	762	319	41.86
Town of Pawleys Island	640	0	0.00
Georgetown County (unincorporated)	25,402	5,884	23.16
Total	29,726	6,511	21.90

Source: Georgetown Co. Assessor's Office, 2018.

The Town of Andrews had the highest percentage of its housing stock represented by manufactured homes (41.86%) with the unincorporated portion of Georgetown County following at 23.16%. The City of Georgetown's 308 units represented 10.54% of the City's total housing stock. The Town of Pawleys Island does not have any manufactured homes within its jurisdiction. Table 2-5 denotes the total value of manufactured housing by jurisdiction.

Table 2-5 - Estimated Value of Manufactured Homes by Jurisdiction, 2018

Jurisdiction	Estimated Value
City of Georgetown	\$3,900,700
Town of Andrews	3,912,660
Town of Pawleys Island	0
Unincorporated Georgetown County	117,019,447
Total	\$124,832,807

Source: Georgetown County Assessor's Office, 2018.

Note: Total building counts were provided by the Georgetown County Assessor's Office, and includes manufactured housing (2018). Special Flood Hazard Area (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 8% of the buildings in Georgetown County are located within SFHAs. Table 2-6 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 2-7 below provides building value estimates by jurisdiction for residential buildings, commercial buildings, and mobile homes.

Table 2-6 - 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	74	0	467	0	467
City of Georgetown	4,701	13	17	439	159	615
Town of Andrews	751	0	0	0	0	0
Unincorporated Area	<u>35,484</u>	<u>16</u>	<u>487</u>	<u>4,968</u>	<u>365</u>	<u>5,820</u>
Total Georgetown County	41,566	17	504	5,874	524	6,902

Source: City of Georgetown GIS Department, Town of Andrews, Town of Pawleys Island Town Administrator's Office, Georgetown County Building Department, Georgetown County GIS Department, 2019.

Table 2-7 - Building Value Estimates by Jurisdiction, 2019

Jurisdiction	Avg. Residential Building Value	Avg. Commercial Building Value*	Avg. Mobile Home Value
Town of Pawleys Island	331,162	172,400	-----
Pre-1980	174,327	-----	-----
City of Georgetown	97,570	867,730	12,665
Pre-1980	48,584	159,078	5,711
Town of Andrews	70,476	398,985	12,265
Pre-1980	36,448	87,972	5,008
Unincorporated Area	226,831	863,811	19,888
Pre-1980	80,318	267,846	7,833
Total Georgetown County	181,510	575,731	14,939
Pre-1980	82,419	128,724	6,184

Source: Georgetown County Assessor's Office, March, 2019.

- * The building values shown in the above are as of March 8, 2019, and include all commercial buildings as well as exempt commercial buildings such as government-owned property, utilities, churches, and hospitals; excluded are residential homes and mobile homes.

Hurricane wind speed is measured using the Saffir-Simpson Hurricane Wind Scale, which is shown in Table 2-8 below:

Table 2-8 – Saffir-Simpson Hurricane Wind Scale

Category	Pressure	Winds	Damage
1	>28.93"	74 – 95 mph	Minimal
2	28.50" – 28.91"	96 – 110 mph	Moderate
3	27.91" – 28.47"	111 – 130 mph	Extensive
4	27.17" – 27.88"	131 – 155 mph	Extreme
5	<27.17"	>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*² shows there have been 62 flood/flash flood/coastal flood/heavy rain events from 1996 through 2018. The area is particularly susceptible to flooding from rain events associated with tropical storms and/or hurricanes. Heavy rains totaling 10" 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. The historic flood of October 2015 caused over \$30 million in damages to structures and infrastructure, especially to inland areas of the County. 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 2-21 lists the number and type of structures located in SFHAs by jurisdiction, and Table 2-8 displays building value estimates for structures located in SFHAs by jurisdiction. These Tables 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. There have been 18 tornado events (including tornado, waterspouts, and funnel clouds) between 1950 and 2016 which caused \$3.68 million dollars in damage, caused 10 tornado-related injuries and six (6) tornado-related deaths.¹⁵ 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 page 2-21 and 2-11 provide data on the number and value of manufactured homes by jurisdiction. The estimated total market value of manufactured homes in Georgetown County is \$124,832,807. 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 tornadoes¹⁶. 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 in Table 2-9:

¹⁵ "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.

¹⁶ NOAA News Online, Story 894.

Table 2-9 - 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: NOAA. Retrieved February 13, 2019, from <https://www.scmnd.org/media/1391/sc-hazard-mitigation-plan-2018-update.pdf>.

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

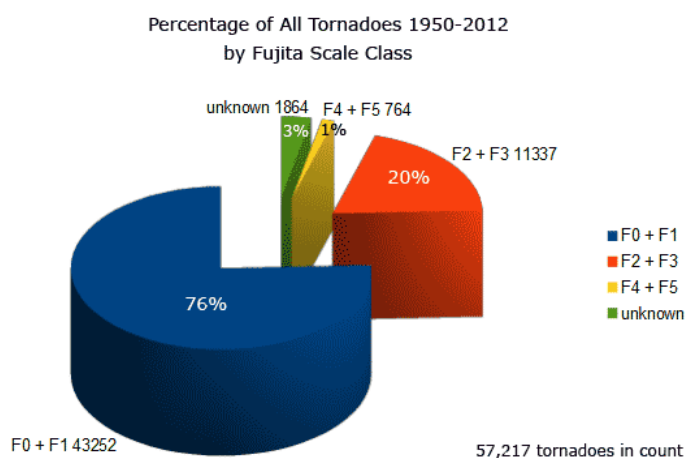
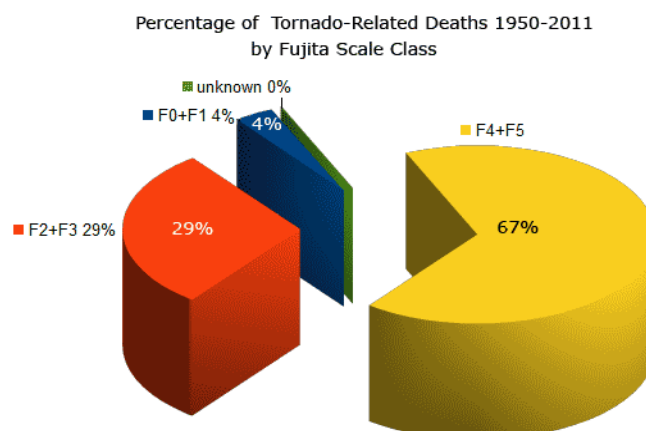


Figure 2-2 - Percentage of Tornado-Related Deaths, 1950-2011

Source: "The Fujita Scale." *The Fujita Scale*. n.p., 2013. Web. 13 Feb. 2019. <http://www.tornadoproject.com/cellar/fscale.htm>.

The tornado that touched down in the City of Georgetown on October 11, 2002, was an F-2 tornado that destroyed five (5) manufactured homes, a car, and two (2) houses before continuing northeast with scattered F1 damage described as major to a total of 28 structures and minor to 78 more including homes, businesses, churches, and also trees. Eight (8) people were hospitalized for minor injuries where they were treated and released. This tornado caused \$750,000 in damages.¹⁷

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:

- 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

¹⁷ National Centers for Environmental Information (NCEI). (2019). NOAA Georgetown County, South Carolina Storm Search 2019. U.S. Department of Commerce. Web: <https://www.ncdc.noaa.gov/stormevents/listevents.jsp>.

respond with differing characteristics than those on non-reclaimed land in the event of an earthquake. The hazard assessment in Appendix A identified 10 “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 in Table 2-10:

Table 2-10 - 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. There have been 5,072 wildfire events burning 47,311.45 acres of land from 1979-2018.¹⁸ 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 $\frac{3}{4}$ 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. 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 wildland/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. Since 1998, a total of 26 droughts have impacted Georgetown County. The last significant (Severe/Extreme) droughts occurred in 2002 and 2007.¹⁹ The impacts of drought

¹⁸ “Wildfires by County and Fiscal Year.” *SCFC*. p. 5, 8/16/2018. Retrieved January 13, 2019, from <http://www.state.sc.us/forest/firecoyr.pdf>.

¹⁹ SCDNR, SC State Climatology Office, *Status Reports*, N.d., N.p. Web. 6 Mar 2019 from http://www.dnr.sc.gov/climate/sco/Drought/drought_press_release.php.

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 155 thunderstorm/hail/strong winds events (1960-2018); 91 hail events (1982-2018), and 16 lightning events (1996-2015). Lightning has injured nine (9) people in Georgetown County between 1996 and 2015, resulting in \$623,500 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. On March 20, 2018, 1" hail was reported in Andrews. On April 15, 2018, a tree was reported down in the Red Hill area due to thunderstorm wind.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 (8) 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 government office closings; and activation of the EOC. The estimated damages from Pax are over \$4 million. Georgetown also experienced freezing rain and bridge icing in December 2017 which led to several motor vehicle accidents as well as closure of the Waccamaw River Bridge. In January 2018, 2-6" of snow was received inland; 1/10" of ice was also reported. Record cold preceded and followed the event which lasted from January 3 to January 8.

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* (SC Public Service Authority (Santee Cooper) November 2018) 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 Sinkholes

Sinkholes are a natural geologic feature, common in areas with underlying limestone, carbonate rock, salt beds and other rock types that are soluble in water. As the weathering and dissolving of rock materials occurs, spaces and voids are created underground. When the spaces get too big, the collapse of the land surface above can occur, regardless of whether there is a development above the cavern or not. There are three (3) types of sinkholes: subsidence, dissolution, and collapse. Collapse sinkholes are the quickest to develop, and may cause the greatest damages. Collapse sinkholes formed in the City of Georgetown in 2011.

According to findings from Foundation and Materials Engineering Consultants (F&ME) who performed a study on the cause of the 2011 sinkholes, construction in an area made up of fossiliferous marine limestone is the culprit. The report says that the area is a “karst” which has “solution cavities and is subject to sinkholes or depressions.” It also says the primary cause of the sinkholes was the installation of “king piles” for the City Hall Storage Facility that penetrated the water table, allowing water to come up out of the ground. Once the water table had been fractured, the report says an “accelerating factor” was the pumping the construction crews did to get rid of the water that had come up. The report also points out that the problem had been building since the first depression showed up in July 2011 – four (4) months before massive sinkholes destroyed Parrish Place, a business plaza on North Fraser Street.²⁰

²⁰ "Report Details Cause of Georgetown Sinkholes - WCIV-TV / ABC News 4 - Charleston News, Sports, Weather". N.p., n.d. Web. 07 Apr. 2014. <http://www.abcnews4.com/story/20705384/report-details-cause-of-georgetown-sinkholes>.

Table 2-11 - Sinkhole Locations

Type	Location	Severity
Sinkhole	UPS Store	High
Sinkhole	Prince St. @ Fire Station	Low
Sinkhole	N Hazard St.	Low
Sinkhole	Highmarket St.	Medium
Sinkhole	Parrish Parking Lot	Medium
Sinkhole	Highmarket St.	Low
Cracked Building	Parrish Place	High
Cracked Concrete	Citgo Gas Station	Low
Cracked Building	Prince and Dozier	Low
Cracked Building	213 Dozier	Low
Cracked Building	205 N Fraser St.	Low
Cracked Building	Bank of America	High
Cracked Building	320 Cleland St.	Low
Cracked Building	County Judicial Center	Medium
Cracked Building	Georgetown Library	Medium
Cracked Building	Sam's Service and Repair	Low
Cracked Building	Winyah Gym	Low
Cracked Concrete	Fire Department	Low
Cracked Building	SCDSS Office	Low
Cracked Building	TD Bank	Low
Cracked Building	Thrift Store	Low
Cracked Building	Landy's Cleaners	Medium
Cracked Building	1118 Duke St.	Low
Sinkhole	N Fraser St.	Medium
Cracked Building	City Hall	Low
Cracked Building	1201 Prince St.	Low
Cracked Building	1409 Highmarket St.	Low
Sinkhole	207 Broad St.	Low
Sinkhole	Waccamaw Regional COG	Low
Sinkhole	1004 Highmarket St.	Low
Sinkhole	1429 Front St.	Low
Cracked Building	205 Dozier St.	Low
Sinkhole	CSX Switch Station	Low
Cracked Concrete	413 King St.	Low
Sinkhole	1105 Church St.	Medium

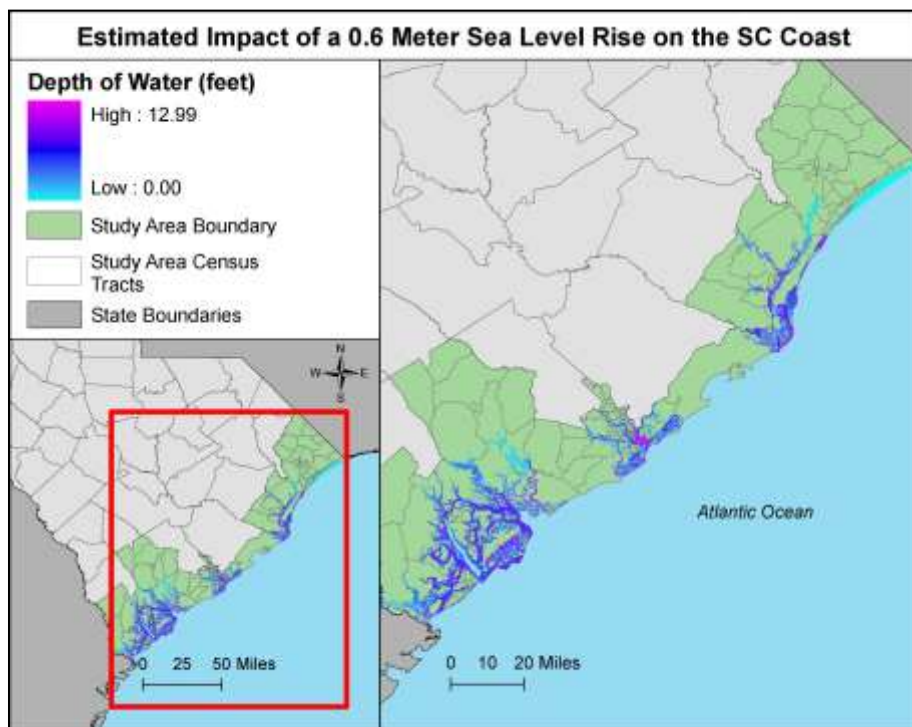
Source: Millwood, Matthew. "HMP Sinkholes Map and List." Message to Cindy Grace. 3 Apr. 2014. E-mail.

2.5.11 Sea Level Rise

According to the SC Hazard Mitigation Plan (2018)², it is difficult to predict the amount of SLR along the coast of South Carolina, but there are numerous factors related to this hazard, including land subsidence, groundwater depletion, wave action, hurricanes, and natural climate variation. The Environmental Protection Agency (EPA) suggests that SLR may increase the impact of coastal storms. The Intergovernmental Panel on Climate Change (IPCC) released a climate change and SRL report in 2014 which found that for

coastal regions in the United States, it is estimated that we will see at least .6m of SLR, and more likely up to 2.0m rise which is illustrated in Figures 2-3 – 2-6 below. The IPCC will release its Sixth Assessment Report in October 2021, so no new data is available, although the draft report mentions a 1-4' rise in sea level globally by the year 2100. Also, the Report mentions that the southeastern coastal states are likely to experience a greater rate of SLR than many other areas around the globe.²¹

Figure 2-3 - Estimated Impact of a .6 Meter Sea Level Rise on the SC Coast²



²¹ IPCC, 2014: *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva Switzerland, 151 pp.

Figure 2-4 - Estimated Impact of a 1.0 Meter Sea Level Rise on the SC Coast²

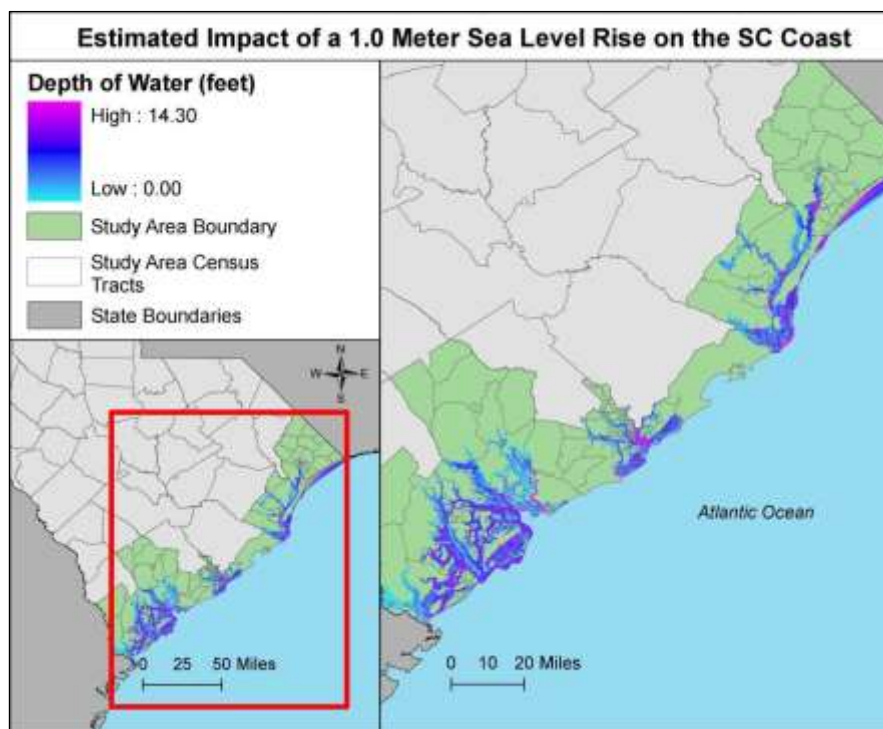


Figure 2-5 - Estimated Impact of a 2.0 Meter Sea Level Rise on the SC Coast²

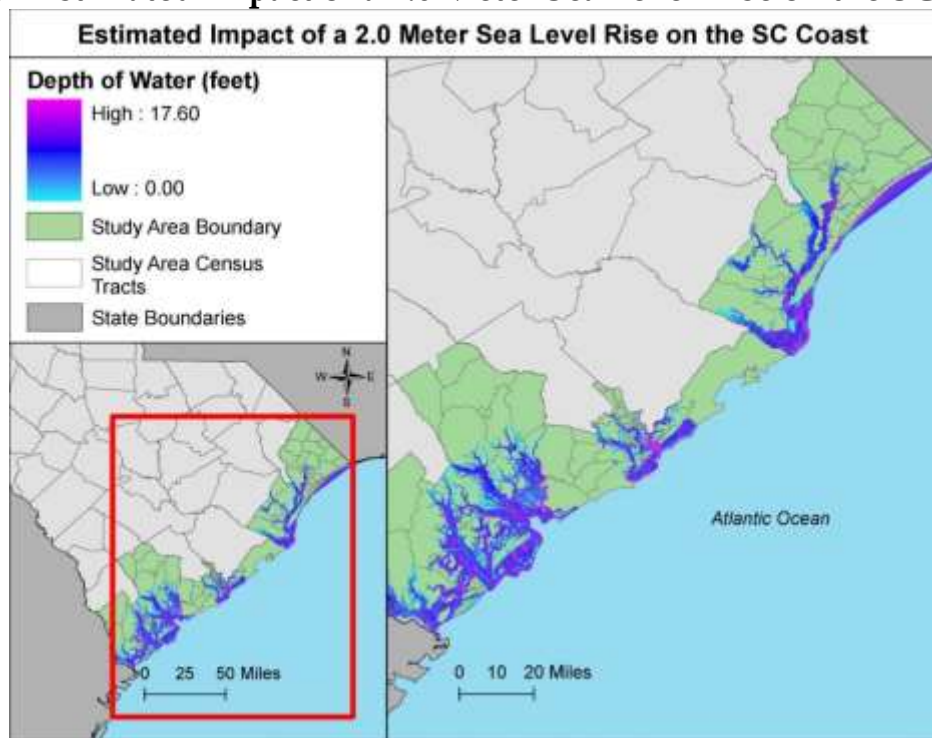


Figure 2-6 – Sea Level Rise Risk²

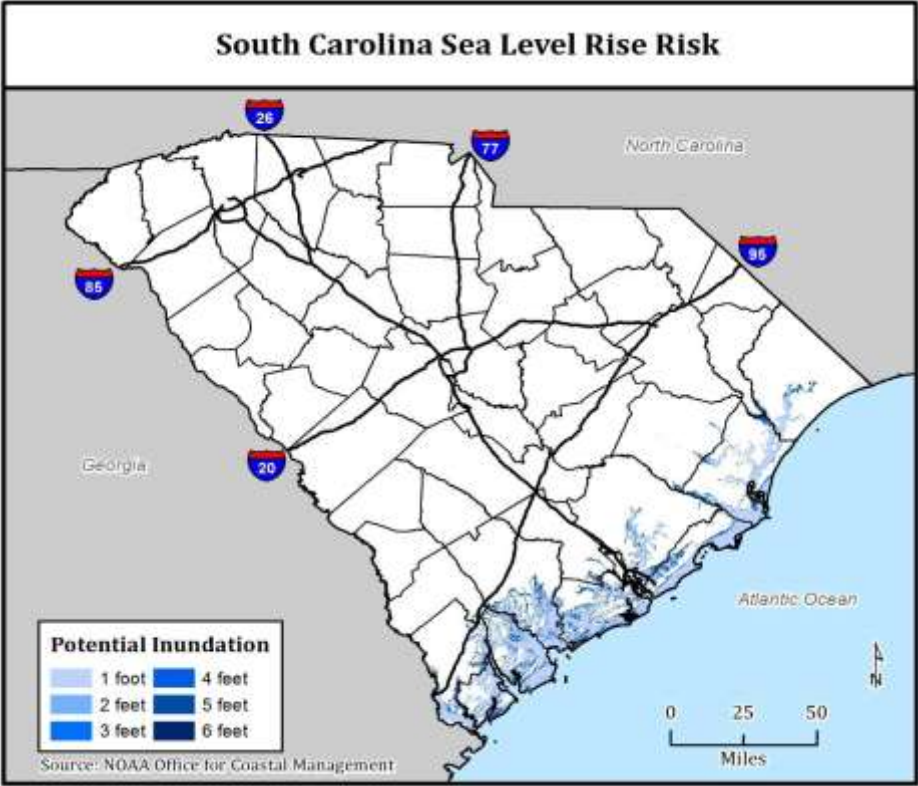
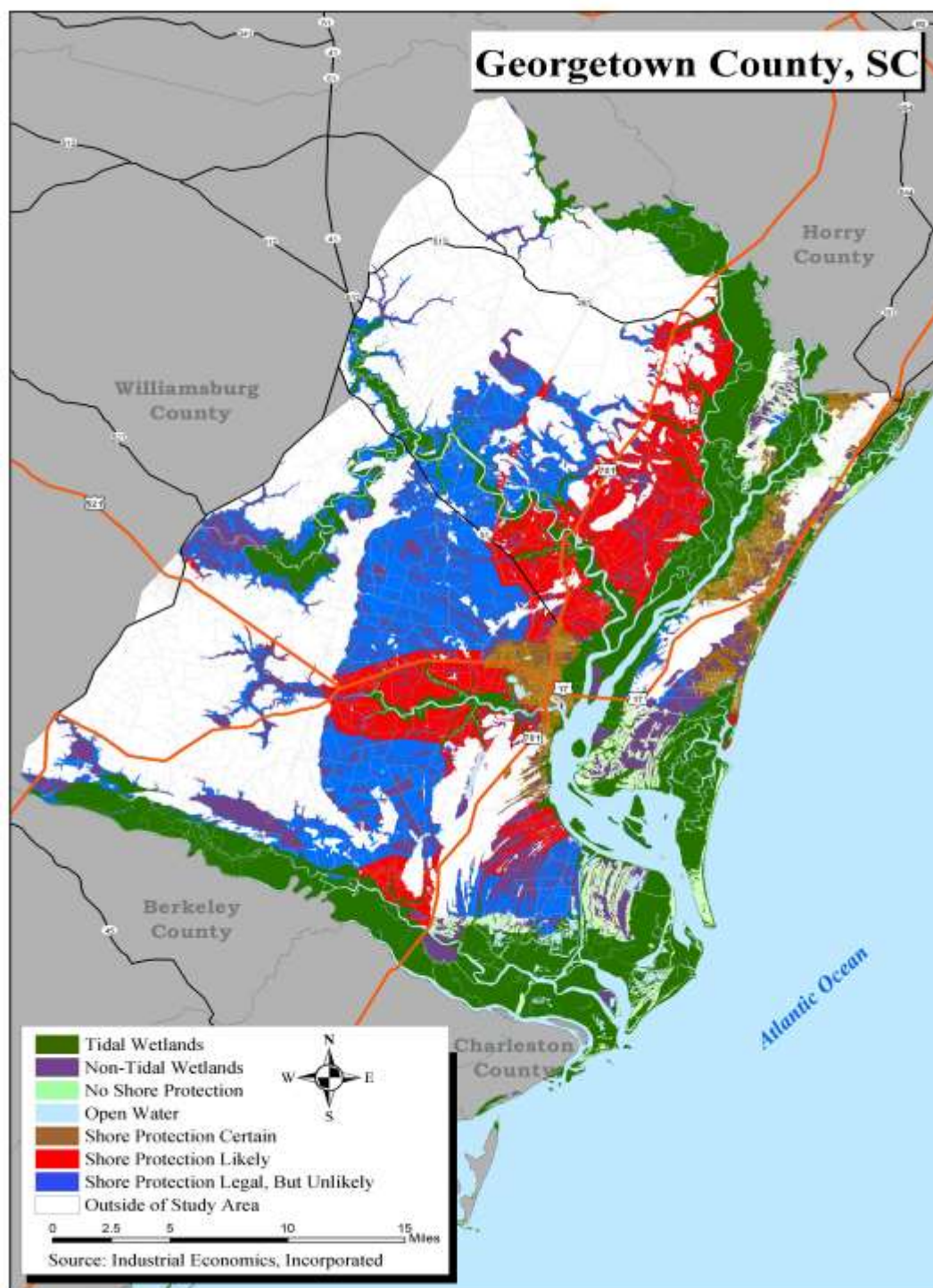


Figure 2-7 – Shore Protection Georgetown County²²

²² Titus, J.G., D.E. [Hudgens](#), D.L. [Trescott](#), M. [Craghan](#), W.H. [Nuckols](#), C.H. [Hershner](#), J. M. Kassakian, C.J. [Linn](#), P.G. [Merritt](#), T.M. [McCue](#), J.F. [O'Connell](#), J. [Tanski](#), and J. [Wang](#). 2009. State and Local Governments Plan for Development of Most Land Vulnerable to Rising Sea Level along the U.S. Atlantic Coast, *Environmental Research Letters* 4 044008. (doi: 10.1088/1748-9326/4/4/044008). Retrieved March 14, 2019, from <http://plan.risingsea.net/SC/Georgetown.jpg>.

Table 2-12 shows the maximum and average inundation levels for each coastal county. Overall, Beaufort County has the most land area to lose in any of the modeled SLR scenarios. However, both Colleton and Georgetown Counties stand to lose substantial land area based on current projections. Coastal counties attract tourists because of the natural beauty of the beaches and other recreational activities. The continuation of coastal development, critical infrastructure, services, and physical property are located in potential threat zones.

Table 2-12 - Projected Inundation from Modeled Sea Level Rise Scenarios²

County	0.6m. SLR Inundation Water Depths (feet)				1m. SLR Inundation Water Depths (feet)				2m. SLR Inundation Water Depths(feet)			
	Maximum	Average	Total Land Area Inundated (Sq. Miles)	Land Area Inundated > 2 feet	Maximum	Average	Total Land Area Inundated	Land Area Inundated > 2 feet	Maximum	Average	Total Land Area Inundated	Land Area Inundated > 2 feet
Beaufort	7.5	0.7	117	7	8.9	1.1	191	35	12.1	3.4	265	200
Charleston	5.9	1	40	5	7.3	1.7	58	17	10.5	3.5	93	66
Colleton	5.8	1.1	37	5	7.1	1.1	104	11	10.4	3.3	172	129
Georgetown	1.6	0.2	62	0	6.7	1.2	147	25	9.93	3.3	207	159
Horry	2.2	0.2	0	0	8.3	1.3	38	4	11.5	3.6	59	47
Jasper	6.5	2	12	4	7.8	0.9	53	5	11.1	3.1	99	73

2.5.12 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.

2.5.12.1 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.

2.5.12.2 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.

2.5.12.3 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.

2.5.12.4 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 South Carolina Emergency Management Division, a Hazards United States (HAZUS)-based study produced on July 7, 2016, using 2010 U.S. Census population data for the entire state, 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:

- A daytime event at 2PM will cause the highest number of casualties.
 - Injuries not requiring hospitalization: 31,250
 - Non-life threatening injuries requiring hospitalization: 9,537
 - Life threatening injuries requiring hospitalization: 1,553
 - Deaths: 2,877
- More than 200 schools (K-12) will experience at least moderate damage and require inspection before entering the facility.
- Approximately 54 fire stations will experience at least moderate damage.
- Of the 108 hospitals statewide, 14 will experience at least moderate damage with greater than 50% damage to the hospitals in the low-country.
- Electric power facilities will suffer damage and approximately 213,000 households will be without power the day following the earthquake.
- On the day following the event, approximately 166,000 households will be without water. It could take weeks, possibly months, to fully restore the water systems.
- A strong earthquake will generate approximately 17 million tons of debris.
- Nearly 94,000 households would be displaced. Of these, approximately 62,500 people will seek temporary public shelter. These numbers could rise in the weeks following the earthquake as weakened structures continue to fail.

This planning scenario, the Summerville/Charleston M7.3 earthquake, is the worst case. A magnitude 7.3 earthquake occurring at the epicenter of the Charleston 1886 earthquake would affect the entire state with most of the destruction and damage occurring within a 100+ mile radius of the epicenter. Most buildings, including schools, hospitals, and fire stations would suffer significant damage.²³

²³ SCEMD, *Attachment A to the South Carolina Earthquake Plan, Appendix 3, South Carolina Emergency Operations Plan*, pages A-1 – A-2, 27 August 2018. Retrieved March 25, 2019, from <https://www.scmd.org/media/1378/attachment-a-earthquake-planning-scenarios.pdf>.

2.5.12.5 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.

2.5.12.6 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.

2.5.12.7 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).

2.5.12.8 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.

2.5.12.9 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.

2.5.12.10 Sinkholes

The most vulnerable infrastructure to sinkholes is the above-ground communications and the electrical distribution system. Downed power lines could occur due to falling debris from buildings and trees that collapse. Roads, bridges, and railroads are also subject to damage, creating problems for motorists and transportation of goods by railcar. Life safety is also an issue when buildings collapse unexpectedly for anyone in or near the structure.

2.5.12.11 Sea Level Rise

SLR can exacerbate damage caused by storm surge, astronomical high tides, and wave driven run-up. These forces combined with SLR could cause beach erosion and

more extensive and frequent flooding and damages. Tourism could be affected, as well as sand dunes, tidal marshes, and structures on or near the coastal beaches. The City of Georgetown and the Waccamaw Neck's road and water systems (wastewater, stormwater, and potable water) are vulnerable to impacts from SLR and associated storm surge. Also, the IPCC 2014 Report²⁴ lists the following key messages for the southeast related to the impacts of SLR: increasing temperatures and associated increases of extreme heat events, and decreased water availability due to droughts and higher sea levels. Although these impacts might not appear applicable on a five-year timeframe for the Hazard Mitigation Plan update, it is worth considering multiple impacts of a changing climate for our area on a longer time frame early on so adaptive measures can be put into place to mitigate for and reduce negative impacts on habitats, structures, infrastructure, and economies.

2.5.13 Critical Facility Analysis

Table B-8 on pages 32-37 in the Community Vulnerability Assessment (Appendix B) lists a total of 189 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 37 level 1 critical facilities in Georgetown County.

Level 2 facilities must be operational within 24 hours following a disaster event. A total of 69 facilities are designated as level 2.

Level 3 facilities must be operational within 72 hours after a disaster event. A total of 83 level 3 facilities are located in the County.

The 37 level 1 facilities include two (2) schools that are designated shelters by the ARC, 21 fire/EMS stations and/or headquarters, five (5) law enforcement facilities, the EOC/GCEMD/911 facility, two (2) hospitals, and six (6) 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 as well as during Hurricane Matthew in October 2015. Construction on a new Town Hall facility, which houses the Town government offices and Police Department, began in March 2018 with construction completed in early 2019. The cost for construction of the building was capped at \$675,000.²⁵ 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 \$3.15 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

²⁴ "WORKING GROUP III." *IPCC WGIII Fifth Assessment Report*. Intergovernmental Panel on Climate Change, n.d. Web. 22 May 2014. <<http://mitigation2014.org/>>.

²⁵ "Late Christmas Gift: Pawleys Town Hall to Open in Early 2019." *South Strand News*, December 6. Web. 2019 January 16. <https://www.southstrandnews.com/news/late-christmas-gift-pawleys-town-hall-to-open-in-early/article_ffb3b992-f89a-11e8-b9f9-4f798c072aec.html>.

Georgetown County Fire Station #2 in the Santee Community. A Category 4 storm surge could impact the City of Georgetown Fire Stations # 1 and 2, Georgetown County Fire/EMS Stations #10 and 11; EOC/GCEMD/911; Georgetown County Fire Department Headquarters; Georgetown County Sheriff's Office; S.C. Highway Patrol Office; Tidelands Georgetown Memorial Hospital; and Central Dispatch communications tower at the GCEMD 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, Tidelands 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.

None of the 69 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 Generating Steam Plant and the Georgetown Armory located on U.S. 17 south of Georgetown. These facilities have a replacement cost of over \$775 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 have a replacement valued of over \$640 million.

Of the 83 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 replacement value of over \$34 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-8 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 per Facility	\$ Current Value	Current Number of People	Projected Number of Buildings per Facilities	\$ Projected Replacement Value *	Projected Number of People
1	County EOC (1)	1	2,500,000	12	1	3,000,000	12
1	Communications (6)	6	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/EMS Stations (21)	21	8,713,484	83	21	10,456,181	83
1	Law Enforcement Facilities (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		37	141,707,140	3,638	38	185,991,234	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) (65)	65	5,943,840	0	65	7,429,800	0
2	Landfill (1)	6	1,490,805	18	6	1,788,966	18
Sub-Total for Priority 2 Facilities		74	614,058,779	218	74	795,012,824	218
3	Schools (17)	17	191,568,027	11,600	17	248,148,691	13,867
3	Courthouse (1)	1	10,690,500	180	1	12,828,600	180
3	Emergency Services (2)	2	20,058,155	225	2	48,023,959	457
3	Electric Utilities (13)	15	12,614,316	0	15	16,340,022	0
3	Seaport (1)	13	16,585,370	7	13	21,483,956	7
3	Airports (2)	37	2,950,000	4	37	3,445,440	0
3	Water Treatment Plants (3)	18	21,903,866	0	18	28,373,287	0
3	Potable Water (27)	25	13,415,105	0	25	17,925,935	0
3	Wastewater Treatment Plants (3)	3	17,388,472	56	3	23,235,346	56
3	Convenience Centers (14)	15	980,000	4	14	1,176,000	4
Sub-Total for Priority 3 Facilities		146	308,153,811	12,076	145	420,981,236	14,571
GRAND TOTAL		257	1,063,919,730	15,932	257	1,401,985,294	20,007

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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 2-7, 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 2023 (currently 7,544 policies in force).
- 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 2023 (currently showing 163 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	Sea Level Rise	Earthquake	Drought	Wildfire	Dam Failure	Winter Storms	Sink Holes
Prevention		X			X			X			X
Property Protection	X	X	X	X	X	X	X	X	X	X	X
Natural Resource Protection		X			X			X		X	X
Structural Projects		X									X
Emergency Services	X	X	X	X	X	X	X	X	X	X	X
Public Information & Awareness	X	X	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 (4) municipalities did not change since 2014. 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.

Also added to this iteration of the plan was one man-made hazard, sinkholes, and one natural hazard, SLR. Although sinkholes are not a high frequency risk for the four (4) jurisdictions, they were included due to the large monetary damage caused by the sinkholes in 2011. SLR is hard to measure along our coast; however, it is and will continue to be a hazard that needs to be closely monitored.

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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:

<u>Action #</u>	<u>Reason for Deletion</u>
2E	Completed
4E	Completed
5C	Completed
5F	Completed
5I	Completed
6-F	Replaced with New Action 6I

The following actions were added in the 2019 plan:
6I

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:	The enhancement of the county's GIS is ongoing. As of this time, we have upwards of 30 hazard-related map layers in several categories: Natural disasters (flood, earthquake, wind speed, hurricane surge, etc.), Man-made hazards (chemical sites, underground fuel tanks, etc.) and infrastructure (fire hydrants, critical facilities, shelters, etc.).

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:	<p>A thorough evaluation of potential mitigation opportunities for Georgetown County's critical facilities is in progress. An inventory/database on critical facilities will be created and maintained by the County and shared with the SC Emergency Management Division. This inventory will 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.</p> <p>As new facilities are added, we will complete an evaluation annually.</p>
Priority:	Moderate
Funding Sources:	SCEMD
Responsibility Assigned to:	GCEMD
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. This includes changes for compliance with IBC and other code applicable codes. Providing information to key personnel in the development chain, as well as the private sector, will help ensure that new requirements are included in the design of new development.
Priority:	Moderate
Funding Sources:	Local Government
Responsibility Assigned to:	Building and Zoning Codes FIRM Maps (Dependent upon review period)
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 code 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. CRS Section 330 PPI in progress. Waiting on new flood maps.

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:	Ongoing
Status:	Public Works now collects photographs and other data for flood events.

ACTION #1I

All construction projects, with dewatering to lower the ground water table, shall be required to submit a monitoring plan with their permit application to county stormwater division for consultation.

Category:	Prevention
Hazard:	Sinkhole
Objective(s) Addressed:	2.2, 3.2
Background:	Georgetown County previously had a sinkhole disaster related to construction dewatering activities.
Priority:	Moderate
Funding Sources:	None
Responsibility Assigned to:	Georgetown County Public Services
Target Completion Date:	Continuous
Status:	This action remains continuous because the Stormwater Division continues to receive plan review submittals for Land Disturbance Permitting.

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 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:	<p>A significant amount of property damage during high wind events results from tree failure. Facilities Services inspects each County structure on an annual basis to determine the overall condition of each structure. During these inspections, conditions involving trees and large vegetation are noted to ensure 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:</p> <p>http://secure.georgetowncountysc.org:8080/atyourrequest</p>
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	Department of Public Services Facility Services
Target Completion Date:	Ongoing
Status:	Facility Services collects monthly safety inspection reports from all County facilities which include any potentially damaging trees or limbs that threaten County property. Facility Services is continuously 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 South Carolina 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:	All new construction permit applications must have engineered plans that address high wind requirements based on ASCE 7 wind zone calculations. These calculations specifically address each structure based on design and location and exceed normal Building Code requirements.

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.
Priority:	Moderate
Funding Sources:	N/A
Responsibility Assigned to:	Planning & Development, GCEMD
Target Completion Date:	2020
Status:	Ongoing

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. Adoption of an Ordinance that resembles the State model makes enforcement and compliance easier because of the consistency in the interpretation of the requirements.
Priority:	Low
Funding Sources:	N/A
Responsibility Assigned to:	Planning & Development
Target Completion Date:	Completed November 2018
Status:	New construction and substantial improvements are required to comply with the most restrictive of either the adopted flood maps or the most recent available data.

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:	GCEMD
Target Completion Date:	Continuous
Status:	GCEMD 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:	GCEMD
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' is generally considered to be sufficient for purposes of bank stabilization and sediment control. Many communities require 200' 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:	2020
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 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 is in the process of revising its "Local Comprehensive Beachfront Management Plan" (LCBMP) which addresses erosion rates, hurricanes and storms, inlet dynamics, littoral transport of sand, sediment budgets, shoreline protection, and erosion analysis. The plan encompasses Garden City Beach, Huntington Beach State Park, Litchfield Beach, DeBordieu Beach, and South Island. An initial draft was submitted to OCRM in July 2017, and they have provided comments. Final revisions are currently being made. A separate plan has been completed by and for the Town of Pawleys Island. Georgetown County has an established and recurring dredging plan for the federal channel of Murrells Inlet, which has a beneficial use of nourishment of Garden City Beach. Sand fencing was installed along Garden City Beach in January 2018 for natural dune accretion, and is being considered for Litchfield Beach.
Priority:	Moderate
Funding Sources:	USACE, Local Government, FEMA (2017 Irma Damage for Sand Loss)
Responsibility Assigned to:	Department of Public Services Engineering and Capital Projects
Target Completion Date:	June 2019 - Final LCBMP
Status:	Ongoing

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:	GCEMD
Target Completion Date:	Continuous
Status:	GCEMD 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 an automated drainage Operations and Maintenance (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 an automated trouble call and service request system 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:	Ongoing
Status:	The County responds to and records Drainage Service Requests through the "At Your Request" (@YR) system. @YR is maintained by Public Works. Any calls received by the Stormwater Division are reported to Public Works and logged into @YR.

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 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 underground.
Priority:	Moderate
Funding Sources:	FEMA, Local Government
Responsibility Assigned to:	GCEMD, Utility Providers
Target Completion Date:	Continuous.
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% could be achieved.
Priority:	Moderate
Funding Sources:	N/A
Responsibility Assigned to:	GCEMD, 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. In partnership with the County Fire Department, the USDA Natural Resources Conservation Services and the Georgetown County Public Works Division currently has installed 70 dry hydrants within Georgetown County. Funding for the materials used for installing these dry hydrants was provided from a Santee-Wateree Resource Conservation and Development Council grant.
Priority:	Moderate
Funding Sources:	Local Government and USDA Natural Resources Conservation Services
Responsibility Assigned to:	<ul style="list-style-type: none"> • Public Works provided the machine and labor for installation. • Fire Department provided testing of Dry Hydrant and annual testing. • USDA Natural Resources Conservation Services provided statistics for water drought and permitting for rivers.
Target Completion Date:	Completed
Status:	All funding from USDA Natural Resources Conservation Services grant has been exhausted. Public Works, Fire Department, and USDA Natural Resources Conservation Services continues to offer the installation of dry hydrants to help firefighting efforts in rural areas when requested by home or land owners at cost of the materials only.

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. GCEMD 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:	GCEMD, in coordination with municipal representatives
Target Completion Date:	Continuous
Status:	Updated annually at our Traffic Control Point meetings.

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 #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:	GCEMD
Target Completion Date:	Continuous
Status:	Ongoing. Have antennas for HAM radios. ARC provides cots, blankets, etc. if requested. 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:	GCEMD, 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 #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.
Priority:	Moderate
Funding Sources:	FEMA, SCEMD Local Government
Responsibility Assigned to:	GIS, GCEMD
Target Completion Date:	Ongoing
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:	GCEMD
Target Completion Date:	Continuous
Status:	Prior to our yearly exercises, GCEMD 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 5" font. The font size presently being used is 6" high letters. To accommodate large font sizes for street signs and improve sign brightness, a multi-year sign upgrade program has been instituted. The Federal standards that went into effect in 2009 have increased reflectivity standards for all traffic signage; these requirements are being phased in via 5-year upgrade funding program beginning in 2017. Georgetown County utilizes ArcGIS to inventory their road/street signs.
Priority:	Moderate
Funding Sources:	Local & Sign Grant Program
Responsibility Assigned to:	Public Works
Target Completion Date:	FY 2021-2022
Status:	Georgetown County is finishing Phase 1 of the 5-year sign upgrade program to improve sign visibility. Federal reflectivity standards continue to be integrated into these improved visibility upgrades.

ACTION #50

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:	Spring 2020 per Public Works Division.
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:	<p>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.</p> <p>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.</p> <p>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.</p>

Priority:	Moderate
Funding Sources:	FEMA, SCEMD, County
Responsibility Assigned to:	GCEMD, Georgetown County Planning and Zoning Department, FEMA, SCEMD
Target Completion Date:	2024
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 August 21, 2018, there were 7,544 policies in effect, with a total coverage amount of \$2,144,320,000. Since 1978, there have been 3,985 claims paid for a total loss amount of \$91,613,815.70 (Source: FEMA, 2018). 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:	GCEMD
Target Completion Date:	Continuous
Status:	GCEMD 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 or is a repetitive loss property. 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 \$30,000. 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, GCEMD
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 or becomes a property.

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 Official. 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:	A letter was mailed to over 1,500 property owners whom had a repetitive loss insurance claim or lived near a repetitive loss property. The letter gave options and ideas to mitigate structures to prevent flood loss. The same or similar information is mailed out annually.

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:	GCEMD
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, SCMD, Local Government
Responsibility Assigned to:	Building Official
Target Completion Date:	Replaced this action with Action #6I.
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:	GCEMD
Target Completion Date:	Continuous
Status:	GCEMD 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:	GCEMD, Media Representatives
Target Completion Date:	Continuous
Status:	GCEMD 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.

ACTION #6I

Conduct question and answer workshops with instructors to address specific hazards with design professionals to gain code compliance.

Category:	Public Information & Awareness
Hazard:	All
Objective(s) Addressed:	2.1, 3.1, 11.1
Background:	Involving architects, engineers, and designers in code and ordinance requirements is the first step in addressing construction practices for hazard prevention. The contractors are required to build to the approved plan that addresses specific hazards based on the location and type of construction.
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 codes, requirements and best practices to achieve hazard-resistant construction. Our greatest challenges are flood, high wind, and seismic hazards. Meetings are planned as needed to address questions and concerns with experts in hazard-specific construction.

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 (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.

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:	Local Government
Responsibility Assigned to:	Chief of Police/Public Works Director/ Administrator
Target Completion Date:	Updated August 2018; ongoing.
Status:	Will update and change as needed.

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:	Code Enforcement Official
Target Completion Date:	Continuous.
Status:	Most current 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, SCEMD
Responsibility Assigned to:	Building Official
Target Completion Date:	Continuous
Status:	Ongoing

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:	Ongoing
Status:	Ongoing

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% could be achieved.
Priority:	Moderate
Funding Sources:	N/A
Responsibility Assigned to:	Local Utility Providers
Target Completion Date:	Continuous
Status:	Ongoing. Biannual Town Hall forums are held each year. This is a topic covered each year.

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:	Code Enforcement Official
Target Completion Date:	Continuous
Status:	Ongoing

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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:

<u>Action #</u>	<u>Reason for Deletion</u>
2E	Completed
4A	Completed
4B	Completed
4C	Completed

The following actions were added in the 2019 plan:

2E
2F

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 1’. 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:	Ongoing

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:	Town Administrator
Target Completion Date:	Continuous
Status:	Ongoing

ACTION #1C

Continue to enforce the Town's Flood Damage Prevention Ordinance that includes cumulative 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. This requires the Town to maintain 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.
Priority:	Moderate
Funding Sources:	N/A
Responsibility Assigned to:	Building Official
Target Completion Date:	Continuous
Status:	Ongoing

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 Senior Building Official at 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:	Require non-conversion agreement on enclosed area below DFE and currently in process of inspecting homes that signed agreement over the past 3 years. Ongoing.

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:	Ongoing

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:	Ongoing

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. These techniques should be promoted to building contractors and homebuyers by the Town 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:	Ongoing

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:	Ongoing

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:	Ongoing

ACTION #2D

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

Category:	Property Protection
Hazard:	Flood
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:	Inspect monthly and clean as necessary. SCDOT plans to install new drains in problem areas, expected to be completed in 2019. Town created flooding task force in 2018 to address numerous flooding issues.

ACTION #2E**Build new Town Hall and Police Department facility.**

Category:	Property Protection
Hazard:	Hurricanes and Tropical Storms, Tornadoes, Sea Level Rise
Objective(s) Addressed:	2.2, 12.1
Background:	The Town Hall and Police Department were inundated with 4 feet of water during Hurricane Matthew, leaving it unusable. The Town is building a new elevated Town Hall facility to mitigate the vulnerability to future extreme weather events. Essential Town personnel will be operational directly following a disaster event to conduct response and recovery operations.
Priority:	High
Funding Sources:	Town General Fund
Responsibility Assigned to:	Town Administrator
Target Completion Date:	October 2018
Status:	Project is underway and expected to be completed by end of 2018. Completed December 2018.

ACTION #2F

Take advantage of available Hazard Mitigation Grant Funds to purchase power generator for Town's vital/critical facility.

Category:	Property Protection
Hazard:	Hurricanes and Tropical Storms, Tornadoes
Objective(s) Addressed:	2.1, 2.2, 12.1
Background:	The Town Hall/Police Department is a critical facility and the Town's only facility. It is important the building is operational as soon as possible following a disaster event. A generator would afford Town personnel the ability to be operational even in the event of an extended power outage.
Priority:	High
Funding Sources:	Town General Fund, HMGP Funds
Responsibility Assigned to:	Town Administrator
Target Completion Date:	Fall 2019
Status:	HMGP application submitted in 2018.

ACTION #3A**Renourish public beaches.**

Category:	Natural Resource Protection, Property Protection
Hazard:	Storm Surge, Flooding
Objective(s) Addressed:	1.1
Background:	<p>Sand renourishment is essential to maintaining the beach as the first line of defense from coastal storms and flooding. The Army Corps of Engineers' project was approved and funded by Congress in 2018. The USACE project includes 850k cubic yards of sand from the south lot to 1/8 mile north of Hazard Street.</p> <p>The town will also add an additional 250k to 475k cubic yards of sand from 1/8 mile north of Hazard St. up north to 3rd Street.</p> <p>The total cubic yard volume of the project will heavily depend on the per unit pricing received when it is released for bid.</p>
Priority:	High
Funding Sources:	SC Beach Renourishment Grant, Local Government, United States Corps of Engineers
Responsibility Assigned to:	Mayor
Target Completion Date:	Ongoing
Status:	Project expected to begin in Fall 2019.

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:	Town Administrator
Target Completion Date:	Continuous
Status:	The town’s beach renourishment project includes installation of sand fence and beach vegetation along 3 miles of beach front. Expected completion date Spring 2020.

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:	Ongoing

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:	Ongoing

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, Santee Cooper Electric
Responsibility Assigned to:	Town Administrator
Target Completion Date:	2018
Status:	Phase 1 complete; Phases 2 and 3 will be completed in May of 2018. Entire project will be completed in May 2018. Completed May 2018.

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:	Completed May 2018.
Status:	Estimated date of completion May 2018. Ongoing.

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:	Needs are covered.

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:	GCEMD, in coordination with municipal representatives, Mayor
Target Completion Date:	Continuous
Status:	Ongoing

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, GCEMD
Target Completion Date:	Continuous
Status:	Ongoing

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 404 policies in effect, with a total coverage amount of over \$118 million. As of 9/30/2018, there have been 249 claims paid for a total of \$3,312,199.82. 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:	Town Administrator
Target Completion Date:	Continuous
Status:	Letter and brochure sent with <i>Tides</i> newsletter. Also promoted on Town website and social media outlets. Town has multi-jurisdictional Program for Public Information (PPI) with City of Georgetown and Georgetown County. PPI requires annual update.

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:	Town Administrator
Target Completion Date:	Continuous
Status:	Set of required FEMA publications delivered to Library February 2019.

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:	Town Administrator
Target Completion Date:	Continuous
Status:	Information sent with <i>Tides</i> newsletter. Also promoted on Town website and social media outlets.

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:	Town Administrator
Target Completion Date:	Not adopted by Town Council.
Status:	Ongoing contact with repetitive loss properties through outreach activities. Actively encourage these property owners to take mitigation measures to remove their property from this list. Letter sent to all residents March 2019.

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 Senior Building Official at 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, Town Administrator
Target Completion Date:	Continuous
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 \$8000 per year
Responsibility Assigned to:	Building & Planning, Town Administrator
Target Completion Date:	Continuous
Status:	Town has taken necessary steps to achieve a class level 5. FEMA "Cycle" visit scheduled for Fall 2019.

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, GCEMD
Target Completion Date:	Continuous
Status:	Ongoing

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:

<u>Action #</u>	<u>Reason for Deletion</u>
1A	Completed
1D	Completed (use 2015 and 2016 Building Codes)
3A	Completed
4A	Completed
5C	Completed
5E	Completed

The following actions were added in the 2019 plan:

1I

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 March of 2014, the City amended the flood ordinance to require that variance requests be taken to the Board of Zoning Appeals (BZA). Then after the BZA, ongoing appeals may go to Circuit Court. Enforcement of this important ordinance is ongoing.
Priority:	Moderate
Funding Sources:	None
Responsibility Assigned to:	Planning & 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 renovations taking place throughout the Special Flood Hazard Area (SFHA). The City currently has 23 Repetitive Loss Properties, of which 12 were added in the past two (2) years because of major flooding from events including Hurricanes Matthew, Irma, and Florence. 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. Recently adding a new Building Inspector position; we will continue to investigate these situations and remedy them.
Priority:	High
Funding Sources:	None
Responsibility Assigned to:	Planning & Community Development
Target Completion Date:	Continuous / Ongoing
Status:	<p>To keep our good Community Rating System (CRS) score of 7, 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 daily. They check job sites for compliance as well as for the proper permits. Stop work orders are issued and enforced for work without City permits.</p> <p>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).</p>

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. Sanitary Sewer Overflows (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. 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:	<p>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, Tidelands Georgetown Memorial Hospital, Georgetown City Water & Sewer, and the largest on-going major attraction – Wal-Mart.</p> <p>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.</p>
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	Chief of Police
Target Completion Date:	Continuous / As natural disaster event happens
Status:	<p>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 crime/business watch program was new two (2) years ago, and it helps us with this coordination between major/critical businesses like 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.</p>

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:	Even small debris can gather to clog up the drainage system generated by a flood so removal of this 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. There are no changes to this action item at this time.

ACTION #1I

Work in partnership with Georgetown County and Coastal Carolina University on a bulkhead, parallel to the Harborwalk, behind CCU Marine Science satellite campus and Constitution Park.

Category:	Structural Projects
Hazard:	Flooding
Objective(s) Addressed:	1.1, 1.4, 1.6, 2.1, & 5.4
Background:	Tidal flooding from full moons and king tides have inundated this area along Front Street for many years, especially the past 4 years. The mean high tide seems to be rising and a mitigation project needs to be completed in the near future to contest this flooding issue.
Priority:	High
Funding Sources:	HMGP, PDM
Responsibility Assigned to:	Planning & Community Development
Target Completion Date:	Early 2021
Status:	The City and Georgetown County have partnered and agreed to split the engineering fee to seek a permit with OCRM and USACE for a new proposed 235' bulkhead behind the CCU building and Constitution Park. Earthworks Group Engineering was selected and they are just starting the permit application process. They are collecting data and historic information to submit. Once we have permits, the city/county will send out bids for construction to start project.

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 (3) 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. Contractor assistance is brought in when needed to assist in maintaining adequate line clearance from trees. A contractor on on-site for several months during FY2014/15, and will be brought in again for several months in FY 2015/16. We will be evaluating our tree program in relation to electric line clearance, maintenance of the City's public tree inventory, and City liability during preparations for the FY2016/17 budget.

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. Creating Stormwater Management Plan will go far in addressing drainage problems.
Priority:	High
Funding Sources:	Stormwater fee, local government
Responsibility Assigned to:	Water Utilities Department
Target Completion Date:	2019
Status:	The City hired a consultant to do a thorough Stormwater Management Plan in 2018. This plan will identify problem areas, collect data, educate citizens, inventory systems, hydrologic and hydraulic modeling, watershed plan, and capital improvement plan, address ordinance and design standards, and evaluate the rate structure. This plan should be complete by July 2019, and will be used by the City as a master plan.

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.). The City completed the installation of a new 250,000 gallon elevated water tank located in the Maryville section of the City. This will help with the potable water dispersion and water pressure for the City since the City Hall tank was demolished in 2014. Also, another 250,000 gallon elevated water tank is currently being constructed behind Georgetown School, and should be online by April 2019.

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. Hurricane Florence occurred September 12-15, 2018 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:	Flood
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. Maintenance logs have been provided through August 2016 (Sec. 540 in CRS). Staff is updating the logs to include maintenance from July and should complete that soon. None of our outfall ditches are anywhere near our Repetitive Loss properties so it should not affect them in any way. No changes are recommended for the action item as of now.

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:	<p>Current facilities for the Fire Department are not adequate for such disasters.</p> <p>Fire Station #1 is susceptible to flooding.</p> <p>Fire Station #2 is leaking and has structural cracks.</p> <p>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.</p>
Priority:	High
Funding Sources:	Local FEMA
Responsibility Assigned to:	Fire Department, Administration, GCEMD, Grant Sources
Target Completion Date:	<p>Station #1 – Continuous; repairs as per available funding.</p> <p>Station #2 – New station completed in 2018.</p>
Status:	<p>Station #1 Continuous as per available funding. 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. Station 1 is to continue receiving repairs and upgrades with available funding. Station #2 completed 2018. It is located outside the 500-year floodplain. Completion date March 2018.</p>

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:	<p>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.</p> <p>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.</p>
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 maintain 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:	<p>During any natural event, the City's fleet and fleet services are critical. The City has agreed to a new deal with Nash Oil to supply gas during emergency events.</p> <p>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. No changes are recommended for this action item.</p>

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 two (2) sites 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:	<p>The City of Georgetown Public Works Department has reviewed its action plan for post-incident/natural hazard work. We did have a Category 1 Hurricane "Florence" that occurred September 12-15, 2018. Implementation of objectives after a weather or flood event has not changed. The Public Works Department has no revised recommendations for the coming season.</p> <p>The Georgetown County Public Works Department will assist the City Public Works Department with debris removal after a natural disaster event.</p>

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:	<p>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.</p> <p>The City and County utilize the same equipment which provides for quicker setup of joint emergency operations.</p>
Priority:	High
Funding Sources:	Local Government
Responsibility Assigned to:	Information Technology Director
Target Completion Date:	Continuous / Ongoing
Status:	Completed.

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:	Network Administrator
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. Messages are automatically sent to Network Administrator any time the generator goes on or off-line. These are now housed at the Police Department, and are covered by their generator and battery backups for the phone servers and core network components. The system recovery is now done through HTC via "the cloud" in Conway/ Aynor, SC.

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:	<p>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.</p> <p>Fire Station 1 was completely restored in 2005, and Station 2 is proposed for replacement. Police and GCEMD have a new facility. Police facility was relocated out of the flood zone in 2003, and the GCEMD just did an addition to its facility in 2012.</p>
Priority:	Moderate
Funding Sources:	Local
Responsibility Assigned to:	Fire, Police, GCEMD
Target Completion Date:	2018
Status:	Complete. 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. The new Fire Station #2 is complete. The new station is located at 2900 S Fraser Street.

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:	<p>The City of Georgetown Law Enforcement & County Emergency/911 Departments have an emergency generator that provides full power for <u>all</u> electrical needs including heat/air and hot water for the Police Department, Municipal Court, and the County Emergency Operations Center.</p> <p>This facility was recently relocated from the flood plain to higher ground and serves as the EOC for local government, Emergency Services, and City Law Enforcement.</p> <p>The generator is tested weekly for proper running service.</p>
Priority:	High
Funding Sources:	Local
Responsibility Assigned to:	Chief of Police
Target Completion Date:	Continuous / Ongoing
Status:	<p>We have done significant repairs and maintenance this year to continually maintain a dependable backup power supply. The department has two (2) generators, one for GCEMD/EOC and one for Police. The two (2) 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. We will continue to look into the availability of Hazard Mitigation Grant Programs (HMGP) to help us with these costs in the future.</p>

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:	<p>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.</p> <p>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.</p>
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:	<p>Provide offsite hosting of a website to ensure availability of emergency information and public awareness in the event of an emergency.</p> <p>The City currently provides weather data through its link to the Fire Department.</p>
Priority:	Moderate
Funding Sources:	Local Government
Responsibility Assigned to:	Network Administrator/Community Planner
Target Completion Date:	Continuous / Ongoing
Status:	<p>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.</p>

ACTION #6C

Continue to participate in the NFIP/CRS program and work towards improving the City's current rating of "7".

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 many years. Each year we increase our awareness activities. We mail letters to banks, insurance companies, realtors and property owners in flood zones about the hazards of flooding. We have placed relevant information in the County Library, and have provided links to FEMA, the SC Climatology Office, NOAA, etc. on the City's webpage.
Priority:	High
Funding Sources:	None
Responsibility Assigned to:	Planning & Community Development
Target Completion Date:	Continuous / Ongoing
Status:	<p>The City continues to participate in the National Flood Insurance Program (NFIP) & Community Rating System (CRS). We follow the 2017 Coordinator's Manual which helps us 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 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 in the City know that they can get flood insurance since the City is part of the NFIP.</p> <p>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 projects seem to be doing their job informing the public. The recent flood events from 2015 to 2018 have sparked the public's awareness.</p> <p>The Building Official and the Planner have</p>

	received a Certified Floodplain Manager (CFM) certificate, and continue to enforce the regulations of our Flood Ordinance.
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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:	<p>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.</p>
Priority:	High
Funding Sources:	Local
Responsibility Assigned to:	Fire, Administration
Target Completion Date:	2017
Status:	<p>Complete; however, routine maintenance of radio station completed as needed. Ongoing.</p> <p>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.</p> <p>The broadcasts are updated regularly and run constantly to ensure that the current emergency services are adequate to protect public health and safety.</p> <p>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.</p>

ACTION #6E

Use City of Georgetown owned radio station, WGEO 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:	<p>The City-owned FM radio station is capable of getting out up-to-date information to all City residents 24 hours a day.</p> <p>This station, WGEO 105.7, is used during all immediate threats and during the recovery after the event.</p> <p>Residents can tune in to find information about evacuation routes, City contracts, services, storm potential, and actions to take.</p>
Priority:	High
Funding Sources:	Local
Responsibility Assigned to:	Fire, Administration
Target Completion Date:	2017
Status:	<p>Completed.</p> <p>This is done in the exact same way as Action #6D, but with more emphasis on the type of natural disaster event that is taking place. No changes are recommended for this action item.</p>

ACTION #6F

Educate City of Georgetown 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:	<p>Many residents rely on the Fire Department to evacuate them from their residence <u>after</u> 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.</p> <ul style="list-style-type: none"> -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, GCEMD
Target Completion Date:	Continuous/Ongoing
Status:	<p>Completed and used as needed. 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 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.</p> <p>The radio station has been updated, and is now streaming via the Internet. Facebook, as well as Fire, Police, and City websites are also used.</p>

SECTION FOUR

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:	Flood
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 lost all historical significance which would have exempted them from some parts of the City of Georgetown Flood Damage and Prevention Ordinance.
Priority:	Low
Funding Sources:	None
Responsibility Assigned to:	Planning & Community Development
Target Completion Date:	Ongoing
Status:	Cleanup of the asbestos-laced building rubble is 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 SFHA (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 2' freeboard that is part of the City flood ordinance. Now only three (3) property owners, the site has been filled and graded off. A decorative fence has been placed along the sidewalk in front of the properties. Development will start when improved economy allows for it.

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SECTION FOUR

Section 4: Resolutions

Resolutions will be attached under separate cover once approved by the County and jurisdictions.

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APPENDIX A: GEORGETOWN COUNTY HAZARD ASSESSMENT

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Table of Contents

Page Number

Table of Contents	A-3
List of Figures and Tables	A-4
History and Methodology of Hazards Assessments Georgetown County, SC	A-5
Introduction	A-6
Purpose for Assessment	A-6
Boundaries of Study Area	A-7
Characteristics of Physical Environment	A-7
Hazard History of Study Area	A-7
Selecting the Appropriate Scale and Base Map	A-10
Hazard Potential Determination	A-10
Identification of Hazards	A-10
Assessed Hazards Impacting Georgetown County, South Carolina	A-11
Data Acquisition	A-28
Hazard Frequency of Occurrence and Hazard Zone Delineation	A-30
Determining Social Vulnerability	A-43
Vulnerable Structures and Evacuating Vehicles	A-47
Societal Analysis.....	A-52
Summary	A-54
Establishing the Social and Infrastructure Context	A-55
Identification of Special Needs Populations	A-55
Identification of Key Infrastructure and Lifelines	A-57
Conclusions	A-60
The Intersection of Hazard Zones and Social Vulnerability	A-60
Tab 1 to Appendix 1 Data Sources	A-1-1

List of Figures and Tables*Page Number*

Figure 1 Georgetown County, South Carolina	A-9
Table 1 Selected Historic Hurricanes for Georgetown County	A-12
Figure 2 Hurricane Tracks for Georgetown County	A-13
Table 2 Tornado Events for Georgetown County	A-14
Table 3 Hail/ Severe Storms/Wind Events for Georgetown County	A-15
Table 4 Flood/Flash Flood/Heavy Rain Events for Georgetown County, 1996-2018	A-21
Figure 3 Geologic Hazards of South Carolina, SCDNR & SCEMD	A-24
Table 5 Number of Wildfires in Georgetown County	A-25
Table 6 Georgetown County Drought Status 2008 – 2018.....	A-26
Figure 4 Dam Failure Potential for Georgetown County	A-29
Table 7 Data Acquisition Matrix for Georgetown County Hazards	A-30
Table 8 Hazard Frequencies for Georgetown County	A-31
Table 9 Summary Table of Risk Assessment by Hazard Type	A-32
Figure 5 Georgetown County Total Hazard Risk.....	A-33
Figure 6 Potential Storm Surge for Georgetown County	A-34
Figure 7 Hurricane Winds Speed Probabilities for Georgetown County	A-35
Figure 8 Estimated Earthquake Intensity by County.....	A-37
Figure 9 Fault System of South Carolina	A-37
Figure 10 Current Flood Zones for Georgetown County	A-39
Figure 10a Proposed Flood Zones for Georgetown County	A-40
Table 10 Vulnerable Population in Georgetown County	A-44
Table 11 Population Exposed to Storm Surge (SC Coastal Counties)	A-44
Table 12 Building Value in Storm Surge Risk Areas (SC Coastal Counties)	A-45
Figure 11 Georgetown County Population by Census Block	A-45
Figure 12 Social Vulnerability in Georgetown County.....	A-46
Table 13 Mobile Home Population in the Northern Conglomerate	A-47
Table 14 Vulnerable Structures in Georgetown County.....	A-48
Figure 13 Georgetown County Parcels	A-49
Table 15 Vulnerable Structure Comparison	A-50
Table 16 Mobile Homes & Tourist Units in the Northern Conglomerate.....	A-51
Table 17 Evacuating Vehicles in Georgetown County	A-51
Figure 14 Percent of Mobile Home Residents	A-53
Figure 15 Percent of Households without Vehicles	A-53
Figure 16 Georgetown County Race Breakdown	A-54
Figure 17 Special Needs Populations	A-56
Figure 18 Lifelines for Georgetown County	A-58
Table 18 Data Sources for Lifelines and Infrastructure, Georgetown County	A-59
Figure 19 Intersection of Hazard Zones	A-61
Figure 20 Final Place Vulnerability	A-62

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 (WRCOG), 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 2019. Sections that discuss ‘recent’ events use the time frame of 2014 through 2019 although some data is available through 2018 through NCEI which is cited as required. Data concerning social vulnerability was gathered from the SC Mitigation Plan (October 2018) and USACE and Dewberry *Vulnerability Analysis for South Carolina Hurricane Events, Northern Conglomerate Counties-Final Report*, January 2011.

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 56.27" of rain on average. The average temperature is 65°F. The annual high temperature is 76.2°F; the annual low temperature is 53.8°F.²⁶ The northwestern edge of the county experiences 240+ growing days, while the Santee River area has 260+. 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. Between 1974 and 2018, there have been 11 deaths attributed to natural hazards, including the death of six (6) residents in one (1) tornado in 1974. Two (2) lives were taken as a result of strong rip currents in 1997 and 2004. One (1) small stream flood claimed a life in 2001, and heavy rain took another life in 2008. One (1) life was lost due to flash flooding in 2018. There have also been 22 injuries directly caused by natural hazards. Injuries to date include one (1) in 2000 due to flash flooding; 10 due to lightning in 1995, 1997, 1998, 2001, 2008, and 2015; one (1) each due to tornado in 1974 and 1995, and eight (8) due to a tornado in 2002; and one (1) due to thunderstorm wind in 2011¹⁷.

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 (3/4) 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. 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.

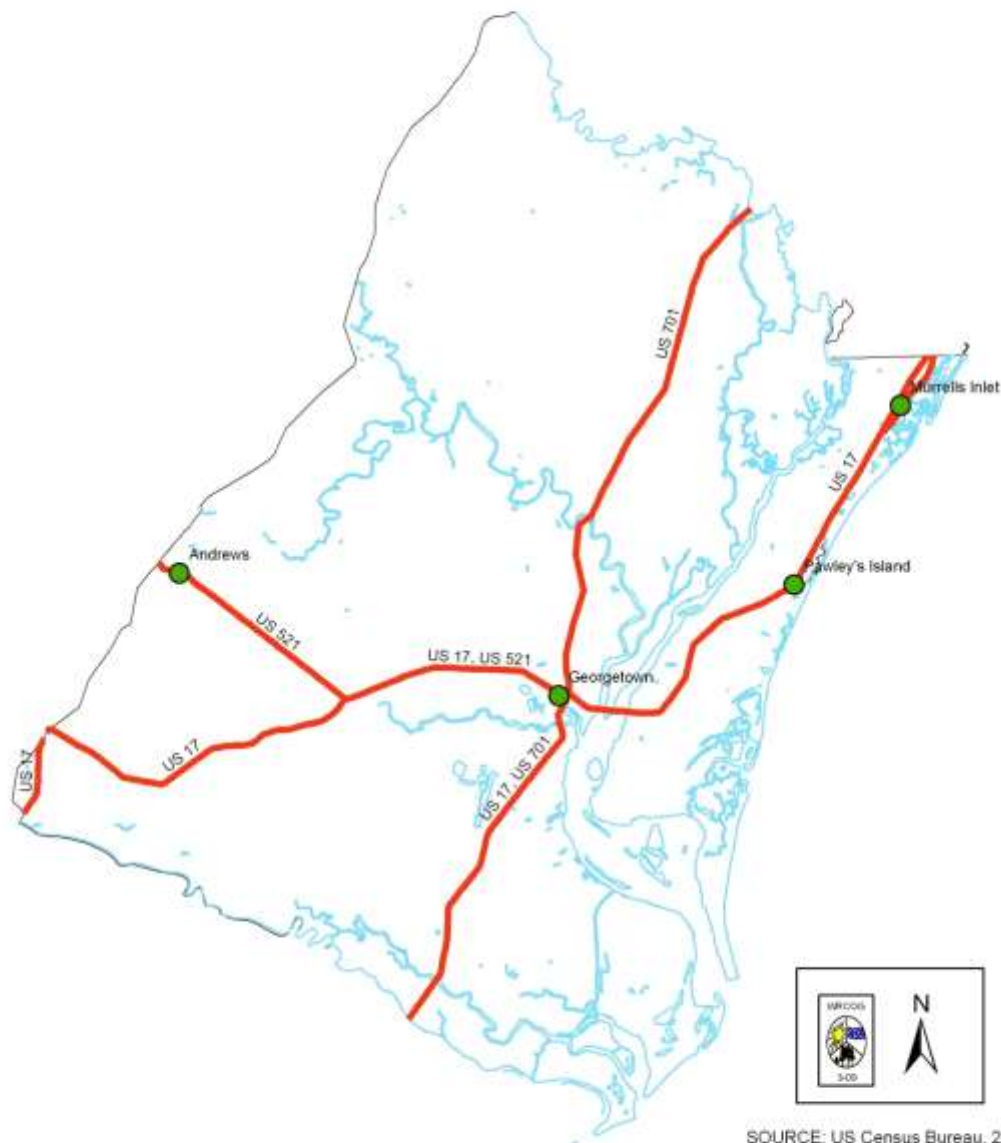
²⁶ U.S. Climate Data, 2019, n.p. *Georgetown weather averages*. Retrieved March 28, 2019 from <https://www.usclimatedata.com/climate/georgetown/south-carolina/united-states/ussc0127>.

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 650 workers²⁷. This figure represents more than a 61% decrease in 59 years.

²⁷ "Georgetown Mill." *International Paper Company*. P. 1, 2019. Retrieved February 13, 2019 from <https://www.internationalpaper.com/docs/default-source/english/careers/georgetown-mill.pdf?sfvrsn=6>.

Figure 1
Georgetown County, South Carolina



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" on the map equals 100" on the ground or parcel-level maps) can depict much more detail than maps with small scales (1" on the map equals 1,000,000" 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 Topologically Integrated Geographic Encoding and Referencing (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 (5) 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, the three (3) main steps in the individual hazard potential determination 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

Sinkholes and SLR were not included in the hazard analysis in 2017. Man-made hazards are not normally included in the plan, but were mentioned in this iteration due to the monetary damage caused by the sinkholes in 2011, although they are not considered a high frequency risk for the area. SLR is a natural-occurring phenomenon, and there is a potential that its extent along the coast will be seen in the future. However, it is difficult to determine that extent along the Georgetown coast without further study.

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 measures²⁸.

In 2012, the National Hurricane Center (NHC) 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 2011, FEMA and the U.S. 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 (3) 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 NCEI. Hurricane tracks (1894-2018) for hurricanes within 150 nautical miles of the county boundary are shown in Figure 2.²⁹

²⁸“Saffir-Simpson Hurricane Wind Scale.” NHC, NOAA, n.d. Web. 12 Nov. 2013.
<http://www.nhc.noaa.gov/aboutsshws.php>.

²⁹ National Oceanic and Atmospheric Administration, *Historical Hurricane Tracks*. 12 Feb. 2019, n.p.. Retrieved February 12, 2019 from <https://coast.noaa.gov/hurricanes/>.

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	1904	Landfall near Georgetown as a Category 1 hurricane; produced excessive rain and 70 mph winds at Georgetown	*
Unnamed	1906	Landfall near Georgetown as a Category 1 hurricane.	*
Unnamed	1928	90% crop loss of rice, corn, cotton	\$25,000 minimum
Hazel	1954	600 homes destroyed/damaged; pier damaged	\$45,000 (pier only)
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
Matthew	2016	Heavy rain (>11"); strong winds (103 mph gust reported at Winyah Bay and 87 mph gust reported at Murrells Inlet); >1,000 structures destroyed/damaged; 48 roadways closed due to flood damage	\$34 million
Irma	2017	Flooding; power outages; high winds; no major damage to structures; minor beach erosion	\$678,240
Florence	2018	One (1) death due to drowning; flash flooding; power outages; downed trees; total rainfall 10.28" in Pawleys Island, 7.79" in Litchfield Beach, and 6.14" in Georgetown.	\$2.2 million

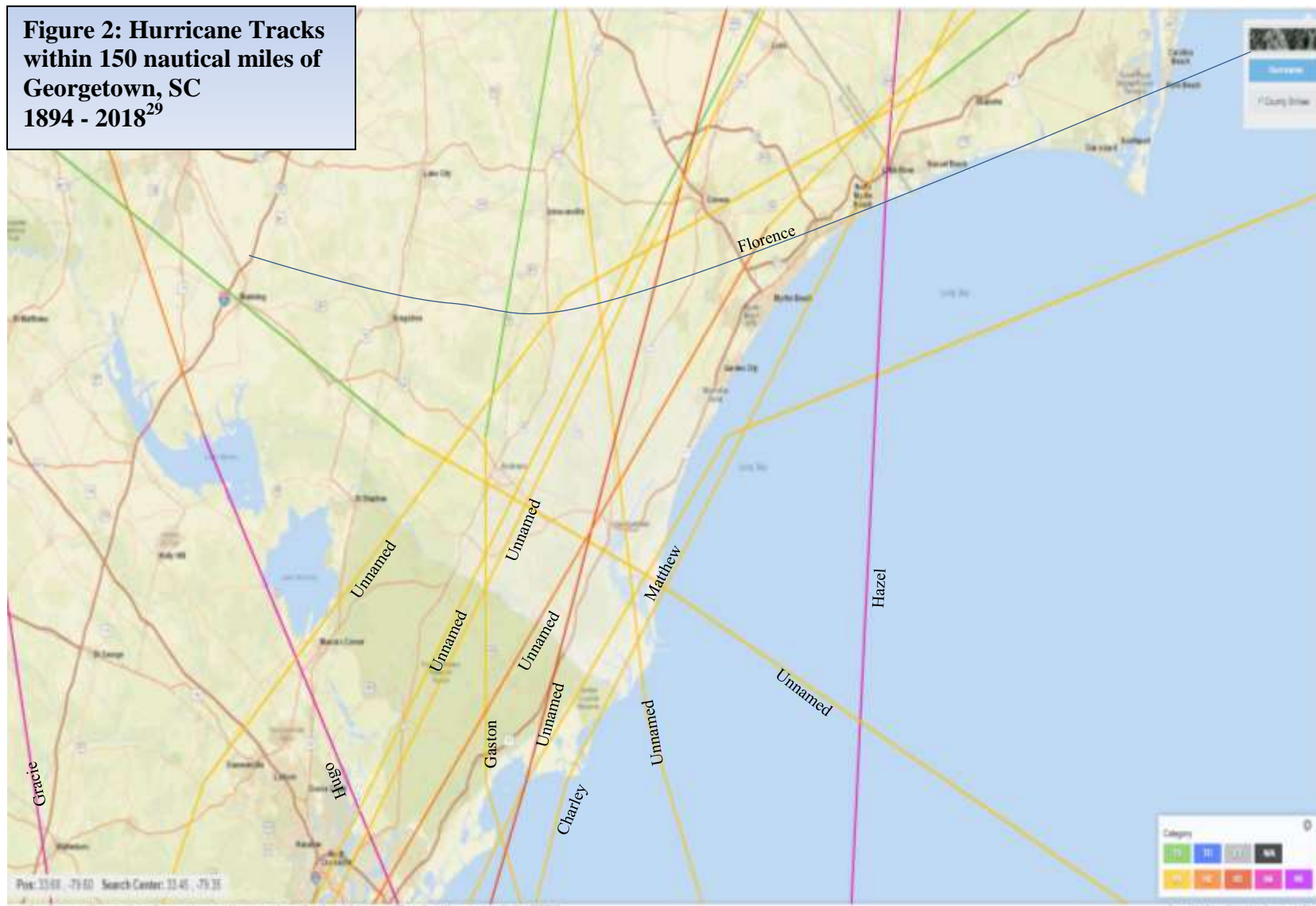
Source: *The Georgetown Times*, <https://www.weather.gov/ilm/Matthew>, <https://www.weather.gov/chs/tchistory>, and NCEI 2019. * no data

The following is a list of evacuations ordered to include Georgetown County due to hurricanes or their threat:

Area	Date Issued	Event
Coastal area	Oct. 14, 1954	Hurricane Hazel
East of 17	Sept. 21, 1989	Hurricane Hugo
East of 17	Sept. 4, 1996	Hurricane Fran
East of Intracoastal	July 11, 1996	Hurricane Bertha
East of 17	Aug. 25, 1998	Hurricane Bonnie
East of Intracoastal/17	Sept. 14, 1999	Hurricane Floyd
East of 17 (Northern portion)	Aug. 13, 2004	Hurricane Charley
Zone A	Oct. 4, 2016	Hurricane Matthew
Medical	Sept. 7, 2017	Hurricane Irma
Zones A-C	Sept. 11, 2018	Hurricane Florence

Source: <https://www.scstatehouse.gov/Archives/ExecutiveOrders/execrpts.php>

**Figure 2: Hurricane Tracks
within 150 nautical miles of
Georgetown, SC
1894 - 2018²⁹**



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 1,253 tornadoes recorded each year. Georgetown County's past experience with tornadoes has resulted in six (6) fatalities, all in one (1) F1 tornado incident in 1974 (Table 2). Property damage to roofs, trees, and other vegetation, as well as power outages, stemmed from the remaining events. 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 (7) miles north-west of the Carvers Bay area in Georgetown County, extending nearly two (2) miles while snapping power lines, uprooting trees, and moving one (1) 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 (2) tornado events. The remaining tornadoes were in the unincorporated area of the County, and two (2) were offshore waterspouts.

Table 2 Tornado Events for Georgetown County¹⁷

Date	Year	Damage	Cost (\$)
August 7	1953	EF1 tornado; damage to downtown Georgetown	\$25,000
May 26	1974	boat capsized; six (6) deaths and one (1) injury	\$25,000
May 7	1976	heavy rains and flooding	\$2,500
September 4	1979	EF2 tornado; nine (9) homes severely damaged; 15 roofs blown off	\$2,500,000
November 7	1995	one (1) house damaged; tree damage; one injury	\$60,000
September 24	1997	EF1 tornado; North Santee	\$50,000
September 3	1998	EF0 tornado; Choppee	*
July 23	2000	EF0 tornado; Georgieville	\$2,000
September 18	2000	EF1 tornado; Georgetown	\$8,000
October 11	2002	EF2 tornado; 125 homes and businesses damaged or destroyed; eight (8) injuries	\$750,000
September 27	2004	EF1 tornado; Power outages, tree and home damage	\$30,000
March 15	2008	EF0 tornado. One home damaged by uprooted tree in Oatland Community	*
April 16	2011	EF0 tornado uprooted trees; caused minor damage in Oatland	\$60,000
April 16	2011	EF0 tornado 4 miles south of Andrews damaged two (2) trailers, uprooted trees, tossed boats	\$28,000
April 16	2011	EF1 tornado 7 miles east/SE of Andrews in Olin snapped more than 400 trees	\$100,000
April 16	2011	EF0 tornado snapped and uprooted over 50 trees, damaged two (2) sheds, and a pickup truck	\$40,000

Source: *The Georgetown Times*, NCEI, 2019. **Storm Data Publication published by the NCEI and severe weather reports issued by the NWS.** * no data

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.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, between 1996 and 2015, nine (9) people were injured due to lightning. 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. There is minimal data on lightning strikes and its likelihood to strike, so establishing its potential for Georgetown County is difficult.

Table 3 Hail/Severe Storm/Wind Events for Georgetown County, 1890-2017¹⁷

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; damage to crops/cars; killed 8 cows	*
August 7	1953	F1 Tornado 5.4 miles long and 100 yards wide	\$25,000
May 25	1960	Thunderstorm Winds 69 mph	*
November 21	1973	Thunderstorm Winds	*
May 12	1974	Thunderstorm Winds	*
May 26	1974	F1 Tornado 3 miles long and 300 yards wide with 6 direct deaths and 1 injury in Murrells Inlet	\$25,000
May 7	1976	F1 Tornado .2 miles long and 13 yards wide in Pawleys Island	\$2,500
May 24	1977	Thunderstorm Winds	*
April 13	1978	Thunderstorm Winds	*
September 4	1979	F2 Tornado 1 mile long and 67 yards wide destroyed 5 beachfront homes; did extensive structural damage to a new condominium complex; and significant damage to 8 other homes in North Litchfield Beach	\$2,500,000
April 27	1982	Hail 2.75" in the Pleasant Hill area	*
December 12	1982	Thunderstorm Winds	*
July 15	1984	Thunderstorm Winds 75 mph	*
September 5	1984	Thunderstorm Winds	*

Appendix A

May 16	1985	Hail 1.75"	*
June 4	1985	Hail 1"	*
June 16	1985	Hail 1.75"	*
July 11	1985	Thunderstorm Wind; lightning struck main power transformer causing large-scale power outage and fires	
Date	Year	Damage	Cost (\$)
June 3	1988	Hail 1.75"	*
June 9	1988	Thunderstorm Wind	*
July 13	1988	Thunderstorm Wind	*
September 25	1988	Thunderstorm Winds gusting to 62 mph in the Dunbar Community with marble size hail in DeBordieu Colony	*
November 5	1988	Thunderstorm Winds up to 60 mph in North Litchfield	*
February 21	1989	Thunderstorm Winds	*
May 5	1989	Thunderstorm Winds	*
June 7	1989	Thunderstorm Winds	*
June 9	1989	Thunderstorm Winds	*
July 25	1989	Thunderstorm Winds	*
August 24	1989	Thunderstorm Winds	*
September 20	1989	Thunderstorm/Hurricane Force Winds, storm surge, 1 indirect death (due to Hurricane Hugo); 410 homes/farms destroyed; 360 homes suffered major damage; 515 homes sustained minor damage; 50 businesses received major damage and 100 minor damage; 7 industrial plants damaged; agriculture and shrimp operations sustained major damage	\$175,125,838
August 1	1990	Hail 1"	*
August 29	1990	Thunderstorm Winds	*
March 3	1991	Thunderstorm Winds	*
May 6	1991	Thunderstorm Winds and hail in Andrews	*
August 6	1991	Flooding and high winds	*
July 1	1992	Thunderstorm Winds gusting to 50 mph	*
June 25	1994	Thunderstorm Winds	*
June 26	1994	Thunderstorm Winds	*
October 13	1994	Thunderstorm Winds	\$5,000
December 23	1994	Thunderstorm Winds; 5" rain; streets flooded; erosion	*
January 7	1995	Thunderstorm Winds	\$60,000
April 22	1995	Thunderstorm Winds and 2" Hail	\$25,000
May 15	1995	Thunderstorm Winds and 1" Hail	*
May 19	1995	Thunderstorm Winds and Hail ½" with 1 lightning injury	\$5,500
July 11	1995	Thunderstorm Winds, heavy rains, 3/4" hail, and flooding	*
July 16	1995	Thunderstorm Winds	*
July 23	1995	Thunderstorm Winds	*
July 24	1995	Thunderstorm Winds	*
November 7	1995	F1 Tornado .1 miles long and 20 yards wide in Sampit with 1 direct injury	\$40,000
November 7	1995	F1 Tornado .1 miles long and 20 yards wide in Georgetown	\$20,000
	1996	Thunderstorm Winds 57 mph in Pleasant Hill and	

March 7		Plantersville	*
May 6	1996	Hail 1.75" in Murrells Inlet	*
May 29	1996	Thunderstorm Winds 86 mph in Sampit	*
August 25	1996	Lightning in Plantersville	\$50,000
October 8	1996	Thunderstorm Winds 69 mph. in Murrells Inlet	*
Date	Year	Damage	Cost (\$)
April 22	1997	Hail 1" in Plantersville	*
May 26	1997	Thunderstorm Winds 69 mph in Choppee; Hail 1.75" in Murrells Inlet; Hail ¾" in Georgetown	*
June 3	1997	Hail 1.25" in Pawleys Island; ¾" in Outland	*
June 21	1997	Lightning with 1 direct injury in Rhems	*
July 5	1997	Thunderstorm Winds 570 mph in Plantersville; Hail ¾" in Murrells Inlet	*
July 7	1997	Waterspout near mouth of Winyah Bay	*
July 24	1997	Funnel Cloud near North Litchfield	*
September 24	1997	F1 Tornado .8 miles long and 30 yards wide in North Santee	\$50,000
April 9	1998	Thunderstorm Winds 69 mph in Pleasant Hill	*
May 4	1998	Hail up to 1.75"	*
May 17	1998	Thunderstorm Winds 69 mph in Georgetown	*
June 1	1998	Hail ¾" in Pleasant Hill	*
June 10	1998	Thunderstorm Winds 86 mph winds, minor structural damage in Andrews	\$300,000
June 19	1998	Thunderstorm Winds 69 mph in Andrews	\$10,000
June 19	1998	Waterspout in Murrells Inlet	
June 29	1998	Lightning with 3 direct injuries	*
August 10	1998	Waterspouts from Murrells Inlet to Litchfield Beach	*
September 3	1998	F0 Tornado .1 miles long and 20 yards wide in Choppee from Hurricane Earl	*
September 8	1998	Thunderstorm Winds 69 mph in Georgetown	\$15,000
February 19	1999	Hail 1" in Andrews, Browns Ferry, Plantersville, Georgetown, and Murrells Inlet	*
April 27	1999	Wind gusts over 60 mph and Hail 1" in Plantersville, 1.75" in Andrews, 1" in Georgetown	*
May 14	1999	Hail 1.75" in Plantersville	*
July 6	1999	Lightning during thunderstorm with 5" of rain	\$5,000
February 14	2000	Thunderstorm Winds 63 mph in Allandale Plantation	*
March 10	2000	Hail ¾" in Oatland	*
April 8	2000	Thunderstorm Winds 63 mph in Georgetown	*
April 17	2000	Thunderstorm Winds 60 mph in Georgetown	*
May 25	2000	Thunderstorm Winds 63 mph in Yauhannah; Hail 1" in Pawleys Island; Hail 1" in Georgetown	*
July 21	2000	Thunderstorm Winds 63 mph in Pawleys Island	\$5,000
July 23	2000	F0 Tornado 1 mile long and 40 yards wide in Georgieville	\$2,000
August 11	2000	Hail .88" in Pawleys Island	*
August 28	2000	Hail ¾" in Plantersville	*
		F1 Tornado .3 miles long and 30 yards wide in Pawleys	

Appendix A

September 18	2000	Island	\$8,000
April 1	2001	Thunderstorm Winds 69 mph in Georgetown	*
May 12	2001	Hail .75" in Pawleys Island	*
May 28	2001	Hail .75" in Oatland	*
June 2	2001	Lightning at Wachesaw Landing	\$1,500
Date	Year	Damage	Cost (\$)
July 2	2001	Lightning in Pawleys Island	\$1,000
August 13	2001	Lightning in Georgetown	\$50,000
August 20	2001	Lightning in Murrells Inlet with 2 direct injuries	*
August 29	2001	Lightning in Georgetown with 1 direct injury	*
June 14	2002	Thunderstorm Winds 60 mph in Murrells Inlet	*
June 28	2002	Thunderstorm Winds 63 mph in North Santee	*
July 21	2002	Hail .88" in Carvers Bay	*
August 25	2002	Thunderstorm Winds 75 mph in Georgetown	\$25,000
October 11	2002	F2Tornado 1.2 miles long and 40 yards wide touched down at Merriman and Emanuel Roads. 8 people hospitalized with minor injuries.	\$750,000
February 22	2003	Thunderstorm Winds 63 mph in Georgetown	*
May 6	2003	Thunderstorm Winds 75 mph in Carvers Bay and Yauhannah	\$30,000
May 16	2003	Hail 1.75" in Georgetown	*
July 12	2003	Thunderstorm Wind 65 mph at Brookgreen Gardens	*
May 22	2004	Lightning in Oatland	\$1,000
June 30	2004	Hail .75" in Choppee and Heavy Rain in Georgetown and Pawleys Island	*
July 17	2004	Thunderstorm Winds 69 mph in Outland and Pawleys Island	*
August 14	2004	Hurricane Charley	\$2,500,000
August 29	2004	Tropical Storm Gaston, flooding	\$320,000
September 27	2004	F1 Tornado 1.6 miles long and 30 yards wide in Carvers Bay	\$30,000
May 24	2005	Hail 1" in Pawleys Island	*
April 3	2006	Hail .88" in Murrells Inlet and Pleasant Hill	*
April 8	2006	Hail ¾" in Andrews	*
May 20	2006	Thunderstorm Winds 63 mph in Pawleys Island	*
May 26	2006	Hail 1" in Outland; .88" in Murrells Inlet	*
July 15	2006	Lightning in Choppee and Thunderstorm Winds 75 mph in Georgetown	\$150,000
November 16	2006	Thunderstorm Winds 69 mph in Andrews/Italy	*
July 11	2007	Thunderstorm Winds 69 mph in Rose Hill; 63 mph in Murrells Inlet	*
February 26	2008	Thunderstorm Winds 65 mph in Pleasant Hill; 57 mph in Lambert Town	*
March 15	2008	F0 Tornado .01 miles long and 20 yards wide in Oatland	*
March 15	2008	Thunderstorm Winds 64 mph in Chicorawood Plantation	*
May 10	2008	Hail .75" in Georgetown	*
June 1	2008	Thunderstorm Winds 60 mph in Maryville Heights	*

June 15	2008	Hail .75" in Oatland	*
June 22	2008	Lightning in Sunny Side	\$350,000
June 23	2008	Thunderstorm Winds 57 mph in Murrells Inlet	*
July 5	2008	Thunderstorm Winds 60 mph in Fraserville with Hail 1.75"; Hail .75" in Maryville	*
Date	Year	Damage	Cost (\$)
July 7	2008	Lightning in Pawleys Island; 1 direct injury	*
July 10	2008	Lightning in Georgievilla	\$10,000
September 6	2008	Tropical Storm Hanna, 40 mph wind, 6" rain, road closures	\$10,000
June 1	2009	Hail .75" in Sunny Side; 1" in Murrells Inlet and Oatland; 1.75" in Annieville; 1" in Andrews	*
June 11	2009	Thunderstorm Winds 60 mph in Andrews	\$10,000
August 11	2009	Thunderstorm Winds 57 mph in Guilliard	\$1,000
August 12	2009	Lightning on Pawleys Island	\$5,000
January 25	2010	Thunderstorm Winds 57 mph in Center Crossroads	\$3,000
May 23	2010	Hail .75" in Murrells Inlet, Wachesaw Landing; Wedgefield Plantation; Georgetown	\$15,000
June 25	2010	Thunderstorm Winds 57 mph in Wedgefield Plantation	\$3,000
July 21	2010	Thunderstorm Winds 60 mph in Murrells Inlet	\$3,500
August 26	2010	Hail 1" in Union Crossroads	\$1,000
October 14	2010	Hail 1" in Andrews	\$2,000
April 5	2011	Thunderstorm Winds 64 mph in Carvers Bay, Center Crossroads, Pelersfield	\$4,000
April 9	2011	Hail 1" in Murrells Inlet	\$500
April 16	2011	Thunderstorm Winds 70 mph in Olin	\$32,000
May 10	2011	Hail 2.75" in Andrews, 1" in Red Hill and Italy, 4.5" in New Hope, 1.75" in Carvers Bay	\$60,000
May 11	2011	Thunderstorm Winds 60 mph in Georgetown; Hail 1" in Murrells Inlet	\$2,000
June 14	2011	Thunderstorm Winds 57 mph in Parkersville	\$2,000
June 23	2011	Thunderstorm Wind 64 mph in Cumberland	\$4,000
July 9	2011	Thunderstorm Winds 60 mph in Georgetown	\$10,000
September 5	2011	Strong Winds 40 mph in Georgetown	\$2,000
December 7	2011	High Winds 40 mph in Georgetown	\$1,000
February 24	2012	Thunderstorm Winds 57 mph in Italy	\$1,500
April 21	2012	Hail 1.25" in Parkersville	\$1,000
May 5	2012	Hail 1" in Sampit	\$1,000
May 15	2012	Hail 1" in Guilliard	\$2,000
May 16	2012	Thunderstorm Winds 60 mph in Murrells Inlet; Hail 1.25" in North Santee	\$3,500
May 22	2012	Hail 1" in Cumberland; Thunderstorm Winds 57 mph in Graves	\$1,000
June 13	2012	Thunderstorm Winds 62 mph in Andrews	\$22,000
July 1	2012	Thunderstorm Winds 57 mph in Union Crossroads and Williams Hill	\$4,000
July 11	2012	Hail .88" in St. Paul; Thunderstorm Winds 60 mph in Plantersville	\$7,250

Appendix A

November 4	2012	Hail 1"-1.75" in Wachesaw Landing, 1" in Murrells Inlet	\$30,500
March 25	2013	Strong Winds 50 mph in DeBordieu Colony, Pawleys Island, and inland Georgetown County	\$3,000
July 17	2013	Thunderstorm Winds 60 mph in Pelersfield and Annieville	\$4,000
September 3	2013	Thunderstorm Winds 60 mph in Jackson	\$17,000
Date	Year	Damage	Cost (\$)
January 11	2014	Thunderstorm Winds 57 mph in Outland	\$2,000
April 30	2014	Thunderstorm Winds 57 mph in Andrews	\$3,500
May 23	2014	Hail 1"-1.75" in Cumberland and Wilson Crossroads and Thunderstorm Winds 59 mph in Andrews and Cumberland	\$3,750
June 5	2014	Thunderstorm Winds 57 mph in Pleasant Hill, Center Crossroads, Union Crossroads	\$14,000
July 28	2014	Thunderstorm Winds 60 mph in Pelersfield and Hail 1" in St. Paul	\$1,250
August 18	2014	Thunderstorm Winds 57 mph in Parkersville	\$750
May 11	2015	Lightning in Plantersville with 1 indirect injury	*
July 11	2015	Thunderstorm Winds 60 mph in Fraserville	\$1,000
September 10	2015	Thunderstorm Winds 57 mph in Spring Gully	\$1,000
February 24	2016	Strong Winds 50 mph in Andrews	\$3,000
June 2	2016	Thunderstorm Winds 57 mph in Plantersville and Outland	\$4,000
June 17	2016	Thunderstorm Winds 75 mph in Kent, Italy, Andrews Airport, Oak Grove, Lodge Hall; 65 mph in Georgetown	\$21,500
June 25	2016	Thunderstorm Winds 60 mph in Andrews/Italy	\$8,000
July 9	2016	Hail 1.75" in Simmonsville and 1" in Oatland; Thunderstorm Winds 65 mph in Allentown, and 57 mph in Andrews and Italy	\$10,250
July 31	2016	Hail 1" in Oatland	\$250
August 18	2016	Thunderstorm Winds 57 mph in Pleasant Hill	\$1,000
May 29	2017	Thunderstorm Winds 60 mph in Center Crossroads	\$5,000
June 15	2017	Thunderstorm Winds 57 mph and Hail 1.25" in Maryville Heights	\$1,000
August 7	2017	Thunderstorm Winds 57 mph in Carvers Bay	\$2,000
September 11	2017	Thunderstorm Winds 61 mph in Georgetown	*
March 20	2018	Hail 1" in Andrews	\$500
April 15	2018	Tree reported down along Browns Ferry Road in the Red Hill area.	\$1,000
June 25	2018	A pre-frontal trough produced strong thunderstorms that blew down a tree on Pleasant Drive in Pelersfield. 57 mph.	*

* no data

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 4' 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 (2) 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 (4) years later, Georgetown got hit again with nearly \$750,000 worth of flood-inflicted property damages. 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 (2) people had to be rescued from their cars. Property damage was estimated at \$20,000. On May 16, 2012, flooding caused \$20,000 damages in the Parkersville community. The historic 1,000 year flood in October 2015 brought rainfall amounts from 14-24" across the County which led to major flooding; downed trees and power lines; 10,000 power outages; 262 homes destroyed; over 300 homes damaged; 800 persons rescued; and over 500 animals rescued and sheltered. This event drew damages of over \$30 million.¹⁷ 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.

Table 4 Flood/Flash Flood/Heavy Rain Events for Georgetown County, 1996-2018¹⁷

Date	Year	Damage	Cost (\$)
July 23	1996	Flash Flood measuring 8" caused flooding in parts of the City and Highways 17, 17A, and 521.	
August 27	1996	Torrential rains measuring 8" in Murrells Inlet.	\$100,000
October 8	1996	Flash flooding from Tropical Storm Josephine in the northeastern part of the County.	
February 3	1998	Flash Flooding due to torrential rainfall closed several roads.	*
July 24	1998	Heavy rains measuring 2-4" caused extensive flooding.	*
August 20	1998	Heavy rains measuring 3-5" caused overflowing ditches and flooding along roadways.	*
August 15	1999	Heavy rains associated with Hurricane Floyd accumulated 9-15" of rain in the eastern part of the county causing flooding 3' deep in some areas, especially around Murrells Inlet. The City of Georgetown was also flooded.	*
October 17	1999	Hurricane Irene caused flooding in Murrells Inlet, Litchfield Beach, and the City of Georgetown.	*
September 5	2000	Two (2) roads were impassable due to flooding.	*
September 18	2000	Remnants of Tropical Storm Gaston passed over the County bringing over 8" of rain closing several streets, flooding homes and businesses, and causing one injury.	\$750,000
March 20	2001	Heavy rains causing flooding in Andrews. One (1) death and two (2) injuries due to a motor vehicle accident on U.S. 17A.	\$25,000
July 2	2001	Heavy rains caused flooding at several intersections as well as the North Causeway in Pawleys Island.	
July 11	2002	Heavy Rain with roads flooded in the City	*

Appendix A

August 30	2002	Heavy Rain causing road closures in Georgetown	*
October 11	2002	Heavy Rain in Murrells Inlet	*
March 20	2003	Heavy Rain in Georgetown closed streets due to 2' of water	*
Date	Year	Damage	Cost (\$)
July 19	2003	Heavy Rain in Georgetown with Hwy. 17 closed due to flooding	*
October 8	2003	Heavy Rain in Oatland, >5"	*
June 30	2004	Heavy Rain in Georgetown and Pawleys Island causing flooding on Hwy. 17.	*
July 2	2004	Funnel Cloud in the Kensington area; Heavy Rain in Georgetown causing flooding on Hwy. 51	*
October 3	2004	Heavy Rain with flooded roads in Pawleys Island	*
July 3	2005	Heavy Rain in Lambert Town with flooded roads.	*
October 6-8	2005	Heavy Rain from Tropical Storm Tammy; 12" in the City	\$1,500,000
November 7	2006	Heavy Rain in Georgetown and Pawleys Island causing street flooding	*
September 6	2008	Tropical Storm Hanna, 40 mph wind, 6" rain, road closures	\$10,000
July 13	2009	Heavy rain caused flooding in the City of Georgetown causing street closures, rescues, and abandoned vehicles.	\$5,000
September 27	2010	Heavy Rain with road closures in Georgetown	*
July 9	2011	Between 5-7" of rain fell on the City of Georgetown causing flooded streets and two (2) persons rescued from flooded cars.	\$20,000
August 26	2011	Heavy rainfall of over 3" caused flooded streets in the City due to Hurricane Irene.	*
May 16	2012	Flooding was reported in Murrells Inlet, Pawleys Island, and the City.	\$20,000
August 28	2012	Heavy rains caused flooding in the City.	*
August 29	2012	Heavy rains caused flooding in Pawleys Island.	*
October 3	2015	Roads reported flooded in North Santee and Plantersville.	\$52,000
October 4	2015	Heavy Rain up to 2' throughout the County	\$10,023,635
October 5	2015	Road closures due to flooding as well as numerous homes and other structures inundated with flood waters in Andrews.	\$300,000
October 10	2015	Several streets around Georgetown were reported closed due to flooding.	\$60,000
September 2	2016	Hurricane Hermine brought heavy rainfall totaling 6" and high wind gusts to the County.	*
April 24	2017	Several streets and structures flooded due to heavy rainfall in Andrews.	\$60,000
September 11	2017	Moderate Coastal Flooding in Pawleys Island and Georgetown with multiple road closures due to Hurricane Irma.	*
September 16	2018	One (1) death due to drowning; flash flooding; power outages; downed trees; total rainfall 10.28" in Pawleys Island, 7.79" in Litchfield Beach, and 6.14" in Georgetown.	\$2.2 million

* no data

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 10 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 3. 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).

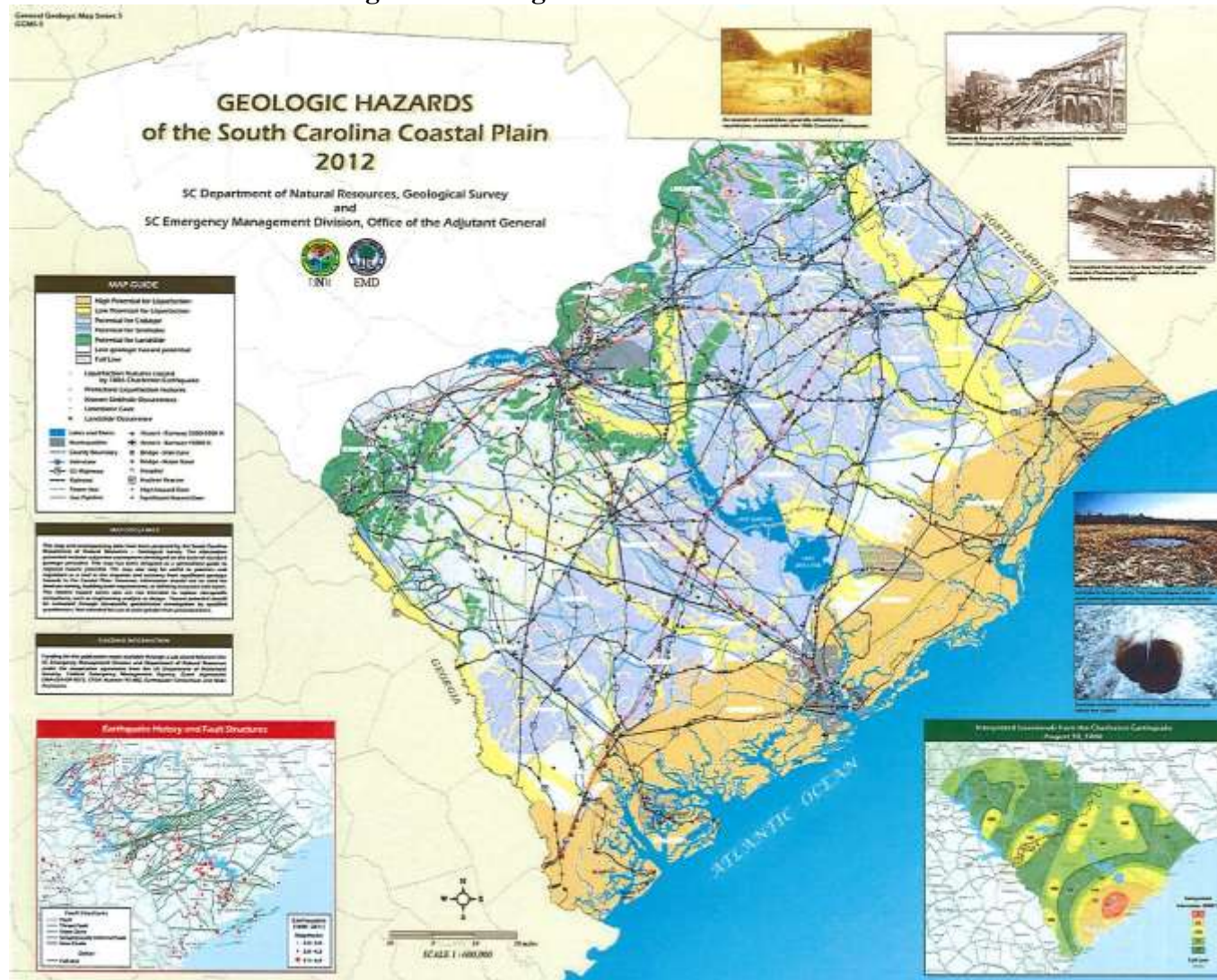
Seismic records dating back to 1698 indicate 10 felt earthquakes in Georgetown County. The U.S. Geological Survey (USGS) confirmed that a 3.6 magnitude earthquake occurred in Dorchester County on December 16, 2008, with waves being felt into Charleston and Berkeley Counties. In May 2009, questions of 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.

There have been 53 earthquakes in South Carolina since 2014, with the largest at a magnitude 3.0 on February 16, 2014 in Centerville and another on March 19, 2014 in Summerville.³⁰ 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.³¹

³⁰ USGS Information by Region – South Carolina, Seismicity and Hazard, All Earthquakes 1900, 13 Feb. 2019. Retrieved February 13, 2019, from <https://earthquake.usgs.gov/earthquakes/byregion/southcarolina.php>.

³¹ Wells, Tammie D. "Hazard Mitigation Plan." Message to Cindy Grace. 5 May 2014. E-mail.

Figure 3: Geologic Hazards of South Carolina



Source: SC Dept. of Natural Resources, 2019

Wildfire

Georgetown County has averaged approximately 149 fires yearly on forested land over the last 39 recorded years (*SC Forestry Commission, 1979-2018*). See Table 5. 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. As of FY 2017, Georgetown County has had 400,136 acres protected, 398 smoke management notifications, and 11,143 other notifications according to the SC Forestry Commission.³²

Table 5 Wildfires Reported in Georgetown County¹⁸

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

³² SC Forestry Commission Annual Report, FY 2016-2017, n.d. *Total Burning Notifications by County-Fiscal Year 2017*. Retrieved February 13, 2019, from <https://www.state.sc.us/forest/ar2017.pdf>.

Fiscal Year (July 1 to June 30)	Number of Fires	Acres Burned
2010-2011	72	402.9
2011-2012	64	799.3
2012-2013	44	201.6
2013-2014	40	344.2
2014-2015	47	195.1
2015-2016	26	231.1
2016-2017	59	785.8
2017-2018*	60	448.6
Total	5,072	47,311.45

*through August 16, 2018

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

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. Table 6 shows the drought status for Georgetown County from September 2008 through May 2018.

Table 6 Georgetown County Drought Status September 2008 – May 2018¹⁹

Period	Status
Jul. 1, 1998 – Jul. 13, 1998	Incipient
Jul. 14, 1998 – Sept. 9, 1998	Moderate
Sept. 10, 1998 – Nov. 9, 1998	Normal
Nov. 10, 1998 – Jan. 27, 1999	Incipient
Jan. 28, 1999 – Apr. 19, 1999	Normal
Apr. 20, 1999 – May 3, 1999	Incipient
May 4, 1999 – Jun. 7, 1999	Normal
Jun. 8, 1999 – Aug. 10, 1999	Incipient
Aug. 11, 1999 – Sept. 29, 1999	Moderate
Sept. 30, 1999 – May 23, 2000	Normal
May 24, 2000 – May 30, 2001	Incipient
May 31, 2001 – Jun. 18, 2002	Moderate
Jun. 19, 2002 – Jul. 23, 2002	Severe
Jul. 24, 2002 – Sept. 23, 2002	Extreme
Sept. 24, 2002 – Nov. 20, 2002	Severe
Nov. 21, 2002 – Jun. 7, 2004	Normal
Jun. 8, 2004 – Jul. 14, 2004	Incipient

Period	Status
Jul. 15, 2004 – May 7, 2007	Normal
May 8, 2007 – Jun. 5, 2007	Incipient
Jun. 6, 2007 – Sept. 4, 2007	Moderate
Sept. 5, 2007 – Apr. 15, 2008	Severe
Apr. 16, 2008 – Aug. 4, 2008	Incipient
Aug. 4, 2008 – Feb. 18, 2009	Normal
Feb. 19, 2009 – Apr. 14, 2009	Incipient
Apr. 15, 2009 – Jul. 8, 2010	Normal
Jul. 9, 2010 – Oct. 6, 2010	Incipient
Oct. 7, 2010 – Jun. 1, 2011	Normal
Jun. 2, 2011 – Jun. 16, 2011	Incipient
Jun. 17, 2011 – Jun. 5, 2012	Moderate
Jun. 6, 2012 – Sept. 26, 2012	Incipient
Sept. 27, 2012 – Dec. 10, 2012	Normal
Dec. 11, 2012 – Apr. 23, 2013	Incipient
Apr. 24, 2013 – Nov. 19, 2014	Normal
Nov. 20, 2014 – Jan. 14, 2015	Incipient
Jan. 15, 2015 – Jun. 18, 2015	Normal
Jun. 19, 2015 – Jul. 15, 2015	Incipient
Jul. 16, 2015 – Sept. 23, 2015	Moderate
Sept. 24, 2015 – Oct. 4, 2015	Incipient
Oct. 5, 2015 – Aug. 16, 2016	Normal
Aug. 17, 2016 – Oct. 26, 2016	Incipient
Oct. 27, 2016 – Apr. 5, 2017	Normal
Apr. 6, 2017 – Jun. 5, 2017	Incipient
Jun. 6, 2017 – May 29, 2018	Normal

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 (SCPSA) owns and maintains the Santee North 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 27 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 4.

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 14 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 (1) 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 Oatland; and 2.5 - 4.5" across the city of Georgetown. On December 26, 2010, small amounts of snow fell with only 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 \$4 million dollars in damages due to debris and power outages.³³ On December 29, 2017, ice accrued on the Waccamaw River Bridge which caused several motor vehicle accidents; the bridge was briefly closed. On January 3, 2018, snow began falling with totals ranging from ½" - 6", mostly inland. A 1/10" of ice was also reported. Record cold preceded and followed the event which lasted until January 8, 2018.

Sinkholes

Sinkholes are an uncommon occurrence in Georgetown County; however, the impact of sinkholes in the City of Georgetown in 2011 was significant. Problems attributed to sinkholes include property damage and potential loss of life. See pages 2-28 and 2-29 for locations of sinkholes and other damage caused by this man-made event.

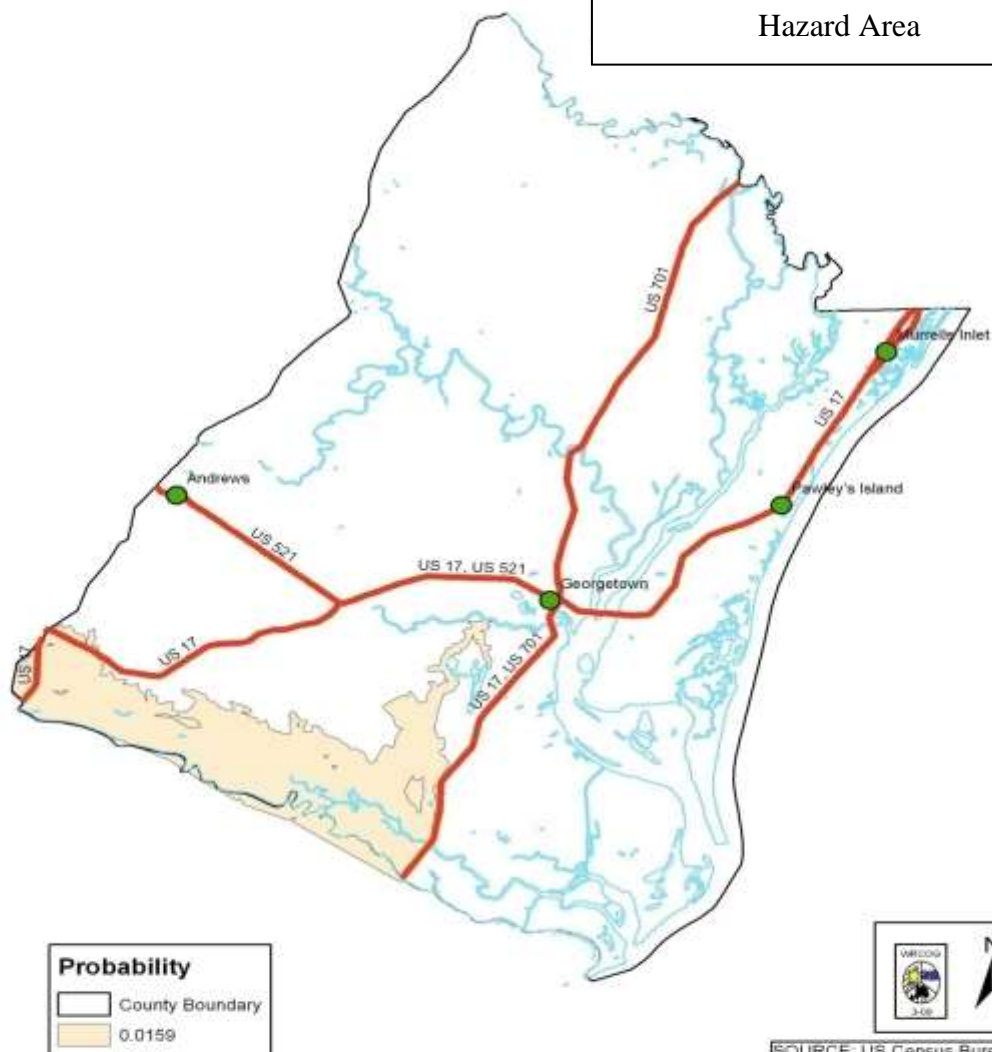
Data Acquisition

For some hazards, a statewide database exists. Others are derived from federal sources and needed additional verification at the local level, especially those that contain locational data such as street addresses. Table 7 provides a matrix for core hazards data that was collected for the Georgetown County assessment and includes some of the specific attributes and sources. More detailed data source listings by individual hazard are found in Appendix 1.

As stated previously, sinkholes and SLR were not included in the hazard analysis in 2009 or 2017. Man-made hazards are not normally included in the plan, but were mentioned in this iteration due to the monetary damage caused by the sinkholes in 2011, although they are not considered a high frequency risk for the area. SLR is a natural-occurring phenomenon, and there is a potential that its extent along the coast will be seen in the future. However, it is difficult to determine that extent along the Georgetown coast without further study.

³³ Armstrong, Timothy. "Winter Storm History-Georgetown, SC." Message to Cindy Grace. 10 Apr. 2014. E-mail.

Figure 4
North Santee Dam Potential
Hazard Area



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 7 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 NCEI	
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 NCEI	1950
Severe Storms-Wind/Hail	events	damage, injuries, deaths	National Severe Storms Lab	1955
Drought	events	Severity	Palmer Drought Severity Index and NCEI	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 Emergency Management	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.

As stated previously, sinkholes and SLR were not included in the hazard analysis in 2009. Man-made hazards are not normally included in the plan, but were mentioned in this iteration due to the monetary damage caused by the sinkholes in 2011, although they are not considered a high frequency risk for the area. SLR is a natural-occurring phenomenon, and there is a potential that its extent along the coast will be seen in the future. However, it is difficult to determine that extent along the Georgetown coast without further study.

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 8 provides annual count of total hazards, future annual probability of hazards, recurrence interval of hazards, and hazard score based on future annual probability for Georgetown County. Note that in Georgetown, wildfires occur almost 5,000 times per year, the highest frequency event. This table is a necessary step in determining the overall hazards vulnerability because it helps to define more clearly what types of events are more frequent and their potential impact on the community. A hazards future annual probability of occurrence and the hazards' annualized losses were calculated to give an overall hazards score for each county. Georgetown County's overall hazard risk score is 5.53. The county's total hazard risk is shown in Figure 5.

Table 8 All Hazard Vulnerability for Georgetown County²

Hazard	Annualized Count of Total Hazards	Future Annual Probability of Hazards	Recurrence Interval of Hazards (years)	Hazard Score Based on Future Annual Probability
Hurricane/Tropical Cyclone	1	68	1.47	.95
Earthquake	0	0	N/A	.00
Tornado	<1	47	2.14	.43
Severe Storm	35	3,469	.03	.65
Hail	3	267	.38	.16
Wind	3	267	.38	.72
Lightning	13,373	1,337,296	.00	.62
Drought	70	1,006	.10	.00
Wildfire	95	9,490	.01	.33
Winter Storms	3	273	.37	.29

Notes: The SC Hazard Mitigation Plan did not include dam failure or floods in their overall vulnerability tables.

Table 9 displays a risk assessment of all hazards events. The hazard types are evaluated based on frequency of occurrences and their severity in the region. The frequency of occurrences is derived from calculations of "hazard frequency percentage chances per year." Severity category is based on monetary damage figures found in Appendix A, Tables 1, 2, and 3. Flood damages are described in text, Appendix A, pages A-20 - A-22.

Table 9 Summary Table of Risk Assessment by Hazard Type²

Hazard Type	Frequency of Occurrences	Severity of Occurrences
Hurricane/Tropical Cyclone	High	Catastrophic
Flood	High	Extensive
Tornado	High	Serious
Earthquake	Low	Minor*
Wildfire	High	Extensive*
Dam Failure	Low	Minor*
Winter Storms	High	Minor*
Drought	High	Minor*
Severe Storms/Hail/Wind	High	Serious

*No monetary figures documented which lead to assumptions that severity was negligible (minor).

**Fire severity based on acres burned, not dollar value. (Extensive: between 1,000 and 5,000 acres burned. See Appendix A, Table 5.)

Criteria for frequency of occurrences determined by:

Very Low: events that have a hazard frequency chance less than 0.1% per year

Low: events that have a hazard frequency chance between 0.1% and 1% per year

Medium: events that have a hazard frequency chance between 1% and 10% per year

High: events that have a hazard frequency chance greater than 10% per year

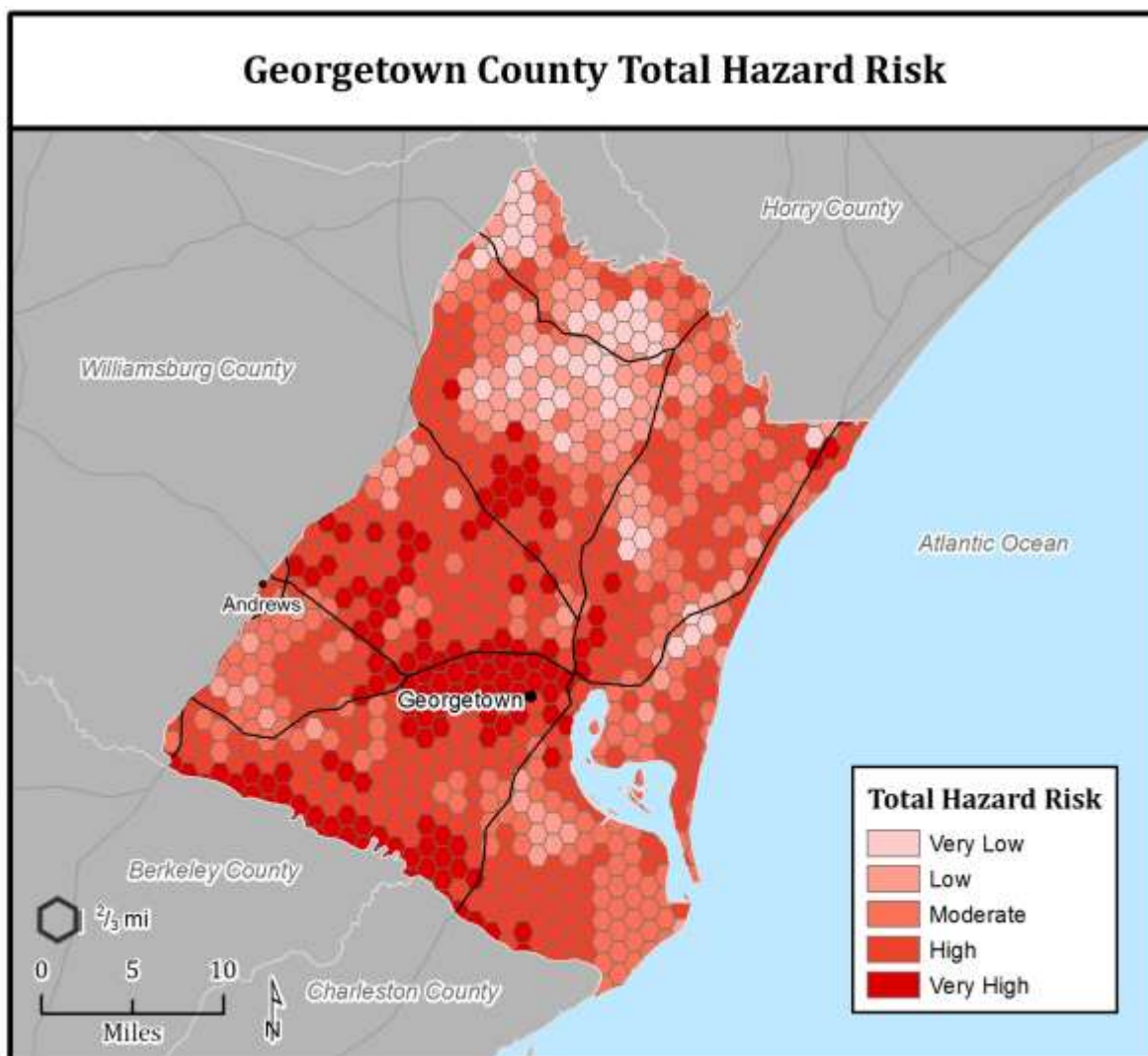
Criteria for severity of occurrences determined by:

Minor: little or no damage to structures or infrastructure

Serious: less than \$1 million in damage to structures or infrastructure

Extensive: between \$1 million and \$100 million in damage to structure or infrastructure

Catastrophic: greater than \$100 million in damages to structures or infrastructure

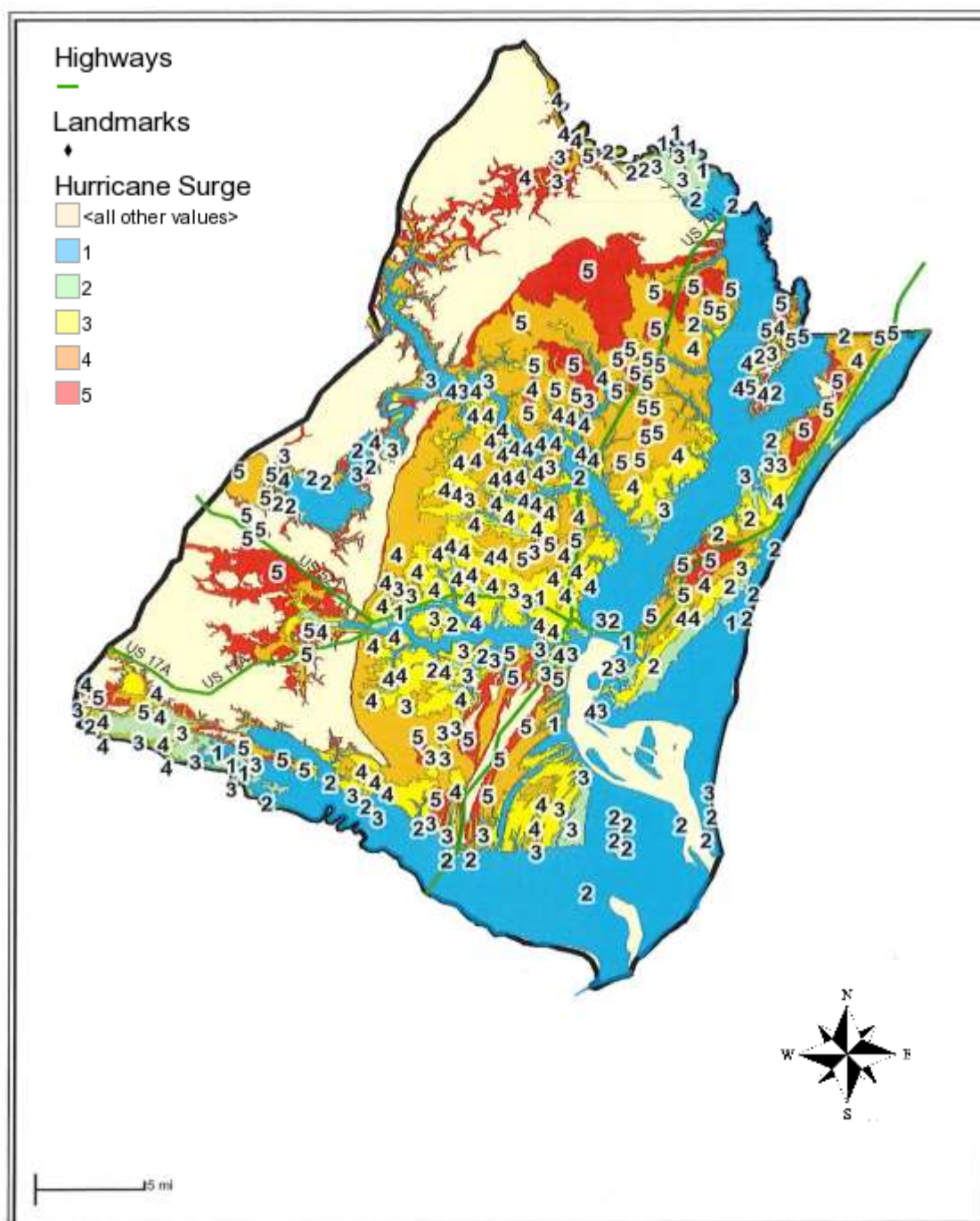
Figure 5 Georgetown County Total Hazard Risk²

Hurricane

This hazard has two (2) 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 U.S. Department of Commerce, NOAA, National Ocean Service, Office of Coastal Management, *Historical Hurricane Tracks updated 6/28/18* 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.

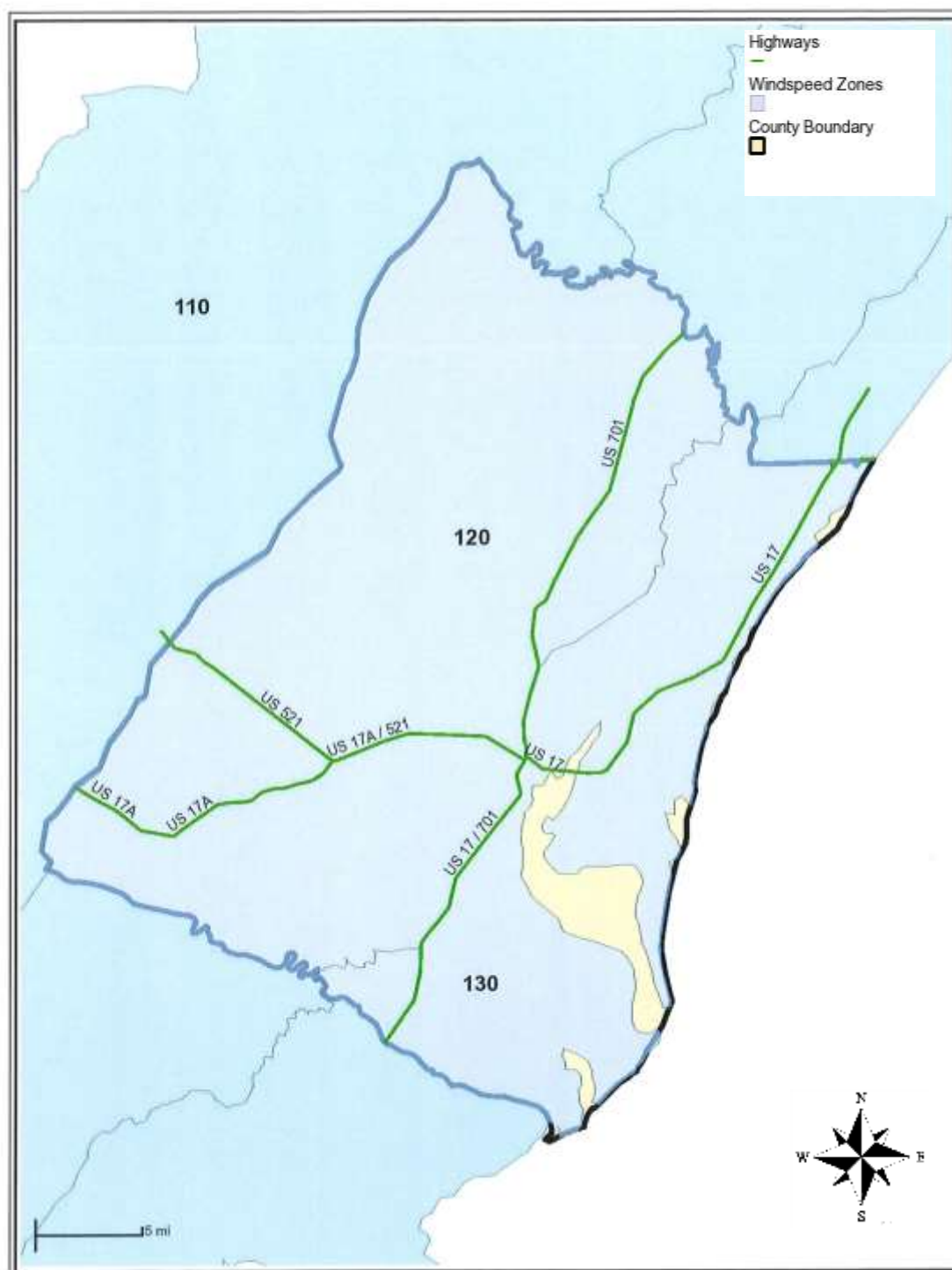
For those counties on the coast, the NOAA NHC has calculated the areas that will potentially be inundated by storm surge in each Saffir-Simpson Hurricane Wind scale category. These hazard zones, output from the NHC's Sea, Lake, Overland, Surges from Hurricanes (SLOSH) model, represent the worst-case 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.

Figure 6 Potential Storm Surge for Georgetown County



Source: Source: Georgetown County GIS, 2019.

Figure 7 Wind Speed Probabilities



Source: Georgetown County GIS, 2019.

Tornado

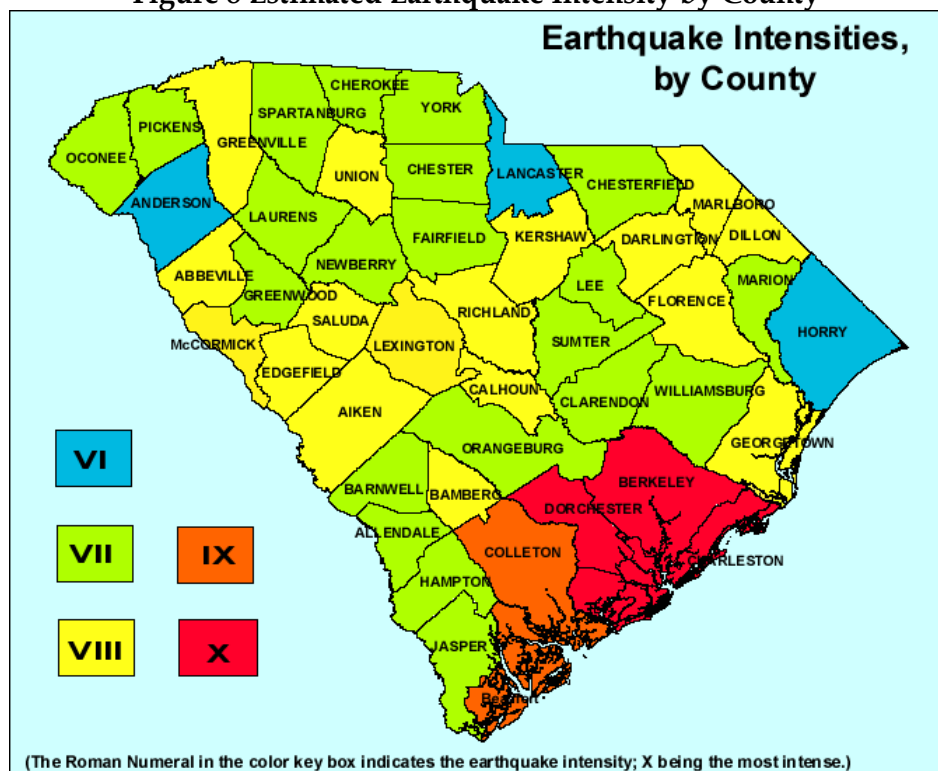
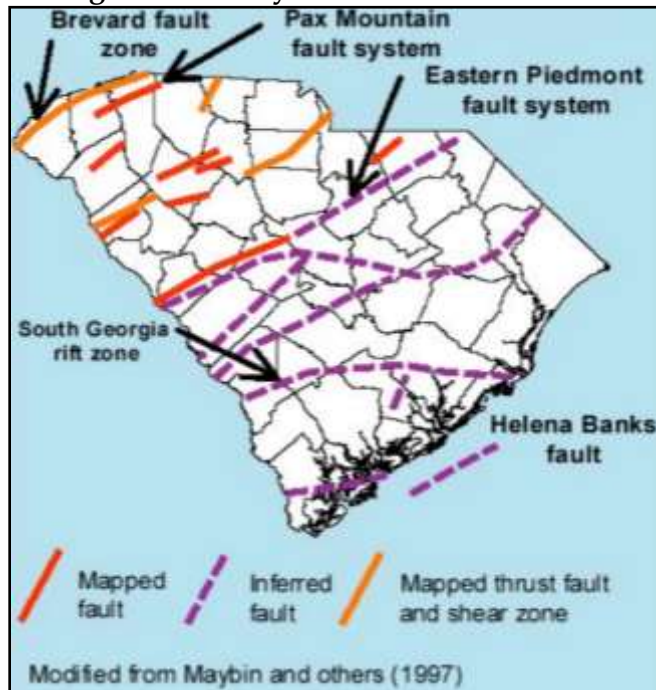
While tornadoes happen in a specific place and at a specific time, they have the potential to occur anywhere. Therefore, the hazards zone encompasses the entire county. The probability of occurrence is simply the number of reported tornadoes divided by the number of recorded years. Eleven tornadoes are on record for Georgetown County according to the NCEI's 2019 records, which date back to 1953. Since September 15, 2014, there have been no tornado touchdowns in Georgetown County.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 September 15, 2014, there have been four (4) hail events totaling \$2,750 in property damage; one (1) high wind event totaling \$3,000 in property damage; and 13 thunderstorm events totaling \$55,500 in property damage. Some of these events happened on the same day but in different areas of the county.¹⁷

Earthquake

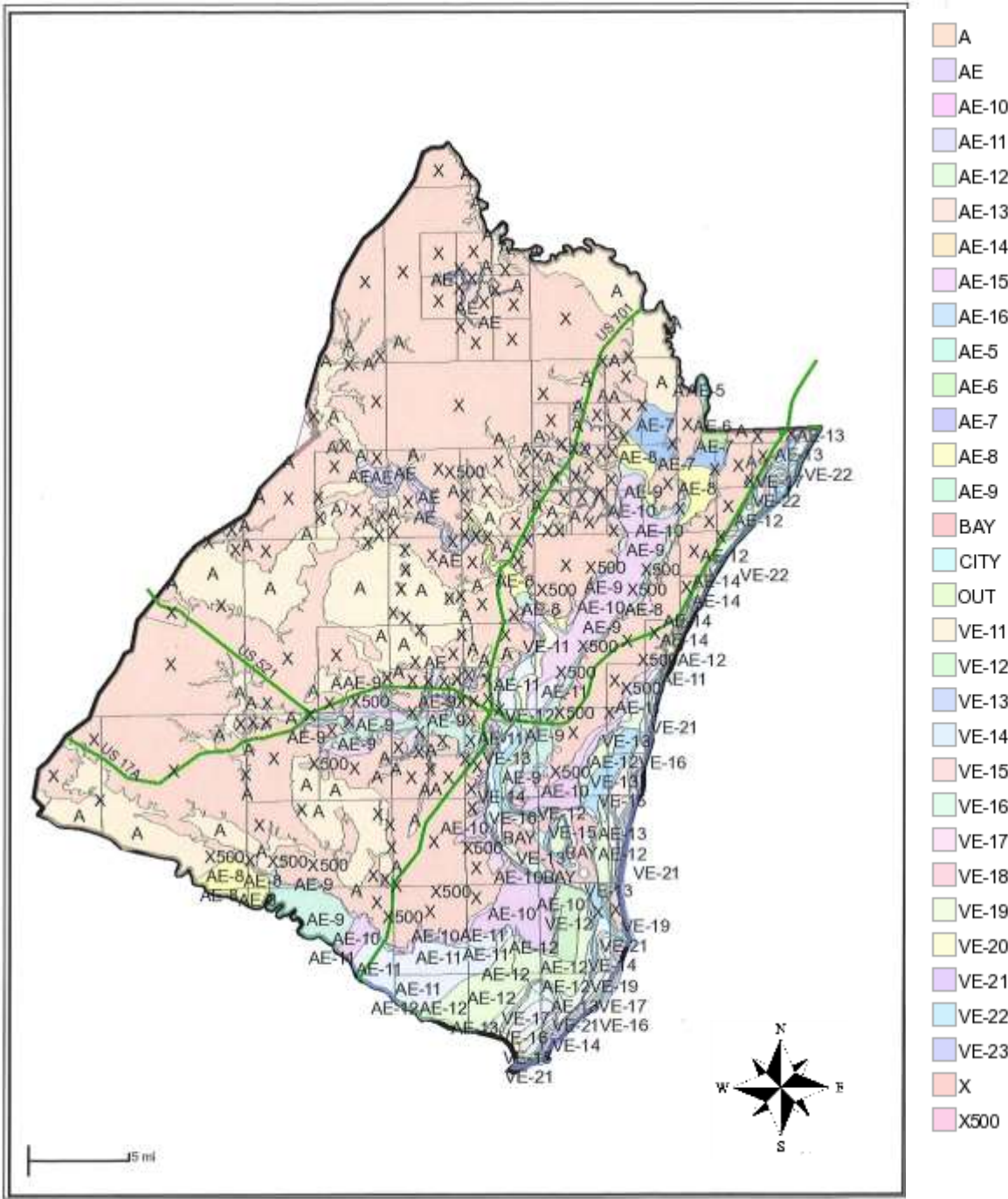
The occurrence probability for earthquakes was determined by dividing the number of felt earthquakes by the number of years in the historical record. Since Georgetown County had no recorded earthquake epicenters, felt earthquakes were utilized. Approximately 10 to 15 earthquakes are recorded annually in South Carolina with 3 to 5 of them felt or noticed by people. About 70% 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. There have been 53 earthquakes in South Carolina since 2014, with the largest at a magnitude 3.0 on February 16, 2014 in Centerville and another on March 19, 2014 in Summerville. 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.³⁰

Figure 8 Estimated Earthquake Intensity by County²Figure 9 Fault System of South Carolina²

Floods

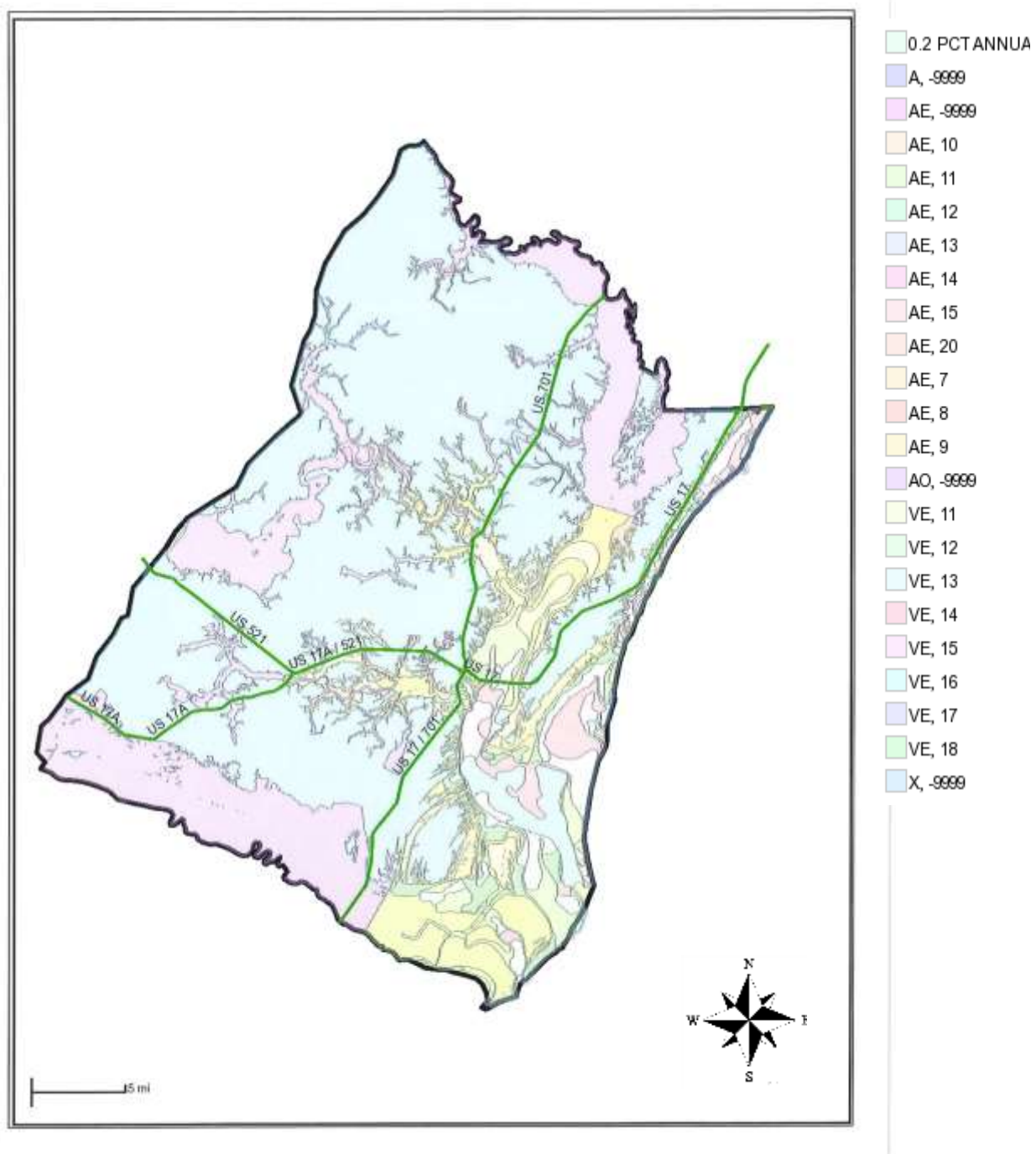
Once the Q3 flood data were obtained, the flood hazard zone was reselected using the designated 100-year and 500-year floodplains. These indicate the probability of a flood occurrence of 1% and 0.25% respectively. The 100-year floodplain is designated by the zone code 'A' and its derivations. Zone code 'V' and its derivations similarly signify areas of 100-year flood combined with wave action. Zone 'B' represents the 500-year floodplain. The current 2016 flood hazard zones are shown in Figure 10, and the Proposed Unofficial 2016 Flood Hazard Zones are shown in Figure 109a. Since September 15, 2014, there have been eight (8) flood/flash flood/heavy rain events in Georgetown County totaling \$1,912,000 in property damage. One of the most significant flooding events to affect Georgetown County in recent history happened on October 4, 2015 when the remnants of Hurricane Joaquin combined with several weather patterns that came together in just the right way to produce 23.88" of rain throughout the county. Hundreds of water rescues were performed as well as widespread power outages being reported in Georgetown County alone.¹⁷

Figure 10 Current Flood Zones



Source: Georgetown County GIS, 2019.

Figure 10a: Proposed Flood Zones



Source: Georgetown County GIS, 2019.

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 September 15, 2014 to 2019, there have been no total wildfire events in Georgetown County.

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 (3) 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). The County experienced a Severe Drought June 19-July 23, 2003; September 24-November 20, 2002; and September 5, 2007-April 15, 2008. Extreme Drought conditions were experienced July 24-September 23, 2002 due to below normal precipitation, record low streamflow levels, agricultural stress and the potential threat of forest fires.¹⁹

Dam Failure

The South Carolina Public Service Authority (SCPSA) 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 4 on page A-29 of this Appendix. 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 (2) winter storms listed on the NCEI site since 2014. In December 2017, ice accrued on the Waccamaw River Bridge which caused several motor vehicle accidents; the bridge was briefly closed. In January 2018, Winter Storm Grayson created a snow and ice event for coastal South Carolina, including Georgetown County, which saw 6" of snow in some areas and sleet and freezing rain which caused >100 motor vehicle accidents due to icy road conditions. No injuries were reported.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).

- *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 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 (Monmonier, 1997). Georgetown County is at a very slight risk for tsunamis. The best information available indicates Georgetown County's greatest risk is from a M 9.0 earthquake along the Puerto Rico Trench. The tsunami could have a wave height of 4-5', and reach the Georgetown County coastline in four to five (4-5) hours with fast moving run-up and dangerous currents along the beaches and inlets. In addition, if a significant submarine landslide occurs off the South Carolina coast, then the wave would arrive within one to two (1-2) hours, and wave run-up could be significant.³⁴

- *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' 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.

For this iteration of the plan, two (2) other 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. 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.

³⁴ Georgetown County Emergency Operations Plan, *Annex D – Tsunami Response 2018*. Page D-4. May 31, 2018.

- Sea Level Rise:
 - It is difficult to predict the amount of SLR 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 SLR may increase the impact of coastal storms. The IPCC released a climate change and SLR report in 2007 that stated for the coastal regions of the United States, it is estimated that we will see at least .6m of SLR, and more likely up to 2.0m rise.

Determining Social Vulnerability

In 2011, the USACE and Dewberry conducted a Hurricane Evacuation Study of the Northern Conglomerate⁸ – the first of its kind since Hurricane Hugo. Although the 2004 Hazard Mitigation Plan compiled data utilizing the USC Hazard Assessment, the 2019 iteration of the plan will utilize the USACE/Dewberry Social Vulnerability Analysis since it is the best available data. Updated verbiage, tables, and figures will be included in the 2024 iteration of this Plan when/if another Evacuation Study is conducted and formalized.

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 Carolina³⁵ 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 10 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

³⁵ Statistical Abstract for the Myrtle Beach Area of South Carolina, 24th Edition. Marketing Research Department, Myrtle Beach Chamber of Commerce, February 2015. Web: 2019 Jan. 30, <http://cdn2.media.zp-cdn.com/689/24theditionstatisticalabstract-3e6d08.pdf>.

these regions. The values listed are cumulative and not independent by storm category and evacuation zone. Table 11 shows total population exposed to storm surge for the coastal counties of South Carolina, and Table 12 shows building values in the storm surge risk area for South Carolina coastal counties. Figure 11 depicts the spatial distribution of the population at the Census block level for Georgetown County.

Table 10 Vulnerable Population in Georgetown County⁸

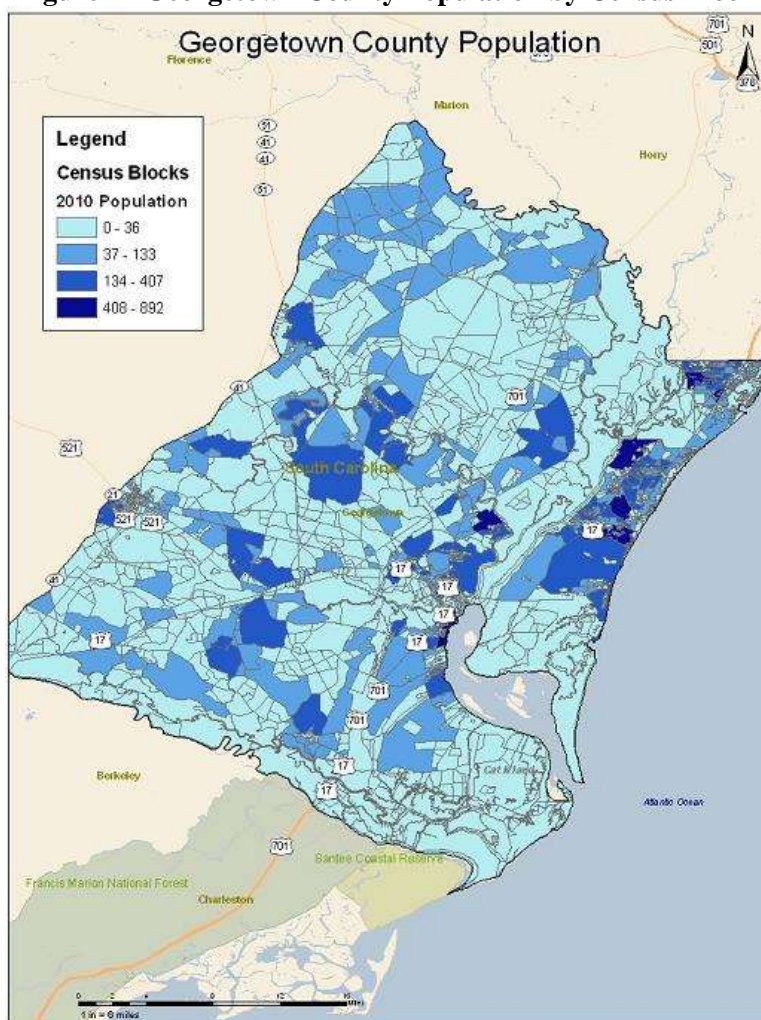
GEORGETOWN COUNTY			
	Total Population	Mobile Home Population	Tourist Population
EVAC ZONE			100% OCC
A	14,862	2,260	22,205
A & B	41,406	7,803	23,435
A, B & C	47,247	11,300	23,435
OUT	12,911	5,266	1,085
TOTAL	60,158	16,565	24,520
SURGE AREA			
1	6,010	1,456	17,200
1-2	12,941	3,609	22,290
1-3	31,792	8,189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

Table 11 Population Exposed to Storm Surge (SC Coastal Counties)²

County	Estimated Population (2010 Census) @ Risk to Storm Surge				
	SLOSH MOM1	SLOSH MOM2	SLOSH MOM3	SLOSH MOM4	SLOSH MOM5
Horry	28,415	46,982	88,288	176,274	176,274
Marion	0	0	0	659	1,443
Florence	0	0	0	1,358	1,358
Georgetown	17,877	29,796	43,897	53,177	55,763
Williamsburg	212	289	420	1,668	3,309
Charleston	146,716	241,483	291,175	327,168	345,641
Berkeley	20,489	43,356	47,979	81,543	112,772
Dorchester	6,658	22,547	43,585	53,588	70,176
Colleton	2,308	3,777	6,314	8,569	11,202
Hampton	222	363	568	846	1,130
Beaufort	69,765	106,846	136,952	151,489	156,893
Jasper	6,112	9,075	15,406	17,044	17,671

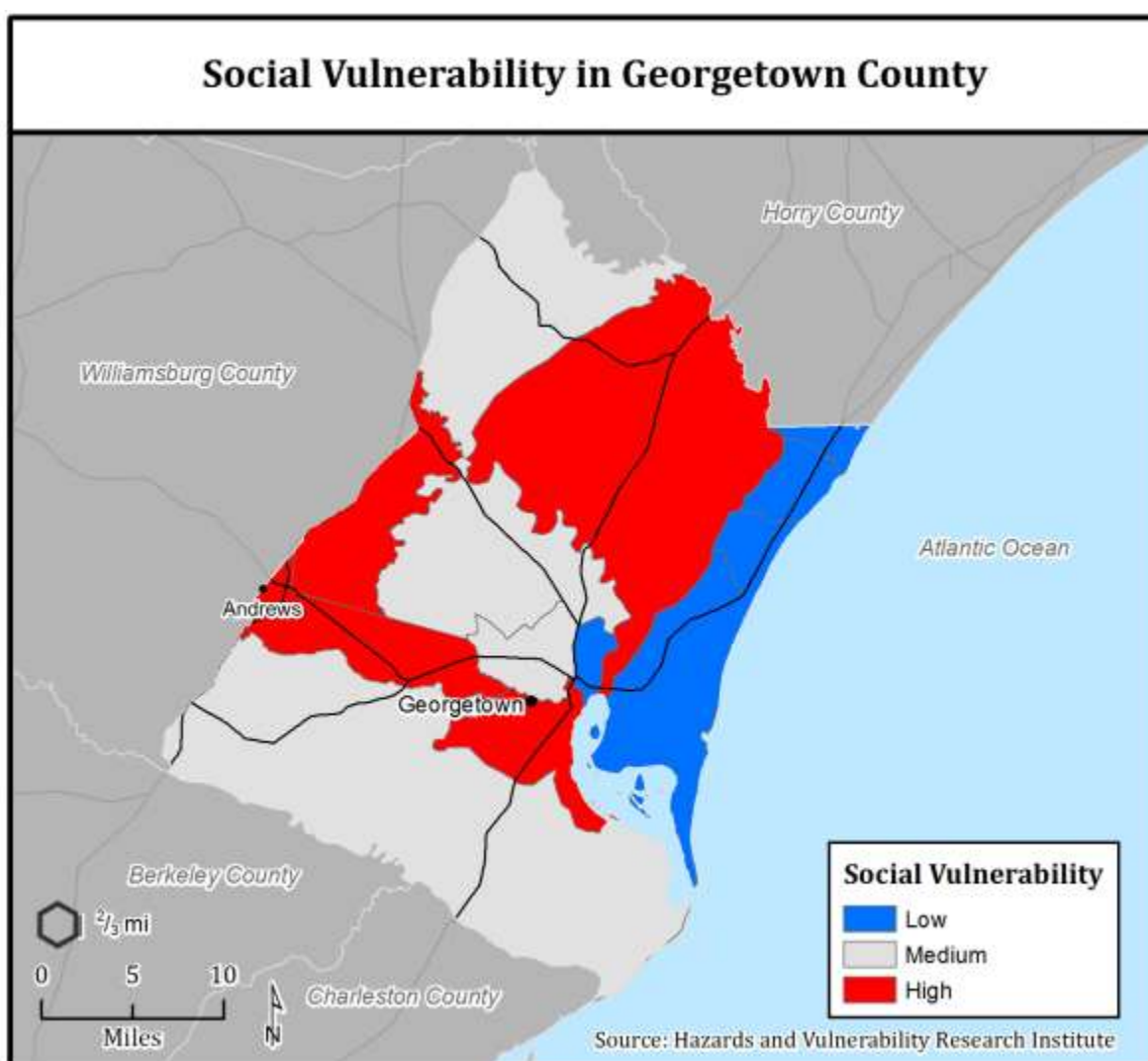
Table 12 Building Value in Storm Surge Risk Area (SC Coastal Counties)²

County	Estimated State Owned Building Value @ Risk to Storm Surge				
	SLOSH MOM1	SLOSH MOM2	SLOSH MOM3	SLOSH MOM4	SLOSH MOM5
Horry	\$222,606,313.00	\$222,606,313.00	\$268,093,951.00	\$269,353,951.00	\$269,353,951.00
Marion	N/A	N/A	N/A	N/A	N/A
Florence	N/A	N/A	N/A	N/A	N/A
Georgetown	N/A	\$738,613.00	\$40,212,986.00	\$40,966,977.00	\$40,966,977.00
Williamsburg	N/A	N/A	N/A	N/A	N/A
Charleston	\$1,088,043,541.00	\$2,149,930,065.00	\$2,489,992,736.00	\$2,546,142,710.00	\$2,601,310,193.00
Berkeley	N/A	N/A	N/A	N/A	N/A
Dorchester	N/A	N/A	\$2,403,194.00	\$2,403,194.00	\$2,403,194.00
Colleton	\$352,553.00	\$2,070,254.00	\$2,070,254.00	\$2,070,254.00	\$6,540,616.00
Hampton	N/A	N/A	N/A	N/A	N/A
Beaufort	\$7,210,288.00	\$19,260,792.00	\$35,704,466.00	\$40,466,923.00	\$58,369,389.00
Jasper	N/A	N/A	\$152,429,012.00	\$153,670,002.00	\$153,670,002.00
Totals	\$1,318,212,695.00	\$2,394,606,037.00	\$2,990,906,599.00	\$3,055,074,011.00	\$3,132,614,322.00

Figure 11 Georgetown County Population by Census Block⁸

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 than 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. Figure 12 depicts social vulnerability in Georgetown County.

Figure 12 Social Vulnerability in Georgetown County²



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 13 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 13 Mobile Home Population in the Northern Conglomerate⁸

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 (2) components of the Vulnerability Analysis have been developed to assist emergency managers in determining the number and characteristics of vulnerable properties within their communities.

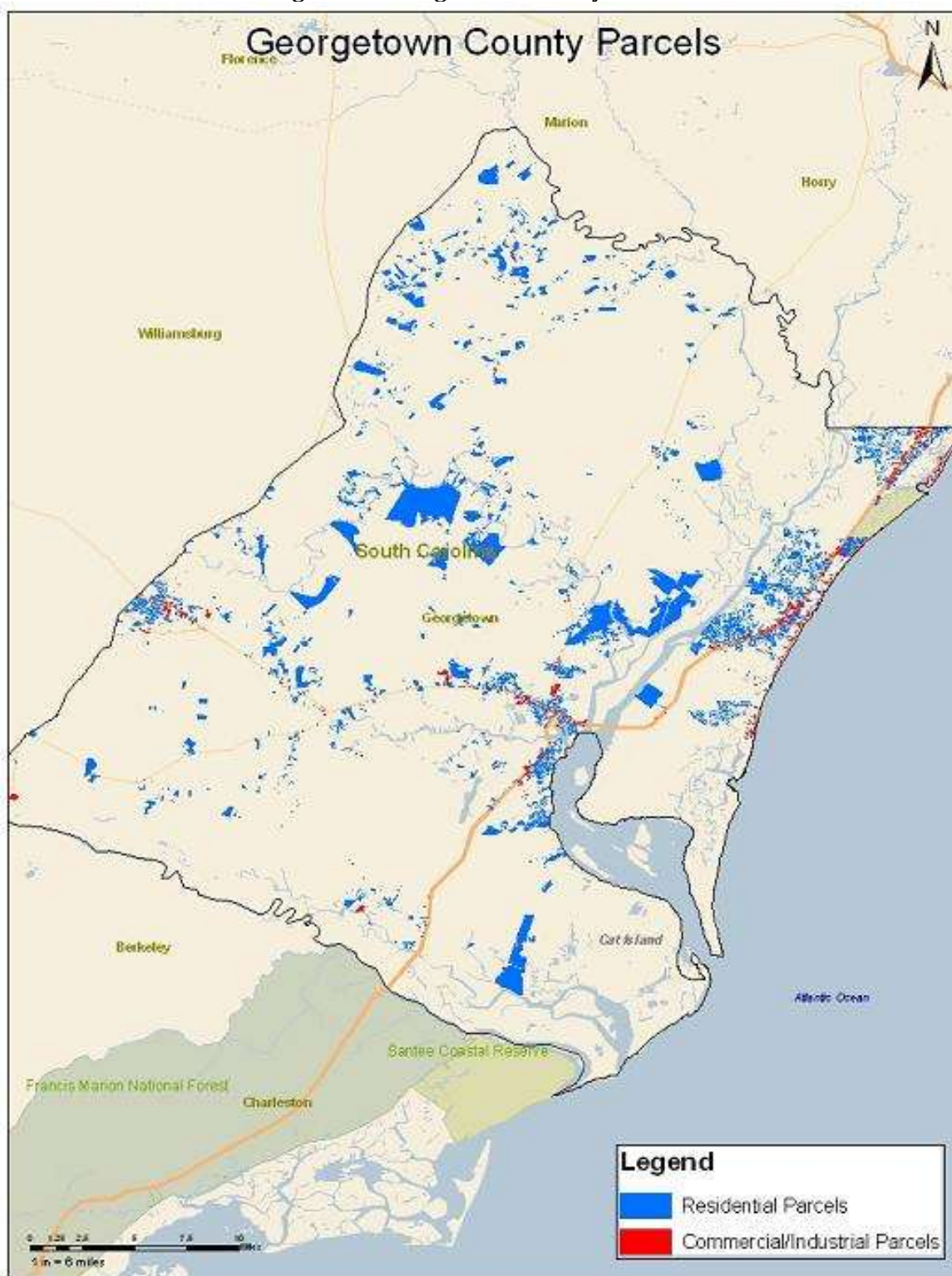
Vulnerable Structures

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 (5) 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 14 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 13 illustrates the distribution of residential, commercial, and industrial parcels in Georgetown County.

Table 14 Vulnerable Structures in Georgetown County⁸

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 13 Georgetown County Parcels⁸

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 (90%) 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. According to the SC Department of Parks, Recreation and Tourism, Georgetown County has 545,000 annual visitors (persons-trips).² 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 (70%) 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 15. 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 16. 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 15 Vulnerable Structure Comparison⁸

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

Table 16 Mobile Homes and Tourist Units in the Northern Conglomerate⁸

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 (1) vehicle per party during an evacuation. Table 17 illustrates the potential number of evacuating vehicles in each evacuation zone and potential shadow evacuees outside of an evacuation zone.

Table 17 Evacuating Vehicles in Georgetown County⁸

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.

According to the 2011 HES Behavioral Study Final Report, for Georgetown County, likely evacuee estimates for a minor Category 1 or 2 hurricane showed that 15.3% (5,100-12,400 population for the region and 4,700-12,400 population in a hazard zone) are likely to evacuate and 70% (38,000-46,300 population for the region) are unlikely to evacuate. However, for a major Category 3 or higher hurricane, 74.1% (40,400-45,200 population for the region and 37,500-45,200 population in a hazard zone) are likely to evacuate and 13.9% (4,200-12,500 population in a hazard zone) are unlikely to evacuate.³⁶

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 (2) key vulnerability factors, mobile home residents and households without vehicles, are illustrated in Figures 14 and 15. The racial breakdown of Georgetown County is displayed on Figure 16. These figures are the best available data from the Hurricane Evacuation Study (2011).

According to the U.S. Census Bureau (2017 data), compared to state averages, the population of Georgetown County has: a higher poverty level (17.1% compared to 15.4%) and more elderly residents (26.9% compared to 17.2%). There are far fewer renters (23.5% compared to 31%), and a lower population density (73.9 people per square mile compared to 153.9). 13.5% of Georgetown County residents have less than a high school education, the same as the state average.¹¹ 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 8.9% of Georgetown County households report having no vehicles which is higher than the state average of 7.3%.⁸ This percentage of households without vehicles 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 than the average community. The racial profile is more diverse than the state, with a larger percentage of African American residents (31.5% compared to 27.3%).¹¹

³⁶ Cutter, S., et al. 2011 *South Carolina Hurricane Evacuation Study Behavioral Study, Final Report*, 15 Aug. 2011, pp. 31-32.

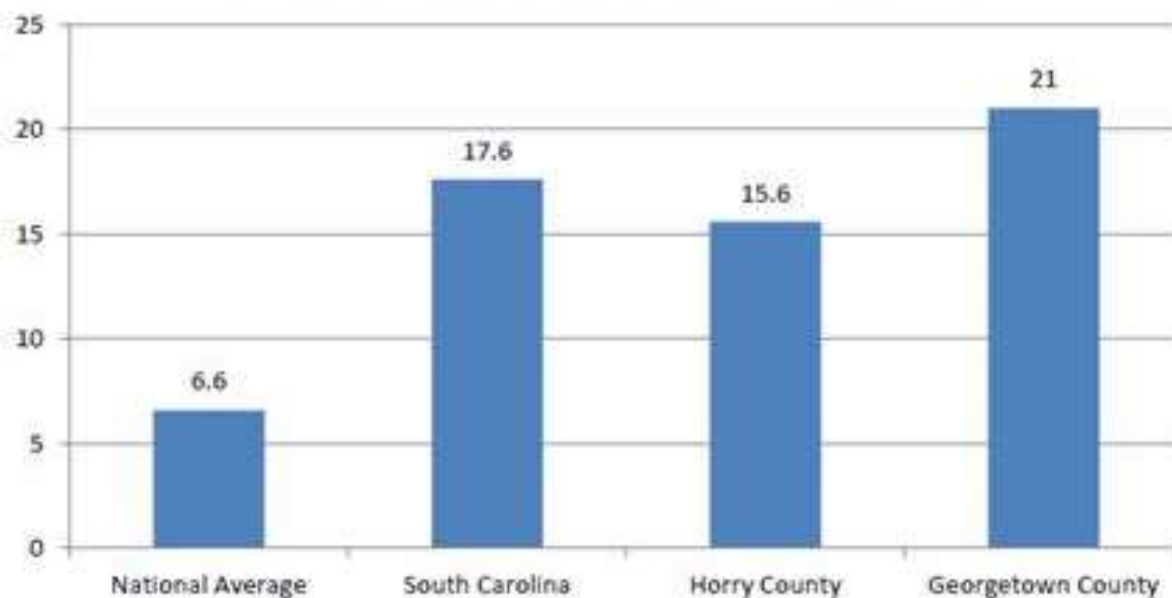
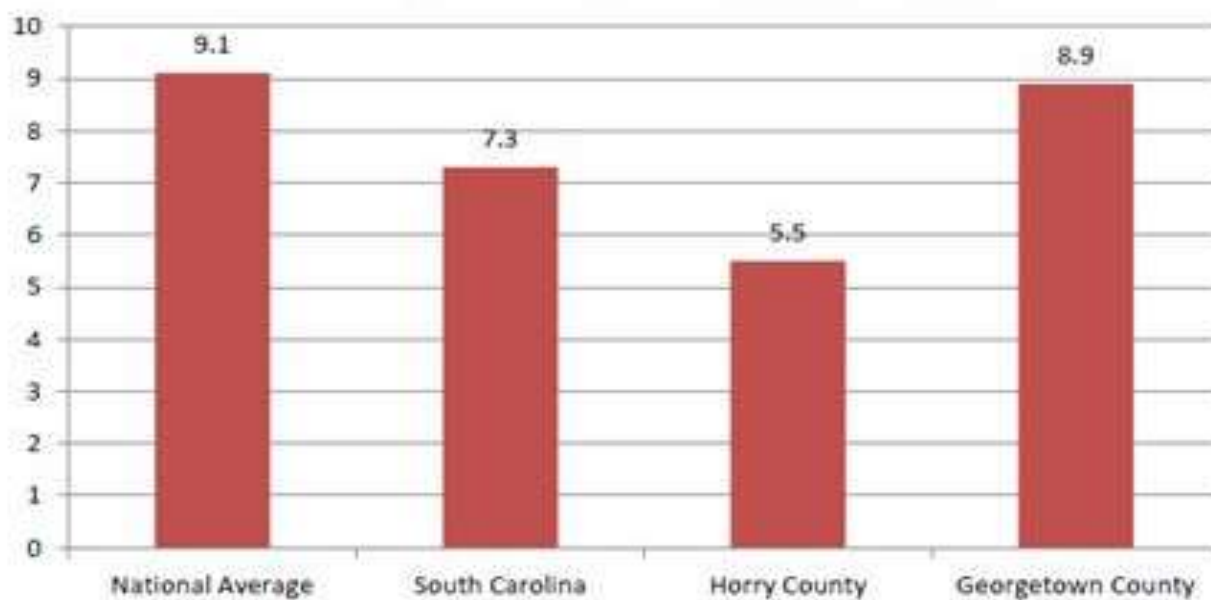
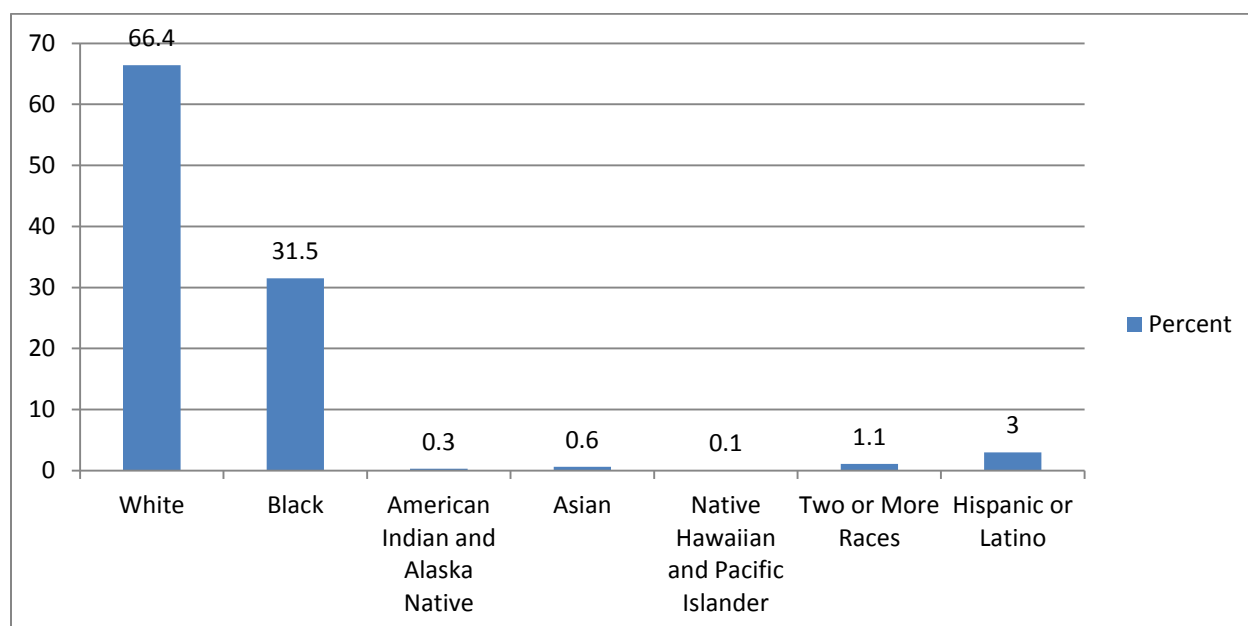
Figure 14 Percent of Mobile Home Residents⁷Figure 15 Percent of Households without Vehicles⁷

Figure 16 Georgetown County Race Breakdown



Source: U.S. Census Data, December 6, 2018.

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.⁸

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 (\$46,967) is below the national average (\$57,652) and a significant portion of the population is living below the poverty level (17.1%).¹¹ A significant portion (8.9%) 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.⁸

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. 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.⁷

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 (2) daycare centers and be near a known bottleneck 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 (2) 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.

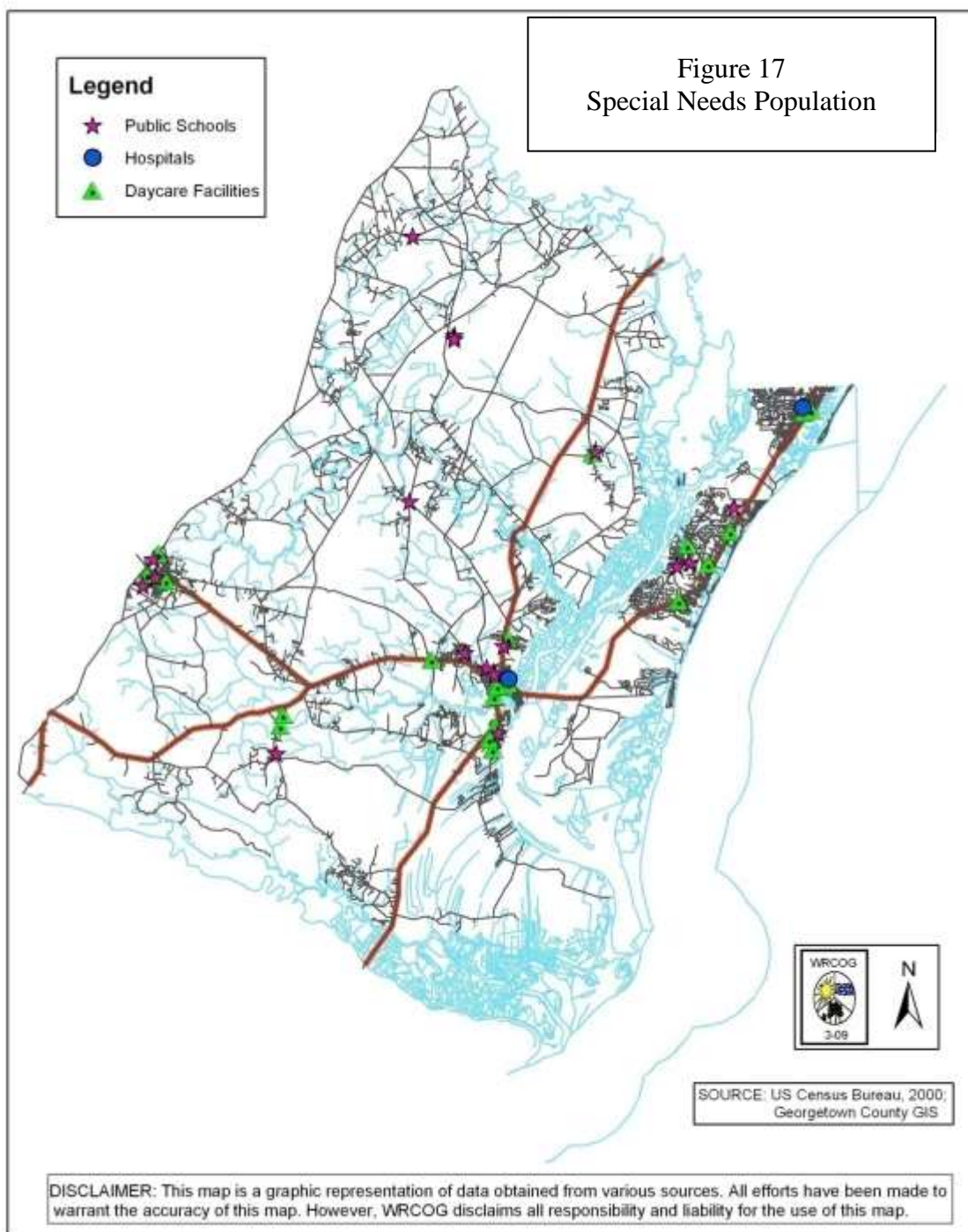
Identification of Special Needs Populations

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 17.

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).



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 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 GPS.

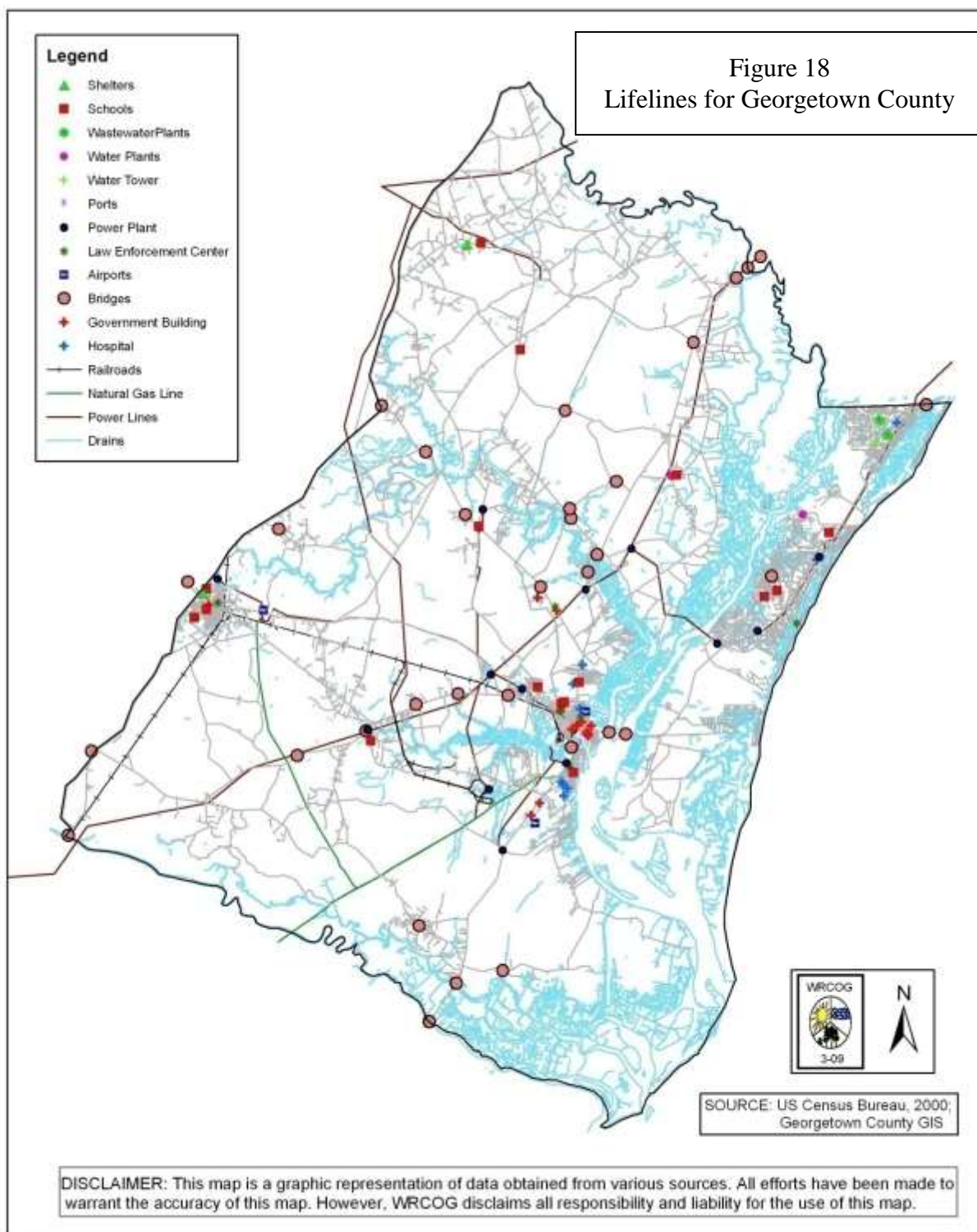
Schools

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 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 was obtained from the county emergency manager. An example of lifelines for Georgetown County is provided in Figure 18.



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 (1) 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 SCDHEC. Fire/police stations were garnered by contacting those agencies. Table 18 summarizes the data sources for lifelines and infrastructure. A complete list of critical facilities is located in Appendix B, Table 8.

Table 18 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		GCEMD
	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	SCDHEC, 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		GCEMD

Conclusions

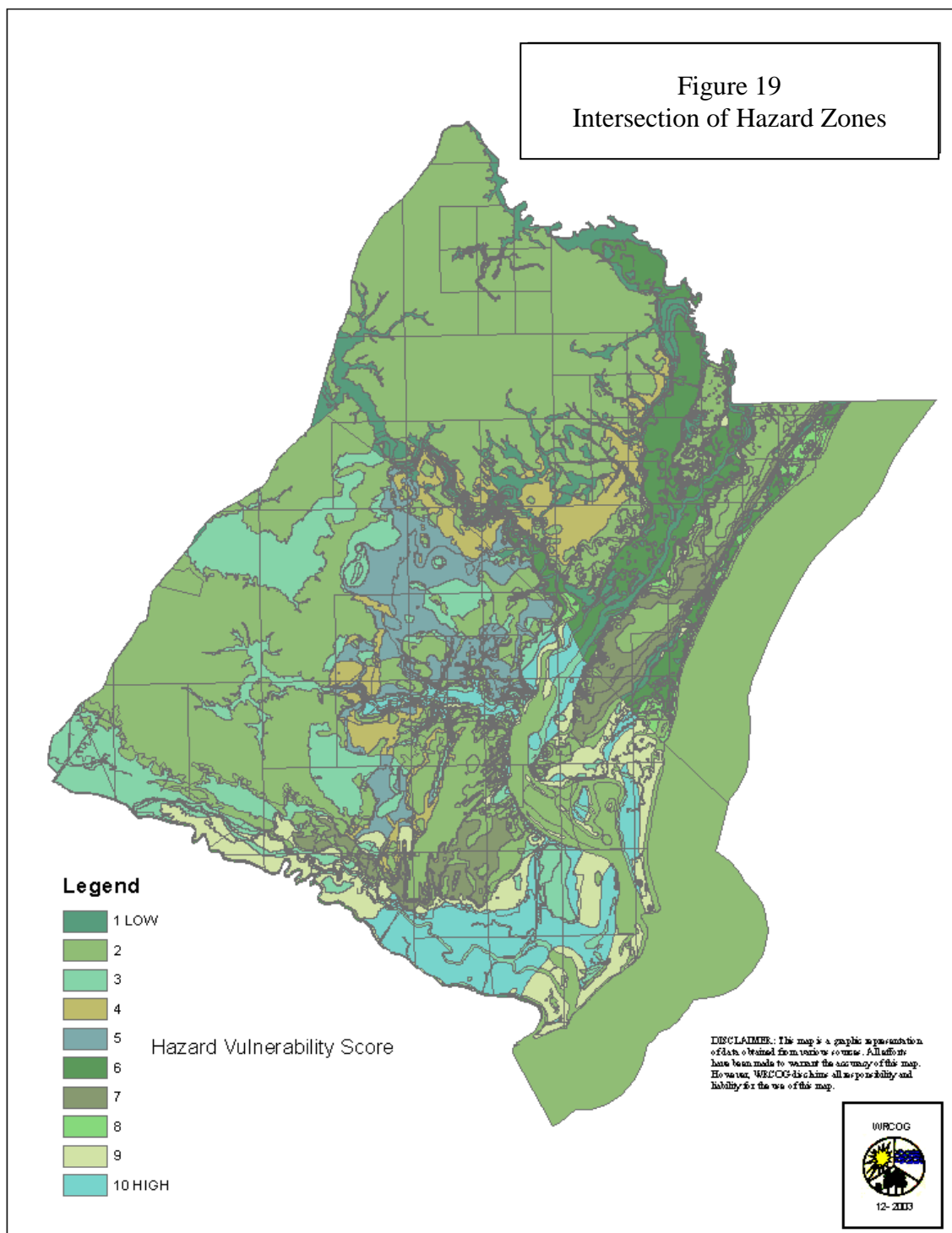
The Intersection of Hazard Zones and Social Vulnerability

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 overlaid 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. Second, the percentages of each social variable for every block were summed to arrive at a composite social vulnerability score for each block. 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 20 illustrates the place vulnerability for Georgetown County.

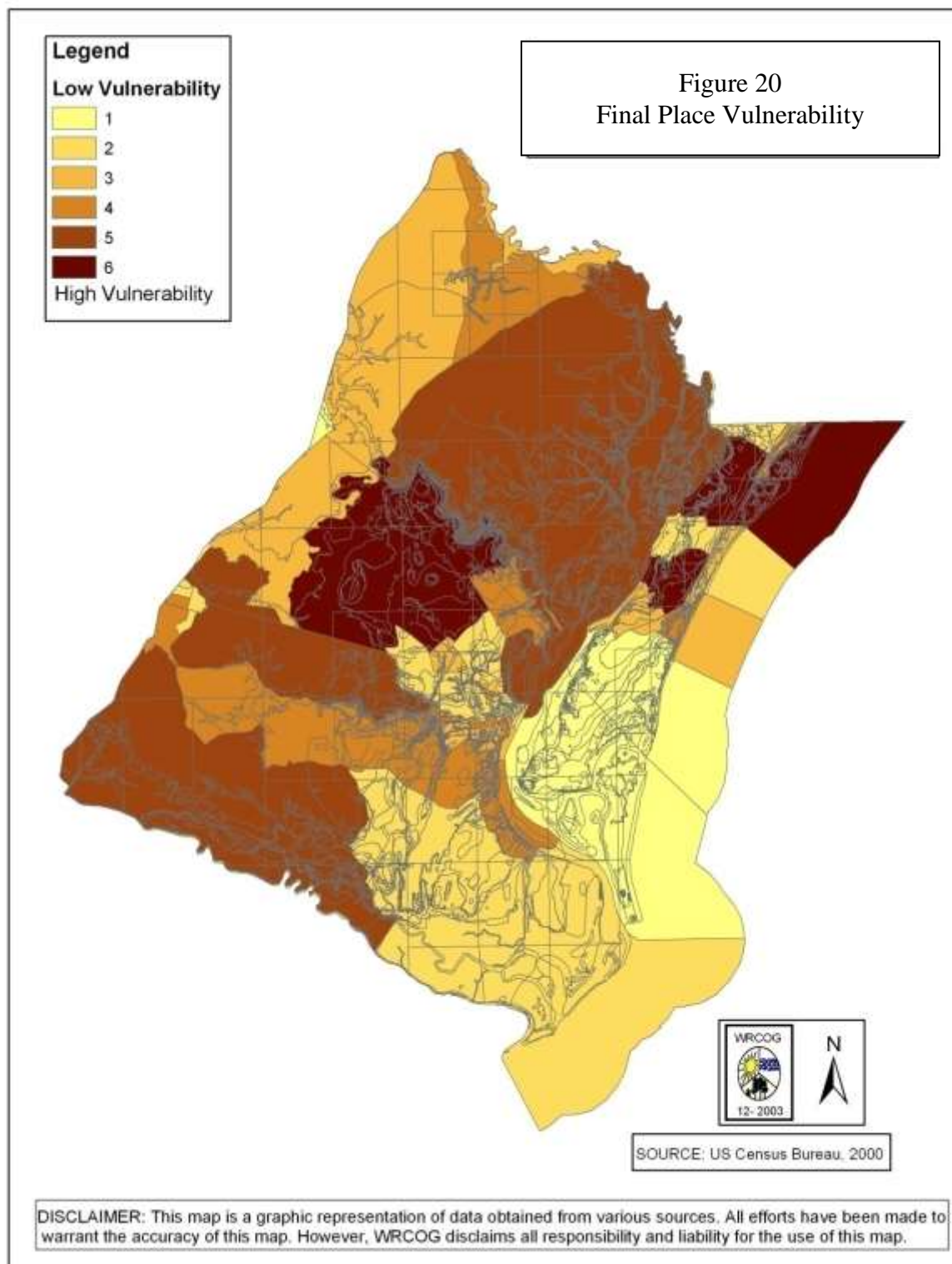
The effects of storm surge and flooding are also noticeable. Those hazards that are more geographically diffuse, such as earthquakes, or those that encompass the entire county, such as tornadoes, are not individually discernible. They still contribute, however, to the overall level of vulnerability where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

The most socially vulnerable areas in Georgetown County appear in Figure 19. 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 12 and 13) or composite hazard zones (Table 14). 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 (1) or more parts of the block group.



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.



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% 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 100 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% 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

This information is provided by the SC Forestry Commission, 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 are 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 1950 to 2018. This data was retrieved from the NCEI and SCEMD. Additional data from the NCEI 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 (57.539 mph). 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 1950 to 2018. These data were retrieved from the NCEI. Data was also retrieved concerning the frequency and severity of hail events. The determining criteria

for inclusion in this dataset are hailstones .75" 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 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 NHC, 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 NCEI and 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 is a computer simulation developed by the NWS used to predict the height of hurricane storm surge. The USACE and FEMA contracted with the NOAA NHC 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 2018. This data was obtained from the NCEI 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 (1950-2019) is available from the SC Climate Office and SCEMD. This data is provided by climate division in South Carolina. There are seven (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 (3) 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 (Santee Cooper) entitled “Emergency Action Plan for Dam Failure” and updated in 2018.

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 EOC. Additional winter weather data was analyzed from the NCEI, 2019.

Data Limitations

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

Sinkholes***Data Sources***

Data on sinkholes was obtained from the City of Georgetown and SCEMD.

Data Limitations

The dataset is limited to current events only; no historical data could be found.

Sea Level Rise***Data Sources***

Data on SLR rise was obtained from the SCEMD and the Intergovernmental Panel on Climate Change.

Data Limitations

Since the event occurs over a long period of time, there is not much information available on the phenomenon and its effects on the Georgetown County coastline.

APPENDIX B: COMMUNITY VULNERABILITY ASSESSMENT

Table of Contents

Page Number

Table of Contents.....	B-2
List of Figures and Tables	B-3
Geographic Profile	B-5
Demographic Profile	B-5
Economic Profile	B-12
Natural, Historic and Cultural Resources	B-15
Hazard Prone Locations.....	B-27
Repetitive Loss Inventory	B-28
Critical Facilities Inventory	B-32
Development Trends and Implications	B-37

List of Figures and Tables	<i>Page Number</i>
Table 1 Georgetown County Population, Housing Units, and Density 2010 – County Subdivisions and Places	B-6
Figure 1 Georgetown County Location Map	B-7
Figure 2 Population by County Census Divisions	B-8
Table 2 Comparison of Selected Census Data	B-9
Table 3 Georgetown County Employment by Industry	B-13
Table 4 20 Largest Employers in Georgetown County	B-13
Table 5 1985 – 2017 Average Per Capita Income	B-14
Table 6 2010 - 2017 Labor Force Employment for Georgetown County	B-15
Figure 3 Georgetown County Zoning	B-16
Figure 4 Commercial Timber Holdings	B-17
Figure 5 Natural Resources Location Map	B-18
Figure 6 2016 Unofficial Proposed Flood Zones	B-22
Figure 7 Status of Flood Insurance Rate Map Studies	B-23
Table 7 Selected Data for Each Jurisdiction’s Participation in the NFIP	B-27
Figure 8-A Georgetown County Repetitive Loss Properties	B-29
Figure 8-B City of Georgetown Repetitive Loss Properties	B-30
Figure 8-C Town of Pawleys Island Repetitive Loss Properties	B-31
Table 8 Georgetown County Critical Facilities	B-32
Figure 9 Critical Facilities in Georgetown County, SC	B-39
Figure 10 Land Use Map	B-41
Table 9 Future Land Use Georgetown County Study Area	B-46

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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 (5) 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 300 years. Figure B-1 displays the location of Georgetown County.

Georgetown County is one of South Carolina's largest counties with a total of 1,035 square miles. The county ranks 7th 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' on Sandy Island. Only 3% of the county exceeds 50' in elevation, and 70% of the land is less than 25' above sea level.

There are three (3) incorporated municipalities in Georgetown County. Georgetown, the county seat, had a population of 8,960 persons in 2017. The Town of Andrews (pop. 2,876) is located in the western section of the County and the Town of Pawleys Island (pop. 106) is located on the eastern edge on the Atlantic Ocean.

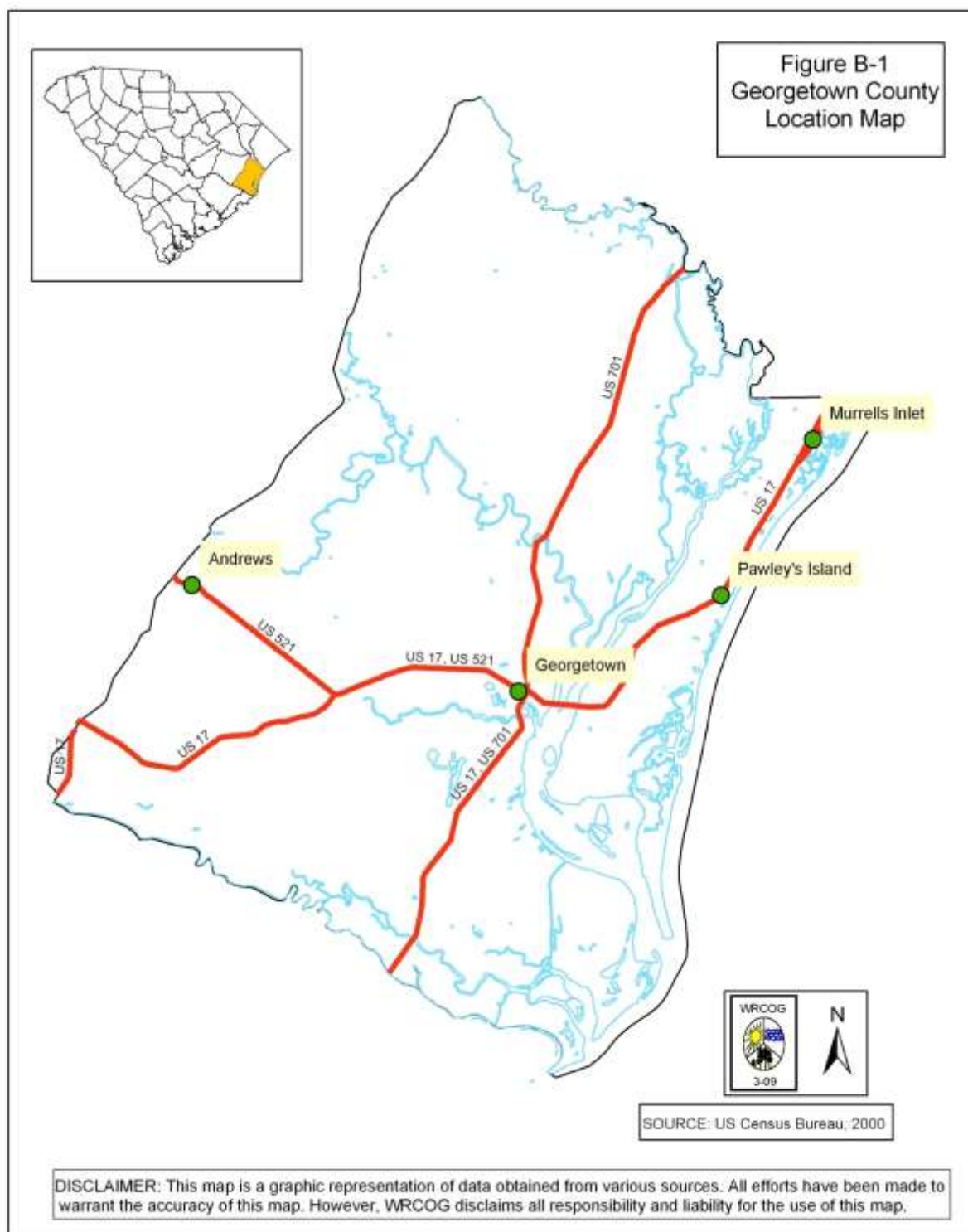
Georgetown County's climate is characterized by hot, humid summers with temperatures occasionally exceeding 95°F and moderate winters with temperatures rarely going below 20°F. The annual average precipitation is 56.27" with heavier rainfall from June through September. Snowfall is rare, and seldom exceeds 2".

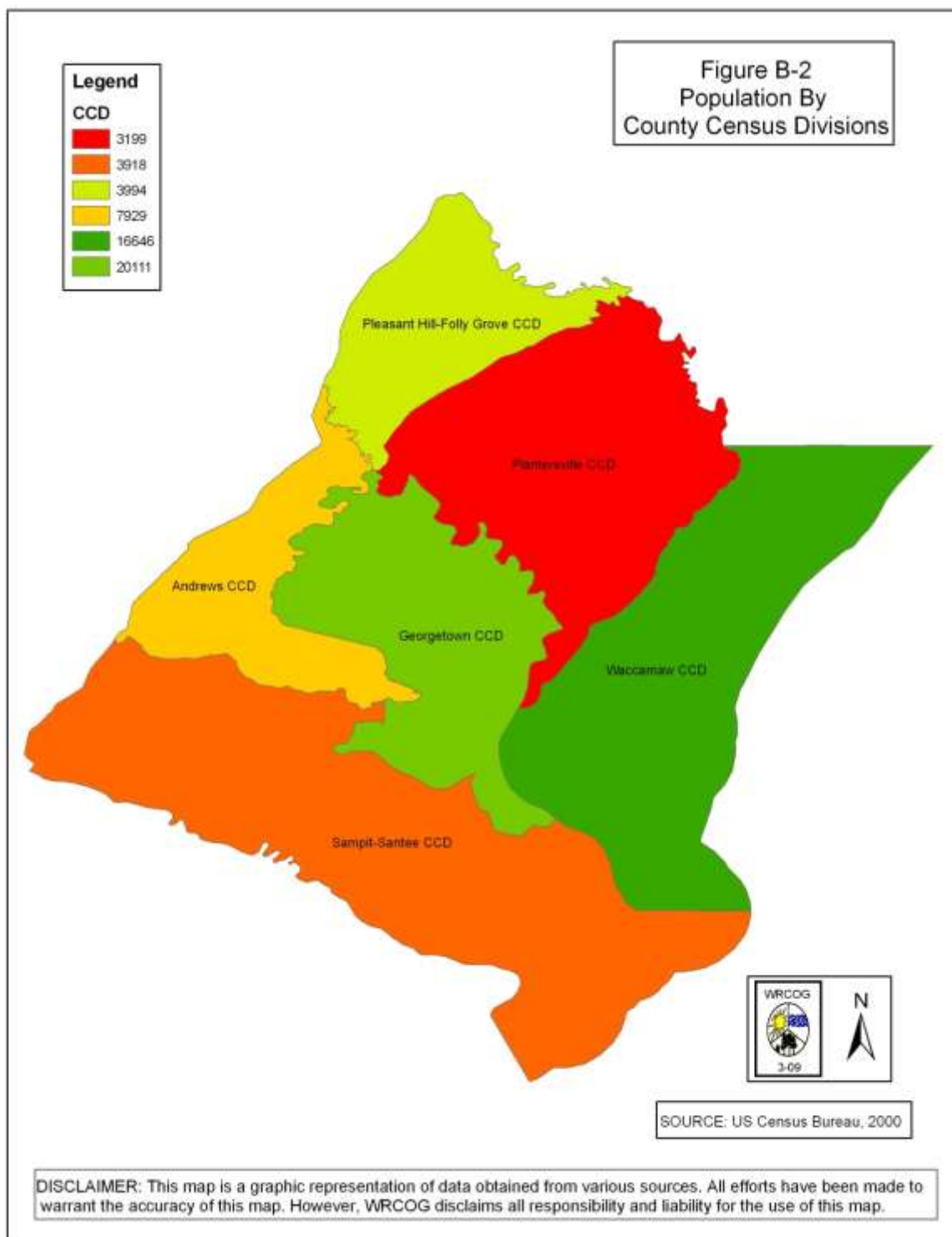
2. Demographic Profile

Georgetown County's population in 2017 was 61,607 compared to counts of 60,158 persons in 2010. The Waccamaw Neck portion of the county has seen a 25.4% decrease in population since 2000 although during peak tourist season, hundreds 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-6 shows the census divisions in the County.

**TABLE B-1 Georgetown County Population, Housing Units, and Density 2010 -
County Subdivisions and Places¹¹**

Geographic Area	Population	Housing Units	Area in Square Miles			Density per Square Mile of Land Area	
			Total Area	Water Area	Land Area	Population	Housing Units
Georgetown County	60,158	33,672	221.10		813.55	73.9	41.4
COUNTY SUBDIVISION AND PLACE							
Andrews CCD	7,608	3,308	87.71	1.12	86.59	87.9	38.2
Andrews Town (part)	2,838	1,237	2.08	0.00	2.08	1,366.1	595.4
Remainder of Andrews CCD	4,770	2,071	85.63	1.12	84.52	56.4	24.5
Georgetown CCD	19,865	8,836	143.45	9.06	134.40	147.8	65.7
Georgetown City	9,163	4,180	7.52	0.61	6.91	1,326.0	604.9
Remainder of Georgetown CCD	10,702	4,656	135.94	8.45	127.49	83.9	36.5
Plantersville CCD	2,957	1,381	189.95	8.35	181.60	16.3	7.6
Pleasant Hill-Folly Grove CCD	3,592	1,544	90.56	1.06	89.50	40.1	17.3
Sampit-North Santee CCD	3,913	1,627	299.89	67.97	231.92	16.9	7.0
Waccamaw Neck CCD	22,223	16,976	223.08	133.55	89.53	248.2	189.6
Murrells Inlet CDP	7,547	4,843	7.53	0.17	7.36	1,205.5	658.1
Pawleys Island town	103	528	0.99	0.29	0.70	146.9	752.9
Remainder of Waccamaw Neck CCD	14,573	11,605	214.56	133.09	81.47	178.9	142.4
PLACE							
Andrews town (part)	2,838	1,237	2.08	0.00	2.08	1,366.1	595.4
Georgetown city	9,163	4,180	7.52	0.61	6.91	1,326.0	604.9
Murrells Inlet CDP	7,547	4,843	7.53	0.17	7.36	1,205.5	658.1
Pawleys Island town	103	528	0.99	0.29	0.70	146.9	752.9





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

TABLE B-2 Comparison of Selected Census Data¹¹

	Georgetown County, South Carolina	South Carolina
White alone, not Hispanic or Latino, percent	64.1%	63.8%
PEOPLE		
Population		
Population estimates, July 1, 2018, (V2018)	NA	5,084,127
Population estimates, July 1, 2017, (V2017)	61,607	5,024,369
Population estimates base, April 1, 2010, (V2018)	NA	4,625,381
Population estimates base, April 1, 2010, (V2017)	60,158	4,625,381
Population, percent change - April 1, 2010 (estimates base) to July 1, 2018, (V2018)	NA	9.9%
Population, percent change - April 1, 2010 (estimates base) to July 1, 2017, (V2017)	2.4%	8.6%
Population, Census, April 1, 2010	60,158	4,625,364
Age and Sex		
Persons under 5 years, percent	4.6%	5.8%
Persons under 18 years, percent	18.8%	22.0%
Persons 65 years and over, percent	26.9%	17.2%
Female persons, percent	52.6%	51.5%
Race and Hispanic Origin		
White alone, percent	66.4%	68.5%
Black or African American alone, percent(a)	31.5%	27.3%
American Indian and Alaska Native alone, percent(a)	0.3%	0.5%
Asian alone, percent(a)	0.6%	1.7%
Native Hawaiian and Other Pacific Islander alone, percent(a)	0.1%	0.1%
Two or More Races, percent	1.1%	1.9%
Hispanic or Latino, percent(b)	3.0%	5.7%
White alone, not Hispanic or Latino, percent	64.1%	63.8%
Population Characteristics		
Veterans, 2013-2017	5,267	367,921
Foreign born persons, percent, 2013-2017	2.5%	4.9%
Housing		
Housing units, July 1, 2017, (V2017)	35,238	2,284,722
Owner-occupied housing unit rate, 2013-2017	76.5%	68.6%
Median value of owner-occupied housing units, 2013-2017	\$178,600	\$148,600


Appendix B

Median selected monthly owner costs -with a mortgage, 2013-2017	\$1,346	\$1,202
Median selected monthly owner costs -without a mortgage, 2013-2017	\$404	\$360
Median gross rent, 2013-2017	\$918	\$836
Building permits, 2017	563	35,521
Families & Living Arrangements		
Households, 2013-2017	24,840	1,871,307
Persons per household, 2013-2017	2.43	2.54
Living in same house 1 year ago, percent of persons age 1 year+, 2013-2017	88.3%	85.1%
Language other than English spoken at home, percent of persons age 5 years+, 2013-2017	3.5%	6.9%
Computer and Internet Use		
Households with a computer, percent, 2013-2017	83.2%	84.2%
Households with a broadband Internet subscription, percent, 2013-2017	70.5%	72.4%
Education		
High school graduate or higher, percent of persons age 25 years+, 2013-2017	86.5%	86.5%
Bachelor's degree or higher, percent of persons age 25 years+, 2013-2017	27.1%	27.0%
Health		
With a disability, under age 65 years, percent, 2013-2017	11.2%	10.5%
Persons without health insurance, under age 65 years, percent	13.9%	13.2%
Economy		
In civilian labor force, total, percent of population age 16 years+, 2013-2017	52.7%	59.9%
In civilian labor force, female, percent of population age 16 years+, 2013-2017	48.5%	56.0%
Total accommodation and food services sales, 2012 (\$1,000)(c)	151,988	9,763,818
Total health care and social assistance receipts/revenue, 2012 (\$1,000)(c)	467,217	22,941,292
Total manufacturers' shipments, 2012 (\$1,000)(c)	1,032,583	99,160,840
Total merchant wholesaler sales, 2012 (\$1,000)(c)	135,289	45,520,900
Total retail sales, 2012 (\$1,000)(c)	703,301	58,093,824
Total retail sales per capita, 2012(c)	\$11,685	\$12,298

Transportation		
Mean travel time to work (minutes), workers age 16 years+, 2013-2017	25.4	24.3
Income & Poverty		
Median household income (in 2017 dollars), 2013-2017	\$46,967	\$48,781
Per capita income in past 12 months (in 2017 dollars), 2013-2017	\$28,748	\$26,645
Persons in poverty, percent	17.1%	15.4%
BUSINESSES		
Businesses		
Total employer establishments, 2016	1,800	105,959 ¹
Total employment, 2016	19,471	1,716,496 ¹
Total annual payroll, 2016 (\$1,000)	716,839	69,050,740 ¹
Total employment, percent change, 2015-2016	0.7%	3.3% ¹
Total nonemployer establishments, 2016	5,427	339,739
All firms, 2012	6,266	367,726
Men-owned firms, 2012	3,370	202,446
Women-owned firms, 2012	2,216	131,856
Minority-owned firms, 2012	1,158	83,233
Nonminority-owned firms, 2012	4,916	276,269
Veteran-owned firms, 2012	692	47,987
Nonveteran-owned firms, 2012	5,256	303,137
GEOGRAPHY		
Geography		
Population per square mile, 2010	73.9	153.9
Land area in square miles, 2010	813.55	30,060.70
FIPS Code	45043	45
Value Notes		

1. Includes data not distributed by county.

Estimates are not comparable to other geographic levels due to methodology differences that may exist between different data sources.

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable. Click the Quick Info  icon to the left of each row in TABLE view to learn about sampling error.

The vintage year (e.g., V2018) refers to the final year of the series (2010 thru 2018). *Different vintage years of estimates are not comparable.*

Fact Notes

- (a) Includes persons reporting only one race
- (b) Hispanics may be of any race, so also are included in applicable race categories
- (c) Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data

Value Flags

- Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper interval of an open ended distribution.
- D Suppressed to avoid disclosure of confidential information
- F Fewer than 25 firms
- FN Footnote on this item in place of data
- NA Not available
- S Suppressed; does not meet publication standards
- X Not applicable
- Z Value greater than zero but less than half unit of measure shown

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and Poverty Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

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. In 2005, the steel mill closed its doors. On June 25, 2017, the Liberty Steel Georgetown plant began operations, rehiring former employees and bringing in experienced workers building the workforce up to 100.³⁷ Table B-3 shows the number of Georgetown County residents employed in each of the employment sectors in the second quarter 2018.

³⁷ Crone, Anita, et al. "Tap the Heat: Liberty Steel Georgetown Set to Recommission Mill June 25." *South Strand News*, 23 June 2018. Retrieved February 27, 2019, from www.southstrandnews.com/news/tap-the-heat-liberty-steel-georgetown-set-to-recommission-mill/article_d027cbec-74aa-11e8-a9c8-ffed5966e497.html#comments.

TABLE B-3
Georgetown County Employment by Industry¹⁰

Employment Industry	Number of Employees
Accommodation and Food Services	3,862
Administrative and Support and Waste Management and Remediation Services	1,288
Agriculture, Forestry, Fishing, and Hunting	535
Arts, Entertainment, and Recreation	1,196
Construction	1,229
Finance and Insurance	954
Health Care and Social Assistance	4,226
Information	106
Management of Companies and Enterprises	108
Manufacturing	2,124
Other Services (except Public Administration)	645
Professional, Scientific, and Technical Services	778
Public Administration	1,292
Real Estate and Rental and Leasing	522
Retail Trade	2,950
Transportation and Warehousing	453
Utilities	292
Wholesale Trade	221

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 20 employers in Georgetown County.

TABLE B-4
20 Largest Employers in Georgetown County (listed alphabetically)¹⁰

Company Name	Type of Business
AgruAmerica Inc.	Manufacturing
Brookgreen Gardens	Non-Profit
City of Georgetown	Government
County of Georgetown	Government
Dining Concepts Group LLC	Food Service
Employer Solutions Staffing Group I	Staffing Services
Food Lion LLC	Grocery Store
Founders National Golf LLC	Golf Course
Georgetown Co. Dept. of Education	Education
Georgetown Hospital System	Medical Services
Georgetown Physician Services LLC	Medical Services
International Paper	Paper Products/Containers
New Penn Financial LLC	Mortgage
Safe Rack LLC	Loading Rack Technologies
Santee Cooper SC Public Service Authority	Electric Generation
ScribeAmerica LLC	Medical Scribe Provider
SEFA Transportation Inc.	Freight Traffic Manager
Valdes Enterprises LLC	Business Services
Waccamaw Management LLC	Property HOA Management
Wal-Mart Associates Inc.	Retail

According to key findings released by the Grand Strand Tourism Commission in *The Economic Impact of Tourism on the Grand Strand* dated April 2016:

- Direct visitor spending on the Grand Strand (Horry and Georgetown Counties combined) totaled an estimated \$4.8 billion in the fiscal year-ending 2015, a growth of 13% in the four (4) years since the previous study was completed.
- The total economic impact of visitor spending is approximately \$7.0 billion, when including multiplier effects from indirect and induced activity tied to visitor spending.
- Visitor spending and its indirect and induced impact support 83,000 jobs in Horry and Georgetown Counties, approximately 53% of total employment across the Grand Strand.
- Nearly 80% of tourism jobs are year-round jobs, according to our analysis of three (3) major tourism sectors and over 68,000 jobs summarized in the Quarterly Census of Employment and Wages.
- Tourism generated \$2.2 billion of income for employees and business owners.
- Visitor spending on the Grand Strand generated a combined \$484.6 million in tax revenue for the state and local governments. Of this total, approximately \$325.8 million was generated for the state from taxes on tourism activities and labor income, and \$158.8 million in tax revenue was generated for the local governments of the Grand Strand.³⁸

Table B-5 compares local, state, and national per capita income figures for 1983 to 2016.

TABLE B-5
1985 - 2017 Average Per Capita Income¹¹

	1985	1995	1998	2002	2005	2012	2016	2017
Georgetown	\$9,479	\$16,134	\$21,207	\$26,193	\$30,399	24,513	26,601	28,748
South Carolina	\$10,734	\$16,861	\$22,372	\$25,370	\$28,285	23,906	25,521	26,645
United States	\$13,896	\$20,800	\$24,203	\$30,795	\$34,471	28,051	29,829	31,177

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 2017. 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.

³⁸ Salvino, Robert F., Ph.D., Loftis, Gary M., Coastal Carolina University, *The Economic Impact of Tourism on the Grand Strand*, Grand Strand Tourism Activity Fiscal Year-end June 30, 2015. (April 2016). Retrieved February 11, 2019, from http://www.tourismworksforus.com/docs/TourismImpactStudy_4-20-16.pdf.

TABLE B-6
2010 – 2017 Labor Force and Employment for Georgetown County¹¹

	2010	2011	2012	2013	2014	2015	2016	2017
Labor Force	26,429	25,960	26,001	26,019	26,087	25,751	26,292	26,747
Employment	23,201	22,734	22,258	22,522	22,847	22,756	26,194	24,152
% of Unemployment	12.1%	12.3%	14.0%	13.1%	12.1%	11.2%	9.5%	9.6%

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 $\frac{3}{4}$ 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 (3) types of forests in Georgetown County. Evergreen forests cover 46% of the land in Georgetown County, mixed forests cover 12%, and saturated bottomland forests cover 13%. 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 381,697 acres of forestland which are owned and used by the forest and paper industry. This accounts for 28% of the County's forest land. The owners generally use a best management practice approach to managing the forests called Sustainable Forestry Initiative (SFI). 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.

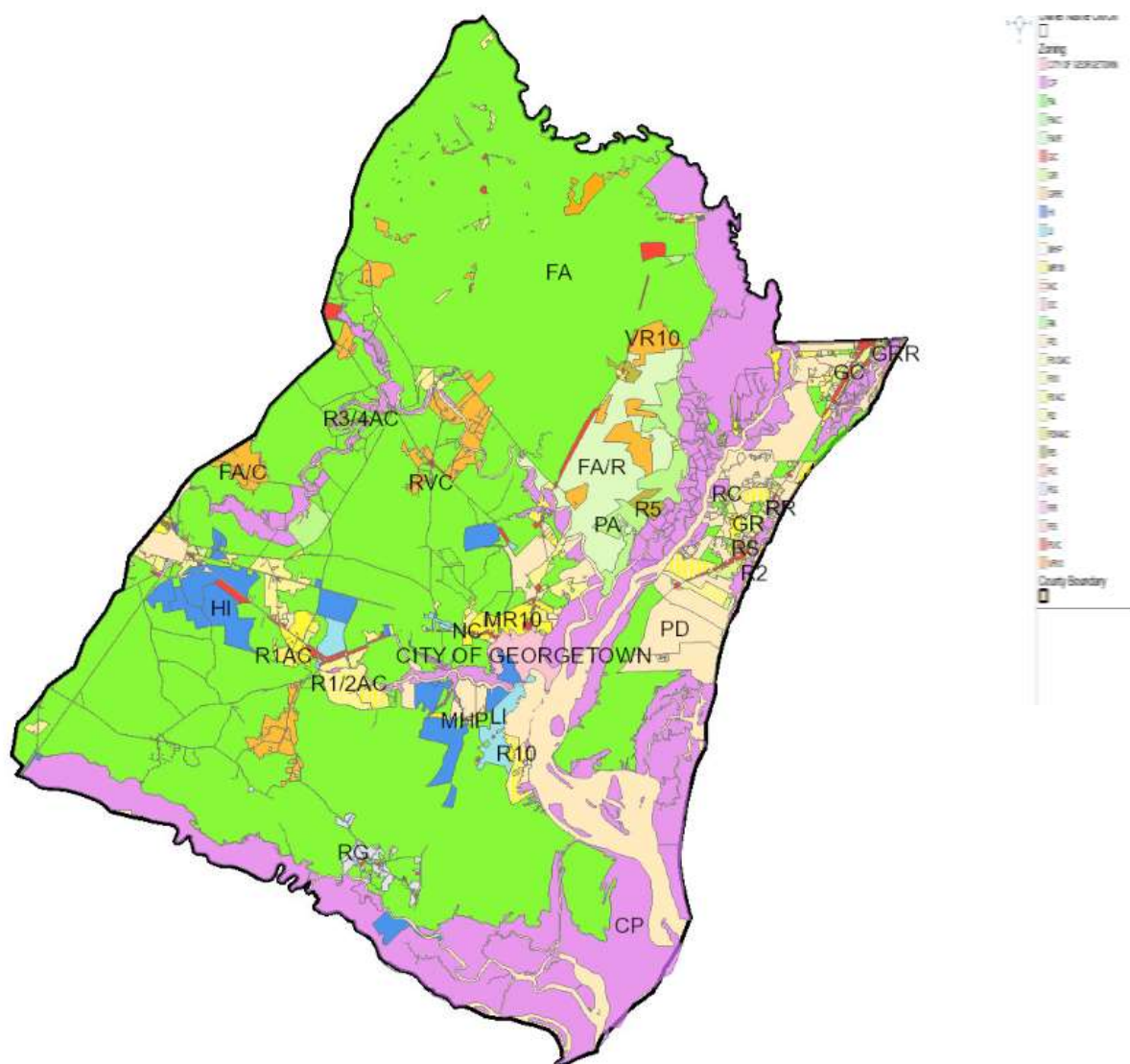
Georgetown County has a wide variety of wildlife habitat, which supports many different kinds of wildlife. Man's activities, as well as soil characteristics and natural moisture conditions, have influenced vegetative patterns. Habitat varies from dry upland ridges that have sparse plant cover to upland 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.

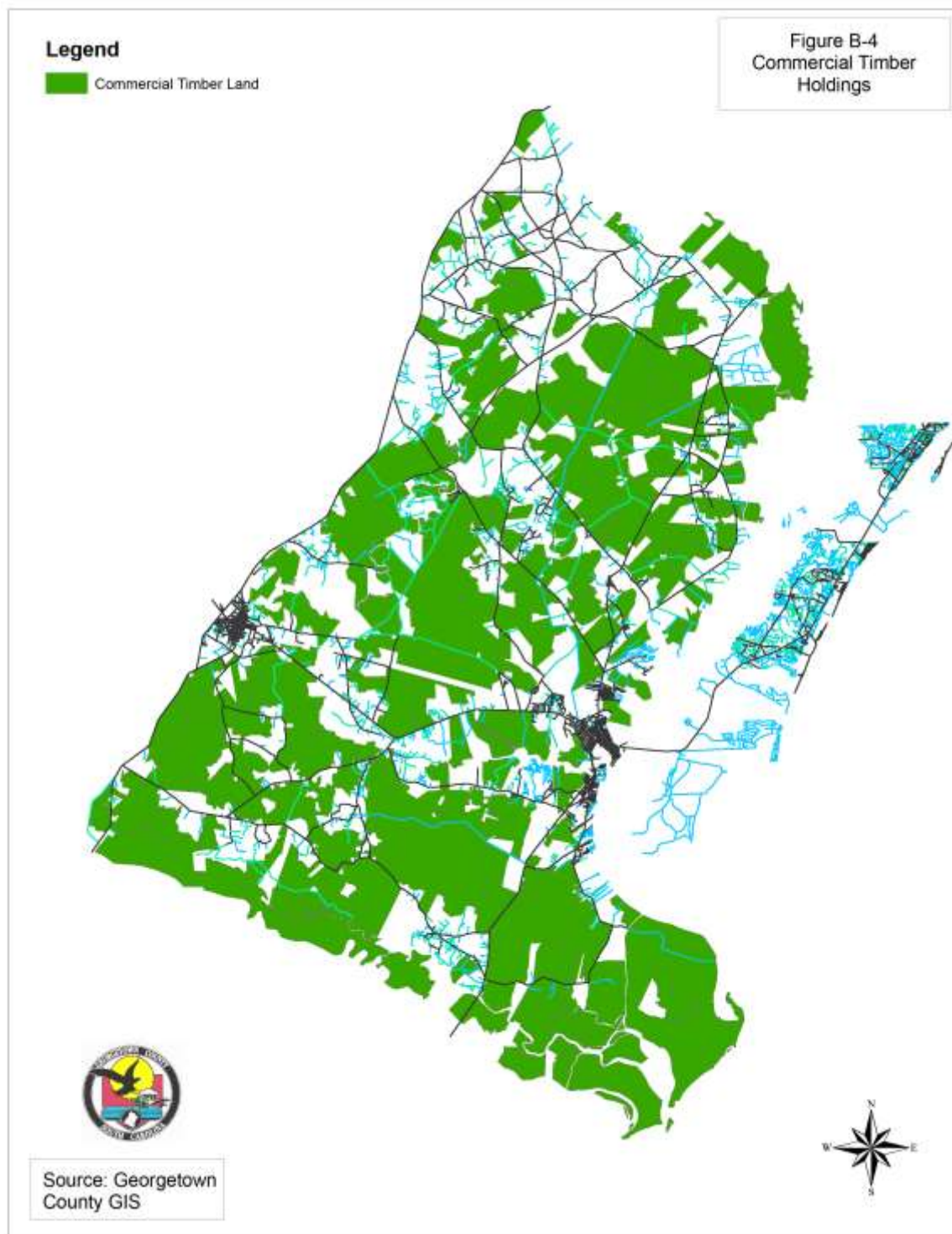
The major game species in the County are eastern cottontail rabbit, gray squirrel, white-tailed deer, wild turkey, bobwhite quail, and mourning dove. The wild turkey population is increasing because of restocking carried out by the South Carolina Department of Natural Resources (SCDNR). The Region also 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 (WMAs) 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 WMAs. These areas are subject to regulations and special schedules of the SCDNR. 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-3 Georgetown County Zoning





Source: Georgetown County GIS, April 10, 2019.



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 35 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 (NERR), designated in 1992, and encompassing over 18,000 acres of tidal marshes, beach, and coastal waters, is located here. There are now 29 NERRs 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.³⁹
- 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 SCDNR. 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' 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% of the county exceeds 50' in elevation, and 70% of the land is less than 25' above sea level.

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

³⁹ Allen, Wendy. "Comments on Draft Hazard Mitigation Plan for Georgetown County." Message to Cindy Grace. 22 May 2014. E-mail.

Appendix B

drainage, septic tanks and building foundations. According to the Natural Resources Conservation Service (NRCS) of the USDA, there are 29 soil series present within the county's boundaries which are categorized below:

Type	Slope (%)	Elevation (Ft.)	Mean Annual Precipitation (Inches)	Farmland Class	Landform Type	Natural Drainage Class	Frequency of Flooding	Minor Components
Leon Sand	0-2	0-140	36-53	Not prime	Flatwoods	Poor	None	Pinckney, Chipley, Echaw, Centenary, Pelham
Beaches		0-10	50-60	Not prime	Beaches	Poor	Frequent	
Yauhannah Loamy Fine Sand	0-2	10-60	50-60	All areas are prime	Flats	Moderately well	None	Grifton
Bladen Loam	0-2	0-60	44-57	Farmland of statewide importance	Flats	Poor	None	Eulonia, Cape Fear
Bohicket Silty Clay Loam		0	50-60	Not prime	Tidal Marshes	Very poor	Very frequent	
Cape Fear Loam		0-40	50-60	Not prime	Depressions, drainage ways, flats	Very poor	None	
Levy Silty Clay Loam		0-10	60-70	Not prime	Tidal marshes	Very poor	Very frequent	
Centenary Fine Sand		10-80	50-60	Not prime	Flats	Somewhat excessive	None	
Chisolm Sand	0-4	10-80	50-60	Farmland of statewide importance	Flats	Somewhat excessive	None	
Wakulla Sand	0-2	10-80	50-60	Not prime	Flats	Somewhat excessive	None	
Eulonia Loamy Fine Sand	0-2	10-80	50-60	All areas are prime	Flats	Moderately well	None	Bladen
Eulonia Loamy Fine Sand	2-6	10-80	50-60	All areas are prime	Flats	Moderately well	None	
Rutlege Sand		0-40	50-60	Farmland of statewide importance	Depressions, flood plains, drainage ways	Very poor	Frequent	
Echaw Sand		10-40	50-60	Not prime	Flats	Moderately well	None	Leon
Hobcaw Loam		0-40	50-60	Farmland of statewide importance	Carolina bays, depressions, flood plains	Very poor	None	
Hobonny Muck		0-40	50-60	Not prime	Flood plains, drainage ways	Very poor	Frequent	
Johnston Loam		0-40	50-60	Not prime	Carolina bays, flood plains, drainage ways	Very poor	Frequent	
Lakeland Fine Sand	0-6	10-80	50-60	Not prime	Flats	Excessively	None	
Newhan Sand	0-6	0-20	50-60	Not prime	Dunes	Excessively	None	Beaches
Norfolk Loamy Fine Sand	0-2	40-80	50-60	All areas are prime	Flats	Well	None	
Lynn Haven Sand		10-40	50-60	Not prime	Flats	Poor	None	
Chipley Fine Sand	0-2	0-80	50-60	Not prime	Flats, stream terraces	Somewhat poor	None	Leon, Johnston
Witherbee Fine Sand		10-40	50-60	Not prime	Flats	Somewhat poor	None	Leon
Chastain Silty Clay Loam		0-40	50-60	Not prime	Flood plains	Poor	Frequent	

Type	Slope (%)	Elevation (Ft.)	Mean Annual Precipitation (Inches)	Farmland Class	Landform Type	Natural Drainage Class	Frequency of Flooding	Minor Components
Grifton Loamy Fine Sand		10-60	50-60	Farmland of statewide importance	Depressions, flats	Poor	None	
Udorthents, Loamy		10-80	50-60	Not prime	Flats	Moderately well	None	
Wahee Fine Sandy Loam		10-80	50-60	Farmland of statewide importance	Flats	Somewhat poor	None	Bladen
Yemassee Loamy Fine Sand		10-60	50-60	Prime if drained	Flats	Somewhat poor	None	Grifton
Water	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

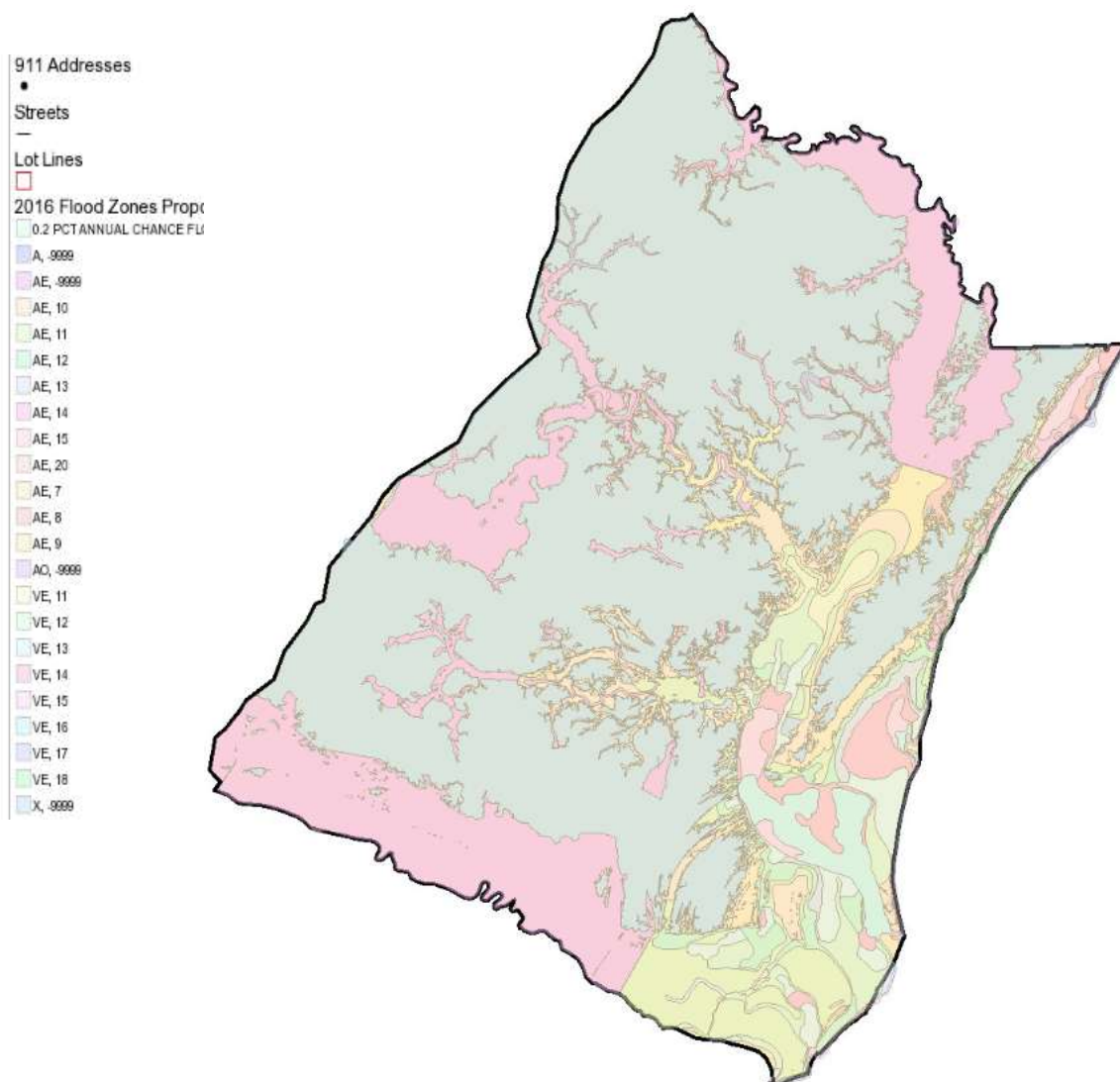
Source: <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>.

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% 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" 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.

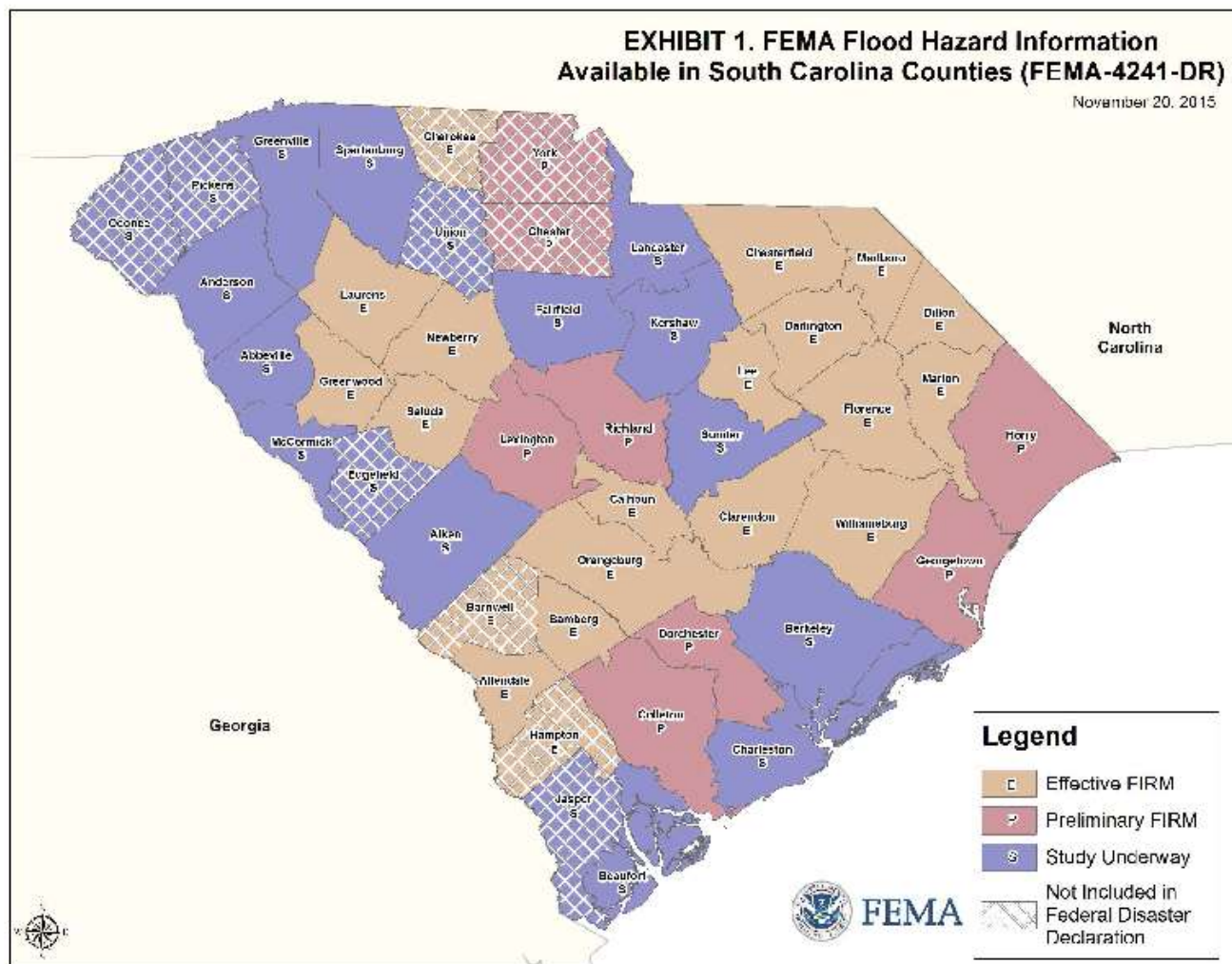
Studies of flood-prone areas in the county have been made by FEMA. A reevaluation of the county was conducted to determine the impacts of flooding generated by waves. Flood Insurance Rate Maps (FIRM's) are available which show various flood zones and base flood elevation data. These maps were last revised in 2016.

FIGURE B-6: 2016 UNOFFICIAL PROPOSED FLOOD ZONES FOR GEORGETOWN COUNTY



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

Figure B-7: Status of Flood Insurance Rate Map Studies



Source: "Exhibit 1. FEMA Flood Hazard Information Available for South Carolina Counties (FEMA-4241-DR)." SCDNR. N.p., November 20, 2015. Retrieved March 8, 2018 from <http://www.dnr.sc.gov/water/flood/documents/Map-FloodHazardInformationSC.pdf>

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 500-900' with secondary aquifers encountered at depths of 70' or less. Yields from the principal aquifers range from 150-900 gallons per minute (g.p.m.) and from 50-100 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 (5) 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 (1) 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 (1) 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 SCDHEC requirements; for fishing and support of aquatic life; and for agricultural and industrial uses).

The North Inlet was reclassified by SCDHEC as Outstanding Resource Waters (ORW) 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 ft². 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 ft². 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. 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 38 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) 12/3/69
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. Minim Island Shell Midden (38GE46) (RESTRICTED) 8/18/82
17. Joseph H. Rainey House (a.k.a. Rainey-Camlin House) 4/20/84
18. Atalaya 9/7/84
19. Belle Isle Rice Mill Chimney 10/3/88 (Georgetown County Rice Culture c.1750-c.1910 MPS)
20. Beneventum Plantation House 10/3/88 (Georgetown County Rice Culture c.1750-c.1910 MPS)
21. Fairfield Rice Mill Chimney 10/3/88 (Georgetown County Rice Culture c.1750-c. 1910 MPS)
22. Keithfield Plantation 10/3/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
23. Nightingale Hall Rice Mill Chimney 10/3/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
24. Pee Dee River Rice Planters' Historic District 10/3/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
25. Rural Hall Plantation 10/3/88 (Georgetown County Rice Culture c. 1750 - c.1910 MPS)
26. Summer Chapel Rectory, Prince Frederick's Episcopal Church 10/3/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
27. Summer Chapel, Prince Frederick's Episcopal Church 10/3/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
28. Weehaw Rice Mill Chimney 10/3/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
29. Milldam Rice Mill and Rice Barn 10/3/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
30. Richmond Hill Plantation Archaeological Sites (Restricted) 10/6/88 (Georgetown County Rice Culture c.1750 - c.1910 MPS)
31. Winyah Indigo School 11/3/88
32. All Saints Episcopal Church 3/13/91
33. Cedar Grove Plantation Chapel 3/13/91
34. Black River Plantation House 3/2/94
35. Hobcaw Barony 11/2/94

- 36. Friendfield Plantation 4/12/96
- 37. Pleasant Hill Consolidated School 4/30/98
- 38. Parrish's Motor Court 10/16/17

Former listing, China Grove, was removed on 3/15/00 due to it being destroyed by fire.⁴⁰

5. Hazard Prone Locations

Due to Georgetown County's location along the north coast of South Carolina, the entire County is at risk of effects from hurricanes and tropical storms. The NHC'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% 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 (4) of the local governments in Georgetown County participate in the NFIP. 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. Table B-7 below displays data related to each jurisdiction's participation in the NFIP:

TABLE B-7
Selected Data for Each Jurisdiction's Participation in the NFIP⁴¹

Name of Local Governments	# Policies In Force	Insurance In Force	Premiums In Force	Total Losses	Total Payments	# Rep Loss Properties
Georgetown County	7,544	\$2,144,320,000	7,242,631	3,985	\$91,613,815.70	163
City of Georgetown	540	146,424,900	592,027	358	7,481,944.34	26
Town of Pawleys Island	404	118,560,700	1,424,646	249	3,312,199.82	107
Town of Andrews	11	2,737,000	3,569	7	52,136.65	0

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, winter storms, sinkholes, and SLR. These disasters and the county's risk probabilities are discussed in the Risk Assessment found in Appendix A. As stated previously, sinkholes and SLR were not included in the hazard analysis. Man-made hazards are not normally included in the plan, but were mentioned in this iteration due to the monetary damage caused by the sinkholes in 2011, although they are not considered a high frequency risk for the area. SLR is a natural-occurring phenomenon, and there is a potential that its extent along the coast will be seen in the future.

⁴⁰ "The National Register of Historic Places: National Register Sites in Georgetown County, SC." 7 March 2019, n.p. Retrieved March 8, 2018 from https://en.wikipedia.org/wiki/National_Register_of_Historic_Places_listings_in_Georgetown_County,_South_Carolina.

⁴¹ FEMA, Policy & Claim Statistics for Flood Insurance, 8/21/2018. Retrieved February 7, 2019 from <https://www.fema.gov/policy-claim-statistics-flood-insurance>.

However, it is difficult to determine that extent along the Georgetown coast without further study.

6. Repetitive Loss Inventory

FEMA has identified 163 “repetitive loss properties” that are situated in the unincorporated areas of Georgetown County. FEMA classifies a property as “repetitive loss” if the NFIP has paid two (2) or more flood claims of \$1,000 or more in any given 10-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 2018 shows that Georgetown County has 7,544 flood insurance policies in force. Total coverage amount of flood insurance policies totals over \$2 billion while premiums paid totals near \$7 million. The total amount of losses submitted (regardless of status) is 3,985, and the total payment amount on losses is over \$91 million according to FEMA data.⁴¹

Figure B-8-A displays information concerning the 163 properties listed in FEMA’s repetitive loss inventory for unincorporated Georgetown County. Of the 163 total repetitive loss properties listed, none of the properties were documented as being non-residential. Specific owner names, addresses, whether they are covered by flood insurance or not, whether they have received flood insurance claims, or the amounts of such claims 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 Figures B-8-B and B-8-C for the City of Georgetown (26 properties) and the Town of Pawleys Island (107 properties), respectively.

FIGURE B-8-A
Georgetown County, SC Repetitive Loss Inventory

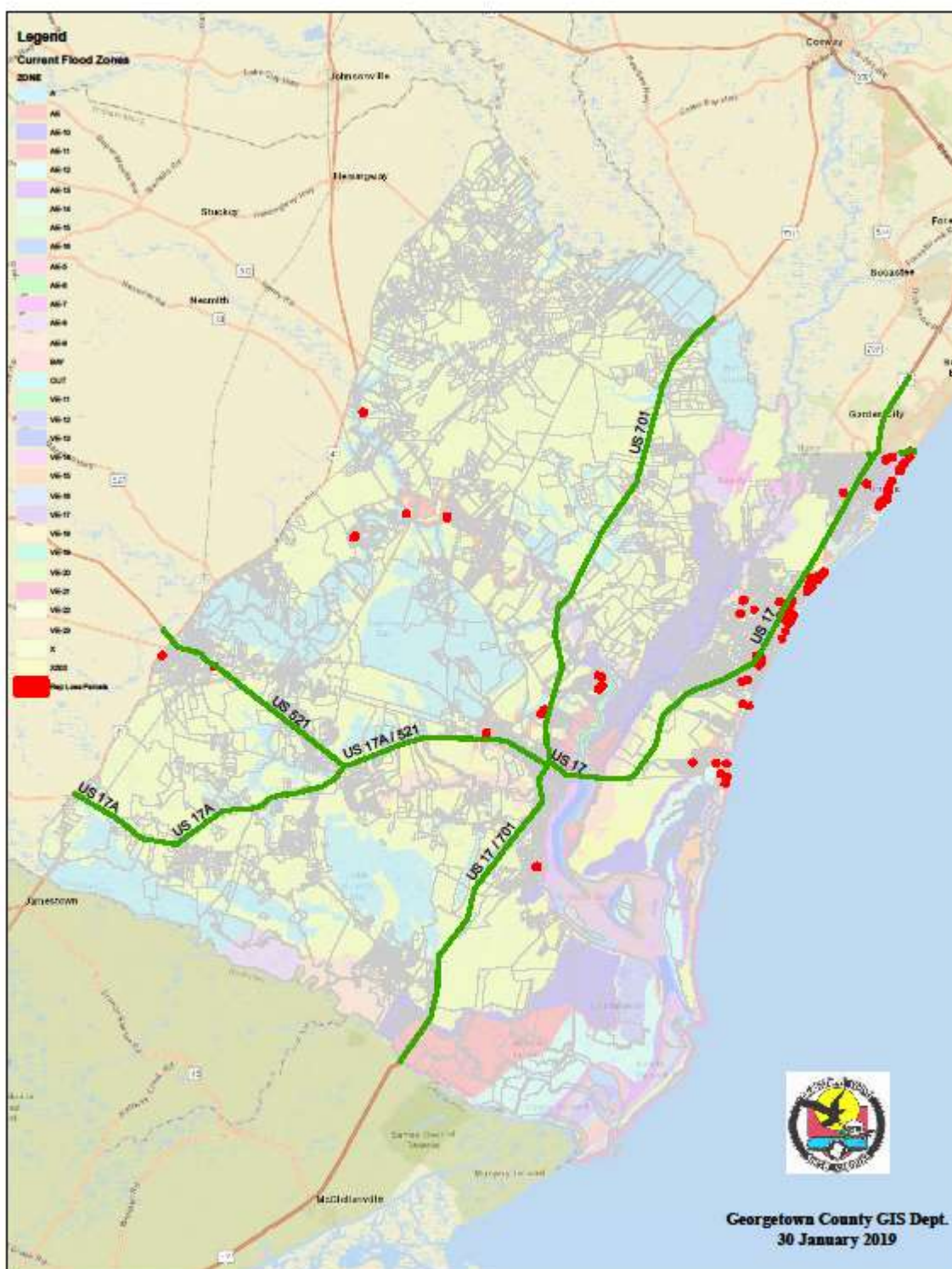


FIGURE B-8-B
City of Georgetown, SC Repetitive Loss Inventory

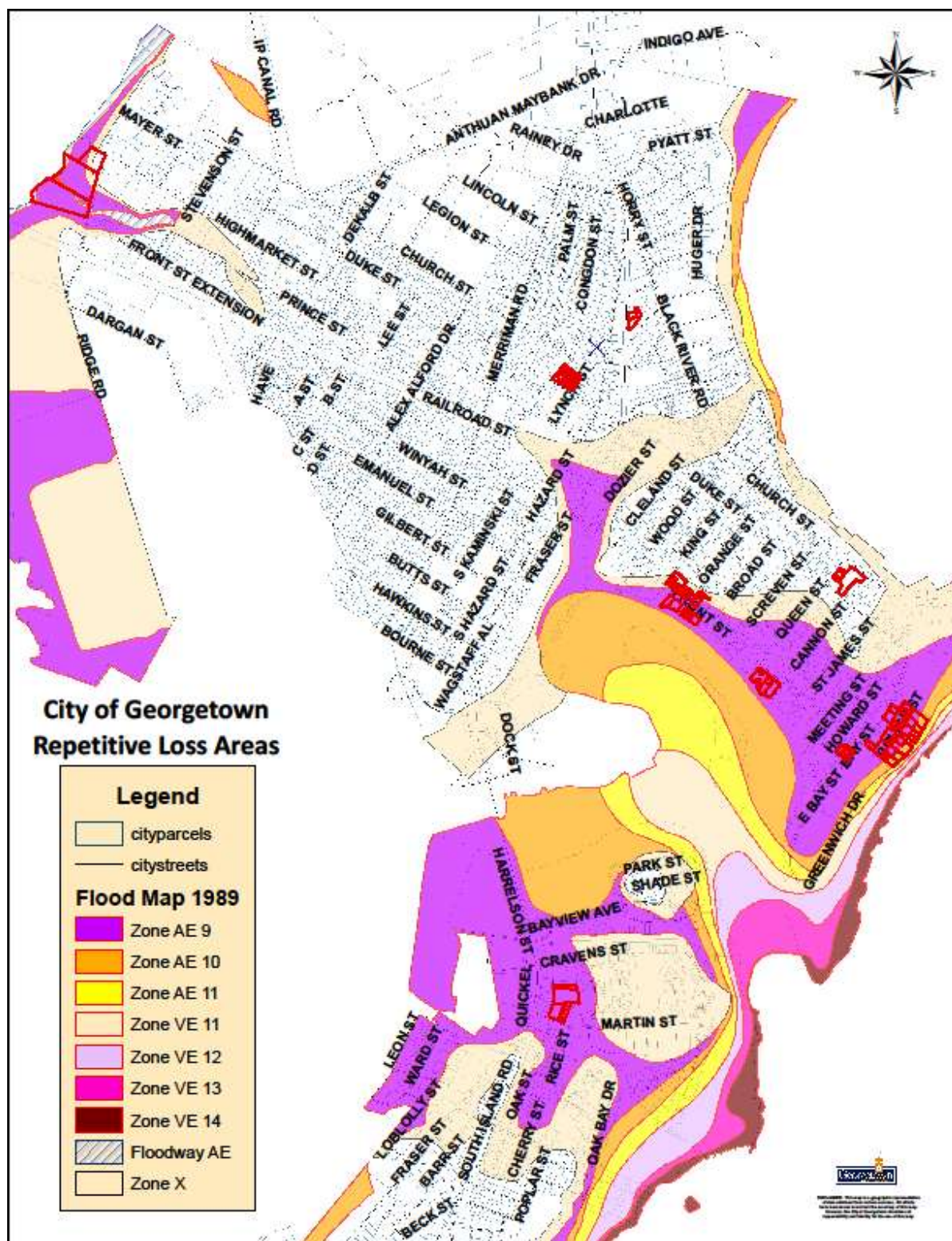
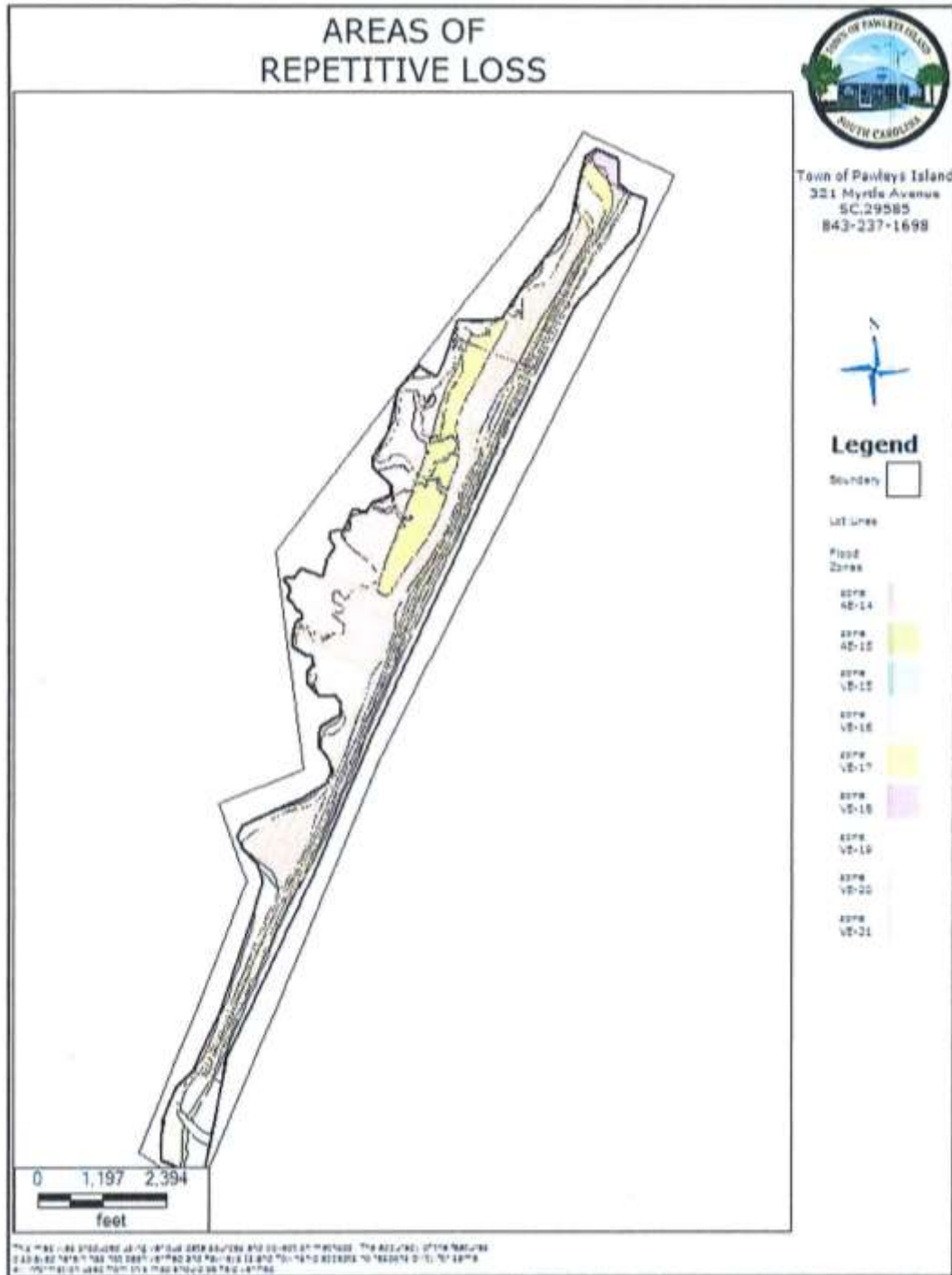


FIGURE B-8-C
Town of Pawleys Island, SC Repetitive Loss Inventory



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-8. Most of these facilities are shown on Figure B-9. 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-8		
Georgetown County Critical Facilities		
LEVEL 1		
<u>COMMUNICATIONS</u>		
Verizon Tel Lec Sw, Georgetown	1113 Front Street	Georgetown
Georgetown Co. Central Dispatch/9-1-1	2222-C Highmarket Street	Georgetown
Town/Primary Antenna Site	2390 Browns Ferry Rd.	Georgetown
Pawleys Island Antenna Site	645 Grate Ave.	Pawleys Island
Kent Antenna Site	486 Tanager Rd.	Georgetown
Burgess / 707 Site	6283 Starbuck Lake Rd.	Murrells Inlet
<u>SCHOOLS (used as Shelters)</u>		
Andrews Elementary School	13072 County Line Rd.	Andrews
Pleasant Hill Elementary School	127 Schoolhouse Dr.	Hemingway
<u>EMERGENCY SERVICES</u>		
Georgetown City Police Dept.	2222 Highmarket Street	Georgetown
Georgetown City Fire Dept. Sta. #1	1405 Prince St.	Georgetown
Georgetown City Fire Dept. Sta. #2	2900 S Fraser 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/EMS Station #15	470 W Cottonwood St.	Andrews
Pawleys Island Police Dept.	321 Myrtle Avenue	Pawleys Island
Georgetown County Sheriff's Office	430 N Fraser St.	Georgetown
South Carolina Highway Patrol Office	220 Ridge Street	Georgetown
<u>HOSPITALS</u>		
Tidelands Health Georgetown Memorial Hospital	606 Black River RD	Georgetown
Tidelands Waccamaw Community Hospital	4070 Highway 17S. Bypass	Murrells Inlet
LEVEL 2		
<u>ELECTRIC</u>		
Winyah Power Generating Plant	661 Steam Plant Dr.	Georgetown
<u>RESPONSE STAGING AREAS</u>		
SC Army National Guard Armory	3777 S. Fraser St.	Georgetown
SC Army National Guard Armory	401 W. Main Street	Andrews
<u>BRIDGES</u>		
0	US 17 Alternate	Andrews
1	US 17 Business SBL	Murrells Inlet
2	US 701	Conway
3	US 521	Andrews
4	Eaddy Rd.	Georgetown
5	Mt. Zion Ave.	Georgetown
6	Powell Rd.	Georgetown

Appendix B

7	Corner Loop	Georgetown
8	No Data Available	
9	Brick Chimney Rd.	Georgetown
10	David Wray Dr.	Georgetown
11	Dunbar Rd.	Georgetown
12	Choppee Rd.	Georgetown
13	Old Pee Dee Rd.	Hemingway
14	Folly Grove Rd.	Hemingway
15	Schoolhouse Dr.	Hemingway
16	County Line Rd.	Andrews
17	Bigelow Dr.	Georgetown
18	Columbus Rd.	Georgetown
19	Walker Rd.	Georgetown
20	Walker Rd.	Georgetown
21	Ten Acre Rd.	Andrews
22	Pennyroyal Rd.	Georgetown
23	Pennyroyal Rd.	Georgetown
24	Pennyroyal Rd.	Georgetown
25	Old Town Ave.	Georgetown
26	Montford Rd.	Georgetown
27	Powell Rd.	Georgetown
28	Unnamed Rd.	Georgetown
29	Ten Acre Rd.	Andrews
30	Hwy 521 Bypass	Andrews
31	Hwy 521 Bypass	Andrews
32	Hwy 521 Bypass	Andrews
33	Hwy 521 Bypass	Andrews
34	Hwy 521 Bypass	Andrews
35	County Line Rd.	Andrews
36	Johnson Rd.	Georgetown
37	IP Canal Rd.	Georgetown
38	Lanes Creek Dr.	Georgetown
39	Gapway Rd.	Georgetown
40	South Causeway Rd.	Pawleys Island
41	South Causeway Rd.	Pawleys Island
42	North Causeway Rd.	Pawleys Island
43	No Data Available	
44	Farthing Rd.	Pawleys Island
45	Kings River Rd.	Pawleys Island
46	Oatland Lake Rd.	Pawleys Island
47	Litchfield Dr.	Pawleys Island
48	Gilman Rd.	Pawleys Island
49	Gilman Rd.	Pawleys Island
50	Gilman Rd.	Pawleys Island
51	Gilman Rd.	Pawleys Island
52	Castaway Key Dr.	Pawleys Island
53	Plantersville Rd.	Georgetown
54	Plantersville Rd.	Georgetown

55	Plantersville Rd.	Georgetown
56	Denmark Dr.	Georgetown
57	Exodus Dr.	Georgetown
58	Exodus Dr.	Georgetown
59	Squirrel Run Rd.	Hemingway
60	Squirrel Run Rd.	Hemingway
61	Bullard Rd.	Hemingway
62	Tomahawk St.	Georgetown
63	IP Canal Rd.	Georgetown
64	IP Canal Rd.	Georgetown
<u>LANDFILL</u>		
Landfill	203 Landfill Road	Georgetown
LEVEL 3		
<u>SCHOOLS</u>		
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
<u>GOVERNMENT SERVICES</u>		
Georgetown County Courthouse	333 Cleland St.	Georgetown
<u>EMERGENCY SERVICES</u>		
Georgetown County Detention Center	2394 Browns Ferry Rd.	Georgetown
Choppee Complex (Alternate EOC)	8259 Choppee Rd.	Georgetown
<u>ELECTRIC</u>		
Litchfield Electric Substation	Information available from Santee Cooper.	Pawleys Island
Pawleys Island Substation	Information available from Santee Cooper.	Pawleys Island
Pennyroyal Substation	303 Kiawah Rd.	Georgetown
Sampit Electric Substation	Kent Rd.	Georgetown

Appendix B

Pringle Ferry Substation	877 Browns Ferry Rd.	Georgetown
Georgetown Switching Station	Gapway Rd.	Georgetown
Georgetown Substation	308 Greentown Road	Georgetown
Belle Isle Substation	6552 S Fraser St.	Georgetown
Dunbar Substation	790 Dunbar Road	Georgetown
Plantersville Substation	3986 Jackson Village Road	Hemingway
Arcadia Electric Substation	Information available from Santee Cooper.	Pawleys Island
Carter Crossroads Substation	9247 Pleasant Hill Dr.	Hemingway
Andrews Substation	4039 County Line Road	Andrews
Rhems Substation	8484 County Line Road	Georgetown
3V Substation	770 Woodstock Street	Georgetown
<u>PORT</u>		
Port of Georgetown	3124 Dock St.	Georgetown
<u>AIRPORTS</u>		
222 Andrews Municipal	11920 Gapway Road	Andrews
11866 Georgetown County	129 Airport Rd	Georgetown
<u>WATER TREATMENT PLANTS</u>		
Georgetown City Water Plant	2355 Anthuan Maybank Blvd.	Georgetown
Pawleys Island Waste Water Treatment Plant	456 Clearwater Dr.	Pawleys Island
Waccamaw Neck Water Treatment Plant	1975 Sandy River Road	Pawleys Island
<u>POTABLE WATER</u>		
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	2400 Anthuan Maybank Dr.	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 Plant	Georgetown
Airport Industrial Park Elevated Storage Tank	Beechcraft Ln.	Georgetown
Plantersville Elevated Storage Tank	1408 Exodus Dr.	Georgetown
Red Hill Water Storage Tank	12074 Browns 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
WASTEWATER TREATMENT PLANTS		
Georgetown City Waste Water Treatment Plant	126 Ridge St.	Georgetown
DeBordieu Colony Waste Water Treatment Plant	Firehouse St.	DeBordieu Colony
North Santee Waste Water Treatment Plant	Earl Rd.	Georgetown
CONVENIENCE CENTERS		
Andrews	201 Carberry St.	Hemingway
Black River	8829 North Fraser St.	Georgetown
Browns Ferry	11547 Browns Ferry Rd.	Georgetown
Dunbar	1946 Dunbar Rd.	Georgetown
Johnson Rd.	720 Johnson Rd.	Georgetown
Landfill	201 Landfill Rd.	Georgetown
Maryville	3555 South Fraser St.	Georgetown
Murrells Inlet	5455 Wesley Rd.	Murrells Inlet
North Santee	135 Veronica Rd.	Georgetown
Old Pee Dee	8208 Old Pee Dee Rd.	Georgetown
Pawleys Island	596 Grate Rd.	Pawleys Island
Pleasant Hill	11987 Pleasant Hill Rd.	Georgetown
Sampit	2656 Saints Delight Rd.	Georgetown
Yauhannah	18900 North Fraser St.	Georgetown

8. Development Trends and Implications

According to the *Georgetown County Comprehensive Plan, Land Use Element* (August 2012)⁴², 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

⁴² *Georgetown County Comprehensive Plan, 2015*. Georgetown, South Carolina-USA.

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.

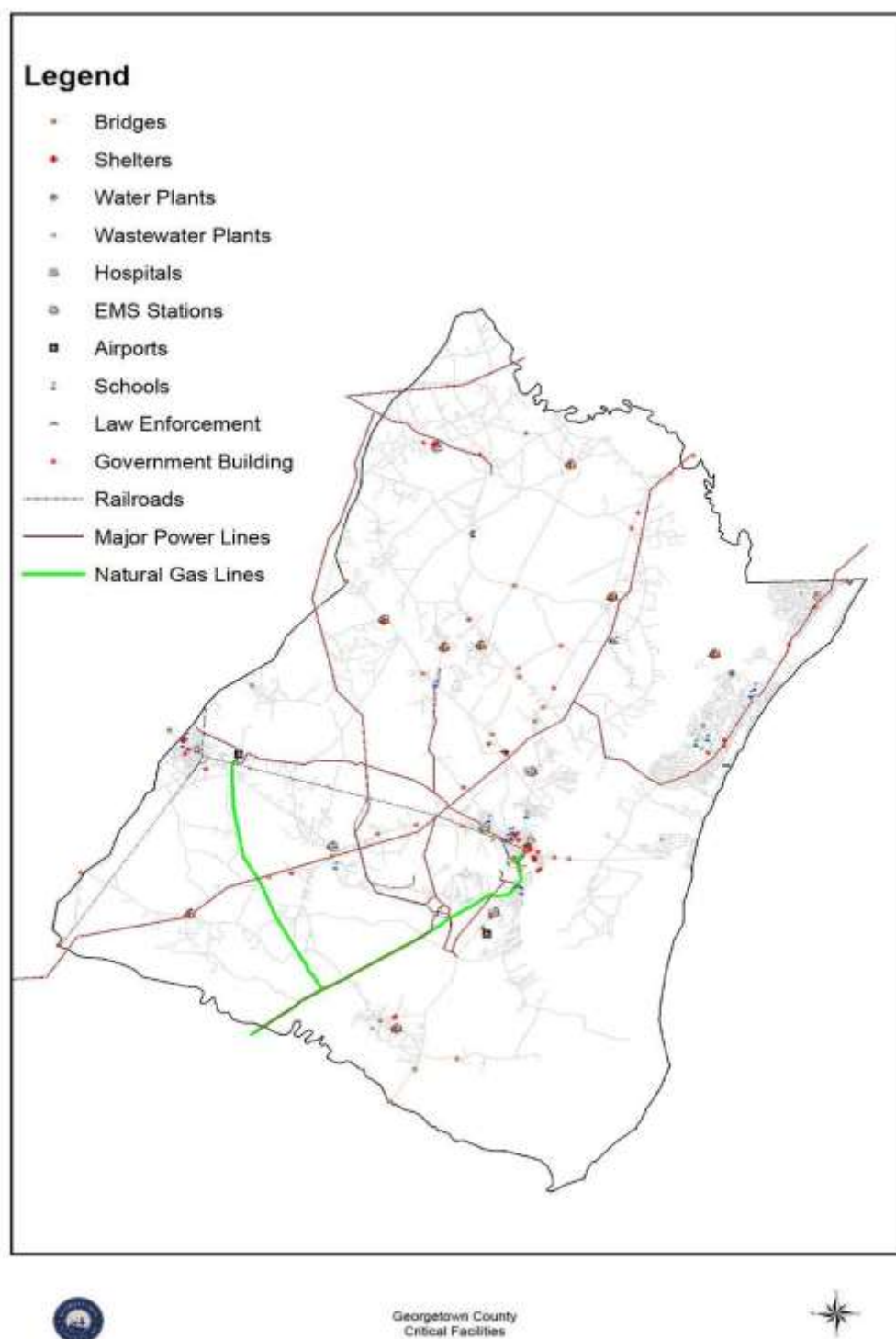
With the exception of the Waccamaw Division and portions of the Georgetown Rural Division, the growth and development of unincorporated Georgetown County can only be classified as sparse. An examination of the total land area for the Waccamaw Neck area shows that 31.38% of the area is developed as residential, commercial, public, industrial, recreation, or utilities. The remaining 68.62% is vacant and undeveloped. The numbers are even smaller for the rural section of the County (the rest of the County excluding the Waccamaw Neck area, the City of Georgetown, and the Town of Andrews). Developed areas (including residential, commercial, public, industrial, and utilities) make up only 12.75% of the total land area, while 87.24% remains vacant and undeveloped.

Population for Georgetown County has increased from 60,158 in 2010 to 61,607 in 2017 (see Table B-1 on page B-6). Building permit fees have increased from \$598,346 for FY2010 to \$1,066,135 for FY2018. There were 329 building permits for new construction issued in 2018.⁴³ There has also been new building construction throughout the County to include, but not limited to:

County Industrial Spec Bldg.	Dollar General Store	Warehouse Facility
Pawleys Island Town Hall	Several Parks and Recreation Centers	Multiple new Fire Substations
New Hangars at Georgetown County Airport	New multi-family developments in Murrells Inlet	New Housing Developments in Murrells Inlet
New Housing Developments in Pawleys Island	New Housing Developments in Litchfield	New multi-family development in Litchfield Plantation
New Assisted Living facilities in Pawleys Island and Georgetown	New Retail Center in Pawleys Island	

⁴³ Energov Building Permit Issuance Report by Status, FY 2018, Holly Richardson, 2/11/19.

Figure B-9 Critical Facilities in Georgetown County, SC



Source: Georgetown County GIS, 2018.

County Planning staff revised the Land Use Element of the Comprehensive Plan in 2015. Between September 2008 and November 2014, the rural area of the County showed an increase of 50.49 acres of commercial land, 39.96 acres of industrial land, 337.9 acres of recreational land, and 2.31 acres of utilities. Additionally, 134 single family homes and 639 mobile homes were permitted in the same time period.

The Waccamaw Planning Area added the following during the same time frame: 53.47 acres of commercial, 4.05 acres of public/semi-public development, and 163.27 acres of recreational land. 1,010 single family homes and 133 mobile homes were also added from September 2008 to November 2014.

The Land Use Map (Figure B-10) 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 (2) noticeable features are the distribution of population and the fact that large tracts of land have no population at all. There are two (2) major factors which are the cause for this distribution:

1. Much of the undeveloped land in the county is considered marginal for development due to physical characteristics such as wetlands, floodplain and poor soils.
2. More than 1/3 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 21 years as the population of Georgetown County should increase by 17,399 people or approximately 23%. 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 six (6) people in the Plantersville Division, and 357 people in the Pleasant Hill/Folly Grove Division over the next 21 years.

Residential Land Use

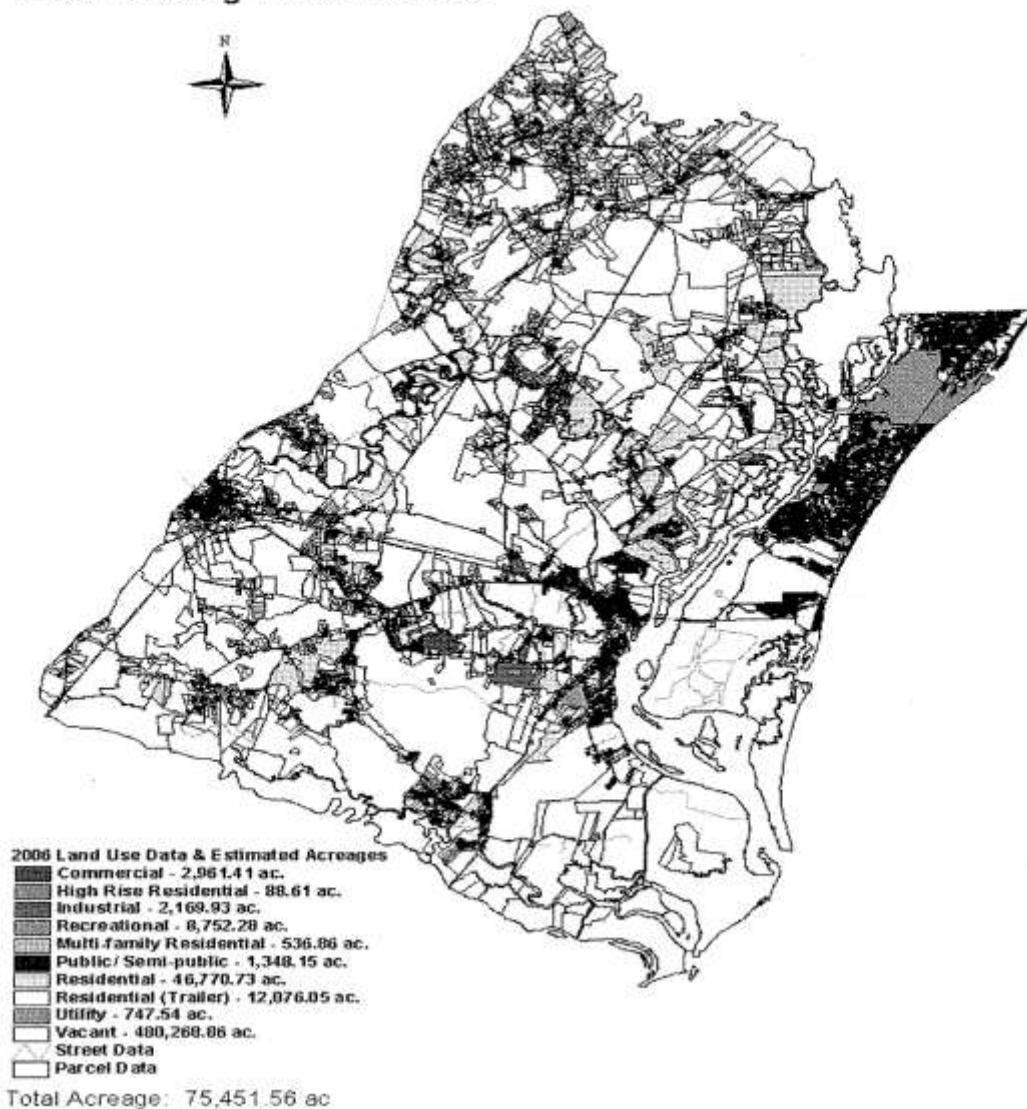
Residential uses occupy the largest portion of developed land for the county as a whole and within most of the Census Divisions. Single family homes and mobile homes are a primary type of residential structure in Georgetown County. Multi-family uses are primarily found in the Waccamaw Division. Here, 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-10 Land Use Map

Final 8/21/2007

Page 6

Georgetown County 2007 Existing Land Use Data



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% 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 County completed a County-wide zoning initiative in 2008 to address these issues. While they Waccamaw Neck and areas around the City of Georgetown have been zoned for quite some time, the more rural areas were not.

The residential development issues that presently confront Georgetown County are somewhat typical of rural and tourist areas.

Commercial Land Use

Commercial land uses occupy 1.17% of the Waccamaw Neck area and .34% of the rural are. This is .84% and 2.09% of the developed land of each of the areas respectively based on numbers from the 2015 Land Use Element. 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 (6) planning areas, Waccamaw Division shows the highest amount of commercial use with the Georgetown Rural Division not far behind. In fact, 65% 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, grocery stores, 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, Litchfield, 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 occupied 416 acres of land in the Waccamaw Neck area and 932.5 acres of land in the rural area which is .77% and .20% of the areas respectively based on the 2015 Land Use Element. Although public uses occupy a large portion of the developed land, a large percentage 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 932.5 acres of public land use. The County is currently in the midst of several parks and recreation capital projects in several regions of the County. It must also 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.

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 40% 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 3,169 acres of land in the study area which is 2.9% of the developed land in the study area. The rural area contains the largest percentage of industrial development with a total of 2,091 acres. 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 (3) 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 (1) 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 shellfishing in Winyah Bay is either prohibited or restricted 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% of the entire study area, and 11.73% 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% of the developed land in the study area and 49.2% 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 acres 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 660 acres of land in the study area according to the 2015 Land Use Element. This is 0.13% of the entire study area and .88% 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 (1) concern is the traffic congestion. Georgetown County has a Transportation Plan that identifies possible solutions to this issue, specifically those affecting Highway 17 along the Waccamaw Neck. The County has also recently approved a Bike and Pedestrian plan for the Waccamaw Neck area, and funds are budgeted for a Corridor Study and associated transportation land use issues on Highway 17. Traffic concerns are also 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% 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% of the Georgetown County study area. The land use projections for the study area are summarized in Table B-9. Projections for each of the Census Divisions are also tabulated and they accompany the discussion of each planning area.

Table B-9
Future Land Use Georgetown County Study Area*⁴⁴

Land Use	Existing Acreage	Additional Acreage by 2025	Total 2025 Acreage	% of Change
Residential	59,472	3,828	63,300	6.44%
Commercial	2,961	789	3,750	26.65%
Public/Semi-public	1,348	32	1,380	2.37%
Industrial	2,169	175	2,344	8.07%
Utility	1,856	25	1,881	1.35%
Total Developed	67,806**	4,849	72,655	7.15%
Vacant and Undeveloped	429,783			
Total Land Area in County Study Area*	497,589			

*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.

⁴⁴ *Georgetown County Comprehensive Plan*, Land Use Element, 11 Mar. 2015, p. 38. Retrieved February 22, 2019, from <http://www.georgetowncountysc.org/Planning/docs/landuseelementwithmaps3-11-2015.pdf>.

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 1% 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.*

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.

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 1% 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.

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.

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.

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.

Project Impact: A program that encourages business, government agencies, and the public to work together to build disaster-resistant communities.

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 (2) 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.

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 1% 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.

Stormwater Management: Efforts to reduce the impact of stormwater or snowmelt runoff on flooding and water quality.

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% 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 (1) 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.

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APPENDIX D

APPENDIX D: PLANNING COMMITTEE MINUTES AND SIGN-IN SHEETS


**Hazard Mitigation Planning Committee IPC Minutes
August 27, 2018
Georgetown County Emergency Operations Center**

Attendees:

Sam Hodge – Georgetown Co. EMD
Cindy Grace – Georgetown Co. EMD
Todd Musselman – American Red Cross
Brantli Senn, Catholic Charities
Carissa Medeiros – Coastal Carolina University
Tim Chatman – City of Georgetown Public Works
Tim Holt – Georgetown Co. Assessor's Office
Jennifer Norman – Georgetown Co. Chamber of Commerce
Loren Wallace – Georgetown Co. Parks & Recreation Department
James Taylor – Georgetown Co. Airport
Nancy Silver – Georgetown Co. Purchasing Department
Alan Walters – Georgetown Co. School District
Maj. T.L. Staub – Georgetown Co. Sheriff's Office/9-1-1 Central Dispatch
Ryan Fabbri – Town of Pawleys Island
Rob Higbe – Santee Electric Cooperative
Brandon Ellis – SC Emergency Management Division
Devon Smith – St. Frances Animal Center

- Meeting called to order at 10:05 a.m.
- Cindy Grace discussed the following:
 - Definition of mitigation
 - Why we have a plan
 - Updates to the Plan
 - Sinkholes and sea level rise are mentioned in the plan; however, we do not include mitigation actions since there is not a completed assessment for these hazards. Mr. Hodge mentioned that since sea level rise is still a "concept," there is not enough historical data to pull from for an assessment.
 - Agency Actions
 - Review the critical facilities list (pages B-30 – B-34) and provide updates.
 - Review their Agency's actions in Section 3 of the 2019 Plan updating those actions using Word's Tracking feature (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.
 - Updates to Cindy Grace by October 31, 2018.
 - Future meetings will be held at 10:00 in the EOC on:
 - Wednesday, November 14, 2018
 - Wednesday, February 13, 2019
 - Wednesday, May 8, 2019 (public hearing)
- Mrs. Medeiros asked about including a mitigation action for CCU's Front Street building in both of our HMPs or just add a reference. CCU's attorney will speak to Wesley Bryant (Georgetown Co. Attorney) about the lease expiration date. Ms. Grace will discuss with Mr. Ellis following this meeting.
- 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 11:23 a.m.

**GEORGETOWN COUNTY HAZARD MITIGATION
PLANNING COMMITTEE IPC
Georgetown County EOC**

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS	Initial
Bob Anderson		49 Woodmont Lane Pawleys Island, SC 29585	(843) 543-2503	bobanderson@sc.rr.com	
Scott McNair	3V Inc.	888 Woodstock St. Georgetown, SC 29440	(843) 520-5146	s.mcnairst@3vsidmausa.com	
Todd Musseleman	American Red Cross	Lowcountry SC Chapter 2424-A City Hall Lane North Charleston, SC 29406	(843) 480-4228	todd.musseleman@redcross.org	TM
Mauretta Dorsey	Town of Andrews	101 N Morgan Avenue Andrews, SC 29510	(843) 264-8666	mdorsey@townofandrews.sc.gov	
Mayor Frank McClary	Town of Andrews	101 N Morgan Ave. Andrews, SC 29510	(843) 359-3355	fmcclary@townofandrews.sc.gov	
Yolanda McCray	Black River United Way/WBL TRG	515 Front St. Georgetown, SC 29440	(843) 546-6317	Yolanda@blackriveruw.org	
Kelly Kaminski	Catholic Charities/WBL TRG	2294 Technology Blvd. Conway, SC 29579	(843) 531-5535	kkaminski@catholic-dcsc.org	
Carlissa Medeiros	Coastal Carolina University	PO Box 261954 Conway, SC 29528-0654	(843) 349-5088	cmedeiros@coastal.edu	
Nancy Appel	Coastal Conservation League	PO Box 603 Georgetown, SC 29442	(843) 723-8035	nancya@ccocl.org	
Mindy Taylor	Duke Energy	1755 Mechanicsville Rd. Florence, SC 29501	(843) 661-4180	mindy.taylor@duke-energy.com	
Jesse Munoz	FEMA Region 4 Mitigation Division	3003 Chamblie Tucker Road Atlanta, GA 30341	(770) 220-5200	jesse.munoz@fema.dhs.gov	
Carey Smith	City of Georgetown Interim Administrator	1134 N Fraser St. Georgetown, SC 29440	(843) 545-4175	csmith@coqsc.com	
Mayor Brendon Barber	City of Georgetown	1134 N Fraser St. Georgetown, SC 29440	(843) 545-4002	bbarber@gcsd.k12.sc.us	
Alan Loveless	City of Georgetown Electric Utility Department	800 Church St. Georgetown, SC 29440	(843) 545-4600	aloveless@coqsc.com	
Orlando Arteaga	City of Georgetown Engineering	2377 Anhuan Maybank Dr. Georgetown, SC 29440	(843) 545-4501	carteaga@coqsc.com	
Chief Charlie Critch	City of Georgetown Fire Department	1405 Prince Street Georgetown, SC 29440	(843) 545-4202	ccritch@coqsc.com	

August 27, 2018

Page 1

**GEORGETOWN COUNTY HAZARD MITIGATION
PLANNING COMMITTEE IPC
(Georgetown County EOC)**

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS	Initial
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Captain Nelson Brown	City of Georgetown Police Department	2222 Highmarket St. Georgetown, SC 29440	(843) 545-4392	brown@coqsc.com	
Chief Kelvin Waites	City of Georgetown Police Department	2222 Highmarket St. Georgetown, SC 29440	(843) 545-4390	kwaites@coqsc.com	TC
Tim Chatman	City of Georgetown Public Works	125 N Kaminski St. Georgetown, SC 29440	(843) 545-4702	tchatman@coqsc.com	
Will Cook	City of Georgetown Water Utility	2377 Anthony Maybank Dr. Georgetown, SC 29440	(843) 545-4500	wcook@coqsc.com	
Sel Hemingway	Georgetown County Administrator	716 Prince Street Georgetown, SC 29440	(843) 545-3006	shemingway@qtcouny.org	Tim 14614
Susan Edwards	Georgetown County Assessor's Office	129 Screven Street Georgetown, SC 29440	(843) 545-3010	sedwards@qtcouny.org	
Steven Elliott	Georgetown County Building Department	129 Screven St. Georgetown, SC 29440	(843) 545-3120	selliott@qtcouny.org	
Jackie Elliott	Georgetown County Bureau of Aging	2104 Lincoln Street Georgetown, SC 29440	(843) 545-3185	jelliott@qtcouny.org	
Jennifer Norman	Georgetown County Chamber of Commerce	531 Front Street Georgetown, SC 29440	(843) 546-8436	jnorman@hammockcoastsc.com	92
Kenny Johnson	Georgetown County Coroner's Office	129 Screven St. Georgetown, SC 29440	(843) 545-3058	kjohnson@qtcouny.org	
Brian Tucker	Georgetown County Office of Economic Development	716 Prince St. Georgetown, SC 29440	(843) 545-3163	btucker@qtcouny.org	
Cindy Grace	Georgetown County Emergency Management Division	2222-C Highmarket St. Georgetown, SC 29440	(843) 545-3136	cgrace@qtcouny.org	CS
Sam Hodge	Georgetown County Emergency Management Division	2222-C Highmarket St. Georgetown, SC 29440	(843) 545-3545	shodge@qtcouny.org	SH

August 27, 2018

Page 2

**GEORGETOWN COUNTY HAZARD MITIGATION
PLANNING COMMITTEE IPC
Georgetown County EOC**

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS	Initial
Herb Puckett	Georgetown County Facility Services	1918 Church St. Georgetown, SC 29440	(843) 545-3328	hpuckett@gtcounty.org	
Scott Proctor	Georgetown County Finance Department	129 Screven St. Georgetown, SC 29440	(843) 545-3066	sproctor@gtcounty.org	
Tony Hucks	Georgetown County Fire EMS	3605 Highmarket St. Georgetown, SC 29440	(843) 545-3139	ahucks@gtcounty.org	
Chief Mack Reed	Georgetown County Fire EMS	3605 Highmarket St. Georgetown, SC 29440	(843) 545-3271	mreed@gtcounty.org	
Dwight McInvaill	Georgetown County Library System	405 Cleland Street Georgetown, SC 29440	(843) 545-3304	dmcinvaill@gtcounty.org	
Beth Goodale	Georgetown County Parks and Recreation Department	2030 Church Street Georgetown, SC 29440	(843) 545-3531	bgoodale@gtcounty.org	BM
Boyd Johnson	Georgetown County Planning & Code Enforcement	129 Screven St., Rm. 222 Georgetown, SC 29440	(843) 545-3299	bjohnson@gtcounty.org	
Jackie Broach-Akers	Georgetown County PIO	716 Prince St. Georgetown, SC 29440	(843) 545-3164	jbroach@gtcounty.org	
Ray Fumye	Georgetown County Public Services	108 Screven Street Georgetown, SC 29440	(843) 545-3325	rfumye@gtcounty.org	
Art Baker	Georgetown County Public Services Capital Projects	1918 W Church Street Georgetown, SC 29440	(843) 545-3255	abaker@gtcounty.org	
James Coley	Georgetown County Public Services Capital Projects	1918 W Church Street Georgetown, SC 29440	(843) 545-3243	jcoley@gtcounty.org	
James Taylor	Georgetown County Public Services Airport	129 Airport Rd. Georgetown, SC 29440	(843) 545-3638	jtaylor@gtcounty.org	ST
Stephen Williams	Georgetown County Public Works Manager	2236 Browns Ferry Rd. Georgetown, SC 29440	(843) 545-3436	swilliams@gtcounty.org	
Nancy Silver	Georgetown County Purchasing	129 Screven St. Georgetown, SC 29440	(843) 545-3076	nsilver@gtcounty.org	NS
Randall Dozier	Georgetown County School District	2018 Church Street Georgetown, SC 29440	(843) 436-7175	rdozier@gcsd.k12.sc.us	

August 27, 2018

Page 3

**GEORGETOWN COUNTY HAZARD MITIGATION
PLANNING COMMITTEE IPC
Georgetown County EOC**

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS	Initial
Alan Walters	Georgetown County School District	2018 Church Street Georgetown, SC 29440	(843) 436-7161	awalters@gcsd.k12.sc.us	AW
Sheriff Lane Cribb	Georgetown County Sheriff's Office	430 N Fraser Street Georgetown, SC 29440	(843) 436-6030	acribb@gccounty.org	
Major T.L. Staub	Georgetown County Sheriff's Office/9-1-1 Central Dispatch	2222-C Highmarket Street Georgetown, SC 29440	(843) 436-6054	tstaub@gccounty.org	TL
Carter Weaver	Georgetown County Sheriff's Office	430 N Fraser St Georgetown, SC 29440	(843) 436-6033	cweaver@gccounty.org	
Michael Yip	Georgetown County Water & Sewer District	456 Clearwater Drive Pawleys Island, SC 29585	(843) 237-9727	michaely@gccwsd.com	
Rose Anne O'Reilly	Horry-Georgetown Homebuilders Association	728 Hwy. 501 E Conway, SC 29526	(843) 438-4124	rao@hghba.com	
Marion Moore	HTC, Inc.	9400 Highway 17 Bypass Murrells Inlet, SC 29576	(843) 369-8648	marion.moore@htcinc.net	
Chief Doug Eggman	Midway Fire Rescue	67 St. Paul Place Pawleys Island, SC 29585	(843) 545-3620	deggman@gccounty.org	
Chief Norman Knight	Murrell's Inlet-Garden City Fire Department	3641 Hwy. 17 Business Murrells Inlet, 29576	(803) 651-5143	chiefknight@migcd.org	
Steve Pfaff	National Weather Service	2015 Gardner Drive Wilmington, NC 28405	(910) 762-0524	Steven.Pfaff@noaa.gov	
Ryan Fabbri	Town of Pawleys Island	321 Myrtle Avenue Pawleys Island, SC 29585	(843) 237-1698	rfabbri@townofpi.com	RF
Chief Michael Fanning	Town of Pawleys Island Police Department	321 Myrtle Avenue Pawleys Island, SC 29585	(843) 237-1698	PoliceChief@TownofPawleysIsland.com	
Capt. Tim Scott	The Salvation Army	2401 Arhuan Maybank Dr. Georgetown, SC 29440	(843) 527-4479	Tim.scott@uss.salvationarmy.org	
Otto Jansky	Santee Cooper	1 Riverwood Drive Moncks Corner, SC 29461	(843) 347-3399	Otto.jansky@santeeccooper.com	
Rob Higbe	Santee Electric Cooperative	92 West Virginia Rd. Georgetown, SC 29440	(843) 355-0533	rhigbe@santee.org	RH

August 27, 2018

Page 4

**GEORGETOWN COUNTY HAZARD MITIGATION
PLANNING COMMITTEE IPC
Georgetown County EOC**

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS	Initial
Barry Brock	Seven Rivers Aviation LLC	129 Airport Blvd. Georgetown, SC 29440	(843) 527-7516	barrybrock@gmail.com	
Derek Underwood	SC Department of Agriculture	123 Ballard Ct. W Columbia, SC 29172	(803) 737-9700	dunder@scda.sc.gov	
Mark Hendrix	SC Department of Health and Environmental Control	145 E Cheves St. Florence, SC 29501	(843) 673-6546	hendriml@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	
Christopher Stout	SC Department of Health and Environmental Control-OCRM	1362 McMillan Ave., Ste. 400 Charleston, SC 29405	(843) 953-0200	stoutcm@dhec.sc.gov	
Maria Cox Lamm	SC Department of Natural Resources, Flood Mitigation Prog.	1000 Assembly St. Columbia, SC 29201	(803) 734-3662	CoxM@dnr.sc.gov	
F/Sgt. B.W. Tyler	SC Department of Public Safety/SC Highway Patrol	214 Ridge Rd. Georgetown, SC 29440	(843) 546-7300	bwt Tyler@scdps.gov	
Ned Moore	SC Department of Social Services	330 Dozier St. Georgetown, SC 29440	(843) 904-9197	Ned.moore@dss.sc.gov	
Christopher Borque	SC Department of Transportation	1007 Merriman Rd. Georgetown, SC 29440	(843) 527-6719	bourqueCD@scdot.org	
Brandon Ellis	SC Emergency Management Division	2779 Fish Hatchery Rd. W Columbia, SC 29172	(803) 509-1677	bellis@emnd.sc.gov	BE
Megan Wood	SC Forestry Commission	2779 Fish Hatchery Rd. W Columbia, SC 29172	(803) 737-8500	mwood@emnd.sc.gov	
James Hall	SC Forestry Commission	596 I.M. Graham Rd. Kingstree, SC 29556	(843) 382-8761	jhall@scfc.gov	
Ron Holt	SC Forestry Commission	596 I.M. Graham Rd. Kingstree, SC 29556	(843) 382-8761	rholt@scfc.gov	
Cpt. Dan Screws	SC National Guard	2779 Fish Hatchery Road West Columbia, SC 29172	(803) 299-4051	Daniel.w.screws.mil@mail.mil	

August 27, 2018

Page 5

**GEORGETOWN COUNTY HAZARD MITIGATION
PLANNING COMMITTEE IPC
Georgetown County EOC**

AGENCY REPRESENTATIVE	AGENCY NAME	ADDRESS	PHONE NO.	E-MAIL ADDRESS	Initial
David Kerr	SC State Ports Authority	1324 Dock St. Georgetown, SC 29442	(843) 296-0401	dkerr@scspsa.com	
Clayton Stairs	South Strand News	615 Front St. Georgetown, SC 29440	(843) 546-4148	cstairs@southstrandnews.com	
Devon Smith	St. Frances Animal Center	125 N Ridge St. Georgetown, SC 29440	(843) 546-0780	dsmith@stefanimals.org	DAS
Stan Gailey	State Fiscal Accountability Authority Procurement Services Office of State Engineer	1201 Main St., Ste. 800 Columbia, SC 29201	(803) 734-0774	sgailey@mmo.sc.gov	
Patrick Devlin	Tidelands Health	606 Black River Road Georgetown, SC 29440	(843) 652-1803	pdevlin@tidelandshhealth.org	
Justin Pickler	U.S. Coast Guard U.S. Army Corps of Engineers	355 Marina Drive Georgetown, SC 29440	(843) 546-2742	justin.l.pickler@uscg.mil	
Michael Hind	U.S. Fish and Wildlife Service	69-A Hagood Avenue Charleston, SC 29403	(843) 328-8106	michael.b.hind@usace.army.mil	
Craig Aubrey	U.S. Geological Survey SE Regional Management Officer	176 Croghan Spur Rd. #200 Charleston, SC 29407	(843) 727-4707	Craig.aubrey@fws.gov	
Kim Crutchfield	VC3	720 Gracem Rd. Columbia, SC 29210	(803) 760-6123	kcrtuch@usgs.gov	
Clark Cooper	Waccamaw Regional Council of Governments	1301 Gervais St. #1800 Columbia, SC 29201	(803) 978-2699	ccooper@atcounrty.org	
Sarah Smith	Waccamaw Neck Council of POAs	Box 1415 Pawleys Island, SC 29585	(843) 237-7547	ssmith@wrcog.org	
Tom Slicker				wrcpoa@outlook.com	

August 27, 2018

Page 6

Hazard Mitigation Plan Planning Committee Minutes
November 13, 2018
Georgetown County Emergency Operations Center

Attendees:

Matt Millwood – City of Georgetown
Sam Hodge – Georgetown Co. EMD
Cindy Grace – Georgetown Co. EMD
Jim Jamieson – American Red Cross
Todd Musselman – American Red Cross
Carissa Medeiros – Coastal Carolina University
Alan Walters – Georgetown Co. School District
John Magann – Georgetown Co. Sheriff's Office
Maj. T.L. Staub – Georgetown Co. Sheriff's Office
Brandon Ellis – SCEMD
Lindsey Greenbaum - SCEMD

- Meeting called to order at 10:00 a.m.
- Cindy Grace discussed the following:
 - Updates to the Plan
 - We have received Mitigation Action updates from the City of Georgetown, Town of Pawleys Island, County GIS, County Fire EMS, County Planning and Code Enforcement, and County Public Services.
 - *Awaiting Mitigation Action updates from Town of Andrews and remaining Georgetown County government departments.*
 - *We are in need of repetitive loss tables from each jurisdiction and table updates from the Assessor's Office.*
 - *Final updates should be received by our office no later than April 12, 2019.*
 - Agency Actions
 - *Review their Agency's actions in Section 3 of the 2019 Plan updating those actions using Word's Tracking feature (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.
 - *See above under Updates to the Plan for any other actions needed.*
 - Future meetings will be held at 10:00 in the EOC on:
 - Tuesday, February 12, 2019
 - Wednesday, May 8, 2019 (public hearing)
- Mr. Musselman will check to make sure he has an updated draft of the Plan. If not, Ms. Grace will provide by email.
- Mrs. Medeiros asked about including a mitigation action for CCU's Front Street building in both of our HMPs or just add a reference. Ms. Greenbaum stated it would probably be best to include an action in both of our plans depending on who the subapplicant will be. CCU's lease with the county expires in 2020. Ms. Medeiros will discuss with Messrs. Ortega and Millwood (City of Georgetown) following this meeting.
- 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 adjourned at 10:30 a.m.

GEORGETOWN COUNTY HAZARD MITIGATION PLANNING COMMITTEE
NOVEMBER 13, 2018

FIRSTNAME	LASTNAME	AGENCY NAME	PHONE NO.	E-MAIL ADDRESS	INITIAL
Bob	Anderson		(843) 543-2503	bobanderson@scrtc.com	
Nancy	Appel	Coastal Conservation League	(843) 723-8035	nancya@cccl.org	
Orlando	Arteaga	City of Georgetown Engineering	(843) 545-4501	orlarteaga@coqssc.com	
Craig	Aubrey	U.S. Fish and Wildlife Service	(843) 727-4707	Craig.aubrey@fws.gov	
Art	Baker	Georgetown County Public Services Capital Projects	(843) 545-3255	abaker@sccounty.org	
Mayor Brendon	Barber	City of Georgetown	(843) 545-4002	bbarber@gspsd.k12.sc.us	
Christopher	Borque	SC Department of Transportation	(843) 527-6719	borqueCD@kdor.org	
Jackie	Broach-Akers	Georgetown County PIO	(843) 545-3164	jbroach@sccounty.org	
Barry	Brock	Seven Rivers Aviation LLC	(843) 527-7516	bbarbrock@gmail.com	
Captain Nelson	Brown	City of Georgetown Police Department	(843) 545-4392	brown@coqssc.com	
Tim	Chatman	City of Georgetown Public Works	(843) 545-4702	tchatman@coqssc.com	
James	Coley	Georgetown County Public Services Capital Projects	(843) 545-3243	jcoley@sccounty.org	
Will	Cook	City of Georgetown Water Utility	(843) 545-4500	wcook@coqssc.com	

GEORGETOWN COUNTY HAZARD MITIGATION PLANNING COMMITTEE
NOVEMBER 13, 2018

FIRSTNAME	LASTNAME	AGENCY NAME	PHONE NO.	E-MAIL ADDRESS	INITIAL
Clark	Cooper	VC3	(803) 978-2699	ccooper@tccounty.org	
Chief Charlie	Cribb	City of Georgetown Fire Department	(843) 546-4202	ccribb@coesc.com	
Sheriff Lane	Cribb	Georgetown County Sheriff's Office	(843) 436-8030	acribb@tccounty.org	
Kim	Crutchfield	U.S. Geological Survey SE Regional Mgt. Officer	(803) 750-6123	kcrutch@usgs.gov	
Patrick	Devlin	Tidelands Health	(843) 652-1803	pdevlin@tidelandhealth.org	
Mauretta	Dorsey	Town of Andrews	(843) 264-8666	mdorsey@townofandrews.sc.gov	
Randall	Dozier	Georgetown County School District	(843) 436-7175	rdozier@ksd.k12.sc.us	
Susan	Edwards	Georgetown County Assessor's Office	(843) 545-3010	sedwards@tccounty.org	
Chief Doug	Eggiman	Midway Fire Rescue	(843) 545-3620	deggiman@tccounty.org	
Jackie	Elliott	Georgetown County Bureau of Aging	(843) 545-3185	jelliott@tccounty.org	
Steven	Elliott	Georgetown County Building Department	(843) 545-3120	selliott@tccounty.org	MP
Brandon	Ellis	SC Emergency Management	(803) 509-1677	bellis@emd.sc.gov	BE
Ryan	Fabbri	Town of Pawleys Island	(843) 237-1698	rfabbri@townofpi.com	

GEORGETOWN COUNTY HAZARD MITIGATION PLANNING COMMITTEE
NOVEMBER 13, 2018

FIRSTNAME	LASTNAME	AGENCY NAME	PHONE NO.	E-MAIL ADDRESS	INITIAL
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Stan	Galley	State Fiscal Accountability Authority Procurement Services	(803) 734-0774	sgalley@mmo.state.sc.gov	
Beth	Goodale	Georgetown County Parks and Recreation Department	(843) 545-3531	bpgoodale@stcounty.org	
Cindy	Grace	Georgetown County Emergency	(843) 545-3136	cgrace@stcounty.org	CG
Sel	Hemlingway	Georgetown County	(843) 545-3006	shemlingway@stcounty.org	
Mark	Hendrix	SC Department of Health and Environmental Control	(843) 673-6546	hendrim@dhsc.sc.gov	
Rob	Higbe	Santee Electric Cooperative	(843) 355-0533	rhigbe@santee.org	
Michael	Hind	U.S. Army Corps of Engineers Charleston District	(843) 329-8106	michael.b.hind@usace.army.mil	
Sam	Hodge	Georgetown County Emergency Management Division	(843) 545-3545	shodge@stcounty.org	SH
Ron	Holt	SC Forestry Commission	(843) 382-8761	rholt@scfc.gov	
Tony	Hucks	Georgetown County Fire EMS	(843) 545-3139	ahucks@stcounty.org	
Otto	Jansky	Santee Cooper	(843) 347-3399	Otto.jansky@santeecoop.com	

GEORGETOWN COUNTY HAZARD MITIGATION PLANNING COMMITTEE
NOVEMBER 13, 2018

FIRSTNAME	LASTNAME	AGENCY NAME	PHONE NO.	E-MAIL ADDRESS	INITIAL
Boyd	Johnson	Georgetown County Planning	(843) 545-3299	bjohnson@atcounty.org	
Kenny	Johnson	Georgetown County Coroner's Office	(843) 545-3066	kjohnson@atcounty.org	
Kelly	Kaminski	Catholic Charities/WBL TRG	(843) 531-5635	kkaminski@catholic-ccc.org	
David	Kerr	SC State Ports Authority	(843) 296-D401	dkerr@scspa.com	
Chief Norman	Knight	Murrell's Inlet-Garden City Fire Department	(803) 651-5143	chiefknight@miakfd.org	
Maria Cox	Lamm	SC Department of Natural Resources, Flood Mitigation Prog.	(803) 734-3662	CoxM@dnr.sc.gov	
Alan	Loveless	City of Georgetown Electric Utility Department	(843) 545-4600	aloveless@coegc.com	
Matt	Maxwell	SC Department of Health and Environmental Control	(843) 238-4378	maxwelmmc@dhhec.sc.gov	
Mayor Frank	McClary	Town of Andrews	(843) 369-3355	frankmclary@townofandrews.sc.gov	
Yolanda	McCray	Black River United Way/WBL TRG	(843) 546-6317	Yolanda@blackriveruw.org	
Dwight	McInvaill	Georgetown County Library System	(843) 545-3304	dmcinvaill@atcounty.org	
Scott	McNair	3V Sigma USA	(843) 520-5146	s.mcnair@3vsigmainsa.com	
Carissa	Medeiros	Coastal Carolina University	(843) 348-5088	cmedeiros@coastal.edu	CM

GEORGETOWN COUNTY HAZARD MITIGATION PLANNING COMMITTEE
NOVEMBER 13, 2018

FIRSTNAME	LASTNAME	AGENCY NAME	PHONE NO.	E-MAIL ADDRESS	INITIAL
Matt	Millwood	City of Georgetown Housing and Community Development	(843) 545-4016	millwood@ccogsc.com	<i>MM</i>
Marion	Moore	HTC, Inc.	(843) 369-8648	marion.moore@htcinc.net	
Ned	Moore	SC Department of Social Services	(843) 904-9197	Ned.moore@dss.sc.gov	
Jesse	Munoz	FEMA Region 4 Mitigation Division	(770) 220-5200	jesse.munoz@fema.dhs.gov	
Todd	Musselman	American Red Cross, Lowcountry SC Chapter	(843) 480-4228	todd.musselman@redcross.org	<i>TJM</i>
Jennifer	Norman	Georgetown County	(843) 546-8436	jnorman@hammockcoastsc.com	
Rose Anne	O'Reilly	Horry-Georgetown Homebuilders Association	(843) 438-4124	rao@hghba.com	
Steve	Piaff	National Weather Service	(910) 762-0524	Steven.Piaff@noaa.gov	
Justin	Pickler	U.S. Coast Guard	(843) 548-2742	Justin.F.Pickler@uscg.mil	
Scott	Proctor	Georgetown County Finance Department	(843) 545-3066	sproctor@gecountv.org	
Herb	Puckett	Georgetown County Facility Services	(843) 545-3328	hpuckett@gecountv.org	
Chief Mack	Reed	Georgetown County Fire EMS	(843) 545-3271	mreed@gecountv.org	
Capt. Tim	Scott	The Salvation Army	(843) 527-4479	Tim.scott@uss.salvationarmy.org	

GEORGETOWN COUNTY HAZARD MITIGATION PLANNING COMMITTEE
NOVEMBER 13, 2018

FIRSTNAME	LASTNAME	AGENCY NAME	PHONE NO.	E-MAIL ADDRESS	INITIAL
Cpl. Dan	Screws	SC National Guard 351st ASB S-3	(803) 299-4051	Daniel.w.screws.m@gmail.com	
Nancy	Silver	Georgetown County Purchasing	(843) 545-3076	nsilver@atcounty.org	
Carey	Smith	City of Georgetown Interim Administrator	(843) 545-4175	csmith@coqpsc.com	
Devon	Smith	St. Frances Animal Center	(843) 546-0780	dsmith@stfrances.org	
Sarah	Smith	Waccamaw Regional Council of Governments	(843) 436-6135	ssmith@wrcog.org	
Clayton	Stairs	South Strand News	(843) 546-4148	cstairs@southstrandnews.com	
Major T.L.	Staub	Georgetown County Sheriff's Office/9-1-1 Central Dispatch	(843) 436-6064	tstaub@atcounty.org	RLS
Tom	Stickler	Waccamaw Neck Council of POAs	(843) 237-7547	wncpsa@outlook.com	
Christopher	Stout	SC Department of Health and Environmental Control-OCRM	(843) 953-0200	cstouten@dhcc.sc.gov	
James	Taylor	Georgetown County Public Services Airport	(843) 545-3638	jtaylor@atcounty.org	
Mindy	Taylor	Duke Energy	(843) 661-4180	Mindy.taylor@duke-energy.com	
Brian	Tucker	Georgetown County Office of	(843) 545-3163	btucker@atcounty.org	
F/Sgt. B.W.	Tyler	SC Department of Public Safety/SC Highway Patrol	(843) 546-7300	bwtyler@scdps.gov	

GEORGETOWN COUNTY HAZARD MITIGATION PLANNING COMMITTEE
NOVEMBER 13, 2018

FIRSTNAME	LASTNAME	AGENCY NAME	PHONE NO.	E-MAIL ADDRESS	INITIAL
Derek	Underwood	SC Department of Agriculture	(803) 737-9700	dunder@scda.sc.gov	
Chief Kevin	Walters	City of Georgetown Police Department	(843) 545-4390	kwalters@copc.com	
Alan	Walters	Georgetown County School	(843) 436-7161	awalters@kcsd.k12.sc.us	AW
Carter	Weaver	Georgetown County Sheriff's Office	(843) 436-8033	cweaver@gtcounty.org	
Stephen	Williams	Georgetown County Public Works Manager	(843) 545-3438	swilliams@gtcounty.org	
Megan	Wood	SC Emergency Management	(803) 737-8500	mwood@emil.sc.gov	LG
Michael	Yip	Georgetown County Water &	(843) 237-9727	michaely@gtcwmd.com	

Lindsay Graham

Hazard Mitigation Plan Planning Committee Minutes
February 12, 2019
Georgetown County Emergency Operations Center

Attendees:

Matt Millwood – City of Georgetown
Cindy Grace – Georgetown Co. EMD
Carissa Medeiros – Coastal Carolina University
Ned Moore – SC Dept. of Social Services

- Meeting called to order at 10:00 a.m.
- Cindy Grace discussed the following:
 - Updates to the Plan
 - Ms. Grace discussed action items marked for deletion, deleted from the 2019 update, and actions added.
 - Agency Actions
 - *Review their Agency's actions in Section 3 of the 2019 Plan updating those actions* using Word's Tracking feature (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.
 - *Awaiting mitigation action updates from City of Georgetown, Town of Pawleys Island, and Town of Andrews.*
 - *Awaiting map updates from County GIS, table updates from County Assessor's Office, and Town of Pawleys Island map of repetitive loss properties.*
 - *Final updates should be received by our office no later than April 12, 2019.*
 - Future meetings will be held at 10:00 in the EOC on:
 - Tuesday, May 7, 2019 (public hearing)
- Mrs. Medeiros and Mr. Millwood discussed including a joint agency mitigation action for CCU's Front Street building and surrounding berm. Mr. Millwood will draft an action and discuss with Mrs. Medeiros for inclusion in CCU's and the County's Hazard Mitigation Plans.
- The meeting adjourned at 10:45 a.m.

GEORGETOWN COUNTY HAZARD MITIGATION PLANNING COMMITTEE
EOC

February 12, 2019 10:00 a.m.

FIRSTNAME	LASTNAME	AGENCY NAME	PHONE NO.	E-MAIL ADDRESS	INITIAL
Bob	Anderson		(843) 543-2503	bobanderson@sc.rr.com	
Nancy	Appel	Coastal Conservation League	(843) 723-8035	nancya@ccccl.org	
Orlando	Arteaga	City of Georgetown Engineering	(843) 545-4501	oarteaga@cogsc.com	
Craig	Aubrey	U.S. Fish and Wildlife Service	(843) 727-4707	Craig.aubrey@fws.gov	
Art	Baker	Georgetown County Public Services Capital Projects	(843) 545-3255	abaker@gtcounty.org	
Mayor Brendon	Barber	City of Georgetown	(843) 545-4002	bbarber@gcsd.k12.sc.us	
Christopher	Borque	SC Department of Transportation	(843) 527-6719	bourqueCD@scdot.org	
Jackie	Broach-Akers	Georgetown County PIO	(843) 545-3164	jbroach@gtcounty.org	
Barry	Brock	Seven Rivers Aviation LLC	(843) 527-7516	barryebrook@gmail.com	
Captain Nelson	Brown	City of Georgetown Police Department	(843) 545-4392	brown@cogsc.com	
Tim	Chatman	City of Georgetown Public Works	(843) 545-4702	tchatman@cogsc.com	
James	Coley	Georgetown County Public Services Capital Projects	(843) 545-3243	jcolev@gtcounty.org	
Will	Cook	City of Georgetown Water Utility	(843) 545-4500	wcook@cogsc.com	

GEORGETOWN COUNTY HAZARD MITIGATION PLANNING COMMITTEE
EOC

February 12, 2019 10:00 a.m.

FIRSTNAME	LASTNAME	AGENCY NAME	PHONE NO.	E-MAIL ADDRESS	INITIAL
Clark	Cooper	VC3	(803) 978-2699	c.cooper@gtcounty.org	
Chief Charlie	Cribb	City of Georgetown Fire Department	(843) 545-4202	ccribb@cogsc.com	
Sheriff Lane	Cribb	Georgetown County Sheriff's Office	(843) 436-6030	acribb@gtcounty.org	
Kim	Crutchfield	U.S. Geological Survey SE Regional Mgt. Officer	(803) 750-6123	kcrutch@usgs.gov	
Patrick	Devlin	Tidelands Health	(843) 652-1803	pdevlin@tidelandshealth.org	
Mauretta	Dorsey	Town of Andrews	(843) 264-8666	mdorsey@townofandrews.sc.gov	
Randall	Dozier	Georgetown County School District	(843) 436-7175	rdozier@gcsd.k12.sc.us	
Susan	Edwards	Georgetown County Assessor's Office	(843) 545-3010	sedwards@gtcounty.org	
Chief Doug	Eggiman	Midway Fire Rescue	(843) 545-3620	deggiman@gtcounty.org	
Jackie	Elliott	Georgetown County Bureau of Aging	(843) 545-3185	jelliott@gtcounty.org	
Steven	Elliott	Georgetown County Building Department	(843) 545-3120	sellott@gtcounty.org	
Brandon	Ellis	SC Emergency Management	(803) 509-1677	bellis@emd.sc.gov	
Ryan	Fabbri	Town of Pawleys Island	(843) 237-1698	rfabbri@townofpi.com	

GEORGETOWN COUNTY HAZARD MITIGATION PLANNING COMMITTEE
EOC

February 12, 2019 10:00 a.m.

FIRSTNAME	LASTNAME	AGENCY NAME	PHONE NO.	E-MAIL ADDRESS	INITIAL
Chief Michael	Fanning	Town of Pawleys Island Police Department	(843) 237-1698	PoliceChief@TownofPawleysIsland.com	
Ray	Funnye	Georgetown County Public Services	(843) 545-3325	rcfunnye@gtcounty.org	
Stan	Gailey	State Fiscal Accountability Authority Procurement Services	(803) 734-0774	sgailey@mmo.sc.gov	
Beth	Goodale	Georgetown County Parks and Recreation Department	(843) 545-3531	bgoodale@gtcounty.org	
Cindy	Grace	Georgetown County Emergency	(843) 545-3136	cgrace@gtcounty.org	CG
Sel	Hemingway	Georgetown County	(843) 545-3006	shemingway@gtcounty.org	
Mark	Hendrix	SC Department of Health and Environmental Control	(843) 673-6546	hendrimi@dhec.sc.gov	
Rob	Higbe	Santee Electric Cooperative	(843) 355-0533	rhigbe@santee.org	
Michael	Hind	U.S. Army Corps of Engineers Charleston District	(843) 329-8106	michael.b.hind@usace.army.mil	
Sam	Hodge	Georgetown County Emergency Management Division	(843) 545-3545	shodge@gtcounty.org	
Ron	Holt	SC Forestry Commission	(843) 382-8761	rholt@scfc.gov	
Tony	Hucks	Georgetown County Fire EMS	(843) 545-3139	ahucks@gtcounty.org	
Otto	Jansky	Santee Cooper	(843) 347-3399	Otto.jansky@santeecooper.com	

February 12, 2019 GEORGETOWN COUNTY HAZARD MITIGATION PLANNING COMMITTEE 10:00 a.m.
EOC

FIRSTNAME	LASTNAME	AGENCY NAME	PHONE NO.	E-MAIL ADDRESS	INITIAL
Boyd	Johnson	Georgetown County Planning	(843) 545-3299	bjohnson@gtcounty.org	
Kenny	Johnson	Georgetown County Coroner's Office	(843) 545-3056	kjohnson@gtcounty.org	
Kelly	Kaminski	Catholic Charities/WBLTRG	(843) 531-5535	kkaminski@catholic-dcc.org	
David	Kerr	SC State Ports Authority	(843) 296-0401	dkerr@scspa.com	
Chief Norman	Knight	Murrell's Inlet-Garden City Fire Department	(803) 651-5143	chiefknight@mgcfd.org	
Maria Cox	Lamm	SC Department of Natural Resources, Flood Mitigation Prog.	(803) 734-3662	CoxM@dnr.sc.gov	
Alan	Loveless	City of Georgetown Electric Utility Department	(843) 545-4600	aloveless@cogsc.com	
Matt	Maxwell	SC Department of Health and Environmental Control	(843) 238-4378	maxwelmc@dhec.sc.gov	
Mayor Frank	McClary	Town of Andrews	(843) 359-3355	frimclary@townofandrews.sc.gov	
Yolanda	McCray	Black River United Way/WBLTRG	(843) 546-6317	Yolanda@blackriveruw.org	
Dwight	McInvaill	Georgetown County Library System	(843) 545-3304	dmcinvaill@gtcounty.org	
Scott	McNair	3V Sigma USA	(843) 520-5146	s.mcnaair@3vsigmausa.com	
Carissa	Medeiros	Coastal Carolina University	(843) 349-5088	cmedeiros@coastal.edu	

February 12, 2019

GEORGETOWN COUNTY HAZARD MITIGATION PLANNING COMMITTEE
EOC

10:00 a.m.

FIRSTNAME	LASTNAME	AGENCY NAME	PHONE NO.	E-MAIL ADDRESS	INITIAL
Matt	Millwood	City of Georgetown Housing and Community Development	(843) 545-4016	mmillwood@cogsc.com	MM
Marion	Moore	HTC, Inc.	(843) 369-8648	marion.moore@htcinc.net	
Ned	Moore	SC Department of Social Services	(843) 904-9197	Ned.moore@dss.sc.gov	NM
Jesse	Munoz	FEMA Region 4 Mitigation Division	(770) 220-5200	jesse.munoz@fema.dhs.gov	
Todd	Musselman	American Red Cross, Lowcountry SC Chapter	(843) 480-4228	todd.musselman@redcross.org	
Jennifer	Norman	Georgetown County	(843) 546-8436	jnormal@hammockcoastsc.com	
Rose Anne	O'Reilly	Horry-Georgetown Homebuilders Association	(843) 438-4124	rao@hghba.com	
Steve	Pfaff	National Weather Service	(910) 762-0524	Steven.Pfaff@noaa.gov	
Justin	Pickler	U.S. Coast Guard	(843) 546-2742	justin.f.pickler@uscg.mil	
Scott	Proctor	Georgetown County Finance Department	(843) 545-3066	sproctor@gtcounty.org	
Herb	Puckett	Georgetown County Facility Services	(843) 545-3328	hpuckett@gtcounty.org	
Chief Mack	Reed	Georgetown County Fire EMS	(843) 545-3271	mreed@gtcounty.org	
Capt. Tim	Scott	The Salvation Army	(843) 527-4479	Tim.scott@uss.salvationarmy.org	

February 12, 2019 **GEORGETOWN COUNTY HAZARD MITIGATION PLANNING COMMITTEE** 10:00 a.m.
EOC

FIRSTNAME	LASTNAME	AGENCY NAME	PHONE NO.	E-MAIL ADDRESS	INITIAL
Cpt. Dan	Screws	SC National Guard 351st ASB S-3	(803) 299-4051	Daniel.w.screws.mil@mail.mil	
Nancy	Silver	Georgetown County Purchasing	(843) 545-3078	nsilver@gtcounty.org	
Carey	Smith	City of Georgetown Interim Administrator	(843) 545-4175	csmith@cogsc.com	
Devon	Smith	St. Frances Animal Center	(843) 546-0780	dsmith@sfranimals.org	
Sarah	Smith	Waccamaw Regional Council of Governments	(843) 436-6135	ssmith@wrcog.org	
Clayton	Stairs	<i>South Strand News</i>	(843) 546-4148	cstairs@southstrandnews.com	
Major T.L.	Staub	Georgetown County Sheriff's Office/9-1-1 Central Dispatch	(843) 436-6054	tstaub@gtcounty.org	
Tom	Stickler	Waccamaw Neck Council of POAs	(843) 237-7547	wncpoa@outlook.com	
Christopher	Stout	SC Department of Health and Environmental Control-OCRM	(843) 953-0200	stoutcm@dhec.sc.gov	
James	Taylor	Georgetown County Public Services Airport	(843) 545-3638	jtaylor@gtcounty.org	
Mindy	Taylor	Duke Energy	(843) 661-4180	Mindy.taylor@duke-energy.com	
Brian	Tucker	Georgetown County Office of	(843) 545-3163	btucker@gtcounty.org	
F/Sgt. B.W.	Tyler	SC Department of Public Safety/SC Highway Patrol	(843) 546-7300	bwtlyer@scdps.gov	

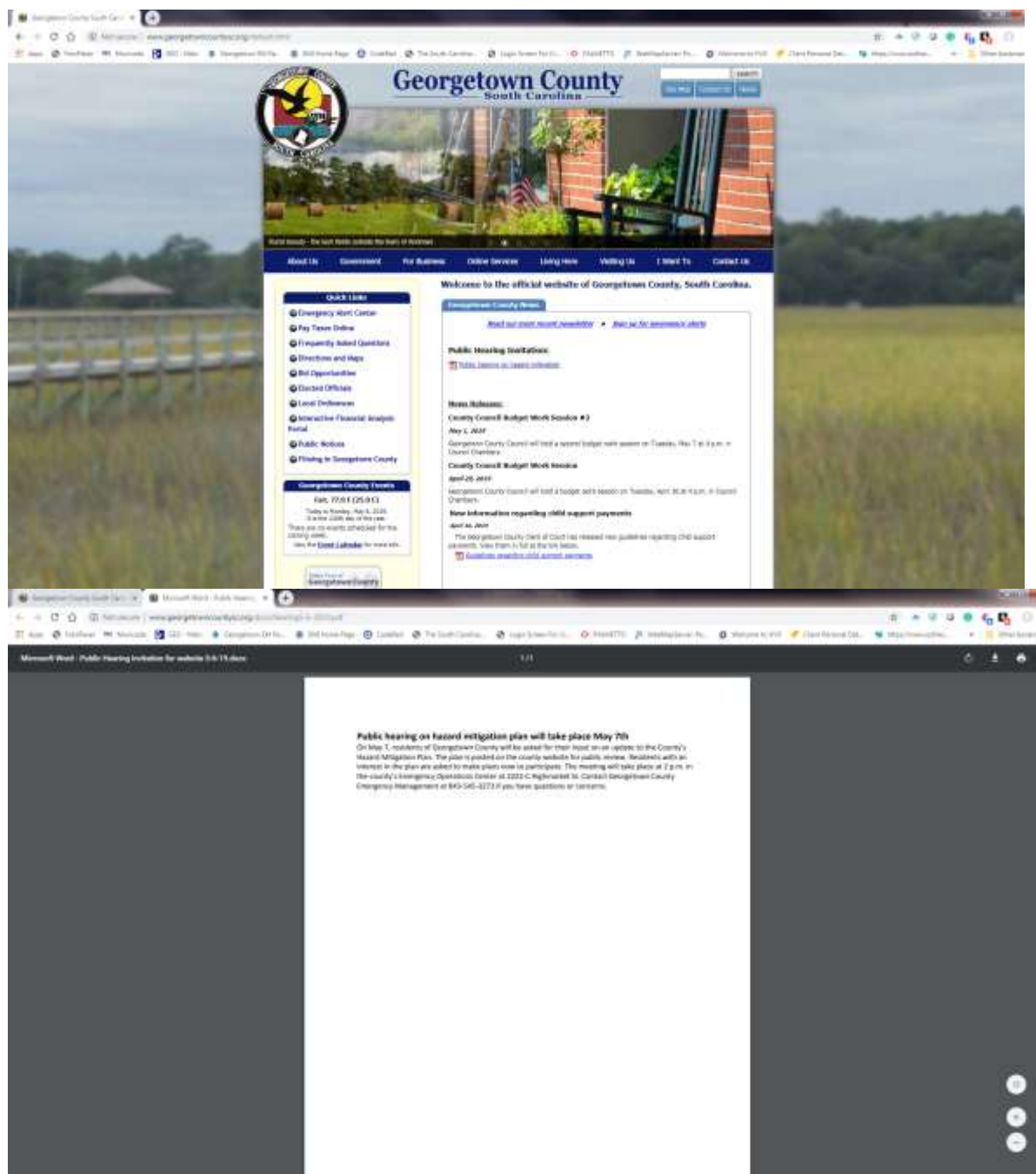
GEORGETOWN COUNTY HAZARD MITIGATION PLANNING COMMITTEE
EOC

February 12, 2019 10:00 a.m.

FIRSTNAME	LASTNAME	AGENCY NAME	PHONE NO.	E-MAIL ADDRESS	INITIAL
Derek	Underwood	SC Department of Agriculture	(803) 737-9700	dunder@scda.sc.gov	
Chief Kelvin	Waites	City of Georgetown Police Department	(843) 545-4390	kwaites@copsc.com	
Alan	Walters	Georgetown County School	(843) 436-7161	awalters@gcsd.k12.sc.us	
Carter	Weaver	Georgetown County Sheriff's Office	(843) 436-6033	cweaver@gtcounty.org	
Stephen	Williams	Georgetown County Public Works Manager	(843) 545-3438	swilliams@gtcounty.org	
Megan	Wood	SC Emergency Management	(803) 737-8500	mwood@emd.sc.gov	
Michael	Yip	Georgetown County Water &	(843) 237-9727	michaely@gcwsd.com	

APPENDIX E

APPENDIX E: PUBLIC HEARING NOTICES



**Hazard Mitigation Plan Planning Committee
Public Hearing Minutes
May 7, 2019
Georgetown County Emergency Operations Center**

Attendees:

Cindy Grace – Georgetown County EMD
Sam Hodge – Georgetown County EMD
Tracey Howell – Georgetown County Emergency Services
Randy Akers – Georgetown County Parks & Recreation Department (Deputy PIO)
Judy Blankenship – Georgetown County Planning Department
Jackie Broach-Akers – Georgetown County Public Information Officer
Alan Walters – Georgetown County School District
John Magann – Georgetown County Sheriff's Office

- Meeting called to order at 2:05 p.m.
- Cindy Grace discussed the following:
 - Mitigation Planning process and outcomes
 - Action items additions/deletions
 - Tables/figures additions/deletions
 - Changes to verbiage
 - Updates to critical facilities inventory
 - Jurisdictional repetitive loss property maps/lists
 - Footnotes/cross reference updates
 - Action Items:
 - *Create two (2) hard copies and two (2) CDs for public review at the Main Library. Cutoff date for public suggestions/updates due May 17th.*
 - *Receive mitigation action updates from Town of Andrews, updating in plan as needed.*
 - *Perform Local Mitigation Plan Review using Appendix B of the Review Tool.*
 - *Upload final draft on SCEMD ftp site for their review.*
 - *After SCEMD's review, complete edits as necessary, and forward plan to FEMA for review/approval.*
 - *Receive Adoption Ordinances from each jurisdiction.*
 - *Make hard copies for Situation Room and EOC; make CD copies for County Council and jurisdictional agencies as needed.*
- The meeting adjourned at 2:40 p.m.

Tuesday, May 7, 2019
Georgetown Co. EOC

NAME	AGENCY	ADDRESS	PHONE NO.	E-MAIL ADDRESS
Cindy Grace	GCENO	2222-c Highland St. Gering, NE 69340	845-545-3273	cgace@treasury.org
Sam Hodge	GC EMD	" "	"	shodge@treasury.org
Judy Bruckert	Planning	129 Scudder St Gering, NE	843-545-3278	Johnbruckert@treasury.org
Jackel Bruckert	PIC		3164	johnbruckert@treasury.org
Randy Akers	Deputy PIC		3301	bruckert@treasury.org
Alan Hirsch	GCIS		458-8368	Alan.Hirsch@treasury.org
Tracey Hoad	GCES		3213	thoad@treasury.org
John Megann	GC Sheriff's Office		543-6765	jmegann@treasury.org

APPENDIX F: REFERENCES AND NEWSPAPERS

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