Charleston Regional Hazard Mitigation Plan







2025 DRAFT

Jurisdictions Represented and Participating in Charleston Regional Hazard Mitigation Plan

CRS Jurisdictions processed by Charleston County:

Unincorporated Charleston County
Town of Awendaw
Town of Hollywood
Town of James Island
Town of Lincolnville
Town of McClellanville
Town of Meggett
Town of Rockville Town
of Seabrook Island

Other CRS Jurisdictions:

City of Charleston
City of Folly Beach
Town of Ravenel
City of Isle of Palms
City of North Charleston
Town of Kiawah Island
Town of Mt. Pleasant
Town of Sullivan's Island

Other Government Entities and Partners Represented and Participating in This Plan:

Charleston County Parks & Recreation Commission
Charleston County School District
Charleston Water System
College of Charleston
Cooper River Parks & Playground Commission*
James Island Public Service District Commission
Mt. Pleasant Water Works Commission
North Charleston District*
North Charleston Sewer District
Roper St. Francis Healthcare
St. Andrew's Parish Parks and Playground Commission
St. Andrews Public Service District
St. John's Fire District Commission
St. Paul's Fire District Commission

**The City of North Charleston assumes the functions and obligations and has acquired all powers, properties, and contract rights.*

CONTACT US ABOUT THE PLAN:

The Charleston Regional Hazard Mitigation Plan involves all participating jurisdictions and partners, but is maintained by Charleston County's Building Inspection Services Department. This plan is published on the Charleston County Building Inspection Services website and is available in the department's office.

Public comment on the Plan is always welcome and incorporated into the yearly updates. For any questions on the Plan or for information on how to be involved with the Plan, please contact Charleston County Building Inspection Services. Thank you for your interest.

Lonnie Hamilton, III Public Services Building
4045 Bridge View Drive, Room A311
North Charleston, SC 29405-7464

Email: floodservices@charlestoncounty.org
Phone: 843-202-6940
Fax: 843-202-6954

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Section 1 Introduction

1.1–Background

The *Charleston Regional Hazard Mitigation Plan* is the result of a community wide effort to determine appropriate mechanisms to address the various types of hazards facing the Charleston Region. The *Charleston Regional Hazard Mitigation Plan* was developed as a required element of *Project Impact,* a former initiative sponsored by the Federal Emergency Management Agency (FEMA) to assist local communities in the Region to become more disaster resistant through cooperative efforts of the private, public and non-profit sectors. The tenets and processes that go into making the hazard mitigation plan ofProject Impact continue to align well with its current planning review requirements.

The **goals** of the program include, but are not limited to:

1. Reduce potential flood damage
2. Improve storm drainage
3. Minimize future flood occurrence
4. Minimize future hurricane damage
5. Improve resistance of infrastructure to all hazards with special attention to critical facilities
6. Minimize future earthquake damage
7. Protect environmental resources/preserve open and green space
8. Minimize future terrorist incidents
9. Improve water quality
10. Preserve historic building inventory
11. Higher regulatory standards uniform as possible and meet community needs
12. Minimize future hazardous material incidents
13. Increase cooperation between jurisdictions and become more resilient.
14. Include the private sector and community to increase collective intelligence and idea sharing to establish Best Management Practices

The *Charleston Regional Hazard Mitigation Plan* was developed as a required element of Project Impact, and in 1998 two committees were formed: the *Hazard Mitigation Plan Committee* and the *Project Impact Advisory Committee*.

The *Advisory Committee* is comprised of the following subcommittees: *Structural Projects, Natural Benefits, Emergency Services, Property Protection and Preventative Activities*.

In 2012, the *Public Information Committee* merged with the *Hazard Mitigation Plan Committee*, to form the *Hazard Mitigation Plan & Public Information Committee.* In 2013 the *Charleston Regional Hazard Mitigation Plan & Public Information Committee* refined the roles to comply with the *Program for Public Information (PPI)* requirements of the *2013 Community Rating System Manual*. Because public information is a key component in protecting the lives of our citizens, merging the two committees into one has proven to be the best way to have the most participation and input from all areas of interest.

As part of an ongoing effort to mitigate loss of life and property damage associated with flooding events, all jurisdictions in the County presently active in the National Flood Insurance

Program (NFIP) - Community Rating System (CRS) have established a *Public Information Plan (PIP)*. The *Public Information Plan* is a stand-alone document that is Appendix A.1 at the end of this Plan. The purpose of the document is to collectively evaluate public information efforts across the different elements found throughout the Plan, from different types of hazards, to different outreach methods, topics and messages that should be addressed, and assessing the needs of the community, this document addresses all areas that incorporate public information activities. This *PIP* will serve all jurisdictions that have recognized the commonality of those natural disasters that pose the greatest threats to the Charleston County's Project Impact area. Establishing a single multi-jurisdictional *PIP* eliminates duplicity of efforts and resources for each jurisdiction. Membership for this function has been established within the County's Project Impact initiative, with primary responsibilities placed within the *Hazard Mitigation & Public Information Plan Committee*. The other subcommittees of Project Impact offered assistance in the form of reviewing and providing recommendations on proposed and existing outreach projects. Twenty-five of the activities of the 2022-2023 *Charleston Regional Hazard Mitigation Plan* action plan are specific *PIP* initiatives.

The *Charleston Regional Hazard Mitigation Plan* is the result of a community-wide effort to determine appropriate mechanisms to address the various types of hazards facing the Charleston Region. The *Hazard Mitigation Plan & Public Information Committee*, which drafted this plan, consisted of members from each of the local government entities within Charleston County, State and Federal agencies with a focus on hazard mitigation, and from partners within the non-profit and private sectors.

The purpose of this plan update is to continue guiding hazard mitigation efforts to better protect the people and property in the County from the effects of hazard events. This plan demonstrates the community's commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. This plan was also developed to ensure Charleston County and participating partners' continued eligibility for certain federal disaster assistance. Maintenance of this plan also earns points for the National Flood Insurance Program's Community Rating System (CRS), which provides for lower flood insurance premiums in CRS communities.

Overview of Project Impact & the *Charleston Regional Hazard Mitigation Plan*

Project Impact was a Federal Emergency Management Agency (FEMA) sponsored initiative aimed at assisting communities in becoming more disaster resistant. Project Impact was intended to involve the public, private and non-profit sectors in forming partnerships to achieve the goal of reducing the amount of loss associated with a hazard event. This initiative began in 1997 with seven pilot communities, and ultimately expanded to approximately 250 communities nation-wide. Charleston County was selected as the 1999 Project Impact community for the State of South Carolina. All the local jurisdictions within Charleston County have partnered together in the Project Impact initiative and still participate despite the defunding of the national project in 2002.

The four phases of the Project Impact initiative were to build community partnerships, assess risks, prioritize needs, build support, and communicate on addressing hazard preparedness and response. The Project Impact initiative is intended to address any types of hazards, which may strike our community. The *Charleston Regional Hazard Mitigation Plan* addresses each of these types of hazards and serves as a mechanism for the assessing risks and prioritizing needs. This plan serves as the governing document for project selection associated with the Charleston County Project Impact initiative.

Project Impact and the *Charleston Regional Hazard Mitigation Plan*, fully complement each other and are therefore fully integrated with each other for the Charleston Region. Applicable efforts undertaken through either program are considered as activities for both programs.

– Community Profile

Charleston County's rich blend of culture, economic activity, environmental beauty, and immense historical preservation makes it one of the most distinguished counties in the nation. A recognized leader, Charleston County is a proud community that strives to protect both its historic treasures and its environment, while keeping an eye toward future development and citizens' needs.

The Land

Charleston County is located along the southeastern coast of South Carolina. It encompasses approximately 916 square miles of land, marshes, rivers, and wetlands with a coastline that stretches nearly 100 miles along the Atlantic Ocean. Charleston County contains vital protected areas, including the Francis Marion National Forest, Cape Romain National Wildlife Refuge, and ACE Basin National Wildlife Refuge.

The Climate

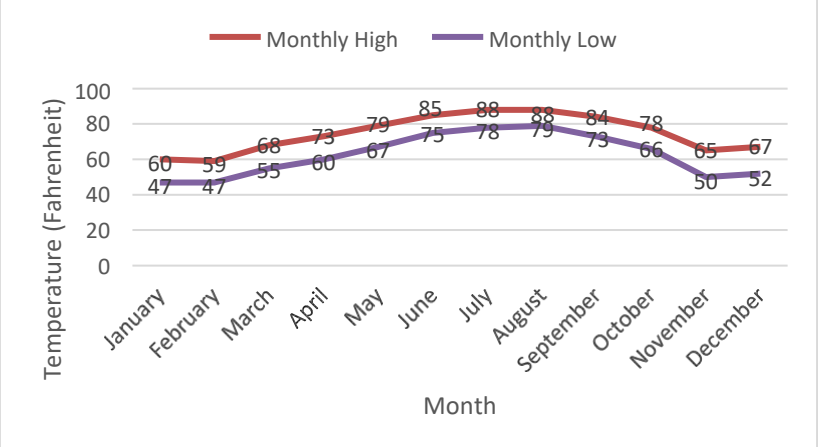
Nestled alongside the Ashley and Cooper rivers as they flow into the Atlantic Ocean, Charleston County enjoys a subtropical climate—with mild winters and warm, sunny summers. On average, July is our warmest month, January is our coldest, and August gets the most rainfall. In January, the average temperature is 48.5 degrees Fahrenheit; in July, the average temperature is 82 degrees Fahrenheit. The first frost usually occurs in December and the last frost usually occurs in February. Fluctuations in these trends happen every year. The year 2016 saw everything from three-digit temperatures to freezing conditions.

Figure 1.1 Charleston Weather Averages for 2024

Annual high temperature:	76°F
Annual low temperature:	56°F
Average temperature:	66°F
Annual precipitation - rainfall:	51.03 inches
Days per year with precipitation - rainfall:	119 days
Annual hours of sunshine:	2993 hours

Source: US Climate Data

Figure 1.2 Monthly Highs and Lows for Charleston County for 2022

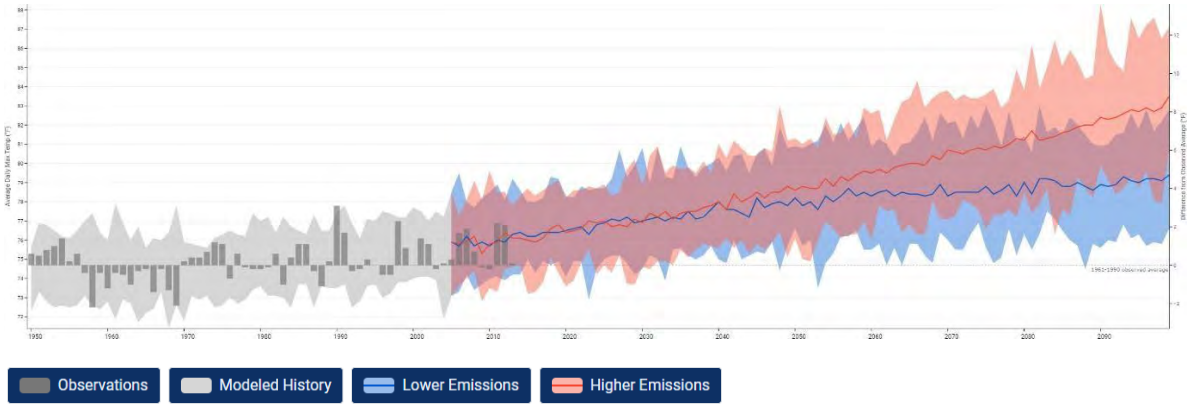


Climate Change

The impacts of climate change are physically evidenced in the Charleston region and are expected to intensify. The most frequent and evident impacts of climate change are reflected in increased temperature and extreme heat events, sea level rise and heavy precipitation causing flooding. Impacts of climate change continue to have many consequences for human health, the built environment, and the natural world across the region. Other more periodic hazards resulting from climate change include increased strength and frequency of hurricane events, tornados, and potentially wildfires. Although climate change has gained more attention in the last few years, it has been an active subject affecting the coastal region of Charleston in the past; however, its impacts have undeniable increased in the past decade. Coastal areas are experiencing the profound effects of climate change at different levels.

Climate Change Indicators include two hazard impacts in the Charleston region, which are visible and substantiated. Increased temperature and extreme heat, as demonstrated in daily maximum temperature in Figure 1.3., and increased flooding resulting from sea level rise in combination with heavy rainfall, which is evidenced in the incremental annual days with tide flooding Annual Days with High-Tide Flooding, Figure 1.4.

Figure 1.3. Average Daily Maximum Temperature Trend, 2005 – 2100



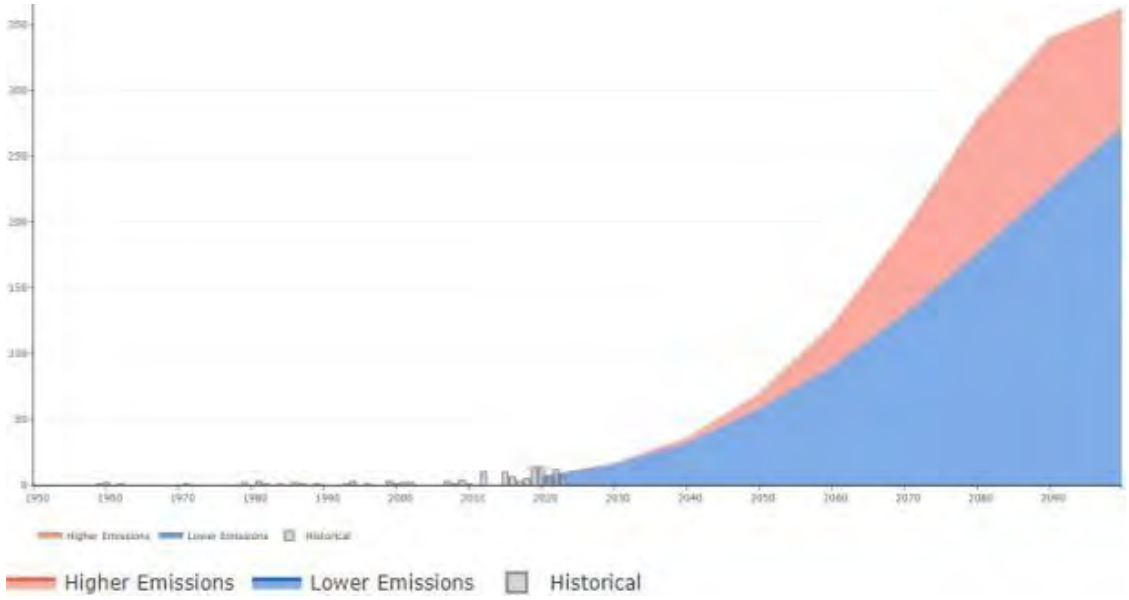
Source: FernLeaf and the National Environmental Modeling and Analysis Center, Climate Explorer

Extreme heat occurs when temperatures hover 10 degrees or more above the average high temperature for the region and lasts for several weeks. The Charleston County Region has become vulnerable to days exhibiting extreme heat, especially urban heating between mid-July to mid-August. Charleston county contains heat islands, urbanized areas that experience higher temperatures than outlying areas, in downtown Charleston, Folly Beach, Isle of Palms, James Island, Ravenel, and Sullivan's Island.

Additionally, heavy rainfall has made record breaking impacts, reaching 22 inches in James Island and 21.5 inches in 2015. Climate change has contributed to the increasing frequency of severe weather in Charleston County. Global warming has, also, caused concerning instances of extreme heat. Upwards sloping trendlines of temperatures showcase a greater probability of days exhibiting extreme heat.

In 2050, Charleston County is projected for to experience on average 68 days of extreme heat as global warming persists. Extreme heat can also impact the probability of wildfires due because extreme heat can cause dry conditions.

Figure 1.4. Annual Days with High-Tide Flooding, 1950 – 2100



Source: FernLeaf and the National Environmental Modeling and Analysis Center, Climate Explorer

High tide flooding essentially results from sea level rise, storm surge and at times in combination with heavy rainfall. Rising sea levels have become more threatening to the Charleston County region, especially in coastal front jurisdictions. Sea level rise is a direct cause of coastal flooding, erosion, and disruptions to coastal and estuarine ecosystems. Within the last decades, it has been recorded that the sea levels in Charleston have risen by **1.1** inches per decade, nearly double the global sea level rise. With more than 800 square miles of coastal land within Charleston County, increasing occurrences of tidal flooding will continue as sea levels continue to rise.

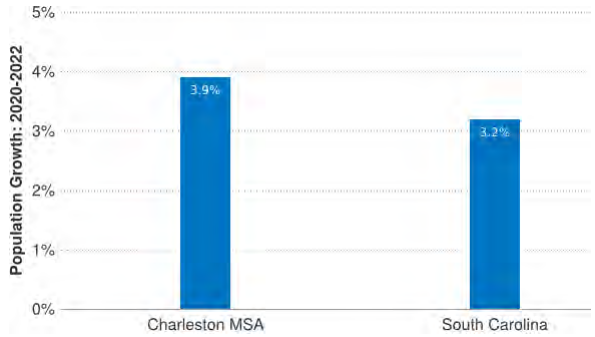
With an increase in the frequency of hurricanes and rapidly rising sea levels, frequent flooding is an everyday issue for Charleston County residents. It has been documented that flooding occurrences increased more than 50% between 2014 and 2015. As global warming worsens, Charleston County will experience a greater number of extreme heat days. Extreme heat prepares conditions for frequent wildfires, too.

The Charleston region and its municipalities recognize the importance of incorporating factors of equity and equitable outcomes throughout the planning process to address varied levels of risk in diverse populations or communities. While all populations are at risk, the policies and strategies intended to ameliorate the impacts of climate change in the region would incorporate equity and access to the larger population including those more exposed to the losses from climate change. Those more exposed include, but are not limited to, underserved communities, who experience an array of barriers from geographic location to economic, language, social and civic life, and socially vulnerable populations, whose characteristics of life influence their individual's or group's ability to prepare, respond, cope or recover from an event, in short, to be resilient. The Charleston Region is in the process of refining or generating climate adaptation plans, strategies, and mechanisms to respond to current needs of populations at risk through climate change. These climate adaptation efforts and plans are discussed in the Capabilities Assessment section of the Plan.

The People

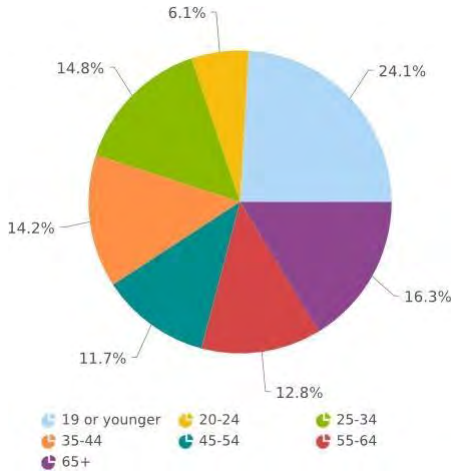
Charleston County is home to an estimated 413,024 people[1]. With a median age of 38.4, most of the county's population is old enough to work and young enough to continue doing so for years to come. 64.3% percent of the county's population is in the civilian labor force, earning a median household income of $67,182. An estimated 11.9 percent of the population lives in poverty[1]. Around 92.4 percent of Charleston County residents have a high school degree or higher level of education, while 45.3 percent hold a bachelor's degree or higher.[1] Caucasian and black races make up approximately 69 percent and 26 percent of the population, respectively[1]. Just over half of the county's population is female.

Figure 1.5 Local, State, and National Population Growth[1]



Source: U.S Census Bureau

Figure 1.6 Charleston Age Profile[1]



Source: U.S. Census Bureau

[1] U.S. Census Bureau

[2] U.S. BLS, Current Employment Statistics

[3] These numbers have decreased during the past year due to COVID-19.

Figure 1.7 Charleston Employment from 2019-2023

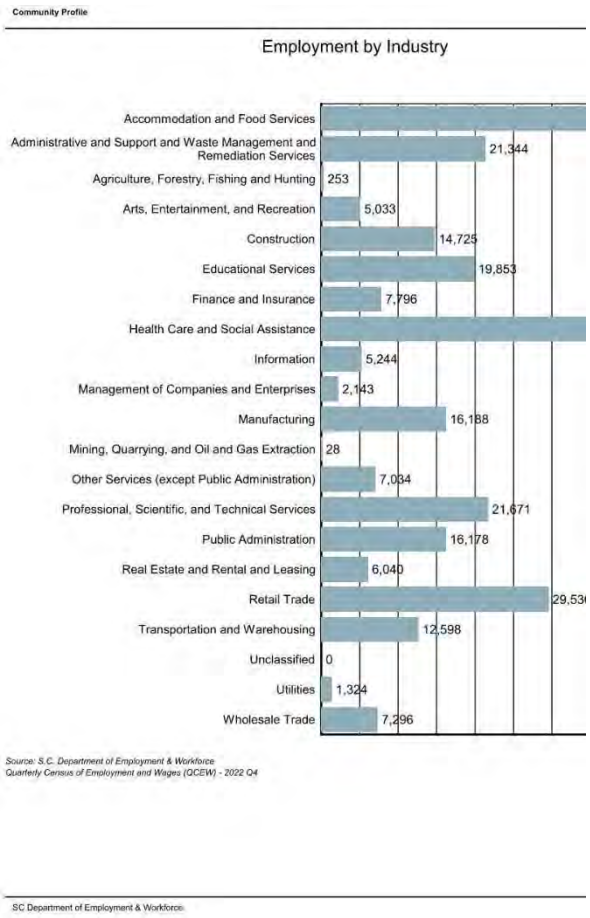
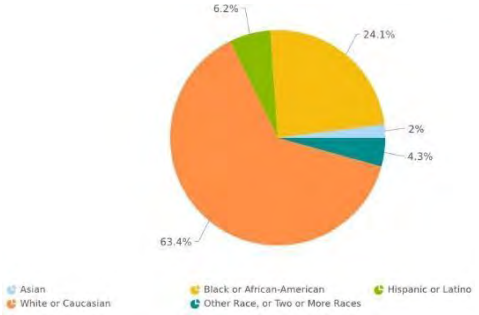


Figure 1.8 Charleston Race Profile[1]

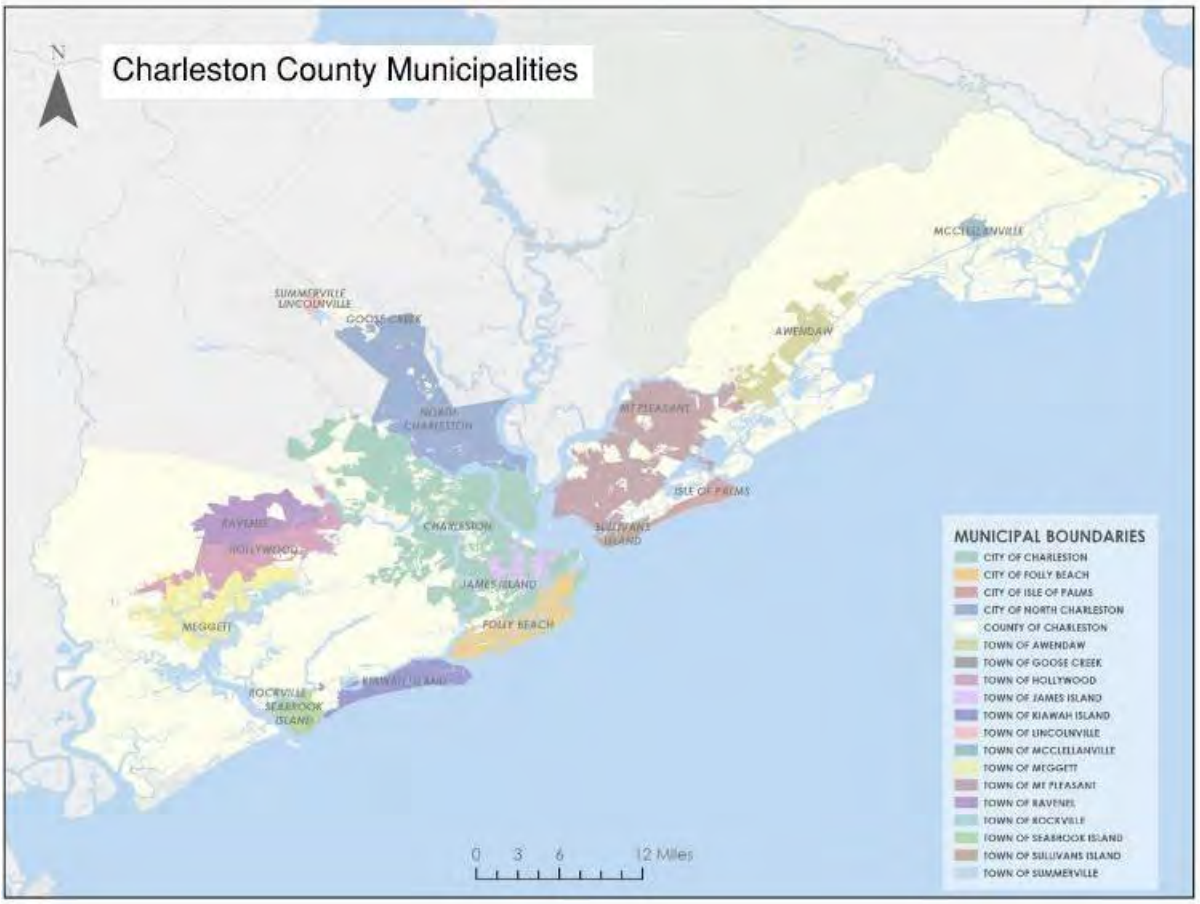


Source: U.S. Census Bureau

The Government

Charleston County uses the Council-Administrator form of local government. This form allows a board to hire an administrator to carry out council policy and personnel functions. The clerk of court, coroner and sheriff are constitutional officers that are elected countywide to four-year terms. Other officers elected countywide to four-year terms are auditor, treasurer, and probate judge. South Carolina's counties are granted enough authority to expand their services beyond traditional limited county purposes. With these enhanced powers, the counties can provide a diverse range of services such as water treatment, transportation, alcoholism and drug programs, and libraries. Charleston County consists of the unincorporated areas and the municipalities of the Town of Awendaw; Town of Hollywood; Town of James Island; Town of Lincolnville; Town of McClellanville; Town of Meggett; Town of Ravenel; Town of Rockville; Town of Seabrook Island; the City of Charleston; City of Folly Beach; City of Isle of Palms; Town of Kiawah Island; Town of Mount Pleasant; City of North Charleston; and Town of Sullivan's Island. Charleston County Government acts as Unincorporated Charleston County – covering all the areas within the County that have not incorporated into a city or township.

Unincorporated Charleston County provides full services for floodplain management and code



enforcement for the following jurisdictions: Town of Awendaw, Town of Hollywood, Town of James Island, Town of Lincolnville, Town of McClellanville, Town of Meggett, Town of Rockville, and Town of Seabrook Island. A detailed matrix for all participating jurisdictions in the Plan and the services provided and program participation is detailed at the end of this section. All

jurisdictions participate in the NFIP except for Lincolnville since their jurisdiction is so small and has no buildings that lie in a flood zone.

Most Special Purpose Government (SPG) and Partners do not participate in the National Flood Insurance Program (NFIP) for reasons described below, except for The James Island Public Service District (JIPSD) and Charleston County School District (CCSD). JIPSD own their buildings and facilities, and all their buildings are insured through the State Insurance Reserve Fund, which provides flood and earthquake coverage. As for Design and construction, all future JIPSD buildings are required to meet flood needs. Both, JIPSD and CCSD participate in the NFIP and will continue to review and design mitigation projects in accordance with their requirements as appropriate.

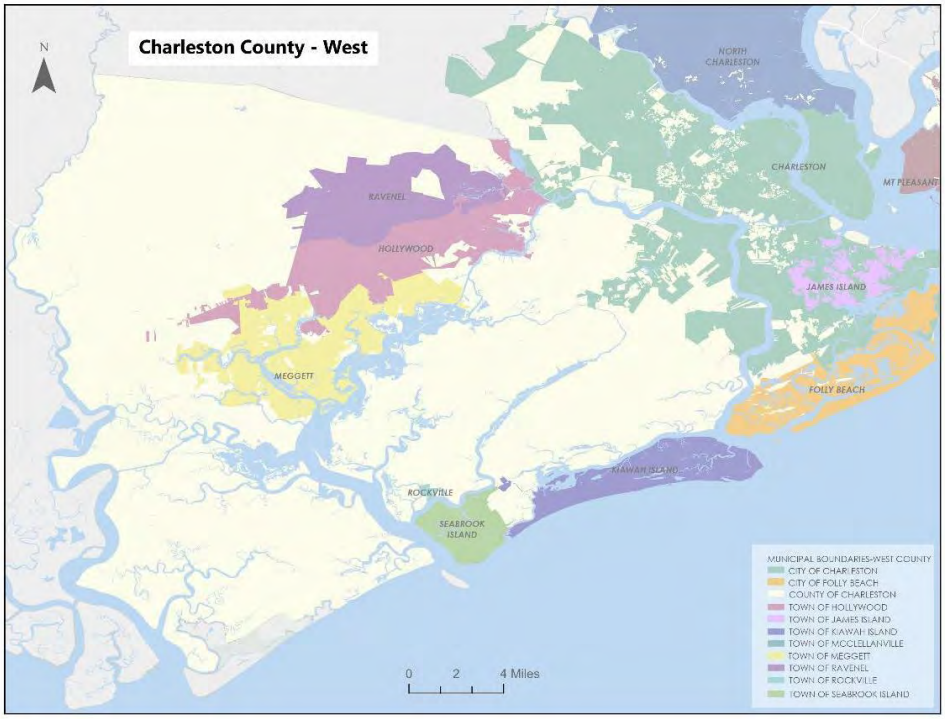
Listed below are the other SPG and Partners' reasons for Non-NFIP participation:

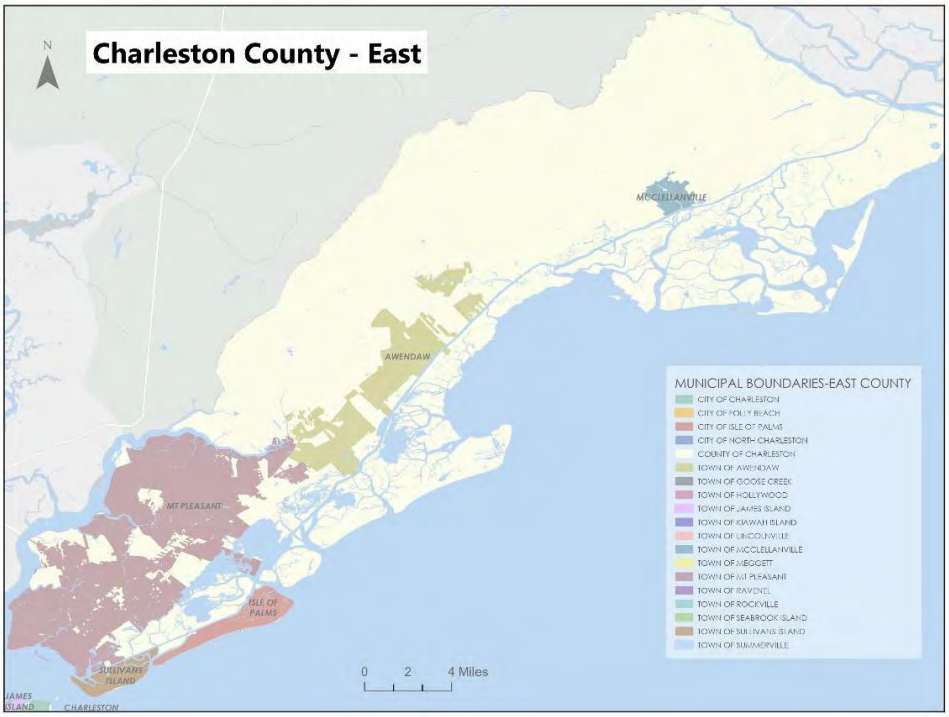
- As SPG, The Cooper River Parks and Playground Commission and The North Charleston District no longer own any property.
- As a utility provider, Charleston Water System is self-insured.
- As a state-supported comprehensive university the College of Charleston is self-insured.
- As utility provider, Mount Pleasant Waterworks own all of their buildings, they are insured through the State Insurance Reserve Fund.
- As a Parks and Recreation District, the St. Andrew's Parish Parks and Playground Commission is self-insured.
- As a service provider and SPG, St. Andrews Public Service District (SAPSD), provides its own flood insurance.
- As Special Fire Districts, St Paul's Fire District and St. John's Fire District are self-insured.
- As a private non-profit critical healthcare facility, Roper St. Francis Healthcare (RSFH) is self-insured for liability and has separate flood insurance.

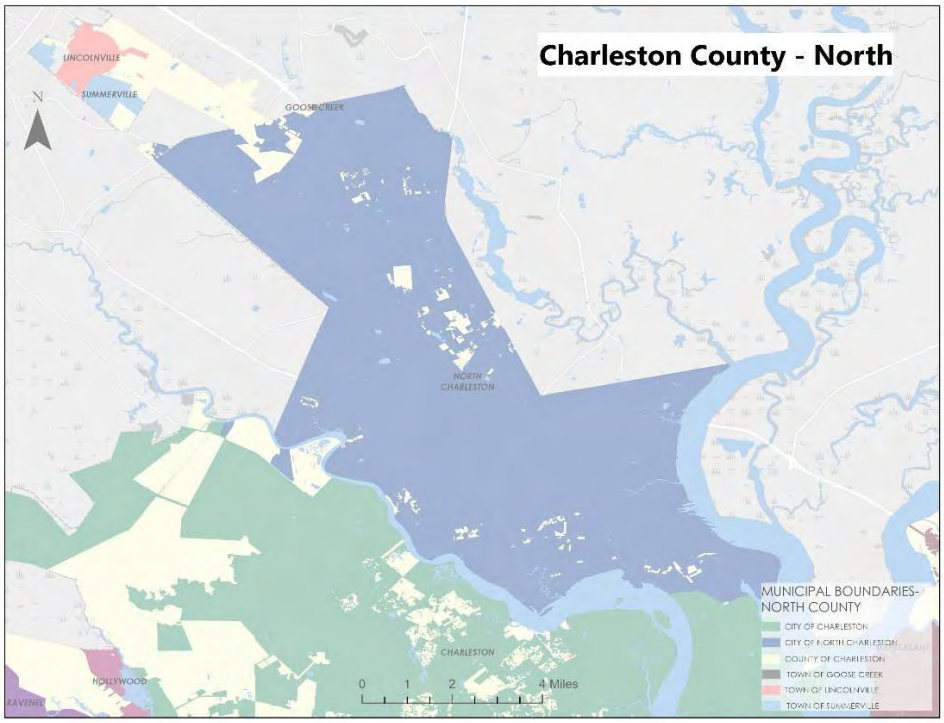
Nevertheless, all the above listed, except for RSFJ will continue to review and design mitigation projects in accordance with NFIP requirements as appropriate. Respect to RSFH, they are unable to comply "as appropriate' no matter how much they want to, specifically at their downtown location and in reference to renovation projects. Depending on the project, the reasons may be physical or financial constraints. That is not to say that they will not comply with the NFIP requirements when they are able to.

The most recent FIRM maps have been adopted (1/29/2021). All jurisdictions also participate in the CRS program except for Lincolnville.

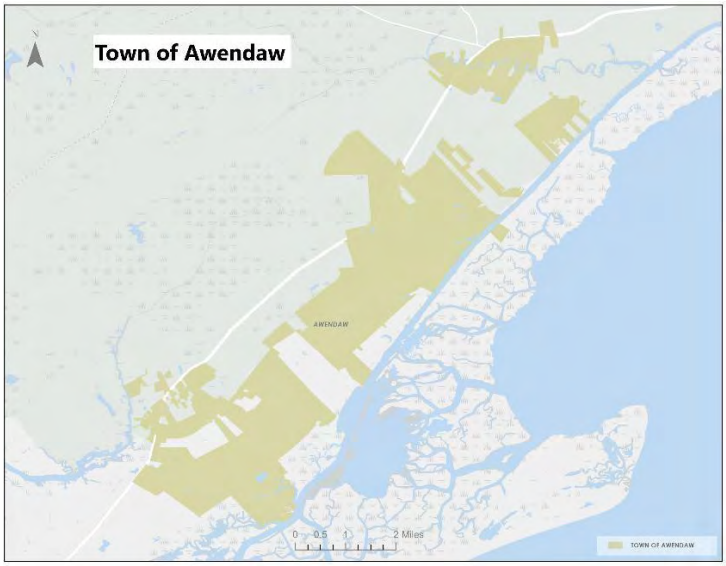
The following are area specific maps to show each participant in more detail.


Charleston County - West
N
NORTH CHARLESTON
CHARLESTON
MT PLEASANT
RAVENEL
HOLLYWOOD
JAMES ISLAND
MEGGETT
FOLLY BEACH
KIAWAH ISLAND
ROCKVILLE
SEABROOK ISLAND
0 2 4 Miles
MUNICIPAL BOUNDARIES-WEST COUNTY
CITY OF CHARLESTON
CITY OF FOLLY BEACH
COUNTY OF CHARLESTON
TOWN OF HOLLYWOOD
TOWN OF JAMES ISLAND
TOWN OF KIAWAH ISLAND
TOWN OF MCCLELLANVILLE
TOWN OF MEGGETT
TOWN OF RAVENEL
TOWN OF ROCKVILLE
TOWN OF SEABROOK ISLAND


Charleston County - East
N
MCCLELLANVILLE
AWENDAW
MT PLEASANT
ISLE OF PALMS
SULLIVANS ISLAND
JAMES ISLAND
CHARLESTON
0 2 4 Miles
MUNICIPAL BOUNDARIES-EAST COUNTY
CITY OF CHARLESTON
CITY OF FOLLY BEACH
CITY OF ISLE OF PALMS
CITY OF NORTH CHARLESTON
COUNTY OF CHARLESTON
TOWN OF AWENDAW
TOWN OF GOOSE CREEK
TOWN OF HOLLYWOOD
TOWN OF JAMES ISLAND
TOWN OF KIAWAH ISLAND
TOWN OF LINCOLNVILLE
TOWN OF MCCLELLANVILLE
TOWN OF MEGGETT
TOWN OF MT PLEASANT
TOWN OF RAVENEL
TOWN OF ROCKVILLE
TOWN OF SEABROOK ISLAND
TOWN OF SULLIVANS ISLAND
TOWN OF SUMMERVILLE

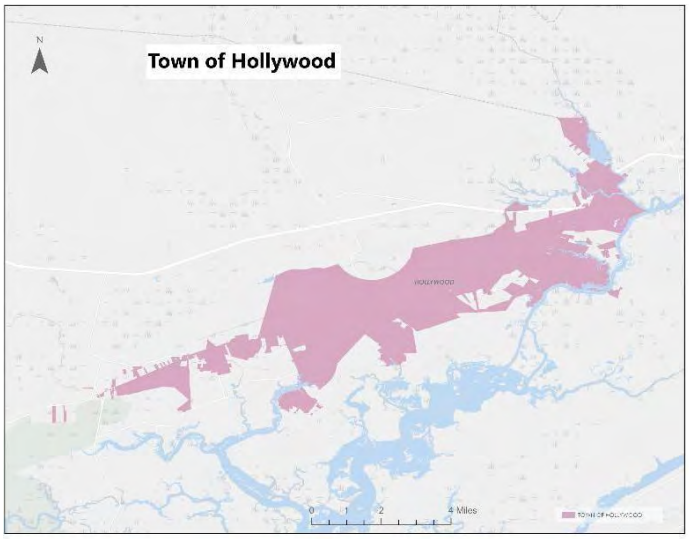


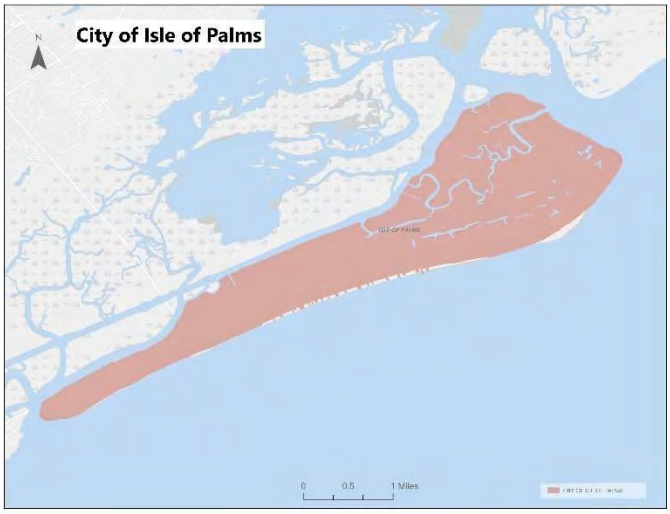
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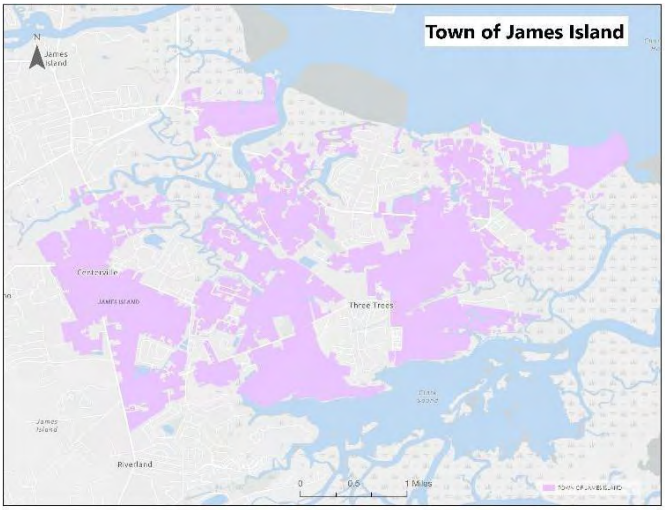


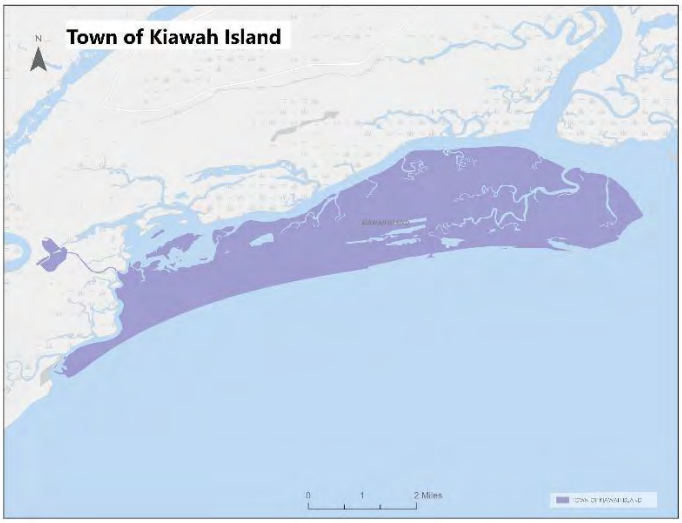


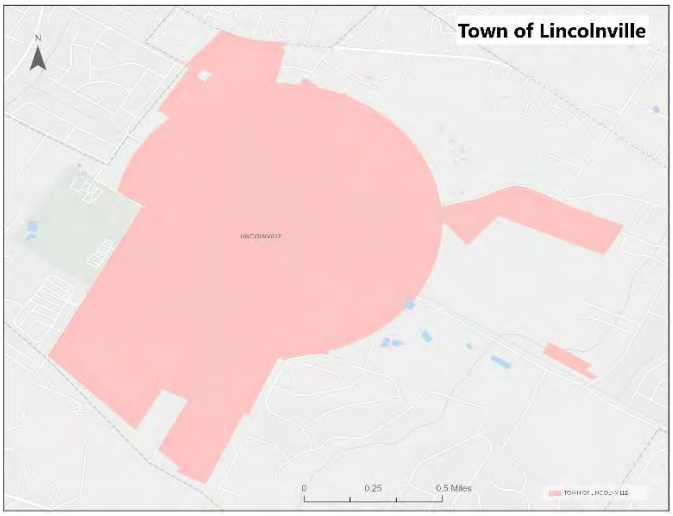

City of Folly Beach
N
0 0.5 1 Miles
CITY OF FOLLY BEACH

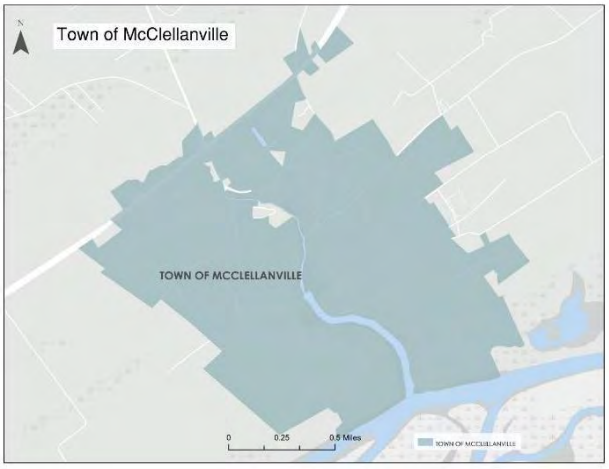

Town of Hollywood
N
0 1 2 4 Miles

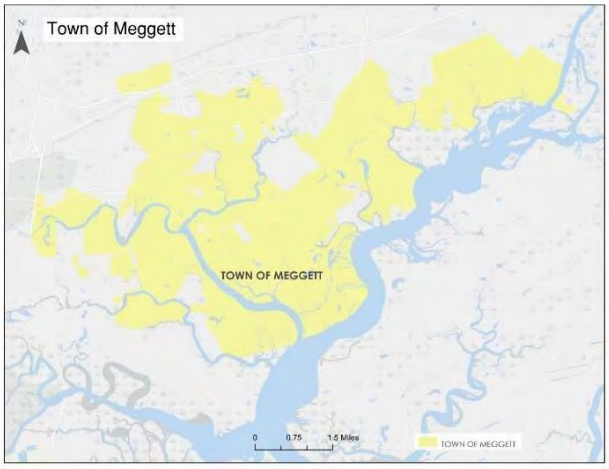

City of Isle of Palms
N
0 0.5 1 Miles

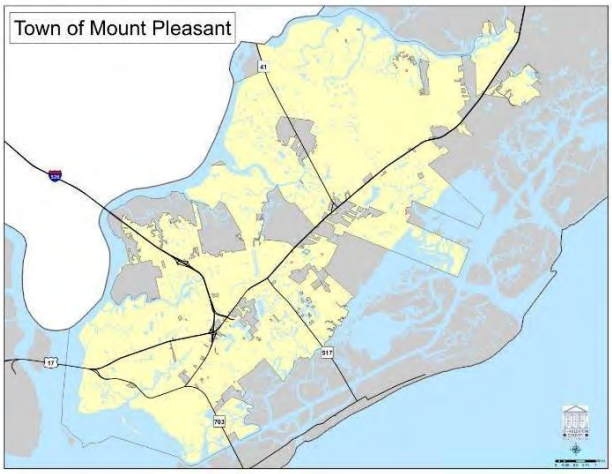

Town of James Island
N
James Island
Fenderville
Three Trees
Riverland
0 0.5 1 Miles

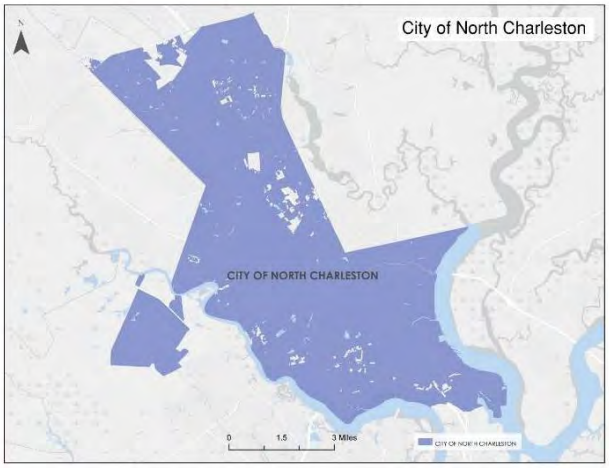

Town of Kiawah Island
N
0 1 2 Miles

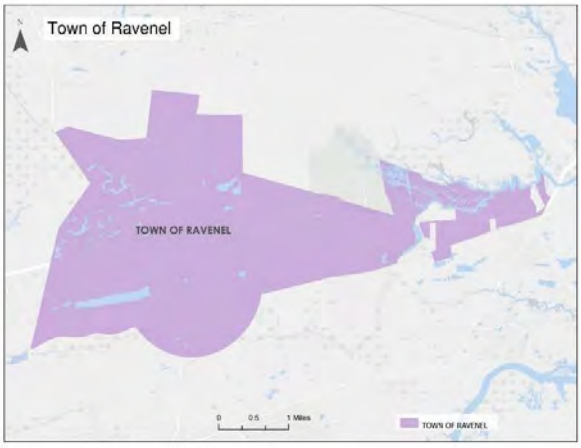

Town of Lincolnville
N
0 0.25 0.5 Miles


Town of McClellanville
TOWN OF MCCLELLANVILLE
0
0.25
0.5 Miles


Town of Meggett
TOWN OF MEGGETT
0
0.75
1.5 Miles


Town of Mount Pleasant


City of North Charleston
CITY OF NORTH CHARLESTON
0
1.5
3 Miles

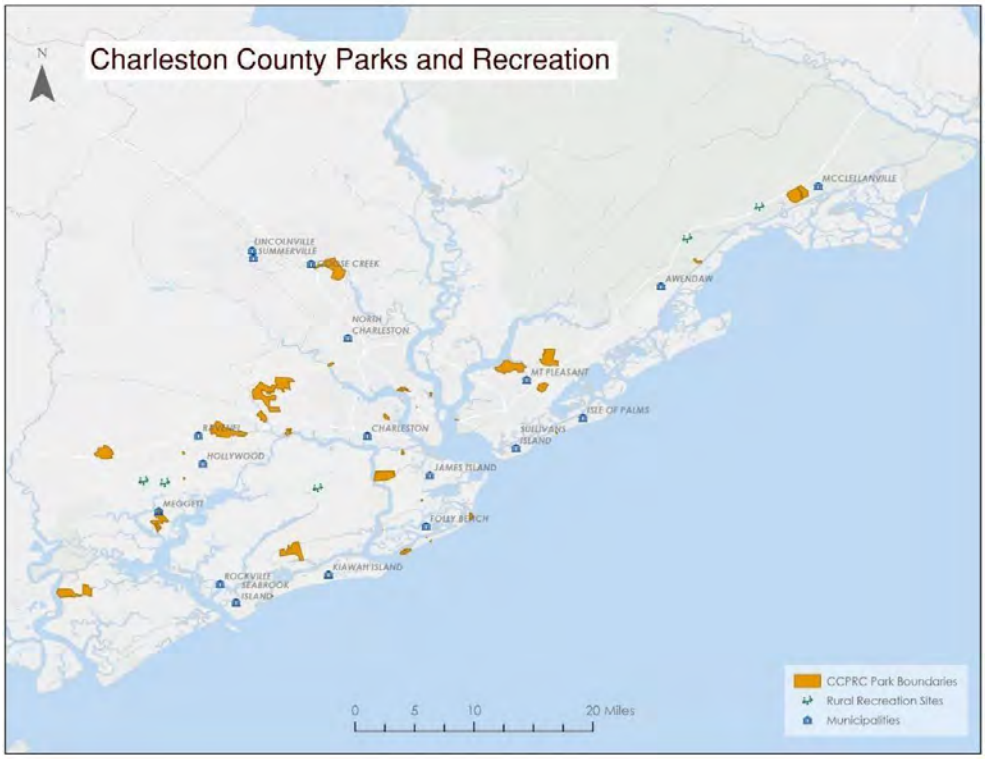

Town of Ravenel
TOWN OF RAVENEL
0
0.5
1 Miles

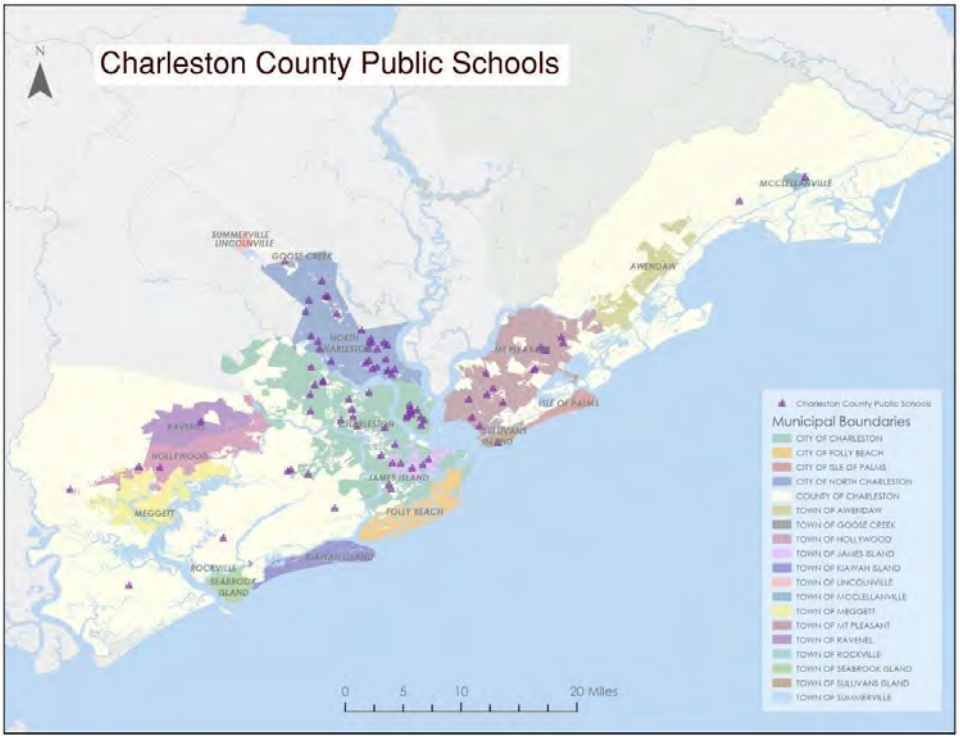

Town of Rockville
TOWN OF ROCKVILLE
0
0.1
0.2 Miles

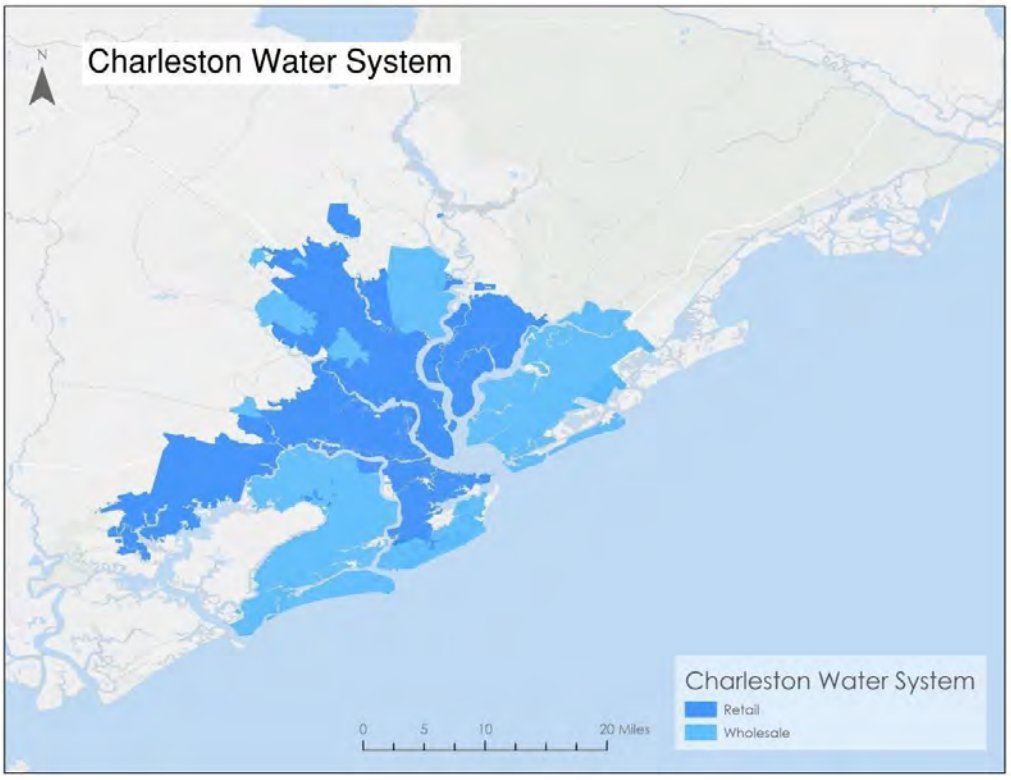

Town of Seabrook Island
TOWN OF SEABROOK ISLAND
0
0.4
0.8 Miles

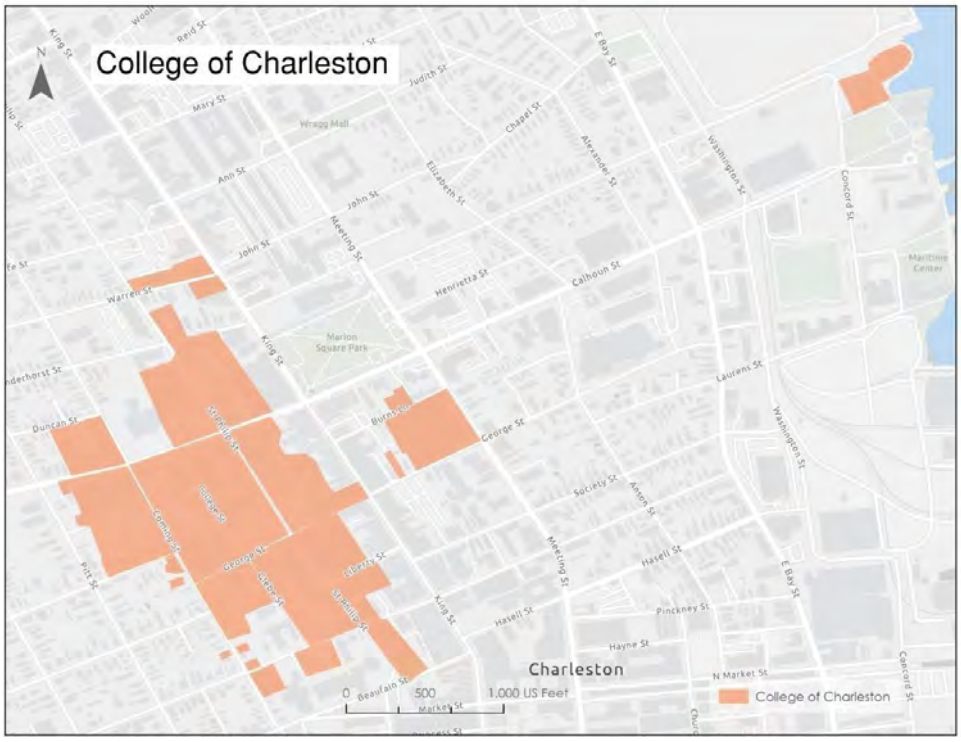

Town of Sullivan's Island
TOWN OF SULLIVANS ISLAND
0
0.3
0.6 Miles
TOWN OF SULLIVAN'S ISLAND

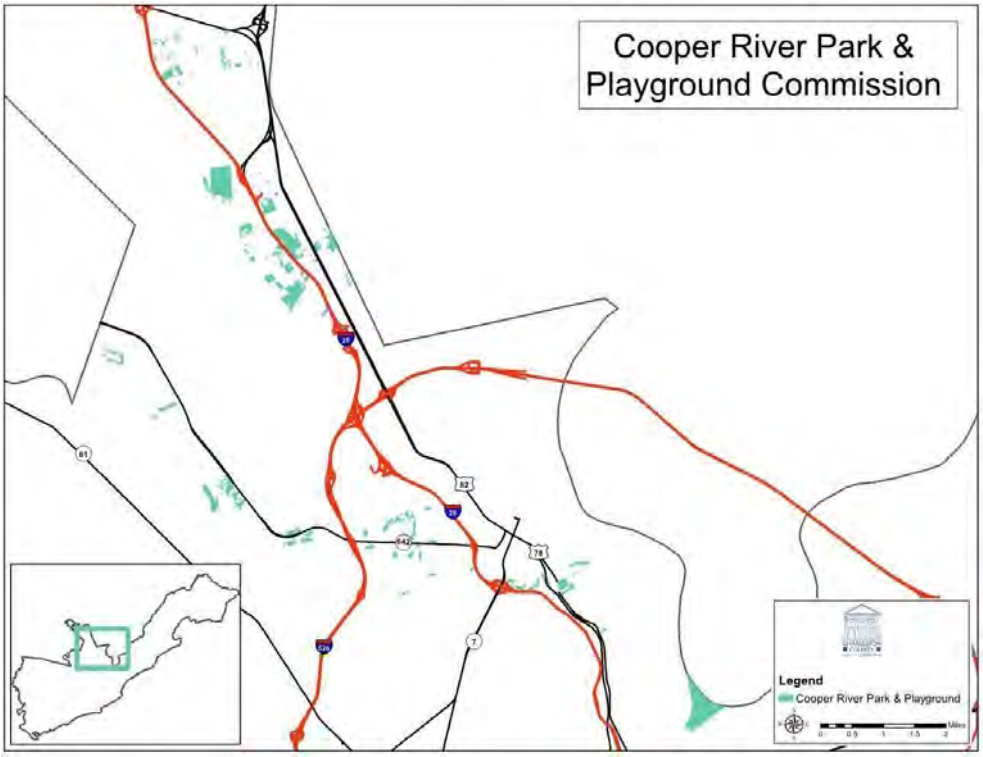
Non-jurisdictional Plan participants:

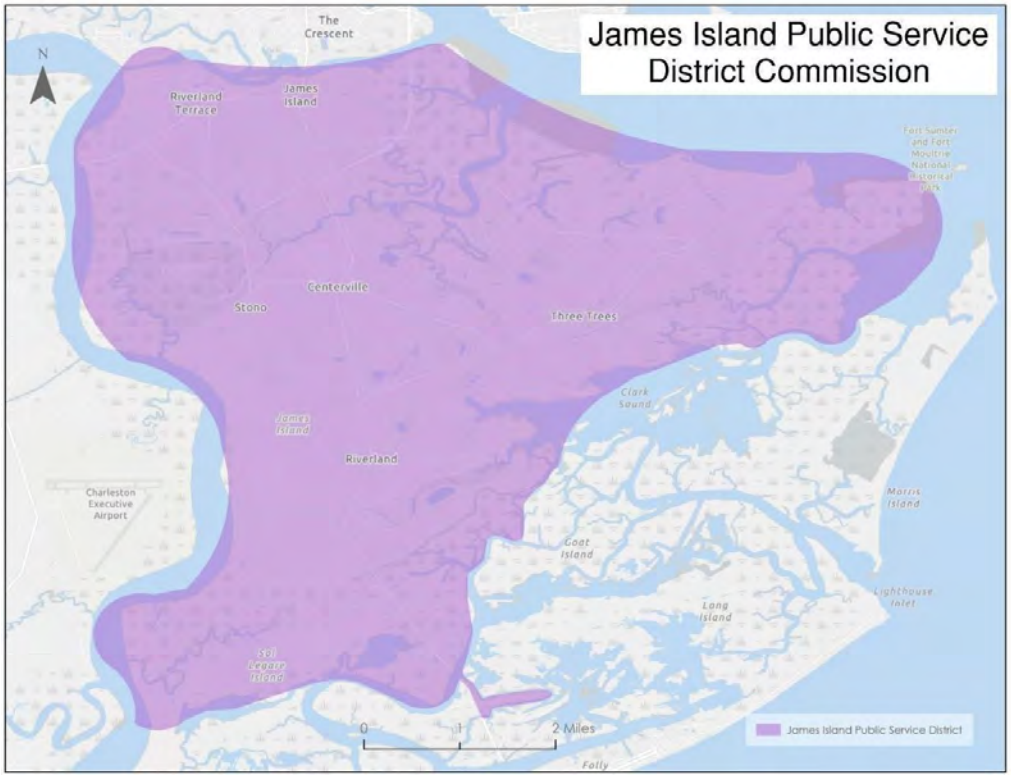


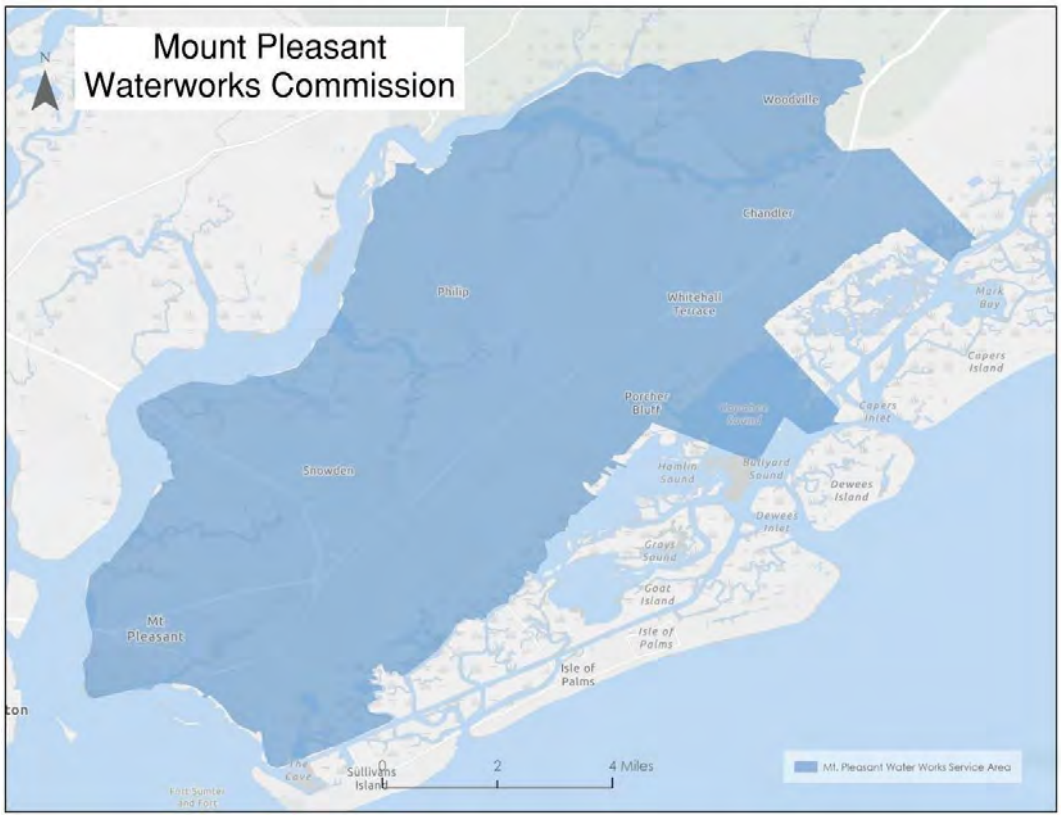


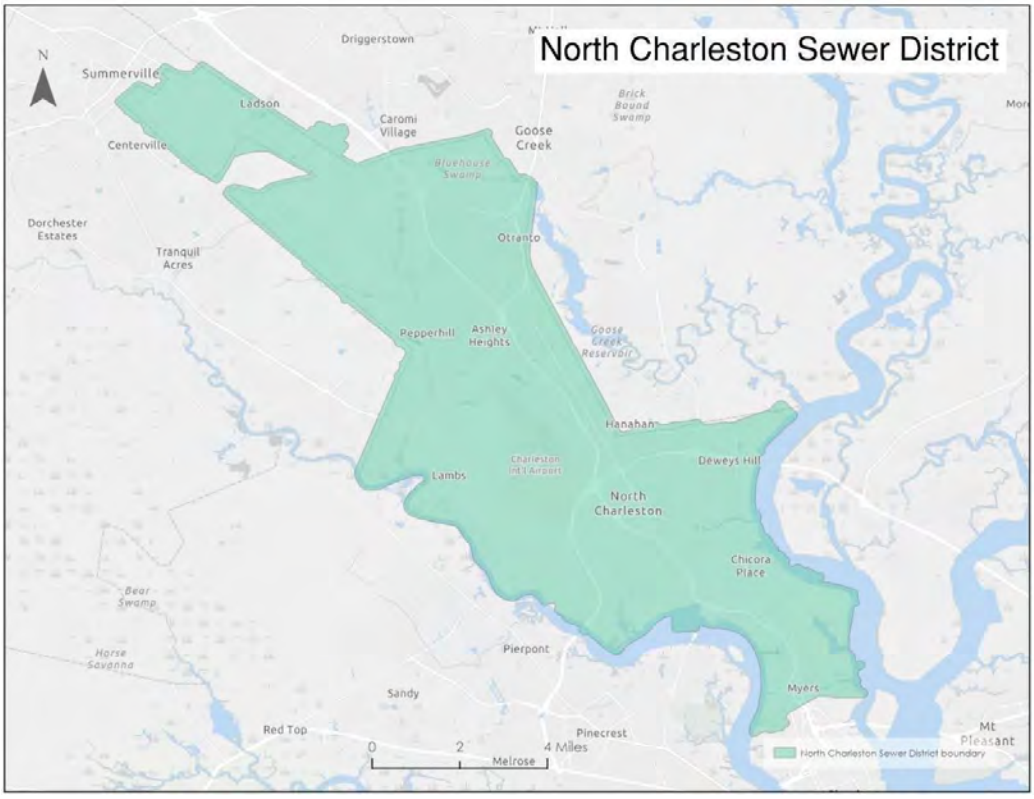

N
Charleston Water System
Charleston Water System
Retail
Wholesale
0
5
10
20 Miles

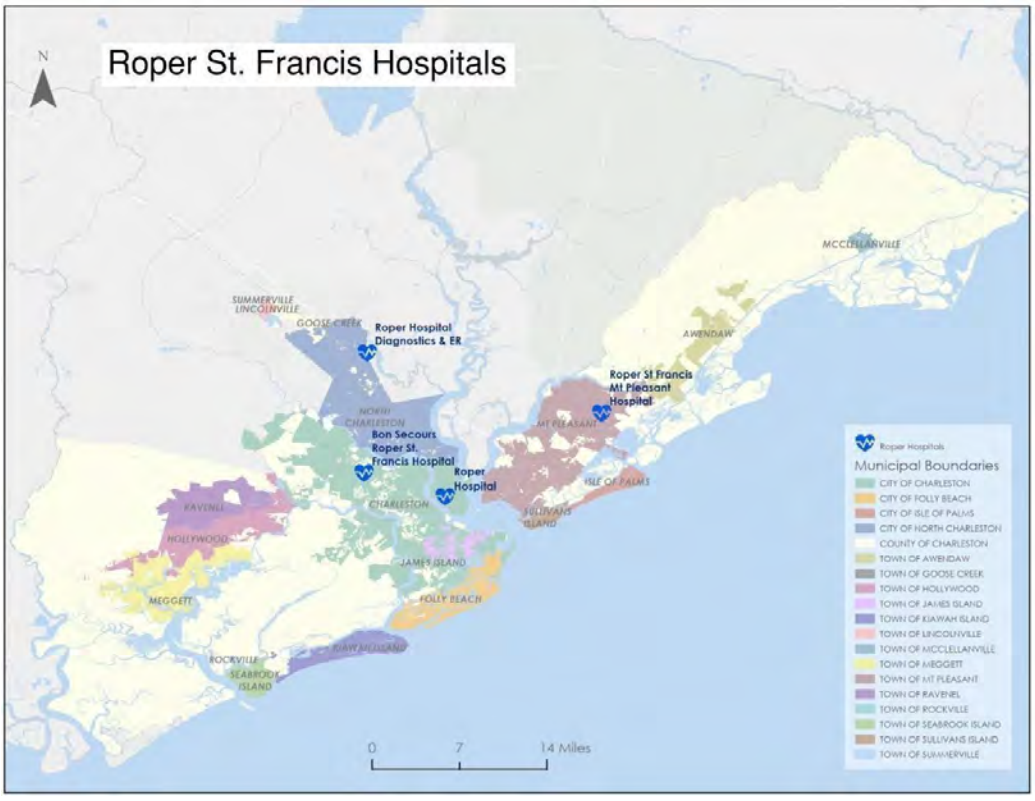

N
College of Charleston
Charleston
0
500
1,000 US Feet
College of Charleston

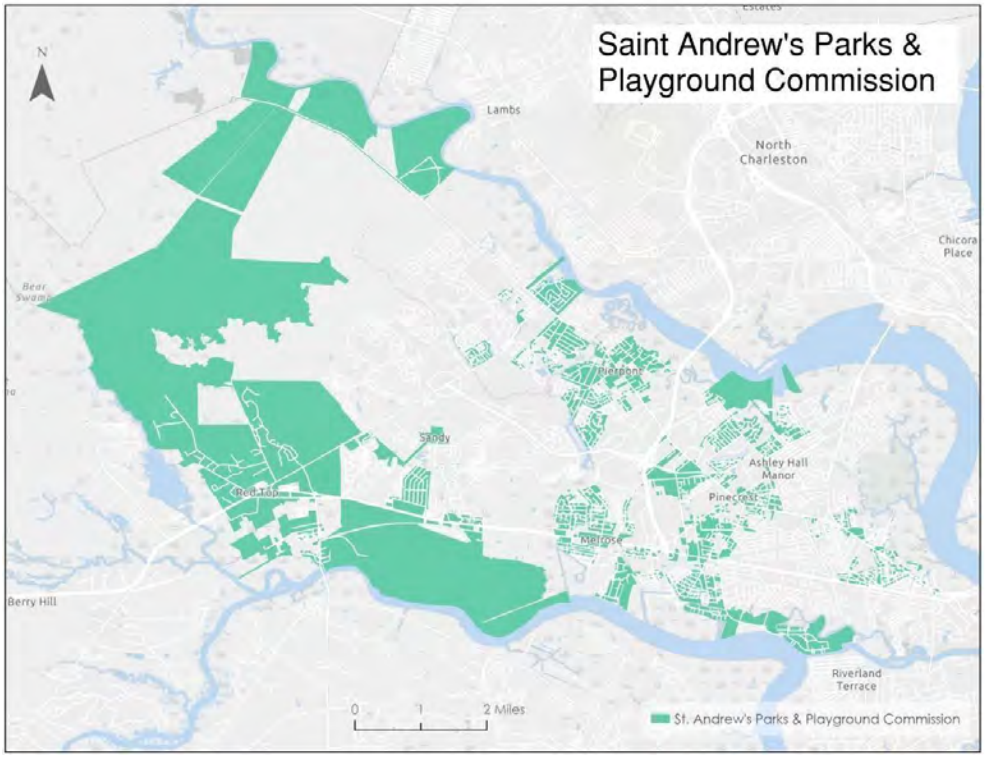

Cooper River Park &
Playground Commission
Legend
Cooper River Park & Playground

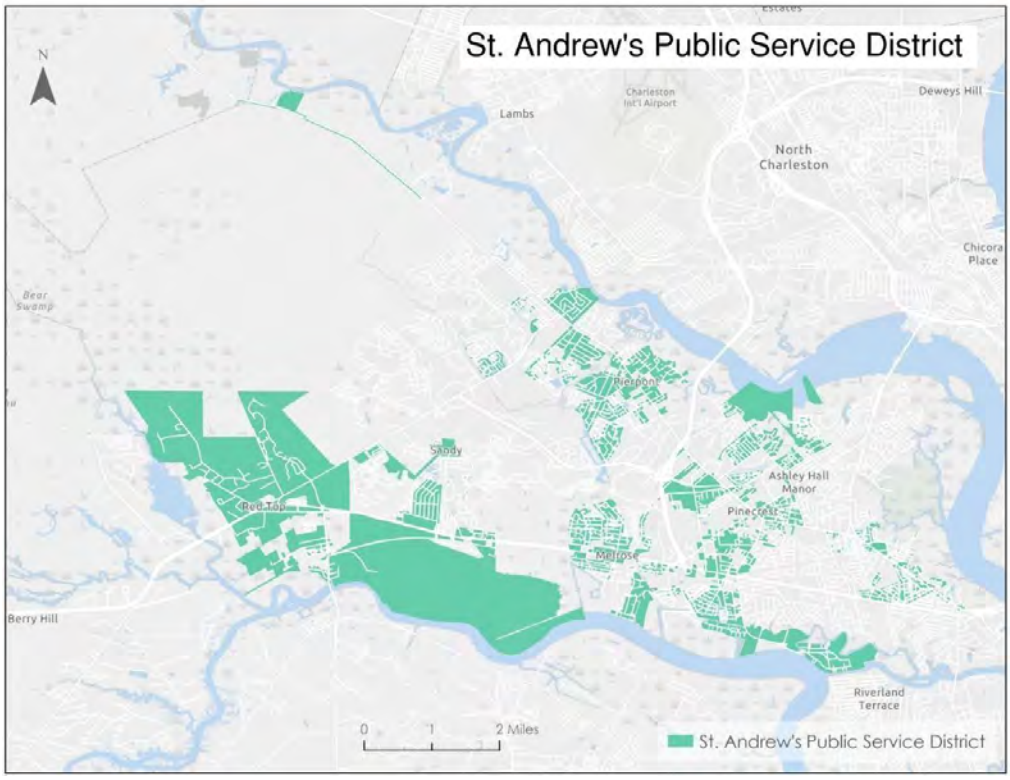

James Island Public Service
District Commission
N
The Crescent
Riverland Terrace
James Island
Centerville
Stono
Three Trees
Clark Sound
Riverland
Charleston Executive Airport
Morris Island
Goat Island
Lighthouse Inlet
Long Island
Folly
0
1
2 Miles
James Island Public Service District


Mount Pleasant
Waterworks Commission
N
Woodville
Chandler
Philip
Whitehall
Terrace
Mark
Bay
Capers
Island
Porcher
Bluff
Capers
Inlet
Hamlin
Sound
Bulliyard
Sound
Dewees
Island
Dewees
Inlet
Shawden
Gray's
Sound
Goat
Island
Isle of
Palms
Mt
Pleasant
Isle of
Palms
Sullivans
Island
0
2
4 Miles
Mt. Pleasant Water Works Service Area


North Charleston Sewer District
N
Driggerstown
Summerville
Ladson
Caromi
Village
Goose
Creek
Brick
Bound
Swamp
Centerville
Bluehouse
Swamp
Dorchester
Estates
Tranquil
Acres
Otranto
Pepperhill
Ashley
Heights
Goose
Creek
Reservoir
Hanahan
Charleston
Int'l Airport
Lambs
Dewey's Hill
North
Charleston
Chicora
Place
Bear
Swamp
Horse
Savanna
Pierpont
Sandy
Myers
Red Top
Pinecrest
Melrose
0
2
4 Miles
Mt
Pleasant
North Charleston Sewer District boundary


Roper St. Francis Hospitals
N
Roper Hospital Diagnostics & ER
Roper St Francis Mt Pleasant Hospital
Bon Secours Roper St. Francis Hospital
Roper Hospital
MCCLELLANVILLE
SUMMERVILLE
LINCOLNVILLE
GOOSE CREEK
AWENDAW
NORTH CHARLESTON
MT PLEASANT
ISLE OF PALMS
SULLIVANS ISLAND
CHARLESTON
RAVENEL
HOLLYWOOD
JAMES ISLAND
FOLLY BEACH
MEGGETT
KIAWAH ISLAND
ROCKVILLE
SEABROOK ISLAND
0 7 14 Miles
Roper Hospitals
Municipal Boundaries
CITY OF CHARLESTON
CITY OF FOLLY BEACH
CITY OF ISLE OF PALMS
CITY OF NORTH CHARLESTON
COUNTY OF CHARLESTON
TOWN OF AWENDAW
TOWN OF GOOSE CREEK
TOWN OF HOLLYWOOD
TOWN OF JAMES ISLAND
TOWN OF KIAWAH ISLAND
TOWN OF LINCOLNVILLE
TOWN OF MCCLELLANVILLE
TOWN OF MEGGETT
TOWN OF MT PLEASANT
TOWN OF RAVENEL
TOWN OF ROCKVILLE
TOWN OF SEABROOK ISLAND
TOWN OF SULLIVANS ISLAND
TOWN OF SUMMERVILLE


Saint Andrew's Parks & Playground Commission
N
Lambs
North Charleston
Chicora Place
Bear Swamp
Pinehaven
Sandy
Ashley Hall Manor
Red Top
Pinecrest
Melrose
Berry Hill
Riverland Terrace
0 1 2 Miles
St. Andrew's Parks & Playground Commission


St. Andrew's Public Service District
N
Lambs
Charleston Int'l Airport
Deweys Hill
North Charleston
Chicora Place
Bear Swamp
Sabdy
Red Top
Pierpont
Ashley Hall Manor
Pinecrest
Melrose
Berry Hill
Riverland Terrace
0 1 2 Miles
St. Andrew's Public Service District

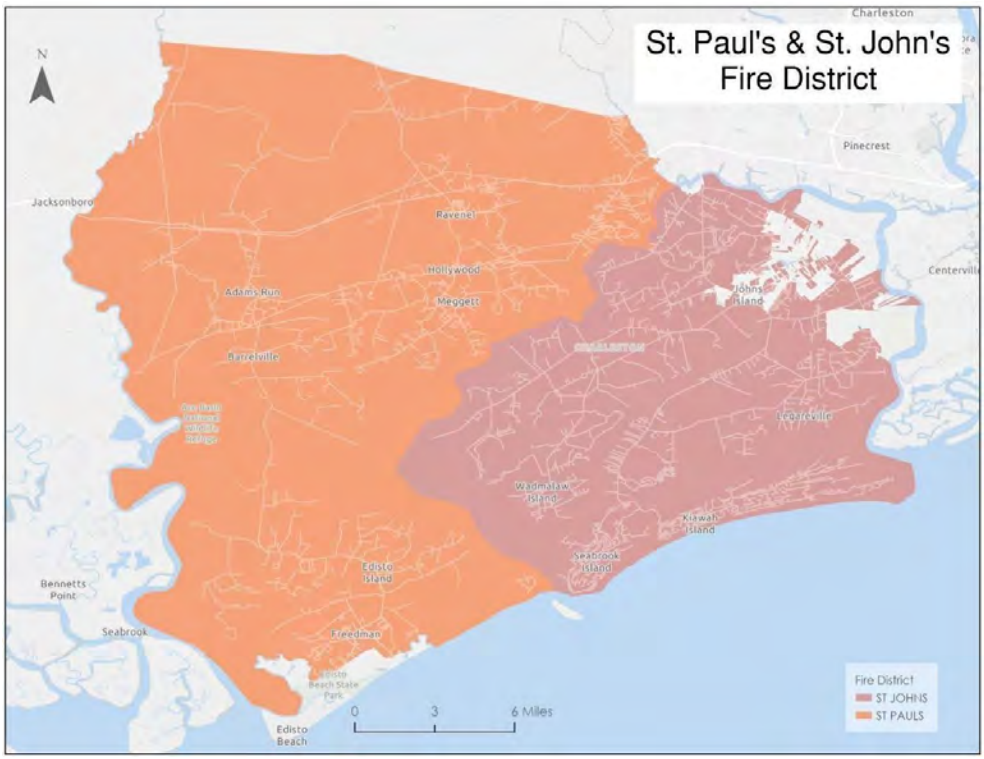

St. Paul's & St. John's Fire District
N
Charleston
Pinecrest
Jacksonboro
Ravenel
Hollywood
Adams Run
Meggett
Johns Island
Centerville
Ravenel
Wadmalaw Island
Kiawah Island
Seabrook Island
Edisto Island
Bennetts Point
Seabrook
Freedman
Edisto Beach State Park
Edisto Beach
0 3 6 Miles
Fire District
ST JOHNS
ST PAULS

Figure 1.9 - Jurisdiction Demographics			
Jurisdiction	**Population**	**Area**	**Proximity to Water**
Unincorporated Charleston County	undefined	700.7 mi^2	Throughout entire County
Town of Awendaw	1,443	9.7 mi^2	Coastal - Atlantic Ocean
Town of Hollywood	5,227	24.5 mi^2	Wadmalaw & Stono Rivers
Town of James Island	12,109	42.1 mi^2	Coastal, Wappoo Creek, James Island River, Schooner Creek
Town of Lincolnville	2,529	1.19 mi^2	Inland
Town of McClellanville	542	2.4 mi^2	Coastal - Atlantic Ocean
Town of Meggett	1,297	18.4 mi^2	Wadmalaw & Toogoodoo Rivers
Town of Ravenel	2,720	12.6 mi^2	Wallace Creek
Town of Rockville	136	.51 mi^2	Coastal
Town of Seabrook Island	1,865	7.0 mi^2	Coastal - Atlantic Ocean
City of Charleston	137,566	127.5 mi^2	Coastal, Ashley River, Cooper River, Stono River, Wando River
City of Folly Beach	2,660	18.9 mi^2	Coastal - Atlantic Ocean
City of Isle of Palms	4,360	5.4 mi^2	Coastal - Atlantic Ocean
City of North Charleston	115,382	76.6 mi^2	Ashley & Cooper Rivers
Town of Kiawah Island	1,769	13.4 mi^2	Coastal, Kiawah River
Town of Mt. Pleasant	91,684	52.6 mi^2	Coastal, Wando River
Town of Sullivan's Island	1,924	3.4 mi^2	Coastal - Atlantic Ocean

DETAIL MATRIX
Services Provided by Unincorporated Charleston County to Municipalities

	Awendaw	City of Charleston	Folly Beach	Hollywood	Isle of Palms	James Island	Kiawah Island	Lincolnville*	McClellanville	Meggett	Mount Pleasant	North Charleston	Ravenel	Rockville	Seabrook Island	Sullivan's Island
Building Services																
Flood Plain Management	✎			✎		✎		✎	✎	✎			✎	✎	✎	
Permit Issuance	✎			✎		✎		✎	✎	✎			✎	✎	✎	
Plan Review	✎			✎		✎		✎	✎	✎			✎	✎	✎	
Inspection Services	✎			✎		✎		✎	✎	✎			✎	✎	✎	
Code Enforcement	✎			✎		✎		✎	✎	✎			✎	✎	✎	
Contractor Licensing	✎			✎		✎		✎	✎	✎			✎	✎	✎	
Community Rating Service Program	✎			✎		✎		✎	✎	✎			✎	✎	✎	
Insurance Service Office Program	✎			✎		✎		✎	✎	✎			✎	✎	✎	
Hazard Mitigation Plan Administration	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎
Project Impact	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎
Damage Assessment	✎			✎		✎		✎	✎	✎			✎	✎	✎	
Damage Assessment Assistance As Requested		✎	✎		✎		✎				✎	✎				✎
Technical Assistance As Requested	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎	✎

*Lincolnville is not a participating community in the NFIP. All other jurisdictions participate.

– Goals

The Section 2 *Goals* of the *Charleston Regional Hazard Mitigation Plan* compliment the goals of the Charleston County area Project Impact initiative. In general, these goals are intended to minimize future losses of life and property associated with hazard events facing the Charleston Region. Since this plan is a regional plan intended for adoption by the local government entities, the *Charleston Regional Hazard Mitigation & Public Information Plan Committee* provided flexibility within this plan to enable local government and entities with specific goals to include those in this section as they deemed appropriate.

– The Planning Process

The *Charleston Regional Hazard Mitigation Plan* is unique in the fact the Plan is updated annually and is a joint effort of all local governmental jurisdictions. This allows a continual planning process to keep the *Plan* current and the history more dynamic.

Initially, the planning process utilized a questionnaire regarding hazard mitigation (assessment and emergency preparedness), project prioritization, and resiliency (coordinated with Resilient America) via online through Google Forms and email as well as through meetings with professional organizations to solicit input regarding the content of the *Plan*. Public meetings were also conducted in multiple areas in the Region to obtain additional input from citizens and create public awareness of the *Charleston Regional Hazard Mitigation Plan*. These efforts were repeated annually to maintain an updated profile. The results of the latest questionnaire are included in this *Plan*. **(* Note: 2023 Questionnaire was administered through Survey 123 for ArcGIS, all years prior were done through Google Forms)**

The *Plan* has been drafted in such a manner that the local government entities within Charleston County are able to prepare an action plan for their respective entities and adopt this *Plan* for their use within their government entity. This cooperative approach enables the Region to have a more standardized way of addressing hazards, which face the entire County and avoids duplication of effort that would occur if all the government entities individually undertook this type of planning initiative.

As a strengthening of this cooperation among the communities, a *Program for Public Information (PPI)* was established for the 2013 *Plan* as part of the Region's ongoing efforts to better inform its citizenry on proper preparedness and mitigation measures to be undertaken to make the Region more resilient to those natural hazards that pose the greatest threat of loss and damage. The *Program for Public Information (PPI)* was renamed the *Public Information Plan (PIP).* The Public Information Plan is now a document that is a part of the *Charleston Regional Hazard Mitigation Plan,* but can also serve as a stand-alone document. This allows the *Hazard Mitigation and Public Information Plan Committee* to enhance upon existing projects and add new projects as it sees fit annually. The Committee's project recommendations are an essential component of the planning process by integrating new ideas and projects that will ultimately fulfill the *Public Information Plan's* goal of educating the public.

– Hazard Identification and Risk Assessment

44 CFR Requirement

44CFR Part 201.6(c)(2)(i): The risk assessment shall include a description of the type, location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

A *Hazard Identification and Risk Assessment Report* is a systematic way to identify and analyze hazards to determine their scope, impact, and the vulnerability of the built environment to such events. Through the yearly *Charleston Regional Hazard Mitigation Plan*, such a systematic process and assessment has already been put into place for the area. To avoid duplication, a separate hazard identification and risk assessment document is not included due to the fact each component is already addressed throughout this plan.

Each aspect of a typical report is discussed in the *Charleston Regional Hazard Mitigation Plan*, including identification of hazards and resource requirements, profiles of previous hazardous events, vulnerability assessments, estimates of potential losses by a variety of simulations, local outreach and education programs, emergency operations procedures, inventories, plans, and shortfalls.

In addition, due to the fact the *Charleston Regional Hazard Mitigation Plan* encompasses a regional perspective rather than a single municipality or organization, the effect is a complete and more coordinated plan to improve the safety of citizens against potential natural and manmade hazards. The *Charleston Regional Hazard Mitigation & Public Information Plan Committee* works with each government or adopting entity, and together this collaborative regional plan for hazard mitigation can also serve as a *Hazard Identification and Risk Assessment Report*. A resource for flood maps by jurisdiction is FEMA's Risk Map Service, which can be accessed at msc.fema.gov. As of January 2021, the adopted FIRM for Charleston County has a map effective date of January 29, 2021. (FIRM 45019C/Suffix K)

– Hazard Assessment

The *Charleston Regional Hazard Mitigation Plan* is based upon the results of the questionnaires and the comments received through both committee and public meetings. Section 4 *Hazard Assessment* of the *Plan* includes a ranking of the types of hazards facing the Charleston Region, with hurricanes being the most serious threat, followed by flooding, sea level rise, tornadoes and earthquakes. Additional hazards for which the possibility of occurrence is much more remote or non-existent, such as dam failures and tsunamis are now discussed in the *Plan* to meet the *Disaster Mitigation Act of 2000* requirements. The hazard description section of the Plan provides a brief description of the nature of each identified hazard within the Charleston Region. The discussion section of the Plan provides a more detailed description of the history of hazard event incidents in the Charleston Region. The Charleston Region has had numerous, mostly localized, hazard events and a few large-scale hazard events (e.g. Hurricane Hugo in 1989, the earthquake of 1886, Hurricane Matthew in 2016, and Hurricane Irma in 2017) throughout our history.

– Problem Assessment

The *Charleston Regional Hazard Mitigation Plan* also addresses the vulnerability of the Region to each of the major types of hazards facing the Region in Section 5 *Problem Assessment*. Each of the major hazard types are discussed in terms of:

- Types of buildings that are most vulnerable to particular hazards.
- Estimation of the total number of buildings vulnerable to flood/hurricane damage
  - 82,945 buildings in the Region are vulnerable to such damage based on their location in *Special Flood Hazard Area*
  - 35,112 buildings of the total number listed above are also vulnerable due to their date of construction.
- Estimated potential building/property losses due to earthquakes and tornadoes.
- The types of hazards that pose a threat and in what manner
- Known flood damages
- Past flood impacts
- Emergency Warning Needs
- Critical Facilities
- Natural and Beneficial Functions of floodplains
- Development and Population Trends
- Economic Impact of hazard events

The overall determination from this section is that the Charleston Region is potentially vulnerable to loss as a result of a hazard event to a relatively high degree, particularly considering the increasing number of residents not necessarily familiar with the types of hazards facing the Region and how best to prepare and protect themselves from these hazards. Since tourism plays such a predominant role in the local economy and is often negatively affected by large-scale hazard events with national media coverage, the potential economic losses associated with a hazard event are potentially high.

– Review of Possible Activities

Section 6 *Possible Activities* of the *Charleston Regional Hazard Mitigation Plan* provides prioritization factors to be utilized in selecting projects to be performed, as well as a description of the ongoing activities currently being performed within the Region. This section also lists other suggested activities that possibly could be performed to enhance hazard mitigation efforts within the Charleston Region. This section discusses: Preventive 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 the ability of the 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 Region); 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 the hazard resistance of the Region); and Public Information Activities (e.g. activities geared towards educating the citizens of the Region regarding hazard preparation and response). The overall view provided within this section is that the Region is already doing many activities for the enhancement of our hazard mitigation; however, there are also additional activities which may be done to further prepare our residents for the hazard events to which the Region is vulnerable. The Public Information Activities portion of this section has been reduced as this information has been moved to its own plan, the *Public Information Plan* in Appendix A.1. This section has been utilized by the respective government 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 as new possible activities are considered.

– Adopting Resolution

This plan is intended to be a working document which may be subject to revision as the Community Rating System schedule changes or as decision making committees request revisions that would enhance their ability to perform their functions. The adopting resolutions for the government entities therefore generally include a section recognizing the *Charleston Regional Hazard Mitigation & Public Information Plan Committee* as a continuing entity to be charged with maintaining and making annual revisions to this plan as needed and making periodic reports regarding this plan to the respective governing councils or commissions for the adopting entities. The Plan now includes the *Public Information Plan* as Appendix A.1. This Plan is also intended to be a working document to be reevaluated and updated annually. The Committee is charged with maintaining the *Public Information Plan* to meet the requirements set forth for Community Rating System credit.

– Action Plan

Each government or other adopting entity has included within the Plan for their entity a specific action plan, regarding activities that they propose be undertaken or continued during each year. This action plan includes several projects reflecting all of the activities discussed within the Plan. While it is the intention of the 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 entity is periodically updated to reflect changes and to indicate activities for the time period for each year. Each entity that adopted the Plan for the 5-year update approved in 2019 has completed an action report and continues to do so, indicating the progress towards the activities listed within the Plan. Status reports included in this update of the Plan report on the collective activity of the 4 years prior, and specific activity for the last year.

– Implementation Plan

The plan is intended to serve as the guiding document for prioritization of hazard mitigation projects undertaken within the Charleston Region. Actual project selection for any projects undertaken as Project Impact initiatives are carried out in accordance with this plan. As the Plan is utilized in this capacity, suggested revisions are considered and incorporated where appropriate into the Plan on an as needed basis. The *Charleston Regional Hazard Mitigation & Public Information Plan Committee* maintains the Plan and makes any necessary revisions as may be required to continue receiving Community Rating System credit for the Plan. A review of the Plan occurs at least annually. A progress report on the Plan is submitted to the governing councils of the adopting jurisdictions and the local media are notified of the availability of the latest edition of the Plan and progress reports on an annual basis.

Every five years, public hearings on the Plan, including its amendments, are conducted, and the local governing councils and commissions are asked to re-adopt the Plan as revised. The plan is also provided to applicable planning entities for potential use in updates to other applicable plans. Similarly, applicable updates to other plans are considered for inclusion in the *Charleston Regional Hazard Mitigation Plan*, as appropriate. Section 3 *Planning Process* Table 3-1 provides a list of

other specific plans in use by the jurisdictions within Charleston County that are considered for updates to the *Charleston Regional Hazard Mitigation Plan*, and which include applicable provisions of the *Charleston Regional Hazard Mitigation Plan* by reference or through excerpts [this table indicates whether and how information from the indicated plan is included in the *Charleston Regional Hazard Mitigation Plan* and whether and how information from the *Charleston Regional Hazard Mitigation Plan* is included in the indicated plan, when appropriate.

– Conclusion

The *Charleston Regional Hazard Mitigation Plan* is the result of a cooperative effort of the public and private sectors and intended to enhance the ability of all the local jurisdictions within the Charleston Region to prepare for and respond to hazard events. The plan is comprehensive and compliments other initiatives to help make the Region more resistant to disasters. Additional information regarding this plan is available through the local jurisdictions or Charleston County Building Inspection Services.

Section 2 Goals

The *Charleston Regional Hazard Mitigation Plan* is intended to serve as a guiding document for project selection under Project Impact and *Public Information Plan (PIP)* initiatives. Charleston County's Project Impact initiative, which began in 1998, is a community-based partnership of all local governments in Charleston County, SC and multiple other partners from the private, public (Federal, State, Regional government entities) and non-profit sectors. There are 139 partners in Project Impact. As a guiding document, goals and hazard mitigation actions of individual jurisdictions will use the results of the hazard assessments, problem assessments and proposed activities to advise in the planning and implementation of their own action plans.
The mission of Charleston County's Project Impact initiative is to create a more disaster resistant community through cooperative efforts of the private, public and non-profit sectors. Although Project Impact was nationally defunded in 2002, its goals and initiative are still very much in place within the local jurisdictions of Charleston County today.

Based upon the responses to the latest survey questionnaire, the following are the goals for this plan (listed in the order of importance):

1. Reduce potential flood damage
2. Improve storm drainage
3. Minimize future flood occurrence
4. Minimize future hurricane damage
5. Improve resistance of infrastructure to all hazards with special attention to critical facilities
6. Minimize future earthquake damage
7. Protect environmental resources/preserve open and green space
8. Minimize future terrorist incidents
9. Improve water quality
10. Preserve historic building inventory
11. Higher regulatory standards uniform as possible and meet community needs
12. Minimize future hazardous material incidents
13. Increase cooperation between jurisdictions and become more resilient.
14. Include the private sector and community to increase collective intelligence and idea sharing to establish Best Management Practices

The average ranking of these goals demonstrated the importance of all of them as it relates to this plan, since they all were rated between moderately important to very important, based on the average raw score, and all of the goals are within a maximum of (1) point of each other. Given this relative importance assigned by the survey respondents to these goals, these goals accurately reflect the overall vision for the hazard mitigation activities to be performed in the Region.
The goals for this plan are also consistent with the hazard vulnerabilities, as determined through the *State of South Carolina Hazards Assessment* and the frequency/severity of hazard events risk assessment methodologies for those hazards considered most likely to damage buildings and/or cause loss of life (e.g. hurricanes, floods, wildfires and earthquakes). Working towards achieving

all of these goals is expected to minimize hazard-related losses associated with any of the hazards within the Charleston Region.

Section 3 Planning Process

– Pre Planning Request for Input

The sample questionnaires, included as Attachment 3-A1 and 3-A2 to this section, are distributed to jurisdictions or citizens, requesting their input at the beginning of the planning and update process. The recipients of the questionnaire were considered to be knowledgeable regarding hazards experienced in the Charleston Region and the potential vulnerabilities of the Region to these hazards.

Completing a questionnaire is considered to be one form of participation in the planning process. Alternate means of participation in the planning process include, but are not limited to, attendance at committee meetings, or having one or more representatives on a committee that develops or provides input into the Plan or the Plan website. The questionnaire asked the respondents to assess the hazards indigenous to the Charleston Region, the nature of the problem these hazards create, and to rate/provide potential goals for the Plan, possible activities for the Plan to address, and criteria for prioritizing projects under the Plan. The questionnaire also asked the respondents to provide copies of existing hazard-related mitigation plans, if available.

In addition to those questionnaires sent to prospective respondents, questionnaires were discussed at presentations to community professional organizations/advisory groups (e.g. Contractor's Associations, Construction Specifications Institute, Charleston Chapter of the American Institute of Architects, etc.), and those interested in completing questionnaires were asked to do so. Questionnaires were also distributed to individuals who requested to provide their input.

The latest questionnaire was distributed in the summer of 2023. In an effort to reduce cost and increase response, the survey was digitized, and responses were recorded through Survey 123 for ArcGIS.

A simplified version of the survey was also produced for the general public to increase the response rate. A link for this simplified public survey was placed on the Charleston County Building Inspection Services' webpage and sent to several citizens that had previously requested to be involved in mitigation planning. In addition, survey information was also made available at several public meetings, expos and hearings. The public survey asked participants to simply describe the area within the County that they lived, rank the natural and man-made hazards previously identified in order of severity and preparedness, and provided the participants an opportunity to leave an email address if they were interested in receiving additional communication regarding the Plan.

Responses received were consistent with previous surveys confirming the fact that the priorities previously established for outreach and mitigation are still appropriate. Hurricanes were perceived as the biggest threat to the Lowcountry, with flooding and sea level rise earning high marks as well.

– Planning Committee

Based upon input received from the questionnaires, the *Hazard Mitigation & Public Information Plan Committee* established a draft for the Plan update. The local Community Rating System Jurisdiction members of this Committee are listed in Attachment 3-B to this section. If a member of the Committee was unable to attend a meeting, applicable drafts and/or information that were distributed and/or discussed at the planning committee meeting was mailed or hand delivered to the member to obtain any comments from the Committee member as an alternative form of participation in the planning process. Members and general public could also participate by telephone. Minutes and/or meeting notes, copies of meeting handouts, and attendance rosters for Committee meetings are maintained in the Charleston County Building Inspection Services Department. Attachment 3-C to this section lists the stakeholder members of the *Hazard Mitigation & Public Information Plan Committee* and Attachment 3-D to this section lists the Other Participating Partners. Because this is a joint committee serving to make recommendations on the *Charleston Regional Hazard Mitigation Plan* and the *Public Information Plan*, the makeup of the Committee meets the standards set for both functions.

The governing bodies of the local jurisdictions represented on the planning committee were provided with a list of the members of the Committee and a Project Impact organizational chart, for these governing bodies to recognize the Committee and approve the proposed organization for Project Impact. The Project Impact committees also routinely provide input into the Plan, as they discuss projects they recommend performing to make the community more resistant to disasters. A list of the governing bodies that have officially recognized the *Hazard Mitigation & Public Information Plan Committee* is included in Attachment 3-F of this section. Copies of the governing body actions are available at the local jurisdiction offices and the Charleston County Building Inspection Services office.

The *Hazard Mitigation & Public Information Plan Committee* meets to discuss the hazard assessment, problem assessment, goals, and possible activities addressed within this plan update. The Committee meets annually (typically at least two times per year), to update the Plan. Project Impact subcommittees meet quarterly. The annual update process includes County staff making routine updates that include, but are not limited to: changes to Committee membership to reflect personnel changes; additional hazard events that have occurred during the year; changes to building vulnerability based on revised building counts or valuations; and government entities providing updates to applicable sections of the Plan (drainage projects status, repetitive flood loss properties, changes to critical facilities, and so forth).

Project Impact Committee members also provide input throughout the year including activities to include on the action plans for the coming year, as they discuss projects they would recommend for hazard mitigation during their routine meetings throughout the year. Each signatory to the Plan develops an action plan for each year and provides a status report on the proposed activities in the previous year's action plan on an annual basis, and provides their recommended revisions to any sections of the Plan, as applicable.

Changes are made to the *Goals* Section of the Plan on an as-needed basis, as determined by the multiple committees involved in the Plan update process. The *Summary of Changes* is an update of changes based on the revisions made to the Plan each year, as applicable. The criteria used for this update/evaluation is threefold: whether all hazards have been included, whether the Plan meets the needs of the signatory governments, and whether the updates are in accordance with FEMA planning guidelines. The *Hazard Mitigation & Public Information Plan Committee* meets as a

group at least once a year to review the updates made to the Plan, to suggest any further updates and to approve the updates made to the Plan for that year. Details as to the changes made to the Plan are provided to the Committee members in advance of the Committee meeting. The Committee also approves an annual report of plan changes for the governing councils/commissions during this meeting.

– Public Input

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44 CFR Requirements

44CFR Part 201.6(c)(4)(iii): *The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process*

44CFR Part 201.6(b)(1): The planning process shall include an opportunity for the public to comment on the plan during the drafting stage and prior to plan approval

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Public input into the Plan is obtained on a routine basis through the Project Impact committees as they determine projects to recommend. All meetings are open to the public and advertised through the local media. The notices for the public meetings exceed *Freedom of Information Act* requirements, since they are sent to six local newspapers, including the *Post and Courier*, which is the newspaper with the largest general circulation in the Region. These notices are also sent to four local television stations and to three radio station groups, which include most of the local radio stations. Notice is also included on the information board found in the lobby of the Public Services Building which advertises public meeting information. Additional opportunities for public input is available since most local governmental entities in Charleston County with websites are linked to Charleston County's website, where the Plan is easily accessible to their residents and they can provide comments or suggested revisions to the Plan. Additional public hearings on the Plan are also conducted on a five-year cycle to obtain further public comments on the Plan, including any revisions that have been made or are proposed for the Plan. During 2020, the committee moved to a 5-6 meeting/year schedule.

Yearly update meetings, which when combined represent the foundation for the 5-year formal plan, are publicized and the public is invited. Furthermore, the *Hazard Mitigation & Public Information Plan Committee* is comprised of both local governments and non-governmental groups, ensuring that representation from all areas and aspects of the County are present.

Public input into the Plan continues as the *Project Impact Committee* and *Hazard Mitigation & Public Information Plan Committee* meetings are public meetings, advertised as indicated above through the local media outlets. The version of the Plan posted on the Charleston County's website is also updated as revisions to the Plan are done annually, so that those who do not attend Committee meetings or public hearings have an opportunity to comment on the latest edition of the Plan. (An e-mail address for comments is provided on the website.)

In 2014, a separate and simplified version of the hazard assessment survey was created to be distributed publicly. This new survey was established online and utilized Google polling. A link to the survey was forwarded to all partners who were participants in the Plan so that they could share it with active citizens or anyone else they wished to distribute it to. A printed version of the

same survey was made available in the Charleston County Building Inspection Services Department, in the hopes of capturing contractors, builders, and citizens as they waited on permits or other building related issues. In 2017, this survey was redistributed in the same manner with the addition of questions on emergency preparedness for hazards and resiliency of communities in the area. Any additional feedback recorded will be included in future meetings and editions of this plan**.** This updated survey was re-issued in 2023 for the Plan's annual update with additional questions asking citizens to provide verbal narratives of the region's hazard history.

– Local Jurisdiction Adoption

The plan was adopted by the local government entities listed in Attachment 3-F by the respective governing councils or commissions for these entities. The local government entities were able to modify the Plan to fit their individual needs if desired. The plan was also re-adopted by the participating local governments in the Charleston Region in 2004, as a part of the five-year cycle process and again in 2008. The five-year plan for 2012-2013 submitted in 2012 was approved by FEMA on September 10, 2013. The most recent formal five-year *Charleston Regional Hazard Mitigation Plan* approval was given by FEMA on March 28, 2019 (See Attachment 3-F). Currently all partners are adopting the 2023-2024 *Charleston Regional Hazard Mitigation Plan* in preparing for FEMA review in early 2024.

– Implementation Plan

The plan is intended to serve as the guiding document for prioritization of hazard mitigation projects undertaken within the Charleston Region. Actual project selection for any projects undertaken as Project Impact initiatives are carried out in accordance with this plan by the Committees that correspond to the activity classifications of this plan (e.g. preventive activities, property protection activities, natural and beneficial function-related activities, emergency service-related activities, structural projects, and public information activities). As the Plan is utilized in this capacity, suggested revisions are considered and incorporated where appropriate into the Plan on an as needed basis. The *Hazard Mitigation & Public Information Plan Committee* maintains the Plan and makes any necessary revisions as may be required to continue receiving Community Rating System credit. A review of the Plan occurs at least annually. A progress report on the Plan is submitted to the governing councils of the adopting jurisdictions at least annually. The local media are notified of the availability of the latest edition of the Plan and progress reports.

Every five years, public hearings on the Plan, including its amendments, are conducted, and the local governing councils and commissions are asked to re-adopt the Plan as revised. The plan is also provided to applicable planning entities for potential use in updates to other plans, including but not limited to the *Charleston County Comprehensive Plan*, *Emergency Operations Plan*, or other applicable plans. Similarly, applicable updates to other plans are considered for inclusion in the *Charleston Regional Hazard Mitigation Plan*, as appropriate. Table 3-1 attached provides a list of other specific plans in use by the jurisdictions within Charleston County that are considered for updates to the *Charleston Regional Hazard Mitigation Plan*, and which include applicable provisions of the *Charleston Regional Hazard Mitigation Plan* by reference or through excerpts. This table indicates whether and how information from the indicated plan is included in the *Charleston Regional Hazard Mitigation Plan,* and whether and how information from the *Charleston Regional Hazard Mitigation Plan* is included in the respective indicated plans, when appropriate. Other resources used or referenced to update the plan includes but not limited to Census data, SC DNR, SC DHEC, NOAA, SC Forestry commission, Us Drought Monitor,

Charleston County Consolidated 911, Repetitive loss reports, various FEMA publications, and National Weather service data.

Table 3-1: Hazard-Related, Land Use and/or Development Plans in the Charleston Region

Hazard-Related, Land Use and/or Development Plans in the Charleston Region			
Jurisdiction	**Name of Plan(s)**	**Information from this plan in the Charleston Regional Hazard Mitigation Plan (CRHMP)**	**Charleston Regional Hazard Mitigation Plan (CRHMP) included in this plan**
Town of Awendaw	Town of Awendaw Comprehensive Plan	Not applicable	Applicable excerpts from CRHMP included in this plan.
City of Charleston	Charleston Century V City Plan	Not applicable	Preservation of open space is a mutual goal of both plans – no need for cross-referencing.
Charleston County (Unincorporated)	Charleston County Comprehensive Plan; Charleston County Emergency Operations Plan; Beach Management Plan; Flood Ordinance; Building Ordinance; Stormwater Management Plan; Flood Analyses; Charleston County Watershed Master Plan; Greenbelt Plan; Repetitive Loss Area Analysis (RLAA)	Applicable excerpts included in CRHMP.	Applicable excerpts from CRHMP included in these plans.
City of Folly Beach	Not applicable	Not applicable	Not applicable
Town of Hollywood	Not applicable	Not applicable	Not applicable
City of Isle of Palms	Updated Comprehensive Plan for the City of Isle of Palms	Not applicable	Entire CRHMP included by reference, CRHMP is referenced on the City's web site (www.iop.net) with a link to the plan.
Town of Kiawah Island	Town of Kiawah Island Emergency Preparedness Plan, Comprehensive Plan, Municipal Code, Article 12, Land Use and Zoning	Not applicable	Entire CRHMP included in some plans by reference; applicable excerpts from the CRHMP included in others.
Town of Lincolnville	Town of Lincolnville Comprehensive Plan	Not applicable	Applicable excerpts from CRHMP included in plan.
Town of McClellanville	Comprehensive Plan for the Town of McClellanville	Not applicable	Entire CRHMP included by reference, and applicable excerpts from the CRHMP in this plan.
Town of Meggett	Not applicable	Not applicable	Not applicable

Town of Mt. Pleasant	Community Rating System, Comprehensive Land Use Plan, NPDES Phase II	Applicable excerpts included in CRHMP.	Entire CRHMP included by reference.
City of North Charleston	North Charleston Comprehensive Development Plan, North Charleston Emergency Operations Plan	Not applicable	References to CRHMP included in other plans.
Town of Ravenel	Town of Ravenel Comprehensive Plan, 2020	Not applicable	Entire CRHMP included by reference.
Town of Rockville	Not applicable	Not applicable	Not applicable
Town of Seabrook Island	Not applicable	Not applicable	Not applicable
Town of Sullivan's Island	Town of Sullivan's Island Comprehensive Plan 1998, revised June 19, 2000	Not applicable	Entire CRHMP included by reference.
Charleston County Parks & Recreation Commission	CCPRC Mission Statement; CCPRC Comprehensive Development Plan; CCPRC Hurricane Plan	Not applicable	Entire CRHMP included by reference.
Charleston CPW	Not applicable	Not applicable	Not applicable
Cooper River Parks & Playground Commission	North Charleston Comprehensive Development Plan; North Charleston Emergency Operations Plan	Not applicable	Include reference to CRHMP in other plans.
James Island Public Service District	Not applicable	Not applicable	Not applicable
Mt. Pleasant Water Works	Mt. Pleasant Waterworks Emergency Plan	Not applicable	Entire CRHMP included by reference.
North Charleston District	Not applicable	Not applicable	Not applicable
North Charleston Sewer District	Not applicable	Not applicable	Not applicable
St. Andrews Parish Parks & Recreation	Not applicable	Not applicable	Not applicable
St. Andrews Public Service District	Not applicable	Not applicable	Not applicable
St. John's Fire District	St. John's Fire District Strategic Plan	Goals & Objectives and Risk Assessment information included in CRHMP.	Entire CRHMP included by reference, and applicable excerpts from the CRHMP in this plan.
St. Paul's Fire District	St. Paul's Fire District Emergency Operations Plan	Not applicable	Entire CRHMP included by reference.

– Planning Process Summary

44 CFR Requirements

44CFR Part 201.6(b)(2): *The planning process shall include an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other non-profit interests to be involved in the planning process*

44CFR Part 201.6(c)(4)(i): *The plan shall include a plan maintenance process that includes a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.*

The public is invited to participate in the mitigation planning process through yearly planning meetings that involve all participating jurisdictions and entities. All planning meetings are open to the public. Each municipality or entity's representative in the yearly planning and update meeting conveys the public input they have received within their district. Public feedback is encouraged through outreach activities that are held throughout the tri-county Region. During the 2013-2017 plan update, there were more than 155 outreach events, including hurricane awareness expos, school science fair partnerships, educator and classroom grants, neighborhood presentations, industry meetings, emergency planning sessions, and more. Currently, meetings are held quarterly with additional meetings as needed. The meetings are advertised through local media, social media, the website and in person at Town Halls and other similar buildings. Hundreds of thousands of residents are impacted continuously by televisions messages, targeted mailings, radio interviews, and emergency preparedness billboards, just to name a few. (See Appendix A.4 for the minutes from the planning committee meetings).

To keep the information in the Plan current and up to date, the *Hazard Mitigation & Public Information Plan Committee* performs a plan update each year, addressing any changes in hazard events, drainage improvement projects, repetitive loss areas, etc. Each of the participating jurisdictions and other entities submits an annual status report, which is compiled to reflect the formal five-year update cycle. Each jurisdiction also has the opportunity to clarify and add items to their action plan. All annual changes are reviewed and approved at a public meeting with representatives from all jurisdictions, media, and the public is invited to attend and provide input. The yearly meetings and yearly updates ensure the Plan is continually being monitored, evaluated and updated to reflect the most current hazard information possible.

Public meetings during 2024 to update this plan were held on:

March 21, 2024
April 25 2024 (Program for Public Information Committee Meeting)
June 27, 2024
September 4, 2024

The plan will continue to be updated annually, involving all jurisdictions, partners, and the public. A variety of stakeholders outside of Charleston County have the opportunity to be involved in the planning process and outreach activities. In addition to the fact that all municipalities within Charleston County participate in Project Impact and other county-wide initiatives, several

municipalities have physical borders that extend beyond Charleston County. The City of North Charleston, for instance, is located within Charleston County, Berkeley County and Dorchester County. Additionally, many residents of neighboring communities, like Summerville, commute into Charleston County for work, shopping, services, etc.

Charleston County also works with the Local Emergency Planning Committee (LEPC) which, in addition to meeting monthly, has a quarterly meeting with neighboring Berkley and Dorchester County's Emergency Management Departments to discuss preparedness and hazard mitigation. Many of the events where outreach activities take place also includes local businesses, insurance agents, and non-profits, all of which have impacts beyond Charleston County. Charleston County's outreach activities and messages affect the Region, reaching the public from Beaufort, south of Charleston County, to Georgetown, north of Charleston County.

The public and all stakeholders are invited to attend and participate in the public meetings. All planning meetings are open to the public. Each municipality/entity's representative in the yearly planning and update meeting speaks for the public based on input they have received within their jurisdiction. Public feedback is incited through Charleston County outreach activities that are held throughout the Tri-County Region including activities such as regular seminars, lectures, expos, and meetings. In addition to public meetings and events, the current update of the Plan is always available on Charleston County's website for public review and comment.

Charleston County has a presence on social media to further connect with the public. Twitter and Facebook both help raise awareness for hazard vulnerability, risk, and mitigation, and encourage public participation. All publications and events have contact information available for public feedback or specific questions.

Charleston County engages the public through professional and trade organizations as well, speaking monthly with the Tri-County Homebuilders Association and is regularly involved with specific trade groups. These interactions are not only educational opportunities but provide valuable feedback. Public input is regularly reviewed and incorporated into the document. To continue to include public participation in the planning process for the upcoming five-year cycle, a new expanded questionnaire will be distributed to the public, local jurisdictions, regional partners, state and federal agencies, and interested parties through a targeted email survey campaign. Charleston County outreach events, websites, and social media networks will also provide access to the questionnaire, extending the access and increasing public feedback.

Charleston County's Floodplain Manager oversees maintaining the Plan, serves as the principal contact for public questions concerning local hazards, and is responsible for coordinating the yearly update and the formal five-year full update cycle. While the Plan is not formally approved annually by FEMA, Charleston County and all other local Councils and governing boards receive notice of changes on an annual basis to have the most current information.

The most recent formal five-year *Charleston Regional Hazard Mitigation Plan* approval was given by FEMA on March 20, 2024. The next 5-year update will be adopted in early 2029.

Attachment 3-A1: Citizen Survey

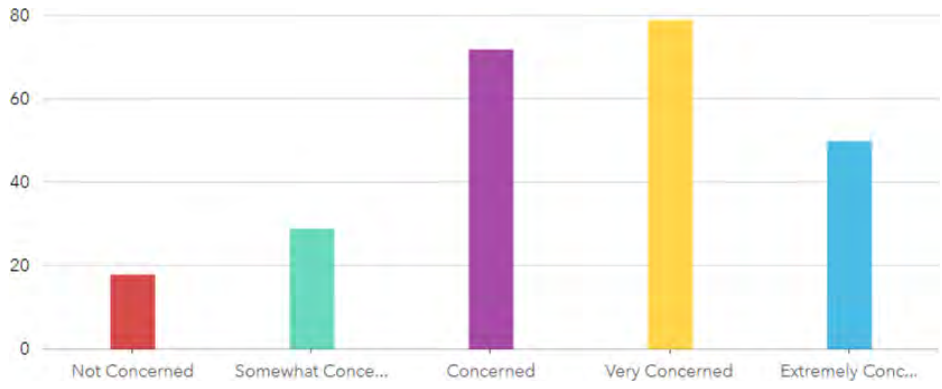
The Charleston County Hazard Mitigation Plan Steering Committee developed a community feedback survey titled "Charleston Regional Hazard Mitigation Plan Citizen Survey" to gather public perspectives on potential hazards and disaster preparedness in the County. The survey was launched on June 20th and utilized extensive social media advertising and website promotion to maximize community engagement. The survey was hosted on the ESRI ArcGIS Survey123 platform. Over the course of a month, 147 responses were collected, showcasing the community's active interest and willingness to contribute to their safety and well-being. The valuable insights below, collected through the survey, will play a crucial role in shaping Charleston County's updated Hazard Mitigation Plan.
The survey was split into categories, with multiple questions within each category.

Hazard Assessment

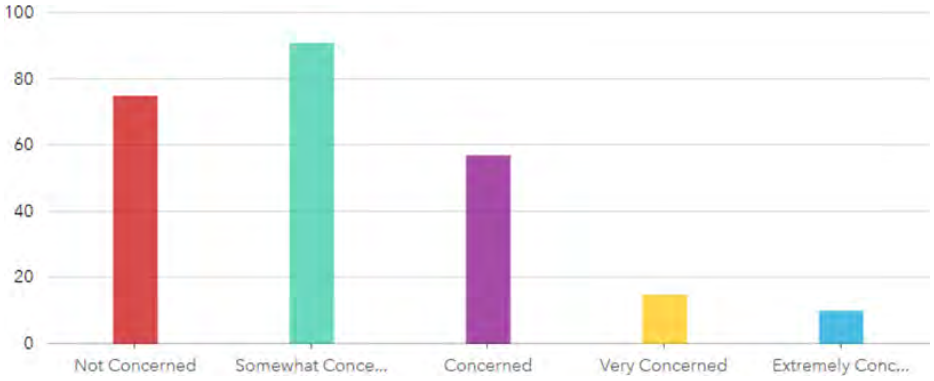
Q1. Please rank each of the hazards below on the level on concern you have for your community (Hazards can be ranked in one of five categories, from left to right: Not Concerned, Somewhat Concerned, Concerned, Very Concerned, and Extremely Concerned)



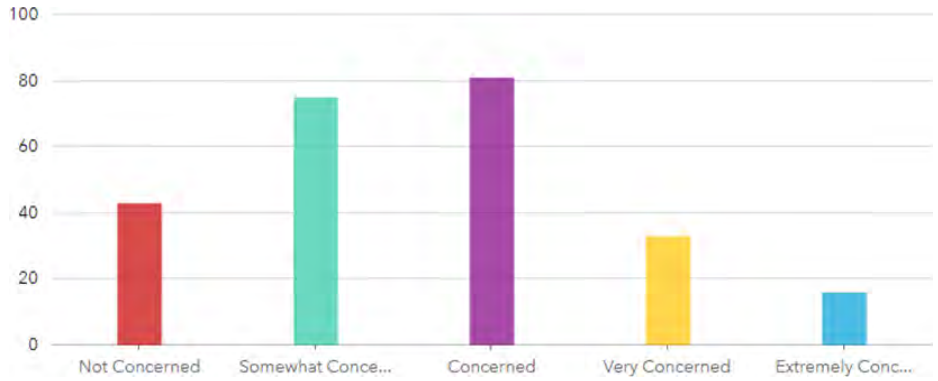
a. Dam Failure



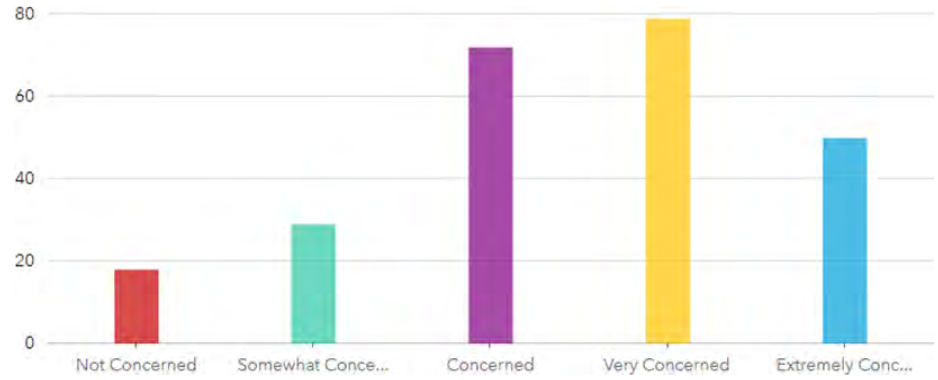
b. Drought



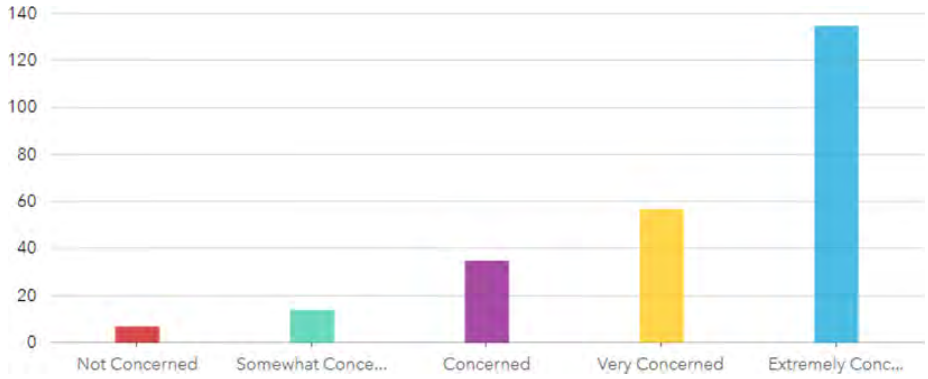
c. Earthquake



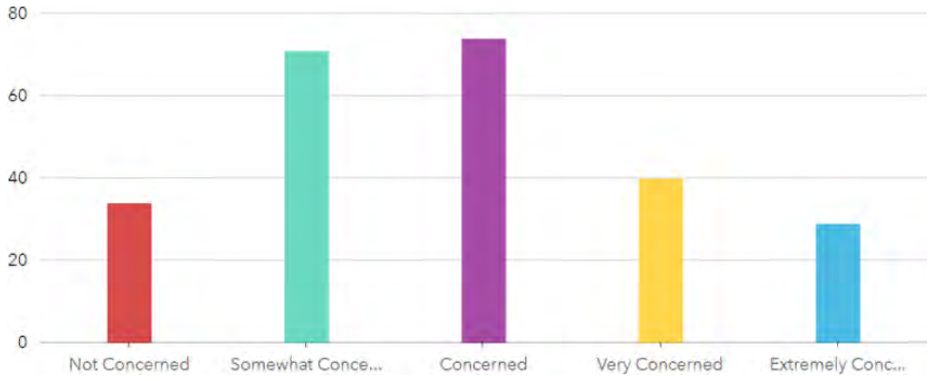
d. Extreme Heat



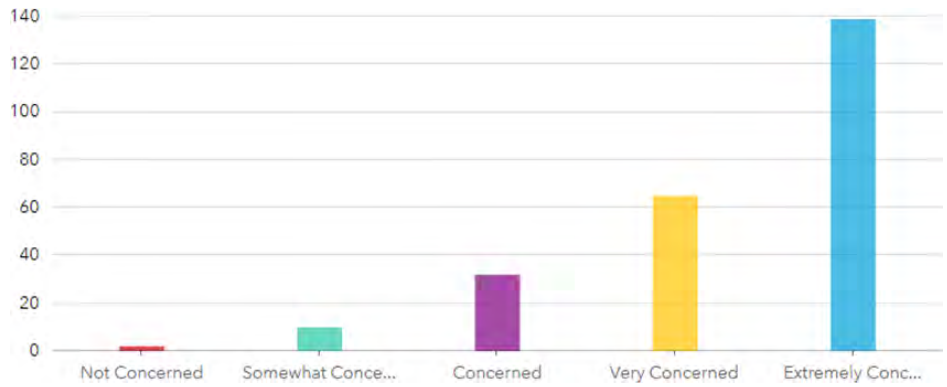
e. Flooding



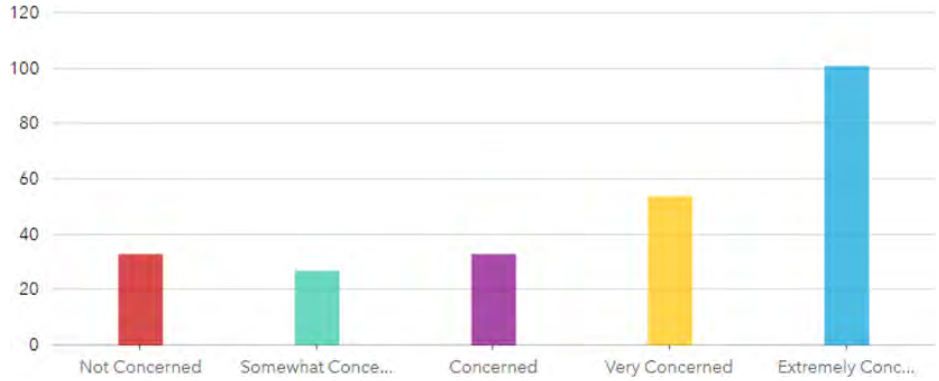
f. Hazardous Materials Incident



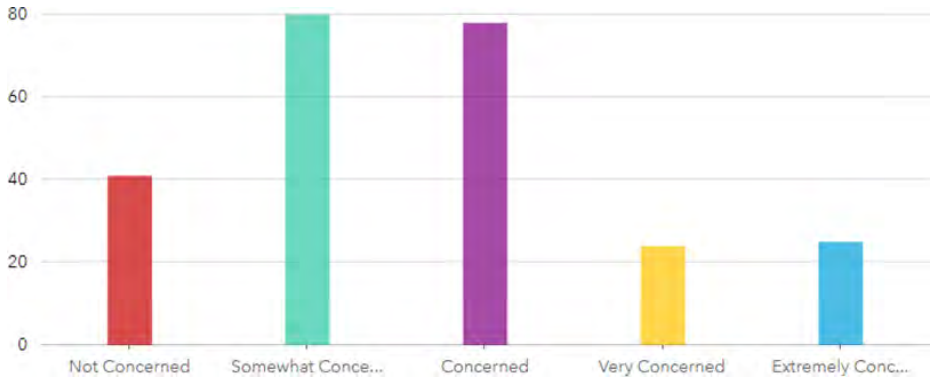
g. Hurricane



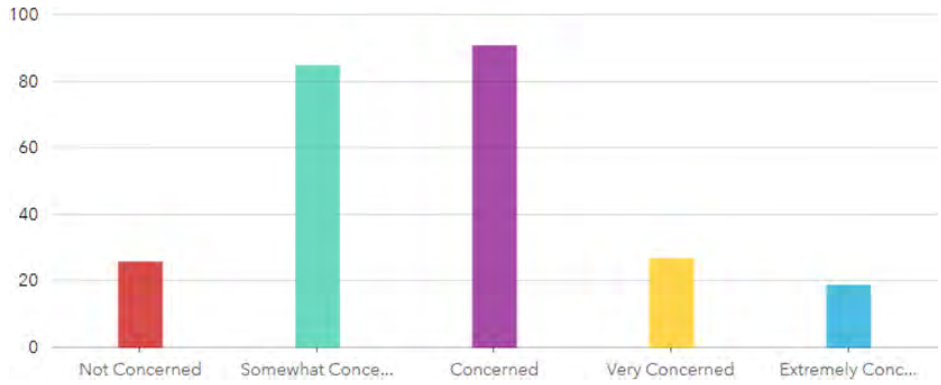
h. Sea Level Rise



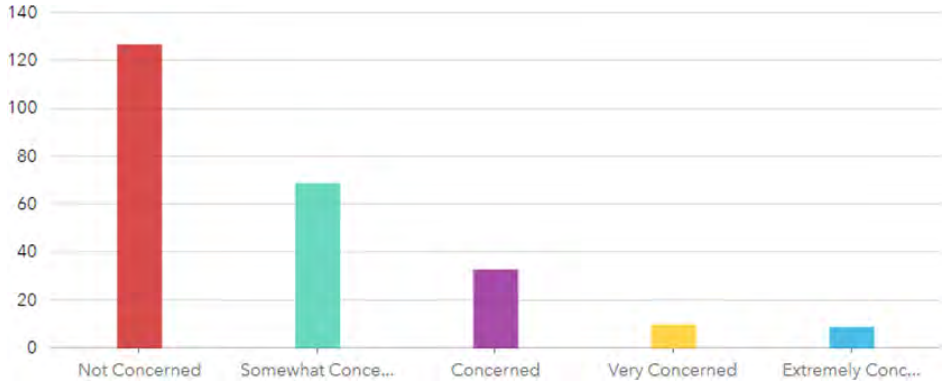
I. Terrorist Incident



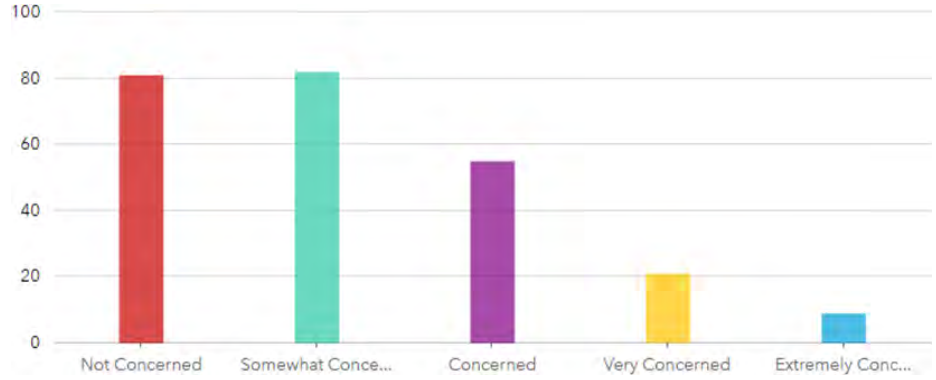
J. Tornado



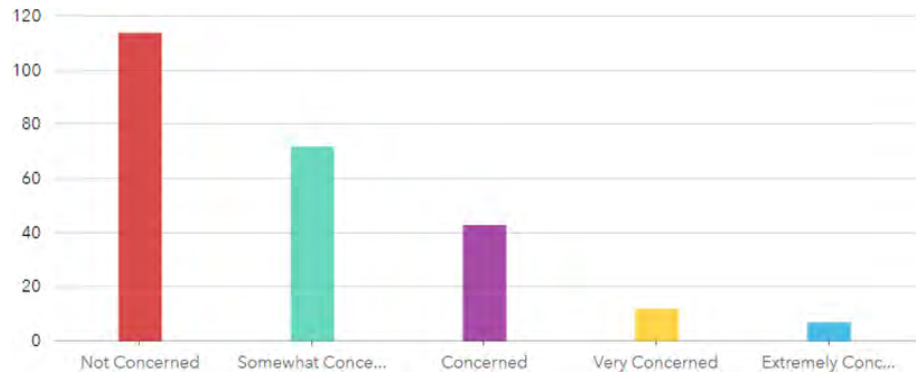
k. Tsunami



l. Wildfire



m. Winter Weather



In conclusion, respondents were most concerned with dam failure, extreme heat, flooding, hurricanes, and sea level rise. On average they were least concerned with drought, tsunamis, wildfire, and winter weather.

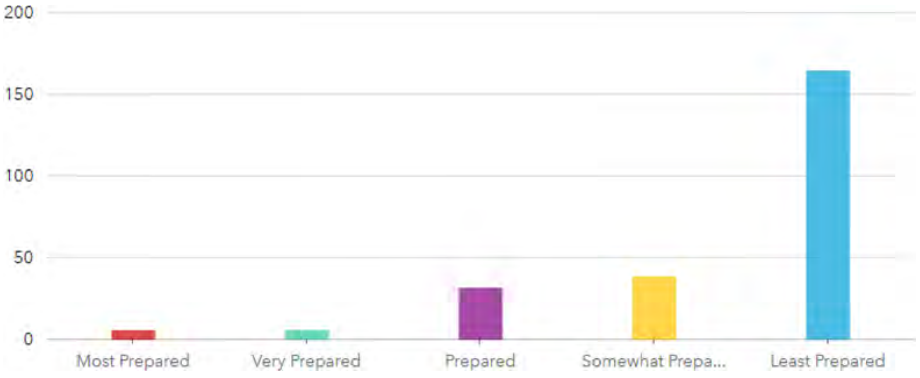
Q2. To the best of your knowledge, to what extent has your community experienced any of the hazards listed above? Please include dates and any associated damages if possible.

There were 130 responses to this question, and the hazards that were discussed most frequently were flooding and hurricanes. Many replies mentioned the increase in frequency and intensity of flood events in the time they have lived in Charleston County. Multiple responses remembered Hurricane Hugo (1989), Hurricane Dorian and Hurricane Ida as three storms that caused extensive damage in Charleston County. Sunny day flooding is becoming common, and residents experience flooding from both the coast and inland.

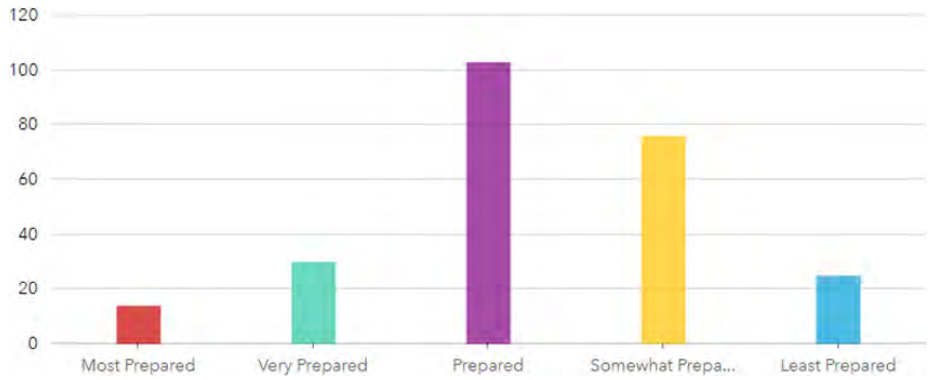
Emergency Preparedness

Q3. How prepared (survival kit, evacuation plan, awareness, etc.) are you for the following situation if they were to occur? (Hazards can be ranked in one of five categories, from left to right: Most Prepared, Very Prepared, Prepared, Somewhat Prepared, Least Prepared)

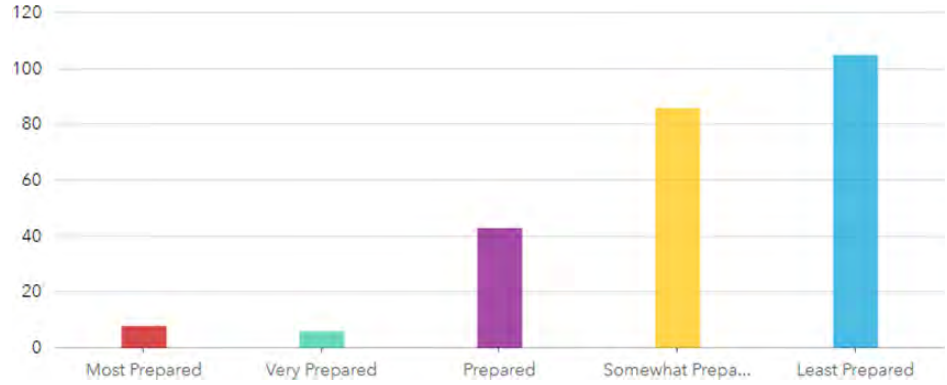
a. Dam Failure



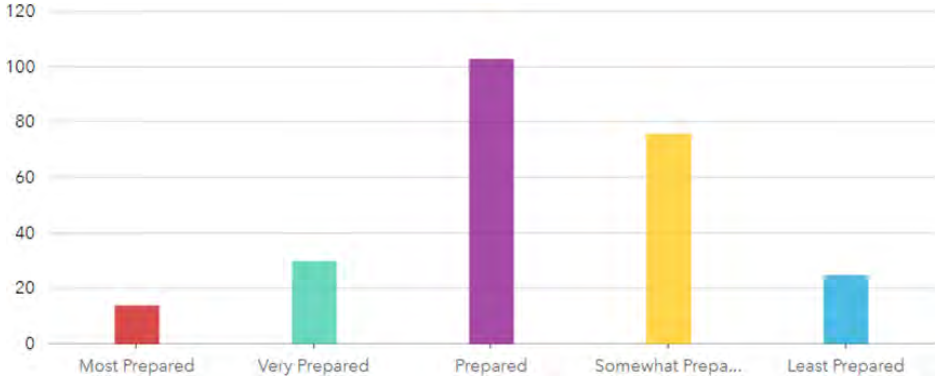
b. Drought



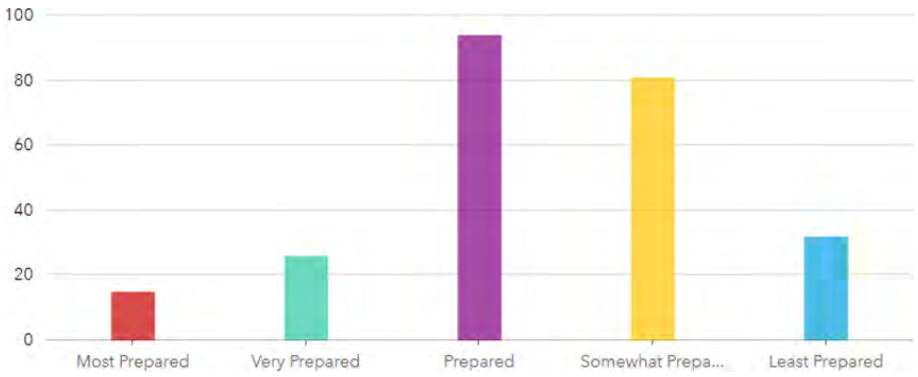
c. Earthquake



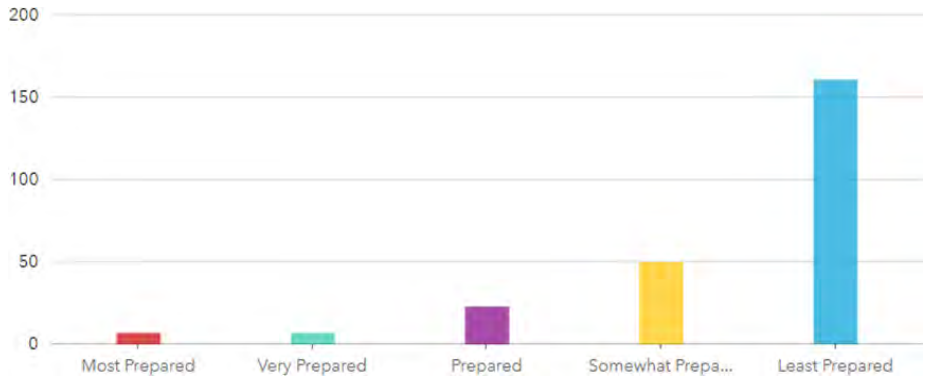
d. Extreme Heat



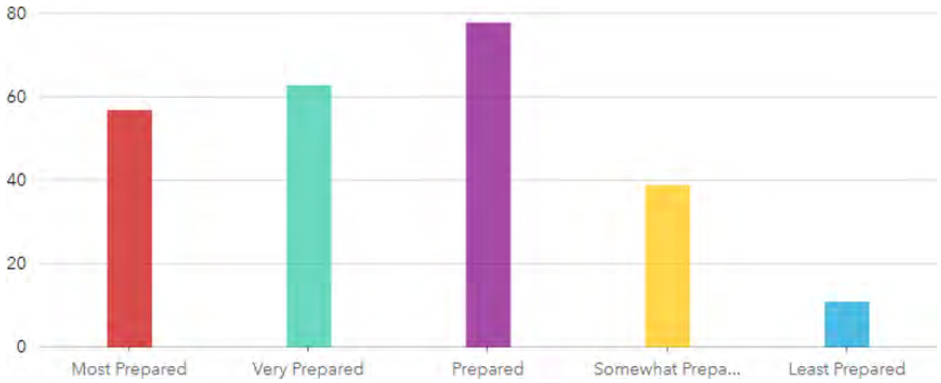
e. Flooding



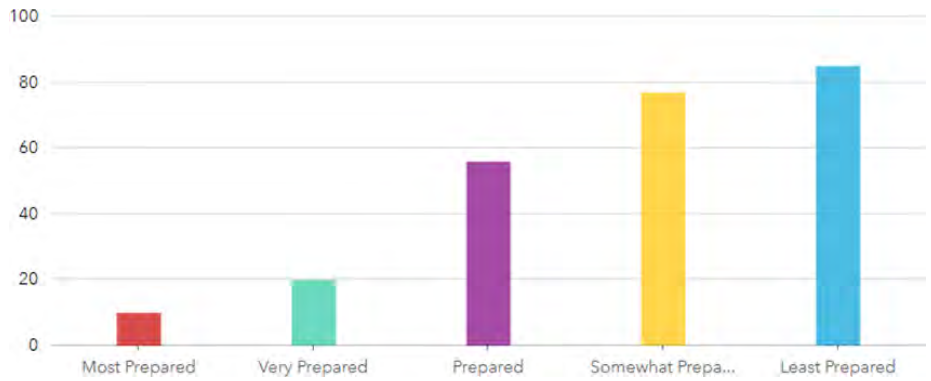
f. Hazardous Materials Incident



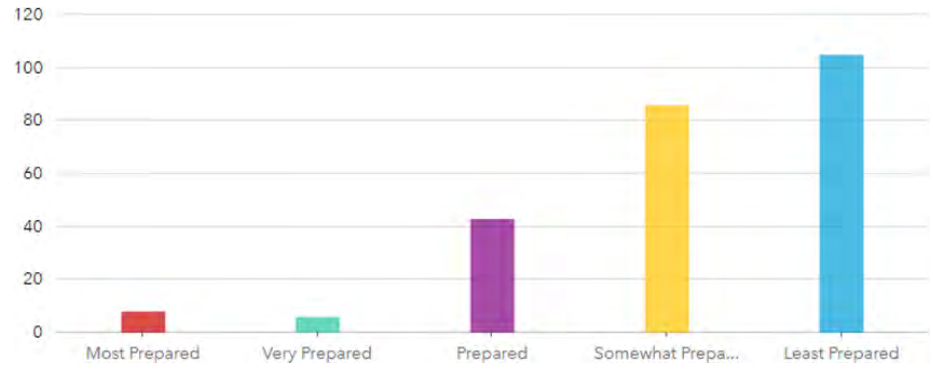
g. Hurricane



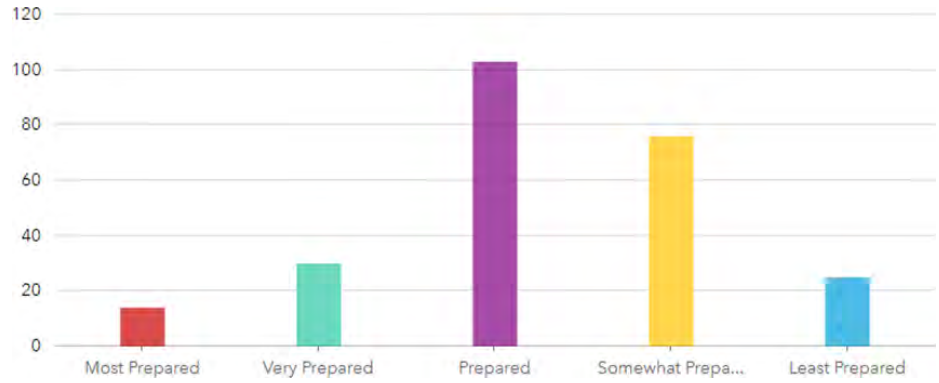
h. Sea Level Rise



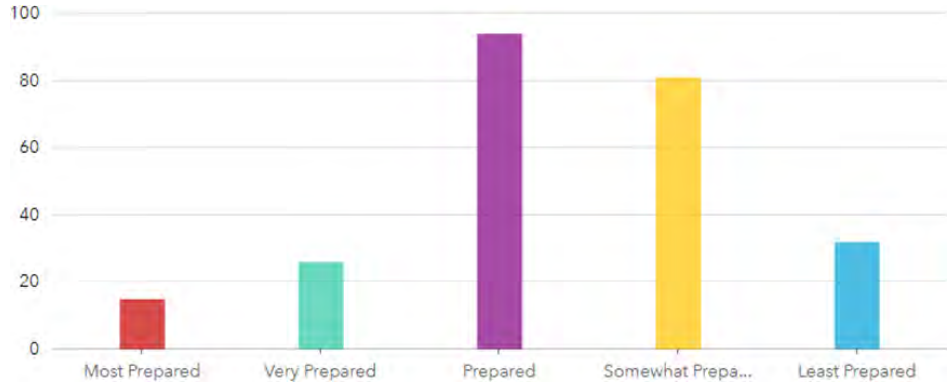
i. Terror Incident



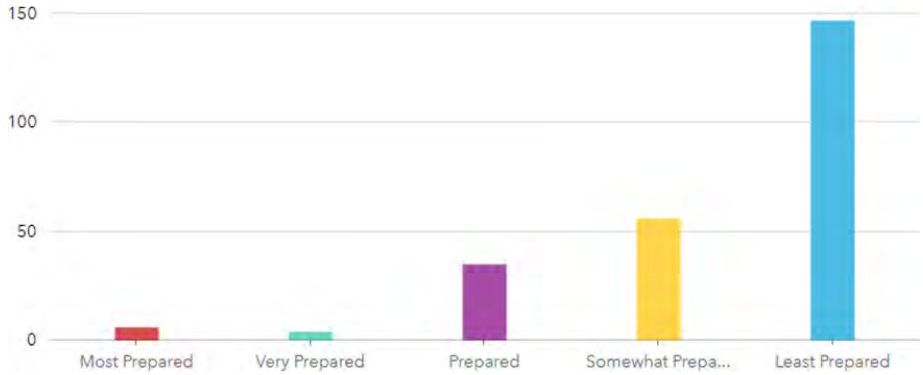
i. Tornado



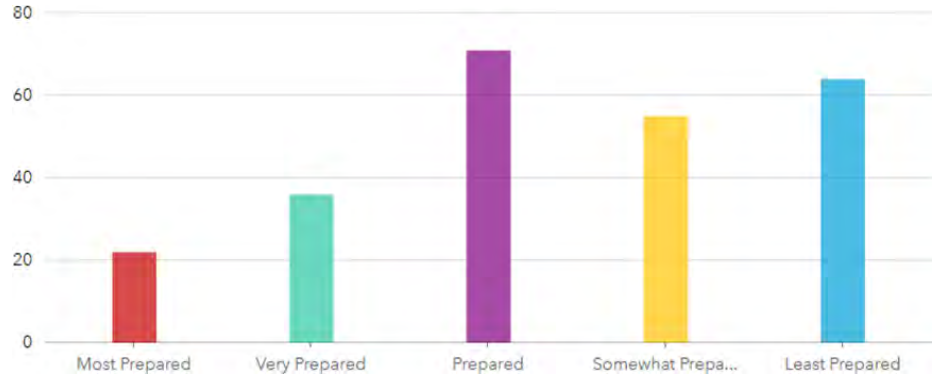
j. Tsunami



k. Wildfire



l. Winter Weather

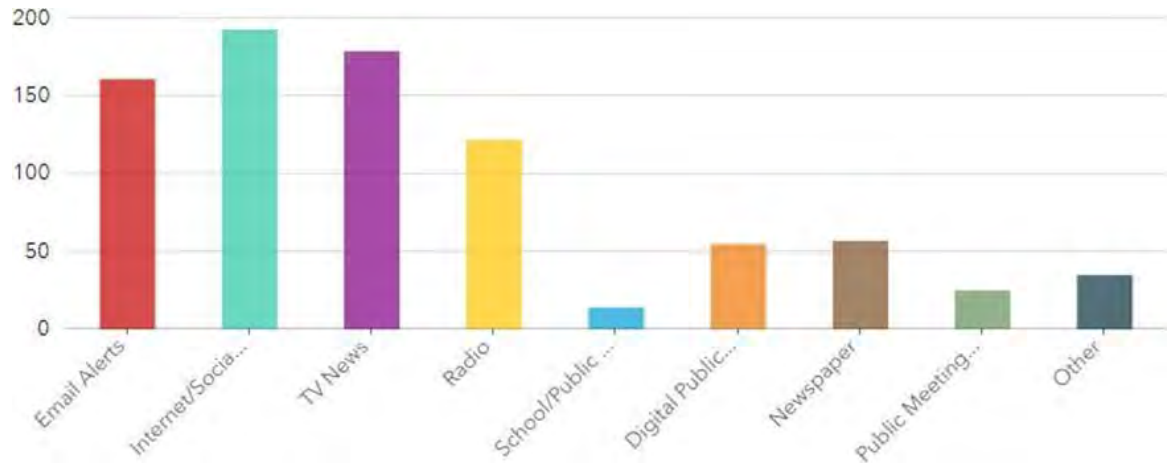


In summary, respondents are most prepared for hurricanes and winter weather, and least prepared for dam failure, wildfire, and terror incidents.

Q4. If there are any other hazards that you feel are pressing to your community, what are they and how prepared do you feel you are for the hazard(s)?

Survey participants responded with additional hazard impacting Charleston County. These included pandemics, air and water pollution, PFAS and other chemical contamination in water and soils, infrastructure failure, and cyber security. Folks discussed personal preparations they have taken in case of an hazard or emergency situation.

Q5. How do you receive your information concerning a disaster?



Most participants received information concerning a disaster through email alerts, internet/social media, TV news, and the radio.

Q6. What types of projects do you think the government could do to reduce damage from disaster in Charleston County?

This question received 109 responses on projects ranging from infrastructure updates to tree trimming to flood mitigation.

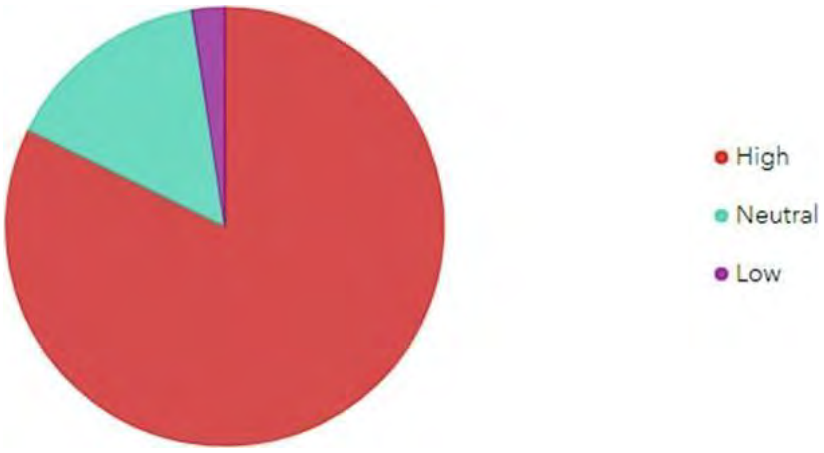


Q7. Please identify any vulnerabilities that you are aware of in Charleston County (e.g. flood-prone areas or specific properties, critical facilities that lack backup power, etc.). Please list street names/other specific identifiers if possible.

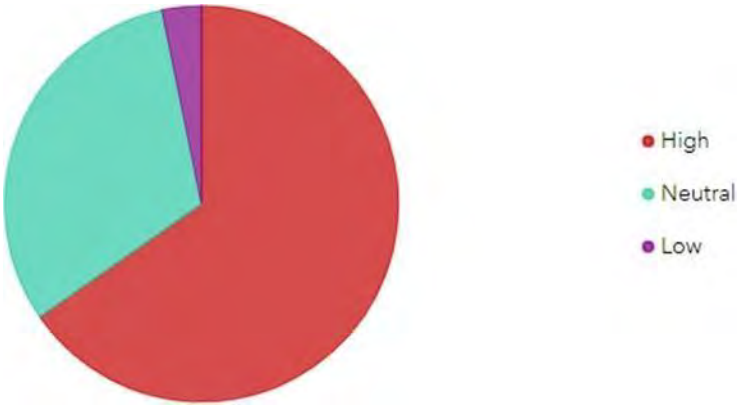
Folks noted areas across the county that are flood-prone, including but not limited to Downtown Charleston, Gadsden Street, tidal creeks along Macoma Drive, Savannah Highway near Burger King, the Pointe at Primus in Mount Pleasant, Home Depot at Six Mile Road, junction of Hagood Ave and Fishburne St, Church Creek Basin, Shadowmoss Plantation, Springfield, Hickory Farms, Tabby Drive and 4th Street East in City of Folly Beach, Southport Drive, Shadowmoss Parkway and especially intersection of Shadowmoss and Dunevagan, Seewee Road, Doar Road, Maxville Road, Porcher School Road, Lockwood Boulevard, King Street, Higer Street, Rutledge Street, N & S Market Street, and multiple streets in West Ashley, including Boone Hall, Sancroft, and Ashley River Road.

Q8. Please rank by level of importance each of the following hazard mitigation categories that you would like to see considered in the planning process.

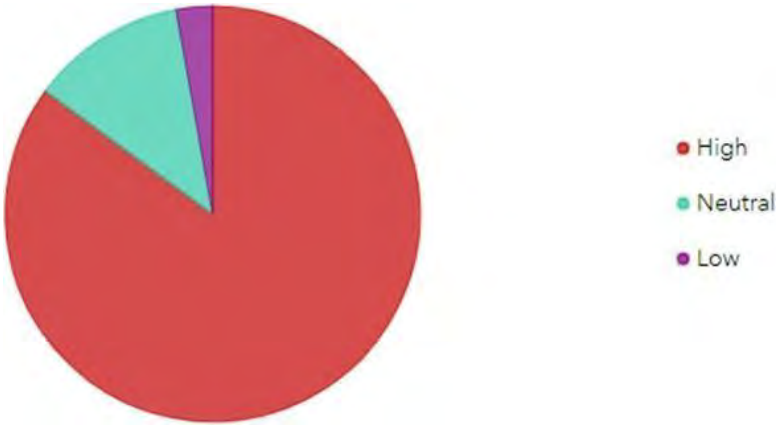
a. Prevention (land/building regulations/ordinances)



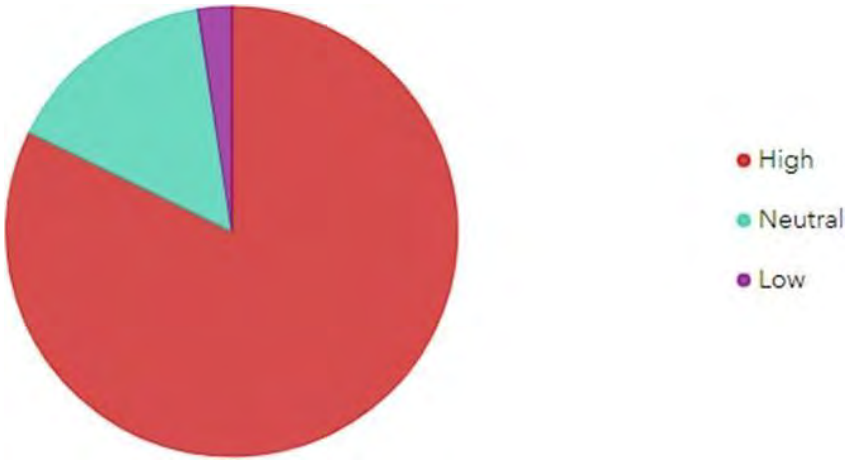
b. Property Protection (remove/retrofit buildings, I.e. elevation)



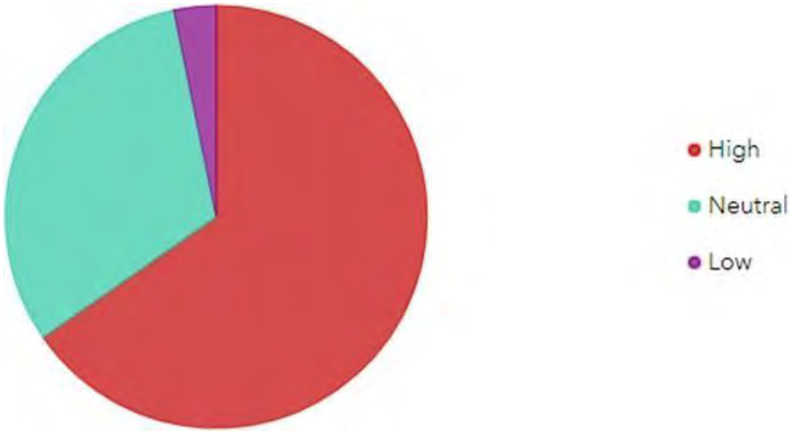
c. Natural Resource Protection (buffer/preservation/management of floodplain, wetland, marsh, water)



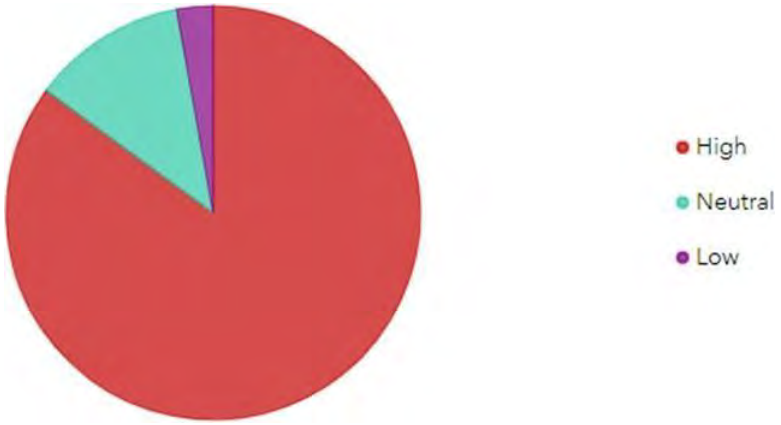
d. Structural Projects (drainage infrastructure, pipes, pumps)



e. Emergency Services (response after any hazard event)



f. Public Education and Awareness (community outreach)



Q9. Do you have any other comments, questions, or concerns regarding hazard mitigation in Charleston County?

The most common response to this question was question and comments about what the County is going to do about flooding. There is concern that stormwater systems are undersized and not sufficient for current storms that the County is experiencing. Folks are also concerned about the extensive new

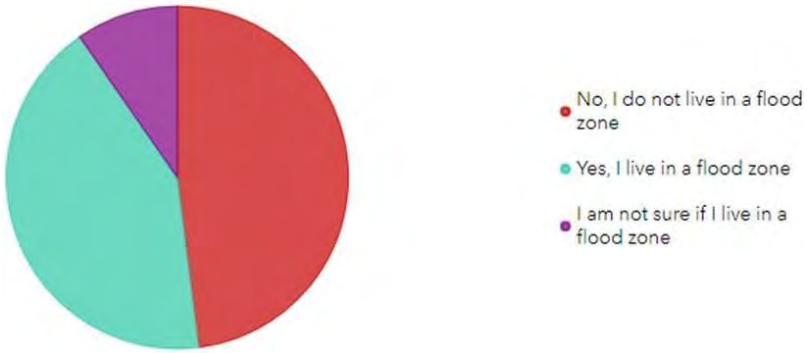
development that is crowding an already crowded county and is creating more development that is causing runoff and flooding. Respondents suggested that community engagement could help draw attention to and mitigate some of the concerns that the county is experiencing.



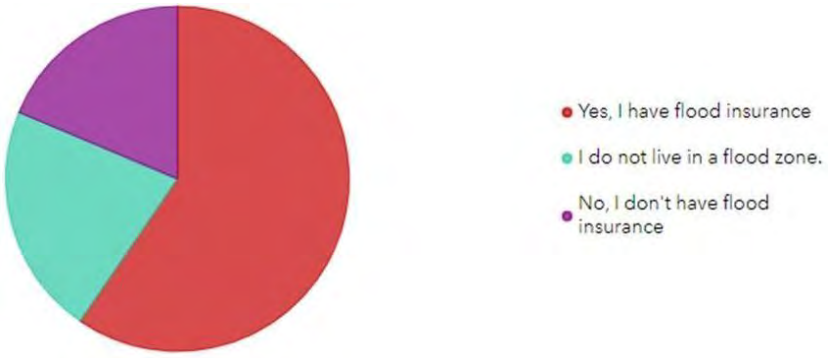
Q10. In the past, has your home been damaged by a hazard event?



Q11. To the best of your knowledge, are you located within a flood zone?



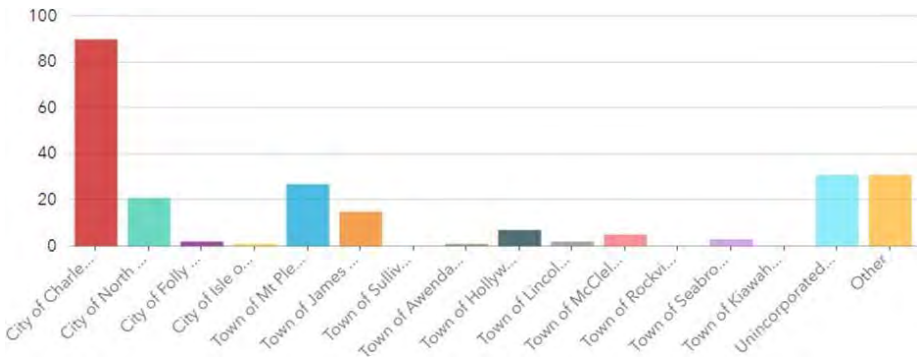
Q12. If your property is in a flood zone, do you have flood insurance?



Q13. If you do not have flood insurance, why not?

Folks expressed different reasons for not having flood insurance. Some have never experience flooding at their house, although they are in a flood zone. Many others stated that flood insurance was too expensive, or that their insurance company did not offer it. Others live in a second-floor condo or rent an apartment.

Q14. In what area of Charleston are you located?



End of survey questions and responses

The successful execution of this survey demonstrates the power of community engagement and inclusivity in the decision-making process. By listening to Charleston County's community members, the county can develop a more robust and effective hazard mitigation plan, addressing the unique needs and concerns of the community. The responses from this survey will serve as a foundation for an informed plan, fostering a safer and more prepared future for the county.

Attachment 3-A2: Jurisdiction Survey

Hazard Assessment Rankings

Description (optional)

Please rank each of the following hazards based on the threat level to your community, on a scale of 1 to 5 (1=Most Threatening and 5=Least Threatening).

	1 (Most)	2	3	4	5 (Least)
DAM FAILURE	○	○	○	○	○
DROUGHT	○	○	○	○	○
EARTHQUAKES	○	○	○	○	○
FLOODING	○	○	○	○	○
HAZARDOUS MAT...	○	○	○	○	○
HURRICANES	○	○	○	○	○
SEA LEVEL RISE	○	○	○	○	○
TERRORIST INCID...	○	○	○	○	○
TORNADOES	○	○	○	○	○
TSUNAMIS	○	○	○	○	○
WILDFIRES	○	○	○	○	○
WINTER WEATHER	○	○	○	○	○

Are there any other hazards that you feel are pressing to your community? Please rank (1=Most Threatening; 5=Least Threatening).

Long answer text

Emergency Preparedness

Description (optional)

On a scale of 1-5, how prepared (evacuation plan, awareness, etc.) is your jurisdiction/organization for the following situations if they were to occur? Please give a rating of 1-5 for each hazard below (1 =Most Prepared, 5= Least Prepared).

	1 (Most)	2	3	4	5 (Least)
DAM FAILURE	○	○	○	○	○
DROUGHT	○	○	○	○	○
EARTHQUAKES	○	○	○	○	○
FLOODING	○	○	○	○	○
HAZARDOUS MAT...	○	○	○	○	○
HURRICANES	○	○	○	○	○
SEA LEVEL RISE	○	○	○	○	○
TERRORIST INCID...	○	○	○	○	○
TORNADOES	○	○	○	○	○
TSUNAMIS	○	○	○	○	○
WILDFIRES	○	○	○	○	○
WINTER WEATHER	○	○	○	○	○

If there are any other hazards that you feel are pressing to your community, what are they and how prepared to you believe your jurisdiction/organization is for the hazard(s)? Please rank (1=Most Prepared; 5=Least Prepared).

Long answer text

STRUCTURES - Vulnerability Assessment Rankings

Description (optional)

How vulnerable to damage are the structures within your jurisdiction/organizaton in the event that the following hazards were to occur? (1=Most Vulnerable and 5=Least Vulnerable)

	1 (Most)	2	3	4	5 (Least)
DAM FAILURE	○	○	○	○	○
DROUGHT	○	○	○	○	○
EARTHQUAKES	○	○	○	○	○
FLOODING	○	○	○	○	○
HAZARDOUS MAT...	○	○	○	○	○
HURRICANES	○	○	○	○	○
SEA LEVEL RISE	○	○	○	○	○
TORNADOES	○	○	○	○	○
TERRORIST INCID...	○	○	○	○	○
TSUNAMIS	○	○	○	○	○
WILDFIRES	○	○	○	○	○
WINTER WEATHER	○	○	○	○	○

If there are any other hazards that you feel are pressing to your community, what are they and how vulnerable to do believe the structures within your jurisdiction are to these hazards? Please rank (1=Most Vulnerable; 5=Least Vulnerable).

Long answer text

CRITICAL FACILITIES - Vulnerability Assessment Rankings

Description (optional)

How vulnerable to damage are the critical facilities within your jurisdiction (e.g. police stations, fire stations, emergency operation centers, hazardous material storage facilities, etc.) if one of the following hazards were to occur? (1=Most Vulnerable; 5=Least Vulnerable)

	1 (Most)	2	3	4	5 (Least)
DAM FAILURE	○	○	○	○	○
DROUGHT	○	○	○	○	○
EARTHQUAKES	○	○	○	○	○
FLOODING	○	○	○	○	○
HAZARDOUS MAT...	○	○	○	○	○
HURRICANES	○	○	○	○	○
SEA LEVEL RISE	○	○	○	○	○
TERRORIST INCID...	○	○	○	○	○
TORNADOES	○	○	○	○	○
TSUNAMIS	○	○	○	○	○
WILDFIRES	○	○	○	○	○
WINTER WEATHER	○	○	○	○	○

If there are there any other hazards that you feel are pressing to your community, what are they and how vulnerable to you believe the structures within your jurisdiction/organization are to these hazards? Please rank (1=Most Vulnerable; 5=Least Vulnerable).

Long answer text

INFRASTRUCTURE - Vulnerability Assessment Rankings

Description (optional)

How vulnerable to damage is the infrastructure within your community (roads, bridges, etc.) if one of the following hazards were to occur? (1=Most Vulnerable and 5=Least Vulnerable)

	1 (Most)	2	3	4	5 (Least)
DAM FAILURE	○	○	○	○	○
DROUGHT	○	○	○	○	○
EARTHQUAKES	○	○	○	○	○
FLOODING	○	○	○	○	○
HAZARDOUS MAT...	○	○	○	○	○
HURRICANES	○	○	○	○	○
SEA LEVEL RISE	○	○	○	○	○
TERRORIST INCID...	○	○	○	○	○
TORNADOES	○	○	○	○	○
TSUNAMIS	○	○	○	○	○
WILDFIRES	○	○	○	○	○
WINTER WEATHER	○	○	○	○	○

If there are any other hazards that you feel are pressing to your jurisdiction/organization, what are they and how vulnerable is the infrastructure to these hazards? Please rank (1=Most Vulnerable; 5=Least Vulnerable).

Long answer text

Please utilize this space to provide any specific comments regarding the vulnerability of your jurisdiction/organization to hazard events. What is your assessment of the overall vulnerability of the Charleston region to these hazards?

Goals

Description (optional)

Please rate the following potential goals for the regional plan according to the needs of your jurisdiction or organization (1=Most Important and 5=Least Important).

	1 (Most)	2	3	4	5 (Least)
Higher regulatory ...	○	○	○	○	○
Improve hazard re...	○	○	○	○	○
Improve storm dra...	○	○	○	○	○
Improve water qu...	○	○	○	○	○
Minimize future e...	○	○	○	○	○
Minimize future fl...	○	○	○	○	○
Minimize future h...	○	○	○	○	○
Minimize future h...	○	○	○	○	○
Minimize future te...	○	○	○	○	○
Protect environme...	○	○	○	○	○
Preserve historic ...	○	○	○	○	○
Reduce potential ...	○	○	○	○	○

Are there any other goals that you feel are pressing to your jurisdiction/organization? Please rank (1=Most Important; 5=Least Important).

Long answer text

Existing Plans/Interest in Participation

Description (optional)

Does your jurisdiction/organization have any hazard-related mitigation plans other than the Charleston Regional Hazard Mitigation Plan?

- [ ] Yes (If Yes, please provide a copy of your plan via email or standard mail)
- [ ] No

Hazard Resilience Survey Questions

The Resilient America program of the National Academies of Sciences, Engineering, and Medicine asks for your input on a few additional questions to help assist the community as a whole in resiliency efforts.

Does your organization include issues of resiliency (e.g. preparedness, adaptation, mitigation, response & recovery) in your planning documents, such as the Comprehensive Plan, or in other planning efforts? If so, what are some examples of these policies?

Long answer text

Reflecting upon recent hurricane threats and flooding events, what has your jurisdiction/organization learned from a hazard preparedness standpoint from these events? Are some areas of preparedness weaker than others in your jurisdiction?

Long answer text

What challenges does your organization face when it comes to incorporating disaster resiliency into your planning or implementation efforts?

Long answer text

Does your jurisdiction/organization participate in emergency operations center activities or command? Please explain your participation level.

Long answer text

What could be done at the regional scale to mitigate impacts to disasters and disruptions? This could include providing technical assistance, setting regional policies, providing a forum for peer sharing, etc. Is your organization currently involved in any regional efforts?

Long answer text

Please share information about relevant projects related to building resilience to hazards (e.g. preparedness, adaptation, mitigation, response, and recovery efforts) that your community is undertaking (e.g. educational programs, risks programs, increased freeboard requirements, etc.).

Long answer text

Point of Contact

23. **Name:** *

24. **Title:**

25. **Mailing Address:**

26. **Telephone Number:** *

27. **Fax Number:**

28. **E-Mail Address:** *

Thank You!

Thank you for participating in the Charleston Regional Hazard Mitigation Plan Jurisdiction/Organization Survey.

Contact Us

Charleston County Floodplain Management
Niki Grimball, Public Services Building
4045 Bridge View Drive, Room A311
North Charleston, SC 29405-7464
(P) 843.202.6940
buildingservices@charlestoncounty.org

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Google Forms

Attachment 3-B: Jurisdiction Members of the Charleston Regional Hazard Mitigation & Public Information Plan Committee

Jurisdiction	CEO	Designated Member
Town of Awendaw	Miriam Green, Mayor	Jody Muldrow, Town Planner
Town of Hollywood	Chardale Murray, Mayor	Roy DeHaven, Zoning Administrator
Town of James Island	Bill Woolsey, Mayor	Mark Johnson, Public Works Director
Town of Lincolnville	Enoch Dickerson, Mayor	Enoch Dickerson, Mayor
Town of McClellanville	Rutledge B. Leland, III, Mayor	Michelle McClellan, Town Clerk
Town of Meggett	Harry V. Herrington, Mayor	Stephanie Smith, Town Administrator
Town of Ravenel	Stephen W. Tumbleston	Mike Hemmer, Planning & Zoning Administrator
Town of Rockville	Riley A. Bradham, Mayor	Hakim Bayyoud, Director, Building Inspection Services
Town of Seabrook Island	John Gregg, Mayor	Joseph Cronin, Town & Zoning Administrator
City of Charleston	John Tecklenberg, Mayor	Ben Almquist, Director, Emergency Management
City of Folly Beach	Tim Goodwin, Mayor	Eric Lutz, Building Official
Town of Kiawah Island	John D. Labriola, Mayor	Bruce Spicher, Community Services Director
City of Isle of Palms	Phillip Pounds, Mayor	Douglas Kerr, Director, Building, Planning, & Zoning
Town of Mt. Pleasant	Will Haynie, Mayor	Hillary Repik, Stormwater Manager
City of North Charleston	R. Keith Summey, Mayor	Darbis Briggman, Building Official
Town of Sullivan's Island	Patrick O'Neal, Mayor	Max Wurthmann, Building Official
Unincorporated Charleston County	Bill Tuten, Administrator	Hakim Bayyoud, Director, Building Inspection Services

Members of the Project Impact committees also provide input into the process as they determine projects to perform under this initiative. These communities have broad-scale representation from multiple public, private, and non-profit organizations with an interest in hazard mitigation in the Charleston County Area.

Attachment 3-C: Stakeholder Members of the Charleston Regional Hazard Mitigation Project and Public Information Plan Committee

Name	Representing
Shawn Engelman, Deputy Chief of Administration	James Island PSD
Chris Seabolt, Fire Chief	James Island PSD
Michael Herman, Safety and Risk Coordinator	North Charleston District and Sewer District
Brian Rollinson, Chief	St. Andrews PSD
Christie Holderness, District Manager	St. Andrews PSD
Gavin Gilcrease, Administrative Assistant Chief	St. John's Fire District
Otis Ackerman, Fire Marshal	St. Paul's Fire District
Truss Johnson, Assistant Fire Chief	St. Paul's Fire District
Mark Cline	Charleston Water System
Michele McCutchen	Charleston Water System
Ronnie Freeman, Safety Director	Mt. Pleasant Water Works
Patty Newshutz, Director of Planning and Capital	Charleston Co Parks & Recreation Commission
Josh Blackstone, Safety Compliance Director	Charleston Co Parks & Recreation Commission
Frank Stefan, Director of Operations	St. Andrews Park & Playground Commission
Susan Klugman, CFO	St. Andrews Park & Playground Commission
Michael Reidenbach, Security & Emergency Management	Charleston County School District
Brock Clary	Charleston County School District
John Morris, VP for Facilities	College of Charleston
Chip Searson, AVP for Public Safety	College of Charleston
Norm Levine	College of Charleston
Cliff Hamilton, Dir. Envir Health & Safety	College of Charleston
Stephanie Palmer, Emergency Management	Roper St. Francis
Anne Sass, Grants Director	Roper St. Francis
Scott Curtis	The Citadel
David Kent	Real Estate Agent
Landon Knapp	SC Sea Grant
Michael Bowers	Awendaw Fire Department
Gene Coker	SC Ports Authority
Kathryn Basha	BCDCOG
Alex Butler	SC Office of Resilience
Liz Fly	The Nature Conservancy
Mike Horton	Davis and Floyd
Adam Bode, Coastal Services Project Manager, Planning	SC DHEC - OCRM
Cedric Green	SCANA
Debbie Eckard	Charleston Soil and Water Conservation
David Ellis	Charleston Home Builders Association

Chris Silcox, Insurance Agent	C.T. Lowndes & Co.
Buddy Smith	Floodplain Resident
Bill West	Floodplain Resident
Thomas Payne	Floodplain Resident
Aleen Kinter	Floodplain Resident
Julie Hensley	Floodplain Resident
Nicole Elko	Floodplain Resident
Robert Cochran	Floodplain Resident
Henry Dingle	Floodplain Resident
Anna Kimelblatt	Weston & Sampson Engineers
Lucas Hernandez	Weston & Sampson Engineers

Attachment 3-D: Other Participating Partners of the Charleston Hazard Mitigation Plan and Public Information Committee

Name	Representing
Natalie Lewis	Town of McClellanville
Niki Grimball, Town Administrator	Town of James Island
James Hackett	Town of James Island
*Larry Brown, Town Council	Town of Lincolnville
Charles Gannt, Fire Chief	Town of Lincolnville
*Henry Holst, Town Council	Town of Rockville
Emmanuel Macklin, Code Inspector	Town of Ravenel
Dale Morris, Chief Resiliency Officer	City of Charleston
Jenna Stephens, Environmental Land Use Planner	City of Folly Beach
Desiree Fragoso, City Administrator	City of Isle of Palms
Austin Rutherford, Planner	Town of McClellanville
Daniel Green	Town of Kiawah Island
William Horne	Town of Mt. Pleasant
Frankie Pettit	Town of Mt. Pleasant
Amanda Knight	Town of Mt. Pleasant
Katie Gerling	Town of Mt. Pleasant
David Rushton, Floodplain Manager	City of North Charleston
Joe Henderson, Zoning Administrator	Town of Sullivan's Island
Sean Dove	Charleston County Building Inspection Services
Anna Kimelblatt	Charleston County Building Inspection Services
Luz Agudelo	Charleston County Building Inspection Services
Eric Adams	Charleston County Public Works
Joe Coates	Charleston County Emergency Management
Lori Kidwell	Charleston County Emergency Management
Wes Linker	Charleston County Public Works
Brian Blake	Charleston County Public Works
Chris Wannamaker	Charleston County Public Works
Sally Brooks	Charleston County Zoning and Planning
Kelsey Barlow	Charleston County Public Information Officer
Ben Almquist	City of Charleston, Emergency Management

Daniel Flessas	City of Charleston, Emergency Management
Kinsey Holton	City of Charleston, Stormwater Management
** Denotes other participating partners that are considered alternative voting members in the absence of the designated member.*	

Attachment 3-E: Charleston Area Local Governments/Entities Adopting Records

**Note: Table will be updated with new dates for plan adoption will be added as they occur.*

Charleston Area Local Governments/Entities Adopting the Charleston Regional Hazard Mitigation Plan						
Name of Jurisdiction/Entity	Date Adopted by Governing Council					
Town of Lincolnville	June 2, 1999	March 3, 2004	September 30, 2008			
Town of Awendaw	June 3, 1999	February 5, 2004	August 7, 2008	November 7, 2013	August 3, 2017	August 8, 2022
Town of McClellanville	June 7, 1999	February 2, 2004	August 4, 2008	October 7, 2013	December 4, 2017	July 5, 2022
Town of Mt. Pleasant	June 8, 1999	February 10, 2004	September 10, 2008	September 11, 2013	December 13, 2017	December 18, 2022
Unincorporated Charleston County	June 15, 1999	February 17, 2004	September 2, 2008	November 7, 2013	September 19, 2017	July 12, 2022
Town of Rockville	June 21, 1999	January 19, 2004	August 18, 2008	November 18, 2013	June 15, 2020	
Town of Kiawah Island	June 22, 1999	January 13, 2004	August 27, 2008	December 3, 2013	May 7, 2019	
Town of Seabrook Island	June 22, 1999	January 27, 2004	August 26, 2008	October 22, 2013	November 28, 2017	June 28, 2022
Town of Ravenel	June 29, 1999	March 16, 2004	September 4, 2008	October 29, 2013	November 28, 2017	July 26, 2022
Town of Meggett	July 15, 1999	March 22, 2004	August 25, 2008	October 28, 2013	July 22 ,2019	
Town of Sullivan's Island	July 20, 1999	February 17, 2004	August 19, 2008	November 19, 2013	February 20, 2018	
City of North Charleston	September 9, 1999	January 22, 2004	August 14, 2008	October 24, 2013	December 21, 2017	July 28, 2022
City of Charleston	September 20, 1999	February 13, 2004	September 23, 2008	October 22, 2013	January 23, 2018	
City of Folly Beach	August 22, 2000	September 23, 2004	August 26, 2008	October 8, 2013	December 12, 2017	July 12, 2022
City of Isle of Palms	June 22, 1999	January 27, 2004	August 26, 2008	September 24, 2013	November 28, 2017	August 23, 2022
Commissioners of Waterworks – Town of Mt. Pleasant	May 19, 2003	February 16, 2004	August 18, 2008	November 18, 2013	December 17, 2018	
Town of James Island		January 20, 2004	August 5, 2008	October 16, 2014	April 25, 2019	
North Charleston District Commission		January 12, 2004	August 11, 2008	October 14, 2013	N/A	
North Charleston Sewer District Commission		January 12, 2004	August 11, 2008	October 14, 2013	May 13, 2019	
Cooper River Park & Playground Commission		January 19, 2004	August 19, 2008	November 18, 2013	July 29, 2015	
St. John's Fire District Commission		February 4, 2004	September 8, 2008		May 13,2019	
St. Paul's Fire District Commission		February 5, 2004	September 11, 2008	November 18, 2013	April 18, 2019	

James Island Public Service District		March 8, 2004	September 22, 2008	October 28, 2013	December 11, 2017	July 25, 2022
Charleston County Park & Recreation Commission		March 29, 2004	August 27, 2008	October 18, 2013		July 18, 2022
St. Andrews Public Service District		April 1, 2004	September 2, 2008	November 4, 2013	December 4, 2017	August 1, 2022
Town of Hollywood		April 7, 2004	September 22, 2008	December 16, 2013		July 25, 2022
Charleston Commissioners of Public Wks. (now known as Charleston Water System)		April 27, 2004	September 22, 2008		July 23, 2019	
College of Charleston		July 12, 2006	September 10, 2008	October 21, 2013	April 16, 2019	
Charleston County School District			August 11, 2008		June 24th, 2019	
St. Andrews Parish Park & Recreation Commission		March 18, 2004	August 28, 2008	October 24, 2013	April 25, 2019	
Roper St. Francis				August 19, 2015	May 15, 2019	

Section 4 Hazard Introduction

– Prioritization

The following data is taken directly from the responses of the 2020 & 2023 Charleston Regional Hazard Mitigation Plan jurisdiction/organization and citizen questionnaires. The data also includes local newspaper accounts, National Weather Service data, and/or academic research conducted regarding hazard-related events that have occurred in the Charleston County area or have been studied as potential hazards for this area. Hazard priorities from the questionnaires were rated in severity from 1 to 5, five being the least priority. Responses came from a cross section of various organizations, governmental and private sector, in and around the Charleston Region.

The highest priority hazard per the questionnaires was the threat of a hurricane. The next highest concern was flooding. The community reflected their concern of sea level rise by ranking it as the third highest priority. Sea level rise and tornadoes were considered the next most serious threats. Earthquakes, Tsunamis, Wildfires, and Drought sequentially followed. Other hazards, such as hazardous materials, terrorist incidents, winter weather and dam failures were the lowest priority hazards. Since 1999, each major survey has confirmed the general ranking of hazards with hurricanes topping list of concerns, followed closely by similarly ranked flooding, earthquakes, and tornadoes.

The Disaster Mitigation Act of 2000 added hazards to the survey and is also evaluated in the hazard mitigation plan.

Following is the hazard ranking as determined from the most recent survey: 1. Hurricane; 2. Flood; 3. Sea Level Rise; 4. Earthquake; 5. Tornadoes; 6. Tsunamis; 7. Hazardous Material Incidents; 8. Winter Weather; 9. Wildfire; 10. Terrorist Incidents; 11. Drought; and 12. Dam Failure. Miscellaneous hazards also included in this Plan are severe storms and rip currents as they are hazardous and quantifiable in the area, but not a top priority.

These results are in line with the anecdotal evidence from dozens of public Charleston County community events, disaster expos, and neighborhood association meetings. Hurricane and flooding mitigation questions comprise most of the questions directed at the Charleston County Building Inspections Department. Charleston County borders the Atlantic Ocean for nearly 100 miles and the ocean is a defining characteristic for the Region, both economically and certainly from a hazardous perspective.

Social Vulnerability

Social Vulnerability is considered in this document to analyze the underlying characteristics of the population that either attenuate or exacerbate the effects of hazard events. The Social Vulnerability Index (SoVI), provides a peer reviewed methodology for creating a standardized comparative metric aimed at understanding differences in socio-economic and demographic information between places. SoVI includes those population characteristics known to influence the ability of social groups and communities to prepare for, respond to, and recover from disasters. Key social indicators that consistently appear in the literature as influencing pre-impact preparedness and post-event response and recovery include attributes such as socioeconomic status (wealth, education, occupation), age (elderly populations and young children are more vulnerable); gender, race and ethnicity; employment and employment sector; and special needs populations. However, it is not just the proportion of the residents in these broad categories that is important, but instead

how race, socioeconomic status and gender interact to produce socially vulnerable populations. Selecting one variable does not adequately capture communities that are described as below the poverty level, all people in poverty are in one element.
Based on the SoVI methodology, the scores use a three-class standard deviation model where greater than 0.5 standard deviation means elevated; 0.5 to -0.5 means moderate; and less than -0.5 mean limited. Charleston County has a SoVI of -1.93 on limited impact based on U.S. Census Data 2010, Hazards and Vulnerability Research Institute calculation.

Emergency Preparedness

In the 2020 & 2023 survey, a series of questions were asked about emergency preparedness concerning different hazards discussed in this Plan to two audiences: jurisdiction/organization representatives and citizens. Analysis of the jurisdiction and citizen surveys show discrepancies between how governing bodies and individual citizens rank hazards and how well prepared the community is to face these hazards. Below are two tables showing the rankings on emergency preparedness: one for jurisdictions and the other for citizens. From these tables, it is evident that both jurisdiction representatives and citizens feel prepared for hurricanes and flooding. This is beneficial as these among the top hazards when asked about threat level in the hazard assessment questions. The most notable hazard is sea level rise, as it is perceived as the third most threatening hazard but jurisdictions and citizens are 8th and 3rd most prepared, respectively, for this hazard among all twelve hazards in the survey.

Impact of Hazards

Please see the appendices for a description of the hazards' impact on the jurisdictions for more detailed information.

Rankings for Emergency Preparedness: based on *Citizen* Survey	
Rank	Hazard
1	Hurricane
2	Flooding
3	Sea Level Rise
4	Winter Weather
5	Tornadoes
6	Drought
7	Earthquakes
8	Tsunamis
9	Wildfires
10	Hazardous Materials
11	Terrorist Incidents
12	Dam Failure

Rankings for Emergency Preparedness: based on *Jurisdiction* Survey	
Rank	Hazard
1	Hurricanes
2	Flooding
3	Hazardous Materials
4	Terrorist Incidents
5	Earthquakes
6	Tornadoes
7	Winter Weather
8	Sea Level Rise
9	Drought
10	Dam Failure
11	Wildfires
12	Tsunamis

Below is a table of all of the hazard events for the 2021-2022 year.

Hazard Events May 1, 2021-April 30, 2022		
Event	Incidents	Description and Information
Flooding	39	Includes flash flooding and coastal flooding.
Rip Current	1	Onshore winds and long period swell energy from distant Hurricane Larry combined to produce an elevated risk of rip currents along the southeast South Carolina coast.
Hurricane, Tropical Storm, Tropical Depression	1	Tropical Storm Danny initially developed as a tropical depression approximately 110 miles off the Southeast United States coast during the morning of June 28th, 2021. Winds peaked over the Atlantic coastal waters with a 41 knot wind gust measured at Buoy 41029. Otherwise, wind gusts generally ranged between the 25 to 40 mph across coastal counties of southeast South Carolina, producing isolated/minor wind damage across Charleston County.
Severe Weather	10	Includes strong wind, thunderstorms, hail, and lightning strikes.
Winter Weather	2	1/29/2022 Numerous reports of light snow, flurries, or a mix of rain and snow were received across Charleston County, even down to the beaches. No accumulation was reported. 1/21/2022 Numerous reports of light freezing rain all across Charleston County were received. The highest ice accumulations received included 0.12 near Mount Pleasant, 0.04 in the Shadowmoss subdivision in West Ashley, and 0.08 at the National Weather Service office in North Charleston.
Fire	943	Includes aircraft fire, explosion, marine fire, outside fire, wildfire, vehicle fire, and train or rail fire. (Data from 2020)
Tornado	2	EF-1 Tornado
Earthquake	0	
Drought	-	The Region experienced 39 total drought weeks. 26 weeks were spent at D0 and an additional 13 weeks were spent at D1.
Water Rescue	65	Includes flood water rescue, inland and coastal rescue, oceanic rescue
Train and Rail	5	(Data from 2020)
Hazardous Material	545	Includes fuel spill, gas leak, and hazmat incidents. (Data from 2020)
Suspicious Packages	65	7 ordinances/explosives found (Data from 2020)
Bomb Threat	14	(Data from 2020)
Pandemic	1	COVID-19, first presumed case in Charleston Area on March 6, 2020
King Tide (Sea Level Rise)	106	Tidal gauge in Charleston Harbor reads 7.0ft or higher

– Hurricane

Background

Hurricanes and tropical storms are classified as cyclones, and defined as any closed circulation developing around a low-pressure center in which the winds rotate counter-clockwise in the Northern Hemisphere with a diameter averaging 10 to 30 miles across. When maximum sustained winds reach or exceed 39 miles per hour, the system is designated a tropical storm, given a name, and is closely monitored by the National Hurricane Center. When sustained winds reach or exceed 74 miles per hour the storm is deemed a hurricane. Tropical cyclones maintain intact by extracting heat energy from the ocean at high temperatures and releasing heat at the low temperatures of the upper troposphere. Most hurricanes and tropical storms form in the Atlantic Ocean, Caribbean Sea and Gulf of Mexico during the official Atlantic hurricane season, which extends from June through

November.

The primary damaging forces associated with these storms are high-level sustained winds, heavy precipitation, tornadoes and flooding. Coastal areas are also vulnerable to the additional forces of storm surge, wind-driven waves, tidal flooding and beach erosion. Storm surge is often the greatest hurricane-related hazard. Storm surge is water that is pushed toward the shore by the force of the winds swirling around the storm. This advancing surge combines with the normal tides to create the hurricane storm tide, which can increase the water level twenty (20) feet or more. In addition, wind driven waves are superimposed on the storm tide. This rise in water level can cause severe inundation in coastal areas, particularly when the storm tide coincides with the normal high tides.

Classification

The National Weather Service's National Hurricane Center uses the Saffir-Simpson Scale to classify hurricane severity. The scale categorizes a hurricane's present intensity on a one (1) to five (5) rating and provides an estimate of property damage and coastal flooding upon landfall. Wind speed determines a hurricane's Saffir-Simpson Scale rating since storm surge is greatly dependent on the coastline shape and slope of the continental shelf.

Saffir-Simpson Hurricane Scale

Category	Winds (mph)	Storm Surge (ft)	Minimum Surface Pressure (Millibars)	Damage	Damage Description
1	74 - 96	3 - 5	Greater than 980	Moderate	No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal flooding and minor pier damage.
2	97 - 111	6 - 8	979 - 965	Severe	Some roofing material, door, and window damage. Considerable damage to vegetation, mobile homes, etc. Flooding damages piers and small craft in unprotected moorings may break their moorings.
3	112 - 131	9 - 12	964 - 945	Extensive	Some structural damage to small residences and utility buildings, with a minor amount of curtainwall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures, with larger structures damaged by floating debris. Terrain may be flooded well inland.
4	132 - 155	13 - 18	944 - 920	Extreme	More extensive curtainwall failures with some complete roof structure failure on small residences. Major erosion of beach areas. Terrain may be flooded well inland.
5	>155	19+	Less than 920	Catastrophic	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Flooding causes major damage to lower floors of all structures near the shoreline. Massive evacuation of residential areas may be required.

Source: National Hurricane Center

Storm Surge: Storm Surge is elevated water level that is pushed towards the shore by the force of strong winds that result in the piling up of water. The advancing surge combines with the normal tides, which in extreme cases can increase the normal water height to rise over 20 feet. The storm surge arrives ahead of the storm's actual landfall and the more intense the hurricane is; the sooner the surge arrives. Water rise can be very rapid and can move far inland, posing a serious threat to those who have not yet evacuated any flood-prone areas especially since about 68% of the Charleston Region rests within a floodplain and some jurisdictions are located 100% in the floodplain. Debris carried by the waves can also contribute to the devastation. A surge of high water topped by waves driven by hurricane force winds can be devastating to coastal regions, causing severe beach erosion and property damage along the immediate coast.

Wind: The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating based on a hurricane's sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous, however, and require preventative measures. A tropical storm becomes a hurricane when the winds meet or exceed speeds of 74mph. The strongest, and subsequently most threatening, hurricanes can exceed speeds of 157mph. The strong winds of a hurricane can cause dangerous waves, posing a significant hazard to mariners and coastal residents and visitors as waves overwhelm sea walls and flooding occurs. Such high winds can pick up debris and turn them into dangerous missile-like objects, knocking down trees and buildings.

Heavy Rain: Hurricanes can generate great amounts of rainfall. Rainfall rates are related to the size and strength of the hurricane; slower moving and large storms tend to generate more rain. Hurricane Isaac in 2012, being both large and slow-moving, produced 1 to 2 inches of rain per hour in some locations.

Tornadoes: Hurricanes and tropical storms may spawn tornadoes that are typically further out from the center of the system; generally embedded in the rain bands. Hurricane-spawned tornadoes also generally have a shorter lifespan but can still cause great damage.

Erosion: Erosion is the process that wears away land due to chemical or physical activity of wind, water, or other meteorological conditions. The two major leading forces to erosion are wind and water. Major storms can cause erosion by picking up soil, sand or vegetation from the combination of high winds, heavy surf and storm surge. Human interactions, such as new development or construction in coastal regions can influence erosion as well.

Hurricanes often threaten the Charleston Region in the summer and early fall seasons. The most devastating hurricane to the Charleston Region in terms of dollars of property damage was Hurricane Hugo (Category 4), which struck on September 21, 1989 and was the 11th most damaging hurricane in the history of the United States as of September 2005. Charleston also had a brush with Hurricane Floyd (Category 2) on September 15, 1999. The most recent events to strike the Charleston Region include Hurricane Matthew on Oct. 8, 2016, Hurricane Irma on September 10-11, 2017, Hurricanes Florence (September 14, 2018) and Michael (October 11, 2018) and Hurricane Dorian (September 5, 2019). All recent events except Hurricane Michael warranted a mandatory evacuation from the Governor.

Location

Hurricanes and tropical storms threaten the entire Atlantic and Gulf coast of the United States, as well as the Pacific coast. Hurricanes that originate in the Gulf of Mexico can still impact the Charleston Region. With about 68% of the Charleston Region in the floodplain and some jurisdictions located 100% in the floodplain and with the community being a coastal community, the Region is vulnerable to hurricanes and tropical storms and their aftermaths. Since hurricane landing patterns are unpredictable until the storm has formed and is within a short time from landing, the Region can not presume that past strike history will continue, and all areas within the Region are subject to these types of events.

Occurrences

Hurricane Events between August 11 1940 - April 30 2013			
Name	Category	Date	Damage Description
August 11th, 1940 (Name classification started after 1950)	2	August 11th, 1940	Estimated damage to the city was $1 million. Sullivan's Island and the City of the Isle of Palms suffered minor damage.
Hurricane Hazel	4	October 15th, 1954	Folly Beach, Sullivan's Island, and the Isle of Palms suffered light property damage and slight beach erosion. The City of Charleston experienced no serious damage.
Hurricane Gracie	3	September 29th, 1959	The total damage inflicted by the storm was estimated at $14 million. High water marks, which were reported near the Town of Edisto Beach, South Carolina, ranged from 7.3 to 11.9 feet.
Hurricane David	3	August 29th - September 7th, 1979	Flooding and minor damage in the City of Charleston.
Hurricane Hugo	4	September 19th, 1989	Tidal surges north of the city were recorded at 19.8 feet and 11.8 feet in the Peninsula City. The hurricane struck at high tide. Its recorded diameter was over 500 miles, Four (4) people were killed and scores injured. Estimated damage of $7 billion for the total area.
Hurricane Bertha	2	July 12th, 1996	This hurricane came close but did not cause any significant damage. Some coastal areas experienced moderate beach erosion. Tourism estimated loss revenue of 20 million dollars.
Hurricane Fran	3	Septemer 5th, 1996	The storm didn't directly hit the Charleston Region but remnants of this hurricane created power outages with economic losses estimated at 20 million dollars.
Hurricane Bonnie	3	August 26th, 1998	Remnants of this hurricane produced winds that knocked down several trees in the Town of Mount Pleasant as it headed for the North Carolina Coast.
Hurricane Floyd	2	September 15th, 1999	Sustained winds of 58 miles per hour were recorded in downtown Charleston with gusts up to 85 miles per hour. Generally 3-5 inches of rainfall occurred. An estimated $10.5 million in damages occurred in the Charleston region.
Hurricane Irene	1	October 17th, 1999	This hurricane dropped 3 to 5 inches of rain created minor street flooding. Minor beach erosion. Trees knocked down and power outages in the area.
Tropical Storm Gordon		September 18th, 2000	Remnants of the storm dropped 6-10 inches of rain. Minor beach erosion occurred as a result of this storm.
Tropical Storm Claudette		July 14th, 2003	Two and a half inches of rain, a tree was downed, 11 traffic accidents.
Tropical Depression Seven		July 25th, 2003	Expected to receive as much as 6 inches of rain and wind gusts up to 35 mph from this storm.
Tropical Storm Henri		September 6th, 2003	Folly Beach, Sullivan's Island, and Isle of Palms experienced beach erosion from remnants of the storm, which was predicted to also bring up to 5 inches of rain to the Charleston area.
Hurricane Isabel	2	September 17th, 2003	This storm created 8 foot surf at Kiawah Island and had wind gusts of 40 mph offshore and 20 mph in downtown Charleston when it passed offshore. Coastal erosion was expected, as tides were 6 to 12 inches above normal.
Tropical Storm Alex		August 2nd, 2004	Minor beach erosion was reported on Folly Beach.
Tropical Storm Bonnie		August 12th, 2004	The remnants of this storm caused a tornado and several incidents of wind damage in the Awendaw area.
Hurricane Charley	1	August 14-15th, 2004	An estimated 4 inches of rain fell in 2 hours in the Northern part of Charleston County on August 14, 2004, flooding low lying areas and areas with poor drainage. Storm surge was estimated at 4-6 feet from Oyster Landing to the Cape Romain Wildlife Refuge in the northern portions of Charleston County. Minor property and tree damage occurred as a result of this storm. The storm caused an estimated damage of $2 million in South Carolina.
Hurricane Gaston	1	August 29th, 2004	Sustained winds of 75 mph. The storm brought a 4 foot storm surge into Bull's Bay, which caused an estimated $4.8 million in damages to homes, primarily in areas east of the Cooper River creating debris with an estimated clean-up cost of $2.2 million county-wide, and left nearly all of the customers of South Carolina Electric and Gas without electrical power. Total estimated damages, per the National Weather Service, were $7.6 million in Charleston County.

Tropical Storm Frances		September 6th, 2004	This storm created nearly 6 ft. surf. Dropped nearly 5 inches of rain, winds of 35 mph, minor damage and flooding.
Tropical Depression Jeanne		September 27th, 2004	Resulted in 40 ft. of beach erosion on the north end of Folly Beach. Maximum wind gusts in Charleston County from this storm were 41 mph in downtown Charleston and at the Charleston airport. Maximum wind gusts at Folly Beach were 38 mph. Non-tornadic damage was limited to a few trees falling on cars.
Tropical Storm Ophelia		September 13th, 2005	Loss of Life, Beach Erosion, minor damage.
Tropical Storm Tammy		October 5th, 2005	Significant Beach Erosion, flooding, minor damage.
Tropical Storm Alberto		June 13th, 2006	Remnants of the storm produced a tornado that touched down near Awendaw, knocking down trees. Street flooding occurred in Charleston and North Charleston as a result of this storm.
Tropical Storm Ernesto		August 31st, 2006	Mt. Pleasant received 6.65 inches of rainfall from this storm system. Street flooding occurred in the City of Charleston and 40 mph gusts.
Tropical Storm Barry		June 2nd, 2007	Remnants of the storm produced heavy rains, strong winds, rough surf, and 3 inches of rain. Loss of electricity to 13,900 customers of SCE&G and Berkeley Electric Cooperative, mostly in the Summerville area, which caused vessels to break their lines, and flood streets, particularly on the Charleston Peninsula. Wind gusts up to 60 mph were recorded.
Tropical Storm Hanna		September 5th, 2008	Resulting in strong wind and localized heavy rain.
Tropical Storm Irene		August 25th, 2011	The Charleston County Folly Beach Park received significant erosion-related damages as a result of this storm, including beach areas and structures.
Tropical Storm Lee		September 6th, 2011	Charleston County sustained scattered showers, thunderstorms, and winds up to 22 mph with a half-inch of rain in some areas.
Tropical Storm Beryl		May 27th, 2012	The region saw tropical storm forced winds, heavy rainfall, and fallen trees as result of the storm.
Tropical Storm Sandy		October 27th, 2012	The storm produced forced winds of 40 mph.

Hurricane Events between May 1, 2013 – December, 2022			
Name	**Category**	**Date**	**Damage Description**
Tropical Storm Andrea		June 6, 2013	Heavy rainfall 3-7 inches
Tropical Storm Arthur		July 3, 2014	Tropical storm watch was posted for Santee River to Bogue Banks, NC. Wind gusts up to 42 mph (68 km/h) along coastal areas, resulting in scattered power outages
Tropical Storm Ana		May 7-8, 2015	Tropical storm warning from South Santee River to Surf City, NC. Produced a small storm surge along Charleston County coast.
Hurricane Joaquin	4	October 1-5, 2015	Did not make landfall in the US, but caused catastrophic flooding in South Carolina and intense flooding and power outages in Charleston County. South Carolina Governor Haley declared a State of Emergency.
Hurricane Matthew	1	October 7-8, 2016	Once a Category 5 hurricane before ripping through Haiti and eastern Cuba, Hurricane Matthew had downgraded to a Category 1 by the time it hit South Carolina. Even so, 830,000 South Carolinians lost power, 355,000 evacuated from their homes, and 4 lost their lives.
Hurricane Irma	1	9/11-9/12/2017	Once a Category 5 hurricane before ripping through the Caribbean, Hurricane Irma had downgraded to a Category 1, and eventually a tropical storm, by the time the system impacted South Carolina. Even so, over 100,000 South Carolinians lost power, 3 lost their lives, and Charleston recorded its third highest storm surge ever (10ft).

Hurricane Florence	1	9/14/2018	Once a Category 4 hurricane before making landfall north of Charleston County, this storm impacted Charleston County as a tropical depression. No lives were lost in Charleston County although thousands of residents lost power during the storm's peak.
Hurricane Michael	4	10/11/2018	Making landfall as a Category 4 hurricane in Florida's Bay County, this storm impacted Charleston County by bringing 50 mph winds which dismantled many trees and power lines plus a storm surge measured at 2.07 ft in Charleston Harbor. Charleston County saw no lost lives, although the storm directly caused 16 casualties and 43 indirectly, according to the NOAA.
Hurricane Dorian	3	9/5-9/6/2019	Made landfall in the Bahamas as a Category 5 hurricane, weakening to a Category 2 off the coast of Florida, and brushed the coast of South Carolina. It then again made landfall as a Category 2 Hurricane in Cape Hatteras, NC.
Hurricane Isaias	1	8/2/2020-8/4/2020	Isaias made its closest approach to Charleston County as it passed by the Santee River about 25 miles offshore as a Category 1 hurricane. The storm did bring tropical storm force wind gusts, and some parts of northeast Charleston County received upwards of 7 inches of rain. The storm remained just offshore and its arrival did not align with high tide, sparing the County from more severe impacts and any major flooding.
Hurricane Ian	1	9/30/2022	After reaching it's peak at a Category 5 hurricane in Dry Tortugas, Florida, Hurricane Ian weakened to a Category 1 where it made landfall approximately 60 miles north of Charleston County. The coast of South Carolina experienced winds up to 80 mph and rainfall up to 10.75 inches, issuing a flash flood warning. Heavy rainfall led to inundation of about 2 to 4 feet. Some residents experienced power outages and downed trees. It managed to weaken more and shift northeast into North Carolina.

Hurricane Probability for each Jurisdiction

Probability

From January 1st, 1950 to May 1, 2022, Charleston County experienced 78 hurricane type events, from named hurricanes to tropical storms/depressions. Hurricane Hugo is known to be the Region's 100-year storm since it hit the area directly and was the most devastating hurricane event for the Region. A 100-year storm has a 1% probability of occurring at that location in any given year. Encountering a "100-year storm" on one day does not decrease the chance of a second 100-year storm occurring in that same year or any year to follow. The most recent hurricane event was Hurricane Ian in September 2022. The entire Region is highly likely during each year of being affected by hurricane type events, either directly or by the remnants of a hurricane, tropical storm or a tropical depression (National Weather Service). Given the records and historical data, the chance of a storm to affect overall Charleston County is 49%. Oceanfront jurisdictions (Folly Beach, Isle of Palms, Seabrook Island, Kiawah Island and Sullivan's Island) have an increased risk of some elements of a hurricane (storm surge and erosion), but all jurisdictions have an equal risk of being affected by a hurricane. The vulnerability and impact of the hazard is discussed later in the Plan.

Likelihood of Event Any Year
1. 0-25% chance
2. 26-50% chance
3. 51-75% chance
4. 76-100% chance

Hurricane Probability for each Jurisdiction	
Jurisdiction	**Probability**
Unincorporated Charleston County	2
Town of Awendaw	2
Town of Hollywood	2
Town of James Island	2
Town of Lincolnville	2
Town of McClellanville	2
Town of Meggett	2
Town of Ravenel	2
Town of Rockville	2
Town of Seabrook Island	2
City of Charleston	2
City of Folly Beach	4
City of Isle of Palms	2
City of North Charleston	2
Town of Kiawah Island	2
Town of Mt. Pleasant	2
Town of Sullivan's Island	2
Charleston County Parks & Recreation Commission	2
Charleston County School District	4
Charleston Water System	2
College of Charleston	2
Cooper River Parks & Playground Commission	2
James Island Public Service District Commission	2
Mt. Pleasant Water Works Commission	2
North Charleston District	2
North Charleston Sewer District	2
Roper St. Francis Healthcare	2
St. Andrews Parish Park & Recreation Commission	2
St. Andrews Public Service District	2
St. John's Fire District Commission	2
St. Paul's Fire District Commission	2

4.1– Flooding

Background

Flooding is the most frequent and costly natural hazard in the United States and are a potential threat for most areas in the U.S. every day. The National Flood Insurance Program defines a flood as a general and temporary condition of partial or complete inundation of normally dry land. Flooding is simply the overflow of water that submerges land which is usually dry. The National Weather Service monitors conditions around the clock that may lead to flooding. Flooding can occur around the United States and the Charleston Region due to heavy precipitation, tropical storms/hurricanes, stream and river basin topography problems, dam failure, and drainage problems. According to the National Oceanic and Atmospheric Administration (NOAA), about three fourths of all presidential disaster declarations are due to flooding. Non-hurricane related flooding events occur each year with variation in intensity and are usually classified in the following three categories: coastal flooding, flash flooding, and general flooding. The National Weather Service also categorizes flooding in relation to their potential damage in three categories: Minor, Moderate and Major. As of January 2021, the adopted FIRM for Charleston County has a map effective date of January 29, 2021.

Classification

Classifying floods is often very diverse in their meaning and are always broadly classified into different categories. Most of the flooding that occurs in the Charleston Region can be labeled as Coastal Flood, Flash Flood, and the general term Flood according to the National Oceanic and Atmospheric Administration (NOAA).

Coastal Flood: Flooding of coastal areas are due to the vertical rise above normal water level caused by strong, persistent onshore wind, high astronomical tide, and/or low atmospheric pressure, resulting in damage, erosion, flooding, fatalities, or injuries. Coastal areas are defined as those portions of coastal land zones (coastal county/parish) adjacent to the waters and bays of the oceans. Farther inland, the Storm Data preparer must determine when and where to encode a flood event as Flash Flood or Flood.

Flash Flood: A rapid and extreme flow of high water into a normally dry area, or a rapid water level rise in a stream or creek above a predetermined flood level, beginning within six hours of the causative event (e.g., intense rainfall, dam failure, ice jam-related), on a widespread or localized basis. Ongoing flooding can intensify to flash flooding in cases where intense rainfall results in a rapid surge of rising flood waters. Flash floods do not exist for two or three consecutive days.

Flood: A flood is any high flow, overflow, or inundation by water which causes or threatens damage. In general, this would mean the inundation of a normally dry area caused by an increased water level in an established watercourse, or ponding of water, generally occurring more than 6 hours after the causative event, and posing a threat to life or property. This can be on a widespread or localized basis.

National Weather Service Flood Categories	
Category	Damage Description
Minor	Minimal or no property damage but with some public inconvenience.
Moderate	Inundation of secondary roads, some evacuation may be required, and higher elevation necessary to save property.
Major	Extensive inundation and property damage. Evacuation of people and closure of both primary and secondary roads.

Source: National Weather Service

A Flood hazard is a serious threat to everyone in the Charleston Region because of its low elevation and frequency of storms. The Charleston Region's worst experience with flooding came when Hurricane Hugo hit with a storm surge that reached 19.3 feet which flooded both coastal and inland areas. Flooding events occur each year with great variation throughout the Charleston Region but the impact of such flooding events is completely dependent upon the area.

Location

Flooding can occur throughout most of the Charleston Region since about 68% resides within a floodplain. Floodplains are designated by the frequency of the flood that is large enough to cover them. Flood frequencies are determined by plotting a graph of the size of all known floods for an area and calculating how often floods occur. The Federal Emergency Management Agency (FEMA) identifies floodplain areas by producing Flood Insurance Rate Maps (FIRM). These maps show all locations near major bodies of water, and show base flood elevations and floodplain boundaries like the 100-year floodplain boundaries. 100-year flood event is a 1% probability of occurring in any given year. The roughly 68% of the areas located in the floodplain are exposed to the threat of floods but that does not mean the other areas are not vulnerable to a flash flood or flooding events. Damaged infrastructure and roadways can limit mobility for citizens. All areas can experience flooding hazards.

Flood Prone Areas of Charleston County	
Jurisdictions Serviced by Charleston County	***Area***
Unincorporated Charleston County	Woodland Shores, James Island
	Capri Isle Area, West Ashley
	Boone Hall Dr, West Ashley
	Main Rd at Hwy 17, Johns Island
Town of James Island	Lighthouse Point (tidal)
	Oakcrest (stormwater)
	Seaside to Honey Hill area (Stormwater)
	Harborview by James Island Connector (Tidal)
	Battery Island Drive (Tidal)
	Whitehouse Plantation (Stormwater and Tidal)

		Fort Johnson Road at various places (Stormwater)
		McCall's Corner (Stormwater)
		Bayfront (Stormwater)
		Wambaw (Stormwater)
Town of McClellanville		Properties that are adjacent to Jeremy Creek, which runs through town and several drainage ditches that overflow during heavy rain and flooding events
		Properties and the right-of-way of McClellan Avenue. Drainage does not flow to nearby drainage canal
		Heavy rain drainage produces ruts in dirt road portion on either side of the creek bridge on Kit Hall Road
Town of Awendaw		All of Highway 17 ditches and pipes
		All of Doar Road ditches and pipes
		Land along Sam White Canal
		Land along Wilson Cemetary Canal
		All of Seewee Road ditches and pipes
Town of Meggett		Quigley Road and Ethel Post Office Road
		Quigley Road (roughly 1000 feet from Ethel Post Office intersection)
		Highway 165 between Meggett Bridge (Ethel Post Office) and Metal Trades
		Coastline Road
		Ethel Post Office near Petersfield Neighborhood (across from L.E.A.R.N. facility)
		Lowcountry Leadership Charter School – flooding and heavy rains have cause wastewater backups over the last 6 years.
Town of Lincolnville		No areas of concern
Town of Ravenel		Savannah Hwy and Hwy 165
Town of Rockville		No areas of concern
Town of Seabrook Island		Seabrook Island Road (Landfall Way to Freshfields Traffic Circle)
		Andell Bluff Boulevard (Near Marina Entrance)
		Bohicket Creek Place pond
		Discharge at Oyster Catcher and Catesbys Bluff
		Causeways on Marsh Gate, Marsh Haven, Captain Sams and Deer Point
		Cattail Pond Road
		Seabrook Island Road near Andell Way
		Gatehouse Area
		SIR and Wood Duck check valve outfall road
		Ocean Winds #7 adjacent to Treeloft Trace
		Ocean Winds #11 drainage channel outfall behind Sealoft Villas
		Pond beside #10 Crooked Oaks green
Town of Hollywood		Baptist Hill Road and Toogoodoo Road
		Toogoodoo and Kings Path
		Toogoodoo and Sam King

		Toogoodoo and Erica Place
		Davison Road @US 17
		Ceva Road @ Highway 162
Jurisdiction Not Serviced by Charleston County		***Area***
City of Folly Beach		Tabby Lane
		9th, 10th, 11th Block East Arctic
		6th, 7th Block East Ashley
		12th Block East Ashley
		9th,10th, 11th Block East Cooper
		10th Block East Erie
		Seacrest Lane
		4th Block East Indian
		2nd, 3rd Block East Erie
		1st,2nd, 3rd block East Huron
		1st block East Indian
		Center Street between Ashley and Arctic Ave
		1st, 2nd, 3rd 4th Block West Indian
		Shadow Race Lane, Sandbar Lane, and Michigan Avenue
		2nd Block West Hudson
		5th, 6th, 9th and 10th Block West Ashley Ave
		9th Street West and Red Sunset
		Folly Road at Folly Creek Bridge (north side of bridge) during storms and King tides
City of Charleston		Cainhoy / Daniel Island o Cooper River and Wando River edges o Pinopolis Dam inundation zone
		James Island • Road surfaces below 8' NAVD88 are susceptible to flooding • Bel Air neighborhood • Charleston Harbor and Stono River edges • Creek Point neighborhood • Cross Creek basin and neighborhood, including Fleming Rd. and Stir Creek Rd. • Fort Lamar neighborhood, including Battleground Rd. • Harbor View Rd. east and south of Theresa Dr. • Inverness basin, including County Club II neighborhood

- Lawton Bluff – Whitehurst neighborhood
- Peas Hill basin, including Westchester neighborhood and Seacroft Rd.
- Pinopolis dam failure inundation areas
- Riverland North, South, and West basins, including Riverland Dr.
- Rivers Point basin and neighborhood
- Seaside Estates at Seaside Plantation neighborhood
- Stiles Point Harbor neighborhood
- Wambaw Creek basin, including Marlborough neighborhood and Central Park Rd.
- Willow Walk neighborhood, including Shoreham Rd.

Johns Island

- Barberry Woods neighborhood
- Headquarters Plantation neighborhood
- Main Rd., low areas
- River Rd., low areas
- Stono River edge

Peninsula

- Road surfaces below 8' NAVD88 are susceptible to flooding
- Ansonborough neighborhood, including Society St., Washington St., Pinckney St., Anson St., and Hasell St.
- Ashley River and Cooper River edges
- Beaufain basin, with many locations including Harleston Village neighborhood, Beaufain St., Ashley Ave., Barre St., Rutledge Ave., Gadsden St., and Wentworth St.
- Calhoun St. west basin, with many locations including the Medical District, Cannon Park and surrounding streets, Calhoun St., Ogier St., and Jonathan Lucas St.
- Fishburne St. basin, including Gadsden Green neighborhood, Hagood St., Fishburne Ave., and Ashley Ave.
- Huger St. basin, including the King St. and Huger St. intersection
- Market St. basin and surrounding area, including East Bay St., North Market St., South Market St., Concord St., and Vendue Range
- North Eastside neighborhood, including Bridgeview apartment complex, Morrison Dr, N. Nassau St., Cool Blow St., and Romney St.; and N. Romney St.
- Pinopolis dam failure inundation zone
- South Eastside neighborhood, including Drake St., Aiken St., Cooper St., America St., Hanover St., and South St.
- South of Broad neighborhood, with many locations including Murray Blvd., South Battery, East Battery, and Tradd St.
- Spring St. basin, with many locations including Westside neighborhood, President St., Hagood St., Septima Clark (Crosstown), and Ashley Ave.

		• Wagener Terrace neighborhood, including Rutledge Ave. and Gordon St.
		West Ashley • Road surfaces below 8' NAVD88 are susceptible to flooding • Ashley Hall Plantation basins, including Ashley Hall Plantation, Rice Hall, Marsh Cove, and Ashley Harbor neighborhoods • Ashley River and Stono River edges • Byrnes Downs basin, including Byrnes Downs neighborhood • Church Creek basin, including, Bees Ferry Rd., and Shadowmoss, Hickory Hill, Hickory Farm, Village at Providence, and Forest Lakes Extension neighborhoods • Crescent neighborhood • Dupont-Wappoo basin • Forest Acres basin, including North Forest Acres neighborhood • Northbridge Terrace neighborhood • Parkshore neighborhood • Parkwood basins, including Farmfield, Parkwood Heights, and Indigo Point neighborhoods • Pinopolis dam failure inundation areas • Saint Andrews basin, including East and West Oak Forest neighborhoods • Sherwood Forest neighborhood • US 17 / Hwy. 61 split • Westwood Basin • Windermere / South Windermere, including William Ackerman Ln.
		Sherwood Forest neighborhood
City of North Charleston		Spruill Avenue (southern end)
		Azalea Drive
		Filbin Creek
		Ashley Phosphate and Palmetto Commerce Parkway
		Ashley River and Cooper River Waterfront subdivisions
Town of Kiawah Island		Entire Island with special regard to land and property along the Kiawah River
Town of Sullivan's Island		Station 26.5 to Station 28.5 drainage basin; Currently working with SCDOT, OCRM to replace 8 inch pipe with a 30 " pipe from Marshall Blvd to Jasper Blvd and to create improved outfall to marsh.
		Station 30 and Brownell Ave; Low area with slow drainage.
		Station 18 to 19; Low area with no drainage currently working with the engineers designing a force main system.
		Station 26 and Brownell

		Drainage Outfalls; Currently working with SCDHEC/OCRM to find solution to silting issues at all outfalls to marsh on the Island.
Town of Mount Pleasant	Capacity/Stormwater	Hobcaw Point
		Groves
		Greenhill
		Brookgreen
		Shemwood I/ Armsway
		Cooper Estates/ Millwood
		Baytree
		Isaac German Watershed (six mile to Chas National & Hamlin/ Boston Grill)
		Six Mile areas (Gulf Estates, Palmetto Fort, etc.)
		Remley's Point
		Bayview Acres
		Hickory Shadows
		Rosemead
		Wakendaw
		Old Village
		Old Mount Pleasant
		Snee Farm
		Four Mile
		Ten Mile
		Copahee
		Philips
		Guerin's Bridge
		Snowden
	Tidal	2nd Avenue
		3rd Avenue
		5th Avenue
		6th Avenue
		Harbor Point Drive
		Church Street
		Shem Creek Marine/ Restaurants/ Ronnie Boals Area
		Haddrell Street
		Simmons Street Boat Landing
		Mill Street
		William Street/ Royall Avenue to Center Street
		William Street Extension
		Oakhaven
		Longpoint Road Causeway/ Bridge
		Darrell Creek Trail at Commonwealth
		Park West

		Dunes West
		Highway 41
		Bowman Road
		Shemwood/ Brookgreen
		Home Farm
		Rivertowne Area
		Seafood Road
City of Isle of Palm		Forest Trail subdivision
		41st Avenue at Waterway Boulevard
		25th Avenue at Waterway Boulevard
		Driftwood Lane
		19th Avenue at Myrtle Boulevard
		Merritt Boulevard
		Palm at 32nd Avenue
		Palm and Charleston Blvd.

Other Participating Partners		***Area***
Charleston County		All parks with special attention to 3 beach parks (Isle of Palms, Folly Beach, and Beachwalker)
Recreation		Caw Caw Interpretive Center
		Campground of James Island County Park (drainage issues)
		Lincoln and McClellanville Campuses, McClellanville, SC
Charleston County School District		Sullivan's Island Elementary School, Sullivan's Island, SC
		Old James Island Middle Campus, Charleston, SC
		Mount Pleasant Academy, Mount Pleasant, SC
		Charleston County School District 75 Calhoun ST Building, Charleston, SC
		Buist Academy, Charleston, SC
		Sanders-Clyde Elementary School, Charleston, SC
		Burke High School, Charleston, SC
		Simons Pinckney Elementary School, Charleston, SC
		Mitchell Elementary School, Charleston, SC
		James Simons Elementary School, Charleston, SC
		Mary Ford Elementary School, North Charleston, SC
		Child and Family Development Head Start Program Campus at Mary Ford Elementary School, North Charleston, SC
		Pepperhill Elementary School, North Charleston, SC
		Saint Andrews Elementary School, Charleston, SC
		Oakland Elementary School, Charleston, SC
		Murray Lasane Elementary School, Charleston, SC
		James Island Elementary School, Charleston, SC

		Mamie Whitesides Elementary School, Mount Pleasant, SC
		Harbor View Elementary School, Charleston, SC
		Archer Campus. Charleston, SC
Cooper River Parks and Playground Commission		Gethsemani Community Center - 2449 Beacon St.
		Perry-Webb Community Center - 3200 Appleton Ave.
		Murray Hill Park - Bonds Ave.
James Island Public Service District		The “Causeway” at the end of Sol Legare (Between 2179 and 2360 Sol Legare Rd)
		Signal Point Road
		McCalls Corner
		Oakcrest Subdivision
St Johns Fire District		Main Rd @ River Rd
		Betsy Kerrison @ the KI & SBI traffic circle
		Kiawah Island Parkway
		Governors Drive
		Seabrook Island Rd
North Charleston Sewer District		Fire station at 7159 Stall Rd
		Spruill Avenue (southern end)
		Azalea Drive
		Filbin Creek
		Ashley Phosphate and Palmetto Commerce Parkway
		Ashley River Road and Cooper River Waterfront subdivisions
St Pauls Fire District		Parkers Ferry and Greenwood Roads
		Station #3 (Edisto Island) Cat 1-5 can be affected by the storm surge - fire station may not flood but access to the fire station would be cut off.
		Station #6 (Stono Ferry) same situation as Station #3 - access cut off by flooding.
		Station #9 (Peter's Field) Same as above however the Station may sustain water intrusion damage.
		Station #7 Same as station #3 mainly access cut off.
		Station #8 (Parkers Ferry) Same as Station #3 with access being the major concern.
Roper St. Francis Healthcare		All streets surrounding Roper Hospital Downtown experience flooding during severe storms including at Doughty Street, Lucas Street, Calhoun Street, President Street, Barre Street, Halsey Blvd and Courtney Street (Refer to City of Charleston's Calhoun West Basin). Additionally, the Roper St. Francis Hospital is within the Church Creek Basin in the West Ashley area of Charleston and is at risk for potential flooding.

College of Charleston		The intersection of Wentworth and Coming floods heavily at highest tides and tides with rain, and HEAVY downpours due to drainage issues in the city. This affects two buildings(McConnell Res Hall and 112-114 Wentworth); one of the buildings we are vacating due to the massive amount of damage and repairs necessary to correct past flood damages and the expense of mitigating the facility.
		Other main flooding area, again due to the city drains affecting two buildings(Robert Scott Smalls(RSS) and Health Services) is College Way and Calhoun. As part of our FEMA repairs from Matthew we installed flood gates on RSS, and continue to sandbag Health Services when there is flooding in this area.
		Our new possession at 176 Lockwood parking area floods constantly due to its low lying location
St. Andrew's PSD		Service area of Shadowmoss
Mt. Pleasant Workworks Commission		No areas of concern for flooding.
St. Andrew's Parks and Playground		1095 Playground Road Brinker Field
		1095 Playground Road Administrative Office
		1095 Playground Road Gymnasium
		1642 Sam Rittenberg Blvd Pool Pump Room
		1710 Dogwood Road Garage
Charleston Water System		No areas of concern for flooding.

Also refer to attachment 6-C: Drainage Improvement Projects for more information.

Historical Occurrences

Flooding Events Between Jan 1, 1950 – April 30, 2022		
Charleston County	376 Events	**Total Property Damage: $21,364,000**
Town of Awendaw	9 Events	**Total: $736,050**
City of Charleston	52 Severe Events	**Total: $2,423,100**
City of Folly Beach	5 events	**Total: $20,000**
Town of Hollywood	1 events	**Total: $0**
City of Isle of Palms	7 Events	**Total: $728,550**
Town of James Island	8 Events	**Total: $ 728,550**
Town of Kiawah	0 Events	**n/a**
Town of Lincolnville	1 Event	**Total: $728,550**
Town of McClellanville	0 Events	**n/a**
Town of Meggett	2 Event	**Total: $728,550**
Town of Mt Pleasant	14 Events	**Total: $500**
City of North Charleston	8 Events	**Total: $413,500**

Town of Ravenel	1 Event	**Total: $500**
Town of Rockville	3 Events	**Total: $728,550**
Town of Seabrook Island	0 Events	**n/a**
Town of Sullivan's Island	1 Event	**Total: $0**

**NOAA Storm Events Database*

These flooding events were mainly the result from heavy rain or severe weather (thunderstorms, tropical storms, heavy rain) incidents that caused flooding in the Charleston Region. Charleston broke its record for number of annual-flood days in 2019 with a total of 89 annual-flood days. Compared to 2000, current trends in flooding have increased by about 256 percent on average. Additionally, NOAA reports that the City of Charleston experienced two flooding events at the Citadel on July 20th, 2018 and December 14th, 2018 that amounted to $22,500 in property damage in total. In 2020, the Charleston Harbor tidal gauge recorded 68 tidal floods, which is second only to the record set in 2019.

Probability

Since about 68% of the Region is within the floodplain, those areas are highly likely to experience a flood event at any given point in a given year. Given the 324 events over the years of 2009 to 2020, there is a 90% chance of a flooding event to occur. However, with the Region located on the coast, low elevation, and the unpredictability of severe weather, any jurisdiction in Charleston County may be affected by a flooding event. There are specific jurisdictions that are higher risk for flooding events, including those located closer to waterways and beaches, like Town of Sullivan's Island or Town of Kiawah Island; those located at lower elevations like the City of Charleston; and those jurisdictions who have more VE/AE (special flood hazard zones). This can be checked at the Charleston County website and utilize the FEMA floodplain maps to determine a property's flood zone. More specifically, oceanfront jurisdictions have a higher probability to coastal flooding (Folly Beach, Isle of Palms, Seabrook Island, Kiawah Island, Sullivan's Island), as do island areas (James Island, Rockville, McClellanville, Seabrook Island, Meggett and City of Charleston). Some portions of all other jurisdictions (City of North Charleston, Hollywood, Mt. Pleasant) except for Lincolnville have some areas that would experience coastal flooding. Areas that are inland and/or have less area that is coastal, have a high probability of flooding. The vulnerability and impact of the hazard is discussed later in the Plan.

Likelihood of Event Any Year
1. 0-25% chance
2. 26-50% chance
3. 51-75% chance
4. 76-100% chance

Flooding Probability for each Jurisdiction	
Jurisdiction	**Probability**
Unincorporated Charleston County	3
Town of Awendaw	3
Town of Hollywood	3

Town of James Island	4
Town of Lincolnville	1
Town of McClellanville	4
Town of Meggett	2
Town of Ravenel	2
Town of Rockville	3
Town of Seabrook Island	4
City of Charleston	4
City of Folly Beach	4
City of Isle of Palms	4
City of North Charleston	3
Town of Kiawah Island	4
Town of Mt. Pleasant	3
Town of Sullivan's Island	4
Charleston County Parks & Recreation Commission	3
Charleston County School District	4
Charleston Water System	3
College of Charleston	3
Cooper River Parks & Playground Commission	3
James Island Public Service District Commission	4
Mt. Pleasant Water Works Commission	3
North Charleston District	3
North Charleston Sewer District	2
Roper St. Francis Healthcare	4
St. Andrews Parish Park & Recreation Commission	3
St. Andrews Public Service District	3
St. John's Fire District Commission	3
St. Paul's Fire District Commission	3

– Sea Level Rise

Background

Over the years, sea level rise has threatened the world and coastal communities as more water is added to the ocean and more development occurs at the coast. With the addition of other climate driven events such as storms and flooding, irreversible change is predicted to occur in the coastal regions, especially Charleston County. There are two main causes of sea level rise: the melting of land ice and the expansion of warm seawater. Both phenomena add water to the overall Global Mean Sea Level (GMSL). Even small amounts of sea level rise drastically affect flooding incidences and can make rare floods more common. The current rate of sea level rise is 3.6 mm per year. A century ago the rate was about half the amount. This shows that over time the sea level is rising faster as time goes on. Over the past century sea level has risen 10 to 20 centimeters

overall. These data measurements and predictions come from core samples, tide gauge readings and satellite imagery. Tides and storm surge are two indicating factors that demonstrate how a community will be affected by sea level rise in the future. Tides are the daily submergence and

reemergence of land due to the rising and falling of the sea based on the lunar cycle. Tides are good indicators of sea level as they are predictable. Tides are rising and flooding coastal zones more frequently and at previously unaffected areas as sea level rises. King tides which are higher than normal high tides coinciding with the alignment of the earth, moon and sun. These tides bring an additional amount of water on land, and in the future these king tides will be the normal high tides. Storm surge is also increasing to become higher than normal as sea level rises with storms becoming more severe and affect areas further inland. Sea level rise can be categorized into two types: eustatic and isostatic, and communities can be ranked based on their coastal vulnerability index.

Classification

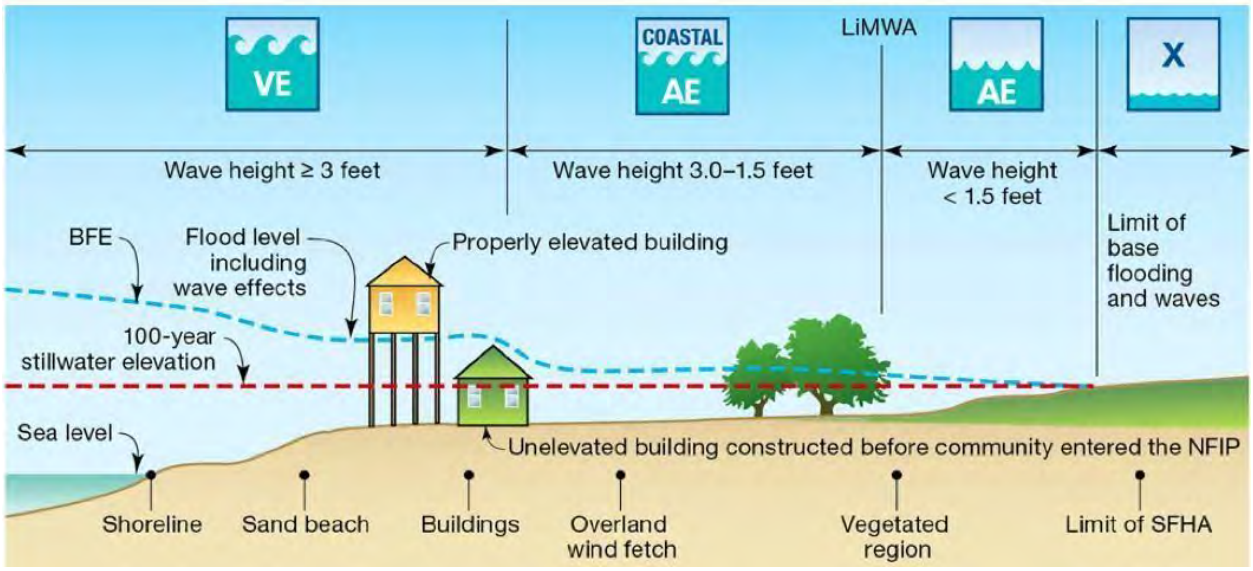
Classifying sea level rise is broad in nature, and case studies of individual areas take a closer look at the effects of sea level rise. There are two types of sea level rise: eustatic and isostatic. Eustatic refers to the global sea level rise and major trends being observed. Isostatic refers to the local sea level rise based on shoreline changes in the area. Sea level rise is occurring globally, but at different scales. Some areas are affected more than others due to their coastal vulnerability, if land is sinking or rising, amount of urbanization and development, and proximity to glaciers. The topography and landforms of Charleston consists of barrier islands and wetlands, which tend to be low lying areas more susceptible to sea level rise. According to the following tables, the Charleston County area would be classified as "very high" on the coastal vulnerability index.

	Ranking of coastal vulnerability index				
	Very low	Low	Moderate	High	Very high
VARIABLE	1	2	3	4	5
Geomorphology	Rocky, cliffed coasts Fiords Fiards	Medium cliffs Indented coasts	Low cliffs Glacial drift Alluvial plains	Cobble beaches Estuary Lagoon	Barrier beaches Sand Beaches Salt marsh Mud flats Deltas Mangrove Coral reefs
Coastal Slope (%)	>0.115	0.115 – 0.055	0.055 – 0.035	0.035 –0.022	< 0.022
Relative sea-level change (mm/yr)	< 1.8	1.8 – 2.5	2.5 – 3.0	3.0 – 3.4	> 3.4
Shoreline erosion/ accretion (m/yr)	>2.0	1.0 –2.0 Accretion	-1.0 – +1.0 Stable	-1.1– -2.0	< - 2.0 Erosion
Mean tide range (m)	> 6.0	4.1 – 6.0	2.0 – 4.0	1.0 –1.9	< 1.0
Mean wave height (m)	<0.55	0.55 – 0.85	0.85 – 1.05	1.05 –1.25	>1.25

Source: US Department of Interior & US Geological Survey

Location

Flooding and tidal flooding is a good indicator of what areas are most at risk for sea level rise and the stressors that accompany it: nuisance flooding, increased storm surge, loss of property. Land in the most susceptible flood zones (AE and VE) will be most affected as sea level continues to rise. Areas of the most susceptibility include Eastern Folly Beach and Morris Island, the tips of Sullivan's Island, the northeastern coast of James Island near SC-30 and Harbor View Rd., all of Kiawah Island, especially laterally along the banks of the Kiawah River, all of Seabrook and Edisto's coastline, eastern Isle of Palms and Caper's Island, all of Awendaw's coastline, and the northeastern coastline of Murphy Island and the coast of the Dunes West Golf and Resort Club. Below is an illustration of the definitions of the different flood zones:



Amount of Land Area of Charleston County Above Sea Level										
Elevation above spring high water (m)	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00
Area of Land (sq. km)	108.6	175.5	223	305.5	344.2	421.8	464.9	587.2	684.4	858.2
Percent of Total Land Cover	4.6%	7.4%	9.4%	12.9%	14.5%	17.8%	19.6%	24.8%	28.9%	36.2%

Occurrences

King tides, which is the above average high tide occurring when once a lunar cycle, are a good predictor of sea level rise. There were 76 more king tides than predicted in 2021 and the highest observed tide was over a foot higher than the highest predicted tide. King tides give a community a glimpse into what it will be like to live with a higher sea level. Communities can expect more king tides in the future as sea level continues to rise.

Duration and Depth* of King Tides in Charleston Area from January 2014 – December 2022				
Year	Predicted Number of Tides	Observed Number of Tides	Highest Predicted Tide (ft)	Highest Observed Tide (ft)
2014	28	46	7	7.6
2015	40	111	7.2	8.7
2016	49	82	7.2	7.9
2017	34	111	7	9.9
2018	44	72	6.9	8.8
2019	34	87	7	8.07
2020	39	96	7.2	8.2
2021	30	106	7.1	8.52
2022	13	94	6.8	8.3

Average	34.56	89.44	7.04	8.44
Total	298	711	--	--

*Depth is based off of the Charleston Harbor Tide Gauge
**Available data from 2014 onwards gathered through MyCoast.org backed by SC DHEC

Probability

While sea level rise predictions vary on how much the sea level will rise, there is a general consensus that sea level will continue to rise. According to the Intergovernmental Panel on Climate Change (IPCC), the ocean is expected to rise 11 to 38 inches by the year 2100. This would have dramatic effects on Charleston County and other coastal communities across the East Coast.
It is predicted that the number of king tide events will continue to increase. Below is a list of the predicted dates of king tides from SC Department of Health and Environmental Control. There is a 100% chance that all jurisdictions will feel the effects of sea level rise though the same effects may not be felt everywhere in the County. The vulnerability and impact of the hazard is discussed later in the Plan. Those areas located in flood zones will experience more of the effects, namely water damage to existing infrastructure, road damage, traffic hazards, personal property damage, etc. The vulnerability and impact of the hazard is discussed later in the Plan.

2020 Predicted King Tides	2021 Predicted King Tides	2022 Predicted King Tides
April 8-10	April 26-29	May 15-18
May 6-9	May 24-28	June 13-16
June 4-6	June 22-25	July 12-15
August 18-20	July 22-24	August 10-13
September 15-21	October 7-10	September 7-10
October 14-20	November 4-8	October 26-28
November 13-18	December 3-7	November 23-26
December 13-16		December 23-25

Likelihood of Event Any Year
1. 0-25% chance
2. 26-50% chance
3. 51-75% chance
4. 76-100% chance

Sea Level Rise/King Tide Probability for each Jurisdiction	
Jurisdiction	**Probability**
Unincorporated Charleston County	3
Town of Awendaw	4
Town of Hollywood	3
Town of James Island	3
Town of Lincolnville	1

Town of McClellanville	3
Town of Meggett	2
Town of Ravenel	2
Town of Rockville	2
Town of Seabrook Island	4
City of Charleston	4
City of Folly Beach	4
City of Isle of Palms	4
City of North Charleston	2
Town of Kiawah Island	4
Town of Mt. Pleasant	3
Town of Sullivan's Island	4
Charleston County Parks & Recreation Commission	3
Charleston County School District	2
Charleston Water System	3
College of Charleston	3
Cooper River Parks & Playground Commission	2
James Island Public Service District Commission	4
Mt. Pleasant Water Works Commission	3
North Charleston District	2
North Charleston Sewer District	2
Roper St. Francis Healthcare	4
St. Andrews Parish Park & Recreation Commission	3
St. Andrews Public Service District	3
St. John's Fire District Commission	4
St. Paul's Fire District Commission	4

– Earthquake

Background

An earthquake is a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. Most earthquakes are caused by the release of stresses accumulated as a result of the rupture of rocks along opposing fault planes in the Earth's outer crust. These fault planes are typically found along borders of the Earth's 10 tectonic plates. The areas of greatest tectonic instability occur at the perimeters of the slowly moving plates, as these locations are subjected to the greatest strains from plates traveling in opposite directions and at different speeds. Deformation along plate boundaries causes strain in the rock and the consequent buildup of stored energy. When the built-up stress exceeds the rocks' strength, a rupture occurs. The rock on both sides of the fracture is snapped, releasing the stored energy and producing seismic waves, generating an earthquake. Ground acceleration caused by earthquakes has the potential to destroy buildings and infrastructure and cause loss of life. Aftershocks are typically smaller than the main

shock, and can continue over a period of weeks, months, or years after the initial earthquake is felt.

In addition to the effects of ground acceleration, earthquakes can also cause landslides, and liquefaction under certain conditions. Liquefaction occurs when unconsolidated, saturated soils exhibit fluid-like properties due to intense shaking and vibrations experienced during an earthquake. Together, ground shaking, landslides, and liquefaction can damage and destroy buildings, disrupt utilities (i.e. gas, electric, phone, water), and trigger fires.

Classification

Earthquakes are measured in terms of intensity and magnitude. Magnitude is measured with the Richter Scale, which is an open-ended logarithmic scale that describes the energy of an earthquake through the measure of shock wave amplitude. Intensity uses the Modified Mercalli Intensity (MMI) scale to measure the effects of an earthquake at a particular place.

Magnitude and Intensity Rating	
Richter Magnitude Scale	Typical Maximum MMI
1.0 to 3.0	I
3.0 to 3.9	II to III
4.0 to 4.9	IV to V
5.0 to 5.9	VI to VII
6.0 to 6.9	VII to IX
7.0 and Higher	VIII or Higher

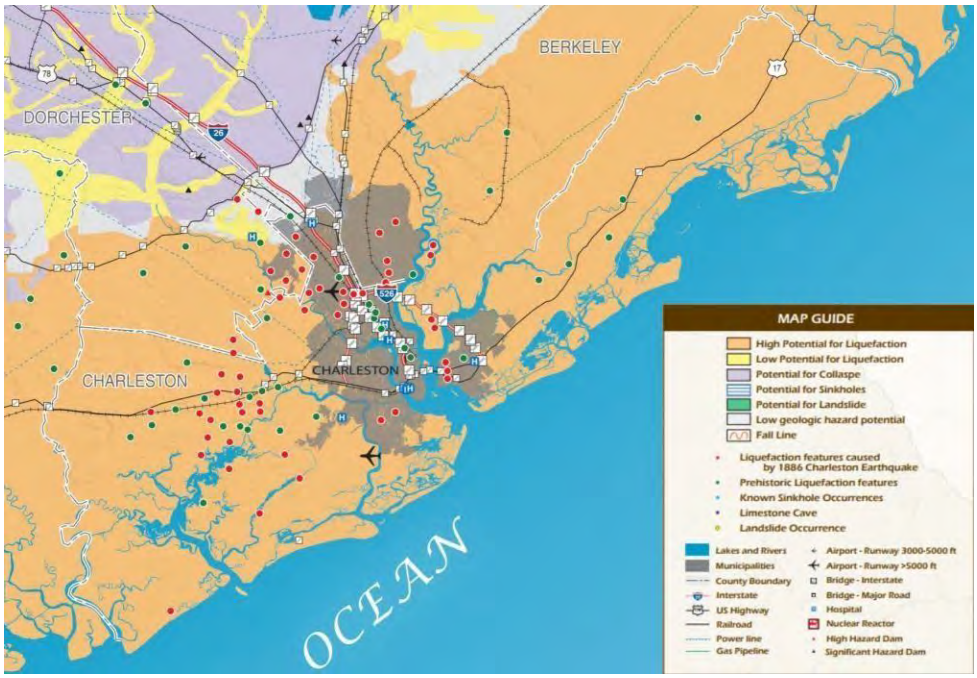
Modified Mercalli Intensity Scale		
Scale	Intensity	Description of Effects
I	Instrumental	Detected only on seismographs.
II	Feeble	Some people feel it.
III	Slight	Felt by people resting; like a truck rumbling by.
IV	Moderate	Felt by people walking.
V	Slightly Strong	Sleepers awake; church bells ring.
VI	Strong	Trees sway; suspended objects swing, objects fall off shelves
VII	Very Strong	Mild alarm; walls crack; plaster falls.
VIII	Destructive	Moving cars uncontrollable; masonry fractures, poorly constructed buildings damaged.
IX	Ruinous	Some houses collapse; ground cracks; pipes break
X	Disastrous	Ground cracks profusely; many buildings destroyed; liquefaction and landslides widespread.
XI	Very Disastrous	Most buildings and bridges collapse; roads, railways, pipes and cables destroyed; general triggering of other hazards.
XII	Catastrophic	Total destruction; trees fall; ground rises and falls in waves.

Source: Federal Emergency Management Agency

The most significant historical earthquakes in Charleston was the 1886 Charleston earthquake. The August 31, 1886 earthquake, with an estimated magnitude of 7.3 struck the Summerville/Charleston area and is the largest historical earthquake to have occurred in the eastern United States and the most destructive, killing 60 people and causing $5 to $6 million dollars (1886 dollars) worth of damage.

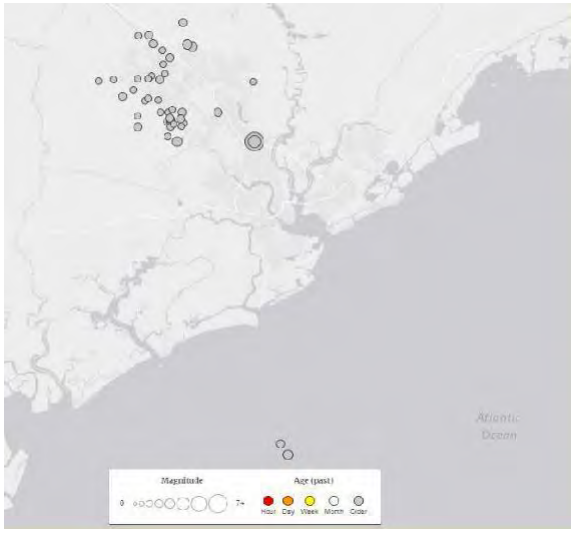
Location

Earthquakes are not an uncommon occurrence in South Carolina. Most earthquakes worldwide occur at plate boundaries when plates stick and then jump past each other. The cause of earthquakes in South Carolina is not so clear; the quakes are located within a plate rather than at a plate boundary. In South Carolina, approximately 70 percent of the earthquakes occur in the Coastal Plain and most are located around three areas west and north of Charleston: Ravenel- Adams Run-Hollywood, Middleton Place - Summerville, and Bowman. Geologically, Charleston lies in one of the most seismically active areas in the Eastern United States. This seismic cluster is known as the Middleton Place - Summerville Seismic Zone (MPSSZ).



Source: SC DNR Geologic Hazard of the South Carolina Coastal Plain 2012

Historical Occurrences



Source: USGS Latest Earthquakes 1800-to-date

Time*	Depth	Magnitude	Location
1817-01-08T09:00:00.000Z		5	South Carolina
1886-09-01T02:51:00.000Z		7.03	South Carolina
1959-08-03T06:08:37.200Z	1	4.4	South Carolina
1974-11-22T05:25:55.500Z	18	4.7	South Carolina
1977-01-18T18:29:13.500Z	5	3	South Carolina

Time*	Depth	Magnitude	Location
1977-12-15T07:15:55.000Z	9	2.5	South Carolina
1977-12-15T19:16:43.100Z	9	3	South Carolina
1978-09-07T22:53:22.300Z	11	2.7	South Carolina
1979-12-07T05:43:35.000Z	15	2.9	South Carolina
1980-09-01T05:44:42.300Z	6	2.7	South Carolina
1981-03-19T04:33:55.720Z	0.1	2.5	South Carolina
1982-03-01T03:33:13.560Z	6.7	3	South Carolina
1983-11-06T09:02:19.820Z	9.6	3.3	South Carolina
1986-09-17T09:33:49.460Z	7.7	2.6	South Carolina
1988-01-23T01:57:16.390Z	7.4	3.3	South Carolina
1989-01-02T16:35:16.270Z	4.9	2.6	South Carolina
1990-02-07T07:41:39.920Z	9.3	2.7	South Carolina
1990-05-11T18:23:33.950Z	6.1	2.6	South Carolina
1990-11-13T15:22:13.010Z	3.4	3.2	South Carolina
1992-08-21T16:31:55.160Z	10	4.1	South Carolina
1995-04-17T13:45:57.800Z	10	3.9	South Carolina
1999-03-29T14:49:36.510Z	5	2.9	South Carolina
2002-11-08T13:29:03.190Z	3.9	3.5	South Carolina
2002-11-11T23:39:29.720Z	2.4	4	South Carolina
2003-02-28T07:02:36.500Z	4.3	2.6	7km SW of Ladson, South Carolina
2003-03-02T17:18:26.500Z	6.5	2.9	7km SW of Ladson, South Carolina
2003-05-05T10:53:49.900Z	11.4	3.1	4km NNW of Summerville, South Carolina
2003-06-12T23:33:17.200Z	10.4	2.6	5km WSW of Centerville, South Carolina
2003-07-19T14:22:21.300Z	5.7	2.5	7km SSW of Ladson, South Carolina
2003-10-14T10:45:38.600Z	7.2	2.5	5km S of Centerville, South Carolina
2003-12-22T23:50:26.000Z	5.6	3	8km SSW of Ladson, South Carolina
2004-05-01T04:16:28.300Z	10.7	2.7	3km ENE of Goose Creek, South Carolina
2004-07-20T09:13:14.400Z	10.3	3.1	7km WSW of Centerville, South Carolina
2004-08-18T03:43:42.400Z	7.7	2.5	0km NE of Summerville, South Carolina

Time*	Depth	Magnitude	Location
2004-11-25T22:58:45.900Z	12.9	2.7	4km NNW of Summerville, South Carolina
2005-11-19T20:02:20.000Z	5	2.6	South Carolina
2008-12-16T12:42:17.520Z	15.39	3.6	5km N of Sangaree, South Carolina
2009-01-29T21:11:27.200Z	6.45	2.5	2km SW of Summerville, South Carolina
2009-05-06T17:07:17.090Z	2.02	2.5	2km N of Summerville, South Carolina
2009-08-29T10:37:13.700Z	4.93	3.2	2km NE of Summerville, South Carolina
2010-05-12T09:03:36.760Z	1.26	2.8	6km SSW of Ladson, South Carolina
2011-10-15T07:02:32.820Z	8.05	2.5	4km WSW of Summerville, South Carolina
2011-12-21T21:38:57.670Z	12.33	2.6	7km SW of Centerville, South Carolina
2012-01-04T07:56:03.800Z	4.94	2.6	3km SSW of Centerville, South Carolina
2012-07-31T04:53:09.290Z	8.21	2.8	5km S of Centerville, South Carolina
2013-09-19T19:14:11.170Z	11.44	2.5	8km WSW of Summerville, South Carolina
2014-03-19T22:38:03.330Z	6.91	3	0km S of Centerville, South Carolina

**Sourced from USGS Latest Earthquakes 1800-to-2014*
A list of all 343 Earthquakes from 1800-Present can be found at USGS Earthquakes

The Charleston Region lies within the meizoseismal area (area of maximum damage) of the 1886 earthquake, but the effects of the 1886 earthquake were felt throughout the eastern United States. The 1886 earthquake had more than 300 aftershocks that occurred for 35 years after the initial earthquake (South Carolina Seismic Network, 1996, July). The 7.3 magnitude earthquake that occurred in 1886 killed 100 people and destroyed or damaged most of the buildings in Charleston and Summerville. The seismic history of the 1886 quake indicates that it erupts on the average every 500 years. But moderate quakes can and do occur here, and not so rarely. Two 3.6 temblors and one 3.2 temblor have rattled Summerville between 2008 and 2013. Also in 2002, a 4.4 magnitude quake erupted in the ocean off Kiawah Island. Summerville had two 4.1 quakes in the 1990s. They did not do much more than rattle nerves. But a 5-magnitude quake would be 10 times stronger, and some 800 of them occur across the globe every year. Moderate quakes are a great

concern to emergency managers. The County has not experienced an earthquake exceeding a 2.5 magnitude since September 2021 (magnitude 3.3).

Probability

Since different magnitude levels are felt from short to long ranges, we can include there is a highly likely chance that the whole Region can experience an earthquake or the aftershocks of one, causing minor to severe damage or loss of life. The earthquake of 1886 was estimated to be a 1 in 500-year event, meaning there is an estimated 0.2% chance of a comparable earthquake happening again any given year. Over the last 5 years, there has been an average of 3.4 small events per year, making the probability of continuing to have small events very likely on any given year for all Charleston County jurisdictions. Because most earthquakes in Charleston are around or below a 2.0 on the Richter scale, damages are minimal if not non-existent across all jurisdictions. Overall, there is a higher probability of a small earthquake happening than a large earthquake occurring at any given year, therefore it is stated that there is 100% chance that an earthquake will occur within the County. The vulnerability and impact of the hazard is discussed later in the Plan. Below is a breakdown of probability of occurrence based on jurisdiction:

Probability of Damaging Earthquake Ground Motion

Based upon the 2014 National Seismic Hazard Map (Petersen et al., 2014), Charleston County lies within the zone of the greatest earthquake hazard on the east coast of the United States. More than 90% of Charleston County can expect to experience damaging earthquake ground motions (>10% of the acceleration of gravity or Modified Mercalli Intensity VI or greater) during a 1 in 475 return period earthquake (i.e., 10% in 50-year probability). For the most densely populated parts of the county (Charleston metropolitan region), this goes up >20% of the acceleration of gravity (or Modified Mercalli Intensity VII or greater). In the northwestern part of Charleston County closest to the source of the 1886 earthquake the expected ground motion during a 1 in 475 earthquake is >30% of the acceleration of gravity (or Modified Mercalli Intensity VIII or greater).

Reference:
Petersen, M.D., Moschetti, M.P., Powers, P.M., Mueller, C.S., Haller, K.M., Frankel, A.D., Zeng, Yuehua, Rezaeian, Sanaz, Harmsen, S.C., Boyd, O.S., Field, Ned, Chen, Rui, Rukstales, K.S., Luco, Nico, Wheeler, R.L., Williams, R.A., and Olsen, A.H., 2014, Documentation for the 2014 update of the United States national seismic hazard maps: U.S. Geological Survey Open-File Report 2014–1091, 243 p., *https://dx.doi.org/10.3133/ofr20141091*.

Likelihood of Event Any Year
1. 0-25% chance

2. 26-50% chance
3. 51-75% chance
4. 76-100% chance

Earthquake Probability for each Jurisdiction	
Jurisdiction	**Probability**
Unincorporated Charleston County	4
Town of Awendaw	2
Town of Hollywood	2
Town of James Island	2
Town of Lincolnville	4
Town of McClellanville	2
Town of Meggett	2
Town of Ravenel	2
Town of Rockville	2
Town of Seabrook Island	2
City of Charleston	3
City of Folly Beach	2
City of Isle of Palms	2
City of North Charleston	4
Town of Kiawah Island	2
Town of Mt. Pleasant	2
Town of Sullivan's Island	2
Charleston County Parks & Recreation Commission	2
Charleston County School District	3
Charleston Water System	3
College of Charleston	3
Cooper River Parks & Playground Commission	4
James Island Public Service District Commission	2
Mt. Pleasant Water Works Commission	2
North Charleston District	3
North Charleston Sewer District	4
Roper St. Francis Healthcare	3
St. Andrews Parish Park & Recreation Commission	3
St. Andrews Public Service District	3
St. John's Fire District Commission	2
St. Paul's Fire District Commission	2

– Tornado

Background

A tornado is a violently rotating column of air forming a funnel-shaped cloud that extends toward the ground from the base of a thundercloud. They are often referred to as a twister or cyclone although cyclone is a term in meteorology to name any closed low-pressure circulation (e.g. hurricane). This violent storm can produce winds up to 300 miles per hour and can move any direction at an average speed of 30 miles per hour. Tornados are most often generated by thunderstorms but sometimes are a result from hurricanes or tropical storms, which is why tornados are a threat to the Charleston Region. Tornados may form at any time of the year, but the peak of events occurs in the spring and early summer from March through June.

Classification

High winds of tornados are the driving force for all damages during a tornado. Picking up debris and turning them into deadly missiles. It is rare to be able to measure pressure changes and wind speeds of a passing tornado, but it is possible to classify the damage. Mostly, tornadoes cause the greatest damage to structures like residential homes that are lightly constructed and hard to remain localized. The Fuijita Scale (F-Scale) was the standard measurement for rating the strength of a tornado. The scale is based on an analysis of damage after a tornado to infer wind speeds. After 2007, the National Weather Service introduced the Enhanced Fuijita Scale (EF-Scale). The new scale considers quality of construction and standardizes different kinds of structures. The only differences between the two are the adjusted wind speeds.

Enhanced Fuijita Scale (EF-Scale)		
EF-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: National Oceanic and Atmospheric Administration

The strongest tornado in the Charleston Region was an EF2 tornado that had maximum winds reaching 120mph. The tornado touched down near Morris Acres on Johns Island in 2015. It is possible for a stronger tornado to impact the Charleston Region, though most of the tornado reports are unconfirmed or are a confirmed EF0 tornado.

Location

Tornadoes are not limited to specific geographic regions, although they are most common in states like Oklahoma, Texas, and Kansas. Tornados have been documented in every state within the United States. Hurricanes are the biggest threat to the Region and since a hurricane can produce a tornado then the whole Charleston Region is vulnerable to the threat of a tornado during a hurricane or tropical storm. Tornadoes can form over water as well as land.

Probability

According to the National Climatic Data Center and the National Oceanic and Atmospheric Administration, there is approximately one tornado every year in Charleston County. However, there is around a 94% chance it will be classified an EF1 or below. The probability of a tornado is equal across all jurisdictions in Charleston County. No specific jurisdictions have a greater chance of experiencing stronger effects from a tornado. A tornado above EF1 has only occurred twice in

the Region's history. It is possible for a stronger tornado to impact the area. The vulnerability and impact of the hazard is discussed later in the Plan.

Likelihood of Event Any Year
1. 0-25% chance
2. 26-50% chance
3. 51-75% chance
4. 76-100% chance

Tornado Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Unincorporated Charleston County	2
Town of Awendaw	1
Town of Hollywood	1
Town of James Island	1
Town of Lincolnville	1
Town of McClellanville	1
Town of Meggett	1
Town of Ravenel	1
Town of Rockville	1
Town of Seabrook Island	2
City of Charleston	1
City of Folly Beach	2
City of Isle of Palms	1
City of North Charleston	1
Town of Kiawah Island	1
Town of Mt. Pleasant	1
Town of Sullivan's Island	1
Charleston County Parks & Recreation Commission	1
Charleston County School District	3
Charleston Water System	1
College of Charleston	1
Cooper River Parks & Playground Commission	1
James Island Public Service District Commission	1
Mt. Pleasant Water Works Commission	1
North Charleston District	1
North Charleston Sewer District	1
Roper St. Francis Healthcare	1
St. Andrews Parish Park & Recreation Commission	1
St. Andrews Public Service District	1
St. John's Fire District Commission	1
St. Paul's Fire District Commission	1

– Hazardous Materials

Background

In most places, chemicals and hazardous materials surround communities. Hazardous materials come in many different forms and incidents can happen in fixed or mobile facilities. Hazardous materials are stored in homes and businesses throughout but also are shipped daily throughout communities through the highways, waterways, railways, or through pipelines. Incidents involving hazardous materials can include spilling, emitting, discharging, disposing, leaking, or escaping into the environment of any hazardous material. These materials, in their various forms, can cause injury, long-term health problems, damage to property, and even death.

Classification

The United States Department of Transportation regulates hazmat transportation within the territory of the U.S. The Federal Motor Carrier Safety Administration was established as a separate administration within the U.S. Department of Transportation in 2000 to reduce crashes, injuries, and fatalities involving large trucks and buses. Together they develop and enforce safety regulations and educate about hazardous materials. The U.S. Department of Transportation uses a standard system of nine classes that identify different hazardous materials. These nine classifications must be labeled on all hazardous materials even if they are in mobile or fixed facilities.



Class 1: Explosives: Materials with an explosion, projection, fire, or blast hazard.
Class 2: Gases: Flammable or non-flammable compressed gases, toxic or non-toxic.
Class 3: Flammable liquids: Flammable liquids (flash point below 141°) and combustible liquids (flash point 141°-200°).
Class 4: Flammable Solids: Flammable solids, spontaneously combustible and dangerous when wet materials.
Class 5: Oxidizer and Organic Peroxide
Class 6: Toxic Materials: Poisonous materials and infectious substances.
Class 7: Radioactive Materials: Materials that emit radiation.
Class 8: Corrosive Materials: Materials that cause destruction of human skin at site of contact or corrosion rate on steel or aluminum.

Class 9: Miscellaneous: Materials that present a hazard during transport but do not meet other class definitions (ex. dry ice or lithium batteries).

The Charleston Region has experienced minor incidents relating to hazardous materials such as natural gas leaks, chemical spills, automobile accident cleanups and more. No serious incidents or injuries have been reported due to a hazardous materials incident.

Location

The Charleston Region is a rapidly growing international port with many industries and growing businesses. The Charleston Region also has a United States Air Force Base and several other smaller military establishments, which handle various types and quantities of hazardous materials. Hazardous materials are a continuous potential hazard due to the large amount of transportation of these materials occurring in and around the Region.

Probability

Hazardous Materials are in residential and commercial locations throughout the Region. Gas leaks and automobile accidents occur frequently in both locations. Since the Charleston Region is a growing international port and military base location, the transportation of hazardous materials happens every day. Each jurisdiction in Charleston County has a 100% chance of hazardous material incidents occurring each year but no major incidents or related injuries are expected. The jurisdictions that are at an increased threat level are the City of Charleston, the Town of Mount Pleasant and the City of North Charleston due to industry, commerce, tourism, and locations of the Charleston Port and Charleston International airport. The vulnerability and impact of the hazard is discussed later in the Plan.

Likelihood of Event Any Year
1. 0-25% chance
2. 26-50% chance
3. 51-75% chance
4. 76-100% chance

Hazardous Material Incident Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Unincorporated Charleston County	3
Town of Awendaw	3
Town of Hollywood	3
Town of James Island	3
Town of Lincolnville	3
Town of McClellanville	3
Town of Meggett	3
Town of Ravenel	3
Town of Rockville	3
Town of Seabrook Island	1
City of Charleston	4
City of Folly Beach	3
City of Isle of Palms	3
City of North Charleston	4

Town of Kiawah Island	3
Town of Mt. Pleasant	4
Town of Sullivan's Island	3
Charleston County Parks & Recreation Commission	3
Charleston County School District	2
Charleston Water System	4
College of Charleston	4
Cooper River Parks & Playground Commission	4
James Island Public Service District Commission	3
Mt. Pleasant Water Works Commission	4
North Charleston District	4
North Charleston Sewer District	1
Roper St. Francis Healthcare	3
St. Andrews Parish Park & Recreation Commission	3
St. Andrews Public Service District	3
St. John's Fire District Commission	2
St. Paul's Fire District Commission	3

– Terrorism

Background

Terrorism is commonly defined as the use of violence and threats to intimidate or coerce in the pursuit of political, religious, or any ideological goal with disregard to the safety of innocent humans. Terrorism is often described as both a tactic and strategy or a crime and a holy duty. The U.S. Department of Defense, The Federal Bureau of Investigation (FBI) and the U. S. Department of State all defined terrorism differently but all definitions have the same key elements of violence, intimidation, and fear.

Classification

Terrorism can be in the form of many different threats like kidnapping, hijacking, bombings, assassinations, and the use of chemical, nuclear, or biological weapons. All these threats range from minimal to extreme losses of life, injury, destruction of property and economic loss. Military or civilian government facilities, airports, large cities, public gatherings, and landmarks are often high-risk targets for acts of terrorism. The following are main terrorism threats from the Federal Emergency Management Agency and the U.S. Department of Homeland Security that are used in a terrorism situation.

Explosions: An explosive device is one of the most common weapons among terrorists. They are highly portable and can be easily detonated from remote locations or by suicide bombers. Information for making an explosive device is readily available to anyone. Bombs have been used to damage or destroy political, financial, and religious institutions. The aftermath of an explosion can lead to other threats like fire and the damage extent is unpredictable.

Biological threats: Biological agents are toxins or organisms that can kill or incapacitate people, crops, and livestock. An attack is when there is a deliberate release of biological substances or germs through the air, animals, food/water, and humans. The three basic groups of biological agents that would likely be used as weapons are bacteria, viruses, and toxins. If encountered, humans should contact authorities of any unusual and suspicious substances.

Chemical threats: Chemical agents are poisonous liquids, solids, vapors, and aerosols that have toxic effects on people, animals, or plants. Agents can be released by bombs or sprayed from vehicles or aircraft. A chemical attack could come without warning, and the agents are usually odorless and tasteless with effects like irritation, nausea, burning sensations or difficulty breathing. While potentially lethal, chemical agents are difficult to deliver in lethal concentrations, but signs of a release can have immediate effects or a delayed effect.

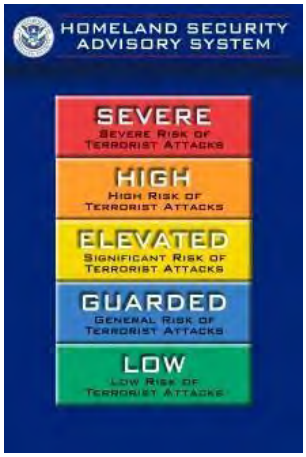
Nuclear blast: Is an explosion with intense light and heat, a damaging pressure wave, and widespread radioactive material that contaminates the air, water, and ground for miles. A nuclear device can be transported by an individual or by an intercontinental missile launched by a terrorist group or hostile nation. Deadly effects are associated with a nuclear blast like intense heat (thermal radiation), initial nuclear radiation, fires, and blinding light. The extent, nature and arrival time of these hazards are difficult to predict.

Radiological dispersion device (RDD): Also known as a "dirty bomb" is considered more likely than use of a nuclear explosive device. A RDD combines a conventional explosive device with radioactive material. It scattered dangerous and sub-lethal amounts of radioactive material over an area. RDDs don't require much technical knowledge to build or deploy, and the radioactive material are easier to obtain compared to nuclear weapons with uranium or plutonium.

Cyber-attack: Unlike physical threats, cyber threats are often difficult to identify and comprehend. Cyber-attacks can be intruders breaking into systems and altering files, using your computer to attack others, stealing confidential information, or erasing entire systems or files. Some attacks are more serious than others and can have wide ranging effects on individuals, organizations and at the national level. Risks include disrupted services or power to transportation, data breaches with organizations or governments and an intrusion on individuals obtaining their personal information.

Homeland Security Advisory System

The U.S. Department of Homeland Security designed the Homeland Security Advisory System to provide a national framework and comprehensive means to disseminate information regarding the risk of terrorist acts to government authorities, private sector, and the American people. It provides warnings in the form of a set of graduated "threat conditions" that increase as the risk of the threat increases. Each level will provide suggested protective measures that the government, private sector and the public can take. Alerts are heard through their website, or media channels.



The Region hasn't experienced a major threat or attack but do see many isolated incidents of domestic terrorism like shootings and bomb threats. Area police and emergency teams regularly perform drills to be prepared in case of a terrorist attack.

Location

The Charleston Region is always at risk of being targeted for a terrorist attack due to the Charleston Port. With Charleston being a major metropolitan area, it is subjected to possible terrorist attacks. With attacks ranging from size and destruction, the whole Region could experience the effects of a terrorist attack.

Probability

There is no evidence to suggest there is any substantial risk for a terrorist event. However, specific jurisdictions, Town of Mt. Pleasant, and City of Charleston, have an increased probability of experiencing a terrorist attack due to the location of the Charleston Port and centralized tourism areas as well as the school district as it is a high concentration of a vulnerable population. The vulnerability and impact of the hazard is discussed later in the Plan.

Likelihood of Event Any Year
1. 0-25% chance
2. 26-50% chance
3. 51-75% chance
4. 76-100% chance

Terrorism Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Unincorporated Charleston County	1
Town of Awendaw	1
Town of Hollywood	1
Town of James Island	1
Town of Lincolnville	1
Town of McClellanville	1
Town of Meggett	1
Town of Ravenel	1
Town of Rockville	1

Town of Seabrook Island	1
City of Charleston	2
City of Folly Beach	2
City of Isle of Palms	1
City of North Charleston	2
Town of Kiawah Island	1
Town of Mt. Pleasant	2
Town of Sullivan's Island	1
Charleston County Parks & Recreation Commission	1
Charleston County School District	2
Charleston Water System	1
College of Charleston	1
Cooper River Parks & Playground Commission	2
James Island Public Service District Commission	1
Mt. Pleasant Water Works Commission	1
North Charleston District	1
North Charleston Sewer District	1
Roper St. Francis Healthcare	1
St. Andrews Parish Park & Recreation Commission	1
St. Andrews Public Service District	1
St. John's Fire District Commission	1
St. Paul's Fire District Commission	1

– Wildfire

Background

According to the South Carolina Forestry Commission, any forest fire, brush fire, grass fire, or any other outdoor fire that is not controlled and supervised is called a wildfire. These fires cause damage to the forest resource as well as wildlife habitat, water quality, and air quality. All though wildfires are considered dangerous, they are a natural process in the environment to clear dead vegetation. Anything that can burn is considered fire fuel, like branches, pine needles, and dead leaves. The most common cause of wildfires however is by negligent human behavior (debris burning, fireworks, arson). Another common cause of wildfires is lightning strikes but only two percent of wildfires in South Carolina are attributed to lightning, however weather is an important factor in dealing with wildfires. Wind, humidity, and droughts will influence the spread and flammability of wildfires. Forest fire danger is usually highest in late winter and early spring (January through mid-April). South Carolina's fire season is in the winter because most vegetation

is dead or dormant during that time. Fires do not start or spread as quickly when vegetation is

green. Of course, the increasing concern is the threat wildfires pose to homes and lives of people and animals. Wildfires burn 20-30 homes in the state every year, and hundreds more are threatened each fire season.

Classification

There are three classes of wildfires: surface fire, ground fire, and crown fire. A surface fire is the most common of these three classes moving slowly burns along a forest floor. A ground fire (muck fire) is usually started by lightning or human carelessness and burns on or below the forest floor. Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees. The northeast part of Charleston County holds the Francis Marion National Forest, a large expanse of land that is home to many native plants and animals. The most significant fire to occur in our Region happened within the Francis Marion National Forest in March of 2011 when 2,600 acres along the Charleston/Georgetown County line burned. The fire also burned two buildings, and residents within a six-mile area were voluntary evacuated.

Location

Wildfire is a potentially serious threat in the Charleston Region, particularly in areas with a high density of vegetation and areas within or surrounding the Francis Marion National Forest. Areas where there is an urban-wild land interface like (St. John's Fire District) are also at risk. Even urban areas within the Region pose the threat of wildfires, since they are defined as uncontrolled fires, which most fires are. For the purpose of this plan, all areas, buildings and facilities are considered to be equally exposed.

Historical Occurrences

The table below shows the amount of fires and acres burned each fiscal year from 2012 to 2020.

Wildfire Events from 2012-2020								
Year	**2012-2013**	**2013-2014**	**2014-2015**	**2015-2016**	**2016-2017**	**2017-2018**	**2018-2019**	**2019-2020**
Fires	19	15	9	6	23	6	10	12
Acres	656.6	37.5	349.9	134.8	249.2	30.2	171.0	277.9
Source: South Carolina Forestry Commission								

Below is a table summarizing fire incidents from 2013 to 2020 recorded by the Consolidated 9-1-1 system.

	Fire Incidents from May 1, 2013 – April 30, 2020							
	As Reported by Charleston County Consolidated 9-1-1							
Category	**2013-2014**	**2014-2015**	**2015-2016**	**2016-2017**	**2017-2018**	**2018-2019**	**2019-2020**	
Outside Fires	893	542	632	999	657	573	848	
Trail/Rail Fires	3	1	2	1	3	0	5	
Marine Fires	13	5	11	11	21	7	8	
Vehicle Fire	102	90	111	111	112	124	87	
Total	**1011**	**638**	**756**	**1122**	**793**	**704**	**948**	**5,972**

Probability

The most significant fire in the last decade was in March of 2011 along the Charleston/Georgetown County line with most of the burned area located within Georgetown County. However, wildfire can affect the whole Region and force evacuation of people. Since only around half of the county has protected acreage of rural land which can be affected by wildfire, there are other events like vehicle fires, house fires and marine fires that can happen anywhere within the Region. Acreages

burned between the years of 1946–2021 have varied. It is unpredictable how much land will be damage per year or where a fire will occur.

In any given year, it's expected that there will be between 32 and 114 wildfires per year, and between 691 and 992 acres burned according to the 5 year and 50-year averages. All jurisdictions within Charleston County have a probability of being affected by a wildfire, but some more rural areas have an increased risk. These jurisdictions include: Awendaw, Hollywood, Meggett and Ravenel, as well as those close to Francis Marion National Forest (Town of Mt. Pleasant, Unincorporated Charleston County and Town ofMcClellanville). The vulnerability and impact of the hazard is discussed later in the Plan. Refer to Appendix A.11 for more detail on wildfires.

Wildfire Averages for Charleston County				
Averages	**5 Year**	**10 Year**	**15 Year**	**20 Year**
Fires	11	17	24	36
Acres	140.4	475.8	368.6	419.7

Source: South Carolina Forestry Commission

Likelihood of Event Any Year
1. 0-25% chance
2. 26-50% chance
3. 51-75% chance
4. 76-100% chance

Wildfire Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Unincorporated Charleston County	3
Town of Awendaw	2
Town of Hollywood	2
Town of James Island	1
Town of Lincolnville	1
Town of McClellanville	2
Town of Meggett	2
Town of Ravenel	2
Town of Rockville	1
Town of Seabrook Island	1
City of Charleston	2
City of Folly Beach	1
City of Isle of Palms	1
City of North Charleston	1
Town of Kiawah Island	1

Town of Mt. Pleasant	2
Town of Sullivan's Island	2
Charleston County Parks & Recreation Commission	2
Charleston County School District	2
Charleston Water System	1
College of Charleston	1
Cooper River Parks & Playground Commission	1
James Island Public Service District Commission	1
Mt. Pleasant Water Works Commission	1
North Charleston District	1
North Charleston Sewer District	1
Roper St. Francis Healthcare	1
St. Andrews Parish Park & Recreation Commission	1
St. Andrews Public Service District	1
St. John's Fire District Commission	2
St. Paul's Fire District Commission	2

– Tsunamis

Background

Tsunami is a Japanese word for "harbor wave". Tsunamis are a series of waves caused from vertical faulting beneath the sea, underwater landslides, meteorite impacts, or volcanic explosions above or below water. From where the waves originate, they move outward in all directions. The waves can travel up to speeds of 500 miles per hour in deep water to 30 miles per hour in shallow water. At its origin in the deep ocean, the wave may only be a few inches, but as it approaches shore it builds in height. As they slow in shallower water, it causes them to effectively pile up and wave heights dramatically increase up to several meters high. As opposed to typical waves which crash at the shoreline, tsunamis bring with them a continuously flowing 'wall of water' with the potential to cause devastating damage in coastal areas located immediately along the shore. Tsunamis are generally considered to be a significant hazard threat primarily for land areas near the Pacific Ocean and are considered to be a rare phenomenon in the Atlantic Ocean.

Classification

The National Oceanic and Atmospheric Administration (NOAA) is the primary agency for providing tsunami warnings, with roles in research and observations as well. They create maps that help identify areas of likely tsunami flooding for at-risk communities. Forecast models and Inundation models are provided to the NOAA's Weather Service forecasters to provide information to emergency managers, planners, and states. The DART system (Deep-ocean Assessment and Reporting of Tsunamis) is a real-time tsunami monitoring system positioned at strategic locations throughout the ocean for forecasting purposes. Most tsunamis are measured by height of the wave. These monitoring devices detect irregularities in the ocean and can determine

the height of the wave once it hits shore and how much time it will take to reach shore. Damage

ranges from the height of the wave when hitting shore, and debris carried from them onto shore create the most damage and drowning being the leader in deaths.
There are reports of 1 event in 1886, though information on damage or extent is extremely limited. The tsunami is likely tied to the record earthquake that occurred on August 31st, 1886. The entire Eastern coastline was rated as having a "Very low to low" probability of a tsunami event in a 500-year timeframe by the USGS and Department of the Interior. Preparedness measures are similar to a hurricane. Charleston has a tsunami warning buoy 425 miles off the coast and was designated as a 'Tsunami Ready Community" in 2006.

Location

A tsunami poses the threat on all coastal communities even though tsunamis are generally considered to be a significant hazard threat primarily for land areas near the Pacific Ocean and are considered to be a rare phenomenon in the Atlantic Ocean. Historical evidence does indicate that tsunamis have affected the Eastern United States but are not the result of traditional sources of tsunami waves (i.e., subduction zones such as the Cascadia Subduction Zone in the Pacific Ocean). They are typically the result of slumping or land sliding associated with local earthquakes or with wave action associated with strong storms such as hurricanes. Other possible causes of tsunami-like activity along the East Coast could include explosive decompression of underwater methane deposits, the impact of a heavenly body (i.e., an asteroid, comet or oceanic meteor splashdown), or a large underwater explosion. The Charleston County area is not an “at-risk” area for a significant type of Atlantic Ocean tsunamis. Consequently, the Charleston County area would not generally be expected to experience a tsunami but as with any coastal community along the Atlantic Ocean, there is still an extremely remote chance of events happening that can cause a tsunami.

Historical Occurrences

With the report of 1 event with limited information on damage and extent which was likely tied to the record earthquake that occurred on August 31st, 1886, the Charleston Region hasn’t experienced any tsunami events since. Through the National Climatic Data Center from National Oceanic and Atmospheric Administration (NOAA), the database shows zero events from the years 2008 through April 30th, 2022.

Probability

There is no evidence to suggest there is any substantial risk for a tsunami event for any jurisdiction within Charleston County. Should one occur, coastal areas would experience the greatest effects (City of Charleston, Town of Kiawah Island, Town of Seabrook Island, City of Folly Beach, Town of Sullivan's Island and City of Isle of Palms). The vulnerability and impact of the hazard is discussed later in the Plan.

Likelihood of Event Any Year
1. 0-25% chance
2. 26-50% chance
3. 51-75% chance
4. 76-100% chance

Tsunami Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Unincorporated Charleston County	1
Town of Awendaw	1

Town of Hollywood	1
Town of James Island	1
Town of Lincolnville	1
Town of McClellanville	1
Town of Meggett	1
Town of Ravenel	1
Town of Rockville	1
Town of Seabrook Island	1
City of Charleston	1
City of Folly Beach	1
City of Isle of Palms	1
City of North Charleston	1
Town of Kiawah Island	1
Town of Mt. Pleasant	1
Town of Sullivan's Island	1
Charleston County Parks & Recreation Commission	1
Charleston County School District	1
Charleston Water System	1
College of Charleston	1
Cooper River Parks & Playground Commission	1
James Island Public Service District Commission	1
Mt. Pleasant Water Works Commission	1
North Charleston District	1
North Charleston Sewer District	1
Roper St. Francis Healthcare	1
St. Andrews Parish Park & Recreation Commission	1
St. Andrews Public Service District	1
St. John's Fire District Commission	1
St. Paul's Fire District Commission	1

– Dam Failure

Background

Dam failure is the collapse, breach, or any incident that compromises a dam structure resulting in downstream flooding. The energy of the water stored behind a dam can cause loss of life and severe property damage downstream of the dam. Dam failure can be the result of human-induced or natural events. Design error, poor maintenance and terrorism acts are examples of human- induced events, while earthquake, prolonged rainfall (flooding) and erosion are natural events that can cause structural damage to dams resulting in failure.

Classification

A series of dam failures in the 1970s resulted in a national focus on inspecting and regulating dams. States are primarily responsible for protecting their populations from dam failure. State governments regulate about 90 percent of the approximately 84,000 dams in the United States. The federal government only owns or regulates only 5% of the dams in the United States. About 27,000 dams throughout our Nation could incur damage or fail, resulting in significant property damage, lifeline disruption (utilities), business disruption, displacement of families from their homes, and environmental damage.

The federal government has used the National Dam Safety Program (NDSP) to protect Americans from dam failure for over 30 years. The NDSP is a partnership of the states, federal agencies and other stakeholders that encourages individual and community responsibility for dam safety, which includes information, training, grant assistance and research. There are also many partners of the NDSP like the Interagency Committee on Dam Safety, National Dam Safety Review Board, and the Association of State Dam Safety Officials (ASDSO) which is a non-profit organization that supports dam safety programs and communities.

Since states are primarily responsible for their dams, South Carolina passed the S.C. Dams and Reservoirs Safety Act in 1977. The act protects citizen's health, safety, and welfare by creating a regulatory program to reduce the risk of failure of dams. The law confers upon the Department of Health and Environmental Control as the regulatory authority to accomplish the purposes of the act. The act also provides a classification for potential hazards that pertain to potential loss of human life or property damage in the event of failure or improper operation of the dam or appurtenant works.

The State of South Carolina does not regulate dams that are owned, operated, or regulated by an Agency of the Federal Government or by the South Carolina Public Service Authority (i.e., Santee Cooper). There are two dams that could impact Charleston County that fall under this State regulatory exemption because they are owned by Santee-Cooper and are also regulated by the Federal Energy Regulatory Commission (FERC). These two dams are Pinopolis Dam (which forms Lake Moultrie) and Santee Dam (which forms Lake Marion).

Dam Failure Hazard Potential Classification	
Classification	**Hazard Potential**
High Hazard (Class I)	Dams located where failure will likely cause loss of life or serious damage to homes, industrial and commercial facilities, important public utilities, main highway(s) or railroads.
Significant Hazard (Class II)	Dams located where failure will not likely cause loss of life but may damage homes, industrial and commercial facilities, secondary highway(s) or railroads or cause interruption of use or service of relatively important public utilities.
Low Hazard (Class III)	Dams located where failure may cause minimal property damage to others. Loss of life is not expected.

Source: South Carolina Department of Health & Environmental Control

There are two state-regulated dams that could impact areas of the Charleston County. Both dams have been classified by DHEC as Low Hazard Potential (State Class III), which means only minimal property damage, and no loss of life, is expected from failure of these dams. Regarding the two Federally regulated dams, Pinopolis and Santee, both are classified as High Hazard Potential by FERC, which means failure or misoperation will probably cause loss of life under the definition used by FERC, which comes from the publication Hazard Potential Classification System for Dams (FEMA-333, April 2004). The Pinopolis Dam, one of the two Federally regulated dams, could temporarily flood parts of North Charleston with up to 15.4 feet of water if it were to fail. The Santee Dam, also Federally regulated, could temporarily flood Awendaw and surrounding areas with up to 22.7 feet of water in the event of failure. To this date, there hasn't been any major historical dam failure event in Charleston County.

Location

Dam failures are extremely rare events. Santee Cooper, a state-owned electric and water utility, operates both the Santee Dam and the Pinopolis Dam System, a failure of which could affect areas within Charleston County. A catastrophic failure at either of these dams would create flooding within the Charleston County area, and it would be a significant event. The most likely root cause of such a failure would be an *earthquake* or perhaps an act of terrorism. While dam failure is unlikely, it is possible that the Charleston County area could experience dam-related flooding.

Historical Occurrences

There have been no recorded historical incidents regarding the Santee Cooper Dam and Pinopolis Dam, which are the only two dams that would impact the Charleston Region during a failure.

Probability

There is no evidence to suggest there is any substantial risk for a dam failure. Only two jurisdictions that could be directly at risk should dam failure occur, City of North Charleston and the Town of Awendaw. Either of these jurisdictions would have a 100% probability of flood

inundation if either of the two area dams were to fail in each given location. The vulnerability and impact of the hazard is discussed later in the Plan.

Likelihood of Event Any Year
1. 0-25% chance
2. 26-50% chance
3. 51-75% chance
4. 76-100% chance

Dam Failure Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Unincorporated Charleston County	1
Town of Awendaw	1
Town of Hollywood	1
Town of James Island	1
Town of Lincolnville	1
Town of McClellanville	3
Town of Meggett	1
Town of Ravenel	1
Town of Rockville	1
Town of Seabrook Island	1
City of Charleston	1
City of Folly Beach	1
City of Isle of Palms	1
City of North Charleston	3
Town of Kiawah Island	1
Town of Mt. Pleasant	1
Town of Sullivan's Island	1
Charleston County Parks & Recreation Commission	1
Charleston County School District	1
Charleston Water System	1
College of Charleston	1
Cooper River Parks & Playground Commission	3
James Island Public Service District Commission	1
Mt. Pleasant Water Works Commission	1
North Charleston District	3
North Charleston Sewer District	3
Roper St. Francis Healthcare	1
St. Andrews Parish Park & Recreation Commission	1
St. Andrews Public Service District	1

St. John's Fire District Commission	1
St. Paul's Fire District Commission	1

– Rip Currents

Background

Rip currents are powerful channels of water flowing quickly away from shore. As waves travel from deep to shallow water, they break close to the shoreline. As they break, they generate currents that flow in both alongshore and offshore directions. Currents flowing away from the coast are called rip currents. A rip current forms this narrow, fast moving section of water. They can also form when a current traveling along the shoreline encounters a structure and is forced offshore. Rip currents typically form at breaks in sandbars, or at low spots. According to the United States Lifesaving Association, 80% of surf beach rescues are attributed to rip currents, and more than 100 people die annually from drowning in rip currents.

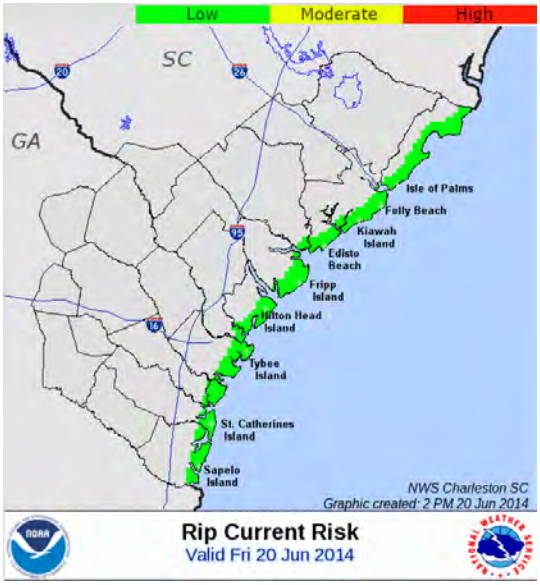
Classification

The National Weather Service Family of Services (FOS), the National Oceanic and Atmospheric Administration (NOAA), Weather Wire Service and the Emergency Manager's Weather Information Network (EMWIN) created The Surf Zone Forecast in the Summer of 2003. The Surf Zone forecast is issued from the National Weather Service's Forecast Offices every day. It provides valuable information on the hazards of the surf zone to communities. It describes the precipitation, visibility, wind speed, wind direction, wave height, surf temperature, tide information, rip currents, and more. The Rip Current Outlook portion of the Surf Zone Forecast provides the public with standard terminology for describing the rip current hazard. That terminology is categorized into three sections: Low Risk, Moderate Risk and High Risk.

Rip Current Outlook for the Surf Zone Forecast

Risk	Description
Low	Wind and/or wave conditions are not expected to support the development of rip currents. However, rip currents can still occur, especially at low spots or breaks in the sandbar and in the vicinity of structures such as groins, jetties and piers. Know how to swim and heed the advice of lifeguards and the beach patrol. Pay attention to flags and posted signs.
Moderate	Wind and/or wave conditions support stronger or more frequent rip currents. Only experienced surf swimmers that know how to escape a rip current should enter the water. Pay attention to flags and posted signs.
High	Wind and/or wave conditions support dangerous rip currents. No one should enter the surf due to this life threatening hazard. Pay attention to flags and posted signs.

Source: National Oceanic and Atmospheric Administration



An example of the Surf Zone Forecast that is issued every day.

In the United States, it is estimated that 100 people will lose their life due to rip currents each year. Extensive signage and education efforts continue to educate beachgoers, though future deaths are possible and unfortunately likely as rip currents occur regularly.

Location

The Charleston Region stretches nearly 100 miles along the Atlantic Ocean. The Region's beaches are prone to rip currents daily leaving citizens who enjoy the beaches vulnerable to this threat. This type of hazard does not cost damage to buildings or infrastructure, but it continues to take lives of residents and visitors on an annual basis. Since majority of people in the Region will experience being around the water at some point, the whole Region can be affected.

Historical Occurrences

According to the National Oceanic and Atmospheric Administration (NOAA) and the National Climatic Data Center (NCDC), rip currents will be listed in Storm Data only when they cause a drowning(s), near-drowning(s), result in numerous rescues (i.e., 5 or more at one beach community), or damage watercraft. Events associated with other surf-related currents, such as long-shore or tidal currents, will not be included in Storm Data as Rip Current events. Rip currents can occur any time and any place along beaches or in other bodies of water.

Charleston County Severe Rip Tide Occurrences from January 1, 1950 – December 31th, 2022
Total: 20 Rip Current Events with 4 Deaths and 5 Reported Injuries

Probability

Since the Charleston Region is located along the coast, the ocean presents a strong threat to the communities close and away from it. With the beach being a popular location for many in the Region, we can claim that the whole Region is exposed to the threat of a rip current during a beach visit. Rip currents occur every day posing a low to high-risk threat. There is a 100% chance that a rip current could occur every day leaving 100% chance coastal jurisdictions such as the City of Isle of Palms, Town of Sullivan's Island, Town of Kiawah, and Town of Seabrook, City of Folly

Beach, along with Charleston County Parks and Recreation which has beachside parks, could experience this hazard. The vulnerability and impact of the hazard is discussed later in the Plan.

Likelihood of Event Any Year
1. 0-25% chance
2. 26-50% chance
3. 51-75% chance
4. 76-100% chance

Rip Current Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Unincorporated Charleston County	1
Town of Awendaw	1
Town of Hollywood	1
Town of James Island	1
Town of Lincolnville	1
Town of McClellanville	1
Town of Meggett	1
Town of Ravenel	1
Town of Rockville	1
Town of Seabrook Island	3
City of Charleston	1
City of Folly Beach	4
City of Isle of Palms	4
City of North Charleston	1
Town of Kiawah Island	3
Town of Mt. Pleasant	1
Town of Sullivan's Island	4
Charleston County Parks & Recreation Commission	3
Charleston County School District	1
Charleston Water System	1
College of Charleston	1
Cooper River Parks & Playground Commission	1
James Island Public Service District Commission	1
Mt. Pleasant Water Works Commission	1
North Charleston District	1
North Charleston Sewer District	1
Roper St. Francis Healthcare	1
St. Andrews Parish Park & Recreation Commission	1
St. Andrews Public Service District	1
St. John's Fire District Commission	1

– Severe Storm

Background

Severe thunderstorms, windstorms, and hail can occur any day throughout the year. According to the National Weather Service, there are approximately 100,000 thunderstorms that occur in the United States per year and about 25 million lightning flashes a year. Severe thunderstorms are caused by the rapid upward movement of warm, moist air. As the warm moist air moves upward, it cools, condenses, and forms cumulonimbus clouds. Cumulonimbus clouds can move in lines, in clusters, or singularly, and they can move through an area very quickly or linger for hours. These types of clouds which produce thunderstorms also produce lightning, which is a serious threat during a thunderstorm. Along with lightning, thunderstorms can produce other accompanying hazards like windstorms and hailstorms.

Classification

Thunderstorms: Thunderstorms are usually classified as severe when at least wind speeds exceed 58 miles per hour or when hail exceeds 0.75 inch in diameter. Nearly 10% of yearly thunderstorm events are classified as severe. Thunderstorms form and clump together in a variety of different ways; Single cell, Multi-cell clusters, Multi-cell lines, and Super cells. The term "cell" refers to each separate principal updraft. The more updrafts, the more severe the thunderstorm can be.

Windstorms: Severe thunderstorms can produce strong winds, typically resulting to be categorized as a windstorm. These high winds can cause downed trees, power lines, flying debris, and damage infrastructures. Wind speeds during a windstorm typically exceed 34 miles per hour which can be attributed to gusts, either short bursts or long periods of sustained winds. Flying debris is the primary cause of damage during high winds.

Lightning: Lightning is a discharge of electrical energy resulting from the buildup of positive and negative charges in cumulonimbus clouds that produce thunderstorms. When the charges are strong enough, it creates a "bolt" of electricity that travels between the cloud and the ground or within the clouds. Lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Thunder is heard from the rapid heating and cooling of the surrounding air following the bolt of lightning. On average, less than 100 people die every year by lightning.

Hailstorms: Hail is produced when ice crystals form due to the rapid rising of warm air into the upper atmosphere and the subsequent cooling of the air mass. Updrafts carry raindrops into parts of the atmosphere where the temperatures are below freezing. These raindrops gradually accumulate onto the ice crystal, and when they develop sufficient weight, they fall as precipitation, usually in the shape of irregularly shaped masses or in the shape of a ball, and greater than 0.75 inches in diameter. The Tornado and Storm Research Organization (TORRO) in England is a privately supported research body, serving the national and international public interest. The Tornado and Storm Research Organization (TORRO) produced a Hailstorm Intensity Scale, which puts different hail sizes into categories with damage descriptions.

TORRO Hailstorm Intensity Scale			
Size Code	**Intensity Category**	**Typical Hail Diameter (mm)**	**Damage Impacts**
H0	Hard Hail	5	No damage.
H1	Potentially Damaging	5 - 15	Slight general damage to plants, crops.
H2	Significant	10 - 20	Significant damage to fruit, crops, vegetation.
H3	Severe	20 - 30	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored.
H4	Severe	25 - 40	Widespread glass damage, vehicle bodywork damage.
H5	Destructive	30 - 50	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries.
H6	Destructive	40 - 60	Bodywork of grounded aircraft dented, brick walls pitted.
H7	Destructive	50 - 75	Severe roof damage, risk of serious injuries.
H8	Destructive	60 - 90	Severe damage to aircraft bodywork.
H9	Super Hailstorms	75 - 100	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open.
H10	Super Hailstorms	>100	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open.

Source: The Tornado and Storm Research Organization

Hail Size Comparison			
Size Code	**Size (mm)**	**Size (inches)**	**Object**
H0	5 - 9	0.25	Pea
H1	10 - 15	0.5	Mothball
H2	16 - 20	0.75 (Classifies storm as severe)	Marble, Grape
H3	21 - 30	1	Walnut
H4	31 - 40	1.5	Squash ball
H5	41 - 50	1.75	Golf ball
H6	51 - 60	2	Hen's egg
H7	61 - 75	2.5	Tennis ball
H8	76 - 90	3	Orange
H9	91 - 100	3.75	Grapefruit
H10	>100	4	Melon

Source: The Tornado and Storm Research Organization

The Charleston Region typically experiences hail events between size codes H0 to H2.

Location

A thunderstorm event is an atmospheric hazard and has no geographic boundaries. They can occur in all regions of the United States however, thunderstorms are most common in the central and southern states because atmospheric conditions are more favorable for generating thunderstorms. Since thunderstorms are unpredictable, all jurisdictions are equally exposed to these hazards.

Historical Occurrences

Severe Storm Events (Thunderstorm Winds) 1956 – April 2022		
TOTAL: 12 Events	**Average Wind Speed: 48**	**Total Damage: $62,000**

Source: NOAA Storm Events Database

Severe Storm (Hail) Incidents in Charleston County 1957 – April 2022		
Total: 5 Events	**AVERAGE SIZE: 0.90**	**TOTAL DAMAGE: $ 0**

Source: NOAA Storm Events Database

Severe Storm (Lightning) Incidents in Charleston County 1998 – April 2022	
Total: 1 Event	**Total Damage: $3,000**

Probability

Since thunderstorms are unpredictable and can occur any day of the year, all jurisdictions are equally exposed to these hazards, and there is a 100% chance that the area will be hit by severe weather in any given year. The likelihood of hail events depends on the severity of the storm. There have been 41 hail events over the past four years, averaging 7.25 hail events per year (https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28C%29+Hail&beginDate_mm=04&beginDate_dd=30&beginDate_yyyy=2016&endDate_mm=04&endDate_dd=30&endDate_yyyy=2020&county=CHARLESTON%3A19&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=45%2CSOUTH+CAROLINA). The vulnerability and impact of the hazard is discussed later in the Plan.

Likelihood of Event Any Year
1. 0-25% chance
2. 26-50% chance
3. 51-75% chance
4. 76-100% chance

Severe Storm Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Unincorporated Charleston County	4
Town of Awendaw	4
Town of Hollywood	4
Town of James Island	4
Town of Lincolnville	4
Town of McClellanville	4
Town of Meggett	4
Town of Ravenel	4
Town of Rockville	4
Town of Seabrook Island	4
City of Charleston	4
City of Folly Beach	4
City of Isle of Palms	4

City of North Charleston	4
Town of Kiawah Island	4
Town of Mt. Pleasant	4
Town of Sullivan's Island	4
Charleston County Parks & Recreation Commission	4
Charleston County School District	4
Charleston Water System	4
College of Charleston	4
Cooper River Parks & Playground Commission	4
James Island Public Service District Commission	4
Mt. Pleasant Water Works Commission	4
North Charleston District	4
North Charleston Sewer District	4
Roper St. Francis Healthcare	4
St. Andrews Parish Park & Recreation Commission	4
St. Andrews Public Service District	4
St. John's Fire District Commission	4
St. Paul's Fire District Commission	4

–Drought

Background

Drought and heat advisories do not damage buildings and roads, drainage channels and other similar types of infrastructure; however, drought does cause potential loss of agricultural production and increases the possibility of wildfires. Droughts are the consequence of a natural reduction in the amount of precipitation expected over an extended period. High temperatures, high winds, and low humidity can exacerbate drought conditions. Also, human actions and demands for water can hasten drought-related impacts. Since droughts can be a natural and human component, it is defined in both conceptual and operational terms. Droughts are generally defined in these four terms: meteorological, agricultural, hydrological, or socioeconomic.

Meteorological: Based on the degree of dryness or actual precipitation from an expected average of time. They have a slow onset that usually takes at least three months to develop and may last for several seasons or years.

Agricultural: Based on the impact to agricultural activity from a deficit in precipitation, soil moisture, ground water supply, or reservoir levels.

Hydrological: Based on a precipitation deficit that affects the surface and subsurface water supply (stream flow, lake levels, and ground water). Other facts such as changes in land use, land degradation, and construction of dams can contribute to hydrological droughts.

Socioeconomic: Based on the adverse supply and demand relationship between economic goods that are dependent on precipitation and water supply. Occurs when water shortage beings to affect the population, individually and collectively.

Classification

In the United States, the U.S. Drought Monitor is a weekly map product produced through the partnership of the National Drought Mitigation Center, US Department of Agriculture (USDA), and the National Oceanic and Atmospheric Administration (NOAA). Drought Monitor maps measure present drought levels and future outlooks through a synthesis of multiple drought indices. Meteorologists predict and monitor droughts using drought indices, as well as monitoring variables that reflect precipitation patters, stream flow, and soil moisture. The U.S. Drought Monitor is a composite index that includes many indicators but its primary purpose measures drought intensity using a scale of D0 through D4. D0 being abnormally dry, D1-moderate, D2-severe, D3-extreme, D4-exceptional.

U.S. Drought Monitor - Drought Severity Classification		
Category	**Description**	**Possible Impacts**
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting and growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fullyrecovered.
D1	Moderate Drought	Some damage to crops and pastures; streams, reservoirs, or wells low; some water shortages developing or imminent; voluntary water-use restrictions requested.
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed.
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions.
D4	Exceptional Drought	Exceptional and widespread crop and pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies.

S=Short-Term, typically less than 6 months. L=Long-Term, typically more than 6 months.

Source: National Drought Mitigation Center

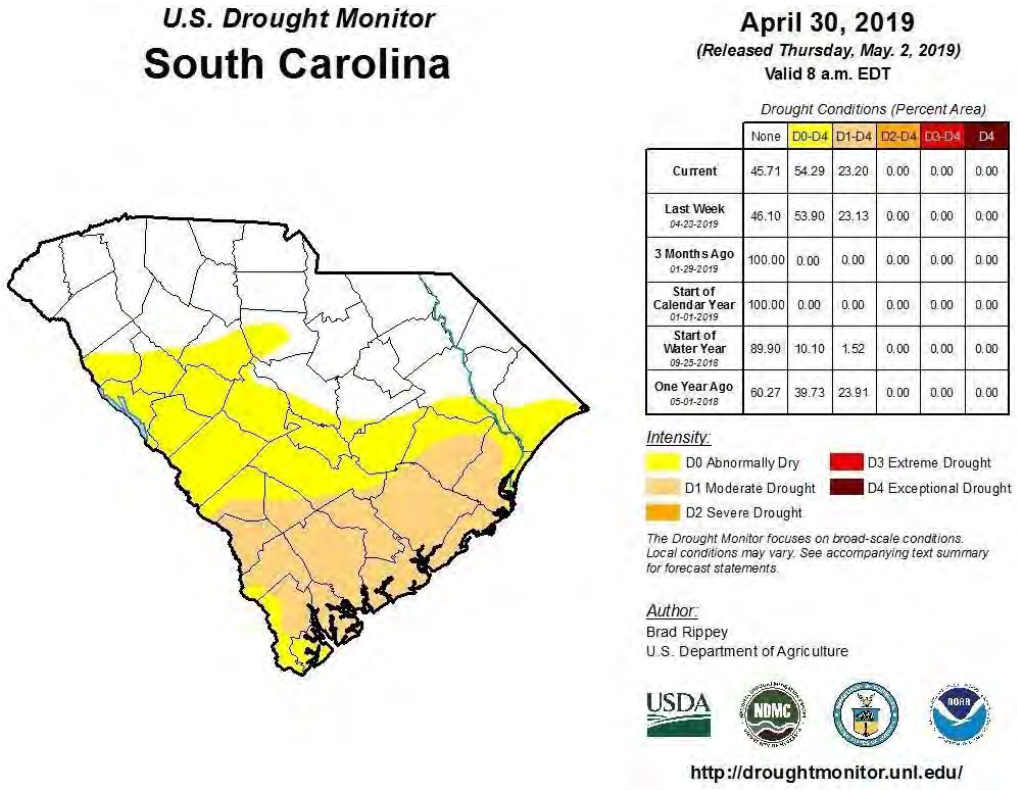
The Palmer Drought Severity Index Scale was developed in the 1960's and uses temperatures and rainfall information in a formula to determine dryness, incorporates soil moisture, and is considered most effective for non-irrigated cropland. It primarily reflects long-term drought and has been used extensively to initiate drought relief.

Palmer Drought Severity Index Classifications	
Category	**Description**
4.0 or more	Extremely Moist
3.0 to 3.9	Very Moist
2.0 to 2.9	Moderately Moist
1.9 to -1.9	Near Normal
-2.0 to -2.9	Moderate Drought
-3.0 to -3.9	Severe Drought
-4.0 or less	Extreme Drought

Source: National Oceanic & Atmospheric Administration

Location

Droughts typically cover a large area and cannot be confined to any geographic boundary. For this purpose, the whole Charleston Region is vulnerable to the threat of a drought.



(An example of the extent of drought that the State experienced in late April 2019)

Historical Occurrences

Number of weeks of Drought Events between May 1, 2013 – April 30, 2022							
Year	Category						Description
	None	D0 Abnormally Dry	D1 Moderate Drought	D2 Severe Drought	D3 Extreme Drought	D4 Exceptional Drought	
1999-2000	35	17	2	0	0	0	
2000-2001	17	35	19	5	0	0	
2001-2002	4	48	38	32	19	0	
2002-2003	18	34	20	18	13	0	
2003-2004	46	6	0	0	0	0	
2004-2005	32	20	5	0	0	0	
2005-2006	47	5	0	0	0	0	
2006-2007	27	25	3	0	0	0	
2007-2008	0	53	35	12	0	0	
2008-2009	15	37	22	0	0	0	
2009-2010	38	14	2	0	0	0	
2010-2011	29	23	0	0	0	0	
2011-2012	0	53	50	46	39	3	
2012-2013	7	45	20	9	5	0	
2013-2014	32	20	0	0	0	0	The Region experienced 20 weeks in drought stage. 32 weeks of no drought stage were reported and 20 weeks of D0 drought from October to December.
2014-2015	37	15	0	0	0	0	The Region experienced only 15 weeks of D0 drought. During weeks when drought was experienced, only approximately 10-20 percent of the county was affected. 37 weeks of the year, the Region experienced no drought.
2015-2016	36	16	0	0	0	0	The Region experienced 16 weeks of D0 drought. During weeks when drought was experienced, only approximately

							10-20 percent of the county was affected. 36 weeks of the year, the Region experienced no drought.
2016-2017	38	14	6	0	0	0	The Region experienced 20 weeks of drought stage. During these 20 weeks, the drought stage remained at D0 for 14 weeks and D1 for 6 weeks. 38 weeks of the year, the Region experienced no drought.
2017-2018	23	29	14	4	0	0	The Region experienced 29 weeks of drought stage D0 and 14 weeks of D1. In addition, 4 weeks were spent at D2; there were 23 weeks where the Region experienced no drought
2018-2019	26	26	10	0	0	0	The Region experienced 36 total drought weeks. 26 weeks were spent at D0 and an additional 10 weeks were spent at D1. The Region was not experiencing a drought for 26 weeks.
2019-2020	31	15	7	1	0	0	The Region experienced 23 total drought weeks. 15 weeks were spent at D0 and an additional 7 weeks were spent at D1. In addition, 1 week was spent at D2. There were 31 weeks where the Region was not experiencing a drought.
2020-2021	52	15	0	0	0	0	The region experienced 15 total drought weeks, all of which were spent at D0.
2021-2022	24	36	13	0	0	0	The Region experienced 49 total drought weeks. 36 weeks were spent at D0 and an additional 13 weeks were spent at D1.

Source: U.S. Drought Monitor

According to the U.S. Drought Monitor, the Charleston Region was in the D4 (Exceptional Drought) category for several weeks in early 2012 with a Palmer Drought Index of at least -5.0 (Extreme Drought). It is possible for severe and exceptional drought periods to return to the Charleston Region.

Probability

Since droughts typically cover a large area and aren't confined to any geographic boundary, the chance that the Region will experience some stage of drought is 100% any given year. The probability of being in a severe drought (D2-D4) at all is 1.28%. The probability of the Region being in a severe or worst drought is 8.16% any given year, and the probability of drought is equal across all jurisdictions, except Charleston County School District. The vulnerability and impact of the hazard is discussed later in the Plan.

Likelihood of Event Any Year
1. 0-25% chance
2. 26-50% chance
3. 51-75% chance
4. 76-100% chance

Drought Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Unincorporated Charleston County	2
Town of Awendaw	2
Town of Hollywood	2
Town of James Island	2
Town of Lincolnville	2
Town of McClellanville	2
Town of Meggett	2
Town of Ravenel	2

Town of Rockville	2
Town of Seabrook Island	2
City of Charleston	2
City of Folly Beach	2
City of Isle of Palms	2
City of North Charleston	2
Town of Kiawah Island	2
Town of Mt. Pleasant	2
Town of Sullivan's Island	2
Charleston County Parks & Recreation Commission	2
Charleston County School District	3
Charleston Water System	2
College of Charleston	2
Cooper River Parks & Playground Commission	2
James Island Public Service District Commission	2
Mt. Pleasant Water Works Commission	2
North Charleston District	2
North Charleston Sewer District	2
Roper St. Francis Healthcare	2
St. Andrews Parish Park & Recreation Commission	2
St. Andrews Public Service District	2
St. John's Fire District Commission	2
St. Paul's Fire District Commission	2

– Winter Weather

Background

Winter weather is generally rare in the Charleston Region; however, there have been a few instances of winter weather in the area. A winter storm can range from just a moderate snow over a certain amount of time to blizzard conditions with blinding wind-driven snow. They are often thought of as a snowstorm, but winter storms usually have other types of weather associated with it that can be extremely dangerous. Winter storms can be accompanied by dangerous conditions with freezing rain, heavy winds, snow, and sleet. A winter storm develops from three basic elements: cold air, moisture and lift. Freezing temperatures near the ground and in the clouds are necessary for snow and ice. Moisture is needed to form clouds and precipitation. Lift is needed to raise the moist air to form clouds and precipitation, which is when warm air collides with cold air and is forced to rise over the cold air. Winter conditions can be significant enough to affect several states or just affect localized areas only. All winter weather conditions have the potential to be very dangerous to the affected area. Snowfall can reduce visibility in driving conditions, and freezing conditions can damage infrastructure throughout the area. These storms are not necessarily

restricted to the winter season; they may occur in early spring or late autumn.

Classification

There is no general accepted classification of winter weather or winter storms, but they generally include snow, ice, freezing rain, and freezing temperatures. The following are a few that the Charleston Region can be affected because of winter weather or winter storms.

Ice Storms/Freezing Rain: An ice storm is when freezing rain accumulates to at least ¼ inch of ice on exposed surfaces. Heavy accumulations of ice can bring down trees, electrical wires, telephone poles and lines, and communication towers. Freezing rain occurs when rain falls onto surfaces with temperatures below freezing, thus turning the rain to ice on contact. They can be perceived as rainstorms occurring just below freezing temperatures. Freezing rain can create black ice on roads, which is difficult for drivers to see and may cause an accident. Ice and freezing rain can lead to frozen water lines and other infrastructures.

Snow: Snowfall can immobilize a region and paralyze a city, stopping the flow of supplies, and disrupting emergency and medical services. The cost of snow removal, repairing damages, and loss of business can have large economic impacts on cities and towns. Regions not prone to annual winter weather may lack the resources to safely remove snow or ice.

Freezing temperatures: Any impact from winter weather requires temperatures below 32°. Prolonged exposure to cold temperatures can cause hypothermia or frostbite and become life-threatening. Freezing temperatures can cause severe damage to crop or other vegetation in the Region. It could also freeze pipes in homes that are poorly insulated or have exposed pipes.

The Charleston Region experienced an extremely rare snowfall in 2010 with isolated areas reporting up to 8 inches of snow and ice. Trees were down due to the ice and snow. In 2018, over 5 inches of snow was reported in the Charleston area. This was the third-largest snowfall in Charleston's history (https://www.postandcourier.com/news/after-historic-winter-storm-charleston-residents-dig-out-of-the-snow-and-play/article_5d415c18-f17b-11e7-bbf2-97c76181f489.html). Most winter hazards that the Region experiences are freezing pipes/temperatures, vegetation damage, and ice, but the Region is still vulnerable to larger winter weather events.

Location

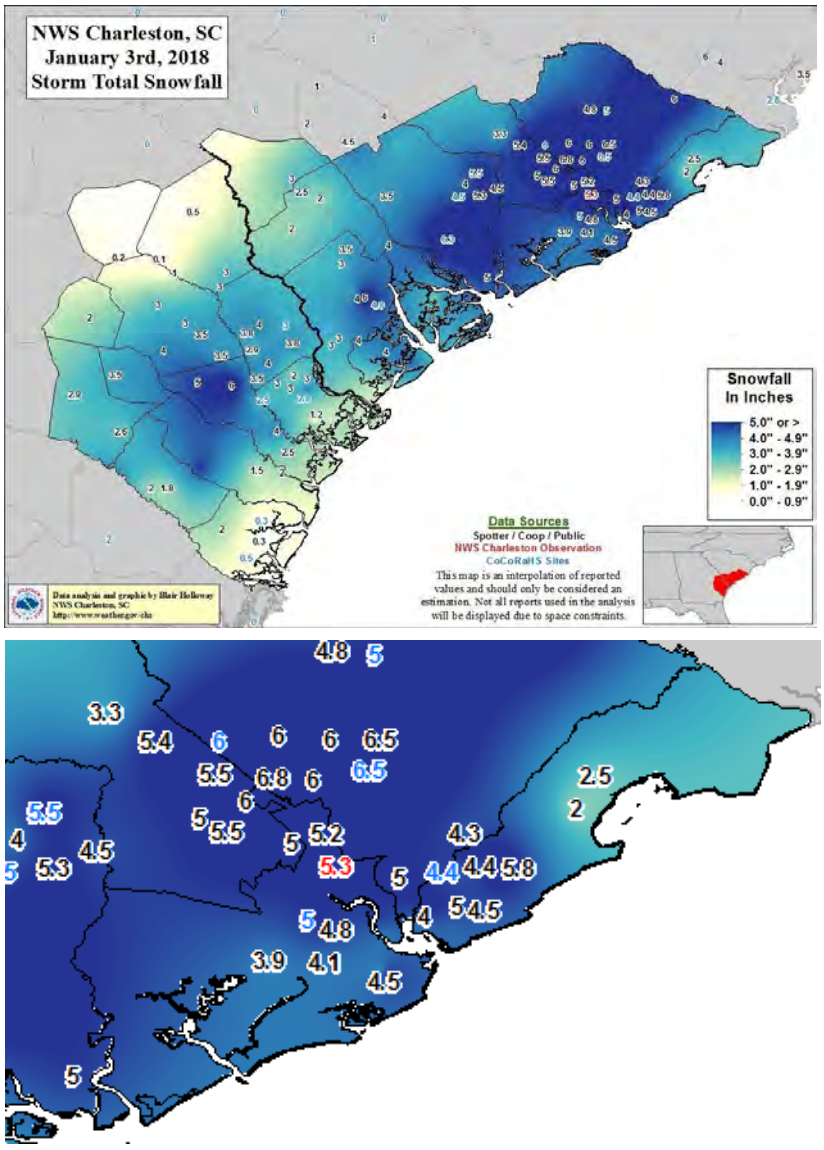
While the Region does not regularly encounter extreme winter storms, some aspects of winter weather occur in the Region annually. With the random nature of this hazard, all jurisdictions are subject to winter weather conditions.

Historical Occurrences

Winter Weather Events Through December 31 2022	
Total of 11 Events	$233,000

Source: NOAA Climate Data

A rare winter storm affected southeast South Carolina on January 3, 2018. The storm produced a variety of wintry precipitation, including snow, sleet and freezing rain. Charleston Airport (KCHS) measured 5.3 inches of snow, the 3rd greatest daily snowfall on record, just 0.1 inches shy of the 5.4 inches that fell during the 1973 storm (NWS, 2019).



Probability

The Region has experienced 9 winter events between the years of 2000 and 2022. The Region is located in a subtropical climate zone but will still experience low temperatures in the winter season every year. The probability of extreme winter weather events affecting the Region is shown in the table below. The vulnerability and impact of the hazard is discussed later in the Plan.

Likelihood of Event Any Year
1. 0-25% chance
2. 26-50% chance
3. 51-75% chance
4. 76-100% chance

Winter Weather Probability for Each Jurisdiction	
Jurisdiction	Probability

Unincorporated Charleston County	2
Town of Awendaw	2
Town of Hollywood	2
Town of James Island	2
Town of Lincolnville	2
Town of McClellanville	2
Town of Meggett	2
Town of Ravenel	2
Town of Rockville	2
Town of Seabrook Island	2
City of Charleston	3
City of Folly Beach	2
City of Isle of Palms	2
City of North Charleston	2
Town of Kiawah Island	2
Town of Mt. Pleasant	2
Town of Sullivan's Island	2
Charleston County Parks & Recreation Commission	2
Charleston County School District	2
Charleston Water System	2
College of Charleston	2
Cooper River Parks & Playground Commission	2
James Island Public Service District Commission	2
Mt. Pleasant Water Works Commission	2
North Charleston District	2
North Charleston Sewer District	2
Roper St. Francis Healthcare	3
St. Andrews Parish Park & Recreation Commission	2
St. Andrews Public Service District	2
St. John's Fire District Commission	2
St. Paul's Fire District Commission	2

– Pandemics

Background

There have been several Pandemics in Charleston's history dating back to yellow fever in 1699, to COVID-19 in 2020 (https://www.charlestoncitypaper.com/charleston/for-charleston-outbreaks-and-epidemics-are-a-key-part-of-history/Content?oid=31083858). The first yellow fever outbreak in Charleston in 1699 killed 15% of the city's population. The outbreak was likely due to Charleston's shipping ports that received a high volume of commercial shipping traffic (https://www.charlestoncitypaper.com/charleston/for-charleston-outbreaks-and-epidemics-are-a-key-part-of-history/Content?oid=31083858). The 1918 Influenza Outbreak is most similar to the COVID-19 Charleston is currently facing. The 1918 outbreak killed between 4,000-5,000 people in South Carolina. In 1918, the government called for quarantines and shut down schools, businesses, churches and public gatherings. Masks were recommended and scientists came together to create a vaccine (https://abcnews4.com/news/coronavirus/cofc-history-professor-sheds-light-on-past-pandemics). In 2020, COVID-19 became a global pandemic and affected the Charleston area. March 6th, 2020, marked the first COVID-19 presumed case, which was soon after confirmed by the CDC (https://www.postandcourier.com/health/covid19/one-new-presumptive-coronavirus-case-announced-bringing-sc-total-to-7/article_bb4b7a2e-6211-11ea-a61e-23fa151135d1.html). As of April 30th, 2022, the total number of confirmed COVID-19 cases in South Carolina were 1,474,272 and total deaths were 17,907 (SCDHEC).

Historical Occurrences

This table shows the pandemics and corresponding causalities in Charleston, SC as of April 30, 2022.

Pandemic	Dates	Causalities
Yellow Fever	1699, 1858	1699: 177; 1858: 800
Cholera	1832, 1836	1832: 15; 1836:
Spanish Influenza	1918-1919	4,000-5,000
COVID-19	Ongoing	945

Classification

A pandemic relates to the geographical spread of a disease over a whole country or the entire world, affecting a large number of people (https://www.verywellhealth.com/difference-between-epidemic-and-pandemic-2615168). A pandemic differs from an epidemic. An epidemic refers to a sudden increase in the number of cases of a disease that is greater than what is normal for that community (https://www.cdc.gov/csels/dsepd/ss1978/lesson1/section11.html).

Location

Historically, disease was most spread in the previous pandemics due to the port in the Charleston Harbor. From ships carrying enslaved Africans in the 18th century, to commercial container ships from Asia, to cruise ships today, the port city has the ability to spread disease (https://www.charlestoncitypaper.com/charleston/for-charleston-outbreaks-and-epidemics-are-a-key-part-of-history/Content?oid=31083858). Today, it is less common for the port being the main reason that disease spreads in Charleston, as traveling has become more widespread and is the easiest way of spreading disease. For example, the first case of COVID-19 in Charleston, SC had recently traveled in Europe (https://www.live5news.com/2020/03/07/first-possible-novel-coronavirus-cases-detected-charleston-kershaw-counties/).

Probability

Likelihood of Event Any Year
1. 0-25% chance
2. 26-50% chance
3. 51-75% chance
4. 76-100% chance

Pandemic Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Unincorporated Charleston County	1
Town of Awendaw	1
Town of Hollywood	1
Town of James Island	1
Town of Lincolnville	1
Town of McClellanville	1
Town of Meggett	1
Town of Ravenel	1
Town of Rockville	1
Town of Seabrook Island	1
City of Charleston	1
City of Folly Beach	1
City of Isle of Palms	1
City of North Charleston	1
Town of Kiawah Island	1
Town of Mt. Pleasant	1
Town of Sullivan's Island	1
Charleston County Parks & Recreation Commission	1
Charleston County School District	1
Charleston Water System	1
College of Charleston	1
Cooper River Parks & Playground Commission	1

James Island Public Service District Commission	1
Mt. Pleasant Water Works Commission	1
North Charleston District	1
North Charleston Sewer District	1
Roper St. Francis Healthcare	1
St. Andrews Parish Park & Recreation Commission	1
St. Andrews Public Service District	1
St. John's Fire District Commission	1
St. Paul's Fire District Commission	1

Hazard Summary

Table 4.1a – Summary of Jurisdiction Affected

Jurisdictions Affected by Hazard Type		
Hazard	**Comments**	**Future Probability**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. Those jurisdiction closer to the coast will experience greater effects from a hurricane.	49% (more for coastal jurisdictions)
Flood	Around 68% of the Charleston Region is in a floodplain. Some jurisdictions aren't located in that floodplain but are still considered at risk for the aftermaths of a flooding event.	90%
Sea Level Rise	Land in the most susceptible flood zones (AE and VE) will be most affected as sea level continues to rise.	100%
Earthquake	Charleston lies in one of the most seismically active areas in the Eastern United States, so the whole county is at risk of the aftermaths of an Earthquake.	100%
Tornado	Tornados aren't limited to any specific geographic region. The landing of tornados is unpredictable so all areas in the region are at risk.	94% of ≤ EF1
Hazardous Materials	The Charleston Region is a rapidly growing international port, areas around the port and Air Force base are at a higher risk but hazardous materials are located in most homes and incidents can occur anywhere.	100%
Terrorism	The urban areas of the region are more at risk for terrorism threats but the whole region is still at risk depending on size and destruction of an attack.	< 5%
Wildfire	Uncontrollable fires can occur in forested areas as well as urban cities, so all areas are considered at risk.	100%
Tsunamis	Tsunamis could only affect jurisdictions located along the coast, however depending on size and destruction, the whole region could experience the aftermaths of a tsunami event.	< 5%
Dam Failure	Dam failure are extremely rare events and would the flooding could only affect certain jurisdictions, however after a catastrophic failure, the whole region would be affected either physically or economically.	< 5%
Rip Currents	Rip currents only occur near jurisdictions located on the coast (Folly Beach, Sullivan's Island, Isle of Palms), but the whole region has access to the ocean and anyone could be caught in a rip current.	100% for coastal jurisdicitions
Severe Storms	Thunderstorms or severe storms have no geographic boundaries so all areas are at risk.	100%
Drought	Droughts can cover large areas and aren't confined to any geographic boundary so the whole region is at risk.	100% for some stage of drought; 14% of severe drought
Winter Weather	Extreme winter weather conditions are rare for the region, but low temperatures are common in the Winter. With the random nature of winter weather events, all areas are at risk.	30%
Pandemic	A pandemic relates to the geographical spread of a disease over a whole country or the entire world, affecting a large number of people .	0-25 %

Probabilities refer to all jurisdictions in the Region except where indicated. Table 4.1b includes specific jurisdictional information.

Table 4.1b – Individual Jurisdiction Hazard Assessment

Jurisdiction		Hazard Type														
Name	Type	Hurricane	Flood	Sea Level Rise	Earthquake	Tornado	HazMat	Terrorism	Wildfire	Tsunami	Dam Failure	Rip Current	Severe Storm	Drought	Winter Weather	Pandemic
Charleston County	County		x						x				x	x	x	x
Awendaw	Town			x					x				x	x	x	x
Hollywood	Town		x		x				x				x	x	x	x
James Island	Town		x	x									x	x	x	x
Lincolnville	Town				x				x				x	x	x	x
McClellanville	Town		x				x		x		x		x	x	x	x
Meggett	Town		x						x				x	x	x	x
Ravenel	Town				x				x				x	x	x	x
Rockville	Town		x										x	x	x	x
Seabook Island	Town	x	x	x								x	x	x	x	x
Kiawah Island	Town	x	x	x								x	x	x	x	x
Mt. Pleasant	Town		x				x	x	x				x	x	x	x
Sullivan's Island	Town	x	x	x						x		x	x	x	x	x
Charleston	City		x				x	x					x	x	x	x
Folly Beach	City	x	x	x						x		x	x	x	x	x
Isle of Palms	City	x	x	x						x		x	x	x	x	x
North Charleston	City		x		x		x				x		x	x	x	x
Charleston County Parks & Rec Commission	Parks & Rec	x	x	x					x	x		x	x	x	x	x
Charleston County School District	School District		x						x	x			x	x	x	x
Charleston Water System	Water System		x										x	x	x	x
College of Charleston	College		x										x	x	x	x
Cooper River Parks & Playground Commission	Parks & Rec		x		x		x						x	x	x	x
James Island Public Service District Commission	Public Service District		x	x									x	x	x	x
Mt. Pleasant Water Works Commission	Water System		x										x	x	x	x
North Charleston District	District		x		x		x				x		x	x	x	x
North Charleston Sewer District	Sewer District		x		x		x				x		x	x	x	x
Roper St. Francis Healthcare	Healthcare		x		x		x						x	x	x	x
St. Andrews Parish Park & Recreation Commission	Parks & Rec		x										x	x	x	x
St. Andrews Public Service District	Public Service District		x						x				x	x	x	x
St. John's Fire District Commission	Fire District								x				x	x	x	x
St. Paul's Fire District Comission	Fire District												x	x	x	x

This table lists all jurisdictions within the Region and all of the previously discussed hazard types. Although all jurisdictions have the same probability of being affected by these hazards, those marked with an X will likely experience the worst of the hazard effects based on different factors (location within Region, infrastructure, geography, etc.). These factors are explained within each hazard section (4.2 - 4.15).

Table 4.2 – Summary of Hazard Extent

Summary of Hazard Extent (Page 1/2)			
Hazard Type	**Extent (based on historical events)**		**Comments**
	Minimum	**Maximum**	
Hurricane/ Tropical Storm/ Coastal Storm/ Coastal Erosion	Tropical Depression	Category 4	On September 21st, 1989, Charleston was hit by Hurricane Hugo. Hugo made landfall as a Category 4 hurricane. On October 7, 2016, Charleston was hit by Hurricane Matthew. Previously a Category 5, Matthew had downgraded to a Category 1 before making landfall in Charleston. The hurricane still left considerable damage; 830,000 South Carolinians lost power and 355,000 evacuated their homes.Tropical Storms have passed by Charleston County and caused considerable erosion problems and minor related damage.
Flooding	0 ft.	19.3 ft.	Following Hurricane Hugo, storm surge flooding reached 19.3 feet. Non-hurricane related flooding events occur each year with great variation in intensity. This report includes isolated storm water flooding events and riverine flooding that reached various levels, but such flooding is completely dependent upon the area.
Sea Level Rise	N/A	N/A	King tides, which is the above average high tide occurring when once a lunar cycle, are a good predictor of sea level rise. On average there were 12.625 observed king tides for every king tide event, compared to the predicted 3.88 king tides. The depth averaged more than half a foot deeper (0.71 ft) than expected. There were 71 more king tides than predicted in 2017/2018 and a cumulative 6.4 feet higher. The extreme difference in predicted and observed king tides in September and October 2017 are attributed to the landfall of Hurricane Irma.

Earthquake	0 M	7.3M	In 1886, an earthquake with an estimated magnitude of 7.3M occurred in Summerville, SC outside of Charleston. This was the largest known earthquake on the east coast. This type of event is extremely rare and expected to occur only every 500 years.
Tornado	EF0	EF2	The strongest tornado in the Charleston region since the first Hazard Mitigation Report in 1999 was an EF2 Tornado with maximum winds reaching 120mph that touched down near Wadmalaw Island in 2008. It is possible for a stronger tornado to impact the area, though the majority of tornado reports are unconfirmed or are confirmed EFO.
Hazardous Materials	N/A	N/A	Category includes natural gas leaks, small automobile accident cleanups, chemical spills, and more. No common measure exists. No serious injuries have been reported due to a hazardous materials incident since this Hazard Mitigation Report has been produced.
Terrorism	N/A	N/A	Due to the Charleston Port, the terrorism threat to the area may be increased. Isolated incidents of domestic terrorism are always possible, though area police and emergency teams regularly perform drills for shootings, bomb threats, and full-scale terrorism events.
Wildfire	0 acres	2,600 + acres	Numerous small fires (fractions of an acre) are reported annually and countless are unreported. The most significant fire in the last decade was in March of 2011 along the Charleston/Georgetown County line which burned nearly 2,600 acres within the Francis Marion National Forrest.

Tsunamis	1 event in 1886	1 event in 1886	There are reports of 1 event in 1886, though information on damage or extent is extremely limited. The tsunami is likely tied to a record earthquake. Due to the vast amount of coastland, a tsunami is a possibility, though extremely remote. The entire Eastern coastline was rated as having a "Very low to low" probability of a tsunami event in a 500-year timeframe by the USGS and Department of the Interior. Preparedness measures are like a hurricane. Charleston has a tsunami warning buoy 425 miles off the coast and was designated as a 'Tsunami Ready Community" in 2006.
Dam Failure	0 ft.	22.7 ft.	The Santee Dam and Pinopolis Dam could both impact areas of Charleston County. The larger Santee Dam is far enough away from homes to give nearly four hours of notice should a breach occur, and regular testing of warning sirens and messages occur. The smaller Pinopolis Dam could temporarily flood parts of North Charleston with up to 15.4 feet of water. The Santee Dam could temporarily flood McClellanville with up to 22.7 feet of water.
Severe Storms/Wind Storms/Hail/Other	H0	H8	The Charleston County region has experienced baseball size hail (2.75in / 70mm) in 2011. This H8 rating estimates severe damage to windows, some tree limbs, small animals, and automobiles. More common to the area are H0-H2 hail (0mm-20mm), which causes damage mainly to crops and vegetation.
Drought/Heat Advisory/Climate Change	Palmers 0 / D0	Palmers -5 / D4	The Charleston County region saw a drought period in 2012 that reached to the D4 stage (Exceptional Drought) with a Palmers Drought index of at least -5.0. for 3 weeks. According to the Drought Monitor, the Charleston Region is regularly in a moderate drought (D1) or listed as abnormally dry (D0). This responds to a Palmers Drought index between 0-2.9.

Winter Weather	0 inches	8 inches	An extremely rare snowfall occurred in 2010 with isolated areas reporting up to 8inches of snow and ice. Many trees were downed by the snow and ice. Another storm in 2018 left about 7 inches of snow and several icy spots. Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads.
Pandemic	N/A	N/A	The Charleston County region has been affected by COVID-19, a global pandemic that made headlines toward the end of 2019. The first case in Charleston County was confirmed on March 6th, 2020. As of April 30th, 2022, the total number of confirmed COVID-19 cases in South Carolina were 1,474,272 and total deaths were 17,767 (SCDHEC).

Table 4.3 – Summary of Hazard Probability

Five Future Probability Summary for Each Hazard			
Hazard Type	**Previous Incidents**		**Future Probability/Frequency**
	Historical Range	**Recorded in 2017-2022**	
Hurricane/Tropical Storm/Coastal Storm/Coastal Erosion	According to SC DNR, there have been a total of 44 events that have affected the Coastal South Carolina from the years 1851-2021.	According to the National Hurricane Center, there have been 13 hurricanes and tropical storms that have affected the area since 2017.	**Likely** As the atmosphere and ocean temperatures continue to increase, hurricanes are likely to be more intense (have stronger winds), produce more rainfall, intensify more rapidly, have a higher flood risk, and move more slowly. The frequency of hurricanes will likely remain the same or perhaps decrease in Charleston County. (Colberty, 2022)
Flooding	Minor and isolated flooding events regularly occur. It is estimated a major hurricane landfall near Charleston County is needed for a regional, widespread flooding event. Hurricane Hugo has been the only major flooding event in history.	The National Weather Service reported 115 flooding and coastal flooding events in Charleston County.	**Likely** The entire southeastern coast of the U.S. is expected to have increased depth and frequency of coastal flooding and high tide flooding (U.S. Climate Resilience Toolkit, 2021). Flooding in Charleston County will continue to be an issue in the upcoming years due to heavier rains, rising oceans, and subsidence (Boyd, 2019).
Sea Level Rise	Sea level rise has been accelerating in the last decade.	The number of king tides observed in the last five years averaged 115 per year. The depth of each tide averaged 8.46 ft.	**Likely** Scientists predict sea level rise will lead to greater hurricane activity, higher storm surge, and will lead to higher salinity in swaps, estuaries, tidal rivers, and coastal wetlands (EPA, n.d.). Scientists forecast the sea will rise 6 more inches in the next 13 years around Charleston. As the ocean rises, flooding events due to storms and king tides will also increase (Sea Level Rise, n.d.).
Earthquake	1 major earthquake in 1886 with minor tremors several times per year, on average, in the north area of the county or in Summerville. (Berkley County)	According to the United States Geological Survey, 21 earthquakes, ranging from a magnitude of 1.7 to 3.3, occurred between January of 2021 and January of 2022.	**Likely (for micro or minor earthquakes)** The frequency and risk of future earthquakes are very difficult to predict; however, most earthquakes in South Carolina occur in the Coastal Plain (Program, 2016). Earthquakes are tectonic events that can be triggered by changes in stress on a fault, and the biggest climate variable that could affect fault stress loads is

			surface water (in the form of rain in Charleston County). Scientists have also found drought can affect stress in the Earth's crust. Therefore, there is a chance that as the climate continues to change, the probability of earthquakes' frequency or intensity could increase in Charleston County (Buis, 2019).
Tornado	51 tornadoes reported in the region since 1950.	The National Climatic Data Center has confirmed 9 tornados in the region over the past 5 years.	**Likely** Scientists cannot yet conclusively connect tornado frequency to climate change, but since warm weather (a result of climate change) is necessary for tornadoes, scientists predict a higher frequency of tornadoes in the future (Treisman, 2023).
Hazardous Materials	No major hazardous materials incidents or related injuries.	No major hazardous materials incidents or related injuries.	**Unlikely** Climate change can cause damage to hazardous waste facilities (Charleston County has over 20) in the form of sea level rise, storm surge, wildfires, etc., which could result in hazardous material incidents or related injuries (EPA, 2023). Therefore, the chance for these types of incidents could increase in the future.
Terrorism	N/A	N/A	**N/A** Climate change is not a direct cause of terrorism; however, since it is a huge destabilizing force in our world, it fosters an environment that enables terrorism (Romm, 2022).
Wildfire	Since 2010, there have been 22,328 wildfires in South Carolina, burning a total of 153,740.4 acres of land. Over the last 50 years, there were an average of 114 wildfires per year burning a total of 991.9 acres per year in Charleston County.	The South Carolina Forestry Commission has reported a total of 31 wildfires in the last five years, averaging 75 acres of land burned per year.	**Likely** The Southeast already has the most wildfires in the U.S. and heat indexes are expected to continue rising in future decades (Boyd, 2019). Higher temperatures and drier conditions will likely lead to longer and more active fire seasons (NOAA, 2023).
Tsunamis	1 tsunami report in 1886 due to the record earthquake of the same year. Charleston was designated as a 'Tsunami Ready Community' in 2006.	Zero events	**Unlikely** Tsunamis will likely become more frequent in the future due to climate change impacts (i.e., sea level rise, landslides, collapsing ice shelves, volcanic activity, and earthquakes) (Cunneen, 2022). However,

			since the U.S. Atlantic Coast has no subduction zone and has a very low chance of tsunamis (Program N. T., 2019), the threat of tsunamis to Charleston County will very likely remain low in the near future.
Dam Failure	N/A	N/A	N/A
Rip Currents	According to NOAA, since 2000, there have been 24 rip current related drownings in South Carolina. On average, there are about 8 rip current incidents each year in North and South Carolina.	The National Climatic Data Center recorded 7 rip current events in the last 5 years. Two of these events resulted in fatal injuries.	**Likely** Rip currents' behavior is impacted by water temperature and salinity (Nuss, 2023). As temperature increases, wind speed increases, which then causes the number of waves to increase, resulting in more rip currents due to excess wave energy. As temperatures continue to rise, rip currents will become more prevalent. Wave heights may also increase due to climate change, which could cause rip currents to become more intense as well (Weise, 2023).
Severe Storms/Wind Storms/Hail/Other	Storms are often unpredictable and can occur any day out of the year.	According to the National Climatic Data Center, there have been 106 heavy rain, thunderstorm wind, strong wind, high wind, and hail events in Charleston County from January 2017 to January 2022.	**Likely** Severe storms are predicted to be more common in the future due to climate change (U.S. Climate Resilience Toolkit, 2021).
Drought/Heat Advisory/Climate Change	Droughts typically cover a large area and aren't confined to any geographic boundary. The U.S. Drought Monitor has been forecasting droughts on a weekly basis since 1999.	The region has experienced D2 (severe drought) conditions. Since 2018, trends show increasingly dry spring seasons.	**Likely** Rising temperatures and increasing heatwaves could potentially lead to more severe droughts in the southeastern U.S. The Southeast U.S. is experiencing more heat waves than any other part of the county, and temperatures are expected to continue to rise in the future (U.S. Climate Resilience Toolkit, 2021). Climate change will continue to affect Charleston County's natural and built environments, climate, weather, and economy (EPA, n.d.).
Winter Weather	The Charleston Region is in a subtropical climate, which has and will continue to experience low temperatures.	The National Weather Service recorded two winter storms in the last five years. The winter storm in 2018 produce snow, while the winter storm in 2022	**Likely** Climate change is causing temperatures to increase, thus making winters slightly warmer (EPA, n.d.). However, major winter snowstorms are

		accumulated thin ice sheets and freezing temperatures.	becoming more common (The Climate Reality Project, 2022). Due to Charleston County's proximity to the coast, it is difficult to determine how winter weather will change in the future due to climate change, so it should continue to be taken seriously.
Pandemic	Pandemics are a geographical spread of disease over a whole country or the entire world, affecting many people. March 2020 was the first reported case of COVID-19 in Charleston County.	Since the first recorded COVID-19 case in March of 2020, there have been a total of 112,905 total cases reported in Charleston County.	**Likely** Climate change has indirect impacts on pandemics. Rising temperatures cause animals to come into contact with other species they typically wouldn't interact with, thus establishing new pathways for pathogens to get into new hosts (Harvard T.H. Chan School of Public Health, n.d.). The chance for future pandemics to occur will likely rise as climate change impacts expand.

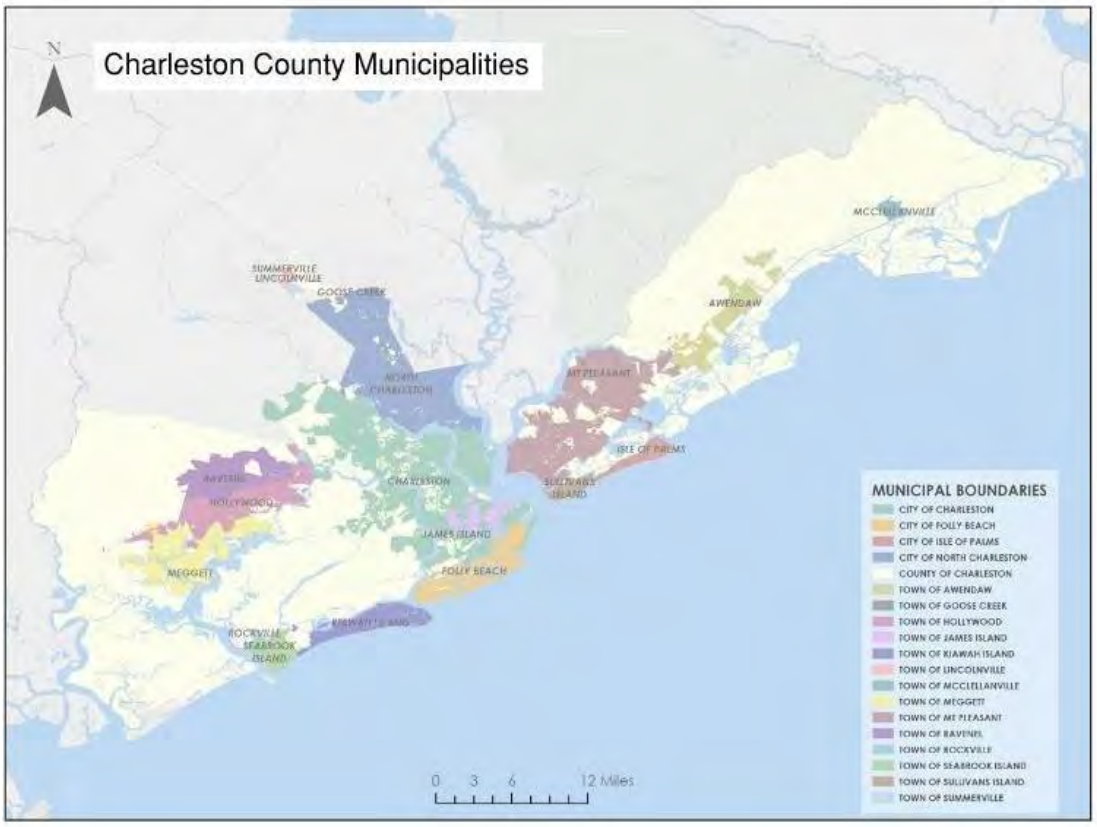
Methodology

To determine the likelihood of future occurrences, we determined the frequency by dividing the number of events observed by the number of years on record and multiplying by 100. This provides the percent chance of the event happening in any given year according to historical occurrences. We then categorized the likelihood of future occurrences into four categories:

- **Highly likely** – Near or more than 100% chance of occurrence within the next year
- **Likely** – Between 10-100% chance of occurrence within the next year (i.e., recurrence interval of 10 years or less)
- **Possible** – Between 1-10% chance of occurrence within the next year (i.e., recurrence interval of 11-100 years)
- **Unlikely** – Less than 1% chance or occurrence within the next 100 years (i.e., recurrence interval is greater than 100 years)

Section 5 Hazard and Problem Assessment by Jurisdiction

While all jurisdictions in Charleston County are equally likely of being affected by hazards introduced in Section 4, certain jurisdictions will likely experience the worst impact of the hazards based on different factors (location within the Region, infrastructure, geography, etc.). These factors are explained within each jurisdiction's Problem Assessment.
To maintain brevity, not all hazards a jurisdiction experiences are detailed in its respective section of this plan. Complete histories of all hazard occurrences in the region are instead listed in Appendix A.9.



– Unincorporated Charleston County Problem Assessment

The Plan discusses three vulnerabilities in the following sections: Hazard, Building, and Infrastructure. Each outlines and spotlights different aspects of the participating communities and organizations and what their vulnerabilities are as well as their capabilities to handle such. Before these are discussed, a point should be made about educational vulnerability. Educational vulnerability is a multi-jurisdictional problem that addresses a lack of access to or awareness of the knowledge and resources that might reduce one's risk of harm from a potential hazard. Poor, ethnic minority communities are those that environmental issues like sea level rise are most likely to adversely impact. They are also the most likely populations to lack access to traditional means of information disbursement. Opportunities to develop, implement, and share culturally responsive, community-specific hazard risk literacy and messaging (for example, school and faith-based programs about hurricane science and preparedness) need to be explored and funded. (Submitted by Merrie Koester, Ph.D. / Director, Kids Teaching Flood Resilience / University of SC Center for Science Education). This is an important point to keep in mind while reading through the rest of the HMP and assessing the vulnerabilities of the organizations.

– Hazard Vulnerability

The Charleston Region is potentially vulnerable to the hazards listed in the following Table 5-1. This table contains a quantitative risk assessment of all hazards required to be included in the Plan for Disaster Mitigation Act of 2000 compliance and additional hazards added to this plan as a result of incidents of this type of hazard occurring (i.e. rip currents) or the Hazard Mitigation & Public Information Plan Committee determining that the hazard type poses a potential risk to residents of this area (i.e. global climate change, avian flu/pandemic). Although the probability of these hazards is equal across all jurisdictions, not all jurisdictions within the region would be affected equally, depending on the hazard. Jurisdictions most vulnerable to different hazard types can be seen in Table 4.1b and each jurisdiction addresses the hazards that would most likely affect them in their individual action reports.
This risk assessment evaluates each type of hazard based upon its frequency and severity to determine which hazards represent the greatest potential risk to the Charleston County Region. The frequency and severity categorizations are based upon the number of each type of hazard event that has occurred in the Region and the dollar amount of damages that have actually occurred (or are estimated to be possible for those types of events, such as dam failure, that have not occurred in Charleston County). For those types of hazard events where there are no structural damages (i.e. rip currents) the actual or potential loss of life has been utilized to determine the severity of the hazard event. The prioritization of hazards using this method essentially mirrors that determined through the pre-planning questionnaires distributed as a part of this planning process. Where the risk assessment utilizing this methodology determines that multiple types of hazards pose comparable risks, the questionnaire rankings from the 2020 questionnaires yield the rank order of the hazards, as applicable.
Of the additional hazards evaluated per the Disaster Mitigation Act of 2000 guidelines, hurricanes scored the highest, followed by flooding, sea level rise, earthquakes, tornadoes and tsunamis. Hazardous material incidents, winter weather, wildfires and terrorist incidents scored slightly lower, likely because they are rarer. Lastly, Drought and Dam Failure scored the lowest, mostly due to the extremely low probability of one of these events occurring.

In addition to hazard rankings from the annual survey, the Committees considered data provided in the State of South Carolina Hazards Assessment, which evaluated the hazard vulnerability of each of the counties in South Carolina utilizing an index calculated from hazard

event frequency and a “social vulnerability index”. This assessment did not, however, include all the hazards identified by the Committees as those to which the Charleston Region is potentially vulnerable, so the data that was available was considered, as applicable. This social vulnerability score utilizes data from the U. S. Census Bureau to determine the social vulnerability of each county in South Carolina.

The summary table provided in Table 5-1-2 provides the vulnerability scores for Charleston County for each of the types of hazards evaluated in the State of South Carolina Hazards Assessment. Charleston County ranked highest in the State in terms of being the most hazardous. The county is vulnerable to all hazards and is located near the largest earthquake hazard on the East Coast. Charleston has a future probability of 67 for the hazard occurrence of tornadoes. The frequency interval is 1.50, which is one of the lowest in the State (SCEMD, 2018). Another way of looking at the hazard vulnerability for flooding, is in terms of properties filing insurance claims and losses. Charleston County had the highest number of annualized losses between 1960-2015. The City of Charleston, a jurisdiction within Charleston County, has the highest number of repetitive losses, 1,893, and the highest number of severe repetitive losses, 316, according to the 2018 State Hazard Mitigation Plan. Charleston County has the 5th highest future probability rating for hail, which falls under the severe storms category. According to the 2018 State Hazard Mitigation Plan, there is a 1/400 chance that a large earthquake will occur each year in the Lowcountry. Charleston County has the third largest number of Hazardous Materials Sites in the area, including TRI, Superfund, Hazard Treatment, Storage and Disposal, and Solid Waste Landfills, which makes it more vulnerable to hazardous materials incidents compared to other counties. Charleston County has the second highest future annual probability of a tropical cyclone occurring per year of 57%. Overall, Charleston County has the 10th highest hazard risk score based on future annual probability.

Given the size of the floodplain, the number of flood claims, and the number of buildings potentially vulnerable to flooding due to their date of construction and location in the floodplain (refer to Attachments 5-D and 5-E) in Charleston County makes it very risky for flooding.

The data for the following Tables 5-2 to 5-4 are from the State of South Carolina Mitigation Plan (2018), but not all of the hazards determined to be potentially damaging to the Charleston Region were included in these assessments.

The State of South Carolina Hazards Assessment (SCEMD, 2018) utilizes a “Vulnerability Score”, which is an index of the frequency of hazard events multiplied by the “Social Vulnerability Score” to assess the hazard vulnerability of each County in South Carolina. Following are these “Vulnerability Scores” for Charleston County, SC for the hazards included in this report. Vulnerability Score (SCEMD, 2018) is the product of the frequency of the hazard event and the social vulnerability score for the County (based on U. S. Census data for total population, age of population, gender of population, racial composition of population, and housing types in the County).

At the local level, Charleston County is the most hazardous county in the State. The county is vulnerable to all hazards and is located adjacent to the largest earthquake hazard on the East Coast.

Table 5-1-2

2018 Risk Assessment by Hazard Type Based on Place "Vulnerability Score" Charleston County, SC		
Hazard Type	Vulnerability Score	State Ranking
Hurricane	0.80	3
Flood	Not studied	Not studied
Wildfire	0.23	16
Tornado	0.70	7
Earthquake	0.07	2
Hazardous Materials	0.34	3
Rip currents	Not studied	Not studied
Severe storms	0.77	13
Drought	0.19	41
Winter Storms	0.35	16
Avian Flu/Pandemics	Not studied	Not studied
Dam Failure	Not studied	Not studied
Terrorism	Not studied	Not studied
Tsunami	Not Studied	Not Studied
Overall	**6.29**	**10**

Source: South Carolina Hazard Mitigation Plan, 2018, pg 201

Charleston County dropped to the 10th ranking for vulnerability relative to the other 45 counties in South under the 2018 updated hazards assessment. In this plan, transportation-related incidents are included under hazardous materials, but otherwise, the hazards included in this assessment are comparable to those analyzed using alternative methodologies(https://www.scemd.org/media/1391/sc-hazard-mitigation-plan-2018-update.pdf).

The overall determination from all the risk assessment methodologies utilized in the Charleston Regional Hazard Mitigation Plan is that the Charleston County Region 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 the methodologies suggest that potential vulnerability to multiple types of hazards exists in the Region, including hurricanes, floods, tornadoes, earthquakes, wildfires, hazardous materials, drought, winter storms, terrorist activity, dam failure, and other forms of severe weather. In the following subsections there are tables outlining specific vulnerability assessments based on each participating jurisdiction for various hazards. Each jurisdiction was given the option to identify any other hazard that could be a threat.

In summary, the following hazards are those for which vulnerability has been estimated in this plan. Table 4.1 provides a listing of which government entities represented in this plan are vulnerable to each specific hazard. Where a hazard inflicts building or infrastructure damages that can be reasonably estimated, this information is provided in the Vulnerable Buildings and Infrastructure Vulnerability subsections in this Problem Assessment portion of the Plan. If a hazard does not inflict damages to buildings or infrastructure that can be reasonably estimated (either due to the hazard not damaging these at all and causing loss of life rather than physical building or infrastructure damages, or due to the random nature of the hazard making meaningful estimations of building or infrastructure losses not possible to reasonably determine), it is not discussed further in these latter sections of this Problem Assessment.

Charleston County stretches along the Atlantic Ocean and contains nearly 100 miles of coastline. Because of the geography and the location of the county, Charleston County has continued to hold the distinction as the most hazard prone county in South Carolina. This calculation is driven by higher-than-average frequencies of hurricanes and other coastal events, earthquakes, waterspouts, flooding, HAZMAT, tornadoes, extreme temperatures, hail, and other threats. Table 5-1-3 shows Charleston County leading the next highest four counties in that regard. But it's important to acknowledge that hazard score only tells a portion of the total hazard risk to the county.

Table 5-1-3

2018 Top Five Most Hazardous Counties in South Carolina	
County	**Ranking**
Charleston	1
Horry	2
Georgetown	3
Berkeley	4
Sumter	5

Source: South Carolina Hazard Mitigation Plan, 2018

The Social Vulnerability Index (SVI) tool uses U.S. Census data to determine the social vulnerability of census tracts. The SVI ranks each tract on 16 social factors, including poverty, lack of vehicle access, and crowded housing, and groups them into 4 related themes: socioeconomic status, household characteristics, racial and ethnic minority status, and housing type and transportation. Each tract receives a separate ranking for each of the four themes, as well as an overall ranking.

- **Socioeconomic Status-** A higher vulnerability score of census tracts can be attributed to socioeconomic status such as poverty rate, unemployment, housing cost burden, populations with no high school diploma, and/or populations with no health insurance.

- **Household Characteristics-** A higher vulnerability score of census tracts can be attributed to household characteristics such as population with age 65 and older, age 17 and younger, civilians with a disability, single parent households, and/or communities with lack of English language proficiency.

- **Racial and Ethnic Minority Status-** A higher vulnerability score of census tracts can be attributed to racial and/or ethnic minority status.

- **Housing Type and Transportation-** A higher vulnerability score of census tracts can be attributed to housing type and transportation including communities with multi-unit structures, mobile homes, crowding, no vehicles, and/or group quarters.

The average vulnerability score across CCDs was determined using social vulnerability scores of census tracts within each jurisdiction represented and participating in Charleston Regional Hazard Mitigation Plan (see Figure 1).



Figure 1, Source: 2020 U.S. Census

Charleston Central CCD 90570

Charleston Central CCD includes census tracts within the jurisdiction of City of Charleston. Overall, social vulnerability for Charleston Central CCD ranges from very low to very high, with the lower vulnerability areas located in the southern peninsula and the higher vulnerability areas located in the northern section closer to North Charleston (see Figure 2). The vulnerability score across the CCD can be averaged to 38.20/100 (national score), or relatively low.

Socioeconomic Status

The higher vulnerability score in census tracts in the northern section of Charleston Central CCD can be attributed to socioeconomic status. Social and economic factors such as income and education can directly impact health outcomes during climate related disasters (EPA 2022). Currently, census tract 005400 is at 98th percentile for poverty, share of people living at or below 100% of the Federal poverty level (Council on Environmental Quality ACS 2015-2019). Census tract 004400 has an unemployment rate of 6% for populations 16 years and over, which is higher than County of Charleston (3.5%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These communities may have inadequate resources to recover from impacts of climate relateddisasters.

Household Characteristics

The higher vulnerability score in census tracts in the northern section of Charleston Central CCD can be attributed to household characteristics. As an example, older adults may have limited mobility and/or health conditions that increase their vulnerability to climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Currently, census tract 004400 has 18% of residents ages 65 and over, which is higher compared to County of Charleston (17.6%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). Individuals with a disability experience higher social risk factors such as poverty and unemployment that can directly impact health outcomes during climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Persons with disabilities account for 15% of the 004400 census

tract population, which is higher compared to County of Charleston (9.8%) (U.S. Census, ACS 2017-2021). These individuals may have limited capacity to meet basic needs, adapting and preparing for, evacuating, and recovering from extreme weather.

Racial and Ethnic Minority Status

The higher vulnerability score in census tracts in the northern section of Charleston Central CCD can be attributed to racial and ethnic minority status. Racial and ethnic minority groups are more vulnerable to impacts of climate change. As an example, Black or African American individuals are 40% more likely to live in areas with projected increases in extreme temperature related deaths (EPA 2021). Currently, 79% of the community in census tract 005400 is Black or African American, which is significantly higher compared to the County overall (24%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021).

Housing Type and Transportation

The higher vulnerability score in census tracts in the northern section of Charleston Central CCD can be attributed to housing type and transportation. Communities with inadequate housing and infrastructure are more likely to be exposed to natural disasters because of climate change. Currently, census tract 005400 is at 97th percentile for projected flood risk to properties from projected floods, tides, rain, riverine, and storm surges within 30 years (Council on Environmental Quality ACS 2015-2019). Census tract 005400 has an estimated 387 (44.8%) households with no vehicle access. These individuals may have difficulty evacuating themselves during a flood event and/or other natural disasters (Urban Observatory by Esri 2017-2021).

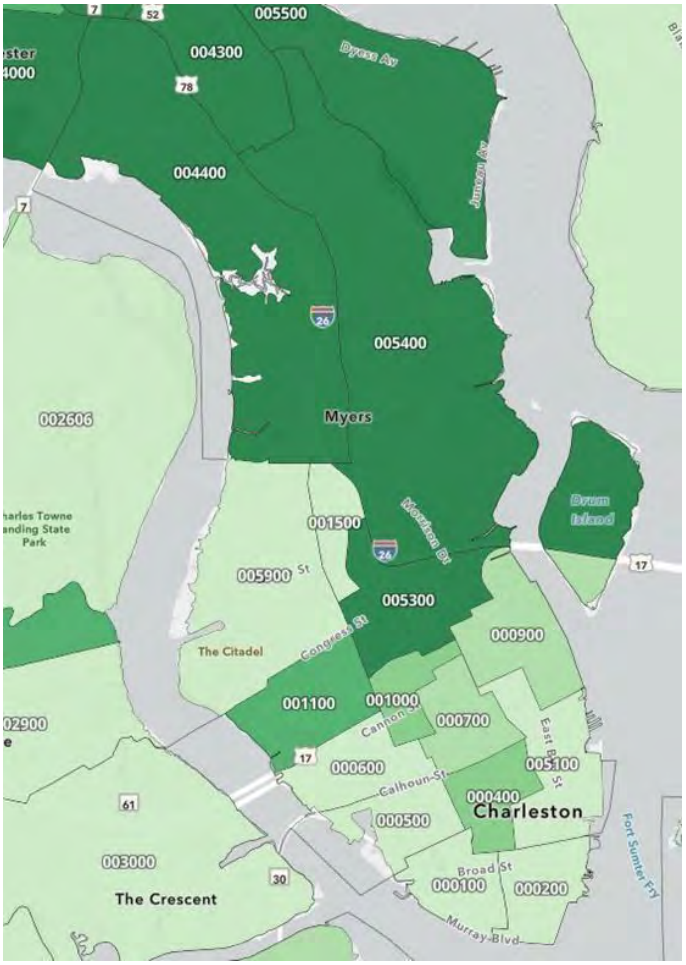


Figure 2, Source: FEMA National Risk Index, https://hazards.fema.gov/nri/map#

John's Island CCD 91703

John's Island CCD includes census tracts within the jurisdiction of City of Charleston and Unincorporated Charleston County. Overall Social Vulnerability for John's Island CCD ranges from

very low to relatively moderate, with the lower vulnerability areas located in the north and the higher vulnerability areas located in the south (see Figure 3). The vulnerability score across the CCD can be averaged to 26.64/100 (national score), or relatively low.

Socioeconomic Status

The higher vulnerability score in census tracts in the southern section of John's Island CCD can be attributed to socioeconomic status. Social and economic factors such as income and education can directly impact health outcomes during climate related disasters (EPA 2022). Currently, census tract 002103 has an unemployment rate of 3% for populations 16 years and over, which is comparable to the County of Charleston (3.5%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have inadequate resources to recover from impacts of climate related disasters.

Household Characteristics

The higher vulnerability score in census tracts in the southern section of John's Island CCD can be attributed to household characteristics. Older adults, children, and socially isolated residents are considered vulnerable to the impacts of climate related disasters. As an example, older adults may have limited mobility and/or health conditions that increase their vulnerability to climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Currently, census tract 002103 has 28% of residents ages 65 and over, which is higher compared to County of Charleston (17.6%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). Individuals with a disability experience higher social risk factors such as poverty and unemployment that can directly impact health outcomes during climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Persons with disabilities account for 12% of the 002103 census tract population, which is higher compared to County of Charleston (9.8%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have limited capacity to meet basic needs, adapting and preparing for, evacuating, and recovering from extreme weather.

Racial and Ethnic Minority Status

The higher vulnerability score in census tracts in the southern section of John's Island CCD can be attributed to racial and ethnic minority status. Racial and ethnic minority groups are more vulnerable to impacts of climate change. As an example, Black or African American individuals are 40% more likely to live in areas with projected increases in extreme temperature related deaths (EPA 2021). Currently, 29% of the community in census tract 002103 is Black or African American, which is higher compared to the County overall (24%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021).

Housing Type and Transportation

The higher vulnerability score in census tracts in the southern section of John's Island CCD can be attributed to housing type and transportation. Communities with inadequate housing and infrastructure are more likely to be exposed to natural disasters because of climate change. As an example, census tract 002103 is at 96th percentile for projected flood risk to properties from projected floods, tides, rain, riverine, and storm surges within 30 years (Council on Environmental Quality ACS 2015-2019). Currently, census tract 002103 has an estimated 127 (7.8%) households with no vehicle access. These individuals may have difficulty evacuating themselves during a flood event and/or other natural disasters (Urban Observatory by Esri 2017-2021).

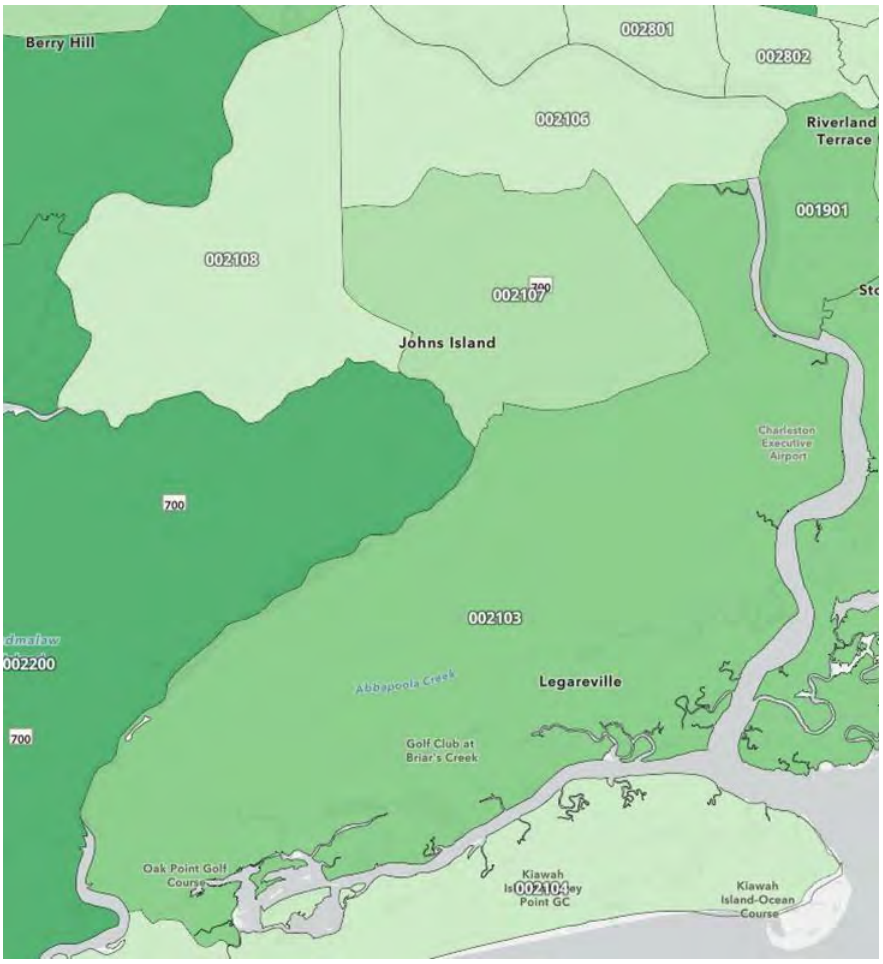


Figure 3, Source: FEMA National Risk Index, https://hazards.fema.gov/nri/map#

Kiawah Island-Seabrook Island CCD 91761

Kiawah Island-Seabrook Island includes census tracts within the jurisdiction of Town of Kiawah Island and Town of Seabrook Island. Overall Social Vulnerability for Kiawah Island-Seabrook Island CCD is very low (see Figure 4). The vulnerability score across the CCD can be averaged to 1.97/100 (national score), or very low.

Socioeconomic Status

Social and economic factors such as income and education can directly impact health outcomes during climate related disasters (EPA 2022). Currently, census tracts 002104 and 00105 have an unemployment rate of 1% for populations 16 years and over, which is lower than the County of Charleston (3.5%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). **Household Characteristics**

The Kiawah Island-Seabrook Island CCD vulnerability score is very low, however, census tract 002105 and 002104 have 59% of residents ages 65 and over, which is higher compared to County of Charleston (17.6%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). Older adults, children, and socially isolated residents are considered vulnerable to the impacts of climate related disasters. Individuals with a disability experience higher social risk factors such as poverty and unemployment that can directly impact health outcomes during climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Persons with disabilities account for 9% of the census tract 002104 population, which is comparable to County of Charleston (9.8%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have limited mobility and/or health conditions that increase their vulnerability to climate related disasters (Gamble, Janet L. ; Balbus, John 2016).

Racial and Ethnic Minority Status

The Kiawah Island-Seabrook Island CCD vulnerability score is very low, with most of the population in census tracts 002105 and 002104 identifying as White (98%). Currently, only 1% of individuals in these census tracts identify as Black or African American (Environmental Protection Agency ACS 2017-2021).

Housing Type and Transportation

The Kiawah Island-Seabrook Island CCD vulnerability score is very low, however census tracts 002105 and 002104 are at high risk for projected floods. Currently, census tracts 002104 is at 99th percentile and 002105 is at 98th percentile for projected flood risk to properties from projected floods, tides, rain, riverine, and storm surges within 30 years (Council on Environmental Quality ACS 2015-2019). Census tract 002104 has 23 households (2.2%) and 002105 has 28 households (2.5%) with no vehicle access. These individuals may have difficulty evacuating themselves during a flood event and/or other natural disasters (Urban Observatory by Esri 2017-2021).



Figure 4, Source: FEMA National Risk Index, https://hazards.fema.gov/nri/map#

Edisto Island CCD 90988

Edisto Island includes census tracts within the jurisdiction of Unincorporated Charleston County. Overall Social Vulnerability for Edisto Island CCD 90988 is relatively moderate (see Figure 5). The vulnerability score of the CCD is 46.57/100 (national score).

Socioeconomic Status

The higher vulnerability scores in Edisto Island CCD 90988 can be attributed to socioeconomic status. Social and economic factors such as income and education can directly impact health outcomes during climate related disasters (EPA 2022). Currently, census tract 002300 has an unemployment rate of 11% for populations 16 years and over, which is higher than the County of Charleston (3.5%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have inadequate resources to recover from impacts of climate related disasters.

Household Characteristics

The higher vulnerability scores in Edisto Island CCD 90988 can be attributed to household characteristics. Older adults, children, and socially isolated residents are considered vulnerable to the impacts of climate related disasters. As an example, older adults may have limited mobility and/or health conditions that increase their vulnerability to climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Currently, census tract 002300 has 37% of residents ages 65 and over, which is higher compared to County of Charleston (17.6%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). Individuals with a disability experience higher social risk factors such as poverty and unemployment that can directly impact health outcomes during climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Persons with disabilities account for 18% of the 002300 census

tract population, which is higher compared to County of Charleston (9.8%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have limited capacity to meet basic needs, adapting and preparing for, evacuating, and recovering from extreme weather.

Racial and Ethnic Minority Status

The higher vulnerability scores in Edisto Island CCD 90988 can be attributed to racial and ethnic minority status. Racial and ethnic minority groups are more vulnerable to impacts of climate change. As an example, Black or African American individuals are 40% more likely to live in areas with projected increases in extreme temperature related deaths (EPA 2021). Currently, 26% of the community in census tract 002300 is Black or African American, which is higher compared to the County overall (24%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021).

Housing Type and Transportation

The higher vulnerability scores in Edisto Island CCD 90988 can be attributed to housing type and transportation. Communities with inadequate housing and infrastructure are more likely to be exposed to natural disasters because of climate change. As an example, census tract 002300 is at 97th percentile for projected flood risk to properties from projected floods, tides, rain, riverine, and storm surges within 30 years (Council on Environmental Quality ACS 2015-2019). Currently, census tract 002300 has an estimated 44 (6.6%) households with no vehicle access. These individuals may have difficulty evacuating themselves during a flood event and/or other natural disasters (Urban Observatory by Esri 2017-2021).



Figure 5, Source: FEMA National Risk Index, https://hazards.fema.gov/nri/map#

Wadmalaw Island CCD 93549:

Wadmalaw Island CCD includes census tracts within the jurisdiction of Unincorporated Charleston County and Town of Rockville. Overall Social Vulnerability for Wadmalaw Island CCD 90988 is relatively high (see Figure 6). The vulnerability score of the CCD is 65.29/100 (national score), or relatively high.

Socioeconomic Status

The higher vulnerability score for Wadmalaw Island CCD 90988 can be attributed to socioeconomic status. Social and economic factors such as income and education can directly impact health outcomes during climate related disasters (EPA 2022). Currently, census tract 002200 has an unemployment rate of 5% for populations 16 years and over, which is higher than the County of Charleston (3.5%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have inadequate resources to recover from impacts of climate related disasters.

Household Characteristics

The higher vulnerability score for Wadmalaw Island CCD 90988 can be attributed to household characteristics. Older adults, children, and socially isolated residents are considered vulnerable to the impacts of climate related disasters. As an example, older adults may have limited mobility and/or health conditions that increase their vulnerability to climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Currently, census tract 002200 has 22% of residents ages 65 and over, which is higher compared to County of Charleston (17.6%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). Individuals with a disability experience higher social risk factors such as poverty and unemployment that can directly impact health outcomes during climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Persons with disabilities account for 12% of the 002200 census tract population, which is higher compared to County of Charleston (9.8%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have limited capacity to meet basic needs, adapting and preparing for, evacuating, and recovering from extreme weather.

Racial and Ethnic Minority Status

The higher vulnerability score for Wadmalaw Island CCD 90988 can be attributed to racial and ethnic minority status. Racial and ethnic minority groups are more vulnerable to impacts of climate change. As an example, Black or African American individuals are 40% more likely to live in areas with projected increases in extreme temperature related deaths (EPA 2021). Currently, 40% of the community in census tract 002200 is Black or African American, which is higher compared to the County overall (24%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021).

Housing Type and Transportation

The higher vulnerability score for Wadmalaw Island CCD 90988 can be attributed to housing type and transportation. Communities with inadequate housing and infrastructure are more likely to be exposed to natural disasters because of climate change. As an example, census tract 002200 is at 93rd percentile for projected flood risk to properties from projected floods, tides, rain, riverine, and storm surges within 30 years (Council on Environmental Quality ACS 2015-2019). Currently, census tract 002200 has an estimated 64 (5.9%) households with no vehicle access. These individuals may have difficulty evacuating themselves during a flood event and/or other natural disasters (Urban Observatory by Esri 2017-2021).



Figure 6, Source: FEMA National Risk Index, https://hazards.fema.gov/nri/map#

Ravenel-Hollywood CCD 92771

Ravenel-Hollywood CCD includes census tracts within the jurisdiction of Town of Hollywood, Town of Meggett, Town of Ravenel, and Unincorporated Charleston County. Overall Social Vulnerability for Ravenel-Hollywood CCD 90988 is relatively moderate (see Figure 7). The vulnerability score across the CCD can be averaged to 59/100 (national score), or relatively moderate.

Socioeconomic Status

The higher vulnerability scores in census tracts of Ravenel-Hollywood CCD 90988 can be attributed to socioeconomic status. Social and economic factors such as income and education can directly impact health outcomes during climate related disasters (EPA 2022). As an example, census tract 002503 and 002504 have an unemployment rate of 6% for populations 16 years and over, which is higher than the County of Charleston (3.5%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have inadequate resources to recover from impacts of climate related disasters.

Household Characteristics

The higher vulnerability scores in census tracts of Ravenel-Hollywood CCD 90988 can be attributed to household characteristics. Older adults, children, and socially isolated residents are considered vulnerable to the impacts of climate related disasters. As an example, older adults may have limited mobility and/or health conditions that increase their vulnerability to climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Currently, census tracts 002503 and 002504 have 20% of residents ages 65 and over, which is higher compared to County of Charleston (17.6%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). Individuals with a disability experience higher social risk factors such as poverty and unemployment that can directly impact health outcomes during climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Persons with disabilities account for 26% of the 002503 and 002504 census tract population, which is significantly higher compared to County of Charleston (9.8%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have limited capacity to meet basic needs, adapting and preparing for, evacuating, and recovering from extreme weather.

Racial and Ethnic Minority Status

The higher vulnerability scores in census tracts of Ravenel-Hollywood CCD 90988 can be attributed to racial and ethnic minority status. Racial and ethnic minority groups are more vulnerable to impacts of climate change. As an example, Black or African American individuals are 40% more likely to live in areas with projected increases in extreme temperature related deaths (EPA 2021). Currently, 65% of the community in census tract 002402 is Black or African American, which is higher compared to the County overall (24%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021).

Housing Type and Transportation

The higher vulnerability score in census tracts of Ravenel-Hollywood CCD 90988 can be attributed to housing type and transportation. Communities with inadequate housing and infrastructure are more likely to be exposed to natural disasters because of climate change. As an example, census tract 002503 is at 85th percentile for projected flood risk to properties from projected floods, tides, rain, riverine, and storm surges within 30 years (Council on Environmental Quality ACS 2015-2019). Currently, census tract 002503 has an estimated 161 (17.8%) households with no vehicle access. These individuals may have difficulty evacuating themselves during a flood event and/or other natural disasters (Urban Observatory by Esri 2017-2021).

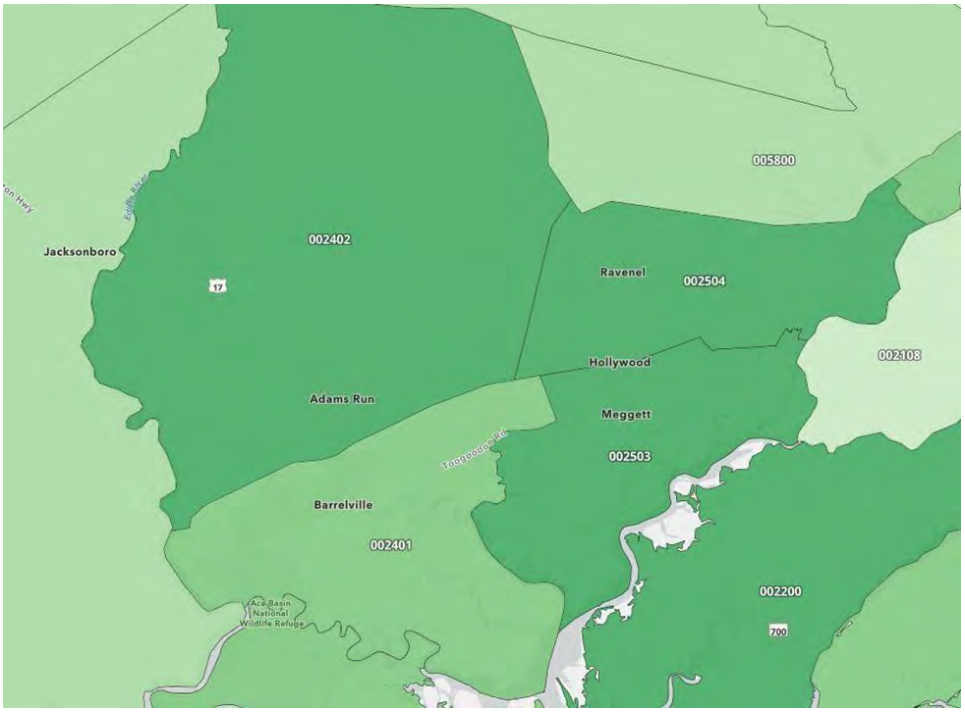


Figure 7, Source: FEMA National Risk Index, https://hazards.fema.gov/nri/map#

McClellanville Census County Division CCD 92080

The McClellanville CCD includes census tracts within the jurisdiction of Town of Awendaw and Town of McClellanville. Overall Social Vulnerability for McClellanville CCD 90988 is relatively moderate (see Figure 8). The vulnerability score across the CCD can be averaged to 43.25/100 (national score), or relatively moderate.

Socioeconomic Status

The higher vulnerability scores in census tracts for McClellanville CCD 90988 can be attributed to socioeconomic status. Social and economic factors such as income and education can directly impact health outcomes during climate related disasters (EPA 2022). Currently, census tracts 005001 and 005002 have an unemployment rate of 13% for populations 16 years and over, which is higher than the County of Charleston (3.5%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have inadequate resources to recover from impacts of climate related disasters.

Household Characteristics

The higher vulnerability scores in census tracts for McClellanville CCD 90988 can be attributed to household characteristics. Older adults, children, and socially isolated residents are considered vulnerable to the impacts of climate related disasters. As an example, older adults may have limited mobility and/or health conditions that increase their vulnerability to climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Currently, census tracts 005001 and 005002 have 21% of residents ages 65 and over, which is higher compared to County of Charleston (17.6%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). Individuals with a disability experience higher social risk factors such as poverty and unemployment that can directly impact health outcomes during climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Persons with disabilities account for 11% of the 005001 and 005002 census tract population, which is higher compared to County of Charleston (9.8%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have limited capacity to meet basic needs, adapting and preparing for, evacuating, and recovering from extreme weather.

Racial and Ethnic Minority Status

The higher vulnerability scores in census tracts for McClellanville CCD 90988 can be attributed to racial and ethnic minority status. Racial and ethnic minority groups are more vulnerable to impacts of climate change. As an example, Black or African American individuals are 40% more likely to live in areas with projected increases in extreme temperature related deaths (EPA 2021). Currently, 40% of the community in census tracts 005001 and 005002 is Black or African American, which is higher compared to the County overall (24%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021).

Housing Type and Transportation

The higher vulnerability scores in census tracts for McClellanville CCD 90988 can be attributed to housing type and transportation. Communities with inadequate housing and infrastructure are more likely to be exposed to natural disasters because of climate change. As an example, census tracts 005001 and 005002 is at 96th percentile for projected flood risk to properties from projected floods, tides, rain, riverine, and storm surges within 30 years (Council on Environmental Quality ACS 2015-2019). Currently, census tract 005001 has an estimated 42 (6.9%) households with no vehicle access and census tract 005002 has an estimated 137 (11.0%) households with no vehicle access. These individuals may have difficulty evacuating themselves during a flood event and/or other natural disasters (Urban Observatory by Esri 2017-2021).

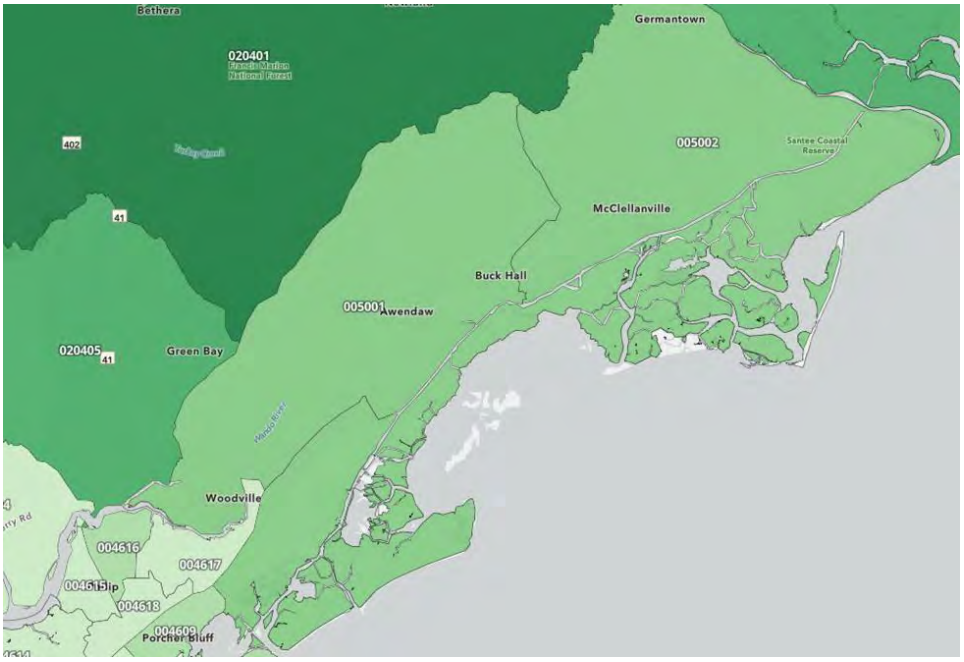


Figure 8, Source: FEMA National Risk Index, https://hazards.fema.gov/nri/map#

West Ashley CCD 93646

West Ashley CCD includes census tracts within the jurisdiction of City of Charleston and City of North Charleston. Overall Social Vulnerability for West Ashley CCD 93646 ranges from very low to relatively high, with lower vulnerability areas located in the eastern peninsula and higher vulnerabilities located generally further inland (see Figure 9). The vulnerability score across the CCD can be averaged to 33.77/100 (national score), or relatively low.

Socioeconomic Status

The higher vulnerability scores in census tracts for West Ashley CCD can be attributed to socioeconomic status. Social and economic factors such as income and education can directly impact health outcomes during climate related disasters (EPA 2022). Currently, census tract 002701 has an unemployment rate of 6% for populations 16 years and over, which is higher than the County of Charleston (3.5%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have inadequate resources to recover from impacts of climate related disasters.

Household Characteristics

The higher vulnerability scores in census tracts for West Ashley CCD can be attributed to household characteristics. Older adults, children, and socially isolated residents are considered vulnerable to the impacts of climate related disasters. As an example, older adults may have limited mobility and/or health conditions that increase their vulnerability to climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Currently, census tract 002605 has 18% of residents ages 65 and over, which is higher compared to County of Charleston (17.6%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). Individuals with a disability experience higher social risk factors such as poverty and unemployment that can directly impact health outcomes during climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Persons with disabilities account for 13% of the 002701 census tract population, which is higher compared to County of Charleston (9.8%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have limited capacity to meet basic needs, adapting and preparing for, evacuating, and recovering from extreme weather.

Racial and Ethnic Minority Status

The higher vulnerability scores in census tracts for West Ashley CCD can be attributed to racial and ethnic minority status. Racial and ethnic minority groups are more vulnerable to impacts of climate change. As an example, Black or African American individuals are 40% more likely to live in areas with projected increases in extreme temperature related deaths (EPA 2021). Currently, 63% of the community in census tract 002613 is Black or African American, which is significantly higher compared to the County overall (24%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021).

Housing Type and Transportation

The higher vulnerability scores in census tracts for West Ashley CCD can be attributed to housing type and transportation. Communities with inadequate housing and infrastructure are more likely to be exposed to natural disasters because of climate change. As an example, census tract 002702 is at 89th percentile for projected flood risk to properties from projected floods, tides, rain, riverine, and storm surges within 30 years (Council on Environmental Quality ACS 2015-2019). Currently, census tract 002702 has an estimated 270 (13%) households with no vehicle access. These individuals may have difficulty evacuating themselves during a flood event and/or other natural disasters (Urban Observatory by Esri 2017-2021).

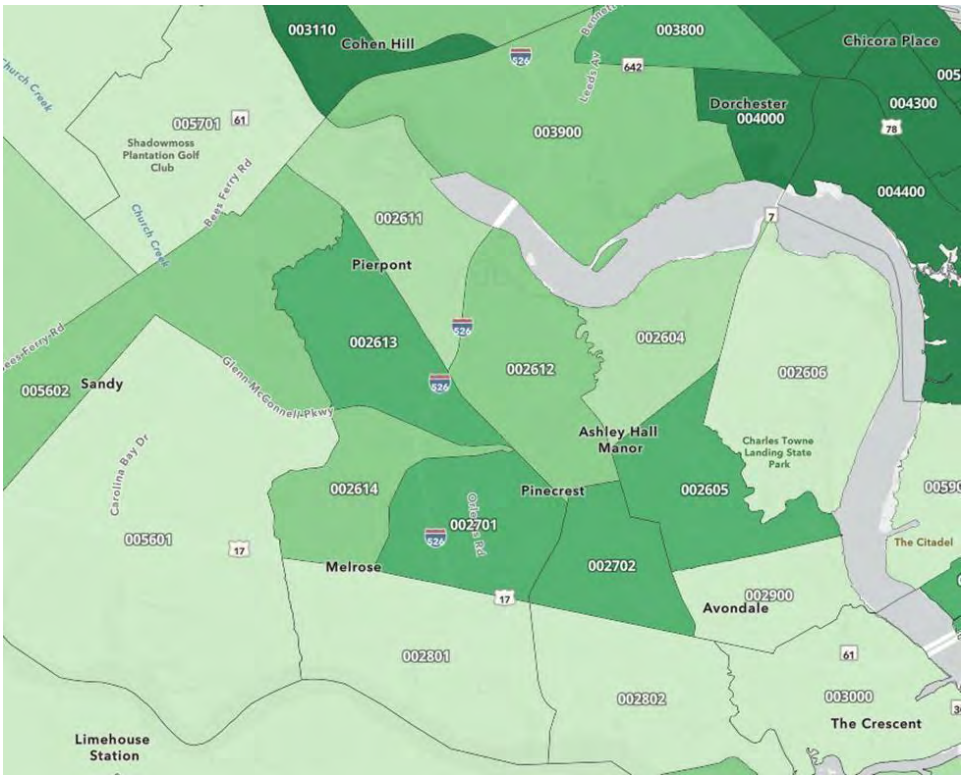


Figure 9, Source: FEMA National Risk Index, https://hazards.fema.gov/nri/map#

James Island CCD 91664

James Island CCD includes census tracts within the jurisdiction of City of Charleston, Town of James Island, and City of Folly Beach. Overall Social Vulnerability for James Island CCD 91664 ranges from very low to relatively moderate, with lower vulnerability areas located along the Stono River (see Figure 10). The vulnerability score across the CCD can be averaged to 21.5/100 (national score), or relatively low.

Socioeconomic Status

Social and economic factors such as income and education can directly impact health outcomes during climate related disasters (EPA 2022). Currently, census tracts 001901 and 002008 have an unemployment rate of 1% for populations 16 years and over, which is lower than the County of Charleston (3.5%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021).

Household Characteristics

The James Island CCD vulnerability score is relatively low; however, older adults, children, and socially isolated residents are considered vulnerable to the impacts of climate related disasters. As an example, older adults may have limited mobility and/or health conditions that increase their vulnerability to climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Currently, census tracts 001901 and 002008 have 17% of residents ages 65 and over, which is comparable to County of Charleston (17.6%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). Individuals with a disability experience higher social risk factors such as poverty and unemployment that can directly impact health outcomes during climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Persons with disabilities account for 9% of the 001901 and 002008 census tract population, which is comparable to County of Charleston (9.8%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have limited capacity to meet basic needs, adapting and preparing for, evacuating, and recovering from extreme weather.

Racial and Ethnic Minority Status

The higher vulnerability scores in James Island CCD can be attributed to racial and ethnic minority status. Racial and ethnic minority groups are more vulnerable to impacts of climate change. As an example, Hispanic and Latino individuals are 43% more likely to live in areas with reduction in labor hours due to extreme temperatures (EPA 2021). Currently, 9% of the community in census tracts

001901 and 002008 is Hispanic or Latino, which is higher compared to the County overall (5.6%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021).

Housing Type and Transportation

The higher vulnerability scores in census tracts of James Island CCD can be attributed to housing type and transportation. Communities with inadequate housing and infrastructure are more likely to be exposed to natural disasters because of climate change. As an example, census tract 001901 is at 96th percentile for projected flood risk to properties from projected floods, tides, rain, riverine, and storm surges within 30 years (Council on Environmental Quality ACS 2015-2019). Currently, census tract 001901 has an estimated 59 (3.2%) households with no vehicle access. These individuals may have difficulty evacuating themselves during a flood event and/or other natural disasters (Urban Observatory by Esri 2017-2021).

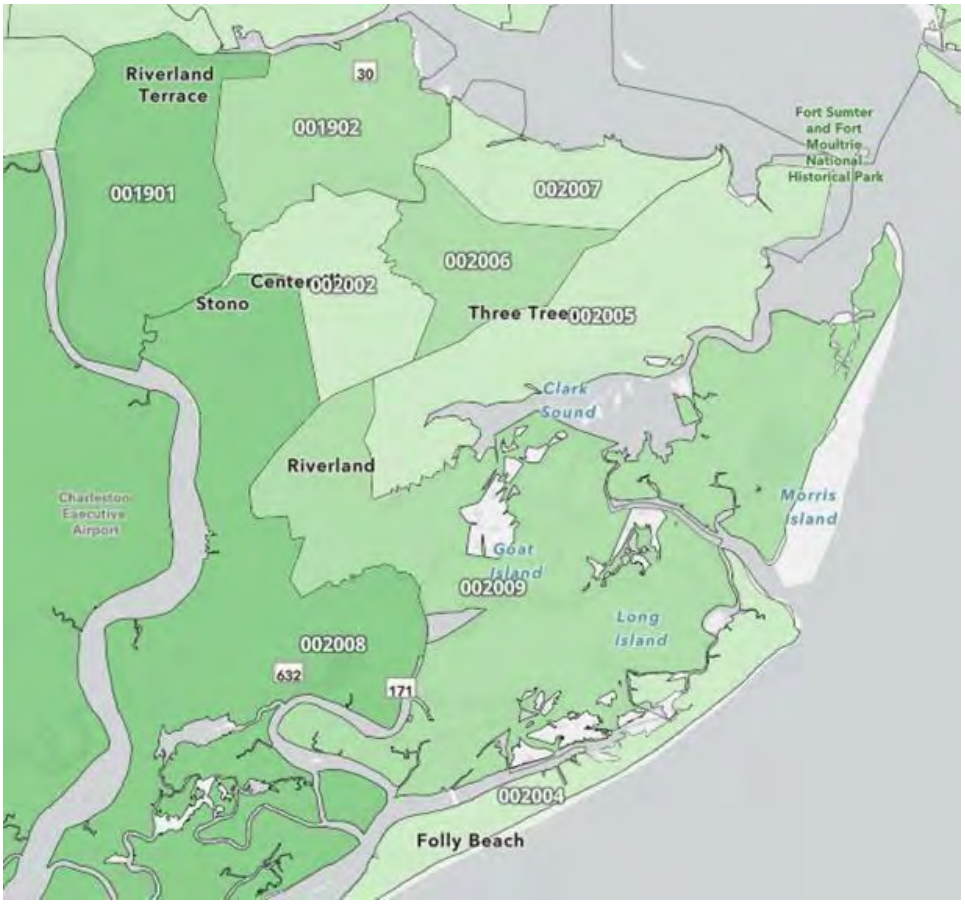


Figure 10, Source: FEMA National Risk Index, https://hazards.fema.gov/nri/map#

North Charleston CCD 92424

North Charleston CCD includes census tracts within the jurisdiction of City of North Charleston and Town of Lincolnville. Overall Social Vulnerability for North Charleston CCD ranges from very low to very high, dispersed throughout the CCD (see Figure 11). The vulnerability score across the CCD can be averaged to 69.28/100 (national score), or relatively high.

Socioeconomic Status

The higher vulnerability score for North Charleston CCD can be attributed to socioeconomic status. Social and economic factors such as income and education can directly impact health outcomes during climate related disasters (EPA 2022). Currently, census tract 003700 has an unemployment rate of 9% for populations 16 years and over, which is higher than the County of Charleston (3.5%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have inadequate resources to recover from impacts of climate related disasters.

Household Characteristics

The higher vulnerability score for North Charleston CCD can be attributed to household characteristics. Older adults, children, and socially isolated residents are considered vulnerable to the impacts of climate related disasters. As an example, older adults may have limited mobility and/or health conditions that increase their vulnerability to climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Currently, census tract 003300 has 18% of residents ages 65 and over, which is higher compared to County of Charleston (17.6%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). Individuals with a disability experience higher social risk factors such as poverty and unemployment that can directly impact health outcomes during climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Persons with disabilities account for 13% of the 003700 census tract population, which is higher compared to County of Charleston (9.8%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have limited capacity to meet basic needs, adapting and preparing for, evacuating, and recovering from extreme weather.

Racial and Ethnic Minority Status

The higher vulnerability score for North Charleston CCD can be attributed to racial and ethnic minority status. Racial and ethnic minority groups are more vulnerable to impacts of climate change. As an example, Black or African American individuals are 40% more likely to live in areas with projected increases in extreme temperature related deaths (EPA 2021). Currently, 77% of the community in census tract 003300 is Black or African American, which is significantly higher compared to the County overall (24%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021).

Housing Type and Transportation

The higher vulnerability score for North Charleston CCD can be attributed to housing type and transportation. Communities with inadequate housing and infrastructure are more likely to be exposed to natural disasters because of climate change. As an example, census tract 005500 is at 90th percentile for projected flood risk to properties from projected floods, tides, rain, riverine, and storm surges within 30 years (Council on Environmental Quality ACS 2015-2019). Currently, census tract 005500 has an estimated 118 (16.3%) households with no vehicle access. These individuals may have difficulty evacuating themselves during a flood event and/or other natural disasters (Urban Observatory by Esri 2017-2021).

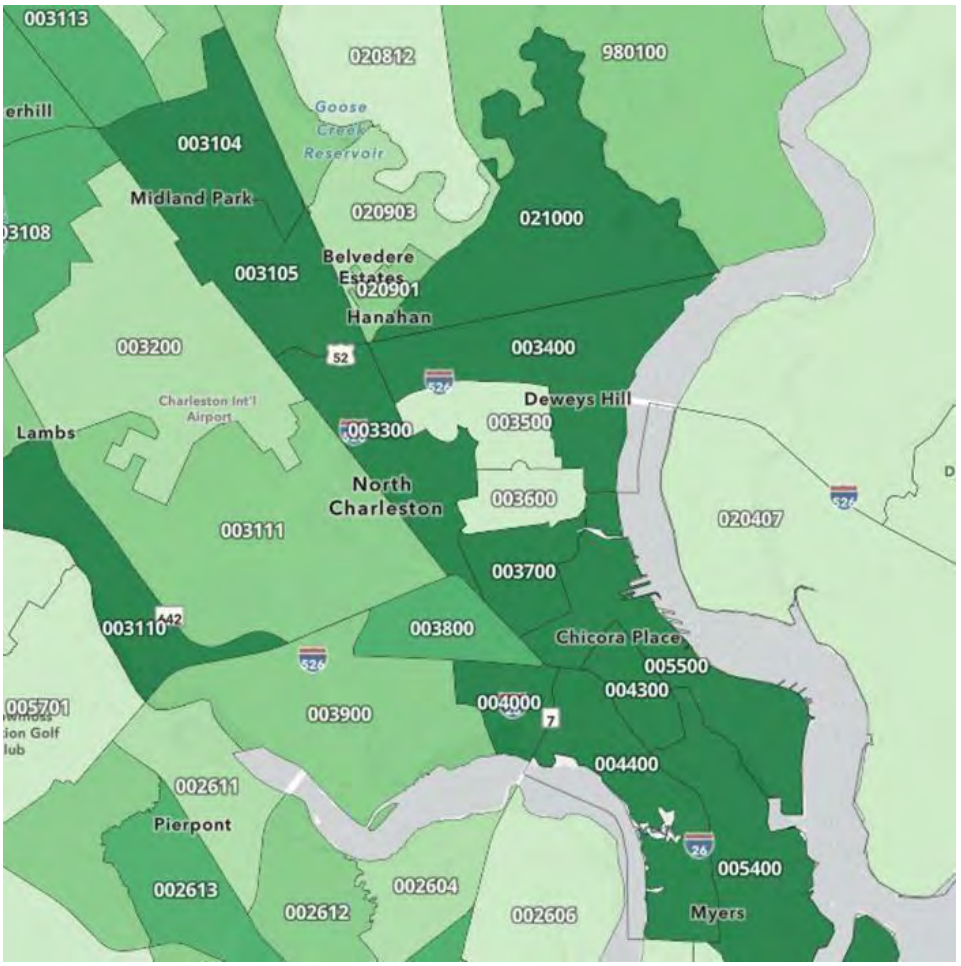


Figure 11, Source: FEMA National Risk Index, https://hazards.fema.gov/nri/map#

Mount Pleasant CCD 92301

Mount Pleasant CCD includes census tracts within the jurisdiction of Town of Mount Pleasant, City of Isle of Palms, and Town of Sullivan's Island. Overall Social Vulnerability for Mount Pleasant CCD ranges from very low to relatively moderate (see Figure 12). The vulnerability score across the CCD can be averaged to 16.07/100 (national score), or very low.

Socioeconomic Status

Social and economic factors such as income and education can directly impact health outcomes during climate related disasters (EPA 2022). Currently, census tracts 004607 and 004620 have an unemployment rate of 1% for populations 16 years and over, which is lower than the County of Charleston (3.5%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021).

Household Characteristics

The higher vulnerability scores in census tracts of Mount Pleasant CCD can be attributed to household characteristics. Older adults, children, and socially isolated residents are considered vulnerable to the impacts of climate related disasters. As an example, older adults may have limited mobility and/or health conditions that increase their vulnerability to climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Currently, census tracts 004607 and 004620 have 23% of residents ages 65 and over, which is higher compared to County of Charleston (17.6%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). Individuals with a disability experience higher social risk factors such as poverty and unemployment that can directly impact health outcomes during climate related disasters (Gamble, Janet L. ; Balbus, John 2016). Persons with disabilities account for 9% of the 004607 and 004620 census tract population, which is comparable to County of Charleston (9.8%) (Environmental Protection Agency ACS 2017-2021), (U.S. Census ACS 2017-2021). These individuals may have limited capacity to meet basic needs, adapting and preparing for, evacuating, and recovering from extreme weather.

Racial and Ethnic Minority Status

The Mount Pleasant CCD vulnerability score is very low, with most of the population in census tracts 004607 and 004620 identifying as White (92%). Currently, only 2% of individuals in these census tracts identify as Black or African American, 3% as Asian, and 2% as Hispanic or Latino (Environmental Protection Agency ACS 2017-2021).

Housing Type and Transportation

The higher vulnerability scores in census tracts of Mount Pleasant CCD can be attributed to housing type and transportation. Communities with inadequate housing and infrastructure are more likely to be exposed to natural disasters because of climate change. As an example, census tract 004620 is at 97th percentile for projected flood risk to properties from projected floods, tides, rain, riverine, and storm surges within 30 years (Council on Environmental Quality ACS 2015-2019). Currently, census tract 004620 has an estimated 125 (6%) households with no vehicle access. These individuals may have difficulty evacuating themselves during a flood event and/or other natural disasters (Urban Observatory by Esri 2017-2021).

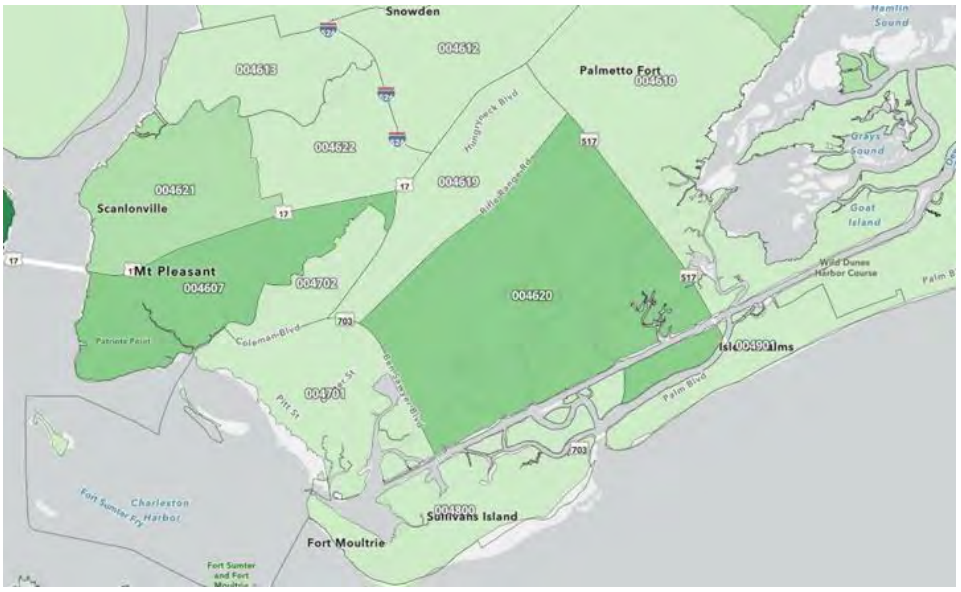


Figure 12, Source: FEMA National Risk Index, https://hazards.fema.gov/nri/map#

Table 5-1-5

2018 All-Hazard Score Based on Future Annual Probability of Hazard Charleston County, SC	
Hazard Type	Hazard Score
Hurricane	0.8
Coastal	1
Severe Storm	0.77
Lightning	0.62
Tornado	0.7
Flood	1
Wildfire	0.23
Drought	0.19
Hail	0.64
Winter Weather	0.35
Earthquake	0.07
Hazmat	0.34
Social Vulnerability Score (SoVI)	**0.36**
Place Vulnerability	**8.64**
Total All-Hazard Score	**6.29**

Source: South Carolina Hazard Mitigation Plan, 2018, pg. 183

– Vulnerable Buildings

The original pre-planning questionnaire asked respondents to rank the vulnerability of the building stock to the various hazards facing the Region. The average results for this vulnerability assessment indicate that the structures in the Charleston County Region are most vulnerable to hazards in the following order:

- Hurricane
- Earthquake
- Tornado
- Flood
- Sea Level Rise
- Tsunamis
- Terrorist Incidents
- Wildfires
- Winter Weather
- Hazardous Material
- Dam Failure
- Drought

The following hazards do not cause determinable damage to buildings and/or they were not addressed in the survey, so they will not be addressed in this section of this plan:

- Rip currents (No structure damage)

The new hazards added to this plan as a result of the requirements for meeting the Disaster Mitigation Act of 2000, also in some cases create a potential vulnerability for buildings within the Region. While drought and heat wave hazards do not typically affect buildings, dam failure could potentially damage buildings within the Charleston County Area.

A questionnaire was distributed to the signatory entities to this Plan and others on the Project Impact e-mail lists during 2020 to determine if the hazard vulnerability rankings had changed since the last survey was taken. For structure vulnerability, the hazards were ranked as follows in this more recent survey: 1. hurricane; 2. earthquake; 3. tornado; 4. flood; 5. sea level rise; 6. tsunamis; 7. terrorist incidents; 8.wildfire; 9. winter weather; 10. hazardous materials incident, 11. dam failure and 12. drought. In this plan, the shootings/carrying of weapons in schools are listed in the acts of terrorism subcategory. Earthquakes surpassed flooding in this most recent survey and the new hazards added to meet the Disaster Mitigation Act of 2000 requirements were the lowest ranked by the survey respondents. The federal focus on terrorism since the attacks of September 11, 2001, and sea level rise with the increased importance and relevance of climate change may be at least in part responsible for the higher ranking of the terrorist activity hazard and the need for the addition of sea level rise in this more recent survey. The earthquake hazard increasing in ranking is perhaps reflective of the educational activities that have been ongoing since this Plan was originally developed to promote awareness of the earthquake hazard in this area.

In this section, municipalities and the County are the government entities that are discussed because the special purpose districts have overlapping jurisdictional boundaries with the Unincorporated County and/or one or more municipalities, and these are the entities for which records are available in the Assessor's data base regarding building numbers and valuations.

1, 2 & 3. Hurricane, Flood, and Sea Level Rise

Although building codes have been enforced in the Charleston County Region in some cases from as early as the late 1800's (City of Charleston), the codes in general did not begin addressing high wind until the late 1970's and seismic design parameters until the late 1990's. Similarly, floodplain management regulations in general did not come into force throughout the Charleston County Region until in most cases the late 1970's or early 1980's. Therefore, structures built pre-1985, in general, are considered to be more likely to be vulnerable to hurricane damage and flood damage than those constructed since 1985. Manufactured housing (mobile homes) constructed pre-1976 are also highly vulnerable to high wind damage since there were no federal guidelines for construction of this type of housing prior to that date. Even after 1976 when Federal guidelines for the construction of mobile homes were implemented, the construction of mobile homes was not up to the wind speed designs of site-built construction. There are an estimated 2,306 manufactured homes in the special flood hazard zone Charleston County Region at this time.

There are an estimated 66,995 residential site-built buildings in "A" flood zones and 7,199 in "V" flood zones in the Region, for an estimated total of 74,194 residences potentially vulnerable to flooding due to their location in the special flood hazard area (SFHA) only. The "A" zone includes parcels designated with any "A" flood zone. The "V" zone includes parcels designated with any "V" designation. Since most manufactured homes are treated for tax assessment purposes as "titled property" as opposed to real property, differentiating flood zones for the manufactured homes using the parcel layer was not feasible at this time. Manufactured homes in the SFHA were considered as "A" zone properties for total building count per flood zone area purposes since most jurisdictions within Charleston County restrict manufactured homes from their "V" zone areas. There are also 6,462 commercial structures throughout the Region, which are potentially vulnerable to flooding due to their location within the SFHA only. Attachment 5-D to this section provides an estimation of the number of vulnerable buildings by jurisdiction/area within Charleston County. The estimates for the number of mobile homes in the SFHA are listed separately, since mobile homes are more highly vulnerable to high wind conditions sometimes associated with flooding, in general, than are site-constructed dwellings. The data utilized for this table were derived using a GIS overlay of FEMA Q-3 flood zone data for Charleston County to designate flood zones for the parcels within Charleston County. Building counts were obtained from the Charleston County

Assessor's data base, utilizing this flood zone information to differentiate the "A" and "V" flood zones from the non-SFHA areas. Building count and valuation data for several of the special purpose districts (e.g. Cooper River Parks and Playground Commission, North Charleston District, St. Andrew's PSD, St. John's Fire District, and St. Paul's Fire District) are included in the data for unincorporated Charleston County. The service areas for the several of the special purpose districts included in this plan also cross multiple jurisdictional boundaries and are included in the building count and valuation data for these jurisdictions.

The actual vulnerability of the building stock within the special flood hazard area (SFHA) does potentially vary depending upon the date of construction for the building, since buildings constructed since the enforcement of floodplain development regulations are elevated to anticipated flood levels and built in accordance with more stringent code requirements. The year of 1985 has been selected as a point at which newest construction in the Charleston Region should be able to withstand the effects of most flood and hurricane events. The estimated numbers of residential and commercial site-built structures that were constructed prior to 1985 and located in the SFHA are shown in this table (5-F). Since no date of construction data is available for manufactured homes in the Charleston County database, the manufactured home data estimates the potential vulnerability of these structures because of their location within the SFHA only. Using this refined data, there are an estimated total of 35,725 buildings (including manufactured homes), of which 6,363 are in Unincorporated Charleston County, that are vulnerable to flooding due to their age of construction and location in the Special Flood Hazard Area in the Charleston Region. Of all structures, 31,960 are residential structures, 3,152 are commercial structures, and 613 are manufactured homes. Attachment 5-F summarizes the vulnerable building counts using this refined analysis method for each of the jurisdictions within Charleston County.

The table provided in Attachment 5-G further refines the potential vulnerability of the building stock within the Region by estimating the average value of the buildings by jurisdiction within the Region that are potentially vulnerable to flooding. The data provided for pre-1985 building valuations were estimated from data derived from the computerized appraisal records in the Charleston County, SC Assessor's office. The average building valuation data indicated is current through June 2021, so the valuations indicated reflect a 20% upward adjustment to reflect current values. This data does not include "exempt" properties, manufacturing properties, or utility or railroad properties. Exempt properties are generally those owned by a government entity (Federal, State or Local) or some charitable organizations. The ages of the buildings were derived from the "year built" records in the tax assessor's database. The building values shown are estimated market value, not replacement value. The valuations provided do not include land values. As this table reflects, the Charleston Region has an estimated $7.6 billion in real property value and mobile homes potentially vulnerable to flood losses due to its location in the Special Flood Hazard Area and construction prior to 1985. The data provided for each jurisdiction gives a rough estimate of potential flood losses if a severe flood event, including hurricane storm surge, occurs.

The table in Attachment 5-H provides information regarding the total value of buildings located within the "A" and "V" flood zones per jurisdiction, as determined from the tax assessor's data base. There is a total of approximately $23.3 billion of real property located in the "A" flood zone and $3.6 billion of real property located in the "V" flood zone. The "V" flood zone property is considered to be the most highly vulnerable to hurricanes, since it is subject to wave action and rising water during hurricanes and coastal flooding events.

As a further step to attempt to quantify the vulnerability of the Charleston Region to hurricane-force winds and storm surge flooding, a HAZUS-MH simulation of a category 4 hurricane making landfall at the northern-most tip of the Isle of Palms was performed. The following is the relative degree of anticipated building-related damages (moderate or more) for all of Charleston County as a result of a hurricane of this magnitude striking in this location. When

this simulation was run using data from the 2010 census as the basis for the building count and valuation information, at least 21,885 buildings were expected to have moderate or more damage in Charleston County. Of these, 10 fire stations, 2 hospitals, 4 police stations, and 119 schools would be expected to have at least moderate damage as a result of a hurricane of this magnitude striking in this location, per this simulation. This simulation estimates that 1,604 buildings will be completely destroyed in Charleston County as a result of a hurricane of this magnitude, with 1,600 of these being residential structures. No critical facilities are expected to be totally destroyed by a hurricane of this magnitude striking in this location, per this simulation. Estimated building, contents, inventory, and business interruption losses from this simulated hurricane are as follows:

Building:	$1.14 billion
Contents:	$416.5 million
Inventory	$ 4.4 million
Business Interruption Losses:	$ 334.6 million
Total (approx.):	$1.89 billion

Of these total estimated building-related damages determined through this simulation, approximately 83.9% are anticipated to occur to residential properties, 13.1% to commercial properties, 1.9% to industrial properties, and 1.1% to other properties in Charleston County. As a comparison of these results to the damages incurred as a result of Hurricane Hugo (a category 4 hurricane), the comparably lower magnitude of the estimated damages from this simulation than actually occurred during Hurricane Hugo is believed to be attributable to several factors. Specifically, Hurricane Hugo destroyed many of the pre-FIRM buildings, mostly on affected barrier islands and coastal communities in the central and northern parts of Charleston County, and structures built to replace these have been constructed in accordance with more current codes and designed to withstand high wind speeds associated with hurricanes and have also been elevated to or above anticipated flood elevations associated with the hurricane storm surge. The HAZUS-MH models take applicable codes into account in determining estimated building losses and damages with simulated hurricanes. In addition, the track of this simulated hurricane is slightly north of the track actually taken by Hurricane Hugo in 1989, placing the most damaging quadrant of the hurricane slightly further north and in less developed areas of Charleston County than where Hurricane Hugo struck, thereby potentially estimating fewer damages in the more highly developed areas (i.e. the City of Charleston and the Town of Mt. Pleasant) than would be expected from a hurricane following Hugo's path more directly. HAZUS-MH also uses census data, which is not considered to be as accurate in its building count and valuation information as the data contained in the Charleston County Assessor's data base. To rectify this for future updates to this Plan, Charleston County has submitted a grant application to seek funding to develop an enhanced tool for populating the HAZUS-MH program with data from the Charleston County Assessor's data base, for the purpose of being able to further define the estimates of potential hazard-related damages generated from this software. Therefore, while this simulation is valuable in helping to quantify potential current damages associated with large scale hurricanes, the results from this simulation are also not exactly representative of Hurricane Hugo, which is the most damaging hurricane to strike the Region in recent history, so these estimates should be analyzed keeping this in mind.

This HAZUS-MH simulation also produced estimates of the quantity of debris that would likely be generated by a hurricane of this magnitude striking in this location. The model estimates that approximately 3.1 million tons of debris would be expected to be generated by this type of hurricane, with 91% of this being trees and limbs. The model estimates that it will take 10,791 (25 ton) truckloads to haul the debris generated from this hurricane. A preponderance of tree-related debris was evident as a result of Hurricane Hugo in 1989, so in

this aspect, the simulation appears to be providing relatively accurate and useful information for post-event clean-up planning.

4. Wildfire

Fire prevention and control have been intimate requirements in the building-related codes and zoning ordinances enforced throughout the Charleston County Region since the adoption of the first of these types of codes. The most vulnerable structures to fire other than wildfire would likely be those in the central business district of the City of Charleston. This is due primarily to the close physical proximity of the structures in this area. The City of Charleston, however, has a fire department that is rated Class 1 through the Insurance Services Organization fire rating schedule, and is therefore well equipped to deal with fires should they occur in this area. There are also well-established jurisdiction-conducted fire prevention inspection programs throughout the Region, providing periodic inspections for fire prevention of the commercial buildings in the Region. Even developed islands in Charleston County without road access, such as Dewees Island, have access to fire fighters and equipment for prompt response to fires should these develop.

Wildfires in rural areas are possible due to, for example, arson, drought or lightning initiation, and are often difficult to contain due to the lack of access to the fire and a lack of readily available water to fight these wildfires, and the rapid spread of these fires due to the dense forestation of these areas. In the event of wildfires, structures in less populated areas in the proximity of the forested areas could be at risk of fire damage. Factors that make homes at higher risk for wildfire damage include, but are not limited to, long narrow driveways with no turnarounds for fire apparatus, and fuel loads (brush, trees, shrubs, pine straw, etc.) adjacent to the structure. Within Charleston County there are 4,567 buildings located within the boundaries of the Francis Marion National Forest. Of these 1,232 are in the Awendaw area, 2,682 are in Unincorporated Charleston County, and 652 are in McClellanville. These buildings, by nature of their location within the forest, are the most vulnerable buildings to wildfire damage within the Charleston County Region.

5. Tornado

Tornado vulnerability exists in almost any structure in the Region since the building-related codes in general do not address designing for winds of the speed often associated with tornadoes. The major vulnerability regarding tornadoes is that in most cases, structures in this Region are not provided with basements or below-grade shelter areas due to the high-water table and the flood zone restrictions on basements in the special flood hazard area. Manufactured housing is probably the most vulnerable general category of structures in the Region to tornadoes, since these structures are often located in areas where tornado activity is greatest and are less likely to provide adequate shelter from these storms than site-constructed structures. The majority of the mobile homes located within the SFHA in Charleston County are located in the unincorporated areas of the County and the City of North Charleston.

Tornadoes of a severe magnitude are capable of totally damaging any type of structure in their path. According to the National Weather Service, the Charleston County area has never been hit by a tornado greater than an F2 in magnitude on the Fujita Tornado Damage Scale. Chances of the Charleston County area being hit by a stronger tornado remain very slim because of the marine influence layer along the coastal areas. Tornadoes of an F2 magnitude may have winds between 113 and 157 miles per hour and are capable of totally destroying mobile homes and taking the roofs off of site-built homes. Tornadoes of this magnitude can also overturn box cars, uplift automobiles, snap and uproot trees, and cause small objects to become wind-borne debris. Tornadoes can form any time of the year and may also be spawned by hurricanes.

According to data provided by the American Red Cross (2016), there have been 11 tornadoes in South Carolina for which the American Red Cross provided disaster services. Following is a listing of the tornadoes that occurred in Charleston County per the American Red Cross data, and the number of families affected by these tornadoes:

Date of Tornado	Location of Tornado	No. of Families Affected
October 15, 2015	Johns Island, SC	10

The American Red Cross data do not include any commercial structures that may have been damaged by these storms. The Charleston County area could potentially incur heavy localized property damage, particularly if an intense tornado made landfall in a densely populated area. The potential loss of one or more major employers to this type of event should also be considered, since the economic loss to the community can spread beyond the area immediately affected by a tornado if an employer is forced to permanently or temporarily cease operations as a result of building or other property damage. Not only is there potential for commercial building and property losses, but also the potential for job loss throughout the community if an employer cannot quickly recover from this type of event.

Building and other property loss is also only one type of loss associated with tornadoes, particularly for those that live in manufactured homes. Researcher Harold Brooks, of the NOAA National Severe Storms Laboratory, has indicated that mobile home residents are killed at a rate 20 times greater than permanent home residents in tornadoes. Therefore, potential loss of life to manufactured home residents as a result of tornadoes, for which no dollar value can be assigned, must also be considered when evaluating potential losses to this type of event.

6. Earthquake

Seismic (earthquake) design parameters are also relatively recent additions to the building-related codes enforced by the various jurisdictions in the Charleston County Region. For the most part, buildings constructed since the between the middle 1980's and early 2000's have been designed to meet the seismic resistance criteria specified in the Standard Building Code or the CABO One- and Two-Family Dwelling Code. Buildings constructed since the early 2000's have been constructed to even higher standards for earthquake as contained in the International Building and Residential Codes. However, buildings constructed prior to this time have the potential to be vulnerable to earthquakes, particularly those which are unreinforced masonry construction. In addition, structures on reclaimed land (filled marsh, old landfill, etc.) will respond with differing characteristics in the event of an earthquake than those on non-reclaimed land.

According to the Comprehensive Seismic Risk and Vulnerability Study for the State of South Carolina, and a report produced from a HAZUS study for the South Carolina Emergency Management Division, an earthquake of a similar magnitude to the earthquake that occurred in Charleston in 1886 (magnitude 7.3 on the Richter Scale) would be expected to produce the following building-related losses:

- Berkeley, Charleston and Dorchester Counties would be expected to have an estimated $7.6 billion in building losses.
- 14,267 million tons of debris (wood/masonry and steel/concrete) would be expected to be generated in Charleston County alone.
- Over 250 fires would be expected to result in the Tri-County area as a result of an earthquake of this magnitude, resulting in further building-related losses.
- Schools and fire stations are vulnerable to damage due to the age of the buildings and type of construction (state-wide estimate of over 220 schools and 100 fire stations damaged).
- More than 30 hospitals in the State (30%) are expected to be non-functional. Most of this damage is expected in the Berkeley-Charleston-Dorchester County areas.

Charleston County participated in the state-wide earthquake drill on March 14, 2016, where the scenario was a 7.7 magnitude earthquake occurring in the same location as the 1886 Charleston earthquake. HAZUS-MH was utilized to estimate the damages due to this

earthquake for Charleston County only. The following building-related damage estimates were derived from this simulation:

Structural Losses (total):	$4.56 billion
Non-Structural Losses (total):	$17.23 billion
Contents losses (total):	$4.60 billion
Inventory losses (total)	$86.64 million
Income losses (total):	$2.47 billion
Total losses:	$28.94 billion

Of these estimated losses, approximately 55.4% are anticipated for single family residences, 23.2% for other residential properties, 17.5% for commercial properties, 2.4% for industrial properties, and 1.5% for other properties. A total of 73,777 buildings in Charleston County and its inclusive municipalities are expected to have damage as a result of an earthquake of this magnitude, with 53% of these expected to receive extensive damage. Critical facilities such as hospitals (12), schools (119), police stations (12), fire stations (58) and emergency operations centers (1) are also expected to receive some damages as a result of an earthquake of this magnitude, based upon this HAZUS-MH simulation.

It should be noted that earthquake intensity is on a logarithmic scale, so an earthquake with a magnitude of 7.7 has much greater damage potential than, for example, the 7.3 magnitude earthquake that the Charleston area previously experienced in 1886. The Charleston County area has fortunately not previously experienced an earthquake with a magnitude as high as a 7.7 on the Richter scale. This of course, is not impossible, but it is also a more damaging earthquake than the largest earthquake that the area has ever experienced in its history. As HAZUS-MH simulation points out, Charleston County could receive catastrophic damages if the area would experience an earthquake of this magnitude. Consequently, educating the citizenry regarding preparations they should take to minimize building–related damages due to earthquakes is a high priority item for the area. It is also important for this education to be aimed at those in the construction community, so as to reduce their interest in attempting to exclude some of the provisions of the adopted codes that apply to seismic strengthening of buildings. (The Homebuilders Association of South Carolina had recommended several changes to the adopted codes, some of which would have resulted in a relaxation of seismic requirements, but these amendments were ultimately either withdrawn or were rejected by the code adoption commission.)

On June 20th, 2012, another HAZUS earthquake simulation was performed to include new construction in the county, new population figures, and additional refinements in the HAZUS simulation program. The simulated earthquake was a 6.8 magnitude on the Richter scale and the simulated epicenter was modeled after the historic 1886 earthquake.

HAZUS estimates that 84,208 buildings will be at least moderately damaged; this is over 62.0% of the buildings in the area. There are an estimated 25,715 buildings that will be damaged beyond repair.

With regards to essential facility damage, all 12 area hospitals, 118 of the 124 schools, the single Emergency Operations Center, 10 of the 12 Police Stations and 20 of the 21 Fire Stations are expected to receive at least moderate damage. Response and functionality of these facilities will be compromised.

With regards to transportation systems, 275 of the 332 bridges are expected to receive moderate damage, 160 of them are estimated to suffer complete damage. After day 1, only 57 bridges will have functionality and after day 7, 89 will be operable. The main bus facility is expected to receive moderate damage, 3 of the 5 ferry facilities are expected to receive moderate damage, 2 of the 3 airport facilities are expected to receive moderate damage, and all 57 port facilities are expected to receive moderate damage, though only 13 suffer complete damage.

Nearly each utility system (water, wastewater, oil systems, electricity, and communication) is expected to receive at least moderate damage at nearly 100% of area locations, though nearly

90% of water, 60% of wastewater, 71% of electrical power, and 67% of communication systems will be functional after one week. It is estimated that after one week, there will not be any functioning oil/fuel systems in the area. It is estimated that by day 30 after the earthquake, all area households will have potable water service, but 16,904 households of the 123,326 will still not have electricity.
As a result of the earthquake, 6.66 million tons of debris will be generated.
The total estimated economic loss is expected to total 14.8 billion dollars. 24% of the estimated losses were related to business interruptions of the Region. By far, the largest loss was sustained by the residential occupancies which made up over 43% of the total loss.
Transportation system loses are expected to reach $5.1 billion with a resulting economic loss at $0.5 billion. These figures are based on a relatively long term 15-year timeframe. Utility system losses were estimated at $2.2 billion with respective economic loss at $300 million.

7. Hazardous Material Incidents
The Charleston County Region has an exemplary hazardous material program. The local industries and other businesses which store hazardous materials support this program through annual fees based upon the type and quantity of hazardous materials stored. The revenues generated through this program are utilized to provide hazardous material response equipment, training, and services for the emergency responders of the community. The greatest hazardous material vulnerability of the structures in the Region is likely due to releases that may occur as a result of a natural hazard damaging permanent storage facilities. Building-related hazardous materials incidents represent a very small percentage of the hazardous materials incidents that occur within the Region.

8. Dam Failure
Pinopolis Dam
From the standpoint of damage to structures, the dam failure event with the greatest potential for overall damage in Charleston County would be a failure of the Pinopolis Dam system. A dam failure that would affect the Charleston County area is, however, an extremely unlikely event, since the Pinopolis dams have been retrofitted to withstand an earthquake of the magnitude of the 1886 Charleston earthquake and are inspected and maintained to strict standards. If a catastrophic failure of the Pinopolis dam system were to occur, floodwaters would be expected to reach the closest areas within Charleston County to the dam location within one day of the failure. The Emergency Action Plan for Dam Failure (Santee Cooper December 2022) is updated every year and it provides maps of potential inundation areas in the event of a breach of this dam system. The floodwaters would not be expected to recede until approximately 12 days after the dam breach. In addition, if the floodwaters caused the above ground liquid storage tanks located along the Cooper River to dislodge or rupture, the tanks themselves could become floating objects and/or the contents of the tanks could pollute the floodwaters with potentially hazardous and/or flammable substances. Other debris resulting from up-stream damages would also likely be carried in the flood stream. This debris could create additional damages within Charleston County as it strikes and damages buildings and infrastructures along its path to the Atlantic Ocean. Utilizing a Geographic Information System (GIS) overlay map, a determination of buildings potentially in the inundation area for a Pinopolis Dam system break has been made for the three municipalities with the greatest potential number of buildings in the inundation area, namely the City of North Charleston, the City of Charleston, and the Town of Mt. Pleasant. It is estimated that 7,687 buildings in the City of North Charleston, 15,237 buildings in the City of Charleston (not including Daniel Island), and 23,971 buildings in the Town of Mt. Pleasant are potentially in the inundation zone for a breach of the West Pinopolis Dam. Whether or not these buildings would be flood damaged is contingent upon the elevation of the finished floor of the buildings relative to the

actual elevation of the floodwaters. Any buildings located along the Cooper or Ashley riverfronts that are not elevated above the anticipated dam failure inundation level indicated in Table 5-7 would be potentially vulnerable to floodwater-related losses. Consistent with the refined analysis methodology for estimating the value of buildings potentially vulnerable to loss due to flooding events (see the hurricane/flood discussion in this section), buildings constructed pre-1985 are considered to be the most likely buildings to have finished floor areas at lower elevations, and are therefore considered more likely to incur flood-related losses in the event of a dam breach. The barrier islands would not be expected to experience flooding as a result of a breach and catastrophic failure of the Pinopolis Dam system.

Table 5-1-7

Projected Maximum Flood Water Elevations in the Charleston Region for a Breach of the Pinopolis Dam System					
Locations	52 hrs. after breach	64 hrs. after breach	96 hrs. after breach	104 hrs. after breach	Flooding not projected as a result of a breach
City of North Charleston near Hwy. 52 (near the Berkeley County border) and near to the Cooper River.	15.4 feet				
Central North Charleston near the Cooper River, Daniel Island, Mt. Pleasant near the Cooper River.		12.7 feet			
Neck area of peninsula Charleston, Highway 17 area near the Ashley and Cooper Rivers (City of Charleston, Town of Mt. Pleasant), City of Charleston and Unincorporated Charleston County areas West of and bordering the Ashley River.			9.8 feet		
Eastern Mt. Pleasant, Ashley River border areas near Atlantic Ocean (City of Charleston, Unincorporated Charleston County, James Island), lower peninsula Charleston.				8.3 feet	
Isle of Palms, Sullivan's Island, Folly Beach, Kiawah Island, Seabrook Island.					X
Ravenel, Meggett, Hollywood, St. Paul's Fire District, St. John's Fire District, Southern portions of Unincorporated Charleston County, City of Charleston areas in southern portions of Charleston County, Town of James Island areas not adjacent to Ashley River or Atlantic Ocean.					X
Awendaw, McClellanville, Northern portion of Town of Mount Pleasant (areas beyond 19 miles north following Hwy. 17 from Cooper River bridges), Northern portions of Unincorporated Charleston County.					X
City of North Charleston areas remote from Cooper River, Lincolnville, other areas in Charleston County not otherwise indicated.					X

Source: Emergency Action Plan for Dam Failure (Santee Cooper, December 2015)

Santee Dam

A catastrophic failure of the Santee Dam system would result in building losses, primarily in the areas located in the northern-most portion of Charleston County along the Santee River floodplain. Properties in Unincorporated Charleston County and in the McClellanville-area would be the main areas expected to experience affects from a breach of this dam. The Emergency Action Plan for Dam Failure (Santee Cooper, December 2015) provides maps of areas projected to experience flooding as a result of a breach of the Santee Dam, and lists 54 structures that are in the potential inundation area within Charleston County. The buildings potentially affected by a breach of this dam would be estimated to be approximately valued at

$3.6 million. Nearly all of these structures are in Unincorporated Charleston County (e.g. St. James-Santee areas) in the McClellanville-area along the Santee River and in the Wambaw Creek area. The maximum water elevations projected from a breach of the Santee Dam within Charleston County (22.7 feet) are expected to occur near Germantown along the Santee River, approximately 64 hours after a breach of the dam. Flooding is not projected to extend further south into Charleston County than approximately 6 miles from the northern-most border with Georgetown County. Therefore, no jurisdictions within Charleston County, except for Unincorporated Charleston County near the Town of McClellanville, would be projected to receive flooding as a result of a Santee Dam breach. The maximum projected flood elevation and location are shown on Table 5.8. Any buildings not elevated to or above the anticipated dam failure inundation level would potentially experience flood damages. Floodwaters are expected to mostly recede from Charleston County within 10 days of a Santee Dam breach event (Emergency Action Plan for Dam Failure, Santee Cooper 2022).

Table 5-1-8

Projected Maximum Flood Water Elevations in the Charleston Region for a Breach of the Santee Dam System					
Locations	52 hrs. after breach	64 hrs. after breach	72 hrs. after breach	104 hrs. after breach	Flooding not projected as a result of a breach
In the vicinity of Railroad Bridge, near the intersection of Hwy 377 and Hwy 45	42.3 ft				
The general region where Highway 301 and State Highway 45 intersects		38.1 ft			
Southwest portion of Charleston County, West of the Ashley River, near intersection of US Hwy 17/701			19.1 ft		
Region of Berkeley County which includes the intersection of US route Hwy 17A and State Hwy 45				28.5 ft	
Isle of Palms, Sullivan's Island, Folly Beach, Kiawah Island, Seabrook Island.					X
Ravenel, Meggett, Hollywood, St. Paul's Fire District, St. John's Fire District, Southern portions of Unincorporated Charleston County, City of Charleston areas in southern portions of Charleston County, Town of James Island areas not adjacent to Ashley River or Atlantic Ocean.					X
Awendaw, McClellanville, Northern portion of Town of Mount Pleasant (areas beyond 19 miles north following Hwy. 17 from Cooper River bridges), Northern portions of Unincorporated Charleston County.					X
City of North Charleston areas remote from Cooper River, Lincolnville, other areas in Charleston County not otherwise indicated.					X

Source: Emergency Action Plan for Dam Failure (Santee Cooper, December 2015)

9. Terrorism

The federal government-owned facilities (e.g. air force base, post offices, etc.) are probably the most vulnerable general category of structures to terrorist threats, followed closely by the

structures at the shipping port and the local government offices in the Region. These facilities located in highly congested areas with easy access to the structures, in general, are likely to be more vulnerable than those with more controlled access to the structures. A terrorism annex to the emergency operations plan has been developed to address response to this threat.
The following table summarizes building vulnerability for Unincorporated Charleston County and the Plan's participating jurisdictions. Since Unincorporated Charleston County surrounds the Plan's other jurisdictions, all participants are displayed in the table.

Table 5-1-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Unincorporated Charleston County	4	5	2	2	5	2	3	2	4	3	4	4

Charleston County School District (CCSD), Roper St. Francis Healthcare, and Charleston County Parks and Recreation Commission span multiple jurisdictions. The following is a table of all of the schools in Charleston County and their jurisdictions to identify their risk level with Table 5-9 as well as a map of Charleston County Parks and Recreation Commission and what jurisdictions it crosses. The maps for CCSD and Roper St. Francis Healthcare can be found in section 5-7 Critical Facilities.

Table 5-1-10

School	Jurisdiction
A.C. Corcoran Elementary	N Charleston
Academic Magnet High	N Charleston
Allegro Charter School of Music	N Charleston
Angel Oak Elementary	Johns Island
Ashley River Creative Arts Elementary	Charleston
Azalea Bus Lot	N Charleston
Baptist Hill Middle-High	Hollywood
Belle Hall Elementary	Mt Pleasant
Buist Academy	Charleston
Burke High	Charleston
C.C. Blaney Campus	Hollywood
C.E. Williams Middle (Old Building)	Charleston
C.E. Williams Middle North	Charleston
C.E. Williams Middle South	Charleston
Camp Road Middle	Charleston
Carolina Park Elementary	Mt Pleasant
Carolina Voyager Charter	Charleston
CCSD Headquarters Building	Charleston
CCSD Operations and Financial Services Campus	N Charleston
Charles Pinckney Elementary	Mt Pleasant
Charleston Advancement Academy	Charleston
Charleston Charter School for Math and Science	Charleston
Charleston County School of the Arts	N Charleston
Charleston Development Academy	Charleston
Charleston Progressive Academy	Charleston
Chicora Elementary	N Charleston
Cooper River Center for Advanced Studies	N Charleston
Daniel Jenkins Academy	N Charleston
Deer Park Middle	N Charleston
District 1 Spray Fields	McClellanville
District 10 Office	Charleston
District 2 Bus Lot	Mt Pleasant
District 2 Stadium	Mt Pleasant
District 4 Office	N Charleston
District 4 Stadium	N Charleston
Drayton Hall Elementary	Charleston
E.B. Ellington Elementary	Ravenel
Early College High School at Palmer Campus	Charleston
East Cooper Center for Advanced Studies	Mt Pleasant
East Cooper Montessori Charter	Mt Pleasant
Edith L. Frierson Elementary	Wadmalaw Island
Gordon H. Garrett Academy Campus	N Charleston
Greg Mathis Charter High	N Charleston
Harbor View Elementary	Charleston
Haut Gap Middle	Johns Island
Hunley Park Elementary	N Charleston
James B. Edwards Elementary	Mt Pleasant
James Island Charter High	Charleston
James Island Elementary	Charleston
James Island Middle School Campus (Old)	Charleston
James Simons Elementary	Charleston
Jane Edwards Elementary	Edisto Island
Jennie Moore Elementary	Mt Pleasant
Jerry Zucker Middle	N Charleston
Julian Mitchell Elementary	Charleston
Ladson Elementary	Ladson
Ladson Elementary Expansion Property	Ladson
Ladson Elementary Expansion Property	Ladson
Laing Middle	Mt Pleasant
Lambs Elementary	N Charleston
Laurel Hill Primary	Mt Pleasant
Liberty Hill Academy	N Charleston
Lincoln Campus	McClellanville
Lucy G. Beckham High	Mt Pleasant
Lucy G. Beckham High Softball Fields	Mt Pleasant
Malcolm C. Hursey Montessori	N Charleston
Mamie P. Whitesides Elementary	Mt Pleasant
Mamie P. Whitesides Expansion Property	Mt Pleasant
Mary Ford Elementary	N Charleston
Lucy Beckham High Tennis Courts	Mt Pleasant
Matilda Dunston Elementary	N Charleston
McClellanville Middle Campus	McClellanville
Meeting Street Elementary at Brentwood	N Charleston
Meeting Street Elementary at Burns	N Charleston
Memminger Elementary	Charleston
Midland Park Primary	N Charleston
Military Magnet Academy	N Charleston
Minnie Hughes Elementary	Hollywood
Montessori Community School	Charleston
Montessori-Springfield Commons Building	Charleston
Morningside Middle	N Charleston
Moultrie Middle	Mt Pleasant
Mount Pleasant Academy	Mt Pleasant
Mt. Zion Elementary	Johns Island
Murray-LaSaine Montessori	Charleston
North Charleston Creative Arts Elementary	N Charleston

North Charleston Elementary	N Charleston
North Charleston High	N Charleston
North Charleston High School Field Restrooms	N Charleston
Northwoods Middle	N Charleston
Oakland Elementary	Charleston
Orange Grove Elementary Charter	Charleston
Orange Grove Middle Charter	Charleston
Pattison's Academy for Comprehensive Education	Charleston
Pepperhill Elementary	N Charleston
Pinehurst Elementary	N Charleston
Porcher Bus Lot	Awendaw
R.B. Stall High	N Charleston
R.B. Stall High School Stadium	N Charleston
R.D. Schroder Campus (Used by CCPRC)	Hollywood
Riverland Terrace Campus	Charleston
Ronald E. McNair Campus	N Charleston
Sanders-Clyde Elementary	Charleston
Septima P. Clark Corporate Academy	Charleston
Simmons-Pinckney Middle	Charleston
Springfield Elementary	Charleston
St. Andrews School of Math and Science	Charleston
St. James-Santee Elementary/Middle	McClellanville
St. Johns High	Johns Island
Stiles Point Elementary	Charleston
Stono Park Elementary	Charleston
Sullivan's Island Elementary	Sullivan's Island
Thomas C. Cario Middle	Mt Pleasant
W.B. Goodwin Elementary	N Charleston
Wando High	Mt Pleasant
West Ashley Head Start	Charleston
West Ashley Center for Advanced Studies	Charleston
West Ashley High	Charleston
Wilmot J. Fraser Campus	Charleston



– Infrastructure Vulnerability

The questionnaire also asked respondents to indicate their opinions regarding the vulnerability of the infrastructure in the Charleston County area to natural and man-made hazards. The average results for this vulnerability assessment indicated that the infrastructure in the Charleston County Region was most vulnerable to hazards in the following order:

- Hurricane
- Flooding
- Earthquakes
- Sea Level Rise
- Tornadoes
- Winter Weather
- Tsunamis
- Wildfire
- Hazardous Material
- Terrorist Incidents
- Dam Failure
- Drought

As previously discussed, of the hazards to which the government entities represented in this plan are considered to be vulnerable, the following do not cause infrastructure damages: Severe Storms

- Rip currents (No Structure Damage)

The above hazard (s) will not be discussed further in this infrastructure vulnerability section of this plan as previously discussed since these do not cause damages to infrastructure that can be reasonably determined. Applicable infrastructure damages as discussed herein apply to all government entities, including the special purpose districts that overlap jurisdictional boundaries with municipalities or Unincorporated Charleston County as indicated in Table 4.1 as having a potential vulnerability to the indicated hazard.

The analysis for the questionnaire that was distributed during 2023 indicated that the vulnerability of the infrastructure in the Region per hazard was ranked as follows: 1. hurricane; 2. flooding; 3. earthquake; 4. sea level rise; 5. tornado; 6. winter weather; 7. tsunami; 8. wildfire; 9. hazardous material; 10. terrorist incidents; 11. dam failure and 12. drought. Compared to last year, winter weather increased, terrorism dropping significantly, and wildfire increased slightly.

Of the additional hazards required to be included in hazard mitigation plans to meet the requirements of the Disaster Mitigation Act of 2000 that the Charleston County area could possibly experience (drought/heat wave, dam failure, tsunami), only dam failure and tsunami would be expected to potentially cause damages directly to the infrastructure within the Region, although the probability of either of these types of events is very low. Any damages to infrastructure as a result of drought would most likely be indirect due to wildfires, which are addressed within this plan under "Wildfire". Rip currents and avian flu/pandemics do not cause structural damage to infrastructure and subsequently are not considered as hazards to infrastructure within this plan.

1. Hurricane

The infrastructure most vulnerable to hurricane activity is likely to be the above ground electrical, telephone, liquefied petroleum gas, and cable television service. The City of Charleston, in conjunction with South Carolina Electric and Gas Co., has, however, initiated a program where neighborhoods may convert their overhead electrical service to underground service for enhanced hurricane protection. SCE&G (Now Dominion Energy) maintains a fund to which consumers and the utility contribute to provide funding for special projects, such as infrastructure upgrades or subterranean line installations, although this utility stresses that underground problems in the electrical service are more difficult to find and repair than overhead transmission line problems. Wastewater treatment facilities may also be vulnerable to hurricane 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.

1 & 3. Flood and Sea Level Rise

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 and hydrodynamic 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 shipping port is also potentially vulnerable to flood damage due to the close proximity to the water.

4. 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.

5. 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 tornado 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, emergency operation centers, etc.) would also be vulnerable to a direct strike by a tornado.

6. 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, sewer, and natural or liquefied petroleum gas utility lines. The Charleston Waterworks has, however, begun work on a $26.5 million project to replace an aging sewer tunnel that services the Charleston peninsula which helps reduce some of this vulnerability to earthquakes and flooding. They have also asked the Charleston County Sheriff's Department to utilize their reverse 911 notification systems to let residents know of any issues that may result with drinking water, should there be damages to any water lines. A major earthquake would be expected to create stresses on water transmission lines, which could disable water services to a large number of residents for a long period since earthquake-related water line breaks could affect a larger number of water lines making diversion of water more difficult. 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 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). The Charleston International Airport is located on land that experienced liquefaction during the 1886 earthquake. The effect this prior liquefaction may have in future earthquakes has not been definitively determined, however, it is likely the airport may experience liquefaction again in the event of a significant earthquake. Roads in areas not subject to liquefaction may also still be vulnerable to damage/obstruction by fallen debris in earthquakes large enough to cause buildings to shed masonry veneer/appendages or experience actual structural failure (magnitude 6 or greater on the Richter scale). Roads on reclaimed land (filled marsh, old landfill, etc.) will respond with differing characteristics in the event of an earthquake than roads on non-reclaimed land.

According to the Comprehensive Seismic Risk and Vulnerability Study for the State of South Carolina, a HAZUS-based study produced for the South Carolina Emergency Management Division, an earthquake of the magnitude of the 1886 Charleston earthquake (magnitude 7.3

on the Richter Scale) would be expected to potentially cause the following infrastructure-related losses:

- Direct economic losses to lifeline (transportation and utility) systems state-wide is expected to be over $1 billion.
- An estimated 800 bridges state-wide are expected to suffer damage to the extent that they will be inaccessible. Charleston County communities accessible only by bridge routes could be left without access until bridges are repaired or replaced.
- Damage to electric power facilities is expected to be mostly limited to major substation equipment, with 63 electric power facilities state-wide expected to be damaged, leaving approximately 300,000 households without electric service. Distribution lines are also expected to need repairs so that restoration of electrical service may take days to weeks to complete.
- Damage to water systems is expected primarily to pipelines, storage tanks or reservoirs, treatment facilities and pumping plants. Pipeline damage is expected to be most critical in determining when water service can be restored to the general public. Since liquefaction is expected in the Charleston County area if an earthquake of this magnitude occurs, damage to the water distribution system is expected requiring weeks to months to complete repairs. It is estimated that 80% of households will be without water.
- Water failures are expected to drain water reserves and create issues for water availability for fighting fires that are expected.
- Environmental damage is expected due to the wastewater treatment facilities or pipelines being damaged.
- Natural gas and oil systems are expected to receive moderate to minor damage, particularly natural gas transmission lines where gas-welded joints are present.
- All elevated above-ground storage tanks are potentially vulnerable, particularly if ground shaking is intense.
- Communications system damages are expected primarily with equipment inside communication buildings. Replacing this equipment may take days to weeks.

Charleston County participated in the state-wide earthquake drill on March 14, 2016, where the scenario was a 7.7 magnitude earthquake occurring in the same location as the 1886 Charleston earthquake. HAZUS-MH was utilized to estimate the damages due to this earthquake for Charleston County only. The following infrastructure damage estimates (Charleston County only) were derived from this simulation:

Bridges Damaged:	332
Water Facilities Damaged:	44
Waste Water Facilities Damaged:	344
Electrical Power Facilities Damaged:	35
Communication Facilities Damaged:	24
Oil System Facilities Damaged:	8
Anticipated water pipeline leaks:	574
Anticipated waste water pipeline leaks:	1,366

Per this HAZUS-MH simulation, over $2 billion in transportation-related inventory losses would be expected in Charleston County if an earthquake of this magnitude would occur at this location, given the current transportation infrastructure in the Charleston County area. Appendix F contains a map indicating the location of the anticipated bridge damages in the central portion of Charleston County. As is indicated, several major arteries connecting James Island and West Ashley to Peninsula Charleston would be expected to be damaged should the area experience an earthquake of this magnitude. This study upgraded the collective health of

the bridges in Charleston County, with the number of substandard bridges in Charleston County on the top 20 list dropping from 10 to 6, due in large part to the replacement of the old Cooper River bridges with the new Ravenel bridge, and other bridge repairs undertaken on I-26 and U.S. Highway 17. The loss of the use of this transportation inventory would make it difficult, if not impossible, for emergency response agencies to respond to many calls for assistance in the immediate aftermath of an earthquake of this magnitude. An additional potential result of a major earthquake that is not specifically addressed in the HAZUS-MH simulation could be the loss of internet capabilities due to damage to underground/undersea internet fiber optic cables, as occurred throughout Asia after an undersea earthquake near Taiwan. While this type of loss is unlikely to occur in the Atlantic Ocean basin due to more redundancy in the fiber optic cabling network for the internet in this region, it is not out of the question that a major earthquake could also temporarily take out internet service to Atlantic coastal regions, if damages occur to multiple fiber optic transmission lines. (The infrastructure loss potential from an earthquake highlights the need for training area residents through the Community Emergency Response Team (CERT) program to be able to assist their neighbors and be self-sufficient after a large-scale event until the emergency responders are able to resume their normal response activities post-event. Charleston County has been active in training area residents through the CERT program since 2003, and had trained approximately 900 people in this program.

In addition to the anticipated transportation system inventory losses, an estimated $1.27 billion in inventory losses to utility systems in the Charleston County area would be expected under this earthquake scenario, per HAZUS-MH. Of these estimated inventory losses, 35.1% would be anticipated to occur to potable water systems, 30.6% to waste water systems, 3.3% to natural gas systems, 1.1% to oil systems, 28.0% to electric power systems, and 1.9% to communications facilities.

As was previously discussed in the earthquake "Vulnerable Buildings" section of this plan, earthquake intensity is on a logarithmic scale, so an earthquake with a magnitude of 7.7 has much greater damage potential than, for example, the 7.3 magnitude earthquake that the Charleston area previously experienced in 1886. While an earthquake of this magnitude is not impossible in Charleston, a 7.7 magnitude earthquake is a more damaging earthquake than the largest earthquake that the area has ever experienced in its history. As this HAZUS-MH simulation points out, the Charleston County area could receive catastrophic infrastructure-related damages if the area would experience an earthquake of this magnitude. Consequently, educating the citizenry and owners/operators of infrastructure facilities regarding earthquake safety and mitigation measures is understandably a high priority activity for the area.

7. Hazardous Material Incidents

The infrastructure vulnerability of the Region is greatest for heavily traveled roads or for roads/bridges which serve as the only artery for access to highly populated areas. The shipping port is also vulnerable to hazardous material incidents associated with transportation-related releases. Drainage ways are also potentially vulnerable to liquid transportation-related hazardous material releases since spills may migrate to the roadside drainage channels and be transported to other locations or to the terminus of the drainage channel through these channels. Airborne releases of hazardous materials, whether through transportation-related causes or from stationary storage sources, may also create vulnerability for utility operation facilities in the proximity of the release, depending on the nature and type of materials released. More than half of the railroad tracks in South Carolina do not have electronic systems in place to warn of oncoming trains, so the potential exists for future train accidents and subsequent release of hazardous materials associated with railroad transportation in our State.

8. Winter Weather

Above ground utility lines are potentially vulnerable to failure and/or damage as a result of ice storms. Structural damage occurred to cross-arms and poles where above-ground utility

services were present in the area affected by this ice storm. While ice storms are rarer in Charleston County than in the upstate of South Carolina, this event shows evidence of a potential vulnerability of above ground utility service lines in Charleston County, should the area experience a winter storm or a high wind event such as a hurricane or tropical storm.

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 the Charleston County area.

Santee Dams – Roads/Bridges

In the highly unlikely event of a dam failure, damages to roads or bridges in the projected flood inundation areas are possible. According to the Emergency Action Plan for Dam Failure, a breach of the Santee Dam is projected to result in flood inundation near portions of Highway 45, Highway 857, and Highway 17 and 701 (causeway) within Charleston County. Several of these roads are often used by residents of areas not expected to be flooded by a breach of this dam (e.g. barrier island communities) for evacuation for hurricanes. Consequently, advising residents of alternate evacuation routes from those used for other hazards may be necessary in the event of a breach of the dam. Since these floodwaters could potentially cover portions of these highways for up to 5 days and may contain floating debris, damages to the road surfaces or overpasses could occur as a result of the event. Road clearing operations and inspections will likely be necessary to make the roads passable to vehicular traffic and ensure road and bridge safety once the flooding has ceased.

Pinopolis Dams – Roads/Bridges

Similarly, a breach of the Pinopolis Dam system would also be expected to result in floodwater inundation of roads, specifically near portions of Cainhoy Road, Clements Ferry Road (near I-526), Highway 17 (near Cooper and Ashley Rivers), Ashley River Road, Dorchester Road, Rhett Avenue, N. Rhett Extension, Remount Road (terminus), Highway 78 (near I-26 and Berkeley County Border) and Highway 52 (between I-26 and Redbank Road interchanges) (Emergency Action Plan for Dam Failure, Santee Cooper, 2000, December 29). Several of these roads are often used by residents of areas not expected to be flooded by a breach of this dam (e.g. barrier island communities) for evacuation for hurricanes. Consequently, advising residents of alternate evacuation routes from those used for other hazards may be necessary in the event of a breach of the dam. Any road areas covered with floodwaters could remain so for possibly seven (7) or more days. Debris carried in the flood stream could potentially damage roads or bridges, so flooded roads or bridges will need inspecting and clearing post- event to make these roads passable to vehicular traffic and ensure road and bridge safety.

Shipping Port

The shipping port, being located on the Cooper River, is vulnerable to damage as a result of rising water elevations and floating debris as a result of a breach of the Pinopolis Dam system. Any containers in storage at the port near the Cooper River that are not anchored against flotation could potentially become floating debris in the Cooper River. Docking facilities and container unloading equipment at the port could also potentially be damaged by debris carried in the floodwaters that could result from a breach of this dam. Since debris-laden floodwaters would not be expected to reach the port facilities for 4-5 days, any ships docked at the port should be able to be moved out of the Cooper River to the Atlantic Ocean prior to the floodwaters reaching the port, consequently damages to ships should be minimized. Loss of business at the port for the minimum of seven (7) or more days this facility would be expected to be closed, due to water elevations and debris in the Cooper River as a result of a dam failure, could have a negative effect on the profitability of the shipping port, even if the port does not

receive physical plant damages as a result of the projected flooding. The economic effect of any hazard-induced closure of the port is addressed in the "Economic Impact" section of this plan.

10. Terrorism

Vulnerability of infrastructure to terrorism is most likely where a single damage event is able to cause extensive damage. This vulnerability is probably greatest for facilities without tightly controlled access (e.g. reservoirs, bridges, major arterial roadways, utility transmission lines, etc.).

The following table summarizes infrastructure vulnerability for Unincorporated Charleston County and the Plan's participating jurisdictions. Since Unincorporated Charleston County surrounds the Plan's other jurisdictions, all participants are displayed in the table.

Table 5-1-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Unincorporated Charleston County	4	5	2	2	4	3	3	4	3	4	4	4

The following problem statement summarizes Unincorporated Charleston County's main concerns regarding hazard vulnerability. Each participating jurisdiction issues a problem statement in this Plan.

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Unincorporated Charleston County	The unincorporated areas of the County are spread throughout all portions of the county. Mostly, it is rural in the west on Edisto and Johns Islands and in the east near Awendaw and McClellanville. These areas tend to have more mobile homes, limited access to evacuation routes and more low income/at-risk populations. This puts the County at high risk for hurricanes. The County is more vulnerable to tornadoes as well as riverine flooding with the amount of mobile homes in the area. Unincorporated Charleston County does not have much coastal land. The County has some low lying areas which make it vulnerable to flooding. The County is also vulnerable to earthquakes with it being close to a fault line and most buildings are not built to withstand a severe earthquake. The entire County is vulnerable to winter weather as we do not experience it often and are not equipped with the plows, salt, etc. for ice and snow.

– Known Flood Damages

FEMA's National Flood Insurance Program identifies those repetitive loss properties for which a claim has been filed for flood insurance twice in any ten-year period as Repetitive Loss Properties. When a community participates in the NFIP/ ISO Community Rating System, it becomes a Class "C" repetitive loss community when there are ten or more repetitive loss

properties within that community. Mt. Pleasant, for example, joined several other Charleston County communities (Charleston County, City of Charleston, City of Folly Beach, City of Isle of Palms, City of North Charleston, and Town of Sullivan's Island) and became a class "C" community in 1998 with twenty-one repetitive loss properties at that time. As of May 2013, this number for the Town of Mt. Pleasant increased to twenty-eight, an increase of one repetitive loss home from the previous year. Several drainage projects have been performed or are under evaluation in the Town and in the other communities with repetitive loss properties. The entire Charleston Region currently has 1,179 properties that have been repetitively damaged by floods throughout the area, 937 of which are insured. These past floods have varied in size and the amount of damage caused. The properties in these repetitive loss areas are considered to be vulnerable to future flooding, particularly associated with hurricanes or tropical or coastal storm systems, due to the proximity of many of these properties to the Atlantic Ocean or tidally influenced water bodies. Many of these repetitive flood loss properties also had one National Flood Insurance Program claim from Hurricane Hugo in 1989, highlighting this vulnerability to hurricanes or other coastal storms. The complete list of the repetitive loss areas is included as Attachment as 5-C to this section.

The repetitive loss areas in the Charleston Region are located in the City of Charleston (742), Unincorporated Charleston County (130), the Town of Mt. Pleasant (49), the City of North Charleston (86), the City of Isle of Palms (24), the Town of Sullivan's Island (20), the City of Folly Beach (97), the Town of McClellanville (3), the Town of Meggett (2), the Town of James Island (24), the Town of Hollywood (4), the Town of Kiawah Island (7), and the Town of Seabrook Island (9). The remaining government entities in Charleston County that are participants in the National Flood Insurance Program have no repetitive loss properties reported at this time. The government entities that have jurisdictional limits concurrent with a municipality or the county (special purpose district governments (see definition in Preface) and the College of Charleston) have none of their government-owned facilities on the National Flood Insurance Program list of repetitive flood loss properties. The repetitive flood loss properties in the Region are, however, potentially within the service areas of these special purpose governments (for example, the repetitive flood loss properties in the City of North Charleston are also potentially in the service districts for the Cooper River Parks and Playground Commission and the North Charleston Sewer District and the Charleston Water System). Because of these concurrent jurisdictional boundaries, the special purpose district governments are considered as potentially servicing repetitive loss properties but not in a position to assist property owners with flood loss mitigation measures. [The National Flood Insurance Program participating communities are the government entities that would work directly with the owners of these properties if they were interested in taking measures to alleviate future flooding of their properties.]

FEMA keeps records titled "Policy & Claims Statistics for Flood Insurance" which shows current and historical information on the National Flood Insurance Program (NFIP). Per this database, a total of 18,480 total losses have occurred in the Charleston Regional Area since 1978 when the NFIP was founded. These losses accumulated to a total of $298,761,177.20 over the 39 year period. Below is a breakdown by jurisdiction:

**RLS = Repetitive Loss Structures. Com = commercial. Res = residential. SRLS = Severe Repetitive Loss Structures*

Table 5-1-12

Jurisdiction	Total Losses	Closed Losses	Open Losses	CWOP Losses	RLS Com/Non-Res.	RLS Res.	SRLS Com/Non-Res.	Severe RLS Res.
CHARLESTON, CITY OF	6,598	4,901	17	1,680	46	577	0	51
CHARLESTON COUNTY*	4,914	2,770	8	2,136	6	107	0	17
FOLLY BEACH, CITY OF	1,244	894	2	348	0	29	0	6

HOLLYWOOD, TOWN OF	17	9	0	8	0	5	0	0
ISLE OF PALMS, CITY OF	2,562	2,009	0	553	1	37	0	0
KIAWAH ISLAND, TOWN OF	114	73	0	41	9	2	0	9
MCCLELLANVILLE, TOWN OF	67	58	0	9	0	5	0	0
MEGGETT, TOWN OF	31	16	0	15	0	2	0	0
MOUNT PLEASANT, TOWN OF	1,546	992	1	553	1	42	0	9
NORTH CHARLESTON, CITY OF	476	324	2	150	10	62	2	9
RAVENEL, TOWN OF	1	1	0	0	0	0	0	0
SEABROOK ISLAND, TOWN OF	61	41	0	20	0	9	0	0
SULLIVANS ISLAND, TOWN OF	849	659	0	190	25	0	0	0
FEMA Policy and Claims Statistics Database, 2019								

*Includes Unincorporated parts of the County.
**Town of Lincolnville does not participate in the NFIP (Zero Repetitive Loss)

Most total losses occur in the City of Charleston (peninsula area), as well as the Unincorporated, City of Isle of Palms, Town of Mt. Pleasant, and City of Folly Beach areas, all with at least 1,000 total losses since 1978. These areas have the most known flood damages, either from nuisance flooding due to sea level rise, or more commonly, hurricanes.
In an effort to reduce flood damages some jurisdictions include higher standards as part of their participation in the NFIP.
A table outlining higher standards enforced in Charleston County is below. Each jurisdiction's problem assessment will outline that respective entity's higher regulatory standards:

Unincorporated Charleston County Higher Regulatory Standards
2' freeboard
min. 5 CFMs on staff
1/2 foot rise in floodway
All Inspectors are State certified
Five year cumulative of all permits is included when conducting a substantial review
Enforcement of the Coastal A Zone construction standards

– Past Flood Impacts

Past flood impacts on buildings have become extremely expensive for property owners as indicated in the previous section. Flood levels, unless during the event of a hurricane, were typically fairly shallow (1-5 feet) and limited to rainfall combined with poor drainage in relation to tides. Nevertheless, the impact on buildings has been quite extensive in the past. Flood waters in the Charleston Region have caused siding to bend and warp on structures inundated with water. Older brick homes without hydrostatic vents may experience foundation collapse associated with flooding. Flooding has also resulted in interior damages to structures

(e.g. insulation, sheetrock, doors, carpeting, furniture, etc.). In the coastal environment areas of the Region, saltwater presents an additional problem. Saltwater can corrode piping, corrode electrical wiring, and contaminate drinking water wells. Public safety becomes a concern during flooding situations, particularly if the water fails to quickly drain completely after the event. Stagnant water in drainage ditches often fosters mosquitos. Standing water under houses also attracts cockroaches and vermin, posing a health risk and may cause moisture- related problems for the integrity of the structure. These problems have been experienced in the Charleston Region following a local flood.

Impact of All Hazards

Please see the Appendix A.8 for a description of the hazards' impact on the jurisdictions for more detailed information. Appendix A.9 provides details regarding previous flooding occurrences. The data provided in this appendix are events contained within the Storm Event Database, provided by the National Center for Environmental Information (formerly the National Climatic Data Center, or NCDC). While there are numerous, oftentimes daily, flooding occurrences throughout Charleston County, the events provided are based upon the best available data. Additionally, Appendix A.11 provides maps which elaborate on the extent of flooding impacts across the peninsula.

– Emergency Warning Needs

There are several situations that could arise, causing the need for evacuation of part or all of the Charleston Region. Small-scale, localized evacuations may be needed as a result of a flood, hazardous material release, fire, or transportation accident. Mass evacuation of the entire Region could be required in the event of the threat of a major hurricane or a damaging earthquake. Charleston County participates in the Emergency Alert System and cable-TV override to provide emergency warning information to all residents in the Charleston County area as needed in emergency situations. If required to evacuate residents from areas potentially subject to flooding or other hazard events, local fire department and police personnel will perform street patrols with their public address systems and/or door–to-door patrols to advise residents of the need to evacuate. Charleston County also has a reverse 9-1-1 system that will be activated to alert residents of the need to evacuate or shelter in place if circumstances warrant. Charleston County Consolidated Dispatch center is also tied into the County's Warning Point through the warning notification (ALERT) system, and is an 800 MHz based voice radio alert system. The system will allow police to disseminate information about hazardous materials, threatening weather, and major police actions to citizens quickly. In addition, Charleston County and Motorola are looking at ways to redesign the system and add more radio towers. Evacuation warnings are based upon data received from the National Weather Service, the U.
S. Army Corps of Engineers, FEMA, the U.S. Geological Survey, and/or other computer assisted modeling of areas potentially subject to damages from a specific hazard event. The current emergency warning system per the Charleston County Emergency Operations Plan is as follows:

1. **Pre-disaster evacuation phase:**
    A. Director, Emergency Management Department
        1. Coordinates with all appropriate agencies to ensure emergency operational readiness.
        2. Maintains Emergency Operations Center Standard Operating Procedures.
        3. Coordinates identification of feasible evacuation routes likely to be available in the anticipated disaster.
        4. Coordinates identification of emergency shelters.
        5. Coordinates with appropriate agencies in plans for emergency medical care for evacuees.

6. Coordinates with appropriate agencies in plans for mass feeding of evacuees and decontamination of evacuees (if needed).
7. Assists affected agencies with development of evacuation plans. Plans will specifically identify critical facilities such as schools, hospitals, nursing facilities, industries, and places of public assembly when possible.

B. Sheriff
1. Identifies evacuation routes in coordination with EPD.
2. Identifies traffic control points (TCPs) with assistance of local law enforcement officials.
3. Identify potential impediments to evacuation, plan, and alternate/contingency routes to avoid impediments, and report actual impediments to the EOC for removal.
4. Provide training tolaw enforcement officers concerning the evacuation process and their role at the TCPs.
5. Has representation on the Evacuation Key Alerter Team comprised of Sheriff's Office, City of Charleston Police Department, North Charleston Police Department, and Town of Mt. Pleasant Police Department.

C. Dept. Of Social Services
1. Plan for Emergency Welfare Services
2. Coordinate in identifying emergency shelters with American Red Cross and County Schools and places for emergency pick-up of special needs populations and mass feeding

D. Charleston County School District
1. Plans for Emergency Welfare Services
2. Plans for providing mass transportation

E. Emergency Response Agencies (fire, police, EMS, etc.) (Ristow, 2005, April 15)
1. Coordinates with Director, Emergency Management
2. Plans for securing employees and physical facilities and equipment against injuries or damages
3. Plans for emergency warning of residents
4. Provides training on emergency procedures, including the National Incident Management System (NIMS), to personnel
5. Obtains equipment needed to perform emergency functions

2. Disaster Phase:

A. Director, Emergency Management Department
1. Activates EOC and augments staff and equipment as required
2. Alerts all possible agencies
3. Coordinates with Chief of Transportation the allocation and dispatch of transportation resources.
4. Coordinates information with the Public Information Service.
5. Coordinates evacuation with lead law enforcement agencies.

B. Sheriff
1. As a Key Alerter, notifies assigned law enforcement agencies of evacuation requirements.

2. Staffs traffic control points (TCPS) as assigned and insures that other TCPs are staffed by proper law enforcement agencies.
3. Keeps law enforcement officers at EOC informed of evacuation progress/problems
4. Coordinates law enforcement activities including curfews, coordinates with all out of town law enforcement personnel.
5. Coordinates the provision of security in evacuated area with municipal EOCs, National Guard and others

C. Department of Social Services
1. Coordinates Emergency Welfare Services

D. Charleston County Schools District
1. Supports Emergency Welfare Services
2. Provides mass transportation

E. Emergency Response Agencies (fire, police, EMS, etc.) (Ristow, 2005, April 15)
1. Responds to emergencies, if possible, depending on the nature of the event, following the National Incident Management System (NIMS)
2. Secures employees and physical assets against hazard-related injuries or damages, as needed
3. Assists with emergency evacuation of residents as needed

3. Reentry/Recovery Phase:

A. Director, Emergency Management Department
1. Director, Charleston County EMD coordinates return of evacuees as required through appropriate services and Emergency Council members, municipal EOCs (MEOCs) and utility companies. EOC recovery team coordinates recovery and donation system with MEOCs.

B. Sheriff
1. Coordinates Law Enforcement activities during return to normal activities including assistance to search and rescue, security, and monitoring of curfew activities.

C. Charleston County Schools District
1. Provides support to Emergency Welfare Services as required.
2. Provides mass transportation for return evacuees as required.
3. Develops standard operating procedures for handling cases where "back to school" shelters are used at night for sleeping quarters.

D. Emergency Response Agencies (fire, police, EMS, etc.) (Ristow, 2005, April 15)
1. Responds to emergencies to the extent possible
2. Reports on damages observed to damage assessment team
3. Assists in clearing roads of obstructions, to the extent possible
4. Maintains equipment needed for emergency response

– Critical Facilities

The Charleston Region has many critical facilities due to its size. According to the S.C. Emergency Management Division list of critical facilities and with additions from the Members of the Charleston Regional Hazard Mitigation & Public Information Plan Committee, there are 518 critical facilities (excluding bridges and overpasses) in the Charleston County area. The majority of the increase was facilities such as wastewater lift stations, other water distribution systems along with increase of local governmental offices, government-owned facilities (e.g. libraries, parking garages, and museums), shelters, telephone service facilities, residential and nursing care facilities, law enforcement facilities, and fire stations.

Since hurricanes and floods are the hazards considered the highest priority hazards per the respondents to the planning survey used to develop this plan and based on these hazards being the highest frequency events with the greatest property losses experienced in the Region, the category of hurricane at which storm surge flooding is anticipated to occur (S.C. Emergency Management Division electronic storm surge flood maps) has been determined, where available electronically, for the critical facilities listed in the S.C. Emergency Management Division list and those added by the members of the Charleston Regional Hazard Mitigation & Public Information Plan Committee. Critical facilities in the Charleston Region are also potentially vulnerable to wind-related losses associated with hurricanes. This is particularly the care for facilities not protected from wind-borne debris. The following discussion of critical facility vulnerability is based upon the storm surge elevation data as provided in the S.C. Emergency Management Division electronic storm surge maps.

A list of Charleston County Critical Facilities is available dependent upon security clearance of the requestor or agency. Please contact Building Inspection Services at 843-202-6940 to submit a request.

Critical Facilities in Category 1 hurricane storm surge flooding areas: Of the critical facilities indicated as being in the Charleston Region per the S.C. Emergency Management Division critical facility list, three hospitals, three law enforcement entities, one EMS station, and one fire station are located in the category 1 storm surge zone. Four court locations and five government offices/emergency operations for four separate local governments are also indicated as being in this storm surge zone. One water pump station, one water treatment facility, one wastewater treatment plant, and ten wastewater lift stations are also listed as being in this zone. There is also one electrical facility listed as being located in this zone. Three media outlets also have broadcast facilities indicated as being in this storm surge zone. Other critical facilities, such as residential care facilities, are also listed as being in this zone. Since storm surge associated with a category 1 hurricane is not expected to exceed 5 feet at the Ocean, and many of the structures listed as being in this storm surge zone are elevated above the anticipated flood elevation, it is not anticipated that flooding within the critical facility structures will occur during a category 1 hurricane. Minor road flooding near or around the critical facilities closest to the ocean is possible during a category 1 hurricane. The critical facility list provides the storm surge flood zone for critical facilities in the Charleston Region. This storm surge elevation data is available on the S.C. Emergency Management Division internet site.

Critical Facilities in Category 2 hurricane storm surge flooding areas: One additional hospital, one additional television station, 15 additional fire stations, and five additional law enforcement facilities are indicated in the S.C. Emergency Management Division storm surge elevation internet site (2003) as being in locations potentially subject to storm surge flooding in a category 2 hurricane. In addition, eleven local government offices in three separate jurisdictions and two additional Courts are located in this storm surge zone. Four water-distribution system components, twelve wastewater lift stations, two telephone service facilities, and multiple residential care and nursing care facilities are also located in the

category 2 storm surge area. Fourteen other government-owned facilities (e.g. libraries, museums, parking garages, etc.) are also indicated as being in the category 2 storm surge area. There are also two nursing homes and multiple residential care facilities listed as being in this storm surge zone. The majority of the critical facilities listed for this zone are located on peninsula Charleston, on barrier islands in Charleston County, or directly adjacent to one of the tidal rivers. Since maximum storm surge elevations anticipated during a category 2 hurricane are 8 feet at the Ocean, and many of these buildings have withstood hurricanes of greater than this magnitude without flood-related damages, it is unlikely that many of these buildings would be flood damaged during a category 2 hurricane. However, for those older pre-FIRM buildings where the floor elevation is not elevated above the current base flood elevation, it is possible minor flooding could occur in lowest levels of these buildings. Since most of these older buildings are masonry construction, any flood damages that may occur are likely to be minor and easily repaired. Heavy equipment and fire apparatus from barrier island locations is also relocated to higher ground in the event of a pending serious hurricane to minimize the possibility of damage to the equipment due to flooding. Valuable artifacts on display or stored at the museum or libraries are also relocated to alternative storage locations in the event of a predicted major hurricane strike to preserve these items for future generations.

Critical Facilities in Category 3 hurricane storm surge flooding areas: One additional hospital, eleven additional fire stations, one additional law enforcement agency, one additional EMS station, and two additional media outlets are indicated as being located in the category 3 storm surge area per the S.C. Emergency Management Division storm surge map internet site. In addition, 20 more local government facilities for 5 separate jurisdictions, six detention facilities, one court facility, and two animal shelters are indicated as being in this zone. Two water system facilities, one wastewater treatment facility, and two electrical system facilities are also indicated as being in the category 3 storm surge area. Three nursing homes and multiple residential care and intermediate care facilities are also listed as being in this zone. Since category 3 hurricanes may have storm surge elevations up to 12 feet, it is possible that flood damage could occur to pre-FIRM critical facilities as a result of a hurricane of this magnitude. These damages are most likely to critical facilities on barrier islands and in peninsula Charleston. Those facilities most likely to be flood damaged are those of frame construction with finished floor elevations below currently required finished floor elevations. Temporary relocations of equipment and offices may be necessary, particularly from critical facilities on barrier islands and adjacent to tidal rivers, in the event of a hurricane of this magnitude. Nursing homes and residential care facilities located in this hurricane storm surge zone will likely evacuate patients/residents in the event of an anticipated direct strike of a hurricane of this magnitude or greater. It is also possible components of the water and sewer distribution systems, particularly on the barrier islands, could be damaged as a result of a hurricane of this magnitude. Electrical system components could also be damaged by a hurricane of this magnitude.

Critical Facilities in Category 4 hurricane storm surge flooding areas: Since the flood insurance rate map required elevations are based on a category 3 hurricane, critical facilities in Charleston County that are elevated just to the required base flood elevation could receive minor to moderate flooding in lowest floor areas during a category 4 or greater hurricane. Several other pre-FIRM critical facilities and other critical facilities that were constructed in accordance with flood maps where the required elevation for the structures was changed in the late 1980's or early 1990's have finished areas below the currently required base flood elevation. These critical facilities could receive moderate to major flood damage as a result of a category 4 or greater hurricane. Several other additional critical facilities are also listed as being in this storm surge flood zone in the S.C. Emergency Management Division storm surge elevation map database. One shelter, one additional hospital, three additional media outlets,

and one additional fire station, and one special purpose district administration building are listed as being in the Category 4 hurricane storm surge zone. One additional nursing home and several other residential care/health services entities are also listed as being in this storm surge zone. In the event of a pending hurricane of this magnitude, these facilities would likely plan to evacuate their residents/patients to more in-land areas on higher ground. Multiple wastewater lift stations are also indicated as being in this storm surge zone.

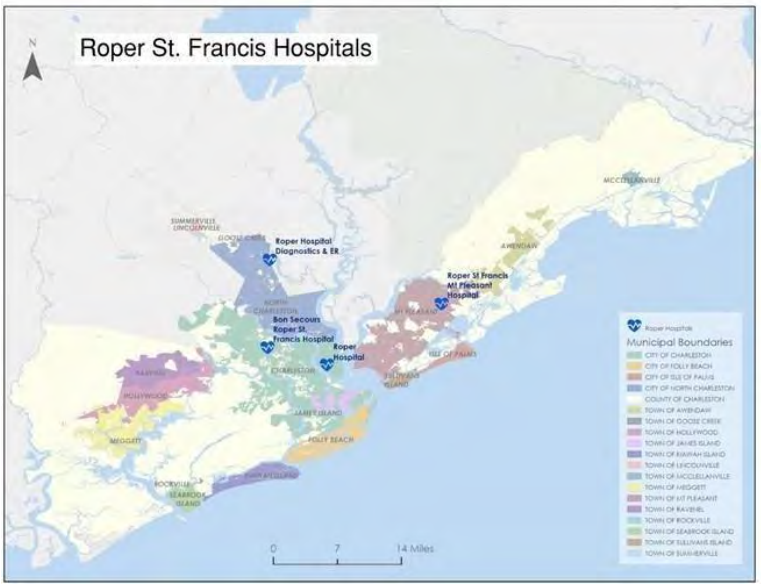
Critical Facilities in Category 5 hurricane storm surge flooding areas: A catastrophic hurricane of category 5 would likely cause major flood damages to critical facilities located on the barrier islands and in communities bordering the Atlantic Ocean. Other critical facilities in more in-land areas would also likely receive flooding in lowest floor areas since several of these facilities are not elevated above a level where flood waters could reach in the event of a hurricane of this magnitude. Several additional critical facilities are also listed in the S.C. Emergency Management Division storm surge map data base as being located in areas potentially subject to storm surge flooding in the event of a category 5 hurricane strike. One additional hospital, three additional fire stations, two additional law enforcement entity locations, one additional City government office, and one court facility are listed as being in the Category 5 storm surge zone. One additional nursing home and several other residential care facilities are also in this zone. When Hurricane Floyd was predicted to be a category 5 hurricane directly striking the Charleston area, several hospitals, nursing homes, and local governments with facilities within 10 miles of the Ocean evacuated their normal operating locations and relocated equipment and records to more in-land areas on higher ground. It is possible that many critical facilities could be damaged to the extent that their operations may need to temporarily relocate to alternative facilities post-event of a hurricane of this magnitude. The survey distributed during 2020 queried jurisdictional respondents as to their perception of the vulnerability of the critical facilities in the Region by hazard type. The analysis of the questionnaires indicated that the critical facilities in the Region are most vulnerable to hurricanes, followed by tornadoes, earthquakes, flooding, sea level rise, tsunamis, terrorist incidents, winter weather, wildfires, hazardous materials, dam failures and drought, in this order. This indicates that hurricanes should be considered as events to which the critical facilities in the Region are potentially highly vulnerable. Summary information regarding anticipated earthquake damages to critical facilities are discussed in the building vulnerability earthquake subsection of this section of this plan. Seismic resistance analyses of critical facilities, particularly those constructed of unreinforced masonry or those constructed prior to 1985 (year during which building codes including seismic provisions were routinely enforced throughout the Region), is recommended to determine structures that may be candidates for seismic retrofits.

Local governments within Charleston County recognize that it is not possible to avoid placing critical facilities in hurricane-prone areas, since these facilities are needed to provide essential services, such as responding to fires and/or providing medical assistance and/or law enforcement in an expedient manner in all areas of the County. Consequently, steps have been taken at many of the critical facilities located in areas potentially subject to damage due to hurricanes to reduce the damage potential to the structures to the extent feasible and/or prepare for expedient reopening of facilities post-event. All new critical facilities constructed will be designed to withstand hazards to which they may be subjected, and will include provisions for emergency operations post event. Multiple local fire stations (Awendaw, Mt. Pleasant, St. John's Fire District, North Charleston, City of Charleston, Sullivan's Island) have also been retrofitted with hurricane panels to protect openings from damage associated with wind-borne debris. Charleston County, for example, has constructed its new critical facilities with floor levels higher than required, and also constructed these to withstand wind speeds associated with the worst-case hurricanes.

Many of the critical facilities in the historic district of Charleston have been exposed to multiple serious hurricanes throughout their history, and are of masonry construction that has withstood exposure to these events. The City of Charleston also generally installs plywood shutters on glazed openings of its buildings in the most vulnerable locations of the Peninsula in the event of a potential hurricane strike, to minimize wind-related damages associated with hurricanes. While it is possible that these historic facilities may receive flood damages as a result of severe hurricane threats, the damages should be repairable in a reasonable time period post-event. Since most of these local government facilities, particularly on the Peninsula of Charleston, are for jurisdictions with multiple buildings located throughout the County, alternative locations for temporary operation are also available, if needed, while repairs to these facilities are performed. Earthquake damages are however, also a possibility for historic government buildings and government buildings constructed prior to building codes required design to withstand earthquakes.

Local governments with utility distribution systems also have plans to enhance the hazard-resistance of their critical assets. For example, the North Charleston Sewer District has plans to install an additional aeration tank and primary clarifier at their treatment plant. The District intends to design these facilities to withstand hazard events, such as floods, earthquakes, high winds, wildfires, and so forth, and to include provisions for emergency operations post-event at these facilities.

Capabilities of critical facilities like hospitals and schools face different risks than municipal jurisdictions. Some of these government entities and partners include Charleston County School District, Charleston County Parks and Recreation Commission, and Roper St. Francis Healthcare. Schools and hospitals act as shelters and their populations are more at risk during a disaster. They also provide emergency needs like food, water and healthcare to those populations. Below are maps of these facilities spread out through the various jurisdictions to assess their risk level. Please Refer to Tables 5-9, 5-11, and 5-13 for the full risk assessment of all jurisdictions on building, infrastructure, and critical facilities.



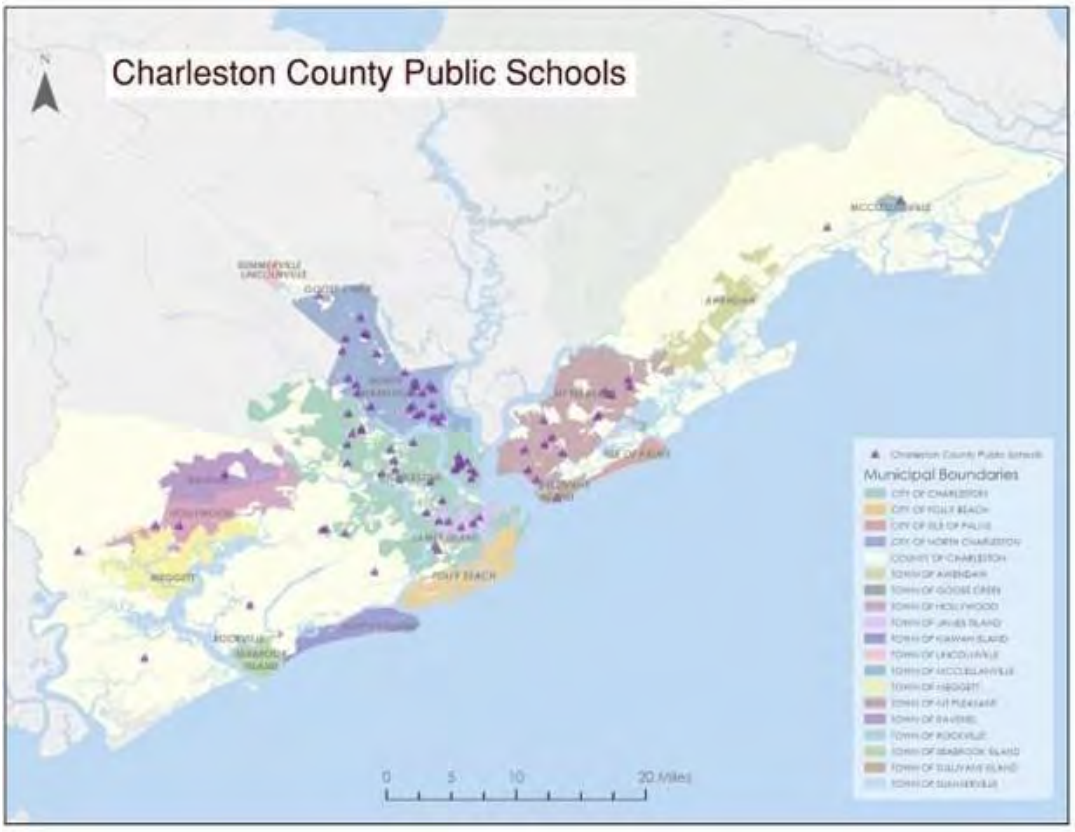


Table 5-1-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Unincorporated Charleston County	5	5	3	3	4	3	3	4	3	4	4	4

Capabilities Assessment

Charleston County Capabilities Assessment

Every community has a unique set of capabilities such as authorities, policies, programs, staff, or funding, that contribute to hazard mitigation and help to reduce vulnerability. Charleston County and the participating jurisdictions have a suite of capabilities that help them accomplish hazard mitigation. Capabilities vary among the different municipalities, making coordination across political boundaries especially important. The current capabilities of Charleston County and the participating municipalities have been reviewed to identify opportunities to incorporate hazard mitigation efforts as well as any gaps in resources that may need to be addressed. Long-Range Plans in the Charleston Region encompass climate adaptation plans aiming at reducing the risk to and mitigating impacts from actual or expected causes of climate change while incorporating equity in the processes. Long-Range Plans also incorporate all-hazards mitigation planning processes and mitigation strategies aiming at reducing risk to current and future events exacerbated by climate change.

This section includes a review of the existing capabilities of Charleston County and the participating municipalities, which provides the ability to expand and improve existing capabilities through the newly identified mitigation actions.

Long-Range Plans Related to Hazard Mitigation and Climate Change

Charleston County Comprehensive Plan (update in process)

The Comprehensive Plan is the County's long-term plan for land development and growth management. It contains goals, policies, and strategies that address challenges, leverage strengths, and provide a framework for land development within the County. The Comprehensive Plan is a legally binding document that governs land use and guides future development. It also addresses issues that pertain to development such as environmental regulation and infrastructure management. The Comprehensive Plan contains a Resilience Element, per South Carolina law. In this element, natural hazards such as flooding and storm surge are addressed, and vulnerable populations are defined and identified. The update process gears up for a series of public workshops to gather community input, which integrates community planning in the process and early engagement of the whole community. The Plan is expected to be finalized in the first quarter of the 2024 calendar year.

The Comprehensive Plan also contains a Priority Investment, Implementation, and Coordination element. There is opportunity for this section to be expanded during the next Comprehensive Plan Update to incorporate a more detailed discussion on hazard mitigation and resilience efforts. The Comprehensive Plan identifies projects to include in the mitigation strategy and is an appropriate place to implement mitigation actions as it is formally adopted and legislatively binding.

The Comprehensive Plan speaks to the issues associated with hazards and climate change. There are eleven Elements in the plan where those themes are weaved into the language, with the most prevalent addressing these issues being the Resilience Element. The direct link to that Element within the Plan is shown below.
https://online.encodeplus.com/regs/charlestoncounty-sc-cp/doc-viewer.aspx#secid-195
The Comprehensive Plan is the process of a scheduled update which will include revisions to the overall vision and each Element, aiming to address these issues even further. The update process gears up for a series of public workshops to gather community input and the Plan is

expected to be finalized in the first quarter of the 2024 calendar year.

The following participating municipalities have their own Comprehensive Plan specific to their jurisdiction:

- Town of Kiawah Island
- Town of Seabrook Island
- Town of James Island
- City of Charleston
- Town of Mount Pleasant
- City of Folly Beach
- City of Isle of Palms
- Town of Sullivan's Island
- Town of Meggett
- Town of Hollywood
- Town of Ravenel
- Town of Rockville
- Town of McClellanville
- Town of Awendaw

Charleston County Emergency Operations Plan (2021)

The Emergency Operations Plan (EOP) establishes emergency response policies for Effingham County and provides a framework to enable community recovery following a disaster. It includes the participating municipalities. It describes the management and coordination of resources and personnel during emergency situations. The EOP addresses hazards and identifies strategies related to emergency services and staff training that contribute to hazard mitigation. It would be appropriate to implement additional strategies related to intergovernmental coordination, training exercises, and emergency warning and response within the EOP.

Charleston County Stormwater Management Plan (2019)

The Stormwater Management Plan is designed to reduce the discharge of pollutants from Charleston County's Small Municipal Separate Storm Sewer System to the maximum extent practicable, to protect water quality and to satisfy the appropriate requirements of the Clean Water Act. The document is intended to be modified frequently, at least on an annual basis, to reflect accomplishments, potential revisions to program components, an additions of other or expanded efforts. The Stormwater Management Plan will help to prioritize projects in Charleston County. It is an important avenue through which mitigation activities can be implemented.

Charleston County Climate Action Plan (in process)

Charleston County is developing a Climate Action Plan to establish short and long-term goals for reducing greenhouse gas emissions, which contribute to climate change. The Climate Action Plan will create a list of actions that should be taken to reach emissions reduction goals. Charleston County decided to develop a Climate Action Plan for several reasons, including to meet sustainability goals, to align sustainability work with trending goals nationwide, to help anticipate and manage climate-related risks, and to ensure infrastructure is resilient to climate change. Mitigation actions from the Hazard Mitigation Plan will be considered and integrated into the Climate Action Plan; it will be important that these two plans are aligned in terms of long-term goals and objectives.

Charleston County Comprehensive Greenbelt Plan (2017)
The Charleston County Comprehensive Greenbelt Plan provides an inventory and analysis of greenspace in Charleston County as well as a forecast of greenbelt needs over the next twenty-five years. It also includes a review of greenbelt funding resources and greenbelt parcel selection criteria. It helps Charleston County decision-makers prioritize areas for conservation. This plan is an appropriate place to integrate mitigation strategies related to wetlands protection and open space preservation.

Building Code, Floodplain Management, Permitting, and Inspections

Building codes ensure structures are built safer and stronger. They create a standard to which communities must be held and help to make communities more resilient. The 2021 International Building Code has been adopted and implemented by the local governing entities since January 1, 2023. Floodplain management ensures compliance with the local flood ordinance and FEMA standards for properties located within the Special Flood Hazard Areas, including but not limited to standards related to building elevation, freeboard and flood vent requirements, wet or dry floodproofing, to name a few. The Charleston County Flood Damage and Prevention Ordinance Flood Ordinance has been recently updated to reflect 2021 FEMA flood maps and to clarify higher standard code requirements.

The Charleston County Building Inspection Services Department administers the 2021 ICC Building Code for the following participating municipalities:

- Town of Seabrook Island
- Town of James Island
- Town of Meggett
- Town of Hollywood
- Town of McClellanville
- Town of Awendaw
- Town of Rockville
- Town of Lincolnville

The following participating jurisdictions administer the building code through their own Building Inspections departments:

- Town of Kiawah Island
- City of Charleston
- City of North Charleston
- Town of Mount Pleasant
- City of Folly Beach
- Town of Sullivan's Island
- City of Isle of Palms
- Town of Ravenel

Land Use Planning and Ordinances

Most of the Charleston County region is experiencing growth and development pressures. The County and all participating jurisdictions should carefully examine their land use planning efforts and ordinances to ensure they are promoting smart and responsible growth

patterns. This is especially true of the barrier island jurisdictions, Kiawah, Seabrook, Isle of Palms, and Sullivan's Island, as these areas are particularly sensitive.
One of Charleston County's most powerful growth management tools is the Urban Growth Boundary. The UGB is written into the County's Comprehensive Plan and establishes regions of growth and regions that should remain rural. It accomplishes this by utilizing more mixed-use zones in the areas slated for growth, and more rural, low-density, residential zones in the regions where growth is to be limited. This helps to create urban centers while also maintaining a rural and residential nature in other areas.

Strategic land use planning and zoning and land development regulations can bolster a county's resilience by shaping where, what, and how land can be developed. There are several regulations included in the County's current Zoning and Land Development Regulations Ordinance (ZLDR) that contribute to resilience.
A prominent resilience element adopted in Charleston County is the required vegetated buffers from saltwater wetlands, waterways, and Ocean and Coastal Resource Management (OCRM) Critical Lines. These buffers provide a visual, spatial, and ecological transition zone between development and the County's saltwater wetlands and waterways, and to protect water quality and wildlife habitat. Additionally, the County requires larger minimum lot sizes and widths for properties that contain or abut an OCRM Critical Line, in order to maintain a lower density along the waterfront.
The Charleston County Resilience Committee has established three categories of short-term, mid-term and long-term recommendations. The 2022 ZLDR updates adopted by County Council included recommendations such as removing freshwater wetland areas from density and lot area calculations, encourage parking under buildings and reduction in impervious surfaces, and change the definition of "Building Height" to be measured from the Design Flood Elevation instead of the Base Flood Elevation.
Furthermore, the Zoning and Planning Department has a subdivision ordinance that is Chapter 8 of the ZLDR. I would say some of the measures taken to reduce hazard impacts are:

1. Subdivision lot density to be calculated on highland only, not wetlands.
2. Requiring buffers and larger setbacks from Critical areas.
3. Incorporating options for Conservation Subdivision in some of the rural districts.
4. Major subdivisions are now considered more than four lots, which requires additional scrutiny of infrastructure for development.

County staff coordination among departments, agencies, and municipalities for reviews, approvals, and information sharing are key elements weaved into the Charleston County procedures.

Charleston County Resilience and Sustainability

Charleston County prioritizes resilience and sustainability. Resilience and Sustainability staff positions were created in 2020 and 2021 by County Council to identify strategies to make the County more resilient and sustainable while focusing on the prevention and mitigation of climate change which causes increased sea level rise, flooding, and extreme heat in the region. Several initiatives are being implemented under this umbrella.

Resilience strategies convey stormwater events and rising sea levels and protection of natural defenses such as wetlands, woodlands, and floodplains, in all County plans, policies, and regulations for long-term strengthening of the community. Resilience initiatives include an extreme heat analysis project that will support state and local initiatives designed to reduce the negative health effects of extreme heat events, especially for disproportionately affected populations and securing a contract to perform an All-Hazards Vulnerability and Risk Assessment using the framework from the US Climate Resilience Toolkit's Steps to Resilience. Sustainability initiatives include green buildings, residential composting, energy efficiency and reduction in County buildings, renewable energy in County buildings, and fleet transition to alternative fuels.

In 2022, Charleston County published a Greenhouse Gas Inventory for 2018 and 2020 which establishes baseline greenhouse gas emissions for Charleston County and the municipalities located geographically within the County. This Inventory will inform the County's Climate Action Plan which is currently in development. The Climate Action Plan will establish greenhouse gas emission reduction goals for the County and County government and provide a framework of activities to meet these goals.

The Resilience and Sustainability Advisory Committee (RSAC) was established in early 2023 to serve as an advisory board for all matters on resilience and sustainability to County Council.

Staffing

Charleston County and the participating jurisdictions are fully equipped with staff. All entities have a Building Official and Community Planner. Most entities have a GIS coordinator; for those entities that do not, Charleston County provides GIS services. Charleston County provides emergency management services for all jurisdictions, but some entities do have additional emergency or risk managers. Not all jurisdictions have a Certified Floodplain Manager (CFM) on staff. Charleston County provides floodplain management guidance to jurisdictions without CFMs as necessary.

The areas of practice for certified planning staff include hazard mitigation and resiliency planning (e.g., risk assessment, flooding, earthquake, wildfires, spills, brownfields, anti-terrorism, disaster preparedness, environmental justice planning, public health crisis, adaptation).

Administration

Planning Commission

All of the entities involved in this plan have active Planning and Zoning Commissions or Boards that review proposed amendments to zoning ordinances, site plans, and plat applications. These Commissions or Boards also make recommendations to Councils regarding the current and future development of the community.

Mitigation Planning Committee

All of the entities involved in this plan have a Mitigation Planning Commission that met to contribute to the update of this plan.

Maintenance Programs to Reduce Risk

Regular maintenance of stormwater infrastructure is handled by the Public Works department for Unincorporated Charleston County. Maintenance programs include ditch clearing and vegetation removal. These programs are conducted on an annual schedule. Charleston County receives Community Rating System credit for the routine maintenance of their stormwater infrastructure.

Other entities, such as Kiawah Island, have their own maintenance crews. The Kiawah Island Community Association is responsible for the maintenance of the stormwater infrastructure on Kiawah. The James Island Public Service District is responsible for the maintenance of stormwater infrastructure on James Island. City of North Charleston has an active Horticultural staff that trims trees as needed, as well as a Stormwater Division that monitors, cleans, and repairs storm drains and ditches. The City of Folly Beach works in conjunction with SCDOT and Dominion Energy for tree trimming. All jurisdictions are serviced by a maintenance entity or covered by Unincorporated Charleston County's Public Works department.

Technical

Technical resources include skills and tools that can be used for mitigation planning and to implement specific mitigation actions. Charleston County and the participating jurisdictions have various technical capabilities that aide in the implementation of mitigation activities.
Warning Systems/Services
Charleston County employs a County-wide emergency notification system. Citizens can sign up on the Charleston County Emergency Management website. Charleston County also utilizes text message and cable TV alerts to notify citizens of incoming weather or natural hazards.

Grant Writing

Charleston County and multiple participating jurisdictions have been successful at securing state and federal funding. Examples of successfully secured grants include Community Development Block Grants, Building Resilient Infrastructure and Communities grants, Flood Mitigation Assistance Grants, and grants through the Hazard Mitigation Grant Program. Grant writing should be further explored by participating jurisdictions in order to fund mitigation projects. The greatest barrier to grant writing is available staff time.

Hazus Analysis

Hazus is a geographic information system-based natural hazard analysis tool developed and distributed by FEMA. Hazus software provides standardized tools and data for estimating risk from earthquakes, floods, tsunamis, and hurricanes for a given area. This software was

used to assess risk to Charleston County. Details regarding the Hazus analysis for Charleston County can be found in the Appendix of this report.

Funding Resources

General Fund

General fund refers to revenues accruing to the municipality from taxes, interest earnings, and other sources which can be used for the general operation of local government. General funds can be used to fund mitigation activities such as structural projects, emergency services, property protection, natural resource protection, public information, or preventative actions.

Stormwater Utility Fee

The Charleston County Stormwater Utility Fee funds the Stormwater Management Program. All residential properties are charged a flat rate annually. Non-residential properties are calculated using the Equivalent Residential Unit which takes the property's size and land use into consideration. The Stormwater Utility Fee can be used to implement mitigation measures related to stormwater management and water quality, such as the maintenance or retrofitting of infrastructure.

Development Impact Fee

Development impact fees have not been utilized but should be explored as potential sources of funding for future hazard mitigation projects.

Federal and State Grant Funding

Grant funding can be an excellent approach to implementing mitigation projects. There are many grant funding opportunities available through the South Carolina Emergency Management Division (SCEMD) and the Federal Emergency Management Agency (FEMA). Some examples of potential federal grant programs are the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance Program (FMA), and the Pre-Disaster Mitigation Program, all of which are funded through FEMA. Other federal opportunities include grants through FEMA's Building Resilient Infrastructure and Communities (BRIC) program. BRIC funding is specifically for hazard mitigation projects. These opportunities should be explored to fund future mitigation activities. Charleston County has been successful at securing federal funding in the past, specifically for flood reduction projects, home elevations, and special outreach projects.

National Fish and Wildlife Foundation Coastal Resilience Fund

The NFWF Coastal Resilience Fund restores, increases, and strengthens infrastructure to protect coastal communities while also enhancing habitats for fish and wildlife. The fund was established in 2018. The program is designed to invest in conservation projects that restore or expand natural features that minimize the impacts the storms and other naturally occurring events. Such features include coastal marshes, wetlands, dune and beach systems, oyster and

coral reefs, maritime forests, barrier islands, and coastal rivers and floodplains. Exploring opportunities via NFWF might be an effective route through which hazard mitigation actions could be implemented in Charleston County.

NOAA Climate Resilience Regional Challenge

This is a competitive funding opportunity that is available for projects that build the resilience of coastal communities to extreme weather and other impacts of climate change, including sea level rise and drought. This federal grant program focuses on collaborative approaches to achieving resilience in coastal regions. Eligible projects should address risk reduction, regional collaboration, equity, and building enduring capacity for adaptation. This grant has a specific track for the implementation of resilience and adaptation actions, making this an excellent opportunity to secure funding for proposed mitigation actions in this Hazard Mitigation Plan. Eligible activities include acquiring vulnerable land, building natural infrastructure, updating state and local codes and policies, hybrid green and gray construction activities, and strengthening or protecting public access to coastal natural resources.

Transformational Habitat Restoration and Coastal Resilience Grants

$240 million in funding is available for transformational habitat restoration and coastal resilience projects under the Bipartisan Infrastructure Law and Inflation Reduction Act. Local governments are eligible applicants for this funding. Eligible projects will help sustain our nation's fisheries, make significant strides in the recovery of threatened and endangered species, and help protect coastal communities and ecosystems from the impacts of climate change. They will support efforts such as reconnecting rivers to their historic floodplains, planting corals to rebuild reefs, building living shorelines that protect coasts from erosion and sea level rise, and more. This funding opportunity should be explored for eligible coastal resilience projects found in the proposed mitigation actions in this plan.

Assistance from Nongovernmental Organizations

StormReady Certification

Charleston County is a Storm Ready Community as designated by the National Weather Service.
To be officially StormReady, a community must:

- Establish a 24-hour warning point and emergency operations center.
- Have more than one way to receive severe weather warnings and forecasts and to alert the public.
- Create a system that monitors local weather conditions.
- 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.

Charleston Waterkeeper

Charleston Waterkeeper protects waterways from pollution and helps to mitigate flooding in the Charleston area. They monitor water quality using citizen volunteers and advise Charleston residents when it is or is not safe to swim in certain water bodies.

S.C. SeaGrant Consortium

The SC SeaGrant Consortium provides information to the community to support conservation of coastal resources to create a more sustainable environment. They fund many research projects in the area and provide no-cost technical assistance to government entities on long-range planning documents.

Sustainability Institute

The Sustainability Institute protects housing in Charleston neighborhoods from future development and climate change. They often provide grants to low-income communities to restore historic properties, provide cooling systems, and make home repairs.

Red Cross Palmetto SC Region

The Red Cross has many emergency preparedness programs for all ages that can be implemented into school curriculums.

National Flood Insurance Program Compliance

All jurisdictions remain in good standing with the National Flood Insurance Program. All communities continue their participation in the Community Rating System Program. Charleston County administers the CRS program for the following jurisdictions:

- Town of James Island
- Town of Seabrook Island
- Town of Hollywood
- Town of Meggett
- Town of McClellanville
- Town of Awendaw
- Town of Rockville

All other jurisdictions administer their own CRS programs. However, the County maintains a policy of information and data-sharing and assists other jurisdictions with recertifications and Community Assistance Visits when necessary.

All communities follow the NFIP's guidelines for tracking and monitoring substantial damage and substantial improvement, as well as FEMA's guidelines for determining substantial damage after a natural disaster incident. Some communities track SI/SD cumulatively over a 5-year period, and some communities have a threshold lower than 50%. These higher standards contribute to Community Rating System scores. Communities that maintain an SI/SD threshold lower than 50% or track SI/SD cumulatively receive additional credits toward their Community Rating System score.

Charleston County unincorporated area recently improved their CRS rating to a Class 2 (Effective October 1, 2023) on a scale of 1-10 with Class 1 being the highest). They are one of only a few Class 2 communities in the country. One activity that contributed towards this new rating was the implementation of Coastal A regulations. A Coastal A flood zone is delineated by the Limit of Moderate Wave Action (LiMWA) line and shown in the Charleston County Flood Insurance Rate Map (FIRM). This is a higher standard that exceeds the minimum requirements of the National Flood Insurance Program, which offer additional protection to properties affected by 1.5-foot or greater breaking waves during a 1-percent- annual flood event (wave wash) in the AE flood zones as determined by FEMA.

Charleston County requires that all new construction in areas on the water side of the Limit of Moderate Wave Action (Coastal A zones) be built to higher V Zone construction standards.
This helps create a safer, more resilient community and lessens the impacts of hazards when they occur. This standard is implemented for all communities that Charleston County administers the CRS program for. The County expects that these communities will also increase their scores as a result of the Coastal A regulations at their next Community Assistance Visit.

As an immediate outcome of Charleston County CRS improvement to Class 2, properties located in the Charleston County unincorporated areas are being assessed upon 40% discount in flood insurance premiums.

Communities in Charleston County often consider the Community Rating System when identifying potential mitigation actions. Aligning mitigation actions with CRS activities benefits the community two-fold by protecting people and property and increasing the discount received on insurance premiums for citizens of the community. Communities within Charleston County should continue to use the CRS manual when considering future mitigation strategies.

Floodplain Management Capabilities

Adopted Flood Insurance Rate Map
All Jurisdictions in the County have adopted Map 45019C Suffix K Dated 01-29-2021 except for Lincolnville. Lincolnville does not have any applicable Special Flood Hazard Area(SFHA) and does not to participate in the NFIP.

Locally Adopted Ordinance and other Standards
Unincorporated Charleston County, Town of Awendaw, Town of Hollywood, Town of James Island, Town of McClellanville, Town of Meggett, Town of Rockville, and Town of Seabrook Island have all adopted a locally enforced floodplain management damage prevention ordinance that meets or

exceeds the National Flood Insurance Program minimum standards. This is in conjunction with the 2021 ICC Codes and ASCE 24-14, which have all been adopted to ensure sound construction/development practices in the special flood hazard area.

The City of Charleston, City of North Charleston, Town of Mount Pleasant, City of Folly Beach, City of Isle of Palms, Town of Sullivan's Island, Town of Kiawah Island, and Town of Ravenel have all adopted a unique enforceable flood damage prevention ordinance as well as ICC Codes that meet or exceed the National Flood Insurance Program requirements.

National Flood Insurance Program Contact
Unincorporated Charleston County, Town of Awendaw, Town of Hollywood, Town of James Island, Town of McClellanville, Town of Meggett, Town of Rockville, and Town of Seabrook Island----
The Charleston County Building Official/ Floodplain Manager

City Of Charleston---- **The Building Official and Floodplain Manager**
City of North Charleston---- **The Floodplain Manager and Building Official.**
Town of Mount Pleasant--- **The Floodplain Manager and Building Official**
City of Folly Beach---- **The Building Official**
City of Isle of Palms---- **The Building Official and Zoning Administrator**
Town of Sullivans Island---- **The Building Official**
Town of Kiawah Island---- **The Building Official**
Town of Ravenel---- **The Town Administrator and Floodplain Manager**

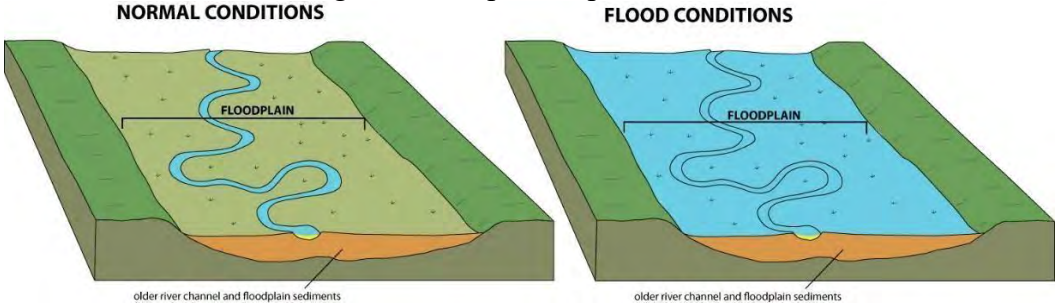
Damage Assessment Capabilities

All 17 jurisdictions do the following for damage assessment during and after an event:
During an event, the inspectors are on standby while administrative staff take calls and plot addresses as damage reports come in from citizens and other channels. This occurs at Town Halls and the County Emergency Operating Center. Information is fed to jurisdictions on the receival of a report. After the event has passed and is it safe to travel, damage assessment teams go to known flooding areas to survey for damage. The County and City of Charleston run an online damage self-reporting tool in which reports will be assigned to the jurisdictions' inspectors as they come in. All damage is noted, photographed, and recorded to be received back in the Office by a team of certified floodplain managers or the Building Official. The damage and estimated cost of repair and valuation of all permits for repair is weighed against fair market value of the structure in accordance with each jurisdictions adopted Ordinance. If it exceeds the substantial damage threshold, a letter is mailed to the structure's owner detailing the measures needed to come into compliance. All inspections are done so in accordance with state and federal guidelines for damage assessment and each jurisdictions follows the FEMA Preliminary Damage Assessment Pocket Guide as a "how to." https://www.fema.gov/sites/default/files/documents/fema_2021-pda-pocket-guide.pdf

All information and forms are filled out in accordance with FEMA guidance and reported to the State by means of Palmetto Software. All damage and total monetary damages are available here.

– Natural and Beneficial Functions of Floodplains

The Charleston Region is comprised of 68% of floodplains, meaning that the functions of floodplains affect daily life tremendously in addition to the citizens and development in turn affects the floodplains. This relationship can be mutually beneficial or destructive. Understanding the natural benefits and functions of floodplains is crucial to be able to protect them and make educated decisions of hazard mitigation and further community development. Below is an illustration showing how floodplains operate:



The benefits and functions of a floodplain include flood protection, improved water quality, recharged aquifers, improved wildlife habitat, recreational industries (like kayaking and fishing), and sustainable agriculture (*Source: The Nature Conservancy*). See below for more:

Some Natural Functions of Floodplains

WATER RESOURCES

Natural Flood and Erosion Control

- Provide flood storage and conveyance
- Reduce flood velocities
- Reduce peak flows
- Reduce sedimentation

Water Quality Maintenance

- Filter nutrients and impurities from runoff
- Process organic wastes
- Moderate temperature fluctuations

Groundwater Recharge

- Promote infiltration and aquifer recharge
- Reduce frequency and duration of low surface flows

BIOLOGICAL RESOURCES

Biological Productivity

- Rich alluvial soils promote vegetative growth
- Maintain biodiversity
- Maintain integrity of ecosystems

Fish and Wildlife Habitats

- Provide breeding and feeding grounds
- Create and enhance waterfowl habitat
- Protect habitats for rare and endangered species

– *A Unified National Program for Floodplain Management*
FEMA-248 (1994)

The Charleston Region recognizes that while there has been positive progress in quality water management, there is growing evidence indicating that urbanization and other land uses adversely impact the quality of marine waters. The Charleston County Comprehensive Plan identifies a number of actions that the Charleston Region may take in order to enhance natural and beneficial functions. Several of these functions are as follows:

1. Continue to coordinate with the State to complete research projects and develop water quality management strategies for the Charleston Harbor and other local rivers and estuaries.
2. Explore options for developing a regional geographic information system (GIS) water quality database.
3. Work with all municipalities and SC DHEC to implement an ongoing regional water quality monitoring program.
4. Support the program by SC DHEC to reduce nonpoint source pollution from new development.

5. Consider revision of local storm water standards to require a "zero degradation" approach to storm water management.
6. Require retention of vegetated buffers along shorelines.

The Charleston Region is one of the most biologically rich and diverse habitat areas on the Atlantic Coast. The Charleston area is a temporary or permanent home to rare whooping cranes, endangered woodpeckers, rare piping plovers, wood storks, bald eagles, ducks, pelicans, royal terns, and other waterfowl. Charleston County is also home to the rare red wolf, bear, deer, wild turkey, and other wildlife. The number of wildlife management, habitat enhancement, and special conservation projects underway is significant. The Charleston Regional Hazard Mitigation Plan supports several of these efforts:

1. Promote intergovernmental coordination to protect the Regions' aquatic habitat.
2. Support the management efforts of SC DNR and SC DHEC to protect the Regions' spawning and nursery habitat and migratory routes for aquatic life.
3. Encourage SC DNR to develop resource management strategies to sustain shellfish resources.
4. Undertake a number of measures to protect the habitat area of species as designated as federally endangered, threatened, or locally identified as rare.
5. Implement measures to preserve farm and forest land open space.

Coordinate with various public and non-profit interests regarding the development of wildlife habitat management plans for specific area of the Region. The Charleston Region also recognizes the importance of preserving farm and forest land, as well as the public and private stewardship of farmland soils and forest resources. This plan includes a number of activities to support this effort:

1. Promote voluntary stewardship of farmland soils.
2. Promote voluntary compliance by private, non-industrial forest resource. Owners with S.C.'s Best Management Practices for Forestry and with the American Forests and Paper Association Sustainability Initiative.
3. Implement a number of measures that will minimize conflicts between forest resource producers and private landowners residing in the vicinity of forest resource lands.
4. Work with the National Forest Service to address management issues at the Francis Marion National Forest.

Many present and future businesses of the Charleston Region are dependent upon groundwater to meet domestic, commercial, and industrial water needs. From its research SC DHEC has concluded that the aquifer systems of the Coastal Plain contain significant groundwater if used wisely, but that it is foreseeable that the resource will be stressed by the demands of a growing population. The Charleston Region recognizes and supports the various activities to take a proactive approach to resolving this issue:

- Support research documenting groundwater resources in the Region and development of a related GIS database.
- Participate with SC DHEC and the Coastal Plain Capacity Use Task Force in future efforts to manage groundwater resources in the South Carolina Coastal Plain.
- Consider Regional actions that would facilitate groundwater use reporting to SC DHEC:

The County of Charleston Comprehensive Plan also discusses the coastal floodplain within Charleston County, specifically indicating the following activities for conservation, use or protection of the floodplains:

- "Prevent disturbances to areas that provide critical flood water storage and filtration functions, including estuarine and palustrine wetlands
- "Prevent excessive clearing and disturbance to natural upland vegetation within the floodplain"
- "Minimize the alteration of natural drainage patterns within the floodplain"

These activities are fully consistent with the activities of the Charleston Regional Hazard Mitigation Plan pertaining to the preservation of natural resources and beneficial functions of floodplains. In addition, many floodplain and wetland areas in Charleston County have previously been set aside and preserved as natural botanical areas (County of Charleston Comprehensive Plan).

Many jurisdictions within Charleston County, including the County and municipalities that contract with them for storm water services, the Town of Mt. Pleasant, the City of Charleston, and the City of North Charleston have enterprise funding systems in place to provide resources needed for implementation and enforcement of water quality and quantity regulations to enhance water quality in the Region. Many of the local jurisdictions have also undertaken storm water or watershed master planning development or updates to address storm water run-off needs. For example, Charleston County undertook a storm water master planning initiative during 2007-2008 to develop recommendations for development trends and storm water systems throughout the County. This planning initiative is fully consistent with the goals and activities discussed in this Charleston Regional Hazard Mitigation Plan, and applicable sections of this plan have been considered as a part of the storm water master planning process. Recommendations from the storm water master planning initiative are also consistent with recommendations included in the Charleston Regional Hazard Mitigation Plan and action plans for applicable government entities.

South Carolina DHEC's Office of Ocean and Coastal Resource Management (OCRM) establishes and reviews beachfront jurisdictional lines, which help to support the state's beachfront management goals and protect the vulnerable shorelines and natural ecosystems that exist on the coast. The coastline changes over time due to currents, storms, beach use and beach maintenance, which requires the OCRM to establish and review the jurisdictional lines every seven to ten years. There are two types of jurisdictional lines – the baseline and the setback line. The baseline is the more seaward of the two, while the setback line is the landward line. The setback area is the area between the baseline and the setback line. The baseline is created differently depending which zone the beach is categorized – the standard zone, the stabilized inlet zone, or the un-stabilized inlet zone. The setback line is established at a distance from the baseline which is forty times the average annual shoreline change rate, as determined by historical and other scientific means. The OCRM also has permit authority over critical areas. Critical areas are any of the following: coastal waters, tidelands, beach/dune systems and beaches. The critical area boundaries were determined using biological field surveys and aerial photography to find the point on the upper reaches of the estuarine systems where tideland vegetation changes from predominately brackish to predominately fresh and has established a boundary using the nearest recognizable physical features within the area. The jurisdictional lines are now available for the public to view on the Charleston County GIS Parcel Viewer.

– Development and Population Trends

According to U.S. Census Bureau data, the combined total population of Charleston County was 413,024 which is a 17.9% increase from 2010 to 2021. In addition, three of the five most

populous incorporated places in South Carolina are in Charleston County. These areas are the City of Charleston with a population of 141,931 (14.51% growth rate since 2000 census), the City of North Charleston with a population of 122,297 (17.81% growth rate), and the Town of Mt. Pleasant with a population of 97,129 (39.69% growth rate) (2020 Census Data).
Since 1970 Charleston County has become an increasingly urban county, as determined by the U.S. Bureau of the Census. In 1970 approximately 18.2% of the population resided in rural areas.

This showcases how fast-growing Charleston County is by exceeding the expectations from the 2010 U.S. Census. Compared to the number of residents in 1990, there has been a 39.4% growth in population over 30 years. This projection represents an extension of established demographic trends in the Region. The projection includes growth of the student population, based on long-range plans of local colleges and universities.
The Mt. Pleasant/East Cooper area is projected to be the fastest growing area in the Region, with a 98% population growth projected to occur between 1990 and 2015. The slowest growing areas are projected to be North Charleston, the Charleston Peninsula, and the rural East community. The current County of Charleston Comprehensive Plan, in general, encourages the maintenance of rural uses in areas that are currently rural in nature, and future development in the more highly developed areas of the County. The following Table 5-14 provides estimated population growth estimates provided by the local governments within Charleston County.

Table 5-1-15

Estimated Population 2020-2021 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2019**	**Approximate 2020 Population**
Town of Awendaw	11.5%	1,384
City of Charleston	14.6%	137,566
City of Folly Beach	1.64%	2,660
Town of Hollywood	10.9%	5,176
Town of Lincolnville	122%	2,133
City of Isle of Palms	5.49%	4,360
Town of James Island	7.87%	12,109
Town of Kiawah Island	8.79%	1,676
Town of McClellanville	8.60%	568
Town of Meggett	5.79%	1,034
Town of Mt. Pleasant	35.1%	91,684
City of North Charleston	18.4%	115,382
Town of Ravenel	10.3%	2,691
Town of Rockville	1.49%	125
Town of Seabrook Island	8.81%	1,762
Town of Sullivan's Island	7.43%	2,203

Source: U.S. Census Bureau, Population Division July 2020

In addition to area-wide efforts to address traffic-related issues associated with growth in the Charleston County area, several communities in the Charleston County area also have ordinances designed to protect their historic building inventory from demolition or have taken other steps to preserve their historical assets.
The local governments within Charleston County are diverse in many ways concerning the amount of land available for development within their jurisdictional limits. For example, areas such as the Peninsula part of the City of Charleston and the Towns of Rockville and Seabrook Island anticipate only limited future development due to the available land being primarily already built-upon. However, other areas, such as the Daniel Island part of the City of

Charleston, and the Towns of Hollywood and the portions of Unincorporated Charleston County within the service districts of the St. John's Fire District and the St. Paul's Fire District have ample land available for development, so high levels of future development are expected in these areas, subject to limitations from the Charleston County Development Regulations and the Charleston County Comprehensive Plan. Other local governments, such as the Towns of Kiawah Island, McClellanville, and Meggett anticipate moderate levels of future development, since they have some land still available for future development. Table 5-15 summarizes the anticipated future development trends for the local governments within the Charleston Region, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan:

Table 5-1-16

Anticipated Future Development Trends Within the Charleston Region				
Jurisdiction	Limited future development expected	Moderate levels of future development expected	High levels of future development expected	Other
Town of Awendaw			X	
City of Charleston	X (Peninsula area)	X (W. Ashley, John's Island, James Island)	X (Daniel Island, Cainhoy)	
Charleston County (Unincorporated)				Charleston County Comprehensive Plan places limits on amount of development in rural areas. Future development trends are also subject to rate of annexations by municipalities.
Charleston Co. PRC			X	
Charleston CPW		X		
Cooper River Parks		X		
City of Folly Beach	X			
Town of Hollywood			X	
Town of Lincolnville		X		
City of Isle of Palms	X			
James Island PSD		X		
Town of Kiawah Island		X		
Town of McClellanville		X		
Town of Meggett		X		
Town of Mt. Pleasant			X	
Mt. Pleasant Water		X		
City of N. Charleston		X		
N. Charleston District	X			
N. Charleston Sewer District		X		
Town of Ravenel	X			The Town has recently approved a Planned Development for 381 homes with the potential for an additional 1,000 in the future. However, sewer capacity will limit additional expansion.
Town of Rockville	X			
St. Andrews Parks				Do not have plans to develop, however, ½¢ sales tax may provide funding for expansion.
St. Andrews PSD	X			
St. John's Fire District			X	
St. Paul's Fire District				Land available, but restricted by Chas. Co. Comprehensive Plan & Land Use Development Regulations.
Town of Seabrook Island	X			
Town of Sullivan's Island	X			

– Economic Impact

The impact of a hazard event upon the community, economy, and tax base is directly dependent upon the severity of the event. A situation such as Hurricane Hugo with a 20-foot storm surge has the potential impact of loss of life, particularly if hospitals are not accessible due to debris obstructing the transportation arteries or if residents in low lying areas refuse to evacuate when ordered to do so. Loss of property, utility service, and personal security also has a direct impact on the ability of the businesses to conduct commerce. Businesses must be prepared to contend with a reduction in the number of employees who are able to work, even if their physical facilities are able to continue operation, if the homes of their employees are severely damaged as a result of a hazard event.

The effect on the overall economy after a large-scale disaster can be quite dramatic. A large part of the economy of the Charleston Region depends on tourist dollars. Since the historic buildings of the City of Charleston represent one of the major tourist attractions of the Charleston area, the loss of the historic structures through damages associated with a hazard event could potentially compound the post event decline in tourist visits, if the tourists no longer have a unique reason to select Charleston as their tourist destination. The most likely hazard event to result in this type of catastrophic loss is a major earthquake. Potential economic effects of a major earthquake are separately addressed in this plan at the end of this section. A major hurricane strike would also likely result in catastrophic losses to some historic structures on the Charleston peninsula. A hurricane of the magnitude of Hurricane Hugo striking south of Peninsula Charleston in such a manner as to place the peninsula in the worst quadrant of the hurricane would likely result in greater losses due to flooding and wind-related damages than Hurricane Hugo generated. The longer the clean-up and repair period after a hazard event and the greater the extent of the damage to the historic district structures, the more devastating these types of events are likely to be upon the tourist-related service sector of the economy.

Since small businesses are particularly vulnerable to closure after a major natural hazard event (nationally 30-40% of small businesses do not reopen after a major natural hazard event), initiatives to prepare small businesses for prompt return to operation post-event may further reduce a hazard's economic impact.

Harbor deepening projects are crucial to economic development of the Southeast and the nation as a whole. According to the Post and Courier, 90 percent of U.S. global trade flows by water carriage. The State Ports Authority chief Jim Newsome called the Panama Canal expansion a "3 million container opportunity" for Charleston. The completion of the deepening of the Panama Canal allows larger ships pass through which require deeper ports to operate in.

According to a HAZUS-based study produced for the South Carolina Emergency Management Division, an earthquake of the magnitude of the 1886 earthquake (7.3 on the Richter Scale) would be expected to cause approximately $10.9 billion in economic losses in the Charleston, Berkeley, and Dorchester County areas. These losses include building losses, direct business interruption losses, and damage to transportation and utility systems. This study recommended further study of the short- and long-term effects of a major earthquake on tourism since the Charleston-area economy is so dependent upon tourism-related businesses. This study also suggests that if an earthquake occurs during high tourist occupancy times the demands on emergency response organizations will likely be greater than the study currently predicts. The study already predicts that an estimated 60,000 people in the State of South Carolina will require short-term shelter and an additional 70,000 households would be displaced as a result of an earthquake of this magnitude. An earthquake event of this magnitude during high tourist occupancy times could precipitate the need for even more shelter space.

The South Carolina State Ports Authority (SCPA) Economic Impact Study clearly defined the economic impact of closing the Port System for any disaster. Approximately 12.3 percent of the statewide economic impact associated with the SCPA is concentrated within the

Lowcountry Region of South Carolina. This specifically translates annually into 7.8 billion in total economic output, nearly 28,000 jobs and $1.5 billion in labor income. It also implies that about 1 out of every 20 jobs in the Lowcountry can be attributed to the SCPA. The manufacturing industry, which represents the primary user base of the SCPA port facilities, provides about 29, 753 jobs in Charleston County alone as of 2019. Based on these figures, any cessation of port operations would result in a significant daily economic loss.

5.4.3 – Resiliency to Hazards

The ability to recover quickly after a disaster is imperative, but having a plan in the light of disasters is arguably how to make this come to fruition. Resiliency is an integral part of hazard mitigation. It is important for jurisdictions of all sizes, like those found in the Charleston Region, to incorporate resiliency issues, such as preparedness, adaption, mitigation, and response & recovery, into planning documents like a Comprehensive Plan. In the 2017 survey, questions about resiliency were asked to gauge what steps jurisdictions were taking independently to further strengthen the resiliency of the area. Table 5-16 lists all of the questions asked about resiliency in the survey. Many of the jurisdictions in the area do this through the protection of natural benefits, infrastructure maintenance programs, business disruption mitigation planning/business continuity planning, policies to limit development in floodplains, and beach management plans.

Many of these resiliency issues come to the surface due to experiences from disasters such as hurricane threats and flooding events. Some specific issues on preparedness of the jurisdictions in the area learned from these hazards are how flooding affects access to critical facilities such as hospital emergency rooms, how mutual aid agreements are helpful in time of disaster, and how understanding the policy and procedures for a hazard is crucial administratively. Some other lessons learned through hazard mitigation are how preemptive communication to high risk, repetitive loss areas help with preparedness; how identifying challenges to specific regions helps to better allocate resources and educate residence on preparation; how cross-checking contractors periodically can help improve the stability of infrastructure; and how quick communication across jurisdictions is valuable.

With these lessons learned, there comes challenges to then applying them to the policy and procedures before the next disaster strikes. These challenges include updating older infrastructure (especially prevalent in the historic district), public education, resource allocation (both short and long term), funding sources/financial restraint, cooperation from within and between jurisdictions, technological shortcomings, and high turnover of elected and appointed government positions (hard to achieve continuity).

The importance of participating in emergency operation center activities is advantageous to jurisdictions by having a first-hand account disaster preparedness and the intricacies of coordination in the time of adversity. The survey asked jurisdictions what their participation level was in EOC duties. Their responses varied from only to call in incidents to we try but are limited due to staff resources to we attend training events and are present in the EOC during storm events. Some jurisdictions need a higher level of involvement due to their size, risk level, and/or staff capabilities.

Moving up from a community scale to a regional scale, these scopes have different priorities and things to consider. The 2017 survey requested some feedback from the local jurisdictions up to the regional scale. Some suggestions to the County are to increase communication between county and city officials, increase collaboration efforts, state clear expectations from both sides, increase technical assistance on hazard mitigation and resiliency efforts, increase pursuit of federal grant funding, more consistency on regional policies for disaster response, and increasing response time by emergency services to fix infrastructure post disaster.

Some relevant projects being conducted by the jurisdictions to build resistance to hazards range from educational programs to increasing use of social media. Some of these projects link back to lessons learned from experiences with hazards. For example, one jurisdiction has several FEMA-sponsored mitigation programs in place to reduce the impact of flooding and hurricanes to medical critical care emergency operations and increase the resiliency of their physical plant. Proactive asset management by increasing types of infrastructure that are being inspected for vulnerability is another relevant project. Other notable projects are increasing freeboard requirements, introducing a sea level rise strategy, enforcing enclosure restrictions below elevated structures, and implementing roundtable discussions on developing a sustainable community.

Table 5-1-16 Resiliency Questions Posed to Jurisdictions

Resiliency Questions Posed to Jusridictions
Does your organization include issues of resiliency (e.g. preparedness, adaptation, mitigation, response & recovery) in your planning documents, such as the Comprehensive Plan, or in other planning efforts? If so, what are some examples of these policies?
Reflecting upon recent hurricane threats and flooding events, what has your jurisdiction/organization learned from a hazard preparedness standpoint from these events? Are some areas of preparedness weaker than others in your jurisdiction?
What challenges does your organization face when it comes to incorporating disaster resiliency into your planning or implementation efforts?
Does your jurisdiction/organization participate in emergency operations center activities or command? Please explain your participation level.
What could be done at the regional scale to mitigate impacts to disasters and disruptions? This could include providing technical assistance, setting regional policies, providing a forum for peer sharing, etc. Is your organization currently involved in any regional efforts?
Please share information about relevant projects related to building resilience to hazards (e.g. preparedness, adaptation, mitigation, response, and recovery efforts) that your community is undertaking (e.g. educational programs, risks programs, increased freeboard requirements, etc.).

Attachment 5-1-A: Largest Private Sector Employer in Charleston Metro Area 2023

Largest Private Sector Employers

Company	Product or Service	Employees
Roper St. Francis Healthcare	Roper and Bon Secours St Francis Hospitals	6,000
The Boeing Company	Aircraft Manufacturing	6,465
Trident Health System	Hospital system	2,600
Walmart Inc.	Retail merchandise	2,300
Robert Bosch LLC	Antilock brake systems, fuel injectors	1,600
Mercedes-Benz Vans, LLC	Production of Mercedes Sprinter Vans for the U.S. market	1,600
Publix Supermarkets	Retail grocery stores	1,200
iQor	Inbound/outbound customer service call center	1,200
T-Mobile USA	Inbound/outbound customer service center	1,200

Source: Charleston County, SC Economic Development

Attachment 5-1-B: Largest Public Sector Employer in Charleston Metro Area 2023

Largest Public Sector Employers

Company	Product or Service	Employees
Joint Base Charleston	Area U.S. military commands	22,000
Medical University Of South Carolina (MUSC)	Hospital, post-secondary education, research	16,000
Charleston County School District	Education/public schools	5,900
Charleston County	Local government	2,700
College of Charleston	Post-secondary education	2,000
U.S. Postal Service	Postal service	2,000
City of Charleston	Local government	1,700
City of North Charleston	Local government	1,200
Trident Technical College	Post-secondary education	1,200

Attachment 5-1-C: Repetitive Loss Areas within the Charleston Region

Repetitive Loss Areas				
Street	City, State	Zip Code	Jurisdiction	PSD / FD
5th Avenue	Charleston, SC	29407	Chas. County	
Alonzo Rouse Road	Mt. Pleasant, SC	29466-8562	Chas. County	
Arlington Drive	Charleston, SC	29407	Chas. County	St. Andrews
Auburn Drive	Charleston, SC	29406-9049	Chas. County	N. Charleston
Awendaw Landing Road	Awendaw, SC	29429-5957	Chas. County	
Belgrade Ave	Charleston, SC	29407-5715	Chas. County	
Bolton Road	Charleston, SC	29407	Chas. County	St. Andrews
Bonanza Road	Charleston, SC	29414-5104	Chas. County	
Boone Hall Drive	Charleston, SC	29407-3006	Chas. County	
Bradford Avenue	Charleston, SC	29412-4001	Chas. County	James Island
Burnham Court	Charleston, SC	29414-6870	Chas. County	
Butternut St	Charleston, SC	29414-6024	Chas. County	
Capri Drive	Charleston, SC	29407-7606	Chas. County	St. Andrews
Catawba Road	Charleston, SC	29414-5527	Chas. County	
Cessna Ave	Charleston, SC	29407-6808	Chas. County	
Cestus Lane	Charleston, SC	29414-6246	Chas. County	
Chaplins Landing Road	Meggett, SC	29449-5834	Chas. County	
Christian Road	Charleston, SC	29407-3042	Chas. County	
Church Creek Drive	Charleston, SC	29414-6404	Chas. County	
Clearview Drive	Charleston, SC	29412-4511	Chas. County	
Coker Avenue	Charleston, SC	29412	Chas. County	
Cynthia Lane	Charleston, SC	29407-7607	Chas. County	St. Andrews
D Woods	Kiawah Island, SC	29455-5759	Chas. County	
Debbenshire Drive	Charleston, SC	29407	Chas. County	St. Andrews
Deene Street	Charleston, SC	29412	Chas. County	
Dobester Avenue	Charleston, SC	29412-9106	Chas. County	James Island
Doncaster Drive	Charleston, SC	29414	Chas. County	
Etiwan Avenue	Charleston, SC	29414	Chas. County	St. Andrews
E Westchester Drive	Charleston, SC	29414	Chas. County	
Fickling Hill Road	Johns Island, SC	29455-8901	Chas. County	
Flamingo Drive	Charleston, SC	29414-5430	Chas. County	
Folly Road	Charleston, SC	29412-3922	Chas. County	James Island
Forest Lakes Blvd.	Charleston, SC	29414-5963	Chas. County	St. Andrews
Glendale Drive	Charleston, SC	29414-6428	Chas. County	St. Andrews
High Hammock Rd A	Seabrook Island, SC	29455	Chas. County	
High Hammock Rd B	Seabrook Island, SC	29456	Chas. County	
Honeysuckle Lane	Charleston, SC	29412-9712	Chas. County	
Howle Ave	Charleston, SC	29412-2421	Chas. County	
Hutton Place	Charleston, SC	29407-3506	Chas. County	
Limehouse Street	Charleston, SC	29401-2305	Chas. County	
Manigault Place	Charleston, SC	29407-3014	Chas. County	
Marilyn Drive	N. Charleston, SC	29418-5853	Chas. County	
Marshland Drive	Charleston, SC	29414-6214	Chas. County	
Mowler Court	Charleston, SC	29414-7361	Chas. County	
Old Ferry Road	Johns Island, SC	29455	Chas. County	St. Andrews
Old Pond Road	Johns Island, SC	29455-3201	Chas. County	
Pauline Avenue	Charleston, SC	29412-4041	Chas. County	James Island
Pelican Flight Drive	Isle of Palms, SC	29451	Chas. County	

Preston Road	Charleston, SC	29412-9130	Chas. County	
Rantowles Court	Ravenel, SC	29470-5304	Chas. County	
Riverland Drive	Charleston, SC	29412-2722	Chas. County	
Saint Julian Road	Charleston, SC	29405	Chas. County	N. Charleston
Sam Rittenberg Blvd.	Charleston, SC	29407-4621	Chas. County	
Savage Road	Charleston, SC	29414-5652	Chas. County	
Seaward Drive	Charleston, SC	29412-8942	Chas. County	James Island
Shelley Road	Charleston, SC	29407-7022	Chas. County	
Spur Street	N. Charleston, SC	29405-6825	Chas. County	
Sunnyvale Avenue	Charleston, SC	29414-6025	Chas. County	
Swift Avenue	Charleston, SC	29407-6858	Chas. County	
Taborwood Circle	Charleston, SC	29407-4820	Chas. County	
Tennent Street	Charleston, SC	29412-4528	Chas. County	
Trent Street	Charleston, SC	29414-5556	Chas. County	St. Andrews
Two Loch Place	Charleston, SC	29414-6883	Chas. County	
Waterloo Street	Charleston, SC	29412-5058	Chas. County	James Island
Wedgepark Road	Charleston, SC	29407-7836	Chas. County	
Wellington Drive	Charleston, SC	29412	Chas. County	
Woodland Shores Road	Charleston, SC	29412-2427	Chas. County	James Island
Yale Drive	Charleston, SC	29412	Chas. County	James Island

Attachment 5-1-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA *	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VE Zone	A/AW Zone*	V/VEZone
Unincorporated	**26,888**	**49**	**1,113**	**11,460**	**1,205**	**514**	**75**	**13,042**	**1,325**
Total Region	**172,201**	**60**	**2,280**	**68,054**	**7,257**	**5,771**	**732**	**76,057**	**8,037**

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-1-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
Unincorporated	5,838	255	6,093	45	270	6,363
All Regions	31,960	3,152	35,112	N/A	613	35,725

Attachment 5-1-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	Avg. Site-Built Residential Building Value	Avg. Commercial Building Value	Avg. Mobile Home Value**	Estimated Total Pre-1985 Site-Built and Mobile Home Building Value	Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)
Unincorporated *(All)*	$179,282.52	$346,108.57	$18,921.42	$1,752,594,252.00	
Pre-1985 only	$126,893.45	$142,993.44	$4,133.56		$878,867,604.00
Total Region *(All)*	$250,707.06	$791,675.65	$11,792.06	$13,893,437,204.00	
Pre-1985 only	$178,152.82	$357,174.24	$3,850.65		$7,633,003,208.00

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-1-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
Unincorporated	$2,745,661,650	$442,689,504	$2,202,606,127	$1,822,689,827
Total Region	$24,603,640,943	$3,766,894,596	$24,091,534,741	$18,071,685,894

** Valuation data reflected herein is for mobile homes, regardless of age.

– Awendaw Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-2-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction – 1 (most) – 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Town of Awendaw	**4**	**4**	**3**	**3**	**4**	**1**	**3**	**1**	**5**	**2**	**2**	**4**

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-2-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction – 1 (most) – 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Awendaw	**3**	**5**	**5**	**2**	**3**	**1**	**3**	**2**	**1**	**3**	**1**	**3**

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Town of Awendaw	The Town of Awendaw is a low lying rural community located along the Intracoastal Waterway, Awendaw Creek and the head waters of the Wando River. The Town is adjacent to the Frances Marion National Forest and Cape Romain Wildlife Refuge. The Town has a scattering of small businesses and residents who have lived here all their lives and recent residents in newer typically waterfront communities. There is a high percentage of mobile homes, limited access to evacuation routes and more low-income/at-risk populations. Hurricane Hugo landed just north of Awendaw resulting in severe flooding and damaging winds. The Town and adjacent Francis Marion National Forest was decimated in Hurricane Hugo. The Town is at risk for hurricanes and is more vulnerable to tornadoes as well as coastal flooding with the amount of mobile homes in the area. Given the proximity to the National Forest, the Town is vulnerable to wildfires. The Town is also vulnerable to earthquakes with it being close to a fault line with most buildings not built to withstand a severe earthquake. The Town is also vulnerable to winter weather as we do not experience it often and are not equipped with snow plows, salt, etc. for ice and snow.

– Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Town of Awendaw Higher Regulatory Standards
2' freeboard
Minimum 5 CFMs on staff via Charleston County
½ foot rise in floodway
All Inspectors are State certified via Charleston County
Five year cumulative of all permits is included when conducting a substantial review
Maximum residential lot occupancy of 20-30%
35' wetland setback
1 acre minimum along intercostal waterway and creeks

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-2-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction – 1 (most) – 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Awendaw	4	5	5	5	5	4	5	5	1	4	5	5

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County. Information outlining jurisdiction-specific information can be found below.

As of 2021, the amount of people below the poverty line was 15.10% (https://censusreporter.org/profiles/16000US4503385-awendaw-sc/).

Table 5-2-14

Estimated Population 2021 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 2021 Population**
Town of Awendaw	10.38%	1,585

Source: U.S. Census Bureau, Population Division 2020

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Attachment 5-2-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA *	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VEZone	A/AW Zone*	V/VEZone
Town of Awendaw	**717**	**40**	**55**	**232**	**36**	**18**	**3**	**304**	**40**

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-2-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
Town of Awendaw	**70**	**8**	**78**	**30**	**5**	**83**

Attachment 5-2-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	**Avg. Site-Built Residential Building Value**	**Avg. Commercial Building Value**	**Avg. Mobile Home Value****	**Estimated Total Pre-1985 Site-Built and Mobile Home Building Value**	**Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)**
Town of Awendaw ***(All)***	**$183,983.73**	**$226,340.00**	**$24,366.23**	**$24,735,500.00**	
Pre-1985 only	**$100,652.89**	**$21,900.00**	**$4,419.05**	**N/A**	**$7,954,400.00**

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-2-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
Town of Awendaw	$48,073,600	$17,673,600	$66,575,501	$49,279,201

** Valuation data reflected herein is for mobile homes, regardless of age.

5.3 – City of Charleston Problem Assessment

5.3.1 – Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-3-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction – 1 (most) – 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
City of Charleston	2	4	2	2	3	2	3	4	2	4	3	-

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-3-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction – 1 (most) – 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
City of Charleston	4	4	1	1	1	1	1	1	3	3	5	5

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
City of Charleston	The assessment of the overall hazard vulnerability is moderate for the City of Charleston. Vulnerability will depend on the origin of hazard, whether man-made (intentional) vs. caused (pollution) vs. natural disaster, and the location or target of disaster. The City of Charleston has a large network of critical infrastructure and known resource (CIKR) facilities that are subject to intentional and incidental man-made events. The City hosts many facilities that hold substances required for reporting in Tier 2 system under the Emergency Planning and Community Right-to-Know Act (EPCRA), including some Extremely Hazardous Substances (EHS). In addition, the City hosts the South Carolina Port Authority (SCPA) Port of Charleston that sees heavy traffic of chemical containers for both import and export operations. The City's historical and cultural environment creates a vulnerability to racial and/or ethnic -based domestic terrorism. In recent history, there have been mass shootings, attacks, and civil unrest, which caused loss of life and property that could present similar risk anticipated from a terrorist attack while not meeting specific terrorism legal definitions. Many assets are lower priority targets for man-made incidents, however infrastructure and building vulnerability can be attributed to age of construction and resulting material failures or lower standards during original construction. The City of Charleston experiences flooding on a regular basis attributed to the increasing intensity of storms, frequency of high tides and effects of sea level rise, especially in low lying areas less than 8 feet in elevation. Flooding will first impact roads near wetlands and on the downtown peninsula, making them impassible to vehicular traffic. This type of flooding may be referred to as 'nuisance flooding,' 'high tide flooding,' or 'sunny day flooding.' The City is also vulnerable to hurricane and tropical weather events with wind, precipitation and storm surge impacts. Winds from hurricanes can cause large trees and their branches to fall, blocking roads, downing power lines and damaging buildings. Vulnerability across the City, including James and Johns Island, is exacerbated during

	the combination of precipitation, storm surge and/or high tides that constitute compound flooding. Historic residential homes and churches, many with basements, in the South of Broad and Harleston Village Neighborhoods are vulnerable during a hurricane event. Church Creek and non-mapped riverine floodplains in the X-Zone of City suburbs are susceptible to pluvial and fluvial flooding as dense development occurs further into outlying areas and more people and businesses occupy the area. The overall number of Repetitive Loss properties in the City has increased following consecutive storm events in 2015 (Hurricane Joaquin), 2016 (Hurricane Matthew), 2017 (Hurricane Irma), and 2019 (Hurricane Dorian). Hurricane Ian (2022) impacts were relatively localized and attributed to rainfall instead of storm surge. Earthquakes pose a hazard to aging infrastructure and buildings, which upon structural failure could cause major loss of property and life. The City jurisdiction is spread across four islands or areas requiring access by bridge. Safety and accessibility of citizens and emergency responders is at risk in the event of an earthquake. The Lowcountry Hazard Center has provided information through the FEMA HAZUS risk modeling software that shows elevated risk to structures attributed to ground instability, sinkholes, and liquification because of a moderate or large earthquake. A major earthquake could cause a cascading hazard of dam failure and flooding within the Pinopolis dam failure inundation area. The community is also vulnerable to a lesser degree to wildfires, droughts, tsunamis, tornados and winter weather, though this risk is increasing as the City continues to annex further into currently rural areas. New residents to the lowcounty, tourists, first time homebuyers, renters and marginalized populations may not have the connections or resources to be well-informed of hazards in their area, which poses a vulnerability to our population to be sufficiently educated and prepared on the hazards affecting the City. The City looks forward to expanding its portion of the Charleston Regional Hazard Mitigation Plan in the coming years with new input from the Vulnerability Assessment, Emergency Operations Plan and City-specific Hazard Mitigation Plan.

– Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-3-12

Jurisdiction	Total Losses	Closed Losses	Open Losses	CWOP Losses
CHARLESTON, CITY OF	6,598	4,901	17	1,680
CHARLESTON COUNTY*	4,914	2,770	8	2,136
FEMA Policy and Claims Statistics Database, 2019 https://bsa.nfipstat.fema.gov/reports/1040.htm#45				

City of Charleston Higher Regulatory Standards	
Item	**Standard**
Freeboard above the Base Flood Elevation	2 ft. Freeboard for New Construction and Commercial Substantial Improvements; 1 ft. Freeboard for Residential Substantial Improvements.
Cumulative Substantial Improvement	5-year cumulative of all permits for Substantial Improvement/Damage
Manufactured Homes	There is no elevation exemption for manufactured homes
Building Code	Enforce the International Code Series, currently BCEGS classification 3/3
Building Diagram Prohibition	Effective January 1, 2024, slab-on-grade foundations for single family (detached and attached) homes will be prohibited in the City's 100-year regulatory floodplain, including building diagrams 1A, 1B, 2A, 2B and 3
SFHA Compensatory Storage	1.25:1 compensatory storage for fill within portions of the Church Creek Drainage Basin SFHA
Critical Area Buffers	Buffer and building setback requirements from the OCRM critical line
Grading/Fill Slope Buffers	Buffer requirements for fill of one foot or more along property boundaries
4% AEP Storm Event Stormwater Management Requirements	Projects disturbing one or more acre of land must match pre-development discharge rates for the 4% AEP storm event
Special Protection Area Stormwater Management Requirements	Runoff rate reduction and volume match requirements for new development in areas associated with known flooding
Redevelopment Stormwater Management Requirements	Runoff rate, volume, or impervious area reduction requirements for redevelopment
Special Protection Area Stormwater Management Requirements for Redevelopment	Runoff rate and volume reduction requirements for redevelopment in areas associated with known flooding
Stormwater 1% AEP Storm Event Storage Compensatory Mitigation	Projects disturbing one or more acre of land must provide compensatory storage mitigation for any modeled 1% AEP storm event storage displacement
Water Quality Volume	Increased water quality requirements for non-green infrastructure based BMPs

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-3-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction – 1 (most) – 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
City of Charleston	5	5	2	2	3	2	2	2	3	2	3	4

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-3-14

Estimated Population in 2021 in the City of Charleston, SC			
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 2021 Population**	**Persons in Poverty (percentage)**
City of Charleston	15.30%	151,612	12.0%

Source: U.S. Census Bureau, Population Division 2021

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

5.5.23– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Attachment 5-3-C: Repetitive Loss Areas within the Charleston Region

Repetitive Loss Areas

Street	City, State	Zip Code	Jurisdiction
Aiken Street	Charleston, SC	29401	City of Chas.
Arabian Drive	Charleston, SC	29407	City of Chas.
Ashley Avenue	Charleston, SC	29401	City of Chas.
Ashley Hall Road	Charleston, SC	29401	City of Chas.
Balsam Street	Charleston, SC	29407	City of Chas.
Barre Street	Charleston, SC	29401	City of Chas.
Beaufain Street	Charleston, SC	29401	City of Chas.
Bennett Street	Charleston, SC	29401	City of Chas.
Broad Street	Charleston, SC	29401	City of Chas.
Broughton Street	Charleston, SC	29407	City of Chas.
Brownswood Road	Johns Island, SC	29464	City of Chas.
Bull Street	Charleston, SC	29401	City of Chas.
Burningtree Road	Charleston, SC	29412-2630	City of Chas.
Calhoun Street	Charleston, SC	29401	City of Chas.
Capri Drive	Charleston, SC	29407	City of Chas.
Cestus Lane	Charleston, SC	29407	City of Chas.
Chadwick Drive	Charleston, SC	29407	City of Chas.
Church Street	Charleston, SC	29401	City of Chas.
Colleton Drive	Charleston, SC	29407	City of Chas.
Curtiss Avenue	Charleston, SC	29401	City of Chas.
Debbenshire Drive	Charleston, SC	29407-3010	City of Chas.
Dolmaine Drive	Charleston, SC	29407	City of Chas.
East Bay Street	Charleston, SC	29401	City of Chas.
Endo Street	Charleston, SC	29407	City of Chas.
Fairway Drive	Charleston, SC	29412	City of Chas.
Falkirk Drive	Charleston, SC	29407-6513	City of Chas.
Fenwick Drive	Charleston, SC	29407	City of Chas.
Fishburne Street	Charleston, SC	29401	City of Chas.
Fleming Road	Charleston, SC	29412	City of Chas.
Franklin Street	Charleston, SC	29401-1909	City of Chas.
Gadsden Street	Charleston, SC	29401	City of Chas.
Gibbes Street	Charleston, SC	29401	City of Chas.
Gordon Street	Charleston, SC	29401	City of Chas.
Hasell Street	Charleston, SC	29401	City of Chas.
Heathwood Street	Charleston, SC	29407	City of Chas.
Juniper Street	Charleston, SC	29407	City of Chas.
King Street	Charleston, SC	29403	City of Chas.
Lamboll Street	Charleston, SC	29401	City of Chas.
Market Street	Charleston, SC	29401	City of Chas.

Meeting Street	Charleston, SC	29401	City of Chas.
Montague Street	Charleston, SC	29401	City of Chas.
Mowler Court	Charleston, SC	29414-7361	City of Chas.
Murray Boulevard	Charleston, SC	29401	City of Chas.
Nicholson Street	Charleston, SC	29407	City of Chas.
North Hanover Street	Charleston, SC	29401	City of Chas.
North Market Street	Charleston, SC	29401	City of Chas.
Nunan Street	Charleston, SC	29401	City of Chas.
Oak Forest Drive	Charleston, SC	29407	City of Chas.
Olivia Drive	Charleston, SC	29418	City of Chas.
Ophir Drive	Charleston, SC	29407	City of Chas.
Orange Grove Road	Charleston, SC	29407	City of Chas.
Pitt Street	Charleston, SC	29401	City of Chas.
Pratt Street	Charleston, SC	29401	City of Chas.
President Street	Charleston, SC	29401	City of Chas.
Queen Street	Charleston, SC	29401-1950	City of Chas.
Rebellion Road	Charleston, SC	29407	City of Chas.
Rutledge Avenue	Charleston, SC	29401	City of Chas.
Saint Dennis Street	Charleston, SC	29407	City of Chas.
Saint Phillip Street	Charleston, SC	29401	City of Chas.
Sandcroft Drive	Charleston, SC	29407	City of Chas.
Savage Street	Charleston, SC	29401	City of Chas.
Shoreham Road	Charleston, SC	29412-9364	City of Chas.
Smith Street	Charleston, SC	29401	City of Chas.
South Battery Drive	Charleston, SC	29401	City of Chas.
South Market Street	Charleston, SC	29401	City of Chas.
South Sherwood Drive	Charleston, SC	29407	City of Chas.
South Street	Charleston, SC	29401	City of Chas.
State Street	Charleston, SC	29401	City of Chas.
Sunnyvale Drive	Charleston, SC	29407	City of Chas.
Thomas Street	Charleston, SC	29401	City of Chas.
Tradd Street	Charleston, SC	29401	City of Chas.
Trapman Street	Charleston, SC	29401	City of Chas.
Vanderhorst Street	Charleston, SC	29401	City of Chas.
Water Street	Charleston, SC	29401	City of Chas.
Wentworth Street	Charleston, SC	29401	City of Chas.
Windermere Boulevard	Charleston, SC	29407	City of Chas.
Wolk Drive	Charleston, SC	29414	City of Chas.
Yew Street	Charleston, SC	29407	City of Chas.

Attachment 5-3-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA *	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AE Zone	V/VE Zone	A/AW Zone*	V/VE Zone
City of Chas	**50,512**	**53**	**62**	**22,270**	**1,428**	**3,049**	**262**	**25,379**	**1,692**

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-3-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
City of Chas	**12,803**	**1,944**	**14,747**	**61**	**24**	**14,771**

Attachment 5-3-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	**Avg. Site-Built Residential Building Value**	**Avg. Commercial Building Value**	**Avg. Mobile Home Value**	**Estimated Total Pre-1985 Site-Built and Mobile Home Building Value**	**Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)**
City of Charleston *(All)*	**$225,843.27**	**$764,196.26**	**$7,952.32**	**$5,605,917,788.00**	
Pre-1985	**$207,302.49**	**$390,206.08**	**$3,702.80**		**$3,730,017,118.00**

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-3-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures($)	Total Value Site-Built Structures Not in the SFHA ($)	Total Value of Site-Built Structures Not Flood-Zone Coded** ($)
City of Chas	$7,697,677,093	$1,049,629,992	$6,052,124,491	$4,579,867,544

** Valuation data reflected herein is for mobile homes, regardless of age.

– City of Folly Beach Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction – 1 (most) – 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
City of Folly Beach	5	4	3	2	2	2	2	2	2	2	4	2

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-4-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction – 1 (most) – 5 (least)

JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
City of Folly Beach	4	4	3	2	3	2	2	3	2	2	4	4

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
City of Folly Beach	City of Folly Beach is coastal beach town with many low lying areas and dated buildings and impacts are seen more frequently during high tide and rainfall events. Sea level rise, beach erosion, hurricanes, and flooding are the top vulnerabilities for the City. There is one access and one potable water supply to the Island from HWY 171 and a flooded roadway or failed bridge could be catastrophic. Also rip currents can occur on windy days and can be life threatening. This coastal community is also vulnerable to tsunamis.

5.4.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-4-12

Jurisdiction	Total Losses	Closed Losses	Open Losses	CWOP Losses
FOLLY BEACH, CITY OF	1,244	894	2	348
FEMA Policy and Claims Statistics Database, 2019 ***https://bsa.nfipstat.fema.gov/reports/1040.htm#45***				

City of Folly Beach Higher Regulatory Standards
4' freeboard
Increase beach (40') and marsh (15') set-backs.
V-zone standards for design and construction for the whole jurisdiction regardless of flood zone for insurance purposes.
IMPC adopted by the jurisdiction.

35’ height limit above BFE.
15% open space requirement for new development.
90% Single family zoning
35% max lot coverage of impervious surfaces.
No impervious driveways allowed in the jurisdiction.
Automatic sprinklers systems required for Multi Family and commercial in the commercial district.

5.4.5 – Past Flood Impacts

The analysis for this section is identical to the analysis under “Past Flood Impacts” for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under “Critical Facilities” for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-4-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
City of Folly Beach	4	4	3	2	3	2	2	3	3	3	4	2

A full list of the capabilities for Charleston County and plan participating partners can be seen in the “Critical Facilities” description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under “Natural and Beneficial Functions of Floodplains” for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under “Development and Population Trends” for Unincorporated Charleston County. Information outlining jurisdiction-specific information can be found below.

As of 2021, 16.1% of the Folly Beach population is below the poverty line (https://censusreporter.org/profiles/16000US4526035-folly-beach-sc/).

Table 5-4-14

Estimated Population 2019-2020 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 202 Population**

City of Folly Beach	0.23%	2,660

Source: U.S. Census Bureau, Population Division 2018

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

5.4.6 – Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Attachment 5-4-C: Repetitive Loss Areas within the Charleston Region

Repetitive Loss Areas			
Street	City, State	Zip Code	Jurisdiction
East Arctic Avenue	Folly Beach, SC	29439	Folly Beach
East Ashley Avenue	Folly Beach, SC	29439	Folly Beach
West Ashley Avenue	Folly Beach, SC	29439	Folly Beach
East Cooper Avenue	Folly Beach, SC	29439	Folly Beach
East Indian Avenue	Folly Beach, SC	29439	Folly Beach

Attachment 5-4-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA*	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VEZone	A/AW Zone*	V/VEZone
Folly Beach	**2,594**	**88**	**0**	**989**	**1,203**	**52**	**37**	**1,041**	**1,240**

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-4-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
Folly Beach	**885**	**59**	**944**	**99**	**0**	**944**

Attachment 5-4-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	Avg. Site-Built Residential Building Value	Avg. Commercial Building Value	Avg. Mobile Home Value**	Estimated Total Pre-1985 Site-Built and Mobile Home Building Value	Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)
Folly Beach *(All)*	**$231,314.20**	**$111,665.43**	**N/A**	**$126,399,100.00**	
Pre-1985 only	**$133,115.06**	**$127,850.00**	**$0.00**		**$125,314,400.00**

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-4-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
Folly Beach	**211,202,500**	**318,562,500**	**31,035,200**	**0**

** Valuation data reflected herein is for mobile homes, regardless of age.

– Hollywood Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-5-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Town of Hollywood	5	3	4	3	4	2	5	3	5	5	3	3

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-5-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Hollywood	5	5	4	3	4	2	5	5	3	5	3	4

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Town of Hollywood	This is a small rural community. Flooding is a concern as it lies on the bank of the Wadmalaw / Stono River. Also, the community lies in the Toogoodoo River and watershed. It is also vulnerable to hurricanes and tornadoes with mobile homes as well as minority populations and low income households. The Town has many areas at or below Base Flood Elevations. There are 4 homes that are on the repetitive loss list.

5.5.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-5-12

Jurisdiction	Total Losses	Closed Losses	Open Losses	CWOP Losses
HOLLYWOOD, TOWN OF	17	9	0	8
FEMA Policy and Claims Statistics Database, 2019 https://bsa.nfipstat.fema.gov/reports/1040.htm#45				

Town of Hollywood Higher Regulatory Standards
2' freeboard
Minimum 5 CFMs on staff via Charleston County
1/2 foot rise in floodway
All Inspectors are State certified
Five year cumulative of all permits is included when conducting a substantial review

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-5-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Hollywood	5	4	3	3	4	2	5	5	3	5	3	2

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County. Information outlining jurisdiction-specific information can be found below.

As of 2018, 10.9% of the Hollywood population is below the poverty line (https://censusreporter.org/profiles/16000US4534495-hollywood-sc/).

Table 5-5-14

Estimated Population 2019-2020 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 2020 Population**
Town of Hollywood	10.27%	5,176

Source: U.S. Census Bureau, Population Division 2018

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Attachment 5-5-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA*	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VEZone	A/AW Zone*	V/VEZone
Hollywood	**2,398**	**22**	**33**	**494**	**0**	**24**	**0**	**551**	**0**

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-5-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
Hollywood	**88**	**10**	**98**	**12**	**7**	**105**

Attachment 5-5-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	Avg. Site-Built Residential Building Value	Avg. Commercial Building Value	Avg. Mobile Home Value**	Estimated Total Pre-1985 Site-Built and Mobile Home Building Value	Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)
Hollywood *(All)*	**$227,870.29**	**$192,571.90**	**$21,960.55**	**$73,091,300.00**	
Pre-1985	**$89,434.74**	**$79,948.86**	**$4,513.19**		**$12,182,500.00**

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-5-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
Hollywood	**211,140,000**	**0**	**328,297,200**	**246,190,100**

** Valuation data reflected herein is for mobile homes, regardless of age.

– City of Isle of Palms Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-6-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
City of Isle of Palms	4	5	2	2	4	2	2	2	4	3	4	4

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-6-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
City of Isle of Palms	4	4	3	2	4	2	2	4	2	2	4	4

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
City of Isle of Palms	The City of Isle of Palms is a low-lying coastal barrier island community that is vulnerable to sea level rise, storm surge, erosion and hurricanes. It is an upper middle class tourist destination with a mix of buildings used as primary homes, secondary homes, and resort rentals. Flooding can occur from storm events, heavy rain or unusually high tides, with any combination of these compounding the issue. There are two ways to access the island. This coastal community is also vulnerable to tsunamis.

5.6.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-6-12

Jurisdiction	Total Losses	Closed Losses	Open Losses	CWOP Losses
ISLE OF PALMS, CITY OF	2,562	2,009	0	553
FEMA Policy and Claims Statistics Database, 2019 ***https://bsa.nfipstat.fema.gov/reports/1040.htm#45***				

City of Isle of Palms Higher Regulatory Standards
1' Freeboard
Elevation requirement of 13' for new construction

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-6-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
City of Isle of Palms	4	5	3	3	4	3	3	3	3	3	4	5

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County. Information outlining jurisdiction-specific information can be found below.

As of 2018, 5.7% of the Isle of Palms population is below the poverty line (https://censusreporter.org/profiles/16000US4536115-isle-of-palms-sc/).

Table 5-6-14

Estimated Population 2019-2020 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 2020 Population**
City of Isle of Palms	4.57%	4,360

Source: U.S. Census Bureau, Population Division 2018

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Attachment 5-6-C: Repetitive Loss Areas within the Charleston Region

Repetitive Loss Areas			
Street	City, State	Zip Code	Jurisdiction
19th Avenue	Isle of Palms, SC	29451	IOP
24th Avenue	Isle of Palms, SC	29451	IOP
25th Avenue	Isle of Palms, SC	29451	IOP
30th Avenue	Isle of Palms, SC	29451	IOP
33rd Avenue	Isle of Palms, SC	29451	IOP
41st Avenue	Isle of Palms, SC	29451	IOP
Beachwood East	Isle of Palms, SC	29451	IOP
Cameron Boulevard	Isle of Palms, SC	29451	IOP
Forest Trail	Isle of Palms, SC	29451	IOP
Hartnett Boulevard	Isle of Palms, SC	29451	IOP
Ocean Boulevard	Isle of Palms, SC	29451	IOP
Palm Boulevard	Isle of Palms, SC	29451	IOP
Sandwedge Lane	Isle of Palms, SC	29451	IOP
Lake Village Lane	Isle of Palms, SC	29451	IOP
Waterway Boulevard	Isle of Palms, SC	29451	IOP

Attachment 5-6-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA*	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VEZone	A/AW Zone*	V/VEZone
Isle of Palms	4,771	99	0	3,385	1,043	225	82	3,610	1,125

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-6-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
Isle of Palms	2,036	14	2,050	100	0	2,050

Attachment 5-6-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	Avg. Site-Built Residential Building Value	Avg. Commercial Building Value	Avg. Mobile Home Value**	Estimated Total Pre-1985 Site-Built and Mobile Home Building Value	Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)
Isle of Palms *(All)*	$376,530.72	$339,494.52	$0.00	$492,032,000.00	
Pre-1985 only	$240,174.42	$122,400.00	$0.00		$490,710,400.00

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-6-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
Isle of Palms	1,239,531,900	533,917,600	10,744,300	7,150,000

** Valuation data reflected herein is for mobile homes, regardless of age.

– James Island Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-7-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Town of James Island	5	5	2	2	4	1	2	1	3	3	4	2

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-7-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of James Island	5	5	3	2	5	1	1	4	3	4	5	4

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Town of James Island	The Town has many rivers and creeks running through it or near it. It is also adjacent to the Charleston Harbor. This makes the Town vulnerable to hurricanes, flooding and sea level rise. Outdated storm drainage systems and having to work with multiple jurisdictions on the island make for an issue in coordination with standards. This coastal community is also vulnerable to tsunamis.

– Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Town of James Island Higher Regulatory Standards
2' freeboard
Minimum 5 CFMs on staff via Charleston County and 1 CFM on staff at the Town
1/2 foot rise in floodway
All Inspectors are State certified via Charleston County
Five year cumulative of all permits is included when conducting a substantial review
Supplemental Stormwater Design Standards

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-7-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of James Island	**5**	**5**	**3**	**4**	**5**	**2**	**3**	**2**	**2**	**4**	**5**	**3**

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County. Information outlining jurisdiction-specific information can be found below.

As of 2018, 4.8% of the James Island population was below the poverty line (https://censusreporter.org/profiles/16000US4536430-james-island-sc/).

Table 5-7-14

Estimated Population 2019-2020 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 2020 Population**
Town of James Island	7.33%	12,109

Source: U.S. Census Bureau, Population Division 2020

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Attachment 5-7-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA*	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VEZone	A/AW Zone*	V/VEZone
James Island	**5,301**	**60**	**17**	**2,937**	**195**	**67**	**1**	**3,021**	**196**

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-7-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
James Island	**2,419**	**33**	**2,452**	**59**	**7**	**2,459**

Attachment 5-7-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	**Avg. Site-Built Residential Building Value**	**Avg. Commercial Building Value**	**Avg. Mobile Home Value****	**Estimated Total Pre-1985 Site-Built and Mobile Home Building Value**	**Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)**
James Island(All)	**$204,015.03**	**$275,429.86**	**$25,500.00**	**$768,203,600.00**	
Pre-1985 only	**$184,899.73**	**$178,888.16**	**$4,037.50**		**$459,382,300.00**

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-7-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
James Island	622,428,900	55,418,400	413,920,100	408,845,600

** Valuation data reflected herein is for mobile homes, regardless of age.

– Kiawah Island Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-8-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Town of Kiawah Island	5	5	1	2	5	1	2	1	5	5	3	4

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-8-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Kiawah Island	4	5	2	1	5	1	1	5	3	4	4	4

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Town of Kiawah Island	Being a coastal town, hurricanes, tornadoes, sea level rise and flooding are potentially major problems for Kiawah Island and are most vulnerable to these hazards. Kiawah has a large portion of the residents who do not live full time on the Island and use their homes as secondary homes. This poses a vulnerability to the buildings as these structures may not be prepped properly for a hurricane or repairs may not be started promptly. Again, having a lot of individuals out of state poses a vulnerability for hurricanes, tornadoes, sea level rise, and flooding. This coastal community is also vulnerable to tsunamis.

5.8.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-8-12

Jurisdiction	Total Losses	Closed Losses	Open Losses	CWOP Losses
KIAWAH ISLAND, TOWN OF	114	73	0	41
FEMA Policy and Claims Statistics Database, 2019 https://bsa.nfipstat.fema.gov/reports/1040.htm#45				

Town of Kiawah Island Higher Regulatory Standards
1' freeboard
Five year cumulative of all permits is included when conducting a substantial review
Require BFE's to be included on all plans and FLCs for under construction
Do not allow recreational vehicles of any kind on the island
Require all buildings to be built landward of the reach of mean high tide
Do not allow any encroachments to be located less than 2-times the width or 20 feet for streams w/out established BFE's
Require infrastructure to be installed to minimize flood damage.

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-8-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Kiawah Island	5	5	2	2	5	1	2	5	2	5	4	Not Available

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County. Information outlining jurisdiction-specific information can be found below.

As of 2018, 7% of the Kiawah Island population was below the poverty line (https://censusreporter.org/profiles/16000US4538162-kiawah-island-sc/).

Table 5-8-14

Estimated Population 2019-2020 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 2020 Population**
Town of Kiawah Island	8.36%	1,676

Source: U.S. Census Bureau, Population Division 2018

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Attachment 5-8-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA*	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VEZone	A/AW Zone*	V/VEZone
Kiawah Island	**3,921**	**96**	**0**	**3,645**	**74**	**55**	**5**	**3,700**	**79**

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-8-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
Kiawah Island	**1,615**	**20**	**1,635**	**100**	**0**	**1,635**

Attachment 5-8-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	**Avg. Site-Built Residential Building Value**	**Avg. Commercial Building Value**	**Avg. Mobile Home Value****	**Estimated Total Pre-1985 Site-Built and Mobile Home Building Value**	**Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)**
Kiawah Island *(All)*	**$547,664,38**	**$2,922,532.94**	**N/A**	**$421,839,400.00**	
Pre-1985 only	**$258,969.54**	**$180,180.00**	**$0.00**		**$421,839,400.00**

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-8-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
Kiawah Island	2,025,492,300	109,071,700	214,144,200	51,800

** Valuation data reflected herein is for mobile homes, regardless of age.

– Lincolnville Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-9-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Town of Lincolnville	5	3	4	4	4	3	3	3	4	5	3	3

The Town of Lincolnville is serviced by Charleston County and therefore reflect their survey responses.

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-9-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Lincolnville	5	4	1	1	2	1	2	2	2	2	3	3

The Town of Lincolnville is serviced by Charleston County and therefore reflect their survey responses.

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Town of Lincolnville	This is a small town in Charleston County neighboring North Charleston and Summerville, and it has a high number of mobile homes. This makes it most vulnerable to hurricanes and tornadoes. No buildings are built in the flood zone and the jurisdiction is at minimal risk for any other hazards as there are no major intersections within the town.

5.9.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Town of Lincolnville Higher Regulatory Standards
2' freeboard
Minimum 5 CFMs on staff via Charleston County
1/2 foot rise in floodway
All Inspectors are State certified
Five year cumulative of all permits is included when conducting a substantial review

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-9-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Lincolnville	5	3	2	2	3	2	3	3	2	3	3	1

The Town of Lincolnville is serviced by Charleston County and therefore reflect their survey responses.

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County. Information outlining jurisdiction-specific information can be found below.

As of 2018, 22.9% of the Lincolnville population was below the poverty line (https://censusreporter.org/profiles/16000US4541740-lincolnville-sc/).

Table 5-9-14

Estimated Population 2019-2020 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 2020 Population**
Town of Lincolnville	122.04%	2,133

Source: U.S. Census Bureau, Population Division 2018

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Attachment 5-9-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA*	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VEZone	A/AW Zone*	V/VEZone
Lincolnville	**362**	**53**	**63**	**169**	**0**	**23**	**0**	**255**	**0**

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-9-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
Lincolnville	88	6	94	64	23	117

Attachment 5-9-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	Avg. Site-Built Residential Building Value	Avg. Commercial Building Value	Avg. Mobile Home Value**	Estimated Total Pre-1985 Site-Built and Mobile Home Building Value	Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)
Lincolnville *(All)*	$127,626.10	$889,033.33	$13,788.36	$12,860,900.00	
Pre-1985 only	$87,082.14	$52,550.00	$3,661.76		$8,553,700.00

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-9-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
Lincolnville	24,448,300	0	53,896,200	41,153,900

** Valuation data reflected herein is for mobile homes, regardless of age.

– McClellanville Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Town of McCellanville	3	5	3	1	4	1	1	3	5	5	2	5

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5.10-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of McClellanville	2	5	1	1	2	1	1	3	4	2	1	3

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Town of McClellanville	The main waterway, Jeremy Creek, that flows through McClellanville makes the Town vulnerable to flooding and hurricanes. Hurricane Hugo made landfall in the Cape Romain Bulls Bay area. McClellanville, in Hugo's northeast quadrant, felt the strongest effects. Hurricane Matthew, a category two hurricane, made landfall in McClellanville in 2016. The town is also vulnerable to dam failure and wildfire with the proximity to the major dams in the Lowcountry and Francis Marion National Forest.

– Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-10-12

Jurisdiction	Total Losses	Closed Losses	Open Losses	CWOP Losses
MCCLELLANVILLE, TOWN OF	67	58	0	9
FEMA Policy and Claims Statistics Database, 2019 https://bsa.nfipstat.fema.gov/reports/1040.htm#45				

Town of McClellanville Higher Regulatory Standards
2' freeboard
Minimum 5 CFMs staff via Charleston County
1/2 foot rise in floodway
Five year cumulative of all permits is included when conducting a substantial review

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-10-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of McCellanville	2	5	2	1	3	1	1	5	3	3	2	5

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County. Information outlining jurisdiction-specific information can be found below. As of 2018, 7.5% of the McClellanville population was below the poverty line (https://censusreporter.org/profiles/16000US4543585-mcclellanville-sc/).

Table 5-10-14

Estimated Population 2019-2020 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 2020 Population**
Town of McClellanville	8.22%	568

Source: U.S. Census Bureau, Population Division 2018

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Attachment 5-10-C: Repetitive Loss Areas within the Charleston Region

Repetitive Loss Areas				
Street	City, State	Zip Code	Jurisdiction	PSD / FD
Morrison Dive	McClellanville, SC	29458	McClellanville	
Pinckney Street	McClellanville, SC	29458	McClellanville	
Highway 17 N.	McClellanville, SC	29458	McClellanville	

Attachment 5-10-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA *	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VEZone	A/AW Zone*	V/VEZone
McClellanville	**434**	**95**	**1**	**335**	**25**	**53**	**1**	**389**	**26**

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-10-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
McClellanville	163	21	184	98	0	184

Attachment 5-10-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	Avg. Site-Built Residential Building Value	Avg. Commercial Building Value	Avg. Mobile Home Value**	Estimated Total Pre-1985 Site-Built and Mobile Home Building Value	Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)
McClellanville *(All)*	$272,281.55	$155,666.54	$13,950.00	$33,404,300.00	
Pre-1985 only	$190,536.36	$93,609.52			$33,024,000.00

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-10-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
McClellanville	93,275,393	11,707,000	5,723,900	887,900

** Valuation data reflected herein is for mobile homes, regardless of age.

– Meggett Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-11-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Town of Meggett	5	1	1	3	1	1	3	1	1	3	3	3

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-11-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Meggett	5	5	1	1	5	1	1	5	1	3	5	3

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Town of Meggett	The Town has a lot of waterfront property on the Wadmalaw River. This is also a rural community. It is vulnerable to flooding and hurricanes as there are low lying areas. Meggett also have a couple repetitive loss areas within its community. More individuals are starting to develop this part of Charleston County as the cities become more populated.

5.11.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-11-12

Jurisdiction	Total Losses	Closed Losses	Open Losses	CWOP Losses
MEGGETT, TOWN OF	31	16	0	15
FEMA Policy and Claims Statistics Database, 2019 ***https://bsa.nfipstat.fema.gov/reports/1040.htm#45***				

Town of Meggett Higher Regulatory Standards
2' freeboard
Minimum 5 CFMs on staff via Charleston County
1/2 foot rise in floodway
Five year cumulative of all permits is included when conducting a substantial review

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-11-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Meggett	5	5	1	1	5	1	1	5	1	3	5	3

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County. Information outlining jurisdiction-specific information can be found below.

As of 2018, 5.5% of the Megget population was below the poverty line (https://censusreporter.org/profiles/16000US4545790-meggett-sc/).

Table 5-11-14

Estimated Population 2019-2020 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 2020 Population**
Town of Meggett	5.63%	1,034

Source: U.S. Census Bureau, Population Division 2018

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Attachment 5-11-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA*	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VEZone	A/AW Zone*	V/VEZone
Meggett	**783**	**79**	**47**	**582**	**2**	**31**	**1**	**660**	**3**

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-11-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
Meggett	**198**	**16**	**214**	**88**	**14**	**228**

Attachment 5-11-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	Avg. Site-Built Residential Building Value	Avg. Commercial Building Value	Avg. Mobile Home Value**	Estimated Total Pre-1985 Site-Built and Mobile Home Building Value	Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)
Meggett *(All)*	**$234,311.62**	**$205,221.21**	**$24,838.10**	**$40,763,500.00**	
Pre-1985 only	**$170,144.25**	**$140,218.75**	**$4,814.29**		**$37,843,600.00**

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-11-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
Meggett	**147,262,800**	**362,000**	**34,646,900**	**18,371,200**

** Valuation data reflected herein is for mobile homes, regardless of age.

– Town of Mt. Pleasant

The Town of Mt. Pleasant provided more detailed information about some hazards specific to their jurisdiction. That information is reflected here.

Flood

The Town of Mt Pleasant commonly experiences flooding in the following areas:

ROADS/ AREAS KNOWN TO FLOOD with Heavy Rain/ Extended Rain/ Tides:	Emergency Division/ Area	Issue
William Street – at Royall Ave	1	low area - tidal flooding
William Street Extension	1	low area - tidal flooding
Bank Street at Royall Ave	1	low area - pump station capacity
Coleman Boulevard	1	capacity - upgraded 2019
Church Street by Mill Street	1	low area - tidal flooding
Behind Friend Street/ Queen Street/ Pitt St.	1	low area - upgraded 2015
Freeman Street	1	low area no drains
Erkmann St & Kincade Street	1	capacity issue
Ferry Street	1	low area - pump station capacity
William Street	1	low area - tidal flooding
Atlantic Street Belleview to Pocahontas	1	low are no drains
Fox Pond Drive	1	debris prone
Privateer Drive - cul de sac	1	tidal
Barquentine Dr. - cul de sac	1	tidal
Whilden at Morrison	1	low area - pump station capacity
Bank and Carr Street	1	low area - pump station capacity
Allen & Matoaka Streets	1	limited drains/ ditches
Deer & Short Streets	1	no drains
Middle Street	1	low area - tidal flooding
Magwood Lane/ Haddrell Street	1	low area - tidal flooding
Simmons Street/ Mill Street	1	low area - tidal flooding
pit/ Royall/ center/ William street	1	flooding in rear yards - tidal/ low area
Rose Lane	1	no drains
Bennett Street between Venning/ Morrison	1	limited drains - low area
Pitt Street Business	1	limited drains/ capacity
Rivers Street at Whilden	1	limited drains/ maintenance/ capacity
Coleman Boulevard at Moultrie Middle School	1	** Upgraded drainage 2019
Vincent Drive at Pearl – Brookgreen	1	limited drains - low area
Pearl Street - Brookgreen	1	limited drains - low area
Bose Court - Brookgreen	1	limited drains - low area

ROADS/ AREAS KNOWN TO FLOOD with Heavy Rain/ Extended Rain/ Tides:	Emergency Division/ Area	Issue
Elizabeth Circle – Shemwood I	1	limited drains - low area
Bluebird Drive – Moss Park	1	limited drains/ capacity
Oakleaf Apartments – at rear ditch	1	capacity/ debris prone
Old Georgetown Road	1	capacity
Decoy Court – Mallard Lakes	2	capacity/ debris prone
Merganser Court – Mallard Lakes	2	capacity/ debris prone
Old Colony Road - Heritage	2	capacity/ debris prone
Meadowcroft Lane - Heritage	2	capacity/ debris prone
Lakeview Drive – The Groves	1	limited drains
Japonica Drive – The Groves	1	limited drains
Bayview Drive – Bayview Acres	1	limited drains
Quince Street – Bayview Acres	1	limited drains
Cumming Circle – Cooper Estates	1	limited drains
Williamson Drive – Baytree Town homes	1	limited drains
Ralston Court - Baytree Town homes	1	limited drains
Baytree Court - Baytree Town homes	1	limited drains
Pine Hollow Drive – Pine Hollow	1	limited drains
Kirk Court/ Creekside Subdivision Tennis Center	1	limited drains - private
Large Ditch at Sandpiper Convalescent Home/ Hunters Trace Town homes	1	clogging of debris
Hobcaw Drive – Hobcaw Point – rear yard	1	limited drains
Oldwannus Drive – Parish Place	1	clogging - limited drains
O'Sullivan Drive – Parish Place	1	clogging - limited drains
Anna Knapp Boulevard – by Publix	1	clogging - limited drains
Mathis Ferry Road	1	clogging - capacity
Various Roads – Remley's Point	1	tidal - limited drains/ capacity
Belle Hall Parkway @ Longpoint	2	grading issue
Hook Lane	2	capacity of rear system overflows to street
Hidden Boulevard	2	clogging/ tidal
Chimney Bluff Road – Past Bridge	2	clogging/ debris
Davant Circle - Longpoint	2	clogging/ debris
Arundel Place – Longpoint	2	clogging/ debris
Rice Hope Drive – Longpoint	2	clogging/ debris
Longpoint Road at Marsh Crossings	2	tidal
Wando Park Boulevard – multiple locations	2	clogging debris at I-526
Hidden Bridge Drive –Coopers Landing	2	capacity/ elevation issues?

ROADS/ AREAS KNOWN TO FLOOD with Heavy Rain/ Extended Rain/ Tides:	Emergency Division/ Area	Issue
Lauda Drive – Wando East	2	capacity
Nantahala Boulevard – Wando East	2	capacity
Law Lane at Indigo Cut – Snee Farm	2	capacity - under construction for 10 year storm
Planters Curve – Snee Farm	2	capacity - under construction for 10 year storm
Colonial Drive – Snee Farm	2	capacity
Deleisseline Blvd. Snee Farm	2	capacity
Chersonese Round – Snee Farm	2	capacity
Governors Road – Snee Farm	2	capacity
Astor Court – Snee Farm Gardens	2	capacity
Longpoint Road	2	clogging/ capacity
Beaumont Townhomes area	2	capacity
Snee Farm Gardens	2	capacity
Longpoint Road at Hwy 17	2	capacity/ clogging
Hamlin Road at Laing School	3	capacity - some improvements installed
Rifle Range Road between Six Mile Road and Hamlin Road	3	capacity/ debris prone
Highway 41 causeways	3	tidal surge
Dunes West Entrance (Private)	3	capacity/ tidal
Various Roads – Dunes West (Private)	3	capacity/ tidal

Road/ Area of Concern	Area	Emergency Division/ Zone	Impact	Water in curb/ inlets - tide level	Tidal Inundation
2nd Avenue	Remley's Point	1	Road flooding		8' tide
3rd Avenue	Remley's Point	1	Road flooding		8' tide
5th Avenue	Remley's Point	1	Road flooding		8' tide
6th Avenue	Remley's Point	1	Road flooding		8' tide
Harbor Point Drive	Harbor Point S/D	1	Road flooding		8' tide
Church Street	Old Village	1	Road flooding		8' tide
Shem Creek Marine/ Restaurants/ Ronnie Boals Area	Old Village	1	Road flooding	7.30'	8' tide
Haddrell Street	Old Village	1	Road flooding	7.30'	8' tide

Simmons Street Boat Landing	Old Village	1	Road flooding		8' tide
Mill Street	Old Village	1	Road flooding		8' tide
William Street/ Royall Avenue to Center Street	Old Village	1	Road flooding		8' tide
William Street Extension	Old Village	1	Road flooding		8' tide
Oakhaven	Oakhaven	2	Road flooding		8' tide
Longpoint Road Causeway/ Bridge		2	Road flooding	7.59'	8' tide
Darrell Creek Trail at Commonwealth	Commonwealth	3	Road flooding/ Yard Flooding		8' tide
Park West	Various neighborhoods	3	Back flooding on detention ponds at creeks		8' tide
Dunes West	Dunes West	3	Road flooding/ Yard Flooding		9' tide
Highway 41	Causeways	3	Road flooding		9' tide
Bowman Road	Shem Creek Bridge	1	Road flooding		9' tide
Shemwood/ Brookgreen	Shemwood I	1	Road flooding/ Yard Flooding		9' tide
Home Farm	Home Farm	1	Road flooding/ Yard Flooding		9' tide
Rivertowne Area	Rivertowne/ RTCC	3	Road flooding/ Yard Flooding		9' tide
Seafood Road	Gasdenville (County/ SCDOT)	3	Road Flooding		8' tide

*** Tidal surge flooding only - no rain event impacts considered in this listing.**

5.12(b)– Mt. Pleasant Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County. Jurisdiction-specific insights are listed below:

Impacts for all Hazards for Town of Mount Pleasant	
Hazard	**Impact**
Hurricane	The potential for Tropical Weather is of great concern for the Town of Mount Pleasant. Storm track and intensity are very unpredictable until near landfall. The severity of impact will vary according to the tropical system's composition to include size, surge, intensity, speed, and geographic location of landfall with regard to Mount Pleasant. The Town can expect, at a minimum, interruption of key and critical infrastructure due to high wind impacts and flooding of roads, structures, utilities, etc. Tropical systems

	come with a risk of tornado impact especially as the system interacts with land.
Flooding	Approximately 60% of the Town of Mount Pleasant is located in a Special Flood Hazard Area. Flood impact occurs as a consequence of many types of flood hazard to include storm surge, heavy rain events, undersized (or no) drainage systems, and extreme high tides. Flood hazard impact often is exacerbated by overlapping event types such as a heavy rain event during extreme high tide. Anticipated impacts of flooding are largely dependent upon the extent and duration of the event. At a minimum, severe flooding will interrupt transportation and threaten critical utilities (such as wastewater treatment). First responder rescues are likely to be needed for citizens trapped in vehicles or isolated in structures surrounded by high and flowing water. Following extended flood events public health may be of great concern as waters become contaminated.
Sea Level Rise	Some impact from Sea Level Rise is felt now, and is anticipated to increase in severity in coming decades. Currently, the primary consequence seen is an increase of minor flooding for portions of major transportation roadways as well as low lying community roads and yards. Long term impacts are still being assessed. Focus should be given to infrastructure such as drainage and wastewater systems. Particularly, how they are designed or upfitted to withstand SLR impact and adequately discharge without mechanical assistance. Very long term concern includes more frequent and severe impacts to roads, properties, and structures.
Earthquake	The Charleston area is one of the greatest areas of earthquake risk in the state. The last significant earthquake that impacted the area occurred in 1886 which killed 60 people and caused significant structural damage in the City of Charleston. If the same 7.3 magnitude earthquake were to occur today, there would be potentially catastrophic impacts to include significant loss of life, structures destroyed, subsequent fires, severe interruption of critical facilities and infrastructure; as well as cascading impact on the economy.
Tornado	Tornadoes occur with very little warning and carry impacts varying according to the intensity, duration, and path. Tornado risk is typically associated with severe weather brought in by low pressure systems. Hurricanes also produce tornadoes in rain bands as it comes ashore. Potential impact includes loss of life, building and infrastructure damage, interruption of transportation and other utilities.
Hazardous Materials	Hazardous Material incidents have the potential to impact the Town of Mount Pleasant in the case of a port incident, intentional attack, or spill, leak, or explosion during transport or storage. Materials in various forms can cause loss of life, injury, long-term health problems, damage to property.
Terrorism	Impacts resulting from an intentional, acts of violence will range from minimal to extreme loss of life, injuries, destruction of property and economic loss. Much of the impact will vary according to severity and classification of the attack.
Wildfire	There are portions of the Town of Mount Pleasant that are susceptible to wildfire; mostly restricted to less densely populated areas. Impacts associated with wildfire include interrupted transportation, air quality, potential loss of life, loss of structure, and property damage.

Tsunamis	The impact of tsunamis is considered minimal and may be expected to occur with earthquake events. Vulnerability to tsunami impacts in the Town of Mount Pleasant would include disruption to transportation routes, structures, and utilities located in the lower lying areas along Charleston Harbor and the intracoastal waterway.
Dam Failure	The Town of Mount Pleasant is minimally vulnerable to the impact of Dam Failure. The greatest risk is associated with smaller dams within the town, which would likely result in minor flooding and damage to roadways and utilities. There are larger dams within the region, but are considered to have a lower risk of impact to Mount Pleasant.
Rip Currents	The Town of Mount Pleasant is a waterfront community, but with no beach areas. The vulnerability to Rip Currents is minimal. There are several larger rivers, including Charleston Harbor, that have strong currents that can pose a safety risk for boaters and swimmers.
Severe Storm	Severe weather occurs throughout the year and may be associated with frontal boundaries, low pressure systems, or hot summer days with "pop up thunderstorms". Severe thunderstorms typically produce large amounts of lightning, hail, high winds, heavy rain, and potentially tornadoes. Impact varies according to intensity of the storm and may include risk of injury or loss of life, destruction of property, and flash flooding.
Drought	The impact of drought is minimal on the Town of Mount Pleasant. Regionally, the historical droughts typically experienced were D1 (moderate drought). Vulnerable populations and utilities would include farmers/ agriculture, properties with drinking wells, and municipal water sources. Drinking water in Mount Pleasant is provided by a separate utility. Water is sourced from a deep aquifer and from inland sources. The inland water sources are the most vulnerable during droughts.
Winter Weather	Severe winter weather can negatively impact many components of the entire region when it occurs. Transportation infrastructure, economy and critical utilities are the primary areas of concern. Vulnerable populations may be at greater risk due to lack of access to heat. Injuries, loss of life, and property damage can occur due to falling trees and tree limbs and slippery road surfaces.
Other	The Town of Mount Pleasant is located in a coastal region where access to the jurisdiction requires the use of bridges. Bridges are also used for access and interconnectivity within the community. During any regional emergency, it is possible for the Town or portions of the Town to be isolated for a period of time. The vulnerability for the Town and its citizens may be lead to delayed emergency or recovery services from outside resources or from Town responders.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-12-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Town of Mt. Pleasant	3	5	2	3	4	2	1	2	1	1	4	4

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-12-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Mt. Pleasant	3	5	1	2	2	2	1	2	2	2	3	4

Additionally, the following road flood maintenance projects help decrease infrastructure vulnerability to hazards:

Road	Segments	Emergency Division/ Area	Owner	Maintenance Issue	Needs
Mathis Ferry Road	Entire length	1	SCDOT	roadside ditches/ culverts are heavy debris prone	Pipes/ ditches need annual cleaning
Long Point Road	Whipple Road to Hwy 17	2	SCDOT	roadside ditches/ culverts are heavy debris prone	Pipes/ ditches need annual cleaning
Wando Park Blvd - Maintenance related (Town/ SCDOT) – work in progress	Entire lengths/ outfalls to I-526	2	TOMP/ SCDOT	Road drains to I-526, 526 needs cleaning/ maintenance to allow flow	Pipes/ ditches need annual cleaning

Rifle Range Road (6-Mile to Hamlin) – Lack of infrastructure/ maintenance / age (SCDOT)	Entire length (roadside ditches)	3 & 4	SCDOT	Roadside ditches have silted in / debris prone	Pipes/ ditches need annual cleaning
Belle Hall Parkway at Longpoint Road	at intersection	2	TOMP/ SCDOT	road shoulder is high - prevents water from flowing into ditch/ inlet	shoulder needs grading/ lowering
Drainage Canal Hot Spots	As identified for Drainage maintenance program - internal checklist		various	known debris choke points in canal systems at culverts	check/ clear after events
Flap Gates/ Tide Gates	As identified for Drainage maintenance program - internal checklist			tidal gates to keep flood waters out	can be debris compromised
*** other flood prone areas of concern may be listed in the Regional Hazard Mitigation Plan - Attachment 6C for Town of Mount Pleasant's Drainage Improvement Projects**					

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Town of Mount Pleasant	The Town is accessed by the Ravenel Bridge, Interstate 526 and Hwy 17 from Georgetown. Two of the three access points are via bridges. An earthquake could cause catastrophic damage to the Town if it became inaccessible. The Town is also susceptible to flooding, mostly in the Historic District, with outdated storm drainage infrastructure and low lying areas. The Town is also developing very quickly with a new influx of businesses and residents unfamiliar with the hazards associated with the Town. Buildings are also built close together which could be detrimental if an earthquake occurred or hurricane made landfall. The Town of Mt. Pleasant is also bordered by water with the Wando River, the Charleston Harbor, Hobcaw Creek and Shem Creek. It has some protection from hurricanes with the barrier islands of Sullivan's Island, Dewees Island and Isle of Palms.

– Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-12-12

Jurisdiction	Total Losses	Closed Losses	Open Losses	CWOP Losses
MOUNT PLEASANT, TOWN OF	1,546	992	1	553
FEMA Policy and Claims Statistics Database, 2019 https://bsa.nfipstat.fema.gov/reports/1040.htm#45				

Town of Mt. Pleasant Higher Regulatory Standards

Item	Standard
Freeboard	2 foot freeboard
Cumulative substantial improvement	5 Year Cumulative Substantial Improvement
Protection of Critical Facilities	Critical Facilities Allowed only in Zone X (unshaded)
Enclosure limits below elevated buildings in SFHAs	Enclosure limits of 200 SF below elevated buildings in SFHAs
Nonconversion Agreements	Nonconversion Agreements required for Elevated Residential Buildings
Critical Line	Critical Line setback and buffer requirements
Open space requirements for new residential developments	Open space requirements for new residential developments 20% to 30%
New Impervious Surface Overlay District	New Impervious Surface Overlay District - 40% impervious Surface Limit
	New Single Family Residential Stormwater Management & Tree Preservation Program

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

Flood Areas- Capacity Concerns

Area/ Subdivision	Age of infrastructure (plat dates)	Type of infrastructure	History/ reports of flooding issues	Has re-development of properties	Road ownership	Jurisdiction	Watershed/ Priority	SLR Vulnerability	Prior Improvement Projects?	In Hazard Plan	CIP/ CMP STATUS
*Hobcaw Point	1950-1980s	Ditches, pipes, private ponds	Home Yard road	Yes	Town SCDOT	Town	Hobcaw Creek (303d)	2 feet +	No	Yes	CMP FY 17/18 study area
*Groves	1960s	Ditches Pipes	Road Yard	Yes	Town	Town	Shem Creek Charleston Harbor	No	Yes Cliffwood/ Japonica (SW)	Yes	CMP FY 18/19 Study area
Greenhill	1958	Ditches Pipes	Yard	Yes	SCDOT	Town	Hobcaw (303d)	4 feet +	Yes CDBG	Yes	TBD
Brookgreen	1948	Pipes/ ditches Lake	Home Road Yard	Yes	SCDOT	Town	Shem Creek (303d)	1 foot +	Yes Phases 1-3 of 4 SW	Yes	TBD
Shemwood I/ Armsway	1942+	Pipes Ditches Lake	Home Road Yard	Yes	SCDOT	Town	Shem Creek (303d)	1 foot +	No	yes	TBD
Cooper Estates/ Millwood Baytree	1965	Pipes Ditches Lake Cooper	Road Yard Home (BT)	Yes	SCDOT Town	Town	Shem Creek (303d)	2 feet +	Yes Asset Mgt. (BT) SW	Yes (BT)	TBD



Isaac German Watershed (six mile to Chas National & Hamlin/ Boston Grill)	1800+	Ditches Pipes Wetlands	Road Yard Home?	Yes	SCDOT Town Private	Town County	Isaac German Intra Coastal	2 feet + Lower ends	Road upgrades New Developments upstream	Yes	TBD
Six Mile areas (Gulf Estates, Palmetto Fort, etc.)	1957-	Ditches Pipes Six Mile Canal	Road Yard	Yes	SCDOT Town	Town County	Intra Coastal Isaac German	2 feet + Lower end	No	Yes (gulf)	TBD
Remley's Point	1879	Ditches Pipes	Yard Road	Yes	Town	Town	Charleston Harbor Molasses Creek	1 foot +	Yes CDBG	No	In SEA Grant Study area?
Bayview Acres	1951	Ditches Pipes Wetland	Road Yard	Yes	SCDOT Town	Town	Shem Creek (303d)	1 foot +	No	No	TBD
Hickory Shadows	1970	Pipes Canal	Road Yard	Yes	Town	Town	Shem Creek (303d)	1 foot + (low ends)	Yes Asset Mgt.	No	TBD
Rosemead	1975	Pipes Canal	Road	TBD	Town	Town	Shem Creek (303d)	1 foot + (road)	Yes Asset Mgt	No	TBD
Wakendaw	1969+	Pipes Lakes	Yards	TBD] Upstream Development	Town	Town	Hobcaw (303d)	2 feet + (Low Edge)	Yes Asset Mgt	No	TBD
Old Village	In Process										

Old Mount Pleasant											
Snee Farm	In Process										
Future Consideration of consider areas as they are for inclusion into the matrix (or to coordinate with Charleston County) – includes areas within the Town's Planning Boundaries;											
Four Mile	1950-/ +	Ditches Pipes	Road Yards	TBD Adjacent Development	Town County SCDOT	Town County	Intra Coastal Snee Farm/ Boone Hall (TMDL)	NO	No	No	TBD
Ten Mile Copahee	1960-/ +	Ditches Canals Wetlands	Yards	TBD Adjacent Development	SCDOT County	Town County	Intra Coastal	2 feet +	No	no	TBD
Phillips	1977-	Ditches Canals	Yards	TBD Adjacent Development	SCDOT County	Town County	Horlbeck Creek (TMDL)	2 feet +	No	no	TBD
Guerin's Bridge	1950+	Ditches Canals	TBD	TBD	SCDOT County Town	Town County	Wando River (TMDL)	1 foot +	No	no	TBD
Snowden	1966	Ditches Canals	Yards (Longpoint Road) TBD	Yes	SCDOT County Town	County Town	Foster Creek	2 feet +	TBD		TBD

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Facility	Emergency Division/ Area	Owner	Type	Use During	Use post event
Waterworks Treatment Plant – Waterworks Blvd. (Center Street)	1	MPW	Water/ Wastewater	Utility services	utility services
Town Hall – Houston Northcutt/ Ann Edwards Lane	1	Town	EOC	EOC	Offices
Speights Field	1	Town	Municipal	Staging	Staging/ debris
SCE&G Substation - @ town hall	1	Utility	Power	Power	Power
Police Substation- Ed. Park	1	Town	Municipal building	None	Offices
Patriots Point Recreation Complex	1	Town	Municipal Facility	Staging	Staging/ housing/ debris
Mt. Pleasant Academy – Center Street	1	County	School	None	Staging/ housing
Moultrie Middle School – Coleman Boulevard	1	County	School	Emergency housing	Staging/ housing
G.M. Darby Building – King Street	1	Town	Municipal building	None	Offices
First Baptist School – McCants Street	1	Private	School	None	Staging/ housing
Fire Station #1 – McCants Street	1	Town	Fire/ EMS Response	Emergency services	Emergency services
Channel 4 News – Frontage Road	1	Private	Communications	Telecommunications	Telecommunications
Channel 2 News – Coleman Boulevard	1	Private	Communications	Telecommunications	Telecommunications
Center Street - Duffy Fields	1	Town	Municipal Facility	Staging	Staging/ housing/ Debris
Boys and Girls Club – Whilden Street	1	Town	Municipal building	None	Community services/ outreach
Bell South Facility – Ben Sawyer Boulevard	1	Utility	Communications	Telecommunications	Telecommunications
Alhambra Hall – Middle Street	1	Town	Municipal building	None	Staging/ housing

Memorial Waterfront Park	1	Town	Municipal Facility	none	staging/ housing/ debris
Whipple Road Tennis Center	2	Town	Municipal Facility	none	staging/ housing/ debris
Whipple Road Park & ballfields	2	Town	Municipal Facility	none	staging/ debris
Waterworks Station – off Mathis Ferry Road	2	MPW	Water/ Wastewater	Water supply	water supply
Wando Port Terminal/ SPA Headquarters	2	State	State	None	None
Wando Park Water Tower	2	MPW	Water/ Wastewater	Water supply	water supply
SCE&G transmission station	2	Utility	Utility	power	Power/ staging
SCE&G Transmission Lines (Whipple Road)	2	Utility	Utility	Power	power
SCE&G Substation – In Snowden	2	Utility	Utility	Power	power
Remley's Point Community Center	2	Town	Municipal Facility	None	Community outreach
Palmetto Islands County Park	2	County	Park	none	staging/ housing/ debris
National Guard Armory	2	National Guard	Resource	food services	staging/ housing
MPW – Rifle Range Road Plant	2	MPW	Water/ Wastewater	Utility services	utility services
Lucy Beckham High School (under Construction)	2	County	School	Emergency Housing	Staging/ housing
Jones Center	2	Town	Municipal Building	Emergency Housing?	Staging/ housing/ debris
James B. Edwards School	2	County	School	Emergency Housing	Staging/ housing
Hamlin Park	2	Town/ County	Park	none	staging/ debris
Greenhill Community Center	2	Town	Municipal Building	Staging	Community Outreach
Fire Station #2	2	Town	Fire/ EMS Response	Emergency services	Emergency services
Fire Station #3	2	Town	Fire/ EMS Response	Emergency services	Emergency services
Fire Station #7	2	Town	Fire/ EMS Response	Emergency Services	Emergency services
East Cooper Montessori School – Rifle Range Road	2	County	School	None	Staging/ housing
East Cooper Hospital	2	Private	Medical	Medical	Medical
Belle Hall Elementary	2	County	School	none	staging/ housing
Fire Station #4	2	Town	Fire/ EMS Response	Emergency services	Emergency services
Wando High School	3	County	School	Emergency housing	Staging/ housing

Public Services Facility – Sweetgrass Basket Parkway	3	Town	Municipal operations/ Fleet	Fleet/ Resource Staging / Fueling	Debris Management/ Operations
Police Fire Training Facility	3	Town	Municipal Facility	Staging	Staging/ housing
Park West Schools	3	County	School	Emergency housing	Staging/ housing
Park West Recreation	3	Town	Municipal Facility	None	Staging/ housing
MPW Water Tower/ Facility (Hwy 41)	3	MPW	Water/ Wastewater	Water supply	water supply
MPW water Tower/ Facility (Hwy 17N - Chas National)	3	MPW	Water/ Wastewater	Water supply	water supply
MPW North Operations Center	3	MPW	Water/ Wastewater	Staging	Staging
Lieben Road Facility	3	Town	Municipal building	Staging	Staging/ Debris/ Ops
Fire Stations #5	3	Town	Fire/ EMS Response	Emergency services	Emergency services
Fire Station #6	3	Town	Fire/ EMS Response	Emergency services	Emergency services
Whitehall Terrace Community Center	3	Town	Municipal Building	None	Community services/ outreach
Active Park - Carolina Park	3	Town	Municipal Facility	none	Staging/ debris
Roper Hospital	3	Private	Medical	Medical	Medical

Table 5-12-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Mt. Pleasant	4	5	1	4	3	2	1	2	1	2	4	4

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County. Information outlining jurisdiction-specific information can be found below.
As of 2018, 4.7% of the Mount Pleasant population was below the poverty line (https://censusreporter.org/profiles/16000US4548535-mount-pleasant-sc/).

Table 5-12-14

Estimated Population 2019-2020 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 2020 Population**
Town of Mt. Pleasant	39.93%	91,684

Source: U.S. Census Bureau, Population Division 2018

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Town of Mount Pleasant Capacity - Plan/ Code/ Study/ Regulations
Town of Mount Pleasant Strategic Plan; Theme 5 Incident Management
Town of Mount Pleasant Emergency Operations Plan
Resolution 18121 Adopting Emergency Operations Plan
South Carolina State Wide Mutual Aid
Stormwater Management Program/ Plan
Drainage System Maintenance SOPs
Asset Management Program/ Plan for drainage systems
Drainage Canal Maintenance Program
Capital Improvements Program/ Plan
Comprehensive Maintenance Program/ Plan
Old Village Drainage Study
Snee Farm Preliminary Engineering Report - Drainage Study
Hobcaw Point Drainage Study
Hazard Mitigation Plan (Charleston Region) - Attachment 6C drainage projects
Bridge Inspection Program
Water Quality Monitoring Plans
Civil Emergencies Code of Ordinances (Chapter 41)

Waters and Sewers Code of Ordinances (Chapter 51)
Stormwater Management Program Code of Ordinances (Chapter 52)
Building Regulations Code of Ordinances (Chapter 150)
Flood Damage Prevention Ordinance (Chapter 152)
Stormwater Management and Water Quality Regulations Code of Ordinances (Chapter 153)
Land Development Code of Ordinances (Chapter 155)
Zoning Code of Ordinances (Chapter 156)
2015 International Building Code with SC modifications
Higher Regulatory Standards (CRS Section - 430) - *see separate document
Departmental Specific Operating Procedures for Emergency and Disaster Response/ Recovery
NFIP & CRS Participation

Attachment 5-12-C: Repetitive Loss Areas within the Charleston Region

Repetitive Loss Areas				
Street	City, State	Zip Code	Jurisdiction	PSD / FD
DeLeisseline Boulevard	Mt. Pleasant, SC	29464	Mt. Pleasant	
E. Shipyard Road	Mt. Pleasant, SC	29464	Mt. Pleasant	
Ferry Street	Mt. Pleasant, SC	29464	Mt. Pleasant	
Hibben Street	Mt. Pleasant, SC	29464	Mt. Pleasant	
Hidden Bridge Drive	Mt. Pleasant, SC	29464	Mt. Pleasant	
Highway 17 By-Pass	Mt. Pleasant, SC	29464	Mt. Pleasant	
Kincaid Drive	Mt. Pleasant, SC	29464	Mt. Pleasant	
Kirk Court	Mt. Pleasant, SC	29464	Mt. Pleasant	
Live Oak Drive	Mt. Pleasant, SC	29464	Mt. Pleasant	
Magwood Lane	Mt. Pleasant, SC	29464	Mt. Pleasant	
Middle Street	Mt. Pleasant, SC	29464	Mt. Pleasant	
Montclair Drive	Mt. Pleasant, SC	29464	Mt. Pleasant	
Nantahala Boulevard	Mt. Pleasant, SC	29464	Mt. Pleasant	
Pearl Street	Mt. Pleasant, SC	29464	Mt. Pleasant	
Ralston Court	Mt. Pleasant, SC	29464	Mt. Pleasant	
Royall Avenue	Mt. Pleasant, SC	29464	Mt. Pleasant	
Sehoy Drive	Mt. Pleasant, SC	29464	Mt. Pleasant	
Shadow Drive	Mt. Pleasant, SC	29464	Mt. Pleasant	
Whilden Street	Mt. Pleasant, SC	29464	Mt. Pleasant	
William Street	Mt. Pleasant, SC	29464	Mt. Pleasant	

Attachment 5-12-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA*	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VEZone	A/AW Zone*	V/VEZone
Town of Mt P	**36,434**	**48**	**12**	**15,347**	**1,318**	**738**	**225**	**16,097**	**1,543**

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-12-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
Town of Mt P	**2,306**	**259**	**2,565**	**33**	**3**	**2,568**

Attachment 5-12-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	**Avg. Site-Built Residential Building Value**	**Avg. Commercial Building Value**	**Avg. Mobile Home Value****	**Estimated Total Pre-1985 Site-Built and Mobile Home Building Value**	**Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)**
Mt. Pleasant *(All)*	**$308,236.17**	**$1,005,119.02**	**$14,538.95**	**$1,614,438,443.00**	
Pre-1985 only	**$201,559.17**	**$303,295.53**	**$3,668.00**		**$609,249,043.00**

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-12-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
Town of Mt P	6,234,746,925	703,867,100	6,173,839,100	4,706,816,400

** Valuation data reflected herein is for mobile homes, regardless of age.

– City of North Charleston Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-13-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
City of North Charleston	4	5	3	3	3	2	3	4	3	3	3	3

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-13-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
City of North Charleston	3	5	2	1	3	1	3	3	2	3	3	2

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
City of North Charleston	The City of North Charleston is most vulnerable to hurricanes, hazardous materials, earthquakes, terrorism and flooding. There are many low lying areas and at risk populations that live in flood zones. There are also repeatedly flood areas of the City due to lack of stormwater drainage. There is a high number of mobile homes which puts the community at increased risk for hurricanes and tornadoes. With major ports, the airport, major convention center, and military bases, North Charleston is vulnerable to a terrorist attack as a result

	of being an economic engine for the region with large international businesses.

– Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

City of North Charleston Higher Regulatory Standards
2' freeboard

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-13-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
City of North Charleston	2	2	3	3	3	2	3	2	2	3	3	2

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County. Information outlining jurisdiction-specific information can be found below.

As of 2018, 20.2% of the North Charleston population are below the poverty line (https://censusreporter.org/profiles/16000US4550875-north-charleston-sc/).

Table 5-13-14

Estimated Population 2019-2020 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 2020 Population**
City of North Charleston	18.38%	111,501

Source: U.S. Census Bureau, Population Division 2018

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Attachment 5-13-C: Repetitive Loss Areas within the Charleston Region

Repetitive Loss Areas			
Street	City, State	Zip Code	Jurisdiction
Annette Street	N. Charleston, SC	29406-3801	N. Chas.
Arapahoe Drive	N. Charleston, SC	29405-7784	N. Chas.
Auburn Drive	Charleston Heights, SC	29406-9049	N. Chas.
Dorchester Road 100	N. Charleston, SC	29418	N. Chas.
Dorchester Road 400	N. Charleston, SC	29418	N. Chas.
Holden Street	N. Charleston, SC	29418-5823	N. Chas.
Lilac Avenue	N. Charleston, SC	29405-6818	N. Chas.
Maxwell Street	N. Charleston, SC	29405-4171	N. Chas.
Melanie Court	N. Charleston, SC	29418-5414	N. Chas.
New Ryder Road	N. Charleston, SC	29406	N. Chas.
Nightingale Road	Charleston Heights, SC	29405-7387	N. Chas.
Northwoods Blvd.	N. Charleston, SC	29406	N. Chas.
Norwood Street	N. Charleston, SC	29405-8005	N. Chas.

Rivers Avenue	N. Charleston, SC	29406	N. Chas.
Spoleto Lane	N. Charleston, SC	29418	N. Chas.
Spoleto Lane East	N. Charleston, SC	29418	N. Chas.
Spur Street	N. Charleston, SC	29405-6825	N. Chas.
Technical Parkway	N. Charleston, SC	29418-4931	N. Chas.
Temple Street	N. Charleston, SC	29405	N. Chas.

Attachment 5-13-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA*	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VEZone	A/AW Zone*	V/VEZone
City of NC	**26,965**	**11**	**812**	**2,196**	**1**	**818**	**18**	**3,790**	**19**

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-13-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
City of N. Chas	**1,646**	**505**	**2,151**	**13**	**239**	**2,390**

Attachment 5-13-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	**Avg. Site-Built Residential Building Value**	**Avg. Commercial Building Value**	**Avg. Mobile Home Value****	**Estimated Total Pre-1985 Site-Built and Mobile Home Building Value**	**Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)**

N. Charleston *(All)*	**$127,612.08**	**$802,534.12**	**$9,126.72**	**$2,412,930,806.00**	
Pre-1985 only	**$102,018.39**	**$359,351.78**	**$3,783.32**		**$349,990,228.00**

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-13-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
City of NC	**926,295,585**	**22,186,600**	**6,162,169,400**	**5,253,050,000**

** Valuation data reflected herein is for mobile homes, regardless of age.

– Ravenel Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-14-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Town of Ravenel	3	1	3	1	3	2	1	1	3	3	1	3

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-14-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Ravenel	2	2	2	1	3	2	1	4	2	4	2	1

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Town of Ravenel	The Town of Ravenel is a small rural community accessed by Highways 17 and 165. The Town is located on Mellichamp and Rantowles Creeks, which makes it susceptible to flooding. There are

	a high number of mobile homes in the community making it vulnerable to tornadoes and hurricanes.

5.14.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-14-12

Jurisdiction	Total Losses	Closed Losses	Open Losses	CWOP Losses
RAVENEL, TOWN OF	1	1	0	0
FEMA Policy and Claims Statistics Database, 2019 ***https://bsa.nfipstat.fema.gov/reports/1040.htm#45***				

Town of Ravenel Higher Regulatory Standards
2' freeboard
Minimum 5 CFMs on staff via Charleston County
1/2 foot rise in floodway
Five year cumulative of all permits is included when conducting a substantial review

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-14-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER

Town of Ravenel	**1**	**2**	**3**	**3**	**3**	**2**	**1**	**3**	**2**	**3**	**1**	**4**

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County. Information outlining jurisdiction-specific information can be found below.

As of 2018, 18.3% of the Ravenel population live below the poverty line (https://censusreporter.org/profiles/16000US4559020-ravenel-sc/).

Table 5-14-14

Estimated Population 2019-2020 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 2020 Population**
Town of Ravenel	9.05 %	2,691

Source: U.S. Census Bureau, Population Division 2018

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Attachment 5-14-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA*	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VEZone	A/AW Zone*	V/VEZone

Ravenel	975	12	86	96	0	19	0	201	0

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-14-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
Ravenel	33	5	38	11	20	58

Attachment 5-14-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	Avg. Site-Built Residential Building Value	Avg. Commercial Building Value	Avg. Mobile Home Value**	Estimated Total Pre-1985 Site-Built and Mobile Home Building Value	Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)
Ravenel *(All)*	$151,982.63	$269,538.52	$15,153.68	$27,360,400.00	
Pre-1985 only	$81,332.62	$82,697.96	$4,330.23		$3,097,200.00

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-14-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
Ravenel	20,843,300	0	142,501,200	121,601,400

** Valuation data reflected herein is for mobile homes, regardless of age.

– Rockville Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-15-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Town of Rockville	5	3	4	4	4	3	3	3	4	5	3	3

The Town of Rockville is serviced by Charleston County and therefore reflect their survey responses.

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-15-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Rockville	5	4	1	1	2	1	2	2	2	2	3	3

The Town of Rockville is serviced by Charleston County and therefore reflect their survey responses.

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Town of Rockville	The town of Rockville is a small, rural riverine community off Bohicket Creek. The main business is the Sea Island Yacht Club. Any damage from hurricanes, wildfire, or flooding could be catastrophic to the Town's economic prosperity. There are also a number of historic sites in Rockville and these are vulnerable to flooding and hurricanes.

5.15.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Town of Rockville Higher Regulatory Standards
2' freeboard
Minimum 5 CFMs on staff via Charleston County
1/2 foot rise in floodway
Five year cumulative of all permits is included when conducting a substantial review

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-15-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Rockville	5	3	2	2	3	2	3	3	2	3	3	1

The Town of Rockville is serviced by Charleston County and therefore reflect their survey responses.

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County. Information outlining jurisdiction-specific information can be found below.

As of 2018, 2.5% of the Rockville population is below the poverty line (https://censusreporter.org/profiles/16000US4561495-rockville-sc/).

Table 5-15-14

Estimated Population 2019-2020 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 2020 Population**
Town of Rockville	4.48%	125

Source: U.S. Census Bureau, Population Division 2018

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Attachment 5-15-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA*	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VEZone	A/AW Zone*	V/VEZone
Rockville	**108**	**71**	**1**	**38**	**37**	**1**	**1**	**40**	**38**

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-15-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
Rockville	59	2	61	87	1	62

Attachment 5-15-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	Avg. Site-Built Residential Building Value	Avg. Commercial Building Value	Avg. Mobile Home Value**	Estimated Total Pre-1985 Site-Built and Mobile Home Building Value	Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)
Rockville *(All)*	$238,823.08	$64,400.00	$7,450.00	$13,938,100.00	
Pre-1985 only	$207,230.30	$64,000.00	$3,300.00		$13,227,700.00

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-15-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
Rockville	8,891,700	11,386,700	4,816,800	4,654,500

** Valuation data reflected herein is for mobile homes, regardless of age.

– Seabrook Island Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-16-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Town of Seabrook Island	5	4.5	1.5	2.5	4.5	1.5	2.5	2.5	4	3	4	3.5

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-16-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Seabrook Island	5	5	1.5	2	5	1	2	5	3	3	4.5	2.5

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Town of Seabrook Island	Town of Seabrook Island is a coastal community with luxury homes and amenities. The beachfront properties are at risk for sea level rise and hurricanes, and the whole island is vulnerable to flooding. Many homes are not occupied year round and used as winter or secondary homes. This poses a vulnerability for preparation and repairs for buildings. Also some roads flood repetitively with rainfall and high tides and including emergency access roads and the only entry and exit for the island. This coastal community is also vulnerable to tsunamis.

5.16.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-16-12

Jurisdiction	Total Losses	Closed Losses	Open Losses	CWOP Losses
SEABROOK ISLAND, TOWN OF	61	41	0	20
FEMA Policy and Claims Statistics Database, 2019 ***https://bsa.nfipstat.fema.gov/reports/1040.htm#45***				

Town of Seabrook Island Higher Regulatory Standards
2' freeboard
Minimum 5 CFMs on staff via Charleston County
1/2 foot rise in floodway
Five year cumulative of all permits is included when conducting a substantial review

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-16-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Seabrook Island	5	5	2.5	2	5	1	2.5	5	3	4.5	4.5	3.5

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County. Information outlining jurisdiction-specific information can be found below.

Table 5-16-14

Estimated Population 2019-2020 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 2022 Population**
Town of Seabrook Island	9.33%	1,874

Source: U.S. Census Bureau, Population Division 2018

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Attachment 5-16-C: Repetitive Loss Areas within the Charleston Region

Repetitive Loss Areas				
Street	City, State	Zip Code	Jurisdiction	PSD / FD
Rascal Run Court	Seabrook Island, SC	29455-6208	Seabrook Isl.	
Seabrook Island Road	Johns Island, SC	29455	Seabrook Isl.	

Attachment 5-16-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA *	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VEZone	A/AW Zone*	V/VEZone
Seabrook Island	2,569	92	0	2,230	98	33	3	2,263	101

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-16-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
Seabrook Island	1,148	5	1,153	100	0	1,153

Attachment 5-16-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	Avg. Site-Built Residential Building Value	Avg. Commercial Building Value	Avg. Mobile Home Value**	Estimated Total Pre-1985 Site-Built and Mobile Home Building Value	Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)
Seabrook Island *(All)*	$359,954.11	$206,206.79	N/A	$231,787,600.00	
Pre-1985 only	$198,216.93	$573,616.67	$0.00		$229,395,600.00

** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-16-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
Seabrook Island	784,460,400	87,243,900	18,679,700	0

** Valuation data reflected herein is for mobile homes, regardless of age.

– Sullivan's Island Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-17-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Town of Sullivan's Island	5	5	3	4	3	3	3	3	3	3	4	4

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-17-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Sullivan's Island	5	5	4	4	4	3	3	4	4	3	4	4

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Town of Sullivan's Island	Town of Sullivan's Island is a coastal community with luxury homes and amenities. The beachfront properties are at risk for sea level rise and hurricanes, and the whole island is vulnerable to flooding. Many homes are not occupied year round and used as winter or secondary homes. This poses a vulnerability for preparation and repairs for buildings. Also some roads flood repetitively with rainfall and high tides and including emergency access roads and the only entry and exit for the island. This coastal community is also vulnerable to tsunamis.

5.17.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-17-12

Jurisdiction	Total Losses	Closed Losses	Open Losses	CWOP Losses
SULLIVANS ISLAND, TOWN OF	849	659	0	190
FEMA Policy and Claims Statistics Database, 2019 ***https://bsa.nfipstat.fema.gov/reports/1040.htm#45***				

Town of Sullivan's Island Higher Regulatory Standards
1' freeboard
2 CFM on staff
All inspectors are State certified
Limit solid wall enclosures to 200 sq. ft. in AE and VE zones.
Hydrostatic venting is required in solid walls in AE and VE zones.
All Lattice and solid walls must be breakaway and designed by a design professional in AE and VE zones.
All structures must be designed by a licensed design professional and must provide design certifications in AE and VE zones prior to construction and at the completion of construction.
Limit fill on all properties to no more than one foot above natural grade. Decrease in natural grade is prohibited except for minimal retention areas for stormwater retention.
Require a drainage plan certified by a design professional for any land disturbance over 625 square feet. Stormwater of 2 inches per hour or less must be retained on site by dry wells or retention areas. Plan must be provided prior to construction and must be verified and signed off as a functional storm water system at final inspection by a SouthCarolina licensed certified stormwater professional.
Limit impervious surface to no more than 30% of lot.
Limit unnatural surfaces to no more than 50% of a lot and 50% of a lot must be Natural vegetated surfaces or natural planting beds.
Limit the placement of any unnatural surfaces in the road right of way and limit the property to one driveway 12 feet wide at property line and no more than a 5-foot radius taper at the street pavement. Currently working with SCDOT on a pilot program to allow homeowners to place pervious designed parking areas in ROW to assist with road drainage.
Setback from critical lines, base lines and toe of dunes are 30 feet and do not allow the destruction of dunes or changes to the topography of a lot.

We perform a flood inspection at frame and final inspection requiring an elevation certificate to be provided prior to the inspections.
Approximately 80% of the shoreline is protected by natural and beneficial shoreline and this area is protected by deed restrictions by the Lowcountry Open Land Trust. We allow trimming and pruning only in this area. No destruction of vegetation is permitted.
We require all substantial improvements and new construction to sign a non-conversion agreement stating that they will not alter the area below BFE and the document is recorded as a deed restriction to the property. Inspections are performed yearly to insure the area below BFE has not been altered.

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-17-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Town of Sullivan's Island	5	5	5	5	4	4	4	3	3	4	5	5

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County. Information outlining jurisdiction-specific information can be found below.

As of 2018, 7.7% of the Sullivan's Island population is below the poverty line (https://censusreporter.org/profiles/16000US4570090-sullivans-island-sc/).

Table 5-17-14

Estimated Population 2019-2020 in Charleston County SC		
Jurisdiction	**Growth Rate 2010-2020**	**Approximate 2020 Population**
Town of Sullivan's Island	7.26%	2,203

Source: U.S. Census Bureau, Population Division 2018

Additional summaries of the anticipated future development trends for the local governments within Charleston County, as provided by the local government entities participating in the Charleston Regional Hazard Mitigation Plan, are outlined in "Development and Population Trends" in Section 5.1(b).

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Attachment 5-17-C: Repetitive Loss Areas within the Charleston Region

Repetitive Loss Areas			
Street	City, State	Zip Code	Jurisdiction
Atlantic Ave.	Sullivan's Island, SC	29482	Sullivan's Isl.
Bayone St.	Sullivan's Island, SC	29482	Sullivan's Isl.
Brownell Ave.	Sullivan's Island, SC	29482	Sullivan's Isl.
I'on Ave.	Sullivan's Island, SC	29482	Sullivan's Isl.
Jasper Blvd.	Sullivan's Island, SC	29482	Sullivan's Isl.
Marshall Blvd.	Sullivan's Island, SC	29482	Sullivan's Isl.
Middle Street	Sullivan's Island, SC	29482	Sullivan's Isl.
Myrtle Ave.	Sullivan's Island, SC	29482	Sullivan's Isl.
Osceola St.	Sullivan's Island, SC	29482	Sullivan's Isl.
Seabreeze Lane	Sullivan's Island, SC	29482	Sullivan's Isl.

Attachment 5-17-D: Charleston Region Buildings Vulnerable to Flooding Due to Location in the Special Flood Hazard Area (SFHA) Only

Jurisdiction	Total Site-Built Structures	% of Total Site-Built Structures in the SFHA	Mobile Homes in SFHA*	Residential site-built structures in the SFHA		Commercial Structures in the SFHA		Total Structures in the SFHA (including site-built and mobile homes	
			SFHA	A/AE Zone	V/VE Zone	A/AEZone	V/VEZone	A/AW Zone*	V/VEZone

Sullivan's Isle	1,079	98	0	503	531	16	12	519	543

* Since most mobile homes in Charleston County are treated as vehicles for tax purposes, the determination of "A" of "V" zones for these homes using the Q-3 digital data was not able to be readily performed. All mobile homes in the SFHA are included in the A-zone total for this table, since most jurisdictions in Charleston County restrict mobile homes from the "V" flood zone areas.

Attachment 5-17-E: Charleston Region Buildings Vulnerable to Flooding Due to Year of Construction and Location in the Special Flood Hazard Area (SFHA)

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings In Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
Sullivan's Isle	588	14	602	98	0	602

Attachment 5-17-F: Charleston Region Average Valuation of Buildings and Mobile Homes

Jurisdiction	Avg. Site-Built Residential Building Value	Avg. Commercial Building Value	Avg. Mobile Home Value**	Estimated Total Pre-1985 Site-Built and Mobile Home Building Value	Estimated Pre-1985 Site-Built Building And Mobile Home Value in SFHA (mil.$)
Sullivan's Isl. *(All)*	$518,254.19	$329,473.08	N/A	$203,222,750.00	
Pre-1985 only	$333,730.70	$240,963.64	$0.00		$200,370,650.00

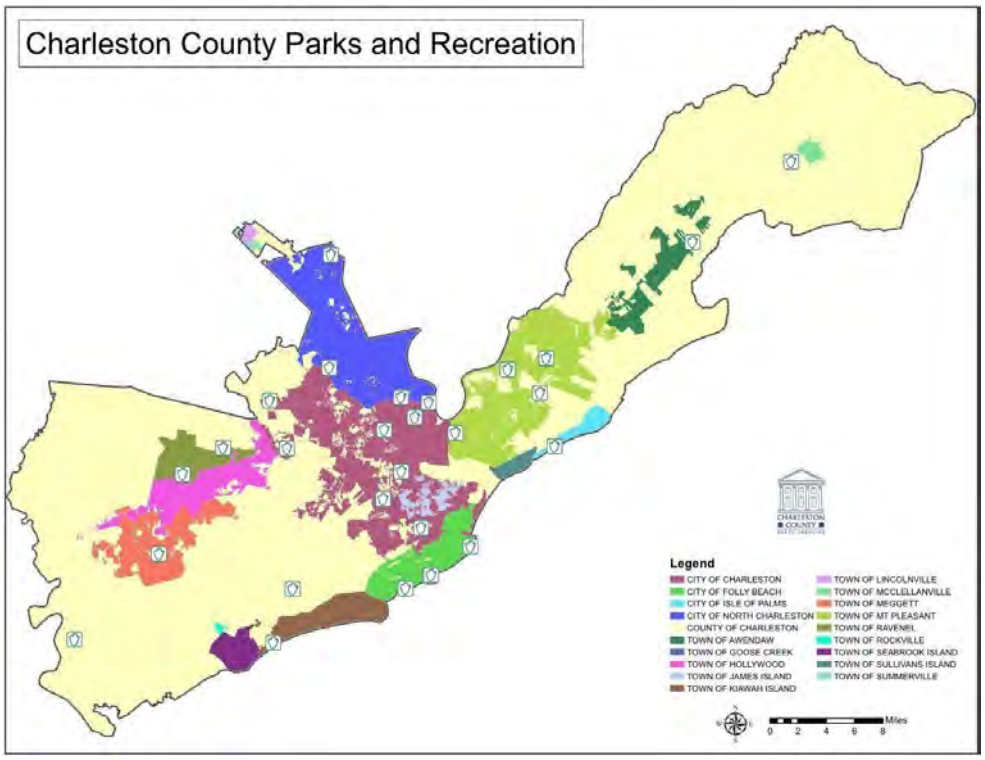
** Valuation data reflected herein is for mobile homes, regardless of age.

Attachment 5-17-G: Charleston Region Average Valuation of Site-Built Buildings by Flood Zone

Jurisdiction	Total Value "A" Zones Site-Built Structures	Total Value "V" Zones Site-Built Structures(mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood-Zone Coded** (mil$)
Sullivan's Isle	240,319,850	305,613,700	6,281,400	0

** Valuation data reflected herein is for mobile homes, regardless of age.

– Charleston County Parks & Recreation



Charleston County Parks and Recreation (CCPR) currently holds facilities located in Unincorporated Charleston County as well as a number of jurisdictions. For this reason, please refer to the hazard summary for a CCPR facility's location to assess that facility's hazard vulnerability. The following table contains a summary of relevant jurisdictions and their most pertinent hazards. Please note that while all jurisdictions are equally probable of encountering each hazard, the list highlights hazards for which a jurisdiction is especially vulnerable.

Jurisdiction	Number of CCPR Facilities	Hazards
Unincorporated Charleston County	9	Flood, Hurricanes, Wildfire, Severe Storm, Drought, Winter Weather
Town of Awendaw	1	Sea Level Rise, Wildfire, Severe Storm, Drought, Winter Weather, Hurricanes
City of Charleston	7	Flood, Hazardous Materials, Terrorism, Severe Storm, Drought, Winter Weather, Hurricanes
City of Folly Beach	4	Hurricane, Flood, Sea Level Rise, Tsunami, Rip Current, Severe Storm, Drought, Winter Weather
Town of Hollywood	4	Hurricane, Flood, Severe Storm. Drought, Winter Weather, Earthquake
City of Isle of Palms	1	Hurricane, Flood, Sea Level Rise, Tsunami, Rip Current, Severe Storm, Drought, Winter Weather
Town of Kiawah Island	1	Hurricane, Flood, Sea Level Rise, Rip current, Severe Storm, Drought, Winter Weather

Town of Meggett	1	Flood, Wildfire, Severe Storm, Drought, Winter Weather
Town of Mt Pleasant	4	Hurricane, Hazardous Materials, Terrorism, Wildfire, Severe Storm, Drought, Winter Weather
City of North Charleston	4	Flood, Earthquake, Hazardous Materials, Dam Failure, Severe Storm, Drought, Winter Weather
Town of Ravenel	1	Earthquake, Wildfire, Severe Storm, Drought, Winter Weather

As a whole, CCPR reports nine hazards for which it is especially vulnerable: hurricane, flood, sea level rise, wildfire, tsunami, rip current, severe storm, drought, and winter weather.

Hurricane

Since CCPR possesses beachfront facilities, its hurricane vulnerability is high since these locations can be the first point of hurricane landfall, especially in the Kiawah Island, Folly Beach, and Isle of Palms jurisdictions. In the past few years, Hurricane Florence delivered power outages to many residents while Hurricane Michael brought 50 mph winds to the county while dismantling power lines and uprooting some trees. No lives were lost.

Hurricane Probability for each Jurisdiction	
Jurisdiction	**Probability**
Charleston County Parks & Recreation Commission	26-50%

Flood

CCPR's coastal facilities as well as those in North Charleston and Meggett are especially susceptible to flooding. While Hurricane Michael did deliver a 2.07 ft storm surge to the Charleston Harbor, NOAA does not report any significant flooding events related to this jurisdiction since the last HMP update.

Flooding Probability for each Jurisdiction	
Jurisdiction	**Probability**
Charleston County Parks & Recreation Commission	51-75%

Sea Level Rise

Charleston again surpassed its expected amount of king tides during the past year, meaning residents saw exceptionally high tides compared to the typical extent of a high tide. For beachfront CCPR facilities, this hazard is routinely present.

2020 Predicted King Tides	2021 Predicted King Tides	2022 Predicted King Tides
April 8-10	April 26-29	May 15-18
May 6-9	May 24-28	June 13-16
June 4-6	June 22-25	July 12-15
August 18-20	July 22-24	August 10-13
September 15-21	October 7-10	September 7-10
October 14-20	November 4-8	October 26-28
November 13-18	December 3-7	November 23-26

December 13-16		December 23-25

2021 Tidal Flood Events	2022 Tidal Flood Events
Minor - 46	Minor - 70
Moderate - 8	Moderate - 20
Major – 4	Major - 3

Sea Level Rise/King Tide Probability for each Jurisdiction	
Jurisdiction	**Probability**
Charleston County Parks & Recreation Commission	51-75%

Wildfire

Inland facilities susceptible to wildfire are seeing a decline in incidents from previous years as well as other fire incidents reported by Charleston County Consolidated 9-1-1. The South Carolina Forestry Commission has reported 667 wildfires in 2023, burning 5,171 acres across the state.

Wildfire Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Charleston County Parks & Recreation Commission	26-50%

Tsunami

Charleston County maintains its current status of experiencing zero tsunami incidents. CCPR, however, is still likely to experience an incident and maintains steps in its action plan to mitigate such an incident's impacts.

Tsunami Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Charleston County Parks & Recreation Commission	0-25%

Rip Current

Coastal facilities specifically in Folly Beach and Isle of Palms report incidents of injuries or death resulting from rip currents in their respective hazard history sections. As sea levels rise it is predicted that rip currents will continue to be a greater and greater threat to Lowcountry beaches.

Rip Current Probability for Each Jurisdiction	
Jurisdiction	**Probability**

Charleston County Parks & Recreation Commission	51-75%

Severe Storm

Charleston County as a whole is susceptible to severe storms on a largely equal basis between jurisdictions since thunderstorms are unpredictable in terms of their size, path, and characteristics. All CCPR facilities, therefore, are equally probable of encountering severe storm hazards. Please refer to severe storm hazard histories separated by high winds, hail, and lightning in Unincorporated Charleston County's hazard history section.

Severe Storm Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Charleston County Parks & Recreation Commission	76-100%

Drought

All of Charleston County experiences drought impacts uniformly since the U.S. Drought Monitor reports data for the County as a whole rather than by jurisdiction. Charleston County experienced 36 total weeks of drought in 2019-2020, compared to only 23 weeks in 2018-2019. In 2019-2020, one week was spent at a D2, or "severe drought." During the 2020-2021 period, the region experienced fifteen weeks of drought at level D0. During the 2021-2022 period, Charleston County experienced 25 weeks of D0 drought.

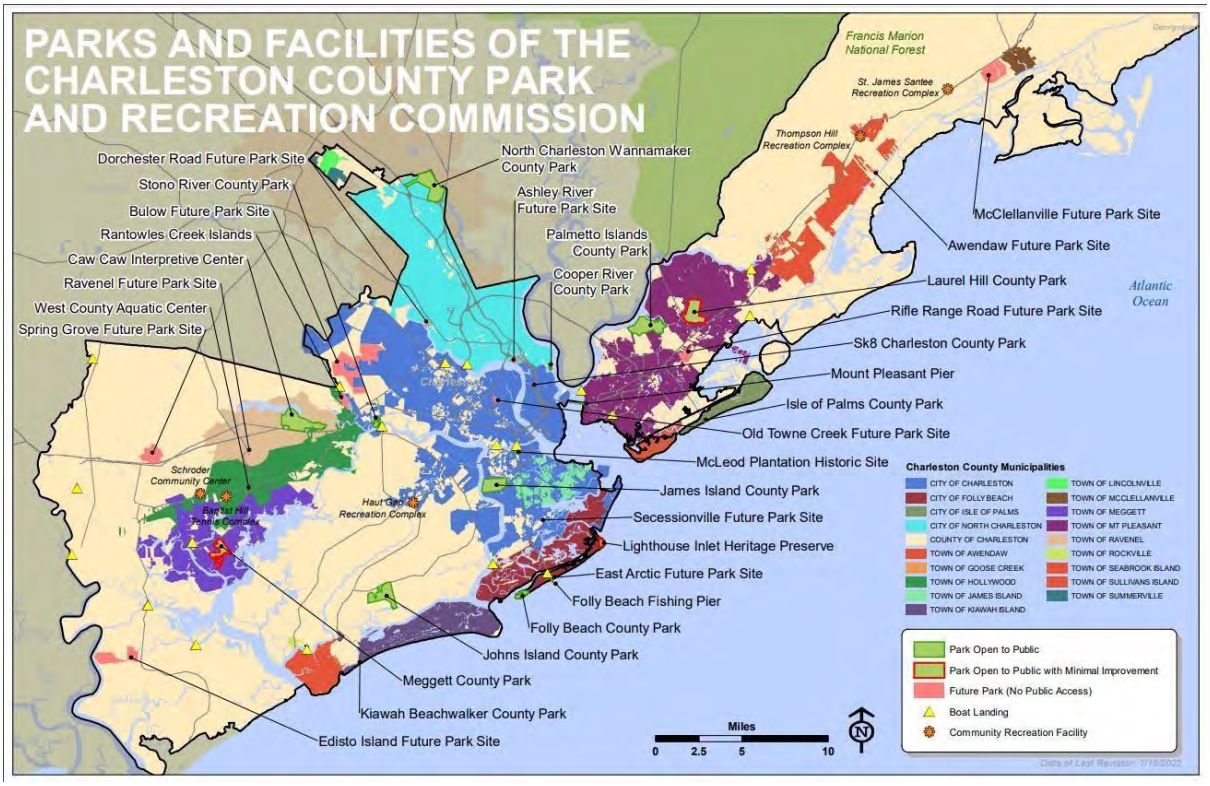
Drought Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Charleston County Parks & Recreation Commission	26-50%

Winter Weather

The 2021-2022 year did not yield significant winter weather occurrences warranting a hazardous classification. Please refer to the winter weather hazard history under Unincorporated Charleston County for a record of previous hazard events as reported by NOAA.

Winter Weather Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Charleston County Parks & Recreation Commission	26-50%

5.18(b) – Charleston County Parks and Recreation Problem Assessment



Charleston County Parks and Recreation has facilities within the following jurisdictions: Unincorporated Charleston County, Town of Awendaw, City of Charleston, City of Folly Beach, City of Isle of Palms, Town of Kiawah Island, Town of Meggett, Town of Mt Pleasant, City of North Charleston, Town of Ravenel. Problem assessments for these jurisdictions should, therefore, be referenced when assessing CCPR's situation.

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-18-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Charleston County Parks and	5	n/a	1	2	1	1	2	4	3	3	5	n/a

Recreation Commission												

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-18-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Charleston County Parks and Recreation Commission	5	n/a	2	1	5	1	2	5	2	4	3	n/a

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Charleston County Parks and Recreation	The parks system is spread throughout the County jurisdictions. Most of the parks are limited infrastructure. Parks located on Isle of Palms, Folly Beach and Kiawah Island are also vulnerable to sea level rise, flooding and hurricane. Rural parks near McClellanville and Awendaw are vulnerable to dam failure and wildfire. Other parks on James Island, West of the Ashley River, and into North Charleston are vulnerable to flooding.

5.18.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-18-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Charleston County Parks and Recreation Commission	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County.

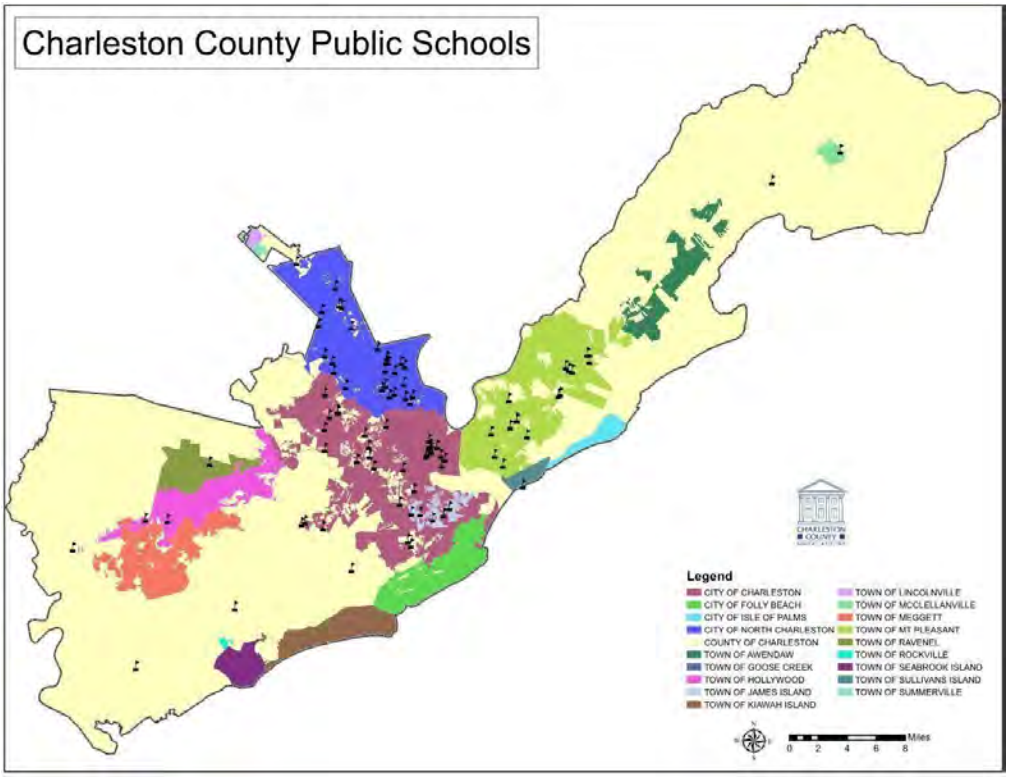
– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County.

5.19(a) – Charleston County School District



Charleston County Public Schools are located in many of the County's jurisdictions as well as unincorporated territory. This makes the District vulnerable to multiple hazards since it has properties in coastal, inland, low-lying, and elevated areas. While it is possible for any hazard in this plan to affect CCSD, it identifies the following hazards as ones it is most vulnerable to: hurricane, flooding, earthquake, severe storms and tornadoes.

For histories of hazard occurrences, as well as descriptions of additional hazards that individual jurisdictions containing CCSD facilities are vulnerable to, please refer to the hazard history for the jurisdiction in question.

Flood

CCSD facilities in often-flooded jurisdictions like the City of Charleston, City of North Charleston, Town of Sullivan's Island, and the Town of Mt. Pleasant are most vulnerable to flooding incidents. Especially in the past year, the City of Charleston saw the most flooding events compared to nearby jurisdictions. Please refer to the hazard history sections in these jurisdictions for complete records of flooding from NOAA.

Flooding Probability for each Jurisdiction	
Jurisdiction	**Probability**
Charleston County School District	76-100%

Hurricane

Charleston County and its schools are impacted by hurricanes or tropical storms almost annually; notable ones include Hurricane Hugo in 1989, Hurricane Matthew in 2016, Hurricane

Dorian in 2019 and Hurricane Ian in 2022. All of these hurricanes resulted in school closures, damage and use of shelters; these actions can be expected to continue to occur.
The greatest threat to life and property associated with a hurricane and tropical storm is storm surge.
Other effects include high winds, tornadoes, and inland flooding associated with heavy rainfall that usually accompanies these storms.

Hurricane Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Charleston County School District	76-100%

Earthquake

If there were to be a major earthquake at this fault line, there would inevitably be damage to buildings and infrastructure in CCSD, especially in its schools located closest to the epicenter. These are likely to include schools in North Charleston, West Ashley and downtown Charleston. Due to its no notice and potential to separate parents, teacher, staff and students, an earthquake is considered among the biggest hazards to the CCSD.

Earthquake Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Charleston County School District	51-75%

Severe Storm

Charleston County as a whole is susceptible to severe storms on a largely equal basis between jurisdictions since thunderstorms are unpredictable in terms of their size, path, and characteristics. All CCSD facilities, therefore, are equally probable of encountering severe storm hazards. Please refer to severe storm hazard histories separated by high winds, hail, and lightning in Unincorporated Charleston County's hazard history section.

Severe Storm Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Charleston County School District	51-75%

Tornadoes

Tornadoes can strike anywhere at any of the schools in CCSD. While there is some notice available from NWS alerts, watches and warnings, the short notice of these incidents makes them a considerable hazard to CCSD.

Tornado Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Charleston County School District	51-75%

Wildfire

Inland facilities susceptible to wildfire are seeing a decline in incidents from previous years as well as other fire incidents reported by Charleston County Consolidated 9-1-1. There was an increase in both wildfire events and fire incidents from 2018-2019 and 2019-2020.

Wildfire Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Charleston County School District	26-50%

Tsunami

Charleston County maintains its current status of experiencing zero tsunami incidents. CCSD, however, is still likely to experience an incident and maintains steps in its action plan to mitigate such an incident's impacts.

Tsunami Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Charleston County School District	0-25%

Drought

All of Charleston County experiences drought impacts uniformly since the U.S. Drought Monitor reports data for the County as a whole rather than by jurisdiction. Charleston County experienced 36 total weeks of drought in 2019-2020, compared to only 23 weeks in 2018-2019. In 2019-2020, one week was spent at a D2, or "severe drought." During the 2020-2021 period, the region experienced fifteen weeks of drought at level D0.

Drought Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Charleston County School District	51-75%

Winter Weather

The 2020-2021 year did not yield significant winter weather occurrences warranting a hazardous classification. Please refer to the winter weather hazard history under Unincorporated Charleston County for a record of previous hazard events as reported by NOAA.

Winter Weather Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Charleston County School District	26-50%

5.19(b) –Charleston County School District Problem Assessment

Charleston County School District has facilities across the Charleston County area. The following list identifies jurisdictions containing CCSD structures. For a problem assessment concerning specific CCSD facilities, please refer to the assessment for that facility's corresponding jurisdiction.

School	Category	Address	Jurisdiction	Zip Code
A.C. Corcoran Elementary	School	8585 Vistavia Rd	N Charleston	29406
Academic Magnet High	School	5109 W Enterprise St	N Charleston	29405
Allegro Charter School of Music	Charter School	2731 Gordon St	N Charleston	29405
Angel Oak Elementary	School	6134 Chisolm Rd	Johns Island	29455
Ashley River Creative Arts Elementary	School	1871 Wallace School Rd	Charleston	29407
Azalea Bus Lot	Bus Lot	2712 Rourk St	N Charleston	29405
Baptist Hill Middle-High	School	5117 Baptist Hill Rd	Hollywood	29449
Belle Hall Elementary	School	385 Egypt Rd	Mt Pleasant	29464
Buist Academy	School	103 Calhoun St	Charleston	29401
Burke High	School	244 President St	Charleston	29403
C.C. Blaney Campus	Office Building	7184 Hwy 162	Hollywood	29449
C.E. Williams Middle (Old Building)	Shuttered Campus	640 Butte St	Charleston	29414
C.E. Williams Middle North	School	1776 William Kennerty Dr	Charleston	29407
C.E. Williams Middle South	School	3090 Sanders Rd	Charleston	29414
Camp Road Middle	School	1825 Camp Rd	Charleston	29412
Carolina Park Elementary	School	3650 Park Avenue Blvd	Mt Pleasant	29466
Carolina Voyager Charter	Charter School	721 Wappoo Rd	Charleston	29407
CCSD Headquarters Building	Office Building	75 Calhoun Street	Charleston	29401
CCSD Operations and Financial Services Campus	Office Building	3999 Bridgeview Dr.	N Charleston	29405
Charles Pinckney Elementary	School	3300 Thomas Cario Blvd	Mt Pleasant	29466
Charleston Advancement Academy	Charter School	1484 Camp Rd	Charleston	29412
Charleston Charter School for Math and Science	Charter School	1002 King St	Charleston	29403
Charleston County School of the Arts	School	5109 W Enterprise St	N Charleston	29405
Charleston Development Academy	Charter School	233 Line St	Charleston	29403
Charleston Progressive Academy	School	382 Meeting St	Charleston	29403
Chicora Elementary	School	3100 Carner Ave	N Charleston	29405
Cooper River Center for Advanced Studies	School	1088 E Montague Ave	N Charleston	29405
Daniel Jenkins Academy	School	2670 Bonds Ave	N Charleston	29405
Deer Park Middle	School	2263 Otranto Rd	N Charleston	29406

District 1 Spray Fields	Miscellaneous Property	9287 State Rd S-10-913	McClellanville	29458
District 10 Office	Office Building	725 Wappoo Rd	Charleston	29407
District 2 Bus Lot	Bus Lot	581 Fiason Rd	Mt Pleasant	29466
District 2 Stadium	Athletic Facility	1010 Warrior Way	Mt Pleasant	29466
District 4 Office	Office Building	4720 Jenkins Ave	N Charleston	29405
District 4 Stadium	Athletic Facility	3659 W Montague Ave	N Charleston	29418
Drayton Hall Elementary	School	3183 Ashley River Rd	Charleston	29414
E.B. Ellington Elementary	School	5540 Old Jacksonboro Rd	Ravenel	29470
Early College High School at Palmer Campus	School	66 Columbus St	Charleston	29403
East Cooper Center for Advanced Studies	School	900 Warrior Way	Mt Pleasant	29466
East Cooper Montessori Charter	Charter School	1120 Rifle Range Rd	Mt Pleasant	29464
Edith L. Frierson Elementary	School	6133 Maybank Hwy	Wadmalaw Island	29487
Gordon H. Garrett Academy Campus	Miscellaneous Property	2731 Gordon St	N Charleston	29405
Greg Mathis Charter High	Charter School	2872 Azalea Dr	N Charleston	29405
Harbor View Elementary	School	1576 Harborview Road	Charleston	29412
Haut Gap Middle	School	1861 Bohicket Rd	Johns Island	29455
Hunley Park Elementary	School	1000 Michigan Ave	N Charleston	29404
James B. Edwards Elementary	School	885 Von Kolnitz Blvd	Mt Pleasant	29466
James Island Charter High	Charter School	1000 Fort Johnson Rd	Charleston	29412
James Island Elementary	School	1872 Grimball Rd	Charleston	29412
James Island Middle School Campus (Old)	Miscellaneous Property	1484 Camp Rd	Charleston	29412
James Simons Elementary	School	741 King St	Charleston	29403
Jane Edwards Elementary	School	1960 Jane Edwards Rd	Edisto Island	29438
Jennie Moore Elementary	School	2725 Bulrush Basket Ln	Mt Pleasant	29466
Jerry Zucker Middle	School	6401 Dorchester Rd	N Charleston	29418
Julian Mitchell Elementary	School	2 Perry St	Charleston	29403
Ladson Elementary	School	3321 Ladson Rd	Ladson	29456
Ladson Elementary Expansion Property	Miscellaneous Property	3345 Ladson Rd	Ladson	29456
Ladson Elementary Expansion Property	Miscellaneous Property	3347 Ladson Rd	Ladson	29456
Laing Middle	School	2705 Bulrush Basket Ln	Mt Pleasant	29466
Lambs Elementary	School	6800 Dorchester Rd	N Charleston	29418
Laurel Hill Primary	School	3100 Thomas Cario Blvd	Mt Pleasant	29466
Liberty Hill Academy	School	5025 West Enterprise St	N Charleston	29405

Lincoln Campus	Shuttered Building	714 Lincoln Rd	McClellanville	29458
Lucy G. Beckham High	School	1560 Mathis Ferry Rd	Mt Pleasant	29464
Lucy G. Beckham High Softball Fields	Athletic Facility	855PB Von Kolnitz Rd	Mt Pleasant	29464
Malcolm C. Hursey Montessori	School	4542 Simms St	N Charleston	29406
Mamie P. Whitesides Elementary	School	1565 Rifle Range Rd	Mt Pleasant	29464
Mamie P. Whitesides Expansion Property	Miscellaneous Property	1432 Hale Rd	Mt Pleasant	29464
Mary Ford Elementary	School	3180 Thomasina McPherson Blvd	N Charleston	29405
Lucy Beckham High Tennis Courts	Athletic Facility	1536 Mathis Ferry Rd	Mt Pleasant	29464
Matilda Dunston Elementary	School	1825 Remount Rd	N Charleston	29406
McClellanville Middle Campus	Shuttered Building	711 Pinckney St	McClellanville	29458
Meeting Street Elementary at Brentwood	School	2685 Leeds Ave	N Charleston	29405
Meeting Street Elementary at Burns	School	3750 Dorchester Rd	N Charleston	29405
Memminger Elementary	School	20 Beaufain St	Charleston	29401
Midland Park Primary	School	2415 Midland Park Rd	N Charleston	29405
Military Magnet Academy	School	2950 Carner Ave	N Charleston	29405
Minnie Hughes Elementary	School	8548 Willtown Rd	Hollywood	29449
Montessori Community School	School	2120 Wood Ave	Charleston	29414
Montessori-Springfield Commons Building	School	2126 Pinehurst Ave	Charleston	29414
Morningside Middle	School	1999 Singley Ln	N Charleston	29405
Moultrie Middle	School	645 Coleman Blvd	Mt Pleasant	29464
Mount Pleasant Academy	School	605 Center St	Mt Pleasant	29464
Mt. Zion Elementary	School	3464 River Rd	Johns Island	29455
Murray-LaSaine Montessori	School	691 Riverland Dr	Charleston	29412
North Charleston Creative Arts Elementary	School	5200 Lackawanna Blvd	N Charleston	29405
North Charleston Elementary	School	4921 Durant Ave	N Charleston	29405
North Charleston High	School	1087 E. Montague Ave	N Charleston	29405
North Charleston High School Field Restrooms	Athletic Facility	1090 Garco St	N Charleston	29405
Northwoods Middle	School	7763 Northside Dr	N Charleston	29420
Oakland Elementary	School	505-A Arlington Dr	Charleston	29414
Orange Grove Elementary Charter	Charter School	1225 Orange Branch Rd	Charleston	29407
Orange Grove Middle Charter	Charter School	2728 Arlington Ave	Charleston	29414
Pattison's Academy for Comprehensive Education	Charter School	721 Wappoo Rd	Charleston	29407
Pepperhill Elementary	School	3300 Creola Rd	N Charleston	29420
Pinehurst Elementary	School	7753 Pinehurst St	N Charleston	29420

Porcher Bus Lot	Bus Lot	1206 Porcher School Rd	Awendaw	29429
R.B. Stall High	School	3625 Ashley Phosphate Rd	N Charleston	29418
R.B. Stall High School Stadium	Athletic Facility	7763 Northside Dr	N Charleston	29420
R.D. Schroder Campus (Used by CCPRC)	Shuttered Building/Community Center	7224 Hwy 162	Hollywood	29449
Riverland Terrace Campus	Miscellaneous Property	2113 Medway Rd	Charleston	29412
Ronald E. McNair Campus	Shuttered Building	3795 Spruill Ave	N Charleston	29405
Sanders-Clyde Elementary	School	805 Morrison Dr	Charleston	29403
Septima P. Clark Corporate Academy	School	1929 Grimball Rd	Charleston	29412
Simmons-Pinckney Middle	School	244 President St	Charleston	29403
Springfield Elementary	School	2130 Pinehurst Ave	Charleston	29414
St. Andrews School of Math and Science	School	30 Chadwick Dr	Charleston	29407
St. James-Santee Elementary/Middle	School	8900 N. Hwy 17	McClellanville	29458
St. Johns High	School	1518 Main Rd	Johns Island	29455
Stiles Point Elementary	School	883 Mikell Dr	Charleston	29412
Stono Park Elementary	School	314 Huntley Dr	Charleston	29407
Sullivan's Island Elementary	School	2014 Mike Perkis Pl	Sullivan's Island	29482
Thomas C. Cario Middle	School	3500 Thomas Cario Blvd	Mt Pleasant	29466
W.B. Goodwin Elementary	School	5501 Dorchester Rd	N Charleston	29418
Wando High	School	1000 Warrior Way	Mt Pleasant	29466
West Ashley Head Start	School	1401 Ashley River Road	Charleston	29407
West Ashley Center for Advanced Studies	School	4066 West Wildcat Blvd	Charleston	29414
West Ashley High	School	4060 West Wildcat Blvd	Charleston	29414
Wilmot J. Fraser Campus	Shuttered Campus	63 Columbus St	Charleston	29403

– Hazard Vulnerability

The analysis for this section is identical to the analysis under “Hazard Vulnerability” for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under “Vulnerable Buildings” for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-19-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Charleston County School District	5	5	1	3	3	2	4	3	4	4	5	5

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-19-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Charleston County School District	5	5	2	3	3	2	5	3	2	4	4	3

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Charleston County School District	The Charleston County School District (CCSD) is located in the Lowcountry area of South Carolina, which is threatened by multiple natural and technological hazards. The threat posed by these hazards is both immediate [e.g., hazardous chemical spill, act of terrorism, hurricane, tornado] and long-term/inherent to the challenges of school district [e.g. accidents, criminal activity]. These hazards have the potential to disrupt day-to-day activities, cause extensive property damage, and create mass casualties. They can range in time from a few minutes to many days or weeks and occur with little to no warning. Historically, the greatest risk to life safety and property was perceived to be from natural hazards [e.g., hurricane, tornadoes, earthquakes, floods, etc.]. However, the continued expansion of chemical usage, terrorist attacks on the World Trade Center, The Pentagon and in San Bernadino, California and active shooter situations like at the Emanuel AME Church here in Charleston and at Parkland High School in Florida show the need for CCSD to prepare for threats like these as well. The CCSD Safety/Emergency Operations Plan

	addresses threats and hazards that most endanger our students, teachers and staff.

5.19.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-19-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Charleston County School District	5	5	2	2	3	2	4	4	3	4	4	4

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County.

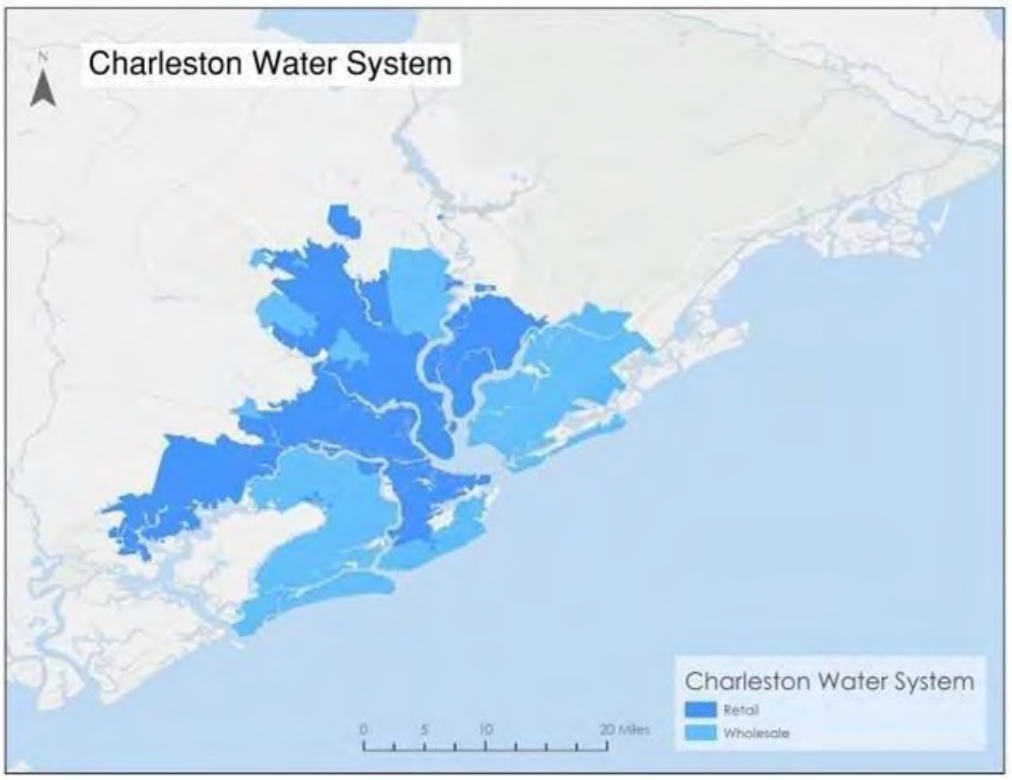
– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County.

5.20(a) – Charleston Water System



Charleston Water System spans over nearly the entire county with the exception of jurisdictions north of Mt. Pleasant and southwest of Hollywood and Ravenel. This makes the system vulnerable to all hazards addressed in this report. In particular, Charleston Water System identifies particular vulnerability to flooding, severe storms, drought, and winter weather. Complete hazard histories for these events are listed under Unincorporated Charleston County.

Flood

Charleston Water System facilities in often-flooded jurisdictions like the City of Charleston, City of North Charleston, Town of Sullivan's Island, and the Town of Mt. Pleasant are most vulnerable to flooding incidents. Especially in the past year, the City of Charleston saw the most flooding events compared to nearby jurisdictions. Please refer to the hazard history sections in these jurisdictions for complete records of flooding from NOAA.

Flooding Probability for each Jurisdiction	
Jurisdiction	**Probability**

Charleston Water System	51-75%

Severe Storm

Charleston County as a whole is susceptible to severe storms on a largely equal basis between jurisdictions since thunderstorms are unpredictable in terms of their size, path, and characteristics. All Charleston Water facilities, therefore, are equally probable of encountering severe storm hazards. Please refer to severe storm hazard histories separated by high winds, hail, and lightning in Unincorporated Charleston County's hazard history section.

Severe Storm Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Charleston Water System	76-100%

Drought

All of Charleston County experiences drought impacts uniformly since the U.S. Drought Monitor reports data for the County as a whole rather than by jurisdiction. Charleston County experienced 36 total weeks of drought in 2019-2020, compared to only 23 weeks in 2018-2019. In 2019-2020, one week was spent at a D2, or "severe drought." During the 2020-2021 period, the region experienced fifteen weeks of drought at level D0. Charleston Water System has two raw water sources, Bushy Park Reservoir and Edisto River that serve the water plant. The reservoir source is fed continuously by the USACOE mandated discharge into the Cooper River from Lake Moultrie.

Drought Probability for Each Jurisdiction	
Jurisdiction	**Probability**
Charleston Water System	26-50%

Winter Weather

The 2020-2021 year did not yield significant winter weather occurrences warranting a hazardous classification. Please refer to the winter weather hazard history under Unincorporated Charleston County for a record of previous hazard events as reported by NOAA.

Winter Weather Probability for each Jurisdiction	
Jurisdiction	**Probability**
Charleston Water System	26-50%

5.20(b) – Charleston Water System Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County.

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County.

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Charleston Water System	This commission supplies water and sewer to a majority of Charleston County. Their infrastructure would be at risk of dam failure and flooding as there are low lying areas. Also a hazardous material spill near purification or supplies centers would be catastrophic as well.

5.20.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-20-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)

JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Charleston Water System	5	5	2	2	3	2	4	4	3	4	4	4

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County.

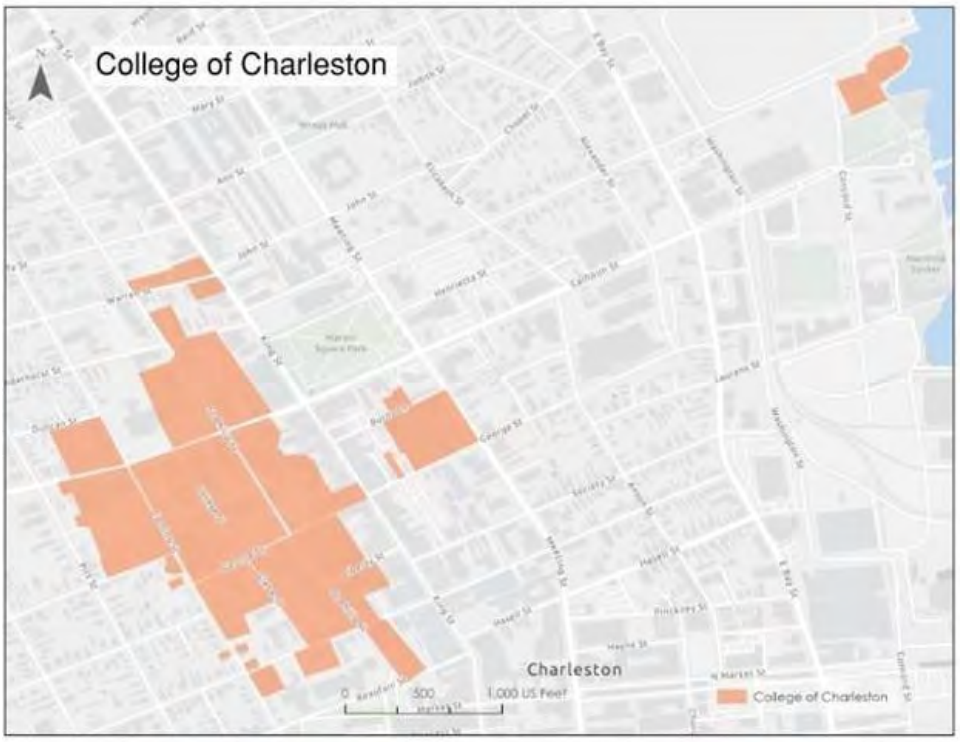
– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County.

5.21(a) – College of Charleston



The College of Charleston's main campus is located in the City of Charleston. While being susceptible to all hazards affecting the County, the College is especially vulnerable to hazards impacting downtown Charleston. These hazards include flooding, severe storms, drought, and winter weather. Within the past year, the College experienced minimal impacts resulting from hazard events, but this does not affect future hazard probabilities on a year-to-year basis.
Please refer to the City of Charleston's hazard history for complete records of hazard events to which the City is most vulnerable. While these hazards are identified by the College as most significant for this jurisdiction, the College is vulnerable to all hazards in this plan.

Flood

Flooding Probability for each Jurisdiction	
Jurisdiction	**Probability**
College of Charleston	51-75%

The College of Charleston sits on the high point of the Charleston peninsula and as a result has the potential for local regional flooding however does not experience the same level of impact as the surrounding areas. The most regional flooding in 2020 occurred at the intersection of Wentworth Street and Coming Street. Please refer to the hazard history sections in this jurisdiction for complete records of flooding from NOAA.

5.21(b) – College of Charleston Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-21-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
College of Charleston	5	5	2.5	2.5	3	2	2.5	2.5	2.5	2.5	2.5	3.5

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-21-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
College of Charleston	4	4.5	2.5	1.5	4	1.5	2	3.5	3	3.5	4.5	2.5

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
College of Charleston	College of Charleston is situated on peninsular Charleston and sits in some low lying areas and even uses some historic buildings. Campus is susceptible to flooding and can sometimes render classrooms and facilities unusable if a hurricane occurs and water intrudes the building. College of Charleston is also vulnerable to an earthquake if infrastructure damage were to occur from a severe enough event. Also, since the College houses many out of state students, this poses a challenge with evacuation for events. The disruption of class and job functions is also a problem for the College.

5.21.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-21-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
College of Charleston	5	5	3.5	4	4	3	4.5	4	3	5	5	4.5

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County.

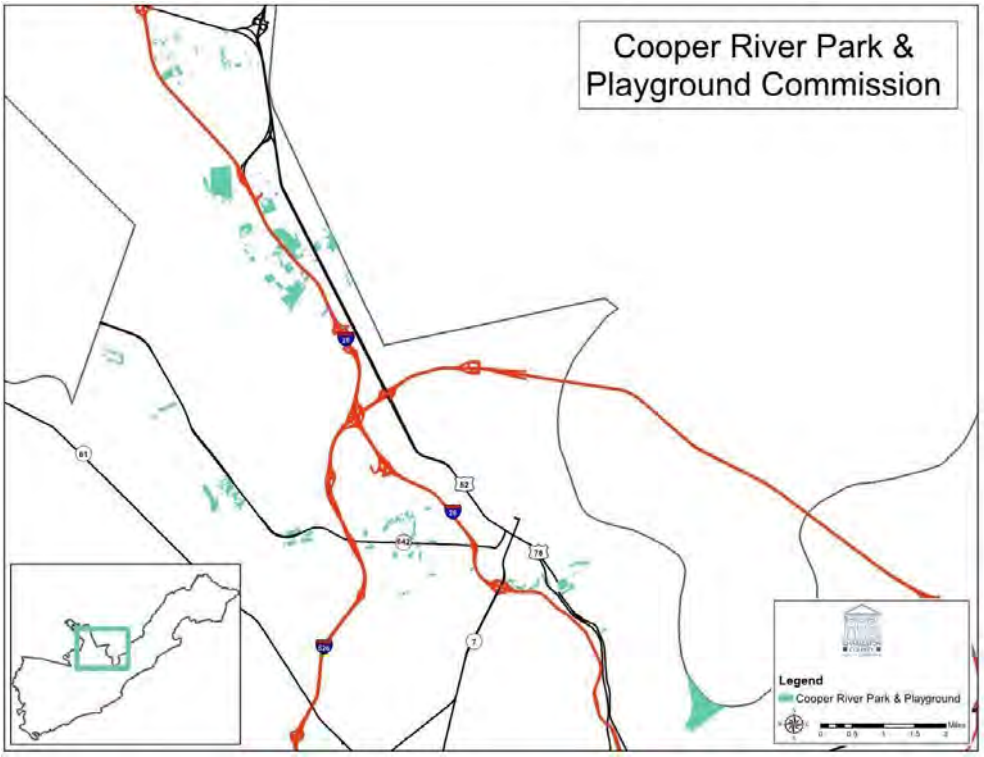
– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under “Resiliency to Hazards” for Unincorporated Charleston County.

5.22(a) – Cooper River Parks & Playground Commission



**The City of North Charleston assumes the functions and obligations and has acquired all powers, properties, and contract rights.*

Cooper River Parks & Playground Commission's (CRPPC) facilities primarily lie in North Charleston, meaning it is most vulnerable to hazards common in higher-ground areas. Since it shares most of its territory with North Charleston, descriptions and histories of hazards impacting this jurisdiction can be found under Section 5.13. CRPPC, though, is susceptible to all hazards in this plan since each hazard has a possibility of impacting any part of Charleston County.

5.22(b) – Cooper River Parks and Playground Commission Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-22-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Cooper River Parks and Playground	4	4	3	1	2	2	3	2	3	5	4	3

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-22-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Cooper River Parks and Playground	2	5	1	3	3	2	4	3	2	4	3	2

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Cooper River Park and Playground Commission	This is entirely located in City of North Charleston. They are vulnerable for flooding and hazard materials with their proximity to the industrial centers of the Count as well as earthquakes as it is close to the fault line.

5.22.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-22-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Cooper River Parks and Playground	2	5	2	3	3	3	4	2	3	3	4	3

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County.

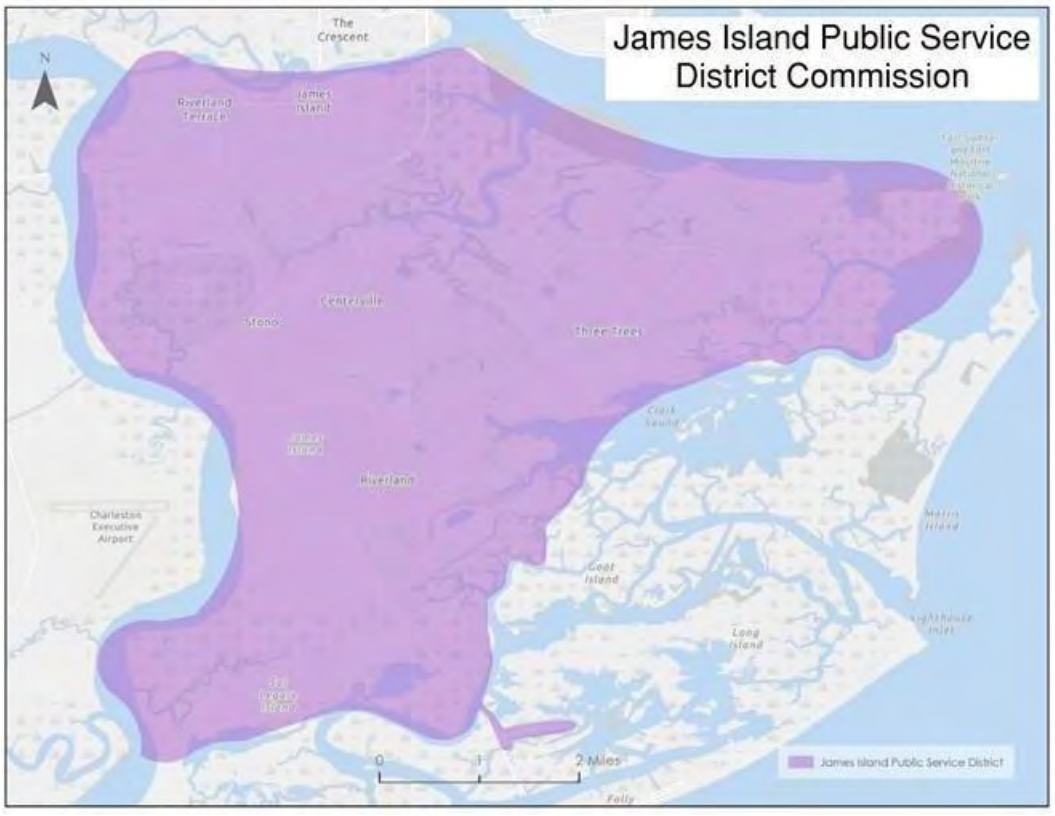
– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County.

– James Island Public Service District Commission



James Island Public Service District Commission (PSD) services residents of unincorporated James Island plus those living in the Town of James Island and additional customers in the Cities of Charleston and Folly Beach. While the PSD is vulnerable to all hazards affecting the County, it identifies flooding, sea level rise, severe storms, and winter weather as hazards posing the highest threat to the jurisdiction. Complete hazard histories can be found in sections for Town of James Island, City of Charleston, and City of Folly Beach as well as Unincorporated Charleston County.

5.23(b) – James Island Public Service Commission Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-23-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
James Island Public Service District	3	5	1	1	4	1	2	1	4	3	4	3

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-23-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
James Island Public Service District	2	5	1	4	4	2	3	4	3	3	4	2

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
James Island PSD	This service district carries out services to James Island. Infrastructure is vulnerable to flooding and hurricanes as roads can become inundated and impassible.

5.23.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-23-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
James Island Public Service District	4	4	2	3	4	2	3	4	1	4	4	4

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County.

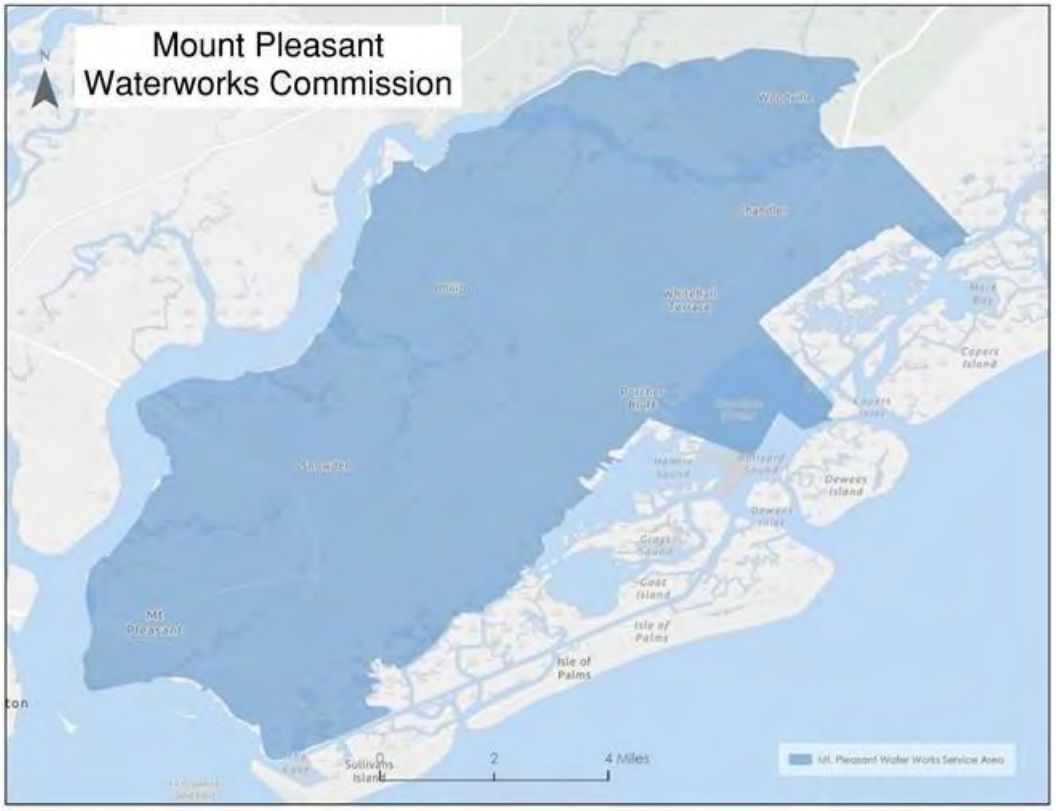
– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County.

5.24(a) – Mt. Pleasant Water Works Commission



Pleasant Water Works Commission services the Town of Mt. Pleasant. Please refer to Mt. Pleasant's hazard history section for records of previous hazard incidents affecting this jurisdiction. Additionally, the Commission identifies principal vulnerability to floods, severe storms, droughts, and winter weather occurrences. It is also vulnerable to the other hazards affecting the County at large.

5.24(b) – Mt Pleasant Water Works Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-24-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
Mount Pleasant Water &	3	5	1	2	5	2	3	2	4	2	4	5

Sewer Commission												

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-24-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Mount Pleasant Water & Sewer Commission	4	5	1	2	5	2	2	5	3	3	2	3

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Mt. Pleasant Water Works	This commission supplies water and sewer to the Mount Pleasant area. Their infrastructure would be at risk of dam failure and flooding as there are low lying areas. Also a hazardous material spill near purification or supplies centers would be catastrophic as well.

5.24.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

5.24.5 – Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

5.24.7 – Critical Facilities

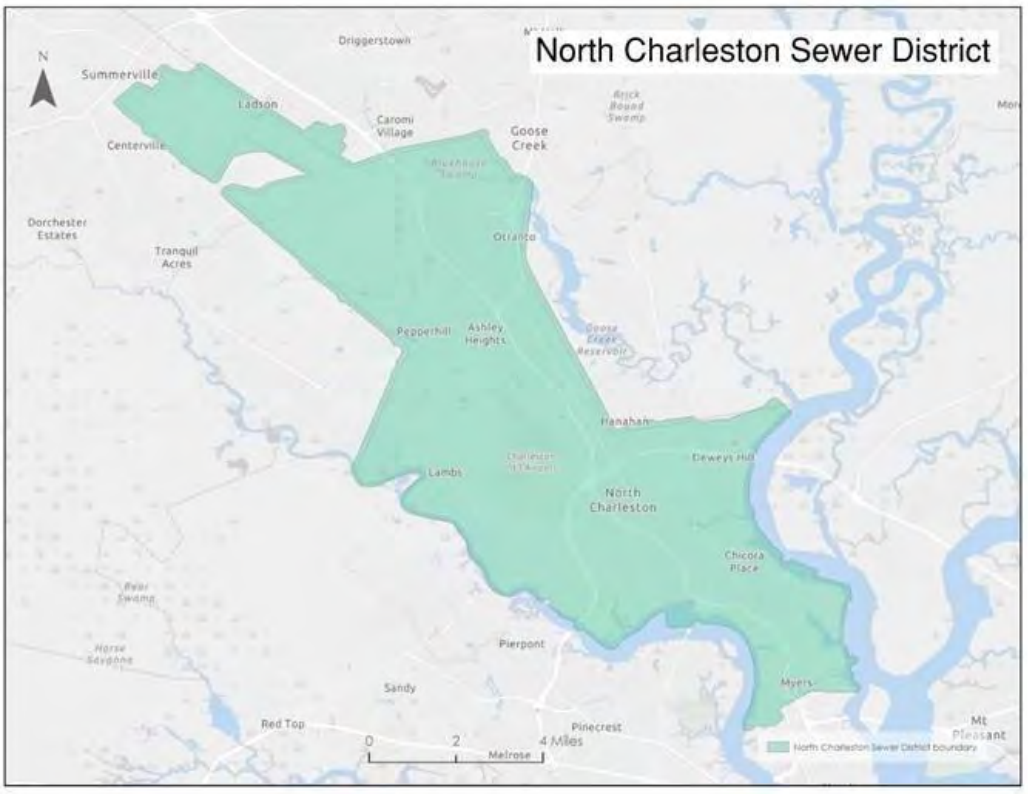
The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

5.26(a) –North Charleston Sewer District

The North Charleston Sewer District is fully serviced by the City of North Charleston and remaining District areas are expected to be annexed by the City of North Charleston. For histories of hazard occurrences in the District, please refer to North Charleston section 5.13

5.26(b) – North Charleston District Problem Assessment

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
North Charleston District	The North Charleston Sewer District lies entirely within the City of North Charleston and has no infrastructure or resources of its own.



The North Charleston Sewer District provides services to the City of North Charleston and some adjacent areas. Full hazard histories for jurisdictions receiving services from the District can be found under each jurisdiction's respective section in this plan. While the North Charleston Sewer District is vulnerable to all hazards in this plan, the District identifies particular vulnerability to floods, earthquakes, dam failures, hazardous materials, hurricanes, severe storms, and winter weather events.

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-26-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
North Charleston Sewer District	4	5	1	3	5	1	5	1	5	5	5	3

5-26.3 – Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-26-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
North Charleston Sewer District	4	5	1	1	5	1	4	5	2	3	5	3

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
North Charleston Sewer District	Hazardous materials and flooding are the two main vulnerabilities that the Sewer District is concerned about. There are many low-lying areas where pump stations are. They service the North Charleston area and thus close to a fault line. The sewer district is vulnerable to this hazard as well. The District owns the fire station at 7159 Stall Rd so it would be vulnerable to flooding or earthquakes. North Charleston Sewer District owns properties from Lincolnville down to Mount Pleasant St into City of Charleston. Vulnerability is once again flooding, hazardous materials and earthquakes.

5.26.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County.

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-26-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
North Charleston Sewer District	3	5	1	2	5	1	5	5	1	1	5	3

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County.

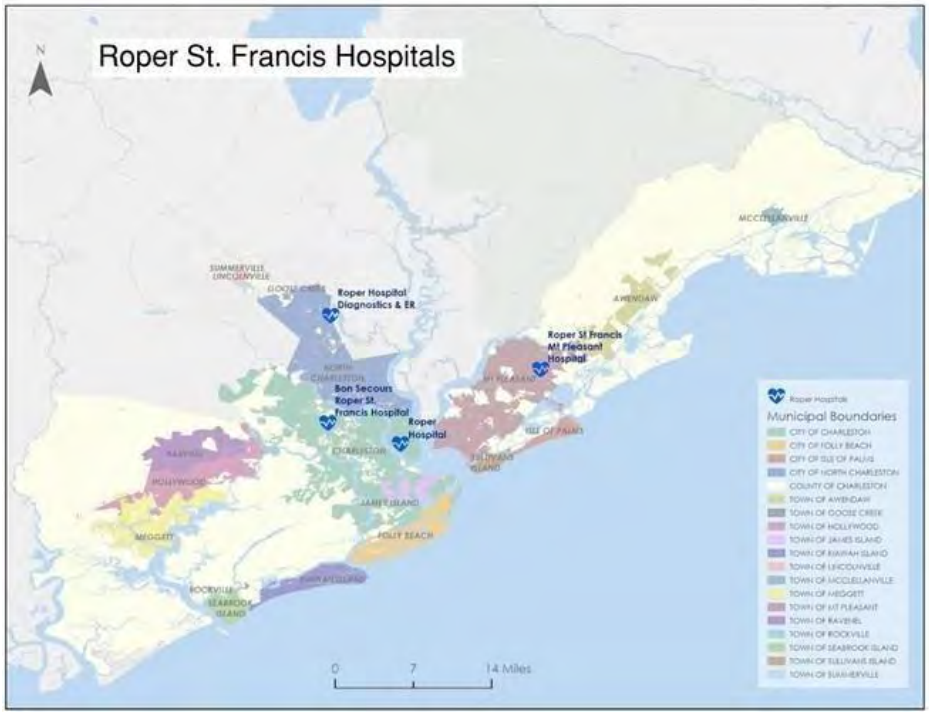
– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County.

5.27(a) – Roper St. Francis



Roper St. Francis Healthcare has four acute care hospitals in the region, two are located in the City of Charleston, and one in the Town of Mt Pleasant in Charleston County and one located in Summerville in Berkeley County. There are also 2 free-standing Emergency Departments, one in Charleston County and one in Berkeley County. Roper St. Francis Healthcare also has numerous free-standing physician practices, a hospice care facility and a home health and hospice program throughout the entire tri-county area that are subject to the same hazard events at each jurisdiction in which they may be located. Refer to hazard histories for these jurisdictions for complete records of hazard events affecting Roper St. Francis hospitals.

5.27(b) – Roper St Francis Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-27-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather

Roper St. Francis Healthcare	5	5	3	2	3	2	2	2	2	2	5	5

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-27-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Roper St. Francis Healthcare	3	5	1	1	4	1	1	3	3	1	5	2

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
Roper St. Francis Healthcare	There are four Roper St. Francis hospitals located in Mt. Pleasant, City of Charleston, and Summerville (Berkeley County). These hospitals are at risk for the same hazards as the listed jurisdictions including flooding, earthquakes, hurricanes, hazardous materials, sea level rise and winter weather. These are also considered critical infrastructure facilities and have a vulnerability from that perspective. The statements for their associated townships are accurate for the vulnerability of each facility. Of note, the most vulnerable facilities are those located on the Charleston peninsula which are Roper Hospital, Doughty Garage, Lucas Garage, Barre Street Lot, 4th Street lot, Calhoun Street lot, Lucas House, Governor Thomas Bennett House and Roper Marketing & Corporate Communications located on Halsey Street.

5.27.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-27-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
Roper St. Francis Healthcare	5	5	2	2	5	2	2	5	2	2	5	3

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County.

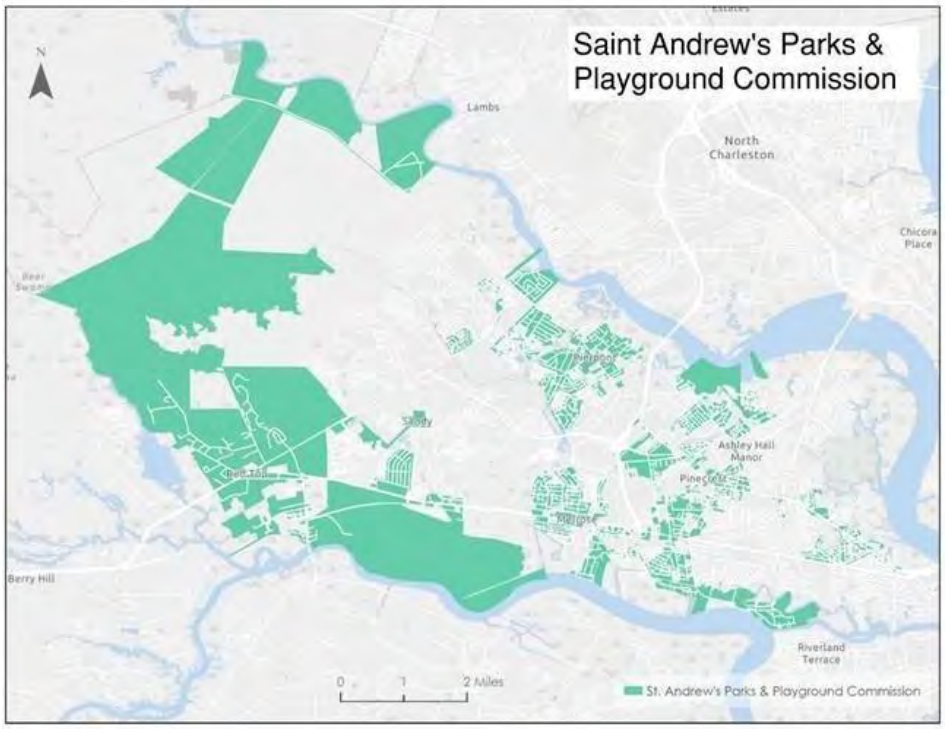
– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County.

5.28(a) –St. Andrews Parish Parks and Playground Commission



St Andrew's Parks and Playground Commission is in close proximity to the City of Charleston, North Charleston, Hollywood, and Ravenel. Please refer to sections concerning these jurisdictions for full hazard descriptions and histories.

5.28(b) – St Andrews Parish Parks and Playground Commission Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-28-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
St. Andrews Parish Park & Playground Commission	4	3	3	2	3	1	2	1	1	4	4	1

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-28-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
St. Andrews Parish Park & Playground Commission	3	3	2	1	3	1	1	1	1	4	4	1

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
St. Andrew's Parks and Playground Commission	The parks are vulnerable to flooding and hurricanes with infrastructure and accessibility being the main concern. The Commission owns large tracts of land that could be susceptible to wildfire.

5.28.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-28-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
St. Andrews Parish Park & Playground Commission	4	3	2	1	3	1	2	1	2	4	4	2

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County.

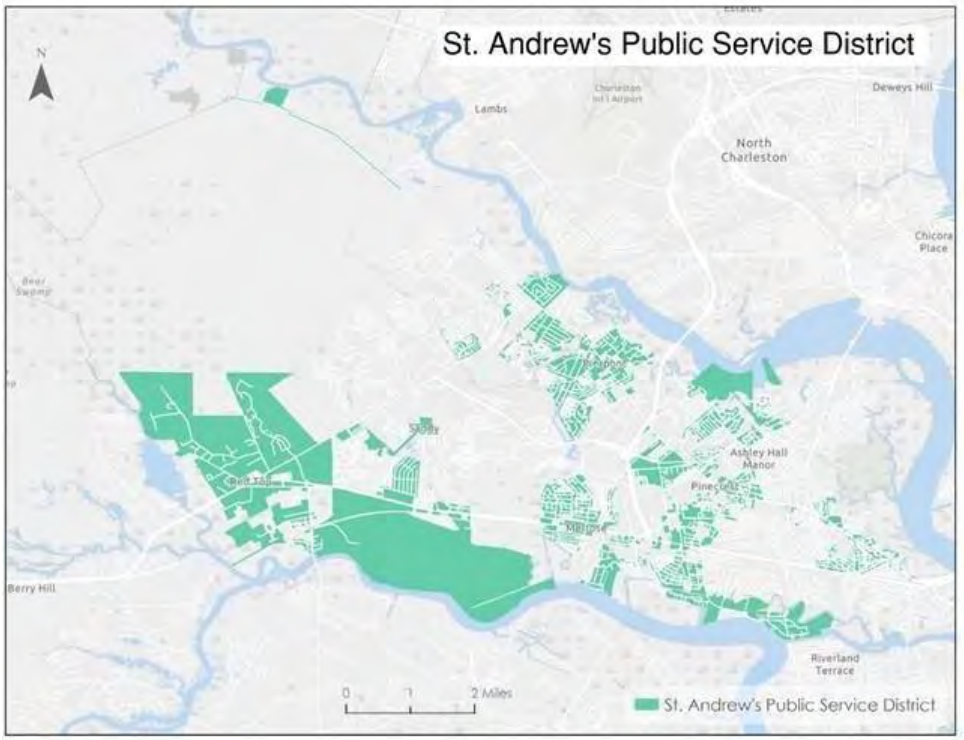
– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County.

5.29(a) – St. Andrews Public Service District



St Andrew's Public Service District is in close proximity to the City of Charleston, North Charleston, Hollywood, and Ravenel. Please refer to sections concerning these jurisdictions for full hazard descriptions and histories.

5.29(b) – St. Andrew's Public Service District Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-29-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
St. Andrews PSD	5	5	3	3	5	3	4	4	4	5	5	4

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-29-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
St. Andrews PSD	5	5	3	3	4	4	4	4	3	5	4	4

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
St. Andrew's Public Service District	St. Andrew's services some of the West Ashley area of the City of Charleston. Infrastructure is vulnerable to flooding as well as hurricanes. Low lying roads within the service area can limit services provided when inundated by water after a flood.

5.29.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-29-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
St. Andrews PSD	5	5	3	3	5	4	4	5	4	5	5	4

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County.

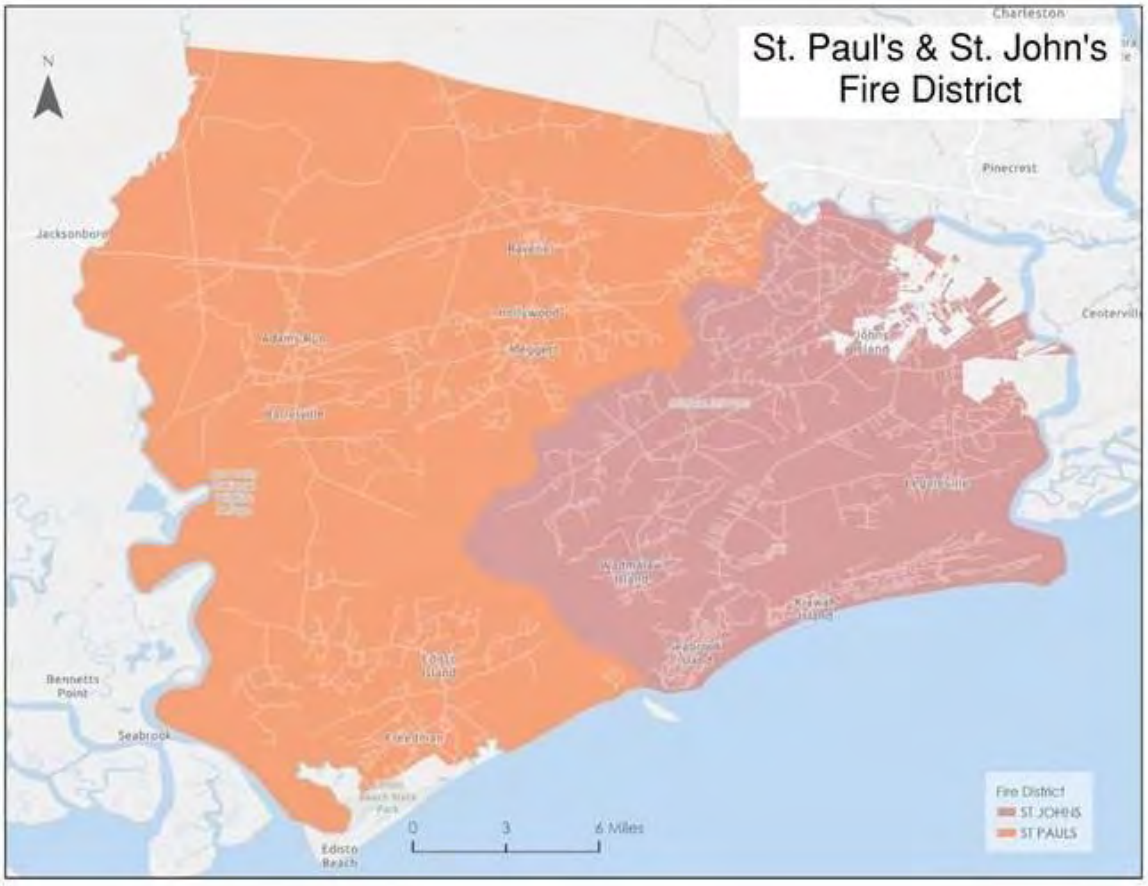
– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County.

5.30(a) – St. John's Fire District Commission



St John's Fire District experiences hazards similarly to the Cities of Charleston and Folly Beach as well as the Town of James Island. Refer to hazard histories for these jurisdictions for full records of hazards St. John's Fire District is most susceptible to.

5.30(b) – St. John's Fire District Commission Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-30-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
St. Johns Fire District	5	5	2	2	4	2	2	2	3	2	3	3

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-30-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
St. Johns Fire District	5	5	2	1	2	2	2	4	3	3	4	1

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
St. John's Fire District	This is a rural service district at risk for flooding, wildfires, sea level rise, hurricanes, and tornadoes. There are fire stations susceptible to flooding and access routes that can be blocked by downed trees or flood waters after an event.

5.30.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-30-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
St. Johns Fire District	5	5	3	3	4	2	2	3	2	2	5	3

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County.

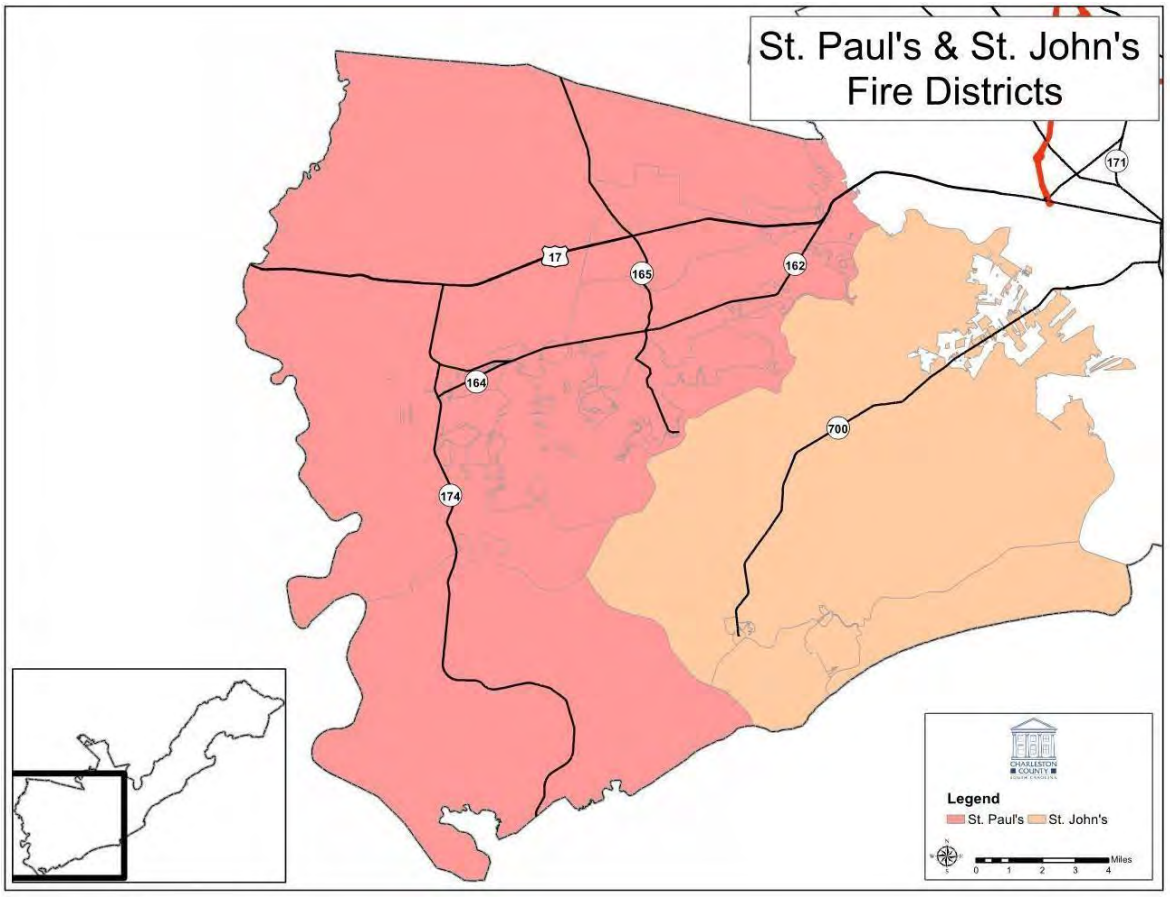
– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County.

–St. Paul's Fire District Commission



St Paul's Fire District experiences hazards similarly to the Towns of Meggett, Hollywood, Ravenel, Rockville and Unincorporated Charleston County. Refer to hazard histories for these jurisdictions for full records of hazards St. Paul's Fire District is most susceptible to.

5.31(b) – St. Paul's Fire District Commission Problem Assessment

– Hazard Vulnerability

The analysis for this section is identical to the analysis under "Hazard Vulnerability" for Unincorporated Charleston County.

– Vulnerable Buildings

The analysis for this section is identical to the analysis under "Vulnerable Buildings" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-31-9

Building Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
Jurisdiction	Dam Failure	Drought	Earthquakes	Flooding	Hazardous Material Incidents	Hurricanes	Sea Level Rise	Tornadoes	Terrorist Incidents	Tsunamis	Wildfires	Winter Weather
St. Paul's Fire District	5	3	1	2	3	1	4	2	3	4	3	3

– Infrastructure Vulnerability

The analysis for this section is identical to the analysis under "Infrastructure Vulnerability" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-31-11

Infrastructure Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
St. Paul's Fire District	5	4	1	1	2	1	2	3	1	4	4	1

Problem Statements and Vulnerability Based on Jurisdiction	
Jurisdiction	**Vulnerability Assessment**
St. Paul's Fire District	This is a suburban / rural service district at risk for flooding, wildfires, sea level rise, hurricanes, severe storms, drought, winter weather, terrorism (homegrown), tornadoes, and Hazardous materials (transported by railway and Highway), earthquakes (fault line runs from Ethel Post office road through Dorchester County and ends near Palmetto Commerce Parkway). The fire stations susceptible to flooding, high wind, damage, fires, hazardous material releases, and earthquakes. These events can impact access routes to and from the fire stations.

5.31.4 – Known Flood Damages

The analysis for this section is identical to the analysis under "Known Flood Damages" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

– Past Flood Impacts

The analysis for this section is identical to the analysis under "Past Flood Impacts" for Unincorporated Charleston County.

– Emergency Warning Needs

The analysis for this section is identical to the analysis under "Emergency Warning Needs" for Unincorporated Charleston County.

– Critical Facilities

The analysis for this section is identical to the analysis under "Critical Facilities" for Unincorporated Charleston County. Tables outlining jurisdiction-specific information can be found below.

Table 5-31-13

Critical Facility Vulnerability Assessment of Hazards Based on Jurisdiction -- 1 (most) - 5 (least)												
JURISDICTION	DAM FAILURE	DROUGHT	EARTHQUAKES	FLOODING	HAZARDOUS MATERIAL INCIDENTS	HURRICANES	SEA LEVEL RISE	TERRORIST INCIDENTS	TORNADOES	TSUNAMIS	WILDFIRES	WINTER WEATHER
St. Paul's Fire District	5	3	1	1	3	1	4	3	2	3	3	2

A full list of the capabilities for Charleston County and plan participating partners can be seen in the "Critical Facilities" description in Section 5.1(b).

– Natural and Beneficial Functions of Floodplains

The analysis for this section is identical to the analysis under "Natural and Beneficial Functions of Floodplains" for Unincorporated Charleston County.

– Development and Population Trends

The analysis for this section is identical to the analysis under "Development and Population Trends" for Unincorporated Charleston County.

– Economic Impact

The analysis for this section is identical to the analysis under "Economic Impact" for Unincorporated Charleston County.

– Resiliency to Hazards

The analysis for this section is identical to the analysis under "Resiliency to Hazards" for Unincorporated Charleston County.

Continue to work with Charleston County to support and, where possible, directly participate, in the EPA CARE grant and other available programs	PI, PP, SP, NB	General Funds Stormwater Funds Grant Funds (HMGP)	2.1, 2.2, 2.3, 3.1, 4.1,	Complete	Coordinated through Project Impact activities with Charleston County as available. No new grants or programs funded in 2015-2016 **(no CARE grants - program closed/ completed - managed by County through Project Impact)**
	1	Public Service		Complete	
Continue development of WEB EOC- hazard information outreach to residents	PI	Grant Funding (HMGP) General Funds	1.1, 1.3, 1.6, 2.1, 2.2	?	Began implementation and training on Crisis tract and Allistar Management Systems. Web EOC is ongoing operation as needed during large scale events. Hazard information is provided to residents via various social medial platforms. **(Rolled into activity in current plan)**
	2	All Departments		?	
Work to standardize flood damage reporting system	PA	Stormwater Funds General Funds	2.1, 2.2, 2.3, 3.1, 3.2, 4.1	Ongoing	Utilization and improvements of flood reporting through the Cityworks Database platform is ongoing. (212) flood reports (streets, yards, homes) were logged in 2016. **(Rolled into Damage Assessment post major event)**
	2	Public Services		Continuous Process	
Update and revise Flood Insurance Rate Maps (FIRM) with SCDNR	PP	Grant Funding (FMA) General Funds	2.1, 2.2, 2.3, 3.1, 3.2, 4.1	Ongoing	New FIRMs for Charleston County became effective on 1/29/21.
	1	Building Services Planning Department		Dec-18	
Continue to update and modify hurricane response plan for Town area. Complete search and rescue grid maps and data	PA	Grant Funding (HMGP) General Fund	1.1, 1.3, 1.6, 2.1, 2.2	Ongoing	Work with the newly formed Emergency Manager position to develop search maps and modify the hurricane response plan. **(Rolled into current activity)**
	3	Fire Department/ Public Services		Ongoing	
Continue to develop and update the elevation reference mark inspection program	SP	General Fund	1.1, 2.2	Ongoing	Benchmarks are annually inventoried and updated and/or recovered in conjunction with Charleston County **(Remove, no longer active. Digital Elevations)**
	1	Planning Department		Continuous Process	

Continue Terrorist Response Training	ES	General FundGrant Funding (HMGP)	2.1, 2.2, 2.3, 3.1, 4.1,	Ongoing	Ongoing on a regular basis as part of established departmental processes **(Rolled into all hazards training)**
	1	Police Department		Continuous Process	
Develop/update Standard Operating Procedures for the Municipal Emergency Operations Center	ES	General Fund Grand Funding (HMGP)	2.1	Ongoing	The town has secured funding and approval for an emergency manager who will write new procedures for the new EOC and lead town wide trainings. **(Rolled into current activity)**
	2	All Departments Emergency Manager		?	
Develop and implement Illicit Discharge Detection Program to eliminate pollutant discharges into the storm drainage system.	PA. SP, GIS	General Fund Special Revenue (Stormwater Utility)	4.1, 4.2	Ongoing	The town has hired a GIS coordinator who is assisting all departments. Cityworks software has been implemented in public services and is GIS based and can be used for planning and managing assets. GIS assets for Stormwater operations are being updated though several drainage studies – new data will be incorporated into the main database once the work is complete. **(Rolled into hazardous materials activity)**
Includes staff training and spill responses in conjunction with NPDES program	1			?	
Promote standards for existing homes and single family residences to be retrofitted to exceed minimum code and ordinance requirements	PP	General Fund	1.2, 1.3, 1.6, 2.2, 4.1	Ongoing	Literature is provided in the Building Permit & Inspection Office and through Project Impact **(discontinued program) (involved in public education).**
	4	Building Inspection Services		?	
~~Seek funding for retrofitting, demolishing or relocating repetitively flooded properties if suitable candidates can be identified.~~	~~PP, PI~~	~~General Fund~~	~~1.1, 1.2, 1.3, 1.6, 2.1, 2.2, 2.3, 4.1~~	~~Ongoing~~	~~Literature is available in the Building Inspection Division Office and through Project Impact.~~ ~~Worked with Department of Insurance and SC Safe Home program to promote retrofitting. Representatives from these programs distributed literature and were available to answer questions at the Be Flood Ready (120 Attendees) event held in May at Town Hall and (25) people at the Scannlonville event. ITEM TO BE DELETED BC IT IS DUPLICATED ELSEWHERE IN PLAN~~

	~~4~~	~~Building Inspection Division~~		~~Continuous Process~~	
Continue to evaluate existing Town-owned facilities for hazard resistance and retrofit facilities if feasible and continue to require new Town critical facilities to be located in low risk flood zones (Zone X).	ES	General Fund Bond Fund	1.1, 1.2, 1.3, 2.1, 3.2	Ongoing	The replacement building for Fire Station #4 was completed in FY 20/21. It is in Flood Zone X and is designed to meet current wind and seismic building code requirements. 2021-2022 Town will conduct an assessment to evaluate Town-owned buildings and infrastructure to determine vulnerability and prioritize mitigation activities. Town's Public Services Department is Master Planning a new Public Services Facility for municipal operations and will consider hazard resistance and accommodating emergency operations in the design process. (Zone X). Construction is anticipated to begin in FY 21/22. **(Rolled into critical facilities mitigation activity)**
	1	Public Services Department Building Inspection Division Fire Department Police Department EM/Resilience		Continuous Process	
~~Continue distributing a brochure on protecting boats from damages during hurricanes to interested citizens through expos, offices, marinas, and boat dealers (PPI).~~	~~PP, PI~~	~~Grant Funding (HMGP)~~	~~1.3, 2.2, 3.1, 4.4~~	~~Ongoing~~	~~Materials provided by the PPI in FY 20/21 - due to COVID resources were not available to the public in government offices. See Charleston County Hazard Mitigation Actions for Project Impact/PPI update. 2021 - Item being deleted as it~~ is duplicated elsewhere.
	~~3~~	~~Charleston County/ Project Impact~~		~~Continuous Process~~	
~~Continue distributing a brochure on protecting and preserving historic artifacts to~~ interested citizens ~~through expos, government offices, etc. (PPI).~~	PP, PI	Grant Funding	~~1.1, 2.2, 3.2~~	Ongoing	~~Materials provided by the PPI in FY 20/21 - due to COVID resources were not available to the public in government offices. See Charleston County Hazard Mitigation Actions for Project Impact/PPI update. 2021 - Item being removed as~~ it is duplicated elsewhere
	~~2~~	~~Charleston County/ Project Impact~~		~~Continuous Process~~	

~~Continue to distribute literature on riparian buffer zones and hazard resistant landscaping to citizens through government offices and at expos (PPI).~~	~~NB, PI~~	~~Partner DonationsGrant Funding (HMGP)~~	~~1.1, 1.3~~, ~~2.2, 3.1~~, ~~4.1, 4.2~~, ~~4.3, 4.4~~	~~Ongoing~~	~~Materials provided by the PPI in FY 20/21 due to COVID resources were not available to the public in government offices. See Charleston County Hazard Mitigation Actions for Project Impact/PPI update. 2021 Item being deleted as it is duplicated elsewhere.~~
	~~2~~	~~Building Inspection Division~~ ~~Stormwater Division~~ ~~Project Impact~~		~~Continuous Process~~	
Continue to seek funding and opportunities to provide safe shelter for residents and town staff for multiple emergencies/ events.	ES	General Fund Grant Fund	2.1	Ongoing	In winter 2018 several emergency warming-shelters were opened in cold weather. Future: Support partner agencies to provide shelter capability and seek funding for equipment and resources to enhance shelter capability and capacity. **(Rolled into shelter capability activity)**
	1	EM/Resilience Partner Agencies		Continuous	
~~Continue to distribute a generator safety brochure to interested generator retail outlets, utility companies and the general public (PPI).~~	~~SP~~	~~Partner DonationsGeneral Fund~~	~~1.3, 2.1~~, ~~2.2, 3.1~~	~~Ongoing~~	~~Project Impact attended 6 expos since July 2018 where information was distributed to attendees. Brochure has recently been updated with new information. 2021 removing item as it is duplicated elsewhere~~
	~~2~~	~~Charleston County/ Project Impact~~ ~~Building Inspection Division~~		~~Continuous Process~~	

Section 6 Possible Activities

44 CFR Requirements

44CFR Part 201.6(c)(4)(ii): *The plan maintenance process shall include a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as Comprehensive or capital improvement plans, when appropriate*

44CFR Part 201.6(c)(3)(i): *The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effect of each hazard, with particular emphasis on new and existing buildings and infrastructure.*

– Prioritizing Projects

Since this plan is a regional plan intended for applicability to all jurisdictions within the Charleston County area, specific project selection is not included within this plan. (An exception to this pertains to those projects that are ongoing within the Region and are therefore already funded through designated sources.) Separate committees consisting of interested parties from the jurisdictions, businesses, non-profit sector, and/or the public at large have been established to actually select projects to be performed and to identify potential funding sources for those projects that are not ongoing projects. The individual jurisdictions have also been encouraged to identify and implement projects applicable to their jurisdictions as they deem appropriate.

Data received from the 2014-15 questionnaire was used for project prioritization ranking because the 2017 survey was focused on hazard risk assessment in addition to resiliency. The results of this survey are as follows:

1. Project technical feasibility.
2. Jurisdiction/agency in agreement with/support project
3. Use of structure.
4. Property affected by project is a repetitive (flood) loss property
5. Environmental considerations.
6. Nature of structure.
7. Property owners are in agreement with/support project.
8. Ability to recover expenditures.
9. Historic nature of property.
10. Location of project.
11. FEMA cost benefit analysis used to rank projects.
12. Ability of property owners to afford mitigation measure (lower income first)

These prioritization factors from the questionnaire surveys, are (with the exception of the repetitive flood loss property factor) not hazard-specific, so consequently would apply to all hazards identified in the quantitative risk assessments (e.g. State of South Carolina Hazards Assessment and the frequency/severity of hazard events risk assessment methodologies) discussed in the Problem Assessment section of this plan. The ranking of the repetitive flood loss property prioritization factor is still relatively high and is generally consistent with the high ranking of the flood hazard in this plan. These prioritization factors are utilized by the multiple committees who provide input into this plan as criteria for assigning a 1 to 4 priority rating for action items in the action plans for the adopting entities (1 through 4 with 1 being the

highest). The members of the committees also conduct a cost benefit review of the action items in determining these priority ratings (1 to 4). This review includes, but is not limited to, discussion of which action items have the lowest cost for the highest benefit, funding availability for the types of projects, and whether the proposed activity/project complies with National Flood Insurance Program (NFIP) requirements (and local flood ordinances when these exceed NFIP requirements). The highest-ranking items were deemed to be the most beneficial. Several of these project prioritization factors are specific to a particular type of activity. The following sections of this plan describe the factors that are applicable to the six categories of activities (e.g. preventive activities, property protection, natural and beneficial functions of floodplains, emergency services, structural projects and meeting PPI standards) are used to classify potential hazard mitigation projects.

- Public Information Plan

In an effort to achieve the goals and requirements for a Program for Public Information Plan for Community Rating System credit, the Public Information Plan for the *Charleston Regional Hazard Mitigation Plan* is now included in this document as an Appendix. This document, though still a part of the *Charleston Regional Hazard Mitigation Plan*, can also act as a stand-alone document for specific use as a public information document. The history of the program that established the Plan, the Committee, topics, messages and target audiences, outreach projects, and many other elements are all included in the document. Please see Appendix 1 for the complete document, as well as Attachment 1-A for an organizational chart.

– Preventive Activities

Preventive activities include such items as floodplain management regulations, beachfront management regulations, stormwater management regulations, building-related codes, fire prevention codes, wetlands protection regulations, water quality regulations, stream-dumping regulations, coastal erosion regulations, and the preservation of open space. Public information activities are discussed in Appendix 1 that is specifically designated to this topic. The Preventative and Property Protection Subcommittee of the *Hazard Mitigation and Public Information Plan Committee* collaborate to make recommendations for future projects.

The project prioritization factors applicable to this type of activity in the order of importance per the 2014-15 questionnaire survey results are as follows:

1. Project technical feasibility.
2. Jurisdiction/agency in agreement with/support project.
3. Use of structure.
4. Property affected by project is a repetitive (flood) loss property.
5. Environmental considerations.
6. Property owners are in agreement with/support project.
7. Historic nature of property.

Ongoing projects within the Charleston County area that would be classified as preventive activities, the type of organization(s) performing the function, and funding mechanisms for these activities are provided in Table 6.1 below.

Table 6-1

On-Going Preventative Activities in Charleston County		
Activity	Type of Organization	Funding Mechanism
Floodplain Management Regulations	Local jurisdictions, SC Dept. of Natural Resources, US ACOE	General Fund
Fire Protection Regulations	Local jurisdictions, State Fire Marshal	General Fund Insurance Reserve Fund
Wetlands Protection Regulations	U.S. Army Corps of Engineers, S. C. DHEC Office of Coastal & Resource Management	General Fund
Other Management Regulations (e.g. Building Code Enforcement Assistance, flood mapping / delineation, Environmental Review, hazards research)	S.C. Dept. of Insurance, S. C. Dept. of Natural Resources, S. C. Sea Grant Consortium, US ACOE	General Fund Grant Funding Donations
Preservation of Open Space	Charleston County Parks & Recreation Commission, Local Jurisdictions, wetlands banks	General Fund Bond Funding
Stormwater Management Regulations	S. C. DHEC Office of Coastal and Resource Mgmt., Local Jurisdictions, US ACOE	General Fund
Wind Building Regulations	Local Jurisdictions	General Fund
Coastal Erosion Regulations	S. C. DHEC Office of Coastal and Resource Mgmt., Local Jurisdictions, US ACOE	General Fund
Earthquake Building Regulations	Local Jurisdictions	General Fund
Beachfront Management Regulations	SC DHEC Office of Coastal and Resource Mgmt.	General Fund
Water Quality Regulations	SC DHEC, U. S. Army Corps of Engineers, S.C. Dept. of Natural Resources	General Fund
Stream Dumping Regulations	Local Jurisdictions	General Fund

Additional preventive activities which may be considered by the jurisdictions in the Charleston County area include but are not limited to, the following:

- Considering areas subject to repetitive flooding for acquisition for parks and other permanent open space.
- Revising floodplain management ordinances to include a two (2) foot freeboard in areas without other restrictions that make the requirement for an extra foot of elevation impractical (e.g. historic buildings, areas with zoning ordinances with height limitations, etc.).
- Adopting voluntary standards for single-family residence construction that exceed minimal building code requirements for wind and seismic design.
- Adopting stream-dumping ordinances.
- Modernizing flood insurance rate maps.
- Restricting newly located manufactured housing from Velocity ("V") flood zones.
- Developing maps to indicate areas where radon protection would be recommended.

- Sponsoring educationalprograms for design professionals, contractors, building code officials, insurance agents, etc. on regulations and codes.
- Developing a monitoring program for known repetitively flooded properties to verify that substantial improvements are not being performed without proper permitting in an effort to avoid elevating the structures.
- Encouraging a standardized system to collect data on flood events throughout the Region for future flood studies.
- Participating in a "Drainage Awareness Campaign" to educate citizens regarding effects of dumping foreign materials into drainage ways.
- Encouraging development reviewers to consider provisions for "no adverse impact" when development is proposed within floodplain areas.
- Encouraging young people to learn more about hazard prevention through engineering solutions by sponsoring awards at the Lowcountry Science Fair.

– Property Protection

Property protection includes but is not limited to such items as educating or assisting citizens regarding retrofitting existing structures to be more resistant to hazards (e.g. hurricane, flood, earthquake, tornado, wildfire, hazardous material incidents, and/or terrorism), elevating existing structures so that the finished floor/lowest horizontal structural member is at or above the base flood elevation or freeboard elevation, demolishing structures below the base flood elevation which cannot be cost effectively elevated or retrofitted, relocating structures in areas subject to repetitive flooding to areas not within the special flood hazard area, educating citizens regarding hazard safe interior rooms for tornado shelters, educating property owners regarding glazing protection in the event of a hurricane, providing information regarding hazard insurance to citizens, and insuring public owned facilities against hazards.
The project prioritization factors applicable to this type of activity per the survey in the order of importance are as follows:

1. Project technical feasibility.
2. Jurisdiction/agency in agreement with/support project.
3. Use of structure.
4. Property affected by project is a repetitive (flood) loss property
5. Environmental considerations.
6. Nature of structure.
7. Property owners are in agreement with/support project.
8. Ability to recover expenditures.
9. Historic nature of property.
10. Location of project.
11. FEMA cost benefit analysis used to rank projects.
12. Ability of property owners to afford mitigation measure (lower income first)

Ongoing projects within the Charleston County area which would be classified as property protection activities, the type of organization(s) performing the function, and funding mechanisms for these activities are provided in Table 6.2 (the order of the activity in the table corresponds to the prioritization of these activities from most important to least important per the average of the questionnaire responses).

Table 6-2

On-Going Property Protection Activities in Charleston County		
Activity	Type of Organization	Funding Mechanism
Providing information re: flood insurance to citizens	Local Jurisdictions, SC DNR, FEMA, Sea Grant Consortium, US ACOE	Grant Funding General Fund Donations
Designing new publicly owned buildings to exceed minimal hazard resistance design criteria	Local Jurisdictions, State Engineer, SC DOT, US ACOE	Bond Funding Grand Funding General Fund
Purchase flood insurance for publicly owned buildings	Local Jurisdictions, State Engineer	General Fund
Elevating/Retrofitting repetitively damaged property	Local Jurisdictions, S. C. Sea Grant Consortium, SC DNR, FEMA, US ACOE, SC DOT	Grant Funding General Fund Donations
Retrofitting existing publicly owned structures to meet minimal hazard resistance design criteria	Local Jurisdictions, State Engineer, SC DOT, US ACOE	Bond Funding Grant Funding General Funding Donations
Purchase earthquake insurance for publicly owned buildings	Local Jurisdictions, State Engineer	General Fund
Demolition of repetitively damaged properties (flood)	Local Jurisdictions, SC DNR, FEMA, SC DOT, SC DHEC OCRM	Grant Funding General Fund
Purchase wind insurance for publicly owned buildings	Local Jurisdictions, State Engineer	General Fund
Provide information re: earthquake insurance to citizens	Local Jurisdictions, FEMA	Grant Funding General Fund
Acquisition/Relocation of repetitively damaged property	SC DNR, FEMA, US ACOE, SC DOT, SC DHEC OCRM	Grant Funding General Fund

The Committee determined that there should be some consideration of the nature of the flooding problem in the entire neighborhood in addition to a structure-by-structure approach in determining projects to be undertaken. It was discussed that there may be certain situations where, for example, a drainage improvement project may be the most cost-effective mechanism of addressing a neighborhood flooding problem where multiple structures are flooding (with or without flood insurance claims), and others where retrofitting/elevating/demolishing one structure with repetitive flooding may be the most effective mechanism for addressing the problem. A broad-based neighborhood approach is recommended for project selection in this regard.

Activities the jurisdictions in the Charleston County area may want to consider implementing in addition to those ongoing projects for property protection include but are not limited to the following. The Preventative and Property Protection Subcommittee of the *Hazard Mitigation and Public Information Plan Committee* collaborate to make recommendations for future projects.

- Encouraging lenders to provide low interest rate loans for retrofitting structures for hazard resistance.
- Encouraging local building material/hazard resistant product suppliers to donate or provide supplies at a reduced cost for retrofitting existing structures for hazard resistance.

- Encouraging local volunteer agencies/contractors/design professionals to donate or provide services at a reduced cost for retrofitting existing structures for hazard resistance.
- Educating citizens regarding hazard safe interior room construction.
- Establishing a volunteer network to assist elderly/infirmed property owners with installing glazing protection when a hurricane warning is issued.
- Supporting projects designed to enhance the distribution of information regarding hazard mitigation/preparation to the citizens (e.g. development of displays for information distribution at public events/facilities, Hazard Awareness Week, etc.)
- Utilizing available software for conducting vulnerability analyses to various types of natural or man-made hazards (e.g. HAZUS, CAMEO, Consequences Assessment Tool set, etc.)
- Develop a voluntary set of specifications that exceed minimal code to encourage builders and property owners to construct or retrofit their homes in a more hazard resistant manner.
- Develop educational materials to educate residents about hazard resistant construction techniques and protecting property from hazard-related damages.
- Retrofitting existing critical facilities for enhanced hazard-resistance.
- Supporting demonstration projects where residents may learn how to protect their homes from hazard events.
- Developing programs where eligible residents receive assistance in repairing/renovating their homes for enhanced hazard resistance.
- Developing a detailed inventory of the most vulnerable and most critical structures to the types of hazard events experienced in the community for archival records in the event of a loss due to a hazard event.

– Natural and Beneficial Functions of Floodplains/Resource Preservation

Floodplains in the Charleston County area may contain wetland areas or primary ocean front dunes, which serve important functions. Specifically, wetlands may moderate flooding, enhance water quality, enhance ground water recharge, and often serve as habitats for wildlife. Primary ocean front dunes serve as a buffer against minor wave height fluctuations and against beach erosion. Activities geared towards the protection of natural and beneficial functions of floodplains include but are not limited to wetlands protection through permitting processes, dune protection through permitting processes, building set-back lines for wetlands and/or the ocean, beach re-nourishment, tree protection ordinances, erosion-control requirements for commercial construction, and installation of environmentally sensitive wastewater treatment facilities. Although historic structures are not generally thought of as performing a function beneficial to floodplains, the Charleston area has a long history of considering these structures as beneficial resources to the community. Therefore, the preservation and rehabilitation of these structures for improved resistance to natural hazard strikes could be considered an activity with benefit for the other types of hazards facing this area.

The project prioritization factors applicable to this type of activity in the order of importance are as follows:

1. Project technical feasibility.
2. Jurisdiction/agency in agreement with/support project.
3. Environmental considerations.
4. Property owners are in agreement with/support project.
5. Ability to recover expenditures.
6. Historic nature of property.
7. Location of project.
8. FEMA cost benefit analysis used to rank projects.
9. Ability of property owners to afford mitigation measure (lower income first)

Ongoing projects within the Charleston County area which would be classified as natural and beneficial function protection activities, the type of organization(s) performing the function, and funding mechanisms for these activities are provided in Table 6.3.

Table 6-3

On-Going Floodplains/Resource Preservation Activities in Charleston County		
Activity	Type of Organization	Funding Mechanism
Beach Renourishment	Local Jurisdictions, FEMA	Grant Funding General Fund
Permitting of wasterwater treatment facilities	SC DHEC Env. Health	General Fund
Erosion Control	Local Jurisdictions, SC DHEC OCRM, contractors	General Fund Contractor Expense
Permitting for wetland disturbance	SC DHEC OCRM, US ACOE	General Fund
Tree protection/landscaping ordinances	Local Jurisdictions, State Engineer, SC DOT, US ACOE	General Fund
Dune protection	Local Jurisdictions, SC DHEC OCRM	General Fund
Designation of wildlife preservation areas	US DOL, SC DNR	General Fund
Preservation/retrofitting of Historic sites/structures for hazard resistance	Local Jurisdictions, SC Dept. of Archives, US DOI	General Fund Bond Funding Grant Funding Donations
Reviewing/Preparing Environmental Impact Statement (SPA at Daniel Island)	US ACOE	General Fund
National Water Quality Assessment Program	USGS, US ACOE	General Fund
Bioremediation assessment	USGS, Naval Facilities Engineering Command, US ACOE	General Fund
Biological and Ecological studies	USGS, US Fish & Wildlife Service, US ACOE	General Fund
Preservation of open space as parks	Local Jurisdictions, SC Dept. of Archives, US ACOE	Bond Funding General Fund Donations

Activities the jurisdictions in the Charleston County area may want to consider implementing in addition to those ongoing projects for natural and beneficial function protection include but are not limited to the following:

- Educating citizens regarding hazard resistant landscaping and coastal and endangered species.
- Participating in a "Garden Spot for Kids" program.
- Considering purchasing COBRA zone properties for parks.
- Developing programs to encourage young people to take an interest in preserving natural and historic resources.
- Creating new beachfront dunes through "Build-A-Dune" projects.
- Encouraging wetlands preservation through educating the public about wetlands buffer zones or regulating these buffer zones through development ordinances.
- Encouraging citizens to preserve natural and historic resources at appropriate existing public venues and parks.
- Encouraging wildfire-prone local communities to become "Firewise communities", to the extent feasible.

– Emergency Services

Emergency services include but are not limited to posting hazard event activities such as damage assessment, search and rescue, treatment of injuries, traffic control, crime control, firefighting, hazardous material cleanup/control, debris removal, road clearing, distribution of emergency supplies, and disposition of debris. Emergency services also include the provision of emergency shelters, emergency mass transportation, evacuation procedures, and emergency warning.

The project prioritization factors applicable to this type of activity per the survey in the order of importance are as follows:

1. Project technical feasibility.
2. Jurisdiction/agency in agreement with/support project.
3. Use of structure.
4. Property affected by project is a repetitive (flood) loss property
5. Environmental considerations.
6. Nature of structure.
7. Property owners are in agreement with/support project.
8. Historic nature of property.
9. Location of project.
10. FEMA cost benefit analysis used to rank projects.

Ongoing projects within the Charleston County area which would be classified as emergency services activities, the type of organization(s) performing the function, and funding mechanisms for these activities are provided in Table 6.4.

Table 6-4

On-Going Emergency Services Activities in Charleston County		
Activity	Type of Organization	Funding Mechanism
Emergency Health Care Services Provision	Local Jurisdictions, Hospitals, Ambulance companies, American Red Cross	General Fund Insurance Direct payment for services Donations
Emergency Warning (Emergency Broadcast System)	Local jurisdictions, media, NOAA NWS, US ACOE	General Fund
Distribution of Emergency Supplies	Local Jurisdictions, American Red Cross, FEMA, US ACOE	General Fund Donations Grant Funding
Evacuation Shelters	American Red Cross, Local Jurisdictions, US ACOE	General Fund Donations
Fire suppression	Local Jurisdictions	General Fund Insurance Reserve Fund
Hazardous Material cleanup/control	Local Jurisdictions, Transporters/storage location operators of hazardous materials	General Fund Enterprise Fund Bond Funding
Crime Control	Local Jurisdictions, SLED, US FBI	General Fund
Debris removal/disposition	Local Jurisdictions, FEMA	General Fund Grant Funding Enterprise Fund
Coordination of Volunteer services (post-event)	Local Jurisdictions, American Red Cross, Salvation Army	General Fund Donations
Hurricane Surge Mapping	US ACOE, USGS	General Fund
Flood forecasting	NOAA NWS, US ACOE	General Fund
Gathering and providing hydrologic data	USGS, State Hydrologist, US ACOE	General Fund
Sandbagging for flooding	Local Jurisdictions	General Fund
Maritime firefighting program	Local jurisdictions, SPA, maritime industry	General Fund Enterprise Fund Donations
Hazardous material training	Local Jurisdictions	General Fund Grant Funding
Terrorist response/preparation training	Local Jurisdictions	General Fund Grant Funding
Staffing Emergency Operation Centers	Local Jurisdictions, American Red Cross, Salvation Army, media providers, US ACOE	General Fund Bond Funding

The Emergency Services Subcommittee of the *Hazard Mitigation and Public Information Plan Committee* collaborate to make recommendations for future projects. Activities the jurisdictions in the Charleston County area may want to consider implementing in addition to those ongoing projects for emergency services include but are not limited to the following:

- Retrofitting existing critical facilities for hazard resistance.
- Identifying evacuation shelters for areas currently not within reasonably close proximity to a shelter for humans and pets/domestic animals.
- Making provisions for emergency warning during normal sleep hours (particularly for hazards with little warning such as tornadoes).

- Making provisions for transportation to emergency shelters for those in need of transportation.
- Constructing new critical facilities to the extent practical in such a manner as to exceed minimal standards for hazard resistance and to be located in areas that are the least prone to damage by hazard events (e.g. not in the special flood hazard area if possible and still meet the service needs for the facility).
- Obtaining information regarding/ assisting with the preparation of emergency plans for places of large assembly (e.g. Aquarium, Coliseum, Athletic stadiums, etc.) and tourist activity centers.
- Adopting the Terrorism Annex to the Emergency Operations Plan.
- Educating medical providers on emergency service topics such as decontamination procedures.
- Providing resources to enable emergency shelters to be opened quickly in the event of a hazard with little or no warning.
- Providing assistance to the marine assistance pact and the anti-terrorism task force.
- Making applications to nationally recognized programs that promote emergency preparedness, such as the "Storm Ready" program of the National Weather Service.
- Providing updated weather radios to schools for early warning of pending hazard events.
- Promoting hazard awareness through media campaigns using weather radios as give-away items.

– Structural Projects

Structural projects include, but are not limited to, drainage improvement projects, stream channel modification/dredging, dam construction, and infrastructure construction/modification/repair. Since Geographic Information Systems (GIS) are potentially valuable tools for use in structural projects, GIS related projects are included within this section of the Plan.

The project prioritization factors applicable to this type of activity per the survey in the order of importance are as follows:

1. Project technical feasibility.
2. Jurisdiction/agency in agreement with/support project.
3. Use of structure.
4. Property affected by project is a repetitive (flood) loss property
5. Environmental considerations.
6. Nature of structure.
7. Property owners are in agreement with/support project.
8. Ability to recover expenditures.
9. Historic nature of property.
10. Location of project.
11. FEMA cost benefit analysis used to rank projects.
12. Ability of property owners to afford mitigation measure (lower income first)

Ongoing projects within the Charleston County area which would be classified as structural project activities, the type of organization(s) performing the function, and funding mechanisms for these activities are provided in Table 6.5.

Table 6-5

On-Going Structural Project Activities in Charleston County		
Activity	Type of Organization	Funding Mechanism
Drainage Improvement Projects (See list provided in Attachment 6-C to this section)	Local Jurisdictions, US ACOE	Grant Funding Enterprise Funding General Fund Bond Funding
Drainage studies (See list provided in Attachment 6-C to this section)	Local Jurisdictions, US ACOE	General Fund Grant Funding Enterprise Funding
Drainage System Maintenance	Local Jurisdictions, SC DOT	General Fund Enterprise Fund
Installation of dry fire hydrants in rural areas	Local Jurisdictions	General Fund
GIS Mapping	Local Jurisdictions, US ACOE, NOAA Coastal Resources, BCD COG, SC DNR, USGS, FEMA	General Fund Grant Funding
Establishing elevation reference marks	US ACOE, FEMA	General Fund Grant Funding
Inspecting elevation reference marks	Local Jurisdictions	General Fund
Channel dredging	Local Jurisdictions, SPA, US ACOE	General Fund Grant Funding Bond Funding
Road/bridge construction/repair	Local Jurisdictions, SC DOT, US ACOE	General Fund Grant Funding Bond Funding
Utility right-of-way permitting/construction	Local Jurisdictions, SC DOT, utility service providers, US ACOE	General Fund Utility use collections Bond Funding
Coastal Erosion Study	USGS, SC DHEC OCRM, S. C. Sea Grant Consortium, US ACOE	General Fund Grant Funding
Topographic Mapping	USGS, US ACOE	General Fund
Hydrologic Data Collection	USGS, State Hydrologist, US ACOE	General Fund
Stormwater Master Planning	Local Jurisdictions	Enterprise Funds

Activities the jurisdictions in the Charleston County area may want to consider implementing in addition to those ongoing structural projects include but are not limited to the following

- Updating or developing a master drainage, storm water or watershed plan.
- Implementing drainage improvement projects consistent with results of the drainage studies.
- Implementing a Drainage Awareness Campaign program.
- Developing a system for recording flood damages as a result of inadequate drainage in a consistent manner across jurisdictions.
- Developing a schedule for placing existing above ground utilities underground where feasible, particularly along evacuation routes, major arteries, and highly congested areas.

- Developing a schedule to repair/replace existing roads/bridges, which based upon vulnerability analyses and inspection results are least likely to withstand hazard events.
- Developing a system for the sharing of GIS maps and support data amongst the jurisdictions to minimize duplication of effort.
- Installing signs indicating anticipated flood elevation levels over major roadways in the event of a hurricane or severe flood event.
- Educating residents on proper generator usage.
- Educating residents on procedures to follow to underground their utilities going to their individual properties.
- Implementing a storm water section to address water quality and NPDES requirements and to address water quantity issues to reduce flooding potential.

– Public Information Plan Activities

Public Information Activities have expanded substantially by becoming a part of the Hazard Mitigation Plan. The former Public Information Committee of Project Impact has been merged and is now an integral part of the *Hazard Mitigation and Public Information Plan Committee*. As a result, the PIP has become the roadmap for all community information systems of all Project Impact programs.

In addition to the individual Committee's requirements, the requirements of Section 6.2 Public Information Plan are met when appropriate. A list of current outreach projects, flood response preparation projects and coverage improvement plan project requirements are found in the Public Information Plan, which is Appendix 1).

Ongoing projects within the Charleston County area, which would be classified as public information activities, the type of organization(s) performing the function, and funding mechanisms for these activities are provided in Table 6.6.

Table 6-6

On-Going Public Information Activities in Charleston County		
Activity	Type of Organization	Funding Mechanism
Mailing hazard brochures to all residents	Local Jurisdictions, FEMA, SC DNR, US ACOE	General Fund Grant Funding
Providing literature to citizens at offices/places of business	Local Jurisdictions, FEMA, SC DNR, US ACOE, USGS, American Red Cross, S. C. Sea Grant Consortium, DHEC OCRM, media providers	General Fund Grant Funding Donations
Television Advertisements and County-wide summer billboards	FEMA, media providers, Corporate sponsors	General Fund Grant Funding Donations
Participating in Hazard Awareness Weeks	Local Jurisdictions, American Red Cross, Corporate sponsors, US ACOE; National Weather Service	General Fund
Newspaper advertisements	Local Jurisdictions, FEMA, American Red Cross, SC DOT, DHEC OCRM	General Fund
Providing speakers for schools/groups	Local Jurisdictions, US ACOE, SC DNR, DHEC OCRM, FEMA, American Red Cross, SC DOT, S.C. Sea Grant Consortium, USGS; National Weather Service	General Fund Grant Funding
Mailing hazard brochures to floodplain residents	Local Jurisdictions	General Fund
Participating in hazard-related/product expos	Local Jurisdictions, American Red Cross, media providers, National Weather Service	General Fund Grant Funding
Providing courses for school children re: hazard preparedness	FEMA, Earthquake Education Center, State Fire Marshal, SC EPD, Local Jurisdictions,	General Fund
Providing hazard-related information on internet web pages	Local Jurisdictions, FEMA, NOAA NWS, SC DNR, US ACOE, USGS, American Red Cross, SC DOT, Sea Grant Consortium, media providers	General Fund
Providing post-disaster educational services, such as but not limited to, literature distribution, media announcements, speaking to groups of residents, etc.	American Red Cross, Local Jurisdictions, FEMA, ACOE, SC DOT, media providers	General Fund Grant Funding

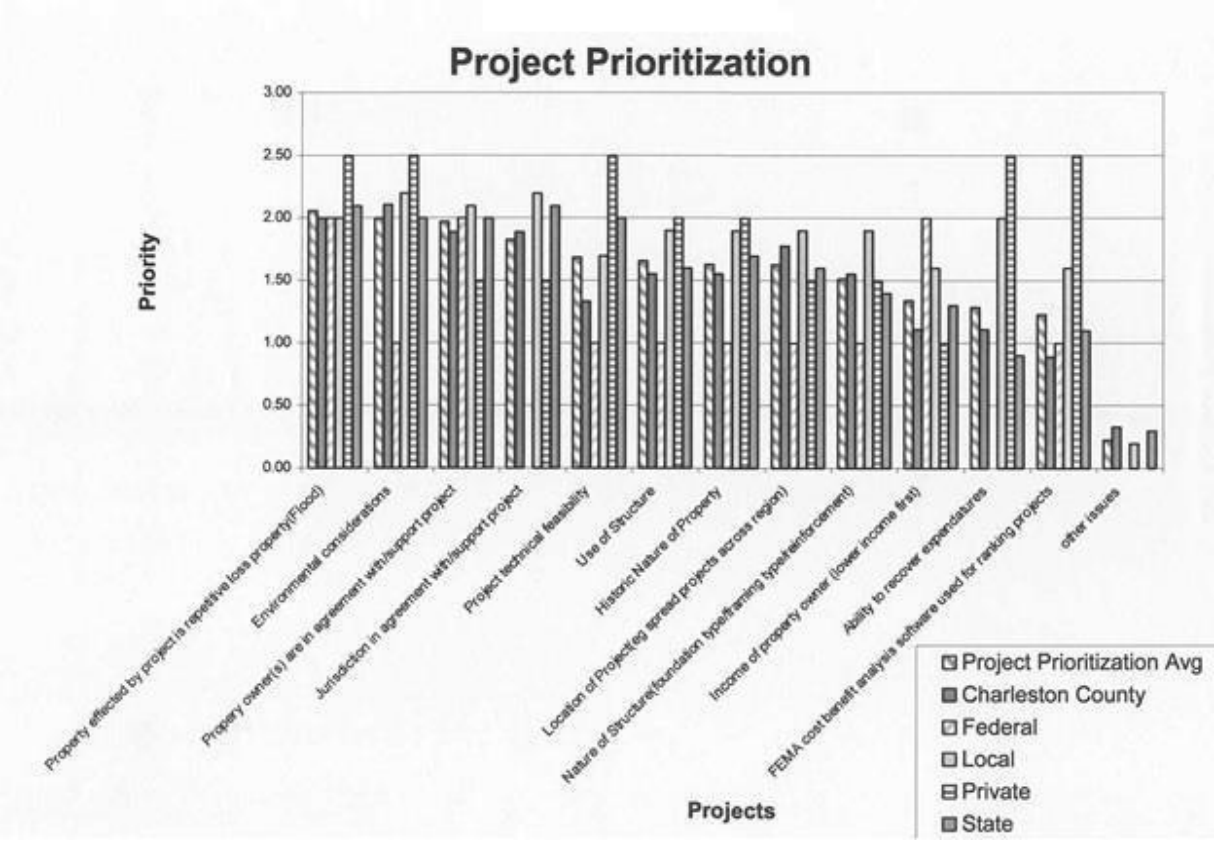
In addition, the activities the jurisdictions in the Charleston County area may want to consider implementing in addition to those ongoing public information projects include but are not limited to the following:

- Participating in a study of the residents of the Charleston County area regarding their knowledge level of hazards facing this area.
- Participating in "Project Impact" public information activities to the extent feasible.
- Participating in contractor hazard resistant building techniques workshops.
- Participating in a children's hazard awareness program.
- Participating in the development of a mobile hazard-related educational display.
- Participating in hazard mitigation techniques demonstration projects.
- Establishing an information sharing resource centrally located so that all the jurisdictions have access to hazard-related information when needed.
- Encouraging local restaurants and/or movie cinemas to participate in public education campaigns targeted for these establishments.

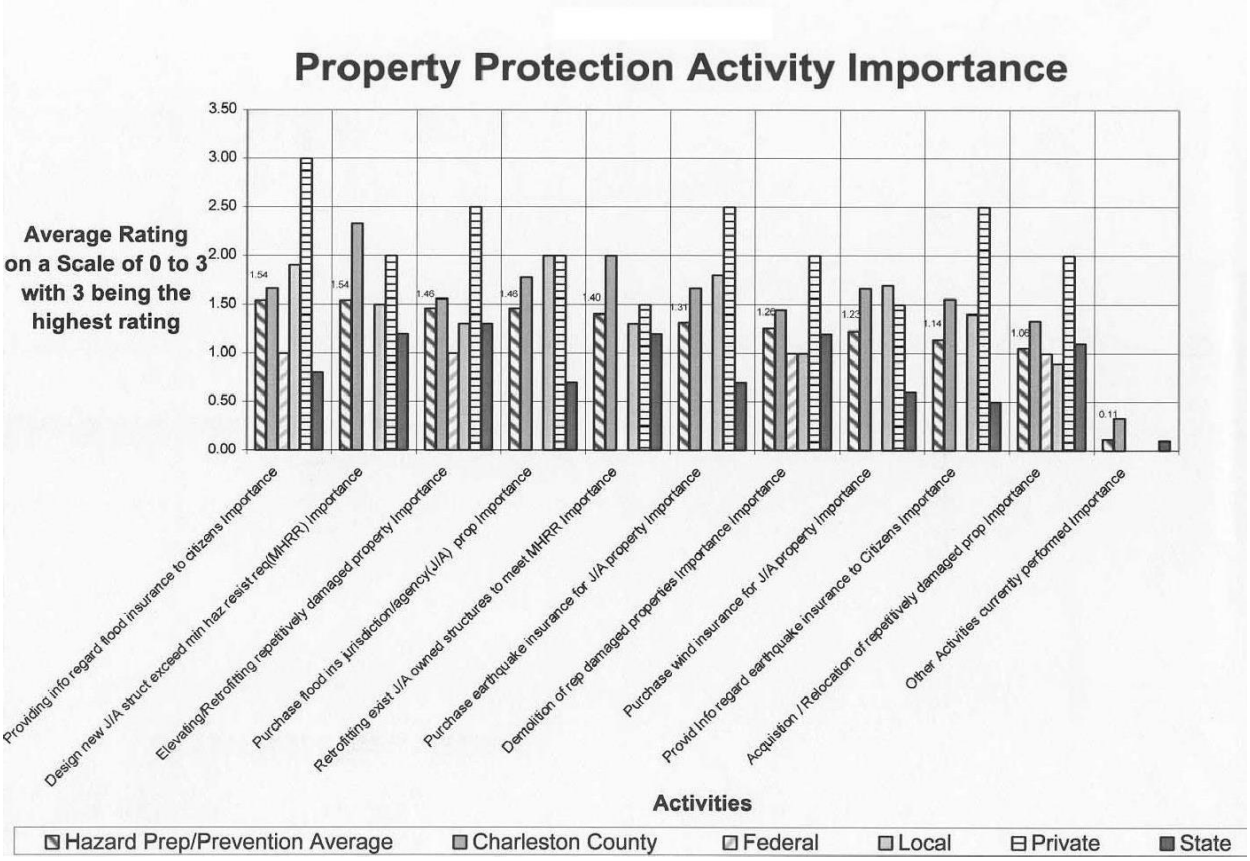
- Participating in hazards expos and other events designed to educate citizens about hazard preparation and protection.
- Assisting with the development and/or distribution of printed materials to residents or visitors on hazard-related topics.
- Participating in the speaker's bureau and/or asking speakers to present hazard-related topics at local functions or events.
- Encouraging young people to learn more about hazard preparations through activities and programs aimed at this audience.
- Working with media outlets to provide hazard-related information to local citizens.
- Working with media outlets to provide hazard-related information to local citizens.
- Distributing an "Electronic Bulletin Board" of public education events and other activities to Committee members and supporters.

Jurisdictions are encouraged to select projects they intend to participate in for their respective action plans to include with this plan.

Attachment 6-A: Chart of Project Prioritization Factors Based Upon Questionnaire Responses



Attachment 6-B: Chart of Property Protection Project Prioritization Based Upon Questionnaire Responses



Attachment 6-C: Drainage Improvement Projects

Listed in the tables below are some of the drainage improvement and drainage study projects undertaken in Charleston County. For a complete list of projects contact the jurisdiction.

Current Studies			
Study	**Description**	**Jurisdiction**	**Status**
Stormwater Management Program	Charleston County has developed and is in the implementation phase of a stormwater management program to address stormwater quantity and quality concerns throughout the community. The county has entered into intergovernmental agreements with the City of Isle of Palms, Town of Sullivan's Island, City of Folly Beach, Town of James Island and Town of Lincolnville for the stormwater management program development and implementation. Drainage improvements identified through the stormwater management program and/or the stormwater master planning efforts are considered as projects under this plan as if listed individually herein	Charleston County, Isle of Palms, Sullivan's Island, Folly Beach, James Island and Lincolnville	Ongoing
Isle of Palms Drainage Study	A comprehensive drainage study of the entire island emphasizing problem areas and outfall capacity is being conducted.	Charleston County, Isle of Palms	Study complete. Three outfall improvement projects are permitted and preparing for construction.
St. Andrews Canal Flood Control Study	Initial reconnaissance phase activities are being performed for this study to identify flooding and drainage problems in the watershed and to support development of hydrologic and hydraulic models of the existing flood conditions.	Charleston County/U.S. Army Core of Engineers	Ongoing

Snowden/Longpoint Road	A survey of existing conditions and flooding conditions will be performed to determine the design of a future drainage improvement project. This scenic highway suffers from a lack of maintenance and a substandard drainage system. Coordination of efforts will involve the Town, Charleston County, and the S. C. Department of Transportation.	Charleston County/Town of Mount Pleasant/SC DOT	Charleston County is studying Snowden Community drainage and working to obtain additional easements.
Signal Point	Charleston County has surveyed this two mile drainage system and has now contracted with an engineering firm to study and provide recommendations for areas to improve drainage. Upsizing of a culvert under Grimball Road and Grimball Farm Road was ranked highest.	Charleston County/ City of Charleston/ SCDOT	Study completed and construction completed.
Calhoun West Preliminary Engineering Report for Flood Reduction	This study will provide conceptual engineering services for the Calhoun West Drainage Basin, an approximately 600 acre basin bounded by King, Bee, Murray, and Lockwood Boulevards which has been a historically flood-prone area. Initial analysis indicates that a deep tunnel/pumped system will be needed to address flooding during all tide cycles.	City of Charleston	Study in progress
DuPont/Wappoo Watershed Master Plan	This study will provide a basin - wide model to determine impacts of development on the existing system and suggest possible improvements.	City of Charleston/ Charleston County	Conceptual study is complete and first 4 areas of improvements are in the design phase.
Church Creek Flood Reduction Study	A second opinion study of the Church Creek Drainage Basin.	City of Charleston	Stormwater design standards completed 2018

Barberry Woods Drainage Study	The City, in conjunction with the Barberry Woods HOA, is commissioning a drainage study to examine the area northeast of Maybank Highway (from Trophy Lakes to River Road). This area includes several flood-prone developments. With the possibility of future development occurring in the basin, a study is required to correct the existing drainage deficiencies and provide guidance for stormwater management in the future development.	City of Charleston	Study in progress
Low Battery Seawall Study	During the study and concept design phase of the repair of the Low Battery, the City initiated a Sea Level Rise Strategy. This strategy mandates that capital projects with a design life of 50 years or greater shall be designed for 2.5' of sea level rise. The City's Department of Public Service and Design Center are working together to incorporate the increased height in the design of the sea wall. This improvement should provide increased protection for the properties along the southern Peninsula from flooding.	City of Charleston	Final design under review
Filbin Creek Drainage Study	Areas adjacent to Filbin Creek encountered flooding during Hurricane Matthew. It is proposed that a Drainage Study of the affected reaches of Filbin Creek be initiated. The study and analysis of Filbin Creek from Virginia Avenue to Ferndale will focus on identifying primary factors causing flooding in the Cameron Terrace and Ferndale neighborhoods adjacent to Filbin Creek. The study will identify and evaluate conceptual improvements that	City of North Charleston	Underway

	may have the potential to alleviate flooding in these areas.		
Pepperhill Drainage Study	A drainage study of the drainage basins affecitng the Pepperhill neighborhood, including the McChune Branch, is proposed to identify factors and potential improvements to alleviate flooding conditions experienced in Pepperhill and surrounding areas. Partial FEMA funding.	City of North Charleston	Pending FEMA funding release
Asset Management Program (CMP)/ CIP Stormwater studies	Other studies as may be developed, prioritized, scheduled or conducted as identified through the Town's asset management (CMP)/ CIP program during annual reviews.	Town of Mount Pleasant	Ongoing CIP and CMP programs
Indigo Cut- Snee Farm Study	A study will be performed in this flood-prone area. The entrance road to a major subdivision floods during rain events. In addition, several homes have repeatedly received water damage. Drainage improvements are being evaluated for a portion of this basin as a part of the Whipple Road widening project included basin modifications. Other opportunities are being evaluated as a part of the Town's Asset Management Program.	Town of Mount Pleasant	Project in CIP (unfunded), submitted initial request to State for SRF funding
Hobcaw Point Study	A survey of existing conditions and flooding conditions will be performed to determine the design of a future drainage improvement project. This older neighborhood suffers from a lack of or substandard drainage.	Town of Mount Pleasant	Unfunded

	Repetitive loss homes are within the project area.		
The Groves Study	A survey of existing conditions and flooding conditions will be performed to determine the design of a future drainage improvement project. This older neighborhood suffers from substandard drainage systems.	Town of Mount Pleasant	Unfunded
Old Village- Business District Study	A survey of existing conditions and flooding conditions will be performed to determine the design of a future drainage improvement project. This older neighborhood suffers frequent flooding due to substandard drainage.	Town of Mount Pleasant	Unfunded
Shemwood I Study	A survey of existing conditions and flooding conditions will be performed to determine the design of a future drainage improvement project. This older neighborhood suffers from a lack of or substandard drainage. Repetitive loss homes are within the project area.	Town of Mount Pleasant	Unfunded
Hidden Lake Studies	Two studies are being evaluated. One will involve two drainage studies – one for water quantity and one for water quality. The Water Quantity study will evaluate the current basin conditions against the original basin model to predict flood conditions and any potential impacts from upstream development. The second study for Water Quality impacts will be undertaken to determine the effect, if any of upstream commercial development and residential activities on the neighborhood's lake system.	Town of Mount Pleasant	Study conducted for upstream development project. Upstream pond improvements are being installed by developer

Infrastructure Assessment and Drainage Canal Study	A sampling of representative public drainage systems will continue to identify and prioritize areas where the drainage system was experiencing pipe failures, erosion, siltation, and other structural problems. This survey would be used to identify and perform systems repairs, replacements, and drainage channel rehabilitation projects. Following surveys have been completed; the Shemwood II, Sloan Park Canal, Brecon Road, Mill Tract North, Pine Hollow, Whipple Road canal. Scheduled for 17-19 are Shirmer Ave, Erckman Drive, Venning Road, Creekside/ Outback systems - other surveys are identified/ prioritized though the Town's Comprehensive Maintenance Program (CMP).	Town of Mount Pleasant	Funded for 2017-2019 in Town's CMP
Old Mount Pleasant Study	A survey of existing conditions and flooding conditions will be performed to determine the design of a future drainage improvement project. This older neighborhood suffers frequent flooding due to substandard drainage.	Town of Mount Pleasant/ SCDOT	Phase I evaluation underway
Shem Creek Watershed Study	High level study of priority watershed to identify possible pollution sources and framework for future mitigation efforts to include a watershed management plan for water quality.	Town of Mount Pleasant	Phase II plan development funded for 18-19

Master Drainage and Floodplain Management Plan	This comprehensive plan identified all stormwater drainage facilities for most areas within the City at the time of its completion. The plan includes an inventory and hydraulic analysis of existing drainage facilities with recommended improvement projects based on those findings. The City continues to use the plan as a valuable guide in prioritizing and implementing current and future drainage improvement projects throughout the City.	City of Charleston	To begin 2019
Island Wide Drainage Study	This study is being conducted by 3rd party consultants to look at existing infrastructure, problem areas, and will make recommendations and a priority list for City Council to target moving forward.	City of Folly Beach	In Progress
Completed Studies			
Study	**Description**	**Jurisdiction**	**Status**
St. Paul's Area Drainage Study	This project involves a drainage study for the St. Paul's community. The project is being funded by the Charleston County Transportation Sales Tax Program.	Charleston County	Completed
Westwood-St. Teresa Drive	This study was undertaken to determine if improvements can be made along St. Teresa and Moore Drives and Morton Avenue to alleviate frequent flooding of the streets and yards in the neighborhood	City of Charleston	Completed
Ashley Hall Manor Drainage Study	The City is performing a study to eliminate frequent flooding in the neighborhood. Streets such as Downing, Salisbury, and Birthright experience frequent severe flooding. The study will address if a new outfall may help alleviate the	City of Charleston	Completed

	frequency and duration of this flooding.		
Legareville Drainage Study	This project involved drainage improvements for this Legareville community on Johns Island. The funding was provided by the Charleston County Transportation Sales Tax Program	Charleston County	Completed
Peninsula Seawall Study	A study to investigate the condition and construction of the seawall along Murray Boulevard and E. Battery (known as "The Battery") and to make recommendations for the method of repair and/or construction has been completed. The city has entered into a contract for engineering services to prepare bid documents for repairing two sections of the high seawall from its northern end on E. Battery through the transition section located at the intersection of Murray Boulevard and E. Battery. Additional funds must be acquired to repair the remaining section, which extends along Murray Boulevard from E. Battery to Tradd Street.	City of Charleston	
Ashley Villas Drainage Study	Drainage Study of the Ashley Villas neighborhood to identify possible solutions to historically recurring back yard and some structure flooding.	City of North Charleston	
Waterview Circle Drainage Study	Drainage Study of the outfalls at Waterview Circle in Evanston Estate to evaluate potential to improve street flooding and garage flooding.	City of North Charleston	

Oak Bluff on Crossroads Drive Drainage Study	The City of North Charleston commissioned a study of the flooding problems at Oak Bluff on Crossroads Drive and related drainage problems near Northwoods Mall during 2005 (Wise, 2005, October 7).	City of North Charleston	
Accabee Drainage Study	The City of North Charleston commissioned a study of the flooding problems in the Accabee subdivision where the drainage system overflows during heavy rains.	City of North Charleston	
Jacksonville/Carner Drainage Improvement	The City of North Charleston initiated a drainage study of the intersection of Jacksonville Road and Carner Avenue. This study sought to identify solutions to recurring street flooding in this area. The study and design of improvements has been completed. While easement acquisition was underway, the removal of shipping containers from adjacent property allowed the City to locate and clean the old drainage facilities and the intersection is now draining. Construction no longer necessary.	City of North Charleston	
Indigo Cut- Snee Farm Study	A study will be performed in this flood-prone area. The entrance road to a major subdivision floods during rain events. In addition, several homes have repeatedly received water damage. Drainage improvements are being evaluated for a portion of this basin as a part of the Whipple Road widening project included basin modifications. Other opportunities are being evaluated as a part of the Town's Asset Management Program.	Town of Mount Pleasant	Study/ PER completed

Old Mount Pleasant Study	A survey of existing conditions and flooding conditions will be performed to determine the design of a future drainage improvement project. This older neighborhood suffers frequent flooding due to substandard drainage.	Town of Mount Pleasant/ SCDOT	Study Completed
Shem Creek Watershed Study	High level study of priority watershed to identify possible pollution sources and framework for future mitigation efforts to include a watershed management plan for water quality.	Town of Mount Pleasant	Phase I study completed
Hidden Lake Studies	Two studies are being evaluated. One will involve two drainage studies – one for water quantity and one for water quality. The Water Quantity study will evaluate the current basin conditions against the original basin model to predict flood conditions and any potential impacts from upstream development. The second study for Water Quality impacts will be undertaken to determine the effect, if any of upstream commercial development and residential activities on the neighborhood's lake system.	Town of Mount Pleasant	System evaluation/ study completed by developer - Upstream modifications completed by developer
Signal Point	Charleston County has surveyed this two mile drainage system and has now contracted with an engineering firm to study and provide recommendations for areas to improve drainage.	Charleston County/City of Charleston/SCDOT	Complete
James Island Watershed Basin Study	Delegated watershed for major and minor conveyances	Charleston County/City of Charleston/Town of James Is	Complete
Main Road and CSX Rail Road Drainage Study	Main Rd improvement to ensure no overtop flows during a 500 year storm event with a two feet sea level rise.	Charleston County	Complete

Current Projects			
Project	**Description**	**Jurisdiction**	**Status**
Station 18 and 19	Install a wet wall and pumps to discharge to rear of island to alleviate severe flooding. Project includes new force main to discharge on rear of island.	Sullivan's Island	Designs are under review by town staff
Station 28.5	Discharge pipe found to be 8 inch clay pipe. Design and install larger RCP to drain Stations 27 to 28.5.	Sullivan's Island	Currently under design
Morrison Court Drainage Project	Replace the current 36" CMP with a 60" concrete pipe with a smooth interior wall. Funded through FY 18 Transportation Sales Tax Annual Allocation Program (TST).	McClellanville	Currently in design phase. Working on DHEC permitting and easement acquisition.
Pinckney Street Culvert Replacement	Replacement of roadway crossline pipe along Pinckney Street. Funded through the FY 17 Transportation Sales Tax Annual Allocation Program.	McClellanville	Design
Ashley Avenue Drainage	Ashley Avenue E from 2nd to 5th Street. Funded through the FY 15 Transportation Sales Tax Annual Allocation Program.	Folly Beach	Phase 1 under construction.
Scotia Street Drainage	Roadside drainage improvements. Funded through the FY 16 Transportation Sales Tax Annual Allocation Program (CTC).	McClellanville	Working on right of entry access onto CCSD property.
Seabrook Island Road Drainage	Roadside drainage improvements. Funded in FY 17 by the County Transportation Committee.	Seabrook Island	Town of Seabrook managing.

45th- 52nd Avenue Drainage Improvement Project	This is the second phase of a large scale drainage project to help eliminate the most severe drainage problems within the City.	Charleston County/City of Isle of Palms	The construction of the project is underway and will be completed before the end of 2018.
Accabee Drainage Improvements Phase II	Phase II of drainage improvements identified in the Accabee Drainage Study	Charleston County/City of North Charleston	This project is in easement acquisition.
East Dolphin Channel Improvements	The drainage channel adjacent to East Dolphin Street experiences significant recurring erosion on the banks, threatening the fences and back yards of homes on Spaniel Drive and Jockey Court. The channel is approximately 10 feet deep with steep banks. The proposed project will install approximately 125 LF of 8' x 4' box culvert, approximately 880 LF of keystone retaining wall system on the East side of the channel, and a terraced, landscaped slope on the west side of the channel.	Charleston County/City of North Charleston	Complete (check with NC on dates)
Union Heights Drainage Improvements Phase III	Phase III of ongoing drainage improvements in the Union Heights area recommended in the Union Heights Drainage Study prepared by the USACOE. Funding for Phase III is from the Charleston County Transportation Sales Tax Program.	Charleston County/City of North Charleston	Easement acquisition is underway.
Snee Farm- Farm Quarter Outfall Channel Reconstruction and Stabilization	This project involves surveying existing flow conditions and sediment impacts to this outfall canal that serves a large portion of the Snee Farm subdivision. Canal reconstruction was previously conducted in 2000, however the system has significant erosion and sediment impacts. Engineering study is funded for FY 09/10 which	Charleston County/Town of Mount Pleasant	Design Phase with Charleston County, working on permitting with ACoE.

	will include measures to install more permanent bank and channel stabilization techniques. Project is in design phase with construction currently partially funded by Charleston County and Mount Pleasant.		
Snowden Community Drainage Study and Improvements	This community experiences flooding due to inadequate drainage. This project consists of an evaluation of the existing systems and implementation of improvements.	Charleston County/Town of Mount Pleasant	Charleston County has completed a study and is evaluating improvements. Additional drainage easements are needed. Work in progress.
Gulf Drive Drainage Improvement Project	Charleston County has completed a preliminary investigation of the drainage of this area. The County is coordinating with the Town of Mt. Pleasant regarding cost sharing and using the Town's easements.	Charleston County/Town of Mount Pleasant	Staff is reviewing alternate flow routes.
Country Manor Drive-Waters Edge	This project involves the piping of a swale easement to eliminate standing water, flooding of yards, and to improve drainage conditions for an adjacent area of Unincorporated Charleston County.	Charleston County/Town of Mount Pleasant	Staff is reviewing alternate flow routes.
Simmons Hill Community Drainage Improvement Project	The community is experiencing flooding due to inadequate public drainage systems. This project consists of evaluation of the existing systems and implementation of improvements.	Charleston County/Town of Awendaw	Preliminary survey work for this project is underway.
Parkers Ferry / Penny Creek Drainage	Improvements to outfall. Funding from Charleston County Transportation Sales Tax Annual Allocation program and managed by CC Public Works Department.	Charleston County	Right of way acquisition.

New Drainage Improvement Projects	All drainage projects, which are identified by or are a result of damages incurred from any natural disaster and/or hazard events of the type described within the *Charleston Regional Hazard Mitigation Plan.*	Charleston County	
Air Harbor Subdivision Drainage Project	Design improvements and funding mechanisms for this project are related to the St. Andres Canal project.	Charleston County	Working with City and SCDOT for maintenance efforts. Design work is in progress.
McClellanville Area Drainage Project	Drainage in the McClellanville area is being evaluated to determine potential ways to reduce the frequency of flooding in this community. Easements acquired by the USDA Soil Conservation Service (SCS) have been cleared by the County. Various small basin improvements are being tied into the canal system.	Charleston County	
Gapway Canal	The scope for engineering design and construction need to be developed. Drainage easement needs to be acquired for a major portion of the canal.	Charleston County	Completed.
Phillip's Community Drainage Improvement Project	The community is experiencing flooding due to inadequate public drainage systems. This project consists of evaluation of the existing systems and implementation of improvements. The funding is being provided by the Charleston County Transportation Sales Tax Program.	Charleston County	Working on easement acquisition and permitting.
Buck Hall Community Watershed Improvement Project	The community is experiencing flooding due to inadequate public drainage systems. This project consists of evaluation of the existing systems and implementation of improvements.	Charleston County	Initial field surveys have been completed and easement requirements

			are being conducted.
Red Top Community Watershed Improvement Project	This community experiences flooding due to inadequate drainage. This project consists of an evaluation of the existing systems and implementation of improvements.	Charleston County	Maintenance work has been done with SCDOT. Improvements are concept only at this time.
Hoot Owl Watershed Improvements	This community experiences flooding due to inadequate drainage. This project consists of an evaluation of the existing systems and implementation of improvements.	Charleston County	
Station 18.5 and 19 drainage pipe replacement.	Project includes replacement of collapsed pipes between middle street and outfalls in this area.	Charleston County/ Sullivan's Island	In planning stage and funding has been applied for
Brickyard Drainage Improvement Phase I	The private consultant hired by the City of North Charleston has completed a comprehensive drainage study of this drainage basin. Charleston County will perform the construction work. This project will involve the installation of larger drainage pipes, retention ponds, and the cleaning and widening of ditches throughout these three neighborhoods to address problems of standing water in streets and yards that has been going on for 30-40 years. Property acquisition for easements is needed.	Charleston County/City of North Charleston	Three regional retention ponds have been constructed. Further projects are under evaluation for feasible alternatives due to minimal space available.
Manor Road Drainage Project	This project involves drainage improvements for this street in the Town of Hollywood. The funding is being provided by the Charleston	Charleston County/Town of Hollywood	Award of contract for construction going to

	County Transportation Sales Tax Program and managed by CC Transportation Development Department.		County Council. Requesting additional funds for construction.
John's Island Canal North of Maybank Highway Watershed Improvements Project	This area experiences flooding due to inadequate drainage. This project consists of an evaluation of the existing system and implementation of improvements.	Charleston County	
Tiger Swamp Community Watershed Improvements	This community experiences flooding due to inadequate drainage. This project consists of an evaluation of the existing system and implementation of improvements. Charleston County is looking at efforts to begin the designation of this watershed as a Special Protection Area as per the Charleston County Stormwater Program Permitting Standards and Procedures Manual. Coordination efforts will be needed with the City of Charleston.	Charleston County	Part of this is within the DuWap study area with some improvements in design phase.
Hut/Abram Road Design	This project involves road design for Johns Island. The funding is being provided by the Charleston County Transportation Sales Tax Program.	Charleston County	Easement plans are underway.
Wilson Cemetery Canal	Surveying activities have been completed. Canal design, environmental permitting, drainage easement identification and acquisition and construction must be completed. The existing drainage system is currently maintained by County government.	Charleston County/Town of Awendaw	
Alert Road / N. Carolina Road Drainage Canal	Improvements to canal and easement dedication. Funding from Charleston County	Charleston County/Town of McClellanville	Design scope and fee being negotiated

	Transportation Sales Tax Annual Allocation FY 15 program and managed by CC Transportation Development Department.		with engineering consultant.
Hanahan Canal	Canal improvements managed by Charleston County Public Works. Funding from Charleston County Transportation Sales Tax Annual Allocation FY 15 program.	Charleston County	
Market Street Drainage Project	The Market Street Drainage Improvements project is divided into three phases. Construction contract for Phase I was awarded in September 2006 and completed in September 2007. Phase I consisted of connecting the surface drainage on Concord Street to the existing pump station, upgrading the pump station controls, and installing an additional pump. Phase II, the construction of tunnels & shafts and an emergency outfall, was completed in August 2014. The design for Phase III (surface collection system) should be complete late 2017 with construction starting early 2018. This project will reduce flooding in the Market and adjacent areas.	City of Charleston	Phase III to be completed by 2024.
Spring/ Fishburne Drainage Project	Engineering design is complete for this project, which will alleviate the flooding in the combined Spring and Fishburne Drainage Basins, including most of the Crosstown. Combined, the drainage basins are the largest on the Peninsula of Charleston and the drainage project is the largest that the City has undertaken to date with an estimated cost of $154 million. The first phase was completed in April 2013. Currently, Phases 2 & 3 are underway with completion expected in 3rd quarter 2017 and	City of Charleston	Phases 1 & 2 complete. Phase 3 to be completed 2020. Phase 4 to be completed 2022. Phase 5 to be completed 2024.

	2nd quarter 2019, respectively. Phase 4, wetwell & outfall, is expected to begin in 2018 and be completed in 2020, with Phase 5, the pump station, to commence directly thereafter.		
Forest Acres Drainage Project	This project includes the Forest Acres drainage basin and a portion of the 5th Avenue drainage basins. Design is almost complete on Phase 1 and Phase 2A of the improvements. The recommended improvements include removing the existing pump station, constructing a combination of dual box culvert and open channels, and combining the outfalls from the Forest Acres and 5th Avenue drainage basins.	City of Charleston	Phase 2A to be completed by 2021. Phase 2B to be completed by 2023.
Carol Street/Charleston Municipal Golf Course/Canal Street Drainage Project	The drainage system is currently maintained by local governments. A portion of this project was completed in 2002. The City of Charleston and Charleston County will complete the Golf Course portion of this project. Working our way upstream, upsizing culverts under Carol Street will allow reduced flooding from Woodland Shores residents.	City of Charleston/Town of James Island	Golf Course ponds are constructed. Carol Street design nearly completed.
Central Park/Wambaw Watershed Master Plan	Includes Fleming Road, Howle Avenue, Stefan Drive, Marlborough. This project will require drainage design, surveying, construction plans, drainage easement identification and acquisition, environmental permitting and construction activities. Fleming Road and Howle Avenue are state maintained roads. Drainage system and outfall capacity needs to be increased.	City of Charleston/Town of James Island/ SC DOT	In progress

Grimball Road/ Hazard Land Watership Improvements Project	The preliminary drainage basin study has been completed and drainage easement needs identified. The County realigned drainage ditches at the Elementary School located at Grimball Road.	Town of James Island	Additional drainage easements need to be acquired and funding identified.
Yorktown Drainage/ Bishop Gadsden Pipe Installation	The installation of an arch drainage culvert and improvements to road crossings associated with this project has been completed. A Hazard Mitigation Grant Program application for this project was denied. The Bishop Gadsden pipe installation phase has been completed for this project. The remainder of the project needs funding and additional easement acquisition.	Town of James Island	
Isle of Palms City-wide Drainage Improvements	Continue with efforts to implement city-wide drainage improvements as outlined by studies done by E. M. Seabrook.	City of Isle of Palms	
Isle of Palms City-wide Drainage Improvements	The City has conceptual designs and is working on final designs to improve the outfalls of the three worst performing drainage basins on the island. Ultimately the project will involve sealing the tidal water from entering into the upland portions of the drainage system, while allowing stormwater to escape. The outfalls are located along Waterway Boulevard at 30th Avenue, 36th Avenue and 41st Avenue.	City of Isle of Palms	Working on final design
24th, 29th and Hartnett Boulevard Drainage Improvement Project	This continuing project involves vacuum cleaning of open ditch systems where it is not feasible to maintain the ditches with conventional methods.	City of Isle of Palms	
Northwoods Point Drainage Improvements	This project will involve a redesign and a redirection of stormwater to reduce flooding potential in the	City of North Charleston	Design Complete, property

	Northwoods Point & Northwoods Mall commercial areas.		owner concurrence and easements needed.
Ashley Villas Drainage Improvements Phase II	Phase II of drainage improvements identified in the Ashley Villas Drainage Study.	City of North Charleston	Design Complete, easement acquisition underway.
Forest Hills II CMP Replacement Phase II	Phase II of project to replace deteriorated CMP within the Forest Hills II subdivision	City of North Charleston	Preparing for Bid
Ashley Villas Drainage Improvements Phase III	Phase III of drainage improvements identified in the Ashley Villas Drainage Study. (Final Phase)	City of North Charleston	Design in progress.
Collins Road Culvert Improvements	Project to replace undersized culvert under Collins Road	City of North Charleston	Design and permitting
New Drainage Improvement Projects	All drainage projects, which are identified by or are a result of damages incurred from any natural disaster and/or hazard events of the type described within the *Charleston Regional Hazard Mitigation Plan.*	Town of Mount Pleasant	Ongoing, East Crossing Spillway replacement is underway from Hurricane Matthew damage.
Brookgreen Phase III Drainage Project	This is the final phase of the Brookgreen Drainage improvements. Phases I and II have been completed. Repetitive loss homes exist within the project area.	Town of Mount Pleasant	Unfunded
Mathis Ferry Road Drainage Improvements	This project involves a drainage study, design, and installation of storm drain pipes in roadside ditches along Mathis Ferry Road. This area has not received ditch maintenance due to heavy traffic. The ditches are obstructed. Flooding of this major roadway is occurring and a health hazard	Town of Mount Pleasant/SC DOT	Remainder of project is on hold pending acquisition of additional funding.

	exists due to standing water. The S. C. Department of Transportation has been asked to participate. Cross line pipe replacement was completed in 2007.		
Implementation of Asset Management Comprehensive Maintenance Program (CMP) and Capital Improvement Program (CIP)	Based upon initial system inspections the Town will begin to schedule replacements or rehabilitation of failing infrastructure, to respond to system failures that occur during large rain events, to conduct drainage studies and improvements where warranted. Program includes ranking and prioritizing critical maintenance and improvement needs over a 5-year window. Funding mechanisms include the Infrastructure Maintenance Program are in place. Other funding opportunities such as grants are reviewed annually. Program is refined as resources become available.	Town of Mount Pleasant	Program is developed and is updated annually based upon needs and study data.
2018-2019 Asset Management Replacement Program and Comprehensive Maintenance Program (CMP)	Projects include Pipe inspections, cleaning and rehabilitation/ replacements for various pipes and other stormwater structures (spillways, inlets, etc. as identified.)	Town of Mount Pleasant	Funded for FY 18-19
Swale Regrading Projects	This project will involve the regarding of several rear yard drainage swales in locations throughout Mount Pleasant. These swales are non-functional and are causing property damage. Systems will need to be identified and added to GIS.	Town of Mount Pleasant	Unfunded/ addressed as needed - may be incorporated into CMP
Old Village - Pitt Street Business District Drainage Improvements	Project includes installation of larger drainage system to collect flood waters in this historic area. Area is flood prone due to	Town of Mount Pleasant/ Mount Pleasant Waterworks	Design is complete, project awaiting

	undersized pipes- this is phase II of an original SW Program project. Will be conducted along with Water and Sewer improvements.		permits/ scheduling
Old Mount Pleasant Drainage Improvements	Project involves drainage improvement projects as selected by Town Council for development in this area of Town will address old and substandard infrastructure. May be completed in smaller phased projects.	Town of Mount Pleasant	In design phase for Royall and Edwards sub-basins
Snee Farm (SRF)	Subdivision wide project to address up to (3) flood prone areas with improvements, replace or rehabilitate failing piped infrastructure and ditch systems, install water quality best management practices. Based upon Indigo Cut/ Snee Farm Study (PER) findings. Project includes priority repairs/ projects only.	Town of Mount Pleasant	Funded and under construction. Anticipated completion date is 2020
Snee Farm- Farm Quarter Outfall Channel Reconstruction and Stabilization	This project involves surveying existing flow conditions and sediment impacts to this outfall canal that serves a large portion of the Snee Farm subdivision. Canal reconstruction was previously conducted in 2000, however the system has significant erosion and sediment impacts. Engineering study is funded for FY 09/10 which will include measures to install more permanent bank and channel stabilization techniques. Project is in design phase with construction currently partially funded by Charleston County and Mount Pleasant.	Town of Mount Pleasant	Design Phase with Charleston County, working on permitting with ACoE and property owners.
Coleman Boulevard Improvements	In conjunction with an area revitalization and transportation project, significant basin changes and hydrology improvements to	Town of Mount Pleasant	Under Construction

	the area drainage system including water quality BMPs		
Bayonne Avenue Drainage Improvement Project	This project will provide drainage infrastructure between stations 26 and 26 2 where no drainage system currently exists. This area routinely floods during heavy rainstorms.	Town of Sullivan's Island	The engineering design for the project is complete, and permitting processes have begun.
Sullivan's Island Drainage Improvements	This project involves the implementation of the phased drainage improvements for the island. Funding sources are being pursued.	Town of Sullivan's Island	
Station 18 and 18.5 Drainage	This project includes engineering and implementation of drainage improvements and possible revitalization of pump and wetwell at station 18.	Sullivan's Island	Engineering is in progress.
West 9th Street Extension Drainage	Improvements to alleviate flooding at high tide. Funding from the Charleston County Transportation Committee (CTC) program and managed by CC Transportation Development Department.	Charleston County/SCDOT/ City of Folly Beach	Permitting with SCDOT.
Entire Sullivan's Island	Compete study of all drainage infrastructure and areas without infrastructure to develop a plan to improve all drainage on Sullivan's island.	FEMA/Town of Sullivan's Island	Grant has been applied for.
Septima Clark Expressway	Improve drainage and reduce tidal flooding with the installation of deep tunnels, access shafts, and outfalls.	City of Charleston/SCDOT	Phases 1 & 2 complete. Phase 3 to be completed 2020. Phase 4 to be completed 2022. Phase 5 to be

			completed 2024.
James Island Watershed Study	Includes the entire island. Purpose is to identify basins on James Island and prioritize the basins that require drainage improvements.	City of Charleston/Charleston County, Town of James Island	Final report delivered
2nd East to 6th East Drainage improvements design.	Engineering and final plans for drainage improvements from 2nd East to 6th Street East by Charleston County Transportation with CTC funding.	City of Folly Beach	Ongoing, plans completed, seeking funding. Construction TBD
Island Wide Drainage Study	Island wide study by Wood LP to map existing drainage, study problem areas, make recommendations for and prioritize improvements	City of Folly Beach	Draft report to be completed Summer of 2020
Tide valve change out	Tide valve change out by Chas County PW at 8th Street and East Erie and mid block 9th block East Cooper	City of Folly Beach	Summer 2020
Completed Projects			
Project	**Description**	**Jurisdiction**	**Status**
Isaac German Canal Drainage Basin Project	The study to determine drainage in the eastern Rifle Range Road area has been completed. A joint County of Charleston/Town of Mount Pleasant project improved the downstream end of Rifle Range Road (approximately 2,040 acres of watershed). Construction of a major roadway crossing improvement (Porcher Bluff Road) has been completed. Coordination efforts will be needed with the Town of Mount Pleasant. County is looking at efforts to begin the designation of this watershed as a Special Protection Area as per the	Charleston County/Town of Mount Pleasant	Complete

	Charleston County Stormwater Program Permitting Standards and Procedures Manual.		
Middle Street Drainage	This project involves drainage improvements for a Sullivan's Island neighborhood near Station 24th Street. The funding is being provided by the Charleston County Transportation Sales Tax Program and managed by CC Transportation Development Department. Seven drainage basins have been identified by a consultant for improvement. Currently, two of the seven phases of the improvement have been constructed. The remaining five phases are pending funding.	Charleston County/Sullivan's Island	Complete
Pinckney Street Drainage Repairs	Improvements to drainage on town parcel. Funding from Charleston County Transportation Sales Tax Annual Allocation FY 15 program and managed by CC Transportation Development Department.	Charleston County/Town of McClellanville	Completed
Osceola Ave Drainage Project	This project involves drainage improvements for this street on Sullivan's Island. The funding is being provided by the Charleston County Transportation Sales Tax Program and managed by CC Transportation Development Department.	Charleston County/Town of Sullivan's Island	Complete
Thompson Ave Drainage Project	This project involves drainage improvements for this street on Sullivan's Island. The funding is being provided by the Charleston County Transportation Sales Tax Program and managed by CC Transportation Development Department.	Charleston County/Town of Sullivan's Island	Complete
Accabee Drainage Improvements Phase I	Phase I of drainage improvements recommended in the Accabee Drainage Study. Funding from City	Charleston County/City of North Charleston	Complete.

	and Charleston County Transportation Sales Tax Program. Easement acquisition has been completed		
Angel Oak Elementary Drainage	Addition of storm drainage infrastructure at the entrance to the school to alleviate standing water. Funding from the Charleston County Transportation Committee (CTC) program and managed by CC Transportation Development Department.	SCDOT/Charleston County	Completed
Joy Avenue Drainage	Construction of this project was completed in 2007. The improvements are being monitored.	Charleston County	Completed
Legareville Road Watershed Improvement Project	This project consisted of evaluating the existing systems and implementing improvement for an area where flooding occurred due to inadequate drainage systems. A feasibility study has been completed and outlines three alternatives addressing the local flooding problem. This project has been completed.	Charleston County	Completed
Lauden Street	This project involved drainage improvements for an Isle of Palms neighborhood. The funding was provided by the Charleston County Transportation Sales Tax Program. This project has been completed.	Charleston County	Completed
Sparrow Drive	This project involved drainage improvements for an Isle of Palms neighborhood. The funding was provided by the Charleston County Transportation Sales Tax Program.	Charleston County	Completed
Middle Street Drainage	This project involved drainage improvements for a Sullivan's Island neighborhood. The funding was provided by the Charleston County Transportation Sales Tax Program. Coordination with SC DOT is complete and the project	Charleston County	Completed

	coordination is underway with the Town of Sullivan's Island.		
Lincoln High School Area	This project involved drainage improvements for the Lincoln High School area in McClellanville. The funding was provided by the Charleston County Transportation Sales Tax Program. Permitting and easement acquisition is complete and construction is underway.	Charleston County	Completed
3rd Street East at East Huron Avenue	This project involved drainage improvements for this Folly Beach neighborhood. The funding was provided by the Charleston County Transportation Sales Tax Program.	Charleston County	Completed
4th Street West at West Ashley Avenue	This project involved drainage improvements for this Folly Beach neighborhood. The funding was provided by the Charleston County Transportation Sales Tax Program.	Charleston County	Completed
6th Street East	This project involved drainage improvements for this Folly Beach neighborhood. The funding was provided by the Charleston County Transportation Sales Tax Program.	Charleston County	Completed
East Erie at 10th Street Drainage Improvements	This project involved drainage improvements for this Folly Beach neighborhood. The funding was provided by the Charleston County Transportation Sales Tax Program. Construction is underway.	Charleston County	Completed
Parish Place Ditch Improvements	This project sought to eliminate a hazardous section of ditch located near an elementary school as well as eliminate ongoing erosion problems. A section of the ditch was piped.	Charleston County/Town of Mount Pleasant	Completed
Clubhouse Ditch- Hidden Cove	This project involved increasing the size of a detention pond, regarding an existing ditch, and adding additional pipes to a street	Charleston County/Town of Mount Pleasant	Completed

	crossing to allow the drainage system to handle water from a 10-year storm event. Several properties are flooded during rain events. This was a joint project between Charleston County Public Works and the Town.		
Porcher Bluff Road	This project involved drainage improvements for this Mt. Pleasant neighborhood. The funding was provided by the Charleston County Transportation Sales Tax Program.	Charleston County (Transportation Sales Tax)	Completed
Hamlin Drainage Improvements	This project consisted of re-routing drainage lines to reduce localized flooding. The easements have been acquired and the construction work is complete.	Charleston County/S.C. DOT	Completed
Cowpens Canal Drainage Project	Road cross pipes have been upgraded. The County received negative comments from environmental agencies during the permit process.	Charleston County	Completed
27th Avenue Ditch System Project	This project involved the repair of the ditch system on 27th Avenue and Hartnett Avenue.	Charleston County/City of Isle of Palms	Completed
Isle of Palms Marina and Fire Station 2 Stormwater Collection Boxes	For this project, the county placed two stormwater collection boxes at the Isle of Palms Marina at the terminus of 41st Avenue and the newly constructed Fire Station 2 at #44 Forty-First Avenue.	Charleston County/City of Isle of Palms	Completed
Vestry Drive Drainage Project	Improvements to the piping and ditch system have been completed. The City and County of Charleston worked together to fund this project. The improvements are being monitored.	Charleston County/City of Charleston	Completed

Memminger Hall Subdivision	This project involved drainage improvements for this West Ashley neighborhood. The funding was provided by the Charleston County Transportation Sales Tax Program.	Charleston County Transportation Sales Tax	Completed
Sauldam Road Drainage	This project involved drainage improvements for a St. Paul's neighborhood. The funding was provided by the Charleston County Transportation Sales Tax Program.	Charleston County	Completed
Scotia, Baker, and Morrison Drainage	This project involved drainage improvements for this McClellanville neighborhood. The funding was provided by the Charleston County Transportation Sales Tax Program.	Charleston County	Completed
East Ashley at 2nd Street Drainage Improvements	This project involved drainage improvements for this Folly Beach neighborhood. The funding was provided by the Charleston County Transportation Sales Tax Program.	Charleston County	Completed
West Huron Avenue Drainage Improvements	This project involved drainage improvements for this Folly Beach neighborhood. The funding was provided by the Charleston County Transportation Sales Tax Program.	Charleston County	Completed
Bees Ferry Road Drainage Improvement	The project included multiple drainage improvements, road widening, and other improvements to the entire 4.5 mile length of Bees Ferry Road from Savannah Highway (U.S. 17) to Ashley River Road (S.C. 61). The project was requested by the City of Charleston and was funded by the Charleston County Transportation Sales Tax Program. Partial funding for the project was approved by voters in the second Transportation Sales Tax bond referendum.	Charleston County	Completed
Accabee Drainage Improvements Phase I	Phase I of drainage improvements recommended in the Accabee Drainage Study. Funding from City	Charleston County/City of North Charleston	Completed

	and Charleston County Transportation Sales Tax Program. Easement acquisition has been completed		
East Dolphin Channel Improvements	The drainage channel adjacent to East Dolphin Street experiences significant recurring erosion on the banks, threatening the fences and back yards of homes on Spaniel Drive and Jockey Court. The channel is approximately 10 feet deep with steep banks. The proposed project will install approximately 125 LF of 8' x 4' box culvert, approximately 880 LF of keystone retaining wall system on the East side of the channel, and a terraced, landscaped slope on the west side of the channel.	Charleston County/City of North Charleston	Completed
Monterey Drive Drainage Project	This project involves drainage improvements for this City of North Charleston street. The funding is being provided by the Charleston County Transportation Sales Tax Program and managed by CC Transportation Development Department.	Charleston County/City of North Charleston	Completed
Brookdale Canal Drainage Improvements	Project to pipe section of existing canal in the Brookdale section of Forest Hills 2 with significant recurring erosion issues.	Charleston County/City of North Charleston	Completed
Town Creek Drive Drainage Improvement Project	The City of Charleston completed drainage improvements designed by B.P. Barber to install catch basins and pipe to prevent significant overland flow from the right-of-way through private property to a marsh behind the property. Minor damage would occur to the garage of the residence. Project was completed in 2011.	City of Charleston	Completed

Rebellion Road	Installation of 4 Checkmates to prevent tidal flooding and installation of pipe lining (CIPP) to preserve the existing CMP outfalls.	City of Charleston	Completed
Barre and Canal Streets	Installation of 2 inlets and piping.	City of Charleston	Completed
White Chapel	Replacement of collapsed CMP drainage system.	City of Charleston	Completed
Pipe repair: Rutledge and Ashley at Colonial Lake	The existing clay pipe in both streets was cleaned, inspected, and lined (CIPP) as part of the renovation of Colonial Lake. The work occurred from Beaufain to Broad Streets.	City of Charleston	Completed
Replacement/installation of check valves	Existing Tideflex valves were replaced at Colonial Street, and the outfalls at Rutledge Avenue and Limehouse Street installed with Checkmate valves to prevent tidal intrusion during high tides. New check valves were installed at the Water Street outfall and on William Ackerman Lane.	City of Charleston	Completed
Wagener Terrace pipe lining	Failing clay storm drain was repaired and/or lined to extend the service life of the system. The depth of the system made a CIPP repair the only viable alternative.	City of Charleston	Completed
902 Preston Drive	Installation of 2 inlets and berms to reduce flow of water from ROW onto private property.	City of Charleston	Completed
Greenleaf	Rerouting of collapsed drainage pipe currently located under a building.	City of Charleston	Completed
Peach Blossom Lane	This project is for the connection of an isolated portion of the existing drainage system that has no outfall to connect to the existing system to discharge to an	City of Charleston	Completed

	available outfall of Beresford Creek.		
18 Formosa Drive	Installation of sag (vertical curve) in road to allow water to drain from one side to the other to alleviate flooding in front of residence.	City of Charleston	Completed
12 Water Street	Installation of new catch basin to capture water collecting along curb.	City of Charleston	Completed
Burns Lane	Installation of 376 LF of 18-in. RCP to replace failed brick arch in Burns Lane in conjunction with new C of C coliseum.	City of Charleston	Completed
Bridgepointe Drainage Improvement Project	The City of Charleston completed the Bridgepointe Drainage Improvement Project to alleviate flooding problems at the Bridgepointe Townhomes in the Church Creek Drainage Basin. Approximately 350 linear feet of 12'x4' concrete box was installed to improve stormwater conveyance from the detention ponds adjacent to the townhomes.	City of Charleston	Completed
Calhoun/ Concord Street Deep Tunnel Connection	This project connected Calhoun Street east of the railroad track at Washington and Concord Street from Charlotte Street to Laurens Street to the Concord Street Stormwater Pump Station that was completed in 2000. This project alleviated flooding in these areas, and was a component of Division I of the Market Street Drainage Improvements, construction of which was completed September 2007.	City of Charleston	Completed

Byrnes Down Drainage Project	The City of Charleston completed the drainage improvements designed by B.P. Barber and Assoc, Inc. as detailed in the *Storm Drainage Study of the Byrnes Downs Drainage Basin*, dated January 2001. Construction contract was awarded to Chandler Construction in April 2006. Substantial completion was achieved in February 2007 with full project close-out in May 2007.	City of Charleston	Completed
Church Creek Drainage Improvement Project	The City of Charleston completed the drainage improvements recommended by the Church Creek Watershed Master Drainage Plan. The project consisted of constructing approximately 2,650 linear feet of channel and installing approximately 1,850 linear feet of reinforced concrete box. The project should alleviate some persistent, serious flooding in the Shadowmoss and Hickory Hill neighborhoods and was complete December 2007.	City of Charleston	Completed
MUSC Pump Station Improvements	The pump station serving the areas immediately adjacent to the new hospitals on the west side of the peninsula was recently upgraded as part of the hospital construction undertaken by MUSC.	City of Charleston/MUSC	Completed
Town Creek Drive Drainage Improvement Project	The City of Charleston completed drainage improvements designed by B.P. Barber to install catch basins and pipe to prevent significant overland flow from the right-of-way through private property to a marsh behind the property. Minor damage would occur to the garage of the residence. Project was completed in 2011.	City of Charleston	Completed

Rebellion Road	Installation of 4 Checkmates to prevent tidal flooding and installation of pipe lining (CIPP) to preserve the existing CMP outfalls.	City of Charleston	Completed
Barre and Canal Streets	Installation of 2 inlets and piping.	City of Charleston	Completed
White Chapel	Replacement of collapsed CMP drainage system.	City of Charleston	Completed
Pipe repair: Rutledge and Ashley at Colonial Lake	The existing clay pipe in both streets was cleaned, inspected, and lined (CIPP) as part of the renovation of Colonial Lake. The work occurred from Beaufain to Broad Streets.	City of Charleston	Completed
Replacement/installation of check valves	Existing Tideflex valves were replaced at Colonial Street, and the outfalls at Rutledge Avenue and Limehouse Street installed with Checkmate valves to prevent tidal intrusion during high tides. New check valves were installed at the Water Street outfall and on William Ackerman Lane.	City of Charleston	Completed
Otranto Villas Drainage Project	This project was intended to relieve flooding of several repetitive loss properties. A Flood Mitigation Assistance grant was received for this project.	City of North Charleston/City of Hanahan, Berkeley County	Completed

College Heights Drainage Improvements Phase I	This project consisted of enlarging culverts and ditch sections and creating detention between Otranto Road and Highway 78. The flood potential for Auburn Drive, which has two repetitive flood loss properties, has been relieved as a result of this project.	City of North Charleston	Completed
Evanston Estates Drainage Improvement Project	This project involved the installation of piping along Renee Street to improve drainage in this area that holds water.	City of North Charleston	Completed
Union Height Drainage Improvements – Phase II	Phase II near the intersection of Spruill and Arbitus Avenues. This project is funded under the Community Development Block Grant (CDBG) program. Future phases of this project will continue as funding is available.	City of North Charleston	Completed
Hilda Street Drainage Improvements	The City has contracted for drainage pipes to be installed on Hilda Street to tie into a new drainage system being installed for the Bonds Ave School. This will alleviate standing water in the roadway at this location.	City of North Charleston	Completed
South Rhett Drainage Improvements	This project will pipe and improve a roadside ditch along South Rhett Avenue that has been subject to erosion along the edge of the pavement.	City of North Charleston	Completed
Crossroads Drive Drainage Improvements	Improvements to the drainage system along Crossroads Drive that were recommended in the drainage study were designed and constructed.	City of North Charleston	Completed
Industrial Avenue Regional Detention Pond	Regional detention pond recommended in the Brickyard Creek Drainage Basin Study. The City completed acquisition of property for construction of this detention pond.	City of North Charleston	Completed

Deerwood Drive Drainage Improvements	The section of Deerwood Drive generally located between Tyler Street and the Fire Station experiences recurring flooding conditions. This is a low point in the road, however, there is no discernible outfall for the drainage that collects here. This project will construct a drainage outfall to the Salamander Channel.	City of North Charleston	Completed
Pepperdam-Industry Intersection Drainage Improvements	The intersection of Pepperdam Avenue and Industry Drive experiences recurring flooding conditions which render the intersection impassable during significant rain events. This project will install a new piped drainage system to create an alternate outfall location for this intersection.	City of North Charleston	Completed
Northwoods Boulevard CMP Evaluation	The existing Stormwater pipe along Northwoods Blvd. consists of Corrugated Metal Pipe which is exhibiting signs of deterioration and creating recurring sinkholes along Northwoods Blvd. The City is proposing a pipe rehabilitation project. The initial step of the project will be investigation and evaluation of the existing pipe conditions to determine the most effective method of rehabilitation or replacement.	City of North Charleston	Evaluation and Pipe Rehabilitation Completed.
Parkside Drive Drainage Improvements Phase II	Additional drainage improvements on Parkside Drive between Maxwell Street and Iroquois Street.	City of North Charleston	Completed
Jacksonville/Carner Drainage Improvement	Drainage improvements coordinated with redevelopment of property downstream of the Jacksonville/Carner intersection. Improved drainage infrastructure installed.	City of North Charleston	Completed

Constellation Drive CMP Rehabilitation	Relining (concrete spincasting) of failing CMP under Dorchester Road and Constellation Dive.	City of North Charleston	Completed
Morrison Street Drainage Project	This project involves draining water from a low lying area East of Morrison Street to the West side of Morrison Street, and then empties into the marsh.	Town of McClellanville	Completed
Rambler Lane Crossing - Hickory / Rosemead	This project calls for the upgrade of a crossline pipe. The crossline is a choke point for debris during storm events which contributes to flooding of the upstream ditches and yards. Project will require utility relocation, a road cut to install a larger diameter pipe, and downstream bank stabilization.	Town of Mount Pleasant	Completed
Rifle Range Road / Hidden Lakes Outfall Crossing Stabilization	This project installing a headwall where a major ditch channel flows through a piped system under a major town arterial roadway. During Hurricane Gaston water from the upper basin overtopped the roadway and began to undercut the roadways as water tried to channel around the pipe structures. At this time, the piped section has minimum erosion protection. The Town plans to install a concrete headwall to better armor this system and protect the road from failure during a major event. Headwall was installed and is functional.	Town of Mount Pleasant	Completed
Snee Farms Wetlands Restoration and Channel Improvements	This project involves restoring a portion of the headwaters of Boone Hall Creek, which is now a golf course ditch system, to a larger wetlands channel. Project will provide additional water storage during rain events to help reduce flooding of upstream properties (some repetitive loss properties are in this area) and will help improve water quality by	Town of Mount Pleasant	Completed

	filtering run-off pollutants through the new wetlands channel. Due to funding and permitting problems, only a portion of this project was completed in 2007. This project was expanded to include the restoration of a subdivision ditch and outfall channels and possible restoration of a pond outfall near Westos Way. Westos Way pond spillway was reconstructed in 2009.		
Whitehall Terrace	This project is a multiphase project to pipe open drainage ditch system and re-rout systems to reduce flooding occurrences in several interior lots of this neighborhood. This project will also provide a safer neighborhood environment by piping the open systems and installing a sidewalk system. Phase I survey and design are complete. A portion of Phase I was completed in 2006. Phase II was completed in 2007. Phase III is underway and scheduled for completion in 2008. Design of Phase IV is complete, funding is being sought and project is scheduled for 2009. Construction of Phase IV was completed in September 2009.	Town of Mount Pleasant	Completed
Laurel Hill Outfall	A drainage improvement project involving the construction of a new outfall canal to redirect stormwater flows from the Ivy Hall/ Carol Oaks area between Gregory Ferry Road and Highway 17 that currently drain into a wetlands that has no outfall.	Town of Mount Pleasant	Completed

Scott Creek / Goblet Canal Piping Project	This project involved a partnership with a private entity to pipe an upper portion of a large canal system. The canal had experienced heavy erosion due to upstream flows and has grown to hazardous proportions with steep slopes and a deep channel. Because of utilities and home locations in the area, channel stabilization was not feasible	Town of Mount Pleasant	Completed
Waterford Outfall Improvements	This project involved the drainage easement acquisition and the installation of larger diameter outfall pipes for this sub basin. A repetitive loss property exists within the project area.	Town of Mount Pleasant	Completed
Snee Farm Project	The existing lake system was retrofitted with three (3) new bridges, existing culverts were replaced and the pond outfall was reconstructed. These improvements relieved frequent flooding in this 800 plus acre subdivision	Town of Mount Pleasant	Completed
Morrison Street Project	This was a project of adding drainage to prevent frequent flooding to a low to moderate income community which had frequently flooded in the streets, houses, and yards.	Town of Mount Pleasant	Completed
Greenhill Drainage Improvement Project	This project was part of a community development block grant to improve drainage in this low to middle income neighborhood. This project included piping of existing open roadside swales and replacement of culverts, significantly improving the drainage in this neighborhood.	Town of Mount Pleasant	Completed
Dovre Drainage Project	This three-part project consisted of adding underground piping, installing a stormwater	Town of Mount Pleasant	Completed

	management pond, and improving an outfall.		
William Street Project	This project to remedy tidal flooding in this area is complete. Several repetitive loss homes are in this area. This project consisted of replacing failed flap gates and some system modifications.	Town of Mount Pleasant	Completed
Outfall Repairs- Charleston National Subdivision	This project consisted of repairing damages to an outfall pipe for this neighborhood. The pipe was damaged and not functioning, thereby reducing the amount of stormwater that could be released from the drainage system. This project also included coordinating contacts and emergency operations with the neighborhood association.	Town of Mount Pleasant	Completed
Sullivan's Island Curb and Gutter Drainage Line Improvement Project	This project involved the replacement of a malfunctioning drainage system along Middle Street with an adequate system to transport storm water to outfalls, and the subsequent replacement of the curb and guttering system currently deteriorating due to the crushed drainpipe beneath it.	Town of Sullivan's Island	Completed
Edwards Park Phase III	Hazard Mitigation Grant Program from Hurricane Floyd was sought to fund this project. The HMGP grant was denied. This project will involve connecting drainage pipes from three small flood prone basins to the Edwards Park Stormwater Pump Station. Several other small sections of this project remain unfunded as of 2006. The Carr Street portion of this project was completed during 2007. A basin study is funded for FY 10/11 to determine current system operations, capacity, and the limits of adding additional sub-	Charleston County/Town of Mount Pleasant	Completed 2016/ 2017

	basins to the existing system. Design is complete for upgrades to the Queen Street sub basin. Easements funding are being sought. Freeman Street sub basin is not funded and design needs to be updated.		
2013-2014 Asset Management Replacement Program and Capital Improvement Program	Projects include Edwards Park Pump Station rehabilitation, Brickyard Bridge Culvert stabilization, and Laurel Grove Pipe repairs, Belle Hall Hibben Phase 4 pipe repairs, and year 1 of Water Quality Monitoring program projects have been funded for 2013-2014.	Town of Mount Pleasant	Complete
2014-2015 Asset Management Replacement Program and Capital Improvement Program	Projects include Whipple Road Area Subdivision pipe rehabilitation and replacements, Wakendaw/ Mathis Ferry Road area subdivision pipe rehabilitation and repairs, Hickory Shadows/ Rosemead Pipe rehabilitation and repairs, Water Quality Monitoring Program - year 2, Drainage Canal rehabilitation - year 1.	Town of Mount Pleasant	Complete
2015-2016 Asset Management Replacement Program and Capital Improvement Program	Projects include Whipple Road Area Subdivision pipe rehabilitation - and replacements, Wakendaw/ Mathis Ferry Road Phase II area subdivision pipe rehabilitation and repairs, Hickory Shadows/ Rosemead Pipe Phase II rehabilitation and repairs, Water Quality Monitoring Program - year 2, Drainage Canal rehabilitation - year 2.	Town of Mount Pleasant	Complete
2016-2017 Asset Management Replacement Program and Comprehensive Maintenance Program	Projects include Rivertown Phase 3 Section 2, Wando East/ Lakes, Water Quality Monitoring Program - year 3, Drainage Canal rehabilitation survey/ design - Whipple Sports Complex and Mill Tract (North Branch).	Town of Mount Pleasant	Complete

2017-2018 Asset Management Replacement Program and Comprehensive Maintenance Program	Projects include Pipe inspections, cleaning and rehabilitation/ replacements for various pipes though out the Town, Water Quality Monitoring Program - year 4, Drainage Canal rehabilitation - Whipple Sports Complex.	Town of Mount Pleasant	Complete
Drainage Infrastructure Installation Stations 18 ½ and 19	This project consisted of the installation of adequate drainage where none existed and upgrades of inadequate pipe in an area plagued by flooding.	Town of Sullivan's Island	Completed
Change out of Tide Valve at 2nd Street East	Replacement of nonfunctional and outdated whales tale valve for inline tide valve by Charleston County Public Works	City of Folly Beach	Completed
Tide Valve at 310 West	Installation of Flap gate valve at 310 West Hudson out fall to prevent king tide interior island flooding	City of Folly Beach	Completed
Culvert and cross line at 5th East	Installation of new drainage culvert and crossline along East Indian at 5th East	City of Folly Beach	Completed
Culvert and tie in at 6th Street West	Installation of drainage culvert and tie in to existing drainage box at 6th street west by SCDOT	City of Folly Beach	Completed
Crossline cleanout	Cleanout of cross line and outfall at 9th west	City of Folly Beach	Completed
I'On Avenue Drainage	Improvements to drainage along I'On Ave. Funding from Charleston County Transportation Sales Tax Annual Allocation FY 15 program and managed by CC Transportation Development Department.	Charleston County/Town of Sullivan's Island	Completed
Pinckney Street Drainage Repairs	Improvements to drainage on town parcel. Funding from Charleston County Transportation Sales Tax Annual Allocation FY 15 program and managed by CC Transportation Development Department.	Charleston County/Town of McClellanville	Completed

Clayton Drive	Installation of an improved outfall to alleviate frequent flooding.	City of Charleston	Completed
Pipe repair and lining: Ashley, Colonial, and Tradd Streets	Partial lining (CIPP) of failing clay pipe in the streets. The storm drain was cleaned and inspected. Where needed, point repairs and/or CIPP lining was used to stabilize the approximately 150-year-old clay pipe.	City of Charleston	Completed
Hut/Abram Road Design	This project involves road design for Johns Island. The funding is being provided by the Charleston County Transportation Sales Tax Program.	Charleston County	Complete
Hanahan Canal	Canal improvements managed by Charleston County Public Works. Funding from Charleston County Transportation Sales Tax Annual Allocation FY 15 program.	Charleston County	Complete
Parkers Ferry / Penny Creek Drainage	Improvements to outfall. Funding from Charleston County Transportation Sales Tax Annual Allocation program and managed by CC Public Works Department.	Charleston County	Complete
Seabrook Island Road Drainage	Roadside drainage improvements. Funded in FY 17 by the County Transportation Committee	Seabrook Island	Drain line relining and replacement completed February 2019.
9th West Drainage Improvement	Raising of road bed and installation of culverts and cross pipes from Ashley avenue West along 9th Street West	City of Folly Beach	Completed Spring 2019
Installation of Tide Valve at 5th East and East Indian Avenue	Installation of tide valve by Charleston County Public Works at newly installed culvert and cross pipe installed earlier this year by SCDOT	City of Folly Beach	Completed Spring 2019

To incorporate FEMA requirements for plan updates, the Mitigation Action Report identified in the previous plans were evaluated to determine their 2023 implementation status. Updates on the implementation status of each action are provided. The mitigation actions provided in Section 7: *Adopting Resolution and Jurisdiction-Specific Action Reports* include the mitigation actions from the previous plans as well as any new mitigation actions proposed through the 2022-2023 planning process.

Section 7 Adopting Resolution and Jurisdiction-Specific Action Reports

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44 CFR Requirements

44CFR Part 201.6(c)(3)(i): *The mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.*

44CFR Part 201.6(c)(3)(iii): *The mitigation strategy shall include an action plan describing how the actions identified in paragraph (c)(2)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction.*

Each government entity that is participating in the Charleston Regional Hazard Mitigation Plan provides an action report on an annual basis for the activities proposed to be undertaken during the coming year for inclusion in this section of the Plan. The time period for the action report is a one-year time period unless otherwise indicated. The action reports include numerous items that collectively address all 14 of the hazards identified as those to which the Region is potentially vulnerable in this plan.

Participating government entities also contribute to action reports regarding the activities proposed for the previous edition of the Plan on an annual basis for inclusion in this section of the Plan. The time period for which the status is provided is indicated on each of these action reports. As is indicated on the action reports, many of the action items are ongoing from year-to-year so are on the action reports for the government entity every year. Updates to activities that have potential for different results each year are provided on the status reports.

As was previously discussed in this plan, the Special Purpose Governments have concurrent jurisdictional boundaries with municipalities and/or the County government. The Special Purpose Governments also have statutorily identified responsibilities that they may perform. For example, special purpose districts that are water and/or sewer commissions are permitted to offer water and sewer services only in their service areas. Similarly, fire district commissions are permitted to offer only fire protection services in their service areas, and park and recreation commissions are limited to offering park/recreation-related services. However, the activities being performed by the municipalities and the County governments, as applicable, are also being provided to the areas services by special purpose district governments due to the concurrent jurisdiction of these government entities and special purpose district governments.

Consequently, any activity listed on Charleston County's action plan is similarly provided for the service areas of the special purpose district governments with concurrent jurisdiction with the County (all of fire district commissions, the Charleston County and St. Andrews Parish Park and Recreation Commissions, the North Charleston District and Sewer District Commissions and parts of the Charleston Water System, the James Island and St. Andrews public service districts, and the Charleston County School District). Similarly, the Cooper River Park and Recreation Commission shares concurrent jurisdictions with the City of North Charleston (as does the North Charleston District and the North Charleston Sewer District Commissions and parts of the Charleston Water System). The Mt. Pleasant Water Commission and the Charleston County School District also have concurrent jurisdiction with the Town of Mt. Pleasant. The Charleston Water System (partially), the College of Charleston and the Charleston County School District also share jurisdictional boundaries with the City of Charleston. Table 7-1 shows those plans that include multiple jurisdictions and where to find the plans for each jurisdiction or Special Purpose Government. While each of these government entities has their own action plan in this section, the action plans for the jurisdictions with which they share jurisdictional boundaries also apply to their service areas. Taken together, these action plans address all 14 types of hazards to which the government entities in the Region are potentially vulnerable as discussed in this plan. The action plans and status reports for each of the signatory governments follow in this section.

For each action and each goal addressed, natural hazards will refer to all hazards addressed throughout the entirety of this plan and the aforementioned goals.

The resolutions for adoption for each jurisdiction are for the 5-year update in 2019 and the resolutions will be updated once the plan has been formally adopted for the next FEMA approved plan in 2024.

Given that Charleston County and the participating municipalities and partners used the capability assessment as a part of the basis of forming and prioritizing their mitigation actions, the identified actions represented in each participants action report addresses their ability to expand on and improve their existing capabilities through the continued and newly identified mitigation actions.

Table 7-1: Multijurisdictional Plans

Multijuridictional Plans	Jurisdictions Included	Additional Plan Section
Unincoporated Charleston County	Town of Awendaw	7.2
	Town of Hollywood	7.5
	Town of Lincolnville	7.9
	Town of McClellanville	7.10
	Town of Megget	7.11
	Town of Ravenel	7.14
	Town of Rockville	7.15
	Town of Seabrook Island	7.16
	Town of James Island	7.70
	St. Johns Fire District	7.30
	St. Paul's Fire District	7.31
	Charleston County Parks and Rec	7.18
	St. Andrews Parish Parks and Rec	7.28
	North Charleston District	7.25
	North Charleston Sewer District	7.26
	Charleston Water System	7.20
	James Island Public Service District	7.23
	St. Andrews Public Service District	7.29
City of North Charleston	North Charleston District	7.25
	North Charleston Sewer District	7.26
	Cooper River Park and Playground Commission	7.22
	Charleston Water System	7.20
Town of Mount Pleasant	Mt. Pleasant Water Works Commission	7.24
	Charleston County School District	7.19
City of Charleston	Charleston Water System	7.20
	College of Charleston	7.21
	Charleston County School District	7.19

*Multijurisdictional plans incorporate smaller jurisdictions and special purpose district governments whose boundaries sometimes overlap with larger jurisdictions. This overlap accounts for some of the smaller jurisdictional plans being incorporated into more than one multijurisdictional plan (i.e. Charleston Water System, North Charleston District and Sewer District and Charleston County School District)

– Unincorporated Charleston County

Resolution for Adoption

#22-25 **Adopted: 07/12/2022**

A RESOLUTION

FOR THE ADOPTION OF THE FEMA-APPROVED 2019 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY CHARLESTON COUNTY COUNCIL

WHEREAS the County of Charleston has experienced the effects of natural and man- made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the County of Charleston originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, 2008, 2013, and 2017, and is required to adopt the amended version of this plan on a five-year cycle for the County to remain eligible for certain Federal programs in which Charleston County participates, and

NOW THEREFORE be it resolved that

1. The *Charleston Regional Hazard Mitigation and Program for Public Information Plan* is hereby adopted as an official plan of the County of Charleston, and

2. The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the Charleston County Council.

Effective this 12th Day of July 2022



Action Report for Unincorporated Charleston County

**Unincorporated Charleston County, SC fully services the following jurisdictions and therefore all have the same action report. Additions and individualized projects for this plan will be shown under the applicable jurisdiction: Town of Awendaw, Town of Hollywood, Town of James Island, Town of Lincolnville, Town of McClellanville, Town of Meggett, Town of Ravenel, Town of Rockville, and Town of Seabrook Island.*

Following are the proposed projects to be undertaken / continued in Unincorporated Charleston County for hazard mitigation during May 2023 - April 2024 and their status from May 2022-April 2023.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)
The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

Hazard Mitigation Goals and Objectives	
Goal 1: Mitigate natural hazard damage	
Objective 1.1	Minimize future flood damage
Objective 1.2	Minimize future earthquake damage
Objective 1.3	Minimize future hurricane damage
Objective 1.4	Minimize future wildfire damage
Objective 1.5	Minimize future tornado-related loss of life
Objective 1.6	Reduce existing flood damage
Goal 2: Increase public preparedness and protection	
Objective 2.1	Protect the lives of our citizens from natural and man-made hazards
Objective 2.2	Educating citizens regarding steps to take to reduce vulnerabilities
Objective 2.3	Promote long-term prosperity
Goal 3: Improve infrastructure	
Objective 3.1	Improve hazard resistance of infrastructure
Objective 3.2	Reduce vulnerability of our infrastructure to natural and man-made hazards
Goal 4: Increase environmental well being	
Objective 4.1	Preserve environmental resources
Objective 4.2	Improve water quality
Objective 4.3	Preserve open space
Objective 4.4	Encourage recreational activities

Based upon the responses to the latest survey questionnaire, the following are the goals for this plan (listed in the order of importance):

1. Reduce potential flood damage
2. Improve storm drainage
3. Minimize future flood occurrence
4. Minimize future hurricane damage
5. Improve hazard resistance of infrastructure

6. Minimize future earthquake damage
7. Protect environmental resources/preserve open and green space
8. Minimize future terrorist incidents
9. Improve water quality
10. Preserve historic building inventory
11. Higher regulatory standard
12. Minimize future hazardous material incidents

Charleston County Hazard Mitigation Actions					
Mitigation Action and Description	***Type*** / ***Priority***	***Funding Source*** / ***Responsible Agency***	***Goals*** and ***Objectives***	***Status*** / ***Implementation Schedule***	***Milestones Achieved*** and ***Future Plans***
Continue enforcement of the International Series Building-related and Fire codes and the floodplain management regulations (including the two-foot freeboard, cumulative substantial improvement clause, and/or other provisions deemed necessary to enhance Community Rating System credits) to maintain participation in the National Flood Insurance Program and the Community Rating System.	PA 1	General Fund Building Inspection Services	1.1, 1.2, 1.3, 2.1	Ongoing Continuous Process	Unincorporated Charleston County has maintained a Class 3 Rating System (CRS).
Continue to expand the Community Wildfire Protection Plan (CWPP) to include all Fire Departments / Districts in the County. Support the CWPP by increasing public awareness with the purpose of improving the protection of all structures.	PA, PI 1	General Fund Building Inspection Services, Project Impact, County-wide Fire Departments and Districts	1.4, 2.1, 2.2, 3.1, 3.2	Ongoing Continuous Process	Charleston County Consolidatd-911 has streamlined response and the department is accredited by the Commission on Accreditation for Law Enforcement Agencies, Inc. The Natural Hazard Awareness Expo 2018 was geared towards promoting the awareness of all natural hazards that occur in Charleston. The Expo reached about 1000 people. Another Hazards Expo is currently in the planning stages. The expos for 2020 and 2021 were postponed TBD due to COVID.
Promote Standards for existing homes to be retrofitted to exceed minimal codes.	PP, PI 1	General Fund Building Inspection Services	1.2, 1.3, 1.6, 2.2, 4.1	Ongoing Continuous Process	Reworked and published new brochures to push this message in 2016. Brochures are available at all expos and handed out at County permitting office. Worked with Department of Insurance and SC Safe Home program to promote retrofitting. Developed grant-funded community fair for the public to educate on retrofitting practices.

Promote Standards for existing homes to be retrofitted to exceed minimal codes.	PP, PI 2	General Fund Building Inspection Services	1.5, 2.2	Ongoing Continuous Process	Education project through use of brochures and information given to citizens. Ongoing on a regular basis as part of established departmental process. The Natural Hazard Awareness Expo 2018 was geared towards promoting the awareness of all natural hazards that occur in Charleston. The Expo reached about 1000 people. Another Hazards Expo is currently in the planning stages
Provide hazard related information to all residents through local telephone book. Continue providing information to citizens regarding hazard safe interior rooms (PPI).	PI 2	General Fund Building Inspection Services	1.1, 1.3, 2.1, 2.2, 4.2	Ongoing Continuous Process	Servicing local phonebooks and updated yearly for new publications.
Continue to provide coordination of County stormwater management through development and implementation of a comprehensive program. Enhance efforts at improving water quality through environmental educational activities.	PA, PI 1	General Fund Enterprise Fund Grant Funding (FEMA) Planning Public Works Building Inspection Services Project Impact	1.1, 1.6, 2.2, 3.1, 3.2, 4.2	Ongoing In place/In process	Charleston County has completed the Stormwater Comprehensive Plan for the 72,000-acre Mead Westvaco site known as East Edisto for development that is now in progress. Building Inspection Services has process LOMRs for land area not included in Comprehensive Plan. Project Impact voted on project to promote living shorelines and educate the community.
Continue implementing the stormwater master plan for Charleston County and the applicable regulations.	PA 2	Enterprise Fund Grant Funding (FMA) Public Works Building Inspection Services Planning	1.1, 1.3, 2.1	Ongoing In place	The Stormwater Master Plan was completed in 2012, enforcement is continuing. The county now has digital NFIP Flood Insurance Rate Maps implemented in GIS system. Ongoing on a regular basis as part of established departmental process. The Stormwater Manual is in the process of being updated and amended (2022).

Implement new standard requiring reverse grade to move stormwater runoff back towards the property and away from waterways.	PA	General Fund	4.2	New	Planning Stage in Ordinance Assessing the best avenues to implement these standards / regulations.
	2	Public Works Building Inspection Services		In Process	
Continue enforcement of zoning regulations, including, the low-density zoning provisions of the Zoning and Land Development Regulations (ZLDR).	PA	General Fund	1.1, 1.2, 1.3, 2.1, 2.3, 4.1, 4.3, 4.4	Existing	The Zoning and Planning Department updated the Comp. Plan in 2015 encouraging the preservation of the rural area, preserving open space, and requiring vegetated buffers along the OCRM Critical Line.
	1	Planning		Continuous Process	
Conduct or co-sponsor training workshops regarding the International Building-related, flood, and Fire Prevention Codes and Regulations, and on sustainable construction/landscaping practices, when there is interest in these workshops (PPI).	PA, PI	General Fund Self-supporting through workshop revenues	1.1, 1.2, 1.3, 2.2, 3.1, 4.1	Ongoing	Building Inspection Services participated in 43 meetings, expos, or events between May 2017- April 2018. Director Carl Simmons who spoke at a total of 10 events from SC DOI meetings to FEMA flood map sessions, and Jim Houser speaks regularly at Trident Home Builders meetings (12 events in the past year). Current (2022): The department continues to regularly meet with individual citizens, homeowners, contractors, and other local governments.
	1	Building Inspection Services		Continuous Process	
Continue providing information to citizens regarding propane tank anchoring, hazard safe interior rooms, boat anchoring and maintenance, generator safety, riparian buffer zones, hazard resistant landscaping, and artifact protection, among other issues (PPI).	PA, PP, PI, NB	General Fund Grant Funding (HMGP)	1.1, 1.2, 1.3, 2.2, 4.1	Ongoing	Project Impact attended 7 expos plus conducted additional outreach events through June 2022 where information was distributed to attendees.

	2	Building Inspection Services Project Impact Community Partners		Continuous Process	
Continue enforcing regulations requiring new manufactured homes brought into Charleston County to be constructed to wind zone 2 requirements as required per State law.	PA	General Fund	1.1, 3.2	Ongoing	Enforcement has been maintained including regulations to 2' freeboard. Ongoing on a regular basis as part of established department processes.
	1	Building Inspection Services		Continuous Process	
Continue prohibiting new manufactured homes to be installed in "V" or "Coastal A" flood zones and requiring manufactured homes installed in "A" flood zones to be on permanent foundations.	PA	General Fund	1.1, 1.2, 1.3, 2.1	Ongoing	Continue to prohibit manufactured homes in VE/Coastal AE Zones and require engineered foundations in AE Zones. Continue to regulate to a 2' freeboard.
	1	Building Inspection Services		Continuous Process	
Continue demolishing structures posing a threat to public safety, considering location within the special flood hazard area as a prioritization factor.	PP	Grant Funding (FMA)	1.1, 1.2, 2.3, 3.2, 4.4	Ongoing	There have been 0 substandard structures demolished through Building Inspection Services since February 2019 in Unincorporated Charleston County and jurisdictions that are fully serviced by the Department.
	3	Building Inspection Services		Continuous Process	
Seek funding for elevating, retrofitting, demolishing, or relocating repetitively flooded properties, if suitable candidates should be identified. Utilize Charleston County Repetitive Loss Area Analysis for identifying suitable candidates.	PP	Grant Funding (FMA, HMGP)	1.2, 1.3, 1.6, 3.1, 3.2, 4.1	Existing	From 2019, there are 2 suitable candidate that met the eligibility requirements and grants have been awarded. In 2022: 9 additional applicants have been identified and grants are in the process of being applied for.
	1	Building Inspection Services		In process	
Continue distributing a brochure on protecting boats from damages during hurricanes to interested citizens through expos, offices, marinas, and boat dealers (PPI).	PP, PI	Grant Funding (HMGP)	1.3, 2.2, 3.1, 4.4	Ongoing	Project Impact attended 7 expos plus conducted additional outreach events through June 2022 where information was distributed to attendees.

	3	Building Inspection Services Project Impact		Continuous Process	
Continue distributing a brochure on protecting and preserving historic artifacts to interested citizens through expos, government offices, etc. (PPI).	PP, PI	Grant Funding	1.1, 2.2, 3.2	Ongoing	Project Impact attended 7 expos plus conducted additional outreach events through June 2022 where information was distributed to attendees.
	2	Building Inspection Services Project Impact		Continuous Process	
Seek funding for retrofitting critical facilities or infrastructure to enhanced hazard resistance in accordance with this County of Charleston Facilities Master Plan Update "Building Utilization and Needs Survey" or other applicable plans as funding sources become available.	PP	Grand Funding (FMA, structural) and Hazard Mitigation Funds	1.2, 1.3, 1.6, 2.3, 3.2	Ongoing	Two grants to Charleston County were awarded for educational programs however no structural components were included in these grants. Grants are being closed out now. Roper St. Francis in partnership with Charleston County received a structural grant to upgrade emergency systems. Grants are in progress. Pending the approval of Hazards Mitigation Funds, County EMD plans to add generator transfer switches to One 180 Place, Lowcountry Food Bank and Coastal Pre-Release Center as well as hurricane shutters to the Coastal Pre-Release Center.
	1	Building Inspection Services and County EMD		In process	
Continue enforcement of the tree protection/landscaping ordinance	NB	General Fund	2.3, 4.1, 4.2, 4.3	Ongoing	All road improvement projects are enhanced with landscape plantings for roads and constructed under the half-percent (1.2%) sales tax. The county continues to administer and enforce its tree protection and preservation ordinance and landscaping ordinance which include grand tree protection and landscape buffer requirements.
	2	Planning		Continuous Process	

Continue maintaining permanent open space as parks and restricted use areas.	NB	General Fund Special Revenue Fund	1.1, 2.3, 4.1, 4.4	Ongoing	139,848 acres are deeded privately or publicly to remain as open space and an estimated 89,000 of that total is in special flood hazard area.
	2	Parks and Recreation Commission Building Inspection Services		Continuous Process	
Continue encouraging the Greenbelt Advisory Board to acquire green space in special flood hazard area, to the extent feasible	NB	Special Revenue Fund	1.1, 2.3, 4.1, 4.2, 4.4	Ongoing	Since its inception, the Greenbelt program has protected 21,170 acres of land in Charleston County.
	2	Building Inspection Services Parks and Recreation Commission		Continuous Process	
Continue participating in "Build-A-Dune" projects as funding permits, and assist other jurisdictions in participating in this initiative upon request. Implement and participate in the Charleston County Beachfront Management Plan to enhance and preserve our coastlines.	NB	Grant Funding (PDM, FMA, HMGP)	1.1, 1.3, 1.6, 2.2, 3.1, 4.1	Depending on Funding / Ongoing	No grant funding was secured for "Build-A-Dune" projects during this time period. The County's Beachfront Management Plan adopted in 2014 focuses on current conditions, regulations, strategies for preservation and other relevant information and is being maintained as required.
	2	Building Inspection Services Public Works Project Impact		Depending on Funding / Continuous Process	
Continue to distribute literature on riparian buffer zones and hazard resistant landscaping to citizens through government offices and at expos (PPI)	NB, PI	Partner Donations Grant Funding (HMGP)	1.1, 1.3, 2.2, 3.1, 4.1, 4.2, 4.3, 4.4	Ongoing	Project Impact attended 7 expos plus conducted additional outreach events through June 2022 where information was distributed to attendees. The Natural Hazard Awareness Expo 2018 was geared towards promoting the awareness of all natural hazards that occur in Charleston. The Expo reached about 1000 people. Another Hazards Expo is currently in the planning stages.
	2	Building Inspection Services Project Impact		Continuous Process	

Develop and implement projects to reduce air and water pollution in Charleston County under the Project Impact partnership. Promote conservation of energy resources.	NB	Grant Funding (HMGP)	4.1, 4.2	Completed	Project Impact attended 7 expos plus conducted additional outreach events through June 2022 where information was distributed to attendees. Brochure has recently been updated with new information. The Natural Hazard Awareness Expo 2018 was geared towards promoting the awareness of all natural hazards that occur in Charleston. The Expo reached about 1000 people. Another Hazards Expo is currently in the planning stages.
	1	Building Inspection Services Project Impact		Completed	
Encourage cooperation between county departments, other government entities, interested businesses, and citizens regarding recommended sustainable practices to protect environmental quality.	NB	Grant Funding (PDM) General Fund	2.3, 4.1, 4.2	Ongoing	All Community Development departments are now using the same web-based software program with extensive transparency for the public.
	2	Building Inspection Services Project Impact Other County Departments as applicable		Continuous Process	
Continue hazardous material training (PPI)	ES, PI	Enterprise Fund Grant Funding	2.1, 3.1, 3.2, 4.1	Ongoing	Emergency Management conducted training sessions on topics including Clandestine Labs, Site Safety Officer, and Rae Systems Portable Tech. In addition, Individuals were sent to specialized training at nationwide core competence centers. Emergency Management conducted training sessions on topics including Clandestine Labs/Site Safety Officer, Rae Systems Portable Technician, IAFF 80-HR Hazardous Materials Technician Course, Surface Transportation Emergency

	2	Hazardous Materials Coordinator		Continuous Process	Preparedness and Incident Command. In addition, individuals were sent to specialized training at nationwide core competence centers including the Nevada National Security Site Center for Radiological/Nuclear Training.
Continue Terrorist Response Training (PPI)	ES	General Fund	2.1, 2.3, 3.1, 4.1	Ongoing	Training occurs on a continual basis, at least annually. TRT included Active Shooter training conducted by FBI, SLED, DHEC and other agencies. Training occurs on a continual basis, at least annually. Terrorist Response Training included Weapons of Mass Destruction Refresher training conducted by the FBI, SLED, DHEC and other agencies on January 10, 2017 and Preparedness for Suicide Bombing Incidents conducted on Feb. 23-24, 2017.
	1	Hazardous Materials Coordinator		Continuous Process	
Continue coordinating Emergency Operations Center activities related to a hazard event, including holding drills for EOC personnel and maintain the Charleston Count Continuity of Operations Plan (COOP).	ES	General Fund	2.1, 2.2,	Ongoing	The EOC regularly holds training sessions for area responders, officials and staff. The Charleston County Emergency Operations Center successfully activated for and effectively coordinated responses to two real world incidents – including Hurricane Irma in 2017 and the ice storm January 2018. Additionally, EOC conducted full scale drill on 6/6/18, to practice and improve practices for an earthquake event. Additional drills occur at least annually.
	1	Emergency Management		Continuous Process	
Continue responding to hazard emergencies.	ES	General Fund Enterprise Fund	2.1, 2.2, 2.3, 3.2, 4.1	Ongoing	Charleston County Consolidated Dispatch recorded 67 fuel spills, 363 Gas Leaks/Odors, 15 Hazmat

	1	EMS Fire Departments Sheriff Department Hazmat Coordinator Emergency Management		Continuous Process	Incidences, and 573 Outside fires since May 1, 2018.
Continue to require improved construction practices for new County-owned critical facilities that are sensitive to flood zone (e.g. avoiding "A" and "V" flood zones where feasible) and seismic considerations.	ES	General Fund Bond Fund	1.1, 1.2, 1.3, 2.1, 3.2	Ongoing	The New Charleston County Emergency (EOC) is located inland outside the SFHA and is fully operational.
	1	Facilities Management		Continuous Process	
Continue working to attain resources and to provide training for maritime firefighting through the Maritime Incident Response Team (MIRT).	ES	Grant Funding (HMGP)	2.1, 2.3, 3.1	Ongoing	Quarterly training sessions on marine firefighting are held at this time and on a regular basis as part of establish departmental processes.
	1	Hazardous Materials Coordinator		Continuous Process	
Maintain the national Weather Service "Storm Ready" and "Tsunami Ready" Community designations.	ES, PI	General Fund	1.1, 1.3, 1.5, 1.6, 2.1, 2.2	Completed	Charleston County has been recertified as a "Storm Ready" and "Tsunami ready" Community. This designation remains valid according to the NWS website.
	1	Emergency Management		Completed	
Continue coordinating the Anti-Terrorism Task Force (COBRA) of specially trained police, fire, and EMS personnel to respond to terrorist acts (PPI).	ES	Grant Funding (HMGP)	2.1, 2.2, 2.3, 3.1, 4.1	Ongoing	In addition to conducting various training sessions, the WMD regional Response Team responded to real world assistance calls for suspicious white powder in mailboxes on Sullivan's Island in 2018 and a possible fentanyl bust in the City of Charleston June 2017 and Lincolnville June 2018. It also conducted a full scale alert and exercise on Feb. 23 2018, with assistance from SLED, DOE, and other agencies. In addition to conducting various training sessions, the WMD Regional Response Team (COBRA) Team responded to a real world assistance call for suspicious powder at the Berkeley County Court House Emergency

	1	Hazardous Materials Coordinator		Continuous Process	Management on Jan. 23, 2017. It also conducted a full scale alert and exercise on Feb. 22, 2017, with assistance from SLED, the Department of Energy and other agencies.
Continue sponsoring the Community Emergency Response Training (CERT) program (PPI).	ES, PI	Grant Funding (LEMPG)	2.1, 2.2	Ongoing	As of June 8, 2018, there are 594 CERT members and 51 teen CERT members active on the roster across Charleston County. Classes were conducted at the Charleston County Volunteer Rescue Squad in the fall of 2017 in order to better prepare the citizens of Charleston County for potential incidents.
	2	Emergency Management		Continuous Process	
Maintain a web-based Emergency Operations Center Capability.	ES	General Fund	2.1, 2.3, 4.1	New	The CEOC successfully upgraded its software to Palmetto which is more robust and has more mapping capabilities than previous software. Palmetto is also used across the state leading to increased coordination and real time interaction in a crisis.
	1	Emergency Management		Continuous Process	
Continue the drainage maintenance and canal cleaning program.	SP	General Fund	1.1, 1.6, 2.1, 2.3, 3.1	Ongoing	Continue to survey drainage features and compile a GIS database to improve tracking efficiency. Program goal to reduce mean time between recurring maintenance activities. The Town of Ravenel constructed a new sewer line (TMS 187-00-00-080), which connects to an existing one (TMS 186-00-00-103), improving drainage in the area.
	1	Public Works		Continuous Process	
Continue utility right of way permitting, considering emergency vehicle access and flood zone related issues in permitting decisions.	SP	General Fund	1.1, 1.6, 2.1, 2.3, 3.1	Ongoing	Continue the encroachment permitting process to manage encroachments in ROW and drainage easements to maintain and improve emergency vehicle access and flood zone issues. Continue to require that when new ROW is permitted/added deeded drainage easements are required as part of the permit/approval process.
	1	Public Works		Continuous Process	

Continue the elevation reference mark inspection program.	SP	General Fund	1.1	Existing	Benchmarks are annually inventoried and updated and/or recovered. By tilting high accuracy GPS the National Geodetic Survey has accepted Stability B benchmarks.
	1	Public Works		Continuous Process	
Continue to provide design, permitting, and construction services for the drainage improvement projects.	SP	Grant Funding General Fund	1.1, 1.6, 2.1, 2.3, 3.1	Existing	There were 13 completed projects providing drainage improvements paving of dirt roads and sidewalks and 235 paved roads were resurfaced or applied a preservation application to provide better vehicle travel conditions from May 1, 2016 to April 30, 2017. Other projects are ongoing on a regular basis as part of establish departmental process.
	1	Public Works Assistant Admin for Transp. & Public Works (Transp. Sales Tax)		Continuous Process	
Continue the road/repair construction program considering needs during evacuation and soil liquefaction potential in prioritization decisions.	SP	General Fund Grant Funding (FMA/PDM) Enterprise Funding	1.1, 1.2, 1.6, 2.1, 2.3, 3.1	Completed	There were 13 completed projects providing drainage improvements paving of dirt roads and sidewalks and 235 paved roads were resurfaced or applied a preservation application to provide better vehicle travel conditions from May 1, 2016 to April 30, 2017. Other projects are ongoing on a regular basis as part of establish departmental process. In the Town of James Island, the Harbor View Road Bridge and causeway at James Island Creek are a main focus for repair. The bridges at Folly Road and Ellis Creek and Riverland Drive at New Town Cut have been rebuilt in the past year. Buxton Bridge over James Island Creek and the causeway will be the focus of future projects.
	1	Public Works Assistant Admin for Transp. & Public Works (Transp. Sales Tax)		Continuous Process	

Design/elevate roadways being constructed or reworked through the sales tax program to minimize flooding potential to the extent feasible. Identify those roads susceptible to flooding.	SP	Enterprise Funding	1.1, 1.2, 1.6, 2.1, 2.3, 3.1	Ongoing	The Main, Hollings, Holmes, and Sallie Manigualt Rds. Improvement projects were completed through the end of 2016 period. Trexler Ave, Victory Ln., and Jewel St., projects were completed ruing the 2016-17 period. Improvements included elevating the road, improving the capacity of the drainage system (culverts) reducing potential flooding. These Improvements were funded through the County wide half-cent sales tax program. The Structural Project Impact Subcommittee is focusing on improving flood and emergency routes.
	1	Assistant Admin. For Transp. & Public Works (Transp. Sales Tax)		Ongoing	
Continue to distribute a generator safety brochure to interested generator retail outlets, utility companies and the general public (PPI).	SP	Partner Donations General Fund	1.3, 2.1, 2.2, 3.1	Ongoing	Project Impact attended 7 expos plus conducted additional outreach events through June 2022 where information was distributed to attendees. Brochure has recently been updated with new information. The Natural Hazard Awareness Expo 2018 was geared towards promoting the awareness of all natural hazards that occur in Charleston. The Expo reached about 1000 people. Another Hazards Expo is currently in the planning stages.
	2	Building Inspection Services Project Impact		Continuous Process	
Continue to provide information about the USGS steam gauge program to the public (PPI)	SP	Partner Donations Grant Funding	1.1, 1.3, 2.1, 2.2, 4.2	New	Working on possible new avenues for disseminating new information such as brochures, expo presentations and continuing the partnership with USGS.
	2	Building Inspection Services Project Impact		Continuous Process	
Continue providing hazard-related literature/information to citizens at County offices (PPI)	PI	General Fund	1.1, 1.2, 1.3, 1.4, 1.6, 2.1, 2.2	Existing	Printed materials (brochures, pamphlets, etc.) are always displayed and made available for public use.

	2	Building Inspection Services Project Impact		Continuous Process	Printed media are also updated on a regular basis.
Mail an outreach project to floodplain residents to those property owners whose property is located in special flood hazard areas (PPI)	PI	General Fund	1.1, 1.3, 2.1, 2.2, 4.2	Completed	In preparation for the upcoming grant funded community fair, mailing and advertisements were sent out to property owners in the area and invite them to this hazard related event to educate themselves on their flood risk. An annual outreach activity is completed.
	1	Building Inspection Services Project Impact		Completed	
Continue providing speakers to civic groups regarding hazard related activities and environmental quality topics (PPI).	PI	General Fund	2.1, 2.3, 4.2	Ongoing	Building Inspection Services participates in meetings, expos, or events with many different government and non-government entities.
	1	Building Inspection Services Project Impact		Continuous Process	
Continue programs aimed towards providing resources to local schools and civic groups to enhance their ability to educate students regarding hazard events and hazard event preparation. Provide educational programs to schools on hazards or environmental quality as opportunities arise (PPI).	PI	Grant Funding (HMGP) Project Impact Resources	1.1, 2.1, 2.2, 3.2, 4.2	Completed	Project Impact had awarded mini-grants to teachers and other educators to fund special lessons in hazard mitigation annually since 2010 until 2019. Multiple brochures and children's activity books are also handed out to students of all ages on a regular basis at expos and in offices. Ongoing on a regular basis as part of established departmental process.
	1	Project Impact		Continuous Process	
Continue participating in hazard-related/product or environmental protection-related expos or public events (PPI).	PI	General Fund	2.1, 2.2, 3.2, 4.2	Ongoing	Building Inspection Services participates in meetings, expos, or events with many different government and non-government

	2	Building Inspection Services Project Impact		Continuous Process	entities. Project Impact attended 7 expos plus conducted additional outreach events through June 2022 where information was distributed to attendees. The Natural Hazard Awareness Expo 2018 was geared towards promoting the awareness of all natural hazards that occur in Charleston. The Expo reached about 1000 people. Another Hazards Expo is currently in the planning stages.
Maintain the flood zone frequently asked questions page on the Charleston County web site to provide information on protecting against flood hazards to the public (PPI)	PI	General Fund	2.2	Existing	Respond to inquiries, and update information on a regular basis. A newspaper advertisement was also published in March 2017 for citizens to mail in inquiries for a staff member to return with a phone call.
	2	Building Inspection Services		Continuous Process	
Maintain the Project Impact internet page on the Charleston website to relay information on Project Impact events and methods to reduce hazard-related losses to the public (PPI).	PI	General Fund	2.2	Ongoing	The internet page is monitored constantly and updated with new information and/or brochures as they become available.
	2	Building Inspection Services		Continuous Process	
Maintain a web page with information on environmental resources protection/air and water quality pollution reduction strategies. Promote carpooling, public transportation and bicycle paths.	PI	Grant Funding	2.2, 4.1, 4.2	Ongoing	Facebook and Twitter sites are maintained and updated. Television programming produced is available for view on "YouTube".
	1	Building Inspection Services Public Information		Continuous Process	
Continue educational efforts and initiatives promoting energy conservation. Promote LEED construction practices.	PI	Grant Funding (HMGP) General Fund	2.2, 4.1	Ongoing	Project Impact attended 7 expos plus conducted additional outreach events through June 2022 where information was distributed to attendees. Three past mini-grants to area schools also supported energy conservation and hazard mitigation.
	2	Building Inspection Services		Continuous Process	
Continue participating in the annual maintenance and approval of Hazard Mitigation Plan / Program for Public	PI, PA, PP, NB, ES, SP	General Fund	2.2	Ongoing	During this period, the County has held multiple public meetings and maintained correspondence

Information Committee efforts to achieve maximum public outreach.	1	Building Inspection Services Project Impact		Continuous Process	with jurisdictions about the importance of the Plan.
Maintain the Web and Facebook Pages for Project Impact (PPI)	PI	General Fund	2.2, 4.1, 4.2	Ongoing	Respond to, and update on a regular basis. Ongoing on a regular basis as part of established departmental process.
	1	Building Inspection Services Project Impact Public Information		Continuous Process	
Continue inter-departmental efforts to share geographic digital information and property specific construction-related information.	GIS	General Fund Grant Funding (HMGP)	2.1	Ongoing	Continue compiling updated Topo and Storm Drainage System Expansion information. This system is maintained constantly and updated whenever new data is available.
	2	GIS Building Inspection Services Planning at Stormwater Emergency Management		Continuous Process	
Digitize elevation certificates and make them accessible to the public.	PI	Project Impact Fund General Fund	1.1	Ongoing	Completed archive and continues as new elevation certificates are received. Ongoing on a regular basis as part of establish departmental process.
	2	Building Inspection Services		Continuous Process	

Prepare flood insurance assessment table and address the community's insurance coverage gaps and other concerns.	PI, PP	General Fund	1.1, 1.3, 2.1	Ongoing	Completed assessment for 2019 PIP, will continue to assess for yearly Hazard Mitigation Plan update or as new information becomes available, whichever is sooner. The Natural Hazard Awareness Expo 2018 was geared towards promoting the awareness of all natural hazards that occur in Charleston. The Expo reached about 1000 people. Attendees were able to find their property on the new FEMA flood maps in order to address flood insurance concerns. Another Hazards Expo is currently in the planning stages.
	1	Building Inspection Services		Continuing Process	
Continue to conduct studies on BFEs, floodways, and other pertinent flood concerns.	PA, PP	Grant Funding (FMA)	1.1, 1.6, 2.1	Existing	Active process – concurrent with drainage improvement plans and studies being conducted in reference to new Federal Emergency Management Agency maps.
	1	Planning Building Inspection Services		Continuous Process	
Maintain the beachfront management plan that preserves our shorelines.	NB	General Fund	1.1, 2.1	New	Beachfront management plan is required by state law; regulations will be implemented with the next ordinance amendment later in 2018 and approved by County Council. The approved Natural Benefits Project Impact Subcommittee has focused on developing a living shorelines project alongside non-profit organizations.
	1	Building Inspection Services		Continuous Process	

Additional Recommended Projects may be added to this project list as the Project Impact/Disaster Resistant Communities committees consider other projects and recommend these projects for implementation.

– Town of Awendaw

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE FEMA-APPROVED 2019 *CHARLESTON REGIONAL HAZARD MITIGATION PLAN AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY Town of Awendaw

Resolution No. 2022-02

WHEREAS the County of Charleston has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston County Council approved the formation of the Charleston Regional Hazard Mitigation Project Committee that has prepared a FEMA-approved *Charleston Regional Hazard Mitigation Plan and Program for Public Information Plan*; and

WHEREAS the *FEMA-approved 2019 Charleston Regional Hazard Mitigation Plan and Program for Public Information Plan* has been widely circulated for review by residents/business organizations / professional organizations of the unincorporated and incorporated areas of Charleston County, state, federal, regional, and local government agencies, and has been supported by those reviewers; and

WHEREAS the (Town of Awendaw) has adopted the *Charleston Regional Hazard Mitigation Plan and Program for Public Information Plan,* most recently readopted it in 2017, and is required to adopt the amended version of this plan on a five-year cycle for the Town to remain eligible for certain Federal programs in which the Town participates; and

NOW THEREFORE be it resolved that

1. The *FEMA-approved 2019 Charleston Regional Hazard Mitigation Plan and Program for Public Information* is hereby adopted as an official plan of the Town of Awendaw, and

2. The Charleston Regional Hazard Mitigation Project Committee is recognized as a continuing entity charged with reviewing, maintaining the *Charleston Regional Hazard Mitigation Plan and Program for Public Information Plan* in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Public Information Plan requirements, and periodically reporting on the progress towards and revisions to the plan to the Town Council of Awendaw.

Effective this 08 Day of August, 2022

Signature: Miriam C. Green (Mayor Miriam C. Green)

Action Report for the Town of Awendaw, SC

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the full action plan. Below are the proposed projects additional to the action plan of Charleston County.

Following are the proposed projects to be undertaken / continued in the Town of Awendaw for hazard mitigation during May 2023 - April 2024 and their status from May 2022-April 2023.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

Hazard Mitigation Goals and Objectives	
Goal 1: Mitigate natural hazard damage	
Objective 1.1	Minimize future flood damage
Objective 1.2	Minimize future earthquake damage
Objective 1.3	Minimize future hurricane damage
Objective 1.4	Minimize future wildfire damage
Objective 1.5	Minimize future tornado-related loss of life
Objective 1.6	Reduce existing flood damage
Goal 2: Increase public preparedness and protection	
Objective 2.1	Protect the lives of our citizens from natural and man-made hazards
Objective 2.2	Educating citizens regarding steps to take to reduce vulnerabilities
Objective 2.3	Promote long-term prosperity
Goal 3: Improve infrastructure	
Objective 3.1	Improve hazard resistance of infrastructure
Objective 3.2	Reduce vulnerability of our infrastructure to natural and man-made hazards
Goal 4: Increase environmental well being	
Objective 4.1	Preserve environmental resources
Objective 4.2	Improve water quality
Objective 4.3	Preserve open space
Objective 4.4	Encourage recreational activities

Additional Recommended Projects may be added to this project list as the Disaster Resistant Communities committees consider other projects and recommend these projects for implementation

2020-2021 Town of Awendaw Hazard Mitigation Action Report					
Mitigation Action and Description	*Type*	*Funding Source*	*Goals and Objectives*	*Status*	*Milestones Achieved and Future Plans*
	Priority	*Responsible Agency*		*Implementation Schedule*	
Continue enforcement of zoning regulations including, low density zoning and encourage cluster development to preserve open space	PA	General Fund	1.1, 1.2, 1.3, 2.1, 2.3, 4.1, 4.3, 4.4	Existing	The Planning Department updated the Comprehensive Plan in 2017 encouraging the preservation of the rural areas and open space. Also, several Planned Developments have been approved which preserve open space.
	1	Town Planning		Ongoing	
Continue implementing the stormwater master plan for Charleston County and the applicable regulations	PA	Enterprise Fund Grant Funding (FMA)	1.1, 1.3, 2.1	Ongoing	The Stormwater Master Plan was completed in 2012, enforcement is continuing. The county now has current and preliminary digital NFIP Flood Insurance Rate Maps implemented in GIS system. Ongoing on a regular basis as part of established departmental process. Through the development approval process, the Town of Awendaw requires Low Impact Design per the Low Impact Development in Coastal SC: A Planning and Design Guide.
	2	Charleston County Public Works Charleston County Building Inspection Services Town Planning		In place	

Continue encouraging the Greenbelt Advisory Board to acquire green space in special flood hazard area, to the extent feasible	NB	Special Revenue Fund	1.1, 2.3, 4.1, 4.2, 4.4	Ongoing	Since its inception, the Greenbelt program has protected 21,170 acres of land in Charleston County including the 300 acre Town of Awendaw Park site, a passive park including a 50 acre lake and the 65 acre Charleston County PRC park site on Doar Road.
	2	Charleston County Building Inspection Services Charleston County Parks and Recreation Commission		Continuous Process	
Continue the drainage maintenance and canal cleaning program and obtain easements on existing drainage ways when the opportunity arises.	SP	General Fund	1.1, 1.6, 2.1, 2.3, 3.1	Ongoing	Continue to survey drainage features and compile a GIS database to improve tracking efficiency. Program goal to reduce mean time between recurring maintenance activities. Per the Town's priority list, SCDOT is working one week each quarter to improve drainage ditches along roads in Awendaw. (NEW) Town of Awendaw encourages and requires where possible, drainage easement dedication to the Town for undedicated drainage easements. (NEW)
	1	Charleston County Public Works Town Planning		Continuous Process	
Continue providing hazard-related literature/information to citizens at County offices and Awendaw Town Hall (PPI)	PI	General Fund	1.1, 1.2, 1.3, 1.4, 1.6, 2.1, 2.2	Existing	Printed materials (brochures, pamphlets, etc.) are always displayed and made available to the public. Printed media are also updated on a regular basis.
	2	Charleston County Building Inspection Services Project Impact		Continuous Process	

Continue working with scouts on the Project Impact scout patch program	NB	Grant Funding (HMGP) General Fund	1.2, 2.2, 3.2 (establishing cooperative relationships between the public, private and non-profit sectors to enhance preparedness for all hazard events)	NEW Ongoing	NEW: Working with local boy scout troop on Awendaw East Coast Greenway Phase 1 to determine areas where they can help improve drainage.
	2	County Building Inspection Services, Town Planning Project Impact		Continuous Process	
Design/elevate roadways being constructed or reworked through the ½ cent sales tax program to minimize flooding potential to the extent feasible. Identify those roads susceptible to flooding.	SP	Special Revenue Fund	1.1, 1.2, 1.6, 2.1, 2.3, 3.1	NEW Ongoing	These projects include paving and improving drainage: Martin George Lane, phase 1 paved, swales; Maxville Road phase 1 paved, swales; Porcher School Road extension platted, and paved; Thompson Hill Road phase 1 to be completed by end of 2020.
	1	Assistant Administrator for County Transportation & Public Works (Transportation Sales Tax)		NEW Ongoing	
Promote environmental pollution reduction strategies through Public Service Announcements; pilot projects; and meetings with government, neighborhood, civic, and professional groups.	PI	General Fund	2.2 (establishing cooperative relationships between the public, private and non-profit sectors to enhance preparedness for all hazard events)	NEW Ongoing	Seek opportunities to work with developers to implement Low Impact Development projects (bio-swales etc.) Town will include periodical related articles in the quartly newsletter and website.
	1	Town Planning and County Building Inspection Services Project Impact		NEW Continuous Process	
Seek funding for retrofitting critical facilities or infrastructure to enhanced hazard resistance in accordance with this County of Charleston Facilities Master Plan Update "Building Utilization and Needs Survey" or other	PP	Grant Funding (FMA, Structural)	2.2 (establishing cooperative relationships between the public, private and non-profit sectors to enhance	NEW Ongoing	Two grants to Charleston County were awarded for educational programs however no structural components were included in these grants. Grants are being closed out

applicable plans as funding sources become available. This includes seeking funding to upgrade Awendaw Town Hall and for generators for Town Hall and the water system pump.	1	County Building Inspection Services and Town Admin.	preparedness for all hazard events)	NEW Continuous Process	now. Roper St. Francis in partnership with Charleston County received a structural grant to upgrade emergency systems. Seek grants for Town Hall improvements.
Help prevent wildfires.	PA/PI	Town Planning		NEW Ongoing	Working with Awendaw Fire Department and FMNFS, educate developers and the public about the risk of debris burning. Publish article in Town newsletter and inform developers that burning permits not recommended.
	2				
Mail an outreach project brochure to floodplain residents to those property owners whose property is located in special flood hazard areas (PPI)	PI	General Fund		Completed	Brochure was mailed to 462 residents of the Town of Awendaw in January 2019.

– City of Charleston

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY CITY OF CHARLESTON COUNCIL

WHEREAS the City of Charleston has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

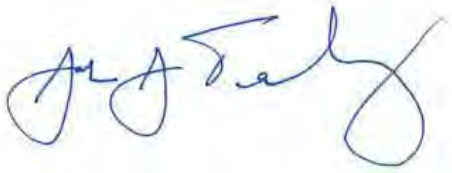
WHEREAS the City of Charleston originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, 2008, 2013, 2018 and 2023, and is required to adopt the amended version of this plan on a five-year cycle for the City to remain eligible for certain Federal programs in which the City of Charleston participates; and

NOW THEREFORE be it resolved that

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the City of Charleston. While content related to City of Charleston may require revisions to meet the plan approval requirements, changes occurring after adoption will not require City of Charleston to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the City of Charleston Council.

Effective this 26th Day of September, 2023



Action Report for the City of Charleston, SC

Following are the proposed projects to be undertaken / continued in the City of Charleston for hazard mitigation during May 2023-April 2024 and their status from May 2022 - April 2023.

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(The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".)

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Objective 2.3	Promote long-term economic prosperity
Goal 3: Improve infrastructure	
Objective 3.1	Improve hazard resistance of infrastructure

Objective 3.2	Reduce vulnerability of our infrastructure to natural and man-made hazards
Goal 4: Increase environmental well being	
Objective 4.1	Preserve environmental resources
Objective 4.2	Improve water quality
Objective 4.3	Preserve open space
Objective 4.4	Encourage recreational activities

Based upon the responses to the latest survey questionnaire, the following are the goals for this plan (listed in the order of importance):

1. Reduce potential flood damage
2. Improve storm drainage
3. Minimize future flood occurrence
4. Minimize future hurricane damage
5. Improve hazard resistance of infrastructure
6. Minimize future earthquake damage
7. Protect environmental resources/preserve open and green space
8. Minimize future terrorist incidents
9. Improve water quality
10. Preserve historic building inventory
11. Higher regulatory standard
12. Minimize future hazardous material incidents

City of Charleston Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals and Objectives***	***Status***	***Milestones Achieved and Future Plans***
	Priority	***Responsible Agency***		***Implementation Schedule***	
Continue enforcement of building-related, flood, and fire prevention codes and regulations to maintain participation in the National Flood Insurance Program (NFIP) and Community Rating System (CRS)	PA, PP	General Fund	1.1, 1.2, 1.3, 2.1	Ongoing	The City of Charleston continues to enforce South Carolina Building and Fire codes and regulations that help to minimize future flood, fire, earthquake, and hurricane damage. In 2020, the City of Charleston adopted a 2' Freeboard requirement for all New Construction and Commercial Substantial Improvements. As of 2024,
	1	Building Inspections, Engineering Livability, Fire Marshals, Stormwater Management		Continuous Process	

					the City of Charleston will enforce a slab-on-grade prohibition (building diagrams 1A, 1B, 3) for residential buildings in the SFHA. Both ordinance amendments are to mitigate future flood losses, considering future floodplain conditions and Sea Level Rise. Additional and amended regulations to improve building protection and CRS Class are being considered.
Continue to maintain completed FEMA Elevation Certificates on all buildings constructed in the SFHA	PA, PI, GIS	General Fund	1.1	Ongoing	The City of Charleston continues to maintain elevation certificates for structures in the SFHA. Elevation Certificates on file are immediately available for download by the public through the City's Mapnet Website, which also includes current FIRMs.
	1	Building Inspections		Continuous Process	
Continue utility right-of-way permitting, considering emergency vehicle access and flood zone issues in permitting decisions	SP	General Fund	1.1, 1.6, 2.1, 2.3, 3.1	Ongoing	The City of Charleston continues to manage permitting for utility rights-of-way. Emergency access and routes are reviewed by the Fire Marshal Division as part of the Technical Review Committee (TRC) process for new developments and substantial projects. Vehicle access is also considered as facilities undergo renovation to evaluate proper access for fire apparatus.
	2	Public Service, Fire		Continuous Process	
Continue coordination and updating of road clearance of winter weather hazards	PA, PI, ES, GIS	General Fund	2.1, 3.1, 3.2	Ongoing	Added in FY23 as an existing/ongoing action. The City of Charleston participates in an annual coordination meeting with Berkeley County, Charleston County, and SCDOT to review and update roadway clearance priorities for winter weather events.
	4	Emergency Management, GIS, Police, Fire Department, Traffic and Transportation, Public Service		Continuous Process	
Continue the road repair and construction program, considering evacuation needs, soil liquefaction potential and sea level rise in prioritization decisions	SP	General Fund, Grant Funding (FMA, PDM, HMGP, SCOR, USACE, SCIIP, SCTIB, CDBG)	1.1, 1.2, 1.6, 2.1, 2.3, 3.1, 4.2	Ongoing	The City of Charleston continues to manage the repair and construction of roads to minimize future flood and earthquake losses. In 2020, the City of Charleston increased minimum public road elevation standards to account for 2' of sea level rise.
	2	Public Service		Continuous Process	

Provide information to citizens regarding hazard-safe interior rooms	PP, PI	General Fund	1.2, 1.3, 1.5, 2.2	Ongoing	The City of Charleston continues to provide resources to citizens to improve the safety of interior rooms to minimize loss of life due to earthquakes, tornados, hurricanes, and other extreme wind events.
	2	Building Inspections		Continuous Process	
Continue to create and provide hazard-related literature and information to citizens	PI	General Fund	1.1, 1.2, 1.3, 1.5, 2.1, 2.2	Ongoing	The City of Charleston continues to provide hazard information to citizens through the City's website and literature in multiple locations throughout City buildings, including the Permit Center. The Charleston Fire Department distributes fire, safety, and preparedness information through hand-outs, and social media postings. A City specific Hazard Mitigation Plan is currently under development to complement this plan. Recent City specific plans on relevant hazards include the 2020 All Hazard Vulnerability and Risk Assessment, 2021 Climate Action Plan, 2021 Heat Watch Report, 2023 Extreme Heat Plan, 2023 Comprehensive, Integrated Water Plan, 2023 Flooding and Sea Level Rise Strategy Update. The City of Charleston recently collaborated on the Charleston County Woodwell Climate Risk Assessment. The City is a partner on the Preservation Society's Resilience Guidelines for Historic Properties. Of note, the Dutch Dialogues Report and Sea Level Rise Strategy (2019) were previously completed.
	1	All Departments		Continuous Process	
Continue participating in and providing speakers for hazard-related public expositions and partnerships	PI	General Fund	1.1, 1.2, 1.3, 1.5, 2.1, 2.2	Ongoing	The City of Charleston continues to participate in local hazard-related expos, forums, and conferences. In 2023, City staff participation has included the Nature-Based Solutions Workshop, SC Association of Hazard Mitigation Annual Conference, James Island Hurricane Expo and presented to AIA and the Coastal Land Surveyors groups with plans to
	1	All Departments		Continuous Process	

					participate in Charleston County's Natural Hazards Expo and present to local real estate agents later this year. The Charleston Fire Department attends various safety events, safety days, and expos focusing on fire prevention and emergency preparedness throughout the year.
Continue to sponsor and participate in "Hazard Awareness Week" and other hazard related Awareness Campaigns	PI	General Fund	1.1, 1.2, 1.3, 1.5, 2.1, 2.2	Ongoing	The City of Charleston continues to sponsor and participate in "Hazard Awareness Week" with plans to expand the outreach efforts in May 2024. In 2023, the Chief Building Official proclaimed May as "Building Safety Month" and City Council has proclaimed May as "Heat Awareness Month." Additionally, an Extreme Heat Storymap and City Heat Plan have been created. The Charleston Fire Department continues to promote a variety of awareness weeks and campaigns through social media throughout the year. These campaigns range from weather awareness and safety to child passenger safety, and fire prevention topics.
	1	All Departments, Public Information Office		Continuous Process	
Continue to evaluate and prepare for Wildland Urban Interface Fire Control	PA, PI, ES, NB, GIS	General Fund	1.4, 2.1, 2.2, 3.1, 3.2, 4.1	Ongoing	Added in FY23 as an existing/ongoing action. Charleston Fire Department prioritizes Wildland Urban Interface Fire Control as a core program in its strategic plan to mitigate wildfire damages.
	1	Fire Department, GIS		Continuous Process	
Continue hazardous materials training	ES	Enterprise Fund	2.1, 3.1, 4.1	Ongoing	The City of Charleston continues to provide hazardous materials training to all appropriate staff.
	1	Emergency Management, Police, Fire Department		Continuous Process	
Continue terrorist response training	ES	General Fund	2.1, 2.3, 3.1	Ongoing	The City of Charleston continues to provide terrorist response training to all appropriate staff.
	1	Police		Continuous Process	

Continue coordinating Emergency Operations Center activities for hazard events	ES	General Fund	2.1, 2.2, 2.3	Ongoing	The City of Charleston continues to manage the Municipal Emergency Operations Center and coordinate interaction with other Emergency Operations Centers in the area, including Charleston County. After Action/ Improvement Plan Reports are developed for every activation, including Table Top Exercises. The last Table Top Exercise was completed following Hurricane Ian.
	1	Emergency Management		Continuous Process	
Develop and maintain a Training & Exercise Program for emergency response, MEOC, and stakeholder personnel	PA, ES	General Fund	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 3.1, 3.2,	New	Added in FY23 as a new action. The City of Charleston has started development of a Training & Exercise Program that includes four (4) exercises per year and seeks to bring various training courses to the City on a regular basis.
	1	Emergency Management		In Process	
Continue participation in FERC-required dam failure exercises with Santee Cooper	PA, PP, ES, GIS	General Fund	1.1, 1.6, 2.1, 2.3, 3.1, 3.2,	Ongoing	Added in FY23 as an existing/ongoing action. The City of Charleston participates in regular training with Santee Cooper for the Pinopolis Dam as required by FERC.
	1	Emergency Management, GIS, Police, Fire Department, T&T, Stormwater Management		Continuous Process	
Develop and maintain a City-wide Continuity of Operations Plan (COOP)	ES	General Fund	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 3.1, 3.2	New	Added in FY23 as a new action. The City of Charleston will create a stand-alone Continuity of Operations Plan (COOP) for use by all departments in the event of a large-scale disaster or emergency that requires the City to modify its operations beyond the considerations outlined in the Emergency Operations Plan (EOP). The COOP will be implemented by June of 2024.
	1	Emergency Management		In Process	
Maintain and regularly update the City's Emergency Operations Plan (EOP)	ES	General Fund	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 3.1, 3.2	Ongoing	Added in FY23 as an existing/ongoing action. The City of Charleston's next EOP update is scheduled for completion in April of 2024.
	1	Emergency Management		Continuous Process	
Become a Weather Ready Nation Ambassador through partnership with the National Weather Service	PI	General Fund	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2	New	Added in FY23 as a new action. The City of Charleston became a Weather Ready Nation Ambassador in 2023 and continues to share hazard-related information through that program.
	1	Emergency Management		Continuous Process	

Become and maintain "Storm Ready" and "Tsunami Ready" Community Designation through partnership with the National Weather Service	ES, PI	General Fund	1.1, 1.3, 1.5, 2.1, 2.2	Ongoing	Added in FY23 as an existing/ongoing action. The City of Charleston has submitted its application to the National Weather Service to be recognized as a "Storm Ready" Jurisdiction with plans of pursuing the "Tsunami Ready" designation, as well.
	1	Emergency Management		Continuous Process	
Continue to monitor NWS Chat for real-time information on tornado activity during severe storms	PP, ES	General Fund	1.5, 2.1	Ongoing	Added in FY23 as an existing/ongoing action. The City of Charleston partners with NWS Charleston through the NWS Chat program to maintain real-time alert and warning in the event of "no-notice" events such as tornadoes.
	1	Emergency Management		Continuous Process	
Implement an Alert & Warning System for providing emergency messaging to City staff, stakeholders, and the public	PA, ES, PI	General Fund	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 3.1, 3.2,	New	Added in FY23 as a new action. The City is in the process of inventorying existing alert systems, improving the process and implementing new technology.
	1	Emergency Management, GIS, Police, Fire Department		In Process	
Continue to evaluate resources and logistics considerations for the effects of prolonged drought or other water shortage	ES	General Fund	2.1, 3.1	Ongoing	Added in FY23 as an existing/ongoing action. The City of Charleston Emergency Management Department coordinates logistics concerns and needs with Berkeley County, Charleston County, and SCEMD for regular updates in the City's EOP.
	4	Emergency Management		Continuous Process	
Continue responding to hazard emergencies	ES	General Fund, Enterprise Fund	2.1, 2.2, 2.3	Ongoing	The City of Charleston continues to provide a coordinated response and follow up to emergency events.
	1	Emergency Management, Police, Fire Department, Traffic & Transportation, Parks, BFRC, Building Inspections, Stormwater Management		Continuous Process	
Continue to maintain critical facilities, repetitive loss, flood, street elevation, parcel, and aerial data within a GIS System	PP, ES, GIS	General Fund	2.1, 2.2, 3.2	Ongoing	Added in FY23 as an existing/ongoing action. The City of Charleston maintains a Flood Planning GIS system for pre- and post- disaster vulnerabilities assessments and emergency planning.
	1	Emergency Management, Stormwater Management, GIS		Continuous Process	
Improve and expand the Damage	PP, GIS	General Fund		Ongoing	Added in FY23 as an existing/ongoing action.

Assessments team and GIS system for hazard-related assessments	1	All Departments	1.1, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2	Continuous Process	Following Hurricane Ian in 2022, multiple departments provided staff to conduct post-event damage assessments. The data was then provided to the County to demonstrate the need for IA, PA, and SBA assistance. The City of Charleston is in the process of developing a system for tracking damages to structures within permit software.
Continue to provide coordination on and enforcement of City stormwater management regulations	PA, PP	General Fund	1.1, 1.6, 2.2, 3.1, 3.2, 4.2	Ongoing	The City of Charleston continues to enforce local stormwater management regulations. The Stormwater Design Standards Manual underwent major revisions in 2020 to improve Stormwater Management regulations. Section 3.7 of the 2020 SWDSM describes some of the specific requirements designers must account for to address potential Sea Level Rise, including a minimum 5.5' NAVD88 datum tailwater elevation. Additionally, rainfall and design storm values are required to use a 10% safety factor to account for uncertainties in the design process and the increasing intensities of storms per Section 3.4.2 of the SWDSM.
	1	Stormwater Management		Continuous Process	
Continue stormwater management as guided by the "Master Drainage and Floodplain Management Plan"	PA, PP	General Fund	1.1, 1.6, 2.2, 3.1, 3.2, 4.2	Ongoing	The City of Charleston continues to implement the objectives of the "Master Drainage and Floodplain Management Plan".
	1	Stormwater Management		Continuous Process	
Continue to ensure that projects are approved by SCDHEC Ocean & Coastal Resource Management (OCRM)	PA, NB	General Fund	1.1, 1.6, 4.1, 4.2	Ongoing	The City of Charleston continues to require any necessary approvals from SCDHEC OCRM, including CZC Certifications, prior to the City providing project approvals or issuing permits.
	1	Stormwater Management		Continuous Process	
Continue Stormwater Utility Program	PA, PP, PI	General Fund, self-funding	1.1, 1.6, 2.2, 3.1, 3.2, 4.2	Ongoing	The City of Charleston continues to operate its Stormwater Utility Program to maintain and improve stormwater drainage systems, with financial assistance options for eligible residents.
	1	Stormwater Management		Continuous Process	

Continue ongoing City drainage projects and studies	SP, PA, PP, GIS	General Fund, Grant funding (FMA, PDM, HMGP, SCOR, USACE, SCIIP, SCTIB, CDBG-MIT), Stormwater fees	1.1, 1.6, 2.1, 2.3, 3.1, 4.2	Ongoing	The City of Charleston continues to manage current drainage projects and studies such as those projects listed on the City's Stormwater Projects webpage. The City of Charleston is also presently planning, designing, engineering and constructing drainage and tidal flooding projects. USACE CSRM feasibility study has been completed and is preparing to move into design and engineering phase for peninsula perimeter surge protection.
	2	Stormwater Management, Office of Resilience & Sustainability		Continuous Process	
Seek funding for proposed City drainage projects and studies	SP, PA, PP	General Fund, Grant Funding (FMA, PDM, HMGP, SCOR, USACE, SCIIP, SCTIB, CDBG-MIT), Stormwater fees	1.1, 1.6, 2.1, 2.3, 3.1, 4.2	Ongoing	The City of Charleston continues to seek opportunities for new drainage projects and studies and for funding to support those projects, including a recently funded project for drainage improvement at the intersection of King and Huger Streets, a green infrastructure flood reduction project on Johns Island, and an upfit of a stormwater pump station in the peninsula's Medical District.
	2	Stormwater Management, Office of Resilience & Sustainability		Continuous Process	
Continue the drainage inspection, maintenance, and canal cleaning programs	SP, PA	General Fund, Stormwater fees	1.1, 1.6, 2.1, 2.3, 3.1, 4.2	Ongoing	The City of Charleston continues to inspect and maintain drainage facilities in the City of Charleston. In 2022, Stormwater created a long-term maintenance plan. The City of Charleston is currently 4 years into a 6-year program rehabilitating all of its open drainage systems.
	2	Stormwater Management		Continuous Process	
Continue outreach to floodplain residents and repetitive loss properties by mailing flood hazard pamphlets annually	PI	General Fund	1.1, 1.3, 1.6, 2.1, 2.2	Ongoing	The City of Charleston continues to distribute the flood preparedness brochure to all addresses in the SFHA and a Repetitive Loss Area Letter to addresses in the RLA. Mailings were most recently completed September 2022 with the next mailings planned for Summer of 2023.
	1	Stormwater Management		Continuous Process	
Continue providing Flood Insurance Rate Map (FIRM) information and continue publicizing this service annually	PI	General Fund	1.1, 1.6, 2.1, 3.2	Ongoing	The City of Charleston continues to provide FIRM and hazard information to citizens. The service is publicized in the annual flood preparedness brochure to addresses in the SFHA and in a letter to lenders, real
	1	Stormwater Management		Continuous Process	

					estate agents and insurance professionals. The letter to lenders, real estate agents and insurance professionals was last mailed in May of 2023 with supplemental materials sent to real estate agents including a Flood Insurance for Real Estate Professionals packet, Charleston County/Jurisdictions "Know Before You Buy" Brochure, and the updated SC Residential Property Disclosure.
Continue providing the Flood Protection Library at the County Public Library branches	PI	General Fund	1.1, 1.3, 1.6, 2.1, 2.2	Ongoing	The City of Charleston continues to provide and update materials for the Flood Protection Library.
	1	Stormwater Management		Continuous Process	
Demolish structures posing a threat to public safety, considering location within the SFHA as a prioritization factor	PP, NB	General Fund, Grant Funding (FMA, HMGP)	1.1, 1.3, 1.6, 2.3, 3.2, 4.4	Ongoing	Continue to perform inspections of substandard structures in the interest of health, safety and welfare. Future plans include adding flood zone information to track demolition permits in the SFHA.
	2	Building Inspections, Stormwater Management		In process	
Seek funding for retrofitting, demolishing, or relocating repetitively flooded properties	PP, NB	Grant Funding (FMA, HMGP)	1.1, 1.3, 1.6, 2.3, 3.2, 4.4	Ongoing	The City of Charleston continues to seek funding and grant opportunities for structure demolition, elevation, or relocation for properties that have experienced flood losses. Since 2015, 44 buildings have been demolished to date. As of 2023, the City of Charleston is working through the grant process for 1 acquisition and 7 elevations through FMA and HMGP grants. Future plans include establishing a process for identifying or pre-approving suitable candidates and prioritization based on relevant criteria, including RL.
	2	Stormwater Management		Continuous Process	
Continue planning, developing, and maintaining open space and parks in flood prone areas	NB, PA	General Fund, Grant Funding (NFWF)	1.1, 2.3, 4.1, 4.3, 4.4	Ongoing	The City of Charleston continues to encourage the location of open spaces in flood prone areas to provide natural infiltration and prevent damage to buildings. The City's 2021 Comprehensive Plan and
	2	Planning, Preservation & Sustainability, Parks, Stormwater Management,		Continuous Process	

		Office of Resilience & Sustainability			Comprehensive, Integrated Water Plan (Under Development) further demonstrate the need for open space and storage/detention. Currently, 4 open space lots acquired through FEMA grants are in the process of being retrofitted into nature-based stormwater drainage projects in the form of rain gardens. 2 larger acquisition sites are also in the process of being converted into nature-based stormwater drainage projects. Another 25-acre set of parcels is in acquisition to convert into a large-scale green infrastructure flood reduction and ecological park facility.
Continue enforcement of zoning ordinances	PA, PP, NB	General Fund	1.1, 1.2, 1.3, 2.1, 2.3, 4.1, 4.3, 4.4	Ongoing	The City of Charleston continues to enforce local zoning ordinances. The City of Charleston has begun a multi-year process of rewriting and updating its Zoning Ordinance. This new Ordinance will implement the land-elevation and water-elevation–based approach to future land use and development procedures including Sea Level Rise considerations.
	1	Planning, Preservation & Sustainability		Continuous Process	
Continue enforcement of tree protection and landscaping ordinances	NB	General Fund	2.3, 4.1, 4.3, 4.4	Ongoing	The City of Charleston continues to enforce its tree protection ordinances.
	2	Planning, Preservation & Sustainability		Continuous Process	
Continue participating in the Project Impact Program for Public Information (PPI) to achieve maximum public outreach	PI	General Fund	2.1, 2.2	Ongoing	City Floodplain website links to Charleston County and Project Impact resources. The City of Charleston continues to participate in the PIP and other Project Impact initiatives.
	1	Project Impact committee members		Continuous Process	

CITY OF FOLLY BEACH

Introduced by: Mayor Goodwin
Date: October 10th, 2023

RESOLUTION 47-23
A RESOLUTION TO ADOPT THE REVISED CHARLESTON REGIONAL HAZARD MITIGATION PLAN BY THE CITY OF FOLLY BEACH PENDING FEMA APPROVAL.

WHEREAS The County of Charleston has experienced the effects of natural and man-made hazard events; and

WHEREAS The Charleston County City Council approved the formation of the Charleston Regional Hazard Mitigation Project Committee that has prepared a recommended *Charleston Regional Hazard Mitigation Plan*; and

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

WHEREAS The City of Folly Beach has adopted the *Charleston Regional Hazard Mitigation Plan*, most recently readopted it in 2017 and is required to adopt the amended version of this plan on a five-year cycle for the City to remain eligible for Federal programs in which Charleston County participates.

NOW, THEREFORE, BE IT RESOLVED that

1. The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the City of Folly Beach; and

2. The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress

towards and revisions to the governing bodies of the participating municipalities.

RATIFIED this 10th day of October 2023, at Folly Beach, South Carolina, in City Council duly assigned.

ATTEST:

Municipal Clerk

Tim Goodwin, Mayor

Action Report for the City of Folly Beach, SC

Following are the proposed projects to be undertaken in the City of Folly Beach for hazard mitigation during May 2023 – April 2024 and their status from May 2022 - April 2023.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

Hazard Mitigation Goals and Objectives	
Goal 1: Mitigate natural hazard damage	
Objective 1.1	Minimize future flood damage
Objective 1.2	Minimize future earthquake damage
Objective 1.3	Minimize future hurricane damage
Objective 1.4	Minimize future wildfire damage
Objective 1.5	Minimize future tornado-related loss of life
Objective 1.6	Reduce existing flood damage
Goal 2: Increase public preparedness and protection	
Objective 2.1	Protect the lives of our citizens from natural and man-made hazards
Objective 2.2	Educating citizens regarding steps to take to reduce vulnerabilities
Objective 2.3	Promote long-term prosperity
Goal 3: Improve infrastructure	
Objective 3.1	Improve hazard resistance of infrastructure
Objective 3.2	Reduce vulnerability of our infrastructure to natural and man-made hazards
Goal 4: Increase environmental well being	
Objective 4.1	Preserve environmental resources
Objective 4.2	Improve water quality
Objective 4.3	Preserve open space
Objective 4.4	Encourage recreational activities

Based upon the responses to the latest survey questionnaire, the following are the goals for this plan (listed in the order of importance):

1. Reduce potential flood damage
2. Improve storm drainage
3. Minimize future flood occurrence
4. Minimize future hurricane damage
5. Improve hazard resistance of infrastructure
6. Minimize future earthquake damage
7. Protect environmental resources/preserve open and green space
8. Minimize future terrorist incidents
9. Improve water quality
10. Preserve historic building inventory
11. Higher regulatory standard
12. Minimize future hazardous material incidents

City of Folly Beach Hazard Mitigation Actions					
Mitigation Action and Description	***Type*** / ***Priority***	***Funding Source*** / ***Responsible Agency***	***Goals*** / ***and Objectives***	***Status*** / ***Implementation Schedule***	***Milestones Achieved*** / ***and Future Plans***
Continue enforcement of the International Series Building-related and Fire codes and the floodplain management regulations (including the cumulative substantial improvement clause, and/or other provisions deemed necessary to enhance Community Rating System credits) to maintain participation in the National Flood Insurance Program and the Community Rating System.	PA	General Fund	1.1, 1.2, 1.3, 2.1	Ongoing	City of Folly Beach has achieved a Class 3 Rating System (CRS). At next CRS cycle visit, the City will explore improving the rating to a Class 2.
	1	Building Department		Continuous Process	
Continue to provide coordination of County Storm Water management regulations and City Storm Water infrastructure improvements.	PA	General Fund	1.1, 1.3, 1.6, 3.1, 4.2	Ongoing	City of Folly Beach takes part in quarterly Storm Water Partners meetings with Charleston County and SCDOT to plan, prioritize, and implement storm water projects within the jurisdiction.
	1	Public Works Department		Continuous Process	
Continue to enforce Zoning regulations.	PP, PI	General Fund	1.1,1.2,1.3, 1.6, 4.3, 4.4	Ongoing	Working on revisions to Beach and Dune management plan and Marsh management plan. Worked out Short Term Rental Ordinance changes and sign regulations. STR cap implemented Jan 2023
	1	Planning Department		Continuous Process	
Prohibit new manufactured home to be installed in both A and V flood zones.	PA	General Fund	1.1, 1.2, 1.3, 3.2	Ongoing	Ongoing on a regular basis as part of established departmental process.

City of Folly Beach Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals***	***Status***	***Milestones Achieved***
	Priority	***Responsible Agency***	***and Objectives***	***Implementation Schedule***	***and Future Plans***
	1	Zoning Department		Continuous Process	
Provide hazard related information to all residents through local telephone book, website, mailouts, and brochures	PP	General Fund	1.1, 1.3, 2.1, 2.2, 4.2	Ongoing	Continually updating website and mail outs to residents. Participating with Charleston County for Phone Books.
	1	Building & IT Departments		Continuous Process	
Recognize "International Building Safety Week" to promote safety in the built environment.	PI	General Fund	1.1-1.6, 2.1-2.3	Ongoing	Recognized by resolution in public meeting and Website.
	1	Building Department		Continuous Process	
Continue participating in the Project impact Program for Public Information (PPI) to achieve maximum public outreach.	PI	General Fund	2.1, 2.2, 2.3	Ongoing	Actively participated in all Project Impact meetings and sub-committee meetings to continue project impact effectiveness and outreach.
	1	Building and Zoning committee members		Continuous Process	
Continue enforcement of tree protection/landscaping ordinance.	NB	General Fund	1.1,2.2, 3.2, 4.1, 4.2, 4.3	Ongoing	Improved tree ordinance in 2021 and continuously enforce landscaping standards to help with erosion control and storm water management.
	1	Building and Zoning Departments		In place and continuous process	
Continue maintaining permanent open space as parks.	NB	General Fund	1.1, 2.2, 3.2, 4.1-4.3	Ongoing	1 new passive/pocket park added and improved. Ongoing grant applications. 1 acquisition of low lying property achieved with Charleston County Greenbelt Fund program.
	1	Zoning, Facilities, and Park and Recreation Board		Continuous Process	
Continue to distribute information on riparian buffer zones and hazard resistant landscaping to citizens through government offices and at expos.	NB	General Fund	1.1, 2.2, 3.2, 4.1, 4.2, 4.3	Ongoing	Participating in Project Impact Committee Expos
	1	Zoning Department		Continuous Process	
Continue Terrorist Response Training.	ES	General Fund	2.1, 2.2	Ongoing	Joint public awareness campaign with Charleston County Emergency Services and Law Enforcement.
	1	FB Public Safety		In Process	
Continue Coordinating Municipal Emergency Operations Center (MEOC) activities in the event of a hazard/disaster.	ES	General Fund	2.1,2.2,2.3	Ongoing	Conducting 7th annual MEOC exercise/drill with outside consultant August of 2023.
	1	FB Public Safety		In Process	

City of Folly Beach Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals***	***Status***	***Milestones Achieved***
	Priority	***Responsible Agency***	***and Objectives***	***Implementation Schedule***	***and Future Plans***
Continue responding to hazard emergencies	ES	General Fund	1.1,1.4,2.1, 2.3	Ongoing	Successful response and recovery for both Hurricane Matthew and Irma, Dorian and Ian. Emergency drill and rehearsals for upcoming potential events with outside agencies through Charleston County Emergency Management.
	1	FB Public Safety, Public Works, Planning, Code Enforcement, Utilities, and Administration		Continuous Process	
Continue to require construction practices for new City and Private facilities that are sensitive to Flood zone (AE and VE) issues and Seismic issues.	SP	General Fund and FEMA Grant (HMGP)	1.1, 1.2, 1.3, 1.5, 2.1, 3.1	Ongoing	Obtained mitigation grant from FEMA for new Roof at City Hall and Impact Rated Glazing throughout the building. In process now. Previously put new roof on PW Facility. Completed March 2019.
	1	Building Department		Completed	
Evaluate City-owned facilities for hazard resistance and retrofit facilities if needed where feasible.	SP	Gen Fund and FEMA Grant (HMGP)	1.3, 1.5, 3.1, 3.2	Ongoing	Obtained mitigation grant from FEMA for new Roof at City Hall and Impact Rated Glazing throughout the building. In process now. Previously put new roof on PW Facility. Complete gut and rebuild of City Hall in 2021/22. Added 4 new generators to protect city facilities with HMGP grant in 2020.
	2	Facilities and Building Department		In process	
Continue Drainage maintenance program.	SP	General Fund	1.1, 1.6, 2.1, 2.2, 3.1, 3.2	Ongoing	Changed out 3 Tide valves and ordering 2 more, opened 4 drainage ditches and installed mini pump station to pump water out of one problematic ditch system. Completed Island Wide Comprehensive drainage study in 2020.
	1	Public Works, City Council, Administration		Continuous and in process	
Continue Road Repair/Construction Program. Design/elevate roadways being constructed or reworked through the ½ cent sales tax program. Identify those roads susceptible to flooding.	SP	Enterprise Funding	2.1, 1.6, 1.1, 1.3, 3.2	Ongoing	Applying for TST and CTC Grant funded projects. 9th West Drainage improvement and roadway improvement completed in 2020. 2nd Street CTC drainage improvement project completed in 2022
	1	Administration and Public Works		In process	
Island Wide Drainage study/assessment.	PA	General Fund	Determine drainage assets in place and create project goals for future drainage improvement projects	Completed	Completed 2020. Used in SCIIP grant applications.

City of Folly Beach Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals***	***Status***	***Milestones Achieved***
	Priority	***Responsible Agency***	***and Objectives***	***Implementation Schedule***	***and Future Plans***
	1	COFB/Consultant		Fiscal Year	
Engineer & construct redundant water source	ES	Water Fund (Grant, Loan, Bond)	Create backup water source for drinking water and firefighting if our single main is damaged	In progress	Concept Plan & preliminary grant application complete Future plans: Engineering, permitting funding, and construction.
	1	City of Folly Beach		2020	
Participate in training workshops regarding the International Building-related, flood, and Fire Prevention Codes and Regulations if there is interest in these workshops	PA	General Fund/Self-supporting through workshop revenues	2.1-2.3, 4.1	In Progress	Ongoing
	1	Building Inspections		Continuous Process	
Continue Participation in the Charleston County Special Inspection Program	PA	General Fund	1.2, 1.3, 2.1	In progress	New
	1	Building/Zoning Department		Continuous Process	
Promote standards for existing homes to be retrofitted to that exceed minimal codes	PP	General Fund	1.2, 1.3, 1.6, 2.2, 4.1	In progress	ongoing
	2	Building/Zoning Department		Continuous Process	
Continue demolishing structures posing a threat to public safety, considering location within the special flood hazard area as a prioritization factor	PP	Grant Funding	1.1, 1.3, 1.6, 2.3, 3.2, 4.4	In progress	ongoing
	3	Building/Zoning Department		Continuous Process	
Continue providing information to citizens regarding hazard safe interior rooms	PP	General Fund	1.5, 2.2	Deleted due to funding	ongoing
	2	Building/Zoning Department		N/A	
Continue utility right of way permitting, considering emergency vehicle access and flood zone related issues in permitting decisions	SP	General Fund	1.1, 1.6, 2.1, 2.3, 3.1	In progress	ongoing
	1	Public Works		Continuous Process	
	PI	General Fund		In progress	continuous

City of Folly Beach Hazard Mitigation Actions					
Mitigation Action and Description	***Type*** / ***Priority***	***Funding Source*** / ***Responsible Agency***	***Goals*** / ***and Objectives***	***Status*** / ***Implementation Schedule***	***Milestones Achieved*** / ***and Future Plans***
Mail and outreach project to floodplain residents to those property owners whose property is located in the special flood hazard area	1	Building/Zoning Department	1.1, 1.3, 2.1, 2.2, 4.2	Continuous Process	

Additional Recommended Projects may be added to this project list as the Project Impact/Disaster Resistant Communities committees consider other projects and recommend these projects for implementation.

– Town of Hollywood

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY TOWN OF HOLLYWOOD TOWN COUNCIL

Resolution No. 9-2023-2024

WHEREAS the TOWN OF HOLLYWOOD has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the TOWN OF HOLLYWOOD originally adopted the *Charleston Regional Hazard Mitigation Plan* in 2004 and readopted it in 2008 and 2019, and is required to adopt the amended version of this plan on a five-year cycle for the County to remain eligible for certain Federal programs in which THE TOWN OF HOLLYWOOD participates; and

NOW THEREFORE be it resolved that

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the TOWN OF HOLLYWOOD. While content related to Charleston County may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Charleston County to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the TOWN OF HOLLYWOOD TOWN COUNCIL.

Effective this 23rd Day of Oct, 2023

Resolution No. 9-2023-2024

Mayor Chardale Murray

Mayor Pro Tem Annette Sausser

Councilmember Michelle Dunmeyer

Councilmember Eulonda Mitchell-McCanick

Councilmember Handy Miles, Jr.

Councilmember Alexander Porter

Councilmember Herbert Townsend

Attest:

Tynetta White, Town Clerk Treasurer

Action Report for the Town of Hollywood, SC

Following are the proposed projects to be undertaken in the Town of Hollywood for hazard mitigation during May 2023 - April 2024 and their status from May 2022 - April 2023.

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the full action plan. There are no proposed projects additional to the action plan of Charleston County.

– City of Isle of Palms



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A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY ISLE OF PALMS CITY COUNCIL

Resolution No. 2023-07

WHEREAS the City of Isle of Palms has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the City of Isle of Palms originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, 2008, 2013, and 2017, and is required to adopt the amended version of this plan on a five-year cycle for the City to remain eligible for certain Federal programs in which City of Isle of Palms participates; and

NOW THEREFORE be it resolved that:

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the City of Isle of Palms. While content related to the City of Isle of Palms may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the City of Isle of Palms to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the Isle of Palms City Council.

City Administrator

Mayor

ATTEST:

City Clerk

Effective this 18 Day of November 2023

Action Report for the City of Isle of Palms, SC

8. Following are the proposed projects to be undertaken in the City of Isle of Palms for hazard mitigation during May 2023 - April 2024 and their status from May 2022 - April 2023.

9.

10.

11. *(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)*

12.
13.

14. *The following terminology is used to update the current status of each proposed project, as suggested byFEMA:*

15. *"New", "Ongoing", "Continuous Process", "Deleted", and "Completed".*

16.

City of Isle of Palms Hazard Mitigation Actions					
Mitigation Action and Description	*Type*	*Funding Source*	*Goals and Objectives*	*Status*	*Milestones Achieved and Future Plans*
	Priority	*Responsible Agency*		*Implementation Schedule*	
Continue enforcement of Building-related, flood and Fire Prevention Codes and Regulations.	PA	General Fund	Minimize hazard event damage; protect the lives of our citizens from natural and man-made hazards	Ongoing	All construction projects are reviewed for compliance with the codes.
	1	Building, Planning & Zoning		Continuous Process	
Continue to provide coordination of NPDES storm water management regulations	PA	General Fund	Eliminate stormwater pollution and enhance the system's ability to minimize flooding	Ongoing	All construction projects are reviewed for compliance with the NPDES regulations. In 2019, the City increased the stormwater management fee from $48 to $72 to accumulate additional funds to use towards stormwater and drainage related projects.
	1	Public Works		Continuous Process	
Continue enforcement of zoning regulations	1	General Fund	Promote a more hazard- resilient community	Ongoing	All construction projects are reviewed for compliance with the zoning regulations.

	PA	Building, Planning & Zoning		Continuous Process	
Continue efforts to monitor the shoreline to preserve a healthy beach with adequate dune fields and vegetation to mitigate storm damage.	1	Beach Preservation Fund	Preservation of a healthy beach to mitigate storm damage Promote a more hazard- resilient community	Ongoing	The City continues to monitor the shoreline and expend resources to preserve a healthy beach. The City included funds in FY22 budget to evaluate the feasibility and need of a future project at Breach Inlet. The City completed the second Beach Renourishment Project on the north end of the island, where approximately 1.6 million cubic yards of sand were pumped onto the beach, creating a dry sand beach where significant erosion was threatening beachfront properties.
	PP	General Government		Continuous Process	
Provide information to citizens regarding benefits of hazard mitigation measures	2	Grant Funding (FMA)	Promote a more hazard- resilient community	Ongoing	The Building Department regularly advises citizens on mitigating hazards.
	PP	Building, Planning & Zoning		Continuous Process	
Seek funding for retrofitting, demolishing or relocating repetitively flooded properties.	3	General Fund	Promote a more hazard-resilient community	Ongoing	The City continues to provide information regarding funding opportunities to flood prone property owners. In 2019, the City obtained a FEMA Flood Mitigation Grant on behalf of a resident who has suffered repetitive loss to elevate his home.
	NB	General Government		Continuous Process	
Continue enforcement of the tree protection/landscaping ordinance.	2	General Fund	Preserve environmental resources; improve hazard resistance	Ongoing	All projects are reviewed for compliance with the tree protection regulations.
	NB	General Government		Continuous Process	

Continue the elevation reference marks inspection program.	NB	General Fund	Promote a more hazard resilient community and minimize hazard event damage	Ongoing	Charleston County continues to inventory the elevations reference marks every year and will continue this effort into the future.
	1	Building, Planning & Zoning		Continuous Process	
Continue hazardous material training.	ES	General Fund	Minimize hazard event damage; protect the lives of our citizens from natural and man-made hazards	Ongoing	Each year the City trains on hazardous materials and will continue this effort into the future.
	1	All City Departments		Continuous Process	
Continue Active Shooter Training with a goal of 100% of the officers having completed this training.	ES	General Fund	Minimize hazard event damage; protect the lives of our citizens from natural and man-made hazards	Ongoing	Police Department has met their goal of 100% of officers having completed this training. The City has a goal of training all employees and elected officials. In 2022, all elected officials and supervisors participated in an active shooter training.
	1	Police Department		Continuous Process	
Continue Training in the National Incident Management System "NIMS" program	ES	General Fund	Minimize hazard event damage; protect the lives of our citizens from natural and man-made hazards	Ongoing	Each year the appropriate City staff members train on the NIMS program and this effort will continue into the future.
	1	All City Departments		Continuous Process	
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.	ES	General Fund	Establish cooperative relationships to enhance response for hazard events	Ongoing	The City participated in the emergency drill conducted on June 2022, to practice and improve upon lessons learned from these tropical weather systems.
	1	All City Departments, County Emergency Preparedness and Dispatch		Continuous Process	
	ES	General Fund		Ongoing	

Continue responding to hazard emergencies.	1	General Government, Police and Fire Departments	Protect the lives of citizens from natural hazards	Continuous Process	The City responds to all emergencies.
Recommend construction practices for new City-owned critical facilities which are sensitive to flood zone (e.g., avoiding "V" flood zones where feasible) and seismic considerations (e.g., avoiding areas subject to liquefaction where feasible).	ES	General Fund/ Bond	Minimize future flood damage; improve hazard resistance of infrastructure	Ongoing	All City projects are reviewed to determine if improvements could be made to minimize damage.
	1	Building, Planning & Zoning		Continuous Process	
Continue to endeavor to construct wind resistant and flood resistant city facilities when replacing older assets.	ES	General Fund& Tourism Funds	Minimize future flood damage; improve hazard resistance of infrastructure	Ongoing	The City replaced the roof of the public safety building in the coming year and a higher wind resistant level will be considered.
	1	Building, Planning & Zoning		Continuous Process	
Continue the drainage maintenance, periodic dredging and canal cleaning program.	SP	General Fund	Minimize future flood damage; preserve environmental resources; improve hazard resistance of infrastructure.	Ongoing	The City has a contract with Eadie's Construction Company for cleaning, repairs and maintenance of City's storm drainage system. This contract was recently amended to increase the frequency ditches are cleaned out of all vegetation and debris, ditches are renovated and pipes cleaned. The City hired Quality Enterprises (QE) to construct two major outfalls with tide valves.
	1	Public Works and General Government		Continuous Process	
Continuing beach monitoring to ensure the preservation of dunes and vegetation sufficient to offer storm protection.	NB, PP, SP	Tourism Funds	Protect the lives of citizens from natural hazards, promote and protect the City's long-term economic prosperity	Ongoing	The City continues to monitor the shoreline and expend resources to preserve a healthy beach.
	1	General Government		Continuous Process	

Provide critical facilities data, repetitive loss property information, flood data, street data, and parcel data into a GIS system.	SP, NB, PP	General Fund and Grant Funds	Promote a more hazard- resilient community.	Ongoing	The City does currently maintain a GIS system as of 2022.
	2	Building, Planning & Zoning		Continuous Process	
Continue utility right-of-way coordination and permitting, considering emergency vehicle access and flood zone related issues in permitting decisions.	SP	General Fund and Tourist Funds	Improve emergency vehicles access to properties.	Ongoing	Police Department regularly identifies hard obstructions on the right of way and notifies property owners to educate them about the encroachment permit process, what is and not permitted and risks associated with these obstructions.
	1	Building, Fire and Public Works Departments		Continuous Process	
Seek funding for the Island-wide drainage projects to include pursuit of available funds from County Transportation Committee and the Transportation Sales Tax.	SP	Capital Projects and Tourist Fund	Promote a more hazard- resilient community.	Ongoing	In 2018, the City used grant funds from CTC and RIA programs to construct phase II of a major drainage project. Phase II Drainage project, which involves the installation of drainage infrastructure on Palm Boulevard between 45th and 52nd Avenues, was completed the summer of 2019. In 2021, $1.4 million in grants was awarded to the City from the Office of Resilience to construct outfalls improvements at 41st Ave.
	1	Public Works		Continuous Process	
Arrange for community meetings to educate citizens related to changes in the flood insurance rates.	PI	General Fund	Educate citizens regarding vulnerability to hazards and steps to reduce vulnerability	Ongoing	Historically, these meetings have occurred when major changes happen with flood insurance.
	2	General Government and Building		Continuous Process	

Mail hazard related information to all residents of the Isle of Palms in a bi-annual mailing.	PI	General Fund	Educate citizens regarding vulnerability to hazards and steps to reduce vulnerability	Ongoing	This continues to happen every year and will continue into the future.
	1	Building, Planning & Zoning		Continuous Process	
Continue providing hazard-related literature/ information to citizens at City offices and posting flags and warnings when potential hazards are threatening or exists.	PI	General Fund	Educate citizens regarding vulnerability to hazards and steps to reduce vulnerability	Ongoing	The City posts emergency preparedness information and resources on the City's website and social media accounts. Handouts are always available at City Hall and other City buildings.
	2	General Government and Fire Department		Continuous Process	
Sponsor Hazard Awareness Events and provide website links to Charleston County and Project Impact resources.	PI	General Fund Disaster Recovery Fund	Educate citizens regarding vulnerability to hazards and steps to reduce vulnerability	Ongoing	The City participates in the Project Impact hazard awareness events and will continue into the future.
	2	General Government and Fire Department		Continuous Process	
Continue mailing an outreach project to floodplain residents.	PI	General Fund	Educate citizens regarding vulnerability to hazards and steps to reduce vulnerability	Ongoing	This mailing continues to happen every year.
	1	Building, Planning & Zoning		Continuous Process	
Continue providing speakers to civic groups regarding hazard-related activities.	PI	General Fund	Educate citizens regarding vulnerability to hazards and steps to reduce vulnerability	Ongoing	This service will continue to occur as the need and opportunities arise.
	2	General Government		Continuous Process	
Continue education regarding septic tanks, drainage ditches and pervious verses impervious surfaces as they relate to adequate	PI	General Fund and Grant funds	Educate citizens regarding preservation of environmental resources;	Ongoing	In 2018, the City entered into an agreement with the Isle of Palms Water and Sewer Commission to

areas for storm water runoff.	1	General Government, Public Works and Building Departments	improve water quality	Continuous Process	study the feasibility of expanding the sewer system and update the Sewer Master Plan to include island-wide sewer. The sewer master plan was completed in the spring of 2019. The City is coordinating a meeting between City Council and the IOPWSC Commission to discuss next steps towards a sewer expansion implementation project.
Post hazard awareness information on City of Isle of Palms and Isle of Palms Marina websites. Communicate information via the City's social media and message boards. Provide disaster information at Police Department "Meet and Greet" neighborhood meetings.	PI	General Fund Accommodations Tax	Educate citizens regarding vulnerability to hazards and steps to reduce vulnerability	Ongoing	The City regularly post emergency preparedness information & resources on the City's website & social media accounts & handouts are always available at City Hall & other City buildings. The Police Department hosts various Community Relations Events throughout the year
	1	General Government, Recreation, Police and Fire Departments		Continuous Process	
Continue participating in hazard-prevention / product expos.	PI	General Fund	Educate citizens regarding vulnerability to hazards and steps to reduce vulnerability	Ongoing	The City participates in the Project Impact hazard awareness events & will continue into the future.
	2	All City Departments		Continuous Process	
Continue to work with other East Cooper municipalities to coordinate pandemic or other hazard response planning efforts.	PI	General Fund	Ensure a coordinated response to hazards	Ongoing	The City has entered into mutual aid & automatic aid agreements with neighboring municipalities for both Police & Fire response. The City has also entered into a statewide mutual agreement for hazard response.
	2	General Government and Fire Department		Continuous Process	
Continue participating in the Project Impact Program for Public Information (PPI) to achieve maximum public outreach.	PI	General Fund	Ensure a coordinated response to hazards and educate citizens regarding	Ongoing	The City is an active participant of the PPI program.

	1	Building Department and Project Impact Committee	vulnerability to hazards	Continuous Process	
Continue Wayfinding Initiative to enable citizens to know most efficient routes to and from destinations thus reducing traffic congestion and enabling better response by emergency vehicles.	ES	Tourism Funds	Educate citizens and protect the lives of citizens from natural and man-made hazards	Ongoing	The City maintains wayfinding signs to ensure proper & maximum visibility. The City recently installed new beach access paths signs in the most utilized beach access paths to consolidate signage & increase messaging.
	2	General Government		Continuous Process	
Continue efforts to identify and acquire property to preserve as green space.	NB	Grant Funds (HMGP)	Promote a more hazard- resilient community	Ongoing	Although it is rare that affordable green space becomes available within the City limits, the City continues to monitor green space opportunities.
	3	General Government		Continuous Process	
Continue adding to the fund balance of the Disaster Recovery Fund to continually increase available fiscal resources to react/ recover in the wake of a disaster.	PA	General Fund	Promote a more hazard- resilient community	Ongoing	City Council continues the practice of allocating funds from the FY22 positive net result to the Disaster Recovery Fund.
	1	General Government and City Council		Continuous Process	
Continue to work with power utility company to make improvements that are more disaster resistant and redundant.	PA	General Fund Nonstandard Service Clause funding	Promote a more hazard- resilient community	Ongoing	The City monitors opportunities to improve the resilience of utilities.
	2	General Government,		Continuous Process	
Review City insurance annually to determine adequate coverage of all assets and update documentation (video) of assets.	PA	General Fund	Promote a more hazard- resilient community	Ongoing	This review happens annually.
	1	All City Departments		Continuous Process	
Recommend adoption of voluntary standards for single family residences to exceed minimal building code requirements for wind and seismic design	PA	General Fund	Minimize future flood damage; minimize future earthquake damage; minimize future	Ongoing	The Building Department regularly advises citizens on methods to help mitigating hazards.

	3	Building Department	hurricane damage; preserve environmental resources; educating citizens regarding vulnerability to hazards and steps to reduce vulnerability	Continuous Process	
Develop a GIS system for hazard-related assessments	PP	General Fund Grant Funding	Minimize future flood damage; minimize future earthquake damage; minimize future hurricane damage; assessing vulnerability to hazards	Ongoing	The City does currently maintain a GIS system
	4	Building/Planning Departments		Continuous Process	
Initiate contracts for the establishment of a network for the sharing of GIS information amongst jurisdictions	SP	General Fund	Minimize future flood damage; minimize future earthquake damage; minimize future hurricane damage; assessing vulnerability to hazards	Ongoing	The City is willing to consider entering into such a network and share information.
	2	Planning Department		Continuous Process	

17.

– Town of James Island

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY THE TOWN OF JAMES ISLAND

Resolution No. 2023-09

WHEREAS the County of Charleston has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the Town of James Island originally adopted the *Charleston Regional Hazard Mitigation Plan* in 2004 and readopted it in 2008, 2013, 2017, and 2019 and is required to adopt the amended version of this plan on a five-year cycle for the Town to remain eligible for certain Federal programs in which the Town of James Island participates; and

NOW THEREFORE be it resolved that:

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the Town of James Island. While content related to the Town of James Island may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Town of James Island to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the James Island Town Council.

Effective this 21 Day of Sept, 2023

Bill Woolsey, Mayor

ATTEST:
Frances Simmons, Town Clerk

Town of James Island

Action Report for the Town of James Island, SC

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the full action plan. Below are the proposed projects additional to the action plan of Charleston County.

Following are the proposed projects to be undertaken in the Town of James Island for hazard mitigation during May 2023 - April 2024 and their status from May 2022 - April 2023.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

Hazard Mitigation Goals and Objectives	
Goal 1: Mitigate natural hazard damage	
Objective 1.1	Minimize future flood damage
Objective 1.2	Minimize future earthquake damage
Objective 1.3	Minimize future hurricane damage
Objective 1.4	Minimize future wildfire damage
Objective 1.5	Minimize future tornado-related loss of life
Objective 1.6	Reduce existing flood damage
Goal 2: Increase public preparedness and protection	
Objective 2.1	Protect the lives of our citizens from natural and man-made hazards
Objective 2.2	Educating citizens regarding steps to take to reduce vulnerabilities
Objective 2.3	Promote long-term prosperity
Goal 3: Improve infrastructure	
Objective 3.1	Improve hazard resistance of infrastructure
Objective 3.2	Reduce vulnerability of our infrastructure to natural and man-made hazards
Goal 4: Increase environmental well being	
Objective 4.1	Preserve environmental resources
Objective 4.2	Improve water quality
Objective 4.3	Preserve open space
Objective 4.4	Encourage recreational activities

Based upon the responses to the latest survey questionnaire, the following are the goals for this plan (listed in the order of importance):

1. Reduce potential flood damage
2. Improve storm drainage
3. Minimize future flood occurrence
4. Minimize future hurricane damage
5. Improve hazard resistance of infrastructure
6. Minimize future earthquake damage
7. Protect environmental resources/preserve open and green space
8. Minimize future terrorist incidents
9. Improve water quality
10. Preserve historic building inventory
11. Higher regulatory standard
12. Minimize future hazardous material incidents

Town of James Island Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals and Objectives***	***Status***	***Milestones Achieved and Future Plans***
	Priority	***Responsible Agency***		***Implementation Schedule***	
Develop and Implement with Charleston County and the Ashley Cooper Stormwater Education Consortium programs to educate about flood reduction techniques for stormwater runoff and pollution reduction on James Island.	NB, PI	TOJI General Operating Funds	2.3, 4.1, 4.2, 4.3	Ongoing	. The Town partners with Ashley Cooper to have community education programs about stormwater management with rain gardens, rain barrels and sponsor Boy Scout Eagle Projects to mark stormwater drains. In a partnering effort to educate about pollution, the Town has also initiated a Neighborhood Pet Waste Station program including has 14 dog waste bag dispenser stations, including those at Pinckney Park and Dock Street Park.
	2	Town of James Island Public Works		Continuous Process	

Continue to provide design, permitting, and construction services for the drainage improvement projects defined in Attachment VI-C. Contract On-Call stormwater construction services available through pre-selected firms to provide infrastructure improvements on James Island.	SP	TOJI General Operating Funds Stormwater Funds Grant Funding (GMA/HMGP)	1.1, 1.6, 2.1, 2.3, 3.1, 4.2	Ongoing	The Town is repairing and restoring neighborhood drainage systems to their original design conditions through the use of the original, approved subdivision plans. The Town is also using our on-call contractors to analyze underground infrastructure through video technology. This is used to evaluate the conditions and prioritize repairs and system upgrades. The Town is also working on James Island Drainage Projects with Charleston County and the City of Charleston as described in Attachment VI-C.
	1	TOJI Public Works and Charleston County Public Works		Continuous Process	
The Town is working on large-scale drainage projects in Quail Run, Seaside to Honey Hill, and Oceanview to Stonepost.	PA, PP, SP	TOJI General Operating Funds	1.1, 1.6,2.1,2.3,3.1,4.2	Current and ongoing	Four projects are under construction as of Aug. 2023 and will be collectively completed by May 2024 or sooner.
	1				
Annual Public Works Expo and Water Quality Event aimed at informing the public about stormwater issues, LID practices, and clean water initiatives.	PI	General Operating and Stormwater Funds TOJI sponsored, other entities participate: JIPSD, CCPW, City of Charleston Public Services	1.1,1.6,2.2,4.1,4.2,4.4	Ongoing	First expo was held 11/2021, the second in 10/2022, and this year's will be in 10/2023.
	1				
TOJI sponsors the annual James Island Hurricane Expo every May.	PI	General Operating Funds TOJI sponsored, several other entities participate	1.1, 1.2, 1.3,1.4, 1.5,1.6,2.1,2. 2,2.3,3.2, 4.1,4.2	Ongoing	This expo occurs annually in May.
	1				
Identify stormwater drainage outfalls where backflow	SP	Stormwater Fund and TOJI General Operating Funds	1.1, 1.6, 2.1, 2.3, 3.1, 4.2	Ongoing	The Town is repairing outfalls and installing backflow tidal check

prevention devices would assist in preventing high tides from entering and flooding residential and commercial areas. Implement a program to install check valve devices at these locations.	1	Town of James Island with assistance of Charleston County Public Works City of Charleston (Stormwater) and SCDOT participate as needed		Continuous Process	valves to prevent inland tidal flooding. We have these installed on Teal Avenue and Relyea Drive and S. Anderson, and will be installing them in Quail Run, Highwood Circle and at Simpson's Creek outfall. Others will be planned as they are identified.

– Town of Kiawah Island

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE REVISED *CHARLESTON REGIONAL HAZARD MITIGATION PLAN* BY CHARLESTON COUNTY COUNCIL

Resolution No. 2023-06

WHEREAS the Town of Kiawah Island has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation Plan*; and

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

WHEREAS the Town of Kiawah Island originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, 2008, 2013, 2017, and 2019 and is required to adopt the amended version of this plan on a five-year cycle for the Town to remain eligible for certain Federal programs in which Charleston County and Town participates, and

NOW THEREFORE be it resolved that

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* are hereby adopted as an official plan of the Town of Kiawah Island. While content related to the Town of Kiawah Island may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Town of Kiawah Island to re-adopt any further iterations of the plan; and

The Town of Kiawah Island is recognized as a continuing entity charged with reviewing and maintaining in accordance with the Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act, and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the Town of Kiawah Island.

EFFECTIVE this 19th day of December 2023.

John D. Labriola, Mayor
Town of Kiawah Island

ATTEST:

~~Petra S. Reynolds~~, ~~Town Clerk~~
Stephanie Tillerson, Town Admin.

Action Report for the Town of Kiawah Island, SC

The Town of Kiawah Island is located approximately 20 miles south of Charleston. Due to our population and staff size, the Town utilizes Charleston County to perform some of our services including planning, public works, etc. Further, the Kiawah Island Community Association (KICA) is responsible for the maintenance of Kiawah's network of private roads, storm water utilities, etc. behind the gate.

The following are proposed projects to be undertaken or continued by the above-mentioned parties in the Town of Kiawah Island for hazard mitigation during May 2023 - April 2024 and their status from May 2022 - April 2023.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

Type	***Activity***	***Lead Agency***	***Funding Source***	***Goal(s) Addressed***	**Priority** ***1 highest – 4 lowest***
PA	Continue enforcement of the International series Building-related and Fire codes and the floodplain management (including the one foot freeboard and five year cumulative substantial improvement clause provisions) regulations.	Kiawah Island Building Inspection Services	General Fund	Minimize future flood, earthquake, and hurricane damage; life protection from all hazards	1
PA	Continue enforcement of the Stream Dumping Ordinance (Sections 8-108 & 15-213 of Municipal Code) for the Town	Public Works, Town Code Enforcement	General Fund	Minimize future flood damage; life protection	1
PA	Promote use of voluntary standards for single family residences to exceed minimal building code requirements for wind and seismic design	Kiawah Island Building Inspection Services	General Fund	Minimize future flood, earthquake, and hurricane damage; preserve environmental resources; educating citizens regarding vulnerability to hazards and steps to reduce vulnerability	1

PA	Continue enforcement of Building related, flood and Fire Prevention Codes and Regulations	Kiawah Island Building Inspection Services	General Fund	Minimize future flood, earthquake, and hurricane damage; life protection from all hazards	1
PA	Continue enforcement of storm water management regulations	Administration	General Fund	Minimize future flood damage; life protection	1
PA	Continue enforcement of zoning regulations	Charleston County Planning, Planning Commission	General Fund	Minimize future flood, earthquake, hurricane damage; preserve natural resources; promote long-term economic prosperity; preserve open space; encourage recreational activities; protect lives	1
PA	Continue to sponsor/support training workshops regarding Building related, flood, and Fire Prevention Codes and Regulations, if there is interest	Kiawah Island Building Inspection Services, Administration	General Fund	Education about vulnerability and steps to reduce; minimize damage from disaster events.	2
PA	Participate in Charleston County Hazard Mitigation Planning activities	Administration	General Fund	Education about vulnerability and steps to reduce; minimize damage from disaster events.	2
PP	Continue providing information for data entry for the County GIS system for hazard-related assessments	Administration	General Fund		2
PP	Promote use of voluntary standards for single family residences to exceed minimal building code requirements for wind and seismic design	Kiawah Island Building Inspection Services	General Fund	Minimize future flood, earthquake, and hurricane damage; preserve environmental resources; educating citizens regarding vulnerability to hazards and steps to reduce vulnerability	1

PP	Provide information to citizens regarding hazard safe interior rooms	Administration	General Fund	Minimize loss of life due to tornado; educate citizens of vulnerability and mitigation	3
NB	Continue enforcement of the tree protection & landscaping ordinance (Section 12A-403 of Municipal Code)	Charleston County Planning	General Fund	Preserve environmental resources; promote long-term economic prosperity; encourage recreational activities	1
NB	Continue maintaining permanent open space as parks	Charleston County Planning, Planning Commission	General Fund	Preserve environmental resources; promote long-term economic prosperity; encourage recreational activities; minimize future flood damages	1
NB	Provide information to citizens regarding establishing and maintaining buffer zones at water's edges	KICA, Administration	General Fund, Grant Funding	Educating citizens regarding vulnerability to hazards and steps to reduce vulnerability; minimize future flood damage; preserve environmental resources; improve water quality; improve hazard resistance of infrastructure; preserve open space; encourage recreational activities; minimize future hurricane damage	2
NB	Work with OCRM to introduce sand fencing in appropriate areas as identified.	Administration	General Fund; Special Revenues	Educating citizens regarding vulnerability to hazards and steps to reduce vulnerability; minimize future flood damage; preserve environmental resources; improve hazard resistance of infrastructure; minimize future hurricane damage	2

NB	Continue to monitor the beach and take appropriate actions to address erosion issues as they arise.	Administration	General Fund; Special Revenues	Minimize future flood and hurricane damage; preserve natural resources; promote long-term economic prosperity; preserve open space; encourage recreational activities	1
ES	Continue coordinating Municipal Emergency Operations Center activities in the event of a hazard event.	Charleston County Emergency Preparedness Administration	General Fund	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; preserve environmental resources; promote long-term economic prosperity	1
ES	Continue responding to hazard emergencies	Administration County & Local Agencies	General Fund	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; preserve environmental resources; promote long-term economic prosperity	1

ES	Continue to support and promote the Community Emergency Response Training (CERT) program, if requested	Administration	General Fund	Protecting lives of citizens from natural and man-made hazards, establishing cooperative relationships between the public, private and non-profit sectors to enhance preparedness and recovery for hazard events; educating citizens regarding vulnerability to hazards and steps to reduce that vulnerability; minimize future terrorist activity incidents	4
SP	Continue the drainage maintenance and canal cleaning program	KICA	General Fund	Protect the lives of our citizens from natural hazards; reduce existing flood damage; minimize future flood damage; improve water quality; improve hazard resistance of infrastructure; promote long-term economic prosperity	2
SP	Continue utility right of way permitting, considering emergency vehicle access and flood zone related issues in permitting decisions	Charleston County Public Works, Administration	General Fund	Protect the lives of our citizens from natural hazards; reduce existing flood damage; minimize future flood damage; improve hazard resistance of infrastructure; promote long-term economic prosperity	2
SP	Provide input to County on road repair/construction program, considering needs during evacuation and soil liquefaction potential in prioritization decisions	Administration	General Fund	Protect the lives of our citizens from natural hazards; reduce existing flood damage; minimize future flood damage; minimize future earthquake losses; improve hazard resistance of infrastructure; promote long-term economic prosperity	2

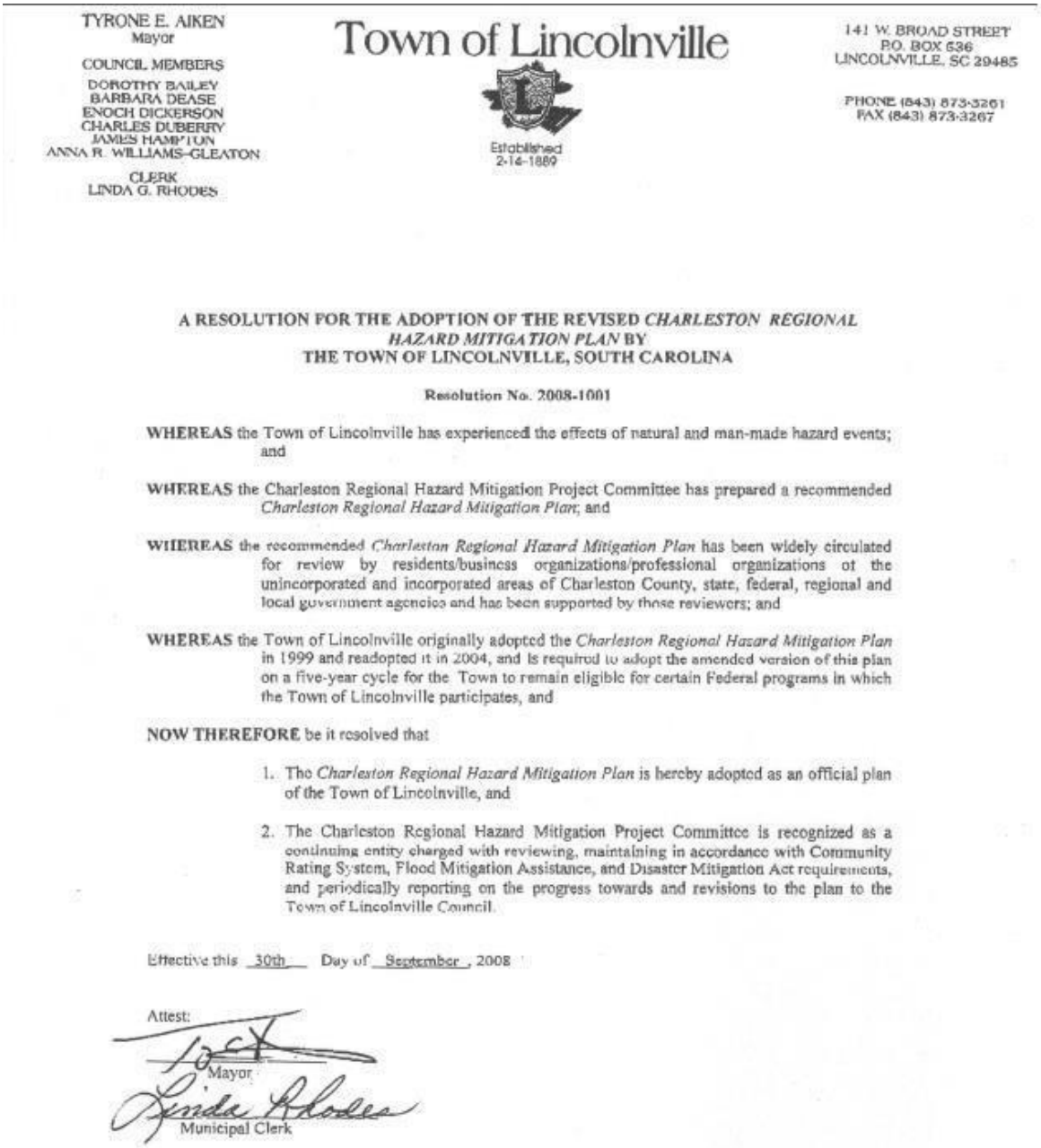
PI	Mail hazard related information to all residents of Kiawah Island; provide residents with Town Emergency Preparedness Plan and packets	Administration	General Fund	Protecting the lives of citizens from natural hazards; reduce existing flood damage; minimize future flood damage; minimize future hurricane damage; educating citizens regarding their vulnerability to natural hazards and steps to take to reduce vulnerability	1
PI	Continue providing hazard-related literature/information to citizens at Town Hall	Administration	General Fund		1
PI	Sponsor "Hazard Awareness Week"	Administration	General Fund		2
PI	Continue sponsoring a "Disaster Awareness Day" for Town citizens	Administration	General Fund		1
PI	Continue utilizing Town newsletter and website for the dissemination of hazard-related literature/information	Administration	General Fund		1
PI	Continue contract and promotion of the emergency alert system, CodeRed	Administration	General Fund	Protecting the lives of citizens from natural hazards through early alert	1
PI	Continue participating in the Project Impact Outreach Project Strategy for the Community Rating System. Participate in the Program for Public Information (PPI).	Administration	General Fund	Establishing cooperative relationships between public, private and non-profit sectors to enhance preparedness and recovery for hazard events; educating citizens regarding their vulnerability to natural hazards and steps to take to reduce vulnerability;	1
GIS	Provide information to County concerning critical facilities data, repetitive loss property information, flood data, street data, parcel data, and TIGER data into the GIS system	Administration	General Fund; Grant Funding	Protecting the lives of citizens from natural hazards; establishing cooperative relationships between the public, private, and non-profit sectors to enhance preparedness and recovery from hazard	2

GIS	Expand Town GIS database to include hazard-related information, e.g., critical facilities, emergency operations centers, repetitive flood properties, etc.	Administration	General Fund	events; educating citizens regarding their vulnerability to natural hazards and steps to take to reduce vulnerability; minimize future flood damage and hurricane damage	1

The Town of Kiawah Island shall, through Project Impact, provide support to the many activities and projects that will benefit the residents of the Town. Additional recommended projects may be added to this project list as other projects are recommended to Charleston County Council and the Town of Kiawah Island. Some Projects that are being undertaken by Charleston County may not necessarily be listed here but may affect the Town of Kiawah Island.

– Town of Lincolnville

Resolution for Adoption



TYRONE E. AIKEN
Mayor

COUNCIL MEMBERS
DOROTHY BAILEY
BARBARA DEASE
ENOCH DICKERSON
CHARLES DUBERRY
JAMES HAMPTON
ANNA R. WILLIAMS-GLEATON

CLERK
LINDA G. RHODES

Town of Lincolnville

Established
2-14-1889

141 W. BROAD STREET
P.O. BOX 636
LINCOLNVILLE, SC 29485

PHONE (843) 873-3261
FAX (843) 873-3267

A RESOLUTION FOR THE ADOPTION OF THE REVISED *CHARLESTON REGIONAL HAZARD MITIGATION PLAN* BY THE TOWN OF LINCOLNVILLE, SOUTH CAROLINA

Resolution No. 2008-1001

WHEREAS the Town of Lincolnville has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation Project Committee has prepared a recommended *Charleston Regional Hazard Mitigation Plan*; and

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

WHEREAS the Town of Lincolnville originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, and is required to adopt the amended version of this plan on a five-year cycle for the Town to remain eligible for certain Federal programs in which the Town of Lincolnville participates, and

NOW THEREFORE be it resolved that

1. The *Charleston Regional Hazard Mitigation Plan* is hereby adopted as an official plan of the Town of Lincolnville, and

2. The Charleston Regional Hazard Mitigation Project Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, and Disaster Mitigation Act requirements, and periodically reporting on the progress towards and revisions to the plan to the Town of Lincolnville Council.

Effective this 30th Day of September, 2008

Attest:

Mayor

Municipal Clerk

Action Report for the Town of Lincolnville, SC

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the

full action plan. There are no proposed projects additional to the action plan of Charleston

County.

Following are the proposed projects to be undertaken in the Town of Lincolnville for hazard mitigation during May 2023 - April 2024 and their status from May 2022 - April 2023.

– Town of McClellanville

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY TOWN OF MCCLELLANVILLE TOWN COUNCIL

Resolution No. 2023-2

WHEREAS the TOWN OF MCCLELLANVILLE has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the TOWN OF MCCLELLANVILLE originally adopted the *Charleston Regional Hazard Mitigation Plan* in 2004 and readopted it in 2008 and 2019, and is required to adopt the amended version of this plan on a five-year cycle for the County to remain eligible for certain Federal programs in which THE TOWN OF MCCLELLANVILLE participates; and

NOW THEREFORE be it resolved that

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the TOWN OF MCCLELLANVILLE. While content related to Charleston County may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Charleston County to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the TOWN OF MCCLELLANVILLE TOWN COUNCIL.

Effective this 2nd Day of October, 2023.

Attest:

Michelle A. McCallen
Clerk of Council

Rutledge B. Leland, III
Mayor Rutledge B. Leland, III

Action Report for the Town of McClellanville, SC

The Town of McClellanville is fully serviced by Charleston County. Please refer to Section 7.1 for the full action report. Below are the relevant projects to Town of McClellanville additional to the action report of Charleston County.

Following are the proposed projects to be undertaken in the Town of McClellanville for hazard mitigation during May 2023 - April 2024 and their status from May 2022 - April 2023.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

Hazard Mitigation Goals and Objectives	
Goal 1: Mitigate natural hazard damage	
Objective 1.1	Minimize future flood damage
Objective 1.2	Minimize future earthquake damage
Objective 1.3	Minimize future hurricane damage
Objective 1.4	Minimize future wildfire damage
Objective 1.5	Minimize future tornado-related loss of life
Objective 1.6	Reduce existing flood damage
Goal 2: Increase public preparedness and protection	
Objective 2.1	Protect the lives of our citizens from natural and man-made hazards
Objective 2.2	Educating citizens regarding steps to take to reduce vulnerabilities
Objective 2.3	Promote long-term prosperity
Goal 3: Improve infrastructure	
Objective 3.1	Improve hazard resistance of infrastructure
Objective 3.2	Reduce vulnerability of our infrastructure to natural and man-made hazards
Goal 4: Increase environmental well being	
Objective 4.1	Preserve environmental resources
Objective 4.2	Improve water quality
Objective 4.3	Preserve open space
Objective 4.4	Encourage recreational activities

Town of McClellanville Hazard Mitigation Actions					
Mitigation Action and Description	*Type*	*Funding Source*	*Goals and Objectives*	*Status*	*Milestones Achieved and Future Plans*
	Priority	*Responsible Agency*		*Implementation Schedule*	
Continue encouraging the Greenbelt Advisory Board to acquire green space in our community.	NB	Greenbelt Bank funding	1.1, 2.3, 4.1, 4.2, 4.4	Ongoing	The Town purchased two parcels for greenspace through the Charleston County Greenbelt Program in the past decade. In 2020, the Deerhead Oak Park purchase and conservation was approved for funding by the Greenbelt Committee and Charleston County Council. the Town also applied for Greenbelt Funding for purchase and conservation of a parcel of creekfront property currently leased by the Town as greenspace. A Comprehensive Open Space plan under development will be incorporated in the new Comprehensive Plan update.
	2	Planning and Zoning, Town Administration		Continuous Process	
Continue to submit drainage and earth road improvement projects for funding through the County's C-Fund program.	SP	CTC Funding	1.1, 1.3, 1.6, 2.1, 2.3, 3.1,	Ongoing	The Town submits project requests each year for funding through CTC to make improvements in areas that are affected by flooding.
	1	Town Administration		Continuous Process	
Continue providing hazard related information to all residents of McClellanville.	PI	General Fund	1.1, 1.3, 1.6, 2.1, 2.2, 2.3, 4.2	Ongoing	Education project making information available to all residents through the Town Newsletter, website, and brochures available at Town Hall.
	1	Town Administration		Continuous Process	
Maintain a link to Charleston County's Hazard Mitigation Plan on the town website.	PI	General Fund	2.1, 2.2, 4.2,	In Place	The town provides residents with quick access through a link on the town website. Updated Regularly

	1	Town Administration		Continuous Process	
Maintain a link to the Charleston County Flood Prevention Ordinance adopted by the Town.	PI	General Fund	2.1, 2.2	Ongoing	This page is monitored and updated as changes occur.
	2	Town Administration		Continuous Process	
Maintain a link to Charleston County's Hurricane Guide, as well as Flood Zone and Flood Protection Information.	PI	General Fund	1.1, 1.6, 2.1, 2.2,	In Place	Respond to and updated on a regular basis. The information is also published in the June Town Newsletter each year.
	1	Town Administration		Continuous Process	
Maintain a webpage with an overlay map of McClellanville properties on the FEMA flood map of the area.	PI	General Fund	2.1, 2.2	In Place	The Town provides a FEMA floodplain map of town properties on its website. Updated as FEMA floodplain changes occur.
	2	Town Administration		Continuous Process	
Continue enforcement of the International series Building-related Fire codes and floodplain management regulations to maintain participation in the National Flood Insurance Program and the Community Rating System.	PP	General Fund	1.1, 1.2, 1.3, 2.1	Ongoing	The Town has an IGA with Charleston County Building Services to perform all building inspection services and floodplain management for the Town.
	1	Charleston County Building Services		Continuous Process	
Continue to support the Community Wildfire Protection Plan by increasing public awareness and	PA, PI	General Fund	1.4, 2.1, 2.2, 3.1, 3.2	Ongoing	Information is made available through brochures and the Town Newsletter.

encouraging participation in the FireWise program to interested neighborhoods.	2	Awendaw-McClellanville Fire Dept. and Town Administration		Continuous Process	The Town facilitated an informational meeting for interested neighborhoods in 2019.
Continue enforcement of zoning regulations, including the low-density zoning provisions of the Town's Zoning and Land Development Ordinance.	PA	General Fund	1.1, 1.2, 1.3, 2.1, 2.3, 4.1, 4.4	Ongoing	The Zoning and Planning Department updated the Comp Plan in 2020 encouraging the preservation of open space and requiring vegetated buffers.
	1	Planning		Continuous Process	
Continue enforcement of the Town's tree protection/preservation ordinance.	NB	General Fund	2.3, 4.1, 4.2, 4.3	Ongoing	The Town is a Tree City USA and continues to administer and enforce its tree protection and preservation ordinance which includes grand tree protection and landscape buffer requirements. Town updated the tree ordinance in 2019 with further protections for protected and grand trees. Town hired a part-time planner in January 2020 to help enforce the Town's tree protection/preservation ordinance.
	2	Planning		Continuous Process	
Town Building Official will maintain his certification as a Certified Floodplain Manager	PP	General Fund	2.1, 2.2	Ongoing	The Town continues to have an IGA with Charleston County to serve as the Town's Certified Floodplain Manager.
	1	Building Inspection Services		Continuous Process	
Recognize "International Building Safety Month" to promote safety in the built environment	PI	General Fund	2.1, 2.2	Ongoing	The Mayor will proclaim May as Building Safety Month in the Town of McClellanville.
	3	Building Inspection Services		Annual	

Additional Recommended Projects may be added to this project list as the Project Impact/Disaster Resistant Communities committees consider other projects and recommend these projects for implementation.

– Town of Meggett

Resolution for Adoption

RESOLUTION NO. 2023-05

A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY TOWN OF MEGGETT TOWN COUNCIL

WHEREAS the TOWN OF MEGGETT has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the TOWN OF MEGGETT originally adopted the *Charleston Regional Hazard Mitigation Plan* in 2004 and readopted it in 2008 and 2019, and is required to adopt the amended version of this plan on a five-year cycle for the County to remain eligible for certain Federal programs in which THE TOWN OF MEGGETT participates; and

NOW THEREFORE be it resolved that

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the TOWN OF MEGGETT. While content related to Charleston County may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Charleston County to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the TOWN OF MEGGETT TOWN COUNCIL.

1



RESOLUTION 2023-05

Effective this 23 Day of 10, 2023

MAYOR HARRY V. HERRINGTON, III

10/23/2023
DATE

ATTEST:

TOWN ADMINISTRATOR, STEPHANIE SMITH

10/23/2023
DATE

TOWN ATTORNEY, W. ANDREW GOWDER, JR.

10/24/2023
DATE

2

Action Report for the Town of Meggett, SC

Following are the proposed projects to be undertaken in the Town of Meggett for hazard mitigation during May 2023 - April 2024 and their status from May 2022 – April 2023.

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the full action plan. There are no proposed projects additional to the action plan of Charleston County.

– Town of Mt. Pleasant

Resolution for Adoption

RESOLUTION NO. R.23101

STATE OF SOUTH CAROLINA	)	A RESOLUTION AUTHORIZING THE ADOPTION OF THE AMENDED 2023-2024 CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN BY THE TOWN OF MOUNT PLEASANT
COUNTY OF CHARLESTON	)	
TOWN OF MOUNT PLEASANT	)	

WHEREAS, the Town of Mount Pleasant has experienced the effects of natural and man-made hazard events; and

WHEREAS, the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS, the Town of Mount Pleasant has adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, 2008, 2013, and 2017, and is required to adopt the amended version of this plan on a five-year cycle for the Town of Mount Pleasant to remain eligible for certain Federal programs in which the Town of Mount Pleasant participates.

NOW, THEREFORE, BE IT RESOLVED by the Mayor and Councilmembers of the Municipality of Mount Pleasant, in Council assembled, hereby approve the Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management

Agency is hereby adopted as an official plan of the Town of Mount Pleasant. While content related to Charleston County may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Town of Mount Pleasant to re-adopt any further iterations of the plan.

BE IT FURTHER RESOLVED that the Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the Mount Pleasant Town Council.

THIS RESOLUTION SHALL BE EFFECTIVE IMMEDIATELY UPON ITS ADOPTION.

SIGNED, SEALED AND DELIVERED THIS 17 DAY OF October, 2023.

J.W. Haynie, Mayor
Town of Mount Pleasant

ATTEST:

Christine Barrett
Clerk of Council

October 17, 2023

Adopted at Council meeting: October 10, 2023

APPROVED AS TO FORM:

David G. Pagliarini
Corporation Counsel

Action Report for the Town of Mount Pleasant, SC

Following are the proposed projects to be undertaken / continued in Town of Mount Pleasant for hazard mitigation during May 2023 - April 2024 and their status from May 2022-April 2023.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

Hazard Mitigation Goals and Objectives	
Goal 1: Mitigate natural hazard damage	
Objective 1.1	Minimize future flood damage
Objective 1.2	Minimize future earthquake damage
Objective 1.3	Minimize future hurricane damage
Objective 1.4	Minimize future wildfire damage
Objective 1.5	Minimize future tornado-related loss of life
Objective 1.6	Reduce existing flood damage
Goal 2: Increase public preparedness and protection	
Objective 2.1	Protect the lives of our citizens from natural and man-made hazards
Objective 2.2	Educating citizens regarding steps to take to reduce vulnerabilities
Objective 2.3	Promote long-term prosperity
Goal 3: Improve infrastructure	
Objective 3.1	Improve hazard resistance of infrastructure
Objective 3.2	Reduce vulnerability of our infrastructure to natural and man-made hazards
Goal 4: Increase environmental well being	
Objective 4.1	Preserve environmental resources
Objective 4.2	Improve water quality
Objective 4.3	Preserve open space
Objective 4.4	Encourage recreational activities

Based upon the responses to the latest survey questionnaire, the following are the goals for this plan (listed in the order of importance):

1. Reduce potential flood damage
2. Improve storm drainage
3. Minimize future flood occurrence
4. Minimize future hurricane damage
5. Improve hazard resistance of infrastructure
6. Minimize future earthquake damage
7. Protect environmental resources/preserve open and green space
8. Minimize future terrorist incidents
9. Improve water quality
10. Preserve historic building inventory
11. Higher regulatory standard
12. Minimize future hazardous material incidents

Town of Mount Pleasant Hazard Mitigation Actions 2021-2022					
Mitigation Action and Description	***Type*** / ***Priority***	***Funding Source*** / ***Responsible Agency***	***Goals and Objectives***	***Status*** / ***Implementation Schedule***	***Milestones Achieved and Future Plans***
Implement Town Strategic Plan Themes, Goals, Objectives, and initiatives which support emergency preparedness and disaster resistance.	PA	General Fund Grant Funds	1.1, 1.2, 1.3, 1.4, 2.1, 2.3, 3.1, 3.2	Ongoing	2016-2020 Strategic Plan was complete with successful implementation of the Incident Management Theme with relevant goals for NIMS/ICS, Training, Cyber Security, and physical security. The 2021-2025 Strategic Plan is in affect with an overall Resilience Theme. Town staff will address three primary goals: 1. Protect Neighborhoods and Community Systems 2. Strengthen Operational Capacity and 3. Refine and Expand Operational Capabilities
	1	All Departments		Continuous Process	
Continue to review and augment Town activities to improve Community Rating System ranking; incorporate program changes from the new CRS Coordinator's Manual into the Town's activities.	PA	General Fund	1.1, 1.3, 2.1, 2.2, 3.1, 4.1, 4.2	Ongoing	Upgrades to the Town's GIS system are complete which enhance mapping capabilities for various activities. The Town continues to participate in the Charleston Area HMP and the PPI that was established through Project Impact (administered through Charleston County) that will enhance outreach to the local communities. Milestones Achieved: Information on the Town's GIS continues to be updated/ upgraded with new layers of information. New FIRM maps became effective 1/29/21 and these and the previous FIRM maps are available as layers on the Town's GIS. Future: Continue to coordinate 300, 400 and 600 level activities to include coordination with Charleston County, Emergency Exercises, and Community Outreach (PPI).
	1	Building Inspection Division EDS/ PSD Departments EM/Resilience		Continuous Process	
	PA	General Fund		Ongoing	

Review Fire ISO programs for opportunities to improve ISO ratings.	1	Fire Department Building Inspection Division	1.1, 1.2, 1.3, 1.4, 2.1, 2.2	Continuous Process	The Town's Building Inspection Division maintains a BCEGS rating of 4/3. The next BCEGS rating is expected in 2026 with an anticipation of a 3/2 rating. The Fire Department currently has an ISO Class 2 rating. The 2020 Fire ISO cycle visit was delayed due to COVID but is now in process. Anticipate ISO Class 1 Improvement with next cycle visit based on new implementation of autoaid agreement with City of Charleston , North Charleston , James Island, Johns Island, and St. Andrews Fire Departments. Autoaid trial began July 6, 2022.The Fire Department continues to implement its strategic plan which identifies the goal to improve ranking Class 1 with improvements in staffing, public outreach, & equipment. Begin assessment to address the Town's Comprehensive Plan Action Item to Improve the Mount Pleasant's Community Ratings System score by 1 class within the next five years.
Continue enforcement of the State mandated Building Codes, the permissive codes as adopted by Town Council, and the Town's Flood Damage Prevention Ordinance.	PA	General Fund	1.1, 1.2, 1.3, 1.6, 2.1	Ongoing	Building Inspection Division inspections completed for FY 20/21 totaled over 28,000. Of these inspections, just under 57% were for buildings located in Special Flood Hazard Areas. FY21/22 nearly 30,000 inspections completed. FY 22/23 nearly 25,000 inspections and 262 flood elevation certs reviewed. The Fire Department completed 2,090 code inspections in FY 19/20 and discovered 1,824 violations. FY20/21 to date: 1631 inspections with 1295 violations discovered with 1.5 months in the reporting year left. Began food truck inspections based on adoption of NFPA Code update to minimize hazards. Conducted 63 food truck inspections. FY21/22
	1	Building Inspection Division Fire Department		Continuous Process	
Review and update regulations regarding construction in flood zones.	PA	General Fund	1.1, 1.2,1.3, 1.4, 2.1	Ongoing	Updated FEMA FIRMs were adopted by the Town and became effective 1/29/21 Included with the FIRM adoption were new Flood Ordinance requirements including an increase in freeboard from one to two feet and the requirement for Coastal A Zones to be regulated in the same manner as VE Zones.
	1	Building Inspection Division		Continuous Process	
Continue Sandbag program for residents.	PA	General Funds	1.1, 1.3, 1.6, 2.1, 2.2	Ongoing	The Town maintains a municipal stockpile of sand and sandbags in preparation for events. When the event calls for flood mitigation efforts, sandbagging stations and operations are initiated for residents to make bags.
	1	Public Services		Complete	
	PA	General Fund		Ongoing	

Continue to enforce stormwater management regulations.	1	Engineering and Development Services/ Public Services Departments Planning Department	1.1, 1.2, 1.3, 1.4, 2.1	Continuous Process	In FY 21/22 (75) Projects were submitted for review for compliance with stormwater regulations. In 2021, (1,997) inspections were performed. Inspections - were completed for compliance with SW regulations (10464) Compliance Inspections, (31) C&G inspections (36) Civil Inspections (40) NOT Inspections (0) Illicit Discharge Inspections (14) Re-Inspections (214) Outfall Inspections, (1) Upstream data collection (5) Upstream Structure Inspections (0) Post (Disaster) Event Inspections (81) Post Construction BMP Inspections (215) Stabilization Inspections (3) Final Plat Inspections (225) New Pipe Inspections (8) End of Warranty Inspections, (6) Facility Inspections, (40) Ditch Inspections, (0) Flap Gate Inspections
Continue to review and evaluate development practices such as LEED and LID for incorporation into Town Land Development and construction standards, where feasible.	PA	General Fund	1.1, 1.2, 1.3, 1.6, 2.1, 2.2	Ongoing	Maintain Coastal LID Manual Links to Town Website for Public Access/ Use. In 21/22 – Staff attended (3) LID specific webinars, Town partners presented (1) Public webinar on LID design in Coastal SC Multiple new and re-development projects in Town are utilizing LID practices to comply with standards and regulations. 21-22 Engage firm to pursue comprehensive planning for activities such as incorporating LID techniques, incentivizing green infrastructure/ LID, incorporating green infrastructure/LID into Town Capital Improvement projects, and updating codes and regulations. 21/22 - Development of Environmental Guidelines Program with tiered requirements and incentives for commercial redevelopment projects 22/23 – begin drafting/ adoption of new guidelines.
	2	Planning Department Stormwater Division EM/Resilience		Continuous Process	
Continue to participate in climate studies and programs, continue to evaluate infrastructure vulnerability as climate data becomes available. Knowledge exchange occurs	PA	General Fund	1.1, 1.2, 1.3, 1.6, 2.1, 2.2, 2.3	Ongoing	2021 Town Flood Study Completed, staff will be working to identify areas for future projects. Continue to participate in Resilience Strategy Workshops with partners and stakeholders such as the Charleston Resilience Network, NOAA, SeaGrant, SCDNR, et.

internally amongst departments and externally with critical stakeholders, partners and within the community.	3	EM/Resilience Planning Department Stormwater Division		Continuous Process	Comprehensive Plan identifies required activities to assess climate vulnerability. The Town participates in the CRS User Group. FY 22/23 - The Town is partnering on a two-year SeaGrant Grant Research project for Rain and Tide: assessing Coastal Stream Flow and Compound Risk Flooding. Awaiting decision on proposal acceptance for funding from SeaGrant and is looking for additional studies and group. The town is undertaking an all-hazards risk/ vulnerability assessment and is applying for a NFWF Shoreline Vulnerability Study grant.
Update/ Establish Cyber security measures to protect critical data from loss during natural or man-made events.	PA 2	General Fund IT Department Police Department	2.1, 2.3, 3.1, 3.2	Ongoing Continuous Process	Backups occur daily and are stored on the cloud. 21/22 Completed IT Assessment and Strategy which includes integration of protective measures, disaster recovery, and continuity of operations. Signed an agreement with SLED for Critical Infrastructure Cyber Security. Hired new IT staff and send out newsletters for phishing and education of staff on cyber security. Future: Explore off-site server options for backup to provide redundancy, recovery, and continuity of operations. Seek funding to implement offsite data storage and additional cyber security measures to protect critical data.
Continue to expand the Community Wildfire Protection Plan (CWPP) to include all Fire Departments / Districts in the County. Support the CWPP by increasing public awareness with the purpose of improving the protection of all structures.	PA, PI 1	General Fund Building Inspection Services Project Impact County-wide fire departments and districts	1.4, 2.1, 2.2, 3.1, 3.2	Ongoing Continuous Process	Charleston County Consolidated-911 has streamlined response and the department is accredited by the Commission on Accreditation for Law Enforcement Agencies, Inc. Fire Department supports Wildland Team through regional coordination. Agreement in place with US Forestry.
Continue providing information to citizens regarding hazard safe interior rooms (PPI).	PP, PI 2	General Fund Building Inspection Division Charleston County/ Project Impact	1.5, 2.2	Ongoing Continuous Process	Education project through use of brochures and information given to citizens. Ongoing on a regular basis as part of established departmental process. Additional education is provided though the County/ Regional PPI Program.
Provide hazard and risk related information to all	PI	General Fund Grant Funds	2.2	Ongoing	2021-2022 – Town participated in the Regional PPI, Hazard outreach and information Is posted on the town's website at

residents through local newspaper, billboards, and other large-scale outreach methods (PPI).	2	EM/Resilience Charleston County/ Project Impact		Continuous Process	www.tompsc.com. There were 5,971 unique page views for hazard related web pages in 2021. The town prints a flood information page in the Moultrie News. A State Webinar Flooding 411 was provided by partners and advertised by the town. 22-23 – Continue to participate in the PPI and provide outreach as available through various platforms. The Town put on their own Public Input Matters workshop series 2022-2023 to collect information from citizens on concerns and hazard info.
Review and Develop framework for management plans that address flood mitigation and/ or water quality by watersheds.	NB, PP, SP	General Fund, Stormwater Funds, CRAM Funds, Grant Funding	1.1, 1.6, 2.1, 2.3, 3.1, 3.2, 4.1, 4.2	Ongoing	The Town's Comprehensive plan identifies watershed-based planning as a beneficial activity for new development areas.The Town is studying Water Quality in the Rathall and Shem Creek Watersheds to support future improvement plan development. .Continue to use Town rainfall/ SLR study to identify vulnerable watersheds and areas for future projects. 21/22 Flood hazard modeling 90% complete with 10, 25-, 50-, 100-, and 500-year events modeled for the entire Town. Modelling incorporated Sea Level Rise scenarios. Future: Seek funds to further develop model outcome to incorporate Stormwater Infrastructure inventory to identify best investments of capital improvement for flood mitigation. air and natural systems,
	1	EM/Resilience Planning Department Stormwater Division		Continuous Process	
Continue to coordinate local stormwater management regulations for flood control and water quality.	PA, PI	General Fund CRAM Funds Grant Funding (FMA)	1.1, 1.3, 1.6, 2.2, 3.1, 3.2, 4.1, 4.2	Ongoing	2021-2022 -The Town participated in and will continue to participate in the Local Flood Prevention Taskforce, and BCD-COG Stormwater Management Committee to coordinate local flood control and water quality program. In addition, The Town is partnered with Charleston County for the Wando River and Shem Creek TMDL water quality programs. 2022-2023 - The town is developing environmentally friendly site design standards to consider green infrastructure for water, energy,
	1	Planning Stormwater Division Charleston County/Project Impact Coastal MS4 group/ SC APWA Chapters		In place/In process	
Continue implementing the Stormwater Management Plan	PA	Stormwater/ CRAM Fund Grant Funding	1.1, 1.3, 2.1	Ongoing	The Stormwater Management Plan was updated in 2015, program activitiescontinue. Ongoing evaluations and updates on a regular

for Mount Pleasant and the applicable regulations.	2	Public Services Planning		Continuous Process	basis as part of established departmental and regulatory processes. For FY 21/22 - Ongoing implementation and enforcement of current regulations and plans. Continue to improve program SOPs and operations. FY 22/23 - no new regulatory programs or permits are anticipated, continue programs.
Implement new land usage regulations in the Old Village area of the Town to limit the expansion of impervious surfaces and manage stormwater runoff.	PA 2	General Fund Planning Department (Engineering) Building Inspection Division	1.1, 1.6, 2.1, 2.2, 2.3, 3.1, 4.2	Ongoing Continuous Process	The new regulations were adopted by ordinance on 6/14/18 and apply to an approx. 975-acre area of the Town. The regulations are enforced through the Building Inspection Division and the Engineering and Development Department. For FY 20/21, 93 permits were issued under the new regulation.
Implement new town wide individual lot regulations for drainage, grading, and tree protection and installation during construction.	PA 2	General Fund Planning Department (Engineering) Building Inspection Division	1.1, 1.6, 2.1, 2.2, 2.3, 3.1, 4.2	Ongoing Continuous Process	The new regulations became effective 3/1/2019 and apply to residential lots throughout the town. The single family regulations are enforced by the Building Inspection Division and the Town Engineer. For FY 21/22 (1022) permits were issued under the new regulation.
Continue enforcement of zoning regulations, including, the low-density zoning provisions.	PA 1	General Fund Planning	1.1, 1.2, 1.3, 2.1, 2.3, 4.1, 4.3, 4.4,	Ongoing Continuous Process	The Town's Comprehensive Plan was adopted in 2020. The plan was written with input from the public, as well as partner government agencies and non-profit organizations. Throughout this process, much discussion has focused on the preservation of green space. in 21/22 Enforcement and regulations continued though the towns zoning process. 22/23 - Continue work on Zoning and other Code revisions, environmentally Friendly Site design standards and other Comp Plan elements.
Conduct, support, or participate in seminars, workshops, and other outreach programs regarding the State mandated Building Codes, the Town's Flood Damage Prevention Ordinance, and hazard mitigation strategies.	PA, PI 1	General Fund Building Inspection Division Planning Department Stormwater Division	1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 4.1	Ongoing Continuous Process	Staff regularly meets with individual citizens, homeowners, contractors, and other local governments representatives to review building code and flood ordinance requirements. In FY 20/21 the Town's Flood Damage Prevention Ordinance was updated to include an increase in freeboard from one to two feet and adoption of VE Zone regulations for Coastal A Zones. 22/23 - Continue to assess and update programs as issues or opportunities are identified.
Continue providing information to citizens regarding	PA, PP, PI, NB	General Fund Grant Funding	1.1, 1.2, 1.3, 1.6,	Ongoing	Brochures are available in the Building Inspection Division lobby concerning these and other related hazard mitigation strategies.

propane tank anchoring, hazard safe interior rooms, boat anchoring and maintenance, generator safety, riparian buffer zones, hazard resistant landscaping, and artifact protection, among other issues (PPI).	2	Building Inspection Division	2.2, 4.1, 4.2	Continuous Process	See Charleston County Hazard Mitigation Actions for Project Impact/PPI update. Ashley Cooper Stormwater Education provides education on buffers and landscaping in the tri-county region in 2021 there were estimated 3,589,913 indirect education outreach contacts, 68,029 direct contacts for outreach and 4,960 estimated public involvement impacts. Future: Incorporate brochures and online PPI into Town activities. Increase outreach material at Town Hall.
Continue enforcing ordinance requirements for the elevation and anchoring of manufactured homes.	PA	General Fund	1.1, 1.2, 1.3, 2.1	Ongoing	Ongoing as part of the building code and inspection program - no manufactured homes were installed in FY 20/21 in the SFHA. The freeboard requirement increased from one to two feet on 1/29/21.
	1	Building Inspection Division		Continuous Process	
Continue to develop and bolster Emergency Management Program to focus on comprehensive approaches to preparedness, mitigation, response, and recovery.	PA	General FundGrant Funding	1.1 2.1, 2.2, 2.3, 3.1, 3.2	Ongoing	The Emergency Management Program continues to be structured. Major milestones in program planning; Emergency Operations Plan, Emergency Operations Center Structure and Operating Procedure, Emergency Communications, and extensive coordination with key partners within the state and region. Community outreach efforts have been implemented to encourage individual and neighborhood preparedness and local business preparedness. In 2020, the Emergency Management Office was expanded to include Resilience practice. The Town's 2021-2025 Strategic Plan focuses on Resilience and strengthening the community and organization to be able to withstand future hazards. .Future: Conduct a municipal level Hazard Vulnerability Assessment to further identify, prioritize, and implement, mitigation strategies relevant to the Town. Enhance emergency response plans, training, and exercise. Support all inner department coordination for EM and Resilience initiatives. Further Develop Continuity of Operations Plans to ensure critical functions of departments are performed during crisis. Establish a town-wide Resilience Strategy. Seek funding for Emergency Management and Resilience program implementation, plans, assessments and studies. Select consulting firms to have on-call to support Emergency Management Professional Services. 21/22 Began Local Hazard Vulnerability Assessment and Hazard Mitigation Plan. Planning process will extend into 22/23.
	1	All Departments		Continuous Process	
Continue enforcing regulations requiring new manufactured homes brought into the Town to be constructed to wind zone 2 requirements as required per State law.	PA	General Fund	1.1 2.1, 2.2, 2.3, 3.1, 3.2	Ongoing	For FY 20/21, there was one new manufactured home brought into the Town. It met wind zone 2 requirements.
	1	Building Inspection Division		Continuous Process	

Seek funding for retrofitting demolishing, or relocating repetitively flooded properties, if suitable candidates can be identified.	PP	Grant Funding (FMA)	1.2, 1.3, 1.6, 3.1, 3.2, 4.1	Existing	For FY 20/21, there were no properties proposed or funded. Town has discussed with several homeowner the potential acquisition of RL homes via FMA, but they did not meet the Cost Benefit requirements. Future: establish and draft RL Plan
	1	Building Inspection Division Stormwater Division		In process	
Continue to require new Town critical facilities to be located in low risk flood zones (Zone X)and evaluate hazard vulnerability of existing facilities and infrastructure, seeking funding for hazard mitigation and energy efficiency in accordance with the Town's Strategic Plan or other applicable plans	PP	Grand Funding , Bond Fund, General Fund, CRAM Funding	1.1, 1.2, 1.3, 1.6, 2.1, 2.3, 3.2	Ongoing	FY 20/21 - Completed design plans and permitting for a new Public Services Operations Center Plan replace fleet maintenance, waste transfer and employee offices, and a second EOC in Zone X., Multiple Town facilities are being repaired or rehabilitated according to the Town's Building Assessment Program. Future: Town will conduct an assessment to evaluate Town-owned buildings and infrastructure to determine vulnerability and prioritize mitigation activities. Town's Public Services Department is Master Planning a new Public Services Facility. Town was awarded funding for the Hobcaw Drainage Project, an All-Hazards Vulnerability study. Town continues to seek funding under HMGP, BRIC, FMA for several infrastructure mitigation projects to include additional Generator at Town Hall, Shoreline vulnerability Study, drainage improvements in the Old Village, and other areas.
	1	All Departments		In process	
Continue enforcement of the tree protection/landscaping ordinance.	NB	General Fund	2.3, 4.1, 4.2, 4.3	Ongoing	The Town continues to administer and enforce its tree protection and preservation ordinance and landscaping ordinance which include grand tree protection and landscape buffer requirements. Tree ordinance was updated in FY 19/20. All road improvement projects are enhanced with landscape plantings.
	2	Planning Charleston County		Continuous Process	
Continue maintaining permanent open	NB	General Fund Special Revenue Fund	1.1, 2.3, 4.1, 4.3, 4.4	Ongoing	139,848 acres are deeded privately or publicly to remain as open space and an estimated 89,000 of that total is in special flood hazard area throughout Charleston County.

space as parks and restricted use areas.	2	Parks and Recreation Commission Planning Department Public Services Building Inspection Services		Continuous Process	In Mount Pleasant, 2960 Acres are protected lands. Approximately 77% (2200 acres) are in a Special Flood Hazard Area.. Future: Assess and determine potential areas in town that may be maintained as open space. As part of the CIP planning process, look for opportunities designate open space areas within the project. Create an inventory of open space areas and determine a method to preserve them as such. FY 22/23 – initiate buffer mapping pilot project to map critical area buffers and freshwater buffers in the Wando River Watershed.
Continue encouraging the Greenbelt Advisory Board to acquire green space in special flood hazard area, to the extent feasible.	NB	Special Revenue Fund	1.1, 2.3, 4.1, 4.2, 4.4	Ongoing	Since its inception, the Greenbelt program has protected 21,170 acres of land in Charleston County; including parcels in Mount Pleasant at the Hamlin Brewer Tract.
	2	Parks and Recreation Commission		Continuous Process	
Develop and implement projects to reduce air and water pollution in Charleston County under the Project Impact partnership. Promote conservation of energy resources.	NB	Grant Funding	4.1, 4.2	Continuous Process	Materials provided by the PPI in FY 21/22 See Charleston County Hazard Mitigation Action Plan for PPI Activities. Future: improve outreach opportunities on the town's website, spocial media platforms, and in offices.
	1	Charleston County/ Project Impact Stormwater Consortium		Continuous Process	
Encourage cooperation between Town departments, other government entities, interested businesses, and citizens regarding recommended sustainable practices to protect environmental quality.	NB	Grant Funding (PDM) General Fund	2.3, 4.1, 4.2	Ongoing	The Town's Comprehensive Plan was adopted in 2020. A Multi-department Livability Team has been implemented to work on sustainable practices, (Take Root MtP, Mount Pleasant Green) and has been working on other sustainable initiatives in the Comp plan. The town hosted a tree giveaway, and education booths at town events. Through the Ashley Cooper Stormwater Education Consortium the Town provides educational and participation activities in sustainable practices such as shoreline buffers, green infrastructure, and pond management. In FY 22/23 - Stormwater Consortium and Livability outreach and interdepartmental activities will continue as defined by the programs strategic plan.
	2	Ashley Cooper Planning Department Stormwater Division		Continuous Process	
Continue hazardous material training (PPI).	ES, PI	Enterprise Fund Grant Funding	2.1, 3.1, 3.2, 4.1	Ongoing	Charleston County Emergency Management Department conducted training sessions on topics including Clandestine Labs, Site Safety Officer, and Rae Systems Portable Tech.

	2	Charleston County/ Project Impact Public Services Fire Department. Police Department		Continuous Process	Public Services Department trained 25 personnel in OSHA Level II response in 2022. Fire Department includes Awareness, Operations, and Technician level HazMat training in annual in-service training curriculum. Police Department conducts Hazmat Awareness Level training to Block Training. PSD, FD, and PD participate in multi-agency/ multi-jurisdictional level training. Future: Include Police Department in LLR to incorporate LEOs at the Fire Academy
Continue Active Threat, SWAT, and Significant Event Response Training (PPI).	ES, PI	General Fund	2.1, 2.3, 3.1, 4.1	Ongoing	Training offered through the County occurs on a continual basis, at least annually. TRT included Active Shooter training conducted by FBI, SLED, DHEC and other agencies. Police Department and Fire Department conduct joint response training in annual in-service training curriculum and participates in multi-jurisdictional training opportunities. Coordination of Ad-hoc of Multi-Jurisdictional /Organizational Active Violence Emergency Response Team and Rescue Task Force. The Town periodically provides in-service training for all staff members as well as outreach to business and organizations throughout the community. Police and Fire Department staff participate in tabletop exercises to prepare for active threat and SWAT officers train bi-weekly. COVID resulted in a reduction of training and public engagement. Anticipate full resumption of training and engagement activities in 2022.
	1	Hazardous Materials Coordinator Police Department EM/Resilience Fire Department		Continuous Process	
Continue coordinating Emergency Operations Center activities related to hazard events, including exercises and real-world activations.	ES	General Fund Grant Funding	2.1, 2.2, 2.3, 4.1	Ongoing	The EOC regularly holds training sessions for Emergency operations staff and officials. The Town conducts a minimum of one Full-Scale EOC exercise each year in adherence to Homeland Security Exercise and Evaluation Program guidelines. Municipal coordination with other jurisdictions and County Emergency Management Department occurs with full-scale exercises and real-world activations. 21/22 – Town held a Hurricane EOC exercise in August 2021 and an earthquake Exercise in May 2022. The Town activates its EOC for emergency incidents according to the Town's Emergency Operations Plan. After Action/ Improvement Plan Reports are developed for every activation, including exercises. Improvement plan items will be completed in order to enhance and expand core capabilities identified in the National Preparedness System. Future: Assess capabilities of the EOC and Emergency Response staging areas to enhance emergency operations communication and coordination. Seek funding for equipment and resource shortfalls.
	1	All Departments		Continuous Process	
Continue responding to hazard emergencies.	ES	General FundEnterprise Fund	2.1, 2.2, 2.3, 3.2, 4.1	Ongoing	Charleston County Consolidated Dispatch recorded 67 fuel spills, 363 Gas Leaks/Odors, 15 Hazmat Incidences, and 573 Outside fires since May 1, 2018.Town Public Services Spill

	1	EMS Fire Departments Sheriff Department Hazmat Coordinator EM/Resilience Police Department Public Services		Continuous Process	Team/ Stormwater Staff responded to (41) reports of unknown spills/ discharges or request for spill clean-ups in FY 20/21.Town Emergency Response Personnel coordinate response activities for all scope and scale of hazard emergencies throughout the year. Police and Fire continue to train and respond to hazard emergencies. Traffic control patterns are in place for key intersections.
Continue working to attain resources and to provide training for maritime firefighting through the Maritime Incident Response Team (MIRT).	ES	Grant Funding (HMGP)	2.1, 2.3, 3.1	Ongoing	Charleston County offers quarterly training sessions on marine firefighting are held at this time and on a regular basis as part of establish departmental processes. 2020-2021 The Town was awarded $168,000 toward a 23' center console, 200 HP twin engine 23 foot boat from the port security grant. This will aid in mitigating hazmat incidents in port waterways as well as typical water rescue. 2021-2022 Fire Department received and operationalized the new response boat. Assignment of MIRT Point of Contact to coordinate with regional partners for response capability growth. Future: Seek funding to send first responders to maritime fire and hazmat response training.
	1	Hazardous Materials Coordinator Charleston County/ Project Impact Fire Department		Continuous Process	
Maintain the national Weather Service “Storm Ready” and “Tsunami Ready” Community designations.	ES, PI	General Fund	1.1, 1.3, 1.5, 1.6, 2.1, 2.2	Completed	Charleston County has been recertified as a “Storm Ready” and “Tsunami ready” Community. The Town is included in the designated area as a Hazard Mitigation Plan partner.
	1	Emergency Management Charleston County/ Project Impact		Completed	
Continue coordinating the Anti-Terrorism Task Force (COBRA) of specially trained police, fire, and EMS personnel to respond to terrorist acts (PPI).	ES	Grant Funding (HMGP)	2.1, 2.2, 2.3, 3.1, 4.1	Ongoing	In addition to conducting various training sessions, the Charleston County WMD regional Response Team responded to real world assistance calls for suspicious white powder in mailboxes on Sullivan’s Island in 2018 and a possible fentanyl bust in the City of Charleston June 2017 and Lincolnville June 2018. It also conducted a full-scale alert and exercise on Feb. 23 2018, with assistance from SLED, DOE, and other agencies. Contact Lori Kidwell
	1	Hazardous Materials Coordinator Charleston County/ Project Impact		Continuous Process	
Continue sponsoring the Community	ES, PI	Grant Funding (LEMPG)	2.1, 2.2	Ongoing	Charleston County Emergency Management Department coordinates CERT training and

Emergency Response Training (CERT) program (PPI).	2	EM/Resilience Charleston County/ Project Impact		Continuous Process	maintains and active members roster across Charleston County. Classes are conducted at the Charleston County Volunteer Rescue Squad in order to better prepare the citizens of Charleston County for potential incidents. 2020-2021 courses were drastically delayed due to COVID restricting in person gatherings. Future: The Town will coordinate with and support Charleston County to enhance its program and offer CERT courses to Mount Pleasant citizens and neighborhoods in 2022 and onward.
Coordinate online platforms for Emergency Operations.	ES 1	General Fund EM/Resilience	2.1, 2.3, 4.1	New Continuous Process	South Carolina, Charleston County and the Town utilize Palmetto web based platform to coordinate internally and across jurisdictions during emergency incidents. Palmetto is also used across the state leading to increased coordination and real time interaction in a crisis. Additionally, the Town utilizes GIS, Crisis Track, Alastar and City Works information sharing and operational management platforms. Future: The Town will continue to streamline online platforms to increase efficiency and reduce unnecessary redundancy.
Continue to seek funding and obtain fire suppression and other equipment for emergency response operations.	ES, PA, PP, PI 1	General Fund/ Grant Funds EM/Resilience Public Services Fire Department Police Department	2.1, 2.2, 2.3, 3.1, 3.2	Ongoing Continuous Process	The Town continues to operationalize emergency response equipment and resources: Four High Water Rescue Vehicles, Snow Plow/equipment to enable salt/brine application, FD SCBA Airpaks, FD maritime response boat, PD maritime response boats, EM Communications systems, etc. Future: Fire Department will upgrade extrication equipment in 2022. Assess resource and equipment needs to be able to respond to all types of hazards. Seek funding to procure equipment and resources to enhance core capabilities for emergency response and recovery.
Continue fire rescue training.	ES 1	General Fund Fire Department	2.1, 3.1, 3.2	Ongoing Continuous Process	Specialized rescue and fire suppression training activities- confined space, high angle and bridge rescue are ongoing and continue annually. Conducted first 8-week direct hire academy in March 2021. Beginning another in Sept 2021. Fire department provides new hire recruit classes bi-annual basic fire suppression training.
Continue to develop capability and seek	ES, PA	General Fund/ Grant Funds	2.1, 22, 2.3	Ongoing	In winter 2018 several emergency warming-shelters were opened in cold weather.

funding to provide safe shelter for residents for multiple emergencies/events.	1	EM/Resilience Charleston County Emergency Management Partner Agencies		Continuous Process	Hurricane Evacuation shelters are not permitted within the Town due to flood hazard. The Town coordinates Charleston County Emergency Management to ensure adequate shelter capability for citizens. In 2019-2020 Charleston County made significant changes to shelter plans as it was determined many schools in the county would not be able to withstand previously anticipated category of hurricane and none are able to withstand the wind of a category greater than 3.Future: Support partner agencies to provide shelter capability and seek funding for equipment and resources to enhance shelter capability and capacity. The Town will continue to coordinate with Charleston County to create plans and develop MOAs with Berkeley and Dorchester Counties for Hurricane Shelter.
Continue to use, develop and enhance public information and warning capability.	ES, PI	General Fund	2.1, 2.2, 2.3	Ongoing	The Town coordinates messaging through social media, County Emergency Management, media outlets, Civic Plus, and all other available means. 2020: The Town's Communications Manager successfully completed the Master PIO course. The Police and Fire departments have dedicated PIOs and crisis communications protocols. Departments within the Town participate on the Communications Work Team; these team members are working to achieve various certifications in public information. Future: Staff members from all departments will continue to seek training for public information.
	1	All Departments		Continuous Process	
Operate and improve the capabilities/ function of the Mobile Command unit for disaster and other town events where command centers are warranted.	ES	General Fund Grant Funding	2.1, 2.3	Complete	The Town's Mobile Command Center has been utilized on several incidents and town events. Operational use and capabilities will continue to be improved as identified. Future: Seek funding to renovate/update the Town's Mobile Command Center.
	1	Police Department		Continuous Process	
Continue to design and construct components of the Emergency Response training facility.	ES	General Fund Grant Funding	2.1	Ongoing	Funding for master planning and site design is funded for 2018-2019. 2019- 2020 Training Facility design is complete. 2020-2021 Construction is only partially funded at this time. Future: Finalize facility design and seek funding for construction of the training facility.
	1	Police Department Fire Department Partner Agencies		Continuous Process	

Continue ICS and NIMS training for all responders and applicable town staff.	ES	General FundsGrant Funding	2.1, 2.3	Ongoing	New Town staff, who provide response activities are required to take ICS 100, 200, 700, and 800. Additional position-specific training and course are taken as offered or as appropriate for response roles. Future: Send Town staff to ICS 300/400 Train-the-Trainer course to be offered by Charleston County EMD. Further develop position-specific training requirements. Implement OneResponder training management platform.
	1	All Departments		Continuous Process	
Continue the drainage maintenance and canal cleaning program.	SP	General Fund	1.1, 1.6, 2.1, 2.3, 3.1	Ongoing	In 2020/ 2021 (140) of canal inspections and (192) maintenance work orders/ activities were completed. There were (27) Hot Spot - Choke point Work Orders processed after rain events (13) bi-ennial bridge inspections were completed.
	1	Public Services		Continuous Process	
Continue to provide funding, design, permitting and construction for the drainage projects defined in Attachment VI-C – and incorporate new projects as they are identified.	SP	General Fund CRAM Fund Grant Funds	1.1, 1.6, 2.1, 2.2, 3.1, 3.2, 4.2	Ongoing	See Plan attachment for updates.
	1	SRF Funds PLAN		Continuous Process	
Continue utility right of way permitting, considering emergency vehicle access and flood zone related issues in permitting decisions.		Public Services General Fund	1.1, 1.6, 2.1, 2.3, 3.1		
	SP	Stormwater Program/ CRAM Funds		Ongoing	(174) permits in ROW and (74) permits for drainage easements were processed in FY20/21. (18) New Development projects proposing new public infrastructure were reviewed, and/ or permitted, for construction following the Town's standards for minimum road elevations.
	1	Public Services EDS PLAN		Continuous Process	
Continue the Flap Gate inspection and maintenance program.					

SP	CRAM Funds General Funds	1.1, 1.3, 1.6, 2.1, 3.1, 3.2	Ongoing	Tidal flap gates are inspected annually and maintained, as needed, as needed Assessment of areas that are prone to flooding from tides are being evaluated for the installation of new gates.

	1	Public Services Department		Continuous Process	
Continue to provide funding, design, permitting, and construction services for the drainage improvement projects.	SP	Grant FundingGeneral FundStormwater Program/ CRAM Funds	1.1, 1.6, 2.1, 2.3, 3.1	Existing	Started the Royall Ave Basin Drainage Improvement Project Construction in 2022. Funding for Hobcaw Improvements was received via a grant. The Town's CIP/ CMP program funding for future drainage studies and projects based upon a cyclical review/ approval process. With Old Village and Hobcaw Point drainage studies complete, and Old Village construction design complete; continue to seek funding construction of the Old Village: Edwards Park Drainage Improvement and Design/Construction for Hobcaw Point Drainage Improvement. Seek Funding for further studies, design, and construction of drainage improvement projects.
	1	EM/Resilience EDS PLAN Public Services		Continuous Process	
Continue the road/repair construction program, Implement Transportation Management Plan and consider evacuation needs and for soil liquefaction potential in prioritization of decisions.	SP	General Fund Grant Funding (FMA/PDM)	1.1, 1.2, 1.6, 2.1, 2.3, 3.1	Completed	(39) lane miles were resurfaced or applied a preservation application to provide better vehicle travel conditions in FY 2021. Other road improvement projects as identified in the Traffic Management Plan are ongoing and updated as part of the annual planning/budget process.
	1	Transportation Charleston County (Transp. Sales Tax)		Continuous Process	
Support and sponsor placement of hurricane storm surge signs installed though Project Impact.	SP	General Funds Grant Funding	2.2	Ongoing	The Town has (2) signs that re maintained; Longpoint Road and Highway 41. Future: Consider adding
	1	Public Services		Continuous	
Continue providing hazard-related literature/information to citizens at County and Town offices (PPI).	PI	General Fund	1.1, 1.2, 1.3, 1.4, 1.6, 2.1, 2.2	Existing	Printed materials (brochures, pamphlets, etc.) are always displayed and made available for public use. Printed media are also updated on a regular basis. The Town's Emergency Preparedness website provides relevant information to citizens regarding the hazards in which the community is vulnerable, and individual/family/business preparedness activities that can be accomplished to reduce prepare. The Town' annually participates in FEMA's National Preparedness Month and issues infographics and other relevant information in accordance with the federal initiative. The Town regularly distributes hazard-specific preparedness literature via all modes of communication.
	2	Charleston County/ Project Impact All Departments		Continuous Process	

Mail an outreach project to floodplain residents to those property owners whose property is located in special flood hazard areas (PPI).	PI	General Fund	1.1, 1.3, 2.1, 2.2, 4.2	Completed	See Charleston County Hazard Mitigation Plan update for 20/21 metrics. (PPI Activity)
	1	Charleston County/ Project Impact		Completed	
Continue providing speakers to civic groups regarding hazard related activities and environmental quality topics. Update the Speaker's Bureau list as needed (PPI).	PI	General Fund	2.1, 2.3, 4.2	Ongoing	See Charleston County Hazard Mitigation Plan update for 20/21 metrics. (PPI Activity)
	1	Charleston County/ Project Impact		Continuous Process	
Continue programs aimed towards providing resources to local schools and civic groups to enhance their ability to educate students regarding hazard events and hazard event preparation. Provide educational programs to schools on hazards or environmental quality as opportunities arise (PPI).	PI	Grant Funding (HMGP) Project Impact Resources	1.1, 2.1, 2.2, 3.2, 4.2	Ongoing	See Charleston County Hazard Mitigation Plan update for 20/21 metrics. (PPI Activity)
	1	Project Impact		Continuous Process	
Continue participating in hazard-related/product or environmental protection-related expos or public events (PPI).	PI	General Fund	2.1, 2.2, 3.2, 4.2	Ongoing	See Charleston County Hazard Mitigation Plan update for 20/21 metrics. (PPI Activity)
	2	Charleston County/ Project Impact		Continuous Process	
Maintain the flood zone frequently asked questions page on the Charleston County web site to provide information on protecting against flood hazards to the public (PPI).	PI	General Fund	2.2	Existing	See Charleston County Hazard Mitigation Plan update for 20/21 metrics. (PPI Activity)
	2	Charleston County/ Project Impact		Continuous Process	
Maintain the Project Impact internet page	PI	General Fund	2.2	Ongoing	The internet page is monitored constantly and updated with new information and/or

on the Charleston website to relay information on Project Impact events and methods to reduce hazard-related losses to the public (PPI). Provide Hazard Information and links on Town webpages.	2	Charleston County/ Project Impact		Continuous Process	brochures as they become available. Town webpages – there were 24,046 web page visits to town hazard related information on town's web pages (including COVID) in FY 20/21.
Continue storm drain marking program with citizen participation	PI, PP, NB	Grant Funding (FMA) General Funds	2.1, 2.2, 2.3, 3.1, 3.2, 4.1	Ongoing	(60) Drains marked by volunteers in 2021. - program depends on volunteer interest. Many new drain inlets come pre-marked with no dumping messages.
	4	Public Services		Ongoing	
Maintain a web page with information on environmental resources protection/air and water quality pollution reduction strategies. Promote carpooling, public transportation and bicycle paths.	PI	Grant Funding (HMGP)	2.2, 4.1, 4.2	Ongoing	Facebook and Twitter sites are maintained and updated. Television programming produced is available for view on "YouTube".Town webpages – there were 8,581 web page visits to town Water Quality on town's web pages in FY 20/21.
	1	Charleston County Public Information Stormwater Division		Continuous Process	
Continue educational efforts and initiatives promoting energy conservation. Promote LEED construction practices.	PI	Grant Funding (HMGP) General Fund	2.2, 4.1	Ongoing	See Charleston County Hazard Mitigation Plan update for 20/21 metrics. (PPI Activity)
	2	Charleston County		Continuous Process	
Continue participating in the annual maintenance and approval of Hazard Mitigation Plan / Program for Public Information Committee efforts to achieve maximum public outreach.	PI, PA, PP, NB, ES, SP	General Fund	2.2	Ongoing	See Charleston County Hazard Mitigation Plan update for 20/21 metrics. (PPI Activity).
	1	Charleston County Public Services		Continuous Process	
Maintain the Web and Facebook Pages for Project Impact (PPI).	PI	General Fund	2.2, 4.1, 4.2	Ongoing	Respond to, and update on a regular basis. See County Action Plan (PPI Activity) Ongoing on a regular basis as part of established departmental process.
	1	Building Inspection Services Project Impact Public Information		Continuous Process	

Continue inter-departmental efforts to share geographic digital information and property specific construction-related information.	GIS	General Fund Grant Funding (HMGP)	2.1, 3.1, 3.2	Ongoing	The Town continues to improve GIS services. Tracking of New and re-development projects are coordinated for new Development through the Town's DRT Process, the Cityworks Database, and the Town's GIS online maps.
	2	All Departments		Continuous Process	
Continue to improve and expand the use of GIS technology and capabilities for use with pre-and post-disaster vulnerabilities assessments, long range asset management and emergency planning.	GIS, ES	General Funds CRAM Funds Grant Funds	G1, G2, G3	Ongoing	Continue compiling updated Topo and Storm Drainage System Expansion information. Received 2017 LiDAR imagery for use in plan review and flood modeling. A FEMA Grant has been awarded in FY 19/20 for a townwide run-odd model/ drainage flood study. This project is underway. Town participated in a LiDAR update to provide improved topo data and is updating GIS layers and data collection protocols to improve services and coordination between departments. GIS is being integrated into the EOC operations. In 2021 GIS Assisted with Hazmat spill when barge overturned and provided aerial to crews and after for funding/replacement of consumables. Several departments within the Town have the capability to operate drones to capture ariel images.
	1	All Departments		Continuous process	
Prepare flood insurance assessment table and address the community's insurance coverage gaps and other concerns.	PI, PP	General Fund	1.1, 1.3, 2.1	Ongoing	Completed assessment for 2019 PIP, will continue to assess for yearly Hazard Mitigation Plan update or as new information becomes available, whichever is sooner. See County Action Plan for PPI activities. Future: Reassess insurance gaps.
	1	Building Inspection Services		Continuing Process	
Continue to conduct studies on BFEs, floodways, and other pertinent flood concerns.	PA, PP	Grant Funding (FMA)	1.1, 1.6, 2.1, 2.2, 2.3, 3.1, 3.2	Existing	Ongoing Program for Drainage studies in older development areas – concurrent with drainage improvement plans and studies being conducted to assess system functionality and vulnerabilities. Studies include reviews of flood zones, impervious area changes, RL properties, drainage system capacity and a 2' Sea Level Rise in the assessment and design process.
	1	Planning Public Services/ Stormwater Building Inspection Services		Continuous Process	
Develop Damage assessment Teams, training programs,	ES, PA, GIS	General Funds Grant Funds	G1, G2, G3	Ongoing	In 2019, following Hurricane Dorian, multiple departments provided staff to conduct post event damage assessments.

and damage assessment maps.	1	All Departments		Complete	Utilizing multiple platforms and other resources the town has met to develop teams and mapping capabilities – this will continue for different emergency scenarios. A Damage Assessment Team is developing pre- and post event response protocols for use in Crisis Track. The Town's Emergency Management Planning Team meets regularly to plan and prepare for events.. A fully integrated, multi-disciplinary Damage Assessment Team has been established and trained to perform assessments following disasters. This team will continue to seek training and exercise to ensure continued proficiency in their roles.
Include Hazard Mitigation, Resilience, and Emergency Management goals within the Town's Comprehensive Plan Update.	PA, PP 1	General Funds, Grant Funding All Departments	G1, G2, G4	Ongoing Complete	The Town's Comprehensive Plan was adopted in 2020 which includes several areas of hazard mitigation, EM, and resilience planning outcomes. See Plan: https://www.tompsc.com/565/Comprehensive-Plan. Future: The Town will work to implement all components of the Plan over the next decade

– City of North Charleston

Resolution for Adoption

RESOLUTION #2023-032

A RESOLUTION

FOR THE ADOPTION OF THE AMENDED 2023-2024 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY NORTH CHARLESTON CITY COUNCIL

WHEREAS the City of North Charleston has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the City of North Charleston originally adopted the *Charleston Regional Hazard Mitigation Plan* decades ago and readopted it multiple times, and is required to adopt the amended version of this plan on a five-year cycle for the County to remain eligible for certain Federal programs in which the City of North Charleston participates; and

NOW THEREFORE be it resolved by the Mayor and City Council, in Council assembled, that

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the City of North Charleston. While content related to the City may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the City to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to Council.

THE WITHIN RESOLUTION SHALL BE EFFECTIVE IMMEDIATELY UPON ITS RATIFICATION BY CITY COUNCIL.

Resolved in City Council this 26th day of October, in the Year of Our Lord, 2023, and in the 247TH year of Independence of the United States of America.

R. KEITH SUMMEY, MAYOR

APPROVED AS TO FORM:

LEGAL COUNSEL

ATTEST:

COURTNAY NEYWARD, MUNICIPAL CLERK

Action Report for the City of North Charleston, SC

Following are the proposed projects to be undertaken / continued in North Charleston for hazard mitigation during May 2023 - April 2024 and their status from May 2022-April 2023.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

Hazard Mitigation Goals and Objectives	
Goal 1: Mitigate natural hazard damage	
Objective 1.1	Minimize future flood damage
Objective 1.2	Minimize future earthquake damage
Objective 1.3	Minimize future hurricane damage
Objective 1.4	Minimize future wildfire damage
Objective 1.5	Minimize future tornado-related loss of life
Objective 1.6	Reduce existing flood damage
Goal 2: Increase public preparedness and protection	
Objective 2.1	Protect the lives of our citizens from natural and man-made hazards
Objective 2.2	Educating citizens regarding steps to take to reduce vulnerabilities
Objective 2.3	Promote long-term prosperity
Goal 3: Improve infrastructure	
Objective 3.1	Improve hazard resistance of infrastructure
Objective 3.2	Reduce vulnerability of our infrastructure to natural and man-made hazards
Goal 4: Increase environmental well being	
Objective 4.1	Preserve environmental resources
Objective 4.2	Improve water quality
Objective 4.3	Preserve open space
Objective 4.4	Encourage recreational activities

City of North Charleston Hazard Mitigation Actions					
Mitigation Action and Description	*Type*	*Funding Source*	*Goals*	*Status*	*Milestones Achieved*
	Priority	*Responsible Agency*	*and Objectives*	*Implementation Schedule*	*and Future Plans*
Continue enforcement of the International Series Building-related and Fire codes and the floodplain management regulations (including the two-foot freeboard, cumulative substantial improvement clause, and/or other provisions deemed necessary to enhance Community Rating System credits) to maintain participation in the National Flood Insurance Program and the Community Rating System.	PA	General Fund	1.1, 1.2, 1.3, 2.1	Ongoing	North Charleston has maintained a Class 7 Rating (CRS). Upon the next CRS visit, North Charleston plans to improve their rating to a Class 4 or 5.
	1	Building Inspection Services		Continuous Process	
Continue to expand the Community Wildfire Protection Plan (CWPP) to include all Fire Departments / Districts in the City. Support the CWPP by increasing public awareness with the purpose of improving the protection of all structures.	PA, PI	General Fund	1.4, 2.1, 2.2, 2.3, 3.2	Ongoing	Charleston County Consolidated e-911 has streamlined response and the department is accredited by the Commission on Accreditation for Law Enforcement Agencies, Inc.
	1	Building Inspection Services Project Impact City-Wide Fire Department		Continuous Process	
Promote Standards for existing homes to be retrofitted to exceed minimal codes.	PP, PI	General Fund	1.2, 1.3, 1.6, 2.2, 4.1	Ongoing	Reworked and published new brochures to push this message in 2016. Brochures are available at all expos and handed out at City permitting office. Worked with Department of Insurance and SC Safe Home program to promote retrofitting.
	1	Building Inspection Services		Continuous Process	

Continue providing information to citizens regarding hazard safe interior rooms (PPI).	PP, PI	General Fund	1.5, 2.2	Ongoing	Education project through use of brochures and information given to citizens. Ongoing on a regular basis as part of established departmental process.
	1	Building Inspection Services		Continuous Process	
Provide hazard related information to all residents through local telephone book.	PI	General Fund	1.1, 1.3, 2.1, 2.2, 4.2	Ongoing	Servicing local phonebooks and updated yearly for new publications.
	2	Building Inspection Services		Continuous Process	
Continue to provide coordination of City storm water management through development and implementation of a comprehensive program. Enhance efforts at improving water quality through environmental educational activities.	PA, PI	General Fund Enterprise Fund Grant Funding (FMA)	1.1, 1.6, 2.2, 3.1, 3.2, 4.2	Ongoing	Presently working with S. C. Sea Grant Consortium in the Filbin Creek study. Building Inspection Services has process LOMRs for land area not included in Comprehensive Plan. Project Impact voted on project to promote living shorelines and educate the community. The City is an active partner with the Ashley Cooper Stormwater Education Consortium. The Consortium provides ongoing public education and public involvement on stormwater and water quality issues.
	1	Planning Public Works Building Inspection Services Project Impact		In place/In process	
Continue implementing the storm water master plan for North Charleston and the applicable regulations.	PA	Enterprise Fund Grant Funding (FMA)	1.1, 1.3, 2.1	Ongoing	The Storm Water Master Plan was completed in 2012, Enforcement is continuing. The City now has current and preliminary digital NFIP Flood Insurance

	2	Public Works Building Inspection Services Planning		In place	Rate Maps implemented in GIS system. Ongoing on a regular basis as part of established departmental process.
Implement new standard requiring reverse grade to move storm water runoff back towards the property and away from waterways.	PA	General Fund	4.2	New	Planning Stage Assessing the best avenues to implement these standards / regulations.
	2	Public Works Building Inspection Services		In Process	
Continue enforcement of zoning regulations, including the wetland buffer and open space requirements in proposed developments.	PA	General Fund	1.1, 1.2, 1.3, 2.1, 2.3, 4.1, 4.3, 4.4	Existing	The City adopted a new Comprehensive Plan in 2020 that calls for revising the Zoning Regulations to encourage smaller residential lots in areas with existing infrastructure, requiring additional open space and wetland buffers, and studying and possibly revising parking requirements to potentially reduce impervious surface.
	1	Planning		Continuous Process	
Conduct or co-sponsor training workshops regarding the International Building-related, flood, and Fire Prevention Codes and Regulations, and on sustainable construction/landscaping practices, when there is interest in these workshops (PPI).	PA, PI	General Fund Self-Supporting through workshop revenues	1.1, 1.2, 1.3, 2.2, 3.1, 4.1	Ongoing	Building Inspection Services participated in meetings, expos, or events between May 2022- April 2023. Darbis Briggman speaks regularly at Trident Home Builders meetings (12 events in the past year). The department regular meets with individual citizens, homeowners, contractors, and other local governments.
	1	Building Inspection Services		Continuous Process	

Continue providing information to citizens regarding propane tank anchoring, hazard safe interior rooms, boat anchoring and maintenance, generator safety, riparian buffer zones, hazard resistant landscaping, and artifact protection, among other issues (PPI).	PA, PP, PI, NB	General Fund Grant Funding (HMGP)	1.1, 1.2, 1.3, 2.2, 4.1	Ongoing	The City continues to participate with County events where information was distributed to attendees. Brochure has recently been updated with new information.
	2	Building Inspection Services Project Impact Community Partners		Continuous Process	
Continue enforcing regulations requiring new manufactured homes brought into North Charleston to be constructed to wind zone 2 requirements as required per State law.	PA	General Fund	1.1, 3.2	Ongoing	Enforcement has been maintained including regulations to 2′ freeboard. Ongoing on a regular basis as part of established department processes.
	1	Building Inspection Services		Continuous Process	
Continue prohibiting new manufactured homes to be installed in "V" flood zones and requiring manufactured homes installed in "A" flood zones to be on permanent foundations.	PA	General Fund	1.1, 1.2, 1.3, 2.1	Ongoing	Continue to prohibit manufactured homes in VE Zones and require engineered foundations in AE Zones. A change in regulation to 2′ freeboard was adopted in 2019.
	1	Building Inspection Services		Continuous Process	
Continue demolishing structures posing a threat to public safety, considering location within the special flood hazard area as a prioritization factor.	PP	Grant Funding (FMA)	1.1, 1.2, 2.3, 3.2, 4.4	Ongoing	Several houses moved or demolished from flood zone on old naval base. Some areas left as green space.
	3	Building Inspection Services		Continuous Process	

Seek funding for retrofitting demolishing, or relocating repetitively flooded properties, if suitable candidates should be identified. Utilize North Charleston Repetitive Loss Area Analysis for identifying suitable candidates.	PP	Grant Funding (FMA)	1.2, 1.3, 1.6, 3.1, 3.2, 4.1	Existing	We continue to seek grants to assist with mitigation efforts.
	1	Building Inspection Services		In process	
Continue distributing a brochure on protecting boats from damages during hurricanes to interested citizens through expos, offices, marinas, and boat dealers (PPI).	PP, PI	Grant Funding (HMGP)	1.3, 2.2, 3.1, 4.4	Ongoing	Project Impact attended 3 expos during this time period where information was distributed to attendees. Brochure has recently been updated with new information.
	3	Building Inspection Services Project Impact		Continuous Process	
Continue distributing a brochure on protecting and preserving historic artifacts to interested citizens through expos, government offices, etc. (PPI).	PP, PI	Grant Funding	1.1, 2.2, 3.2	Ongoing	Project Impact attended 3 expos during this time period where information was distributed to attendees. Brochure has recently been updated with new information.
	2	Building Inspection Services Project Impact		Continuous Process	
Seek funding for retrofitting critical facilities or infrastructure to enhanced hazard resistance in accordance with North Charleston master plan.	PP	Grant Funding	1.2, 1.3, 1.6, 2.3, 3.2	Ongoing	We continue to coordinate with Charleston County in receiving and implanting grants.
	1	Building Inspection Services		In process	

Continue enforcement of the tree protection/landscaping ordinance.	NB	General Fund	2.3, 4.1, 4.2, 4.3	Ongoing	All road improvement projects are enhanced with landscape plantings for roads and constructed under the half-percent sales tax. The City continues to administer and enforce its tree protection and preservation ordinance and landscaping ordinance which include grand tree protection and landscape buffer requirements.
	2	Planning		Continuous Process	
Continue maintaining permanent open space as parks and restricted use areas.	NB	General Fund Special Revenue Fund Greenbelt Fund	1.1, 2.3, 4.1, 4.4	Ongoing	Areas are deeded privately or publicly to remain as open space. Working to establish more open spaces in special flood hazard area. City has acquired several properties, including wetlands along Filbin and Noisette Creeks, using Charleston County Greenbelt funds. Additionally, City is in process of purchasing additional wetlands property in Bluehouse Swamp (Ingleside).
	2	Executive Department Planning Department Building Inspection Services		Continuous Process	
Continue inter-department efforts to share geographical digital information and property specific construction-related information.	GIS	General Fund	1.1, 1.3, 2.1, 4.1	Ongoing	GIS works closely with and in support of all departments involved in permitting and with members of Damage Assessment with training and installing new software to the DA team's tablets. GIS participates and is expanding its role with the Emergency Preparedness department.
	2	Building Inspection Services GIS Emergency Services		Continuous Process	
Continue participating in "Build-A-Dune" projects as funding permits, and assist other jurisdictions in participating in this initiative upon request. Implement and participate in the Charleston County Beachfront Management	NB	Grant Funding (PDM, FMA, HMGP)	1.1, 1.3, 1.6, 2.2, 3.1, 4.1	Depending on Funding / Ongoing	No grant funding was secured for "Build-A-Dune" projects during this time period. North Charleston's Management Plan focuses on current conditions, regulations,

Plan to enhance and preserve our coastlines.	2	Building Inspection Services Public Works Project Impact		Depending on Funding / Continuous Process	strategies for preservation and other relevant information and is being maintained as required.
Continue to distribute literature on riparian buffer zones and hazard resistant landscaping to citizens through government offices and at expos (PPI).	NB, PI	Partner Donations Grant Funding (HMGP)	1.1, 1.3, 2.2, 3.1, 4.1, 4.2, 4.3, 4.4	Ongoing	The City participates with the County in events where information was distributed to attendees. Brochure has recently been updated with new information.
	2	Building Inspection Services Project Impact		Continuous Process	
Develop and implement projects to reduce air and water pollution in North Charleston under the Project Impact partnership. Promote conservation of energy resources.	NB	Grant Funding (HMGP)	4.1, 4.2	Completed	The City participates with the County in events where information was distributed to attendees. Brochure has recently been updated with new information. In 2019, City adopted an ordinance requiring enclosure of all dumpsters and other waste storage containers on all sides, to a height of eight feet, to contain wind- and water-borne debris.
	1	Building Inspection Services Project Impact		Completed	
Encourage cooperation between city departments, other government entities, interested businesses, and citizens regarding recommended sustainable practices to protect environmental quality.	NB	Grant Funding (PDM) General Fund	2.3, 4.1, 4.2	Ongoing	We share information through GIS web-based software program for our departments.

	2	Building Inspection Services Project Impact Other City Departments as Applicable		Continuous Process	
Continue hazardous material training (PPI).	ES, PI	Enterprise Fund Grant Funding	2.1, 3.1, 3.2, 4.1	Ongoing	The City participated with Charleston County Emergency Management conducted training sessions on topics including Clandestine Labs, Site Safety Officer, and Rae Systems Portable Tech. In addition, Individuals were sent to specialized training at nationwide core competence centers.
	2	Hazardous Materials Coordinator		Continuous Process	
Continue Terrorist Response Training (PPI).	ES	General Fund	2.1, 2.3, 3.1, 4.1	Ongoing	Training occurs on a continual basis, at least annually. For the 2022-2023-period, TRT included Active Shooter training conducted by FBI, SLED, DHEC and other agencies. Training occurs on a continual basis, at least annually. For the 2022-2023 period, Terrorist Response Training included Weapons of Mass Destruction Refresher training conducted by the FBI, SLED, DHEC and other agencies as well as Preparedness for Suicide Bombing Incidents
	1	Hazardous Materials Coordinator		Continuous Process	

Continue coordinating Emergency Operations Center activities related to a hazard event, including holding drills for EOC personnel and maintain the Charleston County Continuity of Operations Plan (COOP).	ES	General Fund	2.1, 2.2, 2.3, 4.1	Ongoing	The MEOC regularly holds training sessions for area responders, officials and staff. The North Charleston Emergency Operations Center successfully activated for and effectively coordinated responses to Hurricane Ian in 2022
	1	Emergency Management		Continuous Process	
Continue responding to hazard emergencies.	ES	General Fund Enterprise Fund	2.1, 2.2, 2.3, 3.2, 4.1	Ongoing	North Charleston worked fuel spills, gas leaks/odors, Hazmat Incidences, and outside fires
	1	EMS Fire Department North Charleston Police Department Hazmat Coordinator Emergency Management		Continuous Process	
Continue to require improved construction practices for new City-owned critical facilities that are sensitive to flood zone (e.g. avoiding "A" and "V" flood zones where feasible) and seismic considerations.	ES	General Fund Bond Fund	1.1, 1.2, 1.3, 2.1, 3.2	Ongoing	North Charleston Emergency Operations Center (NCEOC) is located inland outside the SFHA and is fully operational.
	1	Facilities Management		Continuous Process	
Continue working to attain resources and to provide training for maritime firefighting through the Maritime Incident Response Team (MIRT).	ES	Grant Funding (HMGP)	2.1, 2.3, 3.1	Ongoing	Quarterly training sessions on marine firefighting are held at this time and on a regular basis as part of established departmental processes.
	1	Hazardous Materials Coordinator		Continuous Process	

Maintain the national Weather Service "Storm Ready" and "Tsunami Ready" Community designations.	ES, PI	General Fund	1.1, 1.3, 1.5, 1.6, 2.1, 2.2	Completed	North Charleston has been recertified as a "Storm Ready" and "Tsunami ready" Community. This designation is valid through 2023.
	1	Emergency Management		Completed	
Continue coordinating the Anti-Terrorism Task Force (Charleston County WMD Team) of specially trained police, fire, and EMS personnel to respond to terrorist acts (PPI).	ES	Grant Funding (HMGP)	2.1, 2.2, 2.3, 3.1, 4.1	Ongoing	Charleston County and North Charleston Police Department, along with assistance from SLED, DOE, and other agencies continue to coordinate and conduct training sessions.
	1	Hazardous Materials Coordinator		Continuous Process	
Continue sponsoring the Community Emergency Response Training (CERT) program (PPI).	ES, PI	Grant Funding (LEMPG)	2.1, 2.2	Ongoing	Members of VERT were invited to attend our June earthquake drill. We email e-newsletters, neighborhood meetings, and faith base groups.
	2	Emergency Management		Continuous Process	
Maintain a web-based Emergency Operations Center Capability.	ES	General Fund	2.1, 2.3, 4.1	New	The NCEOC successfully upgraded its software to Palmetto which is more robust and has more mapping capabilities than previous software. Palmetto is also used across the state leading to increased coordination and real time interaction in a crisis. Multiple training has been applied throughout the year.
	1	Emergency Management		Continuous Process	

Continue the drainage maintenance and canal cleaning program.	SP	General Fund	1.1, 1.6, 2.1, 2.3, 3.1	Ongoing	Continue to survey drainage features and compile a GIS database to improve tracking efficiency. Program goal to reduce mean time between recurring maintenance activities.
	1	Public Works		Continuous Process	
Continue utility right of way permitting, considering emergency vehicle access and flood zone related issues in permitting decisions.	SP	General Fund	1.1, 1.6, 2.1, 2.3, 3.1	Ongoing	Continue the encroachment permitting process to manage encroachments in ROW and drainage easements to maintain and improve emergency vehicle access and flood zone issues. Continue to require that when new ROW is permitted/added, deeded drainage easements are required as part of the permit/approval process.
	1	Public Works		Continuous Process	
Continue the elevation reference mark inspection program.	SP	General Fund	1.1	Existing	Benchmarks are annually inventoried and updated and/or recovered. By tilting high accuracy GPS the National Geodetic Survey has accepted Stability B benchmarks.
	1	Public Works		Continuous Process	
Continue to provide design, permitting, and construction services for the drainage improvement projects.	SP	Grant Funding General Fund	1.1, 1.6, 2.1, 2.3, 3.1	Existing	There were a number of completed projects providing drainage improvements, paving of dirt roads and sidewalks, and a number of paved roads were resurfaced or applied a preservation application to provide better vehicle travel conditions. There were two completed flood studies completed by HMGP. Other projects are ongoing on a regular basis as part of established departmental process. The City has active ongoing drainage studies for areas of concern.
	1	Public Works Assistant Admin for Transp. & Public Works (Transp. Sales Tax)		Continuous Process	

Continue the road/repair construction program considering needs during evacuation and soil liquefaction potential in prioritization decisions.	SP	General Fund Grant Funding (FMA/PDM) Enterprise Funding	1.1, 1.2, 1.6, 2.1, 2.3, 3.1	Completed	There were a number of completed projects providing drainage improvements paving of dirt roads and sidewalks and a number of paved roads were resurfaced or applied a preservation application to provide better vehicle travel conditions. There were two completed flood studies completed by HMGP. Other projects are ongoing on a regular basis as part of establish departmental process.
	1	Public Works Assistant Admin for Transp. & Public Works (Transp. Sales Tax)		Continuous Process	
Continue to distribute a generator safety brochure to interested generator retail outlets, utility companies and the general public (PPI).	SP	Partner Donations General Fund	1.3, 2.1, 2.2, 3.1	Ongoing	The City participates with the County in events where information was distributed to attendees. Brochure has recently been updated with new information.
	2	Building Inspection Services Project Impact		Continuous Process	
Continue to provide information about the USGS stream gauge program to the public (PPI).	SP	Partner Donations Grant Funding	1.1, 1.3, 2.1, 2.2, 4.2	New	Working on possible new avenues for disseminating new information such as brochures, expo presentations and continuing the partnership with USGS.
	2	Building Inspection Services Project Impact		Continuous Process	
Continue providing hazard-related literature/information to citizens at City offices (PPI).	PI	General Fund	1.1, 1.2, 1.3, 1.4, 1.6, 2.1, 2.2	Existing	Printed materials (brochures, pamphlets, etc.) are always displayed and made available for public use. Printed media are also

	2	Building Inspection Services Project Impact		Continuous Process	updated on a regular basis.
Mail an outreach project to floodplain residents to those property owners whose property is located in special flood hazard areas (PPI).	PI	General Fund	1.1, 1.3, 2.1, 2.2, 4.2	Completed	In preparation for the upcoming grant funded community fair, mailing and advertisements were sent out to property owners in the area and invite them to this hazard related event to educate themselves on their flood risk.
	1	Building Inspection Services Project Impact		Completed	
Continue providing speakers to civic groups regarding hazard related activities and environmental quality topics. Update the Speaker's Bureau list as needed (PPI).	PI	General Fund	2.1, 2.3, 4.2	Ongoing	Building Inspection Services continues to participate inmeetings, expos, and events. The department regular meets with individual citizens, homeowners, contractors, and other local governments.
	1	Building Inspection Services Project Impact		Continuous Process	
Continue programs aimed towards providing resources to local schools and civic groups to enhance their ability to educate students regarding hazard events and hazard event preparation. Provide educational programs to schools on hazards or environmental quality as opportunities arise (PPI).	PI	Grant Funding (HMGP) Project Impact Resources	1.1, 2.1, 2.2, 3.2, 4.2	Ongoing	Project Impact has awarded mini-grant to teachers and other educators to fund special lessons in hazard mitigation annually since 2010. Multiple brochures and children's activity books are also handed out to students of all ages on a regular basis at expos and in offices. Ongoing on a regular basis as part of established departmental process.
	1	Project Impact		Continuous Process	

Continue participating in hazard-related/product or environmental protection-related expos or public events (PPI).	PI	General Fund	2.1, 2.2, 3.2, 4.2	Ongoing	Building Inspection Services continues to participate in meetings, expos, or events. The department regular meets with individual citizens, homeowners, contractors, and other local governments.
	2	Building Inspection Services Project Impact		Continuous Process	
Maintain the flood zone frequently asked questions page on the Charleston County web site to provide information on protecting against flood hazards to the public (PPI).	PI	General Fund	2.2	Existing	Respond to, and update on a regular basis, as well as monitor and answer inquiries submitted via social media.
	2	Building Inspection Services		Continuous Process	
Maintain the Project Impact internet page on the North? Charleston website to relay information on Project Impact events and methods to reduce hazard-related losses to the public (PPI).	PI	General Fund	2.2	Ongoing	The internet page is monitored constantly and updated with new information and/or brochures as they become available.
	2	Building Inspection Services		Continuous Process	
Maintain a web page with information on environmental resources protection/air and water quality pollution reduction strategies. Promote carpooling, public transportation and bicycle paths.	PI	Grant Funding (HMGP)	2.2, 4.1, 4.2	Ongoing	Facebook and Twitter sites are maintained and updated. Utilize in-house videography to push all relevant messages to the public, and as a source of data collection and to solicit input.
	1	Building Inspection Services Public Information		Continuous Process	
Continue educational efforts and initiatives promoting energy conservation. Promote LEED construction practices.	PI	Grant Funding (HMGP) General Fund	2.2, 4.1	Ongoing	The City participates with the County in events where information was distributed to attendees. Brochure has recently been updated with new information. Three mini-grants to area schools also supported energy
	2	Building Inspection Services		Continuous Process	

					conservation and hazard mitigation.
Continue participating in the annual maintenance and approval of Hazard Mitigation Plan / Program for Public Information Committee efforts to achieve maximum public outreach.	PI, PA, PP, NB, ES, SP	General Fund	2.2	Ongoing	The City has attended public meetings and maintained correspondence with jurisdictions about the importance of the Plan.
	1	Building Inspection Services Project Impact		Continuous Process	
Maintain the Web and Facebook Pages for Project Impact (PPI).	PI	General Fund	2.2, 4.1, 4.2	Ongoing	Respond to, and update on a regular basis. Ongoing on a regular basis as part of established departmental process.
	1	Building Inspection Services Project Impact Public Information		Continuous Process	
Continue inter-departmental efforts to share geographic digital information and property specific construction-related information.	GIS	General Fund, Grant Funding (HMGP)	2.1	Ongoing	Continue compiling updated Topo and Storm Drainage System Expansion information. This system is maintained constantly and updated whenever new data is available.
	2	GIS Building Inspection Services Planning at Stormwater Emergency Management		Continuous Process	
Digitize elevation certificates and make them accessible to the public.	PI	Project Impact Fund General Fund	1.1	Ongoing	Completed archive and continues as new elevation certificates are received. Ongoing on a regular basis as part of establish departmental process.
	2	Building Inspection Services		Completed	

Prepare flood insurance assessment table and address the community's insurance coverage gaps and other concerns.	PI, PP	General Fund	1.1, 1.3, 2.1	Ongoing	Completed assessment for 2021 PIP, will continue to assess for yearly Hazard Mitigation Plan update or as new information becomes available, whichever is sooner.
	1	Building Inspection Services		Continuing Process	
Continue to conduct studies on BFEs, floodways, and other pertinent flood concerns.	PA, PP	Grant Funding (FMA)	1.1, 1.6, 2.1	Existing	Active process – concurrent with drainage improvement plans and studies being conducted in reference to new Federal Emergency Management Agency maps.
	1	Planning Building Inspection Services		Continuous Process	
	1	Building Inspection Services		Continuous Process	
Continue energy conservation retrofitting of City-owned facilities as resources are available	PP	General Fund Grant Funding (HMGP)	4.1	Ongoing	Ongoing on a regular basis as part of established departmental processes
	2	North Charleston Facilities Management Department		Continuous Process	
Continue encouraging the Greenbelt Advisory Board to acquire green space in the special flood hazard area, to the extent feasible	NB	General Fund Special Revenue Fund	1.1, 2.3, 4.1, 4.4	Ongoing	City has continued to acquire wetlands and nearby properties using Charleston County Greenbelt Program funding.
	2	North Charleston Parks and Recreation Department North Charleston Building Inspection Services		Continuous Process	

Continue working with Scouts on the Project Impact Scout Patch Program	NB	Grant Funding (HMGP) General Fund	2.2, 3.2	Ongoing	Ongoing on a regular basis as part of established departmental processes
	2	North Charleston Building Inspection Services Project Impact Partners		Continuous Process	
Design/elevate roadways being constructed or reworked through the 1/2 cent sales tax program to minimize flooding potential to the extent feasible. Identify those roads susceptible to flooding.	SP	Special Revenue Funding	1.1, 1.6, 2.1, 2.3, 3.1	Ongoing	Ongoing on a regular basis as part of established departmental processes
	1	Deputy Administrator (Transportation sales tax)		Continuous Process	
Create a Flood Plain Management page available through the City of North Charleston website	PI	General Fund	2.2	Ongoing	Created a webpage in 2021
	2	North Charleston Building Inspection Services		Continuous Process	
Continue participating in the Project Impact Outreach Project Strategy for the Community Rating System	PI	General Fund	2.2	Ongoing	In transition to Program for Public Information. Ongoing
	1	North Charleston Building Inspection Services/ Project Impact committee members		Continuous Process	

– Town of Ravenel

Resolution for Adoption

TOWN OF RAVENEL

Introduced by: Mayor Stephen Tumbleston
Date: September 26, 2023

RESOLUTION #2023-08

A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY THE TOWN OF RAVENEL, SOUTH CAROLINA

WHEREAS the County of Charleston has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the Town of Ravenel originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, 2008, 2013, 2017, and 2019, and is required to adopt the amended version of this plan on a five-year cycle for the Town to remain eligible for certain Federal programs in which the Town participates; and

NOW THEREFORE be it resolved that

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the Town of Ravenel. While content related to the Town of Ravenel may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Town of Ravenel to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the Town Council of the Town of Ravenel.

APPROVED this 26th day of September 2023 at Ravenel, South Carolina, in Town Council duly assigned.

Ayes: 7 **Nays:** 0 **Abstains:** 0

Mayor or Presiding Member of Council

Signature Attest – Clerk-Treasurer

Action Report for the Town of Ravenel, SC

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the full action plan. There are no proposed projects additional to the action plan of Charleston County.

Following are the proposed projects to be undertaken in the Town of Ravenel for hazard mitigation during May 2023 - April 2024 and their status from May 2022 - April 2023.

– Town of Rockville

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY TOWN OF ROCKVILLE TOWN COUNCIL

Resolution No. 101623

WHEREAS the TOWN OF ROCKVILLE has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the TOWN OF ROCKVILLE originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, 2008, 2013, and 2020, and is required to adopt the amended version of this plan on a five-year cycle for the County to remain eligible for certain Federal programs in which THE TOWN OF ROCKVILLE participates; and

NOW THEREFORE be it resolved that

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the TOWN OF ROCKVILLE. While content related to Charleston County may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Charleston County to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the TOWN OF ROCKVILLE TOWN COUNCIL.

Effective this 16 Day of Oct, 2023



Action Report for the Town of Rockville, SC

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the full action plan. There are no proposed projects additional to the action plan of Charleston County.

Following are the proposed projects to be undertaken in the Town of Rockville for hazard mitigation during May 2022 - April 2023 and their status from May 2022 - April 2023.

– Town of Seabrook Island

Resolution for Adoption

TOWN OF SEABROOK ISLAND
Resolution No. 2023 – 30
Adopted September 26, 2023

A RESOLUTION OF THE TOWN OF SEABROOK ISLAND ADOPTING THE AMENDED 2023-2024 CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN

WHEREAS the Town of Seabrook Island ("Town")) recognizes the threat that natural hazards pose to people and property within the Town; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan;* and

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

WHEREAS the Town of Seabrook Island last adopted the Charleston Regional Hazard Mitigation Plan in 2019, and is required to adopt the amended version of this plan on a five-year cycle for the Town to remain eligible for certain Federal programs in which the Town participates; and

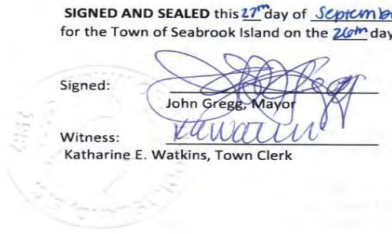
WHEREAS the Amended 2023-2024 Charleston Regional Hazard Mitigation and Program for Public Information Plan identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in (local government) from the impacts of future hazards and disasters; and

WHEREAS adoption by the Town of Seabrook Island demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Amended 2023-2024 Charleston Regional Hazard Mitigation and Program for Public Information Plan.

NOW THEREFORE, BE IT RESOLVED BY THE TOWN OF SEABROOK ISLAND, SOUTH CAROLINA, THAT:

Section 1. In accordance with Town of Seabrook Island Code of Ordinances Sections 2-346 and 2-347 pertaining to adoption of resolutions, the Town adopts the Amended 2023-2024 Charleston Regional Hazard Mitigation and Program for Public Information Plan together with all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency as an official plan of the Town of Seabrook Island. While content related to the Town may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Town to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

Section 2. The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the Charleston County Council.


SIGNED AND SEALED this 27th day of September, 2023, having been duly adopted by the Town Council for the Town of Seabrook Island on the 26th day of September, 2023.

Signed: _____
John Gregg, Mayor

Witness: _____
Katharine E. Watkins, Town Clerk

Action Report for the Town of Seabrook Island, SC

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the full action plan. Below are the proposed projects additional to the action plan of Charleston County.

Following are the proposed projects to be undertaken in the Town of Seabrook Island for hazard mitigation during May 2023 - April 2024 and their status from May 2022 - April 2023.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

Town of Seabrook Island Hazard Mitigation Actions					
Mitigation Action and Description	*Type*	*Funding source*	*Goals and Objectives*	*Status*	*Milestones Achieved and Future Plans*
	Priority	*Responsible Agency*		*Implementation Schedule*	

Seabrook Island Road Drainage Study and Master Plan	PA, PP, NB 1	General Funds Town of Seabrook Island	Identify options to address issues with tidal flooding and freshwater ponding on Seabrook Island Road	Completed Drainage improvements are anticipated to be completed as part of the Seabrook Island Road project (see next item).	The town contracted with ESP Associates for completion of a drainage study and master plan for Seabrook Island Road. The study was completed in January 2020. In October 2021, following implementation of the new flood maps (January 2021), the centerline elevations of Seabrook Island Road were updated to the NAVD 1988 datum.
Seabrook Island Road Elevation Project	PA, ES, SP 1	General Funds Town of Seabrook Island	Increase the minimum elevation of Seabrook Island Road as a protective measure against tidal flooding and rising sea level	Ongoing Permitting initiated in the fall of 2023; permit currently pending review and approval by SCDHEC-OCRM. Discussion of funding options is ongoing. Construction currently anticipated in 2026.	The town contracted with ESP Associates for completion of alternative proposals for increasing the minimum elevation of Seabrook Island Road. Town Council has obtained cost estimates for a preferred alternative and authorized ESP to initiate the permitting process with SCDHEC-OCRM in the fall of 2023. The town has approximately $1.6 million on hand and dedicated to the project, which is approximately 50% of the estimated construction cost. The town is currently evaluating additional funding sources to complete the project. . It is expected that construction will require public-private coordination.
Disaster Awareness Day	PI 1	General Funds Town of Seabrook Island and Town of Kiawah Island	Enhance public safety by educating residents and property owners of Seabrook and Kiawah Islands to various hazards affecting our area and offering best practices for risk mitigation.	Ongoing (Annual event) The 2023 event was held on June 1, 2023, at the Seabrook Island Club. The 2024 event was held on May 31, 2024, at the Sandcastle on Kiawah Island. The 2025 event will be held in June, 2025, in Seabrook Island.	The Disaster Awareness Day event is held annually and alternates between Seabrook and Kiawah Islands. The event has taken place annually for more than 20 years, with a two-year hiatus in 2020 and 2021 due to the COVID-19 pandemic and restrictions on group gatherings. In recent years, the program has been live streamed and video recorded for interested parties to view content online at their convenience.
Town Hall site Improvements	PA, PP, NB 1	General Funds Town of Seabrook Island	Implement protective measures against occasional site flooding and minimizing risks to the use of Town Hall as an Emergency Operations Center	Construction plans were completed in the third quarter of 2023. The project is currently on hold pending further evaluation and identification of funding alternatives.	Town Council has previously expressed its support for construction of a garage and Town Hall addition at the Town Hall site—The construction of a detention pond and additional drainage improvements for the site are anticipated to be included as part of a future construction projects.
Preparation, Printing and Distribution of Flooding Booklet ("Are You Prepared for Flooding in Your Neighborhood"	PI 1	General Funds Town of Seabrook Island	Enhance resident awareness by distributing information about flood hazards and hurricanes (Preparation and response)	Ongoing (Completed annually) Flood booklets are made available for distribution annually on/around June 1st to coincide with the start of the Atlantic Hurricane Season.	Flood booklets have been widely distributed to residents and property owners of Seabrook Island annually since 2001.
Disaster Recovery Council	PI 1	General Funds Town of Seabrook Island	Activities of the Disaster Recovery Council are intended to improve coordination and reinforce disaster response actions of participating organizations within the community.	Ongoing The Disaster Recovery Council conducts meetings and training Exercises annually. The most recent training exercise took place in June 2024.	The town's Disaster Recovery Council is made up of representatives from the Town of Seabrook Island, Seabrook Island Utility Commission, Seabrook Island Property Owners Association, Seabrook Island Club, Bohicket Marina, St. Christopher Camp and Conference Center, Seabrook Island CERT, and various public safety and utility providers.
Maintenance and Publication of	PI	General Funds	The goals of the Comprehensive	Ongoing	The Comprehensive Emergency Plan is distributed to representatives to the town's

Comprehensive Emergency Plan Comprising Information for Preparation for and Response to Disaster Events Including Hurricanes, Earthquakes and Tsunamis	1	Town of Seabrook Island	Emergency Plan are to standardize various policies, practices and procedures related to the preparation for, and response to, various emergency situations which may affect the town.	The Comprehensive Emergency plan was adopted in October 2009. The plan is reviewed and updated annually. The town's Disaster Recovery Council uses the plan during its annual disaster exercise. The plan is also activated when an actual emergency threatens the town or has occurred.	Disaster Recovery Council and is available online at the town's website. The Comprehensive Emergency Plan is used by elected officials, members of the Disaster Recovery Council, and members of town staff when preparing for, and responding to, emergency situations affecting the town.
High Water Vehicle	PA, ES	ARPA Funda	Improve the ability of the St. Johns Fire District to respond to emergency situations during flooding events and to provide high-water rescue services in Seabrook Island.	Funds approved in May 2024. An intergovernmental agreement is anticipated to be executed in the summer of 2024, at which time funds will be provided to SJFD.	In May 2024, Town Council approved a donation to the St. Johns Fire District in the amount of $400,000 from federal ARPA funds for the purchase of a high-water vehicle. Upon purchase, the vehicle will be stationed at the SJFD station on Captain Sams Road in Seabrook Island.
		Town of Seabrook Island / St. Johns Fire District		It is anticipated that delivery of the high water vehicle will take up to 2 years.	

PATRICK M O'NEIL
MAYOR

TOWN COUNCIL
JUSTIN NOVAK
MAYOR PRO-TEM
NED HIGGINS
CARL HUBBARD
JODY LATHAM
SCOTT MILLIMET
GARY VISSER

TOWN OF SULLIVAN'S ISLAND

ANDY BENKE
TOWN ADMINISTRATOR

JOSEPH R. HENDERSON
DEPUTY ADMINISTRATOR

JASON BLANTON
TOWN COMPTROLLER

LAWRENCE A. DODDS
TOWN ATTORNEY

CHARLES DRAYTON
DIRECTOR OF PLANNING AND ZONING

GREG GRESS
WATER AND SEWER MANAGER

CHRISTOPHER GRIFFIN
POLICE CHIEF

M. ANTHONY STITH
FIRE CHIEF

BRIDGET WELCH
TOWN CLERK

MAX WURTHMANN
BUILDING OFFICIAL

RESOLUTION

A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024 CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN BY SULLIVANS ISLAND TOWN COUNCIL

WHEREAS, the Town of Sullivans Island has experienced the effects of natural and man-made hazard events; and

WHEREAS, the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended Charleston Regional Hazard Mitigation and Program for Public Information Plan; and

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

WHEREAS, the Town of Sullivans Island originally adopted the Charleston Regional Hazard Mitigation Plan in 1999 and readopted it in 2004, 2008, 2013, and 2017, and is required to adopt the amended version of this plan on a five-year cycle for the Town to remain eligible for certain Federal programs in which the Town of Sullivans Island participates; and

NOW THEREFORE, BE IT RESOLVED that The Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency is hereby adopted as an official plan of the Town of Sullivans Island. While content related to the Town of Sullivans Island may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Town of Sullivans Island to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the Sullivans Island Town Council.

Effective this 17th day of October, 2023.

Justin Novak, Mayor Pro-Tem of Sullivan's Island

Attest:

Bridget Welch, Town Clerk

2056 MIDDLE STREET • P.O. BOX 427 • SULLIVAN'S ISLAND, SC 29482
(843) 883-3198 • FAX (843) 883-3009 • WWW.SULLIVANSISLAND.SC.GOV

Action Report for the Town of Sullivan's Island, SC

Following are the proposed projects to be undertaken / continued in the Town of Sullivan's Island for hazard mitigation during May 2023 - April 2024 and their status

from May 2022-April 2023.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

Hazard Mitigation Goals and Objectives	
Goal 1: Mitigate natural hazard damage	
Objective 1.1	Minimize future flood damage
Objective 1.2	Minimize future earthquake damage
Objective 1.3	Minimize future hurricane damage
Objective 1.4	Minimize future wildfire damage
Objective 1.5	Minimize future tornado-related loss of life
Objective 1.6	Reduce existing flood damage
Goal 2: Increase public preparedness and protection	
Objective 2.1	Protect the lives of our citizens from natural and man-made hazards
Objective 2.2	Educating citizens regarding steps to take to reduce vulnerabilities
Objective 2.3	Promote long-term prosperity
Goal 3: Improve infrastructure	
Objective 3.1	Improve hazard resistance of infrastructure
Objective 3.2	Reduce vulnerability of our infrastructure to natural and man-made hazards
Goal 4: Increase environmental well being	
Objective 4.1	Preserve environmental resources
Objective 4.2	Improve water quality
Objective 4.3	Preserve open space
Objective 4.4	Encourage recreational activities

Town of Sullivan's Island Hazard Mitigation Actions					
Mitigation Action and Description	*Type*	*Funding source*	*Goals and Objectives*	*Status*	*Milestones Achieved and Future Plans*
	Priority	*Responsible Agency*		*Implementation Schedule*	
Continue enforcement of the International series Building-related and Fire codes and the floodplain management regulations to include additional freeboard regulations, cumulative substantial improvement requirements as recommended and required for participation in the national Flood Insurance program.	PA	General Fund	1.1, 1.2, 1.3 2.1	Ongoing	The Town of Sullivan's Island maintains a class 5 CRS Rating. Plans are to improve Class Rating as opportunity to improve arises.
	1	Building Inspection Services and Zoning Services		Continuous process	
Continue support for coordination of departments to implement the storm-water management regulations as stated in the NPDES permit requirements.	PA	General Fund	1.1, 1.3,1.6, 2.1, 3.1, 3.2, 4.1, 4.2	Ongoing	Monthly meetings being held with Charleston County Storm water manager to address various issues with storm water drainage. Applying for SMS 4 permit renewal. Continue with pipe, ditch maintenance and to improve outfalls.
	1	Building Inspection Services and Zoning Services		Continuous process	
Continue enforcement of zoning regulations; seek assistance with developing regulations to continue the single-family character of the island and to encourage open space preservation.	PA	General Fund	1.1, 1.6, 2.3, 4.1, 4.2, 4.3, 4.4	Ongoing	Continue with text amendments to strengthen single family character. Limiting structure square footage and lot coverage. Comprehensive Plan rewrite completed and adopted by Town Council.
	1	Zoning		Continuous process	
Continue providing information to citizens regarding propane tank anchoring.	PA	General Fund	1.1, 1.3, 1.6, 2.1, 2.2, 4.1	Ongoing	Revised brochure on elevating and anchoring fuel tanks using FEMA technical bulletin. Continue with one on one education of residents and contractors. Continue to provide technical

	1	Building Inspection Services		Continuous process	information by way of brochures available at town hall.
Promote the use of voluntary standards for single-family residences to exceed minimal Building Inspection Services code requirements for wind and seismic design.	PP	General Fund	1.1, 1.2, 1.3, 2.1, 2.3	Ongoing	Continue to discuss better design and structural integrity of all buildings. All buildings on Sullivan's Island are designed by an engineer and engineered for seismic activity, wind and water loads.
	2	Building Inspection Services and Zoning		Continuous process	
Continue to enforce the Trimming & Pruning ordinance in the RC-1 and RC-2 areas.	NB	Tree Fund and General Fund	1.3, 1.6, 2.1, 4.1, 4.2, 4.3, 4.4	Ongoing	Continue to monitor these areas and work with Land trust representatives to protect the property.
	2	Zoning and Tree Commission		Continuous process	
Protect and enhance the tree canopy and enhance the natural benefits of native trees and vegetation.	NB	Tree Fund and General Fund	2.3, 4.1	Ongoing	Continue as a Tree City USA, , held Arbor Day activities. Continue to look for ways to enhance the tree canopy on public and private properties with the Sullivan's Island Tree Commission.
	2	Zoning and Tree Commission		Continuous process	
Replace existing Town water treatment plant and upgrade parts of the collection system.	SP	Bond and Grant Funding	1.1, 1.2, 1.3, 2.3 ,3.1, 3.2, 4.2	New	Construction of new treatment plant underway. All buildings, oxidation ditches, switching to be above BFE. New compliant flood proofed lift stations being installed with all switching and generators above BFE. Relining of all waste lines has been completed.
	1	Admin, Water and Sewer Department		In process	
Implement requiring storm-water plans for residential properties requiring construction to have no adverse impact to neighboring properties.	PP	General Fund	1.1, 1.6, 2.3, 4.2	New	All new construction and land disturbance of more than 650 square feet must submit a drainage plan that will have no adverse impact on neighboring properties and plan

	1	Building and Zoning		Ongoing	must be certified by a design profesional.
Continue to update and implement procedures and automate systems to better enhance the ability of contractors and homeowners in securing permits and receiving information on construction to better protect life and property.	ES	General Fund	2.1, 2.3	New	Used software program to update contractors on developing storm events and rain events throughout this past year. Also use to advise contractors of conditions with inspections and plans review durring COVID 19 event.
	1	Building and Zoning		Ongoing	
Continue to train contractors in technical aspects of the building code, coastal construction, permitting and inspections.	PI	General fund	1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.2	Ongoing	All education events were suspended due to COVID 19.
	2			Continuous process	
Evaluate existing Town-owned facilities for hazard resistance and retrofit facilities if needed where feasible.	SP	General Fund/ Grant Funding/ Bonds	1.1, 1.2, 1.3, 2.3, 3.1, 3.2, 4.1, 4.2	Ongoing	Oxidation ditch at sewer plant being rebuilt to exceed seismic and flood requirements. Pump stations to receive attention. Both are under construction Fire station plans are being finalized and construction bids to be acccepted in December 2020 to January of 2021.
	1	Building, Fire Department Water and Sewer		Continuous process	
Continue the drainage maintenance program.	SP	General Fund	1.1, 1.6, 2.1, 4.2	Ongoing	Continue to meet with SCDOT officials and Charleston County officials to improve maintenance schedule for stormwater conveyance system.

	2	Maintenance and Charleston County		Continuous process	
Continue the road repair/construction program, considering needs during evacuation and sea level rise in prioritization decisions.	SP	General Fund and Grant Funding	2.1, 2.3, 3.1, 3.2	Ongoing	Attended meetings with city of Charleston representatives addressing sea level rise. Continue to monitor and apply for grant funding if available to address concerns for sea level rise in the future. Strive to develop the Town's sea level rise adaptation plan in Comp Plan.
	1	Building, zoning, Town Council and Administration Staff		Continuous process	
Continue providing hazard-related literature/information to citizens visiting Sullivan's Island Town Hall.	PI	General Fund	2.2	Ongoing	Continuing to stock brochure racks and brochure kiosk in town hall to display and distribute FEMA, County and local information and brochures.
	2	Planning		Continuous Process	
Continue providing speakers or in-house training sessions to civic groups and local citizens regarding hazard related activities.	PI	General Fund	1.1, 1.2, 1.3, 1.6, 2.2, 4.1	Ongoing	Building and Planning staff conducts training for Island residents and members of the development community (real-estate, engineers, etc.) throughout the year.
	1	Building, Zoning, Fire and Police		Continuous process	
Continue participating in the Project Impact Program for Public Information (PPI) to achieve maximum public outreach and	PI	General Fund	1.1, 1.2, 1.3, 1.4, 1.6, 2.2	Ongoing	Staff attends regular meetings for PPI participation.

participation in Regional Hazard mitigation Plan.	1	Building Inspection Services/ Project Impact committee Members		Continuous process	
Continue working with State Department of Natural Resources, Charleston County and ISO to maximize Community Rating System (CRS) rating.	PI	General Fund	1.1, 1.2, 1.3, 1.6, 2.1, 2.2, 2.3	Ongoing	Staff attends regular SCDHEC-OCRM group meetings to assist in CRS class advancement.
	3	Zoning/ Building Inspection Services		Continuous process	
Create Floodplain Management and Hazard Mitigation Web Page with regular updates.	PI	General Fund	2.2	Ongoing	Continue to update website
	1	Zoning/ Building Inspection Services		Continuous process	
Continue to develop Town GIS.	GIS	General Fund	1.1, 1.2, 1.3, 1.6, 2.1, 3.1, 3.2	Ongoing	Continue to update GIS information.
	1	Zoning/ Building Inspection Services		Continuous process	
Recognize Building Inspection Services Safety Week to promote safety in the built environment	PI	General Fund	2.2	Ongoing	Ongoing on a regular basis as part of established departmental processes
	3	Building Inspection Services		?	
Participate in "Hazard Awareness Week"	PI	General Fund	1.1, 1.2, 1.3, 1.5, 2.2	Ongoing	Ongoing no end date, will reevaluate as

	2	Building/ Zoning		No end date	needed
Support Charleston County in maintaining hurricane storm surge signs installed through Project Impact	SP	Partner Donations/ General Fund	1.1, 1.3, 1.6, 2.1, 2.2	Ongoing	Ongoing on a regular basis as part of established departmental processes
	2	Building Inspection Services		?	
Continue to requires stringent construction practices for new critical facilities that are sensitive to flood zone and seismic considerations	ES	General Fund Grant Funding (HMGP)	1.1, 1.2, 1.3, 2.1, 2.2	Ongoing	New Town Hall EOC facility Exceeding current Building Codes via participation in the CRS program
	1	Administrative and Building		?	
Continue Responding to Hazard Emergencies	ES	General Fund	2.1, 2.2, 2.3	Ongoing	Ongoing on a regular basis as part of established departmental processes
	1	Fire Department Police Department		Continuous process	
Continue coordinating Emergency Operations Center activities in the event of a hazard event	ES	General Fund Fire Department	2.1, 2.2, 2.3	Ongoing	Town Hall EOC was used during Hurricane event in 2019.
	1	Administrative Fire Department Police Department		Continuous process	
Continue Terrorist Response Training	ES	General Fund	2.1, 2.2, 2.3, 3.1, 3.2,	Ongoing	Ongoing on a regular basis as part of established departmental processes
	1	Fire Department Police Department		Continuous process	

Continue Hazardous Material Training	ES	General Fund	2.1, 2.2, 3.1, 4.1	Ongoing	Fire Department held training for volunteers and participates with Charleston County EMD with training exercises
	1	Fire Department		?	
Continue to participate in Charleston County's initiative to distribute literature on riparian buffer zones and hazard resistant landscaping to citizens through government offices and at expos	NB	None	1.1, 1.3, 2.2, 3.1, 4.1, 4.2, 4.4	Ongoing	Literature provided to the public at Town Hall, Fire station and also Library.
	2	Building Inspection Services		Continuous process	

Additional Recommended Projects may be added to this project list as the committees consider other projects and recommend these projects for implementation.

– Charleston County Parks & Recreation Commission

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY CHARLESTON COUNTY PARK & RECREATION COMMISSION

WHEREAS the County of Charleston has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

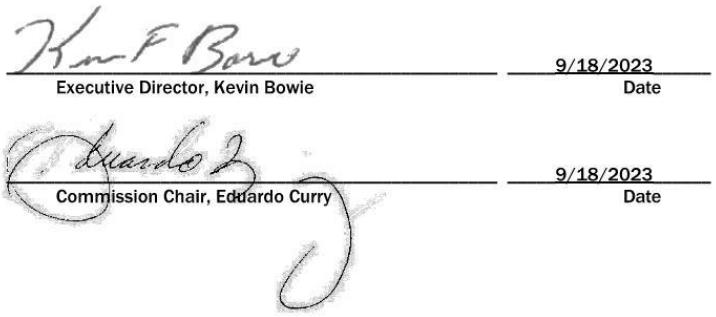
WHEREAS the County of Charleston originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, 2008, 2013, and 2017, and is required to adopt the amended version of this plan on a five-year cycle for the County to remain eligible for certain Federal programs in which Charleston County participates; and

NOW THEREFORE be it resolved that

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the Charleston County Park & Recreation Commission. While content related to Charleston County may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Charleston County Park & Recreation Commission to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the Charleston County Park & Recreation Commission.

Effective this 18th day of September, 2023



Executive Director, Kevin Bowie — 9/18/2023 Date

Commission Chair, Eduardo Curry — 9/18/2023 Date

Action Report for the Charleston County Park and Recreation Commission

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the full action plan. Below are the proposed projects additional to the action

plan of Charleston County.

Following are the proposed projects to be undertaken / continued in the Charleston County Parks and Recreation Commission for hazard mitigation during the 2023-2024 school year and their status as of July 2023.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

Hazard Mitigation Goals and Objectives	
Goal 1: Mitigate natural hazard damage	
Objective 1.1	Minimize future flood damage
Objective 1.2	Minimize future earthquake damage
Objective 1.3	Minimize future hurricane damage
Objective 1.4	Minimize future wildfire damage
Objective 1.5	Minimize future tornado-related loss of life
Objective 1.6	Reduce existing flood damage

Charleston County Parks and Recreation Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals and Objectives***	***Status***	***Milestone Achieved and Future Plans***
	Priority	***Responsible Agency***		***Implementation Schedule***	
Distribute brochures to marina guest on protecting boats from damages during hurricanes.	PP	General Fund	1.3	Ongoing	No future plans but to continue program as needed.
	1	FEMA		Continuous	
Continue to purchase and maintain permanent open space as parks.	NB	Grants (HMGP/ FMA) Bond Funding	1.1, 1.6	Ongoing	No future plans but to continue program as needed.
	1	CCPRC		Continuous	

Charleston County Parks and Recreation Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals and Objectives***	***Status***	***Milestone Achieved and Future Plans***
	Priority	***Responsible Agency***		***Implementation Schedule***	
Continue preservation of beach access and shoreline ecology.	NB	Grants (HMGP/ FMA) General Funds	1.1, 1.3	Ongoing	No future plans but to continue program as needed.
	1	CCPRC		Continuous	
Continue involvement in local hazard mitigation initiatives by providing information to the community.	PI	General Fund	1.2, 1.3, 1.4, 1.5	Ongoing	No future plans but to continue program as needed.
	1	CCPRC		Continuous	
Evaluate CCPRC property and structures to man- made and natural hazards.	PP	General Fund	1.1, 1.2, 1.3, 1.4, 1.5	Ongoing	No future plans but to continue program as needed.
	2	CCPRC		Continuing Annual Assessment	
Re-establish beach dunes and vegetation.	NB	General Fund	1.1, 1.3	Ongoing	No future plans but to continue program as needed.
	1	CCPRC		Continuous	
Re-establish riparian buffer zones at all applicable water resources' owned by CCPRC.	NB	General Fund	1.1, 1.3, 1.6	Ongoing	No future plans but to continue program as needed.
	1	CCPRC		Continuous	
Continue providing programs and resources to schools to enhance education of students to hazards and environmental issues.	PI	General Fund	1.1, 1.2, 1.3, 1.4, 1.5, 1.6	Ongoing	No future plans but to continue program as needed.
	2	CCPRC		Continuous	
Accelerate agency's Hazard Tree Identification program. Identify and remove problem trees.	PP	General Fund	1.3, 1.5	Ongoing	No future plans but to continue program as needed.

Charleston County Parks and Recreation Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals and Objectives***	***Status***	***Milestone Achieved and Future Plans***
	Priority	***Responsible Agency***		***Implementation Schedule***	
	2	CCPRC		Continuing periodic assessment of property vegetation	
Continue to update and inform employees of hazardous weather conditions as outlined in the Hurricane plan.	PP	General Fund	1.1, 1.2, 1.3, 1.4, 1.5, 1.6	Ongoing	No future plans but to continue program as needed.
	2	CCPRC		Continuing annual updates of agency's E.A.P.	
Reforestation of selected zones within the developed CCPRC parks, Re-establish natural vegetation.	NB	General Fund	1.3	Ongoing	No future plans but to continue program as needed.
	2	CCPRC		Continuous	
Purchase energy efficient and hybrid vehicles.	NB	General Fund	1.1, 1.2, 1.3, 1.4, 1.5, 1.6	Ongoing	No future plans but to continue program as needed.
	2	CCPRC		Continuous	
Evaluate structure vulnerability to wildfire events at parks. Work with local Fire departments.	PP	General Fund	1.4	Ongoing	No future plans but to continue program as needed.
	1	CCPRC		Continuous	
Develop procedures to protect computer equipment and records.	PA	General Fund	1.1, 1.2, 1.3, 1.4, 1.5, 1.6	Ongoing	No future plans but to continue program as needed.
	2	CCPRC		Continuous	

Charleston County Parks and Recreation Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals and Objectives***	***Status***	***Milestone Achieved and Future Plans***
	Priority	***Responsible Agency***		***Implementation Schedule***	
Establish riparian buffer zones around facility lakes and water bodies.	NB	General Fund	1.1, 1.2, 1.3, 1.6	Ongoing	No future plans but to continue program as needed.
	2	CCPRC		Continuous	
Monitor bodies of water near CCPRC dog parks for bacterial levels.	NB	General Fund	1.1, 1.6	Ongoing	No future plans but to continue program as needed.
	2	CCPRC		Continuous	
Increase emphasis in recycling at all CCPRC facilities. Install recycling containers and drop off locations, etc.	NB	General Fund	1.1, 1.2, 1.3, 1.4, 1.6	Ongoing	No future plans but to continue program as needed.
	2	CCPRC		Continuous	

– Charleston County School District

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY THE BOARD OF TRUSTEES OF THE CHARLESTON COUNTY SCHOOL DISTRICT

WHEREAS the Charleston County School District has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the Charleston County School District originally adopted the 2018 *Charleston Regional Hazard Mitigation Plan* in 2019, and is required to adopt the amended version of this plan on a five-year cycle for the district to remain eligible for certain Federal programs; and

NOW THEREFORE be it resolved that:

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the Charleston County School District. While content related to the Charleston County School District may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Charleston County School District to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the Board of Trustees.

Effective this 13th Day of November, 2023

Attest:

Mr. Keith Grybowski, Chair
Charleston County School District Board of Trustees

Action Report for the Charleston County School District

Following are the proposed projects to be undertaken / continued in the Charleston

County School District for hazard mitigation during the 2023-2024 school year and their status after the 2022-2023 school year.

This jurisdiction is fully serviced by the Town of Mount Pleasant. Please refer to Section 7.12 for the full action report as well as the letter below. Below are proposed projects additional to the action report of the Town of Mount Pleasant.

This jurisdiction is fully serviced by the City of Charleston. Please refer to Section 7.3 for the full action report as well as the letter below. Below are proposed projects additional to the action report of the City of Charleston.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

Hazard Mitigation Goals and Objectives	
Goal 1: Increase public preparedness and protection	
Objective 1.1	Protect the lives of children from natural and man-made hazards.
Objective 1.2	Educate citizens regarding steps to take to reduce vulnerabilities.
Goal 2: Mitigate natural hazard damage	
Objective 2.1	Minimize future hurricane damage.
Objective 2.2	Minimize future earthquake damage.
Objective 2.3	Minimize future hurricane damage.
Objective 2.4	Minimize future tornado-related loss of life.
Goal 3: Improve critical infrastructure	
Objective 3.1	Improve hazard resistance of critical infrastructure.
Objective 3.2	Reduce vulnerability of critical infrastructure to natural and man-made hazards.

The following are the goals for this plan (listed in the order of importance):

1. Protect the lives of our children from natural and man-made hazards.
2. Improve hazard resistance of infrastructure.

3. Reduce vulnerability of our infrastructure to natural and man-made hazards.
4. Educating citizens regarding steps to take to reduce vulnerabilities.
5. Minimize future hurricane damage.
6. Minimize future earthquake damage.
7. Minimize future flood damage.
8. Minimize future tornado-related loss of life.

Charleston County School District Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals***	***Status***	***Milestones Achieved***
	Priority	***Responsible Agency***	***and Objectives***	***Implementation Schedule***	***and Future Plans***
Continue to prepare a comprehensive hazard plan.	PA, NB	General Fund	1.1, 1.2, 3.1, 3.2	Ongoing	Schools complete annual review of school safety plans. *In 2022, CCSD conducted the first revision to its fully updated 2021 district level Emergency Operations Plan. New/updated annexes cover increased preparedness for coastal flooding, severe weather and other natural and man-made hazards.*
	1	CCSD		Completed	
Continued development of emergency response activities and training for all schools and other occupied structures.	PA, PI	General Fund	1.1, 1.2, 3.1, 3.2	Ongoing	Ongoing training programs are being maintained such as New Hire Orientation, SafeSchools online training, First Five training series, FEMA online courses, monthly drills, School Resource Officer and all hazards shelter operations training.
	1	CCSD		Continuous Process	
Continue distributing information related to hazard preparations to educate Charleston County School District staff and the public regarding hazard events.	PI	General Fund	1.1, 1.2, 2.1, 2.2, 2.3, 2.4	Ongoing	Distribution of annual hurricane bulletin, dissemination of key information/briefings on natural hazards (particularly coastal flooding alerts and *Tri-County hurricane* updates), participation in the Great American Shake Out drill, and participation in Severe Weather Awareness Week.
	2	CCSD		Continuous Process	
Continue working with local municipalities and Charleston County to enhance hazard event preparations and response.	PI, ES	General Fund	1.1, 1.2, 3.1, 3.2	Ongoing	Conducting public education and outreach efforts for hazard-related activities. Presentation of First Five videos; School Resource Officer Memorandum of Understanding; participation in Charleston County's annual EOC drill; *participating in/coordination of information and activities during Tricounty Hurricane Conference Calls*; shelter operations/sheltering agreements.

Charleston County School District Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals***	***Status***	***Milestones Achieved***
	Priority	***Responsible Agency***	***and Objectives***	***Implementation Schedule***	***and Future Plans***
	2	CCSD		Continuous Process	
Emergency Operations Center operations for Charleston County School District.	PA, ES	One Cent Sales Tax	1.1, 3.1, 3.2	Completed	The EOC, which opened in October 2017, provides a central facility for monitoring and coordinating responses to natural and man-made hazards. It is used for daily incidents, such as fire alarms, power outages, etc. It is also activated for larger scale incidents/events including special events, hurricanes/shelter operations, etc.
	1, 2	CCSD		Completed	
Retrofit CCSD-owned facilities for hazard resistance as opportunities become available.	PP, SP	One Cent Sales Tax, FCO Bond Money	1.1, 2.1, 2.2, 2.3, 2.4, 3.1, 3.2	Ongoing	Use of one cent sales tax and FCO bonds to execute capital preventative maintenance strategy to replace major building features at end-of-life, such as roofs.
	2	CCSD		Continuous Process	
Continue to update design specifications that will ensure new and renovated facilities will better resist natural and man-made disasters.	PA, PP, SP	General Fund, One Cent Sales Tax, FCO Bond Money	1.1, 1.2, 2.1, 2.2, 2.3, 2.4, 3.1, 3.2	Existing	Provide architects designing CCSD projects with guidelines that ensure their designs are hazard-resistant.
	1	CCSD		Continuous Process	
Remove and rebuild schools identified as needing earthquake improvements.	PA, PP, SP	One Cent Sales Tax, FCO Bond Money	1.1, 1.2, 2.1, 2.2, 2.3, 2.4, 3.1, 3.2	Ongoing	Ongoing engineering and planning for the repair and replacement of buildings identified as being particularly susceptible to earthquake damage.

Charleston County School District Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals***	***Status***	***Milestones Achieved***
	Priority	***Responsible Agency***	***and Objectives***	***Implementation Schedule***	***and Future Plans***
	1	CCSD		Continuous Process	

Additional Recommended Projects may be added to this project list as the Project Impact/Disaster Resistant Communities or Charleston County School District committees consider other projects and recommend these projects for implementation.

7.20 – Charleston Water System

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024
CHARLESTON REGIONAL HAZARD MITIGATION AND
PROGRAM FOR PUBLIC INFORMATION PLAN
BY THE COMMISSIONERS OF PUBLIC WORKS
Of the City of Charleston, South Carolina
(DBA CHARLESTON WATER SYSTEM)

WHEREAS the Charleston Water System service area has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the Charleston Water System originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, 2008, 2013, and 2017, and is required to adopt the amended version of this plan on a five-year cycle for the Commission to remain eligible for certain Federal programs in which Charleston Water System participates,

NOW THEREFORE be it resolved by the **COMMISSIONERS OF PUBLIC WORKS Of the City of Charleston, South Carolina, (DBA CHARLESTON WATER SYSTEM),** that:

1. The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the Charleston Water System. While content related to Charleston Water System may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Charleston Water System to re-adopt any further iterations of the plan; and

2. The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the Charleston Water System.

Action Report for the Charleston Water System

(Commissioners of Public Works for the City of Charleston)

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the full action plan. Below are the proposed projects additional to the action plan of Charleston County.

This jurisdiction is fully serviced by the City of North Charleston. Please refer to Section 7.13 for the full action report as well as the letter below. Below are the proposed projects additional to the action report of the City of North Charleston.

This jurisdiction is fully serviced by the City of Charleston. Please refer to Section 7.3 for the full action report as well as the letter below. Below are proposed projects additional to the action report of the City of Charleston.

The Charleston Water System is located in Charleston County, SC.
The following are proposed projects to be undertaken/continued by the Charleston Water System service area for hazard mitigation during 2023-2024.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

(Abbreviations for "Responsible Agency" are as follows: "CS" is Customer Service, "E&C" is Engineering and Construction, "EO" is Executive Office, "ERD" is Environmental Resources (Wastewater Treatment), "IT" is Information Technology, "HR" is Human Resources, "HWTP" is Hanahan Water Treatment Plant, "WWC" is Wastewater Collection and "WDD" is Water Distribution)

Charleston Water System Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals and Objectives***	***Status***	***Milestones Achieved and Future Plans***
	Priority	***Responsible Agency***		***Implementation Schedule***	
Continue to maintain 25-year master plans for water supply, distribution, collection, and treatment.	SP	Major and Recurring Capital	Maintain up-to-date master plans to proactively replace aging infrastructure, ensure hydraulic efficiencies, and prepare for area growth.	Ongoing	Updated a minimum of every 10 years.
	1	E&C		In Place	

West Ashley Wastewater Tunnel.	SP	Major Capital	Replaced worn out infrastructure, accommodates growth and helps prevent sanitary sewer overflows in West Ashley area.	Completed	Project is complete as of this report.
	1	E&C		In Place	
Install emergency generators or stand-by power connections at pump stations.	ES	Major and Recurring Capital	Ensure continuous operations during power outages to protect the environment.	Ongoing	Targeted locations are complete. New installations ongoing as system grows and new pump stations are commissioned.
	3	E&C, WWC		In Place	
Require design, engineering, and construction which meets code requirements for flood, hurricane, and seismic considerations.	PP	Major and Recurring Capital	Minimizes the impacts from natural disasters to help ensure continual operations.	Ongoing	Existing facilities subject to these code requirements are complete. New facilities under construction are being built to code requirements.
	1	E&C HWTP ERD WWC WDD		Continuous Process	
Maintain GIS, and implement system upgrades when released.	GIS	Major and Recurring Capital O&M	Maintain up-to-date, accurate system mapping for normal and emergency operations.	Ongoing	GIS mapping system is updated regularly with new data as infrastructure is commissioned and accuracy is regularly validated through user input and CMMS data.
	1	AMGIS; WDD; WWC		Continuous Process	
Water main replacement/ rehabilitation.	SP	Major and Recurring Capital	Helps ensure reliability of water infrastructure fordelivery of abundant drinking water for domestic needs and fire protection.	Ongoing	Assets for replacement or rehabilitation in major capital are identified and prioritized through master planning and may be reprioritized based on

	2	E&C; WDD		Continuous Process	AMP and CMMS data. Assets for replacement or rehabilitation in recurring capital are identified and prioritized annually based on AMP and CMMS data.
Cross Connection Control Program.	PA	O&M	Protects CWS's water system from contaminants and back siphonage; hence, public health protection.	Ongoing	Regular permitting and inspections of new backflow prevention device installations. Annual testing requirements for existing backflow prevention devices.
	1	E&C		Continuous Process	
Expand/improve Supervisory Control and Data Acquisition (SCADA) infrastructure and system.	SP	Major and recurring capital; O&M	Increase ability to monitor water and wastewater systems throughout plants and service area.	Ongoing	Install new RTUs as needed at new or existing facilities. RTUs included with all Major Capital funding facility improvements. Replace antenna poles as needed.
	2	EO		Continuous Process	
Replacement / rehabilitation of treatment plant infrastructure.	SP	Major and Recurring Capital	Helps assure reliability and robustness of mechanical, electrical equipment/facilities and unit processes.	Ongoing	Assets for replacement or rehabilitation in major capital are identified and prioritized through master planning and may be reprioritized based on AMP and CMMS data. Assets for replacement or rehabilitation in recurring capital are identified and prioritized annually based on AMP and CMMS data.
	2	E&C, HWTP, ERD		Continuous Process	
Wastewater main / pump station replacement and rehabilitation.	SP	Major and Recurring Capital	Helps ensure reliability of wastewater infrastructure; reduces blockages and I&I; protects against SSOs.	Ongoing	Assets for replacement or rehabilitation in major capital are identified and prioritized through master planning and may be reprioritized based on AMP and CMMS data. Assets for replacement or rehabilitation in recurring capital are identified and prioritized annually based on AMP and CMMS data.
	1	E&C, WWC		Continuous Process	
Confirm with ISO 14001 Standards for maintaining an Environmental	PA	O&M	Serves to minimize risk of activities adversely impacting the environment and public health, and enhance emergency preparedness. Standardizes	Ongoing	Annual internal and external audits of EMS.

Management System (EMS).	1	All departments	operating procedures and documentation requirements.	Continuous Process	
Maintain and expand corporate and departmental emergency plans	ES	O&M	Corporate-level emergency plans aids in consistent preparation & response to emergency situations. Comprehensive departmental emergency preparedness plans are used to direct operations before, during, and after a disaster to minimize adverse impacts.	Ongoing	Annual reviews, updates, and training. Complete AWIA required risk and resiliency assessments.
	1	EO and all departments		Continuous Process	
Development of Asset Management Program	PA	O&M	Prioritize critical assets; initiate efforts to reduce risk.	Ongoing	Implement asset registry hierarchy structure, populate asset registry, establish asset criticality criteria, and identify critical assets.
	1	AMGIS, ERD, HWTP, WWC, WDD, SSS, EO		Continuous Process	
Participate in the S.C. mutual aid Water/wastewater Agency Response Network (SC WARN).	ES	O&M	Mutual aid agreements for member S.C. utilities to share resources prior to, during, or after an emergency event.	Ongoing	Membership renewed annually and associates assigned as liaisons.
	2	All Departments		Continuous Process	
Use sodium hypo-chlorite at the wastewater plant for disinfection purposes.	PA	O&M	Greatly reduces risks associated with gaseous chlorine storage.	Ongoing	2019-2022 WWTP improvement plans include replacement of existing hypochlorite storage/feed facility with more resilient facility.
	1	ERD		Continuous Process	
Industrial pre-treatment program.	PA	O&M	Enforcement minimizes risk of toxicity to the WWTP	Ongoing	Establish and/or renew permits with industrial dischargers.
	2	ERD; WWC		Continuous Process	
Cyber security systems for corporate business IT and SCADA systems.	PA	O&M	Maintain protection against potential cyber risks that could threaten continuity and sustainability of business and operations systems.	Ongoing	Conduct cyber risk and resiliency assessment. Hire Cyber Security Manager
	1	IT / SCADA		Continuous Process	

Safety Program	PA	O&M	Help ensure safe working conditions for CWS associates, contractors, and CWS customers and visitors.	Ongoing	Conduct monthly training on workplace safety topics.
	1	SSS		Continuous Process	
Risk Management Plan.	PI	O&M	Reduce risk of chlorine release. Mitigate impact in case of chlorine release. Help ensure safety of HWTP staff. Communicate with public and emergency responders.	Ongoing	EPA required. Review, update, and train annually. Third-party program audits, plan update and resubmittal to EPA every five years.
	1	HWTP		Continuous Process	
Process Safety Management Plan	PA	O&M	Workplace procedures designed to mitigate potential chemical releases or hazards. Help ensure safety of HWTP staff and contractors.	Ongoing	OSHA required. Review, update, and train annually. Third-party program audits every three years.
	1	HWTP		Continuous Process	
Spill Prevention Control and Countermeasures Plan	PA	O&M	Facilities and procedures established to prevent, or enhance preparedness and response to petroleum product releases. Help ensure containment and prevent contamination of water bodies.	Ongoing	EPA required. Review, update, and train annually. Third-party program audits, plan update and resubmittal to EPA every five years.
	1	HWTP, ERD, SSS		Continuous Process	
Emergency response training with local emergency planning department, and area first responders.	ES	O&M	Helps ensure that chemical releases are dealt with quickly with minimum of property damage and risk to public.	Ongoing	Annual meetings, plant tours and drills with local emergency response agencies.
	1	HWTP		Continuous Process	
Manage raw water supplies.	PA	O&M	Ensures safety and treatability of source water supplies.	Current	Hired Source Water Manager. Developing source water monitoring and protection program according to AWWA standards.
	1	HWTP		Continuous Process	
Maintain and expand on-line monitoring system for raw water sources and finished water distribution system.	ES	Grant (FMA) and O&M	Will help protect public health by monitoring in real-time any abnormalities in the potable water.	Current	In conjunction with RTU installations at new and existing sites. Source Water Manager collaboration with raw water users and industries adjacent to reservoir.
	1	HWTP; WDD; EO		Continuous Process	
Manage and maintain corporate water and wastewater rules and regulations.	PA	O&M	Standardized and uniform management of water supply and wastewater collection systems, and customer services.	Ongoing	Review and update corporate water and wastewater rules and regulations annually or as needed. Enforcement actions occur daily.

	1	All departments		Continuous Process	
Public education.	PI	O&M	Educating the public will help CWS to convey value of services and help minimize system operational problems.	Ongoing	Participating in regional campaign against non-flushable items. Annual publication of water and wastewater quality reports. Bill inserts distributed monthly.
	2	EO		Continuous Process	
Continue Sewer System Evaluation Surveys (SSES).	PA	O&M	Identifies deficiencies basin by basin for prioritizing capital expenditures for corrective activities such as main, manhole and service lateral rehab or replacement.	Ongoing	Annual programs for main cleaning, CCTV, smoke testing and flow monitoring
	1	WWC		Continuous Process	
Continue fire hydrant installations, replacements, and improvements	ES	Major and Recurring Capital	Helps ensure proper levels of water quantity for fighting emergency fires	Ongoing	Complete planned hydrant replacements and repair activities annually.
	1	WDD, E&C		Continuous Process	

– College of Charleston

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024 CHARLESTON *REGIONAL HAZARD MITIGATION PLAN* BY THE
College of Charleston, Charleston, SC

WHEREAS the College of Charleston has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the College of Charleston originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, 2008, 2013 and 2017 and is required to adopt the amended version of this plan on a five-year cycle for the College of Charleston to remain eligible for certain Federal programs in which the College of Charleston participates, and

NOW THEREFORE be it resolved that

1. The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the College of Charleston. While content related to the College of Charleston may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the College of Charleston to re-adopt any further iterations of the plan; and

2. The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the President at the College of Charleston.

Effective this 19 Day of Sept, 2023

Andrew T. Hsu, President, College of Charleston

Action Report for the College of Charleston

**Unincorporated Charleston County, SC fully services the College of Charleston and therefore has the same action report. Additions and individualized projects for this plan will be shown under the College of Charleston report below.*

Following are the proposed projects to be undertaken/continued at the College of Charleston for hazard mitigation during May 2023-April 2024, and includes the status from May 2022-April 2023.

This jurisdiction is fully serviced by the City of Charleston. Please refer to Section 7.3 for the full action report as well as the letter below. Below are proposed projects additional to the action report of the City of Charleston.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

Hazard Mitigation Goals and Objectives	
Goal 1: Mitigate natural hazard damage	
Objective 1.1	Minimize future flood damage
Objective 1.2	Minimize future earthquake damage
Objective 1.3	Minimize future hurricane damage
Objective 1.4	Minimize future wildfire damage
Objective 1.5	Minimize future tornado-related loss of life
Objective 1.6	Reduce existing flood damage
Goal 2: Increase public preparedness and protection	
Objective 2.1	Protect the lives of our citizens from natural and man-made hazards
Objective 2.2	Educating citizens regarding steps to take to reduce vulnerabilities
Objective 2.3	Promote long-term prosperity
Goal 3: Improve infrastructure	
Objective 3.1	Improve hazard resistance of infrastructure
Objective 3.2	Reduce vulnerability of our infrastructure to natural and man-made hazards
Goal 4: Increase environmental well being	
Objective 4.1	Preserve environmental resources
Objective 4.2	Improve water quality
Objective 4.3	Preserve open space

Objective 4.4	Encourage recreational activities

Mitigation Action and Description	*Type*	*Funding Source*	*Goals*	*Status*	*Milestones Achieved*
	Priority	*Responsible Agency*	*and Objectives*	*Implementation Schedule*	*and Future Plans*
Continued training and coordination activities with the campus- emergency operations team.	PA/PP/ ES/PI	General Fund	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 3.1, 3.2	Ongoing	Campus-wide training is consistently offered on Active-Shooter Response (internal video made); weather-related emergencies and response; workplace violence; fire and evacuation drills; health and safety and driving safety.
	1	Public Safety and EHS		Continuous Process	
Continued development and refinement of campus-wide emergency management protocols.	PA/PS/ ES/PI	General Fund	2.1, 2.2, 3.1, 1.1, 1.2, 1.3, 1.4	Completed/ Ongoing	The College Emergency Preparedness and Management Plan was reviewed for current status during the May 2021-April 2022 timeframe.
	2	Public Safety and University Communications		Continuous Process	
Continue enforcement of the International series Building, environmental safety and Fire codes.	PA/PP	General Fund	2.1 ,2.2, 3.2	Existing/ Ongoing	Continued inspection of buildings, in compliance with the IBC, SCDHEC, OSHA, EPA, and SC Fire Codes was conducted by Public Safety/Fire and EHS employees. Continuing Education was attended which provided code and statute updates.
	1	Facilities Management/ EHS/Public Safety		Continuous Process	
Participation in Project Impact with the purpose of improving education on Hazards to the college and community.	PA	General Fund	1.1, 1.2, 1.3, 1.4, 2.1, 2.2	Ongoing	Education materials were provided from state EMD for Hurricane season to all employees and available to all students. Applicable information provided by PIP is forwarded through Emergency Operations Team or campus population.
	2	Public Safety		Continuous Process	

Continued support of the campus sustainability program at the College of Charleston.	NB	General Fund	4.1, 4.2	Ongoing	Campus Sustainability has been provided a new location to operate which has better meeting and program spaces. The process of intern projects and collaboration with other campus departments, as well as the Charleston Resiliency Network activities are providing more educational and functioning opportunities.
	3	Office of Sustainability		Continuous Process	
Continue energy conservation retrofitting of college-owned facilities as resources are available.	PP	General Fund	3.1, 3.2, 4.1	Ongoing	Continued LED placement in place of fluorescent and incandescent bulbs will show more energy conservation. Several existing buildings' windows have been replaced and two new buildings have had energy conservation-based windows installed thereby creating a better indoor air quality control.
	4	Facilities Management		In Process	
Continue hazardous material training.	ES	General Fund	2.1, 2.2, 3.2	Existing	Continued new employee chemical safety training in the Science, Art, and Facility Departments. Purchases are monitored by EHS to deter any high-hazard purchases that would present unnecessary risks. Chemical management system in place to monitor quantities and hazards of materials. Training on the hazardous material is also provided by the chemical inventory management system in place.
	1	EHS		Continuous Process	
Continue coordinating Emergency Operations Center activities related to a hazard event, including holding drills for EOC personnel.	ES	General Fund	1.1, 1.2, 2.2, 3.2	Completed	Continue to monitor supplies to update and assure sufficient to establish the EOC.
	1	Public Safety		Continuous Process	
Continue responding to hazard emergencies.	ES	General Fund	2.1, 3.1, 3.2	Existing	Fire/EMS/Public Safety, EHS and Facilities continued responding to incidents involving injury/illnesses; fire; chemical spills; gas leaks; suspicious odors; hurricane response and recovery; and flooding.
	1	Public Safety/EHS/Facilities Management		Continuous Process	

Continue working to attain resources and to provide training for campus community on hurricane, earthquake and other natural hazards in the Region.	ES	General Fund	1.1,1.2,1.3, 1.4,2.1,3.1, 3.2	Ongoing	Continued to meet with higher education partners in the city, county, and state to compare, contrast, and support the EHS/EM positions and resources. Shared EM and EHS policy and practice information, had monthly open discussions, and routinely networked with institutes of higher education partners of all sizes. Earthquake education is provided routinely by partnering with the Geology Department and their Seismologists.
	1	Public Safety		Continuous Process	
Continued development of campus EOC / GIS computing / Web-EOC center.	GIS/ES/PI	General Funds	1.1, 1.2, 1.3, 1.3, 1.4, 2.1, 2.2, 3.1, 3.2	Ongoing	Continued development of campus EOC. Shifting to new location with more secure and functional capabilities.
	2	Public Safety		Continuous Process	
Development of campus web pages and email blasts for natural and man-made hazards on Campus.	PI	General Fund	2.1,2.2, 3.1,3.2	Ongoing	Continued, through the University Communications Department and IT Department to develop the emergency.cofc.edu webpage. Continued to review and modify, as necessary, the Cougar Alert pre-planned scripts to support more rapid deployment of alerts, as much as possible. EHS website being updated to include more user-friendly guidance on risk and hazard control.
	1	Public Safety/University COmmunications		Continuous Process	
Continue participating in the Project Impact Program for Public Information (PPI) to achieve maximum public outreach.	PI	General Fund	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 3.1, 3.2, 4.1	Ongoing	Quarterly conversations, meetings, and annual reporting and feedback sessions provide us with information and support to be able to provide our constituents current information.
	1	Facilities Management/ Project Impact Committee		Continuous Process	

Continued development of campus map including referenced blueprints.	GIS	General Fund	1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 3.1, 3.2	Existing/ Ongoing	Facilities Management and Planning continues to update CAD information when buildings are renovated, newly built, or have significant changes. Campus mapping updates are also connected to updating the evacuation maps and shelter in place guidance documents in all buildings. Plan to connect building CAD with work order process to be able to cross check changes and modifications by reference to new or existing prints.
	2	EHS/Public Safety/ Facilities Management SCGIS Lab		In process	
Continued use of Cougar Alert system.	PI	General Fund	2.2 ,2.1, 1.1, 1.2, 1.3, 1.4	Existing	The Cougar Alert mass notification system was used numerous times during the May 2021-April 2022 period. Emergency and non-emergency messages were sent to support the following events: Steam Outage, Gas Leak, Violent Intruder Nearby, Water Leak, Storm Potential and COVID updates. Approx. 14,000 + persons per notification were informed/warned.
	1	Public Safety/ University Communications		In Place	

– Cooper River Parks & Playground Commission

Resolution for Adoption

Cooper River Park & Playground Commission
P.O. Box 71846
North Charleston, S.C. 29415 - 1846
Phone (843)747 - 0776 *Fax (843) 747 - 8851*

July 29, 2015

Ms. Pamela Mecke
Technical Service Coordinator
Charleston County Building Inspection Services
4045 Bridgewater Drive, S.C. 29405

Dear Pamela:

The City of North Charleston entered into a lease with the Cooper River Park and Playground Commission in 2005 in which the City of North Charleston leased from the Commission the recreation facilities owned by the Commission. This is a fifty year lease and the City of North Charleston assumes all liability for the properties, buildings, athletic and other facilities; the city will provide insurance coverage, and provide all necessary maintenance to the properties.

The Cooper River Park and Playground Commission agrees because of this lease with the City of North Charleston and their participation and operation of these facilities they will also include the Commission's property in the Charleston County Hazard Mitigation Plan. This will be an ongoing policy between the Commission and the City unless you receive further notification.

Sincerely

James Conner
Chairman

E Mail Gare@Comcast.Net

Action Report for Cooper River Parks & Playground Commission

This jurisdiction is fully serviced by the City of North Charleston. Please refer to Section 7.13 for the full action report as well as the letter below. There are no proposed projects additional to the action report of the City of North Charleston.

Following are the proposed projects to be undertaken in the Cooper River Parks & Playground Commission for hazard mitigation during May 2023 - April 2024 and their status from May 2022 - April 2023.

- Action Report for James Island Public Service District

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY JAMES ISLAND PUBLIC SERVICE DISTRICT COMMISSION

WHEREAS the County of Charleston has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the County of Charleston originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, 2008, 2013, and 2017, and is required to adopt the amended version of this plan on a five-year cycle for the County to remain eligible for certain Federal programs in which Charleston County participates; and

NOW THEREFORE be it resolved that

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the County of Charleston. While content related to Charleston County may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Charleston County to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the Charleston County Council.

Effective this 23rd Day of October, 2023

Commission Chair

Commission Secretary

Following are the proposed projects to be undertaken / continued in James Island

Public Service District for hazard mitigation during May 2023 - April 2024 and their status from May 2022 - April 2023.

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the full action plan. Below are the proposed projects additional to the action plan of Charleston County.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

Hazard Mitigation Goals and Objectives	
Goal 1: Mitigate natural hazard damage	
Objective 1.1	Minimize future flood damage
Objective 1.2	Minimize future earthquake damage
Objective 1.3	Minimize future hurricane damage
Objective 1.4	Minimize future wildfire damage
Objective 1.5	Minimize future tornado-related loss of life
Objective 1.6	Reduce existing flood damage
Goal 2: Increase public preparedness and protection	
Objective 2.1	Protect the lives of our citizens from natural and man-made hazards
Objective 2.2	Educating citizens regarding steps to take to reduce vulnerabilities
Objective 2.3	Promote long-term prosperity
Goal 3: Improve infrastructure	
Objective 3.1	Improve hazard resistance of infrastructure

Objective 3.2	Reduce vulnerability of our infrastructure to natural and man-made hazards
Goal 4: Increase environmental well being	
Objective 4.1	Preserve environmental resources
Objective 4.2	Improve water quality
Objective 4.3	Preserve open space
Objective 4.4	Encourage recreational activities

James Island Public Service District Hazard Mitigation Actions					
Mitigation Action and Description	*Type* / *Priority*	*Funding Source* / *Responsible Agency*	*Goals* / *and Objectives*	*Status* / *Implementation Schedule*	*Milestones Achieved* / *and Future Plans*
Continue enforcement of the International series Building-related and Fire codes and the floodplain management regulations (including the two-foot freeboard, cumulative substantial improvement clause, and/or other provisions deemed necessary to enhance Community Rating System credits) to maintain participation in the National Flood Insurance Program and the Community Rating System.	PA	General Fund	1.1, 1.2, 1.3, 2.1	Ongoing	Unincorporated Charleston County has maintained a Class 4 Rating System (CRS). Upon the next CRS visit, the County plans to improve their rating to a Class 2 or 3.
	1	Chas. County Building Inspection Services		Continuous Process	
Continue to provide coordination of County stormwater management through development and implementation of a comprehensive program. Enhance efforts at improving water quality through environmental educational activities.	PA, PI	General Fund Enterprise Fund Grant Funding (FMA)	1.1, 1.6, 2.2, 3.1, 3.2, 4.2	Ongoing	Charleston County has completed the Stormwater Comprehensive Plan for the 72,000-acre Mead Westvaco site known as East Edisto for development that is now in progress.

	1	Chas. County Planning Public Works Charleston County Building Inspection Services Project Impact		In place/In process	Chas. County Building Inspection Services has process LOMRs for land area not included in Comprehensive Plan. Project Impact voted on project to promote living shorelines and educate the community.
Promote Standards for existing homes to be retrofitted to exceed minimal codes.	PP, PI	General Fund	1.2, 1.3, 1.6, 2.2, 4.1	Ongoing	Reworked and published new brochures to push this message in 2016. Brochures are available at all expos and handed out at County permitting office. Worked with Department of Insurance and SC Safe Home program to promote retrofitting. Developed grant-funded community fair for the public to educate on retrofitting practices.
	1	Chas. County Building Inspection Services		Continuous Process	
Continue implementing the stormwater master plan for Charleston County and the applicable regulations.	PA	Enterprise Fund Grant Funding (FMA)	1.1, 1.3, 2.1	Ongoing	The Stormwater Master Plan was completed in 2012, enforcement is continuing. The county now has current and preliminary digital NFIP Flood Insurance Rate Maps implemented in GIS system. Ongoing on a regular basis as part of established departmental process.
	2	Public Works Charleston County Building Inspection Services Charleston County Planning		In Place	
Continue providing information to citizens regarding propane tank anchoring, hazard safe interior rooms, boat anchoring and	PA, PP, PI, NB	General Fund Grant Funding (HMGP)	1.1, 1.2, 1.3, 2.2, 4.1	Ongoing	Project Impact attended 3 expos during this time period where information was distributed to attendees.

maintenance, generator safety, riparian buffer zones, hazard resistant landscaping, and artifact protection, among other issues (PPI).	1	Chas. County Building Inspection Services Project Impact		Continuous Process	
Continue enforcing regulations requiring new manufactured homes brought into Charleston County to be constructed to wind zone 2 requirements as required per State law.	PA	General Fund	1.1, 3.2	Ongoing	Enforcement has been maintained including regulations to 2' freeboard. Ongoing on a regular basis as part of established department processes.
	1	Chas. County Building Inspection Services		Continuous Process	
Continue prohibiting new manufactured homes to be installed in "V" flood zones and requiring manufactured homes installed in "A" flood zones to be on permanent foundations.	PA	General Fund	1.1, 1.2, 1.3, 2.1	Ongoing	Continue to prohibit manufactured homes in VE Zones and require engineered foundations in AE Zones. A change in regulation to 2' freeboard.
	1	Chas. County Building Inspection Services		Continuous Process	
Conduct or co-sponsor training workshops regarding the International Building-related, flood, and Fire Prevention Codes and Regulations, and on sustainable construction/landscaping practices, when there is interest in these workshops (PPI).	PA, PI	General Fund	1.1, 1.2, 1.3, 2.2, 3.1, 4.1	Ongoing	Chas. County Building Inspection Services participated in 43 meetings, expos, or events between May 2017- April 2018. Director Carl Simmons who spoke at a total of 10 events from SC DOI meetings to FEMA flood map sessions, and Jim Houser speaks regularly at Trident Home Builders meetings (12 events in the past year). The department regular meets with individual citizens, homeowners, contractors, and other local governments.
	1	Chas. County Building Inspection Services		Continuous Process	
Continue enforcement of zoning regulations, including, the low density zoning provisions of the Zoning and Land Development Regulations (ZLDR).	PA	General Fund	1.1, 1.2, 1.3, 2.1, 2.3, 4.1, 4.3, 4.4	Existing	The Zoning and Chas. County Planning Department updated the Comp. Plan in 2015 encouraging the preservation of the rural area, preserving open space, and requiring

	1	Chas. County Planning		Continuous Process	vegetated buffers along the OCRM Critical Line. Plan will be updated and adopted again in 2018.
Support requirements for construction practices for new JIPSD-owned critical facilities that are sensitive to flood zone (e.g. avoiding "A" and "V" flood zones where feasible) and seismic considerations.	PP	Grant Funding		Ongoing	New Fire Station 1/Fire HQ completed December 2021. Plans included seismic and flooding considerations. Planning on a replacement station for FS2 has begun and will include the same. Projected completion if approved is 2028.
	1	JIPSD		Continuous Process	
Seek funding for retrofitting demolishing, or relocating repetitively flooded properties, if suitable candidates should be identified. Utilize Charleston County Repetitive Loss Area Analysis for identifying suitable candidates.	PP	Grant Funding (FMA)	1.2, 1.3, 1.6, 3.1, 3.2, 4.1	Existing	As of 2017, there is one suitable candidate that met the eligibility requirements and is in grant application process.
	1	Chas. County Building Inspection Services		In process	
Evaluate existing JIPSD-owned facilities for hazard resistance and retrofit facilities if needed where feasible.	PP	General Fund	2.2	Ongoing	The JIPSD evaluates all facilities on a yearly basis as part of our strategic planning, to identify facilities that need retrofit and improvement.
	1	JIPSD		Continuous Process	
Encourage cooperation between county departments, other government entities, interested businesses, and citizens regarding recommended sustainable practices to protect environmental quality.	NB	Grant Funding (PDM) General Fund	2.3, 4.1, 4.2	Ongoing	JIPSD is actively moving towards being a paperless administrative entity. More and more paperwork is being done digitally to help cut down our carbon footprint. New FS/HQ includes solar panels as will future stations and buildings as they are replaced.
	2	Chas. County Building Inspection Services Project Impact JIPSD		Continuous Process	
Promote the use of voluntary standards for single-family residences	PA, PP	General Fund	1.1, 1.2, 1.3, 2.1, 2.2	Ongoing	JIPSD actively promotes the education of our citizens in the hazards

to exceed minimal building code requirements for wind and seismic design.	1	Chas. County Building Inspection Services		Continuous Process	associated with building damage in a natural disaster.
Support providing information to citizens regarding hazard safe interior rooms.	PP	General Fund	2.1, 2.2	Ongoing	JIPSD distributes literature at all community events including information about safety during seismic and hurricane events.
	3	Chas. County Building Inspection Services JIPSD		Continuous Process	
Continue coordinating Emergency Operations Center activities related to a hazard event, including holding drills for EOC personnel and maintain the Charleston Count Continuity of Operations Plan (COOP).	ES	General Fund	2.1, 2.2, 2.3, 4.1	Ongoing	The EOC regularly holds training sessions for area responders, officials and staff. The Charleston County Emergency Operations Center successfully activated for and effectively coordinated responses to two real world incidents – including Hurricane Irma in 2017 and the ice storm January 2018. Additionally, EOC conducted full scale drill on 6/6/18, to practice and improve practices for an earthquake event.
	1	Emergency Management JIPSD		Continuous Process	
Continue to provide hazard-related literature/ information to citizens at James Island Public Service District Offices.	PI	General Fund	2.1, 2.2	Ongoing	The JIPSD has increased its distribution of material and information dramatically with the creation of various social media platforms, dissemination more information to a wider audience.
	1	JIPSD		Continuous Process	
Maintain the national Weather Service "Storm Ready" and "Tsunami Ready" Community designations.	ES, PI	General Fund	1.1, 1.3, 1.5, 1.6, 2.1, 2.2	Completed	Charleston County has been recertified as a "Storm Ready" and "Tsunami ready" Community. This

	1	Emergency Management JIPSD		Completed	designation is valid through 2018.
Continue participating in the annual maintenance and approval of Hazard Mitigation Plan / Program for Public Information Committee efforts to achieve maximum public outreach.	PI, PA, PP, NB, ES, SP	General Fund	2.2	Ongoing	During this period, the County has held 2 public meetings and maintained correspondence with jurisdictions about the importance of the Plan.
	1	Chas. County Building Inspection Services Project Impact JIPSD		Continuous Process	
Sponsor a Fire Prevention Week, including information on Hazard awareness and assist other communities in participating in this activity.	PI	General Fund	1.1, 1.2, 1.3, 1.5, 2.1, 2.3	Ongoing	CoVid-19 caused a drastic decrease in the ability of the JIPSD to interact in person with the general public. Plans to resume these public training and informational gatherings are in the works for Fall 2022.
	1	JIPSD		Continuous Process	
Continue Hazardous Materials Training.	ES	General Fund	2.1	Ongoing	Annual training of all emergency responders, including material safety awareness, response, and mitigation.
	1	JIPSD		Continuous Process	
Continue Terrorist Response Training.	ES	General Fund	2.2	Ongoing	Annual training including terrorism recognition, Command level staff training for incident command for active violence/active shooter scenes.
	1	JIPSD		Continuous Process	
Maintain a web-based Emergency Operations Center Capability.	ES	General Fund	2.1, 2.2	Ongoing	The JIPSD's new Fire station/HQ was designed to be fully integrated through web-based EOC operations, allowing for multiple data streams to be accessed simultaneously.
	1	JIPSD		Continuous Process	

Continue responding to hazard emergencies	ES	General Fund Enterprise Fund	2.1, 2.2, 2.3, 4.1	Ongoing	No end date- operational readiness (NEW)
	1	EMS, Fire Departments, Sheriff Department, Hazard Mitigation Coordinator, Emergency Preparedness		Continuous Process	
Sponsor training programs for medical providers on topics of interest such as decontamination procedures, etc. if there is interest in these programs	ES	General Fund	2.1, 2.2	Ongoing	Training offered as it becomes available, until all personnel trained (NEW)
	1	Charleston County Hazardous Materials Coordinator, James Island Public Service District Fire Department		No End Date	
Continue coordinating the Anti-Terrorism Task Force of specially trained police, fire, and EMS personnel to respond to terrorist acts	ES	Grant Funding (HMGP) General Fund	2.1, 2.2, 2.3, 3.1, 3.2,	Ongoing	Training performed as it becomes available (NEW)
	1	Charleston County Hazardous Materials Coordinator, James Island Public Service District Fire Department		No End Date	
Assist with outreach initiatives to the small business community to encourage businesses to prepare for hazard events	PI	Project Impact Resources	2.1, 2.2, 2.3, 3.1	Ongoing	Help educate businesses during annual fire inspection, and public education events (NEW)
	2	Charleston County Building Inspection Services Project Impact Partners		No End Date	
	NB	General Fund	1.1, 2.3, 4.1, 4.4	Ongoing	Provide public support for the maintenance of

Support maintaining permanent open space as parks	2	Parks and Recreation Commission JIPSD		No End Date	green space through public outreach (NEW)
Support utility right of way permitting, considering emergency vehicle access and flood zone related issues in permitting decisions	SP	General Fund	1.1, 1.6, 2.1, 3.1, 4.1	Ongoing	Work with develops and DOT as programs arise (NEW)
	1	JIPSD		No End Date	
Support provision of information about the USGS stream gauge program to the public	SP	Partner Donations/ Grant Funding	1.6, 2.1, 2.2	Ongoing	Help educate public and businesses at public outreach and community events (NEW)
	2	Charleston County Building Inspection Services JIPSD		No End Date	
Recognize "International Building Safety Week" to promote safety in the built environment	PI	General Fund	2.1, 2.2	Ongoing	Public posts on social media, and through public events and outreach (NEW)
	3	JIPSD		No End Date	
Assist with providing speakers to civic groups regarding hazard related activities	PI	General Fund	2.1, 2.2	Ongoing	Provide information to community groups, HOAs and church groups (NEW)
	1	JIPSD		No End Date	
Continue participating in hazard-related/product expos	PI	General Fund	2.1, 2.2	Ongoing	JIPSD participates in the Lowe's Fire Expo every October as well as Town of James Island Hurricane Expos and other public safety events.
	2	JIPSD		No End Date	

Additional Recommended Projects may be added to this project list as the Disaster Resistant Communities committees consider other projects and recommend these projects for implementation.

– Mt. Pleasant Water Works Commission

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE FEMA-APPROVED 2023 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY CHARLESTON COUNTY COUNCIL

Resolution No. 05-2023

WHEREAS the Commissioners of Public Works of the Town of Mount Pleasant, SC (the Commission) has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the Commission originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, 2008, 2013, and 2018, and is required to adopt the amended version of this plan on a five-year cycle for the County to remain eligible for certain Federal programs in which Charleston County participates, and

NOW THEREFORE be it resolved that

1. The *Charleston Regional Hazard Mitigation and Program for Public Information Plan* is hereby adopted as an official plan of the Commission and

2. The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the Charleston County Council.

Effective this 16th Day of October 2023

MOUNT PLEASANT WATERWORKS COMMISSIONERS

Rick Crosby, Chair

Susan Mellichamp, Vice-Chair

Diane Lauritsen, Secretary-Treasurer

H. Mac Jenkinson, Commissioner

Linda Page, Commissioner

Will Haynie, Mayor, Town of Mount Pleasant

Jack Rambo, Chair, Water Supply Committee, Town of Mount Pleasant

Allan Clum, General Manager, Mount Pleasant Waterworks

Action Report for Mount Pleasant Waterworks

(Commissioners of Public Works for the Town of Mount Pleasant)

Following are the proposed projects to be undertaken / continued by Mount Pleasant

Waterworks for hazard mitigation during May 2023 - April 2024 and their status from May 2022 - April 2023.

This jurisdiction is fully serviced by the Town of Mount Pleasant. Please refer to Section 7.12 for the full action report as well as the letter below. Below are proposed projects additional to the action report of the Town of Mount Pleasant.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

Hazard Mitigation Goals and Objectives	
Goal 1: Protect public health and safety	
Objective 1.1	Improve detection and rapid internal notification of abnormal operating conditions.
Objective 1.2	Ensure the ability to make rapid mass public notifications.
Objective 1.3	Ensure adequate fire protection within our service area.
Goal 2: Mitigate impacts from all threats / hazards.	
Objective 2.1	Mitigate impacts from natural threats / hazards.
Objective 2.2	Mitigate impacts from man-made threats / hazards.
Objective 2.3	Reduce vulnerability and improve resilience of our infrastructures.
Objective 2.4	Improve our ability to prepare for and respond to all threats and hazards.
Goal 3: Promote hazard awareness, education, and preparedness.	
Objective 3.1	Support Project Impact Public Information efforts.
Objective 3.2	Promote awareness and preparedness among our employees and external customers.

Mount Pleasant Waterworks Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals***	***Status***	***Milestones Achieved***
	Priority	***Responsible Agency***	***and Objectives***	***Implementation Schedule***	***and Future Plans***
Continue installing water pressure & quality sensors, linked to SCADA, throughout the water system as needed.	PP, PA, ES	Capital Funds	1.1, 1.3, 2.4	Ongoing	Ongoing and routine process. Recently upgrades to piping and new control panels were installed. Improved our SCADA system's pressure and chlorine monitoring.
	3	Instrumentation Dept.		Continuous Process	
Continue to maintain and optimize SCADA capabilities throughout critical areas of our water and wastewater systems.	PP, PA, ES	Operating Funds	1.1, 1.3, 2.4	Ongoing	Ongoing and routine process.
	2	Instrumentation Dept.		Continuous Process	
Continue installing emergency generators at critical locations as needed.	PP, ES	Capital Funds	2.1, 2.2, 2.3, 2.4	Ongoing	Ongoing and routine process. Installed 5 stationary generators & have purchased 3 additional portable generators. Plan to install an additional 2 generators and have plans to purchase 3-4 generators over the next 3 years. Currently have 59 total generators
	3	Electrical Dept.		Continuous Process	

Mount Pleasant Waterworks Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals***	***Status***	***Milestones Achieved***
	Priority	***Responsible Agency***	***and Objectives***	***Implementation Schedule***	***and Future Plans***
Continue installing Fire Hydrants in locations determined by the Fire Department, and/or in new areas of our water system.	PP, ES	Capital Funds	1.3, 2.1, 2.2	Ongoing	Ongoing and routine process. A hydrant must be installed within 300 feet of every building per city ordinance. Within the last 2 years we replaced 20+ older hydrants and upgraded them.
	3	Engineering Dept.		Continuous Process	
Continue physically locating, GPS locating, and exercising all isolation valves in water and wastewater systems.	PP, ES, GIS	Operating Funds	1.3, 2.1, 2.2, 2.4	Ongoing	Ongoing and routine process. There are 20 zones within Mt. Pleasant and every valve is tested at least once every 5 years
	2	Engineering, Water Quality, Wastewater Collections		Continuous Process	
Maintain and utilize multiple platforms to facilitate the timely notification of our customers and surrounding community.	PA, PP, NB, ES, PI	Operating Funds	1.2, 2.3, 2.4, 3.1, 3.2	Ongoing	Ongoing and routine process. Notices sent out via website, social media, emails, texts and phone.
	2	Public Information		Continuous Process	

Mount Pleasant Waterworks Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals***	***Status***	***Milestones Achieved***
	Priority	***Responsible Agency***	***and Objectives***	***Implementation Schedule***	***and Future Plans***
Continue assessing the potential threats, hazards, and risks to MPW; mitigate probability and severity where possible and feasible.	PA, PP, NB, ES	Operating Funds	2.1, 2.2, 2.3, 2.4	Ongoing	Ongoing and routine process.
	3	Technical Services Dept.		Continuous Process	
Continue Emergency Management training, drills, and exercises for all departments and employees.	ES	Operating Funds	2.1, 2.2, 2.3, 2.4	Ongoing	Ongoing and routine process. MPW remains committed to performing 2 drills per year. Recently we conducted a fire drill with MPFD on site as observers and then had them conduct fire extinguisher training. We will be conducting hurricane preparedness training in the near future, along with an active shooter tabletop exercise.
	3	Technical Services Dept.		Continuous Process	
Continue public outreach & education efforts to enhance threat & hazard awareness and preparedness.	NB, PI	Operating Funds	3.1, 3.2	Ongoing	Ongoing and routine process. MPW will begin a campaign in August to prepare customers for the Hurricane Season. Also, will use our website, social media, email, text and phone for notifications as well as press advisories as needed.
	3	Public Information		Continuous Process	

7.25 – North Charleston District

This jurisdiction is fully serviced by the City of North Charleston. Please refer to Section 7.13 for the full action report as well as the letter below. Below are the proposed projects additional to the action report of the City of North Charleston.

Following are the proposed projects to be undertaken in the North Charleston District for hazard mitigation during May 2022 - April 2023 and their status from May 2021 - April 2022.

From: Chief Financial Officer, County of North Charleston District

July 24, 2018

We received the Emergency Action Report from the County for the North Charleston District. While we fully support the County's efforts and are completing the Report for the North Charleston Sewer District, the North Charleston District no longer has the ability to assist in these areas and we are asking if you will allow us to forgo completing the Report for the North Charleston District.

The North Charleston District was established in 1972 to provide fire protection, refuse collection, street signage, and street lighting. Since that time, the City of North Charleston has steadily grown and annexed the majority of the original District.

The District has an agreement with the City to provide all the services listed above to the remaining unincorporated properties until they are annexed and in return the District remits the County tax collections from the properties to the City. All District assets have been turned over to the City and the District no longer has any employees.

7.26 – North Charleston Sewer District

Resolution for Adoption

NORTH CHARLESTON SEWER DISTRICT APPROVES THE CHANGES TO THE CHARLESTON HAZARD MITIGATION PLAN AT THE OCTOBER 09, 2023, COMMISSION MEETING.

WHEREAS the North Charleston District has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the North Charleston District originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, 2008, 2013, and 2017, and is required to adopt the amended version of this plan on a five-year cycle for the North Charleston District to remain eligible for certain Federal programs in which North Charleston District participates; and

NOW THEREFORE be it resolved that the **NORTH CHARLESTON SEWER DISTRICT COMMISSION**

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the North Charleston District. While content related to North Charleston District may require revisions to meet the plan approval requirements, changes occurring after adoption will not require North Charleston District to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the North Charleston District.

Jarred Jones, Executive Director

Action Report for the North Charleston Sewer District

Following are the proposed projects to be undertaken / continued in Unincorporated Charleston County for hazard mitigation during May 2023 - April 2024 and their status from May 2022 - April 2023.

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the full action plan. Below are the proposed projects additional to the action plan of Charleston County.

This jurisdiction is fully serviced by the City of North Charleston. Please refer to Section 7.13 for the full action report as well as the letter below. Below are the proposed projects additional to the action report of the City of North Charleston.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

Mitigation Action and Description	*Type* / *Priority*	*Funding Source* / *Responsible Agency*	*Goals and Objectives*	*Status* / *Implementation Schedule*	*Milestones Achieved and Future Plans*
Continue enforcement of the Sewer Disposal Use Resolution	PA / 1	General Fund / Administrative Division	Minimize future flood damage; protect the lives of our citizens from man-made hazards.	Ongoing / Continuing Process	Held one (1) industry enforcement hearing. Continue to monitor industry. Continue enforcement

Continue enforcing regulation requiring new manholes to be elevated above the 50 year flood elevation.	PA	General Fund	Minimize future flood damage; protect the lives of our citizens from man-made hazards.	Ongoing	Continue enforcement
	1	Systems Division		Continuing Process	
Implement cMOM.	PA	General Fund	Minimize the potential for sanitary sewer system overflows.	Ongoing	Continuously collect information on current systems and activities.
	1	Systems Division		Continuing Process	
Continue reduction of Inflow and Infiltration (I&I) into the treatment system.	PA	General Fund	Minimize the potential for sanitary sewer overflows (SSOs), maximize WWTP treatment capacity.	Ongoing	Budgetd 168,00 linear feet to Smoke test to identify repairs needed.
	1	Field Operations		Continuing Process	
Seek funding for retrofitting critical facilities to enhance hazard resistance if funding sources become available.	PP	Grant Funding (HMGP)	Reduce vulnerability of infrastructure to natural and man-made hazards; minimize future hurricane damage; minimize future earthquake damage; reduce existing flood damage; promote long term economic prosperity.	Ongoing	Applying for grants to mitigate hazards to Mulberry and Powerhouse pump stations.
	1	Systems Division		Continuing Process	
Continue providing information to citizens about hazard of improper grease disposal.	PP	General Fund	Minimize future flood damage; protect the lives of our citizens from man-made hazards.	Ongoing	• Visit schools and community meetings/events. • Utilizing a Rapid Response technique to educate citizens in grease-overflow-prone areas.

	2	FOG		Continuing Process	• Engaging in multi-utility campaigns to educate about FOG.
Continue support of the SC Water Quality Association.	NB	General Fund	Preserve environmental resources; promote long term economic prosperity; encourage recreational activities.	Ongoing	NCSD Executive Director is board member. Attend quarterly meetings.
	2	Administrative Division		Continuing Process	
Continue to provide hazard communication, anti-terrorism, and emergency preparedness training to employees.	ES	General Fund	Protecting lives of our citizens from man-made hazards; minimize future hazardous materials incidents; preserve environmental resources; assessing vulnerability to man-made hazards.	Ongoing	Yearly training provided by in-house trainer and outside vendor. Established Emergency Response Team (ERT) in 2019.
	1	Administrative Division		Continuing Process	
Continue to provide Designated First Aid Response Team and associated supplies at the Stall Road and Herbert Street facilities.	ES	General Fund	Protecting lives of our citizens from man-made hazards; minimize future hazardous materials incidents; preserve environmental resources; assessing vulnerability to man-made hazards.	Ongoing	Provided by in-house HR & Risk Coordinator. Yearly training.
	2	Administrative Division		Continuing Process	

Continue to provide visitors and contractors hazard materials orientation at the Herbert Street facility.	ES	General Fund	Protecting lives of our citizens from man-made hazards; minimize future hazardous materials incidents; preserve environmental resources; assessing vulnerability to man-made hazards.	Ongoing	Provided on an as-needed basis.
	1	Plant Division		Continuing Process	
Continue to include contractor and visitor safety program as part of our construction contracts.	ES	General Fund	Protecting lives of our citizens from man-made hazards; minimize future hazardous materials incidents; preserve environmental resources; assessing vulnerability to man-made hazards.	Ongoing	Provided on an as-needed basis.
	1	Systems Division		Continuing Process	
Continue to attend LEPC meetings and emergency response exercises.	ES	General Fund	Protecting lives of our citizens from man-made hazards; minimize future hazardous materials incidents; preserve environmental resources; assessing vulnerability to man-made hazards.	Ongoing	HR & Risk Coordinator attends quarterly meetings.
	2	Administrative Division		Continuing Process	

Continue to host LEPC sponsored emergency response exercises.	ES	General Fund	Protecting lives of our citizens from man-made hazards; minimize future hazardous materials incidents; preserve environmental resources; assessing vulnerability to man-made hazards.	Ongoing	Hosts meeting when asked by LEPC.
	2	Administrative Division		Continuing Process	
Include construction practices that are sensitive to flood, seismic and hurricane considerations on all facility upgrade projects.	SP	General Fund	Minimize future flood damage; protect the lives of our citizens from man-made hazards; improve water quality; improve hazard resistance of infrastructure; promote long term economic growth.	Ongoing	Provided on an as-needed basis.
	2	Systems Division		Continuing Process	
Continue to use manhole inserts or sealed water tight manhole lids in flood prone areas.	SP	General Fund	Minimize future flood damage; protect the lives of our citizens from man-made hazards; improve water quality; improve hazard resistance of infrastructure; promote long term economic growth.	Ongoing	Provided and installed when manholes are determined to be prone to infiltration during I/I evaluation.
	3	Systems Division		Continuing Process	
Continue to use submersible or dry pit submersible pumps for new or upgraded pump stations.	SP	General Fund	Minimize future flood damage; protect the lives of our citizens from man-made hazards; improve water quality; improve hazard resistance of infrastructure;	Ongoing	Pumps are used when practicable.

	2	Systems Division	promote long term economic growth.	Continuing Process	
Continue fats, oils, and grease (FOG) public education program.	PI	General Fund	Educating citizens regarding their vulnerability to man-made hazards and steps to take to reduce vulnerability.	Ongoing	• Continued to give doorhangers and FOG education kits to citizens. • Created and posted social messages regarding FOG and wipes on District sites. Advertized FOG message on YouTube. Posted water-quality related lesson plans on website. Obtained news coverage of pump station cleaning on all major news networks and in Post and Courier.
	2	FOG		Continuing Process	
Continue providing annual report to citizens.	PI	General Fund	Educating citizens regarding their vulnerability to man-made hazards and steps to take to reduce vulnerability.	Ongoing	Annual report is available for all citizens.
	2	Administrative Division		Continuing Process	
Continue to provide speakers to civic groups regarding sewer district operations.	PI	General Fund	Protecting the lives of citizens from man-made hazards; educating citizens regarding their vulnerability to man-made hazards and steps to take to reduce vulnerability.	Ongoing	• Provided speakers, demonstrations, and educational materials for civic group meetings and neighborhood events. • Continue to provide speakers when needed and/or asked.
	3	FOG		Continuing Process	
Continue to maintain NCSD web page.	PI	General Fund	Educating citizens regarding their vulnerability to man-made hazards and steps to take to reduce vulnerability.	Ongoing	Updates are provided when necessary (SSO reporting, weather events, construction activities, etc.)
	3	Administrative Division		Continuing Process	

Continue to update the GIS System.	GIS	General Fund	Minimize future flood damage; protect the lives of our citizens from man-made hazards; improve water quality; improve hazard resistance of infrastructure; promote long term economic growth.	Ongoing	Ongoing process. GIS is updated when new lines, manholes, etc., are installed, or when assets are discovered to not be in the system.
	3	Capital Projects		Continuing Process	
Integrate GIS System with other NCSD engineering and business systems.	GIS	General Fund	Improve efficiency between departments and decrease response time to hazards.	Ongoing	Ongoing process.
	3	Capital Projects		Continuing Process	
Educate citizens about improper disposal of garbage into sewer system.	PI	General Fund	Educate citizens regarding their vulnerability to man-made hazards and take steps to reduce vulnerability.	Ongoing	• Continue to educate citizens concerning the use of disposable wipes at all public events. • Vehicles are wrapped with relevant signage and/or information. • Created and posted social messages regarding wipes on District sites. Obtained news coverage of pump station cleaning on all major news networks and in Post and Courier.
	2	FOG		Continuing Process	

Continue to implement fats, oils, and grease initiative.	PI	General Fund	Educate citizens and food service establishments regarding the proper disposal of fats, oils, and grease	Ongoing	• Continuing grease trap inspections of food service establishments (FSEs). • Continuing review of FSE cleaning compliance and best management Practices. Updating all required forms and documents used in the program. Updating resolutions to be in line with current plumbing codes, EPA standrds, and SCDHEC regulations. Receiving manifests of FSE grease trap/interceptor cleanings from haulers on a regular basis.
	2	FOG		Continuing Process	

The North Charleston Sewer District shall, through Project Impact, provide support to the many activities and projects that will benefit the residents of the NCSD. Additional recommended projects may be added to this project list as other projects are recommended to the North Charleston Sewer District Commission. Some Projects that are being undertaken by other jurisdictions may not necessarily be listed here but may affect the North Charleston Sewer District.

– Roper St. Francis

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE REVISED
CHARLESTON REGIONAL HAZARD MITIGATION PLAN
BY ROPER ST. FRANCIS HEALTHCARE

WHEREAS Roper St. Francis Healthcare, a not-for-profit healthcare system located in Charleston County, has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation Project Committee has prepared a recommended *Charleston Regional Hazard Mitigation Plan*; and

WHEREAS the recommended Pl *Charleston Regional Hazard Mitigation Plan* has been widely circulated for review by residents/business organizations/professional organizations of the unincorporated and incorporated areas of Charleston County, state, federal regional and local government agencies, with support being given by those reviewers; and

WHEREAS Roper St. Francis Healthcare originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2015, and 2019 and is required to adopt the amended version of the *Charleston Regional Hazard Mitigation Plan* on a five-year cycle to remain eligible for certain Federal programs in which Roper St. Francis Healthcare participates, and

NOW THEREFORE be it resolved that

1. The *Charleston Regional Hazard Mitigation Plan* is hereby adopted as an official plan as part of hazard mitigation planning of the Roper St. Francis Healthcare system; and

2. The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, and Disaster Mitigation Act and Program for Public Information requirements, and with periodically reporting on progress towards and revisions to the plan to the Emergency Management Committee of Roper St. Francis, led by the Roper St. Francis Emergency Manager under the direction of the Vice President of Construction and Real Estate.

3. Effective this 2nd Day of April, 2024

Signed: _____, Interim President &Chief Executive Officer

Action Report for Roper St. Francis

Following are the proposed projects to be undertaken in Roper St. Francis for hazard mitigation during May 2023 - April 2024 and their status from May 2022 - April 2023.

Roper St. Francis Healthcare, a non-profit health system with three critical care hospital facilities located in Charleston County, bases this Action Plan Report on the health care system's 2019 Summary Hazard Vulnerability Analysis (HVA). The analysis represents an "all hazards" approach to the management of emergency conditions occurring in Roper St. Francis Healthcare critical care facilities and in the greater Charleston County area. The HVA evaluated the specific probability impact on persons, property, and business, as well as the relative level of the organization's and the community's response capabilities and general preparedness.

Roper St. Francis Healthcare Hazard Mitigation Projects to be undertaken and/or continued May 2021 - April 2022.

RSFH Hazard Mitigation Goals and Objectives	
Goal 1: Mitigate natural hazard damage to **allow delivery of essential critical care services during and after austere events.**	
Objective 1.1	Minimize future flood damage
Objective 1.2	Minimize future hurricane damage
Objective 1.3	Minimize future earthquake damage
Objective 1.4	Reduce existing flood damage
Goal 2: Increase public preparedness and protection of the lives of our patients and staff	
Objective 2.1	Allow for simultaneous notification of all staff/visitors of austere events or life safety events.
Objective 2.2	Coordinate with external agencies for planning, exercise, and preparedness initiatives.
Objective 2.3	Reduce risk of technological hazards
Goal 3: Improve Infrastructure	
Objective 3.1	Improve hazard resistance of infrastructure of critical care physical plants
Objective 3.2	Reduce vulnerability of our infrastructure to natural and man-made hazards
Objective 3.3	Reduce vulnerability to communications failures
Goal 4: Increase environmental well being	
Objective 4.1	Reduce future human hazards incidents
Objective 4.2	Minimize hazardous materials incidents
Objective 4.3	Infectious disease

FEMA Terminology for Use in the Following Action Plan:

- ***Type*** *Designations: "PA" Preventive Activities, "PP" Property Protection Activities, "NB" Natural and Beneficial Functions/Resource Preservation Activities, "ES" Emergency Services Activities, "SP" Structural Projects Activities, "PI" is Public Information Activities, "GIS" Geographic Information Systems Activities.*
- ***Status*** *Designations: "New," "Ongoing," "Continuous Process," "Deleted," "Completed"*
- ***Priority:*** *Prioritize each action on a scale from 1 to 5, with 1 the highest priority and 5 the lowest priority*
- ***Funding Source:*** *Identify source(s) of financial support for each action (ex. General Fund).*
- ***Responsible Agency (Department):*** *Identify party in charge of managing each action.*
- ***Goals and Objectives:*** *Correlate objective(s) affiliated with action using associated number(s).*
- ***Implementation Schedule:*** *Designations: "In Process," "Continuing Process," "In Place," "Completed"*
- ***Milestones Achieved and Future Plans*** *Describe the details concerning affiliated successes and intended goals for each action*

Hazard Mitigation Actions					
Mitigation Action and Description	*Type* *Priority*	*Funding Source* *Responsible Agency*	*Goals and Objectives*	*Status* *Implementation Schedule*	*Milestones Achieved and Future Plans*
Obtain funding for elevating existing utilities at Roper Hospital to meet shelter in place criteria as mandated by SC DHEC.	SP, PP, PA	FEMA Grant (HMGP), Capital Investment	1.1., 1.4., 3.1., 3.2	Ongoing	Grant-funded Fire Pump Project and Backup Generator Project in final Implementation Stages; grant-funded Chiller Project in startup design phase. A new Fuel Tank Flood Mitigation grant is pending with SCEMD/FEMA.
	1	Engineering, Grant Services, Emergency Management		In Process	
Continue educational trainings in relation to disaster preparedness in healthcare facilities for staff/community members.	PA	Emergency Management Budget	1.2.,2.1., 2.2.,4.1., 4.2	Ongoing	Multiple trainings held, training is ongoing. Community and internal exercises continually being conducted.
	2	Emergency Management		In Process	
Potable water equipment for water outages / boil water advisories	ES, PA	Emergency Management Budget, Engineering Budget, Capital Investment	1.1-1.3, 3.1, 3.2	Completed	Water loss plan and mitigation measures approved. Fixed external water connections in place at all RSF hospitals with contractor in place to supply water via tank truck. Additional water in storage on site. Plan expansion, additions complete.
	1	Emergency Management, Engineering		In Place	
Establish mass notification alert system for health care system	PA	Emergency Management Budget	1.1.-1.3., 2.1.-2.3., 3.3.,4.2.	Completed	Everbridge mass notification system fully implemented, including internal and external communication templates for immediate notification of needed parties in austere events. System tested monthly.
	1	Emergency Management, Corporate Communications		Continuous Process	
Continue building review/future building planning to minimize impact from naturally occurring and man-made austere events	SP, PA, PP	Capital Investment	1, 3.1, 3.2	Ongoing	Ongoing, committee review.
	2	Engineering, Information Services, Leadership, Emergency Management		Continuous Process	
Continue hazard planning and mitigation strategies	PA, PP	Emergency Management Fund; Grants	1.1-1.5	Ongoing	2019 HVA completed for facility. Regional healthcare HVA completed in conjunction with SC DHEC. Planning to upgrade security measures. Pursue opportunities for mitigation planning partnerships and grants.
	1	Emergency Management, Department Directors		Continuous Process	
Emergency Preparedness Coordination with External Agencies	ES	Emergency Management Fund	1.1.-1.3., 2.1.-2.3., 3.3., 4.1.-4.3.	Ongoing	Regularly attend county, regional, and state meetings.
	1	Emergency Management		Continuous Process	
Obtain funding for utility water equipment for chill and condenser water make-up during extended flooding and water loss events.	PA, ES	Emergency Management Budget, Engineering Budget, Capital Investment	1.1-1.3, 3.1, 3.2	New	Design complete for well water addition to supply make-up water to critical utility systems during extended water loss events. This remains a capital expenditure low priority.
	1	Emergency Management, Engineering		In process	

– St. Andrews Parish Park & Recreation Commission

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN*
BY
ST. ANDREW'S PARISH PARKS AND PLAYGROUND COMMISSION

Resolution No. 2023-1

WHEREAS the ST. ANDREW'S PARISH PARKS AND PLAYGROUND COMMISSION has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the ST. ANDREW'S PARISH PARKS AND PLAYGROUND COMMISSION originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, 2008, 2013, and 2017, and is required to adopt the amended version of this plan on a five-year cycle for the County to remain eligible for certain Federal programs in which Charleston County participates; and

NOW THEREFORE be it resolved that

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the ST. ANDREW'S PARISH PARKS AND PLAYGROUND COMMISSION. While content related to Charleston County may require revisions to meet the plan approval requirements, changes occurring after adoption will not require Charleston County to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the ST. ANDREW'S PARISH PARKS AND PLAYGROUND COMMISSION.

ATTEST:

CHAIRMAN

SECRETARY

Effective this 28th day of September 2023

Action Report for St. Andrew's Parish Parks and Playground Commission

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the full action plan. Below are the proposed projects additional to the action plan of Charleston County.

The following are proposed hazard mitigation projects to be undertaken or continued by the St. Andrew's Parish Parks and Playground Commission for during 2023 - 2024 and their status through April 2023.

(Abbreviations: PP***- Property Protection;*** NB***- Natural Benefits;*** PI***- Public Information, PA – Preventive Activities)***

St. Andrew's Parish Parks and Playground Commission Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals***	***Status***	***Milestones Achieved***
	Priority	***Responsible Agency***	***and Objectives***	***Implementation Schedule***	***and Future Plans***
Continue to update and inform employees of hazardous weather conditions as outlined in the Hurricane Plan.	PP	General Fund	Protecting the lives of St. Andrew's staff from natural hazards.	Ongoing	Biweekly staff meetings.
	1	St. Andrew's		Continuous Process	
Continue maintaining permanent open space as parks.	NB	General Fund	Preserve environmental resources; promote long-term economic prosperity; encourage recreational activities.	Ongoing	Parks receive daily maintenance and repair.
	1	St. Andrew's		Continuous Process	
Continue to distribute and provide a Safety and Security Manual that deals with severe weather conditions and hazardous materials.	PA	General Fund	Education of employees on safe practices.	Ongoing	There is 24/7 access to the internal document site.
	2	St. Andrew's		Continuous Process	
Prepare and provide park facilities that may be used for tent cities for those who have lost their homes due to extreme weather conditions.	PI	General Fund	To provide park facilities.	Ongoing	Weekly mowing and maintenance occurs in park facilities.
	2	St. Andrew's		Weekly mowing and maintenance	

St. Andrew's Parish Parks and Playground Commission Hazard Mitigation Actions					
Mitigation Action and Description	***Type***	***Funding Source***	***Goals***	***Status***	***Milestones Achieved***
	Priority	***Responsible Agency***	***and Objectives***	***Implementation Schedule***	***and Future Plans***
Continue involvement in local hazard mitigation initiatives providing information to St. Andrew's Parish Parks and Playground Staff.	PI	General Fund	Protect the lives of agency staff.	Ongoing	Frequent meetings and emails disseminate this information.
	2	St. Andrew's		Meetings and emails	
Accelerate agency's Hazard Tree identification program. Identify and remove problem tress.	PP	General Fund	Preserve environmental resources; minimize future hurricane damage.	Ongoing	Several trees have been removed.
	2	CCPRC		Continuous Process	
Seek funding to retrofit facilities for enhanced hazard resistance, if funding becomes available and suitable projects are identified.	PP	Grant Funding (HMGP)	Reduce vulnerability of infrastructure to natural and man-made hazards; minimize future hurricane damage; minimize future earthquake damage; reduce existing flood damage; preserve historic building inventory; promote long-term economic prosperity.	Ongoing	Regularly check current grant and other funding opportunities to retrofit facilities.
	1	St. Andrew's		Continuous Process	
Continue efforts to flood-proof low lying buildings. Maintain inventory of sand and sandbags to be used in a flood event	PA	General Fund	Protect interior buildings and equipment from water damage	Ongoing	?
	1	St. Andrew's		Continuous Process	
Develop procedures to protect sensitive computer equipment and documents	PA	General Fund	Establish and maintain computer back up schedules and follow established Records Retention and Destruction policy	Ongoing	?
	2	St. Andrew's		Continuous Process	

– St. Andrews Public Service District

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE FEMA-APPROVED 2019 *CHARLESTON REGIONAL HAZARD MITIGATION PLAN AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY ST. ANDREWS PUBLIC SERVICE DISTRICT

Resolution No. 2022-001

WHEREAS the County of Charleston has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston County Council approved the formation of the Charleston Regional Hazard Mitigation Project Committee that has prepared a FEMA-approved *Charleston Regional Hazard Mitigation Plan and Program for Public Information Plan*; and

WHEREAS the *FEMA-approved 2019 Charleston Regional Hazard Mitigation Plan and Program for Public Information Plan* has been widely circulated for review by residents / business organizations / professional organizations of the unincorporated and incorporated areas of Charleston County, state, federal, regional and local government agencies and has been supported by those reviewers; and

WHEREAS the **St. Andrews Public Service District** has adopted the *Charleston Regional Hazard Mitigation Plan and Program for Public Information Plan*, most recently readopted it in 2022, and is required to adopt the amended version of this plan on a five-year cycle for the **St. Andrews Public Service District** to remain eligible for certain Federal programs in which the **St. Andrews Public Service District** participates; and

NOW THEREFORE be it resolved that:

1. The *FEMA-approved 2019 Charleston Regional Hazard Mitigation Plan and Program for Public Information* is hereby adopted as an official plan of the St. Andrews Public Service District, and

2. The Charleston Regional Hazard Mitigation Project Committee is recognized as a continuing entity charged with reviewing, maintaining the *Charleston Regional Hazard Mitigation Plan and Program for Public Information Plan* in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Public Information Plan requirements, and periodically reporting on the progress towards and revisions to the plan to the St. Andrews Public Service District.

Effective this 1st Day of August, 2022

Attest: _____

John DeStefano, Commission Chairperson

Action Report for the St. Andrews Public Service District

Following are the proposed projects to be undertaken / continued in the St. Andrews P.S.D. for hazard mitigation during May 2023 - April 2024 and their status from May 2022-April 2024.

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the full action plan. Below are the proposed projects additional to the action plan of Charleston County.

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, and "PI" is Public Information Activities, "GIS" is Geographic Information Systems Activities.)

The following terminology is used to update the current status of each proposed project, as suggested by FEMA: "New", "Ongoing", "Continuous Process", "Deleted", and "Completed".

Hazard Mitigation Goals and Objectives

Goal 1: Provide Fire Prevention Training and Complete Fire Inspections

Objective 1.1 Continue employee training in Fire Prevention

Objective 1.2 Conduct training for children and the elderly

Objective 1.3 Complete Fire Inspections of all PSD Businesses

Objective 1.4 Educate the public regarding vulnerability to hazards and Steps to reduce vulnerability

Goal 2: Protect Lives, Property and the Environment

Objective 2.1 Protect lives and environment from man-made hazards

Objective 2.2 Minimize future hazardous materials incidents

Objective 2.3 Minimize future terrorist incidents

Objective 2.4 Keep PSD Officials aware of on-going major emergencies

Objective 2.5 Enhance preparedness and response for hazard events and Emergency incidents

St. Andrews P.S.D. Hazard Mitigation Actions					
Mitigation Action and Description	*Type* *Priority*	*Funding Source* *Responsible Agency*	*Goals and Objectives*	*Status* *Implementation Schedule*	*Milestones Achieved and Future Plans*
Continue training courses to educate the public in regards to natural fire hazards and how to minimize fire damage	PA 1	General Budget Fire Prevention And Inspections	1.1, 1.2, 1.4	Ongoing Continuous Process	SAPSD was designated a "Fire Safe Community" as a part of the "Fire Safe South Carolina" initiative of the SC State Fire Marshal's Office. SAPSD's Fire Marshal's Division continues to manage a robust smoke alarm installation program, including multiple annual neighborhood smoke alarm blitzes and home fire safety education programs.
Promote a voluntary program of all Fire Prevention codes and fire hazards	PP, PI, PA 1	General Budget Fire Prevention And Inspections	1.1, 1.3, 1.4	Ongoing Continuous Process	The Fire Marshal's office will continue to complete inspections of existing business as well as new businesses. We will inspect all businesses within SAPSD annually and educate the owner/occupant of all related hazards.
Participate in "Hazardous Awareness Week" and "Fire Prevention Month"	PP, PI 1	General Budget Fire Prevention And Inspections	1.2, 1.4	Ongoing Continuous Process	We will continue to conduct training and education for the public in our fire stations, in local schools, and at numerous public events.
Continue programs aimed towards providing resources to local schools to enhance their ability to educate students regarding hazard	PP, PI 1	General Budget Fire Prevention	1.2, 1.4	Ongoing Continuous Process	We provide fire prevention materials to help the students learn in a manner consistent with their learning level

events and hazard event preparation		And Inspections			

St. Andrews P.S.D. Hazardous Mitigation Actions					
Mitigation Action and Description	***Type*** Priority	***Funding Source*** Responsible Agency	***Goals and Objectives***	***Status*** Implementation Schedule	***Milestones Achieved and Future Plans***
Continue participating in the Project Impact Program for Public Information (PPI) to achieve maximum public outreach	PI 1	General Budget Admin personnel	1.4	Ongoing Continuous Process	Establishing cooperative relationships between public, private and non-profit sectors to enhance preparedness and recovery for hazard events; educating citizens regarding their vulnerability to natural hazards and steps to take to reduce vulnerability
Continue Hazardous materials training and terrorism response training	ES 1	General Budget Training Division	2.2, 2.3, 2.5	Ongoing Continuous process	Conduct annual refresher training and initial training for new and existing employees
Provide a member of our staff to report to the County EOC in the event of a major emergency incident and/or set up a MEOC at our location	ES 1	General Budget Admin Personnel	2.4, 2.5	Ongoing In place	We have established an Incident Management Team and Emergency Operations Center. We continue to fortify relationships with both public and private stakeholders. We also continue to update SAPSD officials regarding ongoing situations and operational needs.
Continue responding as an all hazards agency	ES 1	General Fund Fire Suppression and Operations Personnel	1.4, 2.1, 2.5	Ongoing Continuous process	Protecting lives and property; enhancing our response for hazardous events; educating citizens regarding vulnerability to hazards

St. Andrews P.S.D. Hazard Mitigation Actions					
Mitigation Action and Description	*Type* *Priority*	*Funding Source* *Responsible Agency*	*Goals and Objectives*	*Status* *Implementation Schedule*	*Milestones Achieved and Future Plans*
Continue working to attain resources and to provide training for maritime firefighting through the Maritime Incident Response Team (MIRT).	ES	General Budget	2.5	Ongoing	We have established a heavy rescue company and we began partnering with the South Carolina USAR system as a part of SC Task Force 3. We will continue to support the SC USAR system as a member of Task Force 3, continue to train new and existing members, and seek grant funding for additional equipment to support this objective.
	1	Training Division and MIRT team members		Continuous Process	

– St. John's Fire District Commission

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE REVISED *CHARLESTON REGIONAL HAZARD MITIGATION PLAN* BY THE ST JOHNS FIRE DISTRICT

WHEREAS the County of Charleston has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation Plan*; and

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

WHEREAS the St Johns Fire District has adopted the *Charleston Regional Hazard Mitigation Plan* and is required to adopt the amended version of this plan on a five-year cycle for the District to remain eligible for certain Federal programs in which Charleston County participates, and

NOW THEREFORE be it resolved that

1. The *Charleston Regional Hazard Mitigation Plan* is hereby adopted as an official plan of the St Johns Fire District, and

2. The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to the St Johns Fire District.

Effective this 13th Day of May, 2019

Colleen Walz, Fire Chief

Eric P. Britton, Commission Chair

Action Report for the St. John's Fire District

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the full action plan. Below are the proposed projects additional to the action plan of Charleston County.

The St. John's Fire District is a special purpose district located in Charleston County, SC. The St. John's Fire District is a full service fire department providing fire suppression, EMS fire response (non-transport), HAZMAT, marine rescue, confined space, prevention, and inspection services. As we are a specialized service, all other functions of government are accomplished by Charleston County and three municipalities (Kiawah, Seabrook, and Rockville) within our jurisdiction.

The following are proposed projects to be undertaken/ continued in the St. John's Fire District for hazard mitigation during 2023 - 2024 and their status through April 2023 (A Status of "Continuing" refers to activities, which are regularly evaluated and conducted on an ongoing basis as part of established departmental processes. These activities span the entire 5-year planning cycle and have no specified end date.)

(Abbreviations for "Type" are as follows: "PA" is Preventive Activities, "PP" is Property Protection Activities, "NB" is Natural and Beneficial Functions/Resource Preservation Activities, "ES" is Emergency Services Activities, "SP" is Structural Projects Activities, "PI" is Public Information Activities, and "GIS" is Geographic Information System Activities.)

St. John's Fire District					
Mitigation Action and Description	*Type* / *Priority*	*Funding Source* / *Responsible Agency*	*Goals and Objectives*	*Status* / *Implementation Schedule*	*Milestones Achieved and Future Plans*
Community Risk Reduction through Public Education and Proactive programs	PA, PP, PI	General Fund Grant Funding	2.1, 2.2, 3.2	Ongoing	Continue bi-weekly citizen SAFE program. Participation in 50% of county events that promote safety and disaster awareness. Participate in 50% of the child safety seat events in the county. Offer child safety seat curse to qualify more installers/inspectors in the county. Increase involvement at the County level with building plans review20% by Dec. 2019.
	2	Fire Prevention Division		In Place	
Natural disaster preparation and response	ES, PA, PI	General Fund Grant Funding	1.1, 1.2, 1.3, 1.5, 1.6, 3.1, 3.2	Ongoing/New	Update preparation and response to natural disaster policies by Dec 2018. Consider flood mitigation

	2	Administration, Operations, Training		In place/In process	processes to minimize future flood damage to our existing facilities by Dec 2020. Institute a drone program that will assist with real-time information of post disaster situations that have little to no vehicle access By June 2019.
Emergency Medical service delivery enhancement	ES	General Fund Grant Funding	1.5, 2.1	New	Department wide EMT Basic certification for Operations personnel to 75% by Dec 2019. Implement medical squad response units for more efficient response to medical incidents. Purchasing of advanced medical care equipment for response and training.
	1	Operations, Training		Continuing process	
Active Shooter/Act of Violence response	ES	General Fund Grant Funding	2.1	New	Training for all uniformed department personnel in active shooter/act of violence response by Dec 2018. Purchase, and place in service ballistic vests for apparatus and command vehicles by Dec 2018.
	1	Operations, Training		In Process	
Provide speakers to civic groups regarding District operations	ES, PI	General Fund	2.1, 2.2	In Place	We provide speakers and public education for all requested events as well as standing annual events. This is facilitated via the Fire Marshal Division
	1	Fire Prevention Division		Continuing process	
Support "Hazard Awareness Week"	ES, PI	General Fund	1.1, 1.2, 1.3, 1.5, 2.1, 2.2	In Place	We participate annually in this event. Now it is a combined event with Kiawah and Seabrook islands
	2	Administration		Continuing process	
Seek funding for retrofitting critical facilities to enhanced hazard resistance if funding sources become available	ES, PP	Grant Funding	1.2, 1.3, 1.6, 2.3, 3.2	Deferred	Will always consider upgrading facilities to protect against damage. Will attempt to fund through grants as necessary
	1	Administration			
Include construction	ES, PI	General Fund	1.1, 2.1, 2.3, 3.1	In place	UPDATE: In the design of our new facilities we have

practices that are sensitive to flood, seismic and hurricane considerations on all new or upgraded facilities	1	Administration Fire Prevention		Continuing process	addressed considerations for seismic and flood damage prevention.
Continue Terrorist Response Training	ES	General Fund Grant Funding (HMGP)	2.1, 2.2, 2.3, 3.1, 4.1	In Place	Continue development of regional response team through training opportunities identified by the CC HAZMAT office
	2	CC HAZMAT Coordinator Training Division, CCSC		Continuing process	

– St. Paul's Fire District Commission

Resolution for Adoption

A RESOLUTION FOR THE ADOPTION OF THE AMENDED 2023-2024 *CHARLESTON REGIONAL HAZARD MITIGATION AND PROGRAM FOR PUBLIC INFORMATION PLAN* BY ST. PAULS FIRE DISTRICT

Resolution No. 2023-01

WHEREAS the St. Paul's Fire District has experienced the effects of natural and man-made hazard events; and

WHEREAS the Charleston Regional Hazard Mitigation and Public Information Plan Committee has prepared a recommended *Charleston Regional Hazard Mitigation and Program for Public Information Plan*; and

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

WHEREAS the County of Charleston originally adopted the *Charleston Regional Hazard Mitigation Plan* in 1999 and readopted it in 2004, 2008, 2013, and 2017, and is required to adopt the amended version of this plan on a five-year cycle for the County to remain eligible for certain Federal programs in which St. Paul's Fire District participates; and

NOW THEREFORE be it resolved that

The *Charleston Regional Hazard Mitigation and Program for Public Information Plan and all required future revisions from the South Carolina Emergency Management Division and the Federal Emergency Management Agency* is hereby adopted as an official plan of the County of Charleston. While content related to Charleston County may require revisions to meet the plan approval requirements, changes occurring after adoption will not require St. Paul's Fire District to re-adopt any further iterations of the plan; and

The Charleston Regional Hazard Mitigation and Public Information Plan Committee is recognized as a continuing entity charged with reviewing, maintaining in accordance with Community Rating System, Flood Mitigation Assistance, Disaster Mitigation Act and Program for Public Information requirements, and periodically reporting on the progress towards and revisions to the plan to St. Paul's Fire District and Charleston County Council.

Effective this 15 Day of DECEMBER , 2023
Signed: _____ Chief, St. Paul's Fire District

Action Report for the St. Paul's Fire District

This jurisdiction is fully serviced by Charleston County. Please refer to Section 7.1 for the full action plan. Below are the proposed projects additional to the action plan of Charleston County.

The following are proposed projects to be continued in the St. Paul's Fire District for hazard mitigation during 2023-2024 and their status through April 2023.

The St. Paul's Fire District is a Special Purpose Tax District located in Charleston, SC. The District was established as an emergency service District for the purposes of fire protection and suppression, first responder medical response, hazardous materials response, and response to man-made and natural disasters.

The District has no ordinance adopting authority and is a rural agriculture area of low to moderate-income levels, and low population (12,707 per 2000 Census). Due to these factors, the District is very limited in its resources and authority regarding Hazard Mitigation Planning. The District's role would be mostly supportive in regards to Non-Emergency Services Activities. The District would be proactive and reactive regarding Emergency Services, with utilizing additional resources through Charleston County Emergency Action Plans.

(Abbreviations for "type" are as follows: "PA" is Preventive Activities, "ES" is for Emergency Services Activities, and "PI" is Public Information Activities)

Hazard Mitigation Goals and Objectives	
Goal 1: Mitigate natural hazard damage	
Objective 1.1	Minimize future flood damage
Objective 1.2	Minimize future earthquake damage
Objective 1.3	Minimize future hurricane damage
Objective 1.4	Minimize future wildfire damage
Objective 1.5	Minimize future tornado-related loss of life
Objective 1.6	Reduce existing flood damage
Goal 2: Increase public preparedness and protection	
Objective 2.1	Protect the lives of our citizens from natural and man-made hazards
Objective 2.2	Educating citizens regarding steps to take to reduce vulnerabilities
Objective 2.3	Promote long-term prosperity
Goal 3: Improve infrastructure	
Objective 3.1	Improve hazard resistance of infrastructure
Objective 3.2	Reduce vulnerability of our infrastructure to natural and man-made hazards
Goal 4: Increase environmental well being	
Objective 4.1	Preserve environmental resources
Objective 4.2	Improve water quality
Objective 4.3	Preserve open space
Objective 4.4	Encourage recreational activities

St. Paul's Fire District Hazard Mitigation Actions					
Mitigation Action and Description	**Type** / **Priority**	**Funding Source** / **Lead Agency**	**Goals and Objectives**	**Status** / **Implementation Schedule**	**Milestones Achieved and Future Plans**
Support Adoption of any Charleston County or Incorporated Town (within SPFD) standards, regulations, codes, or programs regarding Hazard Mitigation Activities	PA	General Fund	2.1, 1.1-1.5	Ongoing	We have an active fire inspection program that is also used in public education of codes and safe practices in local churches, community centers and business. In the past year added two public fire and life safety educators.
	2	Administration/ Department *Fire Inspectors*		Continuous Process	
Continue membership in the Emergency Council, which supports the Charleston County Emergency Plan.	ES	General Fund	1.1-1.6, 2.1-2.3, 4.1	Ongoing	Purchasing new 800 radios in 2018/2019 budget year with county partnership program. Provide equipment and manpower as needed or that may be requested by local agencies.
	1	Commission Chairman / *Fire Chief*		Continuous Process	
Work with local jurisdictions to form multi-disciplined task forces of specially trained police, fire and EMS personnel to respond to any natural or man-made disasters.	ES	General Fund	2.1, 2.3, 3.1, 3.2	Ongoing	We are training with Charleston County Ems and sheriff department with the active shooter program. Department has secured a high water vehicle and a boat to provided rescue services to the public trapped by flood waters.
	1	Administration / *Fire Chief*		Continuous Process	
Provide speakers to civic groups regarding District operations, and the many supporting programs through Charleston County Government.	PI	General Fund	2.2	Ongoing	We have public fire education speakers that are called on by the community to speak at schools, local businesses, local community centers and churches. We also provide a smoke trailer for public education at community events and schools on fire

St. Paul's Fire District Hazard Mitigation Actions					
Mitigation Action and Description	**Type**	**Funding Source**	**Goals and Objectives**	**Status**	**Milestones Achieved and Future Plans**
	Priority	**Lead Agency**		**Implementation Schedule**	
	3	Administration Department *Fire Inspectors*		Continuous Process	prevention and exit drills. In addition our fire and life safety educators provides information on earthquake and hurricanes.
Seek funding for retrofitting Commission-owned facilities for enhanced hazard-resistance, if funding becomes available	PA	Grant Funding (HMGP)	1.2, 1.3, 1.6, 2.3, 3.2, 4.3	Ongoing	This would be beyond our budget capability currently seeking funding for that addresses the concerns.
	1	Administration / *Commission*		Continuous Process	
Continue participating in the Project Impact Program for Public Information (PPI) to achieve maximum public outreach.	PI	General Fund	2.2, 3.2	Ongoing	We have public fire education speakers that are called on by the community to speak at schools, local businesses, local community centers and churches.
	1	Building Inspection Services/ Project Impact committee members		Continuous Process	

The St. Paul's Fire District shall provide support to the many activities and projects that will benefit the residents of the District. Additional recommended projects may be added to this action plan as they are made available and recommended to the St. Paul's Fire District Commission. Some projects that are being undertaken by other jurisdictions may not necessarily be listed here but may affect the St. Paul's Fire District.

Section 8 Appendices

This section provides additional documentation to the *Charleston Regional Hazard Mitigation Plan*. It includes the following subsections:

- A.1 Public Information Plan (PIP)
- A.2 Overview of the Community Rating System
- A.3 Overview of Project Impact
- A.4 Participation
- A.5 Public Meeting Notices
- A.6 Previous Yearly Meeting Minutes
- A.7 Hazard Mitigation Plan Summary of Changes 2022
- A.8 Impact Statements
- A.9 Complete Hazard Histories
- A.10 Flood Zone Descriptions
- A.11 Flooding Extent
- A.12 Liquefaction Potential Maps
- A.13 Wildfire Intensity Maps

– Overview of the Program for Public Information (PPI)

The Program for Public Information is a dynamic document with its purpose to act as a guidebook for appropriate Committees pertaining to the *Charleston Regional Hazard Mitigation Plan* and Project Impact to be able to update both efficiently and accurately the guidelines, procedures, and projects on educating the public and broadcasting and sharing new information critical to the area. To achieve this, the Plan outlines criteria necessary for the Committee to make these decisions such as the community needs assessment, the flood hazard and insurance assessment, and the repetitive loss assessment. With this Plan, the Committees can create outcomes and opportunities for public education, including but not limited to, expos, access to information electronically, brochures, and community wide access and education through the participation of sixteen (16) jurisdictions within Charleston County.
Below is the Public Information Plan in full:

Charleston Regional Hazard Mitigation Plan

Appendix A.1 to the Charleston Regional Hazard Mitigation Plan

Program for Public Information

Charleston County
Building Inspection Services
4045 Bridge View Drive STE A311
North Charleston, SC 29405
843-202-6940

***Link to the Charleston Regional Hazard Mitigation Plan*:**
http://www.charlestoncounty.org/departments/building-inspection-services/files/Hazard-Mitigation-Plan.pdf

Charleston County, South Carolina

Program for Public Information

Purpose

The Program for Public Information (Plan) is a dynamic document with its purpose to act as a guidebook for appropriate Committees pertaining to the *Charleston Regional Hazard Mitigation Plan* and Project Impact. The Program for Public Information focuses on the ability to update both efficiently and accurately the guidelines, procedures, and projects on educating the public and broadcasting and sharing new information critical to the area. To achieve this, the Plan outlines criteria necessary for the Committee (Tables 1-3) to make these decisions such as the community needs assessment, the flood hazard and insurance assessment, and the repetitive loss assessment. With this Plan, the committees can create outcomes and opportunities for public education, including but not limited to, expos, access to information electronically, brochures, and community wide access and education through the participation of sixteen (16) jurisdictions within Charleston County.

Background

The Charleston County area has historically survived numerous natural and man-made disasters with resilience and an urgent need to prevent or minimize the impact of future events. The community resistance to prevent problems made it very easy to create a community-wide program to educate residents and reduce the impact of future events. In 1987, the creation of a hazard mitigation plan was developed to support an application to participate in the FEMA Project Impact Program. Charleston County was selected as a Project Impact community in December of 1988. As originally created, the program required the establishment of a hazard mitigation plan. The framework of implementing the program was an advisory committee including both a Hazard Mitigation Plan Committee and a Public Information Committee which continues on today as one joint committee.

The **goals** of this plan include but are not limited to:

1. Protecting the lives of our citizens to the best of our abilities from natural and man-made environmental hazards.
2. Assessing the extent of our vulnerability to natural and man-made environmental hazards.
3. Establishing cooperative relationships between the public, private and non-profit sectors to enhance our preparedness, response, recovery, and mitigation for hazard events.
4. Educating our citizens regarding their vulnerability to natural hazards and steps which may be taken to reduce that vulnerability.

5. Reducing vulnerability of our infrastructure and built environment to natural and man-made environmental hazards through specific mitigation projects that will also consider the historic and environmental resources of our area.

The *Charleston Regional Hazard Mitigation Plan* has been a multi-jurisdictional plan since the Project Impact program was utilized to promote the outreach program and assist with implementing the Action Plans of the *Charleston Regional Hazard Mitigation Plan*. In 2012, the Hazard Mitigation & Program for Public Information Committees, which were once separate, were combined and became the Hazard Mitigation & Program for Public Information Committee. In 2013, the *Charleston Regional Hazard Mitigation Plan* refined the roles of the overall Committee to comply with the Program for Public Information requirements of the 2013 Community Rating System. The Program for Public Information is included as an appendix of the *Charleston Regional Hazard Mitigation Plan*. The Program for Public Information will be updated yearly and is voted on and adopted by all jurisdictions' Councils. The *Charleston Regional Hazard Mitigation Plan* is formally adopted by all jurisdictions on a 5- year cycle and Charleston County Council is notified of the annual updates between formal adoptions. The most recent formal adoptions took place in 2019. Please see the Hazard Mitigation Plan (HMP) for Charleston County for each jurisdiction's adopting resolution.

Charleston County has participated in the Community Rating System (CRS) since 1994. The Community Rating System is a part of the National Flood Insurance Program (NFIP). Currently, Charleston County is a CRS Class 3 community, providing residents of Charleston County up to a 35% discount on flood insurance premiums. In an effort to increase public awareness and education, the County has implemented a Program for Public Information based on the past eight years of work created and implemented by the Committee and the County. The final draft of the Program for Public Information was submitted to the insurance liaison of FEMA Region V requesting any comments on the draft document. The document was formally adopted by the Hazard Mitigation & Program for Public Information Committee during the adoption of the *Charleston Regional Hazard Mitigation Plan* in 2019.

Hazard Mitigation & Program for Public Information Committee

The Hazard Mitigation & Program for Public Information Committee is a large group of individuals working to ensure that the Program for Public Information maintains an effective system of providing the public with valuable information in regards to local hazards and mitigation efforts. The Program for Public Information is a program to provide information to target audiences and the public in general about local hazards; how to prepare for, what to do in the event of, and how to recover from, potentially dangerous events that could affect our area. The Committee has been in place since the inception of the Project Impact program resulting in the Committee building on their experiences and their knowledgebase of the best methods for informing the public. The following tables identify current members of the Charleston Regional Hazard Mitigation & Program for Public Information Committee. This Committee is responsible for amending the *Charleston Regional Hazard Mitigation Plan* which includes the duties of amending the Program for Public Information. These members provide perspectives from different jurisdictions, areas of study or interests, government and non-government agencies, real estate and insurance agencies, and stakeholders and concerned citizens from flood-prone areas. In order to be included in the *Charleston Regional Hazard Mitigation Plan*, each jurisdiction has designated members assigned to the Committee to represent different areas concerned within Charleston County. The *Charleston Regional Hazard Mitigation Plan* encompasses sixteen (16) jurisdictions, most of which participate in the CRS Program. Table 1 lists the jurisdictional designated members of the Committee, what jurisdiction they represent and their associated CEO.

Table 1: Designated Members of the Committee

Jurisdiction	CEO	Designated Member
Town of Awendaw	Miriam Green, Mayor	Takeya White, Town Planner
Town of Hollywood	Chardale Murray, Mayor	Hakim Bayyoud, Director, Building Inspection Services
Town of James Island	Brooke Lyon, Mayor	Mike Hemmer, Executive Assistant to the Mayor
Town of Lincolnville	Enoch Dickerson, Mayor	Enoch Dickerson, Mayor
Town of McClellanville	Rutledge B. Leland, III, Mayor	Michelle McClellan, Town Clerk
Town of Meggett	Harry V. Herrington, Mayor	Stephanie Smith, Town Administrator
Town of Ravenel	Stephen W. Tumbleston	Jason Moffit, Codes Enforcement/ Grounds & Facilities
Town of Rockville	Riley A. Bradham, Mayor	Hakim Bayyoud, Director, Building Inspection Services
Town of Seabrook Island	Bruce Kleinman, Mayor	Joseph Cronin, Town & Zoning Administrator
City of Charleston	William S. Cogswell Jr, Mayor	Ben Almquist, Director, Emergency Management
City of Folly Beach	Tim Goodwin, Mayor	Eric Lutz, Building Official
Town of Kiawah Island	John D. Labriola, Mayor	Bruce Spicher, Community Services Director
City of Isle of Palms	Phillip Pounds, Mayor	Matt Simms, Zoning Administrator
Town of Mt. Pleasant	Will Haynie, Mayor	Shannon Whitehead, Emergency Management and Resilience Officer
City of North Charleston	Reginald L. Burgess, Mayor	Toyah Smith, Floodplain Manager
Town of Sullivan's Island	Patrick O'Neal, Mayor	Max Wurthmann, Building Official
Unincorporated Charleston County	Bill Tuten, Administrator	Hakim Bayyoud, Director, Building Inspection Services

Members of the Project Impact committees also provide input into the process as they determine projects to perform under this initiative. These communities have broad-scale representation from multiple public, private, and non-profit organizations with an interest in hazard mitigation in the Charleston County Area.

With such a diverse group of Committee members, the Charleston Regional Hazard Mitigation & Program for Public Information Committee aspires to evaluate public information needs from all areas of interest. Stakeholders involved in the Charleston Regional Hazard Mitigation & Program for Public Information Committee come from various businesses, organizations and other government agencies outside the community that hold special interest in the hazard mitigation process of Charleston County. Other stakeholders involved in the Committee represent floodplain residents, emergency responders, utility companies, business organizations, trade associations, environmental organizations, insurance agencies and

lenders as well as major employers of the area. The Charleston Regional Hazard Mitigation &

Program for Public Information Committee includes seventy (70) stakeholder members, which makes up more than half of the voting Committee of eighty-five (85). Table 2 lists individual non-government stakeholder members of the Charleston Regional Hazard Mitigation & Program for Public Information Committee.

Table 2: Stakeholder Members of the Committee

Name	Representing
Shawn Engelman, Deputy Chief of Administration	James Island PSD
Chris Seabolt, Fire Chief	James Island PSD
Michael Herman, Safety and Risk Coordinator	North Charleston District and Sewer District
Brian Rollinson, Chief	St. Andrews PSD
Christie Holderness, District Manager	St. Andrews PSD
Gavin Gilcrease, Administrative Assistant Chief	St. John's Fire District
Otis Ackerman, Fire Marshal	St. Paul's Fire District
Truss Johnson, Assistant Fire Chief	St. Paul's Fire District
Mark Cline	Charleston Water System
Michele McCutchen	Charleston Water System
Ronnie Freeman, Safety Director	Mt. Pleasant Water Works
Patty Newshutz, Director of Planning and Capital	Charleston Co Parks & Recreation Commission
Josh Blackstone, Safety Compliance Director	Charleston Co Parks & Recreation Commission
Frank Stefan, Director of Operations	St. Andrews Park & Playground Commission
Susan Klugman, CFO	St. Andrews Park & Playground Commission
Michael Reidenbach, Security & Emergency Management	Charleston County School District
Brock Clary	Charleston County School District
John Morris, VP for Facilities	College of Charleston
Chip Searson, AVP for Public Safety	College of Charleston
Norm Levine	College of Charleston
Cliff Hamilton, Dir. Envir Health & Safety	College of Charleston
Stephanie Palmer, Emergency Management	Roper St. Francis
Anne Sass, Grants Director	Roper St. Francis
Scott Curtis	The Citadel
David Kent	Real Estate Agent
Landon Knapp	SC Sea Grant
Michael Bowers	Awendaw Fire Department
Gene Coker	SC Ports Authority
Kathryn Basha	BCDCOG
Alex Butler	SC Office of Resilience
Liz Fly	The Nature Conservancy

Mike Horton	Davis and Floyd
Adam Bode, Coastal Services Project Manager, Planning	SC DHEC - OCRM
Cedric Green	SCANA
Debbie Eckard	Charleston Soil and Water Conservation
David Ellis	Charleston Home Builders Association
Chris Silcox, Insurance Agent	C.T. Lowndes & Co.
Buddy Smith	Floodplain Resident
Bill West	Floodplain Resident
Thomas Payne	Floodplain Resident
Aleen Kinter	Floodplain Resident
Julie Hensley	Floodplain Resident
Nicole Elko	Floodplain Resident
Robert Cochran	Floodplain Resident
Henry Dingle	Floodplain Resident
Anna Kimelblatt Lucas Hernandez	Weston & Sampson Engineers Weston & Sampson Engineers

Table 3 is a listing of other participating partners involved in the Charleston Regional Hazard Mitigation & Program for Public Information Committee. Though these are not Stakeholder members of the Committee, they still have a significant place in reaching the goals of the Committee. Also included in this category are Charleston County staff members, including the Public Information Officer, that provide assistance to the Committee and other jurisdictional government members and special district officials that have a special interest in flood and hazard related issues (i.e., public service district officials, parks and recreation commission members, sewer districts, etc.).

Table 3: Other Participating Partners of the Committee

Attachment 3-D: Other Participating Partners of the Charleston Hazard Mitigation Plan and Public Information Committee	
Name	**Representing**
Natalie Lewis	Town of McClellanville
Niki Grimball, Town Administrator	Town of James Island
James Hackett	Town of James Island
*Larry Brown, Town Council	Town of Lincolnville
Charles Gannt, Fire Chief	Town of Lincolnville
*Henry Holst, Town Council	Town of Rockville
Emmanuel Macklin, Code Inspector	Town of Ravenel
Dale Morris, Chief Resiliency Officer	City of Charleston
Jenna Stephens, Environmental Land Use Planner	City of Folly Beach

Desiree Fragoso, City Administrator	City of Isle of Palms
Austin Rutherford, Planner	Town of McClellanville
Daniel Green	Town of Kiawah Island
William Horne	Town of Mt. Pleasant
Frankie Pettit	Town of Mt. Pleasant
Amanda Knight	Town of Mt. Pleasant
Katie Gerling	Town of Mt. Pleasant
David Rushton, Floodplain Manager	City of North Charleston
Joe Henderson, Zoning Administrator	Town of Sullivan's Island
Sean Dove	Charleston County Building Inspection Services
Anna Kimelblatt	Charleston County Building Inspection Services
Luz Agudelo	Charleston County Building Inspection Services
Eric Adams	Charleston County Public Works
Joe Coates	Charleston County Emergency Management
Lori Kidwell	Charleston County Emergency Management
Wes Linker	Charleston County Public Works
Brian Blake	Charleston County Public Works
Chris Wannamaker	Charleston County Public Works
Sally Brooks	Charleston County Zoning and Planning
Kelsey Barlow	Charleston County Public Information Officer
Ben Almquist	City of Charleston, Emergency Management
Daniel Flessas	City of Charleston, Emergency Management
Kinsey Holton	City of Charleston, Stormwater Management
** Denotes other participating partners that are considered alternative voting members in the absence of the designated member.*	

Participation in the Charleston Regional Hazard Plan and Public Information Committee requires attendance of at least one voting member and associated stakeholders. Because of the diverse nature of the Committee, at least two representatives from each jurisdiction are included in the Committee and more than half of the Committee's members are non-government stakeholder members. This diversity allows the Committee to take into account all perspectives of different areas, groups and interests affected by local hazards. Participation from every Committee member is essential in creating and maintaining an effective Program for Public Information because all of the members have an interest and knowledge of hazard mitigation and the importance of public outreach to produce a better outcome after a hazardous event discussed in the overall HMP.

The Committee has met at least twice a year since the creation of the Program for Public Information in 2012. At these meetings, outreach topics are discussed and modified, if

necessary, target audiences and areas are addressed, and outreach projects are reviewed. These messages and topics have been adjusted over the years to suit the area's current informational needs and are listed in a later section of this document. This year's meetings were held on [d], March 21st, April 25th, June 27th, and September 5th, 2024.

Community Needs Assessment

Charleston County is located along the southeast coast of South Carolina and is subject to many different hazards, from localized flooding to major hurricanes and earthquakes. It encompasses approximately 916 square miles of land, marshes, rivers, and wetlands with a coastline that stretches nearly 100 miles along the Atlantic Ocean.

Charleston County is home to an estimated 419,279 people[1]. With a median age of 39.5, most of the county's population is old enough to work and young enough to continue doing so for years to come. 63.4% percent of the county's population is in the civilian labor force, earning a median household income of $80,401. An estimated 11.2 percent of the population lives in poverty[1]. Around 92.9% of Charleston County residents have a high school degree or higher level of education, while 50% hold a bachelor's degree or higher.[2] Caucasian and black races make up approximately 69 percent and 26 percent of the population, respectively[1]. Just over half of the county's population is female.

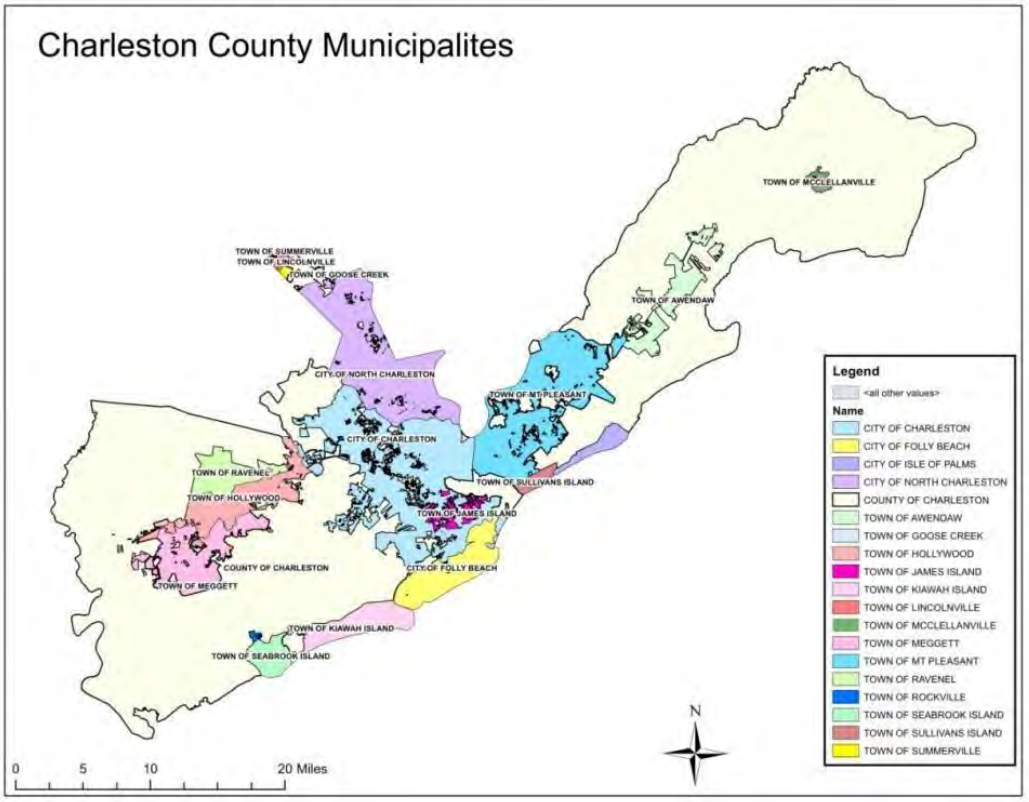
Charleston County consists of the unincorporated areas and the municipalities of the Town of Awendaw; Town of Hollywood; Town of James Island; Town of Lincolnville; Town of McClellanville; Town of Meggett; Town of Ravenel; Town of Rockville; Town of Seabrook Island; the City of Charleston; City of Folly Beach; City of Isle of Palms; Town of Kiawah Island; Town of Mount Pleasant, City of North Charleston; and Town of Sullivan's Island.

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[2] U.S. Census Bureau

[2] U.S. BLS, Current Employment Statistics

[3] These numbers have decreased during the past year due to COVID-19.



The *Charleston Regional Hazard Mitigation Plan* and this Program for Public Information also address the vulnerabilities of the Region to each of the major types of hazards facing the region. Each of the major hazard types are discussed in terms of:

- Types of buildings that are most vulnerable to particular hazards
- Estimation of the total number of buildings vulnerable to flood/hurricane damage
  - 82, 945 buildings in the region are vulnerable to such damage based on their location in *Special Flood Hazard Area*
  - 35, 112 buildings of the total number listed above are also vulnerable due to their date of construction
- Estimated potential building/property losses due to earthquakes and tornadoes
- The types of hazards that pose a threat and in what manner
- Known flood damages
- Past flood impacts
- Emergency warning needs
- Critical facilities
- Natural and beneficial functions of floodplains
- Development and population trends
- Economic impact of hazard events

The overall determination from this section is that the Charleston Region is potentially vulnerable to loss as a result of a hazard event to a relatively high degree, particularly considering the increasing number of residents not necessarily familiar with the types of hazards facing the region and how best to prepare and protect themselves from these hazards. Since tourism plays such a predominant role in the local economy and is often negatively

affected by large-scale hazard events with national media coverage, the possible economic losses associated with a hazard event are potentially high.

Flood Hazards

Flood hazards are of particular importance to the Charleston County area because flooding is caused by many different environmental factors in this area. For example, a heavy rainstorm along with a particularly high tide can easily shut down roads in certain areas. Additional exposure to flooding comes from hurricanes, the fact that much of the area is considered below sea level, seasonally high rainfall amounts, and construction of new developments, which decreases the wooded areas and create the potential for flooding issues. Many drainage projects have occurred over the past few years to reduce the effect that the drainage system has on flood potential.

Flood Insurance Assessment

A flood insurance assessment has been performed for Charleston County to evaluate the participation in current flood insurance coverage, determine new avenues for public outreach to inform residents of the importance of flood insurance coverage, and assess where increased coverage is essential. The Charleston area community sits near the coast, experiences heavy rains at times, and is below sea level, making the area very susceptible to flooding in some areas more than others. The purpose of performing a flood insurance assessment in the Charleston area is aimed at hazard mitigation while reducing repetitive loss, increasing awareness and preparation, and continuing to evaluate ways to protect the lives of citizens from natural and man-made environmental disasters.

The process to assess flood insurance coverage started with an evaluation of each jurisdiction's total valuation of site-built structures, determining what flood zone structures were in (for both residential and commercial) and preparing a total number of structures located within the Special Flood Hazard Areas as documented in the tables below.

Table 4: Site-Built Structures Valuation Per Jurisdiction

Jurisdiction	Total Value "A" Zones Site-Built Structures (mil$)	Total Value "V" Zones Site-Built Structures (mil$)	Total Value Site-Built Structures Not in the SFHA (mil$)	Total Value of Site-Built Structures Not Flood Zone Coded (mil$)
Unincorporated Charleston County	2,547,013,558	422,496,004	2,011,750,227	1,734,387,127
Awendaw	48,073,600	17,673,600	66,575,501	49,279,201
City of Charleston	7,855,881,058	990,419,992	6,485,985,491	4,635,532,044
Folly Beach	211,202,500	318,562,500	31,035,200	0
Hollywood	211,140,000	0	328,297,200	246,190,100
Isle of Palms	1,239,531,900	533,917,600	10,744,300	7,150,000
James Island	622,428,900	55,418,400	413,920,100	408,845,600
Kiawah Island	2,025,492,300	109,071,700	214,144,200	51,800
Lincolnville	24,448,300	0	53,896,200	41,153,900
McClellanville	93,275,393	11,707,000	5,723,900	887,900
Meggett	147,262,800	362,000	34,646,900	18,371,200
Mount Pleasant	6,234,746,925	703,867,100	6,173,839,100	4,706,816,400
North Charleston	926,295,585	22,186,600	6,162,169,400	5,253,050,000
Ravenel	20,843,300	0	142,501,200	121,601,400
Rockville	8,891,700	11,386,700	4,816,800	4,654,500
Seabrook Island	784,460,400	87,243,900	18,679,700	0
Sullivan's Island	240,319,850	305,613,700	6,281,400	0
Total Region	23,241,308,069	3,589,926,796	22,165,006,819	17,227,971,172

Of these totals, another table was prepared to determine the total number of structures that were site-built prior to 1985 within each jurisdiction to evaluate the percentages of structures located within a Special Flood Hazard Area and constructed prior to 1985. Table 5 below represents pre-1985 structures located within Special Flood Hazard Areas.

Table 5: Percentages of Homes within SFHA's per Jurisdiction

Jurisdiction	Pre-1985 Site-Built Residential Buildings in SFHA	Pre-1985 Commercial Buildings in SFHA	Total Pre-1985 Site-Built Buildings in SFHA	% of All Site-Built Buildings in Jurisdiction Constructed Pre-1985 and in SFHA	Pre-1985 Mobile Homes in SFHA	Total Site-Built Buildings Pre-1985 & Mobile Homes in SFHA
Unincorporated Charleston County	5,838	255	6,093	45	270	6,363
Awendaw	70	8	78	30	5	83
City of Charleston	12,780	1,920	14,700	61	24	14,724
Folly Beach	885	59	944	99	0	944
Hollywood	88	10	98	12	7	105
Isle of Palms	2,036	14	2,050	100	0	2,050
James Island	2,419	33	2,452	59	7	2,459
Kiawah Island	1,615	20	1,635	100	0	1,635
Lincolnville	88	6	94	64	23	117
McClellanville	163	21	184	98	0	184
Meggett	198	16	214	88	14	228
Mount Pleasant	2,306	259	2,565	33	3	2,568
North Charleston	1,646	505	2,151	13	239	2,390
Ravenel	33	5	38	11	20	58
Rockville	59	2	61	87	1	62
Seabrook Island	1,148	5	1,153	100	0	1,153
Sullivan's Island	588	14	602	98	0	602
All Regions	31,960	3,152	35,112	1,098	613	35,725

An analysis was performed to determine the amount of coverage in each jurisdiction, and includes data on the number of policies in force and the number of structures in the Special Flood Hazard Areas. Table 6 is a chart representing this information. Overall, the total amount of coverage for Charleston County is $19,584,548,800 though the number of policies for each jurisdiction ranges from 22 policies to 23,454. The population of each of these jurisdictions ranges drastically, so does the amount of area within the SFHA, which also explains the range in number of policies.

Table 6: Flood Insurance Coverage by Jurisdiction

Jurisdiction	Residential structures in the SFHA (site build)		Commercial Structures in the SFHA (site build)		Total Structures in the SFHA (including site-built and mobile homes)		# Policies in Force	Premium	Total Insurance in Force Pre/Post FIRM	Average Coverage
	A/AE Zone	V/VE Zone	A/AE Zone	V/VE Zone	A/AW Zone*	V/VE Zone				
Town of Awendaw	232	36	18	3	304	40	117	54,140	35,877,500	306,645.30
Unincorporated Charleston County	66,995	7,199	5,737	725	12,709	1,325	11,154	6,668,972	3,319,543,500	297,610.14
City of Charleston	22,446	1,435	3,032	257	25,537	1,694	23,454	18,766,815	6,719,304,100	286,488.62
City of Folly Beach	989	1,203	52	37	1,041	1,240	1,661	1,431,205	452,109,100	272,190.91
Town of Hollywood	494	0	24	0	551	0	385	182,346	126,146,700	327,653.77
City of Isle of Palms	3,385	1,043	225	82	3,610	1,125	3,470	2,325,010	1,023,707,800	295,016.66
Town of Kiawah Island	3,645	74	55	5	3,700	79	3,467	1,558,005	1,053,242,500	303,790.74
Town of McClellanville	335	25	53	1	389	26	204	219,513	58,086,100	284,735.78
Town of Meggett	582	2	31	1	660	3	292	169,555	87,069,900	298,184.59
Town of Mount Pleasant	15,347	1,318	738	225	16,097	1,543	15,458	7,486,596	4,798,511,600	310,422.54
City of North Charleston	2,160	1	818	18	3,790	19	2,406	1,807,390	726,834,900	302,092.64
Town of Ravenel	96	0	19	0	201	0	39	18,443	12,924,600	331,400.00
Town of Rockville	38	37	1	1	40	38	22	23,278	6,826,600	310,300.00
Town of Seabrook Island	2,230	98	33	3	2,263	101	1,926	887,750	579,168,400	300,710.49
Town of Sullivan's Island	503	531	16	12	519	543	791	1,094,823	247,107,500	312,398.86
Town of James Island	2,937	195	67	1	3,021	196	1,156	1,024,908	338,088,000	292,463.67
Totals	122,414	12,197	10,919	1,371	188,813	7,972	66,002	43,718,749	19,584,548,800	n/a

Because the Charleston area includes roughly 66,002 existing policies, it is important to keep the public aware of the importance of flood insurance because this area is still growing drastically. Thousands of new homes are constructed or added on to every year and new residents are moving to the area every day. Keeping new and existing residents informed about flood hazards and flood insurance is an essential part of public information activities due to the vast nature of the hazards in the Charleston County area.

In conclusion, the Committee along with assistance from Charleston County employees, have determined some items that are necessary to improve flood insurance coverage after evaluating the flood insurance assessment. This plan includes:

1. Have a home evaluation:
    a. Review existing elevation certificate
    b. Most Pre-FIRM homes, buildings for which construction or substantial improvement occurred on or before November 15, 1973, or before the effective

date of an initial Flood Insurance Rate Map (**FIRM**), do not have an elevation certificate
    i. Get an elevation certificate

2. Areas that may lower the lowest floor elevation:
    a. Enclosures below Base Flood Elevation (BFE) without flood vents
        i. crawl space
        ii. garage
        iii. storage
        iv. areas under stairs
        v. elevator shaft
    b. Unpermitted living area below BFE

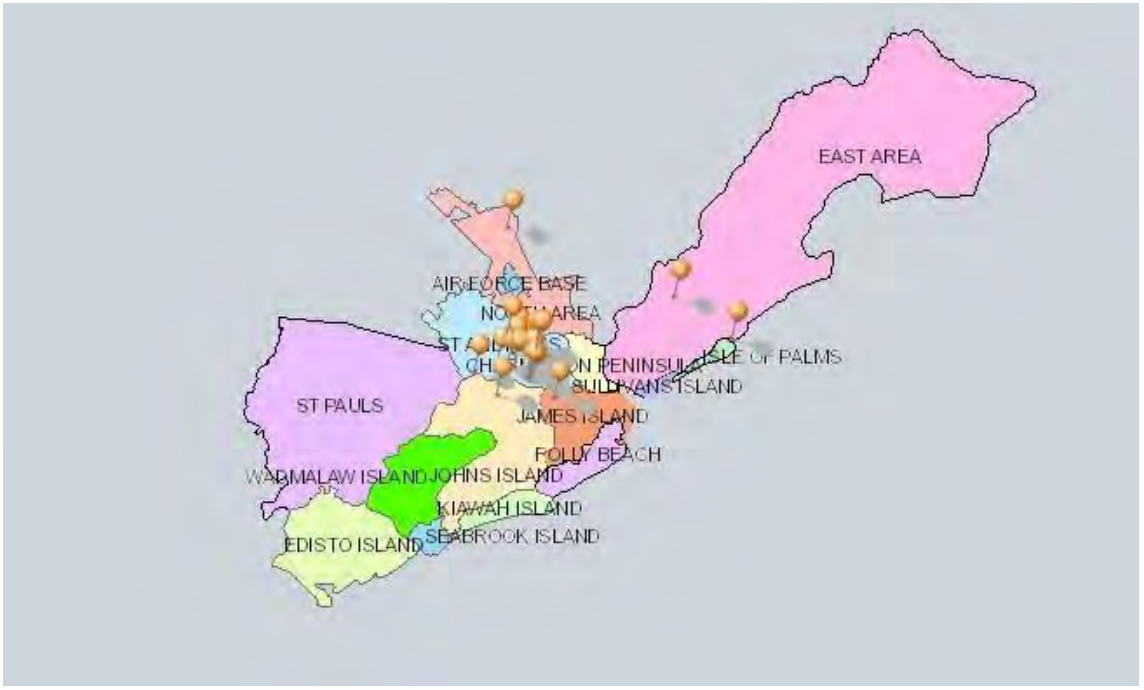
3. After evaluation and elevation certificate review, areas that may need retrofitted:
    a. Elevate finished floor or lowest horizontal structural member
        i. Homes built Pre-FIRM
        ii. BFE changed with map updates
    b. Additional flood vents in enclosure to equal 1 square inch per 1 square foot
    c. Remove unpermitted living space below BFE
    d. Raise mechanical equipment/ductwork
    e. Install flood vents in elevator shaft

4. After retrofit:
    a. Get new elevation certificate
    b. Get new rate on insurance

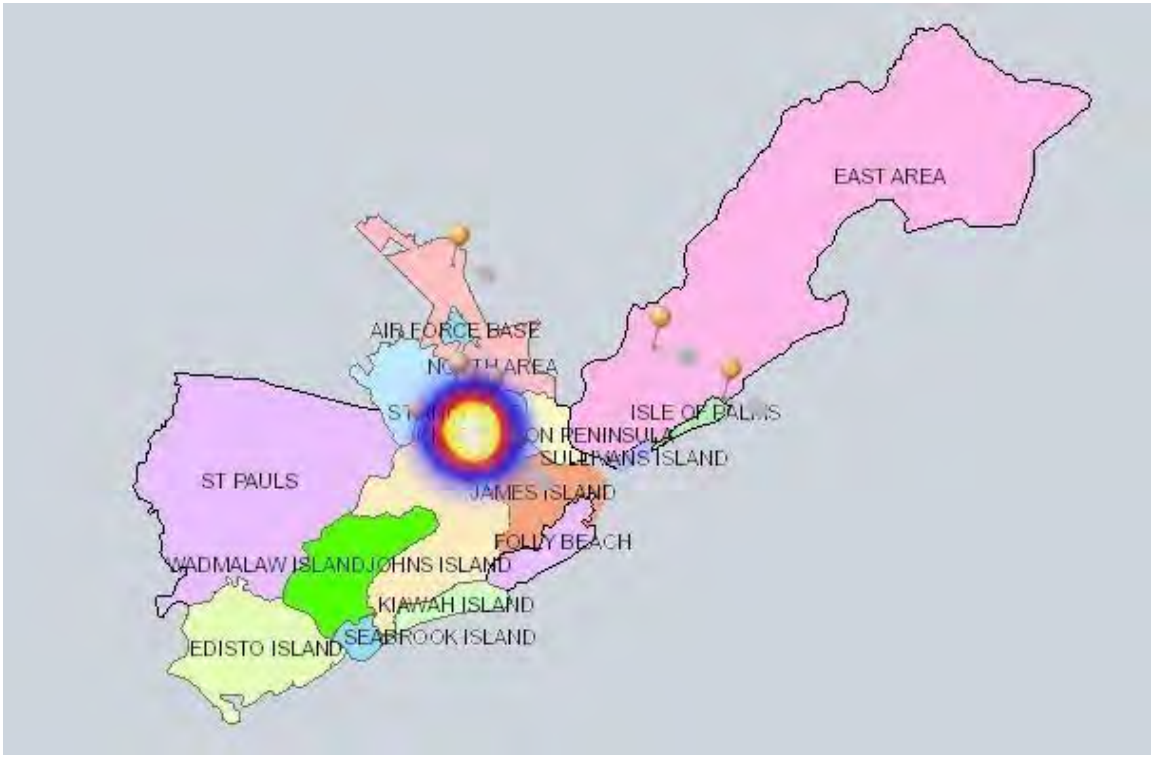
Repetitive Loss Properties

Repetitive loss properties are a serious issue in communities across the United States. Repetitive loss properties drain funds that are needed for preparation of possible catastrophic events, initial rise in the National Flood Insurance's annual revenue losses, and subsequently cause a burden on the National Flood Insurance Program. According to 2022 Repetitive loss data, Unincorporated Charleston County has 130 repetitive loss properties. A thorough review of the specific underlying causes of the repetitive loss properties has been completed, indicating that the majority of properties all had a similar issue- they were equipped with a very poor drainage system surrounding each property. In an effort to increase awareness and work towards reducing this issue, drainage improvement plans have been included in the 2021-2022 *Charleston Regional Hazard Mitigation Plan*. In addition to the drainage improvement projects, individualized outreach continues to take place for these properties to inform residents, affected citizens and/or businesses of the improvement plans in effect to reduce the drainage issues affecting their properties. Map 1 below identifies the locations of repetitive loss properties and Map 2 is a heat map identifying the concentration areas where repetitive loss occurs.

Map 1: Repetitive Loss Map



Map 2: Repetitive Loss Property "Heat Map"



Target Audiences

Based on discussion and agreement from the members of the Hazard Mitigation & Program for Public Information Committee the target audiences and outreach methods are based on providing the most effective means in disseminating the topics and messages established by

the Committee with the goal of reaching and informing the public to the greatest extent possible. The target audiences established by the Committee include the following:

1. General Public
2. Residences and businesses in the Special Flood Hazard Areas (SFHA)
3. Newcomers to the area/ tourists
4. Real Estate and Insurance Agents/ Real Estate Buyers & Sellers
5. Repetitive Loss Area Residents
6. Non-English speaking community
7. Design Professionals/ Contractors
8. Others as determined by the Committee

Outreach Methods

The Committee also established outreach methods that they found to be most effective. The methods include the involvement of local government, but other outreach methods will be completed by non-government stakeholders of the Committee. The established outreach methods include the following:

- Mailers and/ or email
- Expos
- Presentations to specific groups (homeowners' associations, construction associations, school programs)
- Printed Materials (brochures, flyers, booklets, etc.) in public places, expos and presentations
- Social media (Facebook, Twitter, YouTube, Web)
- Charleston County Website
- Newspaper, radio, TV, phonebook ads
- Billboards
- School fairs, conferences and/or demonstration projects
- Training for general public (i.e., CERT and Neighborhood Association Officers)

Existing Public Information Efforts

The Program for Public Information within the *Charleston Regional Hazard Mitigation Plan* has become a roadmap for all community information systems for Project Impact programs. Charleston County became a Project Impact community in 1988 and has set the stage for establishing effective public information methods. Table 7 below describes existing public information activities occurring within Charleston County by different departments, jurisdictions, agencies and businesses.

Table 7: On-Going Public Information Activities

Activity	Type of Organization	Funding Mechanism
Mailing hazard brochures to all residents	Local Jurisdictions, FEMA, SC DNR, US ACOE	General Fund Grant Funding
Providing literature to citizens at offices/places of business	Local Jurisdictions, FEMA, SC DNR, US ACOE, USGS, American Red Cross, S. C. Sea Grant Consortium, DHEC OCRM, media providers	General Fund Grant Funding Donations
Television Advertisements	FEMA, media providers, Corporate sponsors	General Fund Grant Funding Donations
Participating in Hazard Awareness Weeks	Local Jurisdictions, American Red Cross, Corporate sponsors, US ACOE; National Weather Service	General Fund
Newspaper advertisements	Local Jurisdictions, FEMA, American Red Cross, SC DOT, DHEC OCRM	General Fund
Providing speakers for schools/groups	Local Jurisdictions, US ACOE, SC DNR, DHEC OCRM, FEMA, American Red Cross, SC DOT, S.C. Sea Grant Consortium, USGS; National Weather Service	General Fund Grant Funding
Mailing hazard brochures to floodplain residents	Local Jurisdictions	General Fund
Participating in hazard-related/product expos	Local Jurisdictions, American Red Cross, media providers, National Weather Service	General Fund Grant Funding
Providing courses for school children re: hazard preparedness	FEMA, Earthquake Education Center, State Fire Marshal, SC EPD, Local Jurisdictions,	General Fund
Providing hazard-related information on internet web pages	Local Jurisdictions, FEMA, NOAA NWS, SC DNR, US ACOE, USGS, American Red Cross, SC DOT, Sea Grant Consortium, media providers	General Fund
Providing post-disaster educational services, such as but not limited to, literature distribution, media announcements, speaking to groups of residents, etc.	American Red Cross, Local Jurisdictions, FEMA, ACOE, SC DOT, media providers	General Fund Grant Funding

Topics and Messages

The Hazard Mitigation & Program for Public Information Committee has established ten topics with ten or more messages each. These topics and messages were chosen and formulated based on the region's vulnerabilities to hurricanes, tropical storms and associated flooding. Below is a listing of each topic and associated messages:

1. Know Your Flood Hazard

1. Determine if your property is in the Special Flood Hazard Area (SFHA) Zone "A" "AE" or "VE". Contact your local government for a flood zone determination.
2. Check for historical flooding records in your area with your local government or media outlets.
3. Check for existing elevation certificates with your local government or insurance agent.
4. If you need an elevation certificate contact a local land surveyor.
5. Check the depth of the Base Flood Elevation (BFE) above or below building's first floor or above existing grade on a vacant parcel.

6. Get a FIRMette of your location (www.msc.fema.gov) or look at a flood map at your local government offices to determine proximity to a flood hazard area.
7. Check to see if your property is in an area subject to wave action ("V" Zone) or coastal erosion. Contact your local government for assistance.
8. Know the proximity of property to evacuation routes.
9. Determine if property is protected by man-made structures such as levees or dams.
10. Check for localized drainage issues that could result in flooding in your neighborhood.

2. Insure Property for Your Flood Hazard

1. Flood insurance is available through the National Flood Insurance Program; contact your insurance agent for details.
2. All developed properties within the designated flood hazard area should have flood insurance for buildings and contents. Federally backed mortgages must have flood insurance.
3. Most homeowner's insurance policies do not cover flood damage so you will likely need a separate policy.
4. Renters contents are not covered by the building owner's insurance and renters should purchase contents only flood insurance.
5. Property owners should inquire about any discounts that may apply in purchasing flood insurance.
6. If your flood insurance premium increases significantly, make sure your agent is using the correct information to rate your policy.
7. Know when building(s) were constructed, as 'grandfathering' may apply in reducing flood insurance costs.
8. Do not procrastinate; a 30-day waiting is typically required for flood insurance to take effect.
9. Ask questions from insurance agents concerning specific policy information.
10. Research building permit records for history of property improvements.

3. Protect People from the Hazard

1. Be aware of roadways susceptible to flooding during heavy rainfall events, do not drive through flooded areas, flowing or standing water.
2. Pay attention to media (TV, radio, internet) for emergency warnings and instructions.
3. Select an out-of-town contact for family members' in the event local telephone service is disrupted.
4. Designate a location/place where family or people you are responsible for can rendezvous once an evacuation order is issued.
5. Get an evacuation route map for each vehicle and evacuate early if a flood threat is pending.
6. Avoid contact with downed power lines.
7. Check government web sites (fema.gov, charlestoncounty.org) for flood safety information.
8. Stay away from areas subject to flooding during heavy rainfall events – do not wade through standing water.
9. Avoid contact of flood waters as this water may contain toxic materials or venomous animals or insects.
10. Get a weather radio to obtain flood-related weather reports at all times.

4. Protect Your Property from the Hazard

1. Shut off gas service to a building if a flood is imminent.
2. Disconnect electricity at the main disconnect if a flood is imminent.
3. Replace utility machinery above the required flood elevation.
4. Elevate the lowest habitable floor area above the required flood elevation.
5. Landscape in a hazard resistant manner.
6. Make plans for evacuating pets in the event of a flood, as most shelters do not accept pets.
7. Install backflow prevention on plumbing systems susceptible to flooding.
8. Sandbag areas subject to flooding.
9. Provide hurricane protection against wind borne debris for windows and doors.
10. Move valuables to the highest level of a building or evacuate with these when a flood is imminent.
11. Use flood resistant materials in areas below the expected flood elevation to minimize damages.

5. Build Smart

1. Hire design professionals who are familiar with local hazards in preparing construction plans.
2. Consult with your local building department concerning permit requirements.
3. Place buildings in areas with lower flood potential.
4. Obtain permits before you build – permits are required even if the property owner does the work himself/herself.
5. Only hire licensed contractors.
6. Ensure that building inspections are properly arranged and completed.
7. If you are renovating a building, determine if you are performing a substantial improvement ($\geq 50\%$).
8. Check the local flood ordinance for construction requirements.
9. Minimize the use of structural fill in constructing buildings.
10. Obtain a firm written quote from the contractor detailing exact work to be performed; the exact cost and schedule of start and completion of project.

6. Protect Natural Floodplain Functions

1. Protect wildlife habitat areas.
2. Protect dunes – they moderate flooding and erosion.
3. Preserve wetlands – they clean the water, protect us from flooding and provide wildlife habitat.
4. Do not dump anything into the storm drainage system as these discharge into our coastal waters.
5. Every property should plant only native plants, particularly along water bodies.
6. Obtain permission from the South Carolina Department of Health and Environmental Control (SC DHEC) before doing any work near a wetland or dune area.
7. Minimize clearing near wetlands and/or water bodies.
8. Establish buffers and set buildings back from wetlands and/or water bodies.

9. Maintain on-site wastewater treatment systems, such as pumping out of septic tanks, every 3 to 5 years.
10. Do not dump boat sewage into waterways. Use pump-out stations to protect water quality and wildlife habitats.

7. Hurricane Preparedness/Safety

1. Know your evacuation route; obtain published maps.
2. Attach plywood or install commercially manufactured hurricane shutters over windows and patio doors.
3. Evacuate early and follow established evacuation routes when there is a potential hurricane threat.
4. Move valuables and furniture to higher areas of the dwelling.
5. Avoid low lying areas. Seek shelter in the highest areas.
6. Avoid driving if dangerous flooding conditions are imminent.
7. Stay alert to weather advisories and local media broadcast updates.
8. Monitor the track of all hurricanes.
9. Download a copy of the Charleston County Hurricane Guide at www.charlestoncounty.org
10. Make sure you have an emergency kit on-hand and that it is properly supplied.
11. Do not leave anything outside that is not properly anchored. Store items in a garage or shed on an elevated area if possible.

8. General Hazard Preparedness

1. Inventory and photograph your home and business contents and put important papers and insurance policies in a safe place.
2. Have an emergency kit on hand. Check government web sites (fema.gov, American Red Cross, charlestoncounty.org) for items to include.
3. Listen to emergency broadcasts from local media outlets as to when it is safe to return or contact local government authorities prior to returning to property after the storm has passed.
4. Have an emergency generator. Make certain it is properly installed.
5. Have contact information available to properly reconnect utility services (electrical and gas) and licensed contractors you may need if you have damages.
6. Have property inspected to determine the extent of damages.
7. Have insurance agent contact information readily available to file a claim. Understand how to file a claim.
8. If you smell gas upon your return immediately contact your utility company or emergency personnel. If your property has been flooded or otherwise damaged, do not turn on any electrical switches and/or appliances and do not occupy the dwelling until you are told it is safe to do so.
9. Annually inspect home or business for ordinary objects that may pose a hazard during a flood event and have these objects properly secured.
10. Post a note telling others when you left and your destination.
11. Consider volunteering to help flood victims.
12. Develop a disaster plan.

9. Flood Education

1. Include flooding topics as part of school curriculum in science or social studies classes.
2. Gather information on preparing for floods at expos and other public events.
3. Schedule presentations for your neighborhood association or organization to which you belong on hazard event preparations.
4. Attend business community planning workshops to learn how to protect your business from hazard events.
5. Educate youth on hazard events and environmental issues.
6. Listen to the media regarding hurricane season and proper preparation.
7. Attend training seminars for personnel concerning regulatory changes, construction methods, construction materials, etc.
8. Encourage youth to research hazard related topics and share what they learn with others.
9. Look at social media sites (Facebook, You Tube) for information on hazard preparations and environmental protection.
10. Search the internet for hazard related information.

10. Site Drainage

1. Remove standing water with portable sump pump once flood waters have receded.
2. Remove wet insulation and drywall.
3. Allow crawl space to dry and then check for mold, mildew, and rot.
4. If crawl space is damaged, then make needed repairs - obtain permits first.
5. Check for damage to electrical components and utility lines (gas and electric) and contact licensed trade person to complete repairs - obtain permits first.
6. Maintain floor level of crawl space above adjacent grade to reduce water getting into the crawl space.
7. Use flood resistant materials in crawl space areas.
8. Do not store valuables in crawl space areas.
9. Make sure your crawl space is properly vented or engineered to reduce moisture related damage.
10. Grade site to provide runoff from crawl space and building.

Outreach Projects

Table 8 below represents proposed and continuing outreach projects established by the Hazard Mitigation & Program for Public Information Committee. These outreach projects serve all different audiences and address multiple topics and messages. When the Committee meets, they determine if projects will be continued depending upon their effectiveness. Some outreach projects are completed by Charleston County staff while other outreach projects are offered by stakeholders. The topics cover many different CRS activities including: Activity 340, Activity 350, Activity 370, Activity 510, Activity 540 and Activity 610.

Table 8: Outreach Projects

CRS #1	Project Impact		CRS #2			CRS #4	
OP*	**PPI PROJECT INFORMATION/ DESCRIPTION**	**TOPIC # (refer to PPI)**	**TARGET AUDIENCE (refer to PPI)**	**OUTCOME**	**ASSIGNMENT**	**SCHEDULE/ DISTRIBUTION**	**STAKEHOLDER**
OP# 1	**Charleston County HMP Committee Meetings** (quarterly in February, April, July and August, plus one for PPI). Annual meetings advertised in the paper and open to the public. Committee and public can weigh in on outreach activities and messages that the County will portray in the Hazard Mitigation Plan and outreach activities.	1 - 10	1, 4, 8 (Hazard Mitigation Committee members)	A comprehensive, annually updated regional hazard mitigation plan	Hakim Bayyoud and Building Inspections Services staff members; HMP and PPI Committee members and the public	Annual meetings, 4 times per year, advertised and open to the public.	Charleston County
OP# 2	Monthly: Asst. Director Speaks with **Tri-County Home Builders Association**, every 3rd Wednesday monthly.	1 - 10	7	Increased compliance with all building codes and regulations; educate professional on mitigation techniques.	Assistant Director or Director of Building Inspection Services	Regular monthly meetings on the 3rd Wednesday of every month starting in Sept. 2013 to present.	Tri-County Home Builders Association
OP#3	Charleston County Press Release: Charleston County Launches New **Emergency Notification Program** for Citizens. The updated system will allow the County to reach citizens with location specific information at multiple addresses and across multiple platforms 11/18/14	1, 3-4, 7-8	1, 3	Notify all citizens of Charleston County of warnings through home and cell phones, text messages, emails and fax; increase awareness of hazards and staying safe.	Charleston County Emergency Management Department	Launched Nov. 2014, continued and website still active, maintained and operating daily.	Charleston County
OP# 4	**Annual MUSC Hurricane Awareness Day** Building Inspection Services staff set up a booth at the expo and informed citizens about hazards and provided brochures conveying all messages (brochures provided: OP#12, 13, 14, 15, 16, 33; FRP # 3, 9, 10, 11, 14, 15, 16, 17; CPI #4, 6, 7, 8, 12, 13)	1 - 10	1, 2, 3, 4, 5, 6, 7	Increase understanding and information to public on hazards that affect our area and ways to prepare their homes and themselves for hazards.	Building Inspection Services Staff	Participate in the expo annually beginning 5/23/12, 5/22/13, 5/20/14, 5/28/15, 5/26/16, 5/31/17, 5/30/18	MUSC
OP# 5	Building Inspection Services staff participated at the County Square at the **Black Expo** annually where they talked to residents about mitigatingrisks to their property and protecting themselves in the event of hazards (Brochures provided: OP# 12, 13, 14, 16, 17, 18, 20, 23, 24, 25, 29, 30, 31, 33; FRP # 3, 8, 9, 12, 17, 18; CPI #4, 5, 6, 7, 8, 12)	1 - 10	1, 2, 3, 4, 5, 8 (African American community)	Increased understanding of flood risk and ways to mitigate it by the entire community.	Building Inspection Services staff	Annually attended expo since 2014.	Black Expo
OP#6	**Project IMPACT Mini-Grant (STOMP award)**- awards given to teachers/ sponsors seeking to fund a special lesson on hazard mitigation and/or environmental protection. Annual program since 2015; teachers are required to submit details of project and photographs. Award dates:	3, 8, 9	8 (other) Teachers and other educational-type leaders and students or children under the age of 18	Support local schools/ programs in informing children about hazards and mitigation efforts that can be taken.	Building Inspection Services Staff	Annually awarded mid-school year for project completion by the end of the school year. Award dates: 2/4/15, 2/10/16, 1/6/17	Project Impact

	First Tuesday every January is award date.						
OP# 7	**Annual Rain Barrel Sale** and advertisement to promote harvesting rainwater, reducing runoff and promoting water quality protection. Started May 2014 and continued annually.	6, 10	1	Increased use of rain barrels and promote water quality protection.	Charleston County Stormwater Management department	Annual program advertised to the public, started May 2014 and continues in May of every year.	Charleston County
OP #8	Annual: **Community Disaster Awareness Day** - participated in annually to educate residents of Charleston County area on the hazards in the area and how to prepare for them. (Brochures provided: OP #12, 13, 14, 15, 16, 17, 23, 24, 25, 26, 27, 31, 33. CPI #4, 5, 8, 10. FRP #8, 9, 12, 13, 14, 16)	1-4, 7-9	1, 2, 4, 5	Increase understanding and information to public on hazards that affect our area and ways to prepare their homes and themselves for hazards.	Building Inspection Services Staff	6/22/10, 6/12/14, 6/11/15, 5/26/16, 6/15/17	Project Impact
OP# 9	Annual: Summer Countywide **Hurricane Billboards** on Interstates and Major Roads	1, 3, 4, 7 - 10	1	Increased Public Awareness of Hurricanes	Charleston County Emergency Management Department	Annual	Project Impact
OP# 10	Annual Expo: **Lowcountry CERT Hurricane Expo Summer annually:** Building Inspection Services staff set up a booth at the expo, answer questions from the public and handout 10+ brochures informing of hazards and ways to protect their property and themselves. (Brochures provided: OP# 12, 13, 14, 15, 16, 17, 22, 23, 24, 30, 31, 33; FRP # 3, 9, 10, 11, 14, 15, 16, 17; CPI # 4, 6, 7, 12, 13)	1 - 10	1, 2, 3, 4, 5, 6, 7	Increased understanding of flood and hurricane risk and ways to mitigate it by the entire community	Building Inspection Services Staff	Annually attended expo most recently on 5/7/2022	Lowcountry CERT; Lowe's
OP# 12	**County-wide mailer/ brochure**: "Flooding: The Risk Is Real. Are You Prepared?"	1 - 10	1, 2, 3, 4, 5, 7	Increased understanding of flood risks and ways to mitigate.	Building Inspection Services Staff	Available year-round; recently updated to include more messages and topics. Available in office, at libraries and taken to Expos attended. Mailed out to ALL flood zone residents and provided to all jurisdictions to reproduce and make available in their offices.	Project Impact
OP# 13	**Brochure**: "A Homeowner's Guide to Flood Protection"	1-5, 9-10	1, 2, 3, 5	Improved public knowledge about the importance of obtaining permits and hiring licensed contractors.	Building Inspection Services Staff	Available year-round; recently updated to include more messages and topics. This brochure is available in office, at libraries and taken to Expos attended.	Project Impact
OP# 14	**Brochure:** "Safeguard Your Personal Property from Flooding"	1, 3, 4	1	Improved knowledge about how to protect personal valuables from flooding by the general public	Building Inspection Services Staff	Available year-round; recently updated to include more messages and topics. This brochure is available in office, at libraries and taken to Expos attended.	Project Impact
		1, 2, 4, 5, 6	1, 2, 3, 5, 7				FEMA

OP# 15	**Brochure:** "If your home or business has been flooded"			Improved knowledge about what to do if your home or business is flooded	Building Inspection Services Staff	Available year-round; this brochure is available in offices and taken to Expos attended.	
OP# 16	**Brochure**: "NFIP Nothing Can Dampen the Joy of Home Ownership…."	1, 2, 4, 6, 9	1, 2, 3, 4, 5, 7	Increased number of flood insurance policies	Building Inspection Services Staff	Available year-round; this brochure is available in offices and taken to Expos attended.	FEMA
OP# 17	**Brochure**: "Stay Safe: A Guide for Visitors to Charleston"	1, 3, 7	1, 2, 3, 5, 7	Increased number of visitors/newcomers educated about local hazards and how to stay safe	Building Inspection Services Staff	Available year-round; recently updated to include more messages and topics. This brochure is available in office, at libraries and taken to Expos attended.	Project Impact and Charleston Area Convention and Visitors Bureau
OP# 18	**Brochure:** "Increased Cost of Compliance Coverage"	1, 2, 5	1	Improved public knowledge about the cost of compliance coverage.	Building Inspection Services Staff	Available year-round; this brochure is available in offices and taken to Expos attended.	FEMA
OP# 19	**Brochure**: "Marine Vessel Cleaning and Maintenance"	8	1, 8 (boat owners)	Reduction of water and sediment-related pollution in the port environment.	Building Inspection Services Staff	Available year-round; this brochure is available in offices and taken to Expos attended.	Project Impact/ United States Environmental Protection Department
OP# 20	**Brochure**: "Protect your Windows and Doors from Windborne Debris"	1, 2, 7	1	Increased public knowledge of how to protect doors and windows in the event of a hurricane/tropical storm.	Building Inspection Services Staff	Available year-round; recently updated to include more messages and topics. This brochure is available in offices and taken to Expos attended.	Project Impact
OP# 21	**Brochure:** "Hazard Resistant Landscaping"	1, 4, 6, 7	1	Decreased landscape clippings before hurricanes/ storms and increased usage of landscaping techniques that help prevent flooding.	Building Inspection Services Staff	Available year-round; recently updated to include more messages and topics. This brochure is available in office and taken to Expos attended.	Project Impact/ Clemson Extension Services
OP# 22	**Brochure**: "Earthquakes: Are You Ready?"	1, 2 - 4, 8	1	Increased knowledge of earthquakes and how to stay safe during one.	Building Inspection Services Staff	Available year-round; recently updated to include more messages and topics. This brochure is available in office and taken to Expos attended.	Project Impact/ Charleston Southern University Earthquake Education Center
OP# 23	**Brochure:** "The Charleston Earthquake Tour"	3-5, 8	1	Increased knowledge of earthquakes and how to stay safe during one; history and lesson learned during previous earthquakes explained.	Building Inspection Services Staff	Available year-round; recently updated to include more messages and topics. This brochure is available in office and taken to Expos attended.	College of Charleston
OP#24	**Brochure**: "A Boat Owner's Guide to Storm Preparation"	3, 4, 7, 8	1, 8 (boat owners)	Improved knowledge about how to prepare boats for a storm.	Building Inspection Services Staff	Available year-round; recently updated to include more messages and topics. This brochure is available in	Project Impact

						offices and taken to Expos attended.	
OP#25	**Brochure:** "Tornadoes: Are You Ready?"	3, 4, 5, 8	1	Increase knowledge about tornadoes and how to stay safe during one.	Building Inspection Services Staff	Available year-round; recently updated to include more messages and topics. This brochure is available in office and taken to Expos attended.	Project Impact
OP#26	**Brochure:** "Shopping for Your Dream Home? Know & Prepare for Flood Risk Before You Buy"	1-5, 9	1, 2, 3, 5	Increase knowledge of flood insurance and flood risks for potential homebuyers and how to protect their homes after purchase.	Building Inspection Services Staff	Available year-round; recently updated to include more messages and topics. This brochure is available in office and taken to Expos attended.	Project Impact
OP#27	**Brochure**: "Your Family Disaster Supplies Kit"	1-5, 7-9	1, 2, 3, 5	Increase awareness about supplies that people should have on hand in the event of a disaster.	Building Inspection Services Staff	Available year-round; this brochure is available in offices and taken to Expos attended.	FEMA/ Red Cross
OP#28	**Brochure:** "Preparing your Pets for Emergencies Makes Sense"	1, 3-4, 7-9	1, 3	Increase knowledge about protecting your pets during an event or in an evacuation.	Building Inspection Services Staff	Available year-round; this brochure is available in offices and taken to Expos attended.	FEMA
OP#29	**Brochure**: "Safety First/ Disaster Preparedness"	1-5, 7-9	1, 2, 3, 5	Inform residents about how to prepare homes for disasters and staying safe during a storm.	Building Inspection Services Staff	Available year-round; this brochure is available in offices and taken to Expos attended.	International Codes Council ICC
OP#30	**Guide Book**: "Floodplain Management in South Carolina Quick Guide"	1-10	1, 2, 3, 4, 5, 6, 7, 8 (local area building, zoning and emergency government departments)	Inform residents of the objectives of floodplain management, purchase of flood insurance, regulations affecting building in a flood zone.	Building Inspection Services Staff	Available year-round; this brochure is available in offices and taken to Expos attended.	SC Department of Natural Resources
OP#31	**Brochure:** "Harriet the Home Safety Hippo (children's hazard activity booklet)"	1, 3, 7-9	1, 3, 8 (children of the area)	Inform children about flood risks, hazards, and staying safe in a hazard event.	Building Inspection Services Staff	Available year-round; recently updated to include more messages and topics. This brochure is available in office, at libraries and taken to Expos attended. Also distributed to school district camp locations, reaching 330 students.	Project Impact
OP #32	Annual: **Charleston Home and Remodel Expo**; 2017 was first year of the expo; will attend in following years	4, 5, 7-10	1, 2, 3, 4, 5, 6, 7	Inform public about mitigation measures that can be taken during renovations; inform about flood insurance, property protection and staying safe.	Building Inspection Services Staff	Attend Expo annually, this was the first year 3/3/17-3/5/17	Project Impact
OP #33	Preliminary **FEMA Flood Map Presentations and Open Houses**; conducted throughout the County, North Charleston, City of Charleston, Mt. Pleasant, Johns Island (City of Chas and Unincorp), James Island (City of Chas, Unincorp and Town of James Island);	1, 2, 6	1-5, 7	Inform public of new flood designation, review flood zones and hazards, purchase of flood insurance, changes in flood zones, when maps will go into effect; how new data was collected.	Building Inspection Services Staff	3/20/17, 3/21/17, 3/22/17, 5/24/17, 5/30/17 (and continuing upon request by different jurisdictions)	FEMA, Project Impact

	Town of Seabrook, Town of Kiawah						
OP #34	**Brochure:** "Call 811 Before You Dig. It's the Law."	3, 4, 5, 8	1, 2, 6, 7	Inform public and contractors on the safety of utility lines and digging when building a home. Double sided: English and Spanish language.	Building Inspection Services Staff	Available year round; this brochure is available in offices and taken to Expos attended. Recently updated.	Project Impact
OP #35	**Brochure:** "Standby Generator Safety"	3, 4, 7	1, 7	Inform the public on how to safely operate a generator	Building Inspection Services Staff	Available year-round; this brochure is available in offices and taken to Expos attended.	Project Impact, SCE&G
OP #36	**Brochure:** "Benefits of Building Permits"	4, 5	1, 4, 7	Inform public on what building permits are used for, what requires building permits and the benefits behind them	Building Inspection Services Staff	Available year-round; this brochure is available in offices and taken to Expos attended.	International Codes Council ICC
OP #37	**Brochure:** "Building Green - Living Better"	1, 4, 5, 6, 8	1-5, 7	Inform public on the benefits of building green, living with your environment and how to design a home	Building Inspection Services Staff	Available year-round; this brochure is available in offices and taken to Expos attended.	International Codes Council ICC
OP #38	**Brochure:** "Facts About Open Burning"	3, 6, 8	1	Inform public on the hazards of open burning and other ways to reduce waste	Building Inspection Services Staff	Available year-round; this brochure is available in offices and taken to Expos attended.	Project Impact
OP #39	**Brochure:** "Recreational Boater Education Booklet"	6, 8	1, 8 (fisherman and boaters)	Inform the public on ways to reduce marine debris, minimize sewage impact, and tips for sustainable fishing, boat maintenance and boat fueling	Building Inspection Services Staff	Available year-round; this brochure is available in offices and taken to Expos attended.	Project Impact
OP #40	**Brochure:** "Help Mow Down Pollution!"	6, 8	1, 4	Inform the public of the pollution from gas powered mowers and offers alternatives	Building Inspection Services Staff	Available year-round; this brochure is available in offices and taken to Expos attended.	Project Impact
OP #41	**Brochure display** in upstairs Building Inspection Services Administrative office (Brochures provided: OP #12-38, 41-47)	1-10	1-8	Inform public of all hazards in area, flood insurance, property protection, building codes, safety, contractors, natural benefits.	Building Inspection Services Staff	Available year-round	FEMA, Project Impact, SC DNR, NFIP, ICC, SC DHEC
OP #42	**Brochure display** in downstairs Building Inspection Services Inspector and Plan Review office (Brochures provided: OP #12-38, 41-47)	1-10	1-8	Inform public of all hazards in area, flood insurance, property protection, building codes, safety, contractors, natural benefits.	Building Inspection Services Staff	Available year-round	FEMA, Project Impact, SC DNR, NFIP, ICC, SC DHEC

OP #49	**Brochure display** in local jurisdiction offices: Awendaw (Brochures provided: OP #12-14, 17, 23, 25, 33)	1-10	1-8	Inform public of all hazards in area, flood insurance, property protection, building codes, safety, contractors, natural benefits.	Building Inspection Services Staff	Available year-round	FEMA, Project Impact, SC DNR, NFIP, ICC, SC DHEC
OP #43	**Brochure display** in local jurisdiction offices: Seabrook (Brochures provided: OP #12, 131 23, 25, 33)	1-10	1-8	Inform public of all hazards in area, flood insurance, property protection, building codes, safety, contractors, natural benefits.	Building Inspection Services Staff	Available year-round	FEMA, Project Impact, SC DNR, NFIP, ICC, SC DHEC
OP #44	**Brochure display** in local jurisdiction offices: Ravenel (Brochures provided: OP #12-14, 17, 21, 23, 25, 33, 41, 42)	1-10	1-8	Inform public of all hazards in area, flood insurance, property protection, building codes, safety, contractors, natural benefits.	Building Inspection Services Staff	Available year-round	FEMA, Project Impact, SC DNR, NFIP, ICC, SC DHEC
OP#45	**Brochure:** "Your Homeowner's Insurance Doesn't Cover Floods"	1, 2, 4, 5	1-5	Inform residents about insurance coverage and promote purchase of flood insurance policies	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	FEMA
OP#46	**Brochure:** "Preferred Risk Policy- For Homeowners and Renters"	1, 2, 4, 6, 9	1, 3, 7	Increase number of flood insurance policies	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	FEMA, NFIP
OP#47	**Brochure:** "Nothing Can Dampen the Joy of Home Ownership"	2	1-3	Increase number of flood insurance policies	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	FEMA, NFIP
OP#48	**Brochure:** "Increased Cost of Compliance Coverage"	2	1-3	Increase number of claims of Increased Cost of Compliance (ICC)	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	FEMA, NFIP

OP#49	**Brochure:** "Flood Preparation & Safety"	2, 3, 4, 8, 9	1-3, 5	Increase awareness and number of flood insurance policies, inform residents what to do before, during, and after a flood	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	FEMA, NFIP
OP#50	**Brochure:** "Flooding. The Risk Is Real. Are You Prepared?"	1, 2, 3, 4, 5, 6	1-3, 5	Increase number of flood insurance policies, increased awareness of what to do before, during, and after a flooding incident	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	Charleston Area Project Impact
OP#51	**Brochure:** "Safeguard Your Personal Property from Flooding"	1, 2, 4, 8	1-3	Increase awareness on protecting personal property in floods and purchasing flood insurance	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	Charleston Area Project Impact
OP#52	**Brochure:** "Staying Safe: A Guide for Visitors to Charleston"	1, 3, 7	3	Increased awareness for all hazards that visitors could potentially face in Charleston County	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	Charleston Area Project Impact
OP#53	**Brochure:** "A Homeowner's Guide to Flood Protection"	1, 2, 3, 4, 5	1-3, 5	Increase number of flood insurance policies, increased awareness of what to do before, during, and after a flooding incident	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	Charleston Area Project Impact

OP #54	Annual outreach via the Charleston County Libraries. County BIS staff sets up an outreach table at all Charleston County Library locations during Hurricane Awareness week in May; at least three hours are spent at each location. Staff brings outreach materials (brochures) and is available to answer questions about flooding, mitigation, grants, insurance, etc. Started 2021 and plan to continue annually.	1 - 10	1, 2, 3, 4, 5, 6, 7, 8	Increase understanding and information to public on hazards that affect our area and ways to prepare their homes and themselves for hazards.	Charleston County Building Inspection Services	This outreach is conducted annually during or close to Hurricane Awareness Week in May. This was first conducted in 2021 and conducted again in 2022.	Entire Charleston County community
OP #55	HAzard TV Series; Charleston County, in conjunction with a third-party producer, created ten episodes of an educational TV series focused on hazards faced in the Lowcountry. The show is designed to be educational for a wide variety of audiences. A package of supplemental educational materials (worksheets/ word puzzles for each episode) was created to be distributed to educators for use in the classroom. The episodes are available for free on Charleston County's YouTube channel.	1 - 10	1, 2, 3, 4, 5, 6, 7, 8	Increase understanding and information to public on hazards that affect our area and ways to prepare their homes and themselves for hazards.	Charleston County Building Inspection Services	This series is available year-round for free on the Charleston County YouTube Channel. It was also broadcasted on Channel 5 news weekly. Closed captioning is available in Spanish and English.	Charleston Area Project Impact
OP #56	Councilwoman Anna Johnson Round Table: Hurricane Preparedness; staff gave a presentation at Councilwoman Anna Johnson's roundtable regarding hurricane preparedness. Staff spoke about what to do before, during, and after a hurricane, and answered questions from the attendees.	1, 2, 3, 4, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8	Increased understanding of flood and hurricane risk and ways to mitigate it by the entire community	Charleston County Building Inspection Services	It is the goal that at least one Councilperson's roundtable per year is regarding Hurricane preparedness.	Charleston County
OP #57	Councilwoman Anna Johnson Round Table: Mobile Homes in the SFHA; staff gave a presentation at Councilwoman Anna Johnson's March 2022 round table regarding the rules and regulations for mobile homes in the special flood hazard area. Staff discussed new Coastal A zone regulations and ways to retrofit older mobile homes.	1, 2, 3, 4, 5, 9	2, 3, 6, 8	Increased understanding of rules and regulations surrounding mobile homes in the SFHA, and ways to protect people and property	Charleston County Building Inspection Services	This project was conducted one time in March 2022 with potential for more occurrences in the future.	Charleston County
OP #58	Mailer sent to all repetitive and severe repetitive loss properties regarding home elevation grant applications/ financial assistance for mitigation. This notification is sent annually.	1, 2, 3, 4, 5	2, 5	Increased interest in mitigation options for RLP owners; increased knowledge of how to protect people and property in the SFHA	Charleston County Building Inspection Services	This outreach is conducted annually.	FEMA; NFIP
OP #59	Charleston Black Expo: floodplain management staff attended the annual Black Expo to be available to answer questions regarding flooding, hazards, flood insurance, and other related topics. Staff distributed both FEMA and Charleston County literature.	1 - 10	1, 2, 3, 4, 5, 6, 7, 8	Increase understanding and information to public on hazards that affect our area and ways to prepare their homes and themselves for hazards. Also increased knowledge	Charleston County Building Inspection Services	Staff attends this expo annually, most recently in 2023.	Black Expo

				of building codes and building smart			
OP #60	Charleston County Floodplain Management Webpage; the website contains information regarding all messaging for all audiences, as well as information on other outreach projects listed in this document.	1 - 10	1, 2, 3, 4, 5, 6, 7, 8	Increase access to information and spread all messages to all members of the community	Charleston County Building Inspection Services	The website is maintained by Charleston County staff. Links are checked regularly, and the website is updated frequently with new information.	Charleston County
OP #61	Brochure: FEMA/NFIP Flood Insurance Postcard	1-4, 7-9	1-5	Increase awareness on protecting personal property in floods and purchasing flood insurance. Inform residents about insurance coverage and promote purchase of flood insurance policies.	Charleston County Building Inspection Services	Available year-round and distributed via expos	FEMA, NFIP
OP #62	Brochure: Myths and Facts about the NFIP	1-4, 7-9	1-5	Increase awareness on protecting personal property in floods and purchasing flood insurance. Inform residents about insurance coverage and promote purchase of flood insurance policies	Charleston County Building Inspection Services	Available year-round and distributed via expos	FEMA, NFIP
OP #63	Public Forum/Town Hall with Councilmember Kylon Middleton. The purpose of the town hall meeting was to discuss and inform about flood insurance/the NFIP. Topics included what is the NFIP, definition of SFHA, the mandatory purchase requirement, flood risk outside the SFHA, what a typical policy covers, how to purchase flood insurance, a typical waiting period for a policy to become effective, ways to decrease insurance premiums, and the CRS discount.	1, 2, 3, 4, 9	1—8	Inform residents about insurance coverage and promote purchase of flood insurance policies.	Charleston County Building Inspection Services and County Council	This will be an annual town hall event that will take place with the support of elected officials.	Charleston County

OP#21 is a brochure titled "Hazard Resistant landscaping". This brochure presents landscaping techniques to mitigate hazards such as wind and flooding, for example, decrease landscape clippings before hurricanes. See attachment below of the brochure.

Attachment: OP#21 "Hazard Resistant Landscaping"

Salt Tolerant Landscaping

A plant's ability to tolerate coastal conditions will depend upon where it is planted. Even highly salt tolerant plants cannot take a constant barrage of wind, ocean spray, and hot sun and still look good.

Salt tolerant plants may appear ragged after extreme exposures, but they will survive. Plants sensitive to salt or "non salt tolerant" will simply die.

A plant's salt tolerance should be a consideration when landscaping near beaches or waterways. Coastal waterways and marshes all have some salt intrusion.

LAWNS:
Bermuda, Zoysia, and St. Augustine grasses have good salt tolerance, while centipede does not.

TREES:
Japanese Black Pine, Southern Magnolia, Eastern Red Cedar, Live Oaks, Yaupon, Russian Olive, Salt Cedars, Cabbage Palms or Sabal Palmettos have a high salt tolerance.

SALT TOLERANT SHRUBS:
Salt shrub, Dwarf Yaupons, Butcher's Broom, Northern Bayberry, Pittosporum, Wax Myrtles, Yucca, Oleanders, Indian Hawthorn and Viburnum are a few examples.

SALT TOLERANT GROUND COVERS:
English Ivy, Northern Sea Oats, Zamia, Virginia Creeper, Creeping Juniper, Cord Grass, Carolina Jessamine, Creeping Fig, Winter Creeper, and Algerian Ivy are some salt tolerant groundcovers.

For specific planting questions, consult your local Clemson Extension agent.



Resources

CLEMSON EXTENSION SERVICE
Charleston County Office
259 Meeting Street , 2nd Fl.
Charleston, SC 29401
Telephone: (843) 722-5940

S.C. FORESTRY COMMISSION
5500 Broad River Road
Columbia, SC 29212
Telephone: (803) 896-8800
www.trees.sc.gov

SCDHEC-OCRM
1362 McMillan Ave., Suite 300
Charleston, SC 29405
Telephone: (843) 953-0150

CHARLESTON COUNTY BUILDING INSPECTION SERVICES
4045 Bridge View Drive, Ste. A311
North Charleston, SC 29405
(843) 202-6930
www.charlestoncounty.org

PROJECT IMPACT

For more information on
PROJECT IMPACT
call (843) 202-6940

Hazard Resistant Landscaping

While there are no magic solutions in landscaping that will totally protect your home or property from fire, flooding, high winds, or hurricanes, there are several ways in which the homeowner can increase the chance that their home will survive.

Much of the damage suffered through hurricanes Hugo, Andrew, Floyd, Katrina, Charley, Gaston and Sandy was compounded by rapid urbanization and unsound landscaping procedures.

June 1 is the start of hurricane season. For peace of mind, take a few minutes to walk around your yard and see what might be done to make you landscape safer in the event of a big storm.

Starting early will allow you the time needed prune trees and large shrubs so the proper pruning cuts can be made and branches can be safely collected and hauled off. It's better to do this pruning now rather than waiting until you have to remove a large tree limb from you living room.

By spending a little time and effort now you will stand a much better chance of reducing the damage to your home and landscape should a storm come our way.

The following plant recommendations are intentionally minimal. Charleston has a variety of terrain. What will grow well in one area, may not in another. Contact your local Clemson Extension agent, nursery or landscaper for specific recommendations for your area.

Fire Wise Landscaping

If you live in a woodland setting or a wooded lot:

- Create a defensible space (about 30-100 feet) around your home. In this area, use plants that grow close to the ground, have a high moisture and low resin content. Plants such as the junipers are highly flammable.
- If planting trees, hardwood trees are more fire resistant than pines, evergreen, or fir trees.
- Reduce amount and types of fuels. Keep tree branches away from chimneys, keep roofs and gutters free of dead leaves and other debris.
- Eliminate ladder fuels that allow a fire to climb into low hanging branches. Prune trees six to ten feet up within your defensive zone.
- Remove dead leaves, brush and shrubbery on a regular schedule.
- Design access roadways wide enough for emergency vehicle access. Usually at least 20 feet wide with a 13.5 foot overhead clearance.
- Create fire breaks. Plant in islands. Walkways and well maintained turf grass can be an excellent firebreak. Use rock, mulch, flower beds and gardens as ground cover for bare spaces and as effective firebreaks.
- Limit use of flammable mulches such as pine straw, especially within your defensible zone.



Wind Resistant Landscaping

No tree is completely "wind resistant" but some trees do perform better than others.

- Healthy, well maintained and properly pruned trees have better wind resistance. Healthy, uncompacted, properly drained soil is the first step towards a healthy tree.
- Native species do better than non-native species.
- The sabal palmetto, longleaf pine, southern magnolia, dogwood, and live oaks have the best wind resistance.
- The Chinese tallow, or "popcorn tree," pecans, red maples, and sweet gums have poor wind resistance and aren't recommended for planting near homes.
- Trees do not "heal wounds," they just grow over them and seal them off. These old injuries are weak structurally, and could fail under high winds.
- Remove weak and diseased limbs or trees.
- Trees worth saving should be properly protected during construction.
- Consider the adult size of the tree when planting. Some trees have large growth patterns and should not be planted too close to your home.
- Remember, most of the trees feeder roots are near the surface. Never plant turf grass or flowerbeds right up to the trunk of a tree.



Flood Resistant Landscaping

If you live in an area that's likely to flood, it's important to be prepared.

- Keep yards free of leaves, pine needles and other debris that can be washed away during heavy rains, and keep debris from accumulating in streets and curbsides that can be washed into storm drains causing clogs.
- Retention ponds are designed to hold storm water run off and prevent minor flooding. The ponds also give pollutants time to settle out of the water. Ditches, canals and retention ponds can become overgrown with vegetation or filled with silt, which lessens their capacity.
- Work through your community or neighborhood group to insure that retention ponds, and canals in your area are properly maintained and that storm water drains and ditches in your community are kept clear and free flowing.
- Support the establishment of "vegetated riparian buffers" in your community. Riparian buffers are corridors of natural vegetation lining rivers, ditches, ponds, and canals. These buffers slow storm water runoff, bind sediments, prevent erosion, and provide fish and wildlife habitat.
- Mulch, or otherwise cover areas of bare earth to prevent erosion of topsoil into waterways or ponds. Establishing turf grass is one quick and easy method.



Displayed in OP#50, Open Space Preservation (CRS Activity 420) is also an area of great importance to the Charleston community. This area plays host to many beautiful natural habitats, from the shoreline to marshlands and swamplands to forests. Located within the "Flooding: It Is Real. Are you at Risk?" brochure, natural floodplain conservation is addressed. See attachment below that is available to the public.

Attachment: OP#50 "Flooding: It Is Real. Are you at Risk?"

FLOODING
The Risk Is Real. Are You Prepared?

A flood can be devastating. You don't have to live near water to be at risk. The time to prepare is now.



Charleston County Hurricane & Emergency Evacuation Routes

When Flooding is Imminent

- ☐ Begin implementing your emergency plan.
- ☐ Remind your family to stay inside and away from all flood waters and downed power lines.
- ☐ Listen to local media updates and alerts.
- ☐ Move valuables to higher areas.
- ☐ Securely anchor or store outdoor furniture.
- ☐ Sandbag areas subject to the entry of water.
- ☐ If evacuations are ordered, follow instructions, shut off gas and electricity, evacuate promptly, and securely lock your home or business.

During the Flood

- ☐ Stay inside. Avoid contact with all flood waters and downed power lines.
- ☐ Turn around, don't drown. Never drive through flooded areas or any water.
- ☐ Do not wade through any water as it may contain toxic materials or venomous animals or insects.
- ☐ Check local media and official websites such as FEMA.gov and CharlestonCounty.org for emergency notifications.
- ☐ If your dwelling begins to flood, shut off electricity and gas connections.

After the Flood

- ☐ Upon returning from an evacuation, if your building is flooded or otherwise damaged, do not:
  - occupy dwelling until officially notified it is safe.
  - turn on any electrical switches or appliances until you verify that there are no issues or the power company authorizes you to do so.
- ☐ If you smell gas, immediately contact your utility company or emergency personnel.
- ☐ Contact your insurance agent if you have damage.
- ☐ Contact your local jurisdiction for a damage assessment.
- ☐ Remove standing water with a sump pump.
- ☐ Remove wet insulation, drywall, flooring and rugs.
- ☐ Hire contractors only after verifying they are properly licensed.
- ☐ Obtain proper permits for all work.
- ☐ Refer questions or complaints about contractors and permits to the state and/or your local jurisdiction.

Charleston County Building Inspection Services
4045 Bridge View Drive, Suite A311
North Charleston, SC 29405
(843) 202-6930
BuildingServices@CharlestonCounty.org
www.CharlestonCounty.org

Be Prepared

1. Know Your Flood Hazard

Contact your local jurisdiction to see if your property is in a Special Flood Hazard Area or subject to flooding.

Check historical flooding records in your area with your local government or media outlets.

Know your evacuation routes.

Schedule a site visit by your local jurisdiction to gauge your flood risk and learn flood protection measures.

Charleston is part of the Lowcountry for a reason! Even if your property is not in a flood zone, you are still at risk!

2. Build Responsibly & Protect Your Property

Obtain permits, even if you do the work yourself. Report construction done without permits to your local jurisdiction.

Hire design professionals, who are familiar with local hazards, to prepare construction plans. Verify your contractor is licensed with South Carolina and/or your local jurisdiction.

There is a 26% chance that property in a Special Flood Hazard Area will be damaged by flood over the lifetime of a 30-year mortgage

Set buildings back from water and wetlands. Use flood resistant material. Elevate the lowest habitable floor and place utility machinery per local requirements. Install backflow prevention on plumbing systems susceptible to flooding.

Libraries, government offices, and the internet have extensive information on flood prevention measures.

Federal aid may be available for retrofitting, relocating, or demolishing structures with repetitive flooding. Contact your jurisdiction or Charleston County Building Inspection Services at (843) 202-6930 to learn more.

3. Purchase Flood Insurance

Usually, homeowners insurance does not cover floods. Only flood insurance covers floods. Flood insurance is available to owners and renters of residential and commercial properties under the National Flood Insurance Program (NFIP) and can be purchased through a licensed insurance agent.

NFIP policies can cover the building, the contents, or both. All properties in the Special Flood Hazard Area, with a federally backed mortgage, must have flood insurance. Everyone else should have flood insurance.

Visit FloodSmart.gov or contact your insurance agent for details. Your agent may require an elevation certificate to get you a quote. If you do not have an elevation certificate, contact your local jurisdiction to see if it is on file. If not, contact a surveyor, engineer or architect to prepare one.

It takes 30 days after buying flood insurance for the policy to go into effect. Buy your policy now!

Prepare now in case of a future event. Inventory and photograph your building's contents and store this information in a safe place.

4. Protect People from the Hazard

Be notified when there is an emergency. Register for CodeRED Emergency Phone and Text Alerts at SCemd.org. Download the FEMA and Charleston County Emergency Management Department apps. Follow @ChasCountyGov and @SCEMD on Twitter and follow the Facebook.com/EMDChasCo/ page. Monitor local media for the latest information and official instructions.

Create an emergency kit with supplies for at least three days. You may also consider creating a more portable kit to take with you in case of evacuation.

Develop an emergency plan and keep copies of it in your supply kit and share it with your family.

Your plan should include:

- A strategy for family communication. Appoint an out-of-town relative as a point person for everyone in your household to contact. Find out how your family's schools and workplaces will communicate with you during an emergency.
- Details on how you will safely shelter in place or evacuate. Keep evacuation route maps in each car and incorporate these routes into your plan.
- Requirements of household members with special needs.
- Caring for your pet(s) if you shelter in place or evacuate. Know that most shelters prohibit pets.

To learn more about preparing your emergency supply kit and emergency plan visit FEMA.gov or Ready.gov or SCemd.org.

5. Keep Drainage Channels Clear

Keep drainage channels and catch basins free from obstructions to reduce flooding during heavy rains. Residents are asked to maintain the channels near their property by removing or reporting obstructions such as trash and tree limbs.

Don't dump household items & wastewater into storm drains or waterways. It's against the law!

Request a ditch cleaning or report dumping violations, before a storm occurs, by contacting your local jurisdiction.

6. Protect Natural Floodplain Functions

Wetland areas and oceanfront sand dunes help protect property from flooding. Preserve these areas. Keep them clean and do not walk on sand dunes.

Report disturbances to beachfront and wetland areas to the Office of Ocean and Coastal Resource Management of the South Carolina Department of Health and Environmental Control at (843) 953-0200.

Help support natural floodplain functions by using landscaping to establish vegetative buffers using only native plants and minimal amounts of fertilizer.

Flood Protection Assistance (Activity 360) and Flood Insurance Promotion (Activity 370)

A Coverage Improvement Plan is included within this Program for Public Information to further incorporate the promotion of flood insurance purchase throughout the county. As this is an area of mixed economic statuses, all avenues of outreach methods should be utilized to get information out to the community. This includes, but is not limited to, direct mailers to citizens, availability of brochures at all jurisdictional offices, participation at expos and other events pertaining to disasters, public awareness, and remodeling shows. This plan has been, and continues to be, implemented on many levels to get the information out to citizens that purchasing flood insurance is essential. In order for the Coverage Improvement Plan portion of this Program for Public Information to qualify for Activity 370 credit, a draft of this document was submitted to the FEMA Region V insurance liaison for review and comment.

Because flooding is one of the top ranked issues that the Hazard Mitigation & Program for Public Information Committee has identified, several outreach projects have been developed to inform the public about the importance of flood insurance and assist the pubic with information pertaining to flood protection. This assistance comes in many forms; from one- on-one contact to help a homeowner with flood protection measures to presenting at a hurricane expo about flood insurance. Many of the public information outreach activities listed in Table 8 on pages 20-31 address flood protection. In addition to these OP outreach projects, CPI (Coverage Improvement Plan- Activity 370) projects have been established to encourage residents and special groups to promote the purchase of flood insurance. These projects are identified, along with topics, target audiences, assignments and schedule of distribution in Table 9 on page 27.
Other outreach methods have been addressed to directly inform people at expos and special presentations. Table 10 (page 28) is a listing of last year's direct contact presentations to the public addressing flood protection assistance, including property protection advice, protection advice provided after a site visit, financial assistance advice, and advisor training (CRS Activity 360) as well as flood insurance promotion (CRS Activity 370). Charleston County currently has eleven Certified Floodplain Managers on staff that are qualified to provide financial assistance advice. The attached brochure on page 34, "Flooding: The Risk is Real. Are you Prepared?" publicizes the department's flood protection financial advice services. This brochure has been distributed county-wide annually through mailings, is available at all participating jurisdictions' offices and is distributed at all expos attended.
As with all projects identified in this document, the Coverage Improvement Plan will be evaluated annually by the Hazard Mitigation & Program for Public Information Committee for changes and updates that need to be made to existing projects and addition or deletion of projects as the Committee sees fit.

Table 9: Coverage Improvement Plan (CPI) Projects

Coverage Improvement Plan Implementation Projects

Topics (please see PPI document pages 16-20 for list of messages for each topic): 1. Know your flood hazard. 2. Insure property for your flood hazard. 3. Protect people from the hazard. 4. Protect your property from the hazard. 5. Build smart. 6. Protect natural floodplain functions. 7. Hurricane preparedness/safety. 8. General hazard preparedness. 9. Flood education. 10. Site drainage.	**Target Audiences (PPI document pages 14-15):** 1. General Public 2. Residences and businesses in the Special Flood Hazard Areas (SFHA) 3. Newcomers to the area/ tourists 4. Real Estate and Insurance Agents/ Real Estate Buyers & Sellers 5. Repetitive Loss Area Residents 6. Non-English speaking community 7. Design Professionals/Contractors 8. Others as determined by the Committee

CPI#	Coverage Improvement Plan Implementation Projects	Topics/ Messages	Target Audience	Outcome	Assignment	Schedule/ Distribution	Stakeholder
CPI#1	SC Department of Insurance **Disaster Expo** 6/8/13, 5/31/14, 5/30/15. Brochures provided: OP#12, 13, 14, 15, 16, 19/19a, 26, 33; FRP # 3, 9, 10, 11, 14, 15, 16, 17; CPI #4, 6, 7, 8, 12, 13	1-10	1-8	Increase number of flood insurance policies	Charleston County Building Inspection Services	Annually attended Expo- 6/8/13, 5/31/14, 5/30/15	SC Dept of Insurance and Charleston County
CPI #2	Area Flood Insurance Reform **Public Presentations**: Discussion at Zeus' Restaurant 9/17/13; Seabrook Property Owners Assoc. 12/3/13; Fort Johnson Estates 5/6/14; Edisto Community Association 5/15/14; Lions Club 3/10/15; continuous upon request of organization or association; OP #12, 16, 33; FRP # 14, 15; CPI #4, 5, 6, 8, 12 were taken to the events	1-5, 9	1-4, 7-8	Increase awareness and number of flood insurance policies	Charleston County Building Inspection Services	Presentations offered year-round and when requested.	Charleston County
CPI#3	**Roundtable discussion** with Council Member Anna Johnson on "Disaster Protection and Fair Housing" 10/28/15; types of insurance, including flood insurance, were discussed and promoted by Council member; CPI #4, 5, 6, 7, 8, 10, 12, 13; FRP# 10, 12, 14, 15, 17; OP# 12, 13, 14, 16, 19, 19a, 20, 23, 30	2	1-3	Inform residents about flood insurance and it's coverage	Anna Johnson and Building Inspection Services	This is one of several annually attended Roundtable discussions, see OP list for others.	Charleston County
CPI#4	**Brochure:** "Protecting Your Business from Flooding"	1-5, 7-9	1-3, 5	Increase knowledge about how to protect your business or belonging in the event of a flood	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	FEMA
CPI#5	**Brochure:** "Benefits of Flood Insurance Versus Disaster Assistance"	1, 2, 6, 9	1-3	Increase awareness and number of flood insurance policies	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	FEMA
CPI#6	**Brochure:** "Your Homeowner's Insurance Doesn't Cover Floods"	1, 2, 4, 5	1-5	Inform residents about insurance coverage and promote purchase of flood insurance policies	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	FEMA

CPI#7	**Brochure:** "Your Homeowner's Insurance Doesn't Cover Floods (Spanish)"	6	1-5	Inform residents about insurance coverage and promote purchase of flood insurance policies	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	FEMA
CPI#8	**Brochure:** "Why You Need Flood Insurance"	1, 2, 4, 6	1-5	Increase awareness and number of flood insurance policies	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	FEMA
CPI#9	**Brochure:** "NFIP Mandatory Purchase Requirement: Policies, Processes and Stakeholders"	1, 2, 4, 6, 8	1-5	Increase awareness and number of flood insurance policies	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	FEMA
CPI#10	**Brochure:** "Myths and Facts About the National Flood Insurance Program"	1, 2, 5, 8	1	Increase awareness and number of flood insurance policies	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	FEMA
CPI#11	Charleston County Building Inspection Services employees offer technical assistance and financial advice on flood zone information and flood insurance information to customers and phone inquires	1-4, 7	1-5, 9	Increase awareness and number of flood insurance policies	Charleston County Building Inspection Services	Continous in-office activity- see TA Table for occasions.	Charleston County
CPI #12	**Brochure:** "Preferred Risk Policy- For Homeowners and Renters"	1, 2, 4, 6, 9	1, 3, 7	Increase number of flood insurance policies	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	FEMA
CPI#13	**Brochure:** "Preferred Risk Policy- For Homeowners and Renters (Spanish)"	1, 2, 4, 6, 9	6	Increase number of flood insurance policies	Charleston County Building Inspection Services	This brochure is available in offices and taken to Expos attended.	FEMA
CPI#14	**Public Forum/Town Hall** with Councilmember Kylon Middleton. The purpose of the town hall meeting was to discuss and inform about flood insurance/the NFIP. Topics included what is the NFIP, definition of SFHA, the mandatory purchase requirement, flood risk outside the SFHA, what a typical policy covers, how to purchase flood insurance, a typical waiting period for a policy to become effective, ways to decrease insurance premiums, and the CRS discount.	1, 2, 3, 4, 9	1--8	Inform residents about insurance coverage and promote purchase of flood insurance policies	Charleston County Building Inspection Services and County Council	This will be an annual town hall event that will take place with the support of elected officials	Charleston County
CPI #15	Expos: staff regularly attends local and regional hazard awareness expos and other types of expos. Staff brings the above literature and other literature relating to flood insurance. At these expos, staff is available to answer questions about flood insurance, ranging from how to obtain it to what typical policies cover.	1, 2, 3, 4, 9	1--8	Inform residents about insurance coverage and promote purchase of flood insurance policies	Charleston County Building Inspection Services	Expos are attended as frequently as possible. In 2022, staff attended the Black Expo and the James Island/Folly Beach Hurricane expo. These are annual events.	Charleston County

Table 10: Direct Contact Offering Flood Protection Assistance and Promoting Flood Insurance

Event/Project	Date	Hazard(s) Addressed
South Carolina Department of Insurance meeting. Director Carl Simmons attended a regular meeting of the group to discuss issues involving buildings, construction, codes, and insurance of all kinds, including flooding, wind, and hail.	1/18/2018	Building safety, insurance, hurricane mitigation, flood insurance, property protection
Katie Faith attended annual ASFPM conference in Phoenix, Arizona which covered flood mitigation, flood insurance, and overall trends in the flood management practice around the country.	6/18-6/21	Flood insurance, flood risk, disaster mitigation, floodplain management
Charleston County Natural Hazard Awareness Expo involved staff including Director Carl Simmons, William Horne, Cindy Cahill and Katie Faith. This event was FEMA grant funded expo that reached the Tri County area on hazard awareness and disaster mitigation. Over 30 exhibitors set up booths to educate the community on their services and how to be prepared.	8/9/18-8/11/18	All CRS messages including but not limited to: property proection, hazard awareness, rebuilding after a hazard, natural benefits, safety, flood insurance
South Carolina Department of Insurance meeting. Director Carl Simmons attended a regular meeting of the group to discuss issues involving buildings, construction, codes, and insurance of all kinds, including flooding, wind, and hail.	1/24/2019	building safety, insurance, hurricane mitigation, flood insurance, property protection
Katie Faith and William Horne attended a State Hazard Mitigation Planning meeting for the Santee and Peedee watersheds. Future grant funding was discussed for the needs to be resilient to hazards.	2/4/2019	Flood, property protection, low income and vulnerable populations, safety, flood incurance.
Katie Faith held the first Project Impact subcommittee and Hazard Mitigation Plan meeting where she discussed future planning needs and getting the 5 year HMP approved. Multiple jurisdictions were in attendance.	2/19/2019	All CRS messages including but not limited to: property proection, hazard awareness, rebuilding after a hazard, natural benefits, safety, flood insurance; All hazards
Sonia Hill, Cindy Cahill and Margaret Synder attended the Black Expo to educate the community on hazards including flooding. This event was held at the North Charleston Area Convention Center/Colesium.	3/9/2019	All CRS messages including but not limited to: property proection, hazard awareness, rebuilding after a hazard, natural benefits, safety, flood insurance; All hazards
Katie Faith, Sonia Hill and Mary Shemon attended the Annual SCAHM conference. Katie presented to a group of about 75 people on Outreach strategies and public information.	3/18-3/20	Public outreach and messaging about flood insurance and natural hazards.
Carl Simmons made a presentation to a group of architects about the importance of building codes, changes to the flood maps and future conditions.	4/16/2019	Flood, property protection, low income and vulnerable populations, safety, flood insurance.
Katie Faith and intern Sean Dove attended the annual James Island CERT expo on hurricane awareness at Lowe's. Anna Kimelblatt and Sean Dove attended the annual James Island CERT expo on hurricane awareness at Lowe's.	5/4/2019 5/7/22	All CRS messages including but not limited to: property proection, hazard awareness, rebuilding after a hazard, natural benefits, safety, flood insurance; All hazards
Katie Faith attended the North Mt Pleasant Disaster Awareness Expo. She set up a tent and distributed brochures on flooding, flood insurance, earthquakes, hurricanes, hazard preparation, generator safety, and building codes.	6/8/2019	flooding, flood insurance, earthquakes, hurricanes, hazard preparation, generator safety, and building codes
Katie Faith and intern Ina Ivanova attended the Seabrook and Kiawah Island Disaster Day. Katie Faith also gave a presentation on flooding preparation and the flood maps.	6/14/2019	flooding, flood insurance, earthquakes, hurricanes, hazard preparation, generator safety, and building codes
Sean Dove and Katie Faith attended Folly Family Fun Beach night to educate people on the flood maps, sea level rise and importance of flood insurance.	7/9/2019	Flood hazards and flood insurance
Sean Dove attended the Eastside neighborhood outreach on flooding and services offered by surrounding local offices.	7/28/2019	Flood hazards and flood insurance.
Katie Faith participated in the State Chapter ASFPM board meeting.	8/21/2019	Flooding, flood insurance
Katie Faith held her first quarterly meeting for 2020 for the Hazard Mitigation Plan Update	2/19/2020	All CRS messages including but not limited to: property proection, hazard awareness, rebuilding after a hazard, natural benefits, safety, flood insurance; All hazards
Katie Faith attended a Charleston Resilience Network event where Sea Level Rise strategies and overall public messaging was discussed.	2/25/2020	All CRS messages including but not limited to: property proection, hazard awareness, rebuilding after a hazard, natural benefits, safety, flood insurance; All hazards
Anna Kimelblatt conducted six full days of outreach at 12 Charleston County Public Library branches throughout the entire County.	Spring 2021	All CRS messages including but not limited to: property proection, hazard awareness, rebuilding after a hazard, natural benefits, safety, flood insurance; All hazards

Anna Kimelblatt presented at Councilwoman Anna Johnson's monthly round table discussion.	5/26/21	All CRS messages including but not limited to: property protection, hazard awareness, rebuilding after a hazard, natural benefits, safety, flood insurance; All hazards
Anna Kimelblatt gave a presentation regarding the Hazard Mitigation Plan (its purpose, structure, updates, goals, and implementation) to the Charleston County Resilience Committee.	7/21/2021	All hazards.
Anna Kimelblatt conducted six full days of outreach at 12 Charleston County Public Library branches throughout the entire County.	Spring 2022	All CRS messages including but not limited to: property proection, hazard awareness, rebuilding after a hazard, natural benefits, safety, flood insurance; All hazards
Luz Agudelo worked with repetitive loss property owners to apply for FMA and HMGP grants to elevate their homes. Applications are currently in process. Flood protection options and insurance-related items were discussed at length.	Fall 2021-ongoing	Flood hazards, flood insurance, mitigation options, property protection, financial assistance.
Anna Kimelblatt, Sean Dove, and Luz Agudelo attended the Charleston Black Expo to be available to answer questions related to flooding, hazards, flood insurance, and other related topics.	March 12, 2022	All CRS messages including but not limited to: property protection, hazard awareness, rebuilding after a hazard, natural benefits, safety, flood insurance; All hazards
Tyler Ardron, Risk Reduction Plus, gave a presentation on Flood Insurance and Risk Rating 2.0 to the Charleston Regional Hazard Mitigation Plan / Program for Public Information Committee	March 24, 2022	Flood hazards, flood insurance, property protection
Anna Kimelblatt presented at a public Forum/Town Hall with Councilmember Kylon Middleton. The purpose of the town hall meeting was to discuss and inform about flood insurance/the NFIP. Topics included what is the NFIP, definition of SFHA, the mandatory purchase requirement, flood risk outside the SFHA, what a typical policy covers, how to purchase flood insurance, a typical waiting period for a policy to become effective, ways to decrease insurance premiums, and the CRS discount.	July 19, 2022	Flood hazards, flood insurance, property protection.
Isabella Causey attended Town of James Island Hazards Expo	May 5, 2023	All CRS messages including but not limited to: property protection, hazard awareness, rebuilding after a hazard, natural benefits, safety, flood insurance; All hazards
Isabella Causey, Sean Dove, and Luz Agudelo attended the Charleston Black Expo to be available to answer questions related to flooding, hazards, flood insurance, and other related topics.	March 11, 2023	All CRS messages including but not limited to: property protection, hazard awareness, rebuilding after a hazard, natural benefits, safety, flood insurance; All hazards
Floodplain Management hosted a Natural Hazards Expo to educate the public on how to better prepare for natural hazards that affect the area.	August 12-13, 2023	All hazards, flood insurance, property protection, safety, hazard awareness/mitigation
Isabella Causey attended Charleston Green Drinks	September 19, 2023	All hazards, flood insurance, property protection, safety, hazard awareness/mitigation

Also of great public benefit, County Council previously held a Round Table discussion open to the public to inform citizens about flood insurance. Flood insurance has been promoted on several occasions by Council Member Johnson in these presentations and discussions of area flood hazards and mitigation (CRS Activity 370). In 2022, another round table discussion regarding flood insurance was held with Councilman Middleton on July 19. Many aspects of flood insurance were discussed, including what your policy covers, how to decrease your annual premium, and where to buy flood insurance. A flood insurance meeting will be held annually with a County Council representative. See below attachments for the News Release documenting one of these meetings (see OP report backup and CPI backup for other meeting documents).

Attachment: Round Table Discussion Promoting Flood Insurance

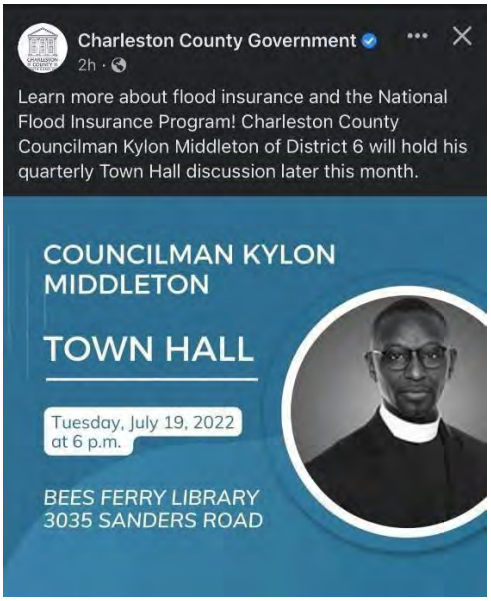
Charleston County and City of North Charleston
Consolidated Plan PY21-25 and
Program Year 2021 Annual Action Plan

ROUNDTABLES AND PUBLIC HEARINGS/MEETINGS

Citizens' Input Needed on Spending Millions of Dollars in Grant Money

Charleston County and the City of North Charleston receive federal funds from the U.S. Department of Housing and Urban Development (HUD).

- Every 5 years, Charleston County prepares a Consolidated Plan to identify and prioritize the community needs for improving **housing, community programs, homelessness services, and infrastructure (water/sewer, well/septic, sidewalks)**.
- Need public input to set quantifiable goals to invest future HUD funding to address the needs of low-to-moderate income individuals in Charleston County.



Technical Assistance (370TA)

Another very important aspect of flood insurance promotion is providing technical assistance to individuals and promoting flood insurance through this assistance. The Charleston County Building Inspection Services Director, Administrative Office Manager, Floodplain Coordinator, Civil Engineer Project Manager, Administrative Service Coordinators, Co-Plan Manager, Technical Service Manager, and Technical Office Manager, all of who are Certified Floodplain Managers. These individuals can provide assistance and advice and have assisted individuals on numerous occasions with information about their properties and the importance of flood insurance as well as financial assistance options. Table 11 below lists technical assistance records for the last year. In addition to this technical assistance, flood-related inspections are also provided as a courtesy to residents as requested to inform them about their flood determination. Standard Operating Procedure "I.2 Flood Zone Related Inspections," for the Charleston County Building Inspection Services department details the procedures for conducting these inspections. The below information is taken from this Standard Operating Procedure:

I. Other Flood-Related Inspections

A. Community Rating System Inspections

1. These inspections are performed at the request of a property owner who indicates they need assistance with a flooding problem
2. Field inspectors are to offer suggestions to property owners as to potential options to help minimize flood losses on the property.
3. Field inspectors are to document the inspections on their daily inspection lists and the CRS flood protection assistance forms.
4. A copy of the inspection documentation is to be maintained by the Administrative Staff for the Community Rating Systemrecertification.

Flood protection assistance and flood insurance promotion are essential in a county like Charleston because of the multiple hazards that can lead to flooding in our area. A heavy rainfall, an exceptionally high tide, a tropical storm, hurricane or other weather event, all pose an imminent risk to the area. Not all homes in the area are located within Special Flood Hazard Areas, but most could benefit from carrying flood insurance or offer information regarding protection against floods as most homeowner policies do not include flooding as a covered event and people do not know what measures they can take to prevent issues in the future.
Overall, in the joint efforts of the Committee, County departments and stakeholders, flood insurance promotion has been identified as a key to the success of most implemented outreach programs. Identifying target audiences and outreach methods are a major part of the Committee's goal and objectives. The Committee will continue to evaluate the effectiveness of each program and adjust or add new programs as it requires. This flood insurance assessment will be evaluated annually as a part of the *Charleston Regional Hazard Mitigation Plan* and the Program for Public Information included in it.

Table 11: Technical Assistance Related to Flood Insurance Promotion

Date	Location	PARCEL ID	Firm Pannel	Current Flood Zone	BFE	Ins. Info Given	CBRS Zone	Past Flood or Repetative Loss	Sensitive or Wetland	360 Flood Protection Assistance financial assistance advice discussed	370 Flood Zone Info Discussed	Findings and Reccomendations
2/1/18	Charleston County	310-02-00-100	491J	AE	11	Yes	No	No	No	No	Yes	Owner verifying flood zone and what flood zone requirements are.
2/16/18	Seabrook	multiple		AE								
3/1/18	McClellanville			VE			No	No	No	Yes	Yes	Information on coastal A zone/v zone requirements. Discussed enclosures/ breakaway walls, insurance
4/18/18												Information on 50% rule for home renovation. Explained restrictions and requirements if exceeding 50%
5/16/18	Charleston County	577-14-00-018	635J	AE	14	Yes	No	No	No	No	Yes	Looking to enclose area below house, discussed flood vents, insurance, new maps etc….
5/29/18	Charleston County	614-13-00-082	555J	VE	17	Yes	Yes	No	No	Yes	Yes	A portion of lot in CBRA zone. Went over LIMWA, CBRA, INS, etc… lender required info that house was not in the CBRA zone.
7/6/18		none									Yes	wanted to know how to read elevation certs to set heights of generator platforms. Discussed FFE, BFE and freeboard
9/6/18	County	4.54E+09	681J	AE	12	Yes	No	No	No	No	Yes	looking for FLC, explained PreFIRM, discussed surveyors, discussed future maps and preferred flood ins.
9/26/18	**James Island**	**4.54E+09**	**681J**	**X**	**N/A**	**Yes**	**No**	**Yes**	**No**	**Yes**	**Yes**	**Site visit for repetitive loss property. Crawlspace that contains ductwork floods. Discussed PDM grant to elevate HVAC Stormwater accumulates in back yard, all stormwater drains to back yard. Looking at drainage in the area.**
11/2/18	**County**	**3.3E+09**	**686J**	**VE**	**15**	**Yes**	**No**	**Yes**	**No**	**Yes**	**Yes**	**Site visit for repetitive loss property. House built on crawlspace - no flooding there, Has enclosed attached garage and made living area that floods. Complains about water staying in crawlspace. All stormwater drains towards the house. Discussed installing flood vents, adding vents to garage area and removing living area from enclosed garage. Not**

												interested in elevation of home.
1/22/19	County	1.56E+09	640J	AE	12	Yes	No	No	No	NO	Yes	Owner wanted flood zone info. Installing manufactured home on site. Discussed what was needed for building permit and insurance requirements.
5/3/19	County	3.881E+09	260J	X	N/A	Yes	No	No	No	No	Yes	Buyer wanting to know flood zone and if insurance reqd. Discussed Perferred insurance.
8/29/19	County									No	Yes	Recently bought land and was wondering how the FEMA Flood Zone change from 2004 FIRM to 2016 FIRM would dchange the height of his home he plans to build
8/29/19	James Island									NO	Yes	Was looking for an elevation certificate to get flood insurance for his property. Unfortnutaly the home as built in 1972 and there was no elevation certificate on file
8/29/19	COUNTY									No	Yes	Jim wanted to know his flood zone and to see if we had an elevation certificate on file for his newly purchased home
8/29/19	COUNTY									NO	Yes	Wanted information on construction of a new home in the upcoming Prelim Flood Zone.
8/29/19	Folly/County									No	Yes	Realtor wanting to know about an elevation certificate for a newly listed home on Folly.
7/22/19	Edisto Island	066-00-00-010						yes		Yes	Yes	All crawl space losses- mold etc. Added sump pump in crawl space.
7/23/19	Hollywood	246-00-00-013						yes		Yes	yes	Low end of street, marsh at rain and creek create probably garage area flooding
7/9/19	Johns Island	282-00-00-029						yes		Yes	Yes	next to stream or canal with restricted flow at bridge
7/16/19	James Island	334-00-00-028						Yes		Yes	Yes	Looking at stono river
7/1/19	James Island	343-01-00-027						Yes		Yes	Yes	Owner lived here 22 years and counting. First flood in 2015, second in 2017. A few inches of floodwater across the ground floor both times. Source: saturated ground, enters house through floor. 3-4 days to completely recede. Installed sump pump (7 holes) after 2017 flood. No easements on property, ones nearby back up often.
7/1/19	James Island	343-02-00-059						Yes		Yes	Yes	Owner- ditches on the road overflow, .5' at the house (water comes up to the first step). It gets under the house (ruins HVAC and duct work). Garage gets 1', has since been sealed off (removed garage door, it is a wall now).
7/1/19	James Island	343-11-00-098						Yes		Yes	Yes	yard floods to first step; 8in of water in garage during 2015 flood; ductwork damage
7/1/19	James Island	343-11-00-099						Yes		Yes	Yes	studio and backyard flood during heavy rains, ditch overflow, standing water
3/22/19	County	350-09-00-052						Yes		Yes	Yes	Yard is lower than road, city easement along road overgrown. Floods back to front, stays for house. Water pools on Piper rd. Drains away from stono. Ditch in front and culvert under driveway. Right side of property has strip of dirt. Front yard mainly drains left except for right side of driveway which drains right. Driveway is below yard. Backyard drains backward, landscape has mounds at bases of pine trees
6/28/19	County	350-14-00-022						Yes		Yes	Yes	circular driveway is higher than ground around house; tidal flooding; stormwater flooding; drain too small overflows hit creek behind house and come back; insufficient drainage. Yard floods during rain/hurricane/high tide; knee deep water on street in front of house; Matthew 18inches of water in garage and water under house
3/20/19	County	350-14-00-024						Yes		Yes	Yes	drains to street; ground forms a slight bowl near front gate. Installed sump pump. Over creek flooding from front and back of island. One drain front right corner of driveway, backyard is higher than front, slopes back to creek. Dock in back.
6/28/19	County of Charleson, City of Charleston	350-14-00-075						Yes		Yes	Yes	Tidal flooding, salt marsh in ditch along Capri, most of water accumulates here at house. Ditch and culvert under driveway.
6/28/19	County	350-14-00-077						Yes		Yes	Yes	flood valves/tidal gauges not working- water in shady ln circle now at high tide. Matthew; water got to middle step of porch and in garage
6/28/19	County	350-14-00-082						Yes		Yes	Yes	garage flooded about 4 inches in the last 2 hurricanes; "tidal

												gates have not worked in 10yrs". Tidal flooding, floods to street.
6/28/19	County	350-14-00-098						Yes		Yes	Yes	flood gate valve frozen in place in water area beside home. Floods at high tide. Air Harbor drainage comes behind house-canal has silt and needs to be dredged (done 2x in past). Water comes in from storm drain
6/26/19	County	353-11-00-002						Yes		Yes	Yes	flooding in crawlspace from Ashley river overflow 24". Driveway had 2" of water but street corner one block east had 2'. HVAC flooded in crawl space. Tidal flooding. Yard slopes down front to back, marsh behind house with another house sitting on fill almost directly behind the propery.
6/26/19	County	353-11-00-015						Yes		Yes	Yes	property received floodwater from parcel across the street. Water emerges from storm drain but hasn't reached property due to high embankment across the back of property. Drains back to front, however floodwaters approach against the natural drainage direction
6/26/19	County	353-13-00-029						yes		Yes	Yes	Owner would like to be bought out. Front yard storm drain, drains into lot. Garden in the backyard catches runoff and directs it down to the side towards neighbords.
6/26/19	County	353-14-00-090						Yes		Yes	Yes	Drainage ditch under driveay does not empty (front right corner). This connects to drain on front left corner of property which is at a lower point than the rest of the yard by .5'. Ditches look overgrown, nearly blocked at points with vegetation. Higher front yard than neighbors, higher than road, driveway, and front walk way. 3 vents present.
9/12/19	County	353-14-00-162						Yes		Yes	Yes	Condition of structure very good. Location flooding- no adequate out pore from big storms.
3/13/19	County	353-14-00-199						Yes		Yes	Yes	Does not have adequate vents present. Ditch in front of home not well kept. Flooding originates behind house, property sits higher than neighbors. Drainage pipe under driveway. Front drains to road. Edges of backyard do trap some water. Backdoor is accessed via a step that is lower than the rest of the back yard by about 1/2 foot.
6/26/19	County	353-14-00-208						Yes		Yes	Yes	Newer than surrounding structures. Drains to road, higher than adjacent property and property behind. Owner reports no flooding issues, only sewer issues. Slope front to a ditch, right side of property has a shallow ditch connecting to the front ditch, flows under Raol Wallenberg. House sits above road.
7/19/19	County	486-11-00-041						Yes		Yes	Yes	Not adequate vents present. End building on street and next to bridge. Lowest spot in development. Outfall is too small for large storm. Structure in good condition.
8/30/19	Hollywood	248-03-00-181	0470J	X		Yes	no	no	no	Yes	Yes	Homeowner needed flood zone determination and had questions about flood insurance in X zones. Homeowner planned to add a flood insurance policy
9/26/19	Kiawah Island	207-05-00-081	0785J	AE	12			no	no	Yes	Yes	Homeowner looking at flood zones on new home
12/13/19	Meggett	127-00-00-168		X		Yes	No	No	No	No	YES	Asked for zoning,flood information, and insurance.
1/10/20	James Island	452-01-00-087		VE	15	Yes	No	No	No	Yes	Yes	Homeowner interested in the map change as well as the flood history of the area. They were changing insurance providers and were curious if there was anything they cold do to lower their rate for a VE structure.
1/14/20	Seabrook Island	147-04-00-025		AE	13	Yes	No	No	No	Yes	Yes	homeowner needed flood zone determination letter for insurance
1/21/20	County	431-06-00-088		AE	13	No	No	No	No	No	Yes	Looking to the map change and what the change in base flood meant for his property
1/24/20	Awendaw	630-00-00-011	370	VE	17	Yes	No	No	No	No	Yes	Owner asked for future flood zone information and possibility of a LOMA. Discussed the LiMWA, state of the new flood maps and the requirements for new build on this parcel.
2/7/20	James Island		0677J	AE	12	Yes	No	no	no	Yes	Yes	owner wanted information on preliminary flood map implications for his home

2/12/20	MEGGETT	160-00-00-187	0610J	AE	12	yes	no	no	no	no	yes	New homeowner emailed to discuss the elevation certificate and insurance options once property leaves the 100 year floodplain
2/13/20	MEGGETT	159-00-00-215	0630J	AE	12	YES	NO	No	No	No	Yes	Homeowner wanted more information on the new maps and how this would change insurance plan and the mandatory flood insurance requirement
2/19/20	County	257-00-00-039	0655J	AE	12	Yes	No	No	No	No	Yes	Homeowner bought land was curious of the various flood zones on the property and the advantages/disadvantages of building in each zone in terms of construction and insurance.
2/28/20	County	343-10-00-031		X500		Yes	No	No	No	No	Yes	Homeowner curious about the map change and what the difference between x500 and shaded x zones were.
3/2/20	Seabrook Island	149-00-00-042		VE	14	YES	No	No	No	Yes	Yes	Homeowner wanted to know what they could do to lower flood insurance. Also curious when the new maps would go into effect as their flood zone is planned to change from VE 14 to AE 9.
3/2/20	James Island	425-12-00-172		AE	12	YES	No	No	No	Yes	Yes	Potential homeowner looking for the elevation certificate and any info on flood ones, new maps, and insurance for her potential new home.
3/11/20	James Island	425-04-00-077		AE	12	Yes	No	No	No	Yes	Yes	Homeowner needed their elevation certificate explained to them and he was inquiring bout the new maps and when that change would occur and what that change would be.
4/20/20	James Island	425-10-00-134		AE	12	Yes	No	No	Yes	Yes	Yes	Homeowner needed elevation certificate for new flood insurance policy. Was interested to see what the new maps meant for his property.
5/14/20	Seabrook Island	147-07-00-088		AE	13	No	No	No	No	No	Yes	Homeowner was emailing to see what the requirements were for his flood zone for an HVAC installation
5/26/20	Awendaw	629-00-00-133		X		YES	No	No	No	No	Yes	Asked for the flood zone and the difference between X and shaded X zone.
6/1/20	James Island	425-01-00-029		AE	12	Yes	No	No	No	Yes	Yes	Homeowner wondering about the new maps because they will be moving to a shaded X from AE 12. Wanted to know what it meant for cost of insurance.
6/10/20	Meggett	159-00-00-038	0630J	AE	12	YES	No	No	No	No	Yes	Commercial property looking to replace a power pole and stay above BFE. Needed to know the BFE height in case he needed to build a platform to reach emergency shut off. Platform not required.
6/19/20	Seabrook Island	147-03-00-09		AE	13	No	No	No	No	No	Yes	Vacant property. Homeowners were wondering about the new maps and the associated flood zones for building a new single family residence.
7/20/2022	James Island	426-03-00-067		AE	10	Yes	No	Yes	No	Yes	Yes	Homeowner in a Rep Loss area looking for ways to mitigate his home to better protect against possible flood damage and reduce the cost of flood of insurance which had rose greatly in 2021. We recommended raising equipment and better wet floodproofing garage and crawl space.
8/22/2022	McClellanville	764-11-00-018		AE	11	Yes	No	No	No	Yes	Yes	Renovation of an old Restaurant Under SID. We walked through the scope of work with them to make the Building as flood resistant as possible as well as reduce the cost of flood insurance.
9/6/2022	Awendaw	681-00-00-067		VE	15	Ins. Info Yes	Cobra: No	Past flood, rep loss: No	Wetland No	Flood/finance assist: Yes	Flood zone: Yes	Discussed the flood zones on the property and the various standards that would be required. Property has VE Zone and Coastal A. We discussed that flood insurance would not be impacted directly by the Coastal A Zone area, but would be higher in the VE Zone. Project was designed and built in the VE Zone.
10/4/2022	James Island	425-10-00-086		AE	11	No	No	No	No	Yes	Yes	Discussed and gave recommendations on how they could make the crawl space more flood resistant after having some issues post Hurricane Ian.
10/17/2022	County	353-13-00-026		AE	10	No	No	Yes/RLP	No	Yes	Yes	Homeowner interested in participating in FMA buyout feasibility study, latest flood claims, expectations, concerns, mitigation options
4/4/2023	Hollywood	163-00-00-153		AE	10	Yes	No	No	No	Yes	Yes	Mobile Home mover and homeowner inquired on best placement for a new mobile home ss the old home was right on Shaded X border and AE 10, we recommended that it be placed in the Shaded X outside of the SFHA. The applicant had it moved to the Shaded X

												to help reduce the presence of mobile homes in the SFHA.
4/12/2023	County	328-00-00-004		AE	11 (coastal)	Yes	Yes		Yes	No	Yes	Homeowner inquiring if property is still in CBRA after new flood maps. Discussed the option for federal flood insurance.
6/22/2023	Awendaw	700-00-00-072		AE	12	Yes	No	No	Yes	Yes	Yes	Mr Sweeney met with us to discuss the potential of renovating the old Awendaw Creek Inn. He needed information on the requirements, flood zones, substantial improvement regulations, and setbacks. We informed him of what would be required and the potential impact that could have the cost of flood insurance.
7/10/2023	Awendaw	701-00-00-104		AE	12	No	No	No	No	Yes	Yes	Applicant needed help determining flood zone for a generator install as she has X to VE Zone on her property. Her site plan referenced an outdated FIRM and was unusable for the current scope of work. She was informed of her current flood zone and required height for new equipment.

Hazard Disclosure (CRS Activity 340)

Real estate agencies provide hazard disclosure to prospective homeowners. Charleston County works with real estate agents to provide them with any information that they need to provide prospective homebuyers and sellers with to give them an accurate picture of what they are purchasing and what kind of flood insurance they will be required to or should purchase. There is a real estate agent on the Charleston Regional Hazard Mitigation & Program for Public Information Committee to provide valuable perspective and information to the Committee regarding this topic. Full disclosure is a necessary part of any real estate purchase. See Table 11 above for some instances where Charleston County assisted both real estate agents and prospective buyers and sellers with information regarding flood zones and flood insurance.
Also, as a part of the Standard Operating Procedures for Charleston County, real estate transaction-related inspection services are provided. Standard Operating Procedure "I.2 Flood Zone Related Inspections" details the inspections below:

A. Special Requirements for Voluntary Flood Inspections for Real Estate Transactions per ordinance Article VII (fee-based)

1. Property records are to be investigated to determine what permits were obtained for the property and applicable flood ordinance requirements based on the dates of these permits prior to inspections being conducted.
2. Inspections are conducted primarily for floodplain management-related elements, based on the date of construction of the building.
3. Any work done without applicable permits is to be noted on the inspection report and photographed.
4. The Department Director will need to approve and sign any letters mailed to the requester of the inspection.

OP#26 brochure has been added to the outreach project list detailing flood insurance and flood risks for prospective and new homeowners. See brochure below.

Attachment: OP#26 "Shopping for Your Dream Home? Know & Prepare for Flood Risk Before You Buy"



Know the Risk & Impact of Flooding

Floods are the most frequent and costly natural hazard in the United States. Given the Lowcountry's low elevation, coastal location and frequency of heavy precipitation, tropical storms and hurricanes flooding is a very serious threat to everyone in the region. Even those not living close to the water are at risk.

The force of moving water or waves can destroy a building. Even standing water can float a building, collapse walls, or buckle a concrete floor. Water-soaked interiors, such as carpeting, clothing, upholstered furniture, and mattresses, may have to be thrown away after a flood. Personal items, such as photographs and heirlooms, may be destroyed.

Flooding threatens the public's health and safety. People drown. Stagnant water is a breeding ground for disease and pests. Excess moisture fosters the growth of mold and mildew. Flood waters carry toxic substances such as fertilizer, gasoline and oil. In addition, the prevalence of saltwater is an added concern as it pollutes drinking water wells.

The financial and personal cost of flooding can be devastating. Too many families have lost their homes and belongings, and some have lost their lives, and they never saw it coming.



It doesn't take much—just a few inches of flood water can cause serious and permanent damage.

Get educated and be prepared. As you shop for or build your dream home, familiarize yourself about flood risks and what you can do to lessen those risks and protect your family and your home.

A Flood-Aware Homebuyer's Checklist

Understand Your New Home's Flood Risk

- ☐ Identify if your property is in a floodplain and its flood zone
- ☐ Determine your elevation, flood depth, velocity and warning time
- ☐ Find out if the property is subject to other hazards
- ☐ Learn if the property or area has been flooded in the past
- ☐ Ask if the home has been built or modified to current floodplain regulations and what building or zoning regulations are in effect

Build & Buy Responsibly

- ☐ If building, hire design professionals familiar with local hazards, including flooding
- ☐ If purchasing an existing home, have it inspected by a professional home inspector
- ☐ Obtain permits for construction, from your local jurisdiction, even if you do the work yourself
- ☐ Hire contractors licensed by South Carolina and/or your local jurisdiction
- ☐ Use flood resistant material as necessary
- ☐ Inquire as to whether federal aid is available for retrofitting, relocating, or demolishing structures with repetitive flooding

Get Insured

- ☐ Purchase flood insurance—get started by contacting your insurance agent or visiting FloodSmart.gov

Remain Aware of Flooding After Moving In

- ☐ Create an emergency Kit and Plan
- ☐ Protect Natural Floodplains and support their function by landscaping with native plants and minimal fertilizer
- ☐ Keep drainage channels and catch basins free from obstructions such as tree limbs and trash
- ☐ Educate yourself about additional flood prevention measures to protect your family and home

Remain Aware of Flooding upon Moving In

Create an Emergency Kit and Emergency Plan

As soon as you move in, make an emergency kit and plan. Your kit should contain supplies needed to shelter in place for at least three days. Your plan should include:

- A strategy for family communication.
- Monitoring local media for the latest news and official instructions.
- Details on how you will safely shelter in place or evacuate. Evacuation route maps should be in each car and incorporate these routes into your plan.
- Requirements of household members with special needs.
- Caring for your pet(s) if you shelter in place or evacuate. Most shelters prohibit pets.



To learn more about preparing your emergency supply kit and emergency plan visit FEMA.gov, Ready.gov or SCEmd.org.

Protect Natural Floodplains & Keep Drainage Channels Clear

Preserve wetland areas and oceanfront sand dunes as they protect property from flooding. Keep them clean and do not walk on sand dunes.

Help support natural floodplain functions by gardening with native plants and minimal fertilizer to establish vegetative buffers.

Keeping drainage channels and catch basins free from obstruction reduces flooding during heavy rains. Maintain the channels near your property and remove or report obstructions. Request ditch cleaning from or report dumping violations to your local jurisdiction, before a storm occurs.

Educate Yourself about Flood Prevention Measures

Upon moving into your home, educate yourself about additional flood prevention measures to safeguard your new purchase, your family and your belongings. Libraries, government offices, and the internet have extensive flood hazard mitigation information.

Build & Buy Responsibly

If you build a new home, hire architects, engineers and other design professionals familiar with flooding and other local hazards, to prepare your building plans.



The design professionals you hire should have knowledge of the area's floodplains, local building regulations and flood prevention measures. A building can be protected from most flood hazards, sometimes at a relatively low cost. New buildings can be set back an appropriate distance from water and wetlands. New construction and mechanical equipment (hot water heaters, air conditioning units, etc.) must be elevated to or above your local jurisdiction's design flood levels.

If you are buying an existing home, have your potential new home inspected by a professional home inspector as early as possible in the buying process. The inspector will examine all major components of the home and alert you if they find damage that may have been caused by past flooding and requires repair. The inspector may recommend retrofitting and other flood prevention actions you should take post-purchase, including regrading, constructing berms or building floodwalls.



Whether you are building your home, or preventing or correcting flood damage in an existing home, only hire contractors licensed by South Carolina and/or local jurisdictions who will use flood resistant material as appropriate. Obtain permits as required by your local jurisdiction for construction-related work, even if you do the work yourself.

Contact your local jurisdiction or Charleston County Building Inspection Services to see if federal aid is available for retrofitting, relocating, or demolishing structures with repetitive flooding.

Understand Your Potential New Home's Flood Risk

The entire Charleston region, whether you are near water or not, is at risk for flooding. When shopping for a home, learn how vulnerable your potential new property might be before you buy.

The County of Charleston and local jurisdictions regulate construction and development to protect buildings from flood damage. Filling of dirt and similar projects are prohibited in certain areas. Houses substantially damaged by fire, flood, or any other cause must be elevated to or above the regulatory design flood level when they are repaired.



Before you commit to buying a property, find out if it is located in a floodplain and determine its elevation. Learn about historical flooding in your new neighborhood. Inquire about the age of the home and if it has been built or modified to current floodplain regulations. In the Charleston area, most current floodplain regulations did not come into effect until the 1970s. As a result, homes built before then could be more vulnerable to flood damage.

Ask your real estate agent, contractor, builder and your local jurisdiction if the property is in a floodplain and the property's flood zone; if it has ever been flooded; what the flood depth, velocity, and warning time(s) are; if it is subject to any other hazards; and what building or zoning regulations are in effect.

Your potential new neighbors, homeowners association and library are also good resources for this information.

More information can be obtained on regulations, floodplains and flood zones from your local jurisdiction.

Get Insured

Flood insurance is one of the best protection measures for a building. Usually, homeowners insurance does not cover floods. Only flood insurance covers floods. Flood insurance is available to owners and renters of residential and commercial properties under the National Flood Insurance Program (NFIP) and can be purchased through a licensed insurance agent.

NFIP policies can cover the building, the contents, or both. All properties in the Special Flood Hazard Area, with a federally backed mortgage, will be required to have flood insurance. Everyone should have flood insurance.

Typically, there is a 30-day waiting period from date of purchase before a policy goes into effect.

Premiums are determined by risk level, the amount of coverage, deductible, age of home, elevation and type of building. The average premium for a residential flood policy is less than $2 a day. The cost of flood insurance is a drop in the bucket compared to the cost of flood damage.



Visit FloodSmart.gov or contact your insurance agent for more information. Ask if you qualify for any discounts.

Your insurance agent may require an elevation certificate to get you a quote. If you do not have an elevation certificate, contact your local jurisdiction to see if it is on file. If not, contact a surveyor, engineer or architect to prepare one.

Flood Protection Information (CRS Activity 350)

In an effort to provide flood protection information, Charleston County has partnered with the Charleston County Library system to introduce FEMA flood publications in all sixteen of the area's branch locations. Below is a list of the publications available at all sixteen branch locations.

Above the Flood: Elevating Your Floodprone House, FEMA-347, 2000
http://www.fema.gov/media-library-data/20130726-1443-20490-3026/fema347cvr_toc.pdf
Catalog # R693.892 ABOVE

Answers to Questions About the National Flood Insurance Program, F -084, 2011
http://www.fema.gov/media-library-data/20130726-1438-20490-1905/f084_atq_11aug11.pdf

Catalog # R368.122 ANSWERS

Coastal Construction Manual, FEMA-P-55, 2011
http://www.fema.gov/media-library-data/20130726-1510-20490-6719/fema55_volii_frontmatter.pdf
Catalog # R693.8 UNITE

Elevated Residential Structures, FEMA-54, 1984
http://www.fema.gov/media-library-data/20130726-1509-20490-6744/fema54.pdf
Catalog # R693.8 UNITE

Mandatory Purchases of Flood Insurance Guidelines

Protecting Manufactured Homes from Floods and Other Hazards, FEMA P -85, 2009
http://www.fema.gov/media-library-data/20130726-1501-20490-6993/a_fema_p85_cvr_toc.pdf
Catalog # R693.8 PROTECTI

Mitigation of Flood and Erosion Damage to Residential Buildings in Coastal Areas, FEMA -257, 1994
http://www.fema.gov/media-library-data/20130726-1505-20490-8508/fema257.pdf
Catalog # R693.8 MITIGATI

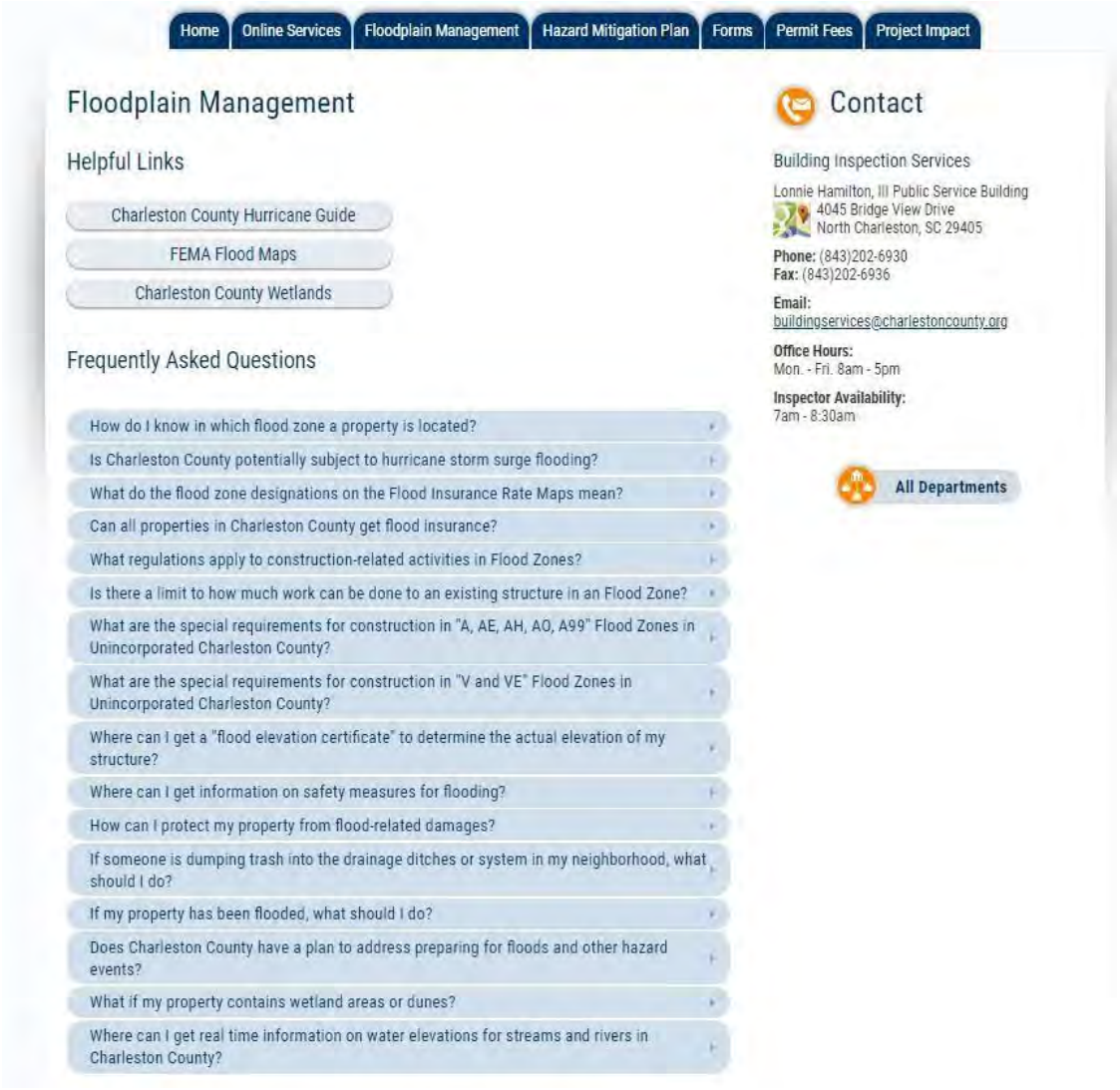
Protecting Building Utilities from Flood Damage, FEMA P-348, 1999
http://www.fema.gov/media-library-data/20130726-1514-20490-7165/p_348.pdf
Catalog # R363.3493 PROTECTI

Protecting Floodplain Resources, FEMA-268, 1996
http://www.fema.gov/media-library-data/20130726-1440-20490-5918/fema268.pdf

Reducing Damage from Localized Flooding, FEMA 511, 2005
http://www.fema.gov/media-library-data/20130726-1446-20490-0539/FEMA511-complete.pdf
Catalog # R363.3493 REDUCING

Also of significant importance is the vast array of information available on the Charleston County website (charlestoncounty.org). A major project and source for citizens, this website includes flood insurance information, all brochures produced for the Program for Public Information and an extensive list of frequently asked questions. Important links include: *Charleston Regional Hazard Mitigation Plan*, floodsmart.gov, links to NFIP webpages and scsafehome.com. This website is updated monthly with any new or updated information or brochures as they are produced. There are currently thirty-three hazard information related brochures, along with three activity sheets for children. Links to more information regarding flooding and other hazards are on this page as well. The website is a very important part of the Program for Public Information as it is typically the first place that citizens will use to gain more information. Below are screen shots of all of the brochures, informational pages and frequently asked questions on the Charleston County website.

Attachment: Charleston County Website


Home
Online Services
Floodplain Management
Hazard Mitigation Plan
Forms
Permit Fees
Project Impact
Floodplain Management
Helpful Links
Charleston County Hurricane Guide
FEMA Flood Maps
Charleston County Wetlands
Frequently Asked Questions
How do I know in which flood zone a property is located?
Is Charleston County potentially subject to hurricane storm surge flooding?
What do the flood zone designations on the Flood Insurance Rate Maps mean?
Can all properties in Charleston County get flood insurance?
What regulations apply to construction-related activities in Flood Zones?
Is there a limit to how much work can be done to an existing structure in an Flood Zone?
What are the special requirements for construction in "A, AE, AH, AO, A99" Flood Zones in Unincorporated Charleston County?
What are the special requirements for construction in "V and VE" Flood Zones in Unincorporated Charleston County?
Where can I get a "flood elevation certificate" to determine the actual elevation of my structure?
Where can I get information on safety measures for flooding?
How can I protect my property from flood-related damages?
If someone is dumping trash into the drainage ditches or system in my neighborhood, what should I do?
If my property has been flooded, what should I do?
Does Charleston County have a plan to address preparing for floods and other hazard events?
What if my property contains wetland areas or dunes?
Where can I get real time information on water elevations for streams and rivers in Charleston County?
Contact
Building Inspection Services
Lonnie Hamilton, III Public Service Building
4045 Bridge View Drive
North Charleston, SC 29405
Phone: (843)202-6930
Fax: (843)202-6936
Email:
buildingservices@charlestoncounty.org
Office Hours:
Mon. - Fri. 8am - 5pm
Inspector Availability:
7am - 8:30am
All Departments



Floodplain Management Planning (CRS Activity 510)

Because the *Charleston Regional Hazard Mitigation Plan* is a multi-jurisdictional plan, every jurisdiction's action plans are included. All jurisdictional action plans include public information activities. See below a sample of activities included in the action plans.

SAMPLE OF ACTIVITIES INCLUDED IN THE ACTION PLANS

PP	Continue providing information to citizens regarding hazard safe interior rooms (PPI)	Building Inspection Services	General Fund	Minimize future tornado-related loss of life; Educating citizens regarding vulnerability to hazards and steps which may reduce vulnerability.	2
PI	Provide hazard related information to all residents through the AT&T yellow pages telephone book (PPI)	Building Inspection Services	General Fund	Protecting the lives of citizens from natural hazards; reduce existing flood damage; minimize future flood damage; minimize future hurricane damage; educating citizens regarding their vulnerability to natural hazards and steps to take to reduce vulnerability; improve water quality.	1
PA	Conduct or co-sponsor training workshops regarding the International Building-related, flood, and Fire Prevention Codes and Regulations, and on sustainable construction / landscaping practices, when there is interest in these workshops (PPI)	Building Inspection Services	General Fund self-supporting through workshop revenues	Educating 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	1
PA, PP, PI, NB	Continue providing information to citizens regarding propane tank anchoring, hazard safe interior rooms, boat anchoring and maintenance, generator safety, riparian buffer zones, hazard resistant landscaping, and artifactprotection, among other issues (PPI)	Building Inspection Services Project Impact Community Partners	General Fund Grant Funding	Educating citizens regarding vulnerability to natural hazards and steps to reduce vulnerability; minimize future flood damage; minimize future earthquake damage; minimize future hurricane damages; preserve environmental resources	2

NB	Continue to distribute literature on to citizens through government offices and at expos (PPI)	Building Inspection Services Project Impact	Partner donations Grant Funding	Educating citizens regarding vulnerability to hazards and steps to reduce vulnerability; minimize future flood damage; preserve environmental resources; improve water quality; improve hazard resistance of infrastructure; preserve open space; encourage recreational activities; minimize future hurricane damage; improve water quality; improve air quality	2
PI	Mail an outreach project to floodplain residents to those property owners whose property is located in the special flood hazard area (PPI)	Building Inspection Services Project Impact	General Fund	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 hurricane damage; improve water quality	1

Flood Response Preparations

Flood response preparation projects were established and have been maintained by the Hazard Mitigation & Program for Public Information Committee since the inception of the Program for Public Information. These projects are aimed at informing the public before, during and after a hazardous incident. Table 12 below is a listing of projects and what topics are addressed that were established by the Charleston Regional Hazard Mitigation & Program for Public Information Committee as Flood Response Preparation (FRP) projects. These projects cover a range of outreach methods from media releases to inform the public to brochures that assist in preparation measures, to bags to be delivered to residents with information while damage assessments are being conducted. Attached at the end of this document (pages 56-61) are procedures for how information will be disseminated in the event of a flood. These procedures are updated and revised as necessary annually. Also included in Table 12 are details describing distribution schedules, assignment, projected outcomes, topics and target audiences for each project.

Table 12: Flood Response Preparation Activities (FRP)

Charleston County Flood Response Projects	
Topics (please see PPI document pages 16-20 for list of messages for each topic): 1. Know your flood hazard 2. Insure property for your flood hazard 3. Project people from the hazard 4. Protect your property from the hazard 5. Build smart 6. Protect natural floodplain functions 7. Hurricane preparedness/safety 8. General hazard preparedness 9. Flood education 10. Site drainage	**Target Audiences (PPI document pages 14-15):** 1. General public 2. Residences and business in the Special Flood Hazard Areas (SFHA) 3. Newcomers to the area/tourists 4. Real Estate and Insurance Agents/Real Estate Buyers and Sellers 5. Repetitive Loss Area Residents 6. Non-English speaking community 7. Design professionals/contractors 8. Others as determined by the committee

FRP#	Flood Response Project Name	Topics Covered	Target Audience	Outcome	Assignment	Distribution
1	FRP Instructions for Distribution	1-6, 8-9	1-7	Inform the public about flood response after an event	Building Inspection Services Department	Distributed within 48 hours post flood event; instructions are kept up to date through the year and ready for distribution in the event of a flood.
2	Media Information Post Flood	1-9	1-7	Inform the public about flood response after an event	Building Inspection Services Department	Immediately following flood event; information is kept up to date throughout the year and ready in the event of a flood
3	Chas. Co Area Project Impact Bag	8	1-8	Inform public about several topics post-event – includes several fliers, information sheets, insurance info, contact info	Building Inspection Services Department	Distributed during damage assessment within 48 hours post flood event and at expos
4	NFIP Flood Insurance Claims Handbook FEMA F-687	1-6	1-2, 5	Inform affected residents about the insurance claims process post-event	FEMA	Post flood event; kept in-house in event of a flood
5	NFIP Flood Insurance Claims Handbook FEMA F-687S (Spanish)	1-6	1-2, 5-6	Inform affected Spanish-speaking residents about the insurance claims process post-event	FEMA	Post flood event; kept in-house in event of a flood
6	NFIP Summary of Coverage FEMA F-679/September 2021	1-6	1-5	Inform public and policy holders about the benefits and coverage available with flood insurance	FEMA	Pre and post flood event; kept in-house
7	NFIP Summary of Coverage FEMA F-679S (Spanish)/September 2021	1-6	6	Inform Spanish speaking community about the benefits and coverage available with flood insurance	FEMA	Pre and post flood event; kept in-house
8	Brochure: “Need a Contractor?”	1-5, 8	1-3	Inform public about what to look for in selecting a contractor	Building Inspection Services Department	Available year-round in BIS offices, expos, and at events
9	Brochure: “Build Back Safer and Stronger”	3-5	1-3, 7	Increase knowledge of how to protect homes from future flooding	FEMA	Available year-round in BIS offices, expos, and at events
10	Brochure: “Safeguarding Your Personal Property”	1-6, 8	1, 3, 8 (business owners, collectors)	Increase knowledge of how to protect valuables from flood damage	Building Inspection Services Department	Available year-round in BIS offices, expos, and at events
11	Brochure: “Increase Cost of Compliance Coverage”	2, 5, 8-9	1-5	Improved public knowledge about the cost of compliance coverage	FEMA	Available year-round in BIS offices, expos, and at events
12	Brochure: “Building Codes: How They Help You”	5, 8	1-5, 7-8	Inform public about how building codes can protect property and lives	International Codes Council	Available year-round in BIS offices, expos, and at events

13	County-wide mailer/brochure: "Flooding: Are you Prepared?"	1, 9	1-5, 7-8	Inform public about flood risks, how to prepare and stay safe, who to contact if home is damaged, financial advice services available, general flood info/facts	Building Inspection Services Department	Updated annually and mailed to residents, begun in 2012; available year-round in BIS offices, expos, and at events
14	Brochure: "Protect Your Windows and Doors"	1, 4-5, 7-9	1-3, 5, 7	Inform public about protective measures and options for building openings	Building Inspection Services Department	Available year-round in BIS offices, expos, and at events
15	Brochure: "Mold and Mildew"	1, 5, 8	1-3, 5, 7	Inform public about hazards associated with mold and mildew growth	FEMA	Available year-round in BIS offices, expos, and at events
16	Brochure: "Standby Generator Safety"	1, 2	1, 3-4, 7-9	Inform public about how and when to safely operate a generator post-event	Building Inspection Services Department	Available year-round in BIS offices, expos, and at events
17	Brochure: "Be Prepared For A Flood"	1, 9	1-5, 7-8	Inform public about how to prepare for a flood and stay safe	FEMA	Available year round in BIS offices, expos, and at events

Annual Evaluation

The Charleston Regional Hazard Mitigation and Public Information Committee meets at least twice per year to discuss and vote on annual updates to the *Charleston Regional Hazard Mitigation Plan* as well as Public Information needs and activities and insurance coverage improvement plan needs. These efforts are very important to keep current so that the public finds the best and most relevant information possible to protect their lives and homes. In these evaluations by the Committee, they will address any modifications that need to be made to the current outreach methods, add new target audiences or areas if necessary, change the topics and/or message as appropriate, and update the Plan as needed to suit the community. The Charleston County staff will facilitate the meetings and will make revisions to the Plan as deemed necessary. In order to keep the the Plan as up-to-date as possible, it is adopted annually. A digital and hard copy are made available for Charleston County Council members as designated in the adoption ordinance after the Plan has been accepted by the Committee. The most recent Council acceptance of the revised 5 Year Update *Charleston Regional Hazard Mitigation Plan* update was March 28, 2019 (see HMP for signed adoption resolutinos). The next scheduled formal adoption will occur in 2024 of the *Charleston Regional Hazard Mitigation Plan*. Refer to the Hazard Mitigation Plan for the signed acceptance of the 5 Year Update. Also refer to the Hazard Mitigation Plan for signed acceptances from each separate Jurisdiction.

A link to the Charleston Regional Hazard Mitigation Plan:

http://www.charlestoncounty.org/departments/building-inspection-

Attachment 1: FRP Instructions for Distribution

Activity 330 – Flood Response Preparations (FRP) Instructions for Distribution

Current as of August 2023

Approximately half of the brochures are locally produced and hundreds to thousands of the flyers are already printed and ready for distribution. The other half are FEMA produced brochures and handouts. Additional copies of these brochures and flyers could be ordered. PDF versions of all flyers are saved and can be printed local or in-house.

The department has thousands of 'Project Impact' plastic bags with the Charleston County Building Services contact information. These bags have been and will be stuffed with the brochures and delivered by Building Inspectors and other members of Initial Damage Assessment teams to affected homes, which would occur within the first 48 hours or so following a flooding event/natural disaster. The content of these bags could be altered depending upon the disaster. For example, additional earthquake information could be included or unique driving instructions for certain areas could be provided by Emergency Management.

All bags have the Building Departments contact information as well as the locally produced brochures. FEMA produced brochures feature the appropriate contact information and instructions for filing claims, documenting damages, and the outline of a basic recovery operation.

Much of the documents and flyers about preparation are distributed throughout the year at various outreach events, while the Flood Response packets feature more recovery and safety information following a flood.

Attachment 2: Media Information Post Flood

Media Information Post Flood:

In the event of a major flooding event, please instruct the general public on the following:

Authority

Charleston County Emergency Management or the appropriate municipality's Emergency Management Department is the lead on emergency situations. The department will be in touch with the appropriate officials. Please follow instructions from the Emergency Operations Center and/or the Public Information Officer.

The Emergency Operations Center will publish the numbers of organizations to contact for assistance. The Red Cross and other groups will have information on supply distribution and additional assistance. Please instruct people not to attempt to return home until the Emergency Operations Center and local law enforcement have indicated it is safe to do so.

Driving with Flooded Roads

"TURN AROUND, DON'T DROWN" – Instruct public to avoid driving on streets where water is on roadway. The water is often deeper than it appears and flood water may have washed out the roadway surface. Six inches of water will reach the bottom of most passenger cars causing loss of control and possible stalling. A foot of water will float many vehicles. Two feet of rushing water can carry away most vehicles including sport utility vehicles (SUV's) and pick-ups. Do not attempt to drive through a flooded road. The depth of water is not always obvious. The road bed may be washed out under the water, and you could be stranded or trapped. Do not drive around a barricade. Barricades are there for your protection. Turn around and go the other way. Do not try to take short cuts. They may be blocked. Stick to designated evacuation routes. Be especially cautious driving at night when it is harder to recognize flood dangers.

Disaster Distress Hotline

SCRIPT: This is an important message from the U.S. Department of Health and Human Services. A disaster or tragedy often brings out strong emotions, such as anxiety, worry and anger, and people may want help in dealing with their feelings. The Disaster Distress Helpline (1-800-985-5990) provides confidential counseling, referrals, and other support, 24 hours a day, seven days a week. The number again: 1-800-985-5990.

Flood Recovery Tips

- ☐ Return home only when officials have declared the area safe.
- ☐ If safe to do so, take photos and document damage to home for your records.
- ☐ Before entering your home, look outside for loose power lines, damaged gas lines, foundation cracks or other damage. Never switch on the main if the building has been under water, wait for professional assistance.
- ☐ Parts of your home may have collapsed or been damaged. Approach entrances carefully. See if porch roofs and overhangs have all their supports.
- ☐ Watch out for wild animals, especially poisonous snakes that may have come into your home with the floodwater.
- ☐ If you smell natural or propane gas or hear a hissing noise, leave immediately and call the fire department.

- ☐ If power lines are down outside your home, do not step in puddles or standing water.
- ☐ Keep children and pets away from hazardous sites and floodwater.
- Materials such as cleaning products, paint, batteries, contaminated fuel and damaged fuel containers are hazardous – use flashlights instead of lanterns and torches. Check with local authorities for assistance with disposal to avoid risk.
- ☐ During cleanup, wear protective clothing, including rubber gloves and rubber boots.
- ☐ Make sure your food and water are safe. Discard items that have come in contact with floodwater, including canned goods, water bottles, plastic utensils and baby bottle nipples. When in doubt, throw it out!
- ☐ Contact your local or state public health department to see if your water supply might be contaminated. You may need to boil or treat it before use. Do not use water that could be contaminated to wash dishes, brush teeth, prepare food, wash hands, make ice or make baby formula!

Flood Insurance Information

- Flooding damage is often not covered by basic homeowners or renters insurance. Flood insurance is a critical component of your security and recovery – flood insurance is available anywhere in Charleston County, though there is a 30 day waiting period in most cases. Do not be caught unprepared again – purchase flood insurance through the National Flood Insurance Program. It is highly likely you can purchase flood insurance through the same agent you purchase your auto or home insurance from.
- ☐ Contact your local agent for information concerning claims and required documentation.

Build Responsibly – Stay Safe…Get a building permit for repairs

- ☐ Without a building permit, there is no guarantee that the work being performed is safe, up to code, or done correctly. You also have no guarantee that the person performing the work is properly licensed, insured, or knowledgeable.
- ☐ If there is ever a problem with the repair/job, you as the homeowner have recourse against a properly licensed and insured contractor. If you do not get a building permit, you risk paying thousands of dollars for improper or incomplete work.
- ☐ Particularly after a disaster, there are dishonest people who try and take advantage of the situation. Even after a disaster or widespread event, proper and honest contractors will be licensed by Charleston County. Do not believe any claim by someone asking for your business who is not going to get a permit or who is not licensed.
- ☐ Some homeowners are finding when they try to sell or refinance their home, prospective buyers or lending institutions want proof that alterations are in compliance with local codes. Without a permit and inspection on record, there is no proof. The homeowner must then apply for a permit with no guarantee that the remodel will meet the codes, and they face the possibility that the remodel must be

redone or removed. This is costly and frustrating and could cause delays in refinancing or a lost sale of their home.

- Make sure you know your flooding risk before any rebuilding. If a building has been substantially damaged, the building requirements may change. Regardless of the extent of damage, there are likely building techniques or alternatives that will make any repair more flood resistant.

Important Messages concerning Flooding, Flood Hazards, and Flooding Information

Know Your Flood Hazard

Determine if your property is in the Special Flood Hazard Area (SFHA) Zone "A" "AE" or "VE". Contact your local government for a flood zone determination.

Check for historical flooding records in your area with your local government or media outlets.

Check for existing elevation certificates with your local government or insurance agent

If you need an elevation certificate, contact a local land surveyor.

Check the depth of the Base Flood Elevation (BFE) above or below building's first floor or above existing grade on a vacant parcel.

Get a FIRMette of your location (www.msc.fema.gov) or look at a flood map at your local government offices to determine proximity to a flood hazard area.

Check to see if your property is in an area subject to wave action ("V" Zone) or coastal erosion.

Contact your local government for assistance.

Know the proximity of property to evacuation routes.

Determine if property is protected by man-made structures such as levees or dams.

Check for localized drainage issues that could result in flooding in your neighborhood.

Insure Property

Flood insurance is available through the National Flood Insurance Program; contact your insurance agent for details.

All developed properties within the designated flood hazard area should have flood insurance for buildings and contents. Federally backed mortgages must have flood insurance.

Most homeowner's insurance policies do not cover flood damage so you will likely need a separate policy.

Renters contents are not covered by the building owner's insurance and renters should purchase contents only flood insurance.

Property owners should inquire about any discounts that may apply in purchasing flood insurance.

If your flood insurance premium increases significantly, make sure your agent is using the correct information to rate your policy.

Know when building(s) were constructed, as 'grandfathering' may apply in reducing flood insurance costs.

Do not procrastinate; a 30-day waiting is typically required for flood insurance to take effect.

Ask questions from insurance agents concerning specific policy information.

Research building permit records for history of property improvements.

Protect People from the Hazard

Be aware of roadways susceptible to flooding during heavy rainfall events, do not drive through flooded areas, flowing water, or standing water.

Pay attention to media (TV, radio, internet) for emergency warnings and instructions.

Select an out-of-town contact for family members' in the event that local telephone service is disrupted.

Designate a location/place where family or people you are responsible for can rendezvous once an evacuation order is issued.

Get an evacuation route map for each vehicle and evacuate early if a flood threat is pending.

Avoid contact with downed power lines.

Check government web sites (fema.gov, charlestoncounty.org) for flood safety information.

Stay away from areas subject to flooding during heavy rainfall events – do not wade through standing water.

Avoid contact with flood waters as this water may contain toxic materials or venomous animals or insects.

Get a weather radio to obtain flood-related weather reports at all times.

Protect Your Property from the Hazard

Shut off gas service to a building if a flood is imminent.

Disconnect electricity at the main disconnect if a flood is imminent.

Replace utility machinery above the required flood elevation.

Elevate the lowest habitable floor area above the required flood elevation.

Landscape in a hazard resistant manner.

Make plans for evacuating pets in the event of a flood, as most shelters do not accept pets.

Install backflow prevention on plumbing systems susceptible to flooding.

Sandbag areas subject to flooding.

Provide hurricane protection against wind borne debris for windows and doors.

Move valuables to the highest level of a building or evacuate with these when a flood is imminent.

Use flood resistant materials in areas below the expected flood elevation to minimize damages.

Build Smart

Hire design professionals who are familiar with local hazards in preparing construction plans.

Consult with your local building department concerning permit requirements.

Place buildings in areas with lower flood potential.

Obtain permits before you build – permits are required even if the property owner does the work himself/herself.

Only hire licensed contractors.

Ensure that building inspections are properly arranged and completed.

If you are renovating a building, determine if you are performing a substantial improvement (≥ 50%).

Check the local flood ordinance for construction requirements.

Minimize the use of structural fill in constructing buildings.

Obtain a firm written quote from the contractor detailing exact work to be performed; the exact cost and schedule of start and completion of project.

Protect Natural Floodplain Functions

Protect wildlife habitat areas.

Protect dunes as these moderate flooding and erosion.

Preserve wetlands – they clean the water, protect us from flooding, and provide wildlife habitat.

Do not dump anything into the storm drainage system, as the stormwater discharges into our coastal waters.

Every property should plant only native plants, particularly along water bodies.

Obtain permission from the SC DHEC before doing any work near a wetland or dune area.

Minimize clearing near wetlands and/or water bodies.

Establish buffers and set buildings back from wetlands and/or water bodies.

Maintain on-site wastewater treatment systems, such as pumping out of septic tanks, every 3 to 5 years.

Do not dump boat sewage into waterways. Use pump-out stations to protect water quality and wildlife habitats.

Hurricane Preparedness/Safety

Know your evacuation route; obtain published maps.

Attach plywood or install commercially manufactured hurricane shutters over windows and patio doors.

Evacuate early and follow established evacuation routes when there is a potential hurricane threat.

Move valuables and furniture to higher areas of the dwelling.

Avoid low lying areas. Seek shelter in the highest areas.

Avoid driving if dangerous flooding conditions are imminent.

Stay alert to weather advisories and local media broadcast updates.

Monitor the track of all hurricanes.

Download a copy of the Charleston County Hurricane Guide at www.charlestoncounty.org

Make sure you have an emergency kit on-hand and that it is properly supplied.

Do not leave anything outside that is not properly anchored. Store items in a garage or shed on an elevated area if possible.

General Hazard Preparedness

Inventory and photograph your home and business contents and put important papers and insurance policies in a safe place.

Have an emergency kit on hand. Check government web sites (fema.gov, American Red Cross, charlestoncounty.org) for items to include.

Listen to emergency broadcasts from local media outlets as to when it is safe to return or contact local government authorities prior to returning to property after the storm has passed.

– Overview of the Community Rating System (CRS)

The Community Rating System (CRS) is a nation-wide program sponsored by the Federal Emergency Management Agency (FEMA) through the National Flood Insurance Program (NFIP). This program has been in existence since 1990 and has as its objectives reducing flood losses, facilitating accurate insurance ratings, and promoting awareness of flood insurance. The CRS program is administered by Insurance Services Office (ISO), the same organization which provides fire department rating services for insurance companies throughout the United States.

The CRS program is a voluntary program. It accomplishes its objectives by providing incentives in the form of flood insurance premium discounts for the citizens of communities which participate in the program. Participating in the CRS program involves performing activities which exceed minimal FEMA requirements for participating in the National Flood Insurance Program. Credit points are assigned according to a schedule, which is periodically revised, based on the types and level of activities performed by a community. These activities include but are not limited to such items as providing flood related information to citizens, conducting inspections and performing needed maintenance of drainage ways, providing emergency warning to the citizens in the event of a flood, and conducting floodplain management planning. The possible activities included in Section 6 of this *Charleston Regional Hazard Mitigation Plan* are categorized in accordance with the CRS program. The six categories of potential activities addressed are preventive measures, property protection activities, activities to promote natural and beneficial functions of floodplains/preserve resources, emergency service activities, structural projects, and public information activities.

There are 10 classifications to the CRS program (1 to 10) with premium reductions for the properties in the Special Flood Hazard Area ("AA" and "V" flood zones) ranging from 0% to 45% depending upon the rating received by the community. The lower the rating in the CRS program the higher the insurance premium reduction (e.g. a Class 1 community receives a 45% reduction whereas a Class 5 receives a 25% reduction and a Class 10 receives a 0% reduction). The participating communities within Charleston County are, as of January 1, 2023, Class 3, Class 4, Class 5, Class 6, or Class 7 communities. Below is a table of the communities that participate:

Table A.2-1: CRS Community Ratings and Discounts

Community Name	**Current CRS Class** (January 1, 2023)	**% Discount** (SFHA/non-SFHA)
Town of Awendaw	6	20/10
City of Charleston	6	20/10
Charleston County	3	35/10
Town of Folly Beach	3	30/10
Town of Hollywood	6	12/10
City of Isle of Palms	5	25/10
Town of James Island	6	20/10
Town of Kiawah Island	5	25/10
Town of McClellanville	6	20/10
Town of Meggett	6	20/10
City of Mount Pleasant	6	20/10
City of North Charleston	7	15/5
Town of Ravenel	5	25/10

Town of Rockville	6	20/10
Town of Seabrook Island	5	25/10
Town of Sullivan's Island	5	25/10
The Town of Lincolnville does not participate in the CRS program.		

The benefits of participating in the CRS program include but are not limited to reduced flood insurance rates, enhanced floodplain management planning, national recognition, incentives to maintain flood programs, and becoming qualified for certain types of federal assistance (e.g. Flood Mitigation Assistance grant funding, Hazard Mitigation Grant Program funding, and Pre-Disaster Mitigation Grant Program funding) as a result of having an approved hazard mitigation plan. One of the potentially most important benefits is the enhanced preparedness for hazard events that occurs through better educating the citizens and the community officials regarding how to address the inevitable hazard events that will occur.

To enhance further preparedness and mitigating efforts, participating CRS communities active in the Charleston Regional Hazard Mitigation Plan for 2013-2014 established a multi-jurisdictional Public Information Plan (PIP) under CRS Activity 330 as described in the CRS Coordinators' Manual of 2013. The current Public Information Plan (PIP) document can be found in *Appendix 1*.

Additional information regarding the CRS program is available in the Charleston County Public Libraries, at the offices of all local jurisdictions within the Region, and through FEMA directly on their internet site at http://www.fema.gov.

– Overview of Project IMPACT

"Project Impact" was a Federal Emergency Management Agency (FEMA) sponsored initiative aimed at assisting communities in becoming more disaster resistant. **"**Project Impact" was intended to involve the public, private, and non-profit sectors in forming partnerships to achieve the goal of reducing the amount of loss associated with a hazard event. This initiative began in 1997 with seven pilot communities, and ultimately expanded to approximately 250 communities nation-wide. Charleston County was selected as the 1999 "Project Impact" community for the State of South Carolina. All of the local jurisdictions within the Charleston County Area have partnered together in this "Project Impact" initiative.

The four phases of the "Project Impact" initiative per the FEMA perspective are to build community partnerships, assess risks, prioritize needs, and build support and communicate what is being done to enhance hazard preparedness and response. The "Project Impact" initiative is intended to address any types of hazards which may strike a community. The Charleston Area "Project Impact" initiative is focused primarily upon floods, hurricanes, earthquakes, tornadoes, wildfires, hazardous material incidents and terrorism activities. This *Charleston Regional Hazard Mitigation Plan* addresses each of these types of hazards and serves as a mechanism for the assessing risks and prioritizing needs phases of "Project Impact". This plan serves as the governing document for project selection associated with the Charleston County Area "Project Impact" initiative.

Project Impact and the *Charleston Regional Hazard Mitigation Plan*, fully complement each other and are therefore fully integrated with each other for the Charleston Region. Applicable efforts undertaken through either program are considered as activities for both programs.

The Disaster Mitigation Act of 2000 uses the term "Predisaster Hazard Mitigation" (Title I) to define the "Project-Impact" type of initiative. The concepts of "Predisaster Hazard Mitigation" and "Project Impact" were to create a more disaster-resistant community through the implementation of projects and programs designed to prepare citizens and businesses in advance of a hazard event to minimize losses associated with these events. While the term

"Project Impact" has been phased out over time and replaced with either "Predisaster Hazard Mitigation" or "Building a Disaster-Resistant Community", the overall concept of preparing in advance for hazard events should remain into the future at the Federal level as a result of the Disaster Mitigation Act of 2000.

Anyone interested seeking additional information about "Disaster Resistant Communities" is encouraged to contact Charleston County Building Services or any of the local jurisdictions within Charleston County for additional information.

– Participation

Below is a table detailing the participation of the jurisdictions and partners throughout the development of the 2022-2023 plan.

Jurisdiction and Government Partner Participation in the Hazard Mitigation Plan Update				
JURISDICTION	**2022 Meetings**	**Survey**	**Updated Tables**	**Action Report**
Charleston County Parks and Recreation Commission	**X**	**N/A**	**X**	**X**
Charleston County School District	**X**	**N/A**	**X**	**X**
Charleston Water System	**X**	**N/A**	**X**	**X**
City of Charleston		**N/A**	**X**	
City of Folly Beach	**X**	**N/A**	**X**	**X**
City of Isle of Palms	**X**	**N/A**	**X**	**X**
City of North Charleston	**X**	**N/A**	**X**	**X**
College of Charleston	**X**	**N/A**	**X**	**X**
Cooper River Parks & Playground	**N/A**	**N/A**	**N/A**	**N/A**
James Island Public Service District	**X**	**N/A**	**X**	**X**
Mount Pleasant WaterWorks	**X**	**N/A**	**X**	
North Charleston District	**N/A**	**N/A**	**N/A**	**N/A**
North Charleston Sewer District	**X**	**N/A**	**X**	**X**
Roper St. Francis Healthcare	**X**	**N/A**	**X**	**X**
SC DHEC		**N/A**	**N/A**	**N/A**
St. Andrews Parish Park & Playground Commission	**X**	**N/A**	**X**	**X**
St. Andrews PSD	**X**	**N/A**	**X**	**X**
St. Johns Fire District	**X**	**N/A**	**X**	
St. Paul's Fire District	**X**	**N/A**	**X**	
Town of Awendaw		**N/A**	**X**	
Town of Hollywood	**X**	**N/A**	**X**	**X**

Town of James Island	**X**	**N/A**	**X**	**X**
Town of Kiawah Island	**X**	**N/A**	**X**	**X**
Town of Lincolnville		**N/A**	**X**	**X**
Town of McCellanville	**X**	**N/A**	**X**	
Town of Meggett		**N/A**	**X**	
Town of Mt. Pleasant	**X**	**N/A**	**X**	**X**
Town of Ravenel	**X**	**N/A**	**X**	
Town of Rockville		**N/A**	**X**	
Town of Seabrook Island	**X**	**N/A**	**X**	**X**
Town of Sullivan's Island	**X**	**N/A**	**X**	
Unincorporated Charleston County	**X**	**N/A**	**X**	**X**

**North Charleston District and Cooper River Parks and Playground are represented by the City of North Charleston.*

– Example Public Meeting Notice 2021-2022

Hakim Bayyoud
Director

Lonnie Hamilton, III
Public Services Building
4045 Bridge View Drive, Room A311
North Charleston, SC 29405-7464

CHARLESTON COUNTY
SOUTH CAROLINA
BUILDING INSPECTION SERVICES

Administration
843.202.6940 Fax:
843.202.6954

Inspections and Contractor
Licensing
843.202.6930
Fax: 843.202036

Notice of Public Meeting

Meeting Date: August 18, 2021 at 2:00 PM

The public and media are always invited to attend the Charleston Regional Hazard Mitigation Plan Committee meeting to discuss the proposed revisions to the Charleston Regional Hazard Mitigation Plan for 2020-2021. For more information, please contact Building Inspection Services at 843-202-6940.

Wednesday, August 18, 2021- Charleston Regional Hazard Mitigation Plan Committee.

The Hazard Mitigation Plan Committee developed and updates the Charleston Regional Hazard Mitigation Plan. This meeting will be held virtually.

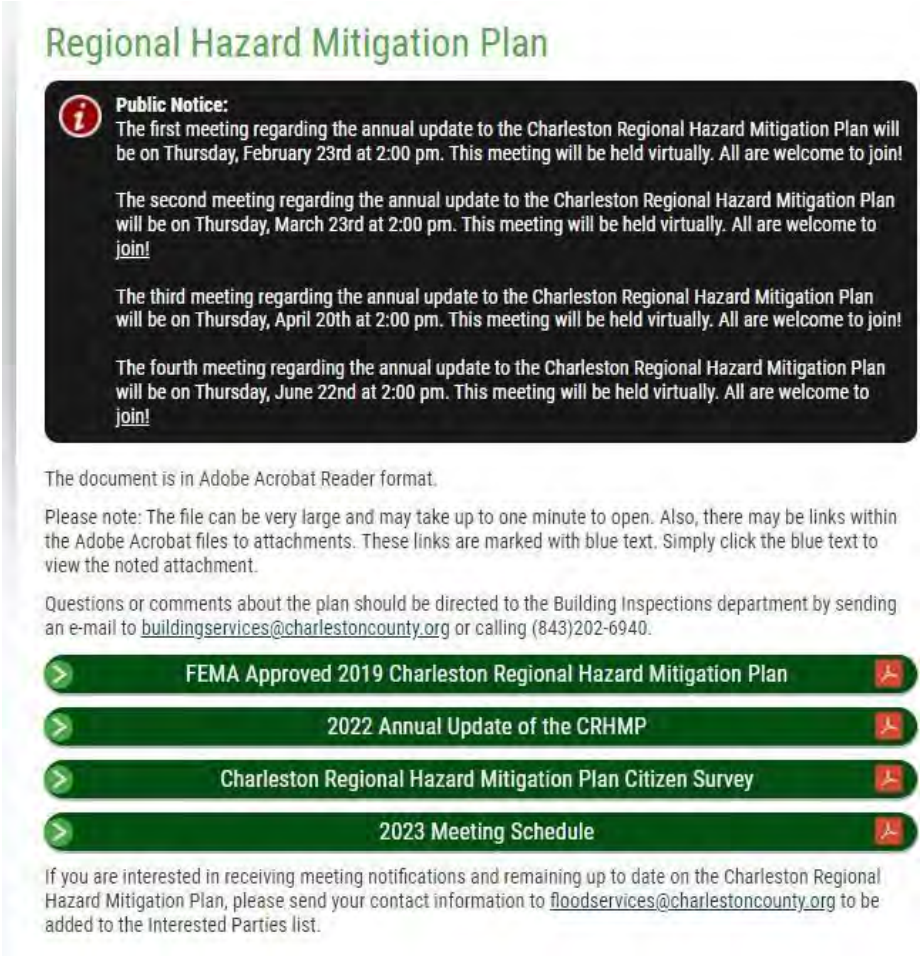
Those who wish to attend should email floodservices@charlestoncounty.org to receive the meeting link and access information.

We look forward to you attending.

IAS ACCREDITED

Professionally We Serve, Personally We Care!
www.charlestoncounty.org

NFIP/CRS Class 3 Community



Regional Hazard Mitigation Plan

Public Notice:
The first meeting regarding the annual update to the Charleston Regional Hazard Mitigation Plan will be on Thursday, February 23rd at 2:00 pm. This meeting will be held virtually. All are welcome to join!

The second meeting regarding the annual update to the Charleston Regional Hazard Mitigation Plan will be on Thursday, March 23rd at 2:00 pm. This meeting will be held virtually. All are welcome to join!

The third meeting regarding the annual update to the Charleston Regional Hazard Mitigation Plan will be on Thursday, April 20th at 2:00 pm. This meeting will be held virtually. All are welcome to join!

The fourth meeting regarding the annual update to the Charleston Regional Hazard Mitigation Plan will be on Thursday, June 22nd at 2:00 pm. This meeting will be held virtually. All are welcome to join!

The document is in Adobe Acrobat Reader format.

Please note: The file can be very large and may take up to one minute to open. Also, there may be links within the Adobe Acrobat files to attachments. These links are marked with blue text. Simply click the blue text to view the noted attachment.

Questions or comments about the plan should be directed to the Building Inspections department by sending an e-mail to buildingservices@charlestoncounty.org or calling (843)202-6940.

FEMA Approved 2019 Charleston Regional Hazard Mitigation Plan

2022 Annual Update of the CRHMP

Charleston Regional Hazard Mitigation Plan Citizen Survey

2023 Meeting Schedule

If you are interested in receiving meeting notifications and remaining up to date on the Charleston Regional Hazard Mitigation Plan, please send your contact information to floodservices@charlestoncounty.org to be added to the Interested Parties list.

– Yearly Meeting Minutes

Charleston Area Project Impact

Building Disaster Resistant Communities

Charleston Area – Project Impact

Hazard Mitigation Plan & Public Information Committee Meeting Minutes February 23, 2023 2:00 pm

Cisco Webex Call

Members in Attendance:

Jurisdiction Members: Sean Dove (Charleston County BIS/FPM), Luz Agudelo (Charleston County BIS/FPM), Hakim Bayyoud (Charleston County BIS/FPM), Isabella Causey (Charleston County BIS/FPM), Lori Kidwell (Charleston County EMD), *Alyssa* Corpus City of Charleston), Ben Almquist (City of Charleston), Caroline Schnell (City of Charleston), Charleston County Public Works Department, Dale Morris (City of Charleston), Jason Moffitt (Town of Ravenel), Jenna Stephens (City of Folly Beach), Joe Cronin (Town of Seabrook Island), Joe Henderson (Town of Sullivan's Island), John Gregg (Town of Seabrook Island), Kelsey Barlow (Charleston County PIO), Kinsey Holton (City of Charleston), Mark Johnson (Town of James island), James Hackett (Town of James island), Matt Simms (Isle of Palms), David Rushton (City of N. Charleston), Michelle McClellan (Town of McClellanville), Mike Hemmer (Town of Ravenel), Roy De Haven (Town of Hollywood), Sally Brooks (Charleston County Zoning and Planning), Sarah Mardon (City of Charleston), William Horne (Town of Mt. Pleasant), and Takeya White (Town of Awendaw).

Stakeholder Members: Alex Butler (South Carolina Office of Resilience), Brock Clary (Charleston County School District), David Kent (The Real Buyer's Agent), Dr. Norm Levine (College of Charleston), Frank Stefan (St. Andrew's Parish Parks and Playground Commission), John Morris (College of Charleston), Michelle McCutchen (Charleston Water System), Otis Ackerman (St. Paul's Fire District), Patty Newshutz (Charleston County Parks), Ronnie Freeman (Mt. Pleasant Waterworks), and Shawn Engelman (James Island PSD).

NOTE: Some names did not get recorded in the chat. Please email floodservices@charlestoncounty.org if you were in attendance but were missed above

Others in Attendance:

The following are CRS jurisdictions represented and processed by Charleston County: Town of Awendaw, Town of Hollywood, Town of James Island, Town of Lincolnville, Town of McClellanville, Town of Meggett, Town of Rockville, and Town of Seabrook Island.

Opening Comments and Approval of Minutes: Sean Dove welcomed everyone to the first meeting of the year for the Charleston Regional Hazard Mitigation Plan Committee. He thanked everyone for

providing updated contact information prior to this meeting and reminded everyone that interested parties should email their contact information to floodservices@charlestoncounty.org to be added to the Charleston Regional Hazard Mitigation Plan (CRHMP) interested parties list.

He motioned to approve the minutes from the meeting on August 25, 2022. The motion was seconded by several in attendance. There was no one in opposition and the minutes were approved.

Review of the Roles and Responsibilities of the Committee: Sean then reviewed the roles and responsibilities of the County in regard to the annual update and announced this year we are required to submit 6 months in advance for FEMA Approval before the March, 2024 deadline. He also covered the roles and responsibilities of the participating partners. He reiterated that the County will handle hazard frequency updates, buildings in the SFHA data, Sections 1-4, 6, and 8. The participating partners will be responsible for updating their own impact assessments (Section 5) and action reports (Section 7). He added that there may be additional information required outside of

these sections that participating partners may be responsible for providing to the County and that follow ups on those potential topics will be sent out in the coming weeks.

Review of the Process: He then reviewed the general process as well as the meeting schedule for 2023. He included relevant deadlines for the participating partners. He stated that participating partners could expect to have their Sections 5 and 7 before the March Meeting.

Annual Meeting for PPI: He requested that jurisdictions come prepared to talk about current and future outreach efforts or opportunities and the meeting could be used to brainstorm new ideas for outreach.

Good of the Order: Sean concluded the meeting by encouraging the participating partners to begin thinking about updates they may need to provide. Potential updates could include commonly flooded areas, new outreach efforts, new grants or grant applications, newly adopted higher regulatory standards, or updated planning documents such as comprehensive plans.

A question was posed about the June 2022 Meeting minutes and Sean said he would include them in his post Meeting 1 email.

Caroline Schnell posed a question about claims data collection and how it should be collected to be included in the CRHMP. Sean responded that FEMA should be providing the data, but that the public has been encouraged to notify and share claims information at the time the claim is filed so the jurisdictions can better serve flooded areas.

Sean reminded the committee that the next meeting would be March 23rd and held virtually again. The meeting concluded at 2:35 pm.

Members in Attendance:

Jurisdiction Members: Sean Dove (Charleston County BIS/FPM), Luz Agudelo (Charleston County BIS/FPM), Hakim Bayyoud (Charleston County BIS/FPM), Isabella Causey (Charleston County BIS/FPM),, *Alyssa* Corpus City of Charleston), Ben Almquist (City of Charleston), Caroline Schnell (City of Charleston), Charleston County Public Works Department, Dale Morris (City of Charleston), Jenna Stephens (City of Folly Beach), Eric Lutz (City of Folly Beach, Max Wurthmann (Town of Sullivan's Island), John Gregg (Town of Seabrook Island), Kinsey Holton (City of Charleston), Mark Johnson (Town of James island), Matt Simms (Isle of Palms), David Rushton (City of N. Charleston), Roy De Haven (Town of Hollywood), Sally Brooks (Charleston County Zoning and Planning), Sarah Mardon (City of Charleston), Takeya White (Town of Awendaw), Joe Coates (Charleston County EMD), and Katie Gerling (Town of Mt. Pleasant).

Stakeholder Members: Brock Clary (Charleston County School District), John Morris (College of Charleston), Michael Bowers) Awendaw/McClellanville Fire) Stephanie Palmer (Roper St. Francis Healthcare), Anna Kimelblatt (Weston & Sampson Engineers), Lucas Hernandez (Weston & Sampson Engineers) and Shawn Engelman (James Island PSD).

NOTE: Some names did not get recorded in the chat. Please email floodservices@charlestoncounty.org if you were in attendance but were missed above

Others in Attendance:

The following are CRS jurisdictions represented and processed by Charleston County: Town of Awendaw, Town of Hollywood, Town of James Island, Town of Lincolnville, Town of McClellanville, Town of Meggett, Town of Rockville, and Town of Seabrook Island.

Opening Comments and Approval of Minutes: Sean Dove welcomed everyone to the second meeting of the year for the Charleston Regional Hazard Mitigation Plan Committee and announced that this meeting would also serve as a meeting for the Program for Public Information Committee. He issued a quick reminder that sections 5 and 7 had been sent out to all parties and that they should be working on updating those sections. Sean then reminded everyone to make sure adopting resolutions also include language that reference the adoption of their Program for Public Information if applicable.

He motioned to approve the minutes from the meeting on February 23. 2023. The motion was seconded by Alyssa Corpuz and several others in attendance. There was no one in opposition and the minutes were approved.

Committee Representation: The next item covered was a request for the Program for Public Information Committee to submit contact information and reach out to the community for better representation of real estate agents, bankers, insurance agents, and citizens in the flood zone. Sean requested that the Committee reach out to their contacts in these fields to see if there would be anyone willing to serve on the Committee. This request is in important for the 5-year update

because of the importance of a wide variety of stakeholders being adequately represented on the Committee.

Outreach Efforts: Sean started the outreach conversation off announcing that folk should be on the look out for more information on a Hazards Expo on August 12th and 13th, 2023. He stated that it will be at Trident Technical College and that a follow up email with details would be going to members and interested parties for participation. Sean summarized the County's outreach efforts with some successes with digital zoom forums, career fairs, library tabling, but also some failures with getting attendance at in person Town Halls. He then stated that the County is looking for ways to innovate outreach and partner with other groups to reach wider audiences.

Mark Johnson announced the Town of James Island Hurricane Expo on May 6th and invited members to participate or drop by from 10am-2pm at Lowes on James Island and to email (mjohnson@jamesislandsc.us) to participate.

Alyssa Corpuz from the City of Charleston discussed the City's meeting with the Architect's Institute Chapter and announced some upcoming outreach on land surveying and elevation certificates and stated their outreach has been yielding lots of great questions and good opportunities to discuss various topics.

Katie Gerling announced the Town of Mt. Pleasant's Public Input Matters outreach. She mentioned while the outreach is not all hazards related, it's a good opportunity for feedback and discussion with he public. She mentioned that they've been partnering with other departments and hitting important areas across town to discuss important items like their comprehensive plan. Sean mentioned if folks needed any pieces or data from the hazard mitigation plan to incorporate into any other plans such as a comprehensive plan, to just reach out via email.

Mr. Morris from the City of Charleston highlighted the City's efforts in reaching out to neighborhood groups, neighborhood associations, and college students and with the City's regional and national participation at stormwater conferences and planning conferences. He stated that they have regular meetings and could resource share with those interested.

Good of the Order: Sean concluded the meeting by encouraging the participating partners to begin finishing and submitting updates for sections 5 and 7 and to make sure adopting resolutions included the Hazard Mitigation Plan and Program for Public Information.

A question was posed about the possibility of quarterly floodplain manager meetings to discuss various topics and the group decided to look into setting this up in the near future.

Sean reminded the committee that the next meeting would be April 20th and held virtually again. The meeting concluded at 2:22pm.

Charleston Area – Project Impact
Hazard Mitigation Plan & Public Information Committee Meeting Minutes
April 20, 2023 2:00 pm
Cisco Webex Call

Members in Attendance:
Jurisdiction Members: Isabella Causey (Charleston County Building Inspection Services), Sean Dove (Charleston County Building Inspection Services), Luz Agudelo (Charleston County Building Inspection Services), Hakim Bayyoud (Charleston County Building Inspection Services), William Horne (Town of Mt Pleasant), Roy DeHaven (Town of Hollywood), Eric Lutz (City of Folly Beach), John Gregg (Town of Seabrook Island), Alyssa Corpuz (City of Charleston), Matt Simms (Town of Sullivan's Island), Max Wurthmann (Town of Sullivans Island), Mark Johnson (Town of James Island), James Hackett (Town of James Island), Kinsey Holton (City of Charleston), Caroline Schnell (City of Charleston), Sarah Mardon (City of Charleston), Sally Brooks (Charleston County), Natalie Lewis (Town of McClellanville), Angela McJunkin (City of North Charleston), and Jenna Stephens (City of Folly Beach)

Stakeholder Members: Michele McCutchen (Charleston Water System), Buddy Smith (Citizen of Awendaw), Brock Clary (Charleston County School District, Frank Stefan (St. Andrew's Parish Parks and Playground Commission), Stephanie Palmer (Roper St. Francis), and Shawn Engelman (James Island PSD)

Opening Comments and Approval of Minutes: Sean Dove opened the meeting welcoming the committee and reminding them this year we are going for FEMA approval. There was a motion and a second to approve the minutes from the April 20, 2023 meeting of the Committee. There were no objections to approval and the minutes were approved.
Updates In Addition to Sections 5 & 7: Sean reminded the Committee that everyone should be close to finishing their Sections 5 and 7 updates. He asked that updates be completed and provided to the County by the next meeting on June 22nd or shortly after. There was also a reminder for the jurisdictions that the capabilities assessments would also be best turned in around this time as well.
Good of the Order: Sean asked for any additional questions or comments from the Committee. Having none, he reminded the Committee that the next meeting would be, June 22, 2023, at which they would discuss revisions and FEMA approval schedule starting in the Fall. The meeting was then adjourned.



Charleston Area – Project Impact
Hazard Mitigation Plan & Public Information Committee Meeting Minutes
June 22, 2023 2:00 pm
Cisco Webex Call

Members in Attendance:
Jurisdiction Members: Sean Dove (Charleston County Building Inspection Services), Luz Agudelo (Charleston County Building Inspection Services), Isabella Causey (Charleston County Building Inspection Services), Matt Simms (City of Isle of Palms), Roy DeHaven (Town of Hollywood), Liz Boyles (Town of Mt Pleasant), William Horne (Town of Mt. Pleasant), Eric Lutz (City of Folly Beach), John Gregg (Town of Seabrook Island) Joe Henderson (Town of Sullivan's Island), David Rushton (City of North Charleston), Max Wurthmann (Town of Sullivans Island), Caroline Schnell (City of Charleston), Michele McCutchen (Charleston Water System), Joe Cronin (Town of Seabrook Island), Michael Herman (North Charleston Sewer) Sarah Mardon (City of Charleston, Floodplain Mgt.), Michelle McClellan (Town of McClellanville), Takeya White (Town of Awendaw)

Stakeholder Members: Lori Kidwell (CC EMD), John Morris (College of Charleston), David Kent (Realtor, The Real Buyer's Agent), Ben Almquist (City of Charleston EMD), Frank Stefan (St. Andrew's Parks & Playground), Ronnie Freeman (Mount Pleasant Waterworks), Daniel Flessas (City of Charleston Emergency Management Division), Kinsey Holton (City of Charleston, Department of Stormwater Management), Stephanie Palmer (Roper St. Francis Healthcare), Buddy Smith (Citizen of Awendaw)

Opening Comments and Approval of Minutes: Sean Dove opened the meeting welcoming the committee and reminding them this year we are going for FEMA approval. There was a motion and a second to approve the minutes from the April 20, 2023 meeting of the Committee. There were no objections to approval and the minutes were approved.
Updates In Addition to Sections 5 & 7: Sean reminded the Committee that everyone should be close to finishing their Sections 5 and 7 updates. He asked that updates, as well as capabilities assessments be completed and provided to the County by June 30th. He also mentioned if there were any difficulties in meeting the deadline to email. Sean told the Committee the plan should be submitted to the Committee by August 1 for review for the August 24th meeting, and that any and all comments are welcomed on the draft. Sean gave a heads up that the timeline may call for a September meeting. Additionally, Sean provided the Committee with the link to the citizen survey

and emphasized the importance of pushing it out to each community. Finally, Sean reminded the Committee that the CRHMP must be formally adopted by each Council/governing body every 5 years to remain compliant with FEMA and CRS. He let everyone know the 2024 plan needs to be adopted in September/October, and a vote from Council will be required for a formal adoption—as well as to submit copies of the signed resolutions to the County to add to the plan.

Good of the Order: Sean asked for any additional questions or comments from the Committee. Having none, he reminded the Committee that the next meeting would be, August 24, 2023, at which they would discuss revisions and FEMA approval schedule starting in the Fall. The meeting was then adjourned.

– Charleston Regional Hazard Mitigation Plan Summary of Changes

Summary of Changes Made to the Charleston Regional Hazard Mitigation Plan for 2022-2023 Update:

Table of Contents

- Updated year 2021 to 2022
- Updated page numbers

Section 1: Introduction

- Community Profile (1.2): Generally updated tables and statistics
  - Figures 1.1, 1.2, 1.3

Section 2: Goals

- No updates

Section 3: Planning Process

- Planning Process Summary (3.6): Added the most recent public meetings about the Plan.
- Updated Tables 3-B, 3-C, and 3-D
- Table 3-E will be updated throughout the year as entities adopt the 2019 FEMA-approved plan.

Section 4: Hazard Assessment

- Updated the table of all hazard events occurring in 2021-2022.
- Updated Flood Prone Areas of Charleston County
- Updated Historical Occurrences for sections 4.2-4.15, where applicable.
- Pandemics (4.16):
  - Updated to include the most recent COVID-19 data
- Updated Table 4.2 Summary of Hazard Extent

Section 5: Problem Assessment

- Updated Table 5-1-16; Anticipated Future Development Trends within the Charleston Region
- Updated all jurisdictions for each hazard listed

- This may include flood prone areas, historical occurrences, probability, location, problem statements, repetitive loss areas, vulnerabilities (including buildings, infrastructure and critical facilities), higher regulatory standards, population trends, economic impact and SFHA information.

Section 6: Possible Activities

- Updated Table 6-C Drainage Improvement Projects

Section 7: Adopting Resolution and Jurisdiction-Specific Action Plans

- Updated Action Plans for 2022-2023
- Updated Adopting Resolutions for the jurisdictions who formally readopted the plan in 2022.

Section 8: Appendices

- Updated Table 1: Designated Members of the Committee
- Updated Table 3: Other Participating Partners of the Committee
- Updated Table 4: Site-Built Structures Valuation Per Jurisdiction
- Updated Table 5: Percentages of Homes within SFHA's per Jurisdiction
- Updated Table 6: Flood Insurance Coverage by Jurisdiction
- Updated text associated with Table 6 (Flood Insurance Coverage Assessment)
- Updated the number of repetitive loss properties for Unincorporated Charleston County
- Updated Table 8: Outreach Projects to include new outreach projects from the past year as well as upcoming outreach projects planned for 2022-2023.
- Updated Table 9: Coverage Improvement Plan Implementation Projects
- Updated Table 10: Direct Contact Offering Flood Protection Assistance and Promoting Flood Insurance
- (A.4) Updated the Participation Table for jurisdictions
- (A.6) Previous Yearly Meeting Minutes 2021-2022: Added the meeting minutes for this year's meetings.
- CRHMP Summary of Changes 2022 (A.7): Added the summary of changes for this plan.
- (A.9) Complete Hazard Histories: Updated hazard histories for each hazard.

– Impact Statements

Impacts for all Hazards for Unincorporated Charleston County	
Hazard	**Impact**

Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. The amount of impact is dependent on size of storm, speed, and location of landfall, if any. The portions of Unincorporated Charleston County (Edisto Island, Johns Island, Unconsolidated Awendaw area, Dewees Island) closer to the coast will experience greater effects from a hurricane. The impact of hurricanes (high winds, storm surge, rainfall) is lesser than most jurisdictions as we have limited beach/coastline under jurisdiction.
Flooding	Around 68% of the Charleston Region is in a floodplain. Some portions of the County aren't located in the floodplain but are still considered at risk for the aftermaths of a flooding event. Impact of flooding can be severe depending on how much rain occurs in a short period of time. Unincorporated Charleston County is also impacted by rainfall from the upstate as seen in 2015, mainly the Santee Watershed but also the Edisto. Due to the rural majority of the County, the lack of infrastructure to access flooded and damaged homes is impactful as seen in Hurricane Matthew (2016).
Sea Level Rise	The impact of this hazard has yet to be seen to full magnitude. With the limited beachfront properties and development, the impact of this hazard will be minimal. King tides are the best measurement of this event. For unincorporated Charleston County, little infrastructure or buildings are impacted regularly. It is expected to be have greater impact within the next 20 years.
Earthquake	Historically, impacts to earthquakes on Unincorporated Charleston County have been minimal. As most of the Unincorporated Areas are to the east and west, with the fault line being to the north, impacts of buildings are minimal. If there were to be a major earthquake at this fault line, there would inevitably be damage to building and infrastructure, but other jurisdictions would be hit more severely. Fault lines outside of Charleston County should also be monitored as aftershocks can be catastrophic and trigger other seismic events.
Tornado	The impact of the most recent tornado on Johns Island in 2015 caused over $1.5 million in damages. The unpredictability of tornadoes can be very impactful even in rural communities like most of the unincorporated Charleston County. Mobile homes are especially at risk and would be the most impacted.
Hazardous Materials	The impact of a hazard materials spill in Unincorporated Charleston County would not be impactful unless in the West Ashley, Mt Pleasant or James Island area. Those areas closer to ports or more vulnerable populations or water sources will have a higher impact on Unincorporated Charleston County.
Terrorism	The higher impact would be on the portions of the County closer to the Peninsula. Little impact would occur in the far east and west portions of the County. The impact would be dependent on the scale and type of terrorism.
Wildfire	The impact of wildfires would be detrimental to the natural resources and beautification of Unincorporated Charleston County as well as farmers and agriculturalists. The size of the fire and origination would depict the overall impact.

Tsunamis	The impact of tsunamis has been minimal to Unincorporated Charleston County.
Dam Failure	The highest impact of dam failure is to the eastern part of Charleston County. Past impacts have been minimal and are expected to stay that course.
Rip Currents	Unincorporated Charleston County is not impacted by this.
Severe Storm	There are impacts to Unincorporated Charleston County for severe storms depending on wind speed, hail size and rainfall. Cars and residential homes, especially mobile homes, are at risk and would have the most impact. Overall, severe storms have caused roughly as much as $140,000 worth of damage, but typical damage is about $15,000.
Drought	The impact of drought is minimal on the County as the droughts typically experienced is D1 (moderate drought). The damages this would put on the County is minimal, though farmers would be more impacted and reside more in Unincorporated Charleston County than other jurisdictions.
Winter Weather	Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact the County often.

Impacts for all Hazards for Roper St. Francis Healthcare	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. The amount of impact is dependent on size of storm, speed, and location of landfall, if any. Roper hospital downtown will experience greater effects from storm surge and flooding caused by hurricanes as well as building damage potential due to high wind hazards. The other two RSFH hospitals in Charleston County are not impacted by storm surge but could be equally impacted by rainfall flooding and high wind hazards.
Flooding	During the last major storm, flooding was significant enough that vehicles were almost completely overtaken around the Roper downtown hospital. During large tidal surges flooding is observed at the corner of Calhoun and Courtney as well as parking lot near the marina on Calhoun. This is further compounded if there is any rain associated with the tidal even and water can flow in the crawlspace beneath the hospital. Facilities not on the peninsula are less susceptible to storm and tidal surges but may have affects from rainfall flooding.
Sea Level Rise	The impact of this hazard has yet to be seen to full magnitude. King tides are the best measurement of this event. For Roper, the infrastructure or buildings that are impacted regularly are located on the Peninsula. It is expected to be have greater impact within the next 20 years. Facilities not on the peninsula are anticipated to have minimal impact.
Earthquake	Historically, impacts from earthquakes have been minimal. As most of the Hospitals are to the east and west, with the fault line being to the north, impacts of buildings are minimal. If there were to be a major earthquake at this fault line, there would inevitably be damage to building and infrastructure, but other jurisdictions would be hit more severely. Fault lines outside of Charleston County should also be monitored as aftershocks can be catastrophic and trigger other seismic events.
Tornado	Tornadoes do not impact Roper St. Francis as the building standards are more than the average facility due to it being a hospital.
Hazardous Materials	The impact of a hazard materials spill would vary depending upon the location of the spill, weather conditions for plume risks and potential for an influx of patients with exposure. Historically, little impact from hazmat events has occurred.
Terrorism	The impact would be dependent on the scale and type of terrorism. Unless RSFH were the target, or within the target area, of a terrorism incident, impacts would most likely come in the form of a mass casualty response and an influx of patients needing urgent medical care.
Wildfire	Historically, little to no impact has occurred due to wildfires.
Tsunamis	Historically, little to no impact has occurred due to tsunamis. However, a tsunami off the coast of Charleston will likely have a significant impact on the downtown hospital due to its proximity to the water and the pre-existing flood impacts.

Dam Failure	Historically, little to no impact has occurred due to dam inundation.
Rip Currents	Roper St Francis is not impacted by this.
Severe Storm	There are impacts to Roper for severe storms depending on wind speed, hail size and rainfall. Overall, severe storms have caused roughly as much as $140,000 worth of damage, but typical damage is about $15,000.
Drought	Historically, little to no impact has occurred due to drought conditions.
Winter Weather	Winter weather impacts would be dependent upon the scale and type of winter weather. Recent winter storms have resulted in business interruption and accessibility issues as opposed to property damage.

Impacts for all Hazards for St. Andrew's Parish Parks and Playground Commission	
Hazard	**Impact**
Hurricane	Impact is dependent on the size of the storm and location of landfall. Our primary concern during a storm is damage from wind and rising storm waters.
Flooding	Our biggest concern is damage from flood waters. Much of our property is in low lying areas and several of our fields are particularly vulnerable to flooding.
Sea Level Rise	We have not seen any impact from sea level rise as most of our properties are well away from the coast.
Earthquake	Should there be a strong earthquake in our area in or near the fault line, we can expect moderate to severe damage to some of our buildings.
Tornado	Damage from tornado could be extreme. Our most vulnerable buildings and park structures would not be able to withstand the winds of a F2 or greater tornado.
Hazardous Materials	Our jurisdiction is heavily populated and therefore would be vulnerable to hazard materials release.
Terrorism	Our jurisdiction is heavily populated and therefore would be vulnerable to terrorism.
Wildfire	The impact of wildfires would depend on the location. Several of our properties are heavily wooded.
Tsunamis	Our jurisdiction is well away from the coast and expected impact from a tsunami would be minimal.
Dam Failure	Our jurisdiction is well away from the nearest dam structure and impact from dam failure would be minimal.
Rip Currents	We do not have any coastal beachfront properties and therefor impact from rip currents is minimal.
Severe Storm	The greatest area of concern with a severe storm is the impact from rising water in low lying areas
Drought	Recreation fields are typically more vulnerable to drought as turf grass is difficult to maintain without adequate irrigation.
Winter Weather	Locations in our coastal areas do not typically experience severe winter weather but prolonged freezing temperatures can cause issues with burst pipes and HVAC equipment.

Impacts for all Hazards for the Town of Hollywood	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. The amount of impact is dependent on size of storm and speed. The impact of hurricanes (high winds, storm surge, and rainfall) is lesser than most jurisdictions as we have limited beach/coastline under jurisdiction. Affects will be possible along our Riverland areas fronting the Rantowels Creek, Wallace River, Stono River, Toogoodoo Creek and Wadmalaw River.
Flooding	Impact of flooding can be severe depending on how much rain occurs in a short period of time. Hollywood is also impacted by rainfall from the upstate as seen in 2015, mainly the Santee Watershed but also the Edisto. The lack of infrastructure to access flooded and damaged homes is impactful as seen in Hurricane Matthew (2016). Areas of concern are around the intersection of Baptist Hill Road and Toogoodoo Road; Toogoodoo and Kings Path; Toogoodoo and Sam King; Toogoodoo and Erica Place in particular as they are in current AE (El. 12) and have experienced a lot of water when we had heavy rain events.
Sea Level Rise	The impact of this hazard has yet to be seen to full magnitude. With the no beachfront properties and development, the impact of this hazard will be minimal. King tides are the best measurement of this event. For Hollywood, little infrastructure or buildings are impacted regularly. It is expected to be have greater impact within the next 20 years.

Earthquake	Historically, impacts to earthquakes on Hollywood have been minimal. As most of the Unincorporated Areas are to the east and west, with the fault line being to the north, impacts of buildings are minimal. If there were to be a major earthquake at this fault line, there would inevitably be damage to building and infrastructure, but other jurisdictions would be hit more severely. Fault lines outside of Charleston County should also be monitored as aftershocks can be catastrophic and trigger other seismic events.
Tornado	Impact has been minimal but could have been much greater as the most recent tornado on Johns Island in 2015 caused over $1.5 million in damages. The unpredictability of tornadoes can be very impactful even in rural communities like most of the unincorporated Charleston County. Mobile homes are especially at risk and would be the most impacted.
Hazardous Materials	The impact of a hazard materials spill in Hollywood would not be impactful unless in the West Ashley or Johns Island area. There has been an event located on the West Ashley/Johns Island-area that involved a sewer line break which impacted the shell fish in the local vicinity.
Terrorism	The higher impact would be on the portions of the County closer to the Peninsula. Little impact would occur in the Hollywood/St. Paul's portion of the County. The impact would be dependent on the scale and type of terrorism.
Wildfire	The impact of wildfires would be detrimental to the natural resources and beautification of Hollywood as well as farmers and agriculturalists. The size of the fire and origination would depict the overall impact. There are many large, forested tracts of land with fuel for wildfire.
Tsunamis	The impact of tsunamis has been minimal to the Town of Hollywood.
Dam Failure	Past impacts have been minimal and are expected to stay that course.

Rip Currents	The Town of Hollywood is not impacted by this.
Severe Storm	There are impacts to the Town of Hollywood for severe storms depending on wind speed, hail size and rainfall. Cars and residential homes, especially mobile homes, are at risk and would have the most impact. Overall, severe storms have caused roughly as much as $140,000 worth of damage, but typical damage is about $15,000.
Drought	The impact of drought is minimal on the Town as the droughts typically experienced is D1 (moderate drought). The damages this would put on the Town is minimal, though farmers would be more impacted.
Winter Weather	Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact the Town often.

Impacts for all Hazards for Charleston Water System	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. The amount of impact is dependent on size of storm and speed. The impact of hurricanes (high winds, storm surge, rainfall) is lesser than most jurisdictions as we have limited beach/coastline under jurisdiction.
Flooding	Impact of flooding can be severe depending on how much rain occurs in a short period of time. Hollywood is also impacted by rainfall from the upstate as seen in 2015, mainly the Santee Watershed but also the Edisto. The lack of infrastructure to access flooded and damaged homes is impactful as seen in Hurricane Matthew (2016). Areas of concern are lowlying areas throughout the City of Charleston.
Sea Level Rise	The impact of this hazard has yet to be seen to full magnitude. With the no beachfront properties and development, the impact of this hazard will be minimal. King tides are the best measurement of this event. For Hollywood, little infrastructure or buildings are impacted regularly. It is expected to be have greater impact within the next 20 years.
Earthquake	Historically, impacts to earthquakes on Hollywood have been minimal. As most of the Unincorporated Areas are to the east and west, with the fault line being to the north, impacts of buildings are minimal. If there were to be a major earthquake at this fault line, there would inevitably be damage to building and infrastructure, but other jurisdictions would be hit more severely. Fault lines outside of Charleston County should also be monitored as aftershocks can be catastrophic and trigger other seismic events.

Tornado	Impact has been minimal but could have been much greater as the most recent tornado on Johns Island in 2015 caused over $1.5 million in damages. The unpredictability of tornadoes can be very impactful even in rural communities like most of the unincorporated Charleston County. Mobile homes are especially at risk and would be the most impacted.
Hazardous Materials	The impact of a hazard materials spill in Hollywood would not be impactful unless in the West Ashley or Johns Island area. There has been an event located on the West Ashley/Johns Island-area that involved a sewer line break which impacted the shell fish in the local vicinity.
Terrorism	The higher impact would be on the portions of the County closer to the Peninsula. Little impact would occur in the Hollywood/St. Paul's portion of the County as most of this area is not serviced by Charleston Water. The impact would be dependent on the scale and type of terrorism.
Wildfire	The impact of wildfires would be detrimental to the natural resources and beautification of Hollywood as well as farmers and agriculturalists. The size of the fire and origination would depict the overall impact. There are many large, forested tracts of land with fuel for wildfire.
Tsunamis	The impact of tsunamis has been minimal to Charleston Water.
Dam Failure	Past impacts have been minimal and are expected to stay that course.
Rip Currents	Charleston Water System is not impacted by this.
Severe Storm	The main impacts to Charleston Water would be downed tree limbs, flash flooding and sewer back ups that affect the day to day operations.

Drought	The impact of drought is minimal on Charleston Water as the droughts typically experienced is D1 (moderate drought). The damages this would put on the Town is minimal, though farmers would be more impacted.
Winter Weather	Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact the Water System often.

Impacts for all Hazards for Mt Pleasant Waterworks Commission	
Hazard	**Impact**
Hurricane	Mount Pleasant Waterworks has a comprehensive Emergency Management Plan that covers the effects and impacts of hurricanes regardless of category. The impacts of a hurricane will generally be flooding and infrastructure damage that will limit our ability to provide water and sewer services to the Town of Mount Pleasant until repairs have been made. The low-lying areas around the “Old Village” would be hardest hit. Also, of concern is the aging infrastructure located there. The Mount Pleasant area has barrier islands that provide a small buffer area that will take the impact of a hurricane should it be a direct landfall.
Flooding	Two types of flooding occur in Mount Pleasant: localized flooding and flooding from rising water caused by a storm. Localized flooding is caused from blocked drainage systems or inadequate drainage facilities. Storm flooding or "storm surge" is due to rising water caused by tropical storms and hurricanes. This type of flooding may also have wave action which could exert velocity impact forces against structures located in coastal high hazard areas. Depending on the level of flooding our pump stations could be overwhelmed causing wastewater flooding in certain areas.
Sea Level Rise	Mount Pleasant has minimal impact from sea level rise. King tides are becoming more of an event and Mount Pleasant Waterworks will be addressing this issue soon.
Earthquake	Mount Pleasant Waterworks has a comprehensive Emergency Management Plan that addresses the impacts of an earthquake. Impacts from earthquakes have had minimal impact on the Mount Pleasant area. If there was a major earthquake to hit our area there is the potential for major damage to our infrastructure as well as our buildings making repairs a real challenge.
Tornado	Mount Pleasant Waterworks has a comprehensive Emergency Management Plan that addresses our response to impacts from a tornado. The unpredictability of tornados can be impactful on our infrastructure as well as our buildings making repairs a challenge. In 2017, Tropical Storm Irma passed through our area aa EFO-80 strength tornado, with winds at 80mph, formed on the marsh between Mount Pleasant and Sullivan’s island.
Hazardous Materials	Mount Pleasant Waterworks has a Comprehensive Emergency Management Plan that addresses various hazardous materials releases. We have eliminated major hazardous chemicals that we use in our treatment processes to the greatest extent possible. However, chemical releases could be harmful to our environment.
Terrorism	The impact would depend on the scale and location of the terrorist attack. Mount Pleasant Waterworks employees a Security Response Team to handle small scale events. Our Emergency Management Plan covers terrorist attacks and its impact on our operations.

Wildfire	There would be minimal impact on our infrastructure system should there be a wildfire in our area. However, depending on the location some buildings might be impacted.
Tsunamis	The probability of tsunamis is minimal to the Mount Pleasant Area. Impact would be similar to flooding.
Dam Failure	Minimal impacts expected by dam failure to the Mount Pleasant area. Though the many dam failures in recent weather events have been severe, our area was not impacted by them.
Rip Currents	The Mount Pleasant area is not expected to have impacts from rip currents.
Severe Storm	Mount Pleasant Waterworks has a comprehensive Emergency Management Plan that addresses severe storms and their impacts on our infrastructure. Depending on the severity of the storm and locations, things like downed power lines could cause failures on pump stations and other processes. Fallen trees could disrupt infrastructure as well. Heavy rains could cause flooding in low lying areas.
Drought	The impact on Mount Pleasant Waterworks depends on the severity of the drought. A long-term drought would have an impact of water systems and their capabilities to provide water for our customers. MPW has a drought response plan with action levels based on certain triggers.
Winter Weather	Mount Pleasant Waterworks has a comprehensive Emergency Management Plan that addresses various types of winter weather events. With the snowstorm experience in early 2018 and with the freezing rain of 2014 we experienced issues with infrastructure and difficulty traveling on hazardous roads to make repairs. Harsh winter weather does not happen often in the Mount Pleasant area.

Impacts for all Hazards for the Town of Lincolnville	
Hazard	**Impact**
Hurricane	The amount of impact is dependent on size of storm, speed, and location of landfall, if any. Lincolnville is not routinely impacted by hurricanes as it is one of the most inland parts of Charleston County. However, there are some mobile homes that could be affected by wind.
Flooding	Minimal impacts of flooding. The Town has no buildings in the floodplain so there is little impact.
Sea Level Rise	This hazard does not affect Lincolnville.
Earthquake	Historically, impacts to earthquakes on the Town of Lincolnville have been minimal. This Town is close to the fault line in Summerville, but there is little infrastructure in Lincolnville.
Tornado	The effects of tornadoes have not occurred in recent history.
Hazardous Materials	Lincolnville has not been impacted by this hazard but is surrounded by major thoroughfares and could be impacted by a chemical spill.
Terrorism	The Town has not been impacted by terrorism.
Wildfire	The Town has not been impacted by wildfires and is surrounded by urban area.
Tsunamis	The Town has not been impacted by tsunamis.
Dam Failure	The Town has not been impacted by dam failure.
Rip Currents	The Town has not been impacted by rip currents and not at risk for it.
Severe Storm	Severe storms occur every year. The worst impact has been downed tree limbs.
Drought	The impact of drought is minimal on the Town as the droughts typically experienced is D1 (moderate drought). The damages this would put on the Town is minimal.
Winter Weather	Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact the Town often.

Impacts for all Hazards for Town of Meggett	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. The amount of impact is dependent on size of storm, speed, and location of landfall, if any. The portions of the Town are impacted by storm surge, specifically near Ethel Post Office Road and the DOT bridge.
Flooding	Flooding has minimal impact on Meggett to good building codes regulations and freeboard requirements. There are some portions of the Town that are still considered at risk for the aftermaths of a flooding event. Impact of flooding can be severe depending on how much rain occurs in a short period of time.
Sea Level Rise	The impact of this hazard has yet to be seen to full magnitude. With the limited riverfront properties and development, the impact of this hazard will be minimal.
Earthquake	Historically, impacts to earthquakes on the Town have been minimal. Fault lines outside of the Town should be monitored as aftershocks can be catastrophic and trigger other seismic events.
Tornado	The impact of tornadoes have been minimal. The unpredictability of tornadoes can be very impactful even in rural communities. Mobile homes are especially at risk and would be the most impacted.
Hazardous Materials	The impact of a hazard materials spill has been minimal in Meggett as there are not a lot of commercial businesses.
Terrorism	There is not a high threat or previous impact on the Town for terrorism.
Wildfire	The impact of wildfires has been minimal to the Town.
Tsunamis	The impact of tsunamis has been minimal to the Town.
Dam Failure	The impact of dam failure has been minimal to the Town.
Rip Currents	The Town is not impacted by this.
Severe Storm	There are impacts to the Town of Meggett for severe storms depending on wind speed, hail size and rainfall. Cars and residential homes, especially mobile homes, are at risk and would have the most impact. Overall, severe storms have caused roughly as much as $140,000 worth of damage, but typical damage is about $15,000.
Drought	The impact of drought is minimal on the Town as the droughts typically experienced is D1 (moderate drought). The damages this would put on the County is minimal.
Winter Weather	Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact the Town often.

Impacts for all Hazards for Town of Rockville	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. The amount of impact is dependent on size of storm, speed, and location of landfall, if any. The portions of the Town are impacted by storm surge, specifically near the marina.
Flooding	Flooding has minimal impact on Rockville due to good building codes regulations and freeboard requirements. No reports of flooding have occurred from the past 5 years.
Sea Level Rise	The impact of this hazard has yet to be seen to full magnitude. With the limited riverfront properties and development, the impact of this hazard will be minimal.
Earthquake	Historically, impacts to earthquakes on the Town have been minimal. Fault lines outside of the Town should be monitored as aftershocks can be catastrophic and trigger other seismic events.
Tornado	The impact of tornadoes have been minimal. The unpredictability of tornadoes can be very impactful even in rural communities. Mobile homes are especially at risk and would be the most impacted.
Hazardous Materials	The impact of a hazard materials spill has been minimal in Rockville. There could be a possibility with the boat marina store.
Terrorism	There is not a high threat or previous impact on the Town for terrorism.
Wildfire	The impact of wildfires has been minimal to the Town.
Tsunamis	The impact of tsunamis has been minimal to the Town.
Dam Failure	The impact of dam failure has been minimal to the Town.
Rip Currents	The Town is not impacted by this.
Severe Storm	There are impacts to the Town of Rockville for severe storms depending on wind speed, hail size and rainfall. Cars and residential homes, especially mobile homes, are at risk and would have the most impact. Overall, severe storms have caused roughly as much as $140,000 worth of damage, but typical damage is about $15,000.
Drought	The impact of drought is minimal on the Town as the droughts typically experienced is D1 (moderate drought). The damages this would put on the County is minimal.
Winter Weather	Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact the Town often.

Impacts for all Hazards for North Charleston Sewer District	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. The amount of impact is dependent on size of storm, speed, and location of landfall, if any. The impact to North Charleston Sewer District will depend on windspeed, rainfall, storm surge, and our ability to access and assess our service area after the event.
Flooding	Flooding has a major impact on North Charleston Sewer District due to infiltration into our underground infrastructure. Flooding places a large strain on our pump stations and treatment process. With this added strain on our system it also places our customers at more of a risk to have a sewer overflow in their residence. It also places our properties in low lying areas at the risk of flooding.
Sea Level Rise	The impact of this hazard has yet to be seen to full magnitude however there will be flooding associated with this hazard.
Earthquake	The impact of an earthquake is unknown but of concern due to our underground infrastructure.
Tornado	There are impacts to North Charleston Sewer District for tornados depending on wind speeds.
Hazardous Materials	The impact of a hazard materials spill into our system could have a major impact depending on location and material. It could adversely affect our biomass and could take weeks to recover.
Terrorism	There has not been any attempts and likelihood is low. An attack killing our biomass would have a major impact on treatment process and could take weeks to recover.
Wildfire	The impact of wildfires has been minimal to North Charleston Sewer District.
Tsunamis	The impact of tsunamis has been minimal to North Charleston Sewer District.
Dam Failure	North Charleston Sewer District could be impacted by the amount of water released.
Rip Currents	North Charleston Sewer District is not impacted by this.
Severe Storm	There are impacts to North Charleston Sewer District for severe storms depending on wind speeds and rainfall. The system can become inundated with infiltration affecting our treatment process.
Drought	North Charleston Sewer District is not impacted by this.
Winter Weather	Most winter hazards are associated with occasional icing of roads and driving conditions.

Impacts for all Hazards for Town of Ravenel	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. The amount of impact is dependent on size of storm, speed, and location of landfall, if any. The impact of hurricanes (high winds, storm surge, rainfall) is lesser for the Town of Ravenel than most jurisdictions as we have limited beach/coastline under jurisdiction.
Flooding	Ravenel is located in a floodplain so it is considered at risk for the aftermaths of a flooding event. Impact of flooding can be severe depending on how much rain occurs in a short period of time. The Town of Ravenel is also impacted by rainfall from the upstate as seen in 2015, mainly the Santee Watershed but also the Edisto.
Sea Level Rise	The impact of this hazard has yet to be seen to full magnitude. With the limited beachfront properties and development, the impact of this hazard will be minimal. King tides are the best measurement of this event. For the Town of Ravenel, little infrastructure or buildings are impacted regularly. It is expected to have greater impact within the next 20 years.
Earthquake	Historically, impacts from earthquakes on the Town of Ravenel have been minimal. However, two fault lines meet in Ravenel. If there were to be a major earthquake at these fault lines, there could likely be catastrophic damage to buildings and infrastructure. Fault lines outside of Ravenel should also be monitored as aftershocks can be catastrophic and trigger other seismic events.
Tornado	The impact of the most recent tornado on Johns Island in 2015 caused over $1.5 million in damages. The unpredictability of tornadoes can be very impactful even in rural communities like the Town of Ravenel. Mobile homes are especially at risk and would be the most impacted. The Town of Ravenel contains many mobile homes.
Hazardous Materials	The Town of Ravenel is located along Highway 17 as well as railroad tracks, so it is vulnerable to hazardous material spills. The impact of a hazardous materials spill in Ravenel could be large.

Terrorism	There is not a high threat on the Town for terrorism.
Wildfire	The impact of wildfires would be detrimental to the natural resources and beautification of Ravenel as well as farmers and agriculturalists. The size of the fire and origination would depict the overall impact.
Tsunamis	The impact of tsunamis has been minimal to Ravenel.
Dam Failure	Past impacts from dam failure have been minimal and are expected to stay that course.
Rip Currents	Ravenel is not impacted by this.
Severe Storm	The impact of severe storms depending on wind speed, hail size and rainfall are impactful to Ravenel. Cars and residential homes, especially mobile homes, are at risk and would have the most impact. Ravenel contains many mobile homes.
Drought	The impact of drought is minimal on the Town as the droughts typically experienced are D1 (moderate drought). The damages this would put on the Town would be minimal, though farmers would be more impacted and several farmers reside in Ravenel.
Winter Weather	Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact Ravenel often.

Impacts for all Hazards for College of Charleston	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. The amount of impact is dependent on size of storm, speed, and location of landfall, if any. The Grice Marine Lab, closer to the coast will experience greater effects from a hurricane. The impact of hurricanes (high winds, storm surge, rainfall) is lesser than most jurisdictions as we have limited beach/coastline under our College jurisdiction.
Flooding	Impact of flooding can be severe depending on how much rain occurs in a short period of time. The College of Charleston has been impacted before by 24" flooding in two-three buildings requiring repair. Significant flooding in the downtown area will impact buildings on campus on Calhoun Street, Wentworth Street, Coming Street. Significant flooding on Lockwood will intrude our building located there. And, significant flooding on the coast will impact Grice Marine Lab on Ft Johnson Road.
Sea Level Rise	The impact of this hazard has yet to be seen to full magnitude. It is expected to have greater impact within the next 20 years to our Ft. Johnson Road facilities mentioned above.
Earthquake	Historically, impacts to earthquakes on Unincorporated Charleston County have been minimal. As most of the Unincorporated Areas are to the east and west, with the fault line being to the north, impacts of buildings on campus are minimal. If there were to be a major earthquake at this fault line, there would inevitably be damage to building and infrastructure, but other jurisdictions would be hit more severely. Fault lines outside of Charleston County should also be monitored as aftershocks can be catastrophic and trigger other seismic events. Recent construction has incorporated earthquake-resistant technology where possible
Tornado	The impact of the most recent tornado on Johns Island in 2015 caused over $1.5 million in damages. The unpredictability of tornadoes can be very impactful even on the College campus like most of the unincorporated Charleston County. .

Hazardous Materials	The impact of a hazard materials spill on any of the main arteries routing through campus would be significant if it restricted movement or resumption of classes as a result of a spill. North Campus is adjacent to I-526 and the airport and major industry Being is located. Patriots Point Sailing Facility, Harborwalk Office and Classroom facility, and Grice Marine Laboratory are all on the harbor where a significant spill may affect or limit activities there.
Terrorism	The higher impact would be on the portions of the County closer to the Peninsula. Little impact would occur in the far east and west portions of the County. The impact would be dependent on the scale and type of terrorism.
Wildfire	The impact of wildfires would be detrimental to the natural resources and beautification of Unincorporated Charleston County as well as farmers and agriculturalists. The size of the fire and origination would depict the overall impact.
Tsunamis	The impact of tsunamis has been minimal to the College unless they were to involve our facilities on the harbor or seaside as discussed above.
Dam Failure	The highest impact of dam failure is to the eastern part of Charleston County. Past impacts have been minimal and are expected to stay that course.
Rip Currents	The College of Charleston is not impacted by this.
Severe Storm	The impact of severe storms depending on wind speed, hail size and rainfall is moderately impactful to The College of Charleston. Vehicle access, transportation routes, car and bus travel, if restricted will affect operations significantly.
Drought	The impact of drought is minimal in the County as the droughts typically experienced is D1 (moderate drought). The damages this would put on the County would be minimal to the College as well.
Winter Weather	Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact the College of Charleston except where sidewalks become impassable due to ice and snow buildup.

Impacts for all Hazards for City of Charleston	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. The amount of impact is dependent on size of storm, speed, and location of landfall, if any. The entire City of Charleston is at risk from high winds from a hurricane making landfall. There are many old and historic structures on the City's Peninsula that would suffer the most damage from high winds. The most dangerous threat is from storm surge which will impact the Peninsula first from any Tropical System to include the entire City for a Category 2 storm or higher. The damage would be to older buildings, vehicles, historic and cultural city is extremely vulnerable to storm surge particular on the Peninsula however the entire city is at risk from a category 2 or larger storm.
Flooding	Around 68% of the Charleston Region is in a floodplain including the City of Charleston. The city is at risk of flooding from tropical system storm surge send high tide events approaching 50 times a year along the Peninsula. As tides increasingly surpass 7.1 feet, the impact is being felt along all areas of the city dependent on drainage into tidal waterways. Heavy rainfall from extreme precipitation events affects the entire city. Old and undersized drainage systems along with increased development pressure in and around the floodplain is causing increased flooding from rainfall events due to poor and undersized drainage. The potential for impact to businesses, real estate values and access to critical infrastructure exists as sea levels continue to rise exasperating the effects of high tide flooding and extreme precipitation events.
Sea Level Rise	The City of Charleston is experiencing an increasing rate of sea level rise. The City of Charleston Sea Level Rise Strategy suggests planning for a rate of 2-3 feet over the next 50 years. This rate is consistent with the Fourth National Climate Assessment predictions released in 2018. Sea Level rise exasperates flooding from storm surge, high tides andextreme precipitation. It makes episodic flooding more intense and it has a significant effect on aging infrastructure, particularly roads. Sea level rise will continue to impact city roadways, access to critical infrastructure and vulnerable neighborhoods.

Earthquake	The City of Charleston is vulnerable to an earthquake, having suffered a major earthquake (6.9-7.3) on August 31, 1886. Past earthquakes may be predictive of future events, consequently we should be thinking about impact in those terms. The most vulnerable areas of the city are also our most populated areas with both residential, business and our most critical healthcare facilities. Maps of the area show the most likely areas for significant liquefaction are along the edges of the city where considerable fill was used to expand the city boundaries. These are also the locations where the city has seen the densest growth. Old buildings made of masonry construction will most likely cause the majority of deaths and injuries and the entire city will be cut off both internally and externally due to the numerous bridges and roadways that will need to be inspected and approved before being used.
Tornado	The impact of the most recent tornado on Johns Island in 2015 caused over $1.5 million in damages, including many homes in the city of Charleston. The unpredictability of tornadoes can be very impactful especially in our more rural areas where it may be difficult to reach the damaged area including most of our mobile home communities. Likewise our housing developments generally have heavy tree presence which can be very dangerous and cause more damage.
Hazardous Materials	The City of Charleston would be impacted by a hazardous material spill due to the close proximity of chemical plants and residential areas. The areas most at risk would be the CainHoy and Upper Neck Area where there are chemical plants operating within the vicinity of current and planned residential communities. The impact would involve evacuating homes and businesses until the spill was contained and cleaned up.
Terrorism	The impact would range from a very large group for a special event i.e., Cooper River Bridge Run with 40,000 participants, 5 day Volvo Tennis Classic, LPGA Tournament to a more modest size crowd on Saturday's Farmers Market or Spoleto Festival. A special event on the Peninsula or at a stadium venue on Daniel's Island would be the most likely areas. Impact would be numerous casualties and injuries from a concentrated attack on a large crowd.
Wildfire	Impacts from a wildfire would be almost exclusively to residential single and multi-family homes located on the edges of tracts of forest lands. Evacuations with some damages would be the most likely impacts.

Tsunamis	The impact of a Tsunami would be confines exclusively to the coastal edges of the city including the Peninsula and James, Johns and Daniels Island. Depending on the height of the Tsunami would depend on the severity and impact to include damages from storm surge.
Dam Failure	The impact from a Dam Failure to the City of Charleston would be slow but steady rising water along the city's edges on the Cooper and Ashley Rivers to about 36" of water at the maximum. Impacts would include water damage to infrastructure, homes and transportation networks. In addition, there would be a significant impact to the economy until the water receded and repairs were complete.
Rip Currents	There would be no impact to the City of Charleston from Rip Currents as we have no true ocean front property.
Severe Storm	The impact of severe storms depending on wind speed, hail size and rainfall could range from moderate to severe. Most impacted would be our Peninsula area that suffers from poor drainage and low streets and building elevations. Flooding and transportation interruptions would be the most likely impact. Single family homes in the suburbs would be most impacted by falling trees and debris from high winds.
Drought	Impact from Drought would be minimal as we have very limited agriculture and the vast majority of the city is covered by a municipal water utility.
Winter Weather	Impact form winter weather has and would involve a serious disruption to transportation on bridges and roads that interrupts school, businesses and critical public safety efforts. Likewise, winter weather causes tree limbs to break and fall closing roadways and bringing down power lines.

Impacts for all Hazards for St. Paul's Fire District	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. The amount of impact is dependent on size of storm, speed, and location of landfall, if any. The portions of St. Pauls Fire District (Edisto Island, Adams Run, Town of Meggett, Town of Hollywood and Town of Ravenel) are closer to the coast will experience greater effects from a hurricane. The impact of hurricanes (high winds, storm surge, rainfall) is greater than most jurisdictions as there are many low lying areas, multiple tidal creeks and rivers, that impact many major highways and secondary roads within the fire district. 5 out of 9 fire stations are susceptible to flooding from either storm surge or "king tides" based on the tide and wind blowing additional water into the river systems which cause flooding. The concern for access to and from the 9 fire stations are of concern due to the potential of falling trees and other debris blocking access to and falling on apparatus and buildings.
Flooding	Around 66% of the St. Pauls Fire District is in a floodplain. Some portions of the Fire District are not located in the floodplain but are still considered at risk for the aftermaths of a flooding event. Impact of flooding can be severe depending on how much rain occurs in a short period of time. St. Pauls Fire District is also impacted by rainfall from the upstate as seen in 2015, mainly the Edisto River above the Highway 17 Bridge. Flooded and impacted Parkers Ferry and Greenwood roads by several feet of swift water. Many homes were also heavily impacted due to the flooding. Due to the rural majority of the Fire District, the lack of infrastructure to access flooded and damaged roads and homes required assistance from the National Guard for staffing and their high water vehicles.
Sea Level Rise	The impact of this hazard has yet to be seen within the St. Pauls Fire District. However, with the rapid development of new subdivisions along the rivers and creeks there will likely be impacts to dwellings, vehicles, and access roads. King tides are the best measurement of this event. For St. Pauls Fire District, five of the nine fire stations could be impacted due to flooding from a king tide, main impact would be roadway access to the buildings.
Earthquake	Historically, impacts to earthquakes in St. Pauls Fire District have been minimal. The fire district has a large fault line that starts on Ethel Post Office Rd and runs through the Towns of Meggett, Hollywood, and Ravenel and ends near Ladson at Palmetto Commerce Parkway. With the fault line, being in the center of the fire district potential impacts to the fire stations could be substantial. If there were to be a major earthquake at this fault line, there would inevitably be damage to all building and infrastructure, along with other jurisdictions. Aftershocks can be extremely dangerous as they usually occur after the major quake, placing employees at risk while they perform their duties. Water and sewer lines can become damaged creating a public health emergency.
Tornado	The unpredictability of tornadoes and its impact the St. Pauls Fire District could be minimal. All the fire stations are subject to impacts from a tornado based on its location and strength. Again, a tornado is unpredictable and the impact area is a narrow swath through the fire district. Mobile homes are especially at risk and would be the most impacted.

Hazardous Materials	The impact of a hazard materials spill in St. Pauls Fire District could result in various types of impacts. Impacts from a train derailment involving hazardous materials could impact 4 of the 9 fire stations that are located relatively close to the CSX rail road. Fire stations may have to be evacuated due to hazardous chemical plume or toxic smoke from a burning chemical tank car. Highway incidents involving hazardous materials trucks pose a potential impact within the St. Pauls Fire District, Hwy 17 north and south are routes that lead to and from various chemical related companies located in the county and beyond. Hwy 17 is a route to the State ports for shipping and receiving these chemicals. Both routes; rail and highway pose a significant risk to multiple water sources and populations based on location of the incident.
Terrorism	Homegrown terrorism could potentially impact St. Pauls Fire District, examples could be reporting false calls to ambush the employees and apparatus, drive by shootings targeting fire stations, employees, and apparatus. Responding to school shootings, which seems to be on the increase could place employees and others in danger. The impact would be dependent on the scale and type of terrorism and no one is exempt from this threat.
Wildfire	St. Pauls Fire District could be impacted by a large wildland fire, some of the fire stations are metal sided, and a rubber covered roof. These construction features could pose potential problems for ignition of the fire station should large wildland fire occur that is approximate to the location. The impact of wildfires would be detrimental to natural resources and beautification of St. Pauls Fire District well as farmers and agriculturalists. The size of the fire and origination would depict the overall impact.
Tsunamis	The impact of tsunamis has been minimal to St. Paul's Fire District.
Dam Failure	The impact of a Dam failure is expected to minimal in the St. Paul's Fire District
Rip Currents	St. Paul's Fire District is not impacted by this.
Severe Storm	The impact of severe storms depending on wind speed, hail size and rainfall is a minimal threat to the St. Pauls Fire District.
Drought	The impact of drought is moderate on the St. Pauls Fire District, as the droughts typically experienced is D1 (moderate drought). The damages this would put on the Fire District facilities is minimal, though the employees and fire apparatus could see an increase in call volume due to uncontrolled fires and the public failing to follow the forestry commission guidelines for open burning.
Winter Weather	Most winter hazards are associated with St. Pauls Fire District responding to reported structure fires, vehicle accidents (call volume increase). The impact of winter weather would be on employees and fire apparatus, becoming involved in accidents while responding and the firefighters being exposed to severe cold for an extended time period. Access could become an issue due to trees and power lines becoming coated with ice and snow causing tree limbs to hang much lower and hitting the apparatus, or breaking off and blocking the roadways. Power lines could break and cause extended power outages, dangerous conditions in the areas where they fall potentially exposing employees to electrocution hazards. Winter weather does not impact the St. Pauls Fire District often.

Impacts for all Hazards for St Andrews Public Service District	
Hazard	**Impact**
Hurricane	Our service district is prone to hurricane related damage. Although direct impacts have been limited in recent years, we have been affected by near miss related issues. Most significant have been downed trees, powerlines, and isolated flooding from Hurricane Matthew.
Flooding	Flooding in West Ashley is impacted by the tidal creeks as well as, rivers being at or near flood stage. The PSD has experienced large amounts of rain in the past 4 years and flooding has impacted our ability to respond to several geographical areas of service.
Sea Level Rise	The area is not affected by Sea Level Rise directly and no impacts have been seen on the PSD.
Earthquake	Our district has not been impacted by earthquakes. We do recognize the possibility but there have been no measurable impacts in the last 2 decades. Infrastructure such as bridges, water, and electrical distribution systems would be impacted the most if we were to experience one of these events.
Tornado	There is minimal impact with no measurable damage from tornadoes on the PSD in recent years.
Hazardous Materials	A hazardous materials incident would be minor in impact to our district. Although, depending on the location, it could disrupt access and egress to the district.
Terrorism	Impact for terrorism has been minimal for the PSD.
Wildfire	We have realized a dramatic reduction in wildfires over the last 4 decades. Most of which can be attributed to development in the district.
Tsunamis	Nothing measurable in the last 2 decades
Dam Failure	N/A
Rip Currents	The PSD is not affected by this hazard.
Severe Storm	The impact of severe storms depending on wind speed, hail size and rainfall is impactful to Unincorporated Charleston County. Cars and residential homes, especially mobile homes though there are few, are at risk and would have the most impact.

Drought	The impact of drought is minimal on the County as the droughts typically experienced is D1 (moderate drought). The damages this would put on the district is minimal.
Winter Weather	Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads and bridges. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact the district often.

Impacts for all Hazards for Charleston County Park & Recreation Commission	
Hazard	**Impact**
Hurricane	Charleston County is prone to various tropical system due the location along the coast. Although tropical systems are unpredictable, Charleston County Parks has developed "Emergency Action Plans" for our agency that details the steps to preparing and securing our facilities.
Flooding	Charleston County resides in areas that are at or below sea level. Charleston County Park has three beach parks that is prone to flooding. Although there isn't much we can do against tides or storm surge we try and prepare our facilities by building at higher levels and using sandbags. The campground at James Island County Park is prone to flooding. We are currently in the process to clean out drainage ditches to help with standing water. Caw Caw interpretive center is also an area prone to flooding due to the location to Tea Farm Creek. The area floods but recedes rather quickly without causing harm to any of our structures.
Sea Level Rise	Rising sea levels are a concern, however we have not been able to track rising sea levels. King tides and storm surge are the more obvious signs of higher sea levels.
Earthquake	Charleston resides on a major fault line. Our agency has created "Emergency Action Plans" that cover earthquakes and we do carry the proper insurance for that disaster.
Tornado	Tornadoes are unpredictable. The last tornado that effected our area caused 1.5 million dollars in damages. However none of the property or facilities in our agency was harmed. The most vulnerable area for our parks would be the campground at James Island County Park due to the number of campers we serve each year.
Hazardous Materials	A Hazardous Materials release could prove to be serious given the locations of our facilities. Many of our locations are on or near waterways or near railways and industrial settings.
Terrorism	Terrorism is always a threat and could impact many of our facilities due to the larger scale and population of our events. We work closely with local law enforcement and train with them annually.

Wildfire	Our properties in the rural areas would be impacted greater However, the impact would depend on the size of the fire and origin of the fire.
Tsunamis	With our location on the coast and having many parks on the coastline and rivers a tsunamis could be severe however the likely hood is small.
Dam Failure	Very few of our facilities would be impacted by a dam failure. Impacts are believe to be minimal.
Rip Currents	All three of our beach parks would be at risk for rip currents. Our lifeguards are trained to recognize the signs of rip currents and alert the public once identified.
Severe Storm	The impact of storms could produce moderately severe impacts at our facilities. Depending on the size of the storm and the amount of lightning would determine how our parks are impacted.
Drought	Most of the drought in our area is considered to be minimal.
Winter Weather	Freezing pipes, vegetation and freezing roadways and bridges are the major concern. Economic impact would be the most impact for our agency.

Impacts for all Hazards for James Island Public Service District	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. These storms are unpredictable until the storms are a short distance from landfall. The impact of a storm on James Island Public Service District (JI PSD) depends largely on where it makes landfall. Greater impact occurs if the eye of the storm is south of James Island. While we are not a barrier island and thus not subject to direct wave action, we do experience storm surge in our tidal creek areas, wind and rain impacts.
Flooding	All areas of the Town are at risk from the impacts of flooding as we are on an island with limited routes for vehicles. Several roadways experience regular flooding from tides and heavy rain events. Stormwater infrastructure in the Town is overwhelmed by severe rain events especially if they include large quantities of stormwater in a short amount of time and occur around high tide.
Sea Level Rise	The full impact of this hazard has not yet been experienced. JI PSD has experienced regular flooding and infrastructure damage from King Tides. The PSD is expecting greater impact from this in the coming years.
Earthquake	Impacts from earthquakes in our local area or region to the JI PSD are likely to be minor for Town infrastructure but significant for James Island. We are connected to the mainland by two bridges and to Johns Island by a third bridge all of which would be closed for inspection at the least in the event of an earthquake. Damage to infrastructure in other jurisdictions will also effect James Island and should be accounted for.
Tornado	The unpredictability of tornadoes can be very impactful even in rural communities like some of JI PSD. Mobile homes are especially at risk and would be the most impacted.
Hazardous Materials	James Island PSD is close to the Port of Charleston and as such would be impacted by any hazardous material spill near the harbor or waterways.
Terrorism	The higher impact would be on the portions of the JIPSD closer to the Peninsula and other shorelines. The impact would be dependent on the scale and type of terrorism.
Wildfire	The impact of wildfires would be detrimental to the natural resources and beautification of JI PSD as well as disturb service distribution. The size of the fire and origination would depict the overall impact.
Tsunamis	The impact of tsunamis has been minimal to JI PSD.
Dam Failure	JI PSD is not impacted by this.
Rip Currents	JI PSD is not impacted by this.
Severe Storm	There are impacts to JI PSD for severe storms depending on wind speed, hail size and rainfall. Cars and residential homes, especially mobile homes, are at risk and would have the most impact. Overall, severe storms have caused roughly as much as $140,000 worth of damage, but typical damage is about $15,000.

Drought	The impact of drought is minimal on JI PSD as the droughts typically experienced is D1 (moderate drought). The damages this would put on the County is minimal.
Winter Weather	Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact JIPSD often.

Impacts for all Hazards for St Johns Fire District	
Hazard	**Impact**
Hurricane	Our service district is prone to hurricane related damage. Although direct impacts have been limited in recent years, we have been affected by near miss related issues. Most significant have been downed trees, powerlines, and isolated flooding.
Flooding	Flooding on the islands is impacted by the tides of the Atlantic as well as, rivers being at or near flood stage. We have experienced large amounts of rain in the past 4 years and flooding has impacted our ability to respond to several geographical areas of service.
Sea Level Rise	Beach erosion on Kiawah and Seabrook Islands have been impacted the most by sea level rise. It is more prevalent during sever weather events, such as hurricanes.
Earthquake	Our district has not been impacted by earthquakes. We do recognize the possibility but there have been no measurable impacts in the last 2 decades. Infrastructure such as bridges, water, and electrical distribution systems would be impacted the most if we were to experience one of these events.
Tornado	The impact of the most recent tornado on Johns Island in 2015 caused over $1.5 million in damages. The unpredictability of tornadoes can be very impactful even in rural communities like most of the unincorporated Charleston County. Mobile homes are especially at risk and would be the most impacted.
Hazardous Materials	A hazardous materials incident would be minor in impact to our district. The exception would be the rail line that is on the West Ashley side of the Limehouse Bride/boat landing. If an event happened on or near that section of the rail line, It could disrupt access and egress to the district. (An example would be the Main Rd flooding that took place a few years ago causing Main Rd to be unusable for several days.)
Terrorism	Large scale sporting events on and dignitary visits to Kiawah Island are of the most concern for terrorism events in the district. We are also home to several target hazards (schools and churches) that are near the furthest reaches of county assets due to geographical configuration.

Wildfire	We have realized a dramatic reduction in wildfires over the last 2 decades. Most of which can be attributed to development in the district.
Tsunamis	Nothing measurable in the last 2 decades
Dam Failure	N/A
Rip Currents	Small rips at various times during the year can happen on the beaches and inlets around Kiawah and Seabrook islands. At this time there are two known rip areas in the district. Between Kiawah and Seabrook islands and at the southernmost end of Seabrook at the mouth of the Edisto River.
Severe Storm	The impact of severe storms depending on wind speed, hail size and rainfall is impactful to Unincorporated Charleston County. Cars and residential homes, especially mobile homes, are at risk and would have the most impact.
Drought	The impact of drought is minimal on the County as the droughts typically experienced is D1 (moderate drought). The damages this would put on the district is minimal. The remaining farmers on Johns and Wadmalaw islands would be impacted.
Winter Weather	Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads and bridges. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact the district often.

Impacts for all Hazards for the Town of McClellanville	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. The amount of impact is dependent on size of storm, speed, and location of landfall, if any. Hurricane Hugo made landfall in the Cape Romain Bulls Bay area. McClellanville, in Hugo's northeast quadrant, felt the strongest effects. Hurricane Matthew, a category two hurricane, made landfall in McClellanville in 2016.
Flooding	Many properties adjacent to Jeremy Creek, which runs through town, flood with heavy rain. Several drainage ditches overflow which impacts the Town's infrastructure. Lack of drainage infrastructure along several roads causes flooding in right-of-way and adjacent properties. This has especially caused maintenance issues along dirt roads.
Sea Level Rise	The impact of this hazard has yet to be seen to full magnitude. With the limited beachfront properties and development, the impact of this hazard will be minimal. King tides are the best measurement of this event. For the Town of McClellanville, Jeremy Creek is a source to keep an eye on for impacting the town.
Earthquake	Little impact has been made on the Town from earthquakes in the past.
Tornado	The unpredictability of tornadoes can be very impactful. Mobile homes are especially at risk and would be the most impacted. Impact of tornadoes on the Town has been minimal so far.
Hazardous Materials	Hazardous materials have not made a large impact on the Town thus far.
Terrorism	Due to the Town's size and rural location, terrorism has not been impactful.
Wildfire	The impact of wildfires would be detrimental to the natural resources and beautification of the Town of McClellanville due to its rural location and vicinity to the Francis Marion Forest. The size of the fire and origination would depict the overall impact.
Tsunamis	The impact of tsunamis has been minimal to the Town of McClellanville.
Dam Failure	There would be high impact to the Town in dam failure occurred. Past impacts have been minimal and are expected to stay that course.
Rip Currents	Town of McClellanville is not impacted by this.
Severe Storm	There are impacts to the Town of McClellanville for severe storms depending on wind speed, hail size and rainfall. Cars and residential homes, especially mobile homes, are at risk and would have the most impact.
Drought	The impact of drought is minimal on the Town as the droughts typically experienced is D1 (moderate drought). The damages this would put on the Town is minimal.

Winter Weather	Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact the Town often.

Impacts for all Hazards for Town of Sullivan's Island	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. The amount of impact is dependent on size of storm, speed, and location of landfall, if any. The impact from a tropical event is the greatest hazard to a community such as Sullivan's Island. The potential for widespread devastation is possible depending on the severity of the event.
Flooding	100% of Sullivan's Island is in a floodplain and the potential for Hurricane storm surge flooding can be severe as seen with the whole of Sullivan's Island being a repetitive loss area. Hurricane Hugo greatly impacted the island. Sullivan's Island has also a potential for rainfall flooding which has occurred in recent years due to rainfall events seen between 2015 to 2018 not seen before on Sullivan's Island. Flooding from rainfall is due to several low lying areas and an outdated stormwater system that is constantly being updated as funds are available.
Sea Level Rise	The impact of this hazard has yet to be seen to full magnitude. With most beachfront properties set back behind a natural and beneficial buffer area, the impact of this hazard will be minimal. King tides are the best measurement of this event. For Sullivan's Island minimal infrastructure or buildings are impacted regularly. It is predicted to have greater impact within the next 20 years.
Earthquake	Historically, impacts to earthquakes on Sullivan's Island have been minimal. With the fault line being to the north west, impacts of buildings are minimal. If there were to be a major earthquake at this fault line, there would inevitably be damage to building and infrastructure. Fault lines outside of Charleston County should be monitored as aftershocks can be catastrophic and trigger other seismic events.
Tornado	The impact of the most recent tornado on Johns Island in 2015 caused over $1.5 million in damages. The unpredictability of tornadoes can be very impactful even in rural communities like most of the unincorporated Charleston County. Mobile homes are especially at risk and would be the most impacted.
Hazardous Materials	The impact of a hazard materials spill is minimal on Sullivan's Island due to the mainly single family nature of the island. No industrial or shipping terminals are on the island.

Terrorism	The higher impact would be on the portions of the County closer to the Peninsula. Little impact would occur in the far east and west portions of the County. The impact would be dependent on the scale and type of terrorism.
Wildfire	The impact of wildfires would be detrimental to the natural resources and beautification of Sullivan's Islands Natural and Beneficial areas. Impact to structures abutting this area (Approx. 80 homes) could be devastating. The size of the fire and origination would depict the overall impact.
Tsunamis	The impact of tsunamis has not been a threat to Sullivan's Island in the past and probability in the future is minimal.
Dam Failure	Due to Sullivan's Island being a coastal community there would be little to no impact to this community from a dam failure event.
Rip Currents	Sullivan's experiences rip current events on a regular basis during storm events and when storms pass by the island in the Atlantic ocean.
Severe Storm	The impact of severe storms depending on wind speed, hail size and rainfall is moderately impactful to Sullivan's Island. Cars and residential homes are at risk and would have the most impact.
Drought	The impact of drought is minimal on Sullivan's Island as the droughts typically experienced is D1 (moderate drought). The damages this would put on Sullivan's Island is minimal if any. Most impact may occur from fire potential in the natural and beneficial shrub areas on the ocean side of the island.
Winter Weather	Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact Sullivan's Island often.

Impacts for all Hazards for Town of Awendaw	
Hazard	**Impact**
Hurricane	The Town of Awendaw is located along 10 miles of the Intracoastal Waterway so hurricanes and tropical storms are typically an annual threat. The impacts would include high winds, storm surge, high rainfall and potential flooding from the rain or surge. Cars and personal property, homes, businesses and roads, especially earthen roads, could be impacted with economic loss for closed businesses.
Flooding	The areas along the 10-mile stretch of the Intracoastal Waterway and around Awendaw Creek are in the floodplain. Flooding impacts depend on the amount of rain and potentially the tides.
Sea Level Rise	The impact of sea level rise has not been experienced yet-- no buildings or infrastructure have been impacted. Given the Town's location and elevation, this may become an issue in the future as the level continues to rise.
Earthquake	The impact from earthquakes has not yet been experienced. Buildings and Awendaw Creek bridge may be impacted were a powerful earthquake to be near the Town.
Tornado	To date the Town has not experienced a tornado but the impact could be catastrophic as many residents live in mobile homes.
Hazardous Materials	The impact from a hazardous materials spill could be detrimental given the many waterways and associated marsh and wetlands.
Terrorism	The impact would depend on the scale and type of the event. Primary concern would be contamination of the Town water system.
Wildfire	The impact from a wildfire could be detrimental given the natural resources including the Francis Marion National Forest and Birds of Prey Center. The size and origination of the fire would determine the impact.
Tsunamis	Awendaw has not experienced a tsunami but there is the potential for severe impact.
Dam Failure	The impact from dam failure is minimal.
Rip Currents	Awendaw is not impacted by this.
Severe Storm	The impact from storms could be severe depending on the wind speed and direction, hail size and rainfall. Cars and personal property, homes, businesses and roads, especially earthen roads, could be impacted along with economic loss for closed businesses.
Drought	The impact from drought is moderate however, the increased potential from wildfires is severe.
Winter Weather	The impact from winter weather includes vegetation damage, downed power lines, freezing water pipes and icing roads. These impacts may result in road damage, economic loss for closed businesses and burst pipes.

Impacts for all Hazards for Town of Mount Pleasant	
Hazard	**Impact**
Hurricane	The potential for Tropical Weather is of great concern for the Town of Mount Pleasant. Storm track and intensity are very unpredictable until near landfall. The severity of impact will vary according to the tropical system's composition to include size, surge, intensity, speed, and geographic location of landfall with regard to Mount Pleasant. The Town can expect, at a minimum, interruption of key and critical infrastructure due to high wind impacts and flooding of roads, structures, utilities, etc. Tropical systems come with a risk of tornado impact especially as the system interacts with land.
Flooding	Approximately 60% of the Town of Mount Pleasant is located in a Special Flood Hazard Area. Flood impact occurs as a consequence of many types of flood hazard to include storm surge, heavy rain events, undersized (or no) drainage systems, and extreme high tides. Flood hazard impact often is exacerbated by overlapping event types such as a heavy rain event during extreme high tide. Anticipated impacts of flooding are largely dependent upon the extent and duration of the event. At a minimum, severe flooding will interrupt transportation and threaten critical utilities (such as wastewater treatment). First responder rescues are likely to be needed for citizens trapped in vehicles or isolated in structures surrounded by high and flowing water. Following extended flood events public health may be of great concern as waters become contaminated.
Sea Level Rise	Some impact from Sea Level Rise is felt now, and is anticipated to increase in severity in coming decades. Currently, the primary consequence seen is an increase of minor flooding for portions of major transportation roadways as well as low lying community roads and yards. Long term impacts are still being assessed. Focus should be given to infrastructure such as drainage and wastewater systems. Particularly, how they are designed or upfitted to withstand SLR impact and adequately discharge without mechanical assistance. Very long term concern includes more frequent and severe impacts to roads, properties, and structures.
Earthquake	The Charleston area is one of the greatest areas of earthquake risk in in the state. The last significant earthquake that impacted the area occurred in 1886 which killed 60 people and caused significant structural damage in the City of Charleston. If the same 7.3 magnitude earthquake were to occur today, there would be potentially catastrophic impacts to include significant loss of life, structures destroyed, subsequent fires, severe interruption of critical facilities and infrastructure; as well as cascading impact on the economy.
Tornado	Tornadoes occur with very little warning and carry impacts varying according to the intensity, duration, and path. Tornado risk is typically associated with severe weather brought in by low pressure systems. Hurricanes also produce tornadoes in rain bands as it comes ashore. Potential impact includes loss of life, building and infrastructure damage, interruption of transportation and other utilities.
Hazardous Materials	Hazardous Material incidents have the potential to impact the Town of Mount Pleasant in the case of a port incident, intentional attack, or spill, leak, or explosion during transport or storage. Materials in various forms can cause loss of life, injury, long-term health problems, damage to property.

Terrorism	Impacts resulting from an intentional, acts of violence will range from minimal to extreme loss of life, injuries, destruction of property and economic loss. Much of the impact will vary according to severity and classification of the attack.
Wildfire	There are portions of the Town of Mount Pleasant that are susceptible to wildfire; mostly restricted to less densely populated areas. Impacts associated with wildfire include interrupted transportation, air quality, potential loss of life, loss of structure, and property damage.
Tsunamis	The impact of tsunamis is considered minimal and may be expected to occur with earthquake events. Vulnerability to tsunami impacts in the Town of Mount Pleasant would include disruption to transportation routes, structures, and utilities located in the lower lying areas along Charleston Harbor and the intracoastal waterway.
Dam Failure	The Town of Mount Pleasant is minimally vulnerable to the impact of Dam Failure. The greatest risk is associated with smaller dams within the town, which would likely result in minor flooding and damage to roadways and utilities. There are larger dams within the region, but are considered to have a lower risk of impact to Mount Pleasant.
Rip Currents	The Town of Mount Pleasant is a waterfront community, but with no beach areas. The vulnerability to Rip Currents is minimal. There are several larger rivers, including Charleston Harbor, that have strong currents that can pose a safety risk for boaters and swimmers.
Severe Storm	Severe weather occurs throughout the year and may be associated with frontal boundaries, low pressure systems, or hot summer days with "pop up thunderstorms". Severe thunderstorms typical produce large amounts of lightning, hail, high winds, heavy rain, and potentially tornadoes. Impact varies according to intensity of the storm and may include risk of injury or loss of life, destruction of property, and flash flooding.
Drought	The impact of drought is minimal on the Town of Mount Pleasant. Regionally, the historical droughts typically experienced were D1 (moderate drought). Vulnerable populations and utilities would include farmers/ agriculture, properties with drinking wells, and municipal water sources. Drinking water in Mount Pleasant is provided by a separate utility. Water is sourced from a deep aquifer and from inland sources. The inland water sources are the most vulnerable during droughts.
Winter Weather	Severe winter weather can negatively impact many components of the entire region when it occurs. Transportation infrastructure, economy and critical utilities are the primary areas of concern. Vulnerable populations may be at greater risk due to lack of access to heat. Injuries, loss of life, and property damage can occur due to falling trees and tree limbs and slippery road surfaces.
Other	The Town of Mount Pleasant is located in a coastal region where access to the jurisdiction requires the use of bridges. Bridges are also used for access and interconnectivity within the community. During any regional emergency, it is possible for the Town or portions of the Town to be isolated for a period of time. The vulnerability for the Town and its citizens may be lead to delayed emergency or recovery services from outside resources or from Town responders.

Impacts for all Hazards for the City of Isle of Palms	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms have a tremendous impact on the Isle of Palms, because island is a low-lying beachfront community susceptible to erosion, flooding and storm surge. The amount of impact is dependent on size of storm, speed, and location of landfall, but even minor storms can have a significant impact as the older portions of the island still has homes that are not elevated above the base flood elevations.
Flooding	Over 90% of the Isle of Palms is in a floodplain. Some portions of the island are just above the high tide elevations and are inundated with floodwaters on severe high tides without any rain. Additionally, almost all of the Isle of Palms drainage systems are tidally influenced and depend on low tide elevations to allow stormwater to escape the island. Therefore, flooding has an impact on the island routinely.
Sea Level Rise	As described above, the Isle of Palms is already impacted by the inundation of sea water. As this water rises, the issue of flooding will intensify and create more of an impact for the community. Preparing for sea level rise is expected to be a primary focus for the island for the foreseeable future.
Earthquake	Historically, impacts to earthquakes on the Isle of Palms have been minimal. If there were to be a major earthquake in the area, there would inevitably be damage to buildings and infrastructure, but modern buildings are constructed with consideration given to seismic forces. While earthquakes pose a threat to the island, the issues of flooding, sea level rise and hurricane preparedness remain the focus.
Tornado	The island has been impacted by tornados in recent years, but the damage has typically been minimal and the impact is more focused in smaller areas. The island's focus on hurricane preparedness keeps the community somewhat prepared for tornados.
Hazardous Materials	The Isle of Palms is less exposed than other parts of the community to hazardous materials and does not anticipate being impacted from spills or other hazard materials.
Terrorism	The Isle of Palms remains on alter to the threat of terrorism during times when large numbers of visitors congregate on the island for special events.

Wildfire	There are parts of the island that are densely constructed and parts occupied by visitors that may not be familiar with their environs; therefore the Isle of Palms remains on alert for fire events.
Tsunamis	While the Isle of Palms is coastal community and is always tsunamis-prepared, the community does not expect to be impacted by a tsunami.
Dam Failure	The Isle of Palms does not expect to be impacted by a dam failure.
Rip Currents	The Isle of Palms has sand bars separated by the shoreline that become exposed during low tides. These sand bars become an attraction to beach visitors and unsuspecting visitors can be caught by rip currents as the tide comes in and covers the sand bars. The island struggles with keeping visitors safe every year and rip currents pose a significant threat.
Severe Storm	The impact of severe storms on the Isle of Palms typically comes from high winds and flooding, which are covered above.
Drought	The impact of drought is minimal on the Isle of Palms as the potable water is provided through a public system that is not impacted by droughts.
Winter Weather	Most winter hazards are associated with ice storms, damage by tree limbs falling, freezing pipes, and occasional icing of roads. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact the Isle of Palms often.

Impacts for all Hazards for Town of Seabrook Island	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. The amount of impact is dependent on size of storm, speed, and location of landfall, if any. As a barrier island, Seabrook Island will be subject to tropical storm force winds and storm surge. Wind damage can produce both vegetative and construction debris. Storm surge flooding can result in damage to residences and temporary flooding o roads affecting access by first responders and restoration of utilities.
Flooding	Nearly all of Seabrook Island is located within the floodplain. Flooding impacts include: roads being temporarily impassable (including the only access on and off the island); loss of power (either because of damage to equipment or deliberate shut-off to protect equipment); damage to residences; and, commercial losses from suspension of business operations because workers are not able to travel to their workplaces.
Sea Level Rise	It is believed that sea level rise is contributing to decreased ability of local soil to absorb water from rainfall and high tides, increasing the occurrence of "nuisance" flooding that results in temporarily flooded roadways and persistent pooling following heavy rains and "king" tide events. Sea level rise does not currently pose a threat to existing residences and beachfront properties are not presently threatened by rising sea level.
Earthquake	With the primary fault line being to the north, impacts to Seabrook Island structures would be expected to be attenuated. Impacts of the 1886 earthquake at Seabrook Island are not known owing to the rural (undeveloped) character of the barrier island at that time. It is recognized that the local geology poses the potential for liquefaction of subsurface soil and resulting occurrence of sinkholes and depositions of sediment above the surface. Besides damage to structures, damage to roadways can be expected as well as damage to bridges providing access to the island and to those bridges within the island across creeks. Until bridges providing access to the community are determined to be safe to use, Seabrook Island may be isolated from outside help. In 2002 there was a 4.4 magnitude earthquake 16 miles southeast of Seabrook Island and in 2016, a 1.9 magnitude earthquake 12 miles west-southwest of Seabrook Island.
Tornado	The impact of the most recent tornado on Johns Island in 2015 caused over $1.5 million in damages. There was minor damage on Seabrook Island from a tornado April 13, 2020, with down and broken trees and damage to one residential structure. While occurrence of tornadoes is unpredictable, the potential for formation of tornadoes is increased with tropical storms. As a barrier island, Seabrook Island is exposed to tropical storms along the coast and, consequently exposed to the increased risk for the attendant development of tornadoes. Owing to the density of trees within the community, it is to be expected that damage to and uprooting of trees will pose a threat of damage to structures by the surrounding trees.

Hazardous Materials	There are no industrial areas, rail yards or port facilities within Seabrook Island nor are such developments within ten miles of Seabrook Island. Hence, little to no impact on Seabrook Island is expected from hazardous material spills at any such facilities. In the event offshore production of oil or gas were to be undertaken in the future, such activities could pose a risk to Seabrook Island for spills or leaking depending on proximity of that activity to Seabrook Island.
Terrorism	Seabrook Island is primarily a residential community without commercial centers, port facilities or airports of national significance. The community is not considered a high priority target for acts of terrorism. To the extent terrorist acts were perpetrated on airports or port facilities near Charleston or Savannah, Georgia, there would likely be no direct impact on Seabrook Island from such acts other than any economic impacts affecting the greater southeastern region.
Wildfire	Johns Island includes densely forested areas and Seabrook Island is within a maritime forest. Hence, wildfires could result in excessive demand on firefighting resources posing the risk of structural damage pending arrival of those resources. Loss of wooded areas to wildfires can exacerbate occasional overloading of drainage infrastructure due to increased runoff.
Tsunamis	There is no record of tsunamis impacting Seabrook Island. As a barrier island, the community is exposed to tsunamis travelling westward in the Atlantic ocean. Local impacts would depend on the speed and height of incoming tsunamis, but could inundate large portions of the community, damaging structures and overwhelming drainage infrastructure.
Dam Failure	As a barrier island at the eastern side of Johns Island, Seabrook Island is protected from inland dam failures by the Edisto and Stono rivers separating Johns Island from the mainland. It is believed that inland dam failures would have little to no impact on Seabrook Island.
Rip Currents	Seabrook Island beaches are impacted by rip currents caused by offshore storms. Apart from isolated unusual erosion of the beach, rip currents pose a hazard to swimmers at the beach.
Severe Storm	Severe storms can damage trees and produce temporary flooding of roadways within Seabrook Island. Apart from direct and indirect damage to structures from high winds and tree damage, severe storms can produce unusual amounts of vegetative debris requiring removal to keep roadways open.
Drought	Seabrook Island is primarily a residential and golf course community and has no commercial farming. The principle impact of drought conditions is damage to landscapes and increased demand for watering of golf courses to maintain availability for use.
Winter Weather	As a barrier island at the eastern side of Johns Island, impacts of winter storms are primarily associated with disruption of overland travel to and from Seabrook Island. Seabrook Island is dependent on the South Carolina Department of Transportation and Charleston County to treat and clear roads on Johns Islands following winter storm impacts. Disruptions to overland travel can cause suspension of operations of local businesses and government offices. Damage to trees from snow and ice storms can

	increase the volume of vegetative debris requiring removal to keep roads open.

Impacts for all Hazards for Town of James Island	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. These storms are unpredictable until the storms are a short distance from landfall. The impact of a storm on the Town of James Island depends largely on where it makes landfall. Greater impact occurs if the eye of the storm is south of James Island. While we are not a barrier island and thus not subject to direct wave action, we do experience storm surge in our tidal creek areas, wind and rain impacts.
Flooding	Approximately 60% of the Town of James Island is in a floodplain. All areas of the Town are at risk from the impacts of flooding as we are on an island with limited routes for vehicles. Several roadways experience regular flooding from tides and heavy rain events. Stormwater infrastructure in the Town is overwhelmed by severe rain events especially if they include large quantities of stormwater in a short amount of time and occur around high tide.
Sea Level Rise	The full impact of this hazard has not yet been experienced. The Town of James Island has experienced regular flooding and infrastructure damage from King Tides. The Town is expecting greater impact from this in the coming years and is exploring ways to mitigate its effects.
Earthquake	Impacts from earthquakes in our local area or region to the Town of James Island are likely to be minor for Town infrastructure but significant for James Island. We are connected to the mainland by two bridges and to Johns Island by a third bridge all of which would be closed for inspection at the least in the event of an earthquake. Damage to infrastructure in other jurisdictions will also effect James Island and should be accounted for.
Tornado	James Island has had tornadoes touch down in the past but this hazard is very unpredictable. Impacts would be to structures and trees blocking roads.
Hazardous Materials	James Island is close to the Port of Charleston and as such would be impacted by any hazardous material spill near the harbor or waterways.
Terrorism	There are several venues and events on James Island and in the Town that would have a higher impact than other areas. Proximity to Peninsular Charleston is a factor the Town considers in planning for this type of hazard.

Wildfire	The impact of wildfires has not been a significant hazard for James Island.
Tsunamis	The impact of tsunamis has been minimal to James Island.
Dam Failure	The impact of dam failure has been minimal to James Island.
Rip Currents	James Island is not impacted by this.
Severe Storm	The impact of severe storms to the Town of James Island depends largely on the duration, rainfall amounts, wind speeds and hail size. Residential homes and vehicles are most at risk.
Drought	Drought impact has been minimal to James Island.
Winter Weather	Winter weather impacts are seldom but moderate when they occur. Most impacts to James Island include icy roads, economic loss due to businesses closing and burst water pipes.

Impacts for all Hazards for City of North Charleston	
Hazard	**Impact**
Hurricane	Charleston County, which the City of North Charleston resides, is one of the most likely counties in the state to be impacted by hurricanes and tropical storms. Densely populated coastal areas, especially during peak tourist seasons, coupled with the generally low coastal elevations, significantly increase the county's vulnerability. The greatest threat to life and property associated with a hurricane and tropical storm is storm surge. Other effects include high winds, tornadoes, and inland flooding associated with heavy rainfall that usually accompanies these storms.
Flooding	There are several factors that influence the severity of flooding to include the physical characteristics of the area, the physical characteristics of the drainage outfall, and the severity of the storm. Coastal flooding is usually the result of a severe weather system such as a tropical storm or hurricane which contains an element of high winds. The damaging effects of coastal floods are caused by the combination of storm surge, wind, rain, erosion and battering of debris. Coastal areas, rivers and low laying areas throughout the county may experience flooding from a verity of situations like tropical storms, storm surge, dam failure or inland flooding due to significant rainfall. The impact for the City is mostly riverine flooding combined with stormwater drainage issues.
Sea Level Rise	The City of North Charleston is not impacted by this yet though the tidal creeks going through Town could be impacted in the future especially neighborhoods off the Ashley River.

Earthquake	Earthquakes in South Carolina have the potential to cause great and sudden loss because devastation can occur in minutes. While there have not been any large- scale earthquakes in South Carolina in recent years, a study titled, Comprehensive Seismic Risk and Vulnerability Study for the State of South Carolina, confirmed the state is extremely vulnerable to earthquake activity. The study, provided information about the likely effects of earthquakes on the current population and on contemporary structures and systems, including roadways, bridges, homes, commercial and government buildings, schools, hospitals, and water and sewer facilities throughout Charleston County. The greatest impact to the City was the major earthquake in 1886 with millions of dollars worth of damage though an event like that has not occurred recently.
Tornado	South Carolina ranks twenty-sixth in the United States in the number of tornado strikes, and eighteenth in the number of tornadoes per square mile. The most common type of tornado, the relatively weak and short-lived type, occurs between March and May. Tornadoes are most likely during the spring, but can occur almost anywhere at anytime and anywhere in the City.
Hazardous Materials	The City contains a rapidly growing international port with many industries and growing businesses that may handle hazardous materials. Charleston County also has an Air Force Base and several other smaller military establishments, which handle various types and quantities of hazardous materials. Hazardous materials are a continuous potential hazard due to the large amount of transportation of these materials occurring in and around the area. Statistics reflect that responses to methamphetamine labs in the area are on the increase which has added an increase in response to hazardous materials incidents in Charleston County.

Terrorism	While there have not been any successful acts of terrorism committed in the City of North Charleston, the City has many critical and high-profile facilities, high concentrations of population and other potentially attractive venues for terrorist activity that are inherently vulnerable to a variety of terrorist methods. Governmental, transportation, commercial, infrastructure, cultural, academic, research, military, athletic and other activities and facilities constitute ideal targets for terrorist attacks which may cause catastrophic levels of property and environmental damage, injury, and loss of life. Terrorist attacks may take the form of other hazards described in this section when incidents of these types are executed for criminal purposes, such as induced dam or levee failures, the use of hazardous materials to injure or kill, or the use of biological weapons to create an epidemic.
Wildfire	During periods of drought, the threat of wildfires becomes a serious hazard. The careless toss of a lit cigarette butt or the match of an arsonist can cause major fires. Also, these fires produce large amounts of smoke that can reduce visibility on the highways. According to the SC Forestry Commission, the heaviest wildfire season is between January and April. The City of North Charleston, as a whole, is susceptible to urban, rural and wildfire threats.
Tsunamis	Tsunamis have generally been considered a significant hazard threat primarily for land areas near the Pacific Ocean. Since the Indian Ocean tsunami, geologist have stated that the eastern US could experience this phenomenon but to what severity is unknown. As with any coastal community along the Atlantic Ocean, there is still an extremely remote chance that a volcano eruption in the Caribbean or Canary Islands, or a collapse of the Continental Shelf, or an earthquake in the Puerto Rico Trench, that a tsunami could ultimately strike the Coastal Charleston County area. However, the volcanic eruption of most scientific concern (Canary Islands) for the Southeastern US is theorized to potentially not occur for another 5,000 years and adequate warning of such an event would be likely, so that residents would be expected to have an opportunity to evacuate coastal areas should such an unlikely event occur.

Dam Failure	Dam failures are extremely rare events. Santee Cooper, a state-owned utility, operates both the Santee Dam and the Pinopolis Dam System, a failure of which could affect areas within the City of North Charleston along and near the Cooper and Santee Rivers and other low laying areas adjacent to these rivers. A catastrophic failure at either of these dams would create flooding within the City, and would be a significant event. The most likely root cause of such a failure would be an earthquake of a larger magnitude than 7.6 on the Richter scale, or perhaps an act of terrorism. While dam failure is unlikely, it is possible that the City could experience dam-related flooding. A failure of the Pinopolis Dam System is estimated to result in flooding along the Cooper, Wando, and Ashley Rivers, including but not limited to, areas in or adjacent to Charleston, Dorchester, and Berkeley counties and the City of North Charleston. A failure of the Santee Dam system would result in flooding in areas in the northern part of Charleston County.
Rip Currents	The City of North Charleston is not impacted by this.
Severe Storm	The impact of severe storms to the City of North Charleston depends largely on the duration, rainfall amounts, wind speeds and hail size. Residential homes, manufactured homes, and vehicles are most at risk.
Drought	Summer in the City of North Charleston is hot and humid. Temperatures of 100 degrees or more are possible. Summer is typically the rainiest season, with 41% of the annual rainfall total. When rainfall has fallen below normal levels, as has occurred frequently in the area over time, drought conditions have resulted. Drought has also been a contributing factor to wildfires that occurred in the forested areas. Similarly, since high temperatures and humidity are possible and occur frequently during the summer months, heat wave conditions are possible in the area. The threat of drought and heat can affect human as well as animals throughout the City of North Charleston.

Winter Weather	Snow and ice storms, coupled with cold temperatures, periodically threaten the City. Winter storms can damage property, create safety risks, destroy crops and valuable timber, damage infrastructure components such as power lines, and have enormous economic impacts throughout the City. This weather can cause major problems for City roadways, overpasses and bridges create major obstacles. Snow and ice storms most recently struck South Carolina in 1989, 1993, 2000, 2002, 2010 and 2014. For more detailed information see Exhibits: City of North Charleston Winter Weather Guide.

Impacts for all Hazards for Cooper River Parks and Playground Commission	
Hazard	**Impact**
Hurricane	Charleston County, which Cooper River Parks resides, is one of the most likely counties in the state to be impacted by hurricanes and tropical storms. Densely populated coastal areas, especially during peak tourist seasons, coupled with the generally low coastal elevations, significantly increase the county's vulnerability. The greatest threat to life and property associated with a hurricane and tropical storm is storm surge. Other effects include high winds, tornadoes, and inland flooding associated with heavy rainfall that usually accompanies these storms.
Flooding	There are several factors that influence the severity of flooding to include the physical characteristics of the area, the physical characteristics of the drainage outfall, and the severity of the storm. Coastal flooding is usually the result of a severe weather system such as a tropical storm or hurricane which contains an element of high winds. The damaging effects of coastal floods are caused by the combination of storm surge, wind, rain, erosion and battering of debris. Coastal areas, rivers and low laying areas throughout the county may experience flooding from a verity of situations like tropical storms, storm surge, dam failure or inland flooding due to significant rainfall. The impact for the Parks is mostly riverine flooding combined with stormwater drainage issues.
Sea Level Rise	The Cooper River Parks is not impacted by this yet though the tidal creeks going through Town could be impacted in the future especially neighborhoods off the Ashley River.
Earthquake	Earthquakes in South Carolina have the potential to cause great and sudden loss because devastation can occur in minutes. While there have not been any large- scale earthquakes in South Carolina in recent years, a study titled, Comprehensive Seismic Risk and Vulnerability Study for the State of South Carolina, confirmed the state is extremely vulnerable to earthquake activity. The study, provided information about the likely effects of earthquakes on the current population and on contemporary structures and systems, including roadways, bridges, homes, commercial and government buildings, schools, hospitals, and water and sewer facilities throughout Charleston County. The greatest impact to the City was the major earthquake in 1886 with millions of dollars worth of damage though an event like that has not occurred recently.

Tornado	South Carolina ranks twenty-sixth in the United States in the number of tornado strikes, and eighteenth in the number of tornadoes per square mile. The most common type of tornado, the relatively weak and short-lived type, occurs between March and May. Tornadoes are most likely during the spring, but can occur almost anywhere at anytime and anywhere in the City.
Hazardous Materials	The Parks resides next to a rapidly growing international port with many industries and growing businesses that may handle hazardous materials. Charleston County also has an Air Force Base and several other smaller military establishments, which handle various types and quantities of hazardous materials. Hazardous materials are a continuous potential hazard due to the large amount of transportation of these materials occurring in and around the area. Statistics reflect that responses to methamphetamine labs in the area are on the increase which has added an increase in response to hazardous materials incidents in Charleston County.
Terrorism	While there have not been any successful acts of terrorism committed in the Cooper River Parks, the Parks are near many critical and high-profile facilities, high concentrations of population and other potentially attractive venues for terrorist activity that are inherently vulnerable to a variety of terrorist methods. Governmental, transportation, commercial, infrastructure, cultural, academic, research, military, athletic and other activities and facilities constitute ideal targets for terrorist attacks which may cause catastrophic levels of property and environmental damage, injury, and loss of life. Terrorist attacks may take the form of other hazards described in this section when incidents of these types are executed for criminal purposes, such as induced dam or levee failures, the use of hazardous materials to injure or kill, or the use of biological weapons to create an epidemic.
Wildfire	During periods of drought, the threat of wildfires becomes a serious hazard. The careless toss of a lit cigarette butt or the match of an arsonist can cause major fires. Also, these fires produce large amounts of smoke that can reduce visibility on the highways. According to the SC Forestry Commission, the heaviest wildfire season is between January and April. The Cooper River Parks, as a whole, is susceptible to urban, rural and wildfire threats.

Tsunamis	Tsunamis have generally been considered a significant hazard threat primarily for land areas near the Pacific Ocean. Since the Indian Ocean tsunami, geologist have stated that the eastern US could experience this phenomenon but to what severity is unknown. As with any coastal community along the Atlantic Ocean, there is still an extremely remote chance that a volcano eruption in the Caribbean or Canary Islands, or a collapse of the Continental Shelf, or an earthquake in the Puerto Rico Trench, that a tsunami could ultimately strike the Coastal Charleston County area. However, the volcanic eruption of most scientific concern (Canary Islands) for the Southeastern US is theorized to potentially not occur for another 5,000 years and adequate warning of such an event would be likely, so that residents would be expected to have an opportunity to evacuate coastal areas should such an unlikely event occur.
Dam Failure	Dam failures are extremely rare events. Santee Cooper, a state-owned utility, operates both the Santee Dam and the Pinopolis Dam System, a failure of which could affect areas within the City of North Charleston along and near the Cooper and Santee Rivers and other low laying areas adjacent to these rivers. A catastrophic failure at either of these dams would create flooding within the City, and would be a significant event. The most likely root cause of such a failure would be an earthquake of a larger magnitude than 7.6 on the Richter scale, or perhaps an act of terrorism. While dam failure is unlikely, it is possible that the Parks could experience dam-related flooding. A failure of the Pinopolis Dam System is estimated to result in flooding along the Cooper, Wando, and Ashley Rivers, including but not limited to, areas in or adjacent to Charleston, Dorchester, and Berkeley counties and the City of North Charleston therefore Cooper River Parks. A failure of the Santee Dam system would result in flooding in areas in the northern part of Charleston County.
Rip Currents	Cooper River Parks is not impacted by this.
Severe Storm	The impact of severe storms to the Cooper River Parks depends largely on the duration, rainfall amounts, wind speeds and hail size. Residential homes, manufactured homes, and vehicles are most at risk.

Drought	Summer in the City of North Charleston therefore Cooper River Parks is hot and humid. Temperatures of 100 degrees or more are possible. Summer is typically the rainiest season, with 41% of the annual rainfall total. When rainfall has fallen below normal levels, as has occurred frequently in the area over time, drought conditions have resulted. Drought has also been a contributing factor to wildfires that occurred in the forested areas. Similarly, since high temperatures and humidity are possible and occur frequently during the summer months, heat wave conditions are possible in the area. The threat of drought and heat can affect human as well as animals throughout the City of North Charleston.
Winter Weather	Snow and ice storms, coupled with cold temperatures, periodically threaten the Parks. Winter storms can damage property, create safety risks, destroy crops and valuable timber, damage infrastructure components such as power lines, and have enormous economic impacts throughout the Parks. This weather can cause major problems for City roadways, overpasses and bridges create major obstacles to get to the Parks. Snow and ice storms most recently struck South Carolina in 1989, 1993, 2000, 2002, 2010 and 2014. For more detailed information see Exhibits: City of North Charleston Winter Weather Guide.

Impacts for all Hazards for Charleston County School District (CCSD)	
Hazard	**Impact**
Hurricane	Charleston County and its schools are impacted by hurricanes or tropical storms almost annually; notable ones include Hurricane Hugo in 1989, Hurricane Matthew in 2016 and Hurricane Dorian in 2019. All of these hurricanes resulted in school closures, damage and use of shelters; these actions can be expected to continue to occur. The greatest threat to life and property associated with a hurricane and tropical storm is storm surge. Other effects include high winds, tornadoes, and inland flooding associated with heavy rainfall that usually accompanies these storms.
Flooding	Floods are the most common natural disaster in the United States; Charleston County and its schools are very threatened by floods and flooding due to our low elevation, the presence of rivers, marshes and other bodies of water, tidal effects and a rainy climate. Schools on the peninsula of downtown Charleston, McClellanville, Mount Pleasant, Sullivan's Island, James Island and North Charleston are all subject to either flash or tidal flooding.
Sea Level Rise	While, the impact of this hazard has yet to be seen to full magnitude, it is expected that it could impact schools on the peninsula of downtown Charleston, Sullivan's Island and Mount Pleasant could be impacted by it. It is expected to be have greater impact within the next 20 years.
Earthquake	If there were to be a major earthquake at this fault line, there would inevitably be damage to buildings and infrastructure in CCSD, especially in its schools located closest to the epicenter. These are likely to include schools in North Charleston, West Ashley and downtown Charleston. Due to its no notice and potential to separate parents, teacher, staff and students, an earthquake is considered among the biggest hazards to the CCSD.
Tornado	Tornadoes can strike anywhere at any of the schools in CCSD. While there is some notice available from NWS alerts, watches and warnings, the short notice of these incidents makes them a considerable hazard to CCSD.

Hazardous Materials	All in CCSD schools are at risk from the effects of radiological, hazardous toxic material accidents. Such accidents may result in the need to take immediate action. The action to be taken will depend on the proximity of the accident to the school, the type of hazardous material (HAZMAT), the wind velocity, and the weather.
Terrorism	Charleston County could be subject to terrorist attacks due to the presence of its port – one of the top ten in the United States, its Air Force Base, its airport – the busiest in the state and its many festivals, events and gatherings, which draw thousands of tourists. These potential attacks could affect Charleston County Schools. Action taken to respond to a terrorist attack will depend on the type of attack, the proximity to the school, instructions from CCSD/local emergency services and other factors.
Wildfire	The impact of wildfires to CCSD would be limited, resulting mainly in the closure of roads. Schools in the western part of Charleston County on Edisto Island, Wadmalaw Island, the Willtown and Baptist Hill areas are most threatened by wildfire.
Tsunamis	As with any coastal community along the Atlantic Ocean, there is still an extremely remote chance that a volcano eruption in the Caribbean or Canary Islands, or a collapse of the Continental Shelf, or an earthquake in the Puerto Rico Trench, that a tsunami could ultimately strike the Coastal Charleston County area. However, the volcanic eruption of most scientific concern (Canary Islands) for the Southeastern US is theorized to potentially not occur for another 5,000 years and adequate warning of such an event would be likely, so that residents would be expected to have an opportunity to evacuate coastal areas should such an unlikely event occur. The schools most likely to be affected by a tsunami are primarily on barrier islands and low lying areas at or along the Intracoastal Waterway and Charleston Harbor.

Dam Failure	The highest impact of dam failure is to the eastern part of Charleston County. There is only one school in this area - it is not in the likely flood zone. Past impacts have been minimal and are expected to stay that course.
Rip Currents	CCSD would not be affected by this.
Severe Storm	Virtually every day during the warm season in Charleston County, the environment is supportive of at least isolated severe thunderstorms. The frequency and potential danger of thunderstorms and severe thunderstorms means CCSD must prepare for them.
Drought	The impact of drought is minimal on CCSD.
Winter Weather	Despite the infrequency of winter storms in Charleston County, winter weather and storms due occur and can be quite dangerous. Winter storms in 1989, 2010, 2012 and 2018 resulted in days of school cancellation, closed roads, utility failures and other incidents. Due to the forecasting and lead time ahead of a winter storm, preparations and actions could begin 12-24 hours or more ahead of time for them. It is very likely schools will be closed, and Incident Commanders and their staff may have to coordinate or conduct some activities from home.

Impacts for all Hazards for the Town of Kiawah Island	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a cone of predictability. The severity of the storm is directly correlates to the amount of destruction received. Being a coastal community Kiawah Island is very susceptible to hurricanes and Tropical storms.
Flooding	All of Kiawah Island is in a floodplain. Impact of flooding can be severe depending on how much rain occurs, storm surge, and time duration. Kiawah Island is also impacted by rainfall from the upstate as seen in 2015, mainly the Santee Watershed. During major rain events main roadways both internal and external to the island flood preventing safe access to the island.
Sea Level Rise	The impact of this hazard has yet to be seen to full magnitude. King tides are the best measurement of this event. The Town of Kiawah Island has authored a Sea-Level Rise Report for Kiawah Island addressing the potential vulnerabilities the island residents will need to begin planning for to ensure sustainability. Currently, sea-level rise for the area is reported at 1.5 ft. above, which is creating abnormally high king tides. We have not experienced any flooding due to the king tides and sea-level rise, but, we are currently having engineering analysis performed to determine how high to raise section(s) of Kiawah Island Parkway.

Earthquake	Historically, impacts to earthquakes on Kiawah Island have been minimal. Geographically the island is East-to-West with the fault line being to the north, with the exception of the Helena Banks Fault. Recent data shows only minimal intensity noted, however, since there are F-D seismic zones located on the island, an earthquake classified as major would create massive destruction island wide.
Tornado	Tornadoes can be very damaging, and Kiawah Island is susceptible to tornados.
Hazardous Materials	Hazardous materials spill could affect the ecology and wildlife of the island if not contained in time. SOP's are incorporated to the Town's Hazard Mitigation manual for such an event.
Terrorism	An act of terrorism on the island would have long lasting effect in terms of marketability. Not to mention a loss of life scenario.
Wildfire	The impact of wildfires would be detrimental to the natural resources and beautification of the island. The size of the fire and origination would depict the overall impact.
Tsunamis	The impact of tsunamis has been minimal to Kiawah Island.
Dam Failure	There are no dams on Kiawah Island.
Rip Currents	The Town of Kiawah Island has contract with a private beach patrol company who monitors rip currents and other hazards associated with beach goers. Beach patrol has the responsibility to warn bathers of the hazards associated with coastal waters.
Severe Storm	The impact of severe storms is dependent on wind speed, hail size and rainfall. Severe storms will create some minor flooding events on main roadways.
Drought	The impact of drought is minimal on the County as the droughts typically experienced is D1 (moderate drought). The damages this would create for the island is minimal.

Winter Weather	Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact Kiawah Island often.

Impacts for all Hazards for City of Folly Beach	
Hazard	**Impact**
Hurricane	Hurricanes and Tropical Storms threaten the entire Atlantic Coast. Landing patterns are unpredictable until the storm has formed and is within a short time from landing. The amount of impact is dependent on size of storm, speed, and location of landfall, if any. The impact of hurricanes (high winds, storm surge, and rainfall) is extremely high for Folly Beach from both direct hits and near misses with beach front erosion and property damage occurring at most every storm.
Flooding	100% of Folly Beach is in a Special Flood Hazard Area with V-zone and Coastal A-zones. Impact of flooding can be severe depending on how much rain occurs in a short period of time and the coinciding tide cycle. Some high tides, with our without a rain event, can cause damaging flooding primarily to the marsh side of the island to including flooding of homes, damage to flora, marsh front erosion, and road closures.
Sea Level Rise	The impact of this hazard has yet to be seen to full magnitude. King tides are the best measurement of this event. For the City of Folly Beach increasing amount of King Tide events they are becoming a more regular and more serious threat to the barrier island. As time passes it is expected that Folly will see more property and infrastructure damage due to Sea Level rise.

Earthquake	Historically, impacts to earthquakes on Folly Beach have been minimal. With the fault line being to the north, typical impacts to buildings are minimal. If there were to be a major earthquake at this fault line, there would inevitably be damage to buildings and infrastructure, but other jurisdictions would be hit more severely. Fault lines outside of Charleston County should also be monitored as aftershocks can be catastrophic and trigger other seismic events.
Tornado	The impact of the most recent tornado on Johns Island in 2015 caused over $1.5 million in damages. The unpredictability of tornadoes can be very impactful for Coastal Communities. Though rare they are always a potential threat.
Hazardous Materials	The impact of a hazard materials exposure could be severe if materials are not contained and make their way into the storm water system. Impacts to the marsh and creeks could be severe.
Terrorism	Though unlikely the impact could be severe be dependent on the scale and type of terrorism.
Wildfire	Due to primarily developed land or marshes the impact of wild fires is low for Folly Beach with the exception being air quality due to smoke from fires further inland.
Tsunamis	The impact of tsunamis could be severe due to Folly being a Beach Front community. A tsunami could produce considerable property and infra structure damage.
Dam Failure	Dam failure is not a current threat to Folly Beach.
Rip Currents	Folly Beach is heavily impacted by rip currents. Danger to tourists and first responders during rescue operations.

Severe Storm	The impact of severe storms depending on wind speed, hail size and rainfall is moderately impactful to Folly Beach. Cars and residential homes, are at risk and would have the most impact.
Drought	The impact of drought is minimal to Folly Beach as the droughts typically experienced is D1 (moderate drought). The damages this would put on the City is minimal.
Winter Weather	Most winter hazards are associated with vegetation damage, freezing pipes, and occasional icing of roads. With the most recent event in 2018, the impact to the area was road integrity, economic loss of businesses closing, and burst pipes. Winter weather does not impact the City of Folly Beach often.

– Complete Hazard Histories

Hurricane Events between August 11 1940 - April 30 2013			
Name	Category	Date	Damage Description
August 11th, 1940 (Name classification started after 1950)	2	August 11th, 1940	Estimated damage to the city was $1 million. Sullivan's Island and the City of the Isle of Palms suffered minor damage.
Hurricane Hazel	4	October 15th, 1954	Folly Beach, Sullivan's Island, and the Isle of Palms suffered light property damage and slight beach erosion. The City of Charleston experienced no serious damage.
Hurricane Gracie	3	September 29th, 1959	The total damage inflicted by the storm was estimated at $14 million. High water marks, which were reported near the Town of Edisto Beach, South Carolina, ranged from 7.3 to 11.9 feet.
Hurricane David	3	August 29th - September 7th, 1979	Flooding and minor damage in the City of Charleston.
Hurricane Hugo	4	September 19th, 1989	Tidal surges north of the city were recorded at 19.8 feet and 11.8 feet in the Peninsula City. The hurricane struck at high tide. Its recorded diameter was over 500 miles, Four (4) people were killed and scores injured. Estimated damage of $7 billion for the total area.
Hurricane Bertha	2	July 12th, 1996	This hurricane came close but did not cause any significant damage. Some coastal areas experienced moderate beach erosion. Tourism estimated loss revenue of 20 million dollars.
Hurricane Fran	3	Septemer 5th, 1996	The storm didn't directly hit the Charleston Region but remnants of this hurricane created power outages with economic losses estimated at 20 million dollars.
Hurricane Bonnie	3	August 26th, 1998	Remnants of this hurricane produced winds that knocked down several trees in the Town of Mount Pleasant as it headed for the North Carolina Coast.
Hurricane Floyd	2	September 15th, 1999	Sustained winds of 58 miles per hour were recorded in downtown Charleston with gusts up to 85 miles per hour. Generally 3-5 inches of rainfall occurred. An estimated $10.5 million in damages occurred in the Charleston region.
Hurricane Irene	1	October 17th, 1999	This hurricane dropped 3 to 5 inches of rain created minor street flooding. Minor beach erosion. Trees knocked down and power outages in the area.
Tropical Storm Gordon		September 18th, 2000	Remnants of the storm dropped 6-10 inches of rain. Minor beach erosion occurred as a result of this storm.
Tropical Storm Claudette		July 14th, 2003	Two and a half inches of rain, a tree was downed, 11 traffic accidents.
Tropical Depression Seven		July 25th, 2003	Expected to receive as much as 6 inches of rain and wind gusts up to 35 mph from this storm.
Tropical Storm Henri		September 6th, 2003	Folly Beach, Sullivan's Island, and Isle of Palms experienced beach erosion from remnants of the storm, which was predicted to also bring up to 5 inches of rain to the Charleston area.
Hurricane Isabel	2	September 17th, 2003	This storm created 8 foot surf at Kiawah Island and had wind gusts of 40 mph offshore and 20 mph in downtown Charleston when it passed offshore. Coastal erosion was expected, as tides were 6 to 12 inches above normal.
Tropical Storm Alex		August 2nd, 2004	Minor beach erosion was reported on Folly Beach.
Tropical Storm Bonnie		August 12th, 2004	The remnants of this storm caused a tornado and several incidents of wind damage in the Awendaw area.
Hurricane Charley	1	August 14-15th, 2004	An estimated 4 inches of rain fell in 2 hours in the Northern part of Charleston County on August 14, 2004, flooding low lying areas and areas with poor drainage. Storm surge was estimated at 4-6 feet from Oyster Landing to the Cape Romain Wildlife Refuge in the northern portions of Charleston County. Minor property and tree damage occurred as a result of this storm. The storm caused an estimated damage of $2 million in South Carolina.
Hurricane Gaston	1	August 29th, 2004	Sustained winds of 75 mph. The storm brought a 4 foot storm surge into Bull's Bay, which caused an estimated $4.8 million in damages to homes, primarily in areas east of the Cooper River creating debris with an estimated clean-up cost of $2.2 million county-wide, and left nearly all of the customers of South Carolina Electric and Gas without electrical power. Total estimated damages, per the National Weather Service, were $7.6 million in Charleston County.

Tropical Storm Frances		September 6th, 2004	This storm created nearly 6 ft. surf. Dropped nearly 5 inches of rain, winds of 35 mph, minor damage and flooding.
Tropical Depression Jeanne		September 27th, 2004	Resulted in 40 ft. of beach erosion on the north end of Folly Beach. Maximum wind gusts in Charleston County from this storm were 41 mph in downtown Charleston and at the Charleston airport. Maximum wind gusts at Folly Beach were 38 mph. Non-tornadic damage was limited to a few trees falling on cars.
Tropical Storm Ophelia		September 13th, 2005	Loss of Life, Beach Erosion, minor damage.
Tropical Storm Tammy		October 5th, 2005	Significant Beach Erosion, flooding, minor damage.
Tropical Storm Alberto		June 13th, 2006	Remnants of the storm produced a tornado that touched down near Awendaw, knocking down trees. Street flooding occurred in Charleston and North Charleston as a result of this storm.
Tropical Storm Ernesto		August 31st, 2006	Mt. Pleasant received 6.65 inches of rainfall from this storm system. Street flooding occurred in the City of Charleston and 40 mph gusts.
Tropical Storm Barry		June 2nd, 2007	Remnants of the storm produced heavy rains, strong winds, rough surf, and 3 inches of rain. Loss of electricity to 13,900 customers of SCE&G and Berkeley Electric Cooperative, mostly in the Summerville area, which caused vessels to break their lines, and flood streets, particularly on the Charleston Peninsula. Wind gusts up to 60 mph were recorded.
Tropical Storm Hanna		September 5th, 2008	Resulting in strong wind and localized heavy rain.
Tropical Storm Irene		August 25th, 2011	The Charleston County Folly Beach Park received significant erosion-related damages as a result of this storm, including beach areas and structures.
Tropical Storm Lee		September 6th, 2011	Charleston County sustained scattered showers, thunderstorms, and winds up to 22 mph with a half-inch of rain in some areas.
Tropical Storm Beryl		May 27th, 2012	The region saw tropical storm forced winds, heavy rainfall, and fallen trees as result of the storm.
Tropical Storm Sandy		October 27th, 2012	The storm produced forced winds of 40 mph.

Hurricane Events between May 1, 2013 – January 1, 2023			
Name	**Category**	**Date**	**Damage Description**
Tropical Storm Andrea		June 6, 2013	Heavy rainfall 3-7 inches
Tropical Storm Arthur		July 3, 2014	Tropical storm watch was posted for Santee River to Bogue Banks, NC. Wind gusts up to 42 mph (68 km/h) along coastal areas, resulting in scattered power outages
Tropical Storm Ana		May 7-8, 2015	Tropical storm warning from South Santee River to Surf City, NC. Produced a small storm surge along Charleston County coast.
Hurricane Joaquin	4	October 1-5, 2015	Did not make landfall in the US, but caused catastrophic flooding in South Carolina and intense flooding and power outages in Charleston County. South Carolina Governor Haley declared a State of Emergency.
Hurricane Matthew	1	October 7-8, 2016	Once a Category 5 hurricane before ripping through Haiti and eastern Cuba, Hurricane Matthew had downgraded to a Category 1 by the time it hit South Carolina. Even so, 830,000 South Carolinians lost power, 355,000 evacuated from their homes, and 4 lost their lives.
Hurricane Irma	1	9/11-9/12/2017	Once a Category 5 hurricane before ripping through the Caribbean, Hurricane Irma had downgraded to a Category 1, and eventually a tropical storm, by the time the system impacted South Carolina. Even so, over 100,000 South Carolinians lost power, 3 lost their lives, and Charleston recorded its third highest storm surge ever (10ft).

Hurricane Florence	1	9/14/2018	Once a Category 4 hurricane before making landfall north of Charleston County, this storm impacted Charleston County as a tropical depression. No lives were lost in Charleston County although thousands of residents lost power during the storm's peak.
Hurricane Michael	4	10/11/2018	Making landfall as a Category 4 hurricane in Florida's Bay County, this storm impacted Charleston County by bringing 50 mph winds which dismantled many trees and power lines plus a storm surge measured at 2.07 ft in Charleston Harbor. Charleston County saw no lost lives, although the storm directly caused 16 casualties and 43 indirectly, according to the NOAA.
Hurricane Dorian	3	9/5-9/6/2019	Made landfall in the Bahamas as a Category 5 hurricane, weakening to a Category 2 off the coast of Florida, and brushed the coast of South Carolina. It then again made landfall as a Category 2 Hurricane in Cape Hatteras, NC.
Hurricane Isaias	1	8/2/2020-8/4/2020	Isaias made its closest approach to Charleston County as it passed by the Santee River about 25 miles offshore as a Category 1 hurricane. The storm did bring tropical storm force wind gusts, and some parts of northeast Charleston County received upwards of 7 inches of rain. The storm remained just offshore and its arrival did not align with high tide, sparing the County from more severe impacts and any major flooding.
Tropical Storm Danny		6/28/2021	Danny initially developed off the coast of Southeast United States, making landfall near Hilton Head, SC. The primary impacts from Danny included gusty winds and heavy rainfall, producing isolated/minor damage across Charleston County.
Tropical Storm Elsa		7/7/2021	Elsa made landfall along the North Florida coast, then weakened as it traveled northeastward through Georgia and South Carolina. The primary impacts to southeast South Carolina included heavy rainfall, a few tornadoes, and gusty winds. Rainfall amounts peaked at 6-8 inches in portions of Charleston County, causing flooding.

Source: NOAA Storm Events Database, [Storm Events Database - Search Results | National Centers for Environmental Information (noaa.gov)]

FLOODING EVENTS IN CHARLESTON COUNTY Jan 1, 1950 - April 30, 2022

Location	Date	Type	Property Damage
CHARLESTON	10/8/1996	Flash Flood	0
CHARLESTON	6/6/1997	Flash Flood	125000
NORTH CHARLESTON	6/28/1997	Flash Flood	0
EAST PORTION	1/23/1998	Flash Flood	0
NORTH CHARLESTON	9/21/1998	Flash Flood	413500
CHARLESTON	5/12/1999	Flash Flood	0
JAMES IS	6/16/1999	Flash Flood	0
NORTH CHARLESTON	9/28/1999	Flash Flood	0

FLOODING EVENTS IN CHARLESTON COUNTY Jan 1, 1950 - April 30, 2022			
Location	**Date**	**Type**	**Property Damage**
CHARLESTON (ZONE)	9/29/1999	Flood	0
NORTHEAST PORTION	10/17/1999	Flash Flood	0
AWENDAW	9/5/2000	Flash Flood	0
MC CLELLANVILLE	9/18/2000	Flash Flood	0
CHARLESTON (ZONE)	6/22/2002	Flood	0
CHARLESTON	8/30/2002	Flash Flood	0
MC CLELLANVILLE	8/31/2002	Flash Flood	0
EDISTO IS	10/10/2002	Flash Flood	0
NORTH CHARLESTON	10/11/2002	Flash Flood	0
CHARLESTON (ZONE)	3/20/2003	Flood	0
CHARLESTON	7/14/2003	Flash Flood	0
CHARLESTON	6/15/2004	Flash Flood	0
MT PLEASANT	8/14/2004	Flash Flood	0
CHARLESTON	8/15/2004	Flash Flood	0
SULLIVANS IS	8/29/2004	Flash Flood	0
CHARLESTON	9/27/2004	Flash Flood	0
JAMES IS	5/16/2005	Flash Flood	0
CENTRAL PORTION	5/17/2005	Flash Flood	0
CHARLESTON	5/17/2005	Flash Flood	0
CHARLESTON	6/28/2005	Flash Flood	0
AWENDAW	7/9/2005	Flash Flood	0
CHARLESTON	7/9/2005	Flash Flood	0
AWENDAW	7/9/2005	Flash Flood	0
NORTH CHARLESTON	7/21/2005	Flash Flood	0
MT PLEASANT	8/17/2005	Flash Flood	0
NORTH CHARLESTON	8/24/2005	Flash Flood	0
JAMES IS	9/28/2005	Flash Flood	0
CHARLESTON	8/24/2006	Flash Flood	0
CHARLESTON	8/24/2006	Flash Flood	0
NORTH CHARLESTON	8/24/2006	Flash Flood	0
NORTH CHARLESTON	8/24/2006	Flash Flood	0
CHARLESTON	8/24/2006	Flash Flood	0

FLOODING EVENTS IN CHARLESTON COUNTY Jan 1, 1950 - April 30, 2022			
Location	**Date**	**Type**	**Property Damage**
CHARLESTON	8/31/2006	Flash Flood	0
MT PLEASANT	8/31/2006	Flash Flood	0
CHARLESTON	8/31/2006	Flash Flood	0
ASHLEY HALL	7/28/2007	Flash Flood	1000
CHARLESTON HGTS	7/30/2007	Flash Flood	2000
CHARLESTON HGTS	7/30/2007	Flash Flood	0
CHARLESTON HGTS	7/30/2007	Flash Flood	0
CHARLESTON	7/30/2007	Flash Flood	0
CHARLESTON HGTS	7/30/2007	Flash Flood	0
CHARLESTON	7/30/2007	Flash Flood	0
AWENDAW	5/9/2008	Flash Flood	0
CENTERVILLE	6/20/2008	Flash Flood	0
CHARLESTON	6/21/2008	Flash Flood	0
ROCKVILLE	8/1/2008	Flash Flood	0
ROCKVILLE	8/1/2008	Flash Flood	0
MARYVILLE	9/5/2008	Flash Flood	0
CITADEL	9/5/2008	Flash Flood	0
CHARLESTON HGTS	9/16/2008	Flash Flood	0
CITADEL	10/24/2008	Flash Flood	5000
CHARLESTON	10/24/2008	Flash Flood	0
DRAYTON	10/24/2008	Flash Flood	0
DRAYTON	10/24/2008	Flash Flood	50000
DUPONT	10/24/2008	Flash Flood	0
HILLDALE	10/24/2008	Flash Flood	35000
DRAYTON	10/24/2008	Flash Flood	7500
CHARLESTON	10/24/2008	Flash Flood	15000
DUPONT	10/24/2008	Flash Flood	0
SNOWDEN	10/24/2008	Flash Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0

FLOODING EVENTS IN CHARLESTON COUNTY Jan 1, 1950 - April 30, 2022			
Location	**Date**	**Type**	**Property Damage**
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	30000
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	100000
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	50000
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	50000
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	75000
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	50000
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	40000
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0

FLOODING EVENTS IN CHARLESTON COUNTY Jan 1, 1950 - April 30, 2022			
Location	**Date**	**Type**	**Property Damage**
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/22/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/23/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/23/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/23/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/23/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/23/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/23/2009	Coastal Flood	0
CHARLESTON (ZONE)	6/23/2009	Coastal Flood	0
CHARLESTON HGTS	7/8/2009	Flash Flood	3500
HILLDALE	7/8/2009	Flash Flood	5000
(CHS)CHARLESTON AFB	7/8/2009	Flash Flood	5000
SCANLONVILLE	7/8/2009	Flash Flood	0
RAVENEL	7/8/2009	Flash Flood	500
CITADEL	7/8/2009	Flash Flood	1000
MT PLEASANT	7/8/2009	Flash Flood	500
CHARLESTON	7/8/2009	Flash Flood	1000
AWENDAW	8/22/2009	Flash Flood	500
AWENDAW	8/22/2009	Flash Flood	1000
AWENDAW	8/22/2009	Flash Flood	1000
AWENDAW	8/22/2009	Flash Flood	5000
CHARLESTON (ZONE)	12/2/2009	Coastal Flood	0
CHARLESTON	12/2/2009	Flash Flood	0

FLOODING EVENTS IN CHARLESTON COUNTY Jan 1, 1950 - April 30, 2022			
Location	**Date**	**Type**	**Property Damage**
CITADEL	12/2/2009	Flash Flood	0
CITADEL	12/2/2009	Flash Flood	0
CITADEL	12/2/2009	Flash Flood	0
CHARLESTON	12/2/2009	Flash Flood	0
CITADEL	12/2/2009	Flash Flood	0
CHARLESTON	12/2/2009	Flash Flood	10000
SNOWDEN	12/2/2009	Flash Flood	0
CHARLESTON HGTS	12/2/2009	Flash Flood	0
MIDLAND PARK	12/2/2009	Flash Flood	0
SEVEN MILE	12/18/2009	Flash Flood	0
CHARLESTON HGTS	12/18/2009	Flash Flood	0
THE GROVES	12/18/2009	Flash Flood	0
ISLE OF PALMS ARPT	12/18/2009	Flash Flood	0
CITADEL	12/18/2009	Flash Flood	0
SNOWDEN	12/18/2009	Flash Flood	0
CHARLESTON (ZONE)	1/30/2010	Coastal Flood	0
CHARLESTON (ZONE)	1/30/2010	Coastal Flood	0
CHARLESTON (ZONE)	1/30/2010	Coastal Flood	0
THE GROVES	8/15/2010	Flash Flood	1000
THE GROVES	8/15/2010	Flash Flood	2500
CITADEL	8/20/2010	Flash Flood	0
MOORE CORNER	9/29/2010	Flash Flood	1000
FOLLY BEACH	7/27/2011	Flash Flood	5000
LADSON	8/12/2011	Flash Flood	0
CHARLESTON (ZONE)	8/26/2011	Storm Surge/Tide	0
CHARLESTON (ZONE)	5/7/2012	Coastal Flood	0
CITADEL	5/29/2012	Flash Flood	0
CHARLESTON (ZONE)	6/1/2012	Coastal Flood	0
CHARLESTON (ZONE)	6/5/2012	Coastal Flood	0
CHARLESTON (ZONE)	6/5/2012	Coastal Flood	0

FLOODING EVENTS IN CHARLESTON COUNTY Jan 1, 1950 - April 30, 2022			
Location	**Date**	**Type**	**Property Damage**
ASHLEY HALL	6/6/2012	Flash Flood	0
CITADEL	6/6/2012	Flash Flood	0
CHARLESTON (ZONE)	6/6/2012	Coastal Flood	0
CHARLESTON	7/11/2012	Flash Flood	10000
CHARLESTON	8/28/2012	Flash Flood	0
CENTERVILLE	8/28/2012	Flash Flood	0
CITADEL	8/28/2012	Flash Flood	0
DUPONT	8/28/2012	Flash Flood	0
MARYVILLE	8/28/2012	Flash Flood	0
THE GROVES	8/28/2012	Flash Flood	0
DORCHESTER	8/28/2012	Flash Flood	0
MARYVILLE	8/28/2012	Flash Flood	0
ASHLEY HALL	8/28/2012	Flash Flood	0
ASHLEY JCT	8/28/2012	Flash Flood	0
PINECREST	8/28/2012	Flash Flood	0
CHARLESTON	8/28/2012	Flash Flood	750000
PHILIP	8/29/2012	Flash Flood	0
CITADEL	8/29/2012	Flash Flood	0
MT PLEASANT	8/29/2012	Flash Flood	0
CITADEL	8/29/2012	Flash Flood	0
CITADEL	8/29/2012	Flash Flood	0
ISLE OF PALMS ARPT	8/29/2012	Flash Flood	0
CHARLESTON (ZONE)	11/15/2012	Coastal Flood	0
CHARLESTON (ZONE)	11/15/2012	Coastal Flood	0
CHARLESTON (ZONE)	11/15/2012	Coastal Flood	0
CHARLESTON (ZONE)	12/13/2012	Coastal Flood	0
CHARLESTON (ZONE)	12/15/2012	Coastal Flood	0
CITADEL	2/26/2013	Flash Flood	0
CHARLESTON	3/24/2013	Flash Flood	0
CITADEL	3/24/2013	Flash Flood	0
CENTERVILLE	3/24/2013	Flash Flood	0
WAYLYN	3/24/2013	Flash Flood	0
CHARLESTON	3/24/2013	Flash Flood	0
CITADEL	3/24/2013	Flash Flood	0

FLOODING EVENTS IN CHARLESTON COUNTY Jan 1, 1950 - April 30, 2022			
Location	**Date**	**Type**	**Property Damage**
CITADEL	3/24/2013	Flash Flood	0
CHARLESTON	3/24/2013	Flash Flood	0
CHARLESTON (ZONE)	5/5/2013	Coastal Flood	0
CHARLESTON (ZONE)	5/5/2013	Coastal Flood	0
CHARLESTON (ZONE)	5/5/2013	Coastal Flood	0
CHARLESTON (ZONE)	5/25/2013	Coastal Flood	0
CITADEL	6/11/2013	Flash Flood	0
CITADEL	6/11/2013	Flash Flood	0
CITADEL	6/11/2013	Flash Flood	0
CITADEL	6/11/2013	Flash Flood	0
CITADEL	6/18/2013	Flash Flood	0
CITADEL	6/18/2013	Flash Flood	0
CITADEL	6/18/2013	Flash Flood	0
CITADEL	6/18/2013	Flash Flood	0
CHARLESTON HGTS	6/19/2013	Flash Flood	0
CHARLESTON	6/19/2013	Flash Flood	0
CHARLESTON	6/19/2013	Flash Flood	0
CITADEL	6/19/2013	Flash Flood	0
MYERS	6/19/2013	Flash Flood	0
CITADEL	6/19/2013	Flash Flood	0
CITADEL	6/30/2013	Flash Flood	0
SNOWDEN	6/30/2013	Flash Flood	0
HOBCAW PT	6/30/2013	Flash Flood	0
CITADEL	6/30/2013	Flash Flood	0
CITADEL	7/12/2013	Flash Flood	20000
PARKERS FERRY	7/19/2013	Flood	20000
CHARLESTON	7/21/2013	Flash Flood	50000
CHARLESTON (ZONE)	7/24/2013	Coastal Flood	0
LADSON	7/29/2013	Flash Flood	10000
CITADEL	8/14/2013	Flash Flood	0
CITADEL	8/14/2013	Flash Flood	0
CITADEL	8/15/2013	Flash Flood	0
CHARLESTON	8/15/2013	Flash Flood	0
CHARLESTON (ZONE)	8/18/2013	Coastal Flood	0

FLOODING EVENTS IN CHARLESTON COUNTY Jan 1, 1950 - April 30, 2022			
Location	**Date**	**Type**	**Property Damage**
CHARLESTON (ZONE)	8/18/2013	Coastal Flood	0
CHARLESTON (ZONE)	8/20/2013	Coastal Flood	0
CHARLESTON (ZONE)	3/1/2014	Coastal Flood	0
CITADEL	4/18/2014	Flash Flood	0
LADSON	6/7/2014	Flash Flood	500
HILLDALE	6/23/2014	Flash Flood	0
FOLLY BEACH	7/6/2014	Flash Flood	0
CHARLESTON	7/31/2014	Flash Flood	5000
FOLLY BEACH	7/31/2014	Flash Flood	15000
RIVERLAND TERRACE	7/31/2014	Flash Flood	5000
WAYLYN	7/31/2014	Flash Flood	5000
CHARLESTON	8/9/2014	Flash Flood	0
THE GROVES	8/10/2014	Flash Flood	2500
(CHS)CHARLESTON AFB	8/10/2014	Flash Flood	0
CHARLESTON (ZONE)	8/11/2014	Coastal Flood	0
CITADEL	9/15/2014	Flash Flood	5000
(CHS)CHARLESTON AFB	9/15/2014	Flash Flood	10000
CITADEL	9/16/2014	Flash Flood	5000
PINECREST	9/16/2014	Flash Flood	1000
CHARLESTON (ZONE)	12/6/2014	Coastal Flood	0
CHARLESTON (ZONE)	12/8/2014	Coastal Flood	0
CHARLESTON (ZONE)	12/22/2014	Coastal Flood	0
CHARLESTON (ZONE)	12/24/2014	Coastal Flood	0
CHARLESTON (ZONE)	3/22/2015	Coastal Flood	0
CITADEL	6/9/2015	Flash Flood	10000
CHARLESTON	8/18/2015	Flash Flood	0
THE GROVES	8/19/2015	Flash Flood	0
MYERS	8/19/2015	Flash Flood	0
NAVY YARD	8/31/2015	Flash Flood	0

FLOODING EVENTS IN CHARLESTON COUNTY Jan 1, 1950 - April 30, 2022			
Location	**Date**	**Type**	**Property Damage**
DUPONT	8/31/2015	Flash Flood	100000
DEER PARK	8/31/2015	Flash Flood	0
CHARLESTON HGTS	8/31/2015	Flash Flood	0
ASHLEY JCT	8/31/2015	Flash Flood	0
MIDLAND PARK	8/31/2015	Flash Flood	0
CITADEL	8/31/2015	Flash Flood	0
(CHS)CHARLESTON AFB	8/31/2015	Flash Flood	0
CHARLESTON (ZONE)	9/24/2015	Coastal Flood	0
CHARLESTON (ZONE)	9/26/2015	Coastal Flood	0
CHARLESTON (ZONE)	9/27/2015	Coastal Flood	0
CHARLESTON (ZONE)	9/28/2015	Coastal Flood	0
CHARLESTON (ZONE)	9/28/2015	Coastal Flood	0
CHARLESTON (ZONE)	9/28/2015	Coastal Flood	0
CHARLESTON (ZONE)	9/29/2015	Coastal Flood	0
CHARLESTON (ZONE)	9/29/2015	Coastal Flood	0
CHARLESTON (ZONE)	9/29/2015	Coastal Flood	0
CHARLESTON (ZONE)	9/30/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/1/2015	Coastal Flood	0
MYERS	10/1/2015	Flash Flood	728550
CHARLESTON (ZONE)	10/2/2015	Coastal Flood	0
CHARLESTON	10/3/2015	Flash Flood	728550
PHILIP	10/3/2015	Flash Flood	728550
PINECREST	10/3/2015	Flash Flood	728550
MORRIS ACRES	10/3/2015	Flash Flood	728550
MYERS	10/3/2015	Flash Flood	728550
THE GROVES	10/3/2015	Flash Flood	728550

FLOODING EVENTS IN CHARLESTON COUNTY Jan 1, 1950 - April 30, 2022			
Location	**Date**	**Type**	**Property Damage**
RIVERLAND TERRACE	10/3/2015	Flash Flood	728550
JOHNS IS	10/3/2015	Flash Flood	728550
CHARLESTON (ZONE)	10/3/2015	Coastal Flood	0
MEGGETT	10/3/2015	Flash Flood	728550
LINCOLNVILLE	10/3/2015	Flash Flood	728550
YONGES IS	10/3/2015	Flash Flood	728550
DUPONT	10/3/2015	Flash Flood	728550
WADMALAW IS	10/3/2015	Flash Flood	728550
EDISTO IS	10/3/2015	Flash Flood	728550
ROCKVILLE	10/3/2015	Flash Flood	728550
CHARLESTON	10/3/2015	Flash Flood	728550
DUPONT	10/3/2015	Flash Flood	728550
ISLE OF PALMS ARPT	10/3/2015	Flash Flood	728550
HILLDALE	10/3/2015	Flash Flood	728550
PHILIP	10/3/2015	Flash Flood	728550
JAMES IS	10/4/2015	Flash Flood	728550
AWENDAW	10/4/2015	Flash Flood	728550
CHARLESTON HGTS	10/4/2015	Flash Flood	728550
CHARLESTON (ZONE)	10/4/2015	Coastal Flood	0
RIVERLAND TERRACE	10/4/2015	Flash Flood	728550
CHARLESTON (ZONE)	10/6/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/7/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/7/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/7/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/27/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/27/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/27/2015	Coastal Flood	0

FLOODING EVENTS IN CHARLESTON COUNTY Jan 1, 1950 - April 30, 2022			
Location	**Date**	**Type**	**Property Damage**
CHARLESTON (ZONE)	10/27/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/27/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/27/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/27/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/27/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/28/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/28/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/28/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/28/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/28/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/28/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/28/2015	Coastal Flood	0
CHARLESTON (ZONE)	10/28/2015	Coastal Flood	0
CHARLESTON (ZONE)	11/9/2015	Coastal Flood	0
CITADEL	1/15/2016	Flood	0
CHARLESTON	2/4/2016	Flood	0
HILLDALE	5/29/2016	Flash Flood	0
CHARLESTON (ZONE)	6/3/2016	Coastal Flood	0
CHARLESTON (ZONE)	6/4/2016	Coastal Flood	0
CHARLESTON HGTS	6/6/2016	Flash Flood	0
WAYLYN	6/6/2016	Flash Flood	0
CHARLESTON	6/6/2016	Flash Flood	0
CHARLESTON (ZONE)	6/6/2016	Storm Surge/Tide	0

FLOODING EVENTS IN CHARLESTON COUNTY Jan 1, 1950 - April 30, 2022			
Location	**Date**	**Type**	**Property Damage**
CHARLESTON (ZONE)	6/18/2016	Coastal Flood	0
CHARLESTON	6/29/2016	Flash Flood	0
CHARLESTON (ZONE)	9/2/2016	Storm Surge/Tide	0
CHARLESTON (ZONE)	10/7/2016	Storm Surge/Tide	0
ASHLEY HALL	10/8/2016	Flash Flood	0
DRAYTON	10/8/2016	Flash Flood	0
ASHLEY HALL	10/8/2016	Flash Flood	0
HOLLYWOOD	10/8/2016	Flash Flood	0
CHARLESTON (ZONE)	10/10/2016	Coastal Flood	0
PARKERS FERRY	10/12/2016	Flood	0
CHARLESTON (ZONE)	10/12/2016	Coastal Flood	0
CHARLESTON (ZONE)	10/15/2016	Coastal Flood	0
CHARLESTON (ZONE)	10/16/2016	Coastal Flood	0
CHARLESTON (ZONE)	10/17/2016	Coastal Flood	0
CHARLESTON (ZONE)	9/10/2017	Coastal Flood	0
CHARLESTON (ZONE)	9/10/2017	Coastal Flood	0
CHARLESTON (ZONE)	9/11/2017	Storm Surge/Tide	0
DRAYTON	9/11/2017	Flash Flood	50000
CITADEL	7/20/2018	Flash Flood	20000
CHARLESTON (ZONE)	10/11/2018	Storm Surge/Tide	0
CHARLESTON (ZONE)	11/23/2018	Coastal Flood	0
CHARLESTON (ZONE)	11/23/2018	Coastal Flood	0
CHARLESTON (ZONE)	11/24/2018	Coastal Flood	0
CHARLESTON (ZONE)	11/24/2018	Coastal Flood	0

FLOODING EVENTS IN CHARLESTON COUNTY Jan 1, 1950 - April 30, 2022			
Location	**Date**	**Type**	**Property Damage**
CHARLESTON (ZONE)	12/9/2018	Coastal Flood	0
CHARLESTON (ZONE)	12/9/2018	Coastal Flood	0
CITADEL	12/14/2018	Flood	2500
CHARLESTON (ZONE)	2/20/2019	Coastal Flood	0
CHARLESTON (ZONE)	2/20/2019	Coastal Flood	0
CHARLESTON (ZONE)	8/29/2019	Coastal Flood	0
CHARLESTON (ZONE)	8/29/2019	Coastal Flood	0
CHARLESTON (ZONE)	8/29/2019	Coastal Flood	0
CHARLESTON (ZONE)	8/29/2019	Coastal Flood	0
CHARLESTON (ZONE)	8/30/2019	Coastal Flood	0
CHARLESTON (ZONE)	8/30/2019	Coastal Flood	0
CHARLESTON (ZONE)	8/30/2019	Coastal Flood	0
CHARLESTON (ZONE)	8/30/2019	Coastal Flood	0
CHARLESTON (ZONE)	8/30/2019	Coastal Flood	0
CHARLESTON (ZONE)	12/24/2019	Coastal Flood	0
CHARLESTON (ZONE)	12/24/2019	Coastal Flood	0
CHARLESTON (ZONE)	12/24/2019	Coastal Flood	0
CHARLESTON (ZONE)	9/15/2020	Coastal Flood	0
CHARLESTON (ZONE)	9/16/2020	Coastal Flood	0
CHARLESTON (ZONE)	9/19/2020	Coastal Flood	0
CHARLESTON (ZONE)	9/20/2020	Coastal Flood	0

FLOODING EVENTS IN CHARLESTON COUNTY Jan 1, 1950 - April 30, 2022			
Location	**Date**	**Type**	**Property Damage**
CHARLESTON (ZONE)	9/21/2020	Coastal Flood	0
CHARLESTON (ZONE)	10/18/2020	Coastal Flood	0
CHARLESTON (ZONE)	11/15/2020	Coastal Flood	0
CHARLESTON (ZONE)	12/16/2020	Coastal Flood	0
CHARLESTON (ZONE)	6/12/2021	Flash Flood	0
CHARLESTON (ZONE)	11/05/2021	Coastal Flood	0
CHARLESTON (ZONE)	11/06/2021	Coastal Flood	0
CHARLESTON (ZONE)	11/07/2021	Coastal Flood	0
CHARLESTON (ZONE)	11/08/2021	Coastal Flood	0
CHARLESTON (ZONE)	9/9/2022	Coastal Flood	0
CHARLESTON (ZONE)	11/10/2022	Storm surge	0
CHARLESTON (ZONE)	12/22/2022	Coastal Flood	0
CHARLESTON (ZONE)	5/18/2023	Coastal Flood	0
TOTAL: 376 Events			**TOTAL: $210,364,000**

**NOAA Storm Events Database*

Duration and Depth* of King Tides in Charleston Area from January 2014 – December 2021				
Year	Predicted Number of Tides	Observed Number of Tides	Highest Predicted Tide (ft)	Highest Observed Tide (ft)
2014	28	46	7	7.6
2015	40	111	7.2	8.7
2016	49	82	7.2	7.9
2017	34	111	7	9.9
2018	44	72	6.9	8.8
2019	34	87	7	8.07
2020	39	96	7.2	8.2
2021	30	106	7.1	8.52
2022	13	92	6.8	8.3
Average	34.56	89.22	7.1	8.46
Total	311	803	--	--

*Depth is based off of the Charleston Harbor Tide Gauge
**Available data from 2014 onwards gathered through MyCoast.org backed by SC DHEC: https://mycoast.org/sc/king-tides

Source: USGS Latest Earthquakes 1800-to-date

Time*	Depth	Magnitude	Location
1817-01-08T09:00:00.000Z		5	South Carolina
1886-09-01T02:51:00.000Z		7.03	South Carolina
1959-08-03T06:08:37.200Z	1	4.4	South Carolina
1974-11-22T05:25:55.500Z	18	4.7	South Carolina
1977-01-18T18:29:13.500Z	5	3	South Carolina
1977-12-15T07:15:55.000Z	9	2.5	South Carolina
1977-12-15T19:16:43.100Z	9	3	South Carolina
1978-09-07T22:53:22.300Z	11	2.7	South Carolina
1979-12-07T05:43:35.000Z	15	2.9	South Carolina
1980-09-01T05:44:42.300Z	6	2.7	South Carolina
1981-03-19T04:33:55.720Z	0.1	2.5	South Carolina
1982-03-01T03:33:13.560Z	6.7	3	South Carolina
1983-11-06T09:02:19.820Z	9.6	3.3	South Carolina
1986-09-17T09:33:49.460Z	7.7	2.6	South Carolina
1988-01-23T01:57:16.390Z	7.4	3.3	South Carolina
1989-01-02T16:35:16.270Z	4.9	2.6	South Carolina
1990-02-07T07:41:39.920Z	9.3	2.7	South Carolina
1990-05-11T18:23:33.950Z	6.1	2.6	South Carolina
1990-11-13T15:22:13.010Z	3.4	3.2	South Carolina
1992-08-21T16:31:55.160Z	10	4.1	South Carolina

Time*	Depth	Magnitude	Location
1995-04-17T13:45:57.800Z	10	3.9	South Carolina
1999-03-29T14:49:36.510Z	5	2.9	South Carolina
2002-11-08T13:29:03.190Z	3.9	3.5	South Carolina
2002-11-11T23:39:29.720Z	2.4	4	South Carolina
2003-02-28T07:02:36.500Z	4.3	2.6	7km SW of Ladson, South Carolina
2003-03-02T17:18:26.500Z	6.5	2.9	7km SW of Ladson, South Carolina
2003-05-05T10:53:49.900Z	11.4	3.1	4km NNW of Summerville, South Carolina
2003-06-12T23:33:17.200Z	10.4	2.6	5km WSW of Centerville, South Carolina
2003-07-19T14:22:21.300Z	5.7	2.5	7km SSW of Ladson, South Carolina
2003-10-14T10:45:38.600Z	7.2	2.5	5km S of Centerville, South Carolina
2003-12-22T23:50:26.000Z	5.6	3	8km SSW of Ladson, South Carolina
2004-05-01T04:16:28.300Z	10.7	2.7	3km ENE of Goose Creek, South Carolina
2004-07-20T09:13:14.400Z	10.3	3.1	7km WSW of Centerville, South Carolina
2004-08-18T03:43:42.400Z	7.7	2.5	0km NE of Summerville, South Carolina
2004-11-25T22:58:45.900Z	12.9	2.7	4km NNW of Summerville, South Carolina
2005-11-19T20:02:20.000Z	5	2.6	South Carolina
2008-12-16T12:42:17.520Z	15.39	3.6	5km N of Sangaree, South Carolina
2009-01-29T21:11:27.200Z	6.45	2.5	2km SW of Summerville, South Carolina
2009-05-06T17:07:17.090Z	2.02	2.5	2km N of Summerville, South Carolina
2009-08-29T10:37:13.700Z	4.93	3.2	2km NE of Summerville, South Carolina
2010-05-12T09:03:36.760Z	1.26	2.8	6km SSW of Ladson, South Carolina
2011-10-15T07:02:32.820Z	8.05	2.5	4km WSW of Summerville, South Carolina

Time*	Depth	Magnitude	Location
2011-12-21T21:38:57.670Z	12.33	2.6	7km SW of Centerville, South Carolina
2012-01-04T07:56:03.800Z	4.94	2.6	3km SSW of Centerville, South Carolina
2012-07-31T04:53:09.290Z	8.21	2.8	5km S of Centerville, South Carolina
2013-09-19T19:14:11.170Z	11.44	2.5	8km WSW of Summerville, South Carolina
2014-03-19T22:38:03.330Z	6.91	3	0km S of Centerville, South Carolina

**Sourced from USGS Latest Earthquakes 1800-to-date*

Tornado Events in Charleston County Between January 1, 1950 – January 1, 2023			
Origin Location	Date	SCALE	Property Damage
	5/22/1957	F0	$ 30
	9/11/1960	F3	$ 2,500,000
	4/12/1961	F1	$ 250,000
	8/29/1964	F2	$ 2,500
	7/5/1965	F1	$ 2,500
	4/13/1966	F0	$ 30
	8/7/1966	F1	$ 25,000
	9/19/1966	F1	$ 2,500
	9/19/1966	F1	$ 2,500
	6/7/1968		$ 30
	5/25/1970	F1	$ 2,500
	3/12/1974	F1	$ 25,000
	3/8/1976	F1	$ 25,000
	9/4/1979	F0	$ 250
	6/27/1982	F1	$ 2,500
	2/27/1984	F0	$ 2,500
	7/26/1986	F0	$ 25,000
	11/7/1995	F0	$ -
SULLIVANS IS	3/14/1997	F1	$ 30,000
AWENDAW	3/14/1997	F1	$ 75,000
ISLE OF PALMS	7/23/2000	F0	$ 200,000
ISLE OF PALMS	8/3/2000	F0	$ -
EDISTO IS	6/12/2001	F0	$ -
CHARLESTON	7/15/2002	F0	$ -
CHARLESTON AFB	9/28/2002	F0	$ -
ISLE OF PALMS	8/12/2004	F1	$ -
SOUTH SANTEE	8/14/2004	F0	$ -
JAMES IS	5/30/2005	F1	$ -
ADAMS RUN	4/8/2006	F1	$ -
CHARLESTON	4/8/2006	F0	$ -

CHARLESTON	4/8/2006	F0	$	-
AWENDAW	4/26/2006	F1	$	-
RAVENEL	5/14/2006	F1	$	-
CHARLESTON	6/13/2006	F0	$	3,000
AWENDAW	6/13/2006	F0	$	500
LINCOLNVILLE	6/13/2006	F0	$	5,000
YONGES IS	5/11/2008	EF2	$	1,200,000
MORRIS ACRES	6/29/2008	EF0	$	35,000
ROCKVILLE	8/1/2012	EF0	$	-
ROCKVILLE	5/31/2014	EF0	$	-
MORRIS ACRES	9/24/2015	EF2	$	1,540,000
(CHS)CHARLESTON AFB	9/11/2017	EF0	$	-
CHARLESTON JOHNS ARP	9/11/2017	EF1	$	-
JAMES IS	9/11/2017	EF0	$	-
THE GROVES	9/11/2017	EF0	$	-
WADMALAW IS	4/13/2020	EF1	$	-
ROCKVILLE	4/13/2020	EF1	$	-
JOHNS IS	5/20/2020	EF1	$	
TEN MILE	9/10/2022	EF0	$	
	***49 Events Total**		$	5,956,340.00

Source: NOAA Storm Events Database

	Hazardous Materials Incidents from May 1, 2013 to April 30, 2020							
	As Reported by Charleston County Consolidated 9-1-1							
Category	**2013-2014**	**2014-2015**	**2015-2016**	**2016-2017**	**2017-2018**	**2018- 2019**	**2019-2020**	
Hazmat	37	51	18	24	22	15	19	
Fuel Spill	104	111	102	85	74	67	46	
Gas Leak/Gas Odor (Natural and LP Gases)	278	201	360	397	395	363	480	
Total	**419**	**363**	**480**	**506**	**491**	**445**	**545**	**3,249**

	Suspicious Packages and Bomb Threat							
	From May 1, 2013 – April, 30 2020							
	As reported by Charleston County Consolidated 9-1-1 Center							
Category	**2013-2014**	**2014-2015**	**2015-2016**	**2016-2017**	**2017-2018**	**2018-2019**	**2019-2020**	
Bomb Threat	21	2	5	12	17	24	14	
Bomb Threat (Suspected Caller)	2	0	0	1	1	0	0	
Ordinance/Explosive Found	8	5	8	14	12	10	7	
Suspicious Package	66	110	111	95	131	81	55	
Suspicious Package with Leakage Residue	1	1	4	2	6	1	3	
Total	**98**	**118**	**128**	**124**	**167**	**116**	**79**	**830**

Wildfire Events from 2013-2022										
Year	**2012-2013**	**2013-2014**	**2014-2015**	**2015-2016**	**2016-2017**	**2017-2018**	**2018-2019**	**2019-2020**	**2020-2021**	**2021-2022**
Fires	19	15	9	6	23	6	10	12	6	21
Acres	656.6	37.5	349.9	134.8	249.2	30.2	171.0	277.9	56.1	250.7
Source: South Carolina Forestry Commission										

	Fire Incidents from May 1, 2013 – April 30, 2020							
	As Reported by Charleston County Consolidated 9-1-1							
Category	**2013-2014**	**2014-2015**	**2015-2016**	**2016-2017**	**2017-2018**	**2018-2019**	**2019-2020**	
Outside Fires	893	542	632	999	657	573	848	
Trail/Rail Fires	3	1	2	1	3	0	5	
Marine Fires	13	5	11	11	21	7	8	
Vehicle Fire	102	90	111	111	112	124	87	
Total	**1011**	**638**	**756**	**1122**	**793**	**704**	**948**	**5,972**

Charleston County Severe Rip Tide Occurrences from January 1, 1950 – January 1, 2023				
Date	**Time**	**Deaths**	**Injuries**	**Event Narrative**
5/27/2013	1056	0	0	Lifeguards reported one strong rip current near the Isle of Palms pier. Four rescues were needed.
6/30/2013	1139	0	1	**(Charleston Zone)** One person drowned trying to rescue another person in a rip current.
7/13/2013	1430	0	2	**(Charleston Zone)** Lifeguards reported a very strong rip current north of the pier. 2 people were sent to the hospital for water inhalation.
5/7/2014	1245	1	0	Between 1:45 pm and 2:00 pm EDT, three rip currents were reported near and north of the Isle of Palms county park. Two of the rip currents were about 100 yards north of the 21st Street beach access and another just south of the pier. A 20 year old male was pulled from the water near the 21st Street access point by four Good Samaritans, but died soon after. CPR was attempted by a fire and rescue unit.
5/8/2014	1400	0	0	Several rip currents were reported at and near the Isle of Palms county park throughout the day. Five rescues were performed by lifeguards just north of the pier.
5/10/2014	1400	0	0	An Isle of Palms lifeguard reported 10 rescues through the day from rip currents near the pier and 21st Avenue.

Charleston County Severe Rip Tide Occurrences from January 1, 1950 – January 1, 2023				
Date	**Time**	**Deaths**	**Injuries**	**Event Narrative**
5/1/2015	1500	1	0	A 23 year old male drowned between Stations 23 and 24 on Sullivan's Island due to a rip current.
6/7/2016	900	0	0	The Isle of Palms Fire and Rescue reported the rescue of an individual caught in a rip current between 41st and 42nd Avenue. Bystanders with boogie boards were able to assist in the rescue.
6/7/2016	1050	0	0	The Isle of Palms Fire and Rescue reported that they assisted in the rescue on an individual caught in a rip current between 41st and 42nd Avenue.
6/7/2016	1700	0	0	Lifeguards from Folly Beach County Park assisted in the rescue of an individual caught in a rip current near the Folly Beach Pier.
6/19/2016	1300	0	0	Folly Island lifeguards reported 2 rip currents and 2 rescues at Folly Beach. One rip current was ongoing and approximately 10 yards wide and 50 yards long.
6/20/2016	915	0	1	The Isle of Palms Fire Department rescued 3 adults and 1 child on the northern end of Isle of Palms Beach. One person was taken to the hospital.
6/26/2016	1100	0	0	**(Isle of Palms)** A rip current was observed near 34th Avenue and required the rescue of at least one person.
6/18/2017	1305	0	0	A lifeguard reported one female rescue in a small rip current about 400 feet east of the groin at Folly Beach State Park.
7/12/2018	900	0	0	Lifeguards at the Isle of Palms County Park observed multiple rip currents, averaging 60 feet and extending up to 75 yards offshore. Four rescues were completed as a result of the rip currents.
7/25/2018	1300	0	0	Lifeguards at Beachwalker County Park on Kiawah Island reported a rip current rescue outside of their guarded area.
5/24/2019	1230	1	0	Two swimmers were reported in distress near West 3rd Street Beach Access on Folly Beach in a rip current.

Charleston County Severe Rip Tide Occurrences from January 1, 1950 – January 1, 2023				
Date	**Time**	**Deaths**	**Injuries**	**Event Narrative**
6/26/2020	1500	0	0	A lifeguard reported one rescue due to a rip current at Kiawah Beachwalker County Park.
9/13/2020	**1722**	**1**	**1**	**3 individuals were swept out by a rip current at Folly Beach near a no swimming zone at Folly Beach County Park. A sixyear old boy drowned, one woman sustained minor injury, and one other child was rescued and unharmed.**
9/11/21	**1300**	**0**	**0**	**The Folly Beach lifeguards reported a rip current near the inlet on the north end of the beach. Two rescues were performed due to the rip current.**
4/24/2022	**1703**	**0**	**0**	**Reported rip current approximately 100 yards long at Isle of Palms Beach. 2 people were rescued and sent to hospital.**
Total: 21 Rip Current Events with 4 Deaths and 5 Reported Injuries				
Source: NOAA Storm Events Database				

Severe Storm Events (Thunderstorm Winds) 1956 – Jan 2023					
Origin	Date	Magnitude (kts)	Property Damage		Event Narrative
Charleston	10/30/1993	57	$	-	Thunderstorm winds with gusts to 57 knots were reported at the Custom House Pier.
JAMES IS	10/8/1996	50	$	-	
CHARLESTON	5/9/1997	50	$	-	Trees and powerlines down several locations.
MT PLEASANT	5/9/1997	71	$	-	Three aircraft were overturned at the East Cooper Airport.
FOLLY BEACH	6/14/1997	50	$	-	Trees and limbs down.
ROCKVILLE	6/17/1997	50	$	-	
NORTH CHARLESTON	7/16/1997	60	$	10,000	A 40x80 foot section of the roof at the ABF Freight System, Inc. was blown off.
NORTH CHARLESTON	7/17/1997	60	$	-	Trees and powerlines down.
NORTH CHARLESTON	7/24/1997	50	$	-	Powerlines down
LINCOLNVILLE	5/3/1998	50	$	-	Trees and large limbs down.

CHARLESTON	6/19/1998	50	$	-	
MC CLELLANVILLE	6/29/1998	50	$	-	
NORTH CHARLESTON	8/31/1998	60	$ 0	80,00	Winds blew a 60-foot yacht off its stand and into a shed causing considerable damage to the yacht.
NORTH CHARLESTON	9/3/1998	50	$	-	Large limbs and power lines down.
CHARLESTON	8/8/1999	50	$	-	Large limbs down.
CHARLESTON	8/9/1999	50	$	-	Power lines down and large branches down on car.
FOLLY BEACH	8/10/1999	50	$	-	Power lines down.
NORTH CHARLESTON	2/14/2000	60	$	-	An unoccupied mobile home flipped over and was thrown against another mobile home. The unoccupied mobile home was not tied down very well. Approximately 50 other mobile homes had skirting damage or skirting torn away.
NORTH CHARLESTON	12/17/2000	50	$	-	Limbs and power lines down.
HOLLYWOOD	6/30/2002	50	$	-	Numerous large limbs were downed by thunderstorm winds.
RAVENEL	6/30/2002	50	$	-	Several trees were down.
HOLLYWOOD	6/30/2002	50	$	-	Several large limbs were downed due to thunderstorm winds.
NORTH CHARLESTON	7/11/2002	50	$	-	A large tree was blown down.
RAVENEL	12/24/2002	50	$	-	Trees down across Highway 165.
NORTH CHARLESTON	12/24/2002	50	$	-	Several trees were down across Rutledge Ave near Hampton Park.
CHARLESTON	2/22/2003	50	$	-	Several trees were down.
HOLLYWOOD	5/6/2003	50	$	-	Trees, large limbs and power lines down.
NORTH CHARLESTON	5/25/2003	50	$	-	Several trees were blown down near the intersection of Ashley Phosphate and the Frontage Road.

RAVENEL	6/3/2003	50	$	-	Thunderstorm winds caused widespread damage across the county. Trees and power lines were knocked down in Hollywood, Ravenel, Kiawah Island, Johns Island, the West Ashley section of Charleston, and in Mount Pleasant. A carport was moved 500 feet in Hollywood.
AWENDAW	6/3/2003	50	$	-	Thunderstorm winds knocked down large limbs in Awendaw.
NORTH CHARLESTON	7/10/2003	50	$	-	Thunderstorm winds blew down large limbs.
RAVENEL	8/24/2003	50	$	-	Large limbs were knocked down along Highway 165 just south of its intersection with Highway 17.
EDISTO IS	5/2/2004	50	$	-	Thunderstorm winds knocked down large limbs on Bailey Island.
NORTH CHARLESTON	5/2/2004	50	$	-	Thunderstorm winds knocked down trees along Ashley Phosphate road.
CHARLESTON	6/23/2004	50	$	-	Several large trees were blown down in the West Ashley section of Charleston.
AWENDAW	6/30/2004	50	$	-	Thunderstorm winds knocked down a tree and a large limb.
MC CLELLANVILLE	7/9/2004	50	$	-	60 mph wind gust reported
CHARLESTON	7/10/2004	50	$	-	Large limbs were knocked down in the West Ashley area of Charleston. Trees were also knocked down near the intersection of Ashley Hall Rd. and Gardenia, west of downtown Charleston.
CHARLESTON	7/10/2004	50	$	-	Powerlines down near Church Creek in West Ashley.
CHARLESTON	7/10/2004	60	$	-	Trees and power lines down in several locations downtown and on the peninsula.
LINCOLNVILLE	7/11/2004	50	$	-	Large tree limbs down on East Randolph St.
MT PLEASANT	8/12/2004	50	$	-	Thunderstorm winds damage three boats and the dock at Patriots Point.

AWENDAW	8/12/2004	60	$	-	Thunderstorm winds blew a mobile home off its foundation, blew down a fence, and downed several trees.
HOLLYWOOD	9/6/2004	50	$	-	Thunderstorm winds knocked down several trees.
NORTH CHARLESTON	9/7/2004	50	$	-	Two trees were blown along the 52 Connector.
CHARLESTON	3/8/2005	50	$	-	Thunderstorm winds knocked down trees and large street signs in the West Ashley section of Charleston.
NORTH CHARLESTON	7/21/2005	55	$	-	Power lines down near intersection of Highway 52 and Rivers Ave.
NORTH CHARLESTON	8/22/2005	65	$	-	A severe thunderstorm produced estimated 70 to 80 mph wind gusts in the Forest Hills 2 subdivision. Numerous trees were snapped off, shingles were blown off around 25 homes, and wooden fences were damaged. One tree fell into a person's living room. One inch diameter hail also fell in Hanahan.
CHARLESTON	1/30/2006	50	$ 0	3,00	Thunderstorm winds knocked down trees on Chadwick Drive and Windermere Blvd. in the West Ashley section of Charleston. Two trees were also blown down on Sullivan's Island.
FOLLY BEACH	2/3/2006	56	$ 0	2,00	Nearby thunderstorm produced a gravity wave caused winds to gust to 65 mph on Folly Beach and strong gusts were reported in Charleston, James Island, and Mt. Pleasant prior to midnight on the 4th. One tree was reported blown down on Rifle Range road in Mt. Pleasant.
FOLLY BEACH	2/3/2006	55	$ 0	5,00	Strong winds from a gravity wave, produced from nearby thunderstorms, continued past midnight on the 4th. Damage from the winds included a large oak tree blown down in Fort

					Johnson Estates near the Charleston Harbor on James Island, trees down in the Old Village of Mt. Pleasant, large limbs knocked down in downtown Charleston, and 2 power poles knocked down on Sullivan's Island.
RAVENEL	4/26/2006	50		$ 5,00 0	Power lines down along Highway 162 near the Savannah Highway.
JAMES IS	4/26/2006	50		$ 1,00 0	Trees down at intersection of Fort Johnson Road and Landsdowne Drive.
NORTH CHARLESTON	4/26/2006	50		$ 10,00 0	Wind damaged observed at the Hess Terminal near the base of the Don Holt Bridge. Hess sign bent parallel to the ground. SC DOT portable lighted sign blown down. Rail crossing gate damaged.
JAMES IS	4/26/2006	60		$ 5,00 0	Sail boat sustained significant damage in the Stono River.
HOLLYWOOD	4/26/2006	50		$ 6,00 0	Trees and power lines down along Scott White Road.
CHARLESTON	4/26/2006	50		$ 6,00 0	Trees down on power lines on Bees Ferry Road in West Ashley.
CHARLESTON	4/26/2006	50		$ 1,00 0	Trees down near intersection of Sam Rittenburg and Ashley Road.
MT PLEASANT	4/26/2006	50		$ -	Tents blow down and damaged at Blessing of the Fleet event.
CHARLESTON	4/26/2006	50		$ 6,00 0	Trees and power lines down along Ashley River Road.
RAVENEL	5/7/2006	50		$ 50 0	
NORTH CHARLESTON	5/14/2006	50		$ 5,00 0	Trees down on several homes in the Park Circle area.

JOHNS IS	7/6/2006	50	$ 0	1,00	2 trees down.
CHARLESTON	7/29/2006	50	$ 0	2,00	Trees down along Highway 61 near Drayton Hall.
LINCOLNVILLE	8/4/2006	50	$	-	Large branches down.
NORTH CHARLESTON	8/4/2006	50	$ 0	5,00	Large tree down in bank parking lot at intersection of Rivers and Ashley Phosphate. Street light pole down at Northwoods mall.
NORTH CHARLESTON	8/4/2006	50	$	-	Large branches down on frontage road.
NORTH CHARLESTON	8/4/2006	55	$ 0	10,00	60 foot tall oak tree fell and crushed car and did damage to small shed at Midland Park on Stall Road. Numerous large trees down on buildings at midland park. Powerlines down on Stall Road.
NORTH CHARLESTON	8/4/2006	55	$ 0	10,00	Numerous large trees down on Rivers Ave. Sign down on Dunlap Street. Pool furniture blown into pool at Summit Place Apartments. One trailer blown over.
AWENDAW	6/5/2007	52	$	-	Wind gusts were estimated at 60 mph by the public. Dime size hail was also reported. The report was relayed by broadcast media.
JAMES IS	7/11/2007	50	$ 0	50	A maple tree that was 6 inches in diameter was reported down near the Harborview Shopping Center.
HOLLYWOOD	7/11/2007	50	$ 0	50	Several large tree limbs were reported down in Hollywood, SC.
HOLLYWOOD	7/11/2007	55	$ 0	3,00	Trees and power lines were reported down at the intersection of Manner Road and Fields Road in Hollywood, SC.
RAVENEL	5/11/2008	50	$ 0	3,00	A public report was received of trees down and power outages at 165 High Park Road in Ravenel, South Carolina.

JAMES IS	5/11/2008	50	$ 0	1,50	Several trees were reported down at the corner of Secessionville Road and Camp Road by the broadcast media.
JAMES IS	5/20/2008	50	$ 0	50	An amateur radio operator reported several 4 to 5 inch diameter tree limbs down on George Griffin Road in James Island, South Carolina.
JAMES IS	6/17/2008	50	$ 0	25	A trained weather spotter reported a couple large tree branches 8 inches in diameter, were knocked down by strong winds near the intersection of Harborview Road and Quail Drive on James Island.
FOLLY BEACH	6/17/2008	60	$ 0	25,00	A portion of a roof was torn off of the Marshview Villas on Mariners Cay Drive near Folly Beach. Several Vehicles in the parking lot needed to be towed away due to the damage from the debris. The screen of a screened in porch was also removed. The same storm knocked down a light pole on the Westbury Bridge.
HOLLYWOOD	6/23/2008	50	$ 0	50	A tree was reported down on Highway 162 in Hollywood, South Carolina.
ROCKVILLE	6/23/2008	50	$ 0	50	A tree was reported down on Betsy Kerrison Parkway in Kiawah Island, South Carolina.
ROCKVILLE	8/1/2008	50	$ 0	50	A trained weather spotter reported a 2 to 3 foot diameter tree was knocked down by strong thunderstorm winds in Seabrook Island, South Carolina.
ROCKVILLE	8/1/2008	50	$ 0	10,00	A trained weather spotter reported that strong thunderstorm winds beached and damaged several yachts and boats along the north Edisto River near Rockville, South Carolina. The boats were preparing for the Rockville Regatta.

ROCKVILLE	6/16/2009	50	$ 0	1,00	A golf course employee reported numerous large tree branches down on Kiawah Island Golf Resort.
RAVENEL	6/16/2009	50	$ 0	1,50	A National Weather Service employee reported a 100-150 foot tall tree was blown down onto power lines along Highway 165, approximately 1 mile north of the intersection with Highway 162, near Hollywood, South Carolina.
ROCKVILLE	6/16/2009	50	$ 0	50	A county official reported a tree down at Friarson Elementary School in the 6000 block of Maybank Highway, 2 miles north of Rockville, South Carolina.
ROCKVILLE	6/16/2009	50	$ 0	4,00	A trained weather spotter reported 10-12 inch diameter Oak trees uprooted outside the Seabrook Property Owners building on Seabrook Island, South Carolina.
ROCKVILLE	6/16/2009	52	$	-	A trained weather spotter estimated a wind gust of 60 mph at the intersection of River Road and Betty Kerrison Parkway, 4 miles northeast of Rockville, South Carolina.
LINCOLNVILLE	12/2/2009	50	$ 0	1,00	Broadcast media reported one tree down off Bell Road.
RAVENEL	9/18/2010	50	$ 0	50	A Fire Department employee reported a tree down at the intersection of State Road 165 and County Line Road, 5 miles northwest of Ravenel, South Carolina.
ISLE OF PALMS	5/10/2011	52	$	-	The Public reported quarter to golf ball size hail and estimated winds to be around 60 mph near the Wild Dunes resort on Isle of Palms, South Carolina. The individual reported that car windows were broken by the large hail.

JAMES IS	6/15/2011	50	$ 0	1,00	Law enforcement reported a tree down on a house on Fort Johnson Road.
RAVENEL	6/23/2011	55	$ 0	3,00	Law enforcement reported several trees down along roadways in the Ravenel area.
SULLIVANS IS	8/22/2011	50	$ 0	1,00	A fire department reported one tree down along Station 912 Street.
ROCKVILLE	6/10/2012	50	$ 0	1,00	The Charleston County 911 Dispatch reported a tree down along Maybank Highway on Wadmalaw Island.
HOLLYWOOD	6/18/2013	50	$ 0	1,00	The South Carolina Highway Patrol reported a tree down on Dixie Plantation Road near Highway 162.
LINCOLNVILLE	6/27/2013	52	$ 0	5,25	A downburst developed just south of Route 78 and traveled northeast about 1 mile before dissipating in the Tall Pines subdivision. Sub severe winds of 40-50 mph mainly occurred with small limbs down in several locations. Winds were estimated near 60 mph near Route 78 where a large tree was uprooted and fell on power lines and along Treeland Road where a pine tree was snapped off.
JAMES IS	10/14/2014	50	$	-	A spotter reported a large oak tree fell down and snapped a cable line leading to a house along Cottage Road. The tree was snapped about 4 feet above the ground.
CHARLESTON	5/20/2015	50	$	-	One large tree branch blown down on Bull Street between Rutledge Avenue and Ashley Avenue.
ISLE OF PALMS ARPT	6/25/2015	50	$	-	Multiple tree limbs reported down on power lines on Waterway Boulevard. Report received through social media.

ROCKVILLE	6/28/2015	50	$	-	South Carolina DOT reported a tree blown down onto Bohicket Road at River Road.
SULLIVANS IS	7/21/2015	53	$	-	A 53 knot wind gust was measured at the Sullivan's Island Fire Department with a passing thunderstorm.
SULLIVANS IS	7/21/2015	57	$	-	The Weatherflow site at Station 28.5 on Sullivan's Island measured a 57 knot wind gust with a passing thunderstorm.
ISLE OF PALMS	7/21/2015	61	$	-	The Weatherflow site at the Isle of Palms pier measured a 61 knot wind gust with a passing thunderstorm.
ROCKVILLE	8/6/2015	50	$	-	A trained spotter reported a tree down about 2 miles from the intersection of Bohicket Road and River Road.
RAVENEL	8/30/2015	50	$	-	The public reported through local media that a small utility shed was destroyed. The shed was moved approximately 10 feet from a cinderblock foundation and collapsed.
ISLE OF PALMS ARPT	6/17/2016	60	$	-	Social media indicated several reports of trees down in the Isle of Palms and Wild Dunes area.
HOLLYWOOD	6/17/2016	50	$	-	The Charleston County Sheriff Office reported a tree down at the intersection of Highway 165 and Ballpark Road.
ROCKVILLE	6/17/2016	50	$	-	The South Carolina State Highway Patrol reported a tree down in the 2800 Block of Roseville Road near the intersection with Bumblebee Road.
ROCKVILLE	6/17/2016	50	$	-	The Charleston County Sheriff Office reported a tree down and blocking Roseville Road.
FOLLY BEACH	3/22/2017	51	$	-	The Weatherflow site at the Folly Beach pier measured a 51 knot wind gust.
ISLE OF PALMS	4/5/2017	50	$	-	The Weatherflow site at the Isle of Palms Pier recorded a 50 knot wind gust.

MT PLEASANT	9/2/2017	51	$	-	The Weatherflow site at Fort Sumter measured a 51 knot wind gust. The peak gust of 61 knots occurred 10 minutes later.
FOLLY BEACH	9/2/2017	54	$	-	The Weatherflow site on the Folly Beach pier measured a 54 knot wind gust.
ISLE OF PALMS	9/2/2017	50	$	-	The Weatherflow site at the Isle of Palms pier measured a 50 knot wind gust.
JAMES IS	9/2/2017	55	$	-	A report of a tree down near the intersection of Fred Street and Fort Johnson Road was received via social media.
JAMES IS	9/2/2017	55	$	-	A trained spotter reported several large limbs down on Stillwater Drive.
RAVENEL	8/9/2018	50	$	-	The Charleston County 911 Call Center reported a tree down along Salters Hill Road near Hollywood.
RAVENEL	8/9/2018	50	$	-	The Charleston County 911 Call Center reported a tree down on power lines near the intersection of County Line Road and Hyde Park Road.
LINCOLNVILLE	8/9/2018	50	$	-	The public reported a tree and power line down in Summerville near Gahagan Park.
LINCOLNVILLE	4/19/2019	50	$	-	Law enforcement reported a tree down near the intersection of Royle Road and Highway 78.
JOHNS IS	4/19/2019	55	$	-	A NWS employee reported 4 trees down in Bolton's Landing off of Bees Ferry Road.
CHARLESTON	4/19/2019	70	$	-	An anemometer recorded a 81 mph wind gust approximately 80 feet off the ground on the roof of the Charleston Branch Pilots Association in downtown Charleston.
JAMES IS	4/19/2019	40	$	0.5K	A report via social media indicated a residence mailbox was blown away.
CHARLESTON	4/19/2019	59	$	-	The Weatherflow site at Shutes Folly in Charleston Harbor

					recorded a 68 mph or 59 knot wind gust.
CHARLESTON	4/19/2019	52	$	-	A 60 mph wind gust was recorded at the downtown Charleston observation site CXM.
HOLLYWOOD	6/20/2019	50	$	-	The Charleston County Dispatch reported a tree down on Dixie Plantation Road.
JAMES IS	6/20/2019	50	$	-	The public reported a tree down on a house, damaging an attached garage.
JAMES IS	6/22/2019	50	$	-	The South Carolina Highway Patrol reported a tree down on Fort Johnson Road.
ISLE OF PALMS ARPT	8/8/2019	50	$	-	The Charleston County 911 Call Center reported a tree down on Twin Oaks Lane.
ISLE OF PALMS	8/8/2019	50	$	-	The Charleston County 911 Call Center reported a tree down at the intersection of 4th Avenue and Merritt Boulevard.
ISLE OF PALMS ARPT	8/8/2019	50	$	-	The Isle of Palms Police Department reported a tree down on the corner of 25th Avenue and Cameron Boulevard.
FOLLY BEACH	2/6/2020	56	$	-	The Weatherflow sensor on Folly Beach Pier measured a wind gust of 64 mph.
SULLIVANS IS	2/6/2020	54	$	-	The Weatherflow sensor at Sullivans Island measured a peak wind gust of 62 mph at 1158 PM.
ISLE OF PALMS	2/6/2020	55	$	-	The Weatherflow sensor on the Isle of Palms Pier measured a wind gust of 63 mph.
ROCKVILLE	4/13/2020	50	$	-	A trained spotter reported a tree down on Kiawah Beach Drive
ROCKVILLE	4/13/2020	60	$	-	A picture on social media indicated a tin roof partially blown off and in trees
ROCKVILLE	4/13/2020	78	$	-	A National Weather Service Storm Survey Team determined a downburst of wind snapped off trees and branches as well as uprooted others in and around Night Heron Park and an adjacent apartment complex. A tree also

					fell into an apartment, breakout out several home windows, producing minor roof damage, and damage to a porch railing.
ROCKVILLE	4/13/2020	65	$	-	A member of the public reported several trees down around their property on Airy Hall, including some roof damage caused by falling trees.
CHARLESTON	7/7/2020	40	$15,000		The historic White Bridge at Magnolia Plantation and Gardens was seriously damaged by a fallen tree.
CHARLESTON	8/29/2020	45	$5,000		A concentrated area of wind damage occurred along the seafood supplier docks on Shem Creek.
CHARLESTON	9/29/20	45	$10,000		A concentrated area of wind damage occurred along the seafood supplier docks on Shem Creek.
MT. PLEASANT	11/12/2020	45	$4,000		Down trees, bridge to Sullivan's Island closed due to down power lines, house damage from fallen tree.
JOHNS ISLAND	6/15/2021	50	-		The public reported two trees approximately 1 foot in diameter snapped 10 feet off the ground near the intersection of Bimini Drive and Bluewater Way.
ISLE OF PALMS	6/20/2021	54	-		The Weatherflow sensor at the Isle of Palms Pier measured a 62 mph wind gust.
COUNTY	4/5/2022	50-83	-		

Source: NOAA Storm Events Database

Severe Storm (Hail) Incidents in Charleston County 1957 – Jan 2023				
Origin	**Date**	**Magnitude (in)**	**Property Damage**	**Event Narrative**
N Charleston	8/4/1993	0.75	$ -	In north Charleston, 0.75-inch hail was reported.
Ravenel 5 WNW	1/28/1995	0.75	$ -	

Severe Storm (Hail) Incidents in Charleston County 1957 – Jan 2023				
Origin	**Date**	**Magnitude (in)**	**Property Damage**	**Event Narrative**
North Charleston	5/15/1995	1	$ -	Large tree limbs down.
Charleston	6/27/1995	0.75	$ -	Power outages to over 2,500 homes and very heavy rain.
Charleston	7/7/1995	1	$ -	
NORTH CHARLESTON	3/17/1996	0.75	$ -	
AWENDAW	3/17/1996	0.75	$ -	
CHARLESTON	5/3/1997	1.75	$ -	Golf ball sized hail covered the ground at the 18th green at Legends Oak golf course.
CHARLESTON	5/9/1997	0.88	$ -	Nickel sized hail broke a weather service employee's automobile window.
CHARLESTON	2/28/1998	1	$ -	
FOLLY BEACH	4/3/1998	0.88	$ -	
NORTH CHARLESTON	4/9/1998	1	$ -	
NORTH CHARLESTON	5/4/1998	0.75	$ -	
NORTH CHARLESTON	5/4/1998	1.75	$ -	
MC CLELLANVILLE	6/10/1998	0.75	$ -	
MT PLEASANT	7/22/1999	0.75	$ -	

Severe Storm (Hail) Incidents in Charleston County 1957 – Jan 2023				
Origin	**Date**	**Magnitude (in)**	**Property Damage**	**Event Narrative**
NORTH CHARLESTON	8/11/2000	1	$ -	
MC CLELLANVILLE	8/28/2000	1	$ -	
AWENDAW	5/12/2001	0.75	$ -	
RAVENEL	5/3/2002	1.75	$ -	
AWENDAW	5/4/2002	0.75	$ -	
HOLLYWOOD	11/11/2002	1	$ -	
ISLE OF PALMS	3/20/2003	1	$ -	
NORTH CHARLESTON	5/6/2003	1	$ -	
MC CLELLANVILLE	8/18/2003	1	$ -	
RAVENEL	5/2/2004	0.75	$ -	
NORTH CHARLESTON	7/9/2004	0.75	$ -	Penny size hail occurred at the intersection of Ashley Phosphate and Interstate 26.
NORTH CHARLESTON	7/10/2004	1	$ -	
CHARLESTON	7/10/2004	1.5	$ -	Ping pong ball size hail reported at Charlestowne Landing county park. Large trees also down in park.
JAMES IS	4/13/2005	1	$ -	Hail up to the size of quarters fell on James Island.

Severe Storm (Hail) Incidents in Charleston County 1957 – Jan 2023				
Origin	**Date**	**Magnitude (in)**	**Property Damage**	**Event Narrative**
JAMES IS	6/19/2005	0.88	$ -	
FOLLY BEACH	6/19/2005	0.88	$ -	
ROCKVILLE	1/2/2006	0.88	$ -	Nickel size hail occurred in the River Road area of Seabrook Island.
RAVENEL	4/8/2006	0.75	$ -	
CHARLESTON	4/8/2006	1	$ -	Quarter size hail occurred in the West Ashley section of Charleston.
MT PLEASANT	4/8/2006	1.5	$ -	Ping Pong size hail occurred in the Dunes West Subdivision.
AWENDAW	4/8/2006	0.88	$ -	
CHARLESTON	4/26/2006	0.88	$ -	Hail on Orangegrove Road.
CHARLESTON	4/26/2006	1.5	$ -	Reported on the Charleston Battery.
CHARLESTON	4/26/2006	1	$ -	Quarter size hail at MUSC.
JAMES IS	4/26/2006	0.75	$ -	Reported near Maybank Highway.
CHARLESTON	5/14/2006	1.5	$ -	Reported on Cedarhurst Ave in West Ashley.
NORTH CHARLESTON	5/14/2006	0.75	$ -	Penny hail near the Ashley Phosphate and Pepperidge areas.
NORTH CHARLESTON	5/14/2006	1.25	$ -	Occurred at NWS office on South Aviation Ave.

Severe Storm (Hail) Incidents in Charleston County 1957 – Jan 2023				
Origin	**Date**	**Magnitude (in)**	**Property Damage**	**Event Narrative**
MT PLEASANT	5/14/2006	1	$ -	Quarter size hail in Longpoint subdivision.
NORTH CHARLESTON	5/14/2006	1	$ -	Large hail and a tree down on a house at Merrimac Street off 526.
CHARLESTON	5/14/2006	1	$ -	Large hail reported in West Ashley.
CHARLESTON	5/14/2006	1.75	$ -	Numerous reports of penny to golf ball size hail in sections of West Ashley.
CHARLESTON	5/14/2006	1.5	$ -	Ping Pong ball size hail 1/2 mile south of Citadel Mall.
NORTH CHARLESTON	5/14/2006	0.88	$ -	Near intersection of Dunlap Street and Rivers Avenue.
MT PLEASANT	5/14/2006	0.88	$ -	Reported in Longpoint subdivision.
MT PLEASANT	5/14/2006	0.75	$ -	Penny hail reported off Long Point Rd in Boone Hill Creek subdivision.
MC CLELLANVILLE	7/15/2006	0.88	$ -	Hail at intersection of Highway 17 and Highway 45.
MT PLEASANT	7/26/2006	0.75	$ -	Hail in Longpoint subdivision.
MT PLEASANT	7/26/2006	1.75	$ -	
MT PLEASANT	7/26/2006	0.75	$ -	Hail off Longpoint Road.
CHARLESTON	8/4/2006	0.88	$ -	Nickel hail near Trident College.
AWENDAW	6/5/2007	1	$ -	

Severe Storm (Hail) Incidents in Charleston County 1957 – Jan 2023				
Origin	**Date**	**Magnitude (in)**	**Property Damage**	**Event Narrative**
JAMES IS	6/13/2007	0.75	$ -	
JAMES IS	6/13/2007	0.75	$ -	
CHARLESTON	6/13/2007	0.88	$ -	
CHARLESTON	6/13/2007	0.88	$ -	
JAMES IS	3/15/2008	0.88	$ 500	Nickel sized hail was reported at the Charleston Municipal Golf Course. Several trees were also reported to have been clipped off at the top.
CHARLESTON	3/15/2008	0.88	$ -	Nickel sized hail was reported by a trained weather spotter in Charleston, South Carolina.
FOLLY BEACH	3/15/2008	0.88	$ -	Nickel and Dime sized hail was reported by a trained weather spotter along Folly Road.
CHARLESTON	3/15/2008	1.5	$ -	Hail one and one half inch in diameter was reported in downtown Charleston at the intersection of Market Street and King Street. The hail lasted between 10 and 15 minutes. A funnel cloud was also observed.
JAMES IS	3/15/2008	0.88	$ -	Nickel sized hail was reported by a trained weather spotter at the intersection of Folly Road and Fort Johnson Road.
AWENDAW	5/5/2008	1	$ -	Broadcast media relayed a report of one inch hail received from a weather spotter near Awendaw, South Carolina.
JAMES IS	5/11/2008	0.75	$ -	A public report was received of penny size hail covering the ground in James Island, South Carolina.
JAMES IS	5/11/2008	1	$ -	A trained weather spotter reported quarter inch hail which fell for 15 minutes.

Severe Storm (Hail) Incidents in Charleston County 1957 – Jan 2023				
Origin	**Date**	**Magnitude (in)**	**Property Damage**	**Event Narrative**
JAMES IS	5/11/2008	0.88	$ -	Nickel size hail was reported in James Island, South Carolina.
JAMES IS	5/11/2008	0.75	$ -	Penny size hail was reported on Harborview Road in James Island, South Carolina.
JAMES IS	5/11/2008	1	$ -	A report of quarter size hail covering the ground in James Island, South Carolina was relayed by the broadcast media.
JAMES IS	5/11/2008	0.88	$ -	A trained weather spotter reported nickel size hail at the intersection of Clearview Road and Harborview Road.
JAMES IS	5/20/2008	1	$ -	An amateur radio operator reported quarter size hail near the intersection of Fort Johnson Road and Folly Road.
CHARLESTON	5/20/2008	1	$ -	A trained weather spotter reported quarter size hail near MUSC in downtown Charleston, South Carolina. Wind gusts were also estimated at 45 mph.
JAMES IS	5/20/2008	1	$ -	A trained weather spotter reported dime to quarter size hail covering the ground in James Island, South Carolina.
JAMES IS	5/20/2008	0.88	$ -	A trained weather spotter observed nickel size hail for 5 minutes at James Island Town Hall.
JAMES IS	6/2/2008	0.88	$ -	A trained weather spotter reported nickel size hail in James Island, South Carolina.
JAMES IS	6/17/2008	0.88	$ -	A trained weather spotter reported nickel size hail in James Island, South Carolina.
RAVENEL	6/20/2008	0.88	$ -	A trained weather spotter reported nickel size hail in Ravenel, South Carolina.
JAMES IS	6/20/2008	1	$ -	Nickel to quarter size hail was reported on James Island, South Carolina. A wall cloud was also reported.

Severe Storm (Hail) Incidents in Charleston County 1957 – Jan 2023				
Origin	**Date**	**Magnitude (in)**	**Property Damage**	**Event Narrative**
JAMES IS	6/20/2008	0.88	$ -	Nickel size hail was reported by a trained weather spotter in James Island, South Carolina.
JAMES IS	6/20/2008	0.88	$ -	Nickel size hail was reported by the public in James Island, South Carolina.
RAVENEL	4/20/2009	1	$ -	A trained weather spotter reported dime to quarter size hail along Highway 165 near Delemar Crossroads.
JAMES IS	6/27/2009	0.75	$ -	The public reported penny size hail on Semaht Street in James Island, South Carolina.
MC CLELLANVILLE	5/23/2010	1.75	$ -	The public reported golf ball size hail along Highway 17, approximately 5 miles south of McClellanville, South Carolina.
AWENDAW	5/23/2010	1	$ -	The public reported quarter size hail along Doar Road and estimated winds of 40 to 50 mph in Awendaw, South Carolina.
HOLLYWOOD	5/23/2010	0.75	$ -	The public reported penny size hail in Hollywood, South Carolina.
LINCOLNVILLE	10/25/2010	1	$ -	The Public reported dime to quarter size hail in the Lakes of Summerville subdivision in Summerville, South Carolina.
ISLE OF PALMS ARPT	5/10/2011	1.75	$ -	The public reported golf ball size hail in the Wild Dunes resort at the north end of Isle of Palms, South Carolina.
ISLE OF PALMS ARPT	5/10/2011	1.75	$ -	A Fire Department official reported golf ball size hail at the Isle of Palms Fire Department on Isle of Palms, South Carolina.
ISLE OF PALMS	5/10/2011	2.75	$ -	The public reported baseball size hail on Isle of Palms, South Carolina.
ISLE OF PALMS	5/10/2011	1.75	$ 30,000	The Public reported quarter to golf ball size hail and estimated winds to be around 60 mph near the Wild Dunes resort on Isle of Palms, South

Severe Storm (Hail) Incidents in Charleston County 1957 – Jan 2023				
Origin	**Date**	**Magnitude (in)**	**Property Damage**	**Event Narrative**
				Carolina. The individual reported that car windows were broken by the large hail.
AWENDAW	7/1/2011	1	$ -	The Public reported nickel to quarter size hail and tree limbs down, 1 mile west-northwest of Awendaw, South Carolina.
MT PLEASANT	1/21/2014	1	$ -	Spotter reported quarter size hail at Fort Moultrie.
LINCOLNVILLE	7/14/2016	0.75	$ -	A trained spotter reported penny sized hail as well as a few small tree limbs down.
CHARLESTON	3/20/2018	0.75	$ -	Penny sized hail was reported on King Street between George and Calhoun Streets.
ISLE OF PALMS ARPT	8/8/2019	1.00	$ -	Broadcast media relayed a report of quarter size hail on Isle of Palms
ISLE OF PALMS ARPT	8/8/2019	1.50	$ -	Broadcast media shared a picture on social media of hail as large as a ping pong ball.
CHARLESTON	5/20/2020	0.95		Local broadcast media reported nickel size hail in Mt. Pleasant.
CHARLESTON	1/26/2021	0.85		Penny to nickel size hail was reported along Fort Johnson Road on James Island.
CHARLESTON	6/15/2021	1.00		The public reported quarter size hail in Grand Oak Plantation.
CHARLESTON	6/15/2021	0.88		The public reported nickel size hail along Bimini Drive.
CHARLESTON	4/7/2022	0.88		Pea/nickel size hail along Church street in downtown Charleston.
CHARLESTON	5/4/2022	0.88		Nickel sized hail falling in Park Circle
CHARLESTON	7/23/2022	0.75		Reported penny sized hail on Fieldstone Circle

Source: NOAA Storm Events Database

Severe Storm (Lightning) Incidents in Charleston County 1998 – Jan 2023				
Origin	**Date**	**Deaths**	**Property Damage**	**Event Narrative**
NORTH CHARLESTON	6/29/1998	0	0	Lightning struck a church.

Severe Storm (Lightning) Incidents in Charleston County 1998 – Jan 2023				
Origin	**Date**	**Deaths**	**Property Damage**	**Event Narrative**
MT PLEASANT	7/21/1999	0	0	Lightning struck a transformer, knocking out power to over 1500 customers for several hours.
MT PLEASANT	4/17/2000	0	500000	Lightning destroyed one house and did considerable damage to two nearby homes.
ISLE OF PALMS	8/20/2001	0	0	A 32 year old man experienced a double jolt from lightening within a 10 minute span. The man was driving a Toyota pickup when a bolt of lightning struck his CB antenna. This caused the antenna to pop off, it broke out the rear window on the cab and blew out the left rear tire. When he stopped the truck to get out to assess the damage, a second bolt of lightning hit the bed of the pickup and the force threw him out into the roadway.
SULLIVANS IS	9/2/2001	1	0	A 38 year old man was struck and killed by lightning as he huddled near a beach umbrella that his family was under.
NORTH CHARLESTON	10/8/2002	0	0	Lightning struck a McDonald's restaurant around 1 a.m., causing a fire that did extensive damage to the roof.
NORTH CHARLESTON	8/18/2005	0	0	Lightning struck a house and nearby light pole.
ISLE OF PALMS ARPT	6/23/2008	0	15000	A house caught on fire in the Wild Dunes Subdivision from a lightning strike.
ISLE OF PALMS ARPT	7/16/2017	0	0	Charleston County dispatch reported that 4 people were injured by a nearby lightning strike on the boardwalk to the beach near Ocean Point Drive in the Wild Dunes area.

Severe Storm (Lightning) Incidents in Charleston County 1998 – Jan 2023				
Origin	**Date**	**Deaths**	**Property Damage**	**Event Narrative**
				The 4 injured people were transported to the hospital.
ISLE OF PALMS ARPT	7/7/2018	0	0	The Isle of Palms Fire Department reported that lightning struck and injured 3 people on Isle of Palms beach near 21st Avenue. A male lost consciousness for a brief period and a female had to be pulled out of the water in cardiac arrest. CPR was administered on the female on the beach, who was then transported to an area hospital in serious condition. The other 2 were transported in stable condition in a second ambulance.
JAMES IS	7/7/2018	0	5000	A video received via twitter showed a car being struck by lightning.
RAVENEL	7/17/2018	0	5000	Two outdoor sheds at two different locations in Ravenel caught fire due to lightning strikes.
FOLLY BEACH	7/18/2018	0	3000	Lightning struck a power pole on Folly Beach Road between Oak Island Drive and Little Oak Island Drive resulting in a power outage to Folly Beach.
SULLIVANS IS	7/26/2018	0	5000	Lightning struck and badly damaged a brick chimney at a residence.
CHARLESTON	7/5/2019	0	1000	A social media post reported that lightning struck St. Matthew's Lutheran Church in Downtown Charleston near the corner of King Street and Vanderhorst Street.
CHARLESTON	8/02/2021	0	75000	The media reported a large oak tree struck by lightning and down on a home along Grayson Street, which caused significant roof and structural damage to approximately one third of the home.
CHARLESTON	7/9/2022	0	10000	Dispatch reported a lightning strike which hit a telephone pole and caught fire along the block of Rivers Avenue.
AWENDAW	7/12/2022	0	10000	Fire Dept reported a lightning strike to a house in the 660 block of Sewee rd. Caused a small structure fire.

Severe Storm (Lightning) Incidents in Charleston County 1998 – Jan 2023				
Origin	**Date**	**Deaths**	**Property Damage**	**Event Narrative**
CHARLESTON	7/23/2022	0	10000	Dispatch reported lightning struck a house on Daniels Point Boulevard and started a fire.
CHARLESTON	9/1/2022	0	10000	Lightning struck a home in the 1100 block of Turkey Trot Drive. Extent of damage to home is unknown.

NOAA Storm Events Database

Number of weeks of Drought Events between May 1, 2013 – 2022							
Year	Category						Description
	None	D0 Abnormally Dry	D1 Moderate Drought	D2 Severe Drought	D3 Extreme Drought	D4 Exceptional Drought	
1999-2000	35	17	2	0	0	0	
2000-2001	17	35	19	5	0	0	
2001-2002	4	48	38	32	19	0	
2002-2003	18	34	20	18	13	0	
2003-2004	46	6	0	0	0	0	
2004-2005	32	20	5	0	0	0	
2005-2006	47	5	0	0	0	0	
2006-2007	27	25	3	0	0	0	
2007-2008	0	53	35	12	0	0	
2008-2009	15	37	22	0	0	0	
2009-2010	38	14	2	0	0	0	
2010-2011	29	23	0	0	0	0	
2011-2012	0	53	50	46	39	3	
2012-2013	7	45	20	9	5	0	
2013-2014	32	20	0	0	0	0	The Region experienced 20 weeks in drought stage. 32 weeks of no drought stage were reported and 20 weeks of D0 drought from October to December.
2014-2015	37	15	0	0	0	0	The Region experienced only 15 weeks of D0 drought. During weeks when drought was experienced, only approximately 10-20 percent of the county was affected. 37 weeks of the year, the Region experienced no drought.
2015-2016	36	16	0	0	0	0	The Region experienced 16 weeks of D0 drought. During weeks when drought was experienced, only approximately 10-20 percent of the county was affected. 36 weeks of the year, the Region experienced no drought.
2016-2017	38	14	6	0	0	0	The Region experienced 20 weeks of drought stage. During these 20 weeks, the drought stage remained at D0 for 14 weeks and D1 for 6 weeks. 38 weeks of the year, the Region experienced no drought.
2017-2018	23	29	14	4	0	0	The Region experienced 29 weeks of drought stage D0 and 14 weeks of D1. In addition, 4 weeks were spent at D2; there were 23 weeks where the Region experienced no drought
2018-2019	26	26	10	0	0	0	The Region experienced 36 total drought weeks. 26 weeks were spent at D0 and an additional 10 weeks were spent at D1. The Region was not experiencing a drought for 26 weeks.
2019-2020	31	15	7	1	0	0	The Region experienced 23 total drought weeks. 15 weeks were spent at D0 and an additional 7 weeks were spent at D1. In addition, 1 week was spent at D2. There

							were 31 weeks where the Region was not experiencing a drought.
2020-2021	52	15	0	0	0	0	The region experienced 15 total drought weeks, all of which were spent at D0.
2021-2022	24	36	13	0	0	0	The Region experienced 49 total drought weeks. 36 weeks were spent at D0 and an additional 13 weeks were spent at D1.

Source: U.S. Drought Monitor

Winter Weather Events Through January 2023			
Date	Event Type	Property Damage	Event Narrative
1/24/2000	Heavy Snow	$ -	Snowfall of 1 to around 2 inches fell over much of south coastal South Carolina with a mixture of small amounts of sleet and freezing rain. Numerous accidents were caused on roadways as this was the first measurable snowfall in much of the area since 1989.
1/26/2000	Heavy Snow	$ -	For the first time since records have been kept, measurable snowfall occurred on consecutive days from independent events. Snowfall measured around two (2) inches over much of the area as a shortwave moved across the area overnight. The shortwave intensified over the east central counties of the state as no other places in adjoining counties reported any snow at the surface.
1/26/2004	Ice Storm	$ -	A strong wedge was in place over the Carolinas and Georgia. An area of low pressure developed off the coast and tracked to the northeast on the 26th and into the early morning hours of the 27th, producing freezing rain and freezing drizzle. Ice accretion was generally in the 1/4 inch to around 1/2 inch range. There were trees, large limbs and power lines down that disrupted the power over the low country for several days.
4/8/2007	Frost/Freeze	$ -	Temperatures dipped down into the 20s most areas which produced widespread damage to crops and fruit trees. Total monetary losses unknown but significant.
2/12/2010	Heavy Snow	$ 73,000	A strong storm system tracked across northern Florida and then northeastward off the Georgia and South Carolina coast. Precipitation initially fell in the form of rain, but quickly changed over to snow in the late

			afternoon and evening hours as winds shifted to the north and allowed colder air to wrap back into the region. Heavy snow accumulated across all of southern South Carolina.
1/10/2011	Ice Storm	$ 160,000	An area of low pressure developed in the northeast Gulf of Mexico and tracked eastward across the northern Florida peninsula, then northeastward off the southeast Georgia and southern South Carolina coast. Meanwhile, a shallow cold air mass remained in place in the lee of the Appalachians by high pressure north of the area, allowing a continued supply of cold and dry air at the surface. The warm temperatures well above ground level and freezing or sub-freezing temperatures at ground level, resulted in freezing rain and ice accumulation across much of southern South Carolina and southeast Georgia.
1/28/2014	Ice Storm	$ -	The first reports of impacts due to freezing rain accumulation were of area bridges being closed due to hazardous travel. The Ravenel Bridge, the Ben Sawyer Bridge, and the Isle of Palms Connector Bridge were all closed at various points through the event. Storm total ice accumulations ranged up to three tenths of an inch, with many numerous trees and power lines reported down due to ice. These ice accumulations and associated damage resulted in many power outages. Also of note, melting resulted in ice chunks falling from the towers of the Ravenel Bridge well after the event, 1/31/14, damaging several vehicles and causing one non-life threatening injury.
2/12/2014	Ice Storm	$ -	Storm total ice accumulations ranged from trace amounts closer to the coast up to three tenths of an inch around North Charleston. The initial verification reports were because of public impact when authorities closed several area bridges and overpasses. Numerous trees and power lines were reported down with some power outages noted as well.

12/29/2017	Winter Weather	$ -	The media, NWS employees and the public reported a thin glaze of ice covering cars, fences, road signs, elevated structures and various vegetation such as trees and plants above the ground in Charleston, North Charleston, Mt Pleasant, James Island, Johns Island, West Ashley, Redtop, Rantowles, Meggett and Cainhoy, SC. Several areas also experienced a thin layer of ice on grass and roadways, especially on elevated bridges in Charleston, SC and Mt Pleasant, SC. The greatest storm total ice accumulation in Charleston County was 0.03 inches, which occurred at the National Weather Service office in North Charleston, SC. Elsewhere, storm total ice accumulation ranged from a trace to a few hundredths of an inch. The greatest impact associated with the ice accumulation was the closing of major bridges and overpasses in the Charleston, SC Metropolitan area including: Arthur Ravenel Bridge, Isle of Palms Connector, Ben Sawyer Bridge, Northbridge and the I-26/Cosgrove Ave overpass.
1/3/2018	Winter Storm	$ -	Storm total snowfall amounts generally ranged from 2 to 6 inches across Charleston County. The precipitation started as rain then changed to freezing rain in the morning, before a prolonged period of snow began. One report of a quarter of an inch of ice accumulation was received near the Shadowmoss subdivision. Elsewhere, ice accumulations ranged from trace amounts up to 2 tenths of an inch around James Island, Charleston, and Mount Pleasant. The lowest snow totals occurred in the eastern part of the county near Awendaw and McClellanville where 2 inches was measured. Other notable totals include 4 to 5 inches across James Island, Johns Island, and West Ashley. Around Mount Pleasant, amounts were also 4 to 5 inches. The maximum totals for the county occurred around Ladson and Goose Creek where 6.5 inches was measured. A 36 year old female died a few days following the event when a vehicle slid off of an icy road and struck the

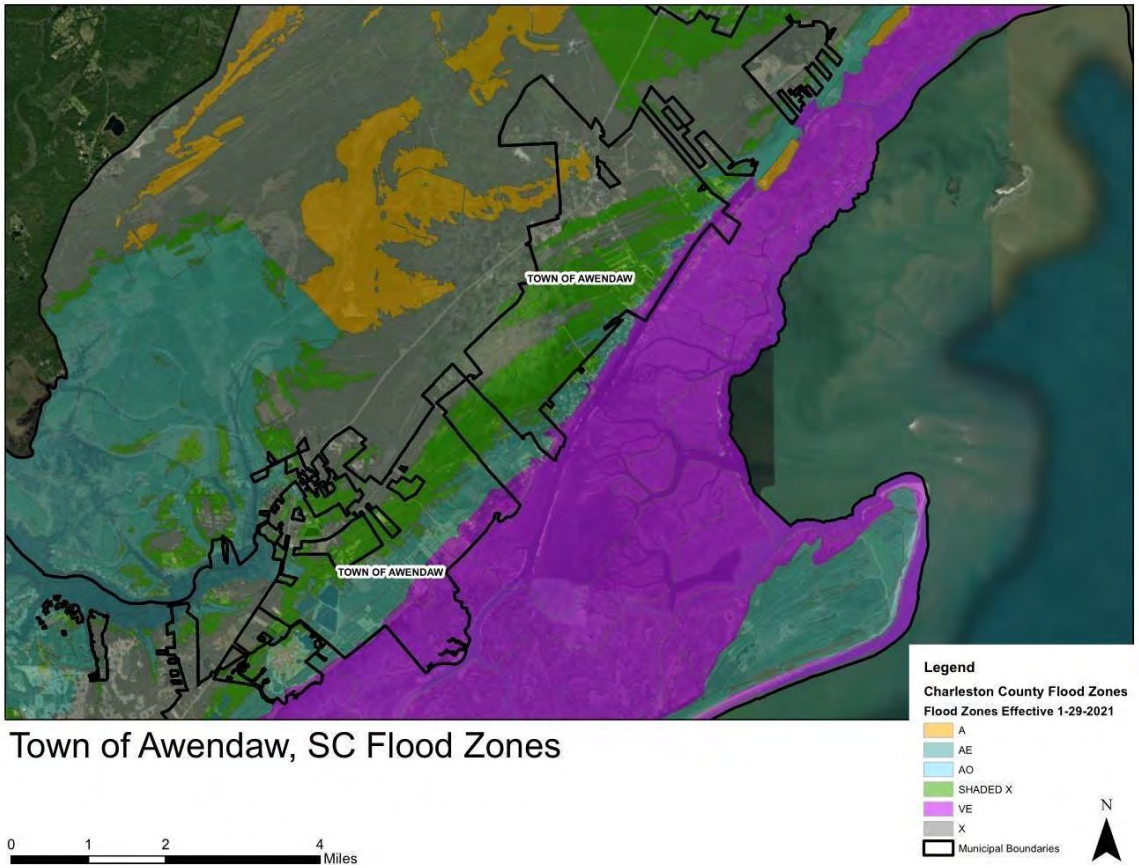
			pedestrian on the sidewalk. The incident occurred on Ladson Road near the intersection with Jamison Road in North Charleston.
1/21/2022	Winter Weather		Numerous reports of light freezing rain all across Charleston County were received. The highest ice accumulations received included 0.12 near Mount Pleasant, 0.04 in the Shadowmoss subdivision in West Ashley, and 0.08 at the National Weather Service office in North Charleston. Several roads had to be closed due to icy conditions including the off ramp from Interstate 526 to Hungry Neck Boulevard, Rivers Avenue and Interstate 26, exit 218 off of Interstate 26, and the Highway 52 connector off of Interstate 26. Also, the Ravenel Bridge between Mount Pleasant and Downtown Charleston was closed in the afternoon due to falling ice from the suspension cables. While most of the wintry precipitation reports were of freezing rain, a few locations did report snow and sleet without any accumulation.
1/29/2022	**Winter Weather**		Numerous reports of light snow, flurries, or a mix of rain and snow were received across Charleston County, even down to the beaches. No accumulation was reported.
Total of 10 Events		$ 23 3,000	

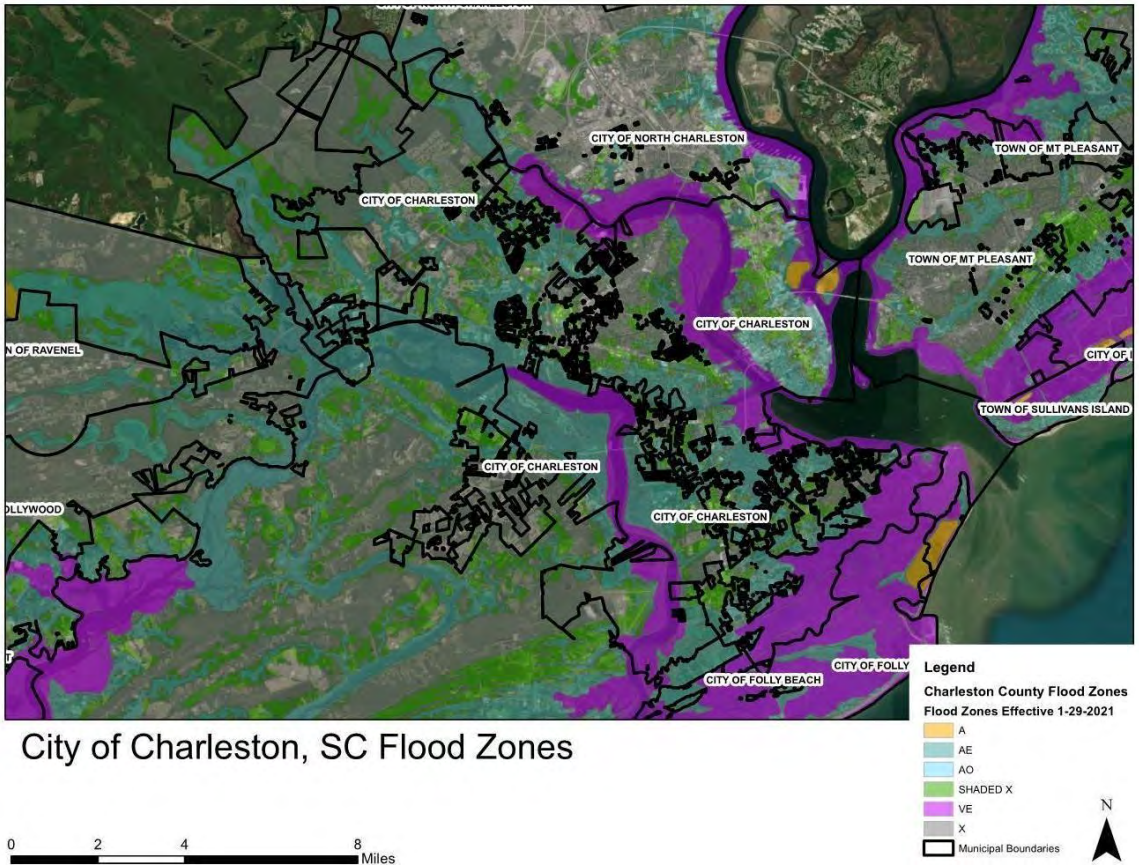
**NOAA Storm Events Database*

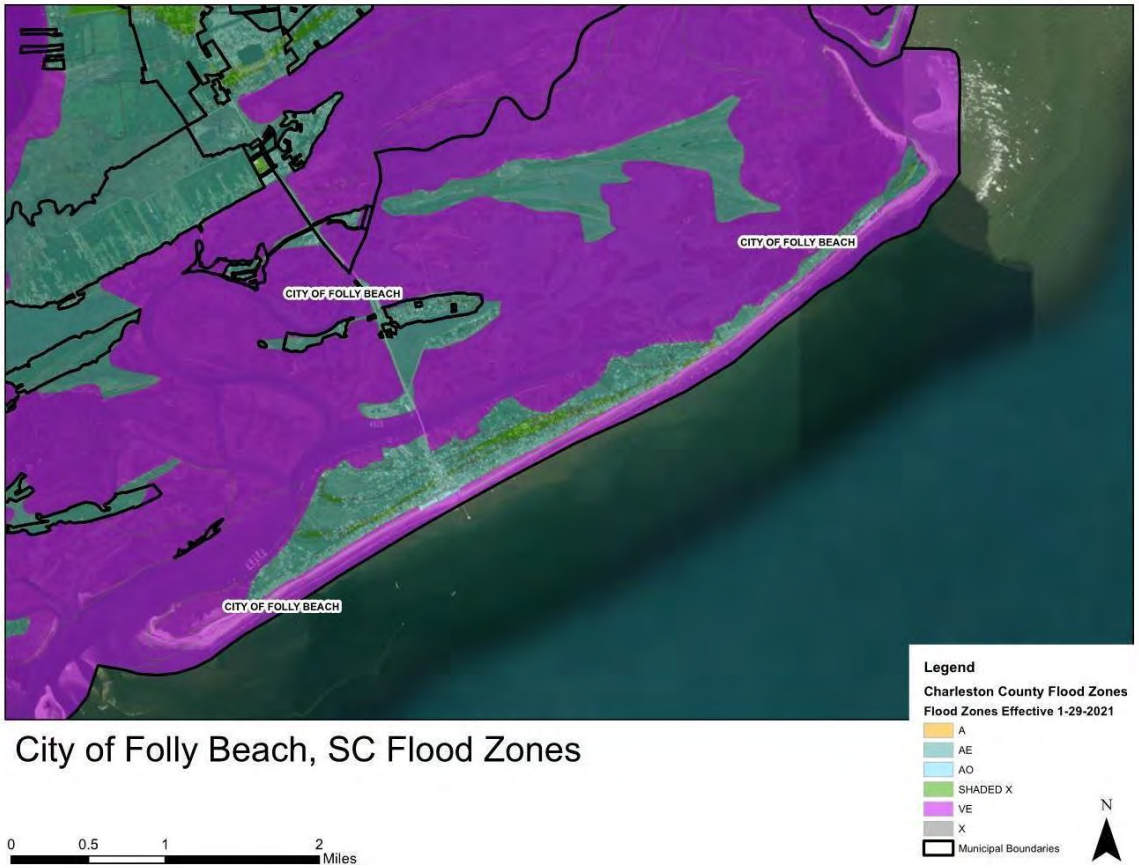
– Flood Zone Maps

Zone Label	Definition
Zone C, Zone X (Unshaded)	Areas determined to be outside 500-year floodplain determined to be outside the 1% and 0.2% annual chance floodplains.
Zone B, Zone X (Shaded)	Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood. An area inundated by 0.2% annual chance flooding.
Zone A	An area inundated by 1% annual chance flooding, for which no BFEs have been determined.

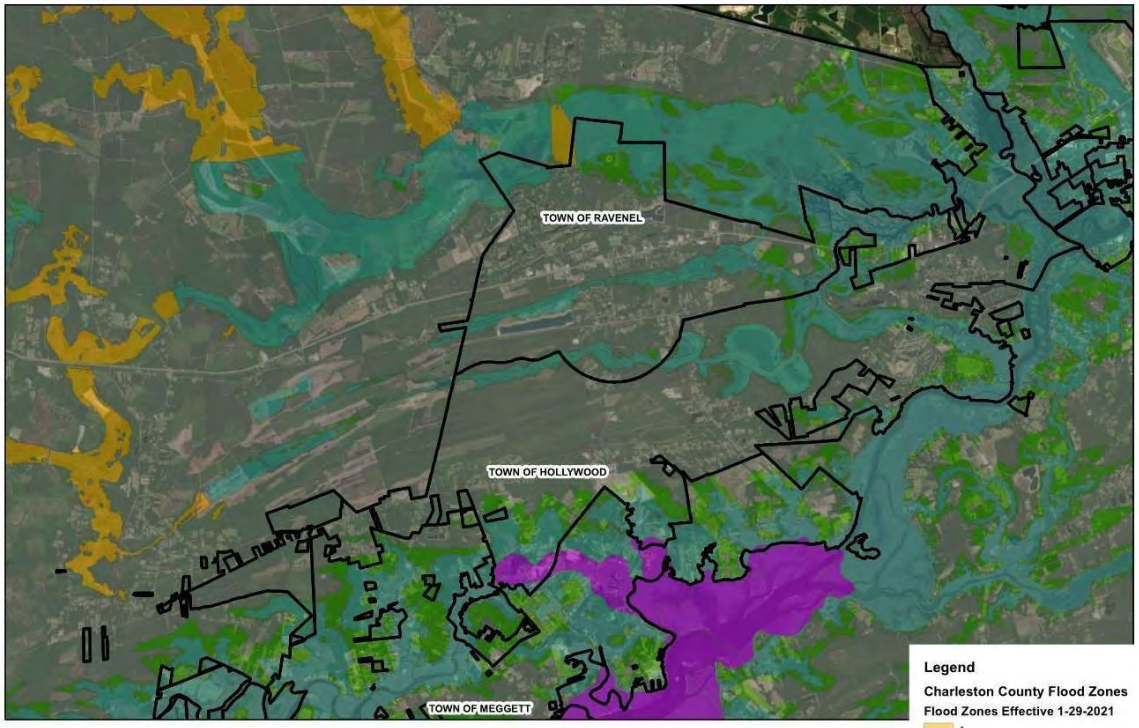
Zone AE	An area inundated by 1% annual chance flooding, for which BFEs have been determined.
Zone AH	An area inundated by 1% annual chance flooding (usually an area of ponding), for which BFEs have been determined; flood depths range from 1 to 3 feet.
Zone AO	An area inundated by 1% annual chance flooding (usually sheet flow on sloping terrain), for which average depths have been determined; flood depths range from 1 to 3 feet.
Zone AR	An area inundated by flooding, for which BFEs or average depths have been determined. This is an area that was previously, and will again, be protected from the 1% annual chance flood by a Federal flood protection system whose restoration is Federally funded and underway
Zone A1-A30	An area inundated by 1% annual chance flooding, for which BFEs have been determined.
Area Not Included (ANI),(N)	An area that is located within a community or county that is not mapped on any published FIRM.
Zone D	An area of undetermined but possible flood hazards.
Undescribed (UNDES)	Area of Undesignated Flood Hazard. A body of open water, such as a pond, lake, ocean, etc., located within a community's jurisdictional limits that has no defined flood hazard.
Zone VE	An area inundated by 1% annual chance flooding with velocity hazard (wave action); BFEs have been determined.
Zone V(1-30)	Coastal flood with velocity hazard.


TOWN OF AWENDAW
TOWN OF AWENDAW
Legend
Charleston County Flood Zones
Flood Zones Effective 1-29-2021
A
AE
AO
SHADED X
VE
X
Municipal Boundaries
N
Town of Awendaw, SC Flood Zones
0
1
2
4
Miles

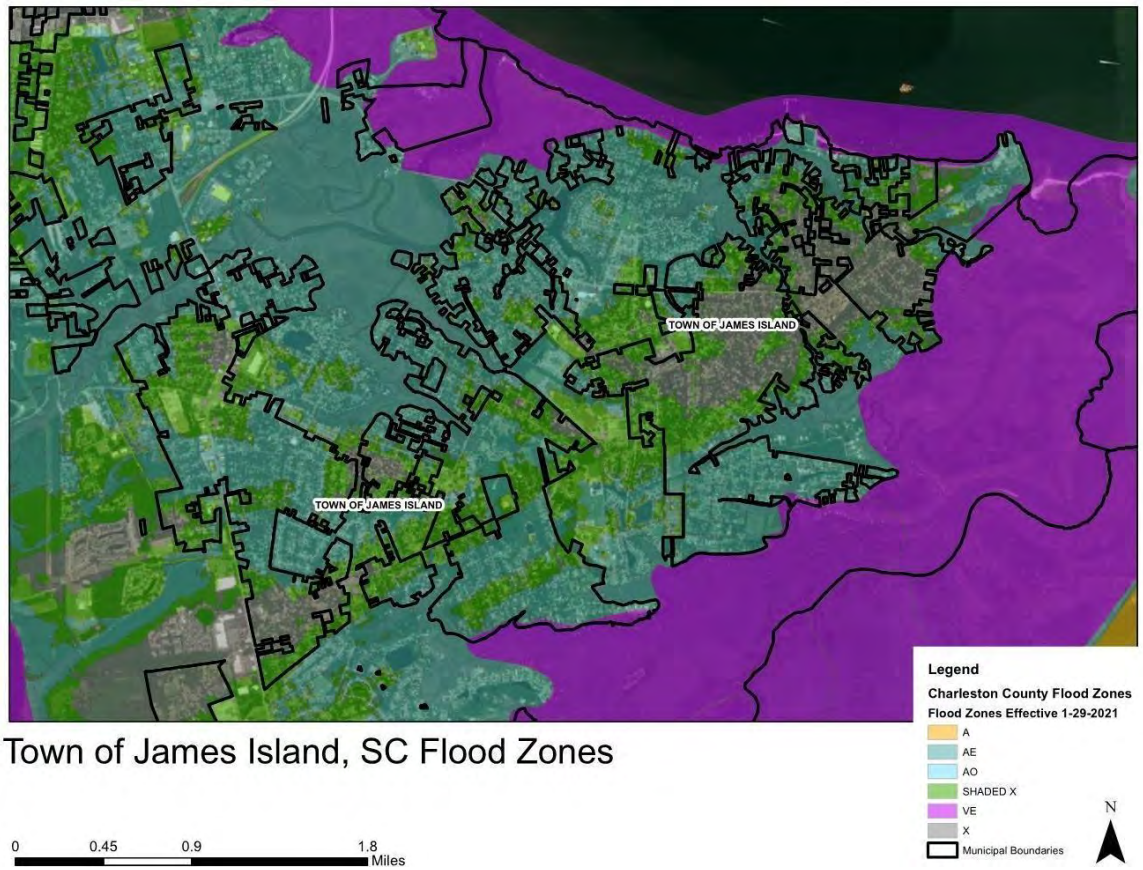

CITY OF NORTH CHARLESTON
TOWN OF MT PLEASANT
CITY OF CHARLESTON
TOWN OF MT PLEASANT
CITY OF CHARLESTON
N OF RAVENEL
CITY OF
TOWN OF SULLIVANS ISLAND
CITY OF CHARLESTON
OLLYWOOD
CITY OF CHARLESTON
CITY OF FOLLY
CITY OF FOLLY BEACH
Legend
Charleston County Flood Zones
Flood Zones Effective 1-29-2021
A
AE
AO
SHADED X
VE
X
Municipal Boundaries
N
City of Charleston, SC Flood Zones
0
2
4
8
Miles



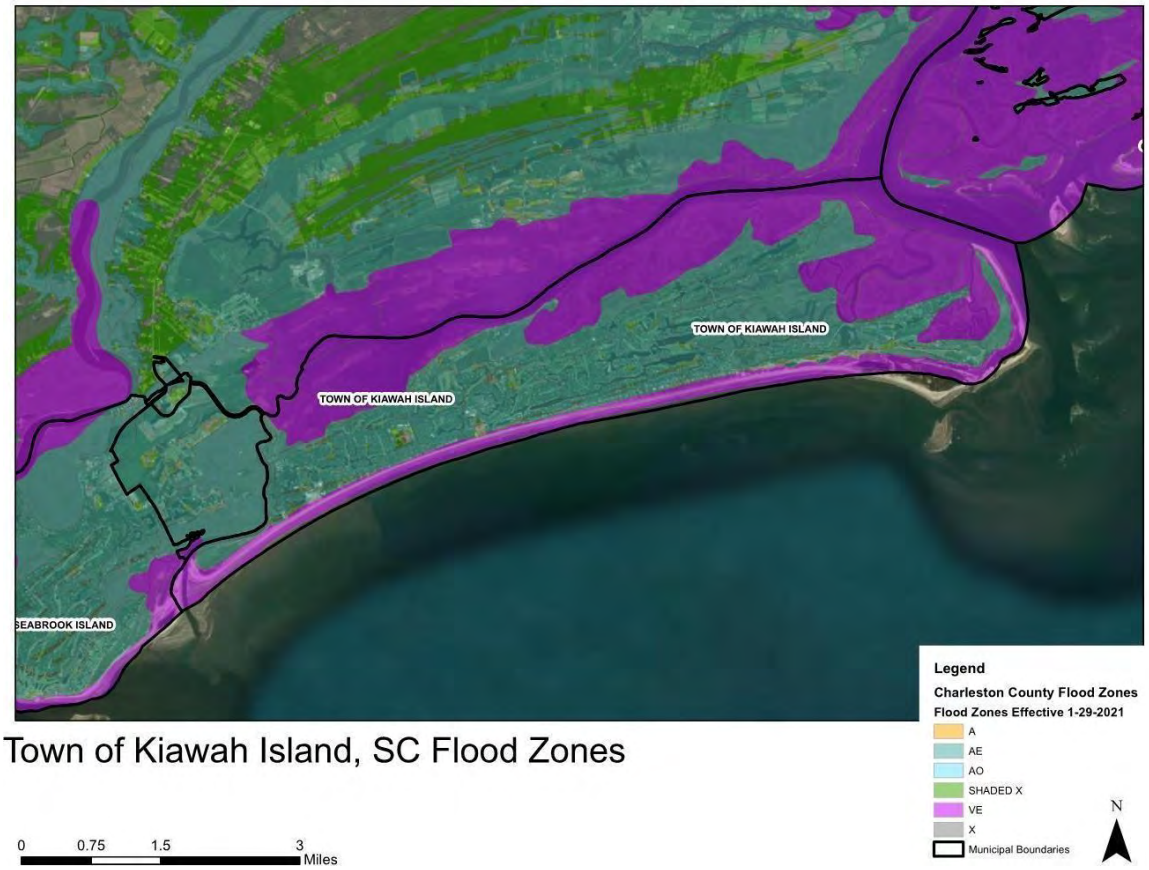
City of Folly Beach, SC Flood Zones



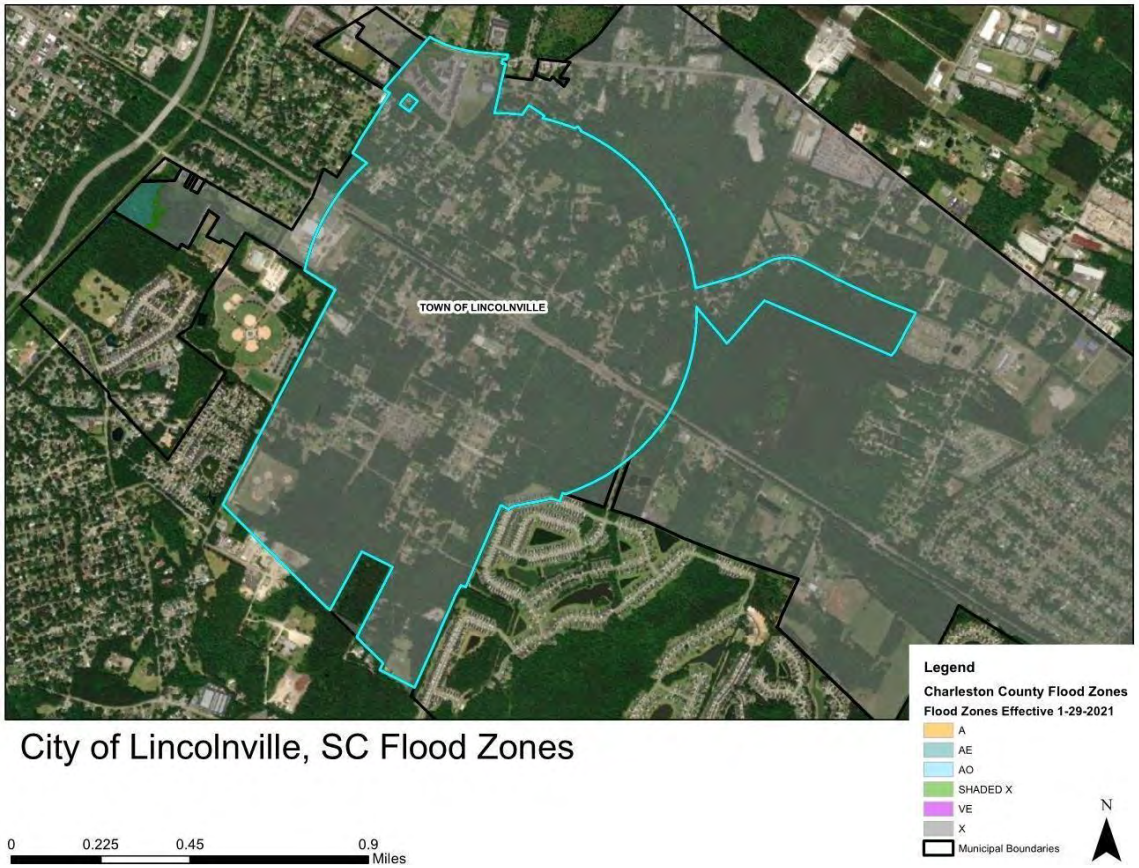
Town of Hollywood, SC Flood Zones

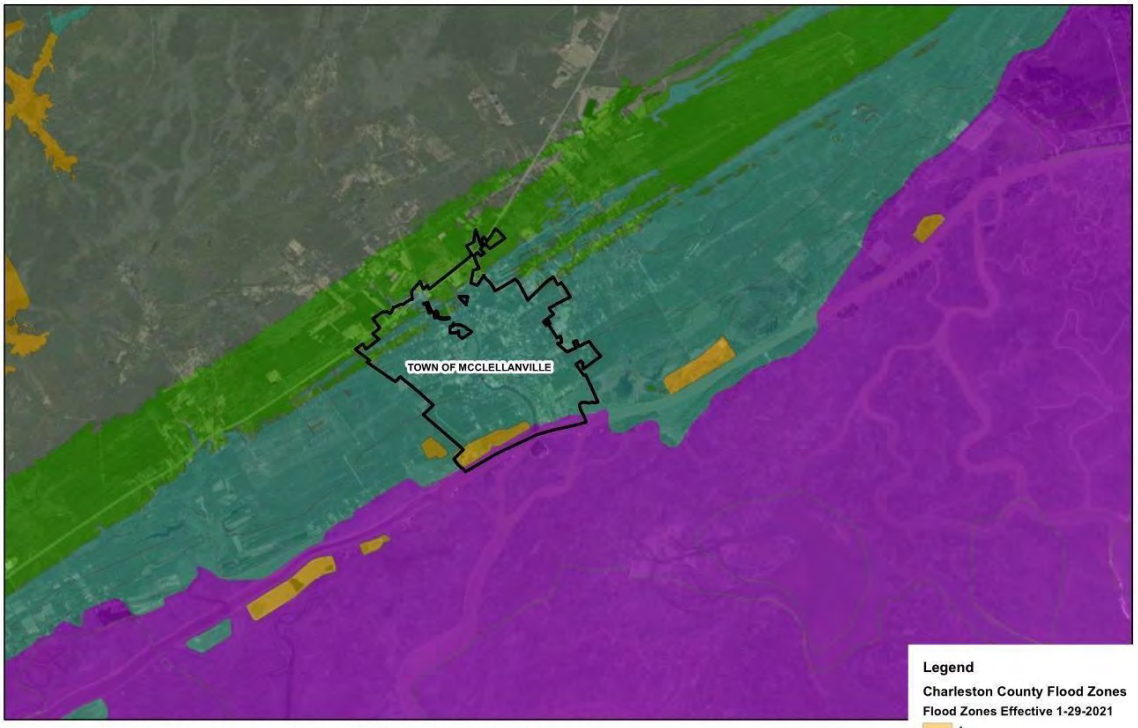


Town of James Island, SC Flood Zones

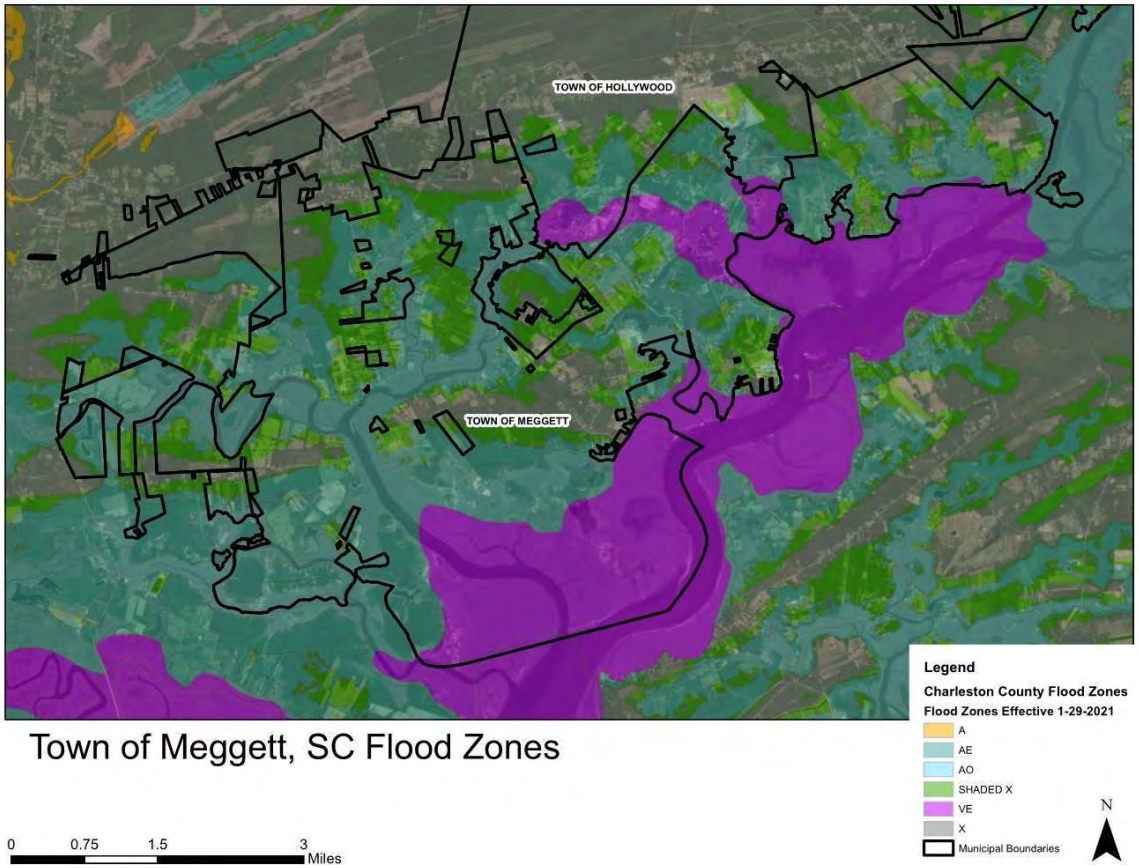


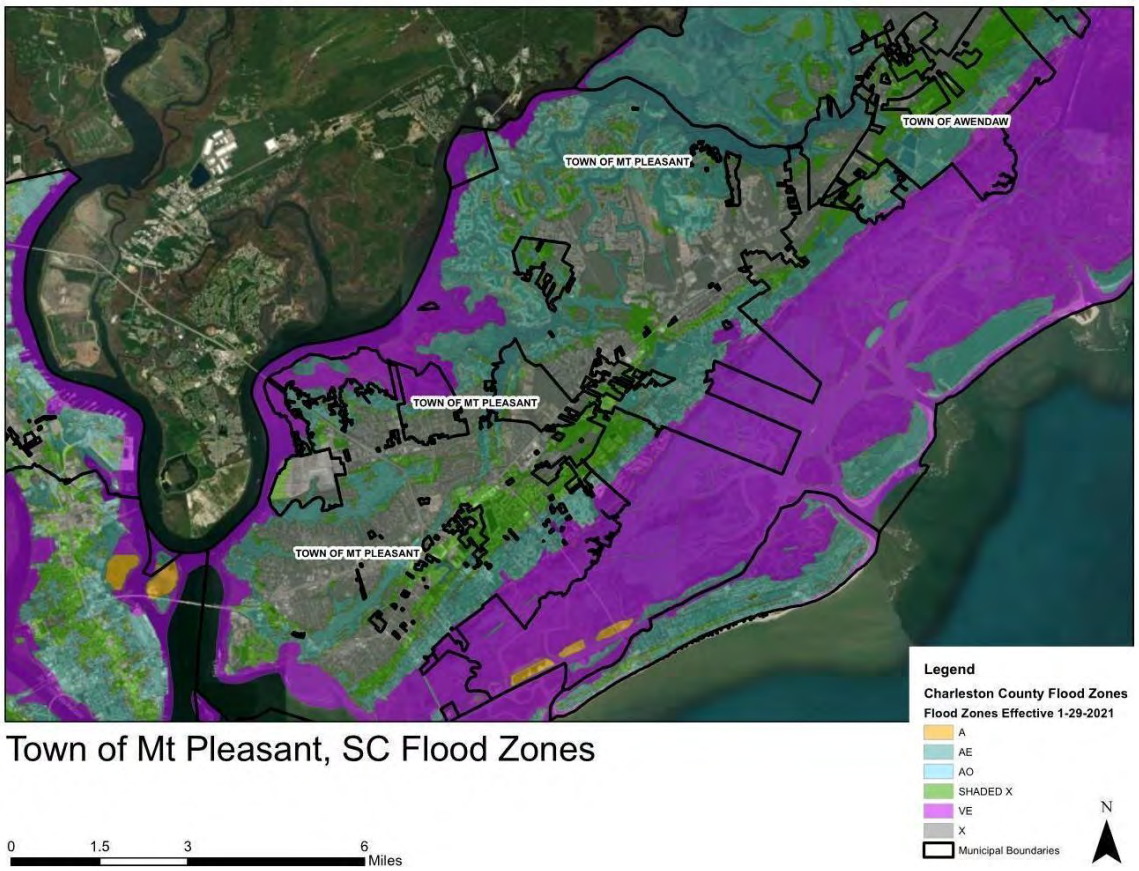
Town of Kiawah Island, SC Flood Zones


TOWN OF LINCOLNVILLE
City of Lincolnville, SC Flood Zones
0
0.225
0.45
0.9
Miles
Legend
Charleston County Flood Zones
Flood Zones Effective 1-29-2021
A
AE
AO
SHADED X
VE
X
Municipal Boundaries
N

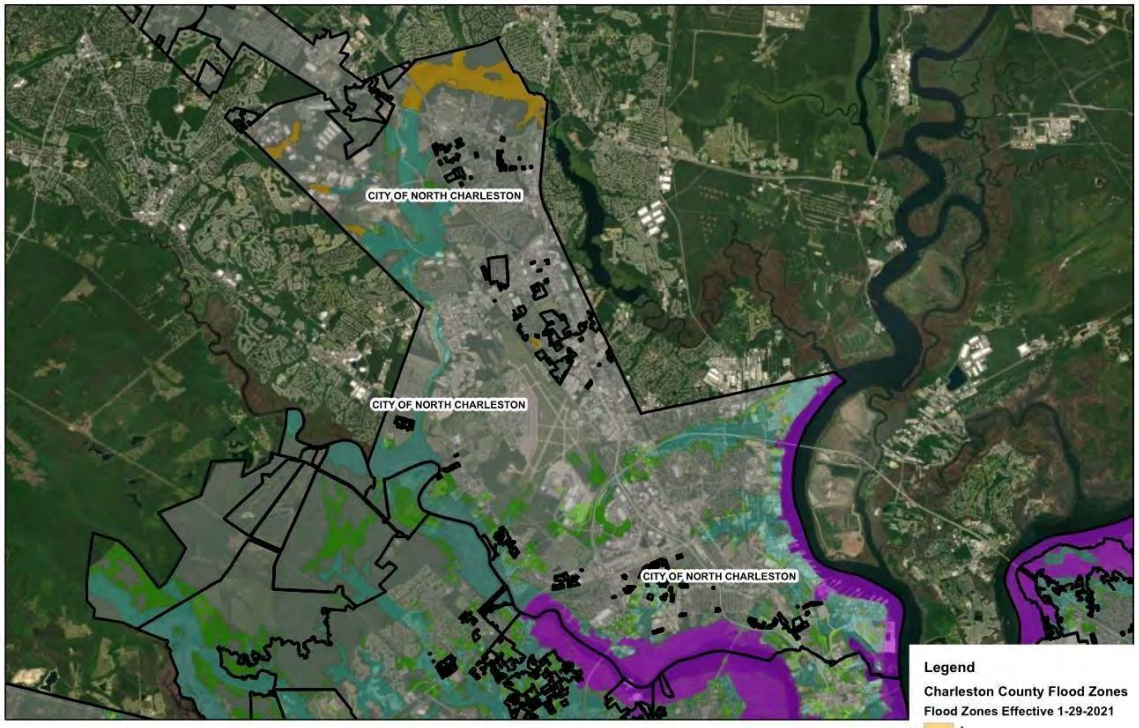


Town of McClellanville, SC Flood Zones

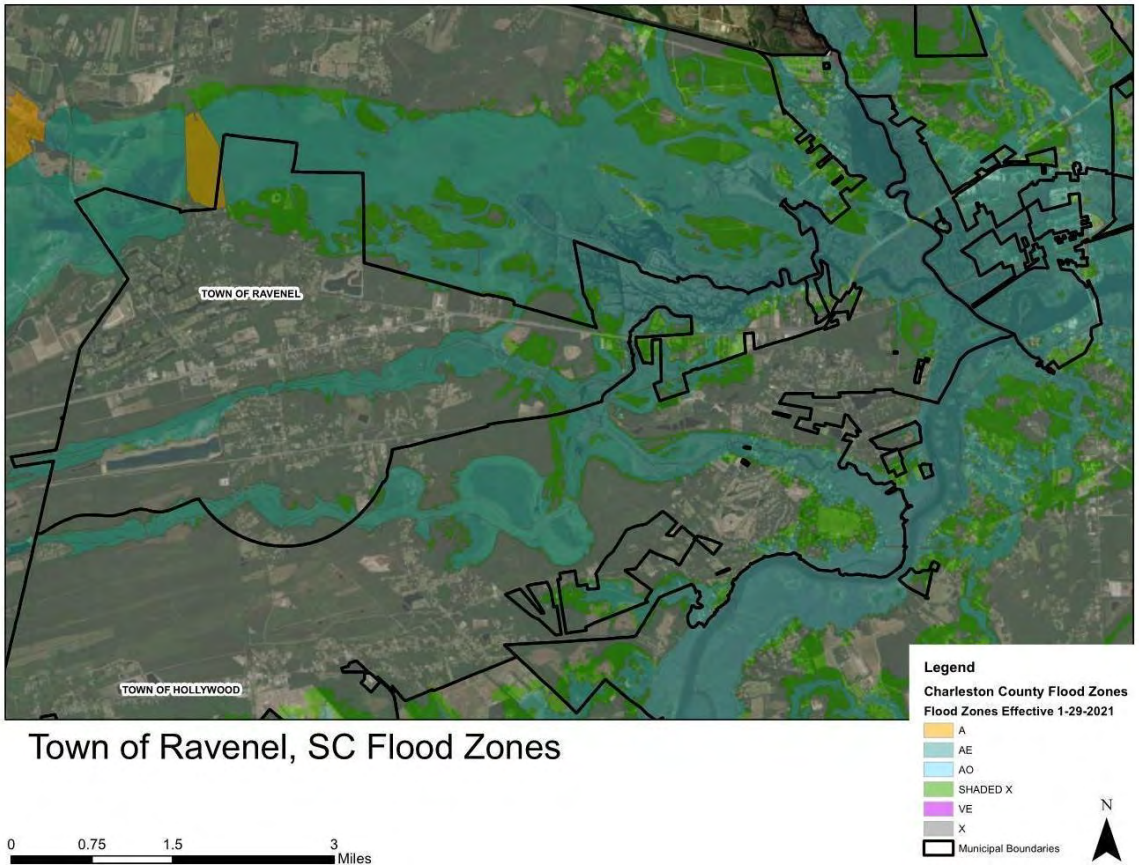

TOWN OF HOLLYWOOD
TOWN OF MEGGETT
Legend
Charleston County Flood Zones
Flood Zones Effective 1-29-2021
A
AE
AO
SHADED X
VE
X
Municipal Boundaries
N
Town of Meggett, SC Flood Zones
0
0.75
1.5
3
Miles



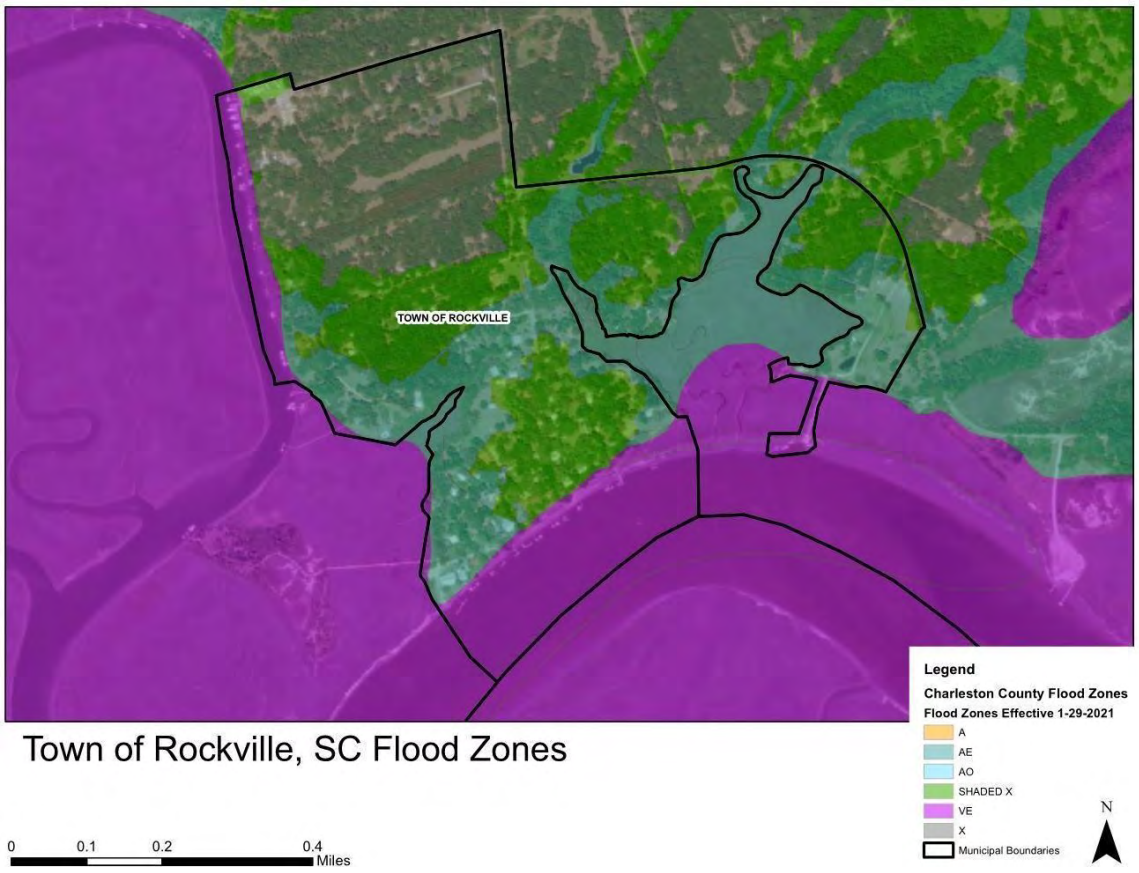
Town of Mt Pleasant, SC Flood Zones



City of North Charleston, SC Flood Zones



Town of Ravenel, SC Flood Zones


TOWN OF ROCKVILLE
Town of Rockville, SC Flood Zones
0
0.1
0.2
0.4
Miles
Legend
Charleston County Flood Zones
Flood Zones Effective 1-29-2021
A
AE
AO
SHADED X
VE
X
Municipal Boundaries
N

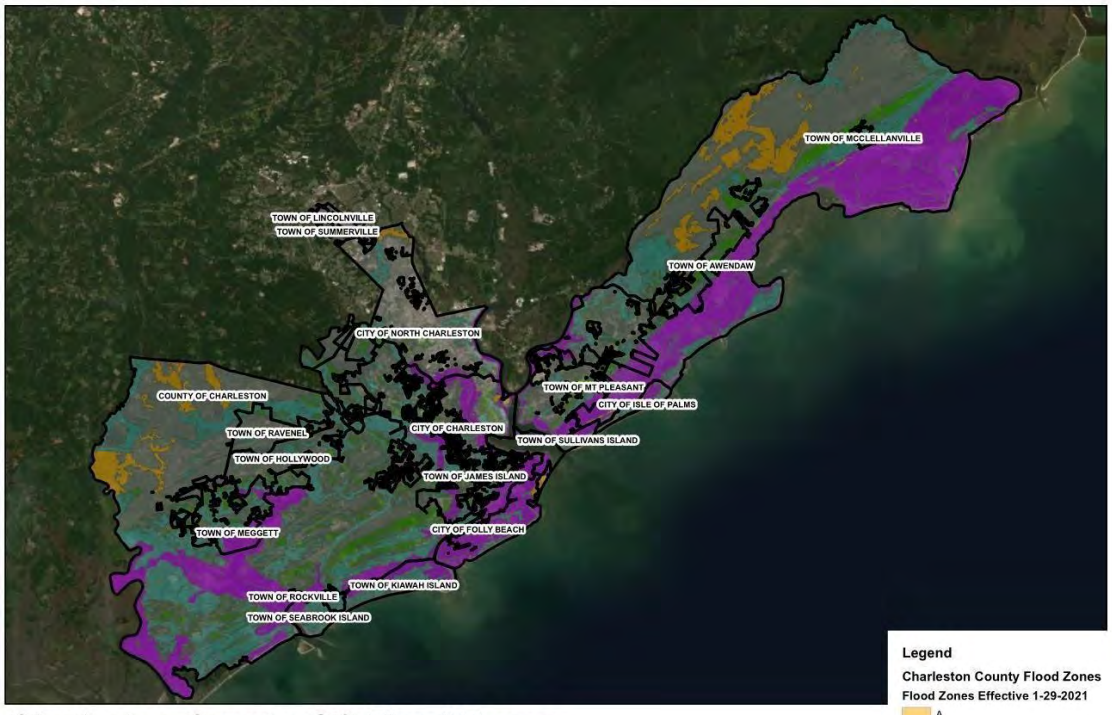


Town of Seabrook Island, SC Flood Zones



Town of Sullivans Island, SC Flood Zones

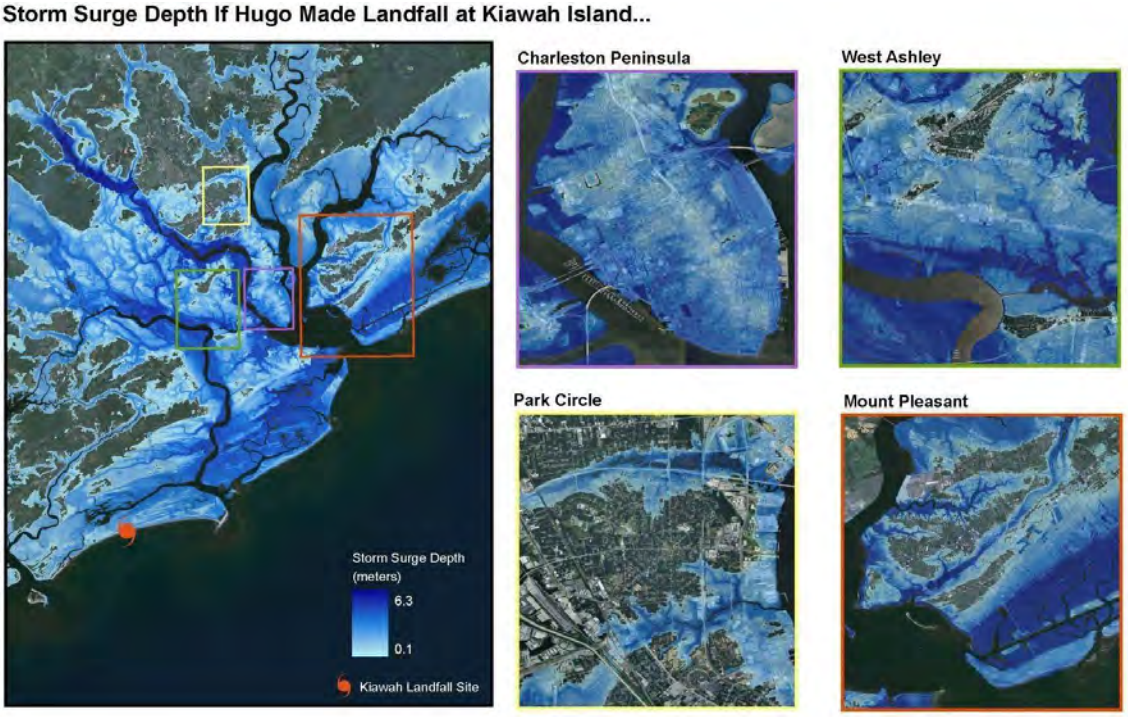
0 0.325 0.65 1.3 Miles

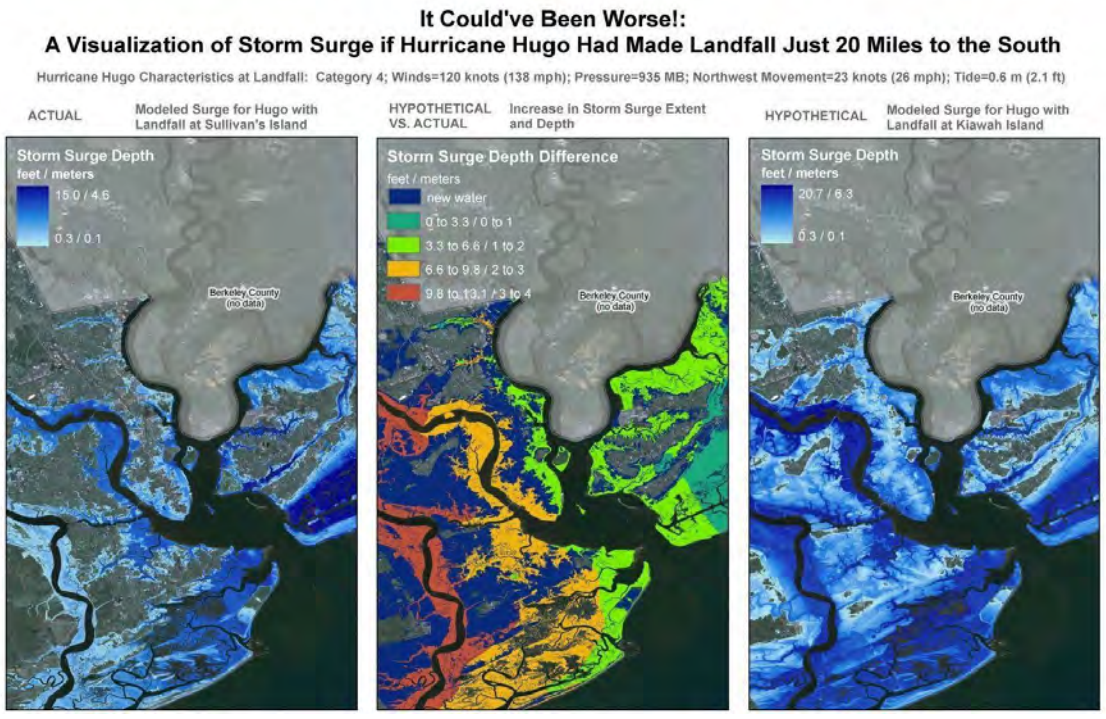


Charleston County, SC Flood Zones

0 5 10 20 Miles

– Flooding Extent (Hurricane Hugo Scenario)





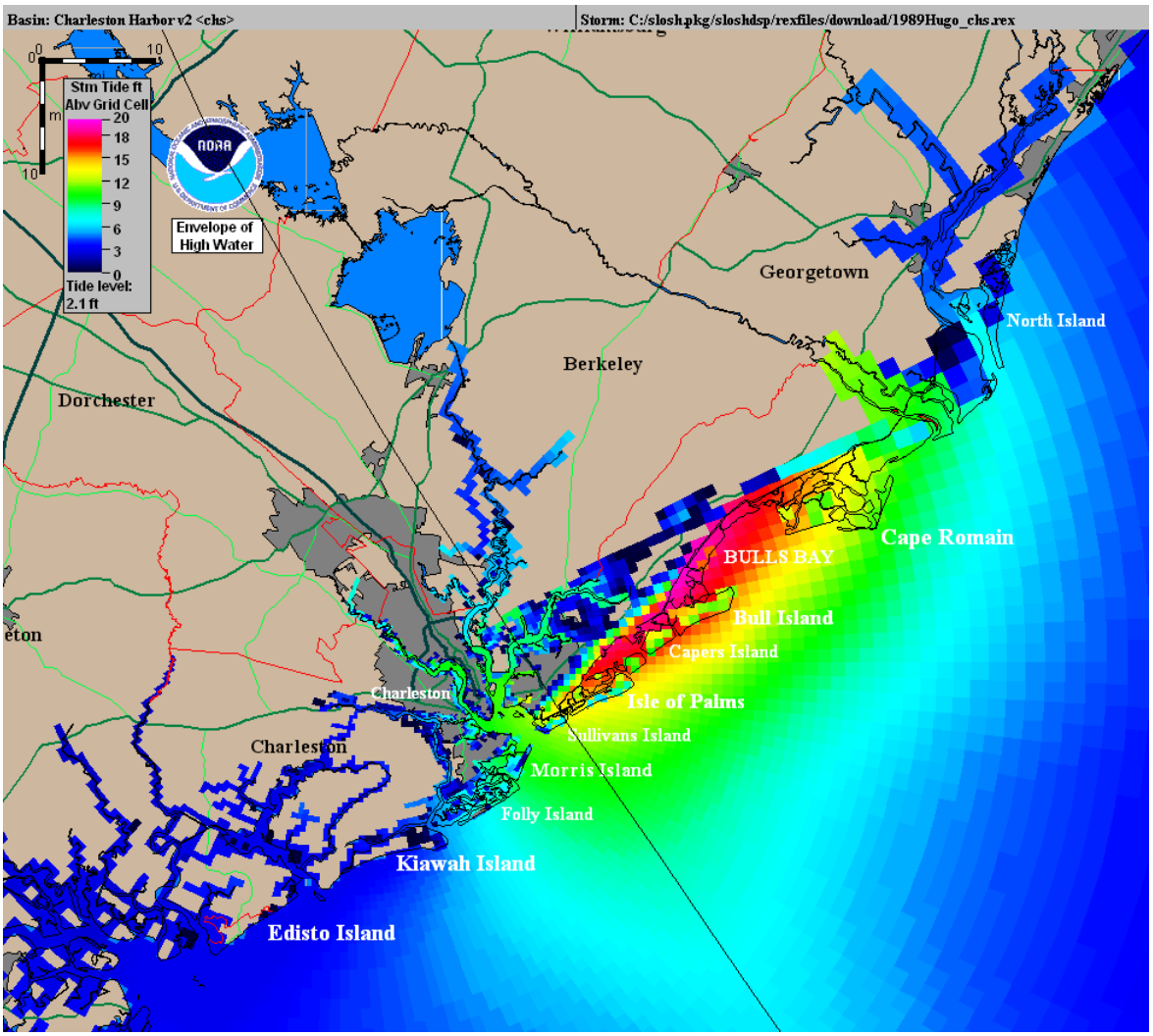

Basin: Charleston Harbor v2 <chs>
Storm: C:/slosh.pkg/sloshdsp/rexfiles/download/1989Hugo_chs.rex
Stm Tide ft Abv Grid Cell
20
18
15
12
9
6
3
0
Tide level: 2.1 ft
Envelope of High Water
Georgetown
North Island
Berkeley
Dorchester
Cape Romain
BULLS BAY
Bull Island
Capers Island
Charleston
Isle of Palms
Sullivans Island
Charleston
Morris Island
Folly Island
Kiawah Island
Edisto Island

Table 1.--High-water marks; location, description, and elevations

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
2	Wampee	1	North Myrtle Beach	33°49'48''	78°38'28''	Good mark	O	9.4	8.0[e]
2	Wampee	2	North Myrtle Beach	33°49'46''	78°38'29''	Good mark	I	9.2	8.0[e]
2	Wampee	3	North Myrtle Beach	33°49'20''	78°39'36''	Good mark	O	9.4	9.0[e]
2	Wampee	4	North Myrtle Beach	33°49'20''	78°39'40''	Poor mark	O	13.0	8.0[e]
2	Wampee	5	North Myrtle Beach	33°51'05''	78°39'22''	Data from USGS[2] gaging station 02110777		8.6	--
3	Hand	1	Myrtle Beach	33°45'48''	78°46'56''	Poor debris line	O	11.8	11.8
3	Hand	2	Myrtle Beach	33°45'47''	78°46'54''	Good stain line	O	12.1	11.5[e]
3	Hand	3	Myrtle Beach	33°45'47''	78°46'54''	Good stain line	O	12.1	11.5[e]
4	Myrtle Beach	1	Myrtle Beach	33°40'45''	78°53'52''	Good mark	I	13.6	10.0[e]
4	Myrtle Beach	2	Myrtle Beach	33°40'44''	78°53'33''	Good mark	I	13.9	10.0[e]
4	Myrtle Beach	3	Myrtle Beach	33°40'50''	78°53'56''	Good mark	I	10.8	10.0[e]

867

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
4	Myrtle Beach	4	Myrtle Beach	33°39'34''	78°55'07''	Good mark	I	12.1	8.0[e]
4	Myrtle Beach	5	Myrtle Beach	33°39'34''	78°55'10''	Good mark	I	12.3	8.0[e]
4	Myrtle Beach	6	Myrtle Beach	33°38'33''	78°56'10''	Good mark	I	12.5	8.0[e]
4	Myrtle Beach	7	Myrtle Beach	33°38'28''	78°56'26''	Good mark	I	12.2	9.0[e]
4	Myrtle Beach	8	Myrtle Beach	33°39'40''	78°55'09''	Good mark	O	12.0	12.0
5	Ocean Forest	1	Myrtle Beach	33°42'09''	78°52'02''	Poor debris line	O	11.0	11.0
5	Ocean Forest	2	Myrtle Beach	33°42'09''	78°52'02''	Good seed line	O	11.7	10.0[e]
5	Ocean Forest	3	Myrtle Beach	33°42'09''	78°52'02''	Good seed line	O	11.7	10.0[e]
6	Surfside Beach	1	Surfside Beach	33°36'20''	78°58'26''	Good mark	I	12.6	10.0[e]
6	Surfside Beach	2	Surfside Beach	33°36'15''	78°58'21''	Good mark	I	12.9	11.0[e]

898

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
6	Surfside Beach	3	Surfside Beach	33°34'38''	78°59'57''	Good mark	I	12.4	11.0[e]
6	Surfside Beach	4	Surfside Beach	33°34'37''	78°59'59''	Good mark	I	12.0	11.0[e]
6	Surfside Beach	5	Surfside Beach	33°34'33''	78°59'58''	Good mark	I	12.6	11.0[e]
7	Brookgreen	1	Garden City	33°34'41''	79°00'01''	Good mud line	I	12.2	5.0[e]
7	Brookgreen	2	Garden City	33°34'46''	79°00'23''	Good mark	I	11.6	6.0[e]
7	Brookgreen	3	Garden City	33°34'34''	79°00'05''	Good seed line	I	12.5	6.0[e]
7	Brookgreen	4	Garden City	33°34'40''	79°00'26''	Good seed line	I	12.0	6.0[e]
7	Brookgreen	5	Garden City	33°34'36''	79°00'30''	Good seed line	O	12.0	6.5
7	Brookgreen	6	Garden City	33°34'16''	79°00'19''	Good seed line	I	12.7	6.0
7	Brookgreen	7	Garden City	33°34'14''	79°01'03''	Good seed line	I	11.7	8.0[e]
7	Brookgreen	8	Garden City	33°34'15''	79°01'10''	Good seed line	O	11.8	8.0[e]

698

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
7	Brookgreen	9	Garden City	33°34'14"	79°01'28"	Good seed line	O	11.7	8.9
7	Brookgreen	10	Garden City	33°33'09"	79°01'08"	Good mark	I	11.1	8.1
7	Brookgreen	11	Garden City	33°33'02"	79°01'12"	Good mark	I	11.7	8.2
7	Brookgreen	12	Garden City	33°33'03"	79°01'19"	Good mark	I	11.5	6.6
7	Brookgreen	13	Murrells Inlet	33°33'06"	79°02'28"	Good seed line	O	11.6	8.9
7	Brookgreen	14	Garden City	33°32'37"	79°01'30"	Good debris line	I	11.2	7.7
7	Brookgreen	15	Garden City	33°32'28"	79°01'26"	Good stain line	I	12.5	9.2
7	Brookgreen	16	Garden City	33°32'24"	79°01'40"	Good seed line	I	11.5	7.1
7	Brookgreen	17	Garden City	33°32'21"	79°01'39"	Good mark	I	11.1	5.4
7	Brookgreen	18	Garden City	33°32'17"	79°01'34"	Good mark	O	11.3	8.3
7	Brookgreen	19	Garden City	33°32'09"	79°01'52"	Good mark	O	11.0	7.4
7	Brookgreen	20	Garden City	33°32'00"	79°01'50"	Good mark	I	12.6	6.9

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
7	Brookgreen	21	Murrells Inlet	33°32'07''	79°03'16''	Good seed line	O	11.7	11.0[e]
7	Brookgreen	22	Garden City	33°34'45''	79°00'12''	Fair seed line	I	12.0	5.0[e]
7	Brookgreen	23	Garden City	33°34'49''	79°00'19''	Good seed line	I	11.6	6.0[e]
7	Brookgreen	24	Garden City	33°34'56''	79°00'21''	Poor debris	O	11.5	11.5
8	Magnolia Beach	1	Litchfield Beach	33°29'45''	79°04'32''	Good seed line	O	11.1	10.5
8	Magnolia Beach	2	Litchfield Beach	33°29'43''	79°04'28''	Good seed line	O	11.1	8.4
8	Magnolia Beach	3	Litchfield Beach	33°29'38''	79°04'28''	Poor mud line	O	13.8	12.4
8	Magnolia Beach	4	Litchfield Beach	33°29'20''	79°04'54''	Good seed/ stain line	O	10.6	7.9
8	Magnolia Beach	5	Litchfield Beach	33°29'17''	79°05'06''	Good seed line	O	10.4	8.0[e]
8	Magnolia Beach	6	Litchfield Beach	33°29'12''	79°04'59''	Good mark	O	10.8	8.5
8	Magnolia Beach	7	Litchfield Beach	33°29'05''	79°05'11''	Good seed line	O	10.7	6.9

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
8	Magnolia Beach	8	Litchfield Beach	33°28'16''	79°06'11''	Good seed line	I	12.1	7.1
8	Magnolia Beach	9	Litchfield Beach	33°28'09''	79°05'54''	Good seed line	O	11.9	6.8
8	Magnolia Beach	10	Litchfield Beach	33°28'09''	79°05'57''	Good seed line	O	11.8	6.8
8	Magnolia Beach	11	Litchfield Beach	33°28'01''	79°06'00''	Good debris line	I	12.1	7.1
8	Magnolia Beach	12	Litchfield Beach	33°28'01''	79°06'04''	Good seed line	O	11.6	6.5
8	Magnolia Beach	13	Litchfield Beach	33°27'56''	79°05'59''	Good seed/ stain line	O	12.2	9.1
8	Magnolia Beach	14	Litchfield Beach	33°27'52''	79°06'02''	Poor stain line	I	11.0	8.6
8	Magnolia Beach	15	Litchfield Beach	33°27'43''	79°06'06''	Good seed line	I	12.9	9.4
8	Magnolia Beach	16	Litchfield Beach	33°27'36''	79°06'17''	Good seed line	I	13.0	7.8
8	Magnolia Beach	17	Litchfield Beach	33°27'30''	79°06'12''	Good seed line	I	13.4	10.2

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
8	Magnolia Beach	18	Pawleys Island	33°26'35''	79°06'49''	Good seed line	I	12.7	6.2
8	Magnolia Beach	19	Pawleys Island	33°26'23''	79°06'58''	Good seed line	O	12.8	7.2
8	Magnolia Beach	20	Pawleys Island	33°26'20''	79°07'04''	Good debris line	I	11.9	5.2
8	Magnolia Beach	21	Pawleys Island	33°26'13''	79°07'05''	Good seed/ mud line	I	12.4	5.8
8	Magnolia Beach	22	Pawleys Island	33°26'11''	79°07'10''	Good mud line	I	11.7	6.6
8	Magnolia Beach	23	Pawleys Island	33°26'11''	79°07'28''	Good seed line	O	11.9	9.0[e]
8	Magnolia Beach	24	Pawleys Island	33°25'43''	79°07'20''	Poor mud/ stain line	I	15.3	5.0[e]
8	Magnolia Beach	25	Pawleys Island	33°25'43''	79°07'22''	Good seed line	I	11.7	5.0[e]
9	Waverly Mills	1	Pawleys Island	33°25'38''	79°07'53''	Good seed line	I	12.0	8.0[e]
9	Waverly Mills	2	Pawleys Island	33°25'36''	79°07'54''	Good seed/ stain line	I	11.8	8.0[e]

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
9	Waverly Mills	3	Pawleys Island	33°25'35''	79°07'56''	Good stain line	I	11.9	8.1
9	Waverly Mills	4	Pawleys Island	33°25'12''	79°07'38''	Fair stain line	O	11.1	8.0[e]
9	Waverly Mills	5	Pawleys Island	33°25'12''	79°07'39''	Fair mark	O	12.1	8.0[e]
9	Waverly Mills	6	Pawleys Island	33°24'39''	79°07'58''	Fair seed line	I	11.9	6.0[e]
10	North Island	1	Georgetown	33°22'26''	79°09'03''	Good mark	O	11.3	8.9
10	North Island	2	Georgetown	33°22'16''	79°09'57''	Good mark	O	11.4	9.0
10	North Island	3	Georgetown	33°21'59''	79°10'11''	Good mark	I	10.8	8.7
10	North Island	4	Georgetown	33°21'59''	79°10'11''	Fair mark	O	10.8	8.7
10	North Island	5	Georgetown	33°21'46''	79°09'23''	Fair mark	O	10.8	7.0[e]
10	North Island	6	Georgetown	33°21'46''	79°09'07''	Good mark	O	11.3	9.2

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
10	North Island	7	Georgetown	33°21'30''	79°09'07''	Good mark	O	11.6	8.3
10	North Island	8	Georgetown	33°20'57''	79°11'42''	Good seed line	O	11.6	5.0[e]
10	North Island	9	Georgetown	33°20'06''	79°11'40''	Good seed line	O	12.1	5.0[e]
10	North Island	10	Georgetown	33°18'09''	79°14'06''	Good seed line	O	12.6	6.0[e]
11	Georgetown South	1	Georgetown	33°22'10"	79°16'38"	Good mark	O	6.9	6.0[e]
11	Georgetown South	2	Georgetown	33°21'52"	79°16'15"	Good mark	O	7.7	7.5
11	Georgetown South	3	Georgetown	33°21'44''	79°21'15''	Fair mark	O	8.1	7.0[e]
11	Georgetown South	4	Georgetown	33°20'33''	79°17'23''	Good mark	O	9.2	5.6
11	Georgetown South	5	Georgetown	33°19'37''	79°17'36''	Fair mark	O	9.7	9.4
11	Georgetown South	6	Georgetown	33°15'21''	79°17'45''	Fair mark	O	8.7	7.0[e]

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
11	Georgetown South	7	Georgetown	33°18'39''	79°16'28''	Good debris line	O	9.0	9.0
11	Georgetown South	8	Georgetown	33°17'55''	79°15'26''	Fair debris line	O	9.0	8.1
11	Georgetown South	9	Georgetown	33°15'03''	79°16'09''	Good mark	O	8.4	5.0[e]
11	Georgetown South	10	Georgetown	33°15'00''	79°16'04''	Good debris line	I	8.6	5.2
12	Santee Point	1	Georgetown	33°14'07"	79°12'16"	Good seed line	I	7.7	5.0[e]
12	Santee Point	2	Georgetown	33°14'03"	79°12'15"	Good seed line	I	7.6	5.0[e]
12	Santee Point	3	Georgetown	33°13'20"	79°11'07"	Good seed line	I	8.2	5.0
12	Santee Point	4	Georgetown	33°13'20"	79°11'05"	Good seed line	I	8.1	5.0
12	Santee Point	5	Georgetown	33°10'00"	79°14'12"	Good debris line	O	12.1	12.0
13	Minim Island	1	Georgetown	33°13'04''	79°16'19''	Good seed line	O	8.2	5.0[e]

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
13	Minim Island	2	Georgetown	33°12'49"	79°17'47"	Poor debris line	O	6.8	5.4
13	Minim Island	3	Georgetown	33°12'28"	79°19'45"	Fair mark	O	7.7	4.0[e]
13	Minim Island	4	Georgetown	33°09'05"	79°21'41"	Good mark	I	7.7	5.0[e]
14	Santee	1	Georgetown	33°12'36"	79°23'03"	Data from USGS[2] gaging station 02171800		6.6	--
14	Santee	2	Georgetown	33°10'52"	79°24'11"	Good debris line	O	7.4	7.4
15	Cape Romain	1	McClellan-ville	33°01'07"	79°22'25"	Good stain/ seed line	I	14.0	7.5
15	Cape Romain	2	McClellan-ville	33°01'05"	79°22'27"	Good stain/ seed line	I	14.0	5.9
16	McClellan-ville	1	McClellan-ville	33°05'43"	79°27'12"	Fair seed line	O	13.4	9.3
16	McClellan-ville	2	McClellan-ville	33°05'27"	79°27'20"	Fair mark	O	16.1	9.3
16	McClellan-ville	3	McClellan-ville	33°05'22"	79°27'45"	Good seed line	O	15.5	9.8

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
16	McClellan-ville	4	McClellan-ville	33°05'34''	79°28'00''	Good seed line	O	15.2	10.7
16	McClellan-ville	5	McClellan-ville	33°05'44''	79°28'34''	Good mark	O	14.8	12.8
16	McClellan-ville	6	McClellan-ville	33°05'35''	79°28'29''	Good seed line	I	15.3	10.4
16	McClellan-ville	7	McClellan-ville	33°04'46''	79°27'34''	Good mud line	I	16.4	6.8
16	McClellan-ville	8	McClellan-ville	33°06'31''	79°24'16''	Good seed line	O	13.4	5.4
17	Awendaw	1	Awendaw	33°04'25''	79°30'53''	Good seed line	O	16.6	13.0[e]
17	Awendaw	2	Awendaw	33°04'11''	79°30'52''	Good seed line	O	18.5	9.8
17	Awendaw	3	Awendaw	33°03'36''	79°32'17''	Good mark	O	17.4	16.5
17	Awendaw	4	Awendaw	33°01'51''	79°37'26''	Good mark	O	15.4	8.7
17	Awendaw	5	Awendaw	33°01'45''	79°37'35''	2 good marks	I O	14.8 14.4	11.1
17	Awendaw	6	Awendaw	33°01'36''	79°37'11''	Good seed line	I	13.8	13.0[e]

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
17	Awendaw	7	Awendaw	33°01'19''	79°36'03''	Good seed line	O	16.8	15.1
17	Awendaw	8	Awendaw	33°00'56''	79°35'34''	Good seed line	O	20.2	19.5
19	Bull Island	1	Awendaw	32°54'29''	79°36'46''	Good seed line	I	16.2	8.2
19	Bull Island	2	Awendaw	32°54'27''	79°36'45''	Good seed line	I	16.2	8.9
19	Bull Island	3	Awendaw	32°54'27''	79°36'43''	Good seed line	I	16.2	9.7
20	Sewee Bay	1	Awendaw	32°58'08''	79°38'15''	Fair mark	I	19.5	16.3
20	Sewee Bay	2	Awendaw	32°58'13''	79°38'15''	Good mark	O	19.4	17.6
20	Sewee Bay	3	Awendaw	32°57'42''	79°39'02''	Fair mark	O	18.8	18.0[e]
20	Sewee Bay	4	Awendaw	32°57'29''	79°38'51''	2 Good marks	I O	18.8 19.2	14.9
20	Sewee Bay	5	Awendaw	32°57'28''	79°38'44''	Good mark	O	19.7	13.1
20	Sewee Bay	6	Awendaw	32°57'20''	79°38'42''	Good mark	I	19.4	13.2
20	Sewee Bay	7	Awendaw	32°57'20''	79°38'46''	Good mark	O	20.0	14.0

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
20	Sewee Bay	8	Awendaw	32°57'16"	79°38'48"	Good mark	I	20.2	11.3
20	Sewee Bay	9	Awendaw	32°56'29"	79°39'30"	Good seed line	I	19.3	11.3
20	Sewee Bay	10	Awendaw	32°56'29"	79°39'30"	Good seed line	I	18.8	11.3
20	Sewee Bay	11	Awendaw	32°55'56"	79°41'10"	Fair debris lines	O	16.2 Avg[3]	16.0
20	Sewee Bay	12	Awendaw	32°55'55"	79°41'09"	Fair seed lines	O O	16.4 16.9	10.0[e]
20	Sewee Bay	13	Awendaw	32°55'10"	79°41'10"	Good mark	I	18.2 Avg[3]	9.5
20	Sewee Bay	14	Mount Pleasant	32°52'36"	79°44'55"	Good marks	I O	15.2 15.2	10.4
21	Cainhoy	1	North Charleston	32°52'49"	79°45'08"	Good mark	O	15.0	11.8
22	North Charleston	1	North Charleston	32°58'06"	79°56'11"	Good debris line	O	8.2	8.0[e]
22	North Charleston	2	North Charleston	32°58'00"	79°56'12"	Fair debris line	O	8.3	8.3
22	North Charleston	3	North Charleston	32°53'33"	79°58'23"	Fair debris line	O	7.7	7.7

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
22	North Charleston	4	North Charleston	32°52'31"	79°58'29"	Fair debris line	O	9.0	6.0[e]
23	Capers Inlet	1	Mount Pleasant	32°52'26"	79°44'45"	Fair mark	I	16.4	5.0[e]
23	Capers Inlet	2	Isle of Palms	32°52'29"	79°44'50"	Good mark	O	15.4	9.2
23	Capers Inlet	3	Isle of Palms	32°48'49"	79°43'26"	Good mark	O	14.2	10.4
23	Capers Inlet	4	Isle of Palms	32°48'37"	79°43'26"	Good mark	O	14.1	8.6
23	Capers Inlet	5	Isle of Palms	32°48'39"	79°43'44"	Good mark	O	12.7	7.0
23	Capers Inlet	6	Isle of Palms	32°48'09"	79°44'12"	Good mark	O	14.5	8.2
23	Capers Inlet	7	Isle of Palms	32°48'19"	79°44'13"	Good mark	O	13.0	9.7
23	Capers Inlet	8	Isle of Palms	32°48'04"	79°44'45"	Good mark	O	12.6	8.4
23	Capers Inlet	9	Isle of Palms	32°48'28"	79°44'56"	Good mark	O	12.7	8.0

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
23	Capers Inlet	10	Isle of Palms	32°48'28''	79°44'23''	Good mark	O	12.5	7.2
23	Capers Inlet	11	Isle of Palms	32°48'27''	79°44'14''	Good mark	O	13.8	8.0
23	Capers Inlet	12	Isle of Palms	32°48'25''	79°44'36''	Good mark	O	12.6	7.0
24	Fort Moultrie	1	Mount Pleasant	32°49'01''	79°48'27''	2 Good seed lines	O O	13.1 13.0	11.0[e]
24	Fort Moultrie	2	Isle of Palms	32°47'03''	79°47'42''	Good mark	I	12.1	8.6
24	Fort Moultrie	3	Isle of Palms	32°46'56''	79°47'38''	Good mark	I	16.2	11.7
24	Fort Moultrie	4	Isle of Palms	32°46'46''	79°48'18''	Good mark	O	10.9	8.3
24	Fort Moultrie	5	Isle of Palms	32°46'41''	79°48'15''	Good mark	I	14.4	8.9
24	Fort Moultrie	6	Sullivans Island	32°46'26''	79°48'58''	Fair mark	I	13.4	9.0[e]
24	Fort Moultrie	7	Sullivans Island	32°46'19''	79°49'17''	Good mark	I	11.7	6.0[e]

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	8	Sullivans Island	32°46'12''	79°49'02''	Fair mark	O	16.0	15.4
24	Fort Moultrie	9	Sullivans Island	32°46'12''	79°49'06''	Good mark	O	16.2	15.0[e]
24	Fort Moultrie	10	Sullivans Island	32°46'12''	79°49'15''	Fair mark	O	13.3	7.5
24	Fort Moultrie	11	Sullivans Island	32°46'06''	79°49'15''	Good mark	I	13.8	12.0
24	Fort Moultrie	12	Sullivans Island	32°46'04''	79°49'14''	Good mark	O	15.8	7.0[e]
24	Fort Moultrie	13	Sullivans Island	32°45'49''	79°49'38''	Fair mark	I	15.8	10.5
24	Fort Moultrie	14	Sullivans Island	32°46'04''	79°49'49''	Good mark	O	11.6	8.0[e]
24	Fort Moultrie	15	Sullivans Island	32°46'03''	79°49'58''	Good mark	I	10.0	6.0[e]
24	Fort Moultrie	16	Sullivans Island	32°45'56''	79°50'12''	Good mark	O	10.2	6.0[e]
24	Fort Moultrie	17	Sullivans Island	32°45'45''	79°50'03''	Poor mark	I	11.0	8.1

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	18	Sullivans Island	32°45'54"	79°50'18"	Good seed line	I	11.6	8.3
24	Fort Moultrie	19	Sullivans Island	32°45'43"	79°50'15"	Good seed line	I	13.5	8.4
24	Fort Moultrie	20	Sullivans Island	32°45'33"	79°50'22"	Fair seed line	I	12.3	10.5
24	Fort Moultrie	21	Sullivans Island	32°45'26"	79°50'31"	2 Good seed lines	I O	13.0 13.0	8.1
24	Fort Moultrie	22	Sullivans Island	32°45'24"	79°51'05"	Good seed line	I	11.6	10.7
24	Fort Moultrie	23	Sullivans Island	32°45'32"	79°51'06"	Good seed line	I	11.0	8.2
24	Fort Moultrie	24	Sullivans Island	32°45'35"	79°51'14"	Good seed lines	I O	10.9 10.9	8.3
24	Fort Moultrie	25	Sullivans Island	32°45'36"	79°51'28"	Good seed line	O	10.9	8.0[e]
24	Fort Moultrie	26	Sullivans Island	32°45'37"	79°51'34"	Good seed line	O	11.5	6.9
24	Fort Moultrie	27	Mount Pleasant	32°48'38"	79°49'44"	Fair seed line	I	12.4	9.0[e]

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	28	Mount Pleasant	32°48'09''	79°50'31''	Good mark	I	11.7	10.0[e]
24	Fort Moultrie	29	Mount Pleasant	32°52'13''	79°46'06''	Fair debris line	O	14.3	14.0[e]
24	Fort Moultrie	30	Mount Pleasant	32°51'20''	79°46'50''	Good seed line Fair seed line	O O	12.2 11.7	8.0[e]
24	Fort Moultrie	31	Mount Pleasant	32°50'35''	79°47'23''	Good mark	O	13.7	11.3
24	Fort Moultrie	32	Mount Pleasant	32°50'14''	79°46'57''	Good seed lines	I O	14.2 14.2	8.0[e]
24	Fort Moultrie	33	Mount Pleasant	32°49'50''	79°47'36''	Good mark	I	12.7	7.0[e]
24	Fort Moultrie	34	Mount Pleasant	32°47'40''	79°50'51''	Good mark	O	11.8	9.0[e]
24	Fort Moultrie	35	Mount Pleasant	32°47'38''	79°50'52''	Good mark	I	12.0	9.0[e]
24	Fort Moultrie	36	Mount Pleasant	32°47'36''	79°50'54''	Good seed line	I	11.8	9.0[e]
24	Fort Moultrie	37	Mount Pleasant	32°47'34''	79°50'56''	Good seed line	I	12.0	9.0[e]

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	38	Mount Pleasant	32°47'27''	79°51'05''	Good seed line	O	12.3	10.0[e]
24	Fort Moultrie	39	Mount Pleasant	32°47'21''	79°51'10''	2 Good marks	I O	12.1 12.2	9.0[e]
24	Fort Moultrie	40	Mount Pleasant	32°47'12''	79°51'03''	Good mark	I	11.8	7.4
24	Fort Moultrie	41	Mount Pleasant	32°46'32''	79°50'46''	2 Good marks	I I	11.6 11.7	6.0[e]
24	Fort Moultrie	42	Mount Pleasant	32°47'14''	79°51'03''	Good mark	O	12.0	7.0
24	Fort Moultrie	43	Mount Pleasant	32°46'52''	79°51'45''	Good mark	O	12.0	11.0[e]
24	Fort Moultrie	44	Mount Pleasant	32°46'49''	79°51'48''	Good mark	O	11.4	6.0[e]
24	Fort Moultrie	45	Mount Pleasant	32°46'46''	79°51'52''	2 Good marks	I I	11.4 11.5	6.0[e]
24	Fort Moultrie	46	Mount Pleasant	32°46'48''	79°51'54''	Good mark	O	10.8	6.0[e]
24	Fort Moultrie	47	Mount Pleasant	32°46'47''	79°52'04''	Good mark	O	11.3	6.0[e]

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	48	Mount Pleasant	32°46'49''	79°52'08''	Good mark	I	12.0	7.0[e]
24	Fort Moultrie	49	Mount Pleasant	32°46'55''	79°52'14''	Good mark	O	11.9	6.0[e]
24	Fort Moultrie	50	Mount Pleasant	32°46'52''	79°52'17''	Good mark	I	12.2	8.0[e]
24	Fort Moultrie	51	Mount Pleasant	32°46'52''	79°52'18''	Good mark	I	12.1	6.0[e]
24	Fort Moultrie	52	Sullivans Island	32°45'58''	79°49'22''	Good mark	I	14.1	9.3
24	Fort Moultrie	53	Isle of Palms	32°48'19''	79°45'30''	Good mark	O	12.9	7.4
24	Fort Moultrie	54	Isle of Palms	32°48'16''	79°45'21''	Good seed line	O	12.7	7.4
24	Fort Moultrie	55	Isle of Palms	32°47'55''	79°45'06''	Good mark	O	15.4	9.2
24	Fort Moultrie	56	Isle of Palms	32°47'56''	79°45'19''	Good debris line	I	15.1	10.0
24	Fort Moultrie	57	Isle of Palms	32°48'02''	79°45'20''	Good seed line	O	12.9	10.8

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	58	Isle of Palms	32°48'08"	79°45'45"	Good mark	O	12.6	7.0
24	Fort Moultrie	59	Isle of Palms	32°47'52"	79°45'37"	Good mark	O	15.5	11.2
24	Fort Moultrie	60	Isle of Palms	32°48'03"	79°46'04"	Good mark	O	12.6	7.7
24	Fort Moultrie	61	Isle of Palms	32°47'57"	79°46'03"	Good mark	I	12.4	6.4
24	Fort Moultrie	62	Isle of Palms	32°47'47"	79°45'55"	Fair mark Good mark	I O	12.4 12.6	11.5 12.1
24	Fort Moultrie	63	Isle of Palms	32°47'54"	79°46'27"	Good mark	O	12.6	7.0[e]
24	Fort Moultrie	64	Isle of Palms	32°47'38"	79°46'12"	Good mark	I	14.7	10.7
24	Fort Moultrie	65	Isle of Palms	32°47'31"	79°46'25"	Good mark	I	13.9	9.2
24	Fort Moultrie	66	Isle of Palms	32°47'45"	79°46'43"	Good mark	O	12.4	7.2
24	Fort Moultrie	67	Isle of Palms	32°47'43"	79°46'48"	Good mark	O	12.4	7.1

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	68	Isle of Palms	32°47'37"	79°47'08"	Good mark	I	12.3	7.7
24	Fort Moultrie	69	Isle of Palms	32°47'28"	79°47'02"	Good mark	I	12.5	7.0
24	Fort Moultrie	70	Isle of Palms	32°47'28"	79°46'50"	Fair mark	O	12.6	7.6
24	Fort Moultrie	71	Isle of Palms	32°47'18"	79°46'58"	Good mark	I	14.0	9.2
24	Fort Moultrie	72	Isle of Palms	32°47'42"	79°46'02"	Good mark	I	15.3	10.8
24	Fort Moultrie	73	Isle of Palms	32°46'56"	79°47'56"	Good mark	I	12.0	9.9
24	Fort Moultrie	74	Isle of Palms	32°46'50"	79°47'54"	Good mark	I	15.2	10.8
24	Fort Moultrie	75	Sullivans Island	32°45'48"	79°51'49"	Good seed line	I	10.9	6.7
24	Fort Moultrie	76	Sullivans Island	32°45'56"	79°51'45"	Good seed line	O	11.5	8.0
24	Fort Moultrie	77	Sullivans Island	32°45'57"	79°51'52"	Poor seed line	O	12.7	8.6

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	78	Sullivans Island	32°45'32"	79°51'16"	Good seed line	O	10.8	8.0[e]
24	Fort Moultrie	79	Sullivans Island	32°45'26"	79°51'05"	Good seed line	I	11.1	7.6
24	Fort Moultrie	80	Sullivans Island	32°45'39"	79°50'43"	Good seed line	O	11.2	8.0
24	Fort Moultrie	81	Sullivans Island	32°45'39"	79°50'24"	Good seed line	I	10.7	9.4
24	Fort Moultrie	82	Sullivans Island	32°45'55"	79°50'19"	Good seed line	I	11.3	5.3
25	Charleston	1	Mount Pleasant	32°47'35"	79°52'58"	Poor mark	I	13.5	6.0[e]
25	Charleston	2	Mount Pleasant	32°47'40"	79°52'48"	Poor mark	O	14.8	6.0[e]
25	Charleston	3	Mount Pleasant	32°47'37"	79°52'47"	Poor mark	O	14.1	6.0[e]
25	Charleston	4	Mount Pleasant	32°47'32"	79°52'57"	Good mark	I	12.2	6.0[e]
25	Charleston	5	Mount Pleasant	32°47'42"	79°53'23"	Fair mark	O	11.3	6.2

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
25	Charleston	6	Mount Pleasant	32°47'06"	79°52'35"	Good mark	I	12.3	8.0[e]
25	Charleston	7	Mount Pleasant	32°47'03"	79°52'34"	Good mark	I	11.8	8.0[e]
25	Charleston	8	Mount Pleasant	32°47'00"	79°52'40"	Good mark	O	15.2	8.0[e]
25	Charleston	9	Mount Pleasant	32°47'19"	79°52'52"	2 Good marks	I I	11.9 11.8	7.5
25	Charleston	10	Mount Pleasant	32°47'46"	79°53'43"	Good seed line	I	11.5	8.5
25	Charleston	11	Mount Pleasant	32°47'47"	79°53'43"	Good seed line	I	10.2	8.5
25	Charleston	12	Mount Pleasant	32°48'04"	79°54'20"	2 Good debris lines	O O	12.1 12.1	12.0[e]
25	Charleston	13	Mount Pleasant	32°48'05"	79°54'22"	Good debris line	O	11.0	9.5
25	Charleston	14	Mount Pleasant	32°48'05"	79°54'19"	Good debris line	O	10.2	9.5
25	Charleston	15	Mount Pleasant	32°48'06"	79°54'16"	Poor debris line	O	9.5	9.5

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
25	Charleston	16	Charleston	32°45'05"	79°52'33"	2 Good marks	I I	11.6 11.8	5.0[e]
25	Charleston	17	Charleston	32°45'03"	79°53'54"	Good mark	O	11.3	8.0[e]
25	Charleston	18	Charleston	32°44'59"	79°54'05"	Good mark	I	10.3	7.0[e]
25	Charleston	19	Charleston	32°46'12"	79°54'46"	2 Good marks	I I	10.8 10.9	9.5
25	Charleston	20	Charleston	32°46'11"	79°55'48"	Good seed line	O	10.7	9.5
25	Charleston	21	Charleston	32°46'12"	79°55'52"	Good mark	O	10.4	9.5
25	Charleston	22	Charleston	32°46'46"	79°55'34"	Good mark	I	9.1	8.0[e]
25	Charleston	23	Charleston	32°46'47"	79°55'30"	Good mark	O	10.5	8.0[e]
25	Charleston	24	Charleston	32°46'51"	79°55'35"	2 Good marks	I O	10.2 12.9	8.0[e]
25	Charleston	25	Charleston	32°46'51"	79°55'39"	Good mark	I	10.4	6.0[e]
25	Charleston	26	Charleston	32°47'24"	79°55'49"	Good mark	O	10.1	8.0[e]
25	Charleston	27	Charleston	32°47'34"	79°56'02"	Good mark	I	7.1	5.6
25	Charleston	28	Charleston	32°48'02"	79°56'09"	Good seed line	I	8.7	8.0[e]

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
25	Charleston	29	Charleston	32°48'04''	79°56'12''	Fair seed line	O	7.9	6.0[e]
25	Charleston	30	Charleston	32°48'05''	79°56'43''	Fair seed line	I	10.7	6.1
25	Charleston	31	Charleston	32°48'01''	79°56'51''	Fair seed line	I	10.3	6.0[e]
25	Charleston	32	Charleston	32°47'59''	79°56'55''	Fair seed line	I	8.9	6.0[e]
25	Charleston	33	Charleston	32°47'36''	79°57'44''	Good seed line	O	9.0	8.0[e]
25	Charleston	34	Charleston	32°47'35''	79°57'43''	Good seed line	O	9.0	8.0[e]
25	Charleston	35	Charleston	32°47'34''	79°57'41''	Good seed line	O	9.1	8.0[e]
25	Charleston	36	Charleston	32°47'02''	79°57'26''	Good debris line	O	10.0	10.0
25	Charleston	37	Charleston	32°46'37''	79°57'33''	Good seed line	O	9.1	6.0[e]
25	Charleston	38	Charleston	32°46'36''	79°57'39''	Fair seed line	O	9.4	6.0[e]

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
25	Charleston	39	Charleston	32°46'34"	79°57'46"	Fair seed line	O	9.3	6.0[e]
25	Charleston	40	Charleston	32°46'01"	79°58'25"	2 Good seed lines	O O	8.1 8.7	6.0e
25	Charleston	41	Charleston	32°46'01"	79°58'29"	2 Good seed lines	O O	9.1 8.6	6.0[e]
25	Charleston	42	Charleston	32°46'50"	79°58'05"	Good debris line	O	9.0	8.9
25	Charleston	43	Charleston	32°46'50"	79°58'17"	Good debris line	O	8.9	8.9
25	Charleston	44	Charleston	32°49'35"	79°59'00"	Fair mark	O	7.5	7.5
25	Charleston	45	Charleston	32°49'48"	79°59'08"	Good seed line	O	8.8	6.0[e]
25	Charleston	46	Charleston	32°49'55"	79°59'09"	Good mark	O	9.7	8.0[e]
25	Charleston	47	Charleston	32°45'23"	79°57'17"	Good mark	O	9.6	6.7
25	Charleston	48	Charleston	32°52'09"	79°58'47"	Good mark	O	8.7	8.0[e]
25	Charleston	49	Charleston	32°52'09"	79°58'47"	Good mark	O	8.7	8.0[e]
25	Charleston	50	Charleston	32°52'09"	79°58'47"	Poor mark	O	8.1	8.0[e]

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
26	Johns Island	1	Charleston	32°50'09"	80°02'47"	Good debris line	O	7.1	7.0
27	James Island	1	Charleston	32°42'15"	79°56'20"	Good mark	O	8.8	8.0[e]
27	James Island	2	Charleston	32°42'14"	79°56'21"	Good mark	O	9.0	8.0[e]
27	James Island	3	Folly Beach	32°39'41"	79°55'34"	Good mark	I	11.9	7.0[e]
27	James Island	4	Folly Beach	32°39'40"	79°55'38"	Good mark	O	12.1	7.0[e]
27	James Island	5	Folly Beach	32°39'38"	79°59'43"	Fair mark	I	8.5	7.0[e]
27	James Island	6	Folly Beach	32°40'07"	79°56'24"	Fair mark	O	9.1	6.0[e]
27	James Island	7	Folly Beach	32°40'09"	79°56'23"	Fair mark	O	9.1	6.0[e]
27	James Island	8	Folly Beach	32°39'23"	79°56'26"	Fair mark	I	8.2	6.5
27	James Island	9	Folly Beach	32°39'23"	79°56'29"	Good mark	O	9.9	6.5

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utsice	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
27	James Island	10	Folly Beach	32°39'20''	79°56'27''	Fair mark	I	11.0	6.5
27	James Island	11	Charleston	32°41'29''	79°57'49''	Poor debris line	0	6.0	6.0
27	James Island	12	Charleston	32°41'27''	79°57'51''	Fair mark	0	6.9	6.0
27	James Island	13	Charleston	32°41'56''	79°59'02''	Good debris line	0	7.1	7.1
27	James Island	14	Charleston	32°43'16''	79°59'21''	Good debris line	0	7.2	7.1
28	Legare-ville	1	Charleston	32°43'32''	80°00'38''	Good mark	0	4.3	4.0[e]
28	Legare-ville	2	Charleston	32°42'49''	80°00'24''	Good mark	0	7.3	7.0[e]
28	Legare-ville	3	Kiawah Island	32°38'42''	80°03'53''	Good mark	0	4.3	4.0[e]
30	Rock-ville	1	Rockville	32°35'56''	80°11'39''	Good mark	0	5.7	5.0[e]
30	Rock-ville	2	Kiawah Island	32°35'18''	80°07'38''	Fair mark	0	10.6	6.0[e]

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Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
30	Rock-ville	3	Kiawah Island	32°35'25''	80°07'52''	Good mark	O	6.3	6.2
30	Rock-ville	4	Kiawah Island	32°33'49''	80°10'48''	Good mark	O	7.4	7.0[e]
31	Edisto Island	1	Edisto Beach	32°31'26''	80°16'36''	Good mark	O	4.9	4.8
31	Edisto Island	2	Edisto Beach	32°30'11''	80°17'47''	Good mark	O	9.9	7.0[e]

[1]National Geodetic Vertical Datum of 1929 (NGVD of 1929).

[2]USGS - U.S. Geological Survey

[e] estimate.

AVG[3] - Water-surface elvation is average of 3 marks.

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– Liquefaction Potential Maps

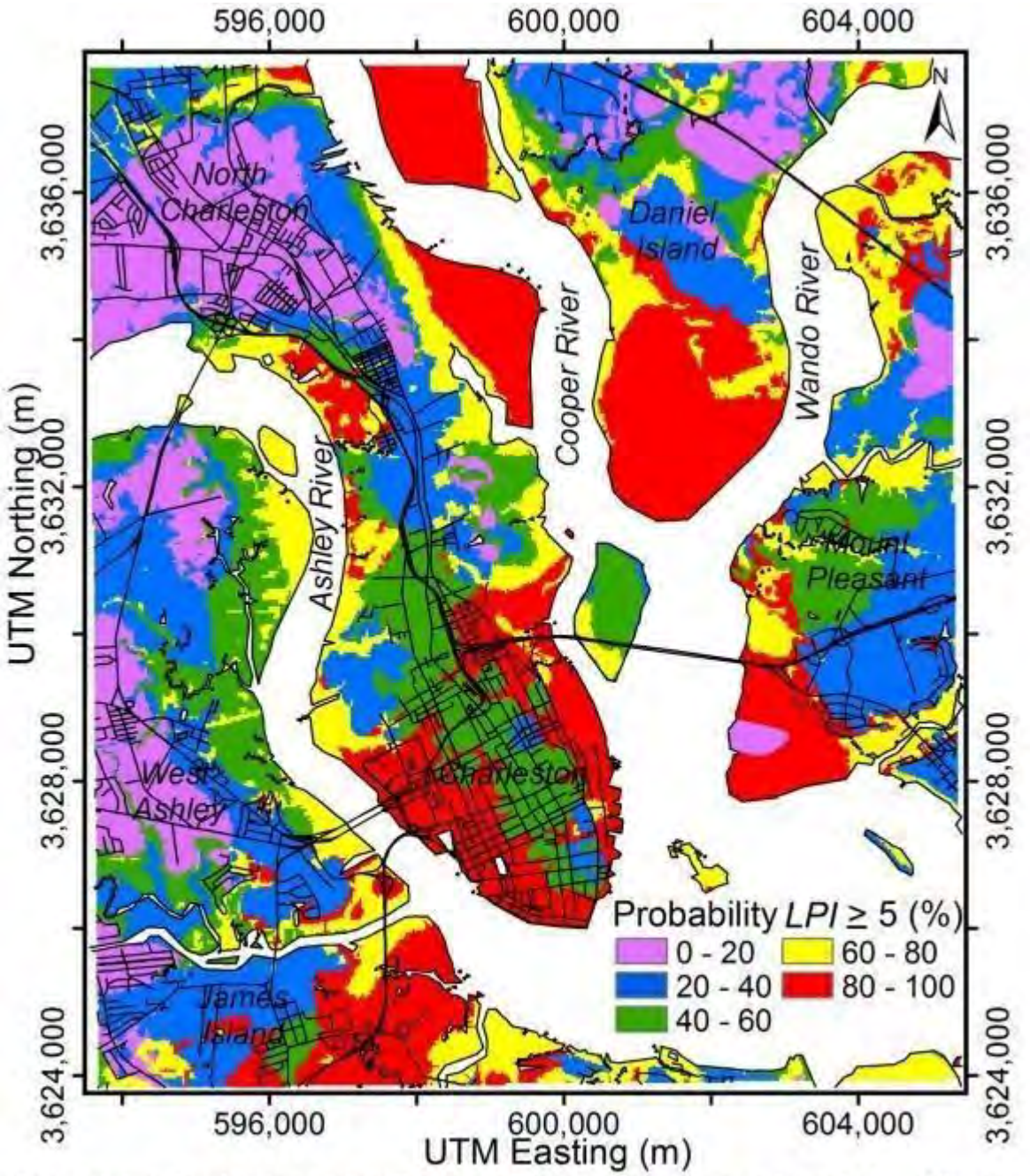


Figure 4.1: Liquefaction potential map of the Charleston quadrangle for 475-year-return-period accelerations and M_W=6.9, with roadways maintained by SCDOT (dbw.scdot.org/GISMapping/default.aspx).

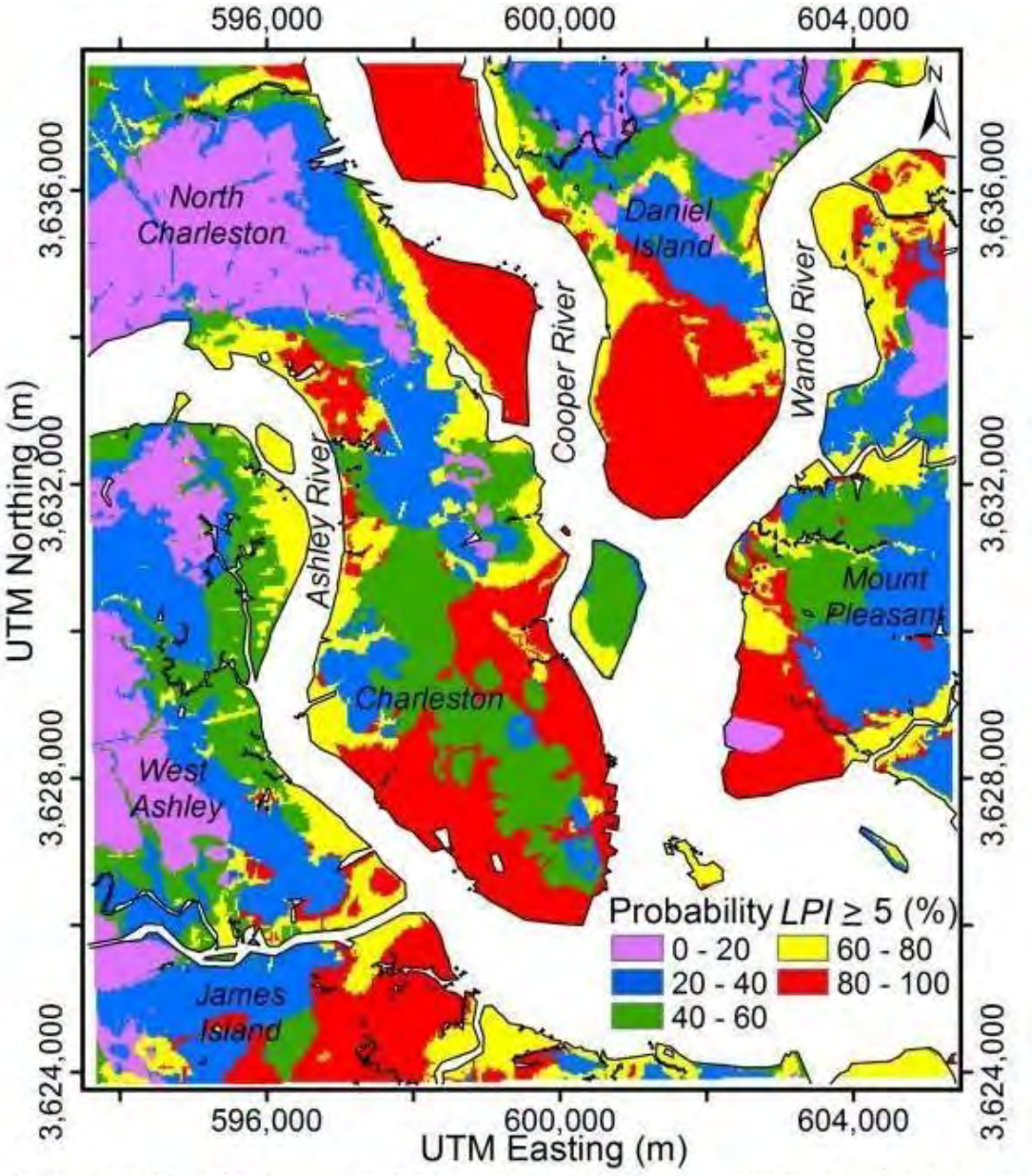


Figure 3.7: Liquefaction potential map of the Charleston quadrangle for 475-year return period accelerations and assuming M_W=6.9 and *GWT*=2.0 m for the Wando and 1.0 m for all other areas.

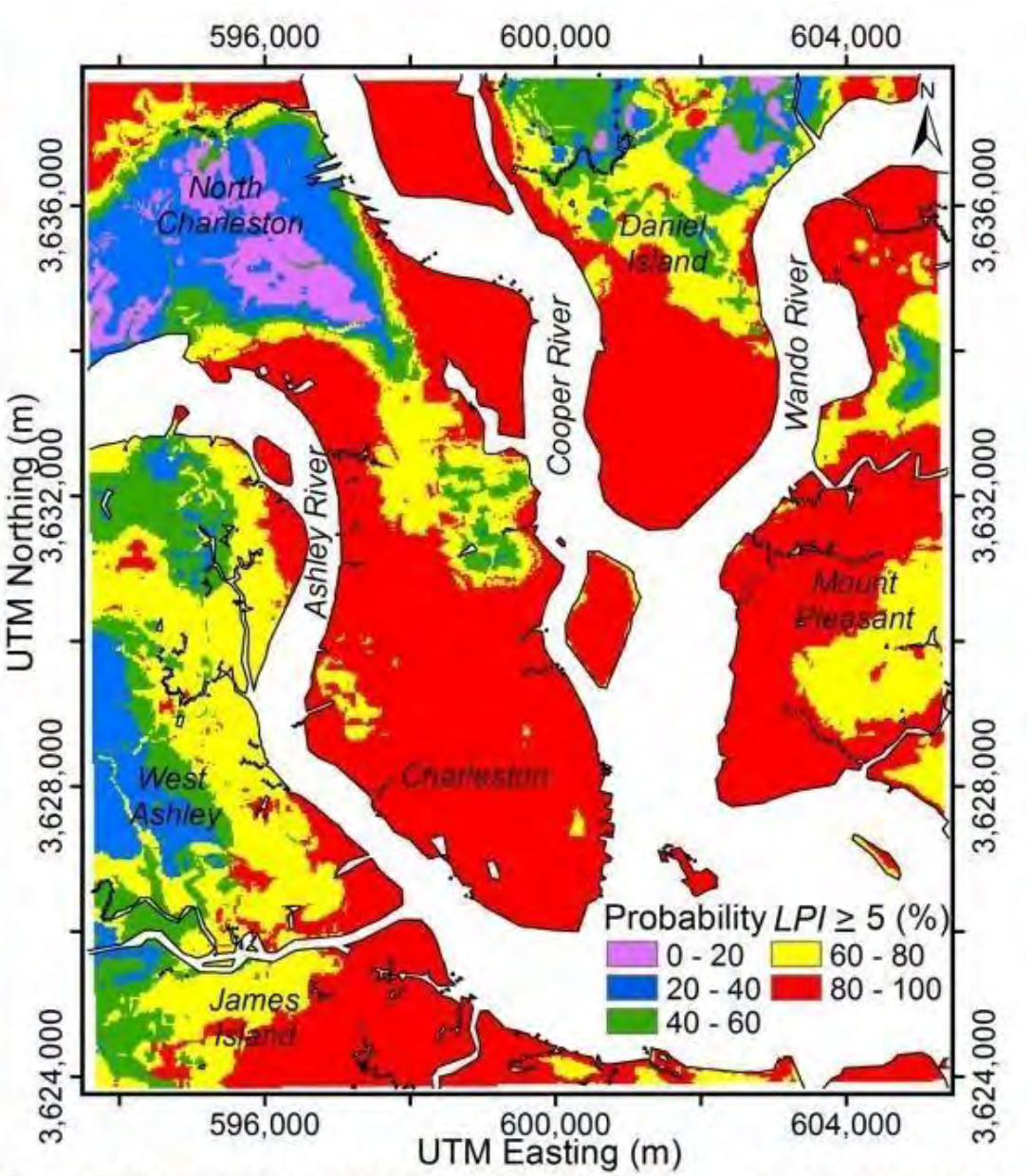


Figure 3.4: Liquefaction potential map of the Charleston quadrangle for a 475-year return period accelerations and assuming M_W=7.3 and *GWT*=1.0 m for all areas.

– Wildfire Intensity Maps

Characteristic Fire Intensity Scale (FIS) specifically identifies areas where significant fuel hazards and associated dangerous fire behavior potential exist based on a weighted average of four percentile weather categories. Similar to the Richter scale for earthquakes, FIS provides a standard scale to measure potential wildfire intensity. FIS consist of 5 classes where the order of magnitude between classes is ten-fold. The minimum class, Class 1, represents very low wildfire intensities and the maximum class, Class 5, represents very high wildfire intensities. Refer to descriptions below.

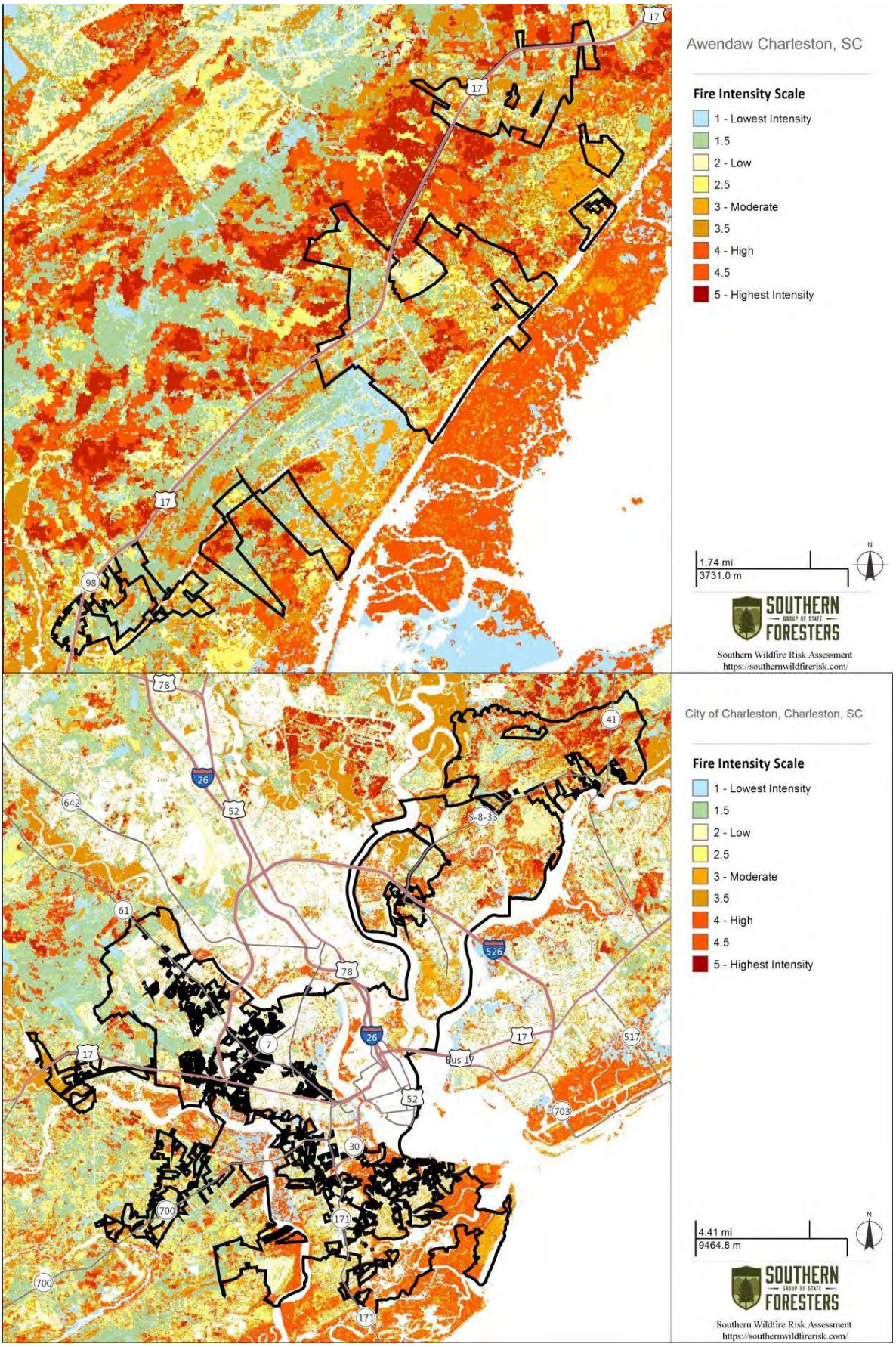
- **Class 1, Very Low:**
  Very small, discontinuous flames, usually less than 1 foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and non-specialized equipment.

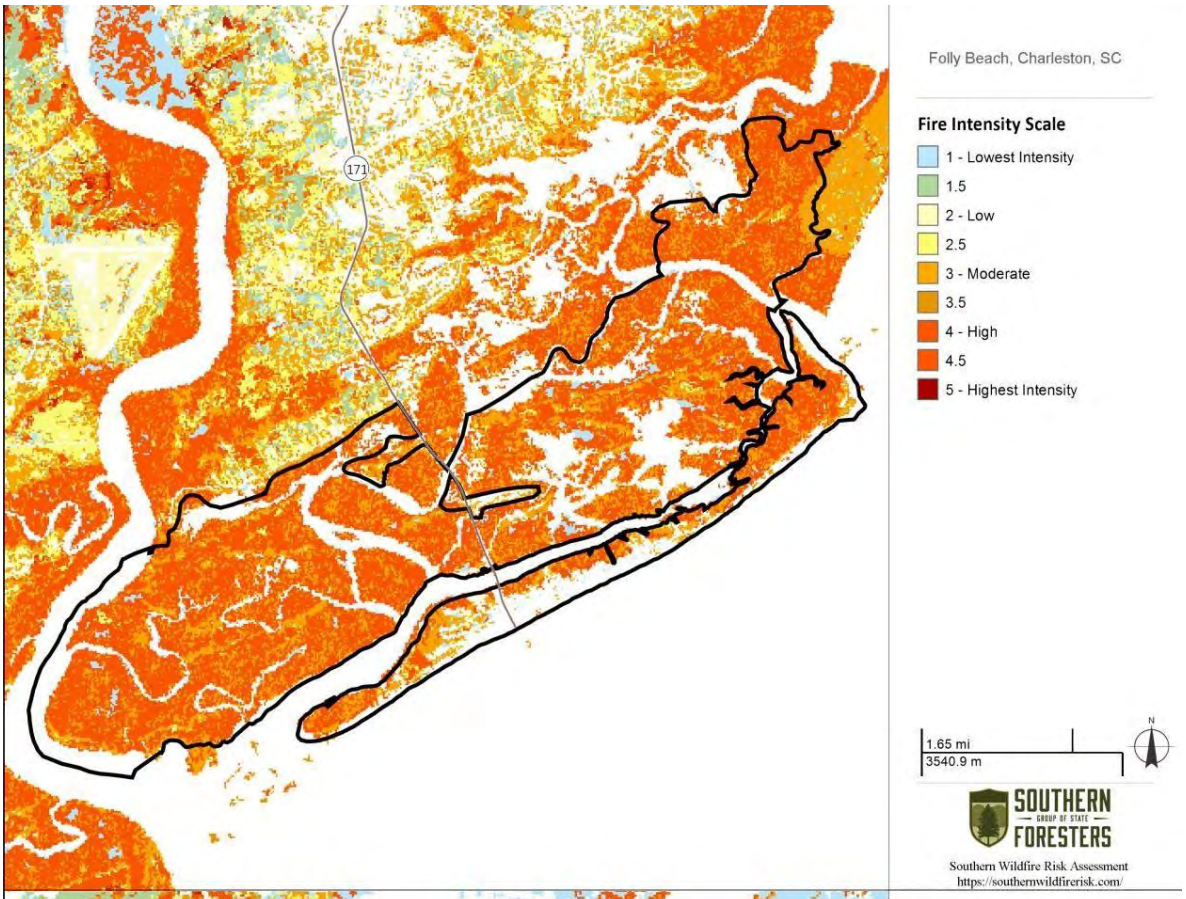
- **Class 2, Low:**
  Small flames, usually less than two feet long; small amount of very short range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.

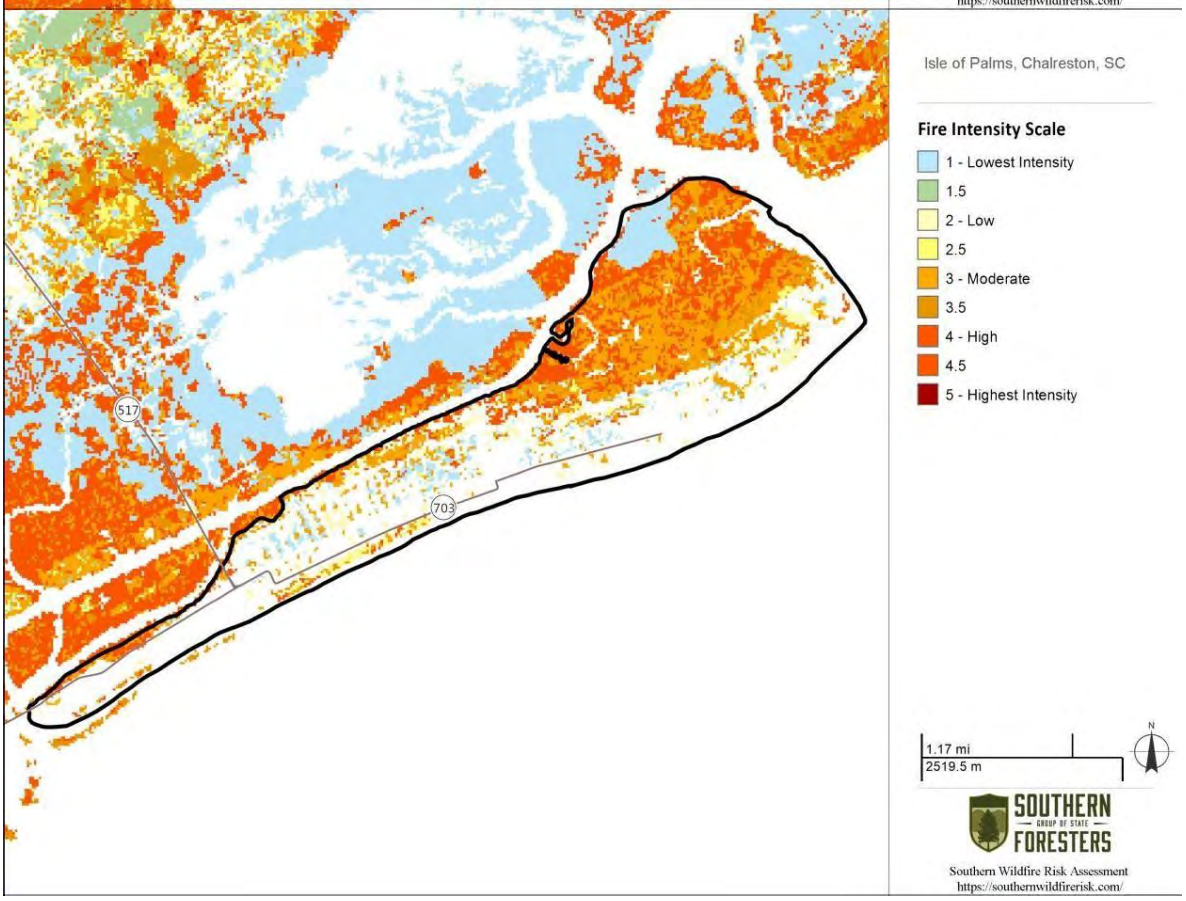
- **Class 3, Moderate:**
  Flames up to 8 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.

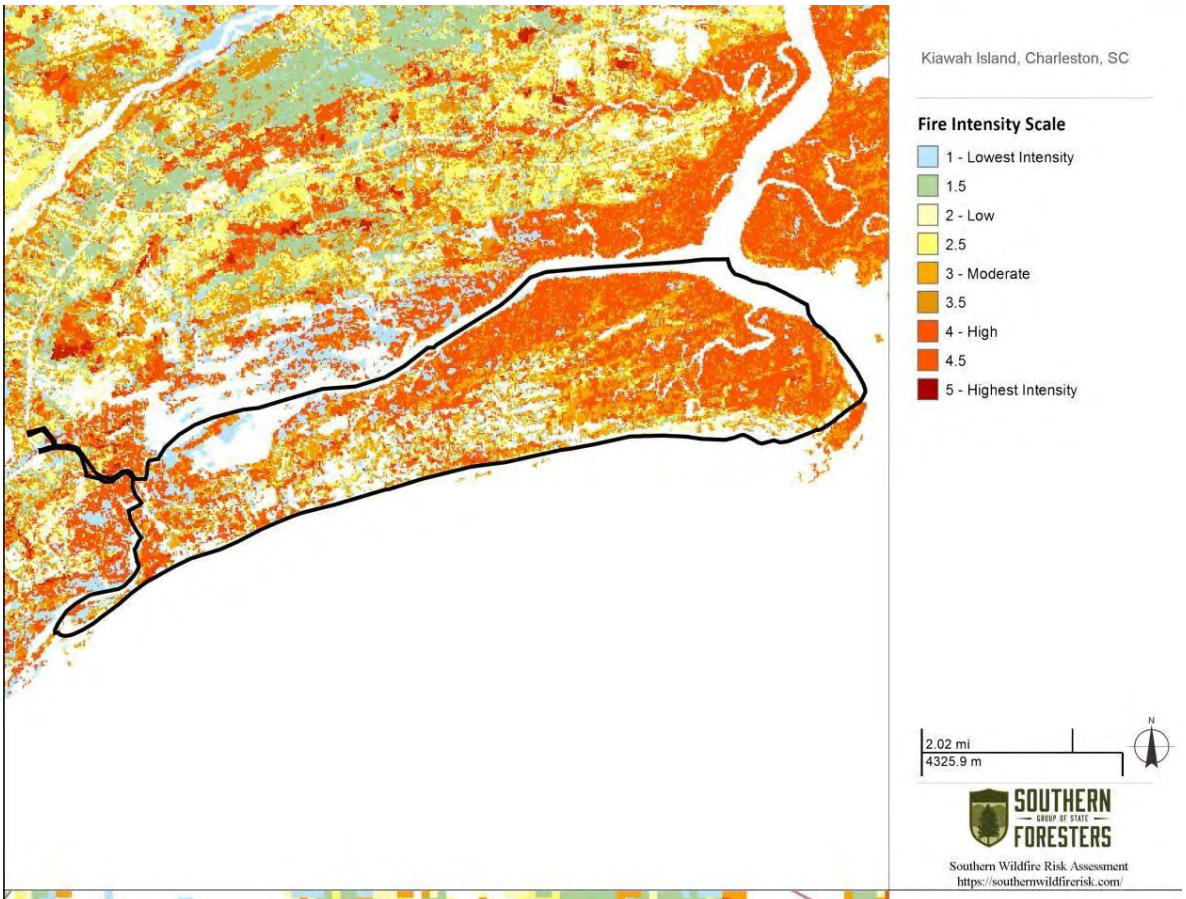
- **Class 4, High:**
  Large Flames, up to 30 feet in length; short-range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property.

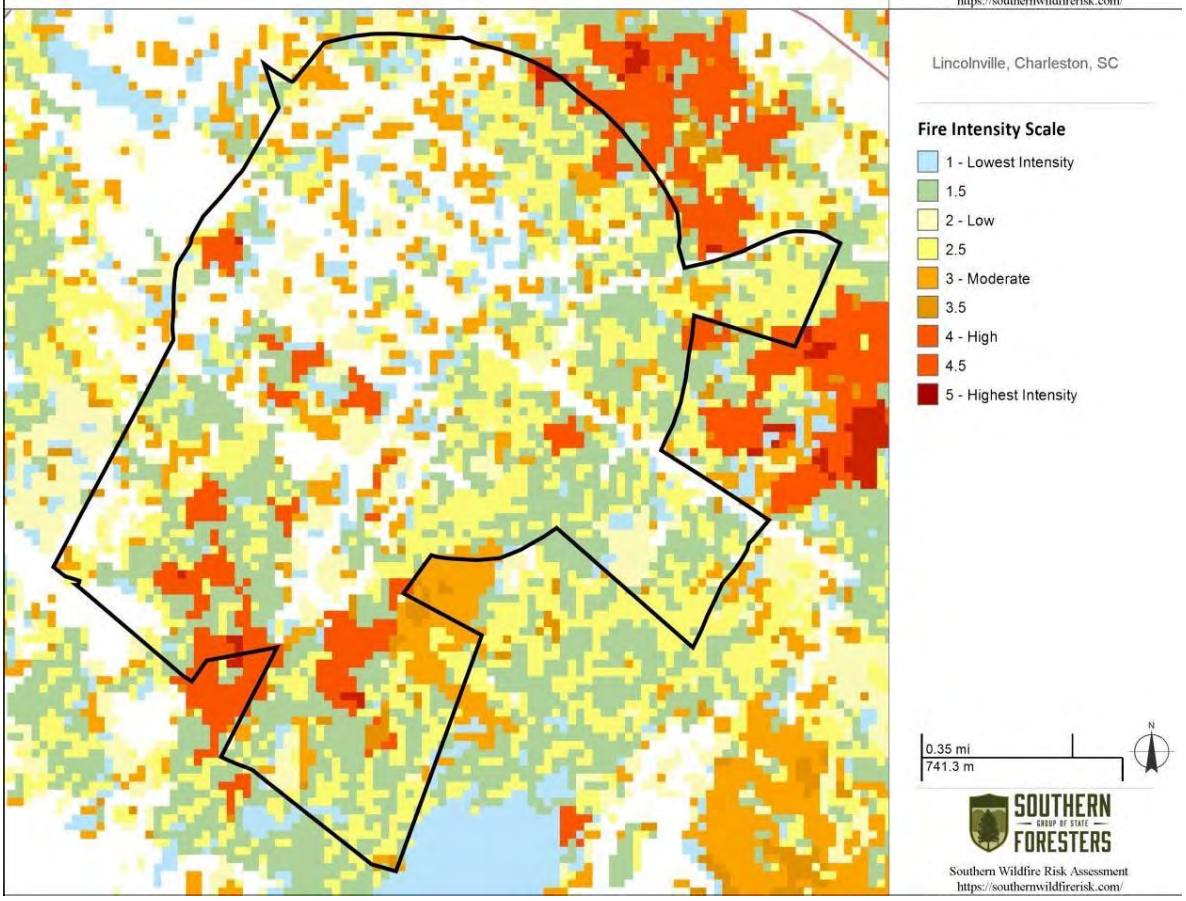
- **Class 5, Very High:**
  Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property.

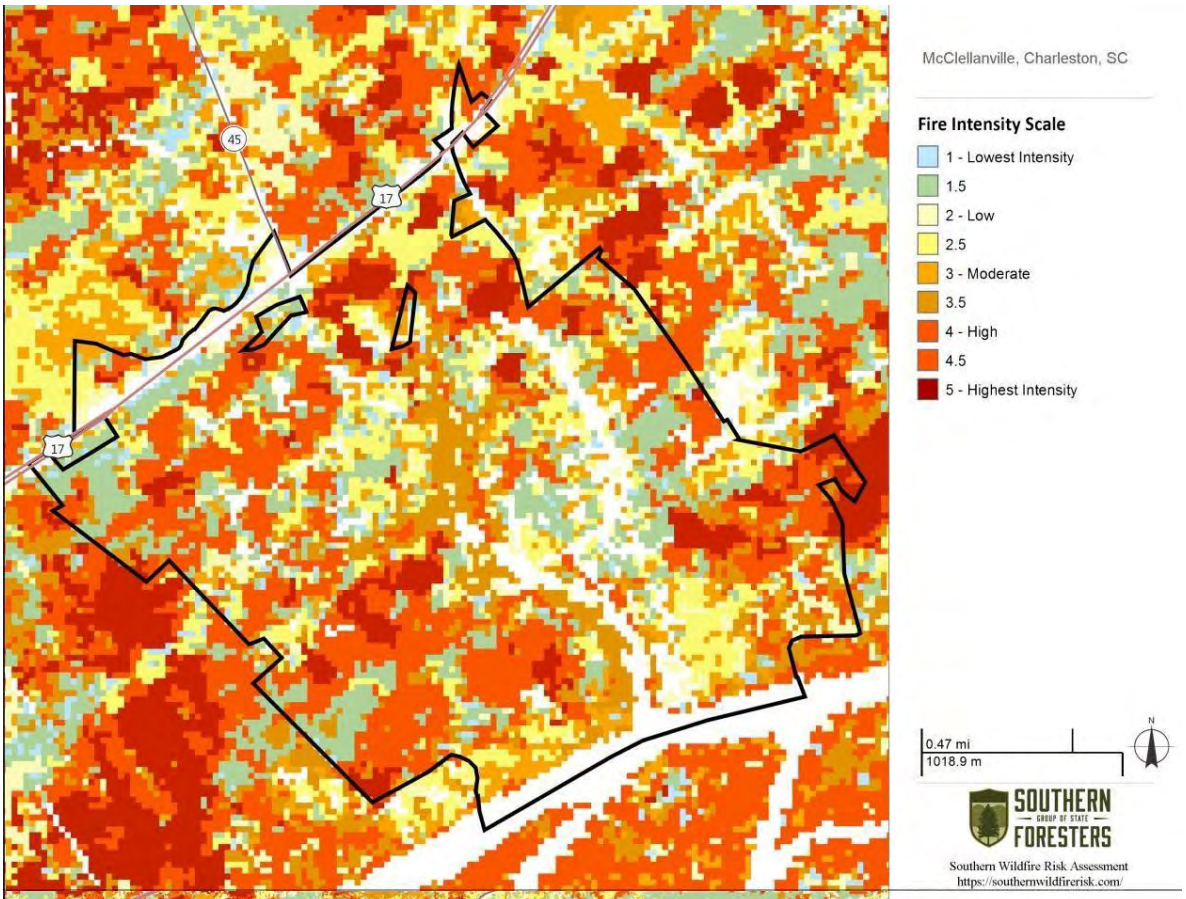

Awendaw Charleston, SC
Fire Intensity Scale
1 - Lowest Intensity
1.5
2 - Low
2.5
3 - Moderate
3.5
4 - High
4.5
5 - Highest Intensity
1.74 mi
3731.0 m
N
SOUTHERN GROUP OF STATE FORESTERS
Southern Wildfire Risk Assessment
https://southernwildfirerisk.com/
City of Charleston, Charleston, SC
Fire Intensity Scale
1 - Lowest Intensity
1.5
2 - Low
2.5
3 - Moderate
3.5
4 - High
4.5
5 - Highest Intensity
4.41 mi
9464.8 m
N
SOUTHERN GROUP OF STATE FORESTERS
Southern Wildfire Risk Assessment
https://southernwildfirerisk.com/

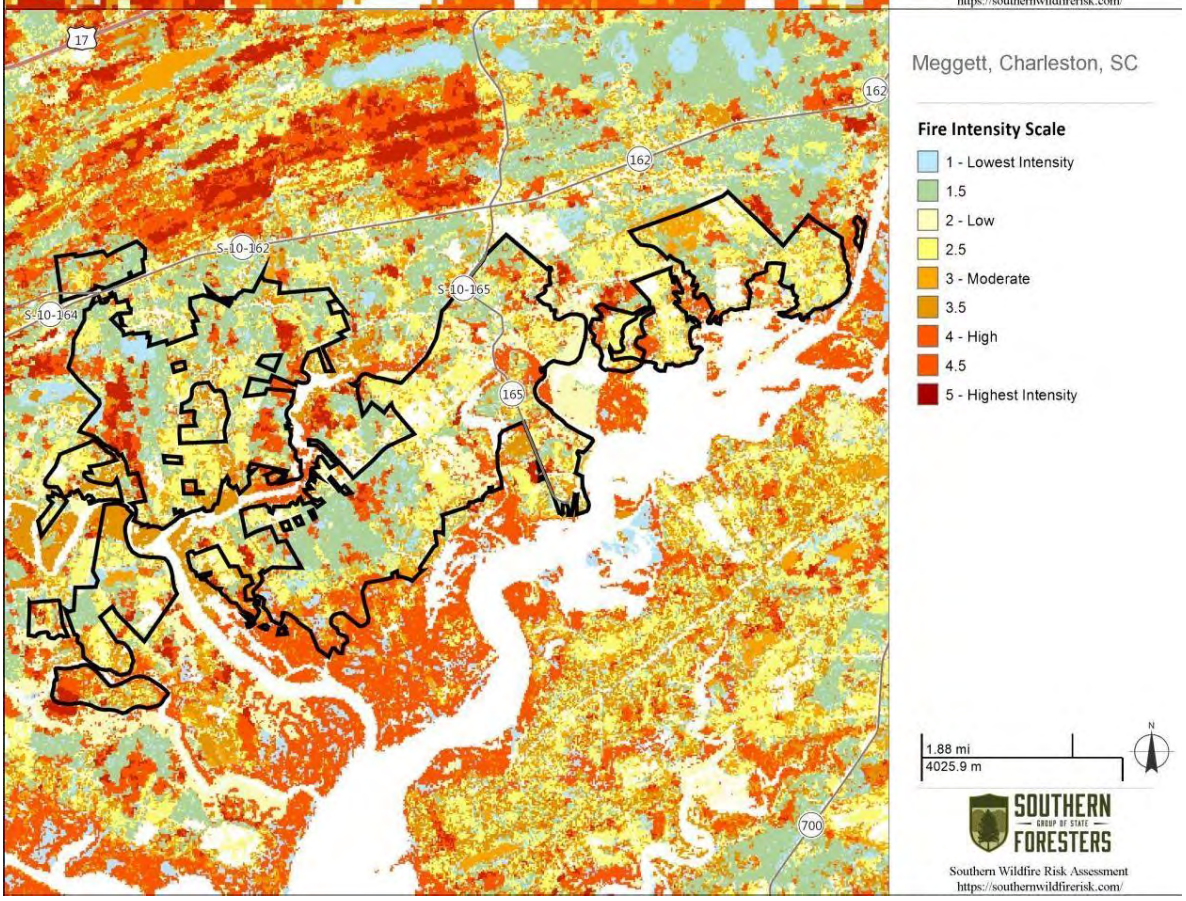

171
Folly Beach, Charleston, SC
Fire Intensity Scale
1 - Lowest Intensity
1.5
2 - Low
2.5
3 - Moderate
3.5
4 - High
4.5
5 - Highest Intensity
1.65 mi
3540.9 m
N
SOUTHERN GROUP OF STATE FORESTERS
Southern Wildfire Risk Assessment
https://southernwildfirerisk.com/

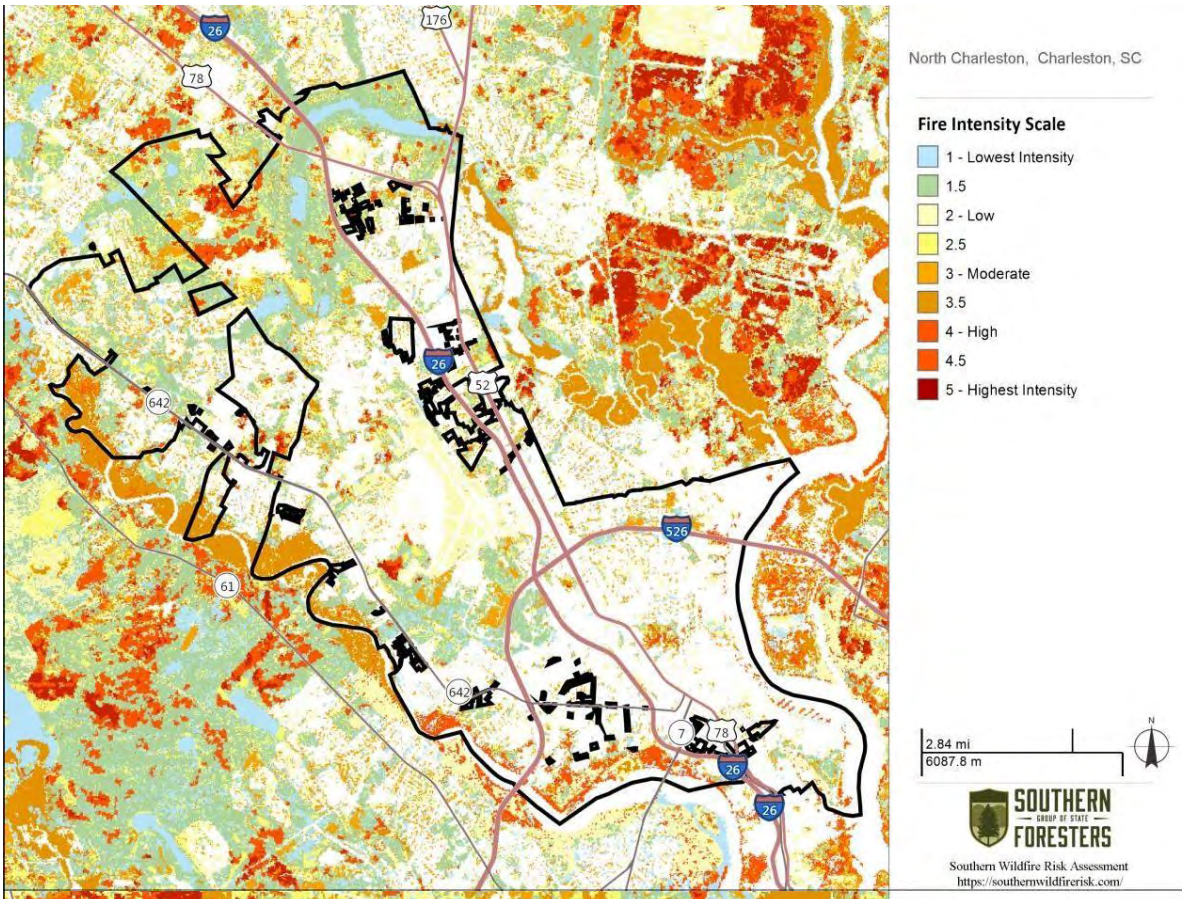

517
703
Isle of Palms, Chalreston, SC
Fire Intensity Scale
1 - Lowest Intensity
1.5
2 - Low
2.5
3 - Moderate
3.5
4 - High
4.5
5 - Highest Intensity
1.17 mi
2519.5 m
N
SOUTHERN GROUP OF STATE FORESTERS
Southern Wildfire Risk Assessment
https://southernwildfirerisk.com/

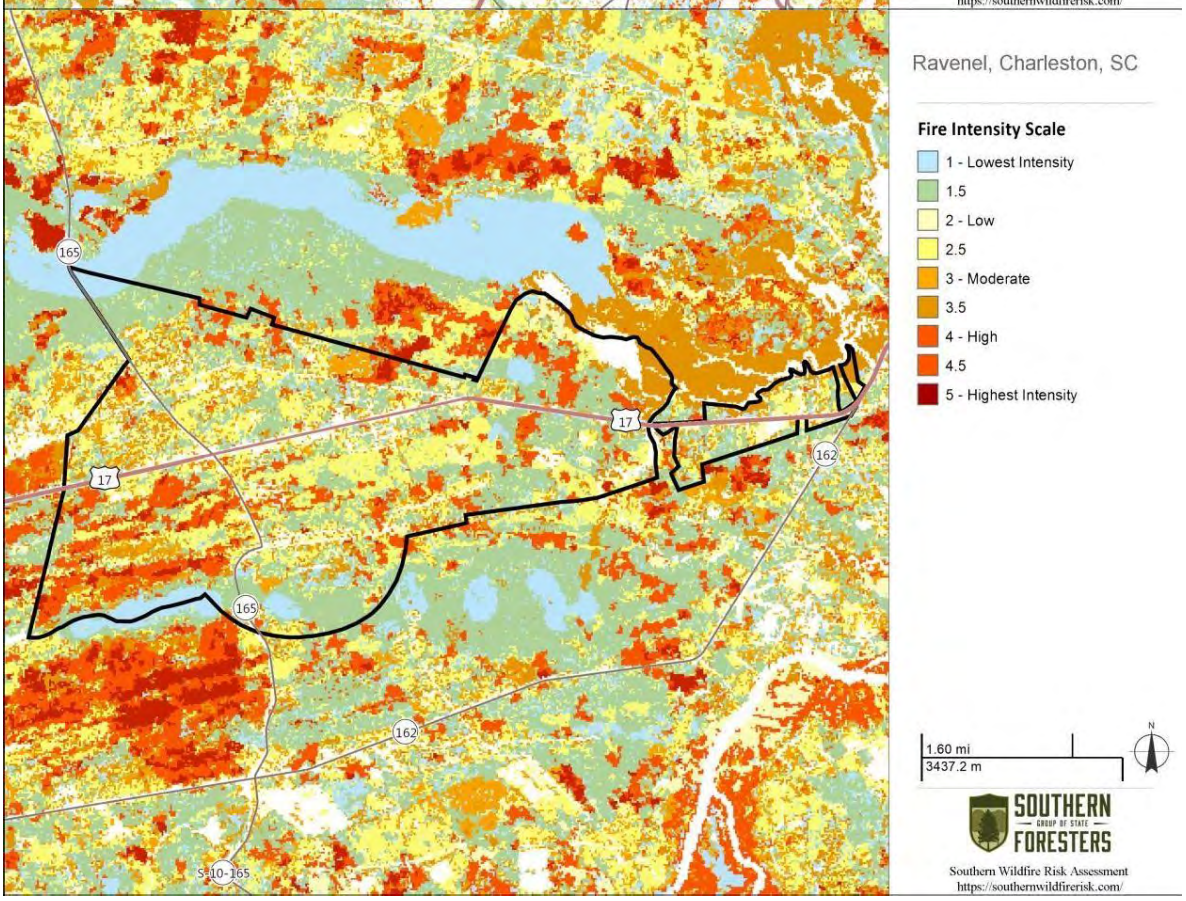

Kiawah Island, Charleston, SC
Fire Intensity Scale
1 - Lowest Intensity
1.5
2 - Low
2.5
3 - Moderate
3.5
4 - High
4.5
5 - Highest Intensity
2.02 mi
4325.9 m
N
SOUTHERN
GROUP OF STATE
FORESTERS
Southern Wildfire Risk Assessment
https://southernwildfirerisk.com/

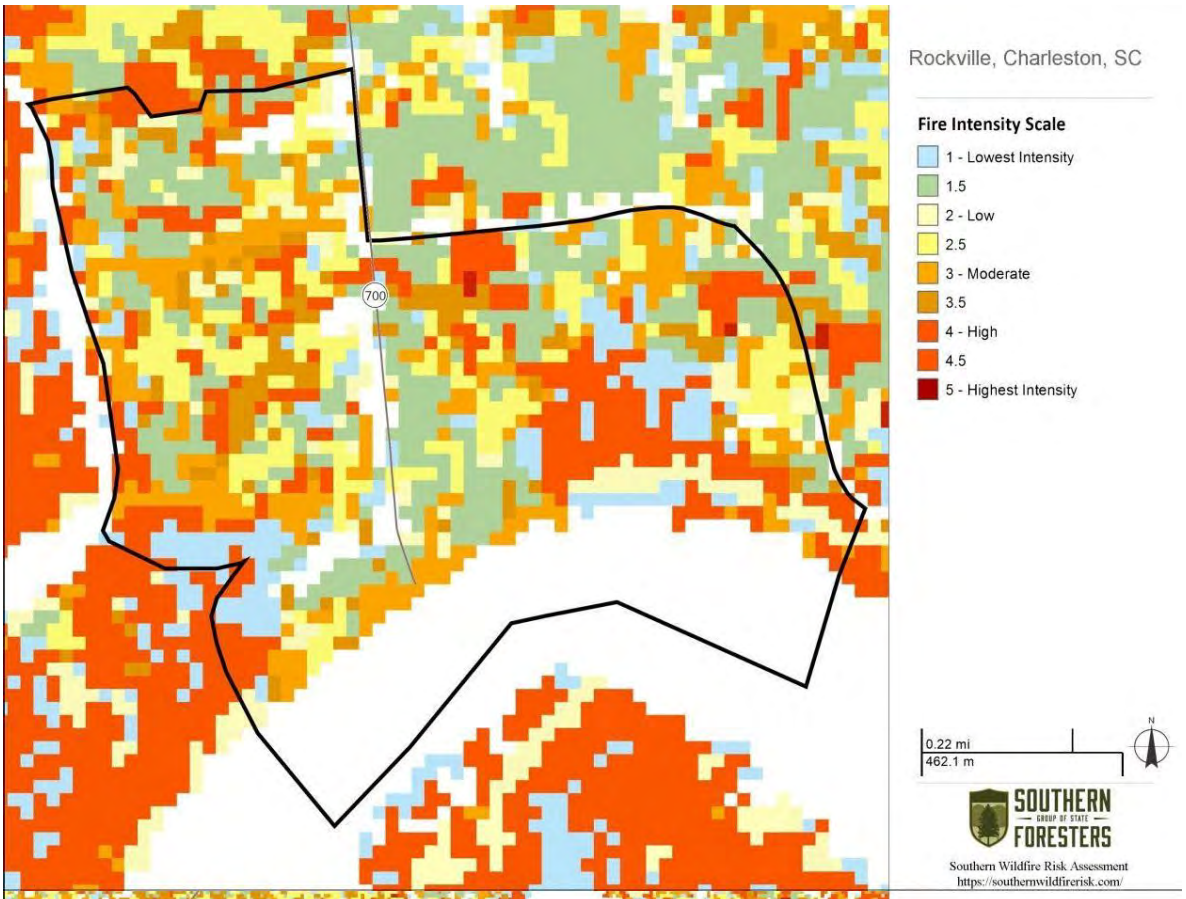

Lincolnville, Charleston, SC
Fire Intensity Scale
1 - Lowest Intensity
1.5
2 - Low
2.5
3 - Moderate
3.5
4 - High
4.5
5 - Highest Intensity
0.35 mi
741.3 m
N
SOUTHERN
GROUP OF STATE
FORESTERS
Southern Wildfire Risk Assessment
https://southernwildfirerisk.com/

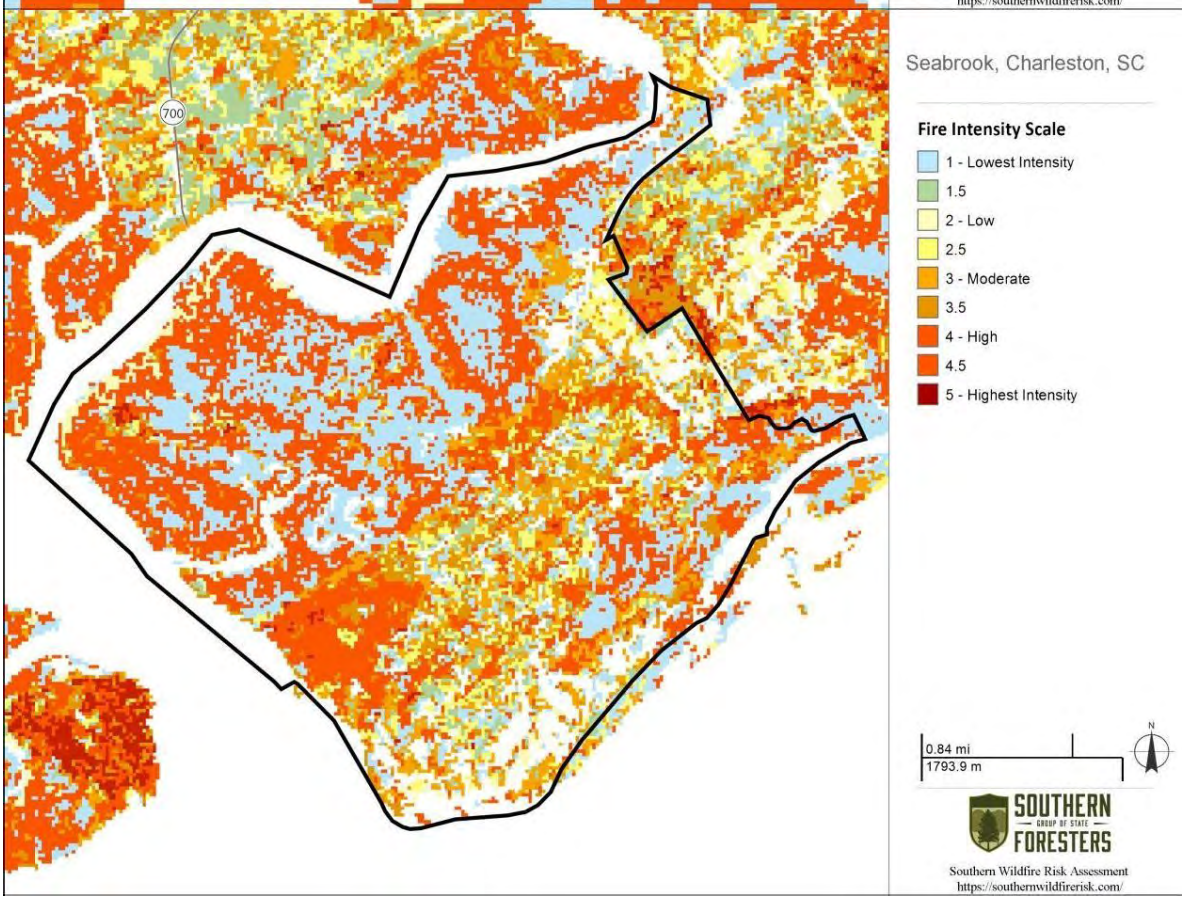

McClellanville, Charleston, SC
Fire Intensity Scale
1 - Lowest Intensity
1.5
2 - Low
2.5
3 - Moderate
3.5
4 - High
4.5
5 - Highest Intensity
45
17
17
0.47 mi
1018.9 m
N
SOUTHERN GROUP OF STATE FORESTERS
Southern Wildfire Risk Assessment
https://southernwildfirerisk.com/


Meggett, Charleston, SC
Fire Intensity Scale
1 - Lowest Intensity
1.5
2 - Low
2.5
3 - Moderate
3.5
4 - High
4.5
5 - Highest Intensity
17
162
162
S-10-162
S-10-165
S-10-164
165
700
1.88 mi
4025.9 m
N
SOUTHERN GROUP OF STATE FORESTERS
Southern Wildfire Risk Assessment
https://southernwildfirerisk.com/


North Charleston, Charleston, SC
Fire Intensity Scale
1 - Lowest Intensity
1.5
2 - Low
2.5
3 - Moderate
3.5
4 - High
4.5
5 - Highest Intensity
2.84 mi
6087.8 m
N
SOUTHERN GROUP OF STATE FORESTERS
Southern Wildfire Risk Assessment
https://southernwildfirerisk.com/


Ravenel, Charleston, SC
Fire Intensity Scale
1 - Lowest Intensity
1.5
2 - Low
2.5
3 - Moderate
3.5
4 - High
4.5
5 - Highest Intensity
1.60 mi
3437.2 m
N
SOUTHERN GROUP OF STATE FORESTERS
Southern Wildfire Risk Assessment
https://southernwildfirerisk.com/


700
Rockville, Charleston, SC
Fire Intensity Scale
1 - Lowest Intensity
1.5
2 - Low
2.5
3 - Moderate
3.5
4 - High
4.5
5 - Highest Intensity
0.22 mi
462.1 m
N
SOUTHERN
GROUP OF STATE
FORESTERS
Southern Wildfire Risk Assessment
https://southernwildfirerisk.com/


700
Seabrook, Charleston, SC
Fire Intensity Scale
1 - Lowest Intensity
1.5
2 - Low
2.5
3 - Moderate
3.5
4 - High
4.5
5 - Highest Intensity
0.84 mi
1793.9 m
N
SOUTHERN
GROUP OF STATE
FORESTERS
Southern Wildfire Risk Assessment
https://southernwildfirerisk.com/


703
Sullivan, Charleston, SC
Fire Intensity Scale
1 - Lowest Intensity
1.5
2 - Low
2.5
3 - Moderate
3.5
4 - High
4.5
5 - Highest Intensity
0.66 mi
1419.1 m
N
SOUTHERN
GROUP OF STATE
FORESTERS
Southern Wildfire Risk Assessment
https://southernwildfirerisk.com/

- Pepperhill/McChune Branch Drainage Study

U. S. Department of Homeland Security
Region IV
3003 Chamblee Tucker Road
Atlanta, GA 30341

FEMA

August 23, 2019

Ms. Elizabeth Melton
State Hazard Mitigation Officer
South Carolina Emergency Management Division
2779 Fish Hatchery Road
West Columbia, South Carolina 29172

Reference: Limited Amendment: Charleston County Multi-jurisdictional Hazard Mitigation Plan

Dear Ms. Melton:

We are pleased to have received, the Pepperhill-McChune Study, as information and a limited amendment to the Charleston County Multi-jurisdictional Hazard Mitigation Plan from your office via email on July 11, 2019.

Although the limited amendments do not require FEMA review and approval, they confirm the community's commitment to implement the Federal recommendation for the community to perform an annual review and assessment of the effectiveness of their hazard mitigation plan and ultimately to complete the required comprehensive plan update as required at least every five (5) years.

We continue to encourage each community to conduct a plan update process within one (1) year of being included in a Presidential Disaster Declaration or of the adoption of major modifications to their local Comprehensive Land Use Plan or other plans that affect hazard mitigation or land use and development. When you prepare a comprehensive plan update, it must be submitted through the State as a "comprehensive plan update" and is subject to a formal review and approval by our office at that time.

If you or the participants in the Charleston County Multi-jurisdictional Hazard Mitigation Plan have any questions or need any additional information, please do not hesitate to contact Kenya Grant, of the Hazard Mitigation Assistance Branch, at (770) 220-8893 or Marlene Dawkins, of my staff, at (770) 220-8715.

Sincerely,

Kristen Martinenza

Kristen M. Martinenza, P.E., CFM
Branch Chief
Risk Analysis
FEMA Region IV

www.fema.gov

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