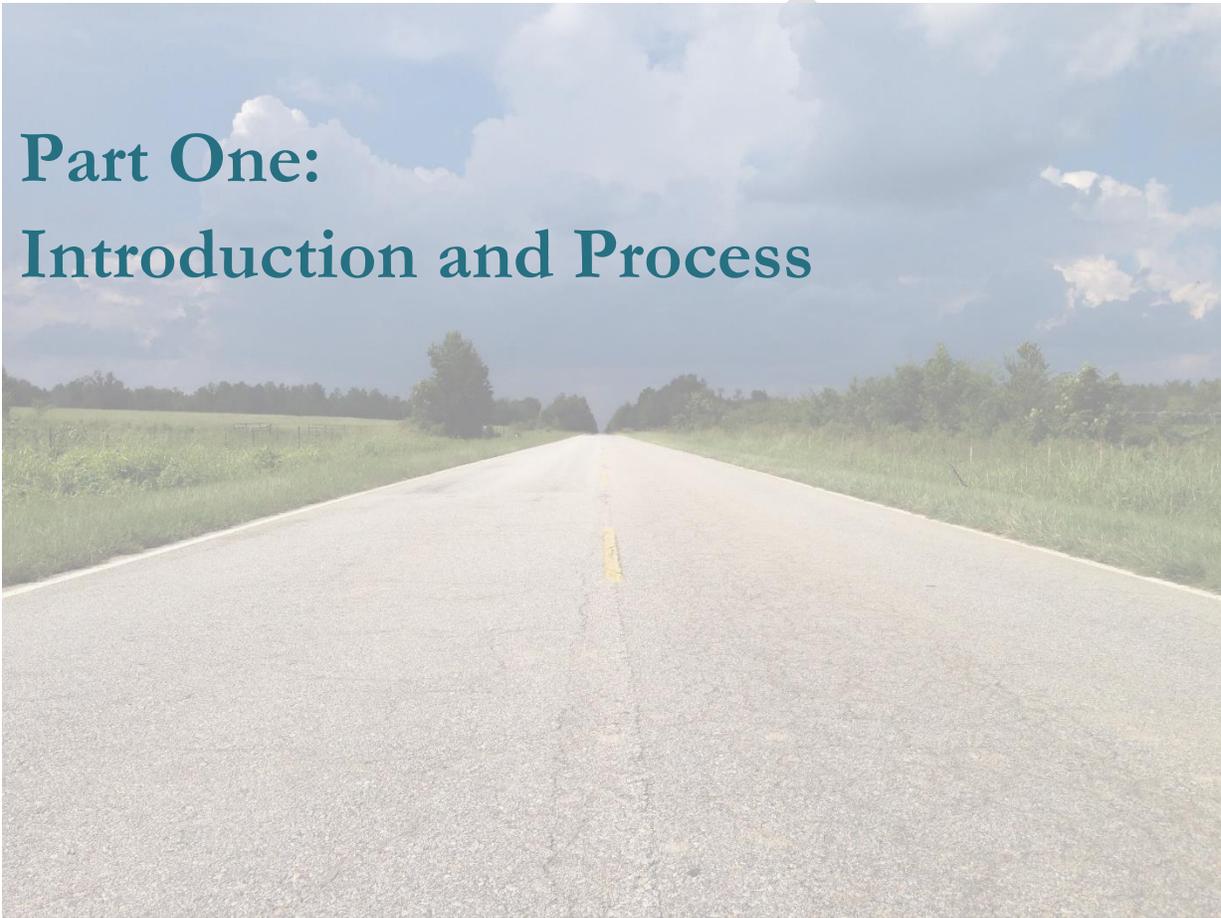


Allendale County Hazardous Mitigation Plan 2021



Photo by [Dave Hoefler](#) on [Unsplash](#)

Prepared on behalf of Allendale County by Lower Savannah Council of Governments



Part One:
Introduction and Process

1.1 Introduction: Natural Hazard Mitigation Plan

After review by the Task Force Committee, this section of the plan has remained the same for the update process.

The Natural Hazard Mitigation Plan is required by the Federal Emergency Management Agency (FEMA) for all counties in the State of South Carolina. The initiation of hazard planning by local governments came into effect after the signing of the Disaster Mitigation Act of 2000 (DMA 2000). This document is the Natural Hazard Mitigation Plan for Allendale County and its incorporated municipalities.

Following the passage of the DMA 200, states and local governments are now required to develop and adopt a hazard mitigation plan in order to remain eligible for FEMA mitigation grant funding. Communities with an adopted plan will become “pre-positioned” and potentially more apt to receive available mitigation funds.

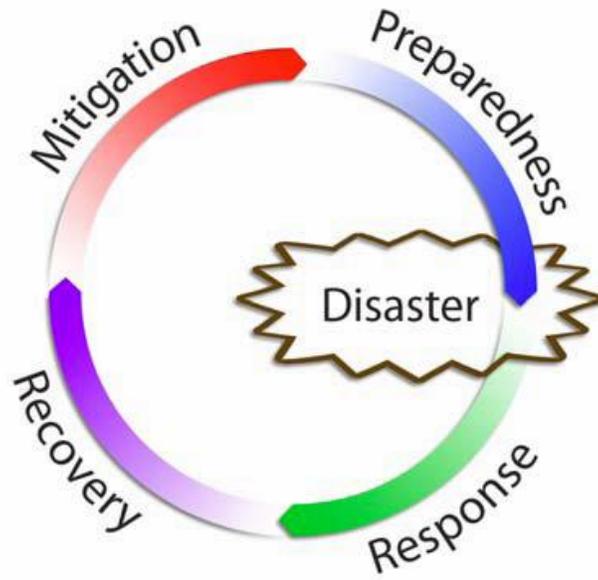
Natural hazards, including floods, hurricanes, earthquakes and severe winter storms, are a part of the world around us. Their occurrence is natural and inevitable, and there is little we can do to control their force and intensity. Allendale County faces a variety of these hazards, each of which is discussed in Part Two: Risk Assessment.

Through the adoption of hazard mitigation planning practices, we can minimize the impact of hazards on people and the built environment. The Allendale County Natural Hazard Mitigation Plan is designed to be a logical, information-driven plan that systematically identifies and guides the implementation of mitigation actions, including policies or site-specific projects designed to make Allendale County and its incorporated municipalities safer from the threat of natural hazards.

Hazard mitigation involves the use of specific measures to reduce the impact of hazards on people and the built environment. Measures may include both structural and non-structural techniques, such as protecting buildings and infrastructure from the forces of nature or wise floodplain management practices. Actions may be taken to protect both existing and/or future development. It is widely accepted that the most effective mitigation measures are implemented before an event at the local government level, where decisions on the regulation and control of development are ultimately made.

Hazard mitigation planning is the first of the four “phases of emergency management,” followed by preparedness, response, and recovery. This prevention-related concept of emergency management often gets the least attention, yet it is one of the most important steps in creating a disaster-resistant community.

Figure 1: Phases of Emergency Management



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1.2 Area Background

After review by the Task Force Committee, this section has been revised as part of the update process to include updated population and median household incomes for the County and its incorporated municipalities, per the US Census information. Additionally, an update to the annual average temperature, rainfall and snowfall rate was included, as well updated maps.

Allendale County is located along the Savannah River in the Midwestern area of the state and is bordered by Hampton, Bamberg, and Barnwell counties in South Carolina, and Burke County in Georgia. The centralized location and pastoral open spaces of Allendale County help to provide a relaxed country lifestyle while maintaining convenient access to some of South Carolina’s larger communities, as well as the state’s coastal and mountain regions.

Allendale County’s population is estimated at 8,903 per 2018 US Census Bureau estimates. The annual average temperature is 64.3°F. Rainfall averages at approximately 46.22 inches with a mean snowfall rate of 1 inch (*South Carolina State Climatology Office*).

The County contains four municipalities: Allendale, Fairfax, Sycamore, and Ulmer. Allendale serves as the County Seat. The Town of Allendale is located in the center of Allendale County where US Highway 278 and US 301 intersect.

Figure 2 below illustrates the area demographic background of Allendale County and its incorporated municipalities.

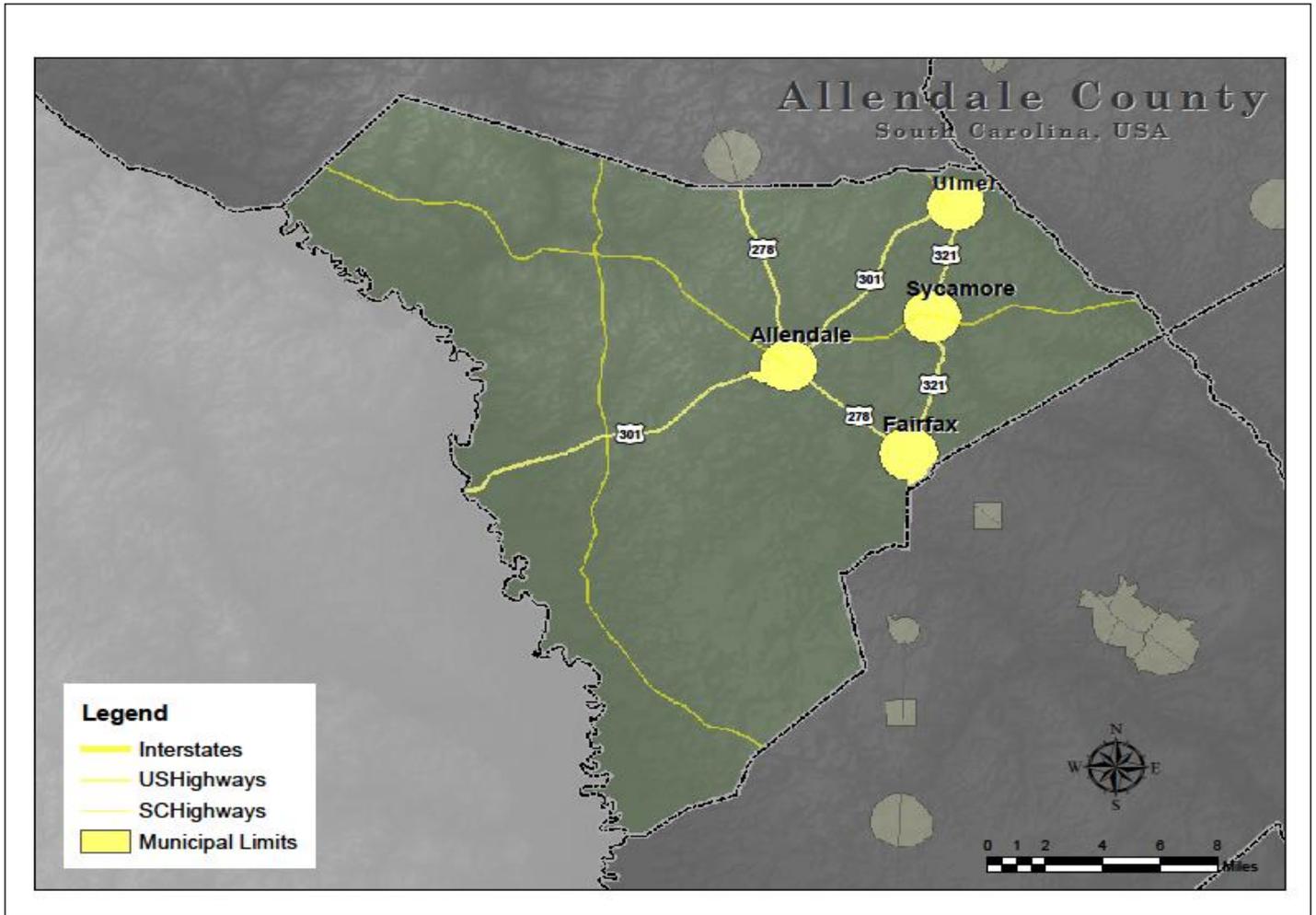
Figure 2. Area Demographic Background

	2013 Population	2013 Median Household Income	2018 Population Projection	2018 Median Household Income Projection
Allendale County	10,214	\$25,252	8,903	\$23,331
Town of Allendale	3,396	\$22,946	2,979	\$19,420
Town of Fairfax	1,761	\$19,855	1,715	\$21,964
Town of Sycamore	223	\$21,389	157	\$47,857
Town Of Ulmer	132	\$12,500	74	\$20,625

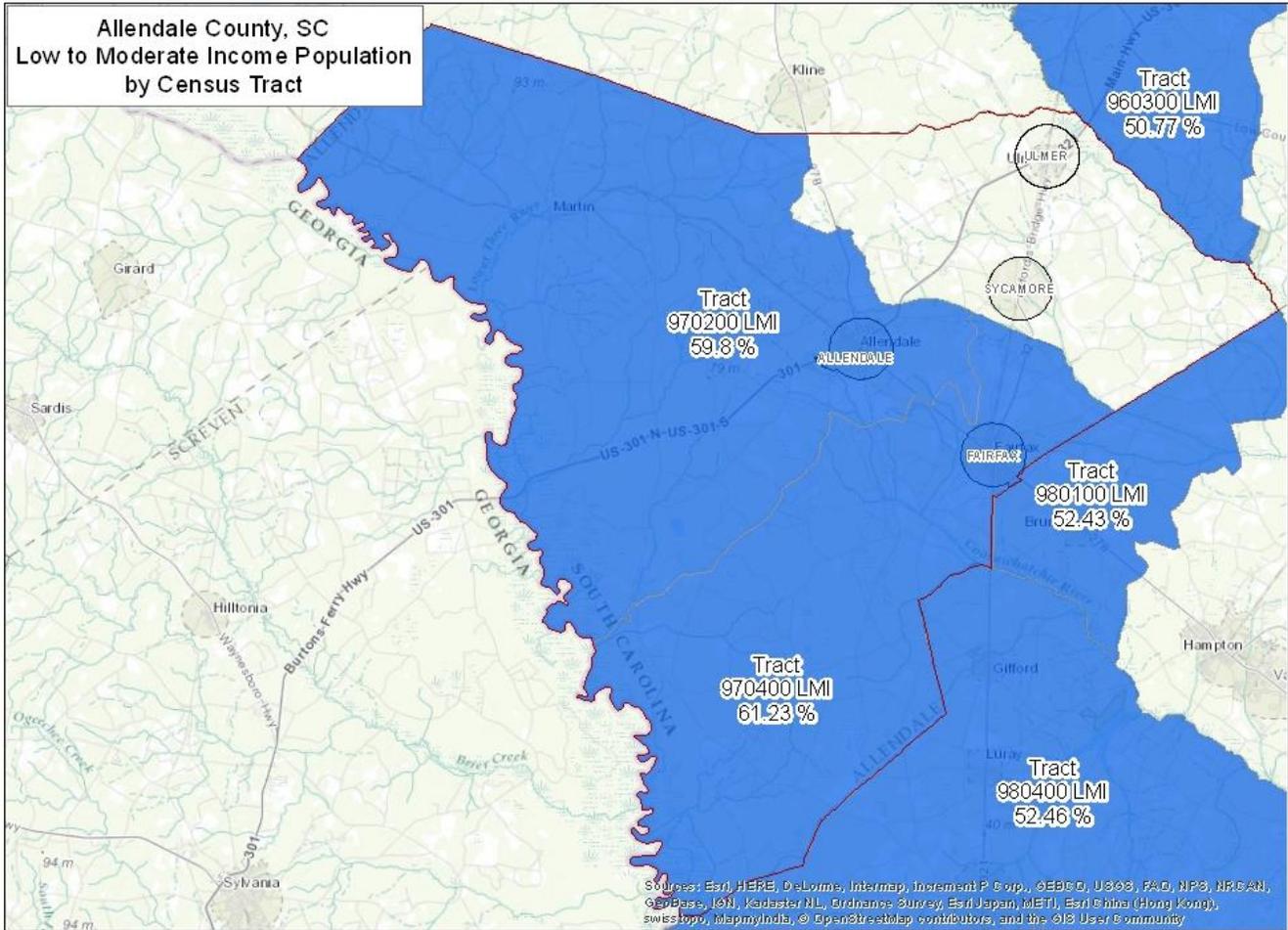
Source: US Census Bureau

The following map reveals the area of Allendale County, which is the focus of this plan.

Map 1: Location Map

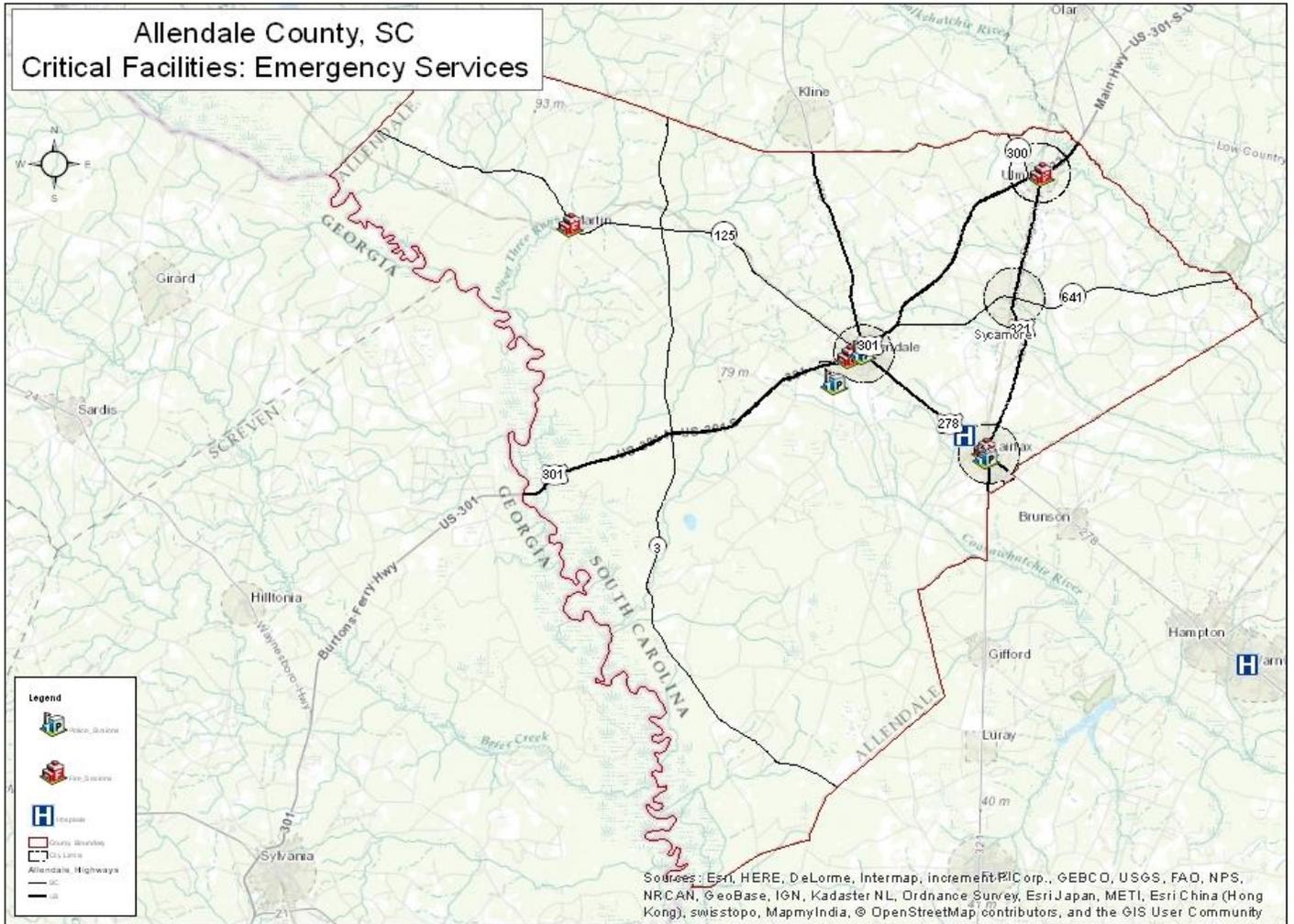


Map 2: Allendale County Low to Moderate Income Population

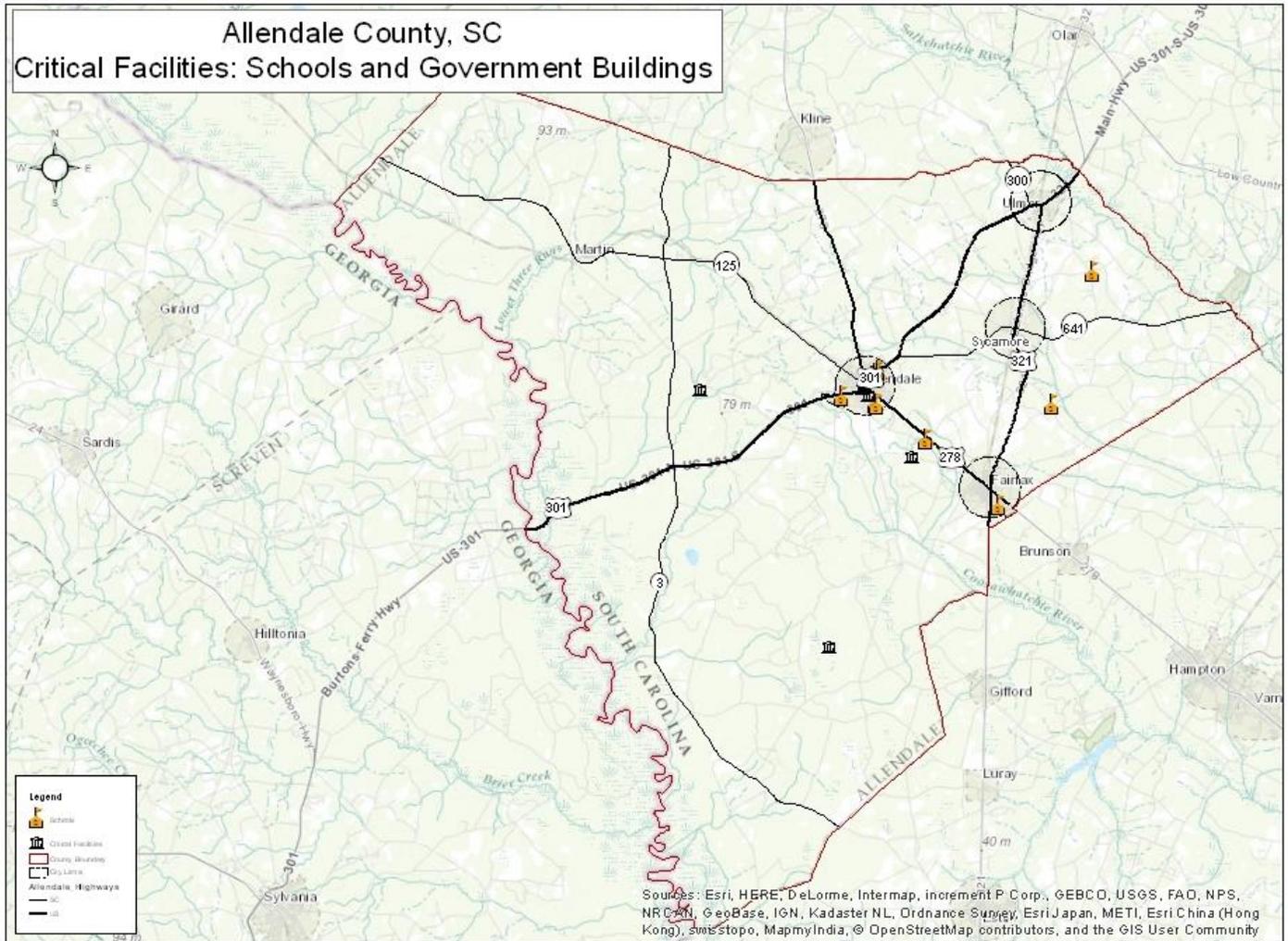


The following maps includes critical facilities within Allendale County.

Map 3: Critical Facilities: Emergency Services Map



Map 4: Critical Facilities: Schools and Government Buildings Map



1.3 Purpose

After review by the Task Force Committee, this section of the plan was updated to reflect consistency with the State 2018 HMP to include the seven (7) principles of the South Carolina mission for mitigation, as well as an overview of goals (Found on page 13 of the SC State 2018 HMP).

This plan is designed to be both strategic as well as comprehensive in nature, providing a long-term vision of how the county will address hazards over time. The concept of multi-objective planning is emphasized throughout this document, identifying ways to link hazard mitigation policies and programs with complimentary goals of the county related to housing, economic development, recreational opportunities, transportation improvements, environmental quality, and public health and safety.

Mitigation planning offers many benefits, including:

- Saving lives and property;
- Saving money;
- Speeding recovery following disasters;
- Reducing future vulnerability through wise development and post-disaster recovery and reconstruction;
- Expediting the receipt of pre-disaster and post-disaster grant funding; and
- Demonstrating a firm commitment to improving community health and safety.

More importantly, mitigation planning has the potential to produce long-term benefits by breaking the repetitive cycle of disaster damages, injuries and loss of life. A core assumption of hazard mitigation is that a pre-disaster investment can significantly reduce the demand for post-disaster assistance. Further, the adoption of mitigation actions enables local residents, businesses and industries to more quickly recover from a disaster, getting the economy back on track sooner and with less interruption.

The benefits of mitigation planning go beyond reducing hazard vulnerability. Measures such as the acquisition or regulation of land in known hazard areas can help achieve multiple community goals, such as preserving open space, maintaining environmental health and enhancing recreational opportunities.

The purpose of this Plan is to:

1. To protect life, safety and property by reducing the potential for future damages and economic losses that result from natural hazards;
2. Meet the requirements of the DMA 2000, and therefore qualify for additional grant funding in the following programs: Hazard Mitigation Grant Program, and Pre-Disaster Mitigation Program;
3. To speed recovery and redevelopment following future disaster events;

4. Enhance the capability of all counties and municipalities to address identified hazards by providing technical support and training;
5. Establish an effective forum for state agencies and statewide organizations to discuss and coordinate existing and future plans, programs and data, rules and regulations and expertise addressing hazard-related issue;
6. Increase the effectiveness and efficiency of hazard mitigation programs and projects sponsored, finances or managed by state agencies or statewide organizations; and
7. To demonstrate a firm local commitment to hazard mitigation planning principles.

Once adopted, the mitigation plan will help the communities of Allendale County to take greater advantage of State and Federal funding opportunities for eligible hazard mitigation projects. For instance, to qualify for Federal aid for technical assistance and post-disaster funding, local jurisdiction must comply with the Disaster Mitigation Act of 2000 (DMA 2000) and its implementing regulations based on the *Local Multi-Hazard Mitigation Planning Guidance*, published by FEMA July 12, 2013. The Allendale County Natural Hazard Mitigation Plan has been prepared to address these hazard mitigation planning requirements. The FEMA Review Criteria in the preface of the document describes each of the major planning requirements and identifies where in the plan document they are addressed.

Another key purpose of the planning process is to ensure that proposals for mitigation actions are reviewed and coordinated among the participating jurisdictions within the County, and supported by technical assistance from appropriated regional, State and Federal agencies. In this way there is a high level of confidence that mitigation actions proposed by one jurisdiction, when implemented, will be compatible with the interests of adjacent jurisdictions and unlikely to duplicate or interfere with mitigation initiatives proposed by others. The last but not the least purpose of the Allendale County Plan is to provide each participating local jurisdiction with a plan of action that can be adopted and implemented pursuant to its own authorities and responsibilities.

1.4 The Planning Process

After review by the Task Force Committee, the following changes were made to this section as part of the update process: Figure 3 reflects more current documents and plans.

FEDERAL REQUIREMENTS FOR LOCAL HAZARD MITIGATION PLANS

Requirement 201.6(b): In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process **shall** include:

- (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- (2) 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 private and non-profit interests to be involved in the planning process; and
- (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information

Requirement 201.6(c)(1): The plan **shall** document the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

This plan is designed to provide a blueprint for hazard mitigation activities in the general sense of the program and is structured to serve as a basis for specific hazard mitigation efforts for any disaster. It is recognized, however, that updates may be required to address specific issues arising from a given disaster.

This plan is currently being updated to comply with State and Federal mandates. As a result of the update, new elements will be included as necessary to meet FEMA regulations.

This plan identifies hazards and considers ways to reduce vulnerability to natural hazards in Allendale County. It encompasses a range of life- and property-saving hazard mitigation initiatives in the categories of mitigation coordination, acquisition/relocation/retrofitting, floodplain management, public safety, emergency preparedness, earthquake, tornado, drought, etc. Both short-term and long-term hazard mitigation measures are identified in order to help all state and local agencies allocate resources in a responsible manner in order to provide for the public safety, public health, and general welfare of all the people in Allendale County.

This plan has taken into account the mitigation experience, and a variety of mitigation projects, from other counties near or surrounding Allendale County and the State of South Carolina. It has taken advantage of the collective mitigation knowledge of many State, Federal, and Local officials, as well as representatives from both the public and private sectors, and is designed as one component to help safeguard the citizens of Allendale County. As such, it should significantly contribute to the mitigation of future disasters.

Allendale County utilized federal and state guidance documents, existing local plans and studies, and data to develop this plan. More specifically, the Allendale County Comprehensive Plan provided demographical statistics that were incorporated into this plan; the Allendale County Land Development Regulations provided specific no-build scenarios in the floodplains and building codes enforcement; and the SC HMP 2018 provided a framework and was used as a guide to updating this plan. Specific examples include:

Figure 3. Existing Plans/Studies/Guides

Plans/Studies/Guides	Author
Allendale County Multi-Jurisdictional HMP	Allendale County/LSCOG
Hazard Mitigation Assistance FY 2015 Unified Guidance	FEMA
FY 2013 PDM Program Guidance	FEMA
SC Floodplain Management Quick Guide 2008	SCDNR
Hazard Mitigation Planning	FEMA
Allendale County Comprehensive Plan	Allendale County/LSCOG
Allendale County Zoning Ordinance	Allendale County/LSCOG
Allendale County Land Development Regulations	Allendale County/LSCOG
National Flood Insurance Program	FEMA
Allendale County EOP	Allendale County
SC HMP 2018	SCEMD
SC Emergency Operations Plan	SCEMD

This plan utilized the process required by the Federal Emergency Management Agency to develop the plan. A Hazard Mitigation Planning Crosswalk is found in Appendix D and provides a summary of plan requirements, including where they are located. The hazard mitigation planning process included the following steps, listed in the order in which they were undertaken and will be described in greater detail throughout the plan:

- Step 1: Establish a Core Planning Team (Task Force)
- Step 2: Data collection, Risk Assessment
- Step 3: Hazard Identification
- Step 4: Create Hazard Mitigation Plan
- Step 5: Develop Goals and Mitigation Strategies
- Step 6: Adopt and Implement Plan

The planning process followed in Allendale County was intended to enhance public awareness and understanding about how the community could become safer from the impacts of future disasters. The plan provides a decision tool for management by department staff in local governments, local elected and appointed officials, business and industry, community associations and other key institutions and organizations to take actions to address vulnerabilities to future disasters. It provides

proposals for specific projects and programs that are needed to eliminate or minimize the vulnerability of the County. One component of the hazard mitigation planning process was a capability assessment of existing policies, programs and regulations for managing growth and development within the County. The study contractors reviewed relevant County and local government comprehensive plans, zoning ordinances, floodplain regulations, and building codes to gain an understanding as to how current development regulations and practices either hinder or support hazard mitigation initiatives.

This process also involved reviewing current mitigation-related policies of local and county government and comparing them to the hazards that threaten the jurisdiction and the relative risks they pose to the community. This comparison supports and justifies efforts to propose enhancement to policies, programs, and regulations that should be implemented to create a more disaster-resistant future for Allendale County. This process was led by the Allendale County Hazard Mitigation Task Force members and supported by the Lower Savannah Council of Governments staff.

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1.5 Planning Process Documentation

As part of the update process, the Task Force Committee reviewed this section and made the necessary member additions and changes to the committee, participating municipality additions, and meeting dates and times. It should be noted that COVID 19 Pandemic impacted the nation, state and county during this update process. This has inhibited in-person meetings. In addition to COVID, health issues with Allendale County staff posed challenges in the coordination of this update process. With sadness, Ms. Gidget Banks, Emergency Management Director when we started the update process, passed away early in 2021. We have worked closely with Ms. Kara Troy of Allendale County EMD to bring this project to fruition. Ms. Troy has instrumental in gathering information and helping to fill in gaps under very challenging circumstances.

The following is documentation of the various steps of the planning process. The preparation of the plan required a series of meetings and workshops for facilitating discussion and initiating data collection efforts. More importantly, the meetings and workshops prompted continuous input and feedback throughout the planning and update process. Sign-in sheets, letters, agendas, surveys, and news releases are included in the appendix of this document.

Allendale County Natural Hazard Mitigation Plan Task Force Committee

The plan was developed through a Task Force Committee comprised of LSCOG staff, the heads of the county emergency service offices, representatives from the incorporated municipalities, and private entities. The committee helped to guide the creation and development of the plan, and participated in the five-year update process of the plan. These committee members were chosen as a result of their expertise in hazard preparation and planning within their respective county and municipalities.

The Task Force Committee includes:

Mayor James L. Cohen	Town of Allendale
Henry Youmans	Town of Allendale Administrator
Mayor Dorothy S. Riley	Town of Fairfax
Mayor Michael Allen	Town of Sycamore
Mayor Ervin Mathias Jr.	Town of Ulmer
J. William Goodson	Allendale County Administrator
Joe Mole	Allendale County
Kara Troy	Allendale County Emergency Management Director

Emory Langston	Lower Savannah Council of Governments
Matthew Abney, Planning Intern	Lower Savannah Council of Governments
Leslie Crawford, GIS Planner	Lower Savannah Council of Governments

Participating Municipalities:

Town of Allendale
Town of Fairfax
Town of Sycamore
Town of Ulmer

Meetings, Workshops, Training, Correspondence:

Memorandum of Agreement from County: November 8th, 2018

A MOA was received from the County indicating their approval of the 25% match requirement totaling \$5,208.34.

SCEMD Meeting – August 5, 2019, 10:00 a.m.

LSCOG staff met with SCEMD staff to discuss the needs of the Hazardous Mitigation Plan updates for five counties in the LSCOG region.

**HMP Update Kick-off Meeting County Emergency Management Directors and SCEMD Staff
September 3, 2019, 10:00 – *Had to be postponed due to activation of SCEMD for Dorian.***

**HMP Update Kick-off Meeting for County Emergency Management Directors and SCEMD
Staff**

October 7, 2019, 10:00 am

Kick-off meeting to discuss upcoming update process, requirements, timelines, needs from the County Directors.

Allendale County Correspondence:

October 15, 2019

Emailed with Ms. Banks as to proposed Allendale County Taskforce meeting for December 5, 2019.

December 5, 2019 Allendale County Taskforce Meeting

February 11, 2020 – Emailed Ms. Banks for follow up meeting in early March.

March 5, 2020 – Emailed Ms. Banks again for follow up meeting in March. Date set for March 19th

March 16, 2020 - Emailed Ms. Banks to reschedule March 19th in light of COVID.

IT SHOULD BE NOTED AT THIS POINT IN THE TIMELINE, DUE TO COVID 19, MOST ALL CORRESPONDANCE WITH THE TASKFORCE HAS BEEN DONE BY TELEPHONE OR EMAIL. THIS HAS MADE THE PROCESS VERY CHALLENGING FOR ALL INVOLVED.

June – September, 2020 – Various emails and calls to Ms. Banks to re-convene the HMP discussions.

August 2021 – DRAFT – Allendale County HMP

Fall 2020 – Various call to Allendale County EMD to talk with someone regarding the HMP>

December, 2020 – Expressed concern to Ms. McCoy that I could not reach anyone at Allendale County. Ms. McCoy put me in touch with Kara Troy, Interim Director for Ms. Banks (out on medical).

December 16, 2020 – Sent Ms. Troy an email to set up a time to discuss the HMP.

January 2021 – Spoke with Ms. Troy as to the HMP updates, document, needs going forward. Met with Ms. Troy on January 21, 2021 to discuss plan, needs, next steps and path forwards.

February 2021 – Emailed with Ms. Troy as to potential dates for a taskforce meeting. Date was set for February 24th to meet.

February 22, 2021 – Learned of passing of Ms. Banks. Scheduled meeting was canceled for the 24th.

March 15, 2021 – Allendale County Taskforce meeting

March -May 2021 – Follow up correspondence and phone calls.

1.6 Participants Involved in the Planning Process

After review by the Task Force Committee, no changes were made to this section.

The plan is intended to serve as a coordinative tool through which local agencies and organizations identify complimentary objectives that systematically reduce the impact of hazards in Allendale County. The plan also serves to coordinate and integrate the responsibilities, authorities and programs of the “participating” and “cooperating” agencies and organizations.

County and Municipality Participation

County, city, and town participation must be defined in order to create a standard for participation in order for the entities to be considered as participants in the Natural Hazard Mitigation Plan process. Invitations (by phone and letter) were extended to mayors, administrators, and managers to attend the County Hazard Mitigation Meetings. Officials were informed through the letters that LSCOG needed their input and comments in order to be considered active participants in the plan.

In order for the county to approve the plan and be an official participant of this planning process, they must satisfy the following consideration:

- The county Emergency Management Director must be a member of the Natural Hazard Plan Task Force Committee and provide input and comments to the plan.

In order for cities and towns to be official participants of the planning process, they must satisfy one of the following considerations:

- The mayor, administrator, or manager attends a county or public meeting and provides input and comments concerning the Natural Hazard Mitigation Plan.
- The mayor, administrator, or manager appoints a city or town employee to attend a county or public meeting and provides input and comments concerning the Natural Hazard Mitigation Plan.
- A LSCOG Planning staff member personally discusses the Natural Hazard Mitigation Plan with a mayor, administrator, manager, or appointed municipal representative and receives input and comments from that individual.

Allendale County Local Government Participation

Town of Allendale

Town of Fairfax

Town of Sycamore

Town of Ulmer

Non-Participating Municipalities

Allendale County was successful in achieving 100% participation from all four incorporated municipalities in the planning and update process of the Natural Hazard Mitigation Plan.

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1.7 Public Participation

Due to Covid-19 adjustments had (and potentially will have) to be made to in regards to Public Participation.

The outbreak of COVID-19 has made the public participation process more challenging. In the past, through the planning and update process, there have been opportunities for public in-person input. The process provided neighboring communities, other agencies, the private sector, and academia an opportunity to participate in the planning process. In addition to the COVID 19 challenge, Allendale County suffered the loss of a key staff member in the update process. Information from the plan was share via social media and websites. It should be noted that in-person public meetings were very difficult to host due to COVID 19. The Bamberg County Interim Director for Emergency Services, Tiffany Kemmerlin, was asked to peer review the HMP draft for Allendale County. After her review, she stated that plan looked good.

LSCOG staff encouraged taskforce members to share the draft documents and get feedback from a variety of people and partners. When the draft plan was placed on social media/websites, an email address and the telephone number of Lower Savannah COG were provided with the draft plan to provide a mechanism for the public to provide comments back to plan development facilitators.

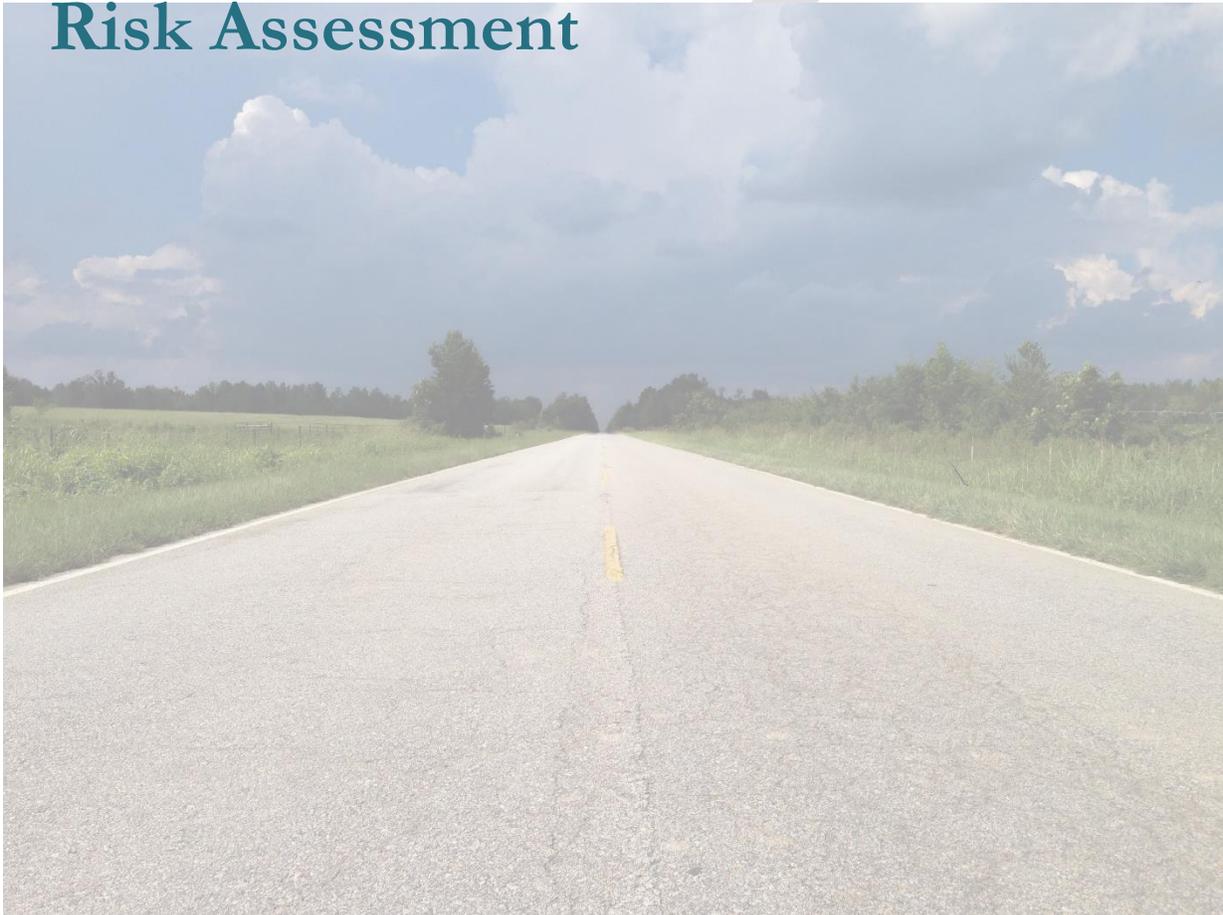
1. Public Meetings during the Drafting Stage of the Plan

The public was invited to review the Allendale County HMP 5-year update on the LSCOG website August 5 – 15, 2021 and to comment on the drafting stage of the Hazard Mitigation Plan. In addition to the draft stage of the plan, the public will potential be invited to make comments on the final draft plan prior to potential adoption by Aiken County Council once approved by FEMA. In-person meeting will be dependent of COVID-19 precautions.

2. Public Notice of Adoption of Plan

In addition, to the public comment meetings, the public will be invited to the plan adoption hearing of the governing bodies of the participating jurisdictions. A public notice of the adoption hearing will be inserted in local newspapers available within all participating jurisdictions. The public notice prior to plan adoption will take place once FEMA has formally approved the plan pending adoption. Adjustments will continue to be made, as necessary for health and safety, with regards to in-person public meeting.

Part Two: Risk Assessment



2.1 Types of Risks

As part of the plan update process, the Task Force Committee reviewed and analyzed this section. Each hazard description was reassessed and updated to include most current and readily available data as well as updated maps and illustrations. This section also included the requirements below:

FEDERAL REQUIREMENTS FOR LOCAL HAZARD MITIGATION PLANS

Requirement 201.6(c)(2): The plan **shall** include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identifies hazards.

Requirement 201.6(c)(2)(i): The risk assessment **shall** include a description of the type of all natural hazards that can affect the jurisdiction.

Risk Assessment

The Risk assessment is the process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from natural or man-made hazards. The results of this risk assessment assist Allendale County and its incorporated municipalities and unincorporated areas in identifying and understanding their risks from natural hazards. This information also serves as the foundation for the development of the mitigation plan and strategies to help reduce risks from future hazard events. The Risk Assessment section answers the fundamental question that fuels the hazard mitigation planning process: *What would happen if a hazardous event occurred in Allendale County or its incorporated municipalities?*

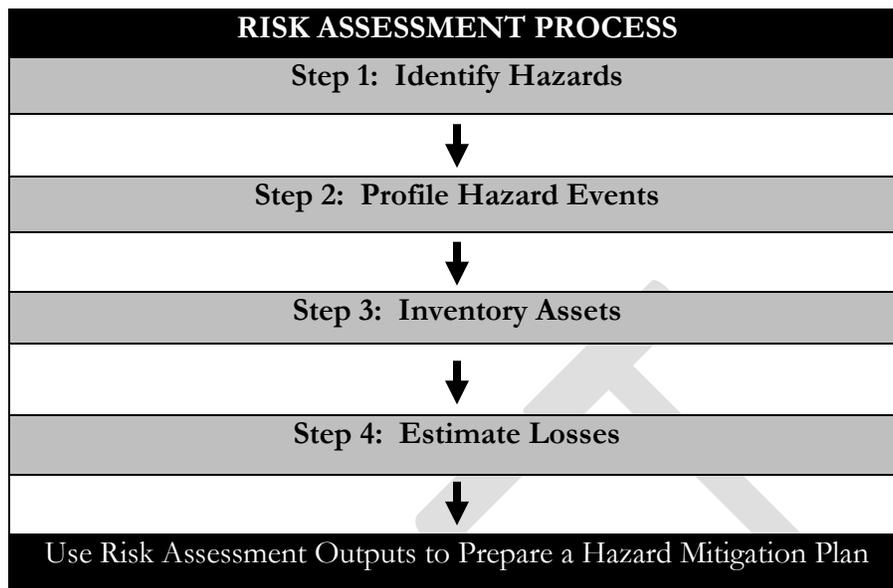
Risk Assessment Approach

- Determine which hazards pose a serious risk to Allendale County.
- Describe what these hazards can do to physical, social, and economic assets of Allendale County.
- Identify which areas of the County are most vulnerable to damage from these hazards.
- Determine damages that may result from the identified hazards.
- Use the Risk Assessment section to identify mitigation actions and set priorities for implementation.

FEMA Requirements Addressed

The Task Force Committee used a risk assessment process consistent with the procedures and steps presented in the FEMA How-To-Guide “Understanding Your Risks: Identifying Hazards and Estimating Losses.” The committee used the four-step risk assessment process shown in Figure 4.

Figure 4: Risk Assessment Process



Hazard Identification

The first step in the risk assessment process was to identify each of the hazards that can occur within Allendale County and its incorporated municipalities. This hazard identification process began with a review of previous hazard events based on historical data. Also, information was collected through general discussion at Task Force Meetings concerning hazard identification and prioritization of these risks. The USC Hazards Lab provided historical findings as well. The findings from these sources were utilized to determine the priority hazards for Allendale County and its incorporated municipalities and unincorporated areas, which will become the focus of the mitigation strategies developed in the remainder of this plan.

The following will provide a factual basis for mitigation project proposals described later in this plan. The following points will be addressed for each natural hazard in this section:

Type

A brief description is provided for each hazard addressed in this section.

Location

The location of past events is mapped or listed in this section.

Extent

The effect and impact of past events is examined in this section for each hazard type.

Probability

To determine the probability of a natural hazard event, the number of events, total number of years those events have been recorded, and the frequency of events must be determined. The recurrence interval is also helpful in portraying how common a certain type of hazard is. Dividing the number of years by the number of events produces the recurrence interval, or how often the event will occur per year. The percentage frequency of events is determined by dividing the number of events by the total number of years and multiplying by 100. This gives a reliable sense of the chance a hazard will occur per year.

Vulnerability

The overall vulnerability of each individual hazard is discussed and analyzed for Allendale County and its municipalities. A rating of high, mid level, and low vulnerability is given to each hazard. Vulnerability is determined by assessing the probability and extent of the hazards that affect the specific area.

Of the many types of hazards that threaten the United States, there are some that have never occurred in South Carolina. Those hazards that have threatened the Lower Savannah Region of South Carolina will be addressed. The hazards that have been examined in this plan were decided on by LSCOG staff and the Task Force Committee.

The following are the specific hazards that will be examined in this section of the Natural Hazard Mitigation Plan, in no particular order.

Figure 5. Jurisdictions Affected by Hazard Type

Hazard	Jurisdictions Affected
Tornadoes/Severe Windstorms	Countywide
Hurricanes/Tropical Storms	Countywide
Hail	Countywide
Drought	Countywide
Earthquakes	Countywide
Wildfires	Countywide
Flood	Specific Jurisdictions
Winter Storms	Countywide

Profiling Hazards

FEDERAL REQUIREMENTS FOR LOCAL HAZARD MITIGATION PLANS

Requirement 201.6(c)(2)(i): The risk assessment **shall** include a description of the 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.

It is important to understand the types of hazards that affect Allendale County and its municipalities. Projects and actions will be discussed in further detail to address these natural hazards which threaten this region. The extent of the hazard and its future probability are important considerations to take when preparing for an event.

Tornado/Severe Windstorm Analysis

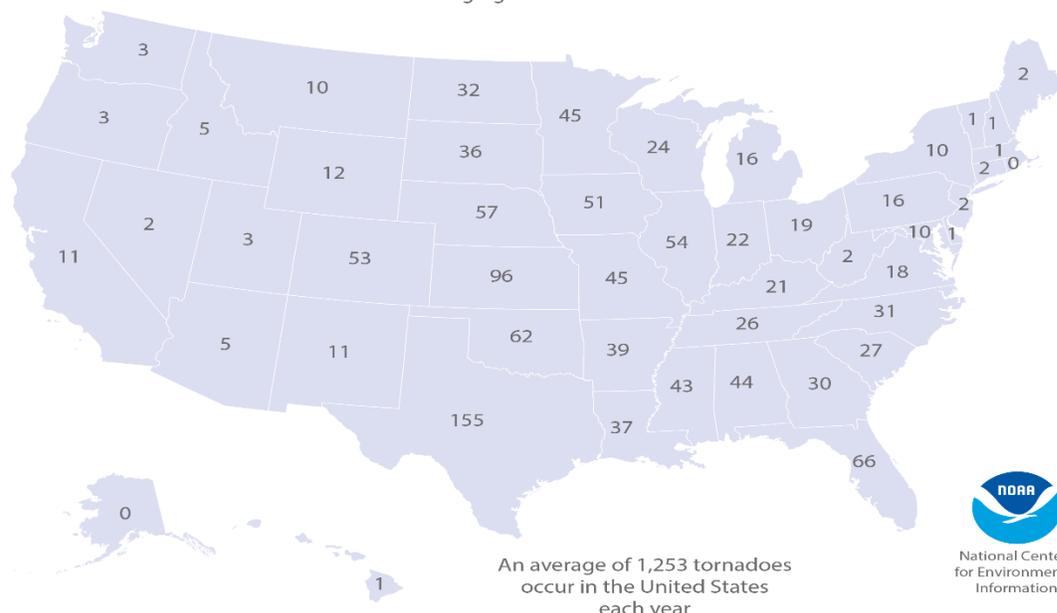


Hazard Description:

A tornado is a violent storm with winds up to 300 miles per hour. It appears as a rotating funnel-shaped cloud, gray to black in color, extending toward the ground from the base of a thundercloud. The average tornado moves southwest to northeast at a forward speed of 30 miles per hour, but tornadoes can move in any direction and may vary from stationary to 70 miles per hour. Tornadoes are most frequent east of the Rocky Mountains during spring and summer months between the hours of 3 PM and 9 PM. In the South, tornadoes touch down most frequently from the month of March through May. Tornadoes may also accompany hurricanes. Tornadoes are especially dangerous because they appear transparent until they begin to pick up debris and dust. These short-lived storms are most violent of all atmospheric phenomena, and over a small area, are the most destructive. Approximately 1,308 tornadoes occur across the nation each year (2001-2010), resulting in nearly 563 deaths. Approximately 1,253 tornadoes occur across the nation each year (1991-2010), resulting in nearly 563 deaths. Damage paths can exceed one mile wide and 50 miles long. Based on NOAA's *Average Annual Number of Tornadoes per State Map* (1991-2010), South Carolina has an average of 27 tornadoes per year. Source: NOAA

Average Annual Number of Tornadoes

Averaging Period: 1991–2010



Tornadoes are most often generated by thunderstorm activity or any situation of severe weather with high winds. High winds can cause downed trees and power lines, flying debris, and building collapses, all of which may lead to power outages, transportation disruptions, damage to buildings and vehicles, and injury or death. Flying debris is the primary cause of damage during a windstorm.

Severity

Damage from tornadoes is from extreme winds and flying debris. It is rare to be able to measure pressure changes and wind speeds of a passing tornado, but it is possible to classify its damage. Typically, tornadoes cause the greatest damages to structures of light construction such as residential homes, particularly manufactured homes, and their impacts tend to remain localized. The Enhanced Fujita Scale for Tornadoes is the standard measurement for rating the strength and associated damages of a tornado. Figures 7 and 8 detail the EF-Scale below.

Figure 7: Enhanced Fujita Scale for Tornadoes

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

Source: SC SHMP 2018/NOAA

The Fujita Scale (F-Scale) is the standard measurement for rating the strength of a tornado. The National Weather Service (NWS) bases this scale on an analysis of damage after a tornado to infer wind speeds. On February 1, 2007, the NWS transitioned from the F-Scale to the Enhanced Fujita Scale (EF-Scale). The EF-Scale is considerably more complex and enables surveyors to assess tornado severity with greater precision. Figure 8 details both scales below.

Figure 8: F-Scale and EF-Scale

F-Scale and EF-Scale				
F-Scale	3-sec. gust speed (mph)	EF-Scale	3-sec. gust speed (mph)	TYPICAL DAMAGE
F0	45-78	EF0	65-85	Light damage. Some damage to chimneys. Branches broken off trees. Shallow-rooted trees pushed over; signboards damaged.
F1	79-117	EF1	86-109	Moderate damage. Peels surface off roofs. Mobile homes pushed off foundations or overturned. Moving autos blow off roads.
F2	118-161	EF2	110-137	Considerable damage. Roofs torn off frame houses. Mobile homes demolished. Boxcars overturned. Large trees snapped or uprooted. Light-object missiles generated. Cars lifted off ground.
F3	162-209	EF3	138-167	Severe damage. Roofs and some walls torn off well-constructed houses. Trains overturned. Most trees in forest uprooted. Heavy cars lifted off the ground and thrown.
F4	210-261	EF4	168-199	Devastating damage. Well-constructed houses leveled. Structures with weak foundations blown away some distance. Cars thrown and large missiles generated.
F5	262-327	EF5	200-234	Incredible damage. Strong frame houses leveled off foundations and swept away. Automobile-sized missiles fly through the air in excess of 100 meters. Trees debarked. Incredible phenomena will occur.

The Beaufort Wind Scale is a simplified scale to aid in the estimation of wind speed and corresponding typical effects. Figure 9 below illustrates the wind scale.

Figure 9: Beaufort Wind Scale

Beaufort Wind Scale		
Wind Speed (mph)	Name	Damage
25-31	Strong Breeze	Large branches in motion; whistling in telephone wires; umbrellas used with difficulty
32-38	Near Gale	Whole trees in motion; resistance felt while walking against the wind

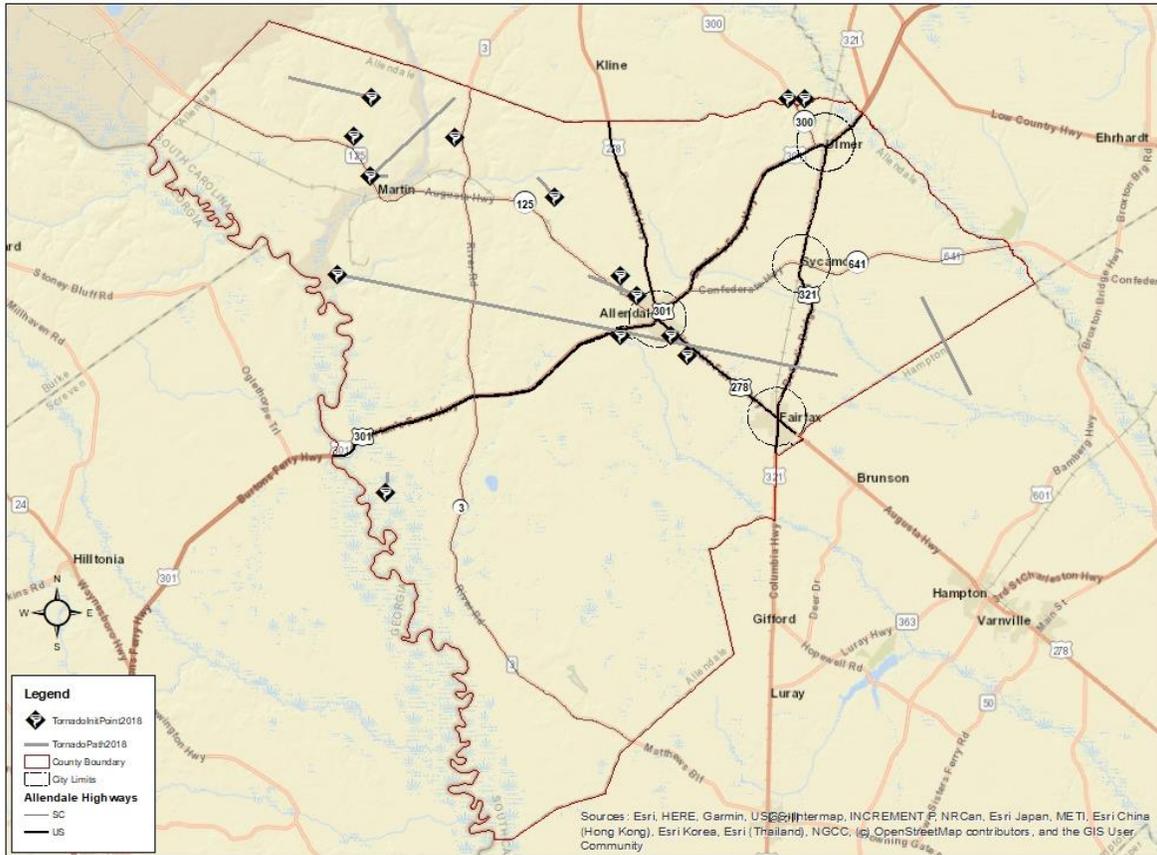
39-46	Gale	Twigs break off of trees; wind impedes walking
47-54	Strong Gale	Slight structural damage to chimneys and slate roofs
55-63	Storm	Seldom felt inland; trees uprooted; considerable structural damage
64-72	Violent Storm	Very rarely experienced; widespread structural damage; roofing peels off buildings; windows broken; mobile homes overturned
73+	Hurricane	Widespread structural damage; roofs torn off homes; weak buildings and mobile homes destroyed; large trees uprooted

Location

The tornado touchdowns for Allendale County and its incorporated municipalities, and all unincorporated areas of the County, can be seen on the tornado map. There have been 15 recorded touchdowns in Allendale County over the past 69 recorded years (1950-2019). Four (4) tornadoes have occurred in the area around Allendale City with six (6) touching down in the western region of the county. The risk assessment is based on reported tornado events. Therefore, the occurrence of events seems to be highest in areas with higher population densities. Tornado touchdowns in rural areas frequently occur without report.

Map 5: Tornado Map

Allendale County Hazards: Tornado Map



Extent

Figure 10 below illustrates the historic occurrences and locations of tornadoes that have affected Allendale County and its incorporated municipalities. A tornado can occur anywhere in the County. Allendale County has experienced 15 noted tornadoes in the past 69 years (1950-2019).

Figure 10. Historic Occurrences of Tornadoes in Allendale County

Date	Location	Description
4/10/2009	Countywide	F2 Magnitude Tornado touched down along Roberts Rd. Numerous trees uprooted or snapped, several mobile homes damaged, several cars sustained damage by falling trees. Tornado continued to Miller Creek Rd. downing numerous trees and power lines.
4/10/2009	Countywide/ Martin area	F1 Magnitude Significant tree damage along tornado path Property damage recorded at an estimated \$1M

3/15/2008	Countywide/ Martin area/ Fairfax	F2 Magnitude 11 homes and private businesses destroyed, 6 homes with major damage, and 70 with minor damage. 5 tornadoes hit 10 counties in SC with a total State damage of \$43M
2/13/2007	Allendale	F1 Magnitude Property damage recorded at \$3K Trees uprooted and damaged skirting of mobile homes
9/7/2004	Countywide	F0 Magnitude Numerous trees snapped or uprooted Remnant of Hurricane Frances produced numerous tornadoes and areas of straight line wind damage. Nuisance type flooding due to unusually high rainfall amounts
9/7/2004	Countywide/ Martin area	F0 Magnitude Numerous trees snapped or uprooted Remnant of Hurricane Frances produced numerous tornadoes and areas of straight line wind damage. Nuisance type flooding due to unusually high rainfall amounts
9/7/2004	Allendale	F0 Magnitude Numerous trees snapped or uprooted Remnant of Hurricane Frances produced numerous tornadoes and areas of straight line wind damage. Nuisance type flooding due to unusually high rainfall amounts
9/7/2004	Fairfax	F0 Magnitude Numerous trees snapped or uprooted Remnant of Hurricane Frances produced numerous tornadoes and areas of straight line wind damage. Nuisance type flooding due to unusually high rainfall amounts
6/12/2004	Countywide	F1 Magnitude Numerous trees snapped or uprooted
9/22/2000	Countywide/ Martin area	F2 Magnitude Property damage recorded at \$290K 1 fatality reported and 5 injuries 3 mobile homes destroyed, major damage to 2 mobile homes, minor damage to 6 mobile homes and major damage to a frame home along with numerous trees down or snapped
9/22/2000	Countywide/ Martin area	F1 Magnitude Property damage recorded at \$10K Damage to roofs, minor damage to several brick homes and several trees down. Tornado associated with the remnants of Tropical Storm Helene. 1 injury reported
4/15/1999	Ulmer	F2 Magnitude Property damage recorded at \$2K Crop damage recorded at \$20K 20 acres of watermelons destroyed, numerous trees and power lines down

4/8/1999	Allendale	F1 Magnitude Property damage recorded at \$25K Roof damage to several buildings, numerous trees and power lines down
4/24/1965	Countywide	F1 Magnitude Property damage recorded at \$250K
Source: NCDC		

These tornadoes have caused a total of six injuries and one fatality. The tornadoes that have touched down in Allendale County have ranged from F0 to F2 magnitudes. Of the tornadoes, four were F0, seven were F1, and four were a F2. According to Figure 8, the wind speeds of these tornadoes have ranged from 45 miles per hour to 161 miles per hour, and had the potential to cause severe damage.

Probability

Figure 11. Tornado Probability for Allendale County

Location	# of Events	Years in Record	Recurrence Interval	Hazard Frequency %
Allendale	3	69	23	4.3%
Fairfax	2	69	34.5	2.9%
Sycamore	0	69	*	*
Ulmer	1	69	69	1.4%
Unincorporated	9	69	7.6	13%
<i>County</i>	<i>15</i>	<i>69</i>	<i>4.6</i>	<i>21.7%</i>
*Unable to calculate (cannot divide by zero)				
Source: NCDC				

Though infrequent, tornadoes are not unprecedented in Allendale County. Over the past 69 years, 15 tornadoes have touched down within the County. Based on the historic frequency, an estimate of one tornado will touchdown in the County is every 4.6 years. The frequency with which a tornado could hit each year in the County is approximately 21.7%.

The incorporated municipalities have experienced a range of zero (0) to three (3) tornadoes over the past 69 years. The Town of Allendale is estimated to have one tornado every 21.7 years, with a frequency of 4.6% per year; the Town of Fairfax is estimated to have one tornado every 34.5 years, with a frequency of 2.9% per year; the Town of Sycamore has no recorded tornado event in the past 69 years; the Town of Ulmer is estimated to have one tornado every 69 years, with a frequency of 1.4% per year. The Unincorporated area of the County may have a tornado every 7.6 years, with a hazard frequency of 13%

Vulnerability

High wind events can pose a serious threat to people and infrastructure. Allendale County, in particular its incorporated municipalities (urban core), provides an environment where numerous objects can become flying debris and severely injure people and damage structures.

Structural vulnerability to wind is related to the building's construction type. Wood structures and manufactured homes are more susceptible to wind damage, while steel and concrete buildings are most resistant.

Based on the results from Figure 9 and Figure 8, Allendale County has a moderate vulnerability to tornadoes. The historical record of events shows a total of \$4.88M in property damage and \$20K in crop damage. This is a major loss for such a rural County and its citizens. There were also six injuries and one death associated with the tornado events.

The impact of tornado events on each participating jurisdiction varies, and from the tornado extent section one can see that the impact of past tornadoes on the county as a whole has been moderate.

Additionally, the breakdown for the Tax Year 2020 year-end figures gathered from Allendale County Tax Assessor's office shows a total assessed market value \$197,519,102. The total number of parcels in Allendale County is 8,999.

Hurricane/Tropical Storm Analysis



Hazard Description

Hurricanes, including coastal storms and tropical storms can have affects on inland areas and not just coastal areas. Allendale County has been affected by hurricanes/tropical storms in the past.

Tropical Storms and Hurricanes

A hurricane is a type of tropical cyclone, which is a generic term for a low-pressure system that generally forms in the tropics. Thunderstorms and, in the Northern Hemisphere, a counterclockwise circulation of winds near the earth's surface accompany the cyclone. Tropical cyclones are classified as follows:

- A tropical depression is an organized system of clouds and thunderstorms, with a defined surface circulation, and maximum sustained winds of 38 miles per hour or less.
- A tropical storm is an organized system of strong thunderstorms, with a defined surface circulation, and maximum sustained winds of 39 to 73 miles per hour.
- A hurricane is an intense tropical weather system of strong thunderstorms, with a well-defined surface circulation, and maximum sustained winds of 74 miles per hour or higher.

Atlantic hurricane season lasts from June to November, averaging eleven (11) tropical storms each year, six (6) of which turn into hurricanes. According to the National Hurricane Center, the Atlantic hurricane season is currently in a period of heightened activity that began around 1995, and could last at least another decade.

Heavy rain, coastal flooding, and powerful winds are commonly associated with hurricanes. 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 mean water level fifteen (15) 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.

Severity

The NWS 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. Figure 12 below illustrates the Saffir-Simpson Hurricane Scale.

Hurricane winds can cause widespread destruction; even tropical storm-force winds can be very dangerous. Such high winds can pick up debris and turn them into dangerous airborne objects, knock down trees and buildings, and destroy manufactured homes. The Saffir-Simpson Scale categorizes hurricane intensity based on sustained wind speeds and correlated potential property damage.

Hurricanes are capable of generating 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.

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 damage.

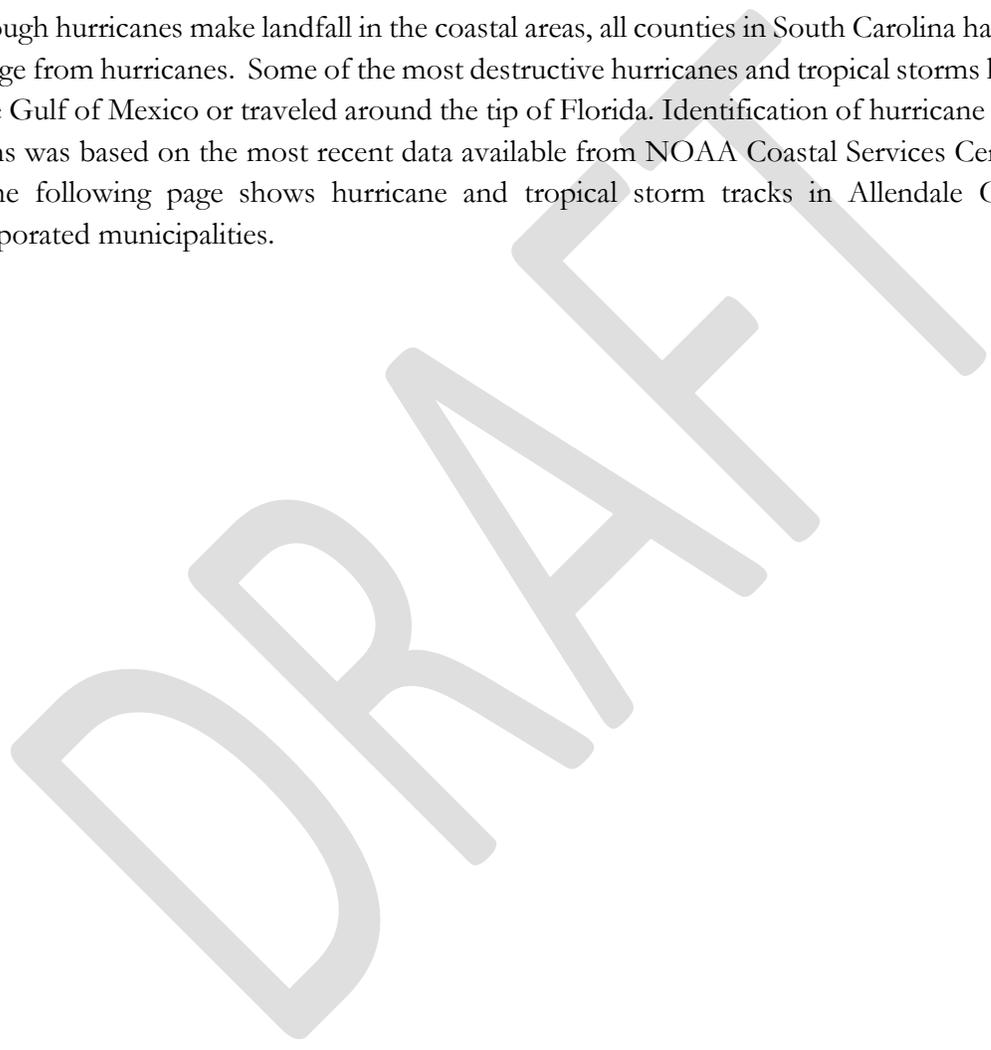
Figure 12: Saffir-Simpson Hurricane Scale

Saffir-Simpson Hurricane Scale				
Category	Storm Surge (ft)	Winds (mph)	Damage	Damage Description
1	6.1 – 10.5	74 – 95	Moderate	<ul style="list-style-type: none"> • Damage primarily to trees and unanchored homes • Some damage to poorly constructed signs • Coastal road flooding
2	13.0 – 10.5	96 – 110	Moderate-Severe	<ul style="list-style-type: none"> • Some roofing material, door, and window damage to buildings • Considerable damage to shrubbery and trees • Flooding of low-lying areas
3	14.8 – 25	111 – 130	Extensive	<ul style="list-style-type: none"> • Some structural damage to residences and utility buildings • Foliage blown off trees and large trees blown down • Structures close to the coast will have structural damage by floating debris
4	24.6 – 31.3	131 – 155	Extreme	<ul style="list-style-type: none"> • Curtainwall failures with utilities and roof structures on residential buildings • Shrubs, trees, and signs all blown down • Extensive damage to doors and windows • Major damage to lower floors of structures near the shore

5	Not predicted	>155	Catastrophic	<ul style="list-style-type: none"> • Complete roof failure on many residences and industrial buildings • Some complete building and utility failures • Severe, extensive window and door damage • Major damage to lower floors of all structures close to shore
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Location

Although hurricanes make landfall in the coastal areas, all counties in South Carolina have experienced damage from hurricanes. Some of the most destructive hurricanes and tropical storms have originated in the Gulf of Mexico or traveled around the tip of Florida. Identification of hurricane tracks/tropical storms was based on the most recent data available from NOAA Coastal Services Center. The map on the following page shows hurricane and tropical storm tracks in Allendale County and its incorporated municipalities.



The hurricane map above illustrates the travel patterns of the recorded hurricane tracks and tropical storms. Actual hurricane landings have not posed a true threat to Allendale County, however, the storms aftermath have been identified as an event risk. The hurricane track map has identified three (3) hurricane events that have been tracked through the county dating back to 1852 through 2019. Of these recorded events, both measured within the aforementioned Hurricane Scale, with one a category 1 and the other category 2.

Within this same timeframe there have been a recorded thirteen (13) tropical storms and depressions in the county ranging in wind speeds of 35 mph to 60 mph. The aftermath affects of these tropical storms produces unusually heavy rains and some flash flooding in the area.

Figure 13. Historic Occurrences of Hurricanes and Tropical Storm Types in Allendale County

Date	Type	Description
September 11, 2017	Tropical Storm (“Irma”)	- Allendale County Emergency Management reported multiple trees down across the county due to strong winds associated with Tropical Storm Irma. Also, one lane of Highway 321 was closed due to high water near Fairfax. -1 Injury reported and \$575K in property damage
September 2, 2016	Tropical Storm (“Hermine”)	-Allendale County Emergency Management reported numerous trees blown down across much of the county. Several roads were closed due to fallen trees. A DOT worker was injured during the storm when a tree fell on the car they were driving while attempting to clear another tree that had fallen across the road. A peak wind gust of 39 miles per hour with the passage of Tropical Storm Hermine. -\$250K in property damage
June 13, 2006	Tropical Storm (“Alberto”)	-Tropical Storm Alberto affected the South Carolina coast late on the 13th into the morning of the 14th. Winds were as strong as 40 mph in many locations mainly near the coast. -Rainfall totaled 2 to 4 inches across portions of southeast South Carolina.
September 17, 2000	Tropical Storm (“Gordon”)	-The remnants of Tropical Storm Gordon produced 1 to 4 inches of rain across south coastal South Carolina. -Strongest observed winds occurred at the Charleston City office with sustained winds of 25 knots and a gust to 32 knots.
September 16, 1999	Hurricane Floyd	-The highest sustained wind speed was 58 mph at the downtown Charleston office, which also had the highest gust (85 mph). In general, 3 to 5 inches of rainfall was reported across the area. -\$17M in property damage recorded

August 21, 1988	Tropical Storm ("Chris")	-Maximum sustained surface wind speed ranged between 39 mph to 73 mph
October 18, 1950	Tropical Depression ("Love")	-Maximum sustained surface wind speed is 38 mph or less
September 9, 1901	Tropical Storm	-Maximum sustained surface wind speed ranged between 39 mph to 73 mph
August 15, 1893	Hurricane	-Category 2 -Some roofing material, door, and window damage to buildings -Considerable damage to shrubbery and trees -Flooding of low-lying areas
September 6, 1888	Tropical Storm	-Maximum sustained surface wind speed ranged between 39 mph to 73 mph
June 27, 1886	Tropical Storm	-Maximum sustained surface wind speed ranged between 39 mph to 73 mph
October 10, 1885	Tropical Storm	-Maximum sustained surface wind speed ranged between 39 mph to 73 mph
September 10, 1884	Tropical Depression	-Maximum sustained surface wind speed is 38 mph or less
August 25, 1856	Tropical Storm	-Maximum sustained surface wind speed ranged between 39 mph to 73 mph
September 7, 1854	Hurricane	-Category 1 -Damage primarily to trees and unanchored homes -Some damage to poorly constructed signs
October 6, 1852	Tropical Depression	-Maximum sustained surface wind speed is 38 mph or less
Source: NOAA		

Probability

The following figures show hurricane/tropical storm probability in Allendale County. While this is a record of actual hurricane and tropical storm tracks through the county, hurricanes hitting the coast can still affect Allendale County in the form of flooding and severe wind. These effects are recorded in other areas of this plan.

Figure 14. Hurricane Probability for Allendale County

	# of Events	Years in Record	Recurrence Interval (Years)	Hazard Frequency (% Chance per Year)
Countywide	3	168	56	1.8%
Source: NOAA				

Figure 15. Tropical Storm/Depression Probability for Allendale County

	# of Events	Years in Record	Recurrence Interval (Years)	Hazard Frequency (% Chance per Year)
Countywide	13	168	12.9	7.7%

Source: NOAA

According to the most reliable hurricane/tropical storm data, there is a 1.8% chance a hurricane pass through Allendale County during any given hurricane season, and a 7.7% chance a tropical storm will pass through the county. During the recorded 168-year period, a recurrence interval of every 56 years was calculated that a hurricane event could occur. During the same time period, a recurrence interval of 12.9 years was calculated for a tropical storm or depression event.

Vulnerability

Based on the results from figures 14 and 15, Allendale County has a low vulnerability to hurricanes. Minor occurrences of unusually heavy rainfall, flooding, and excessive winds have affected the area due to the impact of a coastal hurricane. However, a hurricane landing pattern is unpredictable until the formation of the storm and until it is within a short time frame from landing. Therefore, it is not reasonable to assume that hurricane occurrences are not a foreseen threat in the future based solely on past events.

As far as tropical storm occurrences, it can be concluded that Allendale County has a low vulnerability based on the results from figure 15 (7.7% hazard frequency per year).

Additionally, the breakdown for the Tax Year 2020 shows a total assessed market value \$197,519,102. The total number of parcels in Allendale County is 8,999.

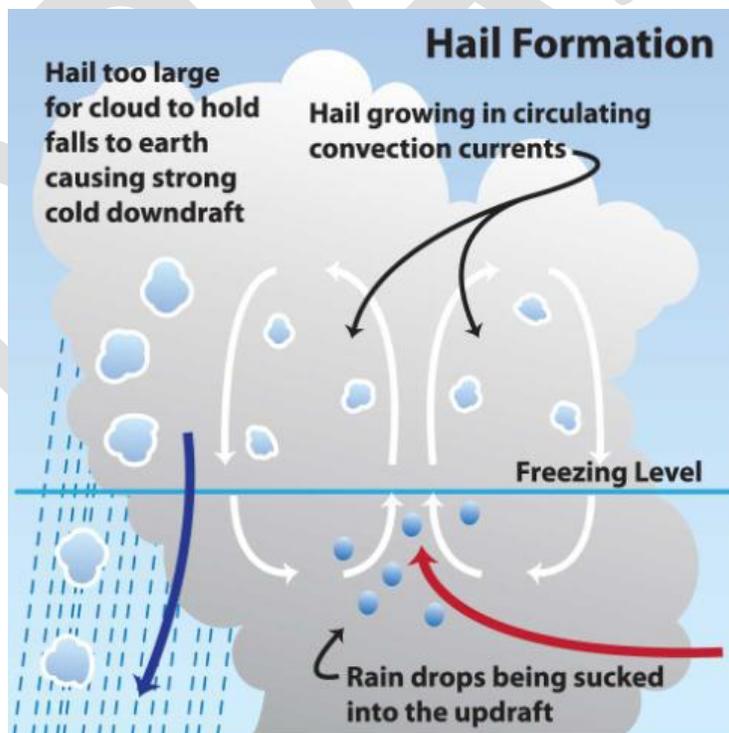
Hail Storm Analysis



Hazard Description

Hailstorms are a result of severe thunderstorms. Early in the developmental stages of a hailstorm, ice crystals form within a low-pressure front due to the rapid rising of warm air into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until, having developed sufficient weight, fall as precipitation, as balls or irregularly shaped masses of ice greater than 0.75 inches in diameter. The size of hailstones is a direct function of the size and severity of the storm. High velocity updraft winds are required to keep hail in suspension in thunderclouds. The strength of the updraft is a function of the intensity of heating at the Earth's surface. Higher temperature gradients relative to elevation above the surface result in increased suspension time and hailstone size. (Source: SC State 2018 HMP).

Figure 16: Hail Formation



Severity

Allendale County has experienced a total of 32 hailstorm events that have been documented in the past 37 years (1982 -2019). The Town of Allendale has experienced nine (9) hail events, the Town of Fairfax has a recorded four (4) events, the Town of Sycamore has had three (3) events, and the Town of Ulmer has had two (2) recorded event. The unincorporated area of the County has experienced 14 hail events in the past 37 years.

Hail can cause serious damage, notably to automobiles, aircraft, skylights, glass-roofed structures, livestock, and most commonly, agricultural crops. Rarely, massive hailstones have been known to cause concussions or fatal head trauma.

According to the National Climatic Data Center, the State of South Carolina has experienced 5,917 hail events from 1950 to 2019. During this time span, all the counties in the state experienced hailstorms of varying sizes, up to four inches in diameter. These events total an estimated \$84,317,100 in property damage, \$4,299,000 in crop damage, caused 46 reported injuries, and no reported fatalities.

Hailstone size is often reported as compared to known objects rather than reporting the actual diameter. Below in figure 17 is a list of commonly used objects for this purpose.

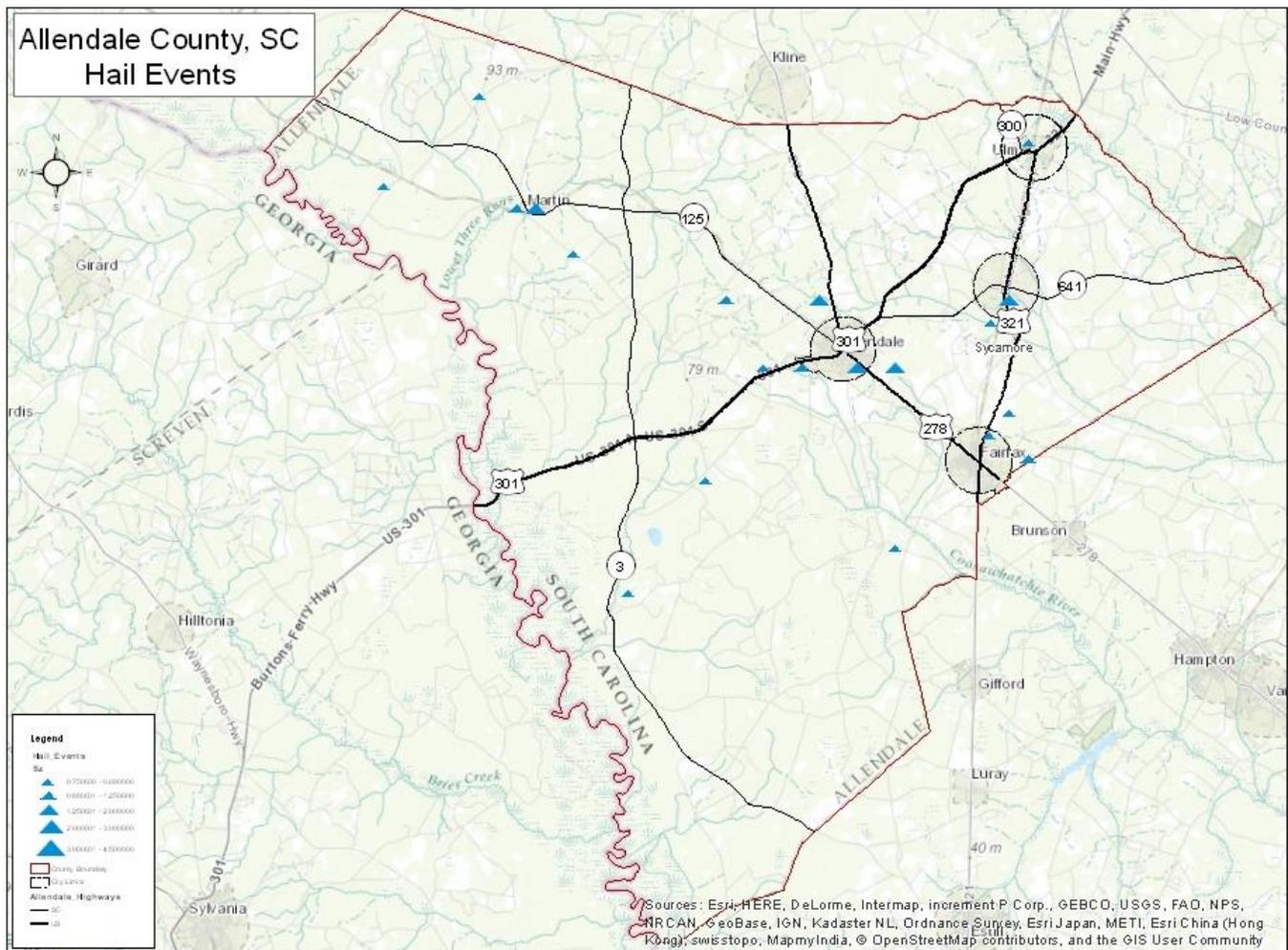
Figure 17: Hailstone Size to Object Comparison

Hailstone Size to Object Comparison	
Object/Coin	Hailstone size (inches)
Pea	0.25 in
Marble	0.50 in
Penny	0.75 in
Nickel	0.88 in
Ping-pong ball	1.50 in
Golf ball	1.75 in
Tennis ball	2.50 in
Baseball	2.75 in
Grapefruit	4.00 in
Softball	4.50 in

Location

The hail events of Allendale County and its incorporated municipalities can be seen on Map 7: Hailstorm event map below. There have been a recorded 32 hail events since 1982 in Allendale County. Hail size recorded in the county ranges from 0.75 inches to 1.75 inches.

Map 7: Hail Events Map



Extent

Allendale County has experienced 32 hail events that have been documented in the past 37 years (1982-2019). A list of the events and dates they occurred in each municipality and unincorporated areas of the County is shown in Figure 18 below.

Figure 18. Historic Occurrences of Hailstorms in Allendale County

Date(s)	# of Events	Location	Description(s)
1982-2014	14	County	0.75 to 1.75 inches in diameter (penny to golf ball sized hail)
1999-2010	9	Allendale	0.75 to 1.75 inches in diameter (penny to golf ball sized hail)
2000-2008	4	Fairfax	0.75 to 1.00 inches in diameter (penny to ping pong ball sized hail)
1998-2010	3	Sycamore	0.75 to 1.75 inches in diameter (penny to golf ball sized hail)
2007-2010	2	Ulmer	0.75 inches in diameter (penny sized hail)

Source: NCDC

The recorded hailstorms over the past 37 years have caused no recorded injuries or fatalities in the county. Although no monetary estimates were reported for property damage or crop damage, storm surveys in the County reported homes with damaged siding, windows, and roofs; vehicles with broken windows and vehicles being badly dented; and crops flattened.

Allendale County has experienced a total of 32 hailstorm events that have been documented in the past 37 years (1982 -2019). The Town of Allendale has experienced nine (9) hail events, the Town of Fairfax has a recorded four (4) events, the Town of Sycamore has had three (3) events, and the Town of Ulmer has had two (2) recorded events. The unincorporated area of the County has experienced 14 hail events in the past 37 years. Hail size recorded in the county ranges from 0.75 inches to 1.75 inches.

Probability

Based on the recorded hailstorm events for Allendale County, there is a probability that a hailstorm will occur at least once, if not more every year in the County (1.0). A hailstorm event has a 100% likelihood of occurring every year in the County.

Figure 19. Hailstorm Probability for Allendale County

Location	# of Events	Years in Record	Recurrence Interval (Years)	Hazard Frequency (% Chance per Year)
Allendale	9	37	4.1	24.3%
Fairfax	4	37	9.25	10.8%
Sycamore	3	37	12.3	8.1%
Ulmer	2	37	18.5	5.4%
Unincorporated	14	37	2.6	37.8%
County	32	37	1.2	86.5%

Source: NCDC

Vulnerability

Overall, Allendale County has a high vulnerability to hail. The majority of hail events occurred in the incorporated municipalities of the County. There is a 37.8% chance that a hail event may occur in the unincorporated area of the County each year. The Town of Allendale has a 24.3% chance that hail may occur each year; the Town of Fairfax has a 10.8%, the Town of Sycamore a 8.1% chance, and the Town of Ulmer a 5.4% chance that hail may occur each year.

A range of 0.75 to 1.75 inches in hail size is common for Allendale County and its incorporated municipalities. No estimated values for property damage or crop damage were reported. Hailstorms can cause damage to roofs, automobiles, power lines, trees, gardens, agricultural crop, and other structural damage.

Additionally, the breakdown for the Tax Year 2020 shows a total assessed market value \$197,519,102. The total number of parcels in Allendale County is 8,999.

Drought Analysis



Grant Blankenship for the New York Times

Hazard Description

The NWS describes four types of drought: meteorological, agricultural, hydrological, and socioeconomic.

Meteorological drought is defined in terms of the departure from a normal precipitation pattern and the duration of the drought hazard. Meteorological drought has a slow-onset that usually takes at least three months to develop and may last for several seasons or years.

Agricultural drought links the various characteristics of meteorological drought to agricultural impacts. The focus is on precipitation shortages and soil-water deficits. A plant's demand for water is dependent on prevailing weather conditions, biological characteristics of the specific plant, its stage of growth, and the physical and biological properties of the soil.

Hydrological drought refers to deficiencies in surface water and sub-surface water supplies. The frequency and severity of hydrological drought is often defined on a watershed basin scale. Although climate is a primary contributor, other factors such as changes in land use, land degradation, and the construction of dams all affect the hydrological characteristics of the basin. Hydrological droughts often lag behind meteorological and agricultural droughts.

Socioeconomic drought occurs when physical water shortage begins to affect the population, individually and collectively. Most socioeconomic definitions of drought associate it with supply, demand, and economic good.

Drought differs from other hazards in many ways. First, the effects of drought take a considerable amount of time to accumulate and the extent of the hazard can linger for prolonged periods after the drought itself had ceased. Second, the absence of a definitive and universally accepted definition of drought complicates the determination of whether a drought is occurring and the level of its severity. Third, compared to other natural hazards, the geographical area, impacts, and duration of drought are difficult to quantify.

Severity

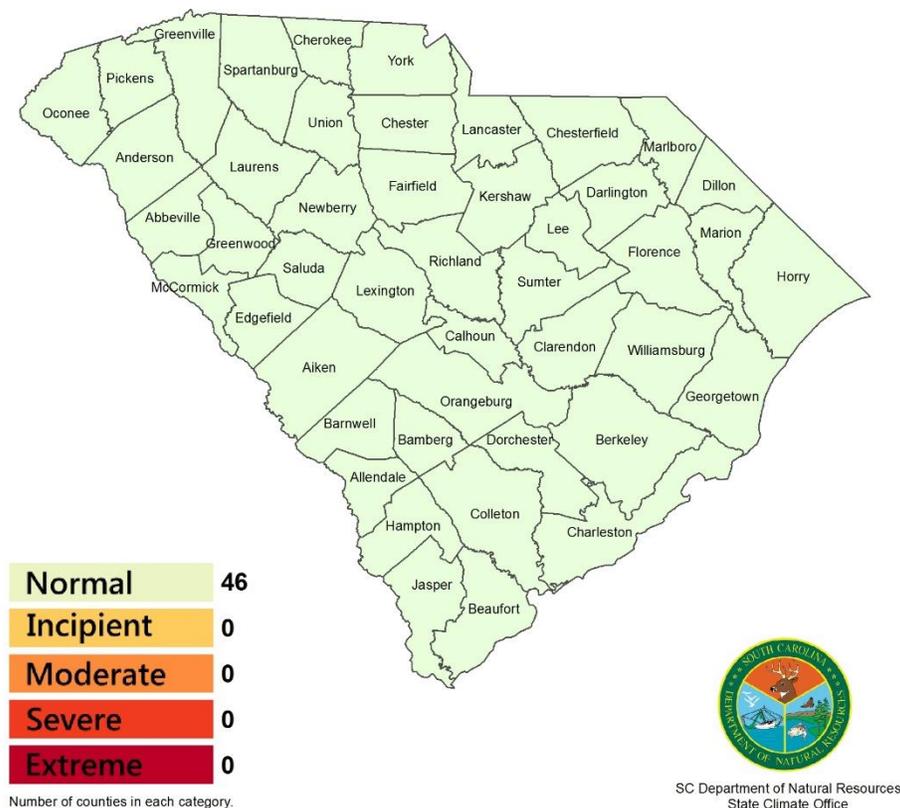
The Palmer Drought Severity Index was developed in the 1960’s and uses temperature and rainfall information in a formula to determine dryness. It has become the semi-official drought index. The Palmer Index is most effective in determining long term drought. The South Carolina State Climatology Office measures drought using a scale based on the Palmer Drought Severity Index. It uses a zero (0) as normal, and drought is shown in terms of minus numbers; minus one (-1) is incipient drought, minus two (-2) is moderate drought, minus three (-3) is severe drought, and minus four (-4) is extreme drought.

The different levels of drought as assigned by the SCDNR uses seven different indicators to measure the varying stages of drought throughout the state. Incipient means that the first stages of drought are beginning to appear according to the indices that measure rain level, stream level, crop moisture, and others. The levels following incipient are upgrades in drought status based on dynamic data. (SCDNR Climatology Office)

Below is the South Carolina Drought Status, effective January 30, 2020.

Figure 20: South Carolina Drought Status by County

Drought Status: 01-30-2020



As of January 30, 2020, the entire state of South Carolina is in a normal status based on the State Climatology Office. The SC Drought Response Committee has removed drought declaration for all counties. Frequent rainfall and coverage over the previous months have alleviated the drought conditions statewide.

Over the past thirteen years (2006-2019) Allendale County has ranged in drought status from normal to severe. Below in figure 21 a list of Allendale County’s drought status can be seen for the past thirteen (13) years.

Figure 21. Drought Status for Allendale County

Month/Year	Status
December 2019	Incipient
May 2019	Incipient
May 2018	Normal
August 2017	Normal
February 2017	Normal
December 2016	Incipient
July 2016	Incipient
July 2015	Moderate
June 2015	Incipient
January 2015	Normal
November 2014 - September 2014	Incipient
April 2013	Normal
January 2013 - December 2012	Moderate
September 2012 - June 2012	Incipient
April 2012 - June 2011	Moderate
June 2011 – July 2010	Incipient
December 2009 – April 2009	Normal
February 2009 – September 2008	Incipient
August 2008 – April 2008	Moderate
January 2008 – September 2007	Severe
June 2007	Moderate
May 2007 – February 2007	Incipient
September 2006	Moderate
August 2006	Incipient
April 2006	Normal

Source: SC State Climate Office

Location

Droughts are region-wide natural disasters and will be addressed in that way. There is no specific location mapping for droughts in the Allendale County region.

Extent

In the Allendale County region, declarations of drought occur frequently. Statistics from the USC Hazards and Vulnerability Research Institute show that from the years 1950 to 2019 there have been a recorded 35 declared droughts. In the summer months the range for drought is abnormally dry to severely dry. From 2012-2015, area farmers have had to apply for agricultural losses due to severe drought. From figure 21 above it can be assumed that Allendale County experiences periods of moderate to severe drought.

The following is a list of impacts associated with drought. Each one can directly or indirectly impact Allendale County’s economy, environment, and people.

Figure 22: Drought Impacts

Drought Impacts		
Economy	Environment	People
<ul style="list-style-type: none"> • Damage to crops • Increase in food prices • Increased transportation costs for food • Reduced dairy and livestock production • Increased fire hazard • Loss to recreational and tourism industry • Revenue loss to water reliant businesses • Loss of navigability of rivers and canals • Reduction of economic development 	<ul style="list-style-type: none"> • Reduction and degradation of fish and wildlife habitat • Wind and water erosion of soils • Loss of wetlands • Increased number and severity of fires • Air quality effects • Damage to plant species • Lower water levels in reservoirs, lakes, and ponds • Water quality effects (i.e., salt concentration, increased water temperature, pH, dissolved oxygen, turbidity) 	<ul style="list-style-type: none"> • Food shortages • Public dissatisfaction with government • Loss of aesthetic values • Reduction or modification of recreational activities • Health issues related to use restrictions • Increased fire hazard • Mental and physical stress • Decrease in quality of life • Increased poverty • Population migrations

Probability

It should be noted that droughts are region-wide natural disasters and will be addressed in that way. There is no location mapping for droughts in the Allendale County region. In the Allendale County region, declarations of drought occur frequently. Historical data reports that there have been 35 drought declarations from 1950 to 2019. Additionally, there have been 16 reported drought impacts since 2016 that will also factor into the interval and frequency. Current data concerning drought declarations has yet to be updated, so impacts from 2016 to the present will be supplemented.

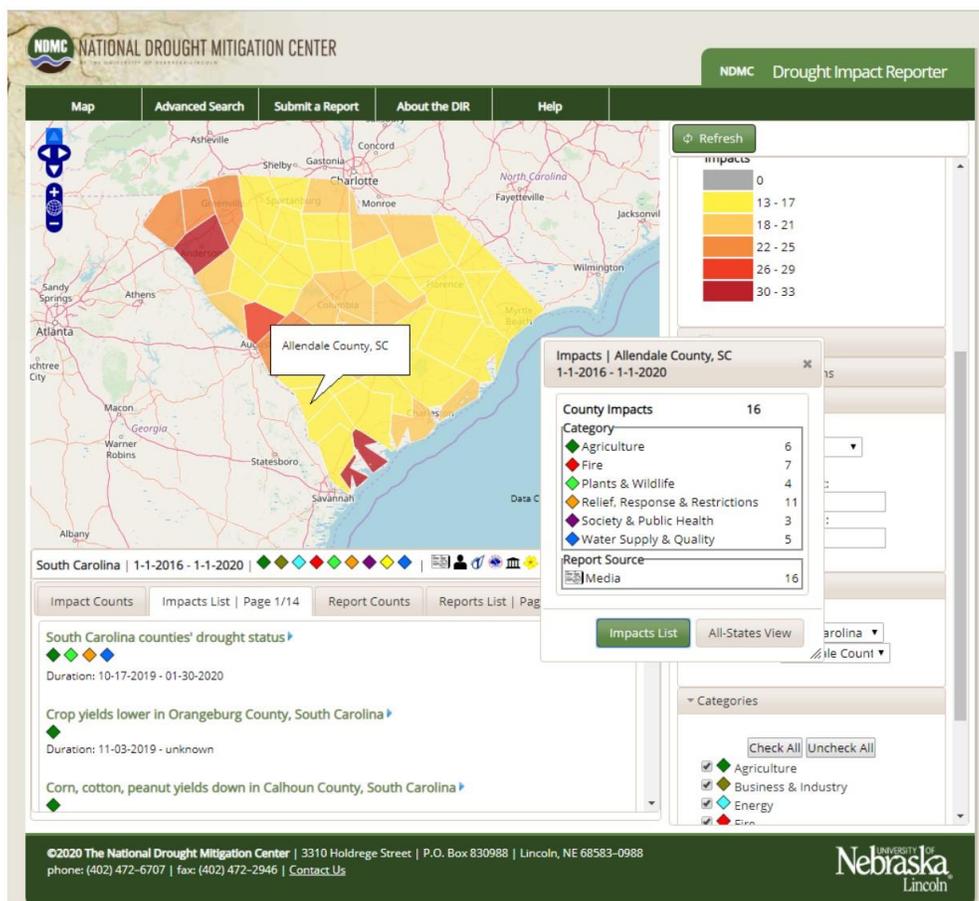


Figure 23. Drought Probability for Allendale County

# of Events	Years in Record	Recurrence Interval (Years)	Hazard Frequency (% Chance per Year)
51	69	1.4	73.9%

Source: USC Hazards and Vulnerability Research Institute

From the above figure 23 it can be expected that the Allendale County region will have a drought declaration or drought impact approximately every 1.4 years, with a 73.9% chance of a drought period occurring every year.

Vulnerability

Overall, the Allendale County region is moderately affected by abnormal to severe levels of drought. Droughts cause devastating affects to agricultural production. Cropland and pasture account for

roughly 30% of the total land area of the county. Therefore, the vulnerability of the Allendale County region to instances of drought is moderate.

Each drought produces a unique set of impacts, depending not only on its severity, duration, and spatial extent, but also on ever-changing social conditions. A wide-range of factors, both physical and social, determines society's vulnerability to drought.

Understanding both direct and indirect impacts (see Figure 22) is one of the most significant challenges in preparing for drought. The direct impacts include loss of revenue from businesses reliant on water, such as car washes, landscapers, and manufacturers. In a drought, water use restrictions may force businesses to suspend all or a portion of their activities. The indirect impacts associated with drought may be far-reaching. The more removed the impact from the cause, the more complex the link to the cause. Indirect impacts are diffused, making it very difficult to determine financial estimates of damages.

Additionally, the breakdown for the Tax Year 2020 shows a total assessed market value \$197,519,102. The total number of parcels in Allendale County is 8,999.

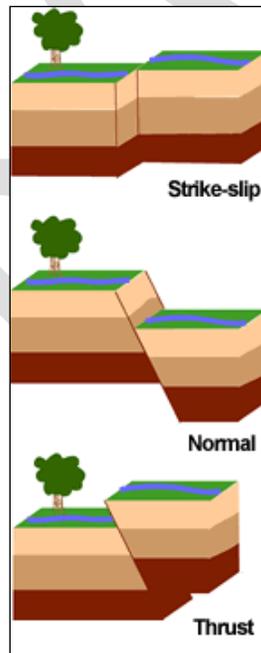
Earthquake Analysis



Hazard Description

An earthquake is a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. Stress built up in the Earth's crust causes rocks near the surface to break and slip, and when this occurs, an earthquake results. This region along which the slip occurs at the Earth's surface is called a fault. There are three types of faults: strike-slip (rock blocks move horizontally), normal (rock moves down relative to the other side), and thrust (rock moves up relative to the other side). The earthquake faults can be seen in the illustration below:

Figure 24: Types of Earthquake Faults



Source: USGS/SC HMP 2018

Annually in South Carolina, there are about 10 to 15 earthquakes recorded, with only 3-5 actually noticed by people. Because of this low frequency of noticeable events, many people are unaware of the earthquake risk in South Carolina. However, all 46 counties in the state are susceptible to efforts of earthquakes. About 70 percent of earthquake activity in the state is located in the Middleton Place-Summerville Seismic Zone. This zone is located about 12 miles northwest of Charleston and is the most active zone in South Carolina, experiencing 10 to 15 earthquakes a year. (*Source: SC HMP 2018*)

Most earthquakes originate from faults, or a break in the rocks that make up the earth's crust, along which rock on either side that have moved past each other. As the rocks move past one another, they occasionally stick, causing a gradual buildup of energy or strain. Eventually, this accumulated energy becomes so great that it is abruptly released in the form of seismic waves, which travel away from the earthquake's source (or focus) deep underground, causing the shaking (ground acceleration) at the earth's surface, known as an earthquake. The point on the earth's surface that is directly above the focus is the epicenter.

Energy is released when an earthquake occurs, which results in the shaking people feel and that which is detectable by seismic instruments. The point below the surface, within the Earth's crust where an earthquake begins is called the hypocenter or focus, and the point directly above this depth on the Earth's surface is the epicenter.

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.

According to the U.S. Geological Survey (USGS) Earthquake Hazards Program, most earthquakes occur at the boundaries where the earth's tectonic plates meet, although it is possible for earthquakes to occur entirely within plates. Allendale County and its incorporated municipalities are located well within the North American plate, far from the plate boundary located east in the Atlantic Ocean. Seismic research is ongoing with regard to causes of earthquakes in regions far from plate margins. Regardless of where they are centered, earthquakes can affect locations beyond their point of origin.

Severity

The terms magnitude and intensity are used to describe the overall severity of an earthquake. The severity of an earthquake depends on the amount of energy released at the epicenter, the distance from the epicenter, and the underlying soil type.

All these factors affect how much the ground shakes, known as Peak Ground Acceleration (PGA) and what a building experiences, known as Spectral Acceleration (SA) during an earthquake.

An earthquake's magnitude is a measurement of the total amount of energy and is expressed in terms

of the Richter scale. Intensity measures the effects of an earthquake at a particular place and is expressed in terms of the Modified Mercalli scale. Figure 25 shows the approximate comparison between Richter scale magnitude and Modified Mercalli Intensity (MMI).

Figure 25: Magnitude and Intensity Comparison

Magnitude and Intensity Comparison	
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

Figure 26 describes the effects of the various intensity ratings.

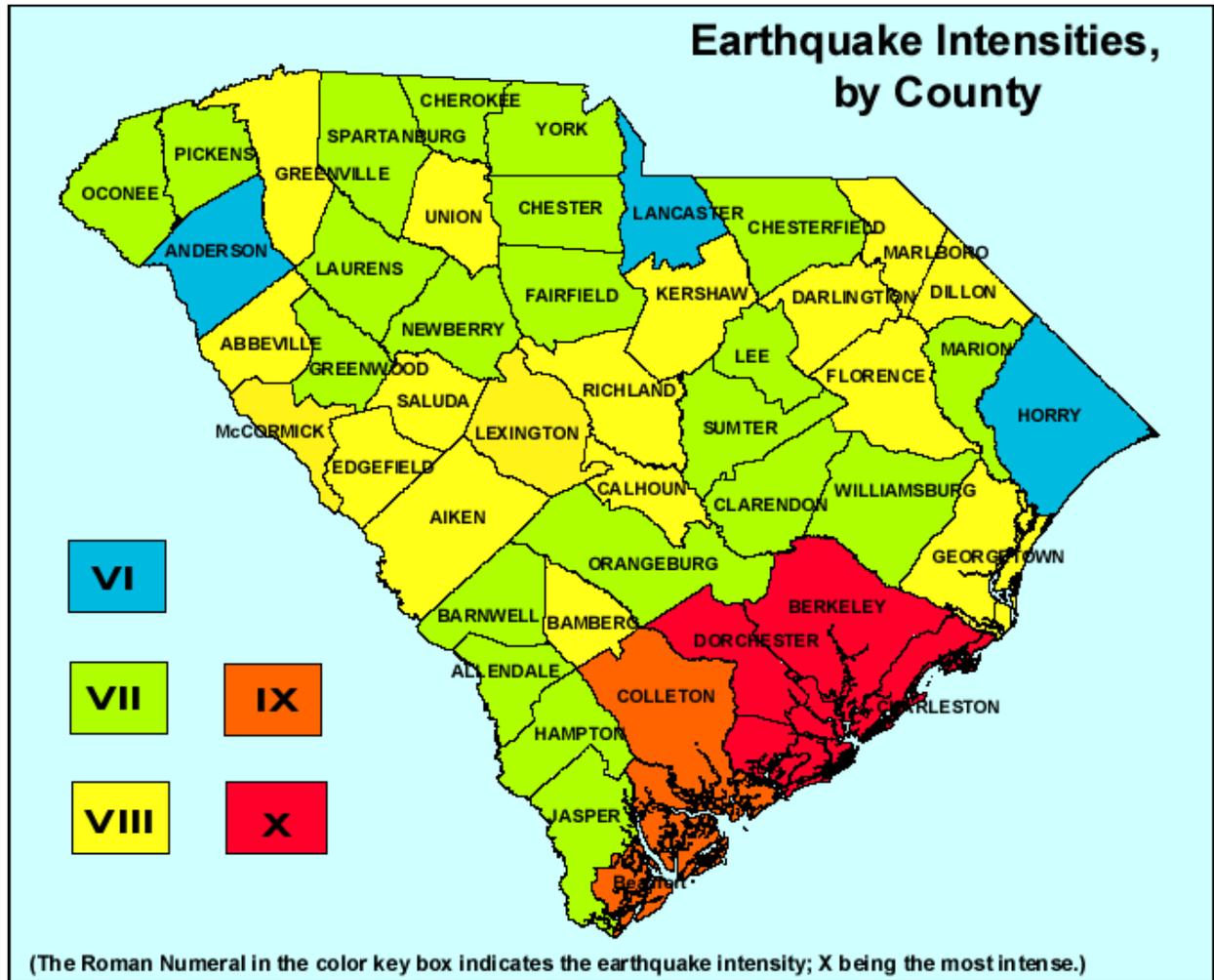
Figure 26: MMI Scale

MMI Scale Rating	
MMI	Damage/Perception
I	<ul style="list-style-type: none"> • Not felt except by a very few under especially favorable conditions
II	<ul style="list-style-type: none"> • Felt only by a few people at rest, especially on upper floors of buildings
III	<ul style="list-style-type: none"> • Felt quite noticeably by people indoors, especially on upper floors of buildings • Many people do not recognize it as an earthquake • Standing motor cars may rock slightly • Vibrations similar to the passing of a truck
IV	<ul style="list-style-type: none"> • Felt indoors by many, outdoors by few during the day • At night, many awakened • Dishes, windows, doors, disturbed; walls make cracking sound • Sensation like heavy truck striking building • Standing motor cars rocked noticeably
V	<ul style="list-style-type: none"> • Felt by nearly everyone; many awakened • Some dishes, windows broken • Unstable objects overturned • Pendulum clocks may stop
VI	<ul style="list-style-type: none"> • Felt by all; many frightened • Some heavy furniture moved • Few instances of fallen plaster • Damage slight
VII	<ul style="list-style-type: none"> • Damage negligible in buildings of good design and construction • Slight to moderate damage in well-built ordinary structures

	<ul style="list-style-type: none"> • Considerable damage in poorly built or badly designed structures • Some chimneys broken
VIII	<ul style="list-style-type: none"> • Damage slight in specially designed structures • Considerable damage in ordinary substantial buildings with partial collapse • Damage great in poorly built structures • Fall of chimneys, factory stacks, columns, monuments, walls • Heavy furniture overturned
IX	<ul style="list-style-type: none"> • Damage considerable in specially designed structures • Well-designed frame structures thrown out of plumb • Damage great in substantial buildings, with partial collapse • Buildings shifted off foundations
X	<ul style="list-style-type: none"> • Some well-built wooden structures destroyed • Most masonry and frame structures destroyed with foundations • Rails bent
XI	<ul style="list-style-type: none"> • Few, if any masonry or frame structures remain standing • Bridges destroyed • Rails bent greatly
XII	<ul style="list-style-type: none"> • Total damage • Lines of sight and level are distorted • Objects thrown into the air

Figure 27 below illustrates the earthquake intensities by County.

Figure 27. Earthquake Intensities, by County

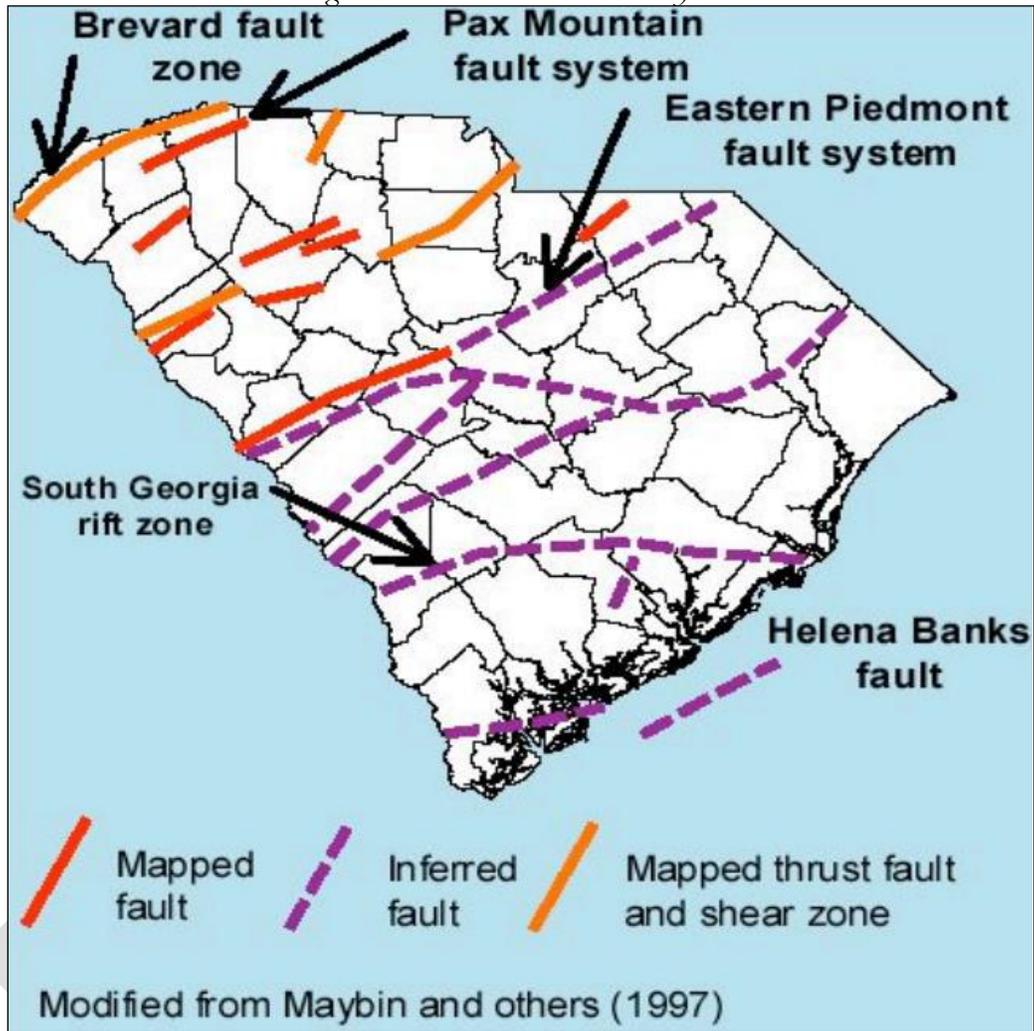


Source: SCDNR

Location

South Carolina is located in the interior of the North American plate, and earthquakes that occur within a plate are called intraplate earthquakes. Earthquake activity in South Carolina fall under three main causes: fault activity, reservoir induced seismicity, and Appalachian rise. A map showing the fault system in South Carolina is shown on the following page.

Figure 28: South Carolina Fault System



Source: SC HMP 2018/SCDNR

Earthquakes are possible in Allendale County and its incorporated municipalities. Approximately two earthquakes, measuring a 2.7 and 2.4 respectively on the Richter scale were recorded in the County over a 42 year (1977-2019) timeframe. Figure 29 gives the timeframe, location, and magnitude of the two (2) events.

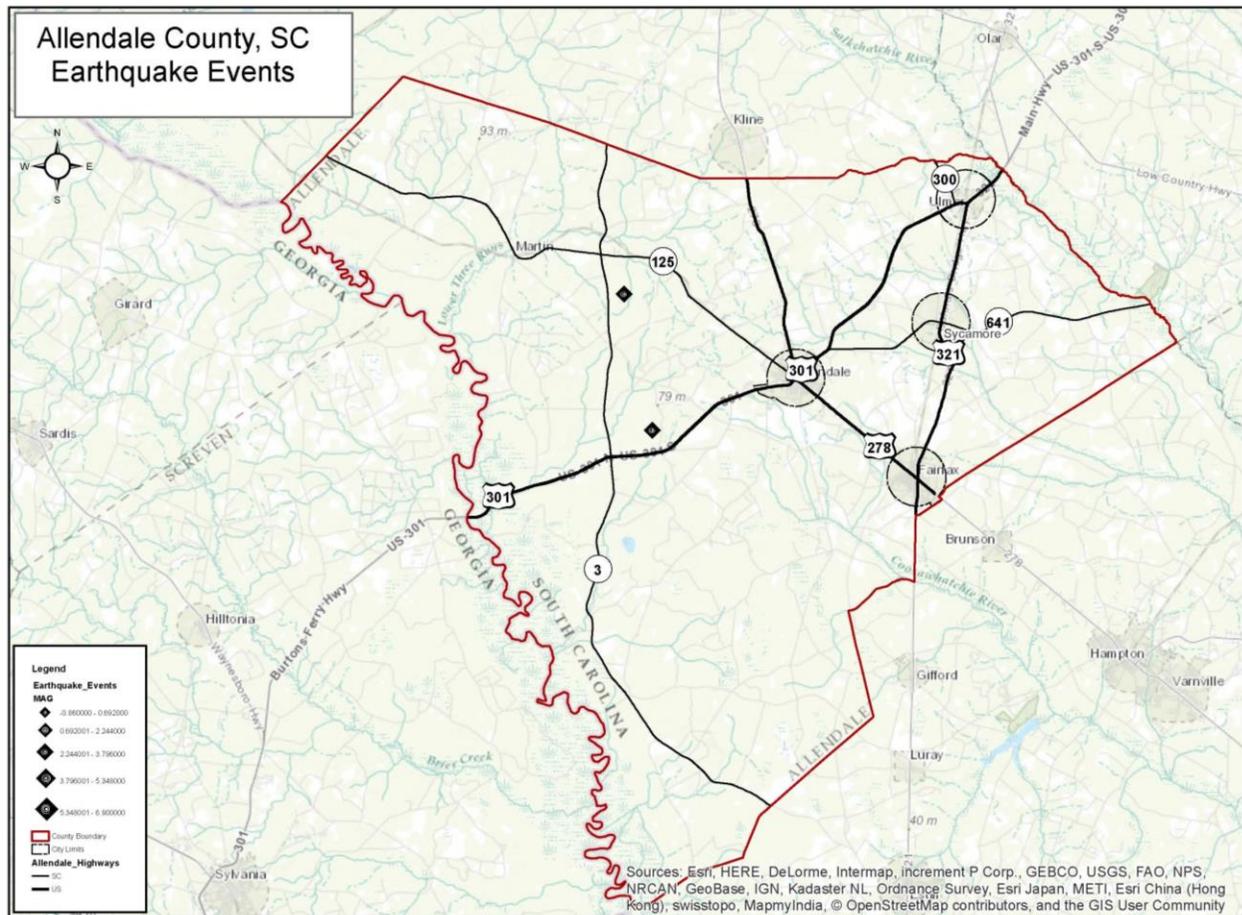
Figure 29. Historic Occurrences of Earthquakes in Allendale County

Date	Location	Richter Magnitude	Damage Perception
May 5, 1977	County	2.7	Not felt except by a very few under especially favorable conditions
January 28, 1982	County	2.4	Not felt except by a very few under especially favorable conditions

Source: USC Hazards and Vulnerability Research Institute

The following map shows earthquakes in Allendale County and the surrounding area. In Allendale County there have been two documented earthquake events over the past 42 years (1977-2019).

Map 7: Earthquake Map



Extent

Allendale County has experienced two recorded earthquakes over a 42 year timeframe (1977-2019). Both events were in the unincorporated area of the county. Of the two earthquakes, both measured on the Richter scale (2.7 and 2.4).

Probability

Figure 30. Earthquake Probability for Allendale County

Location	# of Events	Years in Record	Recurrence Interval (Years)	Hazard Frequency (% Chance per Year)
County	2	42	21	4.8%

Source: USC Hazard and Vulnerability Research Institute

In the past recorded 42 years, two earthquake events have occurred in the unincorporated area of Allendale County. Based on the above figure, Allendale County has a 4.8% probability of an earthquake occurring every year, and a recurrence interval of every 21 years.

Vulnerability

The infrequency of major earthquakes, coupled with low magnitude events in the past can lead one to perceive that Allendale County and its incorporated municipalities are not vulnerable to a damaging earthquake. While the towns and county do not sit on a major fault system, they are nonetheless susceptible to earthquakes. A high-magnitude earthquake could cause significant financial losses, casualties, and disruptions in critical facilities and services. Dams, bridges, and other infrastructure are also a concern and could incur serious damage from an earthquake.

A building's construction is a key factor in how well it can withstand the forces produced by earthquakes. Unreinforced masonry buildings are most at risk in an earthquake because the walls are prone to collapse outward. Steel and wood buildings have more ability to absorb the energy from an earthquake. Wood buildings with proper foundation ties have rarely collapsed in earthquakes.

Currently there is no reliable method for predicting the time, place, and size of an earthquake. Earthquakes typically occur with little or no warning. Based on the previous events and potential for great losses, Allendale County and its incorporated municipalities has a low vulnerability to earthquakes.

Additionally, the breakdown for the Tax Year 2020 shows a total assessed market value \$197,519,102. The total number of parcels in Allendale County is 8,999.

Wildfire Analysis



Hazard Description

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. Wildfires are the most common natural hazard in South Carolina.

According to the South Carolina Forestry Commission (SCFC), over a 20 year span, the average number of fires annually totaled nearly 2,700 and were handled by the SCFC, burning an average of 17,500 acres each year. The SCFC reports that the forest fire danger is usually highest in late winter and early spring (January through mid-April) when the vegetation is dead or dormant. March is usually the busiest month for SCFC firefighters.

According to the SCFC, nearly 98 percent of all the wildfires in the state are human caused. The leading cause of wildfires, which accounts for between 40 and 45 percent of all wildfires reported, are the result of someone intentionally setting fire to someone else's property. Burning debris, such as trash, yard waste, construction waste, and agricultural fields often burns out of control, causing 30 to 35 percent of wildfires annually. Equipment use causes about 5 percent of wildfires, usually due to faulty equipment such as farm equipment or hot catalytic converters on automobiles. Between 4 and 5 percent of wildfires are caused by careless smoking. Between 3 and 5 percent of the state's wildfires are caused by children playing with matches, lighters and fireworks. Wildfires caused by campfires account for 1 to 3 percent of fires, occurring mainly during the summer months. Fires that are started by sparks resulting from carbon build-up on railroad tracks cause 1 to 2 percent of the annually reported wildfires. Miscellaneous fires such as those caused by negligence of adults using fireworks, structural fires that ignite nearby wooded areas, or unattended warming fires account for four to six percent of wildfires. Lightning only causes about 2 percent of the annually reported fires in the state. (Source: SCEMD State HMP)

Severity

The severity of a wildfire is based on the damage to the forest resource, wildlife, water and air quality, and the number of acres damaged. For this section, wildfire will be discussed on a county wide level. There is no particular event of wildfire that is illustrated on an individual jurisdiction basis.

Location

Particular events of wildfire will not be discussed on an individual jurisdiction basis, events will be understood to be county wide and presented as such. Map 8 below illustrates wildfire events as recorded by SCFC and other sources.

The areas within the county that are at a greater risk of wildfires are those areas that have a higher density of vegetation and forests. The land coverage map in the Appendix shows forested and scrub/shrub areas, largely within the unincorporated county, that are at risk due to wildfire events. Smaller county jurisdictions; Sycamore and Ulmer, with close proximity to high risk rural areas face a higher risk than the more urbanized jurisdictions of Allendale and Fairfax. Though the outskirts of urban areas are at risk due to the proximity of forested and vegetated areas, the risk in the urban core is comparatively lower. Historic wildfire occurrences validate this claim as the vast majority start in the forested areas of the county.

Extent

The South Carolina Forestry Commission has historical data for wildfires in Allendale County dating back to 1947 through 2019. During this 72 year period 3,901 wildfires have been documented in the county. In this 72 year timeframe approximately 36,619 acres have been destroyed in the county. Yearly averages have been calculated to give an estimate of how many wildfires occur in the county and how much damage was caused. Figure 31 below depicts a 5, 15, 25, 40, and 50 year average for the county.

<i>Figure 31. Allendale County Wildfire Averages</i>					
	5 year	15 Year	25 Year	40 Year	50 Year
Wildfires	23	22	37	51	50
Acres	124.3	155.3	172.5	238.6	310.1
Source: SC Forestry Commission					

Probability

From 1947 to 2019 there have been a recorded 3,901 wildfire events in Allendale County. The total number of acres affected was 36,619. Figure 32 below depicts the wildfire probability for Allendale County.

<i>Figure 32. Wildfire Probability for Allendale County</i>				
	# of Events	Years in Record	Recurrence Interval (Years)	Hazard Frequency (% Chance per Year)
Wildfire	3,901	72	<0.1	5,418.1%*
*Percent is greater than 100.00, therefore hazard can be expected to occur more than once per year				
Source: SC Forestry Commission				

The areas within the county that are at a greater risk of wildfires are those areas that have a higher density of vegetation and forests. Though the outskirts of urban areas are at risk due to the proximity of forested and vegetated areas, the risk in the urban core is comparatively lower.

Vulnerability

Overall, Allendale County has a high vulnerability to wildfires. The probability of one or more wildfires in the county per year is highly likely (greater than 100%). Unincorporated areas within the county are at an even greater risk and vulnerability to wildfires due to the fact that there is more wooded acreage compared to that of the urbanized towns. By law, the South Carolina Forestry Commission is responsible for wild land fire protection outside of corporate town or city limits. South Carolina law regulates outdoor burning in unincorporated areas. Except within town or city limits, anyone planning to burn outdoors must:

1. Notify the Forestry Commission before starting the fire
2. Clear a firebreak around the area to be burned
3. Have adequate tools, equipment, and personnel on hand to control the fire
4. Stay with the fire until it is completely safe.

After examining past events, wildfires have not caused a great amount of significant reported damage within the county. Therefore, when taking into consideration the high probability of wildfire in the county, and the past history of the event, Allendale County has a high level vulnerability to wildfire.

Additionally, the breakdown for the Tax Year 2020 shows a total assessed market value \$197,519,102. The total number of parcels in Allendale County is 8,999.

Flood Analysis



Photograph by James Nielsen/ AFP/Getty Images

Hazard Description

Flooding is the most frequent and costly natural hazard in the United States. About 75% of presidential disaster declarations are related to flooding. The National Flood Insurance Program defines a flood as a general and temporary condition of partial or complete inundation of normally dry land areas. South Carolina is especially vulnerable to flooding because of its low elevation and frequency of storms.

The terms used to classify floods are diverse, as are the number of subtypes. Floods may be broadly classified into two categories, as either general or flash floods.

General Floods

These floods are usually long-term events that may last for several days; riverine and coastal flooding fall under general flood types.

Flash Floods

Floods are caused by locally heavy rains in areas where water runs off quickly, moving at very high speeds. Flash floods can cause severe damage; it is able to pick up great debris, uproot trees, roll boulders, destroy buildings, and damage bridges and roads. Urban flooding, dam/levee failure, and debris or ice jam water fall under flash flooding type.

South Carolina has five major river basins and one coastal region. The State's rivers generally start in the northwest and flow southeasterly to the Atlantic Ocean, passing through three physiographic areas:

1. The Blue Ridge Mountains in the far northwestern corner of the State
2. The Piedmont Plateau
3. The Coastal Plain

There are five distinctive types of flooding in South Carolina. Flash, riverine, and coastal related to the three physiographic areas listed above.

1. **Flash flooding:** rapid onset of events which occur from short, heavy rainfall, accumulating in areas faster than the ground is able to absorb it.
2. **Riverine flooding:** this occurs when an increase in water volume within a river

channel causes an overflow onto the surrounding floodplain. Also known as “overbank flooding.”

3. **Coastal flooding:** water pushed inland as a result of storm surge, wind-driven waves, and heavy rainfall produced by hurricanes, tropical storms, nor’easters, and other coastal storms.
4. **Local drainage problems:** can occur anywhere in the State where the ground is flat, where the drainage pattern had been disrupted, or where channels or culverts have not been maintained.
5. **Dam/levee failure:** each dam in the State has the potential to fail and suddenly release its water, flooding the land downstream.

(Source: SC HMP 2018)

General Flood	Flash Flood
Riverine Coastal Local drainage	Urban Dam/levee failure Debris/ice jam

Severity

The National Weather Service (NWS) categorizes flooding as major, moderate, and minor. Figure 34 below gives a description of the three flooding categories.

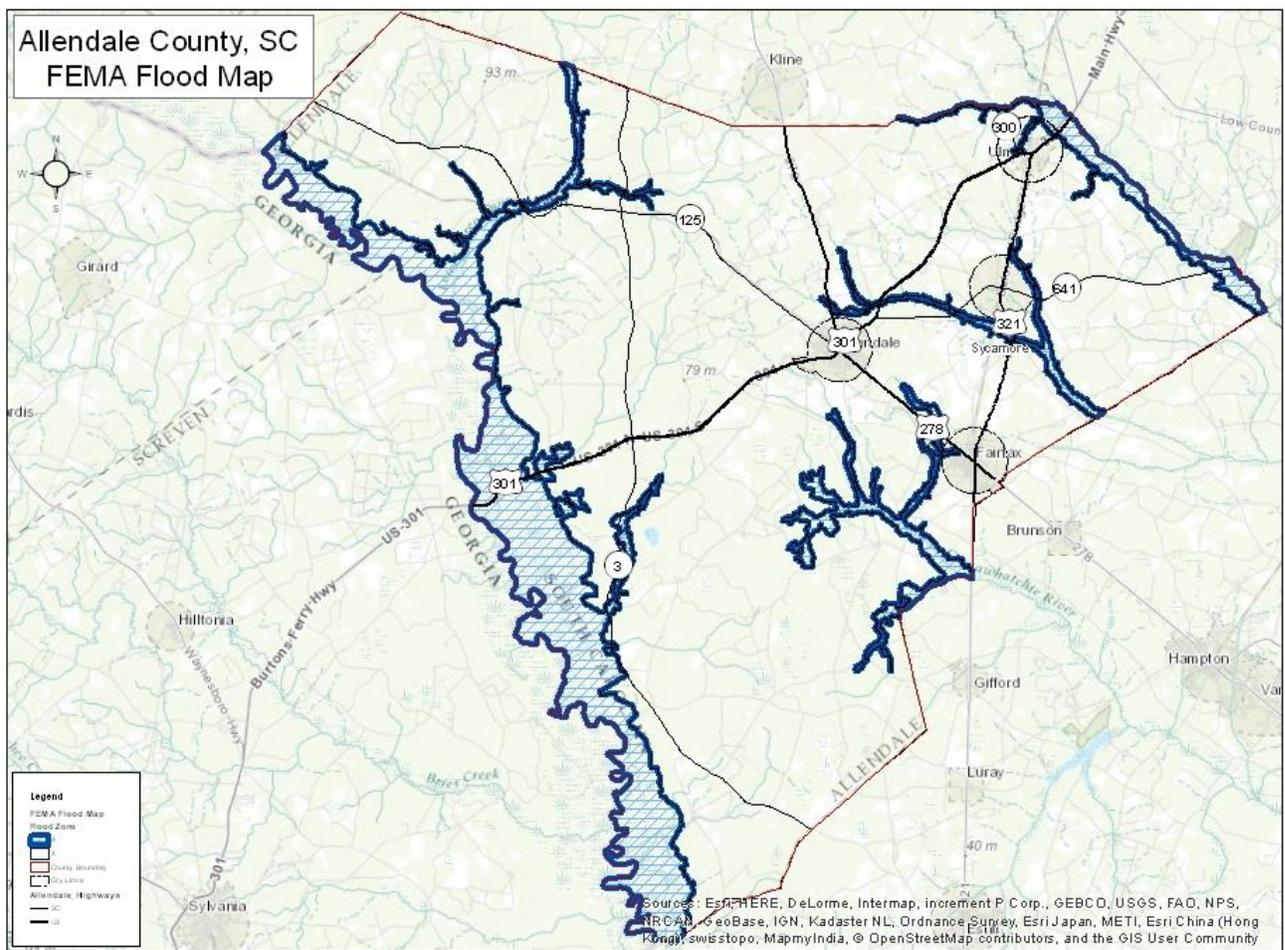
Figure 34: NWS Flood Categories

NWS Flood Categories	
Category	Description
Major	<ul style="list-style-type: none"> • Extensive inundation and property damage • Often involves the evacuation of people and the closure of both primary and secondary roads
Moderate	<ul style="list-style-type: none"> • Inundation of secondary roads • Transfer to higher elevation necessary to save property • Some evacuation may be required
Minor	<ul style="list-style-type: none"> • Minimal or no property damage • Possibly some public inconvenience

Location

Identification of floodplain areas within the county and the incorporated municipalities was based on the most recent Flood Insurance Rate Maps (FIRM) produced by FEMA. These maps display the locations of all of the major water bodies in the county and delineate the 100-year floodplain boundaries (Zone A). These are areas that have a one percent (1%) chance of equaling or exceeding the recorded base flood elevation during any year. Mandatory flood insurance is required to be purchased within Zone A and flood management standards apply. Map 9 below identifies flood prone areas within Allendale County.

Map 9: Flood Map



Extent

The following figure 35 gives specific information concerning flooding events and their location within Allendale County.

It should be noted that for purposes of this update, information to support the previous report of 2019 flood events in Allendale County could not be substantiated through previous sources sited, USC Hazards and Vulnerability Research Institute (USC HVRI). This is due to the information not being available on the website. The information provide in this document reflects the best data available for this updated. The National Climate Data Center (NCDC) – Storm Event Database search for flood and flash flood for Allendale County, between November 1950 and November 2020, lists 10 events between 2003 and 2013. Some of these events occurred on the same day in different areas of the Allendale County.

Figure 35. Historic Occurrences of Flooding in Allendale County

Date	Location	Type	Description
July 12, 2013	Unincorporated	Flash Flooding	Dam broke on private pond causing massive amount of trees/debris on roadways. Some road closures \$1,000 in property damage.
July 12, 2013	Ulmer	Flash Flooding	Road closure due to flash flood \$1,000 in property damage.
July 12, 2013	Sycamore	Flash Flooding	Dam broke on private pond causing massive amount of tree/debris on roadway. Multiple road closures and impassable, including portions of Highway 301. \$5,000 in property damage.
July 12, 2013	Allendale	Flash Flooding	Dam broke on private pond causing several road closures. \$1,000 in property damage
July 11, 2013	Unincorporated	Flash Flooding	Road closure due to heavy rain over short time. \$1,000 in property damage
July 11, 2013	Unincorporated	Flash Flooding	Road closure due to heavy rain over short period. \$1,000 in property damage.
July 11, 2013	Ulmer	Flash Flooding	Several bridges underwater from creeks overspilling banks. Cars stranded. All du to heavy rain over short period. \$20,000 in property damage.
July 11, 2013	Unincorporated	Flash Flooding	House flooded and 3 vehicles washed off highway due to heavy rain over short period. \$25,000 in property damage.

August 29, 2012	Allendale	Flash Flooding	Multiple road closures. Highway 125 and Highway 278 and Short Street and due to flooding.
August 6, 2003	County	Flash Flooding	-Heavy rain flooded numerous roads including SC 301 northeast of Allendale
Source: NCDC			

With consideration given to the best available data, as noted previously, Allendale County has had 10 recorded flood events over a 70 -year timeframe (1950-2020).

Probability

FEMA Flood Insurance Rate Maps (FIRM’s) delineate special flood-hazard areas and the risk zones in a community. These special flood-hazard areas identify locations that have a chance of experiencing coastal or river flooding in any given year. The 100-year flood designation means the area has a 1% chance of flooding in any given year.

Based on analysis of current records from the National Climatic Data Center, Allendale County and its incorporated municipalities have a history of experiencing flooding. Allendale County had 10 reported floods/flash floods over a 70 -year period (1950 to 2020). Allendale County has a 1.4% chance of a flood event to occur each year within the county, and a risk of at least one flood to occur every seven years based on the documented history of flooding.

FEMA FIRMs indicate and illustrate special flood hazard areas (SFHAs) subject to inundation by the 1% annual chance of flood in Zone A for the unincorporated areas of Allendale County as well as areas surrounding the four incorporated municipalities.

In the unincorporated area of the county, there are numerous SFHAs indicated on the FEMA FIRMs subject to inundation by the 1% annual chance of flood in Zone A. Allendale County has many creeks, rivers, and streams that could result in loss and damage should overflow occur during unusual rainfall. The following water bodies have been identified on the FEMA FIRMs that could pose a potential threat: Lower Three Runs Creek, Savannah River, Jackson Branch, Log Branch, Miller Swamp, Salkehatchie River, Coosawhatchie River, and Duck Branch.

The Town of Allendale also has identified water bodies illustrated on the FIRMs that could pose a threat should overflow occur due to unusual rainfall. Those water bodies include: Log Branch and Jackson Branch, located northeast of the Town; Duck Branch, located southeast of the Town; and the Coosawhatchie River, located south of the Town. All of these water bodies are identified as being Zone A.

The Town of Fairfax has two water bodies identified on the FIRMs that are located in Zone A: Duck Branch, northwest and southwest of the Town; and the Coosawhatchie River, southwest of the Town.

The Town of Sycamore has two water bodies identified on the FIRMs, located in Zone A: Jackson Branch, south of the Town; and Miller Swamp, east of the Town.

The Town of Ulmer also has two water bodies identified on the FIRMs: Wells Branch, located north of the Town; and the Salkehatchie River, located east of the Town.

Figure 36. Flood Probability for Allendale County

Location	# of Events	Years in Record	Recurrence Interval (Years)	Hazard Frequency (% Chance per Year)
Allendale	1	70	70	Less than 1%
Ulmer	2	70	35	Less than 1%
Sycamore	1	70	70	Less than 1%
Unincorporated	5	70	14	Less than 1%
Countywide	10	70	7	1.4%

Source: NCDC

Vulnerability

Severe rainstorms can cause area drainage systems to overflow, resulting in flooded roads. This excessive flooding of the highway network can eventually cause permanent damage to the road infrastructure. Also, there were reports of flooding to homes. Allendale County has reported over a 44 year period \$2.84M in property damage and \$87K in damage to crops. Overall, Allendale County as a whole has a moderate vulnerability to flooding.

FEDERAL REQUIREMENTS FOR LOCAL HAZARD MITIGATION PLANS

Requirement 201.6(c)(2)(ii): The risk assessment **must** also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged by floods.

Repetitive Loss Properties

Repetitive loss properties are those for which two or more losses of at least \$1,000 each have been paid under the National Flood Insurance Program within any 10-year period since 1978. After reviewing such properties and structures within the plan area of Allendale County and its incorporated municipalities, no such property has been identified as a repetitive loss property.

NFIP Participation

The National Flood Insurance Program (NFIP) defines a flood as a general and temporary condition of partial or complete inundation of normally dry land areas. South Carolina is especially vulnerable

to flooding because of its low elevation and frequency of storms. There are three distinct types of flooding, two of which affect Allendale County and its incorporated municipalities: coastal flooding, river flooding, and flash flooding.

Coastal Flooding

Long and short wave surges that affect the shores of the open ocean, bays, and tidally influenced rivers, streams, and inlets cause coastal flooding. The astronomic tide and meteorological forces such as nor'easters and hurricanes influence the movement of coastal waters.

River Flooding

River flooding is caused when rivers and streams overflow their banks. Flooding from large rivers usually results from large-scale weather systems that generate prolonged rainfall over wide areas. These same weather systems may cause flooding of smaller basins that drain to major rivers. Small rivers and streams are susceptible to flooding from more localized weather systems that cause intense rainfall over small areas.

Flash Flooding

Short-term, high-intensity rainfall that occurs in inland areas with poor drainage often produces flash floods. Densely populated areas have a high risk for flash floods. The construction of buildings, highways, driveways, and parking lots increases runoff by reducing the amount of rain absorbed by the ground. During periods of heavy rainfall, storm drains may become overwhelmed and flood roads and buildings. Low spots, such as basements are especially vulnerable to flash floods.

The National Flood Insurance Program (NFIP) enables property owners in participating communities to purchase insurance protection from the government against losses from flooding. Participation in the NFIP is based on an agreement between local communities and the federal government which states that if a community will adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in SFHAs, the federal government will make flood insurance available within the community as a financial protection against flood losses. After reviewing FEMA's "Community Status Book Report for Communities Participating in the National Flood Program," Allendale County is an active participant in the National Flood Insurance Program (NFIP) and has continued compliance with NFIP requirements and objectives. The Town of Fairfax, Town of Sycamore, Town of Allendale and Town of Ulmer are also active participants in the NFIP. Therefore all incorporated and unincorporated jurisdictions of Allendale County are mapped.

One of the primary objectives of the NFIP is to guide development away from high-flood risk areas. NFIP regulations minimize the impact of structures that are built in SFHAs by requiring them not to cause obstructions to the natural flow of floodwaters. As a condition of Allendale County's participation in the NFIP, those structures built within SFHAs must adhere to strict floodplain management regulations enforced by the community.

Allendale County's floodplain management program ensures compliance by enforcing regulations

and policies that require pre-construction site approval prior to any structure being built within a floodplain or zone. An application with the County's Building and Zoning Department, is required to identify the property being developed and to determine if it is within an existing flood zone. According to the Zoning Administrator, who is also the Floodplain Manager, there have been few new residential or commercial development, and some limited industrial development within the past five (5) years in all of Allendale County. Should any new development occur, Allendale County will utilize the revised flood maps adopted in 2010. Allendale County oversees the floodplain management compliance for the incorporated and unincorporated jurisdictions.

Additionally, the breakdown for the Tax Year 2020 shows a total assessed market value \$197,519,102. The total number of parcels in Allendale County is 8,999.

DRAFT

Winter Storm Analysis



Hazard Description

Winter storms are often thought of as a snowstorm. While this can be true, there are also other types of weather associated with winter storms that can be extremely hazardous.

Storms and Strong Winds

Sometimes winter storms are accompanied by strong winds creating blizzard conditions with blinding wind-driven snow, severe drifting, and dangerous wind chill. Strong winds with these intense storms and cold fronts can knock down trees, utility poles, and power lines.

Extreme Cold

Extreme cold often accompanies a winter storm or is left in its wake. Prolonged exposure to the cold can cause frostbite or hypothermia and become life-threatening. In areas unaccustomed to winter weather, near freezing temperatures are considered “extreme cold.” Freezing temperatures can cause severe damage to citrus fruit crops and other vegetation. Pipes may freeze and burst in homes that are poorly insulated or without heat.

Ice Storms

Heavy accumulations of ice can bring down trees, electrical wires, telephone poles and lines, and communication towers. Communications and power can be disrupted for days while utility companies work to repair the extensive damage. Even small accumulations of ice may cause extreme hazards to motorists and pedestrians.

Heavy Snow Storms

Heavy snow can immobilize a region and paralyze a city, stranding commuters, stopping the flow of supplies, and disrupting emergency and medical services. In rural areas, homes and farms may be isolated for days, and unprotected livestock may be lost. The cost of snow removal, repairing damages, and loss of business can have large economic impacts on cities and towns.

A winter storm develops from three basic elements: cold air, moisture, and lift. Below freezing temperatures in the clouds and near the ground are necessary to make snow and/or ice; moisture is needed to form clouds and precipitation; and something to raise the moist air to form the clouds and

cause precipitation is required (i.e. warm air colliding with cold air and being forced to rise over the cold dome).

Severity

The severity of a winter storm depends on several factors including temperature, wind speed, type of precipitation, rate of deposition, and time of day and/or year the storm occurs. Everyone is potentially at risk during winter storms. The actual threat to the individual depends on the specific situation. Recent observations indicate the following:

- Related to ice and snow:
 - About 70% occur in automobiles
 - About 25% are people caught out in the storm
 - Majority are males over 40 years old

- Related to exposure to cold:
 - 50% are people over 60 years old
 - Over 75% are males
 - About 20% occur in the home
 -

Dangers associated with exposure to cold include frostbite, hypothermia, and wind chill.

Location

There have been six (6) significant winter storms recorded in Allendale County within the past 64 years. The most recent storm took place on February 12, 2014. The following figure 37 details the six storms that affected the County. Individual jurisdictions are not discussed in detail because the events were part of a county wide and statewide disaster. The participating jurisdictions are assumed to be incorporated in the winter event report.

Figure 37. Historic Occurrences of Winter Storms in Allendale County

Date	Location	Type	Description
February 12-13, 2014	Statewide	Ice Storm	-Ice Storm Pax declared a statewide State of Emergency multi-day winter storm - 5 fatalities were directly attributable to the winter storm -Ice accumulations of ¼ to ½ inch in Allendale County - freezing rain/ice totals 0.75 inches in Allendale County - \$1.7M in Countywide clean-up costs -\$974K in County reimbursement of clean-up costs
January 28-29, 2014	Statewide	Ice Storm	-freezing rain and sleet

			-brief snow -ice accumulations of ¼ to 1 inch Several bridges closed due to ice accumulation across region
January 10, 2011	Statewide	Ice Storm	-Ice accumulations of ¼ inch -Snow accumulations less than 1 inch
January 26, 2004	Statewide	Ice Storm	-Ice accumulations of ¼ to ½ inch -Trees, large limbs, and power lines down -Driving conditions were treacherous -Several power outages reported -Freezing rain and freezing drizzle
January 2, 2002	Statewide	Ice Storm	-Winter storm moved across the southeastern states and continued into January 3 rd -Mixture of snow and sleet -Freezing rain produced ¼ to approx. ½ inch of ice -Numerous auto accidents -Driving conditions were treacherous -Homes and businesses without power on the 2 nd and 3 rd
January 24, 2000	Statewide	Ice Storm	-Snow accumulations ranged from 1 to 2 inches -Mixture of sleet and freezing rain -Numerous auto accidents -Driving conditions were treacherous
Source: NCDC			

Extent

The six (6) significant winter storms/ice storms that affected Allendale County as part of a statewide event caused minor damages; auto accidents, downed power lines and trees, power outages, ice accumulations.

Probability

Figure 38. Winter Storm Probability for Allendale County				
Location	# of Events	Years in Record	Recurrence Interval (Years)	Hazard Frequency (% Chance per Year)
Statewide	6	69	11.5	8.7%
Source: NCDC				

Based on the data from the above figure, it is estimated that a winter storm event may occur every 11.5 years, with a 8.7% chance of a storm occurring every year in Allendale County. However, mild winter storm events are common in this region of the State. Typically Allendale County experiences some ice, sleet, or snow event annually. During the months of December to March these events are more likely to occur.

Vulnerability

Heavy accumulations of snow can distress a community; standing commuters, closing vital businesses and facilities, stopping the flow of supplies, and disrupting emergency and medical services. Accumulations of snow can also result in downed trees and power lines. The cost of snow removal, repairing damages, and the loss of business can have a severe economic impact on Allendale County and its communities.

Ice storms can also have a significant impact on the County. Heavy accumulations of ice can bring down trees and topple utility poles and communication towers. Ice can disrupt communication and power for days while utility companies repair extensive damage. Even small accumulations of ice can be extremely dangerous to motorists and pedestrians. Bridges and overpasses are particularly dangerous because they freeze before other surfaces.

Overall, Allendale County has a moderate vulnerability to major winter storms. In examining these six documented events, it is evident that such winter storms can cause much damage to a community that is not prepared for such hazardous conditions involving heavy ice, sleet, and snow.

Additionally, the breakdown for the Tax Year 2020 shows a total assessed market value \$197,519,102. The total number of parcels in Allendale County is 8,999.

2.2 Overall Risk Probability and Frequency

The Task Force Committee reviewed this section for the update process and made the necessary changes to Figure 39 to reflect the updated statistics described in Section 2.1.

To determine the probability of a natural hazard event, the number of events, total number of years those events have been recorded, and the frequency of events must be determined. The recurrence interval is also helpful in portraying how common a certain type of hazard is. Dividing the number of years by the number of events produces the recurrence interval, or how often the event will occur per year. The percentage frequency of events is determined by dividing the number of events by the total number of years and multiplying by 100. This gives a reliable sense of the chance a hazard will occur per year.

Figure 39 below is necessary in determining overall hazard vulnerability. The figure also helps to define what types of events are more frequent in Allendale County.

Figure 39. All Hazards Probability for Allendale County				
Hazard	# of Events	Years in Record	Recurrence Interval (in years)	Hazard Frequency % (Chance per Year)
Tornado	15	69	4.6	21.7%
Hurricane/Tropical Storm	16	168	10.5	9.5%
Hail	32	37	1.2	86.5%
Drought	51	69	1.4	73.9%
Earthquake	2	42	21	4.8%
Wildfire	3,901	72	<0.1	5,418%**
Flood	10	70	7	1.4%
Winter Storm	6	69	11.5	8.7%
Data Sources: National Climatic Data Center, USC Hazards and Vulnerability Research Institute, SC State Climate Office, SC Forestry Commission				
*Unable to calculate (cannot divide by zero)				
** Percent is greater than 100%, therefore hazard can be expected to occur more than once per year				

2.3 Overall Vulnerability Assessment

No changes were made to the mathematical methodology for prioritizing hazards, after review by the Task Force Committee. The Analysis Worksheets remain largely the same. However, a very few total score figures have changed due to the updated hazard data as part of the update process. Some of the hazard types were categorized as “Countywide” based on the data that was available and narrative information from the various sections.

Prioritization of Hazards for Allendale County

Based on these findings and the results of technical research the following hazards were selected as priority hazards for Allendale County: Tornadoes, Hurricanes/Tropical Storms, Hail, Drought, Earthquakes, Wildfires, Flooding, and Winter Storms.

To assess and evaluate hazards, four criteria have been established by the task force committee and each has been given a rating of low, medium, or high risk.

1. History – A record of occurrences
2. Vulnerability – The number of people and the value of property that could be affected
3. Impact – Assuming the greatest event possible and the worst case scenario.
4. Probability – The likelihood an event will occur (chances per year)
5. Priority Score- Composite score value for each hazard weighing priority attention to planning

In the scoring system, each of the four criteria identified for describing and analyzing potential hazards is assigned a rating and their respective number.

Low	1 point
Medium	5 points
High	10 points

Since some criteria are judged to be more important than others, a weighting factor was established to balance out the total scoring. The following weights are used:

History	2
Vulnerability	5
Impact	10
Probability	7

A composite score for each hazard is arrived at by multiplying the score value assigned to each criterion by its weight and then summing the four totals. For example:

Hazard: Flood

History Medium 5pts x 2 (weighting factor) = 10 pts

Vulnerability	Medium	5pts x 5 (weighting factor) = 25 pts
Impact	High	10pts x 10 (weighting factor) = 100 pts
Probability	Medium	5pts x 7 (weighting factor) = 35 pts
		Total = 160 pts

All information has been compiled and created as to the various hazards in the County. Those hazards with the highest numerical scores will receive priority attention for planning and mitigation purposes. The methods used for determining the rating of High, Medium, and Low risks are as follows:

- History: Risk determined by past occurrences in each participating jurisdiction, where available, and by county wide occurrences.
- Vulnerability: Based on the total population from the jurisdiction and an estimated projection on property values and facilities within the jurisdiction.
- Impact: Risk determination was established by taking into account the vulnerability of the jurisdiction/county as well as past history of occurrence. Determination was also based on the extent of the event located in previous hazard profile section of the plan.
- Probability: Determined by hazard frequency percentage located in the previous section of overall risk probability and frequency.

The following figure 40 and figure 41 are the overall vulnerability summary for hazards within Allendale County and its incorporated jurisdictions. Plan goals and objectives are prioritized according to these figures.

Figure 40. Allendale County Hazard Identification and Analysis Worksheet

Allendale County					
Type of Hazard	Probability	Vulnerability	Impact	History	Total Score
Tornado	Low	High	High	Low	
Priority Score:	7	50	100	2	159
Hurricane/Tropical Storm	Low	Low	Low	Low	
Priority Score:	7	5	10	2	24
Hail	High	Medium	Medium	High	
Priority Score:	70	25	50	20	165
Drought	Medium	Medium	High	Medium	
Priority Score:	35	25	100	10	170
Earthquake	Low	Low	Low	Low	
Priority Score:	7	5	10	2	24
Wildfire	High	Low	Medium	High	
Priority Score:	70	5	50	20	145
Flood	Low	Low	Medium	Low	
Priority Score:	7	5	50	2	64
Winter Storms	Low	Medium	Low	Low	
Priority Score:	7	25	10	2	44

Figure 41. Allendale County: Incorporated Jurisdictions Hazard Identification and Analysis Worksheet						
Municipality	Type of Hazard	Probability	Vulnerability	Impact	History	Total Score
Allendale	Tornado	Low	Medium	Medium	Low	
	Priority Score:	7	25	50	2	84
	Hurricane/ Tropical Storm	Low	Low	Low	Low	
	Priority Score:	7	5	10	2	24
	Hail	Medium	Low	Low	Medium	
	Priority Score:	35	5	10	10	60
	Drought	COUNTYWIDE				
	Priority Score:					
	Earthquake	Low	Low	Low	Low	
	Priority Score:	7	5	10	2	24
	Wildfire	COUNTYWIDE				
	Priority Score:					
	Flood	Low	Low	Medium	Low	
	Priority Score:	7	5	50	2	64
Winter Storms	COUNTYWIDE					
Priority Score:						
Fairfax	Tornado	Low	Medium	Medium	Low	
	Priority Score:	7	25	50	2	84
	Hurricane/ Tropical Storm	Low	Low	Low	Low	
	Priority Score:	35	5	10	2	24
	Hail	Low	Low	Low	Medium	
	Priority Score:	7	5	10	10	32
	Drought	COUNTYWIDE				
	Priority Score:					
	Earthquake	Low	Low	Low	Low	
	Priority Score:	7	5	10	2	24
	Wildfire	COUNTYWIDE				
	Priority Score:					
	Flood	No listed history				
	Priority Score:					
Winter Storms	COUNTYWIDE					
Priority Score:						
	Tornado	Low	Medium	Low	Low	
	Priority Score:	7	25	10	2	44
	Hurricane/ Tropical Storm	Low	Low	Low	Low	

Sycamore	Priority Score:	7	5	10	2	24
	Hail	Low	Low	Low	Low	
	Priority Score:	7	5	10	2	24
	Drought	COUNTYWIDE				
	Priority Score:					
	Earthquake	Low	Low	Low	Low	
	Priority Score:	7	5	10	2	24
	Wildfire	COUNTYWIDE				
	Priority Score:					
	Flood	Low	Low	Medium	Low	
	Priority Score:	7	5	50	2	64
	Winter Storms	COUNTYWIDE				
Priority Score:						
Ulmer	Tornado	Low	Medium	Low	Low	
	Priority Score:	7	25	10	2	44
	Hurricane/ Tropical Storm	Low	Low	Low	Low	
	Priority Score:	7	5	10	2	24
	Hail	Low	Low	Low	Low	
	Priority Score:	7	5	10	2	24
	Drought	COUNTYWIDE				
	Priority Score:					
	Earthquake	Low	Low	Low	Low	
	Priority Score:	7	5	10	2	24
	Wildfire	COUNTYWIDE				
	Priority Score:					
	Flood	Low	Low	Medium	Low	
	Priority Score:	7	5	50	2	64
Winter Storms	COUNTYWIDE					
Priority Score:						

2.4 Community Mitigation Capability Assessment

After the Task Force Committee reviewed and analyzed this section during the update process, language was added to reflect any development, residential, commercial or industrial growth that had occurred since the previous 5-year update. It should be noted that little development has occurred since the last 5-year update.

Purpose

The main purpose of this section is to examine the policies, ordinances, and codes that have been put in place to reduce the impacts of natural hazards. In some instances, especially in the more rural jurisdictions, such existing plans do not exist. In these cases, the town is typically covered underneath the county's plans. The following is a collection of policies concerning natural hazards, mitigation, and emergency preparedness, reviewed by the Lower Savannah Council of Governments. This section is essential for the examination of current natural hazard mitigation. The review of the following plans aided the development of this hazard mitigation by allowing the plan developers to see what is already in place to deal with natural hazards.

Allendale County's Emergency Management Division provides overall coordination during major emergencies, such as hurricanes, tornados, and other natural and manmade disasters. The EMD is responsible for all hazards planning, natural and technological, hazard mitigation, preparedness for, response to, and recovery from disasters, and the coordination of the Emergency Preparedness Committee.

Allendale County has an Emergency Operations Plan that was developed for use by Allendale County Government Officials to ensure mitigation and preparedness, appropriated response, and timely recovery from hazards that may affect Allendale County. The plan has three major parts: letter of promulgation approves the plan and assigns responsibilities, basic plan outlines polices and general procedures that provide a common basis for joint county and municipal governments operations in a natural, technological, or purposeful harm disaster, and Emergency Support Functions (ESFs) providing guidelines for the development of appropriate mechanisms to facilitate the prompt and efficient application of resources in any emergency or disaster situation.

Comprehensive plans and zoning ordinances exist in Allendale County and some of the incorporated municipalities. Integrating mitigation concepts and policies with existing comprehensive plans provides and expanded means for implementing initiatives through established, legal frameworks. The foundation of these plans lies in the promotion of health, safety, efficiency, and well being for all segments of the population. Some of the primary plan objectives include preservation of the County's unique natural environment and historic heritage, creation of a stable and diverse economy, and promoting sustainable developments. A local hazard mitigation initiative can be strengthened by finding opportunities where the implementation of other County goals and policies also supports the mitigation recommendations presented in this plan.

Zoning ordinances cover the unincorporated areas of the county and the four municipalities. Zoning can be used to restrict growth in high risk areas, allow low density development or designate only certain uses in hazard prone areas. All the zoning ordinances require erosion control practices for ground disturbing activities, protection of existing waterways, and revegetation. These practices and others promote best management practices and reduce the risk of flooding hazard in particular.

Allendale County has land development regulations that provide policy for infrastructure for new development. Like zoning regulations, these regulations provide best management practices to reduce the risk of flooding hazards. Since the last update, Allendale County has seen little new residential or commercial development per the Building and Zoning Administrator, however, there has been some limited industrial growth and development along US 278. Additionally, there has been commercial growth along US 301 within the city limits of Allendale including student housing at USC Salkehatchie, a renovated EOC and additional of a solar farm on the outskirts of town. After reviewing the County's current land use map and future land use map, it is evident that there has been some limited growth and development since the previous 5-year update to the Plan. After reviewing the County's existing policies, development regulations and growth projections, the existing tools are viewed as sufficient, and portray an accurate reflection of Allendale County's land use growth and development.

Building codes are important in mitigation because codes are developed for areas of the state in consideration of types, frequency and intensity of hazards present in that geographic region. Consequently, structures that are built to applicable codes are inherently resistant to many hazards like strong wind, floods, and earthquakes. Additionally, Allendale County has a mobile and manufactured home ordinance that provides separate standards for those types of housing

Intergovernmental cooperation is a great asset to the implementation of hazard mitigation actions. This way local, county, and State agencies can act as resources for each other. Interaction between the County, towns, and regional planning organizations occurs in areas such as plan development and grant writing.

The major conclusion reached after conducting the capability assessment is that Allendale County will need to rely on technical and financial assistance from various resources to effectively implement hazard mitigation actions over the next five years. The constraints facing the County and especially the municipalities include both limited staff resources and extremely limited funding.

During this planning process, it is apparent that the County has a strong capability to bring together various groups to work together in crafting better communities of the future. The same cooperative effort, if joined with the appropriate technical and financial assistance from regional, state, and federal resources, can be harnessed to implement the priority hazard mitigation actions. A sustained effort by citizens, staff, and local officials can create a more sustainable and disaster resistant future.

Each of the local governments has the capacity to handle mitigation issues, but are limited due to funding and limited staff. The results of the capability assessment help to provide the framework for developing recommendation for specific mitigation actions. It also helps to identify shortfalls in the local government capabilities as well as draw attention to existing successes. The capability assessment

was analyzed then used to rank the mitigation strategies according to the capability of the county or the municipalities to implement the actions.

Incorporation of the requirements of the mitigation plan into existing planning mechanisms

Figure 42: Existing Planning Mechanisms

Jurisdiction	Comprehensive Plan	Capital Improvement Plan	Building Code/LDR	Flood Hazard Ordinance	Zoning Ordinance	Emergency Operations Plan
Allendale County	Yes	Yes	Yes	Yes	Yes	Yes
Allendale	Yes	Yes	Yes	Yes	Yes	Yes
Fairfax	Yes	Yes	Yes*	Yes	Yes	Yes
Sycamore	Yes*	No	Yes*	Yes	Yes*	Yes
Ulmer	Yes*	No	Yes*	Yes	Yes*	Yes

*Enforced by County

There are several ways to incorporate the hazard mitigation plan requirements into the existing planning processes. First, the comprehensive plans are updated every five years and cover features of the jurisdictions such as natural resources and community facilities. Planning commissions within each jurisdiction revise the plans then recommend the revised plan to the local governing bodies for approval. Using this process, hazard mitigation elements can be included in plan updates.

Capital improvement activities are usually included as part of the comprehensive plans. The jurisdictions are covered under the County CIP. The zoning ordinances are built from the findings of the comprehensive plan, so changes to the zoning ordinances can be made after the comprehensive plan is updated.

Updating the comprehensive plan would cover areas such as economic development, land use, natural resources, road construction and community facilities. From that, the zoning ordinance could reflect needed changes for issues such as development, land uses, storm water retention or road grading activities.

Building codes are standard across the county and can be updated with hazard mitigation findings by the governing body of each local government. In addition, the state has adopted the Southern Building Code. As changes are made to the state building code by the state legislature local jurisdictions may adopt those changes and incorporate them into local building codes.

Public hearings, which provide an opportunity for public comment, are required prior to adoption of any of the above planning mechanisms.



3.1 Mitigation Strategy

After review and analysis from the Task Force Committee, the Mitigation Strategy section has remained unchanged for the update process.

The Mitigation Strategy section describes how Allendale County and its incorporated municipalities will reduce or eliminate potential losses from hazards identified in the Natural Hazard Risk Assessment section. The strategy focuses on existing and potential mitigation actions that will mitigate the effects of a natural hazard event on Allendale County’s population, economy, and property. The Mitigation Strategy is a coordinated effort by various agencies and partners to develop and implement a comprehensive range of inventive and effective natural hazard mitigation actions.

Mitigation Strategy Approach

- Establish mitigation goals and objectives that aim to reduce or eliminate Allendale County’s long-term vulnerability to natural-hazard events
- Identify and analyze a comprehensive range of hazard-specific mitigation actions that aim to achieve the goals and objectives of the Mitigation Strategy
- Describe how Allendale County will prioritize, implement, and administer mitigation actions

FEMA Requirements

The Task Force Committee developed the mitigation strategy consistent with the process and steps presented in the Federal Emergency Management Agency’s (FEMA) How-To-Guide: Developing the Mitigation Plan. This section satisfies the following requirements:

- **Requirement §201.6(c)(3)(i):** The hazard mitigation strategy *shall* include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.
- **Requirement §201.6(c)(3)(ii):** 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 effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. The mitigation strategy must also address the jurisdiction’s participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.
- **Requirement §201.6(c)(3)(iii):** The mitigation strategy *shall* include an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization *shall* include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

Process

Using the findings from the risk assessment and the capabilities assessment as a guide the task force developed the following mitigation goals, objectives, and strategies for implementation. Goals and objectives were developed by the Task Force, Lower Savannah Council of Government representatives, and FEMA representatives and included a period provided for comment and revision. Once the final goals and objectives were determined the Task Force developed the mitigation strategies that would aid the county and participating jurisdictions in meeting the goals and objectives identified in the plan. Strategies were selected using the information obtained from the capabilities assessment, which identified existing programs and shortfalls related to mitigation activities.

The first step in the mitigation actions and prioritization process was the county Task Force reviewed a broad range of potential mitigation actions. From these proposed actions, the Task Force developed a prioritization method based on a number of different factors. The projects were ranked based on a cost-benefit review that showed which projects were most needed, which of these projects was the most likely to be accomplished, and which would most effectively address mitigation needs. Those projects that required minimal funds were considered higher in priority because of the high likelihood that they could be accomplished as well as having a maximum cost-benefit ratio.

In addition to reviewing potential monetary costs, the team considered the social impact of each potential project, the technical capabilities of the local government to carry through the project, impact on the environment, ability of the local government to maintain the project, and any political or legal effects of the decision. Actions that can immediately aid in the mitigation of the most likely and dangerous natural hazards are higher in priority under each of the goals for Allendale County and the participating municipalities. This cost-benefit review was the basis for each of the project feasibility rankings.

Each action and project includes the following: a priority rank, project name, description, responsible party, and timeframe. The participating municipalities will rely on grants and other sources in order to fund mitigation projects.

Based on the recommendations of the Task Force the following implementation schedule has been developed. Projects have been listed by priority according to the ranking assigned by the Task Force (High, Medium, or Low). Feasibility to implement the projects is also ranked High, Medium or Low based on the results of the capability assessment.

Cost Benefit Review

A key criterion for mitigation projects to be eligible for funding is that they must be cost-effective. If the project benefits are higher than the project costs, then the project is cost-effective. In order to ensure a consistent approach in determining the cost-effectiveness of all mitigation projects, Allendale County will use the FEMA Benefit Cost Analysis (BCA) module and process. A Benefit-Cost Analysis (BCA) is a method for determining the potential positive effects of a specific mitigation action and comparing them to the cost of the action. To assess and demonstrate the cost-effectiveness of mitigation actions, FEMA has developed a suite of BCA software, including hazard-specific modules.

Agencies seeking funding under one of FEMA’s mitigation grant programs will perform a detailed BCA using this software prior to the submission of the grant application.

Allendale County will weigh the effectiveness of the mitigation actions based on the implementation timeframe, the history of occurrences for specific hazards, and the cost of the project.

Implementation and Administration

The following categories have been identified as information for each action that will guide Allendale County and its participating municipalities in the implementation and administration of the actions: description, agencies, timeframe, cost, funding source, and priority. It also serves to coordinate the various agencies involved to avoid duplicating or conflicting efforts. The mitigation strategies contain a wide variety of actions that mitigate the effects of natural hazards on the population, economy, and property of Allendale County.

Figure 43. Implementation Key

Column Header	Description
Mitigation Action & Description	Contains the title and description of the action
Agency	Lists the agency that has primary jurisdiction over the mitigation action and any supporting entities that will assist in the implementation, funding, or maintenance of the mitigation action
Project Timeframe/Duration	Estimates when the project will begin and approximately how long it will take to complete. “Ongoing” refers to actions that are either underway or have no definitive end date
Estimated Project Cost	Estimates costs associated with implementing each mitigation action
Possible Funding Source(s)	Identifies possible sources of funding including capital funding, grants, bonds, and other types of funding
FEMA Category	Identifies the associated FEMA mitigation action category (Prevention, Property Protection, Public Education and Awareness, Natural Resource Protection, Emergency Services, and Structural Projects)
Goals and Objectives	Identifies the hazard mitigation goals and objectives addressed by the mitigation action
Priority	Lists the results of the mitigation action prioritization

3.2 Allendale County Goals and Objectives

The Task Force Committee reviewed and analyzed the County’s goals and objectives and revised Figure 44 as part of the update process.

Developing Goals and Objectives

The first step in developing a hazard mitigation strategy is to establish goals and objectives that aim to reduce or eliminate Allendale County’s long-term vulnerability to natural hazard events. Mitigation goals are general guidelines explaining what the County and its participating municipalities want to achieve in terms of hazard and loss prevention. Objectives are specific, measurable strategies or implementation steps used to achieve the identified goals. Developing clear goals and objectives helped reinforce Allendale County’s overall purpose and mission for undertaking a mitigation planning process.

The goals and objectives set forth below provide the necessary framework to develop a mitigation strategy. The Task Force Committee reviewed and analyzed all goals to ensure they would reduce or avoid long-term vulnerabilities to the identified hazards. Allendale County will re-evaluate its hazard mitigation goals and objectives each plan maintenance cycle to ensure they continue to represent the hazard mitigation priorities.

Hazard Mitigation Goals and Objectives	
Goal 1: Protect public health and safety	
Objective 1.1	Improve systems that provide warning and emergency communications.
Objective 1.2	Reduce the impacts of hazards on vulnerable populations.
Objective 1.3	Train emergency responders.
Objective 1.4	Strengthen local building code enforcement.
Goal 2: Increase public preparedness and awareness for natural disasters	
Objective 2.1	Enhance understanding of natural hazards and the risks they pose.
Objective 2.2	Improve hazard information, including databases, maps, articles in local media, instructional web site, pamphlets, information packets, etc.
Objective 2.3	Improve public knowledge of hazards and protective measures allowing individuals to appropriately prepare for and respond to hazard events.
Goal 3: Protect property	
Objective 3.1	Implement mitigation programs that protect critical facilities and services, and promote reliability of lifeline systems to minimize impacts from hazards, maintain operations, and expedite recovery in an emergency.
Objective 3.2	Consider known hazards when identifying a site for new facilities and systems.
Objective 3.3	Adopt and enforce public policies to minimize hazard impacts on buildings, infrastructure, and neighborhoods and enhance safe construction in high hazard areas.
Objective 3.4	Integrate new hazard and risk information into building codes and land use planning mechanisms.
Objective 3.5	Educate public officials, developers, realtors, contractors, building owners, and the public about hazard risks and building requirements.

Hazard Mitigation Goals and Objectives	
Goal 4: Emergency Services	
Objective 4.1	Immediate actions taken in response to a hazard event can minimize the impact of hazard incidents on people and property.
Goal 5: Reduce the potential effects of flooding on homes and buildings in Allendale County	
Objective 5.1	Continue the implementation of zoning codes.
Objective 5.2	Study flood areas to implement needed changes in development and storm drainage.
Goal 6: Ensure protection and emergency shelters	
Objective 6.1	Shelters must be identified to provide protection to the public.
Objective 6.2	Identify buildings approved for occupancy during natural hazards.
Objective 6.3	The number of shelters should be adequate and safe for the amount of people that may potentially need them.

Figure 44: Allendale County Hazard Mitigation Goals and Objectives

3.3 Allendale County Mitigation Actions

The mitigation actions were included in this section based on the Task Force Committee review and recommendations. Those changes can be seen in Figure 45.

Mitigation actions include programs, plans, projects, or policies that help reduce or eliminate the long-term risk to human life and property from natural hazards. The Task Force Committee identified and analyzed a comprehensive range of hazard-specific mitigation actions with particular emphasis on actions that affect new and existing buildings and infrastructure within Allendale County, and also the protection of the citizens.

Identification

The Task Force Committee identified both existing and potential mitigation actions within their respective agencies that have the following criteria:

- Reduce or eliminate the long-term risk to human life and property from at least one of the eight natural hazards identified in the Risk Assessment Section
- Fall under one or more of the six FEMA mitigation action categories
- Achieve one or more of the hazard mitigation goals and objectives

Mitigation Action Categories

FEMA organizes mitigation actions into six broad categories. These categories allow similar types of mitigation actions to be compared, and provides a standardized method for eliminating unsuitable actions. All mitigation actions identified in this strategy fall within one of the FEMA mitigation action categories below:

1. **Prevention:** Government administrative or regulatory actions or processes that influence the way land buildings are developed and built. These actions also include public activities that reduce hazard losses. Examples from this strategy include building and construction code revisions, zoning regulation changes, and computer-hazard modeling.
2. **Property Protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples from this strategy include seismic retrofits, roadway elevations, and floodproofing.
3. **Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Examples from this strategy include programs that target severe repetitive loss properties and vulnerable populations.
4. **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. Examples from this strategy include projects creating open space or wetlands.
5. **Emergency Services:** Actions that protect people and property during and immediately after a disaster or hazard event. Examples from this strategy include enhancements that provide advanced warning and redundant communications.

6. **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Examples from this strategy include projects that control floodwater, reconstruct dams and seawalls, and construct green roofs.

Summary of Mitigation Actions

The final list of Allendale County’s mitigation actions is in the figure below. Many of the actions protect public health and safety, promote a sustainable economy, protect the environment, and increase public preparedness for disasters. The mitigation actions are the County’s programs, plans, projects, or policies that the county may implement to help reduce or eliminate the long-term risk to human life and property from natural hazards. The Task Force identified, analyzed, and prioritized all actions based on the hazard vulnerability, historical occurrence of the hazard, cost effectiveness, and compliance with NFIP. They prioritized the actions on a high, medium and low scale defined as the following:

- **High Priority:** A project that meets multiple plan objectives, benefits exceed cost, is grant-eligible, can be completed in a short-term period once project is funded.
- **Medium Priority:** A project that meets at least one plan objective, benefits exceed costs, funding not secured, grant eligibility is questionable, and can be completed within 1 to 5 years once project is funded
- **Low Priority:** A project that will mitigate the risk of a hazard, benefits may exceed costs, funding is not secured, project may not be grant-eligible and/or timeline for completion is considered long-term

As a side note, it should be mentioned that these priority definitions are considered to be dynamic and can change from one category to another based on changes to a parameter such as availability of funding. For example, a project might be assigned a medium priority because of the uncertainty of a funding source. This priority could be changed to high once a funding source has been identified such as a grant. The prioritization schedule for this plan will be reviewed and updated as needed through the plan maintenance strategy described in section 4.1 of this Plan.

Since the last update, County land regulations, zoning and building codes continue to be enforced. There has been very little change regarding housing, population and development that would impact Allendale County’s vulnerability.

Status on Strategies

After reevaluating and reviewing the mitigation actions for the plan update, it was evident that none of the previous strategies for Allendale County were implemented due to the lack of funding sources. Note some mitigation actions identified in the plan update may not ultimately be implemented due to prohibitive costs, scale, low benefit/cost analysis ratios, or other concerns.

FIGURE 45
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3.4 Town of Allendale Goals and Objectives

The Task Force Committee reviewed and analyzed the Town of Allendale’s goals and objectives and revised Figure 46 as part of the update process.

Developing Goals and Objectives

The first step in developing a hazard mitigation strategy is to establish goals and objectives that aim to reduce or eliminate the Town of Allendale’s long-term vulnerability to natural hazard events. Mitigation goals are general guidelines explaining what the Town wants to achieve in terms of hazard and loss prevention. Objectives are specific, measurable strategies or implementation steps used to achieve the identified goals. Developing clear goals and objectives helped reinforce Allendale’s overall purpose and mission for undertaking a mitigation planning process.

The goals and objectives set forth below provide the necessary framework to develop a mitigation strategy. The Town of Allendale will re-evaluate its hazard mitigation goals and objectives each plan maintenance cycle to ensure they continue to represent the hazard mitigation priorities.

Hazard Mitigation Goals and Objectives	
Goal 1: Protect public health and safety	
Objective 1.1	Improve systems that provide warning and emergency communications.
Objective 1.2	Reduce the impacts of hazards on vulnerable populations.
Objective 1.3	Train emergency responders.
Objective 1.4	Strengthen local building code enforcement.
Goal 2: Increase public preparedness and awareness for natural disasters	
Objective 2.1	Enhance understanding of natural hazards and the risks they pose.
Objective 2.2	Improve hazard information, including databases, maps, articles in local media, instructional web site, pamphlets, information packets, etc.
Objective 2.3	Improve public knowledge of hazards and protective measures allowing individuals to appropriately prepare for and respond to hazard events.
Goal 3: Protect property	
Objective 3.1	Implement mitigation programs that protect critical facilities and services, and promote reliability of lifeline systems to minimize impacts from hazards, maintain operations, and expedite recovery in an emergency.
Objective 3.2	Consider known hazards when identifying a site for new facilities and systems.
Objective 3.3	Adopt and enforce public policies to minimize hazard impacts on buildings, infrastructure, and neighborhoods and enhance safe construction in high hazard areas.
Objective 3.4	Integrate new hazard and risk information into building codes and land use planning mechanisms.
Objective 3.5	Educate public officials, developers, realtors, contractors, building owners, and the public about hazard risks and building requirements.
Hazard Mitigation Goals and Objectives	
Goal 4: Emergency Services	
Objective 4.1	Immediate actions taken in response to a hazard event can minimize the impact of hazard incidents on people and property.
Goal 5: Reduce the potential effects of flooding on homes and buildings in the Town of Allendale	

Objective 5.1	Continue the implementation of zoning codes.
Objective 5.2	Study flood areas to implement needed changes in development and storm drainage.
Goal 6: Ensure protection and emergency shelters	
Objective 6.1	Shelters must be identified to provide protection to the public.
Objective 6.2	Identify buildings approved for occupancy during natural hazards.
Objective 6.3	The number of shelters should be adequate and safe for the amount of people that may potentially need them.

Figure 46: Town of Allendale Hazard Mitigation Goals and Objectives

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3.5 Town of Allendale Mitigation Actions

The mitigation actions were included in this section based on the Task Force Committee review and recommendations. Those changes can be seen in Figure 47.

Mitigation actions include programs, plans, projects, or policies that help reduce or eliminate the long-term risk to human life and property from natural hazards. The Task Force Committee identified and analyzed a comprehensive range of hazard-specific mitigation actions with particular emphasis on actions that affect new and existing buildings and infrastructure within the Town of Allendale, and also the protection of the citizens.

Identification

The Task Force Committee identified both existing and potential mitigation actions within their respective agencies that have the following criteria:

- Reduce or eliminate the long-term risk to human life and property from at least one of the eight natural hazards identified in the Risk Assessment Section
- Fall under one or more of the six FEMA mitigation action categories
- Achieve one or more of the hazard mitigation goals and objectives

Mitigation Action Categories

FEMA organizes mitigation actions into six broad categories. These categories allow similar types of mitigation actions to be compared, and provides a standardized method for eliminating unsuitable actions. All mitigation actions identified in this strategy fall within one of the FEMA mitigation action categories below:

1. **Prevention:** Government administrative or regulatory actions or processes that influence the way land buildings are developed and built. These actions also include public activities that reduce hazard losses. Examples from this strategy include building and construction code revisions, zoning regulation changes, and computer-hazard modeling.
2. **Property Protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples from this strategy include seismic retrofits, roadway elevations, and floodproofing.
3. **Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Examples from this strategy include programs that target severe repetitive loss properties and vulnerable populations.
4. **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. Examples from this strategy include projects creating open space or wetlands.
5. **Emergency Services:** Actions that protect people and property during and immediately

after a disaster or hazard event. Examples from this strategy include enhancements that provide advanced warning and redundant communications.

6. **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Examples from this strategy include projects that control floodwater, reconstruct dams and seawalls, and construct green roofs.

Summary of Mitigation Actions

The final list of the Town of Allendale's mitigation actions is in the figure below. Many of the actions protect public health and safety, promote a sustainable economy, protect the environment, and increase public preparedness for disasters. The mitigation actions are the town's programs, plans, projects, or policies that the town may implement to help reduce or eliminate the long-term risk to human life and property from natural hazards. The Task Force identified, analyzed, and prioritized all actions. They prioritized the actions on a high, medium and low scale defined as the following:

- **High Priority:** A project that meets multiple plan objectives, benefits exceed cost, is grant-eligible, can be completed in a short-term period once project is funded.
- **Medium Priority:** A project that meets at least one plan objective, benefits exceed costs, funding not secured, grant eligibility is questionable, and can be completed within 1 to 5 years once project is funded
- **Low Priority:** A project that will mitigate the risk of a hazard, benefits may exceed costs, funding is not secured, project may not be grant-eligible and/or timeline for completion is considered long-term

Since the last update, County land regulations, zoning and building codes continue to be enforced. There has been very little change regarding housing, population and development that would impact the Town of Allendale's vulnerability.

Status on Strategies

After reevaluating and reviewing the mitigation actions for the plan update, it was evident that none of the previous strategies for the Town of Allendale were implemented due to the lack of funding sources. Note some mitigation actions identified in the plan update may not ultimately be implemented due to prohibitive costs, scale, low benefit/cost analysis ratios, or other concerns

FIGURE 47
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3.6 Town of Fairfax Goals and Objectives

The Task Force Committee reviewed and analyzed the Town of Fairfax goals and objectives and revised Figure 48 as part of the update process.

Developing Goals and Objectives

The first step in developing a hazard mitigation strategy is to establish goals and objectives that aim to reduce or eliminate the Town of Fairfax long-term vulnerability to natural hazard events. Mitigation goals are general guidelines explaining what the Town wants to achieve in terms of hazard and loss prevention. Objectives are specific, measurable strategies or implementation steps used to achieve the identified goals. Developing clear goals and objectives helped reinforce Fairfax’s overall purpose and mission for undertaking a mitigation planning process.

The goals and objectives set forth below provide the necessary framework to develop a mitigation strategy. The Town of Fairfax will re-evaluate its hazard mitigation goals and objectives each plan maintenance cycle to ensure they continue to represent the hazard mitigation priorities.

Hazard Mitigation Goals and Objectives	
Goal 1: Protect public health and safety	
Objective 1.1	Improve systems that provide warning and emergency communications.
Objective 1.2	Reduce the impacts of hazards on vulnerable populations.
Objective 1.3	Train emergency responders.
Objective 1.4	Strengthen local building code enforcement.
Goal 2: Increase public preparedness and awareness for natural disasters	
Objective 2.1	Enhance understanding of natural hazards and the risks they pose.
Objective 2.2	Improve hazard information, including databases, maps, articles in local media, instructional web site, pamphlets, information packets, etc.
Objective 2.3	Improve public knowledge of hazards and protective measures allowing individuals to appropriately prepare for and respond to hazard events.
Objective 2.4	Educate residents on meaning of warning systems and scheduled testing of systems.
Goal 3: Protect property	
Objective 3.1	Implement mitigation programs that protect critical facilities and services, and promote reliability of lifeline systems to minimize impacts from hazards, maintain operations, and expedite recovery in an emergency.
Objective 3.2	Consider known hazards when identifying a site for new facilities and systems.
Objective 3.3	Adopt and enforce public policies to minimize hazard impacts on buildings, infrastructure, and neighborhoods and enhance safe construction in high hazard areas.
Objective 3.4	Integrate new hazard and risk information into building codes and land use planning mechanisms.
Objective 3.5	Educate public officials, developers, realtors, contractors, building owners, and the public about hazard risks and building requirements.
Hazard Mitigation Goals and Objectives	
Goal 4: Emergency Services	
Objective 4.1	Immediate actions taken in response to a hazard event can minimize the impact of hazard incidents on people and property.
Goal 5: Reduce the potential effects of flooding on homes and buildings in the Town of Fairfax	
Objective 5.1	Continue the implementation of zoning codes.
Objective 5.2	Study flood areas to implement needed changes in development and storm drainage.
Goal 6: Ensure protection and emergency shelters	

Objective 6.1	Shelters must be identified to provide protection to the public.
Objective 6.2	Identify buildings approved for occupancy during natural hazards.
Objective 6.3	The number of shelters should be adequate and safe for the amount of people that may potentially need them.

Figure 48: Town of Fairfax Hazard Mitigation Goals and Objectives

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3.7 Town of Fairfax Mitigation Actions

The Task Force Committee reviewed and analyzed the Town of Fairfax mitigation actions as part of the update process. Those changes can be seen in Figure 49.

Mitigation actions include programs, plans, projects, or policies that help reduce or eliminate the long-term risk to human life and property from natural hazards. The Task Force Committee identified and analyzed a comprehensive range of hazard-specific mitigation actions with particular emphasis on actions that affect new and existing buildings and infrastructure within the Town of Fairfax, and also the protection of the citizens.

Identification

The Task Force Committee identified both existing and potential mitigation actions within their respective agencies that have the following criteria:

- Reduce or eliminate the long-term risk to human life and property from at least one of the eight natural hazards identified in the Risk Assessment Section
- Fall under one or more of the six FEMA mitigation action categories
- Achieve one or more of the hazard mitigation goals and objectives

Mitigation Action Categories

FEMA organizes mitigation actions into six broad categories. These categories allow similar types of mitigation actions to be compared, and provides a standardized method for eliminating unsuitable actions. All mitigation actions identified in this strategy fall within one of the FEMA mitigation action categories below:

1. **Prevention:** Government administrative or regulatory actions or processes that influence the way land buildings are developed and built. These actions also include public activities that reduce hazard losses. Examples from this strategy include building and construction code revisions, zoning regulation changes, and computer-hazard modeling.
2. **Property Protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples from this strategy include seismic retrofits, roadway elevations, and floodproofing.
3. **Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Examples from this strategy include programs that target severe repetitive loss properties and vulnerable populations.
4. **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. Examples from this strategy include projects creating open space or wetlands.

5. **Emergency Services:** Actions that protect people and property during and immediately after a disaster or hazard event. Examples from this strategy include enhancements that provide advanced warning and redundant communications.
6. **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Examples from this strategy include projects that control floodwater, reconstruct dams and seawalls, and construct green roofs.

Summary of Mitigation Actions

The final list of the Town of Fairfax’s mitigation actions is in the figure below. Many of the actions protect public health and safety, promote a sustainable economy, protect the environment, and increase public preparedness for disasters. The mitigation actions are the town’s programs, plans, projects, or policies that the town may implement to help reduce or eliminate the long-term risk to human life and property from natural hazards. The Task Force identified, analyzed, and prioritized all actions. They prioritized the actions on a high, medium and low scale defined as the following:

- **High Priority:** A project that meets multiple plan objectives, benefits exceed cost, is grant-eligible, can be completed in a short-term period once project is funded.
- **Medium Priority:** A project that meets at least one plan objective, benefits exceed costs, funding not secured, grant eligibility is questionable, and can be completed within 1 to 5 years once project is funded
- **Low Priority:** A project that will mitigate the risk of a hazard, benefits may exceed costs, funding is not secured, project may not be grant-eligible and/or timeline for completion is considered long-term.

Since the last update, County land regulations, zoning and building codes continue to be enforced. There has been very little change regarding housing, population and development that would impact the Town of Fairfax’s vulnerability.

Status on Strategies

After reevaluating and reviewing the mitigation actions for the plan update, it was evident that none of the previous strategies for the Town of Fairfax were implemented due to the lack of funding sources. Note some mitigation actions identified in the plan update may not ultimately be implemented due to prohibitive costs, scale, low benefit/cost analysis ratios, or other concerns

FIGURE 49
See attached

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3.8 Town of Sycamore Goals and Objectives

The Task Force Committee reviewed the Town of Sycamore’s goals and objectives as part of the update process. The goals and objectives can be seen in Figure 50.

Developing Goals and Objectives

The first step in developing a hazard mitigation strategy is to establish goals and objectives that aim to reduce or eliminate the Town of Sycamore’s long-term vulnerability to natural hazard events. Mitigation goals are general guidelines explaining what the Town wants to achieve in terms of hazard and loss prevention. Objectives are specific, measurable strategies or implementation steps used to achieve the identified goals. Developing clear goals and objectives helped reinforce Sycamore’s overall purpose and mission for undertaking a mitigation planning process.

The goals and objectives set forth below provide the necessary framework to develop a mitigation strategy. The Town of Sycamore will re-evaluate its hazard mitigation goals and objectives each plan maintenance cycle to ensure they continue to represent the hazard mitigation priorities.

Hazard Mitigation Goals and Objectives	
Goal 1: Protect public health and safety	
Objective 1.1	Improve systems that provide warning and emergency communications.
Objective 1.2	Reduce the impacts of hazards on vulnerable populations.
Goal 2: Increase public preparedness and awareness for natural disasters	
Objective 2.1	Enhance understanding of natural hazards and the risks they pose.
Objective 2.2	Improve hazard information, including databases, maps, articles in local media, instructional web site, pamphlets, information packets, etc.
Objective 2.3	Improve public knowledge of hazards and protective measures allowing individuals to appropriately prepare for and respond to hazard events.
Goal 3: Protect property	
Objective 3.1	Implement mitigation programs that protect critical facilities and services, and promote reliability of lifeline systems to minimize impacts from hazards, maintain operations, and expedite recovery in an emergency.
Objective 3.2	Consider known hazards when identifying a site for new facilities and systems.
Objective 3.3	Adopt and enforce public policies to minimize hazard impacts on buildings, infrastructure, and neighborhoods and enhance safe construction in high hazard areas.
Objective 3.4	Integrate new hazard and risk information into building codes and land use planning mechanisms.

Hazard Mitigation Goals and Objectives	
Goal 4: Emergency Services	
Objective 4.1	Immediate actions taken in response to a hazard event can minimize the impact of hazard incidents on people and property.
Goal 5: Reduce the potential effects of flooding on homes and buildings in the Town of Sycamore	
Objective 5.1	Consider the implementation of zoning codes, to be enforced by the County.
Objective 5.2	Study flood areas to implement needed changes in development and storm drainage.

Goal 6: Ensure protection and emergency shelters	
Objective 6.1	Shelters must be identified to provide protection to the public.
Objective 6.2	Identify buildings approved for occupancy during natural hazards.
Objective 6.3	The number of shelters should be adequate and safe for the amount of people that may potentially need them.

Figure 50: Town of Sycamore Hazard Mitigation Goals and Objectives

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3.9 Town of Sycamore Mitigation Actions

The Task Force Committee reviewed and analyzed the Town of Sycamore mitigation actions as part of the update process. Those changes can be view in Figure 51.

Mitigation actions include programs, plans, projects, or policies that help reduce or eliminate the long-term risk to human life and property from natural hazards. The Task Force Committee identified and analyzed a comprehensive range of hazard-specific mitigation actions with particular emphasis on actions that affect new and existing buildings and infrastructure within the Town of Sycamore, and also the protection of the citizens.

Identification

The Task Force Committee identified both existing and potential mitigation actions within their respective agencies that have the following criteria:

- Reduce or eliminate the long-term risk to human life and property from at least one of the eight natural hazards identified in the Risk Assessment Section
- Fall under one or more of the six FEMA mitigation action categories
- Achieve one or more of the hazard mitigation goals and objectives

Mitigation Action Categories

FEMA organizes mitigation actions into six broad categories. These categories allow similar types of mitigation actions to be compared, and provides a standardized method for eliminating unsuitable actions. All mitigation actions identified in this strategy fall within one of the FEMA mitigation action categories below:

1. **Prevention:** Government administrative or regulatory actions or processes that influence the way land buildings are developed and built. These actions also include public activities that reduce hazard losses. Examples from this strategy include building and construction code revisions, zoning regulation changes, and computer-hazard modeling.
2. **Property Protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples from this strategy include seismic retrofits, roadway elevations, and floodproofing.
3. **Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Examples from this strategy include programs that target severe repetitive loss properties and vulnerable populations.

4. **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. Examples from this strategy include projects creating open space or wetlands.
5. **Emergency Services:** Actions that protect people and property during and immediately after a disaster or hazard event. Examples from this strategy include enhancements that provide advanced warning and redundant communications.
6. **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Examples from this strategy include projects that control floodwater, reconstruct dams and seawalls, and construct green roofs.

Summary of Mitigation Actions

The final list of the Town of Sycamore's mitigation actions is in the figure below. Many of the actions protect public health and safety, promote a sustainable economy, protect the environment, and increase public preparedness for disasters. The mitigation actions are the town's programs, plans, projects, or policies that the town may implement to help reduce or eliminate the long-term risk to human life and property from natural hazards. The Task Force identified, analyzed, and prioritized all actions. They prioritized the actions on a high, medium and low scale defined as the following:

- **High Priority:** A project that meets multiple plan objectives, benefits exceed cost, is grant-eligible, can be completed in a short-term period once project is funded.
- **Medium Priority:** A project that meets at least one plan objective, benefits exceed costs, funding not secured, grant eligibility is questionable, and can be completed within 1 to 5 years once project is funded
- **Low Priority:** A project that will mitigate the risk of a hazard, benefits may exceed costs, funding is not secured, project may not be grant-eligible and/or timeline for completion is considered long-term.

Since the last update, County land regulations, zoning and building codes continue to be enforced. There has been very little change regarding housing, population and development that would impact the Town of Sycamore's vulnerability.

Status on Strategies

The following are mitigation actions for the Town of Sycamore. Note some mitigation actions identified in the plan update may not ultimately be implemented due to prohibitive costs, scale, low benefit/cost analysis ratios, or other concerns

FIGURE 51
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3.10 Town of Ulmer Goals and Objectives

The Task Force Committee reviewed the Town of Ulmer’s goals and objectives as part of the update process. The goals and objectives can be seen below.

Developing Goals and Objectives

The first step in developing a hazard mitigation strategy is to establish goals and objectives that aim to reduce or eliminate the Town of Ulmer’s long-term vulnerability to natural hazard events. Mitigation goals are general guidelines explaining what the Town wants to achieve in terms of hazard and loss prevention. Objectives are specific, measurable strategies or implementation steps used to achieve the identified goals. Developing clear goals and objectives helped reinforce Ulmer’s overall purpose and mission for undertaking a mitigation planning process.

The goals and objectives set forth below provide the necessary framework to develop a mitigation strategy. The Town of Ulmer will re-evaluate its hazard mitigation goals and objectives each plan maintenance cycle to ensure they continue to represent the hazard mitigation priorities.

Hazard Mitigation Goals and Objectives	
Goal 1: Protect public health and safety	
Objective 1.1	Improve systems that provide warning and emergency communications.
Objective 1.2	Reduce the impacts of hazards on vulnerable populations.
Goal 2: Increase public preparedness and awareness for natural disasters	
Objective 2.1	Enhance understanding of natural hazards and the risks they pose.
Objective 2.2	Improve hazard information, including databases, maps, articles in local media, instructional web site, pamphlets, information packets, etc.
Objective 2.3	Improve public knowledge of hazards and protective measures allowing individuals to appropriately prepare for and respond to hazard events.
Goal 3: Protect property	
Objective 3.1	Implement mitigation programs that protect critical facilities and services, and promote reliability of lifeline systems to minimize impacts from hazards, maintain operations, and expedite recovery in an emergency.
Objective 3.2	Consider known hazards when identifying a site for new facilities and systems.
Objective 3.3	Adopt and enforce public policies to minimize hazard impacts on buildings, infrastructure, and neighborhoods and enhance safe construction in high hazard areas.
Objective 3.4	Integrate new hazard and risk information into building codes and land use planning mechanisms.

Hazard Mitigation Goals and Objectives	
Goal 4: Emergency Services	
Objective 4.1	Immediate actions taken in response to a hazard event can minimize the impact of hazard incidents on people and property.
Goal 5: Reduce the potential effects of flooding on homes and buildings in the Town of Ulmer	
Objective 5.1	Continue the implementation of zoning codes, to be enforced by the County.
Objective 5.2	Study flood areas to implement needed changes in development and storm drainage.
Goal 6: Ensure protection and emergency shelters	
Objective 6.1	Shelters must be identified to provide protection to the public.
Objective 6.2	Identify buildings approved for occupancy during natural hazards.
Objective 6.3	The number of shelters should be adequate and safe for the amount of people that may potentially need them.

Figure 52: Town of Ulmer Hazard Mitigation Goals and Objectives

3.11 Town of Ulmer Mitigation Actions

The Task Force Committee reviewed and analyzed the Town of Sycamore mitigation actions as part of the update process. Those changes can be view in Figure 53.

Mitigation actions include programs, plans, projects, or policies that help reduce or eliminate the long-term risk to human life and property from natural hazards. The Task Force Committee identified and analyzed a comprehensive range of hazard-specific mitigation actions with particular emphasis on actions that affect new and existing buildings and infrastructure within the Town of Ulmer, and also the protection of the citizens.

Identification

The Task Force Committee identified both existing and potential mitigation actions within their respective agencies that have the following criteria:

- Reduce or eliminate the long-term risk to human life and property from at least one of the eight natural hazards identified in the Risk Assessment Section
- Fall under one or more of the six FEMA mitigation action categories
- Achieve one or more of the hazard mitigation goals and objectives

Mitigation Action Categories

FEMA organizes mitigation actions into six broad categories. These categories allow similar types of mitigation actions to be compared, and provides a standardized method for eliminating unsuitable actions. All mitigation actions identified in this strategy fall within one of the FEMA mitigation action categories below:

1. **Prevention:** Government administrative or regulatory actions or processes that influence the way land buildings are developed and built. These actions also include public activities that reduce hazard losses. Examples from this strategy include building and construction code revisions, zoning regulation changes, and computer-hazard modeling.
2. **Property Protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples from this strategy include seismic retrofits, roadway elevations, and floodproofing.
3. **Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Examples from this strategy include programs that target severe repetitive loss properties and vulnerable populations.

4. **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. Examples from this strategy include projects creating open space or wetlands.
5. **Emergency Services:** Actions that protect people and property during and immediately after a disaster or hazard event. Examples from this strategy include enhancements that provide advanced warning and redundant communications.
6. **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Examples from this strategy include projects that control floodwater, reconstruct dams and seawalls, and construct green roofs.

Summary of Mitigation Actions

The final list of the Town of Ulmer’s mitigation actions is in the figure below. Many of the actions protect public health and safety, promote a sustainable economy, protect the environment, and increase public preparedness for disasters. The mitigation actions are the town’s programs, plans, projects, or policies that the town may implement to help reduce or eliminate the long-term risk to human life and property from natural hazards. The Task Force identified, analyzed, and prioritized all actions. They prioritized the actions on a high, medium and low scale defined as the following:

- **High Priority:** A project that meets multiple plan objectives, benefits exceed cost, is grant-eligible, can be completed in a short-term period once project is funded.
- **Medium Priority:** A project that meets at least one plan objective, benefits exceed costs, funding not secured, grant eligibility is questionable, and can be completed within 1 to 5 years once project is funded
- **Low Priority:** A project that will mitigate the risk of a hazard, benefits may exceed costs, funding is not secured, project may not be grant-eligible and/or timeline for completion is considered long-term.

Since the last update, County land regulations, zoning and building codes continue to be enforced. There has been very little change regarding housing, population and development that would impact the Town of Ulmer’s vulnerability.

Status on Strategies

The following are mitigation actions for the Town of Ulmer. Note some mitigation actions identified in the plan update may not ultimately be implemented due to prohibitive costs, scale, low benefit/cost analysis ratios, or other concerns

LEAVE BLANK FOR FIGURE 53

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4.1 Plan Maintenance and Update

As part of the update process, the Task Force Committee reviewed and analyzed this section and Figure 54 that gives this plan update timeframe, incorporation of the plan into existing planning mechanisms, and the continued public involvement.

The Plan Maintenance section of Allendale County’s Natural Hazard Mitigation Plan (HMP) describes the formal process that will ensure the Plan remains an effective and relevant document. This section establishes the method and schedule for monitoring, evaluating, and updating the HMP during a five-year plan-update cycle. It also established how Allendale County will maintain community involvement in the Plan.

Plan Maintenance Approach

- Incorporate hazard mitigation actions into existing planning mechanisms
- Determine how mitigation projects and actions will be monitored
- Establish indicators of effectiveness or success
- Develop an evaluation and revision schedule to ensure the Plan is up-to-date at the end of the five-year cycle
- Establish a process for public input and community involvement during the planning cycle

FEMA Requirements Addressed

The Task Force Committee created a plan maintenance strategy consistent with the process and steps presented in the FEMA How-To-Guide: Bringing the Plan to Life (FEMA 386-4). The following FEMA requirements are addressed in this section:

- **Requirement §201.6(c)(4)(i):** The plan maintenance process *shall* include a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.
- **Requirement §201.6(c)(4)(ii):** The plan *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, where appropriate.
- **Requirement §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.

Monitoring

Allendale County will monitor the implementation of mitigation actions identified in the Plan. During the five-year planning cycle, the following initiatives will be undertaken.

- Collect reports from the agencies involved in implementing mitigation projects or activities identified in the Mitigation Strategy section of this Plan
- Maintain and update the mitigation action table
- Conduct site visits and obtain reports of completed or initiated mitigation actions to incorporate in the plan revision as needed
- Research and document new natural disaster information pertaining to Allendale County and its incorporated municipalities during the planning cycle and incorporate into a revised Risk Assessment section as needed
- Organize meetings on an as needed basis with the Task Force Committee to discuss relevant hazard mitigation issues, provide status updates, and discuss available grant opportunities
- Coordinate, compile, and disseminate hazard mitigation funding information and applications
- Convene a meeting of the Task Force Committee following a natural disaster or when funding is announced to prioritize and submit potential mitigation actions for funding

The above activities outline plan maintenance during the four years leading up to the fifth year of the planning cycle. The Task Force Committee will be responsible for compiling, documenting, and incorporating all changes derived from the activities listed above into a revised plan document.

Evaluation

The Allendale County HMP will be evaluated on an as needed basis to determine the effectiveness of its projects, programs, and policies. The Task Force Committee will be responsible for scheduling and organizing the meetings, collecting, analyzing and incorporating reports, and providing revised drafts. The Task Force Committee members will assess the current version of the Plan and determine the improvements necessary for the plan update.

A thorough examination of the Plan will take place during the fifth year of the process to ensure Allendale County has an updated HMP at the end of the planning cycle. The Task Force Committee will review the goals and action items to determine their relevance to changing situations in the County and incorporated municipalities, as well as changes in State or Federal policy, and to ensure they are addressing current and expected conditions. The Committee will look at any changes in County resources that may influence the plan implementation (such as funding) and program changes to determine need for reassignment. The Committee will also review all portions of the Plan to determine if this information should be updated or modified, given any new available data.

The Committee will evaluate the content of the Plan using the following criteria:

- Are the mitigation actions effective?
- Are there any changes in land development that affect mitigation priorities?
- Are the goals, objectives, and mitigation actions relevant given any changes in the County?
- Are the goals, objectives, and mitigation actions relevant given any changes to State or Federal regulations or policy?
- Is there any new data that affects the Risk Assessment portion of the Plan?

Update

The Task Force Committee will update the HMP every five years to reflect the results of the reports and on-going plan evaluation. Throughout the planning cycle, the Committee will compile new information and incorporate it into the Plan. The Committee will also assess and incorporate recommended comments expressed by FEMA in the initial review into the plan revision. At the end of the planning cycle, the Committee will submit the updated Plan to the State Emergency Management Office (SCEMD) and FEMA for review. After FEMA has approved the Calhoun County HMP, the County and its incorporated municipalities will formally adopt the Plan. The following figure is an outline of how the Plan will be updated after the 2015 FEMA approval.

Plan Update Schedule		
Timeframe	Participants	Outcome
First quarter 2022	Task Force Committee	Discuss mitigation action progress and possible plan improvements
Fourth quarter 2022	Task Force Committee	Reconvene to discuss mitigation action progress and plan improvements
First quarter 2023	Allendale County	Apply for plan update grant funding
First quarter 2024	Task Force Committee	Reconvene and begin plan update
Third quarter 2025	Task Force Committee, SCEMD	Submit draft plan update to SCEMD for review and comments
Fourth quarter 2025	FEMA, Task Force Committee, SCEMD	Submit plan to FEMA for final approval
First quarter 2026	Allendale County, participating municipalities	Re-adopt the FEMA-approved HMP

Figure 54: Plan Update Schedule

Incorporation into Existing Planning Mechanisms

As part of the local capability assessment conducted during the planning process, the Task Force Committee identified current plans, programs, policies/ordinances, and studies/reports that will augment or help support mitigation planning efforts. The Committee, which will meet on an as needed basis, will be the mechanism for ensuring the County and the participating municipalities integrates hazard mitigation into their future planning activities. Following the HMP approval and adoption, the Committee will work to incorporate, where applicable, the HMP into the planning mechanisms identified on page 80 under Section 2.4: Community Mitigation Capability Assessment.

Incorporating the hazard mitigation strategies into these identified planning mechanisms is a fairly simple process. For example, the comprehensive plans include natural resources, land usage, and community facilities information that could easily include hazard mitigation elements into the plan.

To demonstrate the seriousness about planning for the safety, security, and vitality of its people, Allendale County and its participating jurisdictions will take various steps to successfully incorporate hazard mitigation planning into its comprehensive planning, programming and operational systems. A comprehensive plan can easily include hazard mitigation and recovery in the goals and objectives. Functional plans (i.e. Watershed Management Plans, Long Range Plans, Market and Targeted Industry Plans, Parks and Recreation Plans, Solid Waste Plans, etc.) can incorporate and support hazard mitigation planning by including risk as a performance measure when defining and evaluating alternatives and policy recommendations. A Capital Improvement Program (CIP) can integrate hazard mitigation strategies. The Zoning Ordinance incorporates standards that promote the health, safety, and welfare of the public and property owner. A Zoning Ordinance easily allows for the hazard mitigation strategies to be included as part of the land use regulations, development standards, regulation of stormwater runoff, etc. Building Codes ensure that construction is safe and sustainable at its completion. Uniform building codes create a foundation for emergency responders to base operations on. Eliminating unsafe, blighted, or vacant buildings prevents hazards such as fires or criminal activity. Hazard mitigation strategies can be incorporated into Building Codes. The County and participating municipalities will exude every possible measure to ensure that the local governments incorporates hazard mitigation strategies and planning within the existing planning and programming documents as mentioned above.

Throughout the plan maintenance cycle, the Committee will work to integrate hazard mitigation goals and actions into the general operations of Allendale County agencies and the participating municipalities. The Committee will work with agencies to identify opportunities as outlined below:

- Update work plans, policies, or procedures to include hazard mitigation concepts
- Establish mitigation funding within capital and operational budgets
- Issue plans, policies, executive orders, regulations, or other directives to carry out mitigation actions
- Add hazard mitigation elements to all applicable plans

Continued Public Involvement

Allendale County is dedicated to continued public involvement in the hazard mitigation planning and review process. During all phases of plan maintenance, the public will have the opportunity to provide feedback. The 2021 Plan will be maintained and available for review through 2025. Individuals will have an opportunity to submit comments for the Plan update at any time. The Task Force Committee will compile all comments and present them at the meetings where members will consider them for incorporation into the revision. To help publicize the revised plan, a notice will be posted requesting feedback on an updated draft HMP. The Committee will hold community involvement meetings as

determined, with representatives from various agencies, to be held at the County governmental facilities.

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5.1 Overview

Formal plan adoption is a required part of the planning process and demonstrates Allendale County, the Town of Allendale, Town of Fairfax, Town of Sycamore, and Town of Ulmer’s commitment to fulfilling the mitigation goals and objectives outlined in the Plan. In addition to fulfilling the requirements of the Disaster Mitigation Act of 2000, the County Council and Town Council adoption of the Hazard Mitigation Plan (HMP) will establish the Plan as a policy for Allendale County and the participating municipalities, which will define the actions the various agencies should take to comply with or implement the HMP.

Following a formal plan review by the Federal Emergency Management Agency (FEMA) and the South Carolina Emergency Management Division (SCEMD), FEMA will issue an “Approval Pending Adoption” to Allendale County. Upon review and approval of the HMP, Allendale County Council, Allendale Town Council, Fairfax Town Council, Sycamore Town Council, and Ulmer Town Council will then formally adopt the HMP.

Plan Adoption Process

- Obtain “Approval Pending Adoption” status from FEMA
- Draft an adoption resolution or an ordinance to meet plan requirements and demonstrate Allendale County’s, Allendale’s, Fairfax’s, Sycamore’s, and Ulmer’s commitment to protect its residents and built environment from the effects of natural hazards
- Adopt HMP

FEMA Requirements Addressed

Allendale County and the Task Force Committee created a plan adoption strategy consistent with the process steps presented in FEMA’s How-To-Guide: Bringing the Plan to Life (FEMA 386-4). This section satisfies the following FEMA requirement:

- **Requirement §201.6(c)(5):** The local hazard mitigation plan *shall* include documentation that the plan had been formally adopted by the governing body of the jurisdiction requesting approval of the plan.

5.2 Adoption Resolution/Ordinance

RESOLUTION TO BE INSERTED UPON ADOPTION

DRAFT

5.3 SCEMD Approval Letter

SCEMD APPROVAL LETTER TO BE INSERTED

DRAFT

5.4 FEMA Approval Letter

FEMA APPROVAL LETTER TO BE INSERTED

DRAFT



Appendix A: Acronym List

Acronym List	
Acronym	Definition
BCA	Benefic-Cost Analysis
BFE	Base Flood Elevation
BMP	Best Management Practices
DMA 2000	Disaster Mitigation Act of 2000
DOT	Department of Transportation
EF-Scale	Enhanced Fujita Scale
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance
F-Scale	Fujita Scale
Ft	Feet
FTA	Federal Transit Administration
FY	Fiscal Year
GIS	Geographic Information System
HAZUS-MH	Hazards U.S. Multi-Hazard
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
MMI	Modified Mercalli Intensity
Mph	Miles Per Hour
N/A	Not Applicable
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service
PDM	Pre-Disaster Mitigation
SRL	Severe Repetitive Loss
STAPLEE	Social, Technical, Administrative, Political, Legal, Economical, Environmental
TBD	To Be Determined

Appendix B: Glossary

Glossary	
Term	Definition
100-Year Flood	The term “100-year flood” can be misleading. The 100-year flood does not necessarily occur once every 100 years. Rather, it is the flood that has a 1 % chance of being equaled or exceeded in any given year. Thus, the 100-year flood could occur more than once in a relatively short period of time. The Federal Emergency Management Agency (FEMA) defines it as the 1 % annual chance flood, which is now the standard definition used by most federal and state agencies and by the National Flood Insurance Program (NFIP).
Agricultural Drought	Links the various characteristics of meteorological drought to agricultural impacts, while focusing on precipitation shortages and soil-water deficits.
Annualized Capital Stock Losses	Long-term average losses in a given year
Base Flood Elevation (BFE)	The water surface elevation of a 100-year flood event (a flood that has a 1 % chance of occurring in any given year as defined by the NFIP). The base flood is a statistical concept used to ensure that all properties
Beaufort Wind Scale	A simplified scale to aid in the estimation of wind speed and corresponding typical effects.
Benefit-Cost Analysis	A systematic, quantitative method of comparing projected benefits to projected costs of a project or policy. It is used as a measure of cost
Capability Assessment	Provides a description and analysis of a community’s current capacity to address threats associated with hazards. The assessment includes two components: an inventory of an agency’s mission, programs, and policies, and an analysis of its capacity to carry them out. A capability assessment is an integral part of the planning process in which a community’s actions to reduce losses are identified, reviewed, and analyzed, and the framework for implementation is identified.
Coastal Storms	Tropical cyclones formed in the atmosphere over warm ocean areas. Wind speeds reach 74 miles per hour or more and blow in a large spiral around a relatively calm center or "eye. Circulation is counterclockwise in the Northern Hemisphere.
Community Rating System	A voluntary program under the NFIP that rewards participating communities (provides incentives) for exceeding the minimum requirements of the NFIP and completing activities that reduce flood hazard risk by providing flood insurance premium discounts.

Cultural Facilities	A critical facility is vital to the City’s ability to provide essential services and protect life and property. Loss of a critical facility would result in a severe economic or catastrophic impact.
Dam Failure	An uncontrolled release of impounded water resulting in downstream flooding.
Debris	The scattered remains of assets broken or destroyed during the occurrence of a hazard. Debris caused by wind or water hazards can cause additional damage to other assets.
Disaster Mitigation Act of 2000 (DMA 2000)	The latest federal legislation enacted to encourage and promote proactive, pre-disaster planning as a condition of receiving financial assistance under the Robert T. Stafford Act. The DMA emphasizes planning for disasters before they occur. Under the DMA, a pre-disaster hazard mitigation program and new requirements for the national post-disaster hazard mitigation grant program (HMGP) were established.
Drought	A prolonged period with no rain. Limited winter precipitation accompanied by moderately dry periods during the spring and summer months can also lead to drought conditions.
Earthquakes	The sudden motion or trembling of the ground produced by abrupt displacement of rock masses, usually within the upper 10–20 miles of the earth’s surface.
Enhanced Fujita Scale	National Weather Service's revised Fujita-scale, which is a complex, systematic approach to measuring the strength of a tornado.
Federal Emergency Management Agency (FEMA)	An independent federal agency (now part of the Department of Homeland Security) created in 1978 to provide a single point of accountability for all federal activities related to disaster mitigation and emergency preparedness, response, and recovery.
Flash Flooding	Caused by short-term, high-intensity rainfall that occurs in inland areas
Flood Insurance Rate Map (FIRM)	The official map of a community for which FEMA has delineated the special flood hazard area (SFHA) and the risk premium zones applicable to the community.
Floodplain	Any land area that becomes inundated with water during a flood
Floods	A general and temporary condition of partial or complete inundation on normally dry land. Flooding can be categorized as coastal, riverine, or flash.
Fujita Scale (F-Scale)	Standard measurement for rating the strength of a tornado.
Geographic Information Systems (GIS)	A computer software application that relates data regarding physical and other features on the earth to a database for mapping and analysis.
Goal	A general guideline that explains what is to be achieved. Goals are usually broad-based, long-term, policy-type statements and represent global visions. Goals help define the benefits that a plan is trying to
Ground Acceleration	Shaking of the ground resulting from seismic waves caused by an earthquake.

Hailstorms	Showers-like precipitation in the form of irregular pellets, or balls of ice more than five millimeters in diameter, falling from a cumulonimbus
Hazard	A source of potential danger or adverse condition that could harm people and/or cause property damage.
Hazard Mitigation	Reduction or alleviation of the loss of life, personal injury, and property damage that could result from a disaster through long- and short-term strategies. Hazard mitigation involves strategies such as planning, policy changes, programs, projects, and other activities that could mitigate the impacts of hazards.
Hazard Mitigation Grant Program (HMGP)	Authorized under Section 202 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, the HMGP is administered by FEMA and provides grants to states, tribes, and local governments to implement hazard mitigation actions after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to disasters and to enable mitigation activities to be implemented as a community recovers from a disaster.
Hazard Mitigation Plan (HMP)	A collaborative document that identifies hazards that could affect a community, assesses vulnerability to hazards, and represents consensus decisions reached on how to minimize or eliminate the
Hazards U.S. Multi-Hazard (HAZUS-MH)	A nationally applicable standardized methodology and software program, developed by FEMA, which is under contract with the National Institute of Building Sciences. The program estimates potential losses from earthquakes, hurricane winds, and floods. In HAZUS-MH, current scientific and engineering knowledge is coupled with Geographic Information Systems (GIS) technology to produce estimates of hazard-
Hurricane	A tropical storm with winds that have reached a constant speed of 74
Intensity (earthquakes)	Measures the effects of an earthquake at a particular place and is
Magnitude (earthquakes)	Measurement of the total amount of energy and is expressed in terms of the Richter scale
Mitigation Actions	Specific projects, plans, or policies that achieve goals and objectives that minimize the effects from a disaster and reduce the loss of life and
Mitigation Strategy	A systematic process for analyzing, prioritizing, and implementing the identified mitigation actions in the Hazard Mitigation Plan.
Modified Mercalli Intensity	A scale used for measuring the intensity of an earthquake. The scale quantifies the effects of an earthquake on the Earth's surface, humans, objects of nature, and man-made structures on a scale of I through XII
National Flood Insurance Program (NFIP)	The three components of the NFIP are flood insurance, floodplain management, and flood hazard mapping. Nearly 20,000 communities across the United States and its territories participate

	in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes Federally backed flood insurance available to homeowners, renters, and business owners in these communities. Community participation in the NFIP is voluntary
Objective	A short-term aim that, when combined with other objectives, forms a strategy or course of action to meet a goal. Unlike goals, objectives are specific and measurable.
Peak Ground Acceleration (PGA)	Measures the rate of change in motion of the earth’s surface and expresses it as a percent of the established rate of acceleration due to
Preparedness	Actions that strengthen the capability of government, citizens, and communities to respond to disasters.
Presidential Disaster Declaration	Typically made for events that cause more damage than state and local governments and resources can handle without federal government assistance. Generally, no specific dollar loss threshold has been established for such declarations. A Presidential Disaster Declaration puts into motion long-term federal recovery programs, some of which are matched by state programs, designed to help disaster victims, businesses, and public entities.
Recovery	Recovery refers to actions taken by an individual or community after a catastrophic event to restore order and community lifelines.
Repetitive Loss Property	Any NFIP-insured property that, since 1978 and regardless of any change(s) of ownership during that period, has experienced any of the following:1) Four or more paid flood losses exceeding \$1,000 each 2) Two paid flood losses exceeding \$1,000 each within any 10-year period since 1978 3)Three or more paid losses that equal or exceed the current value of the insured property
Richter Scale	A logarithmic scale used to express the total amount of energy released by an earthquake. Its values typically fall between 0 and 9, with each increase of 1 representing a 10-fold increase in energy.
Risk	The estimated impact that a hazard would have on people, services, facilities, and structures in a community. Risk measures the likelihood of a hazard occurring and resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate, or low hazard. Risk also can be expressed in terms of potential monetary losses associated with the intensity of likelihood of sustaining damage above a particular threshold due to occurrence of a specific type of the hazard.
Risk Assessment	The process of measuring potential loss of life, personal injury, economic injury, and property damage resulting from hazards. This process assesses the vulnerability of people, buildings, and infrastructure to hazards and focuses on 1) hazard description 2) severity 3) probability 4) location 5) historic occurrences 6) impact to NYC 7) structural vulnerability and 8) potential loss estimates.
River Flooding	Caused when rivers and streams overflow their banks.

Saffir-Simpson Scale	Use by the National Weather Service, this scale uses wind speed to determine the category strength of a hurricane on a scale of 1 to 5.
STAPLEE	A set of criteria used to examine the Social, Technical, Administrative, Political, Legal, Economic, and Environmental (STAPLEE) opportunities and constraints of implementing a particular mitigation measure using a consistent framework.
Storm Surge	An offshore rise of water associated with a low-pressure weather system, typically a tropical cyclone. Storm surge is caused primarily by high winds pushing on the ocean's surface. The wind causes the water to pile up higher than the ordinary sea level.
Tornadoes	A local atmospheric storm, generally of short duration, formed by winds rotating at very high speeds, usually in a counterclockwise direction. The vortex, up to several hundred yards wide, is visible to the observer as a whirlpool-like column of winds rotating about a hollow cavity or funnel.
Tropical Depression	An organized system of clouds and thunderstorms, with a defined surface circulation, and maximum sustained winds of 38 miles per hour or less.
Tropical Storms	An organized system of strong thunderstorms, with a defined surface circulation, and maximum sustained winds of 39 to 73 miles per hour.
Wildfires	Any instance of uncontrolled burning in grasslands, brush, or woodlands.
Windstorms	Short-duration events involving straight-line winds or gusts exceeding 50 mph. These gusts can produce winds of sufficient strength to cause property damage. Windstorms are especially dangerous in areas with significant tree stands, exposed property, poorly constructed buildings, mobile homes (manufactured housing units), major infrastructure, and aboveground utility lines. A windstorm can topple trees and power lines; cause damage to residential, commercial, critical facilities; and leave tons of debris in its wake.
Winter Storms	Includes ice storms and blizzards. Extreme cold often accompanies winter storms. The National Weather Service (NWS) characterizes blizzards as being combinations of winds in excess of 35 mph with considerable falling or blowing snow, which frequently reduces visibility.

Appendix C: Meetings, Notices, Sign-in Sheets

William E. Robinson
Chairperson

Theresa H. Taylor
Vice-Chairperson

James L. Pinkney, Sr.
Administrator

Nicole Gaines
Clerk to Council



COUNTY OF ALLENDALE

P. O. Box 190
526 Memorial Ave. North
Allendale, SC 29810
Telephone: (803) 584-3438
Fax: (803) 584-7042

H. Carl Gooding
Councilmember

James J. All
Councilmember

Charles R. Gooding
Councilmember

Walter H. Sanders, Jr.
County Attorney

November 08, 2018

Amanda J. Sievers
Planning Manager
Lower Savannah Council of Governments
P.O. Box 850
Aiken, SC 29802

Dear Amanda,

Allendale County does hereby commit to providing the amount of \$5,208.34 in matching funds for the Pre-Disaster Mitigation (PDM) Planning Grant being sought by Lower Savannah Council of Governments. We understand this grant will be used for the purpose of updating the Hazard Mitigation Plan for counties in the Lower Savannah Region. It is important to note, that should you not be successful in acquiring the grant for this work, Allendale County reserves the right to retain these funds and prepare our plan update using alternative methods.

Sincerely,


James Pinkney
County Administrator

Cc: Gidget Stanley-Banks, Emergency Management Coordinator



**LOWER SAVANNAH REGION
NATURAL HAZARD MITIGATION PLAN UPDATE
SIGN-IN SHEET**

Date: **October 7, 2019** **Place:** Lower Savannah Council of Governments

Time: **10:00 AM**

Name	Agency	Phone	Email
1. Roger Rileys	Barnwell EMA	803-541-1601	riley@barnwellsc.org
2. Paul Matthews	Aiken BMD	803 642 - 1620	pmatthews@airkiana.org
3. Emily Kingston	LSCOG	803-644-1981	elangston@lscog.org
4. Deanna Coffey	SCEMD	803 429 0620	dcoffey@amdisc.gov
5. David Chojinski	Columbia EMA	803-874-3042	dchojinski@columbiacounty.sc.gov
6. Rocky Tucker	SCEMD	803-367-1845	tucker@emf.sc.gov
7. Nathaniel Foutel	LSCOG	803-528-7069	nfoutel@lscog.org
8. Lindsey McCoy	SCEMD	803 361 8045	lmccoy@emf.sc.gov
9. Brittany Barnwell	Barnberg	803-596-2743	barnwell@barnbergcounty.sc.gov
10.			
11.			
12.			

Emory Langston

From: Emory Langston
Sent: Tuesday, October 15, 2019 8:18 AM
To: Gidget Stanley-Banks (gstanley@allendalecounty.com)
Subject: Hazardous Mitigation Meeting-Information
Attachments: Allendale County_Signed Comittment Letter.pdf; AllendaleHMP(NEW)2.pdf

Hi Gidget,

Thanks again for meeting with me yesterday. Please find the attached commitment letter from Mr. Pinkney. I can confirm, on my end, that December 5th is good for the Allendale Kick-off. I have also attached the 2016 Mitigation Plan.

Let me know if you need any additional information.

Best-
Emory

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

Emory Langston

From: Emory Langston
Sent: Monday, December 02, 2019 2:26 PM
To: Gidget Stanley
Subject: RE: Hazardous Mitigation Meeting-Information

Gidget,

How many folks are you expecting? Want to be sure I have enough handouts. Let me know if you think we should postpone to another date.

Thanks!

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: Gidget Stanley <gstanley@allendalecounty.com>
Sent: Monday, December 02, 2019 2:18 PM
To: Emory Langston <elangston@lscog.org>
Subject: Re: Hazardous Mitigation Meeting-Information

Good afternoon Emory
I won't be at the meeting. My assistant will be there

Sent from my iPhone

On Dec 2, 2019, at 12:56 PM, Emory Langston <elangston@lscog.org> wrote:

Hi Gidget,

Hope this finds you well after the Thanksgiving holiday. Are we still on for this Thursday at 10:00?

Thanks,
Emory

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: Emory Langston
Sent: Tuesday, October 15, 2019 8:18 AM
To: Gidget Stanley-Banks (gstanley@allendalecounty.com) <gstanley@allendalecounty.com>
Subject: Hazardous Mitigation Meeting-Information

Hi Gidget,

Thanks again for meeting with me yesterday. Please find the attached commitment letter from Mr. Pinkney. I can confirm, on my end, that December 5th is good for the Allendale Kick-off. I have also attached the 2016 Mitigation Plan.

Let me know if you need any additional information.

Best-
Emory

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

<Allendale County_Signed Comittment Letter.pdf>
<AllendaleHMP(NEW)2.pdf>



**LOWER SAVANNAH REGION
NATURAL HAZARD MITIGATION PLAN UPDATE
ALLENDALE COUNTY
SIGN-IN SHEET**

Date: December 5, 2019 **Place:** Allendale County EOC

Time: 10:00 AM

	Name	Agency	Phone	Email
1.	Kara N. Troy	Allendale Co. EMA	803.584.4081	ktroy@allendalecounty.com
2.	Sarah L. Weeks	American Red Cross	803-941-4152 803-781-0959	slweeks@att.net
3.	Denarda Oke	Town of Fairfax	803-632-3111	rcohen@townoffairfaxva.gov
4.	Emory Langston	LSCOG	803-644-7981	elangston@scog.org
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				



Allendale County Hazard Mitigation Plan Update Meeting

Thursday, December 5th, 2019

10:00 a.m.

Agenda

Welcome and Introductions

*Emory Langston, PCED
Administrator, LSCOG /All*

Hazardous Mitigation Plan Background

*Emory Langston, PCED
Administrator, LSCOG
Representative from Allendale
County Emergency Management*

Current Status and Timeframe for Plan

*Emory Langston, PCED
Administrator, LSCOG*

Plan Update Process

*Emory Langston, PCED
Administrator, LSCOG*

General Discussion

All

Adjourn

Emory Langston

From: Emory Langston
Sent: Tuesday, February 11, 2020 10:51 AM
To: Roger Riley (rriley@barnwellsc.com); Paul Matthews; Chojnacki, David (dchojnacki@calhouncounty.sc.gov); Brittany M. Barnwell; Gidget Stanley-Banks (gstanley@allendalecounty.com); David Myers (dmyers@aikencountysc.gov)
Cc: Matthew Abney
Subject: LSCOG -Hazardous Mitigation Grant Update Meetings

Good morning,

Hope this finds everyone doing well☺. Since we last met, at your county meetings to kick-off the HMP, we have been busy working on the risk assessments for each plan. We should have these wrapped up by the end of the month. We would like to set up a meeting, with each of you individually, to go over this information, begin looking at what is involved with the mitigation strategies, and forming next steps for getting together with your county taskforces. Please let me know your availability to meet Wednesday, March 4, Thursday, March 5 or Friday, March 6. I anticipate the meeting lasting about an hour and we will be glad to come you in your county.

Please let me know your availability as soon as possible so we can schedule these meetings. Let me know if you have any questions.

Best regards-
Emory

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

Emory Langston

From: Emory Langston
Sent: Wednesday, September 09, 2020 11:21 AM
To: Gidget Stanley-Banks (gstanley@allendalecounty.com)
Subject: FW: Hazardous Mitigation Update

Importance: High

Hi Gidget-

Would like to touch base with you on the Hazardous Mitigation Plan. Please let me know a good time we could talk on the phone.

Much thanks!

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: Emory Langston
Sent: Wednesday, June 24, 2020 11:08 AM
To: Gidget Stanley-Banks (gstanley@allendalecounty.com) <gstanley@allendalecounty.com>
Subject: Hazardous Mitigation Update
Importance: High

Hi Gidget,

Please see below.

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: Emory Langston
Sent: Monday, June 15, 2020 3:52 PM
To: Gidget Stanley-Banks (gstanley@allendalecounty.com) <gstanley@allendalecounty.com>
Subject: RE: Hazardous Mitigation Update

Good afternoon,

Hoping this finds you well ☺

We all have had some set-backs in our usual work load thanks to COVID 19. We have been working on the data set for the HMP in Sections 2 and 3 over the past few months. Slowly but surely.

Wanted to see how you wanted to tackle the next phase with the taskforce. At this point, staff at LSCOG is attending in-person meetings sparingly, especially as we are seeing a rise in COVID cases; however we do have some meetings scheduled at the month. We could try for an in-person meeting in July or I can send out all the information via email, or we could try an email with documents and a follow up conference call. Those are just my suggestions. I am open to any ideas you may have.

We are running a little behind, per the timeline, and I have been in contact with SCEMD. At this point I think we are still doing fine, may push out a month or two.

As far as public comment goes for when the draft documents is ready, SCEMD has advised the following.

Public meetings/hearings can be held online. You can choose to host a conference call or WebEx type event, or simply post documents for review to social media and document any input received. As long as proof is provided for whichever you choose, the requirement will be met.

Let me know your thoughts going forward.

Best-
Emory

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: Emory Langston
Sent: Monday, March 16, 2020 2:09 PM
To: Gidget Stanley-Banks (gstanley@allendalecounty.com) <gstanley@allendalecounty.com>
Cc: Matthew Abney <mabney@lscog.org>
Subject: Hazardous Mitigation Update

Good afternoon,

Hope this finds you well; I know it finds you very busy! We have a Hazardous Mitigation update meeting scheduled for Thursday. In light of all that is going on I would propose one of two things. One, postpone that meeting for a time to be determined in April. Two, send you the risk information that we have updated and a proposal of what we will need going forward and schedule a conference call in the next few weeks to review the information. Let me know what works best for you.

Best-
Emory

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments

2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: Emory Langston
Sent: Monday, March 09, 2020 8:41 AM
To: gstanley@allendalecounty.com
Cc: Matthew Abney <mabney@lscog.org>
Subject: RE: Hazardous Mitigation Update

Good morning,

Let's do March 19th at 3:00.

Thanks!

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: gstanley@allendalecounty.com <gstanley@allendalecounty.com>
Sent: Friday, March 06, 2020 2:06 PM
To: Emory Langston <elangston@lscog.org>
Subject: RE: Hazardous Mitigation Update

I'm open on the 16,17, 20 all day. The 18th open until 1. The 19 I'm open after 2 until 5.

-----Original Message-----

From: "Emory Langston" <elangston@lscog.org>
Sent: Thursday, March 5, 2020 09:24
To: "Gidget Stanley-Banks (gstanley@allendalecounty.com)" <gstanley@allendalecounty.com>
Subject: Hazardous Mitigation Update

Good morning,

Hope this finds you well. I would like to schedule a time that we can come to Allendale to update as to where we are in the process with the Hazardous Mitigation Plan and develop some paths forward. Please let me know what availability you have the week of March 16-20.

Much thanks!
Emory

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

Emory Langston

From: Emory Langston
Sent: Wednesday, December 16, 2020 3:01 PM
To: McCoy, Lindsey
Subject: RE: Help with Allendale

I will 😊 Thanks again!

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: McCoy, Lindsey <lmccoy@emd.sc.gov>
Sent: Wednesday, December 16, 2020 2:52 PM
To: Emory Langston <elangston@lscog.org>
Subject: RE: Help with Allendale

I'm not sure, but I think it may have been a couple of months now, unfortunately. Hopefully we'll be hearing back from Gidget soon, but Kara sooner! If you need me to do anything from my end to track her down, please let me know.

Have a great evening!

Lindsey McCoy
Hazard Mitigation Planning Coordinator
South Carolina Emergency Management Division

2779 Fish Hatchery Road
West Columbia, SC 29172
Mobile: (803) 367-8095
lmccoy@emd.sc.gov

From: Emory Langston <elangston@lscog.org>
Sent: Wednesday, December 16, 2020 10:46 AM
To: McCoy, Lindsey <lmccoy@emd.sc.gov>
Subject: RE: Help with Allendale

Thanks Lindsey-

How long has she been out on medical? I have reached out to Kara and fingers crossed she will get back with me.

Thanks again!

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: McCoy, Lindsey <lmccoy@emd.sc.gov>
Sent: Wednesday, December 16, 2020 9:31 AM
To: Emory Langston <elangston@lscog.org>
Subject: RE: Help with Allendale

Hi Emory,

Gidget is currently out on medical leave. Her deputy, Kara Troy, will be the point of contact in the meantime. Her information is as follows:

Kara Natasha Troy
Deputy Director of Emergency Management
Allendale County
1-B Main Street North
Allendale, SC 29810
(803) 584-4081 - office
(803) 686-0679 - cell
(803) 584-3807 – fax
ktroy@allendalecounty.com

Please let me know if you run in to any more issues, or if there's anything else I can do to help!

Lindsey McCoy
Hazard Mitigation Planning Coordinator
South Carolina Emergency Management Division

2779 Fish Hatchery Road
West Columbia, SC 29172
Mobile: (803) 367-8095
lmccoy@emd.sc.gov

From: Emory Langston <elangston@lscog.org>
Sent: Tuesday, December 15, 2020 2:26 PM
To: McCoy, Lindsey <lmccoy@emd.sc.gov>
Subject: Help with Allendale

Hi Lindsey,

I need help with someone getting in touch with Gidget. I have left messages and sent emails that are not answered. The data and plan are going fine on this end, but I need to get together regarding the mitigations actions and have a taskforce meeting, in some capacity.

DRAFT

Emory Langston

From: Emory Langston
Sent: Thursday, January 07, 2021 12:41 PM
To: ktroy@allendalecounty.com
Subject: RE: Allendale County HMP 5 Year update

Perfect! Shoot me your best number and I will call you at 4:00.

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: ktroy@allendalecounty.com <ktroy@allendalecounty.com>
Sent: Thursday, January 07, 2021 12:14 PM
To: Emory Langston <elangston@lscog.org>
Subject: RE: Allendale County HMP 5 Year update

That's fine.

From: Emory Langston <elangston@lscog.org>
Sent: Thursday, January 7, 2021 12:00 PM
To: ktroy@allendalecounty.com
Subject: RE: Allendale County HMP 5 Year update

Later would be better. Would 4:00 be too late?

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: ktroy@allendalecounty.com <ktroy@allendalecounty.com>
Sent: Thursday, January 07, 2021 11:57 AM
To: Emory Langston <elangston@lscog.org>
Subject: RE: Allendale County HMP 5 Year update

This afternoon is fine. The earliest I can is 2:00 and I can go later if need be.

From: Emory Langston <elangston@lscog.org>
Sent: Thursday, January 7, 2021 10:58 AM

To: ktroy@allendalecounty.com
Subject: RE: Allendale County HMP 5 Year update

Hi there! Yes, would this afternoon work for you? Just let me know a good time.

Thanks!
Emory

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: ktroy@allendalecounty.com <ktroy@allendalecounty.com>
Sent: Thursday, January 07, 2021 10:52 AM
To: Emory Langston <elangston@lscog.org>
Subject: RE: Allendale County HMP 5 Year update

Hi Emory!

Are you available today?

From: Emory Langston <elangston@lscog.org>
Sent: Monday, January 4, 2021 9:45 AM
To: ktroy@allendalecounty.com
Subject: Allendale County HMP 5 Year update

Hi Kara,

Hope this finds you well having had happy holidays 😊

We spoke very briefly right before the holidays and I did not hear back from you. I am reaching out again in hopes that we can connect at your soonest convience. This is in regard to the Allendale County Hazardous Mitigation Plan 5 Year updates. Please email me back or call my direct line at 803-508-7046 or my cell 803-645-5467.

Much thanks,
Emory

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: Emory Langston
Sent: Wednesday, December 16, 2020 10:44 AM

To: ktroy@allendalecounty.com

Subject: Allendale County HMP 5 Year update

Good morning,

I have been trying to reach Gidget regarding the Allendale County Hazardous Mitigation Plan updates and have not received any responses back. I learned from SCEMD that she is out on medical leave. Ms. McCoy passed along your information to me. LSCOG is doing the updates to the plan but I really need some guidance and input. I would like to discuss the updates and out next steps at your earliest convenience. Please let me know if have any availability over the next several days to discuss via phone.

Best regards-

Emory

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

MEMO

TO: Kara Troy Emergency Preparedness, Allendale County
FROM: Emory Langston, LSCOG
DATE: January 21, 2021
RE: Allendale County HMP - Needs

See the attached information regarding the updates to Allendale County HMP. Please review the plan and let me know if you see any other information that need to be updated, deleted, added, etc. The following are items that are specifically need from Allendale County for the update.

1. Updated list of names and titles of the Taskforce members
2. Update information from the Assessor or Treasurer - Additionally, the breakdown for the Tax Year 2015 shows a total assessed market value \$175,406,044. The total number of parcels in Allendale County is 8,971.
3. Review and update the Allendale County Hazardous Mitigation Actions
4. Help with facilitating contact and distribution of the local HMP to the municipalities.

We will need to set up a time to review the mitigations actions with the municipalities via conference call or virtual meeting before mid-February.

*Met w/ Kara's
William - 1-21-21
will touch base on 1-28-21
shoot for taskforce mtg.
week of Feb. 8*



Emory Langston

From: [REDACTED] ktroy@allendalecounty.com
Sent: [REDACTED] Friday, February 19, 2021 4:57 PM
To: Emory Langston
Subject: RE: Allendale County HMP

I'm still awaiting confirmation.

Troy

From: Emory Langston <elangston@lscog.org>
Sent: Friday, February 19, 2021 1:06 PM
To: ktroy@allendalecounty.com
Subject: RE: Allendale County HMP

Yes, I can make that work. Where in Allendale we will meet and how many municipalities do anticipate attending?

Thanks!

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: ktroy@allendalecounty.com <ktroy@allendalecounty.com>
Sent: Friday, February 19, 2021 12:32 PM
To: Emory Langston <elangston@lscog.org>
Subject: RE: Allendale County HMP

Hi! Is next Wednesday, February 24 at 10:00 okay?

Troy

From: Emory Langston <elangston@lscog.org>
Sent: Friday, February 19, 2021 8:42 AM
To: ktroy@allendalecounty.com
Subject: Allendale County HMP

Good morning Kara,

Hoping this finds you feeling much better from last week. I know you are catching up from being out, but don't want the HMP to get to far behind either.

Thanks!
Emory

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: Emory Langston
Sent: Wednesday, February 10, 2021 11:20 AM
To: ktroy@allendalecounty.com
Subject: RE: Allendale County HMP

Oh wow! I hope you are feeling better! Take care of yourself and just get back to me when you are better 😊

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: ktroy@allendalecounty.com <ktroy@allendalecounty.com>
Sent: Wednesday, February 10, 2021 9:08 AM
To: Emory Langston <elangston@lscog.org>
Subject: RE: Allendale County HMP

Hi Emory,
I went home early not feeling well and an ER visit put me out one day (said two, but I'm here today). I'll get back with you today.

Thanks!

From: Emory Langston <elangston@lscog.org>
Sent: Monday, February 8, 2021 1:59 PM
To: ktroy@allendalecounty.com
Subject: Allendale County HMP

Good afternoon!

Just touching base to see if you have been able to get a consensus on a date for the taskforce to meet?

Thanks!

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802

803-649-7981

From: Emory Langston

Sent: Wednesday, February 03, 2021 7:48 AM

To: ktroy@allendalecounty.com

Subject: RE: Allendale County HMP

Good morning!

Sounds good. The 9th, 10th or 16th are all wide open for me.

Have a great Wednesday!

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

From: ktroy@allendalecounty.com <ktroy@allendalecounty.com>

Sent: Tuesday, February 02, 2021 5:16 PM

To: Emory Langston <elangston@lscog.org>

Subject: RE: Allendale County HMP

Hi Emory!

I am slated to get the Flood map this week and I have pretty much updated the rest of the document. I will give it another overview before letting you know it's completed. That timeframe is fine for me, let me confirm with the others.

Thanks,

Kara Natasha Troy

Deputy Director of Emergency Management

for Allendale County

911-B Main Street North

Allendale, SC 29810

(803) 584-4081 - office

(803) 686-0679 - cell

(803) 584-3807 - fax

From: Emory Langston <elangston@lscog.org>
Sent: Tuesday, February 2, 2021 3:13 PM
To: ktroy@allendalecounty.com
Subject: Allendale County HMP

Hi Kara,

Hope this finds you well 😊

Touching base to see if you have had a chance to review the HMP documents and if you have any questions or comments. Would like to see if we can get the municipalities together next week or early the week of the 16th?

Let me know your thoughts.

Thanks!
Emory

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-649-7981

DRAFT

Emory Langston

From: Emory Langston
Sent: Wednesday, March 03, 2021 8:14 AM
To: Kara N Troy
Subject: RE: Ms. Stanley-Banks

Good morning,

Hoping this finds you doing well. I am sure the past week has not been an easy one. I know that you are in the midst of 1000% things, but just want to get the HMP back on your radar. I am fairly open the next 2 weeks to come to Allendale and get together with the municipalities and yourself. When you have a chance, please shoot me some dates that work for you.

Thanks!
Emory

From: Kara N Troy <ktroy@allendalecounty.com>
Sent: Monday, February 22, 2021 1:49 PM
To: Emory Langston <elangston@lscog.org>
Subject: Re: Ms. Stanley-Banks

Hi! Yes ma'am. I called earlier but I didn't leave a voice message because I got bombarded again. I'm so need to reschedule. I'm with Bill now and we're planning for early next week. I'll get you a date shortly.

Troy

Sent from my iPhone

On Feb 22, 2021, at 11:00 AM, Emory Langston <elangston@lscog.org> wrote:

Kara,

Our contact at SCEMD informed me of the passing of Ms. Stanley-Banks. I wanted to share our most heartfelt condolences to you and all the staff at Allendale County Emergencies Services. I know that this is a hard time and tough loss. If we need to postpone the meeting on Wednesday, just let know.

Warm regards,
Emory

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-508-7046 office
803-645-5467 cell



**LOWER SAVANNAH REGION
NATURAL HAZARD MITIGATION PLAN UPDATE
ALLENDALE COUNTY
SIGN-IN SHEET**

Date: **March 15, 2021** **Place:** Allendale County EOC

Time: **10:00 AM**

Name	Agency	Phone	Email
1. <i>Emerg Langston</i>	<i>LSCOG</i>	<i>803-588-7046</i>	<i>elangston@kce.org</i>
2. <i>William Robinson</i>	<i>Emergency Management</i>	<i>803-571-7156</i>	<i>wrobinson@allendalecounty.com</i>
3. <i>ERWIN MATHEIAS</i>	<i>Town of Waver</i>	<i>803-686-1243</i>	<i>EMMATHIAS@BIRSWITH.NET</i>
4. <i>Bill Goodson</i>	<i>County Administrator</i>	<i>803-584-3438</i>	<i>bgoodson@allendalecounty.com</i>
5. <i>Joe Mole III</i>	<i>Allendale County Board of Supervisors</i>	<i>686-1653</i>	<i>jhole@allendalecounty.com</i>
6. <i>Henry Doumans Sr</i>	<i>Town of Allendale</i>	<i>803-686-2854</i>	<i>hondoumans@allendalecountysc.com</i>
7. <i>Kara N. Tray</i>	<i>Allendale Co. EMA</i>	<i>803-584-4081</i>	<i>Ktray@allendalecounty.com</i>
8.			
9.			
10.			
11.			
12.			

Emory Langston

From: ktroy@allendalecounty.com
Sent: Tuesday, May 11, 2021 10:17 AM
To: Emory Langston
Subject: RE: ALLENDALE CO. HAZARD MITIGATION PLAN

Good morning Emory!

The answer to all questions is no. There hasn't been any storm doors/windows installed, no back up generators bought and no new information regarding the flooding on A-F Hwy./Duck Branch. I do not know who would have been the project leads on this as all of the employees during the last Hazard Mitigation Plan update are no longer here.

Troy

From: Emory Langston <elangston@iscog.org>
Sent: Monday, May 10, 2021 10:27 AM
To: ktroy@allendalecounty.com
Subject: FW: ALLENDALE CO. HAZARD MITIGATION PLAN

Good morning,

Hope all is well with you.

Just touching base about the questions below. I am stuck on this before we can proceed further.

Thanks!
Emory

From: Emory Langston
Sent: Wednesday, April 07, 2021 11:20 AM
To: ktroy@allendalecounty.com
Subject: RE: ALLENDALE CO. HAZARD MITIGATION PLAN

Thanks for this information.

So the back-up generators at the schools have been done or the Sheriff's Dept or both? Is there any way you can find out if the doors and windows have been done from the school district? What about the improvements at the Sheriff's Dept./Jail? Can you find out if those things have been done? Lastly, what happened with the drainage study conducted by the US Army Corp of Engineers?

I hate to pester about these questions, but I need to know so that I can update this 5 year plan the best we can. Because they are listed, FEMA is going to want to know what has occurred in the past 5 years with these projects. If nothing has been done, that is ok, I just need to know so that I can properly document.

Thanks!
Emory

From: ktroy@allendalecounty.com <ktroy@allendalecounty.com>
Sent: Tuesday, April 06, 2021 9:19 AM
To: Emory Langston <elangston@lscog.org>
Subject: FW: ALLENDALE CO. HAZARD MITIGATION PLAN

Good morning!

I just received a response from Mr. Joe Mole, Buildings & Zoning about the attachment you sent over. It is stated below.

Troy

From: [jmole](mailto:jmole@allendalecounty.com) <jmole@allendalecounty.com>
Sent: Monday, April 5, 2021 5:28 PM
To: ktroy@allendalecounty.com
Cc: jmole@allendalecounty.com
Subject: RE: ALLENDALE CO. HAZARD MITIGATION PLAN

Good Afternoon,

To my knowledge, this was strictly school district.

From: ktroy@allendalecounty.com [<mailto:ktroy@allendalecounty.com>]
Sent: Wednesday, March 31, 2021 5:00 PM
To: bgoodson@allendalecounty.com; 'Joe Mole' <jmole@allendalecounty.com>
Subject: FW: ALLENDALE CO. HAZARD MITIGATION PLAN

Good afternoon,

I have a document submitted by Emory from the COG for review. There are 5 items that need review. I can identify one being completed, and that is the backup generator. I have seen new doors at Fairfax Elementary, but no windows. Was this a Hazard Mitigation project or strictly school district? Mr. Mole, would you recall any of this?

Troy

From: Emory Langston <elangston@lscog.org>
Sent: Wednesday, March 31, 2021 3:25 PM
To: ktroy@allendalecounty.com
Subject: RE: ALLENDALE CO. HAZARD MITIGATION PLAN

Good afternoon,

Could you and Mr. Goodson please review the attached, specifically what is highlighted in yellow and let me know the status of those projects. Have they been completed, are they waiting on funding, etc.... If you could get that information back to me by next Tuesday/Wednesday I would greatly appreciate it 😊

Let me know if you have any questions.

Thanks!
Emory

From: ktroy@allendalecounty.com <ktroy@allendalecounty.com>
Sent: Tuesday, March 23, 2021 5:32 PM
To: Emory Langston <elangston@lscog.org>
Subject: RE: ALLENDALE CO. HAZARD MITIGATION PLAN

Hi! I'm sorry, Mr. Harvey Rouse is the Tax Assessor. He provided the breakdown of total assessed market value and parcels. (Number 2 on the memo) I didn't receive anything else. I will ask Mr. Goodson again to see if he wants to provide any changes.

Thanks!

From: Emory Langston <elangston@lscog.org>
Sent: Tuesday, March 23, 2021 3:27 PM
To: ktroy@allendalecounty.com
Subject: RE: ALLENDALE CO. HAZARD MITIGATION PLAN

Good afternoon,

Thanks so much for this information. I have a few questions.

1. I am not sure I know who Mr. Havery is or what he provided. Please clarify.
2. Do you have any updates for the Allendale County Mitigation Actions?

Thanks!

From: ktroy@allendalecounty.com <ktroy@allendalecounty.com>
Sent: Tuesday, March 23, 2021 1:36 PM
To: Emory Langston <elangston@lscog.org>
Subject: ALLENDALE CO. HAZARD MITIGATION PLAN
Importance: High

Good afternoon,

Please find attached a summary of changes for Allendale County's Hazard Mitigation Plan. I have reached out a few times to the Town of Ulmer and the Town of Sycamore to see if there are any changes and I haven't been able to speak with anyone. Please let me know if there is anything else needed. Thanks again for your help.

Regards,

Kara Natasha Troy

Deputy Director of Emergency Management

for Allendale County

911-B Main Street North

Allendale, SC 29810

(803) 584-4081 - office

Emory Langston

From: Emory Langston
Sent: Monday, March 15, 2021 3:15 PM
To: ktroy@allendalecounty.com
Cc: bgoodson@allendalecounty.com; Joe Mole - Allendale County (jmole@allendalecounty.com)
Subject: Mitigation Actions for the HMP
Attachments: Allendale County Hazard Mitigation Actions(Fig45).doc; Sycamore Hazard Mitigation Actions(Fig51).doc; Fairfax Hazard Mitigation Actions(Fig49).doc; Ulmer Hazard Mitigation Actions(Fig53).doc

Good afternoon,

Thanks again for meeting this morning. I have attached the mitigation actions for all except the Town of Allendale. I will send to Mr. Youmans. If you could forward Ulmer's to Mr. Mathias. Please feel free to make the changes, additions, deletions, etc.... on the word documents and send back to me. Don't hesitate to let me know if you have any questions.

Kara – I failed to get the copy of the tax information. Could you email that to me?

Much thanks

Emory

Emory M. Langston
Planning, Community and Economic Development Administrator
Lower Savannah Council of Governments
2748 Wagener Rd.
Aiken, SC 29802
803-508-7046 Direct
803-645-5467 Cell

DRAFT

Emory Langston

From: Tiffany Kemmerlin <bryantt@bambergcounty.sc.gov>
Sent: Tuesday, May 25, 2021 3:41 PM
To: Emory Langston
Subject: RE: *EXTERNAL*RE: *EXTERNAL*RE: HMP - Peer Review Question

Everything looks good to me!



Tiffany Kemmerlin, SC CEM
Director of Emergency Services, Bamberg County
Office 803.245.3087 | 803.245.4313 x2501
2893 Main Hwy Bamberg, SC 29003

From: Emory Langston [mailto:elangston@lscog.org]
Sent: Thursday, May 20, 2021 2:06 PM
To: Tiffany Kemmerlin <bryantt@bambergcounty.sc.gov>
Subject: *EXTERNAL*RE: *EXTERNAL*RE: HMP - Peer Review Question

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.
Thanks Tiffany!

I really appreciate it and have attached.

Best-
Emory

From: Tiffany Kemmerlin <bryantt@bambergcounty.sc.gov>
Sent: Thursday, May 20, 2021 10:33 AM
To: Emory Langston <elangston@lscog.org>
Subject: RE: *EXTERNAL*RE: HMP - Peer Review Question

Good afternoon! Sorry for the delay response! It has been a little crazy this week! Yes mam, you can send that over and I will review it, but it may take a week or so.

Thanks,
Tiffany

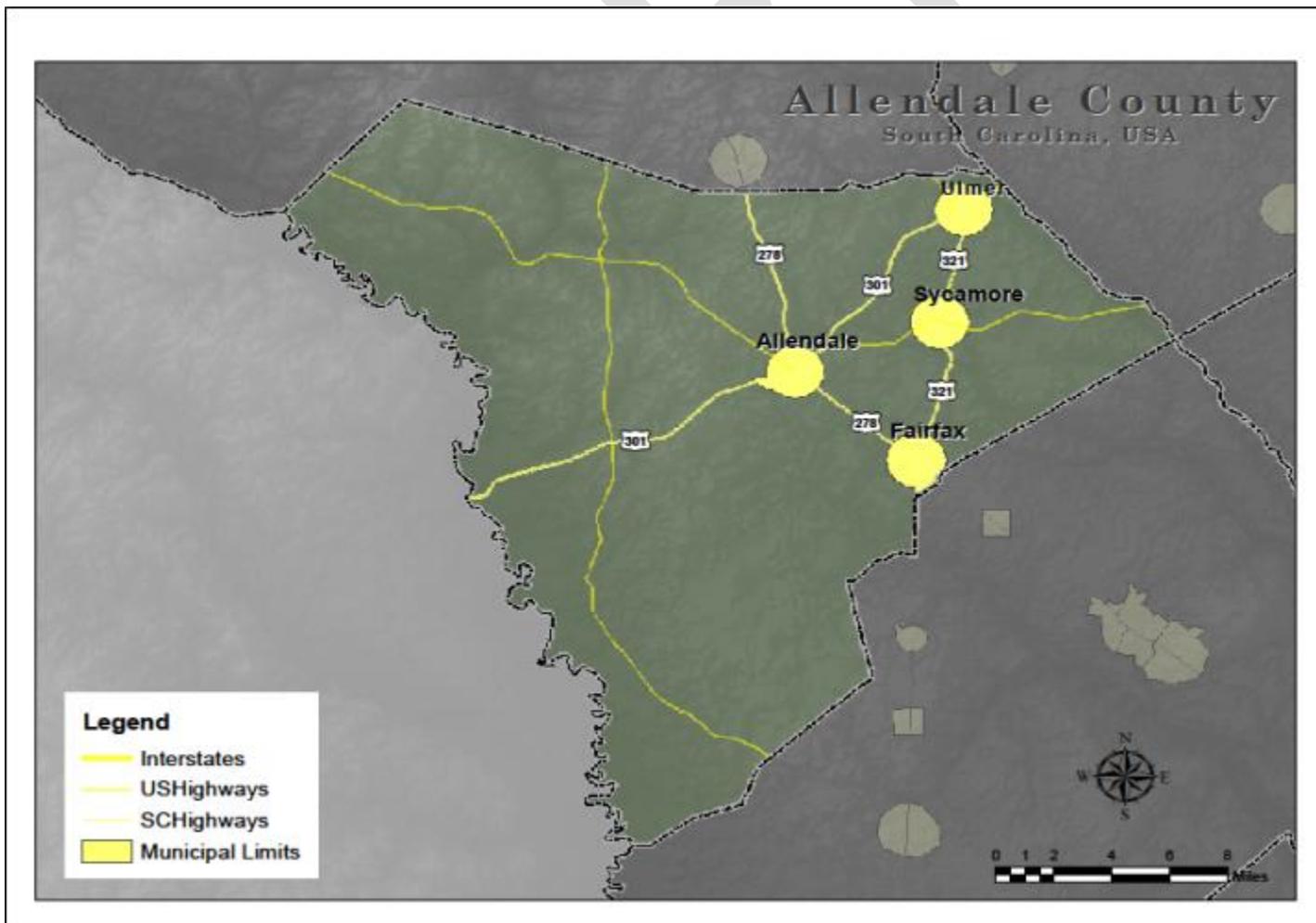


Tiffany Kemmerlin, SC CEM
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2893 Main Hwy Bamberg, SC 29003

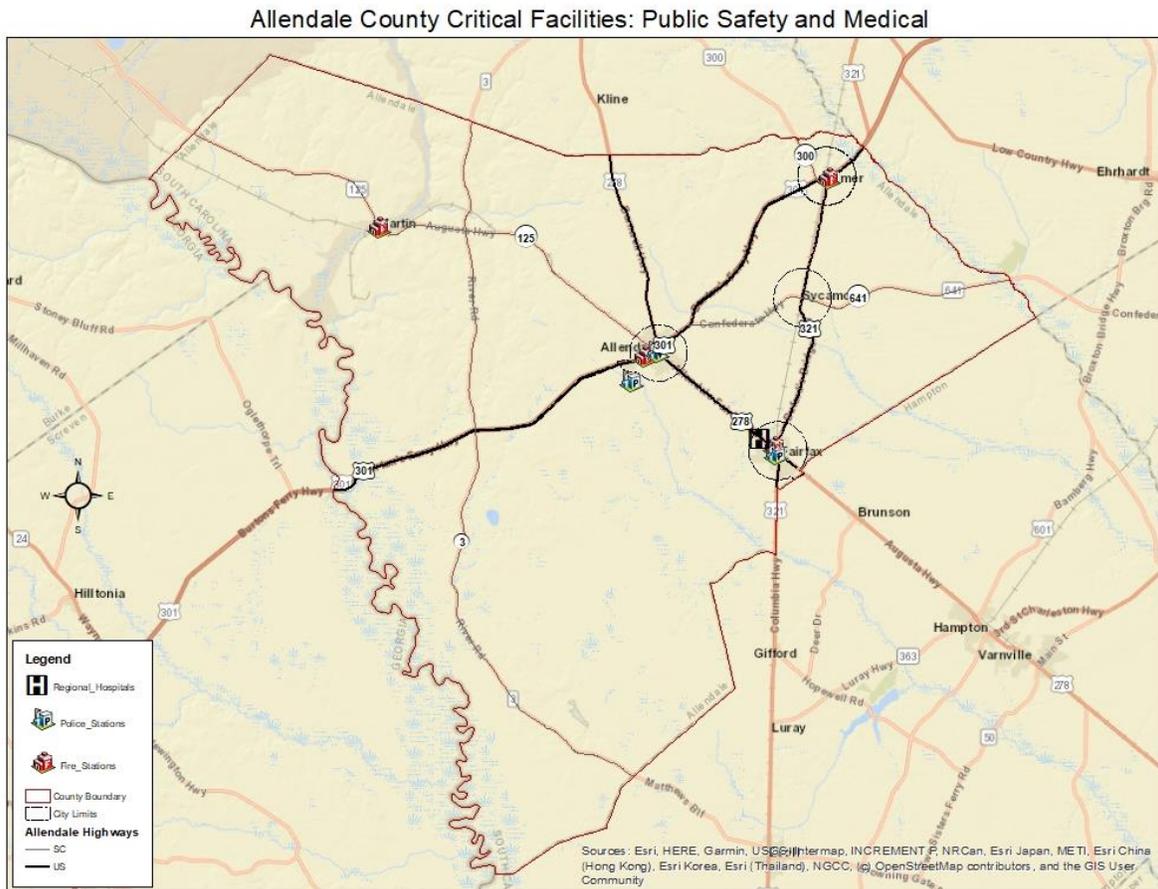
From: Emory Langston [mailto:elangston@lscog.org]
Sent: Tuesday, May 18, 2021 10:20 AM
To: Tiffany Kemmerlin <bryantt@bambergcounty.sc.gov>
Subject: *EXTERNAL*RE: HMP - Peer Review Question

Appendix E: Maps

Map 1: Location Map

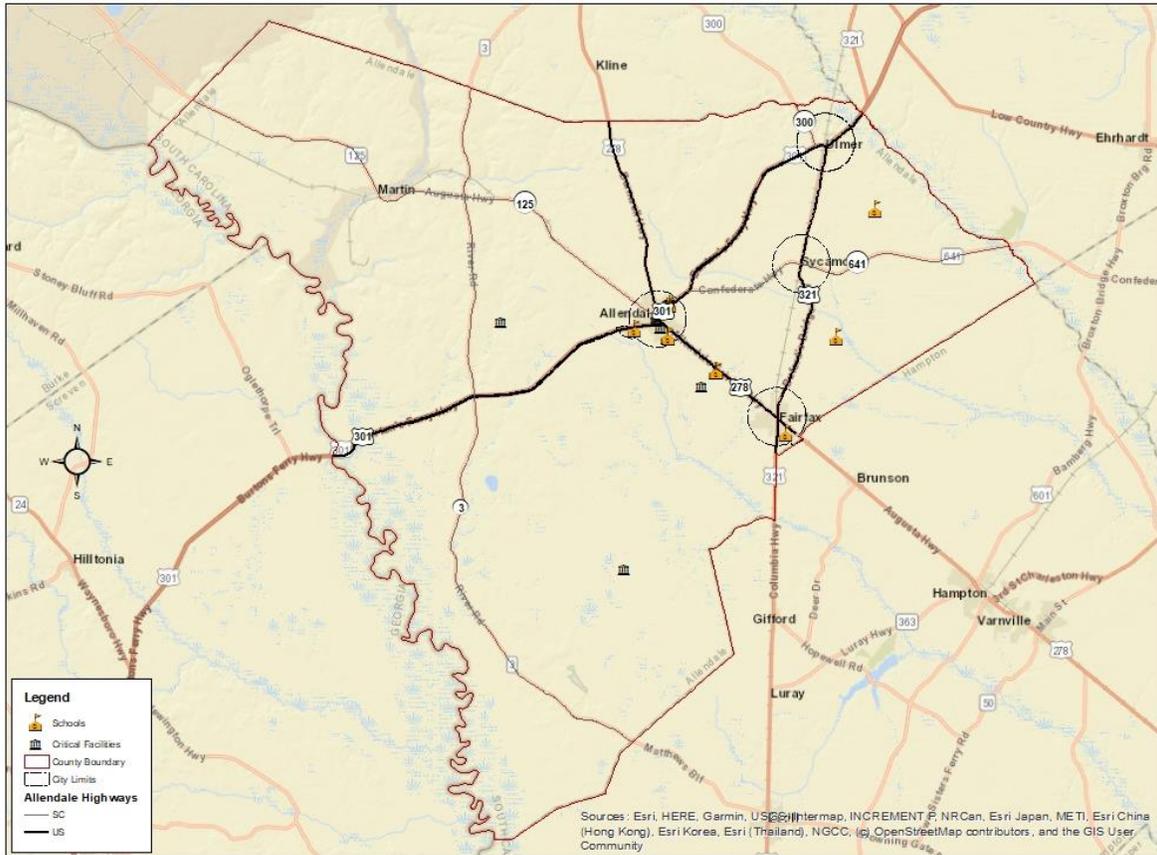


Map 2: Critical Facilities : Public Safety

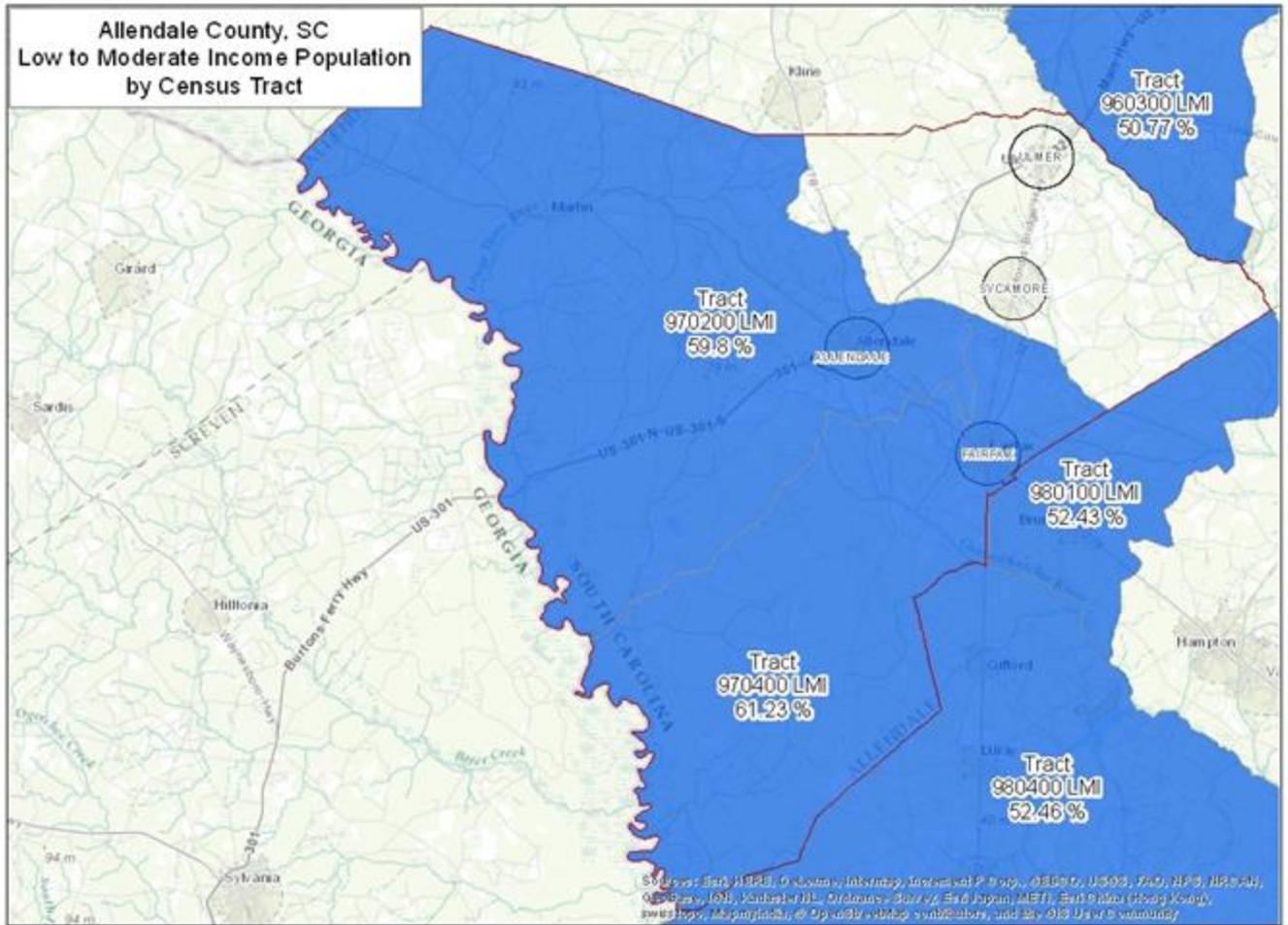


Map 3: Critical Facilities: Schools and Government Buildings

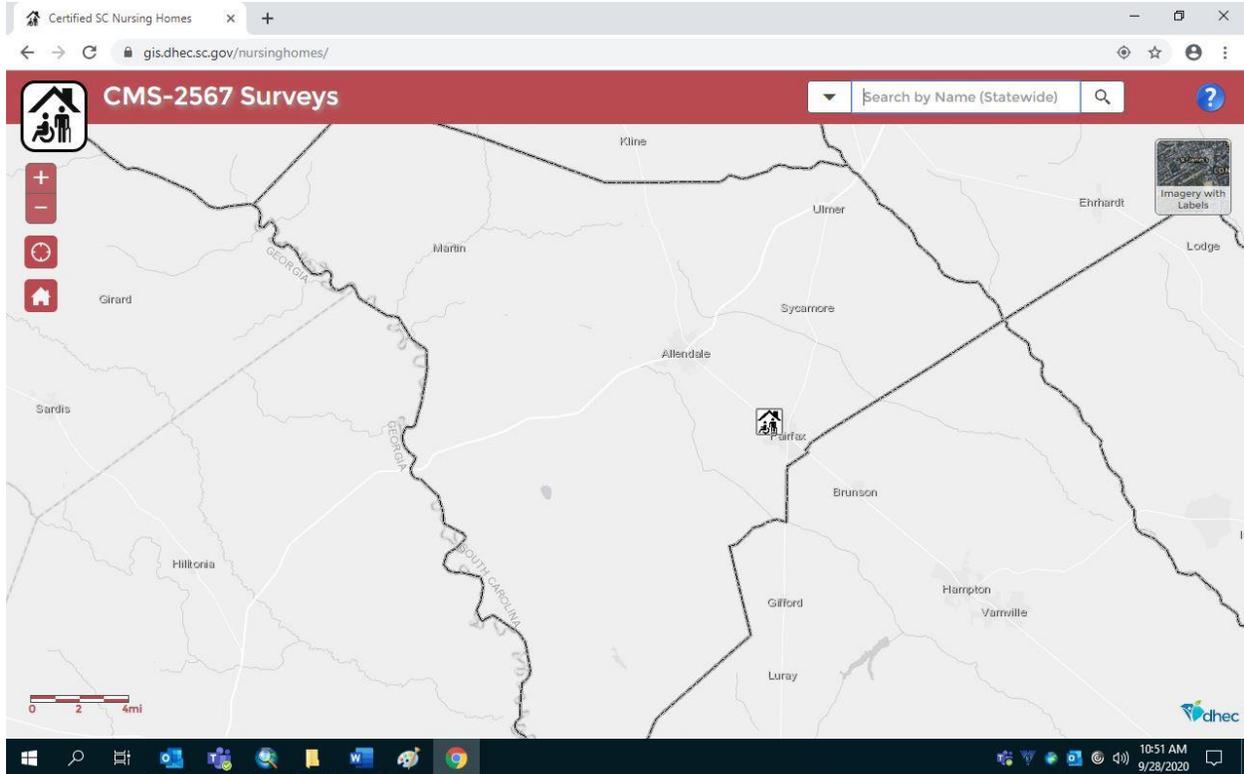
Allendale County Critical Facilities: Schools and Government Facilities



Map 4: Vulnerable Population: LMI

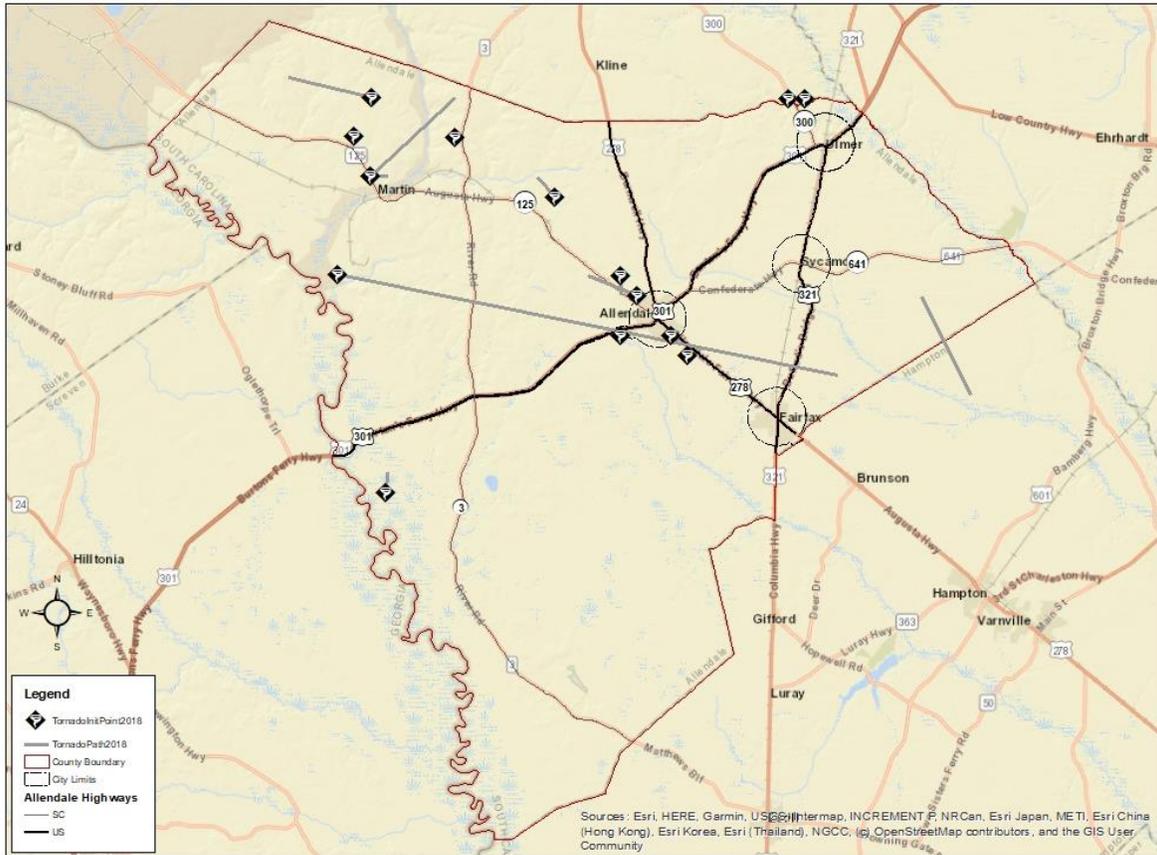


Map 5: Vulnerable Population: Nursing Facilities

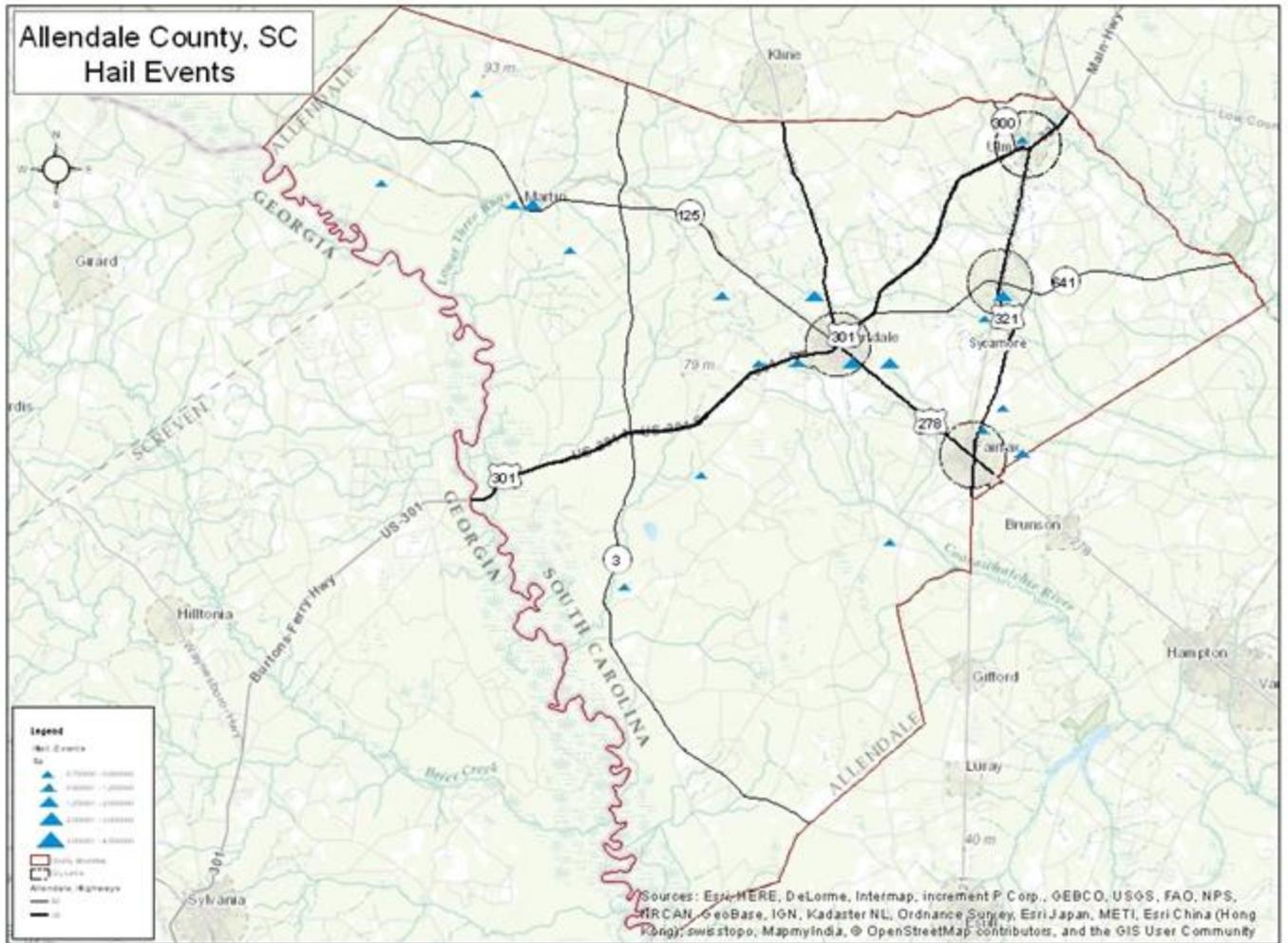


Map 6: Hazards: Tornadoes

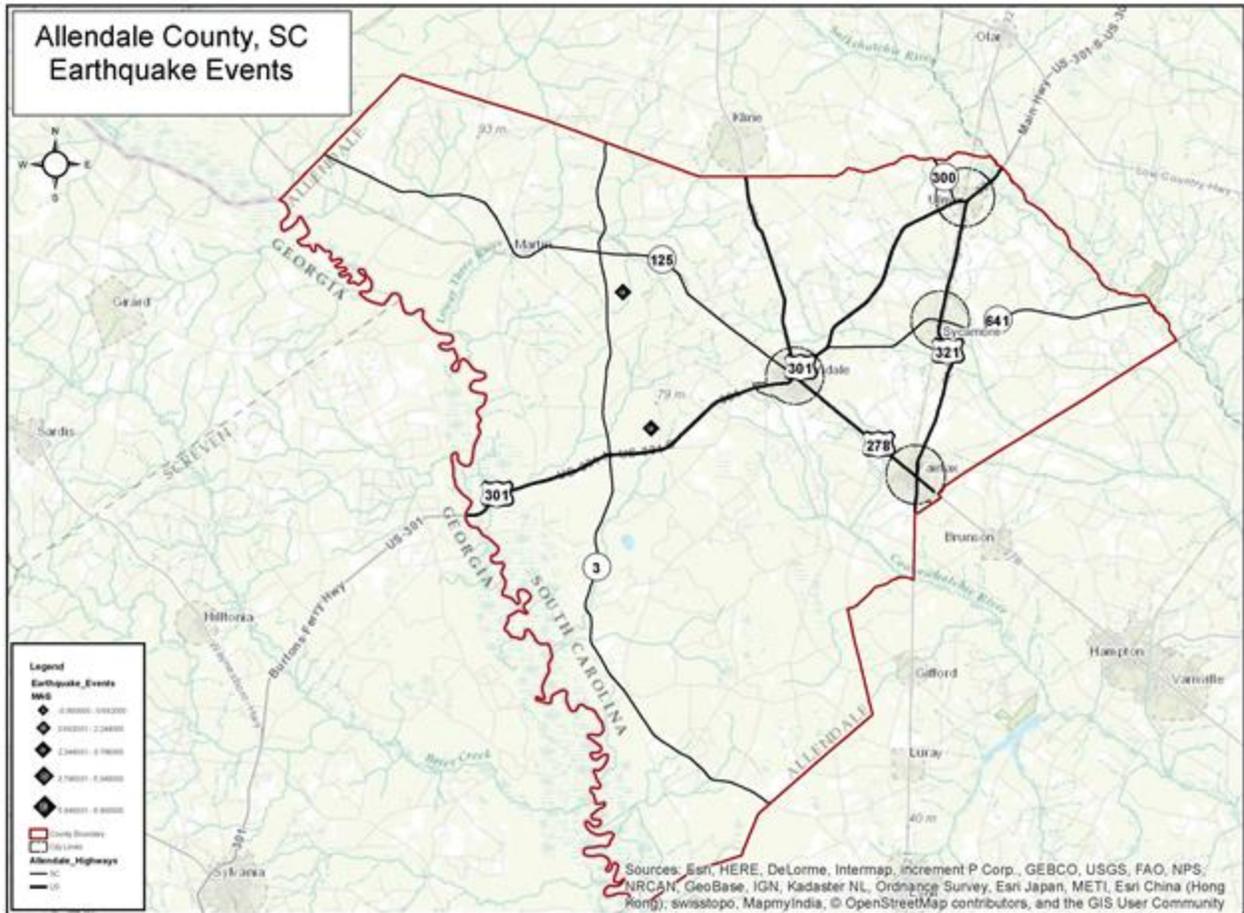
Allendale County Hazards: Tornado Map



Map 7: Hazards: Hurricanes and Tropical Storms

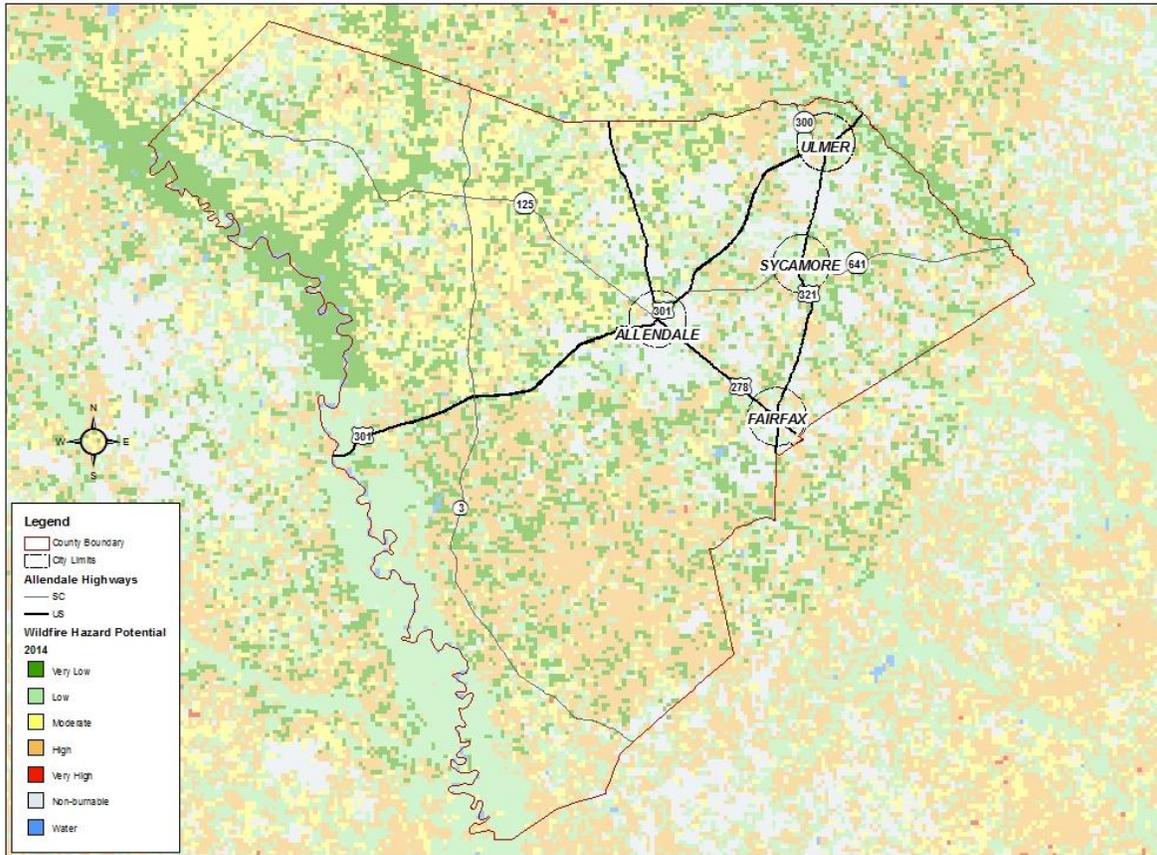


Map 9: Hazards: Earthquakes

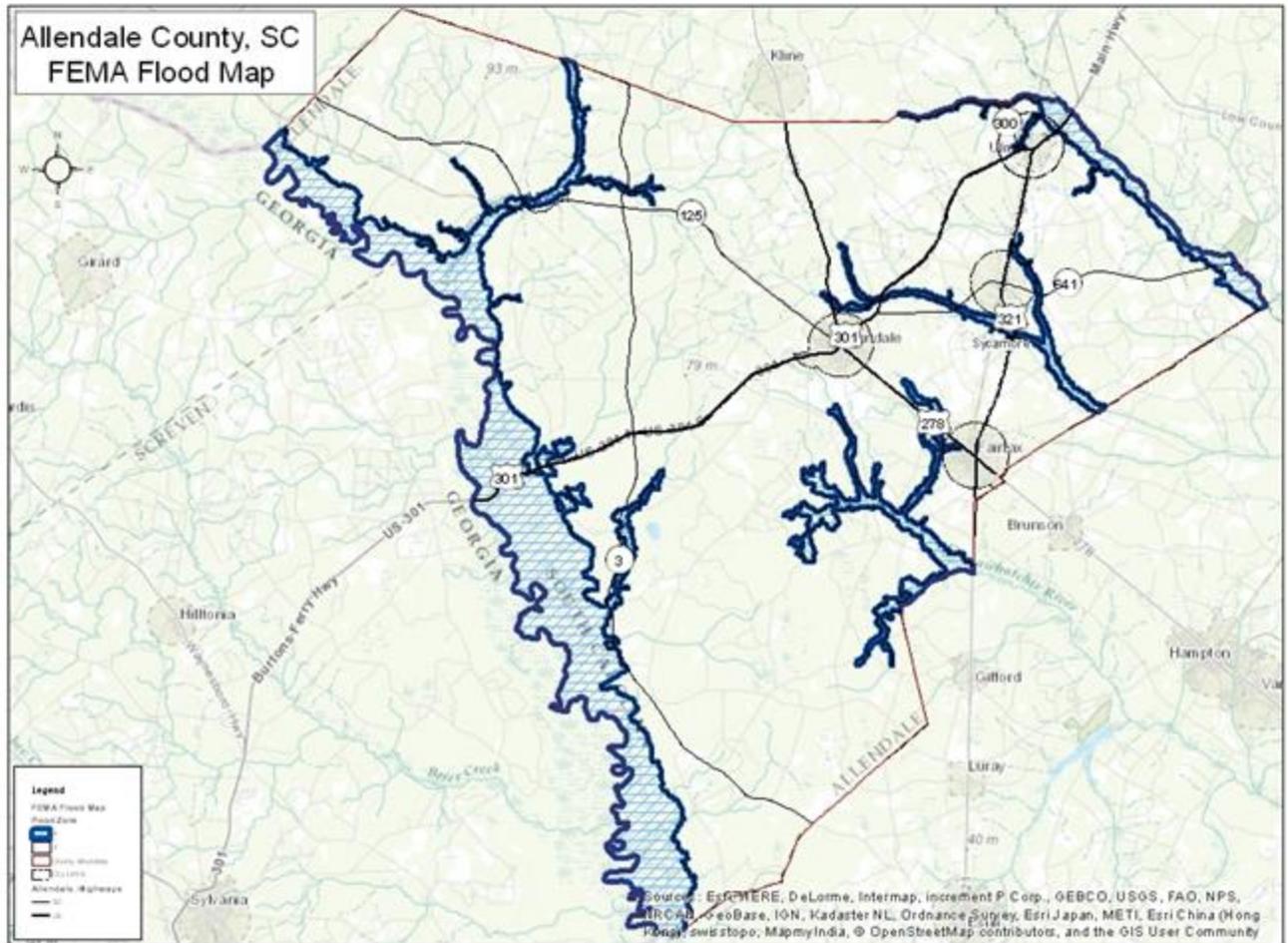


Map 10: Hazards: Wildfire Hazard

Allendale County, SC Wildfire Potential



Map 11: Hazards: Flood



Allendale County Hazard Mitigation Actions											
Mitigation Action and Description	Agency	Hazard(s)	Timeframe	Estimated Project Cost	Possible Funding Source(s)	FEMA Category	Goals and Objectives	Prioritization	Implementation Status	Implementation Schedule	Milestones Achieved, Impediments to Implementation
Develop a continuing communications and education program including instructional web-site, pamphlets, information packets and articles in the local media.	Allendale County/Emergency Management	ALL	Completed	N/A	PDM, HMGP	Public Education and Awareness	2.1, 2.2, 2.3	Medium	Depending on funding	Ongoing	Initially achieved but efforts are ongoing
Implement and enforce zoning codes and building codes to ensure no new structures are built within the floodplains.	Allendale County/Building and Planning	Flood	Completed	N/A	N/A	Prevention	1.4, 3.2, 3.3	High	Approved	Continuous	Continuous enforcement is necessary
Establishment and identification of emergency shelters during times of natural hazards.	Emergency Management	ALL	Completed	N/A	N/A	Emergency Services/Property Protection	1.2, 2.3, 6.1, 6.2, 6.3	Medium	Ongoing	Ongoing	Achieved but ongoing review
Identify flood prone areas and determine appropriate improvements to drainage services and levels of flood protection.	Allendale County/SCDNR/SCDOT	Flood	*Ongoing	N/A	Federal and State Grants	Property Protection	2.1, 5.2	Medium	Depending on funding	5 years	Continued evaluation /depending on funding
Develop an enhanced notification system for the citizens using a variety of communication media to simultaneously notify, alert, and/or instruct citizens prior to and during an emergency	Allendale County/Emergency Management	ALL	Completed	N/A	PDM/HMGP	Emergency Services/Public Education and Awareness	1.1, 2.3, 4.1	Medium	Complete	In place	Complete Code Red is available to all citizens
Bay Street Drainage	Emergency Management/SCDOT	Flood	*Ongoing	\$50K	PDM/HMGP	Prevention Property Protection	1.2,3.1,4.1	High	Depending on funding	3 years	Continued action
Bury Power Lines	Emergency Management/ SCE&G/ Edisto Coop.	ALL	*Ongoing	\$500K	PDM/HMGP	Prevention Property Protection	1.1,3.3,3.4,4.1	High	Depending on funding	Funding Dependent	Continued action
Retrofit Critical Facilities	Emergency Management	ALL	*Ongoing	\$1M	PDM/HMGP	Emergency Services/Property Protection	1.1,1.3,2.3,3.1,3.3,3.4,3.5, 4.1,6.1,6.2	High	Depending on Funding	Continuous	Continued action
Application for backup generator at Brandt Building	Allendale County Emergency Management	ALL	*Ongoing	\$77K	PDM/HMGP	Emergency Services/Property Protection	1.1,1.3,2.3,3.1,3.3,3.4,3.5, 4.1,6.1,6.2	High	Depending on funding	Funding Dependent	Continued Action
Apply for storm doors and window retrofit for Fairfax	Allendale County Emergency Management	ALL	*Ongoing	N/A	PDM/HMGP	Emergency Services	1.2, 2.3, 6.1, 6.2, 6.3	Medium	Depending on funding	Funding Dependent	Continued Action

Elementary, which is an identified emergency shelter											
Allendale County Hazard Mitigation Actions											
Mitigation Action and Description	Agency	Hazard(s)	Timeframe	Estimated Project Cost	Possible Funding Source(s)	FEMA Category	Goals and Objectives	Prioritization	Implementation Status	Implementation Schedule	Milestones Achieved, Impediments to Implementation
Apply for backup generators for 3 identified emergency shelters: Fairfax Elementary, Allendale Elementary and Allendale/Fairfax High School	Allendale County Emergency Management	ALL	*Ongoing	N/A	PDM/HMGP	Emergency Services	1.2, 2.3, 6.1, 6.2, 6.3	Medium	Depending on funding	Funding Dependent	Continued Action
Storm door retrofits and shutter/window retrofits to Jail, Dispatch, Sheriff's Department, and EOC	Allendale County Emergency Management/County/SC EMD	ALL	*Ongoing	N/A	PDM/HMGP /Other	Emergency Services/Property Protection	1.1,1.3,2.3,3.1,3.3,3.4,3.5, 4.1,6.1,6.2	Medium	Depending on funding	Funding Dependent	Continued Action
Backup generators for Courthouse and Sheriff's Department	Allendale County Emergency Management	ALL	*Ongoing	N/A	PDM/HMGP /Other	Emergency Services/Property Protection	1.1,1.3,2.3,3.1,3.3,3.4,3.5, 4.1,6.1,6.2	Medium	Depending on funding	Funding Dependent	Continued Action
Address flooding on Allendale-Fairfax Highway in the Duck Branch area	Allendale County Emergency Management/USACE	Flood	*Ongoing	N/A	PDM/HMGP /Other	Prevention Property Protection	1.2,3.1,4.1	High	Depending on Funding	Funding Dependent	Continued Action

Figure 45: Allendale County Hazard Mitigation Actions

*Ongoing is defined as continuing without termination or interruption



Town of Allendale Hazard Mitigation Actions

Mitigation Action and Description	Agency	Hazard(s)	Timeframe	Estimated Project Cost	Possible Funding Source(s)	FEMA Category	Goals and Objectives	Prioritization	Implementation Status	Implementation Schedule	Milestones Achieved, Impediments to Implementation
Develop a continuing communications and education program including instructional web-site, pamphlets, information packets and articles in the local media.	County/Emergency Management	ALL	Immediate	N/A	PDM, HMGP	Public Education and Awareness	2.1, 2.2, 2.3	High	In place	End of 2012-over a 3-year term	Complete
Implement and enforce zoning codes and building codes to ensure no new structures are built within the floodplains and comply with ICC Guidelines and state codes.	Town of Allendale/Building Department and Planning and Zoning Commission	Flood and enforcement of zoning area as established	*Ongoing	N/A	Municipal Funds	Prevention and Awareness	1.4, 3.2, 3.3	High	Completed	Currently in place and being implemented through the Building Depart for the Town of Allendale	Municipal Planning Commission is in place and active enforcement is being implemented
Establishment and identification of emergency shelters during times of natural hazards.	County/Emergency Management	ALL	Immediate	N/A	N/A	Emergency Services/Property Protection	1.2, 2.3, 6.1, 6.2, 6.3	Low	Completed	Currently in place	Completed at this date
Identify flood prone areas and determine appropriate improvements to drainage services and levels of flood protection.	Emergency Management/SCDNR	Flood	*Ongoing	N/A	Federal and State Grants	Property Protection	2.1, 2.2, 5.2	Low	Depending on funding	5 years	Continued action
Develop an enhanced notification system for the citizens using a variety of communication media to simultaneously notify, alert, and/or instruct citizens prior to and during an emergency	County/Emergency Management	ALL	*Ongoing	N/A	PDM/HMGP	Emergency Services/ Public Education and Awareness	1.1, 2.3, 4.1	Medium	Completed	5 years	Complete and Code Red in place
Retrofit Critical Facilities	Emergency Management	ALL	*Ongoing. Considering alternate methods for communication and distribution	\$1M	PDM/HMGP	Emergency Services/Property Protection	1.1,1.3,2.3, 3.1,3.3,3.4, 3.5,4.1,6.1, 6.2	High	Depending on Funding	5 Years	Continued action

Figure 47: Town of Allendale Hazard Mitigation Actions

*Ongoing is defined as continuing without termination or interruption.

Town of Fairfax Hazard Mitigation Actions											
Mitigation Action and Description	Agency	Hazard(s)	Timeframe	Estimated Project Cost	Possible Funding Source(s)	FEMA Category	Goals and Objectives	Prioritization	Implementation Status	Implementation Schedule	Milestones Achieved, Impediments to Implementation
Develop a continuing communications and education program including instructional web-site, pamphlets, information packets and articles in the local media.	County/Emergency Management	ALL	Immediate	N/A	PDM, HMGP	Public Education and Awareness	2.1, 2.2, 2.3	High	Completed	End of 2012- over a 3-year term	Code Red in place
Implement and enforce zoning codes and building codes to ensure no new structures are built within the floodplains.	Town of Fairfax/County Building and Planning	Flood	*Ongoing	N/A	N/A	Prevention	1.4, 3.2, 3.3	Medium	Completed / Continuous	Currently in place	Continuous process that requires enforcement
Establishment and identification of emergency shelters during times of natural hazards.	County/Emergency Management	ALL	Immediate	N/A	N/A	Emergency Services/ Property Protection	1.2, 2.3, 6.1, 6.2, 6.3	Low	Completed	Currently in place/ongoing	Identified and ongoing
Identify flood prone areas and determine appropriate improvements to drainage services and levels of flood protection.	Emergency Management/ SCDNR	Flood	*Ongoing	N/A	Federal and State Grants	Property Protection	2.1, 2.2, 5.2	Low	Depending on Funding	5 years	Identify funding source
Retrofit Critical Facilities	Emergency Management	ALL	*Ongoing	N/A	PDM/HMGP	Emergency Services/Property Protection	1.1,1.3,2.3,3.1, 3.3,3.4,3.5,4.1, 6.1,6.2	High	Depending on Funding	3 Years	Continued action

Figure 49: Town of Fairfax Hazard Mitigation Actions

*Ongoing is defined as continuing without termination or interruption

Town of Sycamore Hazard Mitigation Actions											
Mitigation Action and Description	Agency	Hazard(s)	Timeframe	Estimated Project Cost	Possible Funding Source(s)	FEMA Category	Goals and Objectives	Prioritization	Implementation Status	Implementation Schedule	Milestones Achieved, Impediments to Implementation
Develop a continuing communications and education program including instructional web-site, pamphlets, information packets and articles in the local media.	County/Emergency Management	ALL	Immediate	N/A	PDM, HMGP	Public Education and Awareness	2.1, 2.2, 2.3	High	In place	End of 2012-over a 3-year term	Complete /ongoing as needed
Continue the implementation of zoning codes and building codes to ensure no new structures are built within the floodplains.	Town of Sycamore/County Building and Planning	Flood	*Ongoing	N/A	N/A	Prevention	5.1,5.2	Medium	Completed/ Continuous	Currently in place	Continuous process requiring enforcement
Establishment and identification of emergency shelters during times of natural hazards.	County/Emergency Management	ALL	Immediate	N/A	N/A	Emergency Services/ Property Protection	1.2, 2.3, 6.1, 6.2, 6.3	Medium	Completed	Currently in place /ongoing	Identified and ongoing
Identify flood prone areas and determine appropriate improvements to drainage services and levels of flood protection.	Emergency Management/ SCDNR	Flood	*Ongoing	N/A	Federal and State Grants	Property Protection	2.1, 2.2, 5.2	Low	Depending on Funding	5 years	Identify funding source
Notification of the public in cases of emergency.	County/Emergency Management	ALL	*Ongoing	N/A	PDM/HMGP	Emergency Services/ Public Education and Awareness	1.1, 2.3, 4.1	High	Currently in place	Completed /	Continuous process during hazard events
Retrofit Critical Facilities	Emergency Management	ALL	*Ongoing	N/A	PDM/HMGP	Emergency Services/Property Protection	1.1,1.3,2.3,3.1,3.3,3.4,3.5,4.1,6.1,6.2	High	Depending on Funding	3 Years	Identify Funding Source

Figure 51: Town of Sycamore Hazard Mitigation Actions

*Ongoing is defined as continuing without termination or interruption

Town of Sycamore Hazard Mitigation Actions											
Mitigation Action and Description	Agency	Hazard(s)	Timeframe	Estimated Project Cost	Possible Funding Source(s)	FEMA Category	Goals and Objectives	Prioritization	Implementation Status	Implementation Schedule	Milestones Achieved, Impediments to Implementation
Develop a continuing communications and education program including instructional web-site, pamphlets, information packets and articles in the local media.	County/Emergency Management	ALL	Immediate	N/A	PDM, HMGP	Public Education and Awareness	2.1, 2.2, 2.3	High	In place	End of 2012-over a 3-year term	Complete /ongoing as needed
Continue the implementation of zoning codes and building codes to ensure no new structures are built within the floodplains.	Town of Sycamore/County Building and Planning	Flood	*Ongoing	N/A	N/A	Prevention	5.1,5.2	Medium	Completed/ Continuous	Currently in place	Continuous process requiring enforcement
Establishment and identification of emergency shelters during times of natural hazards.	County/Emergency Management	ALL	Immediate	N/A	N/A	Emergency Services/ Property Protection	1.2, 2.3, 6.1, 6.2, 6.3	Medium	Completed	Currently in place /ongoing	Identified and ongoing
Identify flood prone areas and determine appropriate improvements to drainage services and levels of flood protection.	Emergency Management/ SCDNR	Flood	*Ongoing	N/A	Federal and State Grants	Property Protection	2.1, 2.2, 5.2	Low	Depending on Funding	5 years	Identify funding source
Notification of the public in cases of emergency.	County/Emergency Management	ALL	*Ongoing	N/A	PDM/HMGP	Emergency Services/ Public Education and Awareness	1.1, 2.3, 4.1	High	Currently in place	Completed /	Continuous process during hazard events
Retrofit Critical Facilities	Emergency Management	ALL	*Ongoing	N/A	PDM/HMGP	Emergency Services/Property Protection	1.1,1.3,2.3,3.1,3.3,3.4,3.5,4.1,6.1,6.2	High	Depending on Funding	3 Years	Identify Funding Source

Figure 51: Town of Sycamore Hazard Mitigation Actions

*Ongoing is defined as continuing without termination or interruption