

## Executive Summary



According to Title 44 CFR §201.1, the purpose of mitigation planning is for State, local, and Indian tribal governments to identify the natural hazards that impact them, to identify actions and activities to reduce any losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources.

Source: Gary McKenchnie for VISIT FLORIDA

Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards, Title 44 CFR §201.2. The mitigation projects, initiatives or action items may be implemented prior to, during, or after a hazard event. It has been noted that hazard mitigation is most effective when based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs.

This document details the continual work of the Calhoun County Local Mitigation Strategy (LMS) Working Group over the past several years to develop the comprehensive planning process and an analysis on the risks posed by natural disasters and their vulnerability, extent and impact to those risks. After reviewing risks and vulnerabilities, the greater community has agreed upon mitigation goals, objectives and measures intended to reduce, or in some cases, eliminate future losses due to these risks.

This local mitigation strategy seeks to accomplish the following:

- Identify and describe hazards to which Calhoun County is vulnerable;
  - Identify and assess the facilities, structures and other assets within Calhoun County that are most vulnerable to particular hazards;
  - Set goals and objectives as a strategy to mitigate property against future losses;
  - Based upon these goals and objectives, identify and prioritize mitigation projects that will take advantage of available funding and reduce future losses;
  - Identify potential funding sources; and
  - Promote hazard risk awareness and mitigation education.

Natural Hazards that pose a risk that have been analyzed in this 2019 local mitigation strategy include:

- ✓ Dam/Levee Failure
  - ✓ Drought/Heat Wave
  - ✓ Floods
  - ✓ Hail
  - ✓ Hurricanes
  - ✓ Thunderstorms
  - ✓ Tornadoes
  - ✓ Tropical Storms
  - ✓ Sinkholes
  - ✓ Wildfires
  - ✓ Winter Storms / Freezes



Calhoun County is threatened by a number of different types of natural hazards that can endanger the health and safety of the population of the County, jeopardizing its economic vitality, and imperil the quality of its environment.

Extensive research and analysis has been performed to identify the hazards threatening the jurisdictions of the City of Blountstown, the Town of Altha, and unincorporated Calhoun County to estimate the relative risks posed to the community by those hazards.

With the natural hazard events evaluated and determined, the Working Group(WG) has worked to identify proposed mitigation projects that will avoid or minimize these vulnerabilities and to make the communities of Calhoun County much more resistant to the impacts of future disasters. The mitigation projects have been developed and will continue to be evaluated for implementation whenever the financial resources become available.

In addition, the mitigation project list is considered a "living document". The project list will and should evolve as projects are undertaken and completed, as future disasters affect the county and new needs are identified, and as local priorities change. As the mitigation projects identified in this plan are implemented, step-by-step, Calhoun County will become a more "disaster resistant" community.

### Crucial Areas of Concern

In the 2019 update process and especially after Hurricane Michael's catastrophic impact on the County, the community's primary concern is with public safety during times of disaster. The LMS WG members evaluated the 2015 critical problems and stated that there were still of special concern.

- Blountstown Elementary School – the building was a total loss

The working group was most concerned about the safety of students who spend their school days in portable units on school campuses which increased to over 15 units after the hurricane and the loss of the elementary school. The third, fourth and fifth-grade students were moved to the middle school and re-assigned middle school students to the high school.

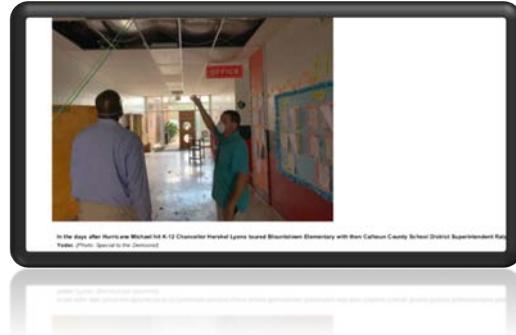


Photo source: Tallahassee Democrat

The group was clear about making student safety a priority, especially with regard to evacuation of the portables into a safe building nearby.

In addition, and most importantly to rebuild a new elementary school for the children in the community.

- Vulnerable Populations

Vulnerable populations are a concern especially with regard to evacuation from areas where roads or bridges may wash out during a storm or flood.

- Regional Coordination

There is a perceived lack of regional coordination with regard to disaster preparedness and mitigation. There has been continual desire to work more closely with other groups, government agencies and general stakeholders to develop a regional strategy that will more effectively combine and leverage planning efforts, local policy and grant funding. One item of specific interest is the need for extended public water supply and wastewater collection, which would reduce the number of septic systems in the floodplain.

Finally, the 2019 Calhoun County Local Mitigation Strategy brings together risk and vulnerability information that can be used for local disaster awareness, preparation outreach and mitigation education, resulting in local mitigation policies, planning application, strengthening of the built environment and overall readiness of the population to endure future disaster events with resilience.

## Purpose

The Disaster Mitigation Act of 2000 states that if States and local governments do not have approved multi-hazard mitigation plans in place and a disaster occurs, they will not be entitled to public assistance and other federal disaster funding. In addition, local jurisdictions are required to review and revise their plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit the plan for approval every 5 years in order to remain eligible for the mitigation project grant funding.

The Calhoun County Local Mitigation Strategy Working Group is comprised of local government agencies, community businesses, County residents, representation from each jurisdiction, and neighboring communities. The LMS Working Group have met each successive year to discuss the mitigation progress and to submit the required annual LMS report to the State.

The purpose of the local mitigation strategy is to identify and assess the natural hazard risks which may face the County and its municipalities and to develop local strategies to reduce the impact of potential future disasters. Through the publication of this 2019 LMS plan update, the WG continues to solicit the involvement of the entire community to make the people, neighborhoods, businesses, and institutions of Calhoun County safer from the impacts of disaster events. The plan is a continuation of local efforts beginning in 1997 and is the 4th revision and update process.

## Plan Organization

This Plan is organized into five main sections to address the Federal Emergency Management Agency (FEMA) requirements for a local mitigation plan, plus appendices. The plan is completed as follows:

### Sections

Section 1	Introduction
Section 2	Planning Process
Section 3	Calhoun County Profile
Section 4	Hazard Risk and Vulnerability Assessment
Section 5	Mitigation Strategy
Section 6	Plan Maintenance

### Appendices

Appendix A	Calhoun County's LMS Working Group Meeting Documentation
Appendix B	LMS Projects, Initiatives or Action Items

Note: Throughout the LMS plan, reference to the LMS mitigation projects could be projects, actions or initiatives.

# Section 1

## Introduction



### Natural Hazard Mitigation Saves

As stated by FEMA, see figure xxx to the left, the nation saves \$4 for every \$1 spent on mitigation programs. And, \$6 for every \$1 spent through mitigation grants funded.

An effective natural hazard mitigation plan and program can save the County and is essential in reducing the risk of loss of life and property from future disasters.

Every community is exposed to some level of risk from hazards and hazards cannot be eliminated, but it is possible to determine what hazards will affect the county communities, where they are most severe, and identify mitigation projects or initiatives that can be taken to reduce the severity of the hazard.

As previously noted, mitigation is any action taken to permanently reduce or eliminate long-term risk to people and their property from the effects of hazards. Examples of mitigation projects for Calhoun County might include:

- ✓ Build and construct a new critical facility to serve the residents of the county;
- ✓ Wind retrofit critical facilities that provide essential services;
- ✓ Address drainage projects that will reduce flooding; and
- ✓ Retrofit existing structures to meet new building codes and standards.

Image Source: [https://www.fema.gov/media-library-data/1528727738945-e9805d8703ed4a1b02c5e2861b7ac65a/MitigationSaves\\_FEMA\\_180611\\_508.pdf](https://www.fema.gov/media-library-data/1528727738945-e9805d8703ed4a1b02c5e2861b7ac65a/MitigationSaves_FEMA_180611_508.pdf)

Ideally, a community can minimize the effects of future hazards through a mix of code enforcement, planning, and responsible development.

The County's critical facilities are those facilities necessary for a community's response and recovery from a hazard event. Categories of the critical facilities would include: emergency response, hospitals, medical centers, emergency shelters, schools, fire stations, sheriff's office, emergency operations center, waste water and water treatment plants, radio communications towers, correctional institutions, utilities, storage of critical records, financial institutions, and major government buildings, etc. should not be placed in high hazard areas because the function these facilities provide are too valuable to be placed in jeopardy, especially during times of disaster, and are essential to the well-being of the community served by these systems.

The community infrastructure such as bridges, roads, drainage structures, sewer lines, electric lines, telephone lines that are built in high hazard areas are subject to frequent damage and extremely costly repair. And, if a local government belongs to the National Flood Insurance Program (NFIP) and allows development in the floodplain without

proper elevation and construction techniques, the federal government can withdraw the community's access to federal flood insurance for both public and private structures. Furthermore, a local government is responsible for as much as 12.5% of their local public cost of a federally declared disaster and 100% of any damage from smaller events that are not declared disasters. These costs can put a significant strain on the local government budget.

The goal of having an established Local Mitigation Strategy (LMS) as an ongoing process will make hazard mitigation part of the daily functioning life in Calhoun County. It serves as a bridge between local governments' programs, plans, and policies including but not limited to the comprehensive growth management plan, comprehensive emergency management plan, land development regulations, and relevant codes and ordinances for effective floodplain management.

Over the last 30+ years, FEMA and the United States Congress have witnessed substantial increases in disaster response and recovery costs; as a result, they have provided funds to communities, counties, and states to reduce impacts from natural hazards through hazard mitigation. This marked a fundamental shift in policy; rather than placing primary emphasis on response and recovery, FEMA's focus broadened to incorporate mitigation as the foundation of emergency management.

The Calhoun County LMS Working Group prepares the community, the businesses and institutions in becoming more resistant to the impacts of future disasters by evaluating the exposure of the community to all types of future natural hazards in order to identify ways to make the county more resistant to their impacts. This document reports the results of that planning process for the current planning period.

The Calhoun County LMS is intended by the Working Group to serve many purposes. These include the following:

- ✓ Structured planning concepts in a methodical process to identify vulnerabilities to future disasters and to propose the mitigation projects necessary to avoid or minimize exposure. Each step in the planning process builds upon the previous process so that there is a higher level of assurance that the mitigation projects proposed by the participants have a valid basis for both their justification and priority for implementation. It is then an important element for the LMS plan is to document that process and to present its results to the community.
- ✓ Continual search for new ways to make the community as a whole more aware of the natural hazards that threaten the public health and safety, the economic vitality of businesses, and the operational capability of important institutions.
- ✓ Providing details on specific vulnerabilities of the neighborhoods of Calhoun County and many of the facilities that are important to the community's daily life. This information will be very helpful to individuals that wish to understand how the community could become safer from the impacts of future disasters.
- ✓ Furnish the required information needed by the managers and leaders of local government, business and industry, community associations, and other key institutions and organizations to take actions to address vulnerabilities to future disasters. In addition, it provides proposals for specific mitigation projects or initiatives and programs that are needed to eliminate or minimize those vulnerabilities.

These mitigation projects have been justified on the basis of their economic benefits using a uniform technical analysis, as well as prioritization for implementation utilizing a selected criteria approach. This path is intended to provide a decision tool for the management of participating organizations and agencies regarding why the proposed mitigation should be implemented, which should be implemented first, and the economic and public welfare benefits of doing so.

A key purpose of the planning process utilized by the Calhoun County WG is to ensure that proposals for mitigation projects are reviewed and coordinated among the participating jurisdictions within the county. These projects can be adopted and implemented for the jurisdiction's own purposes and on its own schedule. In this way, the format of the plan and the operational concept of the planning process ensure that proposed mitigation projects are coordinated and prioritized effectively among jurisdictions, while nonetheless allowing each jurisdiction to adopt only the proposed projects that it actually has the authority or responsibility to implement when resources are available.

The planning process used by the LMS WG meets the analysis and documentation needs of the planning process. The plan utilizes technical analysis and the formulation of proposed mitigation projects for incorporation into this plan.

The following sections of the Calhoun County LMS present the detailed information to support these objectives. In addition, it documents the structural and non-structural mitigation projects proposed by the participating jurisdictions to address the identified exposure. The plan will also address the goals and objectives of the Working Group for the next planning period, during which this plan will continue to be expanded and refined.

## Section 2

### Planning Process

**Requirement 201.6(c)(1):** Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction, and how the public was involved?

**Requirement 201.6(b)(2):** Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, 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?

**Requirement 201.6(b)(1):** Does the Plan document how the public was involved in the planning process during the drafting stage?

**Requirement 201.6(b)(3):** Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information?

**Requirement 201.6(c)(4)(ii):** Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate?

This section of the Plan describes and documents the process used to review and update the 2019 Calhoun County Local Mitigation Strategy (LMS.) The current 2015 plan will expire on June 1, 2020. The final draft of the 2019 updated plan will be submitted to the State of Florida by February 3, 2020 for review and approval.

The Calhoun County Emergency Management (EM) office initiated the 2019 LMS 5-year update process by hiring The Management Experts, LLC to facilitate the update process, and update the risk and vulnerability portion of the plan. The LMS working group engaged local agencies, community members, neighboring communities, regional agencies and the public to be involved in the planning process, beginning with a kick-off meeting on September 4, 2019. (See LMS working group meetings listed below and meeting materials in Appendix XXX.)

#### Planning Area & Participation

Calhoun County is located in rural northwest Florida. It is bordered on the north by Jackson County, on the east by Liberty County, on the west by Bay County, and on the South by Gulf County. The Apalachicola River delineates Calhoun's eastern border, while the Chipola River flows north to south through the County's center. Calhoun encompasses 574 square miles: 567 square miles of land and 7 square miles of water. State Road 20 is the County's major transportation route which provides east-west access through Blountstown, the county seat. The county is comprised of the City of Blountstown, the Town of Altha, and unincorporated areas.

There have been neither new municipalities created nor any dissolved since the last plan approval date. The planning area continues to include the City of Blountstown, Town of Altha, and the unincorporated areas of Calhoun County. For information about population and growth statistics, see the Demographics Table 4xxx.

#### Local Mitigation Strategy Working Group Members

Calhoun County has Working Group Members that participate and provide support and assistance in the LMS meetings

with active members from the local and state government, the community businesses and residents, representation from each jurisdiction, and the neighboring communities.

The organization is intended to represent a partnership between the public and private sector of the community, working together to create a disaster resistant community. The proposed mitigation projects developed by the Working Group and listed in this plan, when implemented, are intended to make the entire community safer from the impacts of future disasters, for the benefit of every individual, neighborhood, business, and institution.

The Calhoun County LMS Working Group encourages participation by all interested local and neighboring jurisdictions, agencies, organizations, and individuals. The Calhoun County EM office sent email notifications to all Local Mitigation Strategy (LMS) Working Group (WG) Members inviting them to attend and participate in the 2019 LMS Plan update. Neighboring communities and regional agencies were also invited to attend and participate in the planning process through the review of the draft plan in December. Specifically, the following external groups were invited:

- Apalachee Regional Planning Council
- The Northwest Florida Water Management District
- Liberty County's LMS Chairperson/Emergency Management Director
- Florida Division of Emergency Management Regional Coordinator, Region I

The current LMSWG member list is shown below in Table 3.xxx. Several of the members of the current planning group were involved in the 2015 LMS Plan update including the risk assessment portion of the plan. Membership consists of local government representatives including city, town and county emergency management, fire, police, planning, and school board; private sector interests including construction, engineering, and small business; and private citizens. All members of the Working Group participated in various aspects of the update process whether through technical assistance, data input, local knowledge or plan element review.

**Table 3.xxx - 2019 Local Mitigation Strategy Working Group Members**

Member	Representing	Role
Chair: Gene Bailey	Calhoun County	Board of County Commissioners
Vice-Chairman: Clifford Newsome	Calhoun County	School District 3
Chelsea Ranew	Calhoun County	Emergency Management Manager
Destiny Barbato	Calhoun County	Emergency Management Coordinator
Bruce Davis	Calhoun- Liberty Hospital	Chief Administrative Officer
Troy Wood	Calhoun County	Road Superintendent
Benjamin Hall	City of Blountstown	Fire Chief
Glenn Kimbrel	Calhoun County	Sheriff
Frank Snowden	Calhoun County	County Planner

Jimmy Baggett	Town of Altha	Police Chief
Danny Ryals	Calhoun County	School District 1, Chairman
Justin Ford	Private Business	Engineer
Brandon Purvis	Private Business	Engineer
Rachel Jackson	Gulf County	Emergency Management Coordinator
Rhonda Lewis	Liberty County	Emergency Management Director
Traci Buzbee	Private Business	Business Owner
Mason O'Brian	Private Business	Mitigation Specialist
Gail Leek	Private Business	Emergency Management Planner

## Working Group Meetings

The Calhoun County Emergency Management office is the lead agency in scheduling, advertising and conducting the Local Mitigation Strategy Working Group efforts, including annual and the 5-year update efforts. During the 2019 update process, Mr. Gene Bailey, Board of County Commissioner, presided as the LMS Working Group chairperson, and Clifford Newsome, School District 3, was the Vice-Chairman.

Local Mitigation Strategy Meetings were held at the Calhoun County Emergency Management Office, 20859 Central Ave #G40, Blountstown, FL 32424.

The LMS meetings occurred in 2015; 2016; 2017; 2018; and 2019. The yearly LMS meeting documentation (i.e. meeting advertisement, agenda, sign-in sheet, meeting minutes and the current LMS Working Group Member list) is located in Appendix A.

Meetings/LMS Project/Initiative List Reviews/Public Outreach in 2019:

- September 4, 2019, LMS Kick-off Meeting: Hazard Identification, Evaluation and Risk Assessment; Vulnerability Assessment and Exposure Processes; Mitigation Projects/Initiatives List Review.
- December 7, 2019, Local Mitigation Strategy Public Outreach: Christmas on the Square, Mitigation Survey (see survey summary results in the next area for public participation).
- December 11, 2019, The current LMS Project List was distributed to the working group members in advance of the LMS meeting on December 19, 2019 to identify and update the status of the mitigation projects.
- December 17, 2019 – Board of County Commissioners monthly meeting, the Calhoun County Emergency Management Director distributed the current LMS project list and requested each of the commissioners to review and provide feedback on the status of the mitigation projects by January 6, 2020.
- December 19, 2019, Mitigation Projects/Initiatives List Review: (Technical Analyses, Reevaluation, Prioritization, Update and Revisions); Mitigation Goals and Objectives.

## Public Participation

Calhoun County is fortunate as private citizens from the community are actively involved in the LMS process.

The public was invited to participate in all of the LMS meetings throughout the 5-year planning cycle through public notices in local newspapers (The County Record, the local newspaper covering all of Calhoun County, and the CLJNews.com), on website notification methods (County Facebook page(s)), and on the Calhoun County Emergency Management (EM) website.

In addition, the Emergency Management office actively participated with local community meetings, events and festivals to get the citizens involved in the County Local Mitigation Strategy.

The Christmas on the Square Festival (photo to the right) was held on December 7, 2019 at the Magnolia Square in Blountstown. The photo displays an EM booth and active participation with the festival.

### 2019 Calhoun County LMS Survey

An emergency management survey was developed and many festival attendees stopped by and visited the booth to provide feedback on the survey and to share other comments on mitigation efforts for the County.

Twenty-one completed the survey with nine new citizens interested in volunteering with the Calhoun County Emergency Management office.

Survey questions and summary response:

1. Whom would you trust to provide you with information about how to make your household and home safer from natural disasters?

*A government agency, the news media and American Red Cross were selected the most.*

2. Have you received information about how to make members of your household and your home safer from natural disasters?

*Fifteen or 71% answered yes.*

3. How concerned are you about the following natural disasters? The disasters included: Drought, Flood, Wildfire, Hurricane, Tornado, Tropical Storms, Other.

*Eighteen answered or 86% were very concerned about hurricanes; eleven or 52% selected tornado as the 2<sup>nd</sup> choice for very concerned; and wildfire and tropical storms tied for 3<sup>rd</sup> for very concerned with nine or 43%.*

4. Since Hurricane Michael, have you developed a Family Emergency Plan and prepared a Disaster Supply Kit?

*Eighteen or 86% answered yes.*

Several attendees from the holiday festival mentioned they would be interested in looking at the LMS Plan update. A



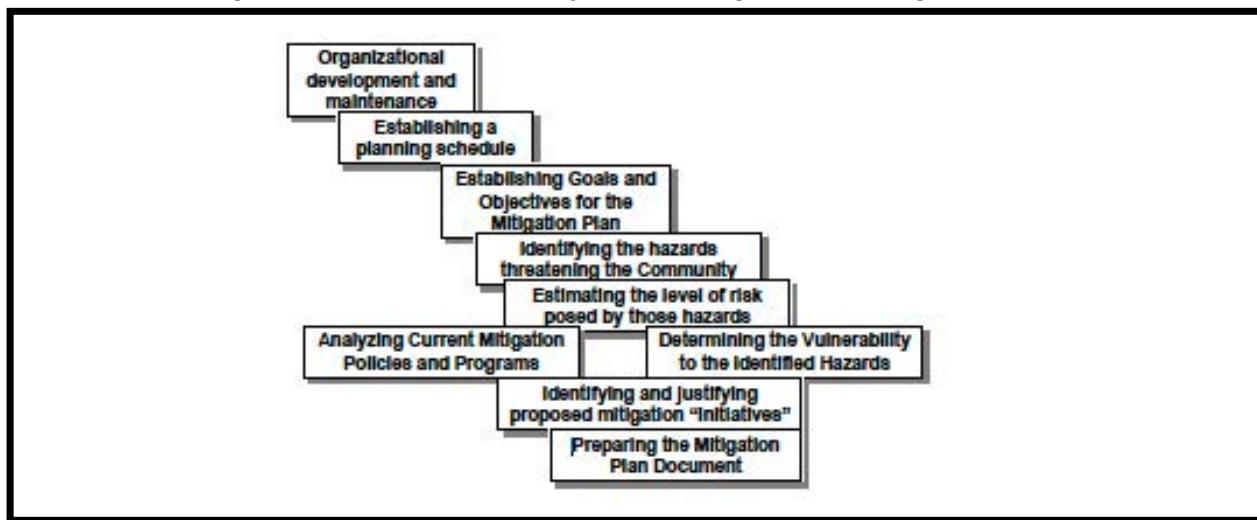
copy of the current 2019 LMS plan was available to the public for review in the Calhoun County EM office from January 6 – 9, 2020 through the placement of hard copies of the plan. Comments and other input were accepted during the drafting stage and prior to plan submission. The public citizens within the County are encouraged to submit their comments on the blank sheet(s) which was placed in a stack next to the copies of the LMS plan. The commentary was considered before the final draft of the LMS Plan is presented to the State.

## Hazard Mitigation Planning Procedures

The procedure or direction used by the Calhoun County LMSWG is based on the following important concepts:

- A comprehensive planning group representing all jurisdictions within Calhoun County that establishes specific goals and objectives to address the community's vulnerabilities to the hazards that affect the community.
- It utilizes an analysis of the identified hazards, the risk evaluation and vulnerability assessment.
- Mitigation projects by the specific jurisdiction or organization with the authority and responsibility for the project implementation.

Figure 3xxx – Calhoun County Hazard Mitigation Planning Process



The planning process begins with the development of the Working Group as an organization and obtaining participation from the local government jurisdictions and key organizations and institutions. The planning work conducted to develop this document relies heavily on the expertise of the participating agencies and organizations, in addition to detailed scientific or engineering studies. Participation and feedback from local experts is essential in the analysis of local mitigation planning.

Analyzing the need for the community and then evaluating proposed mitigation projects to avoid or minimize vulnerability of the community to future disasters is important, and an area that will be reviewed and addressed on an annual basis. The goals and objectives set by the WG are intended to help focus the effort of the participants by directing attention to certain types of neighborhoods, or by emphasizing implementation of selected types of proposed mitigation projects.

The Working Group members established a planning schedule for the upcoming planning period that allowed the participants to anticipate their involvement in the technical analyses and evaluations, and also to review the current LMS Goals and Objectives (which are located in Section xxx) in guiding the planning efforts.

Conducting the needed analyses and then proposing mitigation projects to avoid or minimize vulnerability of the community to future disasters is a time-consuming process. Therefore, for the planning period, the goals and objectives set by the LMSWG are intended to help focus the effort of the participants by directing attention to certain types of facilities or neighborhoods, or by emphasizing implementation of selected types of proposed mitigation initiatives or projects.

The LMS Working Group is responsible for:

- ✓ Official decisions regarding the planning process;
- ✓ Evaluating the natural hazards that affect the County;
- ✓ Determining the priority and approving the proposed mitigation projects/action items for each jurisdiction;
- ✓ Reviewing any changes to local maps;
- ✓ Deleting projects that are no longer applicable for implementation; and
- ✓ Coordinating the technical analysis and planning activities.

These activities include conducting the hazard identification and vulnerability assessment and exposure processes, as well as receiving and coordinating the mitigation projects for incorporation into this plan.

## Hazard Identification and Risk Estimation

The Working Group analyze the natural hazards that threaten all or portions of the community. Where possible, specific geographic areas subject to the impacts of the identified hazards are delineated. Data is analyzed on previous occurrences for the natural hazards. In addition, the WG uses general information to estimate the relative risk of the various hazards as an additional method to focus their analysis and planning efforts. They compare the likelihood or probability that a hazard will impact an area, as well as the consequences of that impact to public health and safety, property, the economy, and the environment. This comparison of the consequences of an event with its probability of occurrence is a measure of the risk posed by that hazard to the community.

Depending on the participating jurisdiction, a variety of information is obtained regarding hazard identification and risk estimation. The planners representing the jurisdiction attempt to incorporate consideration of hazard specific maps, including flood plain delineation maps, whenever applicable, and GIS-based analyses of hazard areas and the locations of critical facilities, infrastructure components and other properties located within the defined hazard areas.

## Vulnerability Assessment

There are two procedures available to the Working Group to assess the communities' vulnerabilities to future disasters.

1. Analyze and examine the vulnerabilities of the important facilities, systems and neighborhoods to the impacts of future disasters. For the participating jurisdictions and organizations, the individuals most familiar with the facility, system or neighborhood will provide a guided, objective assessment process established by Working Group, and a complete the analysis and examination details.

The process ranks both the hazards to which the facility, system or neighborhood is most vulnerable, as well as the consequences to the community should it be disrupted or damaged by a disaster. This process typically

results in identification of specific vulnerabilities that can be addressed by specific mitigation projects that can be proposed and incorporated into this plan.

The LMSWG will review past occurrences and decide on the need for specific mitigation projects based on the type or location of damage they caused. Analysis on these experiences can result in the formulation of specific mitigation projects for incorporation into the plan.

2. The second method for assessment of community vulnerabilities involves comparison of the existing policy, program and regulatory framework promulgated by local jurisdictions to control growth, development and facility operations in a manner that minimizes vulnerability to future disasters.

The Working Group members can assess the individual jurisdictions' existing codes, plans, and programs to compare their provisions and requirements against the hazards posing the greatest risk to that community. If indicated, the participating jurisdiction can then propose development of additional codes, plans or policies as mitigation projects for incorporation into the Calhoun County LMS for future implementation when it is appropriate to do so.

## Review & Integration with Existing Plans

In an effort to integrate mitigation efforts across both the public and private domain, the LMS Working Group works to incorporate existing planning mechanisms into the LMS and to assure that the LMS is integrated into other mechanisms throughout the county. State of Florida mitigation goals were considered and used as reference. Many of the LMSWG are also involved in the current update of the County's Comprehensive Development Plan and bring LMS goals and objectives to the table of those efforts. The Calhoun County Comprehensive Emergency Management Plan was updated in 2017 and reviewed in this LMS planning cycle.

The City of Blountstown was in the process of updating its emergency management plan while the LMS 2015 update was taking place, so it also was not reviewed, but local officials stated that the goals of the LMS will be considered during the update process. XXX

Plans made available for review and incorporation into the 2019 LMS include:

- Calhoun County 2010-2025 Comprehensive Plan
- Calhoun County 2010 Land Development Code
- City of Blountstown Land Development Regulations
- Northwest Florida Water Management District – Strategic Water Management Plan
- Floodplain Management Ordinances of Calhoun County and the City of Blountstown
- FEMA Flood Insurance Rate Maps (FIRM) and Flood Insurance Study (FIS), effective in 2013

Calhoun County currently uses comprehensive and emergency management planning, capital improvement projects, building codes and ordinances to guide and control development throughout the County, and assists the city and town in this respect. The LMSWG recognizes the importance of integrating the hazard mitigation strategies identified in the 2015 update into these planning mechanisms. The County and its municipalities address natural hazards in their comprehensive plan and land use regulations through building codes and specifically through their flood damage prevention ordinances. A summary of mitigation elements in each of the above listed documents is given below; the flood ordinances and FEMA flood maps are briefly discussed below but are presented in more detail in Section 5.xxx of this plan.

## Calhoun County 2010- 2025 Comprehensive Plan

Listed are the County Comprehensive Plan goals, objectives and policies that are consistent with the LMS goals, objectives and intent.

### Future Land Use Element

Policy 1.1 (d) Regulate development in areas subject to seasonal and periodic flooding and provide for drainage and storm water management.

Policy 3.3: Public facilities and utilities shall be located to: a) maximize the efficiency of services provided; b) minimize cost; and c) minimize impacts on the natural environment.

Objective 4: Calhoun County shall implement land development regulations (LDRs) to conserve unique and environmentally sensitive lands and resources from adverse impacts of development. These Conservation Areas include, at a minimum, all wetlands, floodplains and other environmentally sensitive resources identified in other sections of this Plan. Only low-density single-family residential development is allowed in these areas, at a maximum development density of 1 unit per 20 acres.

Policy 4.1: Proposals for limited low density, single family residential development within riverine flood plains may be approved by the County only if no alteration of the functions of the flood plain is proposed and if the proposed development is consistent with the rules of the Northwest Florida Water Management District and Calhoun County Floodplain Protection Ordinance.

Policy 4.2: Developers shall be required to: 1) comply with best management practices from the Florida Department of Environmental Protection (FDEP), the Northwest Florida Water Management District (NFWMD) and any other applicable agency and to minimize dredge and fill activities in order to maintain the natural topography and hydrological functions of the flood plains, 2) locate and cluster housing on the non-flood prone portion of the site, 3) reduce densities in flood prone areas and 4) prohibit the storage of hazardous waste or materials within the flood plain.

Policy 4.6: The County shall limit development activities which have the potential to contaminate water resources, soil or crops, including requiring developers to use appropriate soil erosion mitigation measures during construction.

Objective 6: The County's wetlands shall be conserved and protected from functional alterations.

Policy 6.2: Upon adoption of this Comprehensive Plan, the County shall require: c) where alteration of wetlands is necessary in order to allow use of property as defined by Objective 9 and related policies of this Future Land Use Element, mitigation measures will be consistent with best management techniques identified on the site plan and with state, regional and federal laws pertaining to wetland alterations.

### Land Use Categories

Policy 9.1: Subdivision Residential Land Use Designation is hereby established. Purpose: To provide single family and multi-family residential settings within the county. Details regarding density, Lots, parcels or tracts of land that contain wetlands and/or floodplains, shall have a maximum density of 1 unit per five acres, with at least one buildable acre of upland (not having wetlands or floodplains.)

Policy 10.3: The County shall require that all development regardless of location maintain a minimum 25-foot buffer from known archeological or historical sites. The development review process and regulations shall also include provisions for the site-specific protection, preservation, or sensitive re-use of historical structures.

### Housing Element

Objective 5: All approvals shall require developers to identify, preserve and protect significant historic properties consistent with Federal state and local regulations.

### Infrastructure Element, Stormwater Management

Policy 1.1 - The County hereby adopts the following level of service for Stormwater Management Facilities: The stormwater management facilities for all development shall be consistent with the LOS standards established in this Comprehensive Plan, will meet or exceed the requirements of the Florida Department of Environmental Protection/North West Florida Water Management District (DEP/NFWMD) and the Calhoun County Land

Development Code for pollutant removal and groundwater recharge. All Stormwater Management Facilities shall be designed to manage the stormwater for a 25-yr. frequency, 24-hr. duration storm event with general design and construction standards for on-site stormwater management systems for new development to ensure that post-development runoff rates, volumes, and pollution loads do not exceed pre-development conditions.

Objective 4: The functions of natural drainage features, including wetlands, streams, rivers and floodplains shall be protected by the provisions of the Conservation Element of this Plan and by the following development restrictions consistent with the Future Land Use Element of this Plan.

Policy 4.1: Restrict new development in these environmentally sensitive areas to a density of 1 unit per 20 acres. Prohibit non-residential uses, except water dependent uses, in these areas.

#### Conservation Goals

Objective 2: Calhoun County shall protect the surface waters of the County by restricting development and limiting runoff around surface water bodies.

Objective 3: The County shall protect the natural functions of the 100-year floodplain to the extent that flood-carrying and flood storage capacity is maintained.

#### Hazardous waste

Policy 10.1: The County shall maintain an emergency response plan to handle accidents involving hazardous wastes funded by state grants.

#### Recreation, Open Space Element

Policy 4.1: The County shall continue to implement development standards which encourage open space areas to remain functionally intact.

#### Intergovernmental Coordination Element

Objective 1: The County shall coordinate its comprehensive planning with the School District, Water Management District, Regional Planning Council, adjacent counties, and the municipalities of Blountstown and Altha.

#### Calhoun County 2010 Land Development Code

The County's Land Development Code is the codification of the land development regulations, state codes, definitions and other instructions for local officials concerning development in the county. There were no specific elements which required incorporation with the goals and objectives of the LMS plan. As stated in Section 1.02.00: Relationship to the Comprehensive Plan.

The adoption of a unified land development Code implements the Future Conditions Maps and the goals, objectives and policies of the Comprehensive Plan. Florida law (Section 163.3194(1) (b), F.S. (1985) requires that all land development regulations be consistent with the comprehensive plan of the enacting local government. A land development regulation "shall be consistent with the comprehensive plan if the land uses, densities or intensities, or other aspects of development permitted by such order or regulation are compatible with and further the objectives, policies, land uses, and densities or intensities in the comprehensive plan and if it meets all other criteria enumerated by the local government."

#### City of Blountstown Land Development Regulations

As stated in the last LMS update, a review of the current (1992) City of Blountstown Land Development Regulations (LDR) showed that the regulations are in need of updating. Communication was initiated with the City and at this time the 1992 LDR is the current document for the City. Specifics noted stay, the City needs to replace its current Article VI Floodplain Management section with the revised flood damage prevention ordinance adopted on May 14, 2014 and consolidate other conflicts within the LDR such as differences in height of freeboard required.

There are examples of consistency with the goals and objectives of the LMS, especially within Article VIII (the) Conservation Code and in Article VI, where specific stream setbacks support the 2015 mitigation Objective 1.2 "Take every opportunity to re-direct development away from high hazard areas as much as possible." Although the 2013 FEMA FIRM shows a now regulated floodway in the Sutton Creek, the Article VIII Conservation Zone regulates development in this area through specific setback and construction requirements. These policies underscore the 2015 LMS mitigation Goal 3: "Protect community resources including but not limited to infrastructure, environmental, recreational and historic resources."

The City reviewed the current LMS Goals and Objectives and incorporated the details in their current Emergency Management Plan.

### [Northwest Florida Water Management District Strategic Plan](#)

The Northwest Florida Water Management District typically integrates mitigation initiatives from the LMS into their planning and activities. In their 2019-2020 Strategic Water Management Plan published in September 2019, the District committed to continue to work on detailing special flood hazard areas in cooperation with FEMA. This work is crucial to Calhoun's better understanding of flood risk along both the Chipola and Apalachicola River systems, as well as in undefined flood hazard areas elsewhere in the county. Per this report: This effort includes collaboration with state and local agencies to deliver quality data and digital flood insurance rate maps (DFIRMs) to increase public awareness of and support for actions that reduce flood-related risks. Risk MAP evaluations are ongoing for the Lower Ochlockonee River, Apalachicola River, New River, Chipola River, Pensacola Bay, Perdido River, Perdido Bay, Apalachee Bay – St. Marks River, Pea River, and the Lower Choctawatchee watersheds.

The District also maintains natural floodplain functions along large tracts of land along the Apalachicola River to protect these natural systems and water quality, provide public safety (especially during times of flooding) and access to natural areas for recreation purposes.

### [Floodplain Management Ordinances of Calhoun County](#)

#### 2013 – 02

An ordinance by the Calhoun County Commission amending the Calhoun County, Florida Code of Ordinances to repeal the Calhoun County, Florida Ordinance #2013-01 Flood Damage Prevention Ordinance; to adopt a new Calhoun County, Florida Floodplain Management Ordinance; to adopt Flood Hazard Maps, to designate a Floodplain Administrator, to adopt procedures and criteria for development in Flood Hazard Areas, and for other purposes; to adopt local administrative amendments to the Florida Building Code; providing for applicability; repealer; severability; and effective date.

(WHEREAS, Calhoun County Adopted Ordinance Number 2013-01 and said ordinance contained an error in the adoption date and Calhoun County wishes to clarify the adoption date by repealing ordinance number 2013- 01 and any prior inconsistent ordinance).

This ordinance have previously been advertised and adopted with a scriveners error in the adoption date is corrected and re-adopted this 21<sup>st</sup> date of May, 2013 as an emergency ordinance by a vote of 5 to 0. This ordinance shall take effect on June 18, 2013.

Floodplain Management Ordinance of the City of Blountstown  
Code of Ordinances City of Blountstown, Florida, version October 30, 2018 - current  
Chapter 19 – Floods, Articles I – III (administration, definitions, flood resistant development).  
Article I, Sec. 19-1

The regulations shall be known as the floodplain management ordinance of the City of Blountstown, Florida.  
(c) The purposes of this chapter and the flood load and flood resistant construction requirements of the Florida Building Code are to establish minimum requirements to safeguard the public health, safety, and general welfare and to minimize public and private losses due to flooding through regulation of development in flood hazard areas.

## FEMA Flood Insurance Rate Maps (FIRM) and Flood Insurance Study (FIS)

On June 18, 2013 FEMA's latest Flood Insurance Rate Maps (FIRMs) became effective in Calhoun County. There are 63 panels and one Flood Insurance Study. Special flood hazard areas on the new FIRMs cover more area than on previous maps, but this is more an indication of better mapping detail rather than of expanding flood-prone areas. The Calhoun County employs a planner who attends LMS WG meetings; this individual is knowledgeable regarding local flood-prone areas and other issues. As noted in the previous plan, many unnumbered A zones were studied and became AE zones, which helps tremendously in providing specific risk information to the building department, property owners and flood insurance agents.

According to the FEMA Flood Insurance Rate Maps (FIRM) for Calhoun County was reviewed November 2019:

- Effective products – 67, FIRM panels – 63, FIS report - 1
- There were no changes (revisions, amendments and revalidations) for the Town of Altha, and Unincorporated Calhoun County.
- There were two revalidations for the City of Blountstown. Effective date for the revision: June 19, 2013, Map Panel No: 12013C0210E, Zone: X, 15637 S. Main Street, Section 32, T1N, R8W - 16285 Mccollough Ervin Rd SW Section 28, T1N, R8W – at North Main Street & Folsom Avenue
- There was one product ID – NFHL\_12013C

## **Hazard Mitigation Projects/Initiatives**

Developing hazard mitigation projects/initiatives enables the Working Group participants to prioritize the most significant vulnerabilities and define specific hazard mitigation projects to eliminate or minimize those vulnerabilities.

Once the highest priorities are defined the Working Group members can identify specific mitigation projects for the plan that would eliminate or minimize those vulnerabilities. This procedure involves describing the project, relating it to one of the goals and objectives established by the Working Group, and justifying its implementation on the basis of its economic benefits and/or protection of public health and safety, as well as valuable or irreplaceable resources.

The proposed mitigation projects are “prioritized” for implementation in a consistent manner by each participating organization using a set of ten objective criteria. The 2015 LMS prioritization method was discussed and evaluated by the working group and determined that it would remain effective for the 2019 LMS Plan update. The method is outlined in Table xxx.

**Table xxxx - Prioritization Method for Calhoun County Mitigation Projects/Initiatives**

Prioritization Method for Calhoun County Mitigation Projects/Initiatives	
The project would save lives OR addresses a different stated high vulnerability	40 points
The project addresses flood risk, tornadoes OR power failure	30 points
The project has low-to-no local investment OR has more than two funding sources	30 points
The project is proven to reduce risk community-wide	20 points
The project is cost-beneficial	20 points

The project addresses hurricanes OR hazardous materials OR an environmental concern OR historic site	10 points
The project can be proven to help the local economy	10 points
The project is estimated to be complete in 2 years or less	10 points
The project would reduce future damages by at least \$1 million	10 points
The project has been pre-approved at a local governing meeting	10 points
Maximum points achievable	190 points

In characterizing a mitigation project for incorporation into the LMS plan, it is important to recognize that the level of analysis conducted by each organization involved has been intentionally designed to be appropriate in this stage in the planning process.

In the interest of the LMSWG to have a satisfactory level of confidence that a proposed mitigation project, when it is implemented, will be cost effective, feasible to implement, acceptable to the community, and technically effective in its purpose. To do this, the technical analyses conducted, including the development of a benefit to cost ratio for each proposal, have been based on a straightforward, streamlined approach, relying largely on the informed judgment of experienced local officials.

The analyses have not been specifically designed to meet the known or anticipated requirements of any state or federal funding agency, due largely to the fact that such requirements can vary with the agency and type of proposal. Therefore, at the point when the organization proposing the project is applying for funding from any state or federal agency, or from any other public or private funding source, that organization will then address the specific informational or analytical requirements of the funding agency.

## Developing the Local Mitigation Strategy Plan

After the vulnerability assessment has been performed and mitigation projects are identified, the information used to characterize the project is submitted to the Working Group for review and inter-jurisdictional coordination.

The Working Group members assure that the proposal is consistent with the goals and objectives established by each jurisdiction for the planning period. Once reviewed and coordinated the submitted projects, it is formally considered for incorporation into the Calhoun County LMS. The proposed project is identified as consistent with the goals and objectives for the planning period and would be beneficial for the community as a whole if and when implemented. If so, the WG then informally votes to incorporate the proposed project into the strategy.

At the annual LMS meetings, each mitigation project/initiative or action items included in the plan is evaluated to determine the following:

- ✓ If the project or initiative should remain as a valid and ongoing project (deferred until a later time due to funding);
- ✓ If the mitigation project is completed (all details are gathered on the hazard(s) mitigated, mitigation goals achieved, jurisdiction, funding source, total cost to complete the project, agency responsible for implementation, timeline to complete the project, and any specific details relevant to the project);
- ✓ If the project should be removed or deleted from the mitigation project list (LMS plan); and
- ✓ If there are any new projects that should be added to the mitigation project list (LMS plan).

See Appendix xxx for the details on the ongoing, completed, deleted or new mitigation projects for Calhoun County.

## Approval of the Current Edition of the Plan

At the end of each planning period, a plan document such as this is prepared for release to the community and for action by the governing bodies of the jurisdictions and organizations that participated in the planning process.

## Implementation of Approved Mitigation Projects

Once incorporated into the Calhoun County LMS, the agency or organization proposing the project becomes responsible for its' implementation, if feasible, otherwise it could be assigned to another department, if the LMS Working Group votes and all agree on the decision for the other organization. This could be developing a budget for the effort or making application to state and federal agencies for financial support for implementation.

## Current Status of Participation in the Working Group

In order to support the participating jurisdictions in the completion of the community profiles and vulnerability assessments, the Working Group set a review for each technical step, provide training in the evaluation, if needed, and distribute the necessary forms for completion.

The support staff supporting the LMSWG is from the Calhoun County Emergency Management. The staff facilitated the work of the LMSWG by advertising the LMS meetings, notifying the members and general public on the upcoming meeting, preparing the meeting agenda, completing the meeting minutes, updating the LMS mitigation project/initiation/action item list, keeping documented data on the natural hazard events that occur, and providing technical assistance or direction on the analysis as needed.

This 2019 LMS Plan update has been difficult and challenging for the Working Group Members. After the catastrophic impact from Hurricane Michael in October 2018, the County is still in the recovery phase. County mitigation projects or initiatives were reprioritized as well as the vulnerability and exposure assessments were re-evaluated in the 2019 LMS plan update.



Photo Source: Damage from Hurricane Michael,  
Photo Date: 10/11/18 / Photo by Diane Gallagher / (MGN)

The participating jurisdictions, organizations, and individuals in the Calhoun County LMS Working Group have all worked with dedication to carefully complete this plan and will continue to do so in the future to create a truly disaster resistant community for the benefit of all its citizens.

## Section 3

### Calhoun County Profile

The county profile includes a historic and present-day overview, business environment, education, infrastructure, geography, topography, geology, aquifer, surface water, wildlife, forestry, agriculture, climate, demographics, vulnerable populations, manufactured homes, disabled adults, school children in portable buildings, economic profile, rural economic development initiative, and historic places.

The county profile provides context within which the hazardous events occur.

#### Historic Overview

When Calhoun County was founded in 1838, its geographical area spanned further south than its current border to the Gulf of Mexico. The port city of St. Joseph was established to compete with Apalachicola and served as the county seat. The county seat was moved to Abes Springs Bluff in 1880 after a hurricane event in 1850 and yellow fever that wiped out St. Joseph in 1841. During the steamboat era, Ocheesee, Blountstown, and Lola were the county's chief river landings. Cotton was the county's main industry from 1840 until the Civil War in 1860.



Photo source: photographer Elam Stoltzfus, ©LiveOakProductionGroup.com

The County had little growth from 1865 to 1890. After the war ended, the economy revolved around timber and the naval store industry, both of which would eventually spur the population growth between 1910 and 1920 – when Calhoun was one of the fastest growing counties in Florida. Many large sawmill corporations moved into the county during the decade. Timber was floated down the Apalachicola and Chipola rivers to sawmills at the mouth of the river. In 1903, the City of Blountstown was chartered and the construction of what is now known as the Old Courthouse began in 1904. In 1973 construction began on the new courthouse, which currently holds many local government offices.

#### Historic Places

Calhoun County has two sites listed on the National Register of Historic Places (NRHP). The NRHP is the official list of the nation's historic sites deemed worthy of preservation. Other significant historic sites include the Panhandle Pioneer Settlement located in Blountstown, Florida which is home to 18 historical buildings dating from 1820 to the 1940s.

Table 4.xxx Calhoun County, Historical Sites

Place	Location	Description	Date added to the U.S. National Register of Historic Places
Cayson Mound and Village Site	Three miles southeast of Blountstown on the Apalachicola River.	Indian Burial Mound	March 15, 1976

Old Calhoun County Courthouse	Blountstown, Florida	Built in 1904, One of two Romanesque Revival courthouses in Florida.	October 16, 1980
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Source: National Register of Historic Places; <https://www.nps.gov/subjects/nationalregister/data-downloads.htm>

## Present-Day Overview

### Business Environment – (REVIEW/FEEDBACK)



Two industrial parks located outside the City of Blountstown provide ample space and convenient transportation connections. As noted in the previous plan, the Calhoun County Airport, 5 miles northwest of Blountstown, completed a \$3 million renovation which had led to a considerable rise in business at the rural airstrip.

Blountstown has been designated as a Florida Main Street community. The main street program is a technical assistance program with the goal of revitalizing historic downtowns and encouraging economic development within the context of historic preservation. In addition, the main street status gives the community access to resources that will further improve the business environment of downtown Blountstown. The County is also designated as a Northwest Rural Area

of Opportunity (RAO) under the Rural Economic Development Initiative (REDI) by providing a more focused and coordinated effort among state and regional agencies that provide programs and services for rural areas.

Calhoun County's industrial park has direct access to State Highway 71 and is 15 miles south of Interstate 10 which provides for accessibility by ground to every primary southeastern market within a one-day truck haul. This makes the County's location ideal for transportation, distribution and logistics.

## Education

By the early 1920's, four high schools were built in Gulf and Calhoun Counties: Port St. Joe, Wewahitchka, Blountstown and Altha. Before 1920, as many as thirty district schools accommodated the pupils in small communities. Due to paved roads and school buses, all schools have been consolidated in five centers including the Blountstown Elementary and High School, the Carr Elementary and Middle School, and the Altha Public School. Calhoun County received a B rating/grade in 2019 from the Department of Education (DOE) and the school district ranks 28<sup>th</sup> best in the State of Florida. See details below on the effects on Calhoun County Schools from Hurricane Michael.

#### Hurricane Michael, October 2018 – Calhoun County Schools

In October 2018, Calhoun County experienced extensive and catastrophic damages from the direct hit from Hurricane Michael. The high school which also doubles as the only certified hurricane shelter in the County encountered damage to the gym floor and the administration building. Blountstown Elementary School suffered significant water damage which left the main building unusable for educational purposes for the rest of the year. The elementary students were displaced to three separate campuses.



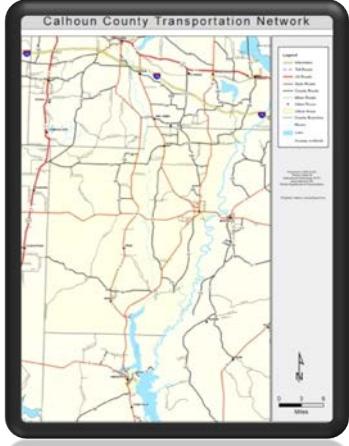
Photo source: <https://abc3340.com/news/videos/kid-cam-saks-elementary-in-calhoun-county>

WSAV Hurricane Central, One year later, Calhoun County Schools still reeling from Hurricane Michael  
September 17, 2019

BLOUNTSTOWN, Fla. (WSAV) — Blountstown Elementary School sustained significant damage from Hurricane Michael in 2018 and the district deemed the original building a total loss. One year later, teachers and students are displaced. The elementary school is operating as two campuses this year because of the damage left behind from the storm. One location houses kindergarten through second grade. The other temporary location houses third graders through fifth graders. Teachers at Blountstown Elementary tell News 3 many of them lost their supplies and teaching tools they use for instruction during the Category 5 storm. Despite the challenges, the teachers say they remain resilient for their students. "It's been a life trauma. It's not just about their education. We are loving these babies through this trauma," said Mechelle Eastwood. The superintendent for Calhoun County Schools says the district is working to secure funding so it can begin to rebuild and restore all they lost. "We have students that went from a family of three or four to now a family of 11 because a lot of them are sharing homes. They come here to have their safe space," said Sandy Willis.

## Infrastructure

### Roads



Although an interstate highway does not pass through Calhoun County, I-10 comes within two miles of the county's northern line. The major roads within the county are State Road 20, which links Blountstown with Tallahassee, State Road 69, which links Blountstown with I-10, and State Road 71, which links Blountstown and Altha with Marianna. In addition, State Road 73 runs north/south through the county connecting to I-10, and US 231, not within Calhoun County but running parallel to the western border, is a Strategic Intermodal System (SIS) roadway. The county's state highway has 95.9 centerline miles and 193.5 lane miles and there are 23 state bridges.

Image source: <https://fcit.usf.edu/florida/maps/pages/12200/f12254/f12254.htm>

### Water/Air

River transportation in the forms of recreational boating, kayaking and tubing are available on the Chipola River, although according to the U.S. Coast Guard, the river is not a federally navigable river meaning it is not used for commerce and transportation of people and goods. Calhoun County Airport provides access to air travel for the region.

## Geography

Calhoun is located in Northwest Florida in the middle of the Panhandle of the state. The County shares borders with Jackson, Gadsden, Liberty, Gulf and Bay Counties. (Map xxx) According to the U.S. Census Bureau, the total area of the county is 574 square miles. The main water bodies of the county are the Apalachicola River, which forms the county's eastern border; the Chipola River, which runs through the central portion of the county; and Dead Lake at the southern end of the county. The total water area in the county is estimated to be approximately seven square miles.



The Town of Altha and City of Blountstown are the only two incorporated municipalities in Calhoun County. There are several unincorporated areas within the county that house a portion of the population (i.e. Kinard, Frink, Chason, Chipola and Selman).

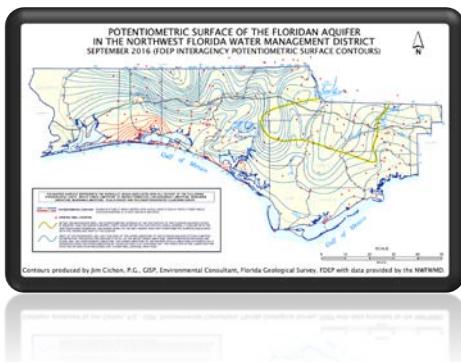
## Topography

Calhoun County is divided into four topographic subzones. These include the Gulf Coastal Lowlands, Fountain Slope, New Hope Ridge, and the Grand Ridge. Elevations in the Gulf Coastal Lowland of Calhoun County range from between 25 and 65 feet above mean sea level (MSL) at the southern edge of the county to approximately 100 feet above MSL where the lowlands meet the higher ridges to the north in mid-Calhoun County. Three topographically-higher subzones are present in northern part of the County: the Fountain Slope, New Hope Ridge, and the Grand Ridge. The elevations of these features range from approximately 100 feet above MSL at its southern edge, adjacent to the coastal lowlands, to about 180 feet above MSL to the north where it meets the New Hope Ridge, which occupies the northwest portion of the County. The New Hope and Grand Ridges are topographically high, with elevations varying between 150 and 250 feet.

## Geology

Calhoun County is underlain by hundreds of feet of marine limestone, dolomites, sands, and clays. Although there are mineral deposits that are of commercial quality, the remote location and the thinness of the deposits prevent commercial mining. Floodplain clay deposits along the Apalachicola River have been used for brick making. In the 1920's, the Guilford Brothers Brick Plant manufactured common brick for various construction projects throughout the region.

## Aquifer



The majority of Calhoun County's consumptive water use is drawn from groundwater aquifers. Three main aquifers are present under the area. They are the Surficial Aquifer, the Intermediate Aquifer, and the Floridian Aquifer system. The Floridian is one of the most productive aquifers in the United States and is the principle source of drinking water for the Calhoun County community.

Image source:[https://www.nfwwater.com/Data-Publications/Hydrogeologic-Data /FDEP\\_Sep2016\\_Potsurf.pdf](https://www.nfwwater.com/Data-Publications/Hydrogeologic-Data /FDEP_Sep2016_Potsurf.pdf)

## Surface Water

The Apalachicola and Chipola Rivers are the major water bodies in Calhoun County. The Apalachicola River forms the eastern boundary of the county with adjacent Liberty County. The Chipola River flows southward through central Calhoun County, forming Dead Lake near the southern boundary. In the northern portion, where the river is well incised, limestone rock is exposed to form several small rapids known as "Look and Tremble." Several collapsed sinkhole lakes are present in the northeastern portion of the county due to the karstic nature of the underlying limestone. The National Wetlands Inventory identifies 138,992 acres of freshwater wetlands in the county.

## Wildlife

The Florida Panhandle is one of the nation's six "biological hotspots," which means it has many rare species found

only in small areas. The Panhandle has four animals and seven plants that are endemic, found nowhere else in the world. These range from mussels to plants and include species found in Calhoun County such as the Apalachicola Floater (a medium-large mollusk), the Chipola Slabshell (a mid-size fresh water mussel only found in the Chipola River), the Fat Threeridge (this fresh water mussel was no longer listed in Florida as of 1/11/17), and the Florida Waxweed (which is endemic to only three counties in the FL panhandle). In addition, this area is one of the primary habitats for the endangered Red-Cockaded Woodpecker and the Florida Black Bear, a state-threatened species, occur here.

## Forestry – REVIEW/FEEDBACK

As stated by the 2004, United States Department of Agriculture, Natural Resources Conservation Service, Soil Survey of Calhoun County, Florida, Woodland Management and Productivity, approximately 302,000 acres, or 83% of the County is woodland. Of this total, 101,854 acres is privately owned, and 200,136 acres is owned by large, wood using industries.

Slash Pine, sand pine, longleaf and loblolly are the main species grown commercially. River bottoms and flood plains along the Apalachicola and Chipola Rivers support bottomland hardwoods. Hardwood species include cypress, hickory, sweetgum, sycamore, tupelo, and oak. Timber management includes clear cutting, bedding, planting, and selective thinning.

## Agriculture

According to the 2017 USDA Census of Agriculture, there are a total of 289 farms in Calhoun County. These farms comprise a total of 118,066 acres. Most of the farming activities consist of mainly harvested cropland 22,175 acres, and livestock, primarily cattle, followed by layers and pigs.

## Climate

Calhoun County is located in the Northern Florida Climatic Zone (NFCZ), which is classified as a hot-humid region. The average annual temperature in the NFCZ is between 65°F and 70°F. January is the coldest month for the region with an average low of 39.7 degrees. The hottest month is July, with an average high of 92 degrees. This area is somewhat cooler than the rest of the state because of its northern latitude. Florida is among the wettest states in the United States, with most areas receiving at least 50 inches of rain annually and humidity generally exceeding 50% all year round.

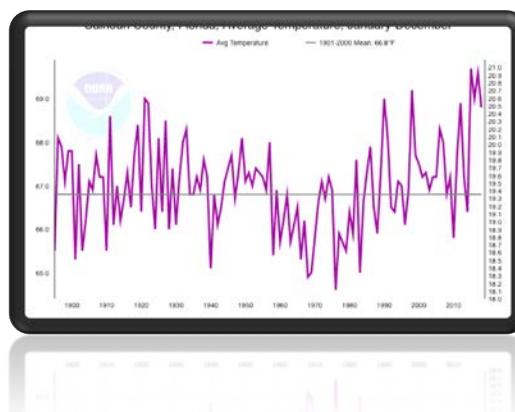


Image source: [https://www.ncdc.noaa.gov/cag/county/time-series/FL-013/tavg/12/12/1895-2019?base\\_prd=true&begbaseyear=1901&endbaseyear=2000](https://www.ncdc.noaa.gov/cag/county/time-series/FL-013/tavg/12/12/1895-2019?base_prd=true&begbaseyear=1901&endbaseyear=2000)

As noted above on the average annual temperature, data from the National Centers for Environmental Information, National Oceanic and Atmospheric Administration (NOAA), Climate at a Glance, data recorded from 1901 – 2000, the mean temperature for Calhoun County for the past 1 years is: 66.8°F.

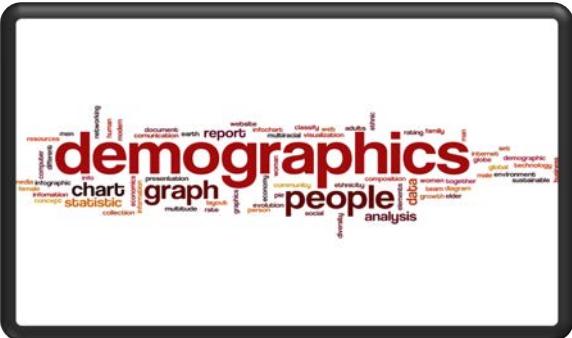
## Map xxxx – Calhoun County Base Map



## Demographics

Calhoun County has seen a slight increase 3.2% in population growth from 2010 to 2018 and is currently ranked 62nd out of 67 counties in Florida's population – with 0.1% in the State of Florida. It is important to note that the population figure is an estimate, which is based on other related data or change in this data that was recorded during 2019. A projection on data trends, calculated over a number of years, and is used to forecast or project future levels, based on an assumption that past trends are unchanged. Details in table xxx identify the statistical data of the county population.

Table xxx- Demographics for Calhoun County

Calhoun County is the 62nd most populous county in the State of Florida	
 A word cloud centered around the word "demographics". Other words include chart, graph, people, analysis, data, report, communication, website, research, study, collection, presentation, evolution, social, community, making family, resources, media, geographic, information, concept, collection, multiple, rate, growth, environment, technology, sustainable, women, migration, search, program, government, and more.	
Population	
2018 Estimate – Calhoun County	15,093
% change 2010 – 2018	3.2%
2019 Estimate	14,067
Population by Jurisdiction	14,067
Estimate figures as of April 1, 2019	
(Inmate Population)	1,417
Estimate figures less inmates as of April 1, 2019	12,650
Inmate population (main unit and work camp) as of November 11, 2019	1,568
City of Blountstown	2,414
2010 Census for Blountstown Population	2514
Total change 2010 – 2018	-100

Current population figure April 1, 2019	2414	
<b>Town of Altha</b>		<b>517</b>
2010 Census for Altha Population	536	
Total change 2010 – 2018	-19	
Current population figure April 1, 2019	517	
<b>Unincorporated Calhoun County</b>		<b>11,136</b>
2010 Census for Unincorporated Calhoun County Population	11,575	
Total change 2010 – 2018	- 439	
Current population figure April 1, 2019	11,136	
<b>Population Growth Estimates and Projections</b>		
2020 Projection based on 2018 estimate		14,914
% change 2018- 2020		-1.2%
2025 Projection based on 2018 estimate		15,477
% change 2020 - 2025		3.8%
<b>Density – Person per Square Mile</b>		
2010		25.8
2019		24.8
<b>Population Characteristics</b>		
Language spoken at home other than English		
Persons aged 5 and over		6.9%
Place of birth, foreign born		4.0%
Veteran status, Civilian population 18 and over		9.6%

Sources: Florida Legislature, Office of Economic and Demographic Research, October 2019;

<http://edr.state.fl.us/content/area-profiles/county/calhoun.pdf>;

Bureau Of Economic and Business Research, <https://www.bebr.ufl.edu/population>

Nearly 80% of the population lives within the unincorporated areas of Calhoun County as illustrated in Map 4.2. According to the US Census Bureau, there are 38 populated places within the unincorporated portions of the county (Map 4.1). The County's only two incorporated areas are the Town of Altha (approximately 4% of the total county population) and City of Blountstown (approximately 17% of the total county population). New population data will be available after the 2020 Census is completed.

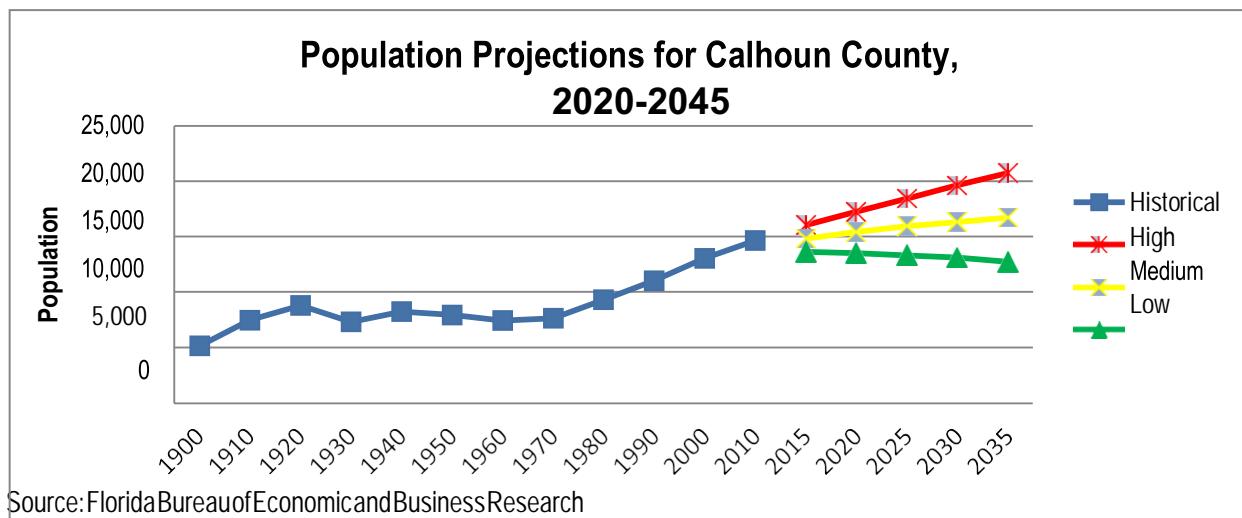
Projections of Florida population by county are made by the Florida Bureau of Economic and Business Research (BEBR) each year. These estimates use historical population changes, monthly electric customer data, and the Bureau's analysis of likely future trends. For years after 2010, BEBR developed nine projections for each county using several different techniques. Using these projections, three averages (high, medium, and low) have been calculated. Projections for Calhoun County's growth vary dramatically over the course of the next few decades. Figure xxx displays how the county's growth could grow steadily or slightly decline through 2040 based upon low, medium, or high projections.

Details for Calhoun County:

Projections of Florida Population by County, 2020–2045, with Estimates for 2018							
County and State	Estimates, April 1, 2018	2020	2025	2030	2035	2040	2045
Calhoun	15,093						
Low		14,200	14,200	14,200	14,100	13,900	13,800
Medium		14,900	15,500	15,900	16,300	16,700	17,000
High		15,700	16,800	17,900	19,000	20,000	21,100

Source: [https://www.bebr.ufl.edu/sites/default/files/Research%20Reports/projections\\_2019.pdf](https://www.bebr.ufl.edu/sites/default/files/Research%20Reports/projections_2019.pdf)

Figure xxx Calhoun County, Population Projections, 2020-2045



Map creation from data source: [https://www.bebr.ufl.edu/sites/default/files/Research%20Reports/projections\\_2019.pdf](https://www.bebr.ufl.edu/sites/default/files/Research%20Reports/projections_2019.pdf)

### Demographic County Structure

Table xxx below summarizes the gender and age makeup of Calhoun County . According to the U.S. Census Bureau, American Community Survey (ACS) 5-Year estimates, 2013 – 2017, the median age of the population is 40.3 years. Approximately 54% of the population is male and 46% of the population is female. The number of males in the county is slightly skewed due to the presence of Calhoun Correctional Institution, which houses an all-male inmate population (main unit) capacity of 1,299, and (work camp) capacity of 286. Per the institution, as of November 11, 2019 there are 1,287 inmates in the main unit, 99% capacity, and 281 inmates in the work camp, 98.3% capacity. The age makeup of the county is similar to that of the state with the majority of the population between the ages of 18 and 65.

Table 4.xx Calhoun County, ACS Demographic and Housing Estimates, 2013 - 2017

	Calhoun	Percent	Florida	Percent
Total Population	14,458	100%	20,278,447	100%
Male	7,872	54.44%	9,914,361	48.89%
Female	6,586	45.55%	10,364,086	51.11%
Median Age	40.3	-	41.8	-

Under 5 Years	681	4.71%	1,105,362	5.45%
18 Years and Over	11,325	78.33%	16,166,865	79.72%
65 Years and Over	2,565	17.74%	3,926,889	19.36%

Source: U.S. Census Bureau, [https://factfinder.census.gov/rest/dnldController/deliver?\\_ts=591380877277;https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF](https://factfinder.census.gov/rest/dnldController/deliver?_ts=591380877277;https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF)

A population pyramid is a diagram that shows the distribution of age groups within a certain population. The pyramid ideally forms the shape of a pyramid when the distribution of the population is healthy.

### Race and Ethnic Composition

The race and ethnic composition of Calhoun County compares similarly to that of the state. Details from the U.S. Census Bureau, American Community Survey (ACS) 5-Year estimates, 2013 – 2017, total population summary estimates (14,458) are noted in table xxx.

Table 4xxx - Population Composition of Calhoun County and the State of Florida,  
ACS Demographic and Housing Estimates, 2013 - 2017

Race/Ethnicity	Calhoun County	Florida
White	80.3%	76.0%
African American	13%	16.1%
Hispanic	5.8%	24.7%
Other Races (i.e. American Indian and Alaska Native, Asian, Native Hawaiian and other Pacific Islander, and/or some other race	4%	5.7%

Source: U.S. Census Bureau, [https://factfinder.census.gov/faces/nav/jsf/pages/community\\_facts.xhtml?src=bkmk;https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk](https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkmk;https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk)

### Vulnerable Populations

While conducting the risk and vulnerability assessment, it is important to recognize community members who may require enhanced mitigation services and considerations. According to the American Journal of Managed Care, vulnerable populations include the economically disadvantaged, racial and ethnic minorities, the uninsured, low-income children, the elderly, the homeless, those with chronic health conditions, including severe mental illness. It may also include rural residents, who often encounter barriers to accessing services available to those in more-dense areas. The vulnerability of these individuals is enhanced by race, ethnicity, age, sex, and factors such as income, insurance coverage (or lack thereof), and absence of a usual source of care. By identifying vulnerable populations and considering their numbers, diverse needs, and extent of special services, we can begin planning to further protect these populations through the mitigation strategy. See Appendix xxx for a map representing populations identified by the LMSWG as needing special services and the geographic location of hazard areas they may be located within.

### Inmate Population

As of November 11, 2019, the Calhoun Correctional Institution has 1,568 inmates in residence (1,287 in the main unit and 281 in the work camp). The Calhoun Correctional Institution has its own emergency planning evacuation mechanisms in place, but it is important to identify the presence of this special inmate population for emergency planning purposes.

## Poverty

Current US Census data (2017) on "percentage of families and people whose income in the past 12 months is below the poverty level" for "all families" was not available for Calhoun County. Specific statistics from the Office of Economic and Demographic Research notes that 21.1% of Calhoun County's population is living in poverty. Another percentage particulars include 30.2% of children under the age of 18 live below the poverty level in Calhoun County. The percentages are higher in the county compared to the State figures. Most of these individuals are food stamp recipients, uninsured, and on Medicaid. Those living in poverty are also more likely to be living in vulnerable structures, such as older mobile homes, as well as have increased difficulty in evacuating due to difficulty obtaining adequate means of transportation. This population is also more likely to require shelter provision.

Percent in Poverty, 2017		
	Calhoun County	Florida
All ages in poverty	21.1 %	14.1%
Under age 18 in poverty	30.2%	20.6%
Ages 5 – 17 in families of poverty	28.2%	19.6%

Sources: Florida Legislature, Office of Economic and Demographic Research, October 2019;  
[www. http://edr.state.fl.us/content/area-profiles/county/calhoun.pdf](http://edr.state.fl.us/content/area-profiles/county/calhoun.pdf)

## Manufactured Homes

All counties in the state of Florida are susceptible to hurricane and tropical storm force winds. These high winds are especially damaging to mobile homes, which represent approximately xxx% of Calhoun County's housing stock. Special consideration in this risk and vulnerability assessment has been paid to this population and details of the structural integrity of these homes are presented in the Residential Construction Inventory and Grading Portion of the LMS.

Table xxx – Calhoun County Mobile Home Parks and Spaces

Company Name	Address	City	State	Zip	Mobile Home Space
Trailer City Mobile Home Park	18946 SR 71 N	Blountstown	FL	32424	39
Hidden Creek Mobile Home Park	19339 SW Hidden Creek Road	Blountstown	FL	32424	40
Shady Oaks Mobile Home Park	25339 NW Walter Potts Road	Altha	FL	32421	10
Pine Lane Estates Mobile Home Park	18946 SR 71 N	Blountstown	FL	32424	29
Faircloth's Mobile Home Park	15247 SW Faircloth Road	Blountstown	FL	32424	28
Cedar Oaks Mobile Home Park	10459 NW CR 287-A	Clarksville	FL	32430	8
Yoder's Mobile Home Park	NW 11th Street	Blountstown	FL	32424	13
M & W Mobile Home Park	SR 71 N	Altha	FL	32421	14

Eastside Mobile Home Park	16114 NW CR 274	Altha	FL	32421	5
Graves Creek Mobile Home Park	22835 NE SR 69	Blountstown	FL	32424	9
Ashley Pines Residential Park	20158 NE John G Bryant Road	Blountstown	FL	32424	14
Northside Trailer Park and Rentals	20218 SR 71 N	Blountstown	FL	32424	9
Lewis's Mobile Home & RV Park	16501 NW John F Bailey	Blountstown	FL	32424	5
Cochran Mobile Home and R/V Park	19286 NE Jim Durham Road	Blountstown	FL	32424	33
Clarksville Mobile Home Park	17575 NW CR 287	Clarksville	FL	32430	5
Redd Hill Trailer Park	23336 NE SR 69	Blountstown	FL	32424	10
<b>Total Number of Mobile Home Spaces</b>				<b>271</b>	

Source: <http://www.floridahealth.gov/environmental-health/mobile-home-parks/index.html>

## Disabled Adults

Disabled adults are those who are limited in any way in any daily activities because of physical, mental or emotional health problems. According to the U.S. Census Bureau, Selected Social Characteristics, American Community Survey (ACS) 5-Year estimates, 2013 – 2017 states that who are limited in any way in any activities because of physical, mental or emotional problems. These populations may require special consideration when planning for disasters, whether it is assistance evacuating in times of disaster or early notification of extreme weather when possible. Planning for these groups will require careful coordination and communication with Calhoun County Emergency Management.

Disability Status of the Civilian Noninstitutionalized Population, ACS 2013 – 2017		
	Calhoun County	Percent
Civilian Noninstitutionalized Population	12,431	
With a disability	2,776	22.3%
Under 18 years	141	1%
Ages 18 to 64	1,263	10.2%
65 years and over	1,372	11%

Source: [https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\\_17\\_5YR\\_DP02&src=pt](https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_DP02&src=pt)

## School Children in Portable Buildings

The LMS Working Group identified school children in portable buildings as being a particularly vulnerable population. A portable is a temporary building installed on the grounds of a school to provide additional classroom space when there is a shortage of capacity. Such a classroom is installed much like a mobile home, with utilities often being attached to the main building to provide light and heat for the room. Portables are intended to be only a temporary solution and removed once the capacity situation abates, whether by a permanent addition to the school, another school being opened in the area, or a reduction in student population. Nevertheless, portables often become long-term partial

solutions to an over-a hazard occurrence.

Portables pose several possible safety risks. These can include the release of chemicals such as formaldehyde from pressed wood used in the building materials, as well as hazards associated with mobile homes, such as increased wind vulnerability. The table below identifies schools in Calhoun County with portables, the number of portables, the age of the school, and the number of student stations in portables and permanent student stations.



Photo source: <https://abc3340.com/news/videos/kid-cam-saks-elementary-in-calhoun-county>

**Table xxx - Portable Buildings and Classrooms in Calhoun County, 2019**

School	Number of Portable Buildings	Total Number of Students	Number of Students Occupying the Portable Buildings	% of Students in Portable Buildings
Blountstown Elementary School Grade Level – PK - 5	15	530		%
Blountstown High School Grade Level – 6 – 12	9	707		%
Altha Public School Grade Level – PK - 12	0	693		%
Carr Elementary / Middle School Grade Level – PK - 8	10	229		%
McKay School Grade Levels – 3, 5,10	0	4		%
<b>Total</b>	<b>34</b>	<b>2,163</b>		

Hurricane Michael – two articles on Calhoun County Schools

CLJNews.com, July 24, 2019

After Tough Post-Hurricane Year Liberty School District Holds On to 'A', Calhoun Earns a 'B'  
CALHOUN COUNTY – Selected specifics from the article

The hurricane completely destroyed Blountstown Elementary School, forcing the district to spread the students out at four other school locations, according to the superintendent. As the new school year approaches, elementary kids will now be at just two locations with Pre-K to second grade in **portable buildings** at the old elementary school site while grades three through five will attend class at the former middle school, now being converted to an elementary school. The county's more than 300 middle schoolers will attend classes at Blountstown High School, with **portable classrooms** being used to house some of the extra students. "There's some good opportunities that come with that," Taylor explained. "Middle school students will now have access to vocational programs and accelerated programs."

Source: <http://www.cljnews.com/20190724after-tough-post-hurricane-year-liberty-school-district-holds-on-to-a-calhoun-earns-a-b>

Tallahassee Democrat, October 23, 2019

Calhoun County left with \$20 million bill year after Hurricane Michael totaled Blountstown school. Hurricane Michael handed cash-strapped Calhoun County Schools a \$20 million bill when its wind blew loose five 20-ton air conditioning units and tossed them like bowling bowls across the **Blountstown Elementary School** roof. The 12-hour battering weakened the roof's support structure and opened several dozen gaping holes in the 64,000-square foot facility. "Once that happened rain just poured into the building," Darryl Taylor, the Calhoun County School District Superintendent told a Florida Senate committee. The **building is a total loss**, said Taylor, and given its age not worth the money to repair.

The school district response after the storm was to **set up 15 portable buildings** at the site of the damaged school for 300 PreK-2 students. It moved the third, fourth and fifth-grade students to the middle school and, re-assigned middle school students to the high school.

Despite the cramped space for PreK and a lack of a cafeteria and library, for the time being, Taylor said "this is a better situation" than it was before the storm. The school district is seeking money to make the moves permanent.

**Design plans for renovations at the middle and high schools and construction of additional campus buildings are estimated at \$20 million.**

"Normally, of course, the Florida Legislature doesn't allocate \$20 million to somebody to build a school, but this is an unusual circumstance," said Sen. Bill Montford, D-Tallahassee, a Blountstown native.

Taylor said the district is counting on \$7 million from an insurance policy and looks to Tallahassee for help to raise the rest. Montford thinks the district can cobble together the needed money through state and federal grants.

He and Taylor have their eyes on a special facility grant program the Legislature established for 29 financially-constrained counties. They, including Calhoun, are rural counties who lack the tax base to be able to raise money to build schools and other public facilities.

"We have a chance through the grant program," said Montford when asked about Calhoun's plans. "We're going to have to be creative, we're going to have to draw from different sources."

The grants are issued in three-year cycles to fund construction. Calhoun would be looking to move to the front of the line among counties requesting grants. Montford thinks given the circumstances, a catastrophic storm hitting the state's poorest region, such a request is understandable. But he adds, Florida needs a better plan for such storm-related emergencies.

"This was a unique storm that hit a unique part of the state, and it's going to require unique solutions," said Montford. "But, we in Florida have to accept that although it was a unique storm it won't be the last one, and we need to have a long-range plan of how to deal with public facilities like this."

Source:<https://www.tallahassee.com/story/news/politics/2019/10/23/calhoun-county-left-20-million-bill-year-after-hurricane-michael-totaled-blountstown-school/3999833002/>

## Economic Profile

The economic data was collected for Calhoun County from the Office of Economic and Demographic Research which analyzes data from population, housing, employment, the labor force, income and financial health, quality of life, revenue and expenditures, state infrastructure and state and local taxation. The figures were updated as of October 2019.

Table xxx- Economic Profile for Calhoun County

**Calhoun County is the 62nd  
most populous county in the State of Florida  
with 0.1% of Florida's population**



#### Unemployment Data

Unemployment Rate, 2018 in Calhoun County	4.1%, a slightly higher than average figure than the State of Florida @ 3.6%
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#### Labor Force as Percent of Population

Aged 18 or Older, Calhoun County, 2018	41.9%
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#### Employment by Industry

Number of Establishments, 2018 preliminary in Calhoun County		Percent of All Establishments, 2018 preliminary in Calhoun County
All Industries	237	237
Natural Resource & Mining	16	6.8%
Construction	37	15.6%
Manufacturing	3	1.3%
Trade, Transportation and Utilities	52	21.9%
Information	4	1.7%
Financial Activities	14	5.9%
Professional & Business Services	17	7.2%
Education & Health Services	27	11.4%
Leisure and Hospitality	21	8.9%
Other Services	13	5.5%
Government	23	9.7%

#### Average Annual Wages

Average Annual Employment, % of All	Average Annual Wages, 2018
-------------------------------------	----------------------------

Industries, 2018 preliminary		preliminary
All Industries	2,859	\$32,745
Resource & Mining	5.6%	\$34,173
Construction	7.1%	\$31,875
Manufacturing	N/A	N/A
Trade, Transportation and Utilities	16.9%	\$26,949
Information	0.5%	\$40,429
Financial Activities	2.1%	\$33,545
Professional & Business Services	1.9%	\$39,734
Education & Health Services	22.4%	\$37,893
Leisure and Hospitality	9%	\$14,920
Other Services	1%	\$30,694
Government	33.2%	\$36,518
<hr/>		
<b>Income and Financial Health</b>		
<hr/>		
Per Capita Personal Income		
2016; % change 2015 – 2016		\$25,229; - 1.6%
2017; % change 2016 – 2017		\$26,108; 3.5%
<hr/>		
Median Income		
Median Household Income		\$36,237
Median Family Income		\$45,081
<hr/>		
Percent in Poverty, 2017		
All ages in poverty		21.1%
Under age 18 in poverty		30.2%
Ages 5 – 17 in families in poverty		28.2%

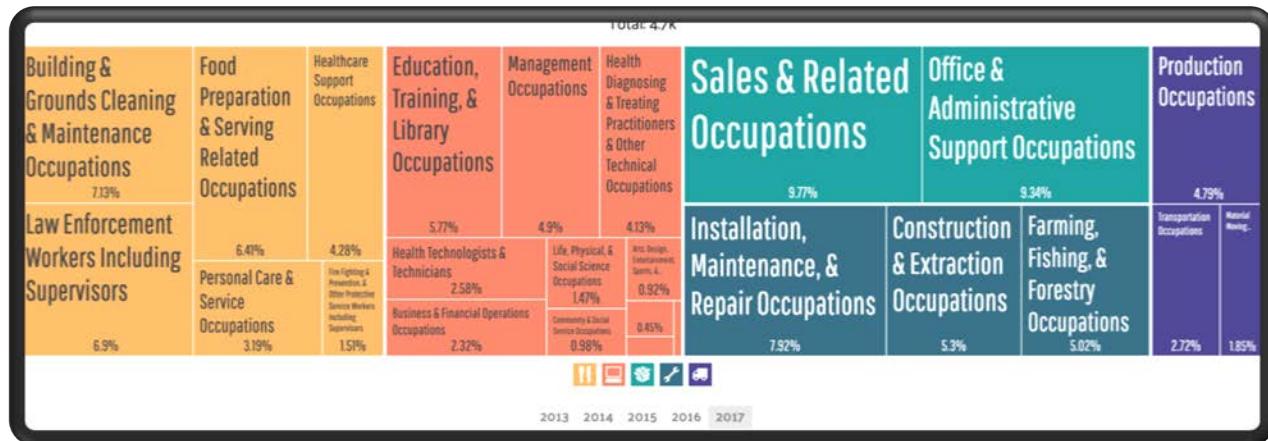
Source: <http://edr.state.fl.us/content/area-profiles/county/calhoun.pdf>

Calhoun County's public sector employment makes up approximately 10% of the total employment. As indicated in the data, government employment in the county is at 1,100 employees. The County's largest public sector employers are the Calhoun County School District<sup>10</sup> and the Calhoun Correctional Institution.

#### Details from the Data USA (a platform that converts US government data into knowledge)

From 2016 to 2017, employment in Calhoun County grew at a rate of 1.73%, from 4,620 to 4,700 employees. The most common job groups, by number of people living in Calhoun County, FL, are Sales & Related Occupations (459 people), Office & Administrative Support Occupations (439 people), and Installation, Maintenance, & Repair Occupations (372 people). This chart , Figures xxx) illustrates the share breakdown of the primary jobs held by residents of Calhoun County, FL.

Figure xxx – Employment by Occupations



Source: <https://datausa.io/profile/geo/calhoun-county-fl/>  
US Census, ACS 5-year data

The top 5 private sector employers in Calhoun County are identified in Table 4.xxx with type of business and estimated number of employees.

Table 4.xxx - Major Private Sector Employers, 2019

Company	Business Line	Employees
Shelton's Trucking LLC	Freight	65
River Valley Rehabilitation Center	Extended Healthcare	150
Oglesby Plants International	Agriculture	72
Calhoun Liberty Hospital	Healthcare	141

#### Rural Economic Development Initiative (REDI)

Established under the Rural Economic Development Initiative (REDI) by F.S. 288.0656, Rural Areas of Opportunity (RAO) previously referred to as Rural Areas of Critical Concern (RACEC) are communities that have been adversely affected by natural disasters or extraordinary events. Calhoun County is a part of the Northwest Region Rural Areas of Opportunity (RAO) (re-designated by Executive Order 15-133) and is comprised of nine counties and (all communities within the county) and one city in Northwest Florida.

REDI provides the following programs and services for rural areas:

- Responds to specific community needs and requests.
- Works with communities to improve their rural economies.
- Assists communities in improving access to housing, health care and educational opportunities.
- Recommends waivers of provisions of economic development programs on a project-by-project basis.

- Undertakes advocacy, outreach and capacity building to improve conditions in rural communities.
- Provides direct access and referrals to appropriate state agencies, as well as county and city associations.
- Reviews and evaluates the impact of statutes and rules on rural communities and works to minimize adverse impact.

## Section 4

# Hazard Risk and Vulnerability Assessment

**Requirement 201.6(c)(2)(i):** Does the Plan include a description of the type, location, and extent of all the natural hazards that can affect each jurisdiction?

**Requirement 201.6(c)(2)(i):** Does the Plan include information on previous occurrences of the hazard events on the probability of future hazard events for each jurisdiction?

**Requirement 201.6(c)(2)(ii):** Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction?

### Update Overview 2019

The 2019 update of the risk assessment represents an effort to enhance data collection techniques and incorporate relevant, new data. On September 4, 2019, the LMS Working Group conveyed that the county had experienced considerable exposure and vulnerability after the Hurricane Michael storm event in October 2018.

For the 2019 LMS, the risk and vulnerability assessment reflects an effort to record hazard occurrences over the past five years and reanalyze hazards since the last plan update in 2015. It was determined that the natural hazard "hail" would be added to the thunderstorms profile area, and the following natural hazards that previously profiled tsunamis, earthquakes, and coastal storms would be removed.

The risk and vulnerability assessment identifies the characteristics and potential consequences of hazards within the natural environment that may threaten life and property within the Calhoun County. Additionally, it outlines the county's potential losses to these hazards. Through the information presented in the county profile and this evaluation section, the county will be able to determine mitigation strategies and prioritize mitigation projects.

The categories are:

- A. Asset Inventory
- B. Natural Hazard Identification and Hazard Analysis
- C. Land Uses and Future Development Trends

The hazard analysis includes a profile of each hazard which identifies county assets vulnerable to each hazard and is a multijurisdictional assessment.

This risk assessment for Calhoun County meets the all requirements of 44 CFR § 201, as follows:

A community's vulnerability to a specific hazard must be coupled with critical factors to perform a risk assessment. By understanding the risk and vulnerability related to a specific hazard, the community can effectively plan mitigation projects and allocate limited financial resources. Additionally, the community can identify the highest priority hazards and focus mitigation strategies to those hazards with the highest risk of occurrence.

Risk, or the probability of loss, depends on three factors:

**Frequency** – How frequent does a known hazard produce an impact within the community.

**Vulnerability** – How vulnerable is a community to the impact produced by a known hazard.

**Exposure** – What is the community's exposure in terms of life and property to the impact produced by a specific hazard.

Once these three factors are established, the risk level faced by a community with regard to any specific hazard can be calculated using the Risk Triangle Approach (Crichton, 1999).

In this approach, the three factors are characterized as the sides of a triangle, and the risk or probability of loss is represented by the triangle's area. If a community wishes to reduce the risk of a specific hazard any of the three factors may be addressed. Mitigation measures applied to any of the three factors can reduce the potential for loss or risk of impacts for any given hazard.

There is very little that can be done to change the frequency of impacts produced by natural hazards. Mitigation planning relative to those hazards must therefore focus on reducing the community's vulnerability or exposure. In terms of technological and societal hazards, the most cost-effective type of mitigation is to limit or reduce the frequency with which such hazards actually occur.

All municipalities in the county are susceptible to the hazards identified therefore the risk assessment was conducted on a countywide basis. Although all communities are susceptible to the identified hazards, the magnitude of those hazards and related disasters can differ.

Residents in the western half of the county are most susceptible to natural disasters including hurricanes, tropical storms, tornadoes and wildfires, however, the threat from manmade disasters is low in this area. There are no fixed hazardous material facilities in this area, but there is a possibility of a spill related to road transportation along State Road 20. Additionally, residents in the northcentral unincorporated area of the county (near Cox, Florida) are in the 50-mile vulnerability zone for a major nuclear release from the Farley Nuclear Power Plant in Houston County, Alabama.

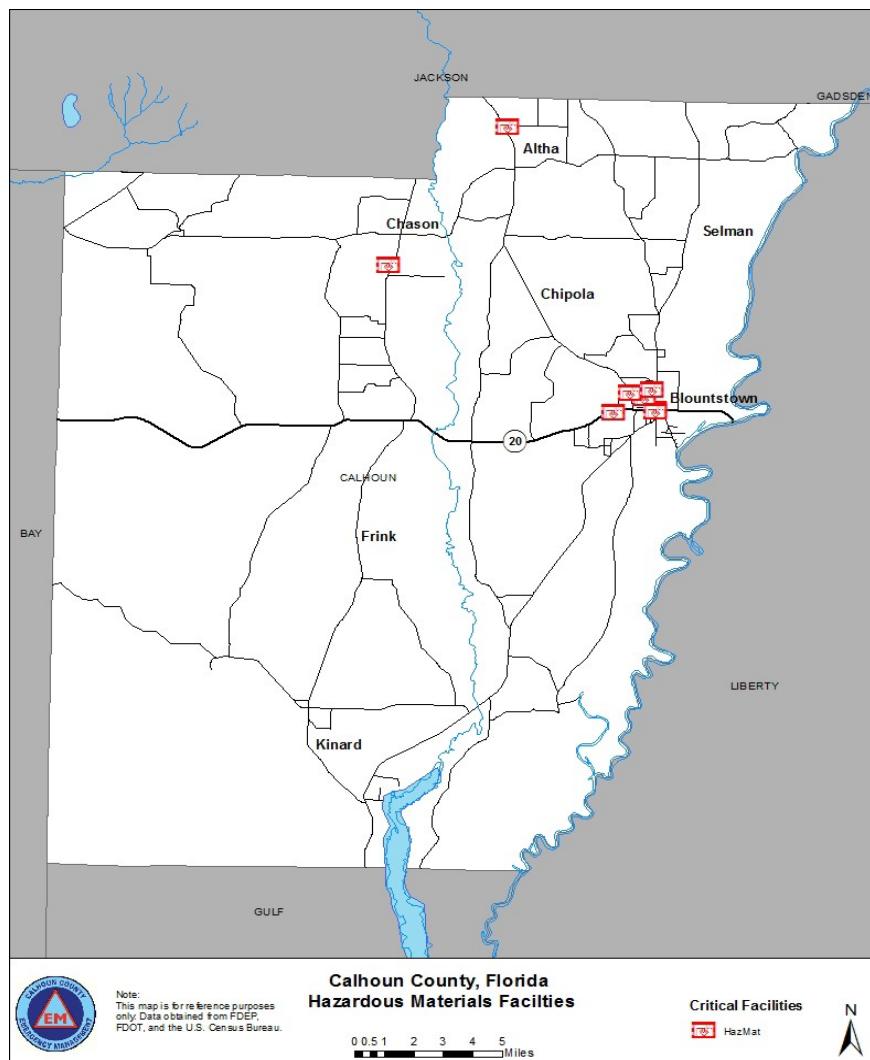
Residents in the eastern half of the county are susceptible to both natural and man-made disasters, but natural disasters still pose the extreme threat. The impact of hazards in this area is likely to be greater due to the higher population concentration meanwhile recovery efforts are likely to be easier in a more populated area. Similar to the western portion of the county, residents in the east could be impacted by a flooding, hurricanes, tropical storms, tornado or wildfire. This area of the county experiences the greatest amount of flooding which is the most common disaster in the county. The threat from manmade disasters is higher in this portion of the county, but it is still relatively low. All the fixed hazardous materials facilities in the county are located in or around the City of Blountstown and Town of Altha. The remote chance of a major hazardous materials leak could threaten residents within 3.7 miles of the facility. Spills related to road transportation could occur along State Road 20, State Road 71 and State Road 69.

## Hazardous Materials Facilities

In the 2015 LMS Plan update, the Working Group members requested an analysis risk to hazardous materials facilities, although profiling this man-made, and potentially technological hazard is not a requirement for the LMS Plan. For the 2019 update, data from the Florida Department of Environmental Protection (FDEP), Hazardous Waste Facilities report and the Apalachee Regional Planning Council (ARPC) 2017 Apalachee Local Emergency Planning Committee (LEPC) Emergency Plan, was reviewed to construct a list of hazardous materials facilities. Analysis reveals that there are no additional facilities within the county and therefore, map xxx remains the same as in the previous LMS plan update.



## Map xx xxxx – Hazardous Materials Facilities



Every area of the county is susceptible to the hazards described below. However, through proper planning, the impacts of these disasters can be reduced. The Calhoun County Local Mitigation Strategy represents a commitment by the community to identify and evaluate the various hazards the county faces and to develop the process and procedures to mitigate the impact from those hazards.

## Natural Hazard Risk and Vulnerability

The important goal for the Working Group members is to maintain a strong, ever-evolving county-wide, multi-hazard mitigation strategy and on a frequent bases evaluate the current and future hazards the county faces and assess the potential vulnerability from each of these hazards.

Periodically analysis occurs of any new information and reassessment the County's vulnerability to each of these threats. This assessment will allow county officials and residents to make fully informed decisions as to the scope of the natural hazards, how severe the threat can be, and the priority to which they should mitigate those threats. It was determined that hail would be profiled with the thunderstorm/wind events as hail could possibly influence the vulnerability for the county.

While many of the hazards discussed in this section are relevant to Calhoun County and the participating jurisdictions, selected natural hazards (earthquake, landslides, tsunami, coastal storms and coastal erosion) were removed and will not be profiled due to the geographic location and the characteristics of the planning area. In addition, the human-caused hazards and technological hazards are profiled in the Calhoun County Comprehensive Emergency Management Plan (CEMP), therefore, cyber-attacks, terrorism, and nuclear/biological hazards and hazardous materials spill/release were also removed and not profiled in the LMS Plan.

The 2019 Hazard Identification and Vulnerability Assessment represents an effort to continually document hazard occurrences and incorporate relevant, new data. Each hazard addressed in this assessment presents Calhoun County with different challenges and opportunities. Some disasters are more likely than others, and some will impact certain residents more than others.

Each natural hazard profile is summarized into the following sections:

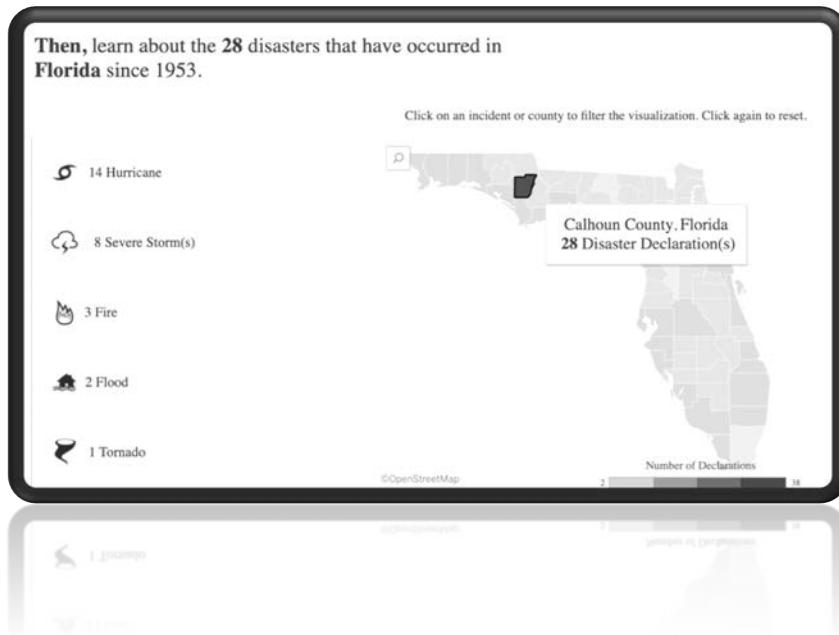
1. Hazard Overview
2. Geographic Area
3. Historical Occurrences
4. Probability
5. Risk and Vulnerability Assessment

## Disaster Declarations

When a disaster strikes that overwhelms the ability of local communities to respond, the President's action authorizes the Department of Homeland Security, Federal Emergency Management Agency (FEMA), to coordinate all disaster relief efforts which have the purpose of alleviating the hardship and suffering caused by the emergency on the local population, and to provide appropriate assistance for required emergency measures, authorized under Title V of the Stafford Act, to save lives and to protect property and public health and safety and to lessen or avert the threat of a catastrophe in the county.

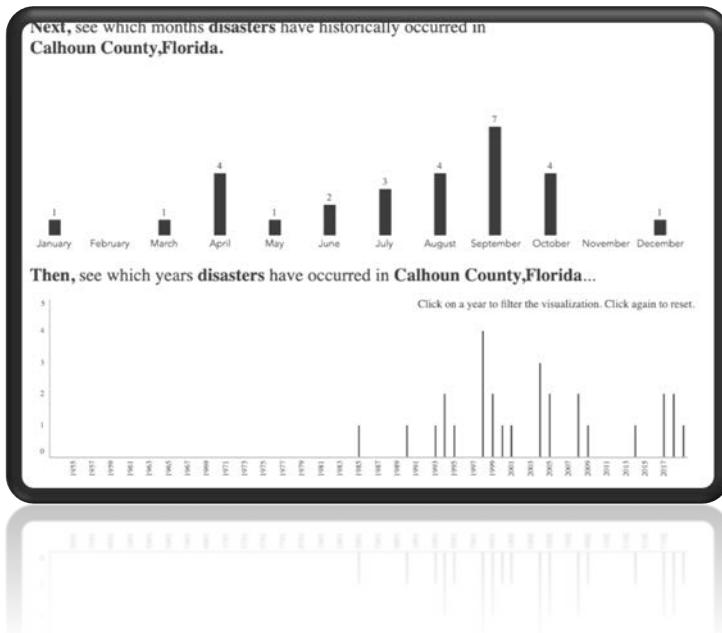
One of the factors associated with risk is the frequency in which the hazard occurs. To understand the risk level and character associated with hazards, the number and type of presidentially declared disasters are recorded below. Calhoun County has been impacted by a number of disasters, many of the most significant being hurricanes, tropical storms, wildfires, severe storms and flooding events. Many of these occurrences have resulted in levels of damage that qualified for federal assistance as the county has recently experienced with Hurricane Michael. Therefore, it is very beneficial to review past major disaster declarations that have impacted the County in preparation for analysis. Since 1953, Calhoun County has received 28 presidential disaster declarations for hurricanes, floods, severe storms, fires and a tornado. Less damaging events that do not call for a presidential declaration are sometimes issued federal, state, or local emergency declarations.

**Figure 4 xxx – 28 Disasters Types in Calhoun County**



Source: FEMA; Source: FEMA; <https://www.fema.gov/data-visualization-disaster-declarations-states-and-counties>

**Figure 4 xxx – 28 Disasters Month and Years in Calhoun County**



Source: FEMA; Source: FEMA; <https://www.fema.gov/data-visualization-disaster-declarations-states-and-counties>

Based on the summary data in Figures 4xxx – 4xxx, table 4 xxx provides a list of disaster declarations for the County providing date of incident, disaster event, incident type, declaration # and what type of assistance the County required (i.e. Individual Assistance (IA) or Public Assistance (PA); or both).

**Table 4.xxx Calhoun County, Disaster Declarations**



Photo Source:<https://www.noaa.gov/media-release/hurricane-michael-upgraded-to-category-5-at-time-of-us-landfall>

IA, PA or both	Date – Incident Period	Disaster Event	Incident Type	Declaration #
IA, PA	November 21 - 22, 1985	Hurricane Kate	Hurricane	756
IA	March 16 - April 9, 1990	Severe Storms & Flooding	Flood	862
IA, PA	March 12 - 16, 1993	Tornadoes, Flooding, High Winds & Tides, Freezing	Tornado	982
PA	July 2 – July 29, 1994	Tropical Storm Alberto	Flood	3114
IA, PA	July 2 - 29, 1994	Severe Storms And Flooding (Tropical Storm Alberto)	Severe Storm(s)	1035
IA, PA	October 4 - 11, 1995	Hurricane Opal	Hurricane	1069
IA, PA	December 25, 1997 – April 24, 1998	Severe Storms, High Winds, Tornadoes, And Flooding	Severe Storm(s)	1195
PA	September 25 – October 2, 1998	Hurricane Georges	Hurricane	3131
PA	September 28 – October 7, 1998	Hurricane Georges	Hurricane	1249
IA, PA	May 25, - July 22, 1998	Fires	Fire	1223
PA	April 13, 1999	Fires	Fire	2255
PA	April 15 – May 25, 1999	Fires	Fire	3139
PA	September 21 - October 4, 2000	Tropical Storm Helene	Severe Storm(s)	1344
PA	June 11 - 15, 2001	Tropical Storm Allison	Severe Storm(s)	1381

PA	August 11 - 30, 2004	Hurricane Charley and Tropical Storm Bonnie	Hurricane	1539
PA	September 3 – October 8, 2004	Hurricane Frances	Hurricane	1545
IA	September 13 – November 17, 2004	Hurricane Ivan	Hurricane	1551
PA	July 7 – 20, 2005	Hurricane Dennis	Hurricane	1595
PA	August 29 – October 1, 2005	Hurricane Katrina Evacuation	Hurricane	3220
PA	August 18 – September 12, 2008	Tropical Storm Fay	Severe Storm(s)	3288
IA	August 18 – September 12, 2008	Tropical Storm Fay	Severe Storm(s)	1785
IA, PA	March 26 – May 28, 2009	Severe Storms, Flooding, Tornadoes, And Straight-Line Winds	Severe Storm(s)	1831
PA	April 28- May 6, 2014	Severe Storms, Tornadoes, Straight-Line Winds, and Flooding	Severe Storm(s)	4177
PA	September 4 – October 18, 2017	Hurricane Irma	Hurricane	4337
PA	September 4 – October 18, 2017	Hurricane Irma	Hurricane	3385
IA, PA	October 7 – October 19, 2018	Hurricane Michael	Hurricane	4399
PA	October 7 – October 19, 2018	Hurricane Michael	Hurricane	3405
PA	August 28 – September 9, 2019	Hurricane Dorian	Hurricane	3419

Source: Federal Emergency Management Agency:

[https://www.fema.gov/disasters?field\\_dv2\\_state\\_territory\\_tribal\\_value\\_selective=FL&field\\_dv2\\_incident\\_type\\_tid>All&field\\_dv2\\_declaration\\_type\\_value>All&field\\_dv2\\_incident\\_begin\\_value%5Bvalue%5D%5Bmonth%5D=1&field\\_dv2\\_incident\\_begin\\_value%5Bvalue%5D%5Byear%5D=1985&field\\_dv2\\_incident\\_end\\_value%5Bvalue%5D%5Bmonth%5D=11&field\\_dv2\\_incident\\_end\\_value%5Bvalue%5D%5Byear%5D=201](https://www.fema.gov/disasters?field_dv2_state_territory_tribal_value_selective=FL&field_dv2_incident_type_tid>All&field_dv2_declaration_type_value>All&field_dv2_incident_begin_value%5Bvalue%5D%5Bmonth%5D=1&field_dv2_incident_begin_value%5Bvalue%5D%5Byear%5D=1985&field_dv2_incident_end_value%5Bvalue%5D%5Bmonth%5D=11&field_dv2_incident_end_value%5Bvalue%5D%5Byear%5D=201)

The Natural Hazards profiled are as follows:

Table 4.xx – Natural Hazards Profiled for Calhoun County

Natural Hazards, Calhoun County
Dam/Levee Failure
Drought/Heat Wave
Flooding
Hurricanes/Tropical Storms
Riverine Erosion
Sinkholes
Thunderstorms, Hail, Lightning and Strong Winds
Tornado
Wildfire
Winter Storms/Freezing Temperatures

## Hazard Identification

The information contained in this assessment was identified by using both primary and secondary research materials which includes, but is not limited to, reports from local, state, and national agencies, as well as media accounts, state and local weather records, and conversations with key personnel and residents in Calhoun County.

Dataset information was obtained from the GIS Technical Department at FDEM. Parcel data was compiled from the Florida Department of Revenue and building count and value data was from the Calhoun County Property Appraiser's Office.

Each hazard analysis includes the possible severity and magnitude, as well as the potential impact of damage within the County from future hazards. After careful deliberation, the Local Mitigation Strategy Working Group developed (and subsequently assigned) the following 4 levels of measurement to determine the probability that future events will affect the incorporated and unincorporated areas of Calhoun County. This method has been retained for the 2019 update, and the probability and magnitude of future hazard events has not changed.



## Probability

The probability of a hazard's occurrence is rated minimum through high as outlined below. Each hazard's probability was determined by the Working Group after careful analysis and evaluation. The probability or "chance of occurrence" is defined using an ordinal scale. The scale is as follows:

- ✓ Minimum: Less than one event in a five-year period
- ✓ Low: One to two events in a five-year period
- ✓ Moderate: Three to five events in a five-year period
- ✓ High: An average of one or more events per year in a five-year period

## Extent or Magnitude

The extent of a hazard's impact in a worst-case-scenario instance of the hazard is represented as outlined below in Table 4 xxx.

- ✓ Minor: Any disaster that is likely to be within the response capabilities of local government and results in only minimal need for state or federal assistance.
- ✓ Major: Any disaster that will likely exceed local capabilities and require a broad range of state and federal assistance. FEMA will be informed and notified for federal assistance. The status of the disaster will be predominantly recovery-oriented.
- ✓ Catastrophic: Any disaster that will require massive state and federal assistance, including immediate military involvement. Federal assistance will involve response as well as recovery needs.

The statements are based on the range of magnitude or severity that the county could experience or has experienced using a scientific scale or a quantitative measurement.

Types of scientific scales:

- Enhanced Fujita Scale for tornadoes

- Saffir-Simpson Hurricane Wind Scale for hurricanes/tropical storms/winds
- Keetch-Byram Drought Index for droughts
- Heat Index Chart for heat-related occurrences

Quantitative measurements were based on historical occurrences recorded:

- Flood depth for floods
- Length, width and height for sinkhole measurement (if available)
- Acres burned for wildfires
- High, medium or low based on the previous event occurrence

## Vulnerability Assessment



Calhoun County has many assets at risk from hazards. The most important risk are injuries to the people or the citizens within the County. Hazard events that could cause significant injuries should be highlighted to ensure that appropriate emergency plans with specific guidelines and response mechanisms are in place. Property to include buildings, critical facilities and infrastructure are other physical assets that could be at risk.

In conducting the risk assessment, evaluate the vulnerabilities that would make an asset more susceptible to damage from a hazard. Examples of types of vulnerabilities could include deficiencies in building construction, process systems, security, protection systems and loss prevention programs which could contribute to the severity of damage when an incident occurs.

An assessment of each of the jurisdictions risk is essential to determine where they vary from the risks facing the entire community. And, estimating potential dollar losses to vulnerable structures, if available.

## Impact

The impact is the consequence or effect of the hazard on the community and its assets. A hazard occurrence's impact could have considerable results on your relationships with customers, the surrounding community and other stakeholders. Contemplate scenarios and situations that would cause the County citizens or customers to lose confidence in your organization and its products or services. The impacts from hazards can be reduced by investing in mitigation actions, projects or initiatives.

## Frequency

This represents how often a hazard that will impact the county is likely to occur. Frequency is based on both how often a hazard has occurred in the past and factors that have been determined to contribute to a hazard's potential future occurrence.



## Distribution

This represents the geographic area that would be impacted should a hazard occur. It refers to how wide-spread a disaster's effects will be felt in the county.

## Hazard Analysis

Natural hazards threaten lives and cause damages to the built environment. While individual hazard vulnerabilities vary, it is important for the public to be aware of the maximum possible extent of damage that could be caused by each hazard explored below. The following table identifies hazard worst case scenarios for each hazard posing a threat to the Calhoun community.

Table 4.xxx - Extent or Magnitude of Each Natural Hazard

Hazard	Effect	Observation and Extent Data for Calhoun County
Dam/Levee Failure	How deep would the flood waters be and what is the potential for property damage?	If a dam/levee failure occurred, and flood waters were released inundating the City of Blountstown, due to the poor drainage systems within the City, the most vulnerable population living in floodplain areas and in close proximity to the Apalachicola River would be affected.
Drought / Heat Wave	Severity of the drought index?	The dry index could reach above 600, which on scale of 700 – 800 is extremely dry, severe drought and extreme fire behavior.  In October 2019 it was stated that the drought has deepened and fire hazards increased in the Northwest Florida. Calhoun County experienced conditions of extremely dry with a dry index of over 600. Although severe drought persists through November 2019, according to the US Drought monitor the drought will likely be removed (effective 11/21/19 – 11/29/20).
Flooding	How deep would the flooding be and what is the potential for property damage and loss of life?	The worst-case scenario would involve extensive river overflow and flooding. This could damage or destroy structures along the rivers in those parts of the county with up to 12 feet of water. If a successful evacuation of the areas is completed there should not be any loss of life.  Data on the extent history for Calhoun County occurred on March 10, 1998. Twenty-eight County Roads and State Road 69 were closed to flooding. Approximately 400 homes and businesses sustained flood damage (57 of them in Blountstown). The Apalachicola River at Blountstown crested near 27.2 feet (third highest) on March 13 and the Chipola River at Altha crested near 31.2 feet on March 14. The property damage was at \$95,000,000 and Calhoun County was declared a federal disaster area.

Hurricanes and Tropical Storms	How significant could it be?	<p>The most powerful hurricane is a Category 5 Hurricane which could result in massive damage and destruction.</p> <p>Extent data on the strongest hurricane ever recorded to hit Florida's northern Gulf Coast was Hurricane Michael on October 10, 2018, a Category 5 hurricane with winds exceeding 161 mph (140 knots) and a minimum pressure of 919 mb.</p> <p>Calhoun County was directly hit with catastrophic damage to homes and the County's timber industry. The estimated figures for property damage was over \$500,000,000 dollars in and over \$250,000,000 in crop damage.</p> <p>On August 22, 2008, Tropical Storm Fay produced widespread heavy rainfall and strong winds resulting in downed trees and power lines. The rainfall was between four and eight inches and several dirt roads were washed out or undermined by flood waters. The County experienced over \$2,225,000 in property damage.</p>
Riverine Erosion	How many feet of river front are lost per year?	<p>While it is unknown how many feet of riverfront are lost per year in Calhoun County, risk is primarily concentrated along the Chipola River and selected areas of the Apalachicola River. Erosion can result in catastrophic damage to structures if they are located on an eroding shoreline.</p> <p>Although the extent data for riverine erosion is located on the Apalachicola River (Liberty County side), it was noted back in 2011 that erosion was occurring near the Estiffanulga Boat Landing at ½ to 1 foot every year. Engineer studies recorded that 5 feet of riverine erosion was occurring each year. The barge traffic increase the velocity so the force of the river against the bank is more erosive, in addition to high and low water conditions. This erosive process is also occurring at the J.R's Landing near Blountstown. The Apalachicola River is shared by both counties (Calhoun and Liberty).</p>
Sinkholes	How significant could it be?	<p>Opening of sinkholes can cause damage to structures and contents. With approximately xxx structures at a total building replacement value of about \$xxx which are located in an area designated to have the capacity to develop sinkholes abruptly.</p> <p>The extent data reveals that there is a swallet (a point where the surface water leaves the surface and flows underground) located in unincorporated Calhoun County approximately 11 miles south of Blountstown.</p>

Thunderstorms, Hail and Lightning, Strong Winds	How significant could it be?	<p>Thunderstorm activity can occur throughout the entire County. These storms can range from a typical thunderstorm that produces lightning and a brief period of heavy rain up to severe thunderstorms that produce 3/4" hail or larger, winds of 55 knots (kts) or greater and/or tornadoes.</p> <p>Data on the extent history for Calhoun County reveals winds of 70 kts or 81 mph on June 30, 2015, causing \$100,000 in property damage. Three hailstorm events of 1.75 inches or the size of a golf ball on April 29, 2002, April 3, 2003, and March 2, 2019. And one lightning event on July 12, 2001 when a man suffered minor injuries from a lightning strike nearby.</p>
Tornado	How significant could it be?	<p>The worst possible tornado is an F5, which is capable of causing incredible damage. In an F5 tornado, strong frame houses are leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.</p> <p>Extent data on the worst tornado recorded Calhoun County's history was a strong F2 rating tornado on September 15, 2004, a 7-mile tornado causing \$2,500,000 in property damage, 4 deaths and 5 injured. During this tornado event, it demolished three trailers and 30 homes. It picked up two mobile homes and one was thrown across the road killing the two occupants. The other was slammed into a neighbor home which killed its two occupants and injured five others. In addition it peeled roofs from dozens of homes, uprooted trees, and scattered debris.</p>
Wildfire	How many acres could be consumed by fire and potential causes?	<p>A wildfire could consume as little as a few acres upward to thousand acres of land. Calhoun is prone to wildfires from drought conditions, lightning events, debris burns, equipment use, smoking, campfires, and incendiary.</p> <p>Data on the extent history over the last 29 years noted that lightning was the main cause for acreage burned in Calhoun County, 3404 acres, cumulative figure -January 1, 1990 – November 26, 2019.</p>
Winter Storms and Freezes	How significant could it be?	<p>Freezing temperatures that could last for 2 or more consecutive days. Calhoun County could experience a dusting of snow and possible ice, resulting in crop damage.</p> <p>Extent data discloses that the County was impacted by freezing rain and wind during the winter freeze on January 28, 2014 which resulted in \$200,000 in property damage.</p>

Sources: NOAA, NCDC, Florida Forest Service, Florida Department of Environmental Protection, US Drought Monitor

The natural hazards profiled are based on previous occurrence data. The aftermath from a storm event can bring different results to Calhoun County, its structures, infrastructure and utilities, transportation networks, its economy, and its environment. Details are analyzed and reported as to the "impact" for each hazard identified. See Table 4.xxxx for the impact summary on the various structures and infrastructure for the county.

**Table 4.xxx - Impacts on Structures and Infrastructure from the Identified Hazards in Calhoun County**

Impacts on Structures and Infrastructure from Identified Hazards	All Structures	Mobile Homes	Poorly Constructed Homes	Non-Elevated Homes	Telecommunications	Electrical Utilities	Water / Sewer Utilities	Roadways	Waterways	Agriculture	Economic Disruption	Environmental Damage
Flooding	X	X	X	X	X	X	X	X	X	X	X	X
Dam/Levee Failure		X	X	X				X	X	X		X
Sinkholes	X	X	X	X			X	X		X		X
Hurricanes/Tropical Storms	X	X	X	X	X	X	X	X	X	X	X	X
Tornadoes	X	X	X	X	X	X		X		X	X	X
Thunderstorm/ Wind		X	X		X	X				X		
Lightning		X	X			X				X		
Hailstorms		X	X							X		
Riverine Erosion			X	X					X	X		X
Wildfires	X	X	X	X	X	X		X		X	X	X
Drought							X		X	X	X	X
Heat Wave							X			X		X
Winter Storm		X	X			X		X	X	X	X	X
Freeze		X	X		X	X		X	X	X	X	X

### Critical Facilities - This area on Critical Facilities will be discussed with further input

The Association of State Floodplain Managers defines a critical facility as those that are essential to community's ability to respond quickly and efficiently to hazard occurrences, recover from and rebuild after hazard occurrences, and meet the needs of its citizens. The critical facilities listed below are those the County has determined are critical to the maintenance of the health, safety and welfare of its residents, and are necessary to help the County respond to and recover from a disaster. These critical facilities should be given special consideration when bearing in mind the threat of a hazard.

In the previous LMS update, additional critical facilities were added to the critical facility list and they were incorporated

below in Table xxx. These facilities cover a wide range of structures and uses, including water wells, wastewater treatment plants, medical facilities, elder care facilities, airstrips, and law enforcement.

Critical facilities and the city or town location are shown in table xxxx. The Calhoun County Emergency Management reviews, updates and maintains the critical list for accuracy. Updated information was made to the list including name changes and removal of selected facilities. The complete list of the critical facilities with full address, coordinates and other relevant information is submitted to Florida Division of Emergency Management (FDEM) according to the Florida Administrative Code (FAC) 27P-22.005 on an annual basis.

As a precursor to the more detailed analysis below on the natural hazards, there are a few critical facilities that were identified as being within site-specific hazard areas, details identified in table xxx.

**Table xxxx- Calhoun County, Critical Facilities**

Facility Name	Location	Flood Zone	Wildfire Susceptible Areas	Type
Calhoun County Emergency Operations Center (EOC)	Blountstown			Emergency Operations Center
Blountstown City Hall	Blountstown	x		Government
Altha City Hall	Altha		x	Government
Blountstown Utilities	Blountstown			Government
Calhoun County Road Department	Blountstown	x	x	Government
Florida Division of Forestry	Altha		x	Government
Mossy Pond Community Center	Altha			Government
Sherriff's Department airport hanger	Altha			Government
Water Tower	Altha			Water
Altha Water Well	Altha			Water
Water aeration tank	Altha			Water
Water Tower at Correctional Facility	Blountstown		x	Water
Water Tower River Street	Blountstown	x	x	Water
Blountstown Sewage Treatment Plant	Blountstown	x	x	Water
Wastewater Treatment, Oak	Blountstown		x	Water
Water Treatment #3 at Sam Atkins	Blountstown	x	x	Water
Blountstown High School	Blountstown	x	x	School
Altha Public School	Altha			School
Blountstown Middle School	Blountstown	x		School
Carr Elementary and Middle School	Clarksville		x	School
Blountstown Elementary School	Blountstown	x	x	School
Calhoun County Adult	Blountstown	x		School

Education Center				
Blountstown Police Department	Blountstown			Law Enforcement
Calhoun County Sheriff Department	Blountstown			Law Enforcement
Altha Police Department	Altha		x	Law Enforcement
Calhoun Liberty Hospital	Blountstown			Medical
River Valley Rehabilitation	Blountstown		x	Medical
Calhoun County Veterans Services/EOC/Courthouse	Blountstown			Medical
Life Management Center	Blountstown			Medical
Blountstown Health and Rehabilitation Center	Blountstown			Medical
Calhoun County Emergency Medical Services (EMS)	Blountstown			Medical
Calhoun Public Health Department	Blountstown			Medical
Altha Volunteer Fire Department	Altha			Fire Department
Carr / Clarksville Volunteer Fire Department	Clarksville			Fire Department
Nettle Ridge Volunteer Fire Department	Blountstown			Fire Department
Westside Volunteer Fire Department ( 2 Buildings)	Blountstown			Fire Department
Blountstown Fire Department (2 Buildings)	Blountstown			Fire Department
Kinard Volunteer Fire Department.( 2 Buildings)	Kinard			Fire Department
Magnolia Volunteer Fire Department	Altha			Fire Department
Mossy Pond Volunteer Fire Department	Altha			Fire Department
Scotts Ferry Volunteer Fire Department	Kinard			Fire Department
Calhoun County Airport	Altha			Other
Altha - Blountstown Farmer's Co-Op	Altha			Hazardous Materials
Calhoun County School Bus Barn	Blountstown	x	x	Hazardous Materials
Griffin Sand and Concrete	Blountstown		x	Hazardous Materials
Magnolia Square Park	Blountstown			Hazardous Materials
Ready Mix USA-Blountstown Plant	Blountstown		x	Hazardous Materials
Shelton Trucking LLC	Altha		x	Hazardous Materials
Calhoun County Recycling	Blountstown			Hazardous Materials

Center				
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## Natural Hazard Profiling

A critical component in the local mitigation plan is to analyze the natural hazards that face the community. Understanding the risk and consequences on the various hazards is the first part of mitigating the adverse effects of future events.

As stated earlier, profiling each natural hazard will include the following sections:

- ✓ **Hazard Overview** – synopsis of the hazard
- ✓ **Geographic Area** – area in the county with exposure to the hazard
- ✓ **Historical Occurrences** – previous occurrences in terms of frequency
- ✓ **Probability** - the chance of occurrence
- ✓ **Risk and Vulnerability Assessment** – process to identify potential hazards and analyze what could happen

## Dam/Levee Failure

### Hazard Summary

The hazard dam/levee will continue to be profiled in the LMS Plan 2019 update due to the Jim Woodruff Dam built on the Apalachicola River in Gadsden County, north of Calhoun County. The hazard summary is outlined before the overview to document that Calhoun County does not have any significant dams located within the County. In addition, dam/levee would be considered a man-made hazard.

### Overview

As of 2016, there are more than 90,580 dams in the United States today, the majority of which are privately owned. Approximately 1/3 of these dams pose a "high" or significant risk to life and property of failure occurs. Other owners are state and local authorities, public utilities, and federal agencies. A dam or levee is an embankment constructed to prevent the overflow of a body of water. A well-constructed and properly maintained dam can save lives by preventing or reducing floods.

Some of the benefits of a dam or levee are the following:

- ✓ supply the water for drinking,
- ✓ provide hydroelectric power and create lakes for fishing and recreation, and
- ✓ support agricultural irrigation.

If dams have many benefits, they also can pose a risk to communities if not designed, operated, and maintained properly. In the event of a dam failure, the energy of the water stored behind even a small dam is capable of causing loss of life and great property damage if there are people downstream of the dam. As stated, the county does not have a dam, however, it could possibly feel the effects of the Jim Woodruff Dam which poses a minor to possibly moderate dam/levee failure threat to the population and property of Calhoun County.



The Apalachicola River has an average daily flow of 25,000 cubic feet/second, which is the greatest flow of any river in Florida. The Jim Woodruff Dam, completed in 1957 and positioned approximately 30 miles north, in the City of Chattahoochee, moderately regulates the flow of the river. However, the main purpose of the dam is navigation, not flood control. During periods of up-river flooding, the dam must release water to maintain a safe height behind the dam. These waters can quickly overflow the riverbank, filling the floodplain and flooding the city and major sections of the county.

Photo source: Credit: Alan Cressler, USGS, <https://www.usgs.gov/media/images/jim-woodruff-dam-apalachicola-river>

### Geographic Area

The Jim Woodruff Dam was built on the Apalachicola River to create electricity for the region and to aid with flood

control. The resulting lake was named Lake Seminole and it borders both Georgia and Florida and has 37,500 acres of water and over 18,000 acres of surrounding land. Since a dam failure will cause flooding downstream from the dam's location, the area of the county vulnerable to a dam failure is the area of Calhoun County that lies along the Apalachicola River.

### Historic Occurrences

There have been no historical occurrences of dam failure in Calhoun County.

### Probability of Future Events

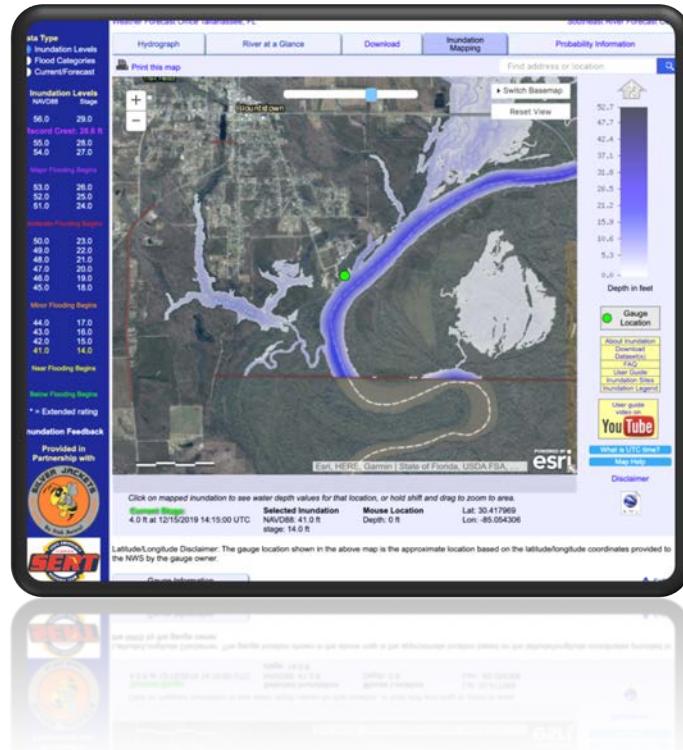
Given the safety record of the Jim Woodruff Lock and Dam and recent flood experiences, the likelihood of failure in the future is considered minimal.

### Risk and Vulnerability Assessment

The U.S. Army Corps of Engineers operates the Jim Woodruff Lock and Dam located in Gadsden County, north of Calhoun County, on the Apalachicola River. Located behind the Jim Woodruff Lock and Dam is Lake Seminole, which is created by the confluence of the Chattahoochee and Flint Rivers.

The lock and dam is a multipurpose project for navigation, hydroelectric power production and related uses. The impoundment is maintained at a relatively constant 77.5 feet above mean sea level, although there is some fluctuation for power production.

There is no storage for flood control. The facility maintains a safety and emergency notification plan and conducts annual dam safety training. There have been no safety and/or structural problems noted at the dam. In the event of a possible failure, facility officials would initiate the notification procedures, which include notifying the Calhoun County Emergency Management Director. Because of the volume of water impounded behind the dam, there is no local mitigation initiative, besides notification, that could reduce the devastating impact of the dam's failure.



Source: <https://water.weather.gov/ahps2/inundation/index.php?gauge=blof1>

### City of Blountstown and the Town of Altha

If a dam/levee failure occurred, and flood waters were released inundating the City of Blountstown, due to the poor drainage systems within the City, the most vulnerable population living in floodplain areas and in close proximity to the Apalachicola River would be affected. Major areas of the City's northern, southern and eastern sections lie within the river's 100-year floodplain. The Town of Altha is not within a zone that would be inundated by a release of the dam.

## Drought and Heat Wave

### Overview

#### Drought

Figure xxx – State of Florida Drought Monitor Map



Drought can be defined based on rainfall amount over some period of time, vegetation conditions, agricultural productivity, soil moisture, levels in reservoirs and stream flow, or economic impacts. In basic terms, a drought is a significant deficit in moisture availability due to lower than normal rainfall. This deficiency results in a water shortage for some activity, group or environmental sector. Excessively dry and hot conditions can provoke dust storms and low visibility. Droughts occur when a long period passes without substantial rainfall.

Map Source: <https://droughtmonitor.unl.edu/Maps/MapArchive.aspx>

Drought is a normal, recurrent feature of climate, although many perceive it as a rare and random event. In fact, each year some part of the U.S. has severe or extreme drought. Although it has many definitions, drought originates from a deficiency of precipitation over an extended period of time, usually a season or more. It produces a complex web of impacts that spans many sectors of the economy and reaches well beyond the area producing physical drought. This complexity exists because water is essential to our ability to produce goods and provide services.

As stated by the National Drought Mitigation Center... "A few examples of direct impacts of drought are: reduced crop, rangeland, and forest productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality rates; and damage to wildlife and fish habitat. Social impacts include public safety; health; conflicts between water users; reduced quality of life; and inequities in the distribution of impacts and disaster relief. Income loss is another indicator used in assessing the impacts of drought; reduced income for farmers has a ripple effect throughout the region's economy".

Conforming to Florida State University, Florida Climate Center description drought is defined on so many different levels, has differing impacts, and can happen on short or long-time scales, it is hard to compare one drought to another. An examination of weather records since 1900 reveals that in every decade there has been at least one severe and widespread drought somewhere within Florida. Droughts that began in 1906, 1927, 1945, 1950, 1955, 1961, 1968, 1980, 1984, 1998, and 2006 were the most severe.

#### Heat Wave

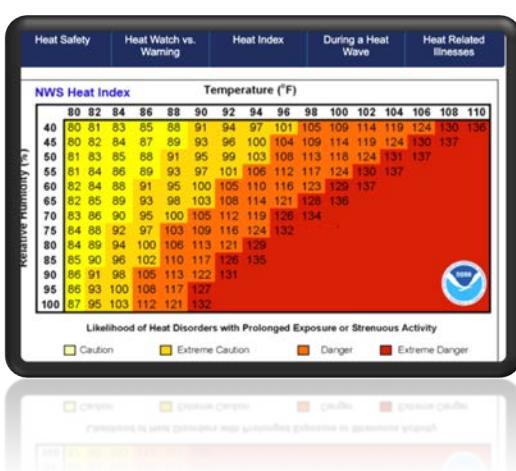
Temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat, or those prolonged excessive heat/humidity episodes. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a "dome" of high atmospheric pressure traps hazy, damp air near the ground.

The heat can kill by taxing the human body beyond its abilities. In a normal year, about 175 Americans die to the demands of summer heat. In the 40-year period from 1936 through 1975, nearly 20,000 people were killed in the United States by the effects of heat and solar radiation. In the disastrous heat wave of 1980, more than 1,250 people died. Elderly persons, small children, chronic invalids, and those on certain medications or drugs, are particularly susceptible to heat reactions, especially during heat waves in areas where a moderate climate usually prevails.

Small children are incredibly susceptible to heat, especially in a vehicle as it only takes approximately 10 minutes to heat up 19 degrees, so that it can reach lethal temperatures quickly. A child is more susceptible than adults to heat as their bodies heat up 3 to 5 times quicker and can suffer a heat stroke.

If the County experiences extended periods of extreme heat, especially when combined with high humidity, it can result in heat-related illness among vulnerable populations, as well as place excess stress on agricultural production, water supplies, and energy generation.

**Figure 4xx– Heat Index Chart**



According to the NWS, the "Heat Index" (HI), is sometimes referred to as the "apparent temperature". The HI, given in degrees F, is an accurate measure of how hot it really feels when relative humidity (RH) is added to the actual air temperature.

To find the HI, look at the Heat Index Chart, Figure Y. As an example, if the air temperature is 96°F and the RH is 60% (found at the top of the table), the HI, or how hot it really feels, is 116°F.

**IMPORTANT:** Since HI values were devised for shady, light wind conditions, exposure to full sunshine can increase HI values by up to 15°F. Also, strong winds, particularly with very hot, dry air, can be extremely hazardous. Note on the HI chart the shaded zone above 105°F. This corresponds to a level of HI that may cause increasingly severe heat disorders with continued exposure and/or physical activity.

Calhoun County's hot season are the months of June to early September. Heat wave events occurring in the hot season would be in the 100°F plus temperature range. According to data In Figure 4xxx (see below), Blountstown experienced record temperatures over 100°F (exact data and number is not identified in this chart), however, at an example of what the Heat Index might have been for this record temperature of at least 100°F, if the RH was only 60%, the Heat Index would have been 129°F based on the Heat Index Chart.

**Table 4.xx - Possible Heat Disorders Related to the Corresponding Heat Index**

Heat Index	Result
130 or Higher	Heatstroke/Sunstroke with exposure for people in higher risk groups
105-130	Sunstroke, heat cramps and heat exhaustion likely and heatstroke possible with prolonged physical activity

90-105	Sunstroke, heat cramps with prolonged exposure
80-90	Fatigue possible with prolonged exposure and physical activity

### Geographic Area

With both these hazards occurring at a regional geographic level, the entire county is likely to be uniformly exposed to drought and heat wave.

### Historical Occurrences

#### Drought Occurrences

According to the NCDC there were 17 drought occurrences reported in Calhoun County from January 1, 1950 – December 2, 2019.

Incident Date	Location	Type	Deaths	Injuries	Property Damage	Crop Damage
10/19/2010	Calhoun County	Drought	0	0	0	0
11/1/2010	Calhoun County	Drought	0	0	0	0
5/10/2011	Calhoun County	Drought	0	0	0	0
6/1/2011	Calhoun County	Drought	0	0	0	0
7/1/2011	Calhoun County	Drought	0	0	0	0
8/1/2011	Calhoun County	Drought	0	0	0	0
9/1/2011	Calhoun County	Drought	0	0	0	0
10/1/2011	Calhoun County	Drought	0	0	0	0
11/1/2011	Calhoun County	Drought	0	0	0	0
12/1/2011	Calhoun County	Drought	0	0	0	0
1/1/2012	Calhoun County	Drought	0	0	0	0
2/1/2012	Calhoun County	Drought	0	0	0	0
4/1/2012	Calhoun County	Drought	0	0	0	0
5/1/2012	Calhoun County	Drought	0	0	0	0
6/1/2012	Calhoun County	Drought	0	0	0	0
1/9/2018	Calhoun County	Drought	0	0	0	0
2/1/2018	Calhoun County	Drought	0	0	0	0

Source: NCDC, NOAA;

[https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Drought&beginDate\\_mm=01&beginDate\\_dd=01&beginDate\\_yyy=y=1951&endDate\\_mm=12&endDate\\_dd=10&endDate\\_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA](https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Drought&beginDate_mm=01&beginDate_dd=01&beginDate_yyy=y=1951&endDate_mm=12&endDate_dd=10&endDate_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA)

#### Hazard Event Narrative

The was no support data on the drought occurrences impact or extent in table 4.xxx notes.

### **Heat-Related Occurrence (State of Florida)**

As reported by the International Journal of Environmental Research and Public Health, A Comprehensive Evaluation of the Burden of Heat-Related Illness and Death within the Florida Population, June 2016, among Florida residents, during the Florida warm season (May–October) for 2005–2012, there were 23,981 non-work-related HRI cases treated in the ED, 4816 HRI hospitalizations, and 139 HRI deaths. These cases accounted for 0.10% of all-cause warm season non-work-related ED visits, 0.05% of non-work-related hospitalizations, and 0.02% of non-work-related deaths. Among work-related HRI cases, there were 2979 cases treated in the ED, 415 hospitalizations, and 23 deaths. The work-related HRI cases accounted for 0.66%, 0.98%, and 2.3% of all-cause work-related ED visits, hospitalizations, and deaths during the warm season.

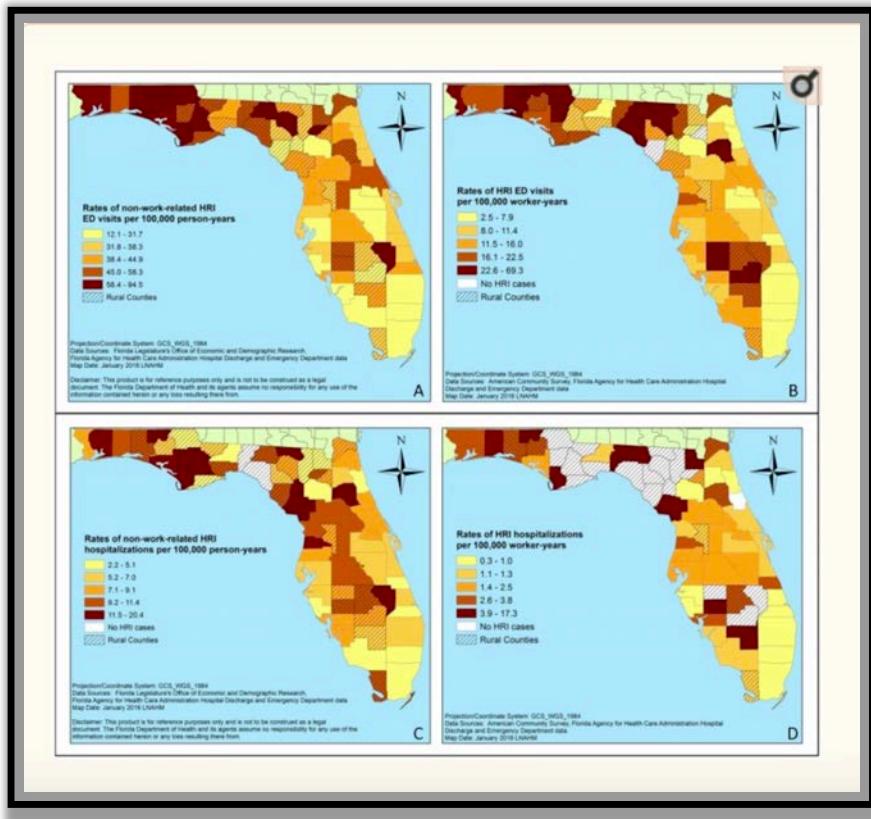
According to the Florida Department of Health in Calhoun County, data related to ED incidents for HRI is not recorded for the county.

Figure 4xxx demonstrates that Calhoun County details are as follows:

- ✓ Box A - Rates of non-work related HRI ED visits per 100,000 person-years (**45 – 58.3 for Calhoun**); the 2<sup>nd</sup> highest category
- ✓ Box B - Rates of HRI ED visits per 100,000 worker-years (**22.6 – 69.3 for Calhoun**); the highest category
- ✓ Box C – Rates of non-work related HRI hospitalization per 100,000 person-years (**11.5 – 20.4 for Calhoun**); the highest category
- ✓ Box D – Rates of HRI hospitalizations per 100,000 worker-years (N/A for Calhoun)

Figure 4xxx – Statistics on Heat-Related Incident Rates for the Florida Counties

(Box A to the left – top ; Box B to the right - top)

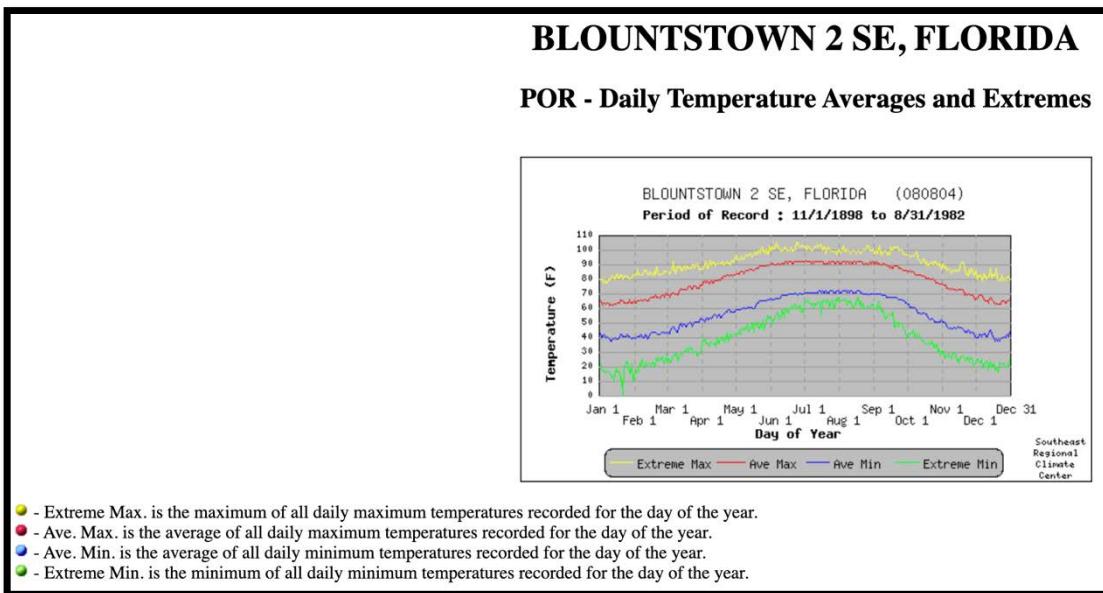


(Box C to left – bottom; Box D to the right – bottom)

Source: International Journal of Environmental Research and Public Health;  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4924008/>

As reported by the Southeast Regional Climate Center, Historical Climate Summaries for Florida, Blountstown, Florida, period of record, daily extremes and averages, November 1, 1898 – August 31, 1982, Blountstown experienced over 100°F on several occasions (exact dates are not stated).

Figure 4xxx. – Blountstown, Daily Temperature Averages and Extremes



Source: <https://sercc.com/cgi-bin/sercc/cliMAIN.pl?fl0804>

From 2005 – 2012, Florida 139 heat related incident deaths. As stated by National Integrated Drought Information System (NIDIS), Drought.gov, the U.S. Drought Monitor started in 2000. Since 2000, the longest duration of drought (D1-D4) in Florida lasted 124 weeks beginning on April 11, 2006 and ending on August 19, 2008. The most intense period of drought occurred the week of February 27, 2001 where D4 affected 39.08% of Florida land.

**Table 4.xxx Historical Occurrences of Drought and Heat Wave Incidents in Florida**

Date	Location	Details
1949 - 1957	Statewide	The most extreme drought on record occurred during 1954 - 1956 when runoff was 8 inches below normal. This drought caused extensive loss of crops and timber.
July 2000	Northwest Florida	In July 2000, it was recorded as the hottest month ever documented in Northwest Florida. The temperature reached 100 degrees or higher seven days during the month. The month was also listed as the seventh driest July in the past 120 years.
1998 – 2002	Statewide	Lower than normal precipitation caused a dangerous and severe long-term drought. Rainfall deficits in Northwest Florida were 38- 40 inches below normal.

The NIDIS, Drought.gov, the U.S. Drought Portal provides an excellent resource for the County to get an up to date status on how drought is affecting their neighborhood and area. Currently, the County is in a level D1, Moderate Drought status, as disclosed in Figures 4xxx – 4 xxx. D1- moderate drought – impacts for some damage to crops, pastures; some water shortages developing; burn bans are possible; and voluntary water-use restrictions requested.

**Table 4 xxx. How Drought is Affecting Calhoun County Neighborhoods**



Source: <https://www.drought.gov/drought/data>

#### Probability of Future Events – Moderate to High

The probability of future drought or heat wave occurrences are considered moderate to potentially high.

#### Risk and Vulnerability Assessment

Droughts and heat waves typically impact an area that cannot be confined to any geographic boundaries. However, certain regions of the United States are more susceptible to drought than others. Drought and heat wave in Florida typically occurs between the months of June and September.

Calhoun County's buildings, infrastructure and critical facilities are not considered vulnerable to damage caused by drought and heat wave events and therefore estimated property loss would be minimal in the area.

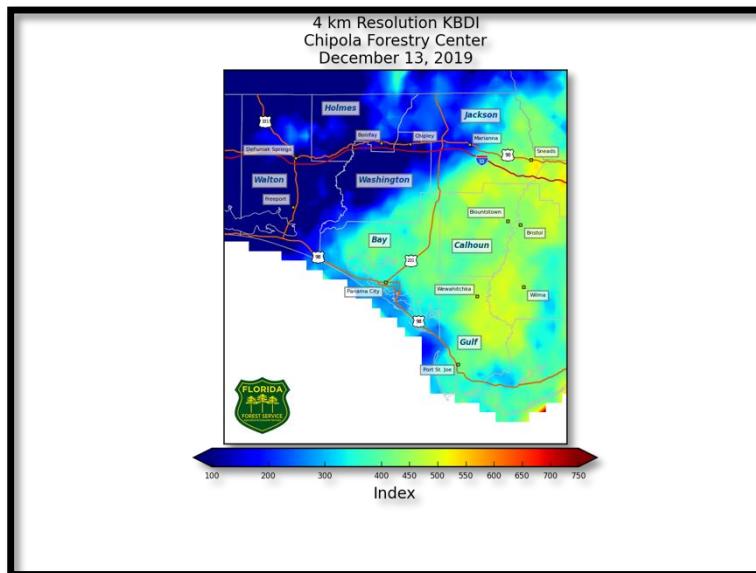
Heat wave incidents does however present a safety threat to the County's population, especially the vulnerable population, the elderly persons, small children, chronic invalids, and those on certain medications or drugs, are particularly susceptible to heat reactions, especially during heat waves in areas where a moderate climate usually prevails.

#### **Keetch Byram Drought Index (KBDI)**

There is another mechanism to the drought monitor, the KDBI Index which is used by the County and updated daily by the Florida Forest Service. The KBDI is a continuous scale for estimating the dryness of the soil and duff layers. The range of the index is determined by assuming that there is 8 inches of moisture in a saturated soil that is readily available to the vegetation.

KBDI is a good indicator of the drought/moisture conditions for agricultural purposes, and it also provides a planning tool for the risks of wildfire. This index provides a numerical scale of 0 through 800, with 800 being the driest and 1 being wettest. Calhoun County averages a rating between 200 and 500 which is towards the low moderate end of the scale. The current rating as of December 2019 is 400 to 500. See Figure 4XXX KBDI, Chipola Forestry Center.

Figure 4xxx – Keetch -Byram Drought Index (KBDI), Chipola Forestry Center



Source: [http://currentweather.freshfromflorida.com/kbdi\\_4km.html](http://currentweather.freshfromflorida.com/kbdi_4km.html)

## Calhoun County AG Losses related to Hurricane Michael (REVIEW/FEEDBACK)

As stated by the UF/IFAS Economic Impact Analysis Program (EIAP) and the Florida Forest Service, the timber and cropland information:

**Timber:** 324,000 acres suffered severe and catastrophic damage, with 75-95% (243,000 – 307,000 acres) of it totally destroyed. Using an extremely conservative estimate of \$1,000 /acre timber value across the county, that equates to a loss of \$324,000,000 in Calhoun County.

### Cropland (loss):

- ✓ Cotton: \$7 million
- ✓ Peanuts: \$1 million
- ✓ Greenhouse/Nursery: \$1 million

If the County experiences any type of chronic and continual drought within the next several years, wildfires could spread throughout the County and destroy what remaining timber and crops are left in the County.

Agriculture is the most vulnerable asset of asset of the County to drought.

The direct physical effects of drought in Calhoun County can have a disastrous impact on the agricultural, conservation and environmentally sensitive land, and the dry heat and lack of moisture can result in wildfire events.

This could be an added burden and critical for Calhoun County since Hurricane Michael's economic impact on the County's agriculture which was decimated. Read details below.

## Floods

### Overview

Floods are the most frequent and costly of all the natural hazards in the United States. Flood effects can be local, impacting a neighborhood or community, or very large, affecting entire river basins and multiple states. Some of the most significant flood losses are due to the failure of dams and levees.

FEMA defines flooding as "a general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters or the rapid accumulation of runoff of surface waters from any source."



Photo Source: Calhoun County Chamber of Commerce

However, all floods are not alike. Some floods develop slowly and over a period of days. Flash floods can develop quickly, sometimes in just a few minutes and without any visible signs of rain. Flash floods often have a dangerous wall of roaring water that carries rocks, mud, and other debris and can sweep away most things in its path. Overland flooding occurs outside a defined river or stream, such as when a levee is breached, but still can be destructive.

Flooding can also occur when a dam breaks, producing effects similar to flash floods. Even very small streams, gullies, creeks, culverts, dry streambeds, or low-lying ground that appears harmless in dry weather can flood. If the rainfall intensity exceeds the evaporation rate and infiltration capacity of the soil, surface runoff occurs. It also occurs when rainfall hits impervious surfaces, such as roadways and other paved areas. Water flows across the surface as either confined or unconfined flow.

In an undeveloped area, the water runoff system is provided by nature. In ever increasing urban areas flooding has necessitated the need for new and upgrades of existing drainage systems. Stormwater management systems have two purposes:

1. the control of stormwater runoff to prevent or minimize damage to property and physical injury and loss of life which may occur during or after a very infrequent or unusual storm; and
2. the control of stormwater to eliminate or minimize inconvenience or disruption of activity as a result of runoff from more frequently occurring, less significant storms.

The following are several terms that are relevant to flooding and important for citizens to know:

- ✓ Flood Watch: Flooding is possible. Tune in to NOAA Weather Radio, commercial radio, or television for information.
- ✓ Flash Flood Watch: Flash flooding is possible. Be prepared to move to higher ground; listen to NOAA Weather Radio, commercial radio, or television for information.
- ✓ Flood Warning: Flooding is occurring or will occur soon; if advised to evacuate, do so immediately.
- ✓ Flash Flood Warning: A flash flood is occurring; seek higher ground on foot immediately.

## Geographic Area



Photo Source: WJHG

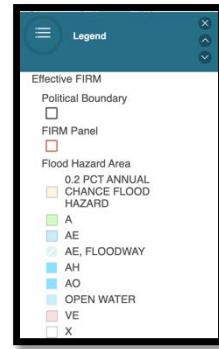
Calhoun County is susceptible to riverine flooding and flooding that inundates the low-lying areas throughout the county. Flooding from tropical storms and hurricanes will generally occur between June and October. The county is also subject to flooding from heavy rains in southern Georgia, which contain the headwaters of the Apalachicola River. Due to the fact that the county does not border the Gulf of Mexico, it is not susceptible to storm surge or coastal flooding.

Figure 4xxx – Legend for the Calhoun County FIRM

Figure 4 xxx – 4 xxx Calhoun County maps are from the Northwest Florida Water Management District's (NFWMD) flood information portal. The maps are created from a variety of sources including the Federal Emergency Management Agency's (FEMA's) Flood Insurance Rate Maps (FIRMs), the District's digital elevation model, the counties' digital parcel maps and data from other governmental sources.

Figure 4 xxx, Calhoun County FIRM, identifies the flood hazard area, the flood zones and the open water.

The flood zones identified in the County Flood Insurance Study (FIS) based on the results of the engineering analyses are the following:



### Zone A

Zone A is the flood insurance rate zone that corresponds to the 1-percent annual chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

### Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 1-percent annual chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

### Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 1-percent annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

#### Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 1-percent annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.

#### Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2- percent annual chance floodplain, areas within the 0.2-percent annual chance floodplain, and to areas of 1-percent annual chance flooding where average depths are less than 1 foot, areas of 1-percent annual chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent annual chance flood by levees. No base flood elevations or depths are shown within this zone.

Figure 4 xxx – 4 xxx – Calhoun County FIRM's

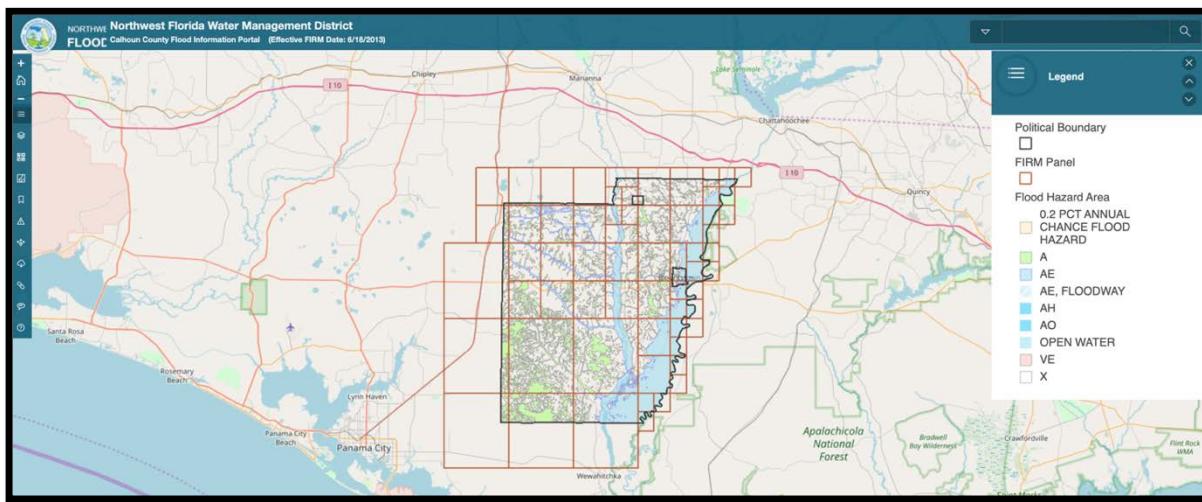
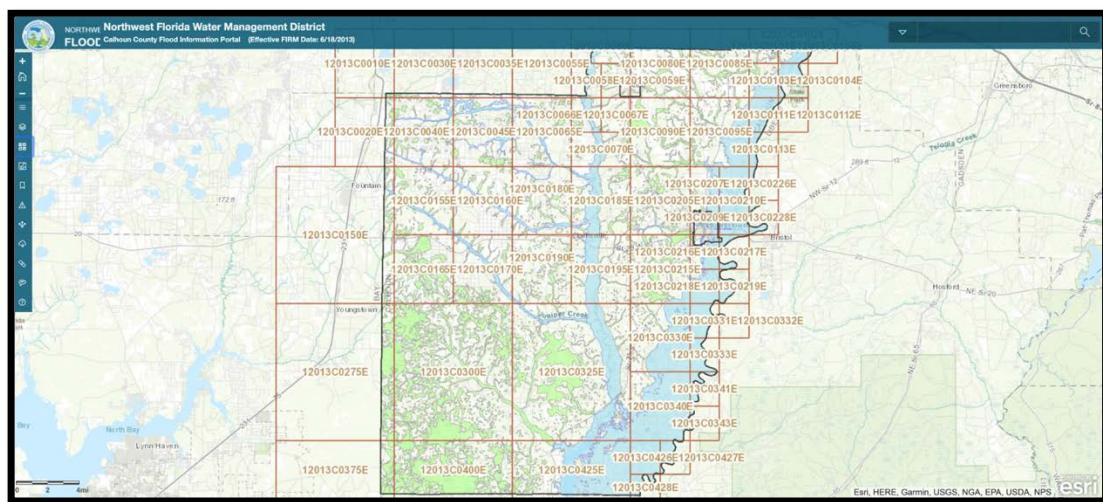


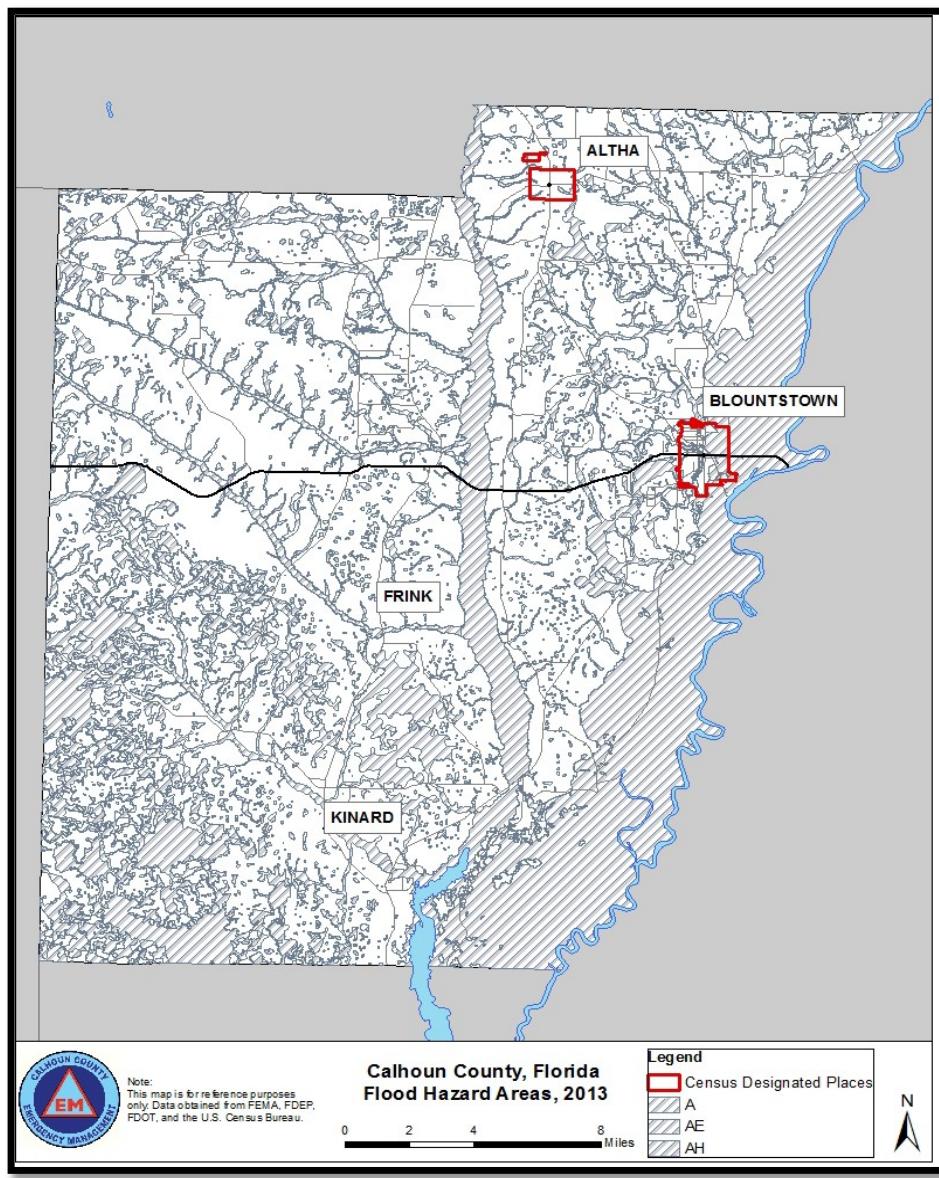
Figure 4 xxx, Calhoun County FIRM with panel numbers.



Source: Northwest Florida Water Management District; <http://portal.nfwmdfloodmaps.com/esri-viewer/map.aspx?cty=calhoun>

Figure 4.xxx below shows the location and extent of the Special Flood Hazard Areas (SFHA) for Calhoun County based on FEMA flood zones updated in June 2013. The SFHA is an area within a floodplain having a 1% or greater chance of flood occurrence in any given year (100-year floodplain). It is important to note that flooding does occur outside of these areas as well.

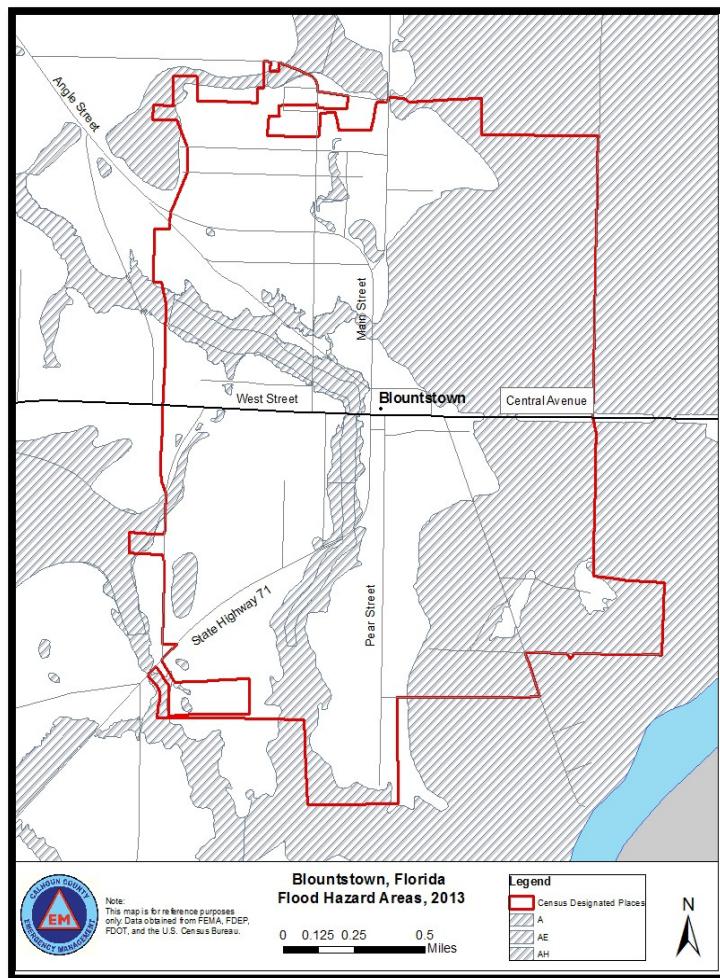
Figure 4.xxx Calhoun County Map, Flood Hazard Areas



## Changes to Flood Zones in the City of Blountstown and the Town of Altha

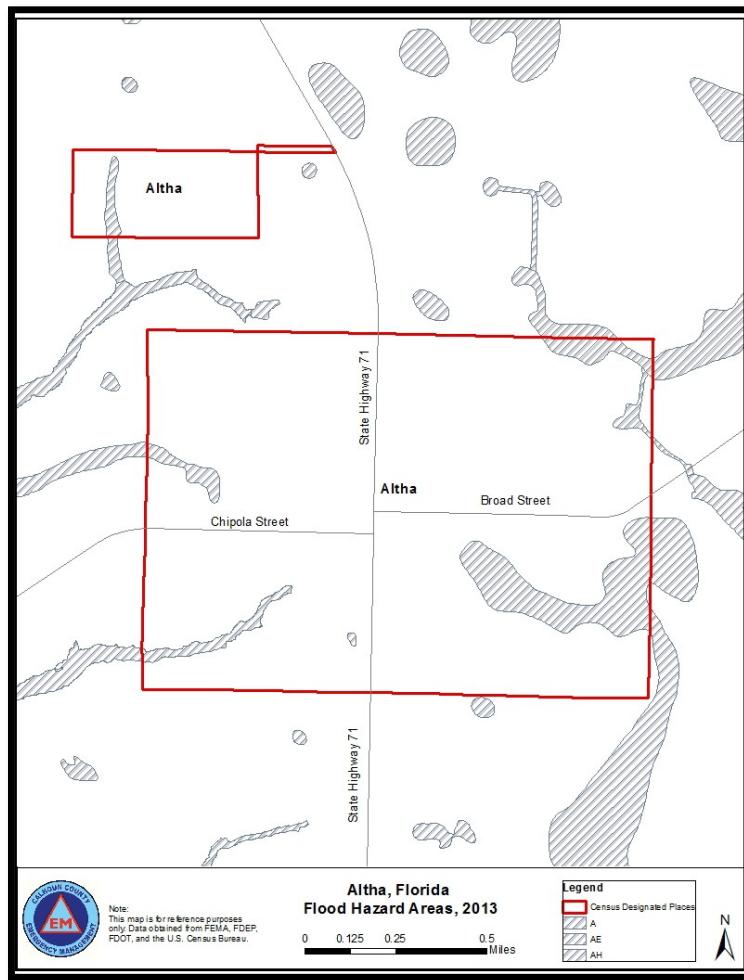
The flood zones within Calhoun County were updated in the FIS (see Figures 4 xxx – 4 xxx). The two maps below represent the updated flood zones within the City of Blountstown and the Town of Altha. The Special Flood Hazard Area (SFHA) is an area within a floodplain having a 1% or greater chance of flood occurrence in any given year. The 100-year floodplain located within the City of Blountstown is now better represented around Sutton Creek and the Apalachicola River.

Figure 4.xxx - City of Blountstown Map, Flood Hazard Areas



The Town of Altha previously had no geographic area located within the SFHA, however, the town now has a small portion of its geographic area located within the 100-year floodplain.

Figure 4.xxx Town of Altha Map, Flood Hazard Areas



### Geomorphology and Geology

The Florida Geological Survey, 1990 data reveals that Calhoun County is in the east-central Florida panhandle. The subzones are the Gulf Coastal Lowlands, Fountain Slope, New Hope Ridge, and Grand Ridge. The Gulf Coastal Lowlands comprise much of the lower half of Calhoun County. This subzone is characterized by a generally flat and commonly swampy, seaward sloping, sandy plain. Most of the lowlands area has been sculpted into a series of marine terraces by high standing Pleistocene seas. Elevations in the Gulf Coastal Lowlands in Calhoun County range from 25 to 65 feet above mean sea level (MSL) at the southern edge of the county to about 100 feet above MSL at the point where the lowlands meet the higher ridges in the middle part of the county.

Three topographically higher subzones are in the northern portion of the county. They are Fountain Slope, New Hope Ridge, and Grand Ridge. Fountain Slope is the name given by White (1964) to the ramp like, northward-rising topographic slope separating the Gulf Coastal Lowlands and New Hope Ridge. The elevations of Fountain Slope range from about 100 feet above MSL at its southern edge, adjacent to the lowlands, to about 180 feet above MSL at New Hope Ridge to the north. New Hope Ridge occupies northwestern Calhoun County, west of the Chipola River (White, 1964).

The Chipola River valley separates New Hope Ridge from Grand Ridge, which has similar elevations and is in the eastern part of Calhoun County. Both ridges are believed to be stream-incised remnants of a once continuous highland spanning north Florida from the Alabama line eastward to Putnam County. New Hope Ridge and Grand Ridge are topographically high. They have elevations generally ranging between 150 and 250 feet above MSL. Both are comprised of resistant clayey-sands overlying limestone. Several collapse depressions and sinkhole lakes on New Hope Ridge belie a karstic nature of the underlying limestone.

The Apalachicola and Chipola Rivers are the major water bodies in Calhoun County. The Apalachicola River forms the eastern boundary of the county. In the northeastern part of the county, the elevation of the broad Apalachicola Valley averages about 50 feet above MSL. The valley forms a divide between the bluffs of the Tallahassee Hills to the east in Liberty County and the topographically lower, gently rolling hills of Grand Ridge. The river meanders southwestward through a three-mile wide valley, which descends to an elevation of about 25 feet above MSL at the southern edge of Calhoun County.

The Chipola River flows southward through the east-central part of Calhoun County and forms Dead Lake near the southern boundary of the county. In places, the river is well incised. In the northern part of Calhoun County, Miocene limestone and Pliocene shell beds are exposed along the course of the river. Several smaller surface streams contribute to the Chipola River. Ten-mile Creek, Four-mile Creek, and Juniper Creek form a southward succession of well-incised, northwest to southeast trending tributaries entering the Chipola River from the west. These creeks may define a parallel series of relict beach ridge systems. In the southern part of the county, Cypress Creek drains several low, swampy areas and ultimately empties into Dead Lake.

### Historical Occurrences

Eleven significant flood events were recorded in Calhoun County between January 1, 1950 and December 2, 2019. The historical flood occurrences listed below (Table 4.xxx) are only those reported to NOAA, NCDC. Additional flood data is mentioned with research and statistics from the Flood Insurance Study (FIS).

Table 4.xx Calhoun County, Flood and Flash Flood Incidents, January 1, 1950 – December 2, 2019

Incident Date	Location	Deaths	Injuries	Property Damage	Crop Damage
3/10/1998	Calhoun County	0	0	\$95,000,000	0
6/11/2001	Clarksville	0	0	0	0
3/3/2002	Calhoun County	0	0	\$10,000	0
9/14/2002	Calhoun County	0	0	\$10,000	0
3/30/2009	Altha	0	0	\$500,000	0
5/4/2010	Macedonia	0	0	0	0
5/4/2010	Chason	0	0	0	0
2/23/2013	Altha	0	0	\$1,100,000	0
4/30/2014	Altha	0	0	0	0
4/30/2014	Center Lake	0	0	\$3,240,000	0
12/15/2018	Chiploa Park	0	0	0	0
<b>Total</b>				<b>\$99,860,000</b>	<b>0</b>

Source: NOAA, NCDC;

[https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28C%29+Flash+Flood&eventType=%28Z%29+Flood&beginDate\\_mm=01&beginDate\\_dd=01&beginDate\\_yyyy=1950&endDate\\_mm=12&endDate\\_dd=02&endDate\\_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA](https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28C%29+Flash+Flood&eventType=%28Z%29+Flood&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=1950&endDate_mm=12&endDate_dd=02&endDate_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA)

### Hazard Narrative

- On 3/10/1998 in Calhoun County, 28 county roads and SR 69 were closed to flooding. Approximately 400

homes and businesses sustained flood damage (57 in Blountstown). The Apalachicola River at Blountstown crested near 27.2 feet (third highest) on March 13. The Chipola River at Altha crested near 31.2 feet on March 14. There was a record property damage of 95,000,000 although specifics on the damage was not recorded.

2. On 2/25/2013 in Altha, significant areal flooding occurred across Calhoun County due to prolonged periods of moderate to heavy rainfall. Four- day rainfall totals of around a foot were estimated across the county between 2/22 – 2/26/2013. The emergency manager estimated over \$1,000,000 in damages across the county, mainly due to road repair.
3. On 4/30/2014 in Center Lake, major flooding occurred across Calhoun County at the end of the month due to a combination of very heavy rainfall and already saturated conditions. Many road in the County sustained damage with estimates at \$3,234,208.

#### [Additional Flood Occurrence Data from the FIS](#)

#### **Principal Flood Problems**

As stated in the Calhoun County Flood Insurance Study, Number 12013CV000A, the largest flood recorded at the U.S. Army Corps of Engineers (USACE) stream gaging station No. 02358700, the Apalachicola River near Blountstown, occurred on July 10, 1994, with a maximum elevation of 53.71 feet North American Vertical Datum of 1988 (NAVD88) and a peak discharge of 209,000 cubic feet per second (cfs). This flood had a recurrence interval of 21 years. Prior to the 1957 installation of the USACE stream gaging station, the highest known elevation since at least 1920 was 55.10 feet NAVD88 on March 21, 1929. Flooding within the corporate limits of Blountstown occurs in many areas due to poor drainage systems and inadequate road culverts and outlets.

The photo to the right – December 30, 2015, Many Calhoun County residents are having to find alternative routes after more than 20 roads have closed or flooded due to recent rain. The Apalachicola River crested at 25.6 feet.



Photo Source:<https://www.wjhg.com/home/headlines/River-causes-major-flooding-in-Blountstown-363871901.html>

## Drainage Patterns



Map Source:<http://fcit.usf.edu/florida/maps/pages/11200/f11220/f11220.htm>

According to the County FIS, flooding within the City of Blountstown occurs in many areas due to poor drainage systems and inadequate road culverts and outlets. In addition to areas in the eastern section of the city, residents in the central part of the city, particularly along Sutton Creek and Lake Hilda, are also impacted by the lack of sufficient drainage. Sutton Creek flows southeast through the center of Blountstown draining nearly 13.7 square miles of the city. The creek rejoins the Apalachicola River south of the city. During flooding on the Apalachicola River, the creek often backs up, flooding central areas of the city.

## Flood Protection Measures

Calhoun County has no existing flood protection measures. However, the flow of the Apalachicola River is regulated to some extent by the Jim Woodruff Dam, completed in 1957 and located about 30 miles upstream in the City of Chattahoochee, Florida.

Flood elevation data for the Apalachicola River was collected from the US Geological Survey Stream Gauge near Blountstown. It is important to note that the minimal reading that qualifies as a flood is 15 feet. Revised flood elevations for the Blountstown gauge defined the 100-year flood at 29.5 feet and the 50-year flood at 27.5 feet.

Although flooding is a serious hazard facing the county, it does not have to be a 100-year flood event to cause serious damage and disruption to everyday activities. As indicated earlier, there has not been a 100-year flood in the county this century. In fact, the three major floods that have occurred since 1990 have all been 50-year events or less. The 1990 March storm event was just shy of the 50-year flood elevation, while Tropical Storm Alberto in 1994 exceeded it by six inches and the 1998 El Nino phenomena matched the 50-year gauge reading of 27.5 feet. Although these three events were at or near the 50-year elevation and each took place within a nine-year span, this activity should be considered abnormal. The last flood event that exceeded the "50-year" flood level was the 1929 event discussed earlier. In more recent flood events the highest Blountstown gauge reading was still less than the 50-year event at about 22 feet.

The floods associated with Tropical Storm Alberto in 1994 damaged many properties throughout the county. Following the floods, Calhoun County and the City of Blountstown began a major mitigation effort to reduce future flood damages. Combined, the County and Blountstown bought and demolished nearly 50 residential structures located in the floodplain, elevated 20 residential structures and 2 public/commercial structures at least one foot above the base flood elevation, repaired and flood proofed manholes and wastewater lift stations, and upgraded the City's wastewater treatment plant.

Following the March 1998 El Nino floods, Calhoun County Emergency Management conducted a damage survey of flood damaged and/or isolated properties within the Apalachicola and Chipola River flood basins. The following tables summarize flood damages associated with the 1998 El Nino event for unincorporated Calhoun County and the City of Blountstown, respectively. The Town of Altha had no reported flood damage.

### Probable Impact Data for Apalachicola River Near Blountstown

The NOAA, National Weather Service, Advanced Hydrologic Prediction Service determines probable impacts in the area anticipated on the stage reading at the Blountstown gage. The impact statements provided are from the flood stage (17 ft) through the record stage (29 ft), see Figure 4 xxx for flood stage and historical crests. In addition to previous flood events and coordinated details from the Emergency Management officials within the basin of Calhoun, Liberty and Gulf counties.

Figure 4 xxx analyzes what streets, homes, and roads would be flooded at the different flood levels. Example: At 29 feet, record flooding would occur in Blountstown. Water would cross North Main Street at NW Folsom Avenue. SR 69 at NE Pear Street floods. In Pine Island, NE Hickory Street floods, affecting a few homes on NE Gum Street and NE Bay Street.

Flood Categories (in feet)	
Major Flood Stage:	26
Moderate Flood Stage:	23.5
Flood Stage:	17
Action Stage:	13
Low Stage (in feet):	1

Historic Crests	
(1)	28.60 ft on 03/21/1929
(2)	27.90 ft on 01/27/1925
(3)	27.23 ft on 03/13/1998
(4)	27.21 ft on 07/10/1994
(5)	26.30 ft on 03/21/1990

Figure 4 xxx - Probable Impact Data for Apalachicola River Near Blountstown

# Apalachicola River Near Blountstown (BLOF1)

**NOTE:** River forecasts for this location take into account past precipitation and the precipitation amounts expected approximately 48 hours into the future from the forecast issuance time.

Flood Stage: 17 Feet

Reliability of the Forecast: Based on current and forecast river, weather and reservoir conditions  
**NOTE:** Forecasts for the Apalachicola River near Blountstown are issued routinely year-round.

## Flood Impacts

29  
Record flooding in Blountstown. Water crosses North Main Street at NW Folsom Avenue. State Road 69 at NE Pear Street floods. In Pine Island, NE Hickory Street floods, affecting a few homes on NE Gum Street and NE Bay Street.  
28  
A few homes north of Blountstown on NE Pear Street will flood. Flood waters approach North Main Street. Along SE River Street, significant residential flooding continues.  
27  
Flooding continues to expand along SE River Street. Many homes are flooded south of SE Ray Street. In Liberty County, all residences downstream of the Bristol Boat Ramp are flooded.  
26  
Major flooding in Blountstown. Numerous homes flooded along SE River Street south of SE Ray Avenue. North of Downtown Blountstown, NE Pear Street floods and water approaches two homes on the west side of NE Pear Street.  
25  
The road to the Bristol Boat Ramp at NW River Park Road is closed in Liberty County. Homes west of the boat ramp begin to flood. In Blountstown, flooding expands around homes near SE River Street.  
24.8  
Water will reach the foundations of two houses east on highway 20. Flooding will also occur in Blountstown on Mayhaw.  
24.5  
In Blountstown, the area from the boat landing to Tupelo Street will be underwater. Lake Grove Road to the Chipola Cutoff area will flood in Gulf County. Water will approach homes at Red Bull Island and the Dalkeith and Howard Creek areas in Gulf County. The 24.5 foot level at Blountstown may at times not be representative of river levels in these areas due to tidal effects, winds, or local rainfall and should be used with caution.  
24.1  
Water begins to flood NE Magnolia Street in Pine Island east of NE Hickory Street. In Blountstown, water begins to surround homes east of SE Pear Street to SE River Street. In Liberty County, flooding expands at the Bristol Boat Ramp affecting more residences.  
24  
The Wewahitchka area in Gulf County will be affected downstream of Blountstown. Minor house flooding will occur at Kentucky Landing, Chipola Cutoff, Red Bull Island, Douglas Landing, Brants Landing, Willis Landing and Howards Creek area. The 24.0 ft level at Blountstown may at time not be representative of river levels in these areas due to tidal effects, winds or local rainfall and should be used with caution.  
23.5  
Water will reach the walkway to Neal Lumber Office in Blountstown. Houses downstream at the Chipola Cutoff in the Wewahitchka area will begin to flood. The 23.5 foot level at Blountstown may at times not be representative of river levels in these areas due to tidal effects, winds, or local rainfall and should be used with caution.  
23  
Water crosses the low water crossing on Parrish Lake East 3 miles before the end of the road in Calhoun County.  
22  
Minor lowland flooding will occur on many roads including Byrd Parker Road, Warmouth Drive, Gaskin Park, the end of Lake Grove Road, Elm Street on Red Bull Island, and Lower Landing on Howards Creek in Gulf County. The 22.0 ft level at Blountstown may at times not be representative of river levels in these areas due to tidal effects, winds, or local rainfall and should be used with caution. In Liberty County, a home on River Road downstream of the Bristol Boat Ramp begins to flood on the lower level.  
21  
Ocheesee Landing in Calhoun County is flooded, restricting access to the boat ramp and parking area. Kennedy Creek at Forest Road 115 in Liberty County floods.  
20  
The boat ramp at Estifanulga in Liberty County floods.  
19  
Minor lowland flooding will occur at Douglas Landing and Willis Landing Campgrounds in Gulf County. The 19.0 ft level at Blountstown may at times not be representative of river levels in these areas due to tidal effects, winds, or local rainfall and should be used with caution.  
18  
Forest Road 115 in Liberty County at River Styx Campground will flood, isolating access to the site.  
17  
John Redd Road in Calhoun County will begin to flood one half mile west of the boat landing, restricting access to the area. The lower portion of the boat ramp in Blountstown floods at this level.

Source: NOAA, National Weather Service; <https://water.weather.gov/ahps2/glance.php?wfo=tae&gage=blof1&riverid=204455>

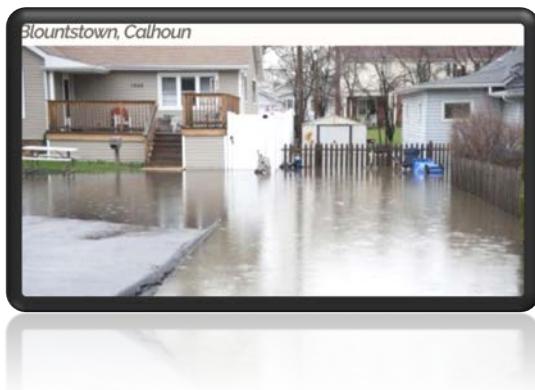
Flooding events either from a tropical storm, a hurricane or simply a heavy summer rain, poses a major hazard throughout the county and it is not necessary for development to be in the 100-year floodplain to be at risk. With heavy development along the Apalachicola and Chipola Rivers and their floodplains, numerous structures and roads are at risk from more frequent flood events.

As noted in the previous LMS Plan update, the county experienced three 35 to 50-year flood events, damaging or isolating hundreds of homes and dislocating hundreds of households. The March 10, 1998 was a significant flooding event for Calhoun County as twenty-eight roads and state Road 69 were closed, approximately 400 homes and businesses sustained flood damage (57 in Blountstown), and property damage of over \$95,000,000. The risk of flood damage can occur not only to the structures in the County, but to the paved and unpaved roads are at risk of being washed out on an annual basis, even if they are outside the floodplain. Mitigation efforts directed by county and municipal officials at development in and/or near the floodplain offer a nearly immediate reduction in risk for residents and business owners located throughout the county.

#### Probability of Future Events - High

There is a high probability that Calhoun County will continue to experience flooding associated with large tropical storms, powerful hurricanes, and heavy rainfall.

#### The City of Blountstown and the Town of Altha



The most vulnerable populated area in the county is the City of Blountstown due to its close proximity to the Apalachicola River and poor drainage systems. Major areas of the City's northern, southern and eastern sections lie within the river's 100-year floodplain (Map 4.xxx).

Photo source:<https://nearsay.com/c/593902/538607/why-flood-insurance-is-a-necessity-for-every-florida-homeowner>

Based on current flood maps 4xxx, nearly half of geographic area of the unincorporated county and over half of the City of Blountstown are in the floodplain. Considering nearly all of the population resides in the unincorporated areas of the county or in the City of Blountstown, a large portion of the population may reside within the floodplain.

The probability the Town of Altha will experience a flood is lower compared to the rest of the county. Due to its topographic elevation, most of the town is outside of the SFHA or 100- year floodplain (Map 4.xxx).

## Hurricanes & Tropical Storms

Because of the enormous extent, impact and financial loss that Hurricane Michael had on Calhoun County, details and photos will be referenced in this section.

### Overview

#### Hurricanes



Hurricanes and tropical storms are cyclonic, low-pressure systems over tropical or sub-tropical waters. Such storms with maximum sustained winds of less than 39 mph are called tropical depressions. A tropical storm has maximum sustained winds between 39 mph and 74 mph.

In meteorological terms, a hurricane is defined as a tropical cyclone which has a central barometric pressure of 29 inches or less of mercury, and wind velocities of 75 miles per hour or more. The low barometric pressures and high winds combine to produce abnormally high tides and accompanying tidal flooding.

Photo Source :<https://www.noaa.gov/media-release/hurricane-michael-upgraded-to-category-5-at-time-of-us-landfall>

The high winds can generate large waves, provided there are no obstructions or barrier beaches to dissipate wave momentum. The winds of a hurricane in the Northern Hemisphere spiral inward in a counterclockwise direction towards the "eye" or center of low pressure. The eye of the hurricane (where winds are subdued) can vary in diameter. Normally, the "eye" can extend for 15 miles, although the eye of a mature hurricane can reach diameters of 20 to 30 miles or even greater.

A hurricane develops as a tropical storm either near the Cape Verde Islands off the African coast or in the western Caribbean Sea. Most hurricanes, which reach northwestern Florida approach from a southerly direction after crossing the Florida peninsula, the island of Cuba, or the western Gulf of Mexico. These hurricanes start their journey northward with a forward speed of about 10 miles per hour. The most destructive winds in a hurricane occur east of the eye, where the spiral wind movement and forward motion of the storm combine. When a hurricane nears land, it may cause torrential rain, high wind, storm surge, coastal flooding, inland flooding, and sometimes tornadoes.

#### Tropical Storms

A tropical storm is a tropical cyclone with maximum sustained winds of at least 39 mph. Tropical storms are given official names once they reach these wind speeds. When the wind speeds reach 74 mph or greater, a tropical storm is called a hurricane, typhoon, or cyclone based on the storm location.

The Saffir-Simpson Scale categorizes hurricanes on a scale of 1 to 5, with hurricane intensity based upon maximum sustained wind speed and storm surge. Table 4.xxx describes each category and the resulting damage that could be expected. Damages from hurricanes can also result from spawned tornadoes, storm surge, and flooding that usually are associated with the storm.

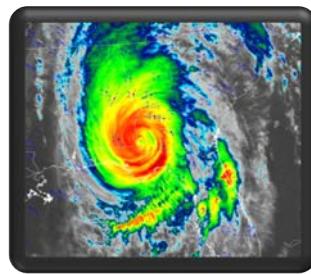


Photo Source: [https://www.weather.gov/images/ffc/events/2018\\_Hurricane\\_Michael/IR\\_Michael.png](https://www.weather.gov/images/ffc/events/2018_Hurricane_Michael/IR_Michael.png)

Table 4xxx – Saffir-Simpson Scale and Damage Classifications

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph 64-82 kt 119-153 km/h	<b>Very dangerous winds will produce some damage:</b> Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph 83-95 kt 154-177 km/h	<b>Extremely dangerous winds will cause extensive damage:</b> Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph 96-112 kt 178-208 km/h	<b>Devastating damage will occur:</b> Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph 113-136 kt 209-251 km/h	<b>Catastrophic damage will occur:</b> Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted, and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 mph or higher 137 kt or higher 252 km/h or higher	<b>Catastrophic damage will occur:</b> A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Source: National Hurricane Center; <https://www.nhc.noaa.gov/aboutsshws.php>

## Geographic Area

Florida is one of the most vulnerable states in the U.S. to hurricanes and tropical storms. Due to its geographic location, all areas of Calhoun County may be exposed to these powerful storm winds, torrential rainfall, and flooding.



The adverse effects from wind of a major hurricane would likely cause damage countywide. – as seen in the photo from Hurricane Michael. Sustained rainfall would likely cause widespread flooding as well as a large portion of the county lies within the floodplain. The county has also experienced tornadoes spawned by the passage of tropical storm systems in the past. The County's location is approximately 40 miles from the coastline therefore, it isn't susceptible to storm surge.

Photo Source: <https://phys.org/news/2018-10-hurricane-michael-heavy-rainfall-nasa.html>



Photo Source: WJHG; <https://www.wjhg.com/content/news/Hurricane-Michael-damage-in-Calhoun-County-497174081.html>

## Historical Occurrences

According to the National Hurricane Center's historical storms, table 4 xxx, outlines storms that have directly impacted Calhoun County (1985 – 2019) and resulted in individual and public assistance. Table 4 xxx identifies the incident period, storm name, category and maximum wind speed. The maximum speed recorded is the highest point during the storm incident period.

**Table 4.xxx- Hurricanes and Tropical Storms that Impacted Calhoun County, 1985-2019**

Date of Occurrence, Incident Period	Storm Name	Category	Maximum Wind Speed (mph)
November 21 – 23, 1985	Hurricane Kate	3	121
July 2 – 29, 1994	Tropical Storm Alberto	TS	65
October 4 – 11, 1995	Hurricane Opal	4	144
September 25, - October 7, 1998	Hurricane Georges	2	110
September 21 – October 4, 2000	Tropical Storm Helene	TS	44
June 11 – 15, 2001	Tropical Storm Allison	TS	58
August 11 – 14, 2004	Tropical Storm Bonnie	TS	65
August 11 – 30, 2004	Hurricane Charley	4	150
September 3 – October 8, 2004	Hurricane Frances	4	145
September 13 – November 17, 2004	Hurricane Ivan	5	160
July 7 – 20, 2005	Hurricane Katrina Evacuation/ Hurricane Katrina	5	N/A/ 175
August 18 – September 12, 2008	Tropical Storm Fay	TS	60
September 4 – October 18, 2017	Hurricane Irma	5	142
October 7 – 19, 2018	Hurricane Michael	5	161
August 28 – September 9, 2019	Hurricane Dorian	5	185

Source: National Hurricane Center, NOAA; <https://www.nhc.noaa.gov/>

Data comparison from FEMA Disaster Declaration site in table 4 xxx to the NCDC, NOAA data, table 4 xxx. the 1985, 1994 and 1995 hurricane and tropical storm events were not recorded in the NCDC county data even though IA and PA was requested by the County. According to the NCDC, NOAA Storm Event Data for Hurricanes and Tropical Storms January 1, 1950 – December 2, 2019, there were 15 documented storm events in Calhoun County. Table 4 xxx provides analysis on date, location, death, injuries, property and crop damage.

Table 4 xxxx – Hurricanes and Tropical Storm Events, January 1, 1950 – December 2, 2019

Incident Date	Location	Storm Type	Deaths	Injuries	Property Damage	Crop Damage
10/7/1996	Calhoun	Tropical Storm	0	0	0	0
9/2/1998	Calhoun	Hurricane	0	0	\$50,000	0
9/28/1998	Calhoun	Hurricane	0	0	\$3,500,000	0
9/21/2000	Calhoun	Tropical Storm	0	0	0	0
8/4/2001	Calhoun	Tropical Storm	0	0	0	0
9/14/2002	Calhoun	Tropical Storm	0	0	\$10,000	0
8/12/2004	Calhoun	Tropical Storm	0	0	0	0
9/15/2004	Calhoun	Hurricane	4	5	\$2,500,000	0
6/10/2005	Calhoun	Tropical Storm	0	0	0	0
7/9/2005	Calhoun	Hurricane	0	0	\$1,000,000	0
6/12/2006	Calhoun	Tropical Storm	0	0	0	0
8/22/2008	Calhoun	Tropical Storm	0	0	\$2,250,000	0
9/10/2017	Calhoun	Tropical Storm	0	0	\$50,000	0
5/28/2018	Calhoun	Tropical Storm	0	0	0	0
10/10/2018	Calhoun	Hurricane	0	0	\$500,000,000	\$250,000,000
<b>Totals</b>			<b>4</b>	<b>5</b>	<b>\$509,360,000</b>	<b>\$250,000,000</b>

Source: NOAA, NCDC;

[https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Hurricane%28Typhoon%29&beginDate\\_mm=01&beginDate\\_d=01&beginDate\\_yyyy=1950&endDate\\_mm=12&endDate\\_dd=02&endDate\\_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA](https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Hurricane%28Typhoon%29&beginDate_mm=01&beginDate_d=01&beginDate_yyyy=1950&endDate_mm=12&endDate_dd=02&endDate_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA)

#### Hazard Narrative

- On 9/28/1998, in Calhoun, Hurricane Georges produced torrential rainfall amounts of 12 to 24 inches in the Florida Panhandle. The Apalachicola River at Blountstown, (flood stage 15 ft) crested at 18.9 ft and the Chipola River at Altha, (flood stage 22 ft) crested at 22.9 ft. on 10/2/1998. Calhoun County officials reported 15 to 20 homes surrounded by high water and severe erosion to numerous unpaved county roads. The property damage was \$3,200,000 however addition specifics were not noted.
- On 9/15/2004, in Calhoun, Hurricane Ivan hardest hit counties were Bay, Calhoun and Jackson County. Calhoun had four deaths and five injuries however the details were not available. Minor areal flooding affected and sharp rises to near or slightly above minor flood levels occurred on the Apalachicola river at Blountstown.

The property damage was \$2,500,000 however addition specifics were not noted.

3. 8/22/2008, in Calhoun, Tropical Storm Fay produced widespread heavy rainfall and strong winds. Rainfall from Fay varied between four and eight inches. There were numerous trees and power lines down throughout the County, with many county roads blocked by debris. Several dirt roads were washed out or undermined by flood waters. The property damage was \$2,250,000 however addition specifics were not noted.
4. On 10/10/2018, in Calhoun, Hurricane Michael was the fourth most powerful hurricane to hit the US, and the most powerful storm to impact the Florida Panhandle in recorded history. The storm caused catastrophic damage, in addition to extensive structural damage, hurricane force winds caused widespread power outages across a large portion of the tri-state region. Nearly 100% of customers across a large portion of the Florida Panhandle lost power, with some of these outages lasting weeks. According to the Florida Forest Service, in Florida, timber damages cost estimates were over \$1,200,000,000 with almost 3 million acres of forested land damaged. Inland flooding associated with Hurricane Michael across the tri-state region was limited as the hurricane quickly traced across the area. The second highest amount of rainfall of 6.66 inches was recorded in Calhoun County.



Photo Source: <http://floridaforest.org/wp-content/uploads/Hurricane-Michael-Initial-Timber-Damage-Estimate.pdf>

With these higher rainfall amounts isolated, on a few areas of inland flooding was observed. Moderate flooding occurred on the Chipola River near Altha. A few homes were impacted downstream from the gauge and significant damage was sustained to the fish camps along the river. Property damage estimates were still being calculated at the time of the publication and will likely rise further. Calhoun's estimates were \$500,000,000 in property damage and \$250,000,000 in crop damage.



#### Information on the Crop or Timber Damage

Although final numbers are not completed, according to the Florida Forest Service, October 2018, below are just of few of the additional future potential costs and impacts to the forest landowners and forest industry in Florida.

- ✓ Significant debris removal costs for timber that cannot be salvaged.
- ✓ Reforestation costs that could be as high as 240 million dollars on pine stands alone in the catastrophic and severe damaged areas.

- ✓ Loss of additional timber because of pine beetle outbreaks or wind damage and reduced value of remaining timber because of poor form and wind sweep.
- ✓ Significantly increased threat and cost to suppress wildfires in areas with upwards to 100 tons per acre of forest fuels on the ground.
- ✓ Potential loss or the reduction of jobs and forest industry in the heavily impacted area because of a loss of forest products for an estimated 15 to 20 years into the future.

Source: <http://floridaforest.org/wp-content/uploads/Hurricane-Michael-Initial-Timber-Damage-Estimate.pdf>

### Impact on the Agriculture in Calhoun County

#### **Calhoun County AG Losses related to Hurricane Michael (details as of December 6, 2019)**

As stated by the UF/IFAS Economic Impact Analysis Program (EIAP) and the Florida Forest Service, the timber and cropland information:

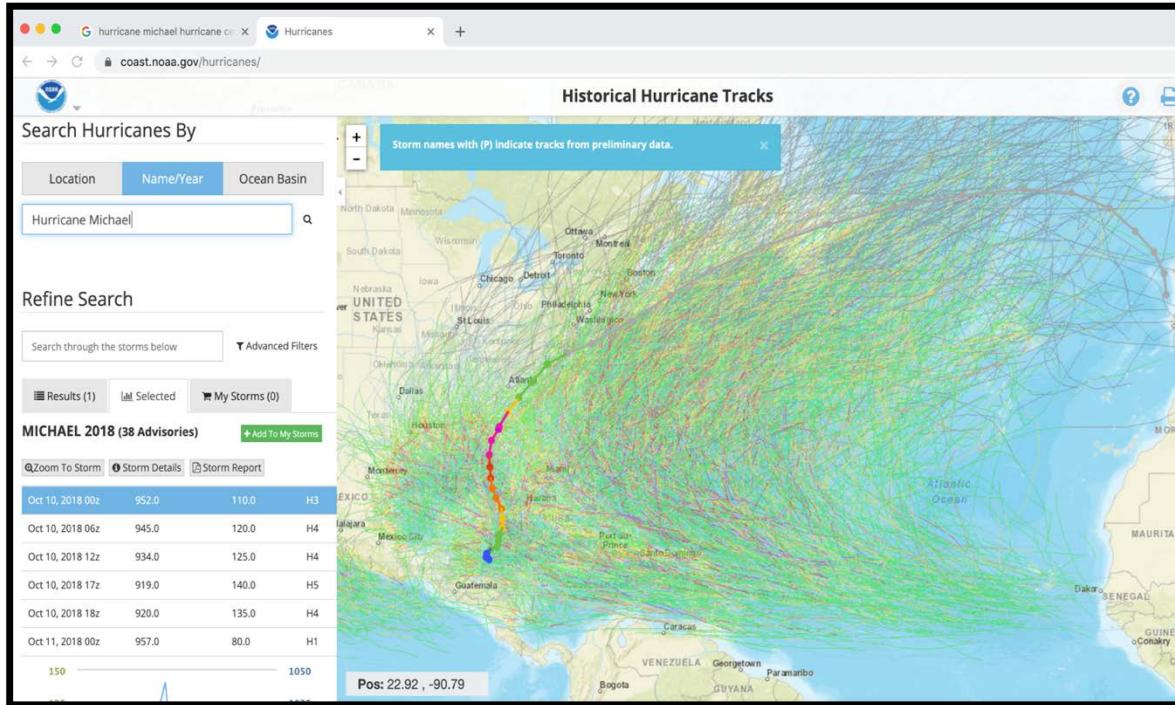
**Timber:** 324,000 acres suffered severe and catastrophic damage, with 75-95% (243,000 – 307,000 acres) of it totally destroyed. Using an extremely conservative estimate of \$1,000 /acre timber value across the county, that equates to a loss of \$324,000,000 in Calhoun County.

#### **Cropland (loss):**

- ✓ Cotton: \$7 million
- ✓ Peanuts: \$1 million
- ✓ Greenhouse/Nursery: \$1 million

Figure 4 xxx Map of Historical Hurricane Tracks, 1850 – 2018, created by the Office for Coastal Management, NOAA, displays the numerous storms that have occurred over the last 168 years and tracks the path. In addition, Hurricane Michael's path is outlined from the initiation point (in dark blue) through its cycle to the conclusion of this massive storm (in light red).

Figure 4xxx- Historical Hurricane Tracks, 1850-2018



Source: <https://www.coast.noaa.gov/hurricanes/>

### FEMA. Fact Sheet: Recovery at a Glance, Calhoun County, October 16, 2019

<b>Release Number:</b> R4 DR-4399-FL F5 057 – CALHOUN COUNTY
As of Sept. 30, unless otherwise noted
Since the federal disaster declaration for Hurricane Michael, Calhoun County residents and local governments have received approximately <b>\$36.7 million</b> in total federal funds:
<ul style="list-style-type: none"> <li>• <b>1,731</b> homeowner and renters have been approved for more than <b>\$9.2 million</b> in federal grants through FEMA's Individuals and Households Program.</li> <li>• As of Sept. 17, an estimated <b>\$34,000</b> has been paid in flood insurance claims.</li> <li>• Nearly <b>\$24.6 million</b> has been approved in U.S. Small Business Administration low-interest disaster loans for <b>538</b> homeowners and renters and <b>33</b> businesses.</li> <li>• Overall to date, FEMA has provided nearly <b>\$2.9 million</b> to the state to help local governments in Calhoun County with Hurricane Michael-related expenses.</li> </ul>
<b>Housing Assistance:</b>
<ul style="list-style-type: none"> <li>• <b>1,068</b> homeowners have been approved for basic housing repairs.</li> <li>• <b>782</b> survivors have not provided FEMA with the necessary information from their insurance settlements to complete their disaster assistance registration.</li> <li>• <b>1,006</b> homeowners and renters have been approved for rental assistance.</li> <li>• Calhoun County was approved for FEMA Direct Temporary Housing Assistance. <b>37</b> households are licensed in to temporary housing units, and <b>10</b> households have successfully moved on to a permanent housing solution.</li> <li>• From October to November 2018, the U.S. Army Corps of Engineers installed <b>481</b> blue roofs in Calhoun County for families to live in their homes while making permanent repairs.</li> </ul>
<b>Public Assistance:</b>
<ul style="list-style-type: none"> <li>• More than <b>1.9 million cubic yards</b> of debris has been removed in Calhoun County.</li> </ul>

## Probability of Future Events - High

According to the Colorado State University, 2019 Tropical Meteorology Project Forecast, Landfalling Hurricane Probability Project, the probability that Calhoun County will experience tropical storm force winds  $> \text{ or } = 40 \text{ mph}$  is 21.9%. Over a 50-year time period, the probability of the county experiencing tropical storm force winds  $> \text{ or } = 40 \text{ mph}$  is 99.9%. Essentially, there is an extremely high probability of a hurricane or tropical storm event occurring in the county in the near future. The figure below provides supporting statistical data.

*It is important to note that in the previous LMS Plan update, there was an extremely high probability of a hurricane in the county in the near future. Since, 2015, Calhoun County has been impacted by three hurricanes and experienced catastrophic damage in October 2018 with Hurricane Michael.*

**Figure 4.xxx Calhoun County, Tropical Landfall Probabilities**

The screenshot shows a web browser window titled "Hurricane Predictor". The address bar says "Not Secure | landfalldisplay.geolabvirtualmaps.com". The main content area displays three tables of data:

**Current Regional Data (Climatology in Parentheses):**

Region Number	Probability of 1 or More Named Storms Making Landfall in the Region	Probability of 1 or More Hurricanes Making Landfall in the Region	Probability of 1 or More Intense Hurricanes Making Landfall in the Region
4	29.8% (29.3%)	14.2% (13.9%)	1.6% (1.6%)

**Current County Data (Climatology in Parentheses):**

County Name	Probability of 1 or More Named Storms Making Landfall in the County	Probability of 1 or More Hurricanes Making Landfall in the County	Probability of 1 or More Intense Hurricanes Making Landfall in the County	Probability of Tropical Storm-Force ( $\geq 40 \text{ mph}$ ) Wind Gusts in the County	Probability of Hurricane-Force ( $\geq 75 \text{ mph}$ ) Wind Gusts in the County	Probability of Intense Hurricane-Force ( $\geq 115 \text{ mph}$ ) Wind Gusts in the County
Calhoun	1.7% (1.7%)	.7% (.7%)	.1% (.1%)	22.3% (21.9%)	6.4% (6.3%)	1.6% (1.6%)

**50 Year Regional Data:**

Region Number	50 Year Probability of 1 or More Named Storms Making Landfall in the Region	50 Year Probability of 1 or More Hurricanes Making Landfall in the Region	50 Year Probability of 1 or More Intense Hurricanes Making Landfall in the Region
4	>99.9%	>99.9%	54.8%

**50 Year County Data:**

County Name	50 Year Probability of 1 or More Named Storms Making Landfall in the County	50 Year Probability of 1 or More Hurricanes Making Landfall in the County	50 Year Probability of 1 or More Intense Hurricanes Making Landfall in the County	50 Year Probability of Tropical Storm-Force ( $\geq 40 \text{ mph}$ ) Wind Gusts in the County	50 Year Probability of Hurricane-Force ( $\geq 75 \text{ mph}$ ) Wind Gusts in the County	50 Year Probability of Intense Hurricane-Force ( $\geq 115 \text{ mph}$ ) Wind Gusts in the County
Calhoun	57.6%	30.8%	3.8%	>99.9%	96.5%	55.4%

Source: Colorado State University, Tropical Meteorology Project, Dr. Gray and his team, Landfalling Hurricane Probability Project, <http://landfalldisplay.geolabvirtualmaps.com/>

## Risk and Vulnerability Assessment – Major (Magnitude)

The Florida Division of Emergency Management (FDEM) provided current HAZUS-MH data that conducted a loss estimation analysis for hurricane and tropical storm force wind. Wind speed data, inventory and damage functions were used to determine expected losses by return period.

Storm models were run for five possible tropical storm and hurricane storms of increasing intensity. Intensity is determined by maximum wind gust sustained for three seconds. The table below identifies the maximum wind gust for each scenario.

**Table 4.xx Calhoun County, Scenarios by Maximum Sustained Wind Speed**

Return Period	Maximum 3-Second Wind Gust (MPH)
10	67
50	96
100	106
500	128
1000	137

Source: HAZUS-MH

#### [City of Blountstown and the Town of Altha](#)

Based on the hurricane's category, strength, and landfall position the vulnerable areas, facilities, and populations will vary. The risks and vulnerability for the City of Blountstown and the Town of Altha are not substantially different from the risks to the unincorporated county. For this reason, expected damage for these two municipalities is contained in the analyses above and no additional research and analysis was performed.



Photo Source: Diane Gallagher, <https://www.wctv.tv/content/news/Calhoun-County-hoping-state-will-cover-mutual-aid-bills-after-Michael-501574841.html>

## Riverine Erosion

### Overview

According to FEMA's Riverine Erosion Hazard Areas Mapping Feasibility Study..."Erosion is the removal of a volume of sediment from a stream reach. However, in riverine areas, a stream reach can be stable and still migrate back and forth. Channel instability occurs when natural or man-induced processes lead to excessive erosion or deposition. Therefore, when a stream migrates laterally but maintains its dimension, pattern, and profile, stability is achieved even though the river is "active" and moves across the floodplain. A reach experiencing this type of lateral migration is considered to be "eroding" and thus has an associated riverine erosion hazard area. This is because stream migration can threaten buildings and infrastructure."

The course of a river's flow can change over time due to both naturally occurring inputs, such as precipitation runoff, and human intervention in the form of urban development, forestry, mining, flow diversion, flood regulation, navigation and other activities. Exactly when or how a river's flow will change cannot be known or predicted. However, if a river's flow does change, it will cause erosion along its banks, which will, in turn, threaten the integrity of any structures located too near the river.

### Geographical Area

The areas of the county that can be impacted by erosion are those that are located along the Apalachicola or Chipola Rivers. Map 4.xxx illustrates the locations of areas within the county that could be affected by erosion.



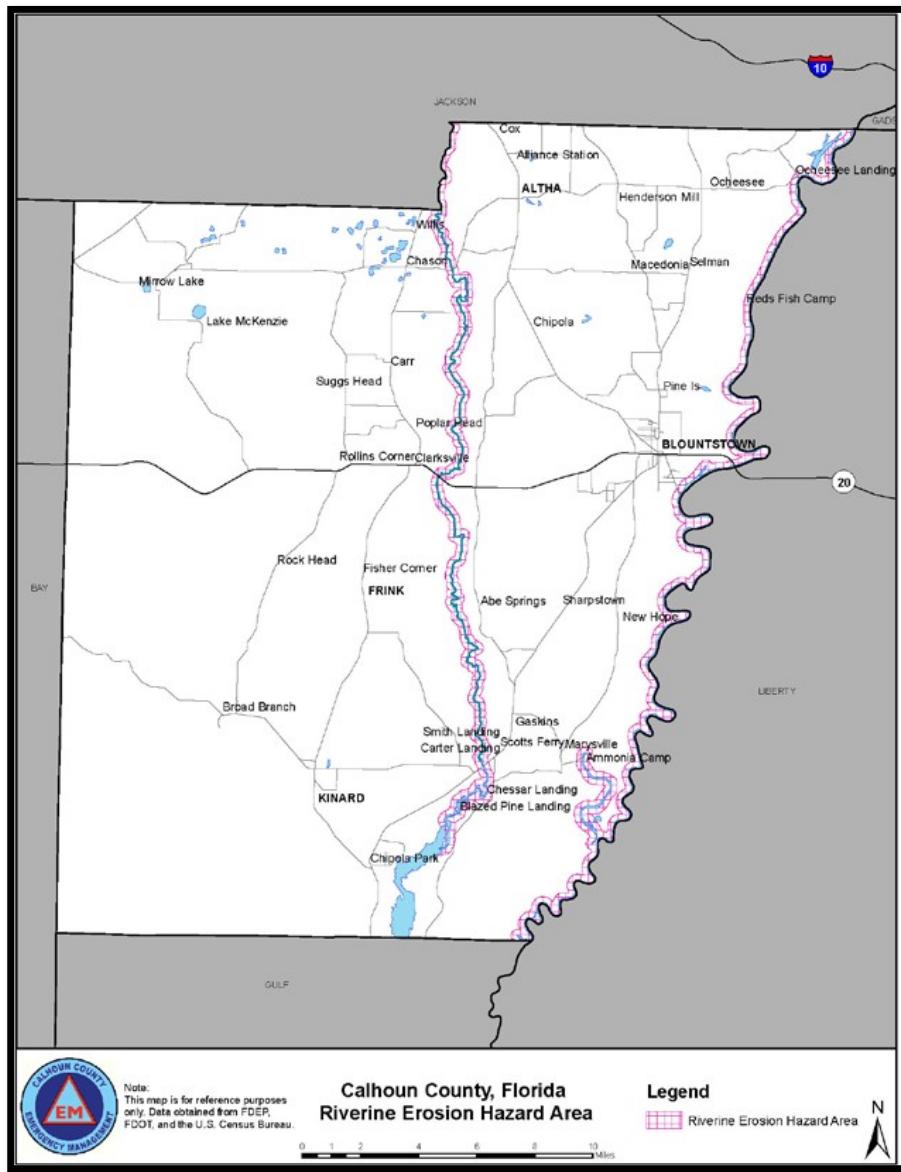
Photo source: <https://explorenwflorida.com/water/water-rivers/>

### Historical Occurrences

Minor erosion is known to have occurred along the Chipola River, but not on the Calhoun County side of the Apalachicola River. However, as noted above in the extent summary area on riverine erosion, location for erosion on the Apalachicola River was documented on the Liberty County side of the river in 2011 and an area near Blountstown. A resident noted that erosion was occurring near the Estiffanulga Boat Landing at  $\frac{1}{2}$  to 1 foot every year, however, engineer studies recorded that 5 feet of riverine erosion was occurring each year.

The barge traffic increase the velocity so the force of the river against the bank is more erosive, in addition to high and low water conditions. This erosive process is also occurring at the J.R's Landing (Neal Landing) near Blountstown. The Apalachicola River is shared by both counties (Calhoun and Liberty). The US Army Corps of Engineers noted that a one-mile section of the river is considered critical for sturgeon and mussel population, making it unlikely that environmental agencies would allow a permit to be issued for work in the selected areas on the river. It was discussed that research should be performed on the potential river erosion rate near John Redd Landing near Blountstown that was noted 8 years ago.

Map 4.xxx - Calhoun County, Riverine Erosion Hazard Areas



#### Probability of Future Events – Low to possible Medium

Although the Apalachicola forms Calhoun County's eastern border and there are several structures located near the river, the threat of loss from severe erosion is low to possible medium. The portion of the Apalachicola that flows along Calhoun County is classified as the "sediment transport zone" which has a reduced likelihood of severe erosion (FEMA, Riverine Erosion Hazard Areas, Mapping Feasibility Study).

#### Risk and Vulnerability Assessment – Minor (Magnitude)

While the risk of riverine erosion causing damage is considered low to possible medium, exposure to this hazard

includes parcels along the Apalachicola and Chipola Rivers. Current exposure is indicated in Table 4.xx below. Riverine erosion can lead to both land and development loss, therefore land value, building replacement value, and content value are vulnerable to this hazard.

#### [\*\*The City of Blountstown and the Town of Altha\*\*](#)

Due to location, the City of Blountstown (as discussed details reveal that John Redd Landing in Blountstown is approximately 2 miles away from the city limits) and the Town of Altha and are not vulnerable to riverine erosion.

## Sinkholes

### Overview

A sinkhole is a natural depression or hole in the Earth's surface caused by karst processes — the chemical dissolution of carbonate rocks or suffusion processes for example in sandstone. Sinkholes may vary in size from less than 1 to 600 meters (3.3 to 2,000 ft.) both in diameter and depth and vary in form from soil-lined bowls to bedrock-edged chasms. They may be formed gradually or suddenly and are found worldwide.

Sinkholes are a common feature of Florida's landscape. They are only one of many kinds of karst landforms, which include caves, disappearing streams, springs, and underground drainage systems, all of which occur in Florida. Dissolution of carbonate rocks begins when they are exposed to acidic water. Most rainwater is slightly acidic and usually becomes more acidic as it moves through decaying plant debris.

Limestone in Florida is porous, allowing the acidic water to percolate through their strata, dissolving some limestone and carrying it away in solution. Over time, this persistent erosion process has created extensive underground voids and drainage systems in much of the carbonate rocks throughout the state. Collapse of overlying sediments into the underground cavities produces sinkholes.

### Geographic Area

There are four areas of sinkhole occurrence in Florida, based on the type and thickness of cover material overlying the limestone. See Figure xxx for the State of Florida, Sinkhole Type.

- ✓ Area I – Bare or thinly covered limestone. Sinkholes are few, generally shallow and broad, and develop gradually. Solution sinkholes dominate.
- ✓ Area II – Cover is 30 to 200 feet thick. Consists mainly of incohesive and permeable sand. Sinkholes are few, shallow, of small diameter, develop gradually. Cover-subsidence sinkholes dominate.
- ✓ Area III – Cover is 30 to 200 feet thick. Consists mainly of cohesive clayey sediments of low permeability. Sinkholes are most numerous, of varying size, and develop abruptly. Cover-collapse sinkholes dominate.
- ✓ Area IV – Cover is more than 200 feet thick. Consists of cohesive sediments interlayered with discontinuous carbonate beds. Sinkholes are very few, but several large diameter, deep sinkholes occur. Cover-collapse sinkholes dominate.

**Figure xxx – Florida Map, Sinkhole Type**



Nearly the entire surface area of Calhoun County is classified by the Florida Department of Environmental Protection (DEP) as Area Type IV, a surface type in which very few sinkholes occur, however, a swallow can occur. The extreme northern central area of the county is classified as Area Type III, the surface type in which sinkholes are most numerous of varying size and develop abruptly. Cover-collapse sinkholes dominate.

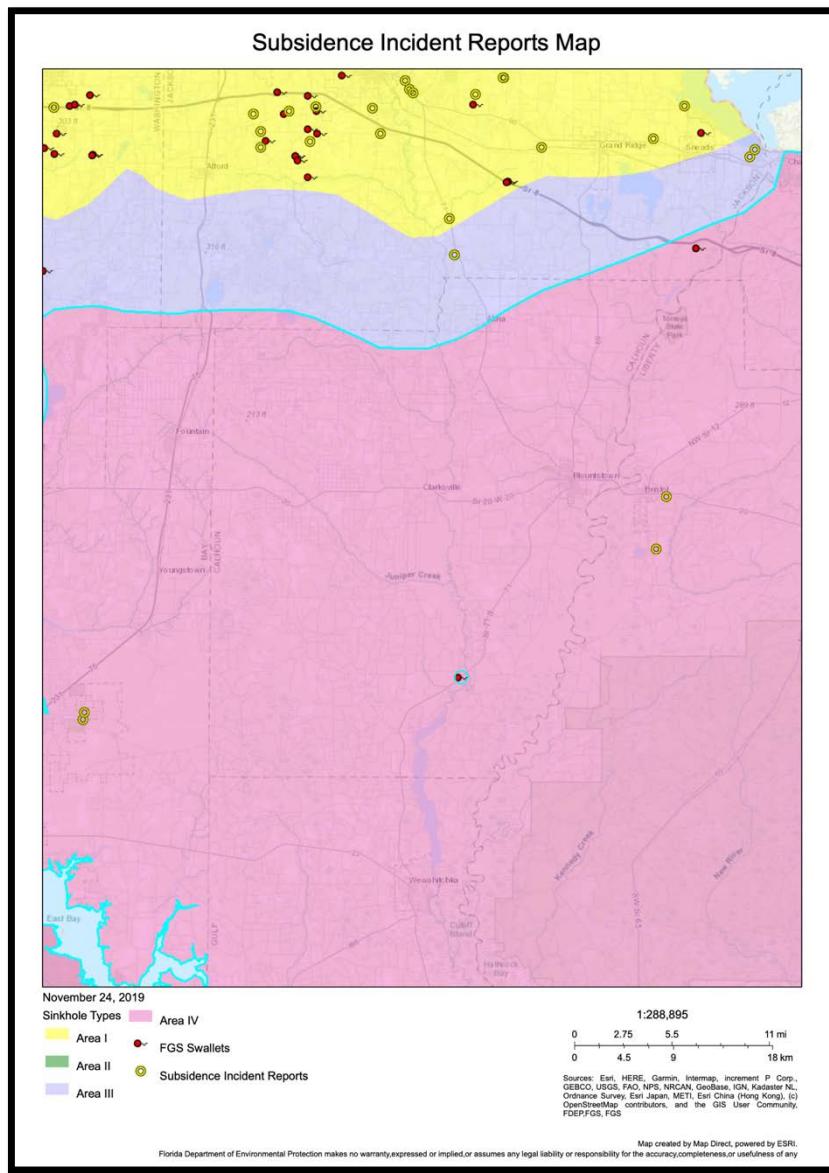
According to the Florida Geologic Survey (FGS), a swallet is a stream to sink feature where an area that concentrates runoff into identifiable streams that disappear underground at a specific point through a sinkhole. The streams may be either intermittent or continuously flowing. Details on the swallet are identified in Table xxx and on Map xxx, Calhoun County has one swallet approximately 11 miles southwest of Blountstown.

**Table xxx - Florida Geologic Survey (FGS)-Swallet, Calhoun County**

OBJECTID	38
SWALLETID	318
NAME	Natural Bridge 8
NATFEAT, CONFIRMED, PHOTO	1, 1, 1
COUNTY	CALHOUN
CNTY_FIPS	36
CONTACTID	195
LATITUDE / LONGITUDE	30.28245 / -85.15087
ALBERS_X / ALBERS_Y	289405.678448 / 697748.59977
ORIENT1 / ORIENT 2	E-W / N-S
POOLDIM1 / POOLDIM2	29 / 50
DEPTH	2.5
MAXH2ODEPT/COLOR	0/ dark tannic
H2OVEG	water lettuce, large segmented rhizome system often curled (looks like bamboo segmentation type)
INFLOW / OUTFLOW	upwelling + channel on north end connecting to 5 and 6 / None
INDIR/ LANDUSE	North/ 2
EROSION, NPSPOLL, BUFFER, GEOID03, OFFSETBEAR	0, 0, 0, 0, 0
DATEVIS/ DATEIN	December 9, 2004/ June 25, 2007
LU_DESC	Residential: Rural

Source: Florida Department of Environmental Protection Geospatial Open Data:  
[https://geodata.dep.state.fl.us/datasets/76c90b4e77c54db89590fd69d3be6f66\\_2?page=16](https://geodata.dep.state.fl.us/datasets/76c90b4e77c54db89590fd69d3be6f66_2?page=16)

Figure 4xxx- Sinkhole and Swallet Occurrences Map



Source: Florida Department of Environmental Protection  
[https://ca.dep.state.fl.us/arcgis/rest/directories/arcgisoutput/Utilities/PrintingTools\\_GPServer/\\_ags\\_568a982-0f1d-11ea-9694-000d3a034a91.pdf](https://ca.dep.state.fl.us/arcgis/rest/directories/arcgisoutput/Utilities/PrintingTools_GPServer/_ags_568a982-0f1d-11ea-9694-000d3a034a91.pdf)

### Historical Occurrences

According to the Florida Department of Environmental Protection FGS, there is one swallet located in Calhoun County. As of November 27, 2019, there have been no reported sinkholes in Calhoun County.

### Probability of Future Events – Minimal

Considering that no sinkhole has been recorded in the county and that the type of surface that covers the majority of the county is not conducive to sinkhole formation, the probability of any future sinkhole occurrence is low.

### Risk and Vulnerability Assessment – Minor (Magnitude)

The majority of Calhoun County is within sinkhole occurrence area IV. However, as illustrated in Map 4.xxx a portion of the county is within area III, an area identified by FDEP to have a greater potential for "abruptly developing" sinkholes. This area is therefore considered the sinkhole hazard area within the county.

### The City of Blountstown and the Town of Altha

Both the City of Blountstown and the Town of Altha are outside the sinkhole hazard area identified in for the county. Therefore, the risk to these cities is minimal and no further analysis is needed.

## Severe Thunderstorms, Lightning and Hail

### Overview

#### Severe Thunderstorms



A severe thunderstorm is defined as a thunderstorm containing one or more of the following phenomena: hail 1 inch or greater, winds gusting in excess of 57.5 mph, and/or a tornado. Severe weather can include lightning, tornadoes, damaging straight-line winds, and large hail. Most individual thunderstorms only last several minutes however some can last several hours.

Long-lived thunderstorms are called super cell thunderstorms. A super cell is a thunderstorm that has a persistent rotating updraft. This rotation maintains the energy release of the thunderstorm over a much longer time than typical, pulse-type thunderstorms which occur in the summer months. Super cell thunderstorms are responsible for producing the majority of severe weather, such as large hail and tornadoes (National Oceanic and Atmospheric Administration). Downbursts are also occasionally associated with severe thunderstorms. A downburst is a strong downdraft resulting in an outward burst of damaging winds on or near the ground. Downburst winds can produce damage similar to a strong tornado. Although usually associated with thunderstorms, downbursts can even

occur with showers too weak to produce thunder (National Oceanic and Atmospheric Administration). Strong squall lines can also produce widespread severe weather, primarily very strong winds and/or microburst.

When a severe thunderstorm approaches, the National Weather Service will issue alerts.

Two possible alerts are:

- Severe Thunderstorm Watch - Conditions are favorable for the development of severe thunderstorms.
- Severe Thunderstorm Warning - Severe weather is imminent or occurring in the area.

#### Lightning

Lightning is a giant spark of electricity in the atmosphere between clouds, the air, or the ground. In the early stages of development, air acts as an insulator between the positive and negative charges in the cloud and between the cloud and the ground. When the opposite charges builds up enough, this insulating capacity of the air breaks down and there is a rapid discharge of electricity that we know as lightning. The flash of lightning temporarily equalizes the charged regions in the atmosphere until the opposite charges build up again. Lightning can occur between opposite charges within the thunderstorm cloud (intra-cloud lightning) or between opposite charges in the cloud and on the ground (cloud-to-ground lightning).



Perhaps the most dangerous and costly effect of thunderstorms is lightning. As a thunderstorm grows, electrical charges build up within the cloud. Oppositely charged particles gather at the ground below. The attraction between positive and negative charges quickly grows strong enough to overcome the air's resistance to electrical flow. Racing toward each other, they connect and complete the electrical circuit. Charge from the ground then surges upward at nearly one-third the speed of light and produces a bright flash of lightning.

On average, more people are killed by lightning than any other weather event. Florida leads in the nation in lightning related deaths and injuries (National Lightning Safety Institute). Florida also has the most strikes, about 12 strikes per square kilometer per year in some places (National Lightning Safety Institute). Nationwide, lightning related economic losses amount to over \$5 billion dollars per year, and the airline industry alone loses approximately \$2 billion a year in operating costs and passenger delays from lightning. The peak months for lightning strikes are June, July, and August, but no month is safe from lightning danger.

## Hailstorms



Hail is precipitation in the form of lumps of ice produced by convective clouds and typically accompanies thunderstorms. They can grow by colliding with supercooled water drops, which will freeze on contact with ice crystals, frozen raindrops, dust or some other nuclei. Thunderstorms that have a strong updraft keep lifting the hailstones up to the top of the cloud where they encounter more supercooled water and continue to grow. The hail falls when the thunderstorm's updraft can't support the weight of the ice or the updraft weakens and the stronger the updraft the larger the hailstone can grow. Hail can damage aircraft, homes and cars, and can be deadly to livestock and people.

Photo Source: <https://wwwmt.com/news/local/watches-warnings-a-look-at-severe-hail-wind-explaining-the-enhanced-fujita-scale>

## Geographic Area

Severe thunderstorms, lighting and hailstorm events are completely at random and it is not possible to predict specific areas that are more susceptible to events over time. Therefore, the entire county is uniformly vulnerable to this hazard.

## Historical Occurrences

### Strong Wind/Thunderstorm Wind Events

There have been 83 significant severe storms / strong high wind events were recorded in Calhoun County between January 1, 1950 and December 2, 2019 by the NCDC. An estimated \$1,380,200 in property damage is attributed to these events. Historic damages may be higher due to possible reporting gaps. Much data is based on local reports. For example, The Calhoun Liberty News Journal reported straight line winds on October 17, 2014 that caused damage to hangars at the airport.

Table 4.xxx Calhoun County, Historical Severe Storm Wind Thunderstorm Occurrences,  
January 1, 1950- December 2, 2019

Incident Date	Location	Wind Speed Knots (kts)	Deaths	Injuries	Property Damage	Crop Damage
4/3/1960	Calhoun	0 kts.	0	0	0	0
4/30/1963	Calhoun	0 kts.	0	0	0	0
2/5/1971	Calhoun	0 kts.	0	0	0	0
2/8/1971	Calhoun	0 kts.	0	0	0	0
7/11/1979	Calhoun	0 kts.	0	0	0	0
12/5/1983	Calhoun	0 kts.	0	0	0	0
12/6/1983	Calhoun	0 kts.	0	0	0	0
12/31/1985	Calhoun	0 kts.	0	1	0	0
4/19/1991	Calhoun	0 kts.	0	0	0	0
6/25/1994	Blountstown	0 kts.	0	0	\$500	0
6/10/1995	Clarksville	0 kts.	0	0	0	0
7/13/1995	Blountstown	0 kts.	0	0	0	0
7/16/1995	Pam	0 kts.	0	0	0	0
7/18/1995	Kinard	0 kts.	0	0	0	0
3/25/1996	Altha	0 kts.	0	0	0	0
1/15/1997	Altha	0 kts.	0	0	\$10,000	0
8/20/1997	Blountstown	0 kts.	0	0	\$5,000	0
6/22/1998	Blountstown	0 kts.	0	0	\$5,000	0
8/14/1999	Clarksville	0 kts.	0	0	\$10,000	0
9/6/1999	Altha	0 kts.	0	0	\$1,000	0
1/24/2000	Altha	0 kts.	0	0	\$35,000	0
1/24/2000	Blountstown	0 kts.	0	0	\$20,000	0
3/11/2000	Northeast Calhoun County	0 kts.	0	0	\$2,500	0
7/16/2000	Altha	0 kts.	0	0	\$20,000	0
8/25/2000	Kinard	0 kts.	0	0	\$200	0
10/13/2002	Clarksville	0 kts.	0	0	\$1,000	0
4/30/2004	Altha	50 kts.	0	0	\$10,000	0

Incident Date	Location	Wind Speed Knots (kts)	Deaths	Injuries	Property Damage	Crop Damage
3/26/2005	Blountstown	60 kts.	0	0	\$1,000,000	0
5/27/2006	Blountstown	55 kts.	0	0	\$500	0
6/22/2006	Central Calhoun County	50 kts.	0	0	\$2,000	0
3/1/2007	Blountstown	55 kts.	0	0	\$3,000	0
6/12/2007	Clarksville	50 kts.	0	0	\$2,000	0
8/11/2007	Blountstown	50 kts.	0	0	\$1,000	0
8/18/2007	Altha	50 kts.	0	0	\$2,000	0
8/24/2007	Chipola Park	50 kts.	0	0	\$10,000	0
2/17/2008	Clarksville	50 kts.	0	0	0	0
6/29/2008	Rollins Corner	55 kts.	0	0	\$10,000	0
12/11/2008	Calhoun County	45 kts.	0	0	\$5,000	0
4/13/2009	Clarksville	65 kts.	0	0	0	0
6/16/2010	Clarksville	50 kts.	0	0	\$1,500	0
4/5/2011	Altha	50 kts.	0	0	\$3,000	0
4/5/2011	Clarksville	55 kts.	0	0	\$50,000	0
4/5/2011	Durham	55 kts.	0	0	\$8,000	0
4/5/2011	Clarksville	55 kts.	0	0	\$5,000	0
5/31/2012	Altha	60 kts.	0	0	\$7,000	0
12/17/2012	Blountstown	45 kts.	0	0	\$500	0
1/30/2013	Clarksville	50 kts.	0	0	\$500	0
1/11/2014	Clarksville	55 kts.	0	0	\$2,000	0
4/30/2014	Altha	65 kts.	0	0	\$10,000	0
7/9/2014	Durham	50 kts.	0	0	\$2,000	0
7/28/2014	Selman	50 kts.	0	0	\$500	0
7/28/2014	Altha	50 kts.	0	0	\$500	0
11/23/2014	Mossy Pond	50 kts.	0	0	0	0
6/30/2015	Blountstown	70 kts.	0	0	\$100,000	0
6/30/2015	Nettle Ridge	50 kts.	0	0	0	0
7/19/2015	Kinard	55 kts.	0	0	0	0
7/22/2015	Clarksville	50 kts.	0	0	0	0
6/17/2016	Center Lake	50 kts.	0	0	0	0
1/22/2017	Clarksville	55 kts.	0	0	\$5,000	0
2/7/2017	Center Lake	55 kts.	0	0	\$10,000	0

Incident Date	Location	Wind Speed Knots (kts)	Deaths	Injuries	Property Damage	Crop Damage
2/7/2017	Ocheessee	55 kts.	1	0	0	0
2/17/2017	Blountstown	55 kts.	0	0	\$10,000	0
4/3/2017	Mossy Pond	50 kts.	0	0	0	0
7/21/2017	Kinard	55 kts.	0	0	0	0
4/15/2018	Blountstown	50 kts.	0	0	0	0
4/15/2018	Nettle Ridge	50 kts.	0	0	0	0
6/28/2018	Nettle Ridge	50 kts.	0	0	0	0
7/21/2018	Chason	50 kts.	0	0	\$2,000	0
9/1/2018	Blountstown	50 kts.	0	0	0	0
9/1/2018	Nettle Ridge	50 kts.	0	0	0	0
9/1/2018	Blountstown	50 kts.	0	0	0	0
9/1/2018	Kennys Mill	50 kts.	0	0	0	0
9/1/2018	Kennys Mill	50 kts.	0	0	0	0
9/1/2018	Durham	50 kts.	0	0	0	0
9/2/2018	Abe Springs	50 kts.	0	0	\$1,000	0
9/2/2018	Scotts Ferry	50 kts.	0	0	0	0
1/19/2019	Chason	50 kts.	0	0	\$1,000	0
1/19/2019	Scotts Ferry	50 kts.	0	0	0	0
1/23/19	Nettle Ridge	50 kts	0	0	0	0
3/2/2019	Mossy Pond	65 kts.	0	0	0	0
3/3/2019	Mossy Pond	55 kts.	0	0	\$5,000	0
3/3/2019	Altha	50 kts.	0	0	0	0
4/14/2019	Blountstown	50 kts.	0	0	0	0
<b>Totals</b>			<b>1</b>	<b>1</b>	<b>\$1,380,200</b>	

Source: NOAA, National Climatic Data Center:

[https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Strong+Wind&eventType=%28C%29+Thunderstorm+Wind&begnDate\\_mm=01&beginDate\\_dd=01&beginDate\\_yyyy=1951&endDate\\_mm=12&endDate\\_dd=09&endDate\\_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA](https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Strong+Wind&eventType=%28C%29+Thunderstorm+Wind&begnDate_mm=01&beginDate_dd=01&beginDate_yyyy=1951&endDate_mm=12&endDate_dd=09&endDate_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA)

#### Hazard Event Narrative – Extent and Impact

- On 3/26/2005, in Blountstown, straight-line winds at 60 kts (69 mph) destroyed one home and damaged several others including some businesses in the Hayes subdivision and Pine Island. Five structures suffered major roof damage, with minor damage to 25 homes. Three families were displaced. Several mills at Redwood Bay Lumber on Highway 71 were destroyed. A semitruck was picked up, carried to the east and slammed into one of the chip trailers. Several trees fell on homes, garages and vehicles. Numerous power lines were also toppled.
- On 2/7/2017, in Ocheessee, after a very active January, another strong system moved through the tri-state region on February 7<sup>th</sup>. Although no tornadoes were reported, there were numerous reports of trees and power lines blown down. Strong winds uprooted a large tree which fell onto a person, resulting in a fatality.

## Lightning Events

As reported by NOAA, NCDC reports two lightning events in Calhoun County between January 1, 1950 and December 2, 2019. Although it is important to note and as reported by the Florida Forest Service "fire data", the leading cause of wildfire events over the last 29 years were due to "lightning" strikes that led to 718 fires and burned over 9,745.3 acres, therefore, there were additional lightning occurrences not recorded by NCDC.

**Table 4.xxx Calhoun County Reported Lightning Occurrences,  
January 1, 1950 – December 2, 2019**

Incident Date	Location	Deaths	Injuries	Property Damage	Crop Damage
7/12/2001	Blountstown	0	1	0	0
9/1/2018	Mossy Pond	0	0	\$5,000	0

Source: NOAA, NCDC;

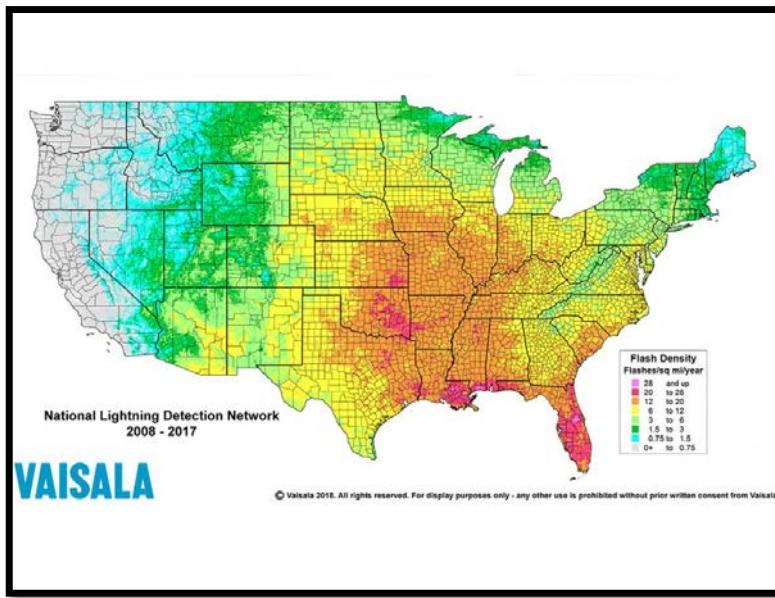
[https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28C%29+Lightning&beginDate\\_mm=01&beginDate\\_dd=01&beginDate\\_yy=1951&endDate\\_mm=12&endDate\\_dd=09&endDate\\_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA](https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28C%29+Lightning&beginDate_mm=01&beginDate_dd=01&beginDate_yy=1951&endDate_mm=12&endDate_dd=09&endDate_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA)

### Hazard Event Narrative – Extent and Impact

1. On 7/12/2001, in Blountstown, a man suffered minor injuries from a nearby lightning strike.
2. On 9/1/2018, in Mossy Pond, scattered to numerous showers and thunderstorms occurred across the area. Some of the storms were marginally severe with impacts to trees and power lines.

Another source of lightning data from the National Oceanic and Atmospheric Administration (NOAA) Severe Weather Data Inventory is the Vaisala National Lightning Detection Network (NLDN) which monitors cloud to ground lightning activity throughout the US. The NLDN reports Calhoun County's flash density rate is between 4 and 12 flashes per square kilometer. Flash density rate is simply the number of flashes recorded per square mile. (See figure 4.xxx).

**Figure 4.xxx- U.S. Map, National Lightning Detection Network (NLDN) Flash Density Rates, 2008 – 2017**



Source: Vaisala, NLDN, <https://www.vaisala.com/en/products/data-subscriptions-and-reports/data-sets/nldn>

The following are facts about lightning:

- ✓ At 54,000 degrees Fahrenheit, a lightning bolt is roughly five times hotter than the surface of the sun.
- ✓ Lightning's unpredictability increases the risk to individuals and property.
- ✓ Lightning often strikes outside of heavy rain and may occur as far as 10 miles away from any rainfall.
- ✓ "Heat lightning" is actually lightning from a thunderstorm too far away for thunder to be heard, however, the storm may be moving in your direction.
- ✓ Most lightning deaths and injuries occur when people are caught outdoors in the summer months during the afternoon and evening.
- ✓ Your chances of being struck by lightning are estimated to be 1 in 600,000 but could be reduced even further by following safety precautions.
- ✓ Lightning strike victims carry no electrical charge and should be attended to immediately.

## Hail Events

As recorded by NOAA, NCDC reports 24 hail events in Calhoun County between January 1, 1950 and August 31, 2019.

**Table 4.xx– Hailstorm Occurrences in Calhoun County, January 1, 1950 – August 31, 2019**

Date	Location	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
1/8/1997	Calhoun County	Hail	0.75 in.	0	0	0	0
8/20/1997	Blountstown	Hail	0.75 in.	0	0	0	0
4/3/2002	Clarksville	Hail	0.88 in.	0	0	0	0
4/3/2002	Clarksville	Hail	1.25 in	0	0	0	0

4/29/2002	Altha	Hail	1.75 in.	0	0	0	0
4/5/2003	Blountstown	Hail	1.75 in.	0	0	0	0
5/5/2005	Blountstown	Hail	1.00 in.	0	0	0	0
5/9/2006	Clarksville	Hail	1.00 in.	0	0	0	0
5/10/2006	Clarksville	Hail	0.88 in.	0	0	0	0
5/10/2006	Clarksville	Hail	0.88 in.	0	0	0	0
4/13/2009	Clarksville	Hail	1.00 in.	0	0	0	0
4/13/2009	Blountstown	Hail	1.00 in.	0	0	0	0
3/28/2011	Durham	Hail	1.00 in.	0	0	0	0
3/14/2012	Mossy Pond	Hail	0.88 in.	0	0	0	0
7/9/2012	Clarksville	Hail	0.75 in.	0	0	0	0
3/23/2013	Clarksville	Hail	1.00 in.	0	0	0	0
3/23/2013	Altha	Hail	1.25 in.	0	0	0	0
5/25/2014	Blountstown Airport	Hail	1.75 in.	0	0	0	0
5/25/2014	Durham	Hail	0.75 in.	0	0	0	0
3/30/2015	Altha	Hail	1.00 in.	0	0	0	0
6/17/2016	Center Lake	Hail	1.00 in.	0	0	0	0
3/2/2019	Mossy Pond	Hail	1.75 in.	0	0	0	0
3/2/2019	Blountstown Airport	Hail	1.00 in.	0	0	0	0
3/2/2019	Nettle Ridge	Hail	0.75 in.	0	0	0	0
<b>Totals</b>						<b>Largest Hailstone, 1.75 inch</b>	

Source: NCDC, NOAA:

[https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28C%29+Hail&beginDate\\_mm=01&beginDate\\_dd=01&beginDate\\_yyyy=1951&endDate\\_mm=12&endDate\\_dd=10&endDate\\_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA](https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28C%29+Hail&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=1951&endDate_mm=12&endDate_dd=10&endDate_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA)

#### Hazard Event Narrative – Extent and Impact

- On 4/29/2002 in Altha, 4/5/2003 in Blountstown, 5/25/2014 at the Blountstown airport, and 3/2/2019 in Mossy Pond, each date recorded a 1.75-inch hail (the size of a golf ball). Although there was no recording to death/injury or damage occurred to property or crop, this size hail is considered a rare size especially for the State of Florida.

#### Probability of Future Occurrences - High

The probability of future occurrences of severe storms, lightning, and hail in Calhoun County is very high. This is evident in the historical occurrence rate.

#### Risk and Vulnerability Assessment – Extensive

All of Calhoun County is vulnerable to severe thunderstorms, lightning, and hailstorm events. Due to the unpredictable nature of these storms, all building and facilities are considered to be uniformly exposed to this hazard and could potentially be impacted.

Severe thunderstorms and lightning events together are known to have cost Calhoun County 1 death, 2 injuries and \$1,385,200 in damages over the last 69 years. All buildings in the county are vulnerable to lightning and it is impossible to know when or where lightning will strike. As a result, the entire building stock and building contents are considered vulnerable.

Vulnerability to severe thunderstorm events can be calculated based on design wind speeds. A thunderstorm is classified as severe when wind speeds reach 57.5 mph or greater. Winds at this speed can push over shallow-rooted trees, break limbs, and damage older and weaker

#### **[City of Blountstown and the Town of Altha](#)**

Severe thunderstorms, lightning and hailstorm events are completely at random and it is not possible to predict specific areas that are more susceptible to events over time. The risks and vulnerability for the City of Blountstown and the Town of Altha are not substantially different from the risks to the unincorporated county.

## Tornadoes

### Overview

Florida ranks third in the United States in the number of tornado strikes, and the first in the number of tornadoes per square mile.



Tornadoes are nature's most violent storms. It is generated by a thunderstorm (or sometimes as a result of a hurricane) and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The damage from a tornado is a result of the high wind velocity and wind-blown debris. Tornadoes can cause fatalities and devastate a neighborhood in seconds and damage paths can be in excess of one mile wide and 50 miles long. A tornado appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground with whirling winds that can reach 300 miles per hour.

Source: <https://www.nssl.noaa.gov/education/srvwx101/tornadoes/types/>

The most common type of tornado, the relatively weak and short-lived type, occurs in the warm season with June being the peak month. The strongest, most deadly tornadoes occur in the cool season, from December through April. Occasional storms such as the spring storm of May 17, 2009 are also widespread and destructive. Every state is at some risk from this hazard.

Some tornadoes are clearly visible, while rain or nearby low-hanging clouds obscure others. Some tornadoes develop rapidly with little advance warning and then may dissipate just as quickly. Most tornadoes are on the ground for less than 15 minutes. Before a tornado hits, the wind may die down and the air may become very still. A cloud of debris can mark the location of a tornado even if a funnel is not visible. It is not uncommon to see clear, sunlit skies behind a tornado.

Facts about tornadoes:

- They may strike quickly, with little or no warning.
- They may appear nearly transparent until dust and debris are picked up or a cloud forms in the funnel.
- The average tornado moves southwest to northeast, but tornadoes have been known to move in any direction.
- The average forward speed of a tornado is 30 MPH, but may vary from stationary to 70 MPH.
- Tornadoes can accompany tropical storms and hurricanes as they move onto land.
- Waterspouts are tornadoes that form over water.
- Tornadoes are most frequently reported east of the Rocky Mountains during spring and summer months.
- Peak tornado season in the southern states is March through May; in the northern states, it is late spring through early summer.
- Tornadoes are most likely to occur between 3 p.m. and 9 p.m. but can occur at any time.

Source: FEMA <http://www.fema.gov/hazard/tornado/index.shtm>

### Definition for Funnel Cloud

A condensation funnel extending from the base of a towering cumulus or Cb, associated with a rotating column of air that is not in contact with the ground (and hence different from a tornado). A condensation funnel is a tornado, not a funnel cloud, if either a) it is in contact with the ground or b) a debris cloud or dust whirl is visible beneath it.

Source: <http://www.crh.noaa.gov/glossary.php?word=FUNNEL%20CLOUD>

According to NOAA's National Weather Service, Storm Prediction Center, the Enhanced Fujita Scale was implemented February 2007. The storm events database documentation notes that the Tornado EF Scale was based on the enhanced F-Scale. Details from NOAA's National Weather Service Storm Prediction Center on the Enhanced Fujita scale states it must continue to support and maintain the original tornado database and there must be some conformity to that of the F-Scale that is listed in the database. When using the EF-Scale to determine the tornadoes EF-rating, begin with the 28 Damage Indicators.

- ✓ Each one of these indicators has a description of the typical construction for that category of indicator.
- ✓ Then the next step is to find the Degree of Damage (DOD).
- ✓ Each DOD in each category is given and expected estimate of wind speed, a lower bound of wind speed and an upper bound of wind speed.

The Enhanced Fujita (EF) Scale is a set of wind estimates (not measurements) based on damage. It uses three-second gusts estimated at the point of damage based on a judgment of 8 levels of damage to the 28 indicators listed below. These estimates vary with height and exposure. The 3 -second gusts is not the same wind as in standard surface observations. Standard measurements are taken by weather stations in open exposures, using a directly measured, and "one-minute mile" speed. See Table xxx, the Enhanced F-Scale for specifics on tornado damage.

Tornadoes classification using the Enhanced Fujita scale as follows:

Table 4.xxx – Enhanced Fujita Scale and Damage Classification

Scale	3 Second Gust (MPH)	Description of Damages
EF0	65-85	<b>Light Damage:</b> Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
EF1	86-110	<b>Moderate Damage:</b> Peels surfaces off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
EF2	111-135	<b>Considerable Damage:</b> Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	<b>Severe Damage:</b> Roofs and some walls torn off well- constructed houses; rains overturned; most trees in forest uprooted; heavy cars lifted off ground and thrown.

EF4	166-200	<b>Devastating Damage:</b> Well-constructed houses leveled; structures with weak foundations blow away some distance; cars thrown and large missiles generated.
EF5	200 +	<b>Incredible Damage:</b> 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.

Source: NOAA Storm Prediction Center; Federal Emergency Management Agency

When a tornado threatens, only a short amount of time is available for life-or-death decisions. The National Weather Service (NWS) issues two types of alerts:

- A Tornado Watch means that conditions are favorable for tornadoes to develop.
- A Tornado Warning means that a tornado has actually been sighted.

The unpredictability and sheer strength of tornadoes presents a unique challenge to community readiness. Tornado preparation is largely dependent on the effectiveness of the local warning system and an understanding by local residents of how they should respond during an actual tornado or a tornado warning. In Calhoun County, tornado watches / warnings are issued by the National Weather Service through the local television and radio networks. Early warning is especially important for residents of manufactured homes who may need to seek shelter at an alternate location. In addition to advanced warning, mitigation may also be achieved through building reinforcement and the construction of safe rooms.

### Geographic Area

Tornado events are completely at random and it is not possible to predict specific areas that are more susceptible to tornado strikes over time. Therefore, the entire county is uniformly vulnerable to this hazard.

Damage to the Calhoun Correctional Institution  
from an EF2 tornado on 11/17/2014.



### Historical Occurrences

There have been a total of 19 tornadoes and 3 funnel clouds officially reported in Calhoun County between January 1, 1950 and December 2, 2019 (Table xxx). These events resulted in 4 deaths, 24 injuries and an estimated \$7,925,000 in property damage. According to the NCDC, the last reported tornado event in Calhoun County was January 2016. NOAA reported (8) F2 tornadoes over the last 69 years with three tornado events (10/25/1981, 9/14/2004, and 11/17/2014) causing over \$7,900,000 in property damage. F2 tornadoes can cause considerable damage potentially demolishing mobile homes, snapping or uprooting trees and lifting cars off the ground.

Table 4 xxx – Calhoun County, Historical Tornado and Funnel Cloud Occurrences,  
January 1, 1950 – December 2, 2019

Incident Date	Location	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
1/28/1952	Central West	F1	0	3	\$25,000	0
6/20/1961	Southeast	Unknown	0	0	0	0
12/10/1967	Chipola	F2	0	0	\$25,000	0
5/8/1972	Northeast	F2	0	0	\$25,000	0
1/12/1975	West Calhoun to Southern Jackson County	F2	0	0	\$250,000	0
7/7/1975	West of Altha	F0	0	0	\$25,000	0
4/4/1979	Blountstown	F1	0	0	\$250,000	0
10/25/1981	Blountstown	F2	0	12	\$2,500,000	0
12/5/1982	Blountstown	F1	0	0	\$25,000	0
11/11/1995	Ocheesee	F0	0	0	0	0
1/15/1997	Camps Head	F2	0	1	\$50,000	0
1/15/1997	Camps Head	F1	0	0	\$50,000	\$500
10/24/1997	Kinard	F1	0	0	\$100,000	0
10/26/1997	Blountstown	F1	0	1	\$50,000	0
3/12/2001	Northwest	Funnel Cloud	0	0	0	0
3/15/2001	Kinard	F2	0	0	\$50,000	0
9/15/2004	Blountstown	F2	4	5	\$2,500,000	0
11/26/2013	Frink	Funnel Cloud	0	0	0	0
10/13/2014	Scott's Ferry	EF0	0	0	0	0
10/13/2014	Chason	Funnel Cloud	0	0	0	0
11/17/2014	Kennys Mill	EF2	0	2	\$2,000,000	0
1/22/2016	Broad Branch	EF0	0	0	0	0
<b>Totals</b>			<b>4</b>	<b>24</b>	<b>\$7,925,000</b>	<b>\$500</b>

Source: NOAA, NCDC;

[https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28C%29+Tornado&beginDate\\_mm=01&beginDate\\_dd=01&beginDate\\_yy=1951&endDate\\_mm=12&endDate\\_dd=10&endDate\\_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA](https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28C%29+Tornado&beginDate_mm=01&beginDate_dd=01&beginDate_yy=1951&endDate_mm=12&endDate_dd=10&endDate_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA)

#### Hazard Narrative – Extent and Impact

- On 10/25/1981, in Calhoun, as a tornado touched down on the southwest side of Blountstown near Hwy 71 and moved along a nearly straight south to north line for about 6 miles. The path ended on the north side of town just west of Hwy 69. The width of damage along the path varied between 100 and 300 feet, mostly toward the lower end of that range. A total of 75 houses were damaged. Of this total, 50 houses sustained minor damage, 22 had moderate to heavy damage, and 3 houses were totally destroyed. Also, the high school football stadium was destroyed, including the press box, bleachers and a cement-block fence around the stadium. Numerous trees were blown down along with power and telephone lines. The tornado funnel was

observed by numerous persons, and the typical roaring sound similar to a freight train was reported. Twelve persons were injured, and the most serious injury was broken leg. Total damage was estimated at \$2,000,000+. The tornado reportedly did all of this damage in less than five minutes. A cold front, which had become stationary across central Florida the day before, moved back northward with associated thunderstorm activity and was in the Blountstown area with the tornado occurred.

2. On 9/15/2004, in Blountstown, the supercell thunderstorm which spawned tornadoes in Franklin and Liberty Counties, produced a strong F2 tornado, which touched down just southeast of Van Lierop Road, a few miles east of Hwy 69. It crossed Hwy 69 near the Stafford Creek Bridge, and peeled roofs from dozens of homes, uprooted trees, and scattered debris. The tornado then struck the Macedonia Community at Hwy 69A and Parrish Lake Road. It demolished three trailers and damaged 30 homes. The tornado picked up two neighboring mobile homes. One was thrown across a road and killed its two occupants. Another was slammed into a neighbor's hours, which killed its two occupants and injured five others.

#### Tornado Causes Significant Damage to Calhoun Correctional Institute, November 17, 2014



Calhoun County Correctional Institute is on restricted movement after sustaining structural damage from a tornado that touched down early Monday morning. Two employees were also injured and taken to the hospital. Repairing the damage to the prison will be a long process. Overturned cars and damaged buildings are what's left from an EF2 tornado that hit the Calhoun Correctional Institution early Monday morning.

Photo Source:<https://www.nydailynews.com/news/national/2-injured-tornado-north-florida-prison-article-1.2013707>

"Had extreme damage to the warehouse at the facility. And also PRIDE---it received extensive damage and had extensive damage to the north and south-side outside perimeter fence," said Sheriff Glenn Kimbrel.

Around 4 a.m. the tornado passed through Calhoun County, mostly affecting CCI, injuring two employees. "One of the vehicles with the occupant was picked up and moved 50 or 60 feet and then landed on its top. And the other one was sitting in her car and another car landed on the hood of that car," explained Kimbrel. Sheriff Kimbrell says about 40 cars were damaged. Thirty of those were employee cars. He believes 18 are completely totaled.

So far only the cars and debris have been removed. The perimeter fence is expected to be back up sometime Monday. Sheriff Kimbrel says it will be awhile before the buildings are completely restored. He estimates the damage to be around \$250,000 to \$350,000, and also assures residents the prison is secure.

Source: <https://www.wjhg.com/home/headlines/Possible-Tornado-Causes-Significant-Damage-to-Calhoun-Correctional-Institute.html>

### Probability of Future Events –Moderate

Based on historical occurrences, it is expected that Calhoun County will experience future low-grade tornado activity into the foreseeable future. The possibility of severely damaging tornadoes of F3 or above is low. In recorded history, there has never been an F3 or above tornado that has occurred in the County. Still, there have been nine tornadoes to hit the region over the past 22 years and four were F2 tornadoes. Based on historical data, the county can expect one tornado approximately every two and a half year, and base upon the past 22 years a 50% chance of an F2 tornado.

### Risk and Vulnerability Assessment –Major (Magnitude)

Calhoun County is vulnerable to these wind disasters due to a high concentration of the population residing in manufactured or mobile homes, 1,546 as of 2019, approximately 31% of the residential structures. A tornado or a series of tornadoes could affect the population if it should occur in a highly populated area. Damage has occurred from tornadoes in the county.

The possible consequences of tornadoes include: power outages, infrastructure damage (road/culvert washout), erosion, property damage/loss from wind, water and fires, riverine flooding, evacuations (day and night, road congestion), agricultural damage/loss, economic loss, and debris.

Tornadoes have caused significant damage to the City of Blountstown with over \$5,325,000 over the last 40 years. The damage is primarily caused by wind damage to roofs and tree debris impacting transportation and power services. Tornado warnings are issued several times a year and are evenly distributed throughout the County.

Because of their speed of onset and unpredictable paths, all buildings and facilities are considered to be uniformly exposed to this hazard and could be potentially impacted. Nevertheless, the tables below indicate those structures most vulnerable to tornado impacts along with their collective building replacement and content values. See Appendix A for detail on how this was calculated.

### The City of Blountstown and the Town of Altha

Tornado events are completely random and the probability to predict specific areas that are more susceptible to tornado strikes over time is virtually impossible. The risks and vulnerability for the City of Blountstown and the Town of Altha are incorporated in the county-wide analysis above and are not substantially different to require specific research or an independent analysis.

## Wildfires

### Overview

A wildfire is any uncontrolled fire in combustible vegetation that occurs in the countryside or a wilderness area. Other names such as brush fire, bushfire, forest fire, grass fire, hill fire, peat fire, vegetation fire, veldfire and wildland fire may be used to describe the same phenomenon depending on the type of vegetation being burned.



Wildfires differ from other fires by its extensive size, the speed at which it can spread out from its original source, its potential to change direction unexpectedly, and its ability to jump gaps such as roads, rivers and fire breaks. Wildfires are characterized in terms of the cause of ignition, their physical properties such as speed of propagation, the combustible material present, and the effect of weather on the fire.

Photo source: WJHG

Florida's ecosystems are dependent on natural fire. These low intensity fires re-nourish soil, thin abundant vegetation, and provide proper conditions for reproduction and forage. However, since the early 1950's when Floridians actively began to suppress all fires to protect newly planted forest areas and keep newly built dwellings safe, vegetative fuel has become dense and thick. Natural fires have given way to dangerous wildfires, which often damage rather than benefit natural surroundings.

There are three different classes of wildland fires, which are usually identified by dense smoke that fills the area for miles around.

- ✓ A surface fire is the most common type and burns along the floor of a forest, moving slowly and killing or damaging trees.
- ✓ A ground fire is usually started by lightning and burns on or below the forest floor.
- ✓ Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees.

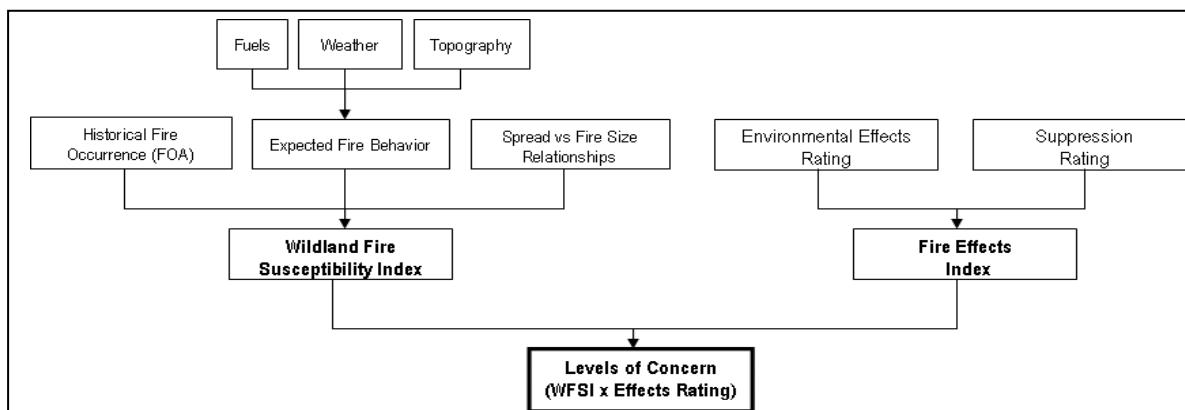
Rural and large tracts of unimproved lands are susceptible to brush and forest fires capable of threatening life, safety and property loss in adjacent developed areas if not effectively controlled. Wildfires are caused by numerous sources ranging from lightning, arson, carelessness by smokers, individuals burning debris, random sparks from heavy equipment, to incendiary. The largest number of fires is caused by lightning strikes which coincide with the height of the thunderstorm season. A major wildland fire can leave a large amount of scorched and barren land, and these areas may not return to pre-fire conditions for decades. If the wildland fire destroys the ground cover, other potential hazards, such as erosion, may develop.

### Geographic Area

Calhoun County is highly susceptible to wildland fires based on the heavily forested composition of the county. Approximately 83% of the county is forested land with native trees and shrubs that are vulnerable to fire.

The Florida Forest Service levels of concern (LOC) measures wildland fire risk (Figure 4.xx). The level of concern is calculated from the probability or likelihood of an acre burning (Wildland Fire Susceptibility Index), and the expected effects of the fire (Fire Effects Index). The Fire Response Accessibility (FRA) Index is a measure of the initial attack response time to a cell from existing initial dispatch locations for fire protection resources. Taken as a pair, these two indices (LOC and FRA) define a cell's accessibility and its vulnerability to wildland fire occurrence and effects. As a result, non-burnable areas and 9 LOC categories ranging from low concern to high concern were assigned. The LOC results can be used to identify areas where mitigation options may be of value. Map 4.xx illustrates these areas.

**Figure 4.xxx Wildfire Level of Concern Variables**



Source: Florida Forest Service, Managing Wildland Fire Risk in Florida;  
[https://www.fs.fed.us/pnw/pubs/gtr802/Vol2/pnw\\_gtr802vol2\\_brenner.pdf](https://www.fs.fed.us/pnw/pubs/gtr802/Vol2/pnw_gtr802vol2_brenner.pdf)

#### Vulnerability for the Calhoun County's Population

Calhoun County had a 3.2% growth rate from 2010 to 2018 with population estimate of 15,093 in 2018. Excluding the projections from 2018 – 2020 with decrease in population of -1.2%, 14,914 in 2020, the 2020 – 2025 population projection is expected to increase 3.8% to 15,477 in 2025.

The population most vulnerable to wildfires would be the residents living in close proximity to Calhoun County's heavily wooded rural areas. Map 4 xxx, Calhoun County, Wildfire Levels of Concern (LOC) and Figure 4 xxx, – Calhoun County WUI Risk, determines wildfire impact levels in the incorporated and unincorporated areas of the County. The population at risk and vulnerable to wildfires is noted in Table 4.xxx.

**Table 4.xxx– Wildfire Population by Level of Concern Category**

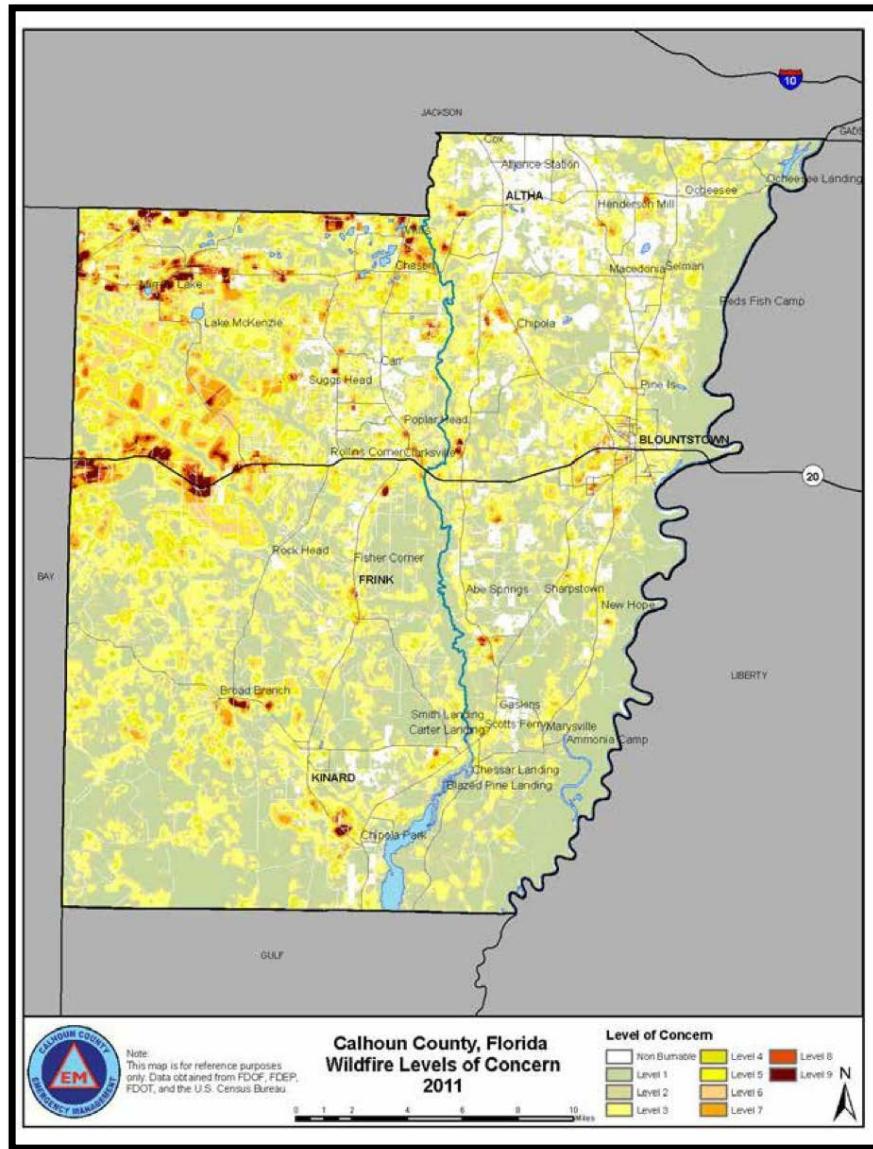
County	LOC 1	LOC 2	LOC 3	LOC 4	LOC 5	LOC 6	LOC 7	LOC 8	LOC 9
Calhoun	602	672	3,196	945	771	743	742	193	102

Source: Florida Division of Emergency Management, GIS Department,  
Data for the State of Florida Enhanced Hazard Mitigation Program, 2018

From the details above, the highest vulnerability for the population would be the level of concern: 3 with 3,196 residents at risk within the population. The topmost risk areas for the population are in the unincorporated areas of the county due to the concentration of residents in rural wooded areas, additional threats to life and property exist, therefore, requiring increased mitigation efforts. This segment of the population could include the mobile home residents which

accounts for xxx% of the residential structures, the poor, the sick, the elderly, the children, and a segment of the single-family home population living in the unincorporated area of the county.

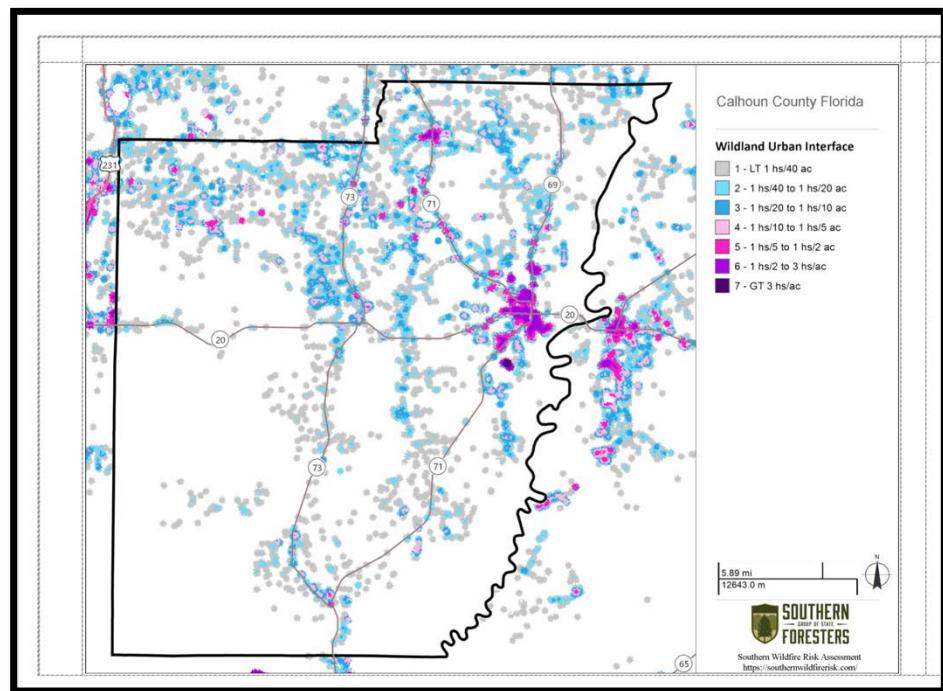
Figure 4.xx Calhoun County Map Wildfire Levels of Concern (LOC)



**Figure 4xxx – Calhoun County Wildland Urban Interface (WUI)**

The wildfires that burned throughout Florida in the last several years are examples of the increasing wildfire threat which results from the Wildland Urban Interface (WUI). The Wildland Urban interface is defined as the area where structures and other human development meet with undeveloped wildland or vegetative fuels (Federal Emergency Management Agency). As residential areas expand into relatively untouched wildlands, people living in these communities are increasingly threatened by forest fires. Figure 4 xxx, map identifies the WUI for Calhoun County.

Source: Southern Group of



State Foresters; SouthWRAP;  
<https://southernwildfirerisk.com/Map/Pro/#project-areas>

**Figure 4 xxx – Key Code for Calhoun WUI and Population**

WUI – Population and Acres				
Housing Density	WUI Population	Percent of WUI Population	WUI Acres	Percent of WUI Acres
LT 1hs/40ac	1,390	9.5 %	60,772	58.2 %
1hs/40ac to 1hs/20ac	1,638	11.2 %	20,756	19.9 %
1hs/20ac to 1hs/10ac	2,127	14.5 %	12,264	11.8 %
1hs/10ac to 1hs/5ac	2,156	14.7 %	6,060	5.8 %
1hs/5ac to 1hs/2ac	2,021	13.8 %	2,657	2.5 %
1hs/2ac to 3hs/1ac	3,858	26.3 %	1,762	1.7 %
GT 3hs/1ac	1,470	10.0 %	80	0.1 %
Total	14,660	100.0 %	104,351	100.0 %

See Figure 4 xxx for the key code description and information on the WUI map for Calhoun on population and acres.

Source: Southern Group of State Foresters; SouthWRAP; <https://southernwildfirerisk.com/Map/Pro/#project-areas>

For Calhoun County, (based on a population of 14,660) it is estimated that 98.9% or (14,684) live within the WUI.



Source: Southern Group of State Foresters; SouthWRAP:  
<https://southernwildfirerisk.com/Account/LogOn?returnUrl=%2FMap%2FPro%2F#project-areas>

Structures in the wildland urban interface zone are vulnerable to ignition by three different ways: radiation, convection, and firebrands (National Wildland Urban Interface Fire Protection Program). Radiating heat from a wildfire can cause ignition by exposure to the structure. The chances of ignition increase as the size of the flames increases, surface area exposed to flames increases, length of exposure time increases, and distance between the structure and the flames decreases.

Another source of ignition by wildfire is convection. Ignition of a structure by convection requires the flame to come in contact with the structure. Contact with the convection column is generally not hot enough to ignite a structure. Clearing to prevent flame contact with the structure must include any materials capable of producing even small flames. Wind and steep slopes will tilt the flame and the convection column uphill increasing the chance of igniting a structure. Structures extending out over a slope have the greatest likelihood of ignition from convection.

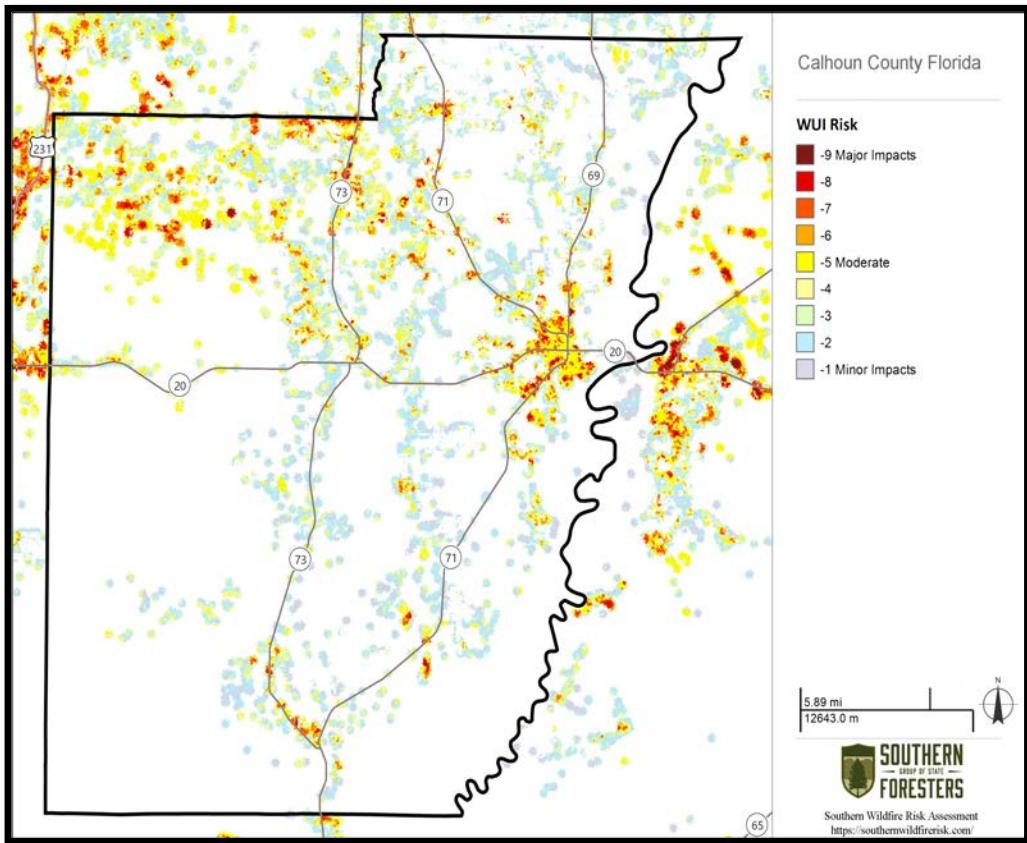
Firebrands also pose a threat to structures in the wildland urban interface. A firebrand is a piece of burning material that detaches from a fire due to strong convection drafts in the burning zone. They can be carried a long distance (around 1 mile) by fire drafts and winds. The chance of these firebrands igniting a structure depends on the size of the firebrand, how long it burns after contact, and the materials, design, and construction of the structure.

The Wildland Urban Interface (WUI) Risk Index layer is a rating of the potential impact of a wildfire on people and their homes. The key input, WUI, reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the Wildland Urban Interface and rural areas is key information for defining potential wildfire impacts to people and homes.

### Impact Data

In calculating the WUI Risk Rating, the WUI housing density data is combined with flame length data and response functions to define the potential impacts to homes and people and likely to take place. Fire intensity data is modeled to incorporate penetration into urban fringe areas so that outputs better reflect real world conditions for fire spread and impact in fringe urban interface areas. With this enhancement, houses in urban areas adjacent to wildland fuels are incorporated into the WUI risk modeling.

Figure xxx – Calhoun County WUI Risk



Source: Southern Group of State Foresters; SouthWRAP; <https://southernwildfirerisk.com/Map/Pro/#project-areas>

Figure 4 xxx – Key Code for WUI Risk

See Figure 4 xxx for the key code description and information on the County WUI Risk map and impact data.

Class	Acres	Percent
-9 Major Impacts	152	0.2 %
-8	1,171	1.3 %
-7	3,468	4.0 %
-6	3,117	3.6 %
-5 Moderate	13,917	15.9 %
-4	13,485	15.4 %
-3	11,964	13.7 %
-2	28,934	33.1 %
-1 Minor Impacts	11,313	12.9 %
Total	87,521	100.0 %

The Southern Wildfire Risk Assessment Summary Report for Calhoun County prepared by the Southern Group of State Foresters is located in Appendix xxxx. In addition to the details above on the Calhoun County Wildland Urban interface (WUI) maps, the report analyzes and discusses data on the Community Protection Zones, the Burn Probability, the Fire Behavior, Surface Fuels, and Dozer Operability Rating for the county.

## Historical Occurrences



From January 1, 2015 to November 26, 2019, 88 wildfires have been reported within the county from the Chipola Forestry Center burning a total of 971.5 acres. Table 4.xxx provides a summary of wildfires over the past 5 years by cause.

Table 4.47 Calhoun County, Fires by Cause, January 1, 2015 – November 26, 2019

Cause	Fires	Percent	Acres	Percent
Campfire	0	0	0.0	0
Children	1	1.14	0.1	0.01
Debris Burn*	0	0	0.0	0
Debris Burn--Auth--Broadcast/Acreage	10	11.6	155.6	16.02
Debris Burn--Auth--Piles	5	5.68	15.3	1.57
Debris Burn--Auth--Yard Trash	4	4.55	7.6	0.78
Debris Burn--Nonauth--Broadcast/Acreage	2	2.27	4.1	0.42
Debris Burn--Nonauth--Piles	6	6.82	58.4	6.01
Debris Burn--Nonauth--Yard Trash	16	18.18	118.4	12.19
Equipment use*	0	0	0.0	0
Equipment--Agriculture	1	1.14	1.0	0.10
Equipment—Logging	0	0	0.0	0
Equipment--Recreation	0	0	0.0	0
Equipment--Transportation	3	3.41	3.6	0.37
Incendiary	6	6.82	27.1	2.79
Lightning	15	17.05	497.3	51.19
Miscellaneous --Breakout	0	0	0.0	0
Miscellaneous --Electric Fence	0	0	0.0	0
Miscellaneous --Fireworks	0	0	0.0	0
Miscellaneous --Power Lines	3	3.41	1.1	0.11
Miscellaneous --Structure	3	3.41	0.7	0.07
Miscellaneous--Other	2	2.27	8.0	0.82
Railroad	0	0	0.0	0
Smoking	0	0	0.0	0
Unknown	11	12.50	73.2	7.53
<b>Total</b>	<b>88</b>		<b>971.5</b>	

Source: Florida Department of Agriculture and Consumer Services, Florida Forest Service;  
<http://tlhforucs02.doacs.state.fl.us/fmis/publicReports/FiresByCause.aspx>

The two largest known causes for these uncontrolled fires have been lightning and debris burning nonauthorized, yard trash. Analysis of recorded data on Fires by Cause, January 1, 1990 – November 26, 2019 reveals that Lightning and Incendiary were the largest causes of fires in the last 29 years with a total figures of 718 fires and 9,745.3 acres for Calhoun County.

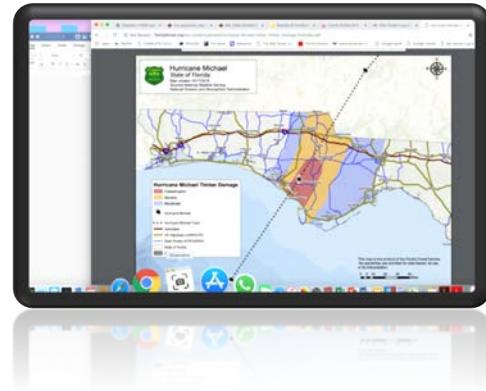
### Disaster Declarations for Calhoun County Due to Fires

IA, PA or both	Date – Incident Period	Disaster Event and Incident Type	Declaration #
IA, PA	May 25, - July 22, 1998	Fires	1223
PA	April 13, 1999	Fires	2255
PA	April 15 – May 25, 1999	Fires	3139

### Hurricane Michael's Impact on Calhoun County's Vulnerability to Wildfires

In October 2018, hundreds of thousands of acres of Calhoun County were covered by towering pines planted 15 to 20 years ago with the intent that one day they would be harvested to make lumber, poles and planks. Then Hurricane Michael's catastrophic winds with up to 156 mph pummeled the county for at least three hours and decimated xxx (confirm data on the number of acres) thousands of acres of timber leaving the risk for wildfires.

**Figure 4 xxx - Florida Forest Service, Hurricane Michael**



Source: Florida Forest Service, Initial Value Estimate of Altered, Damaged or Destroyed Timber in Florida, 10/19/18

As reported by the Florida Forest Service blazes that were once contained to an acre now routinely spread to as many as three because of the difficulty to reach them in time. The region has neither enough people nor equipment available to begin to clear the woods of all the debris. In addition, there is now 100 tons of fuel per acre to sustain wildfires, 10 times more than before the storm. And, the wood that has been drying on the ground for a year, a lack of canopy contributes to the dryness and has allowed undergrowth to bloom and provide additional fuel. If a significant drought event occurs, the wildfire season could be very destructive for the County.

## Probability of Future Events

There is a high probability of wildfire events in Calhoun County, particularly during drought cycles and very dry conditions. Florida's dry season usually begins in November and continues through May or June, with the driest months being March through May or June. The current drought condition for Calhoun County is D1, Moderate Drought. The drought monitor should be watched for the county especially during the Springtime on a daily basis.

Due to inability to clear the woods of debris and the potential of smaller debris burn fires (nonauthorized), the probability increases for wildfire events. These fires are more likely to cause damage to life and property.



Source: <https://www.weather.gov/tbw/droughtinfo>

## **City of Blountstown and the Town of Altha**

The areas around these municipalities are at a significantly higher risk than most other areas in the county due to activity within the wildland urban interface.

## **Steps to take for Wildfire Mitigation Efforts for Calhoun County**

### **Community Wildfire Protection Plan (CWPP)**

As stated by the Forests and Rangelands... "The Healthy Forests Restoration Act (HFRA) provided communities with a tremendous opportunity to influence where and how federal agencies implement fuel reduction projects on federal lands. A Community Wildfire Protection Plan (CWPP) is the most effective way to take advantage of this opportunity. Additionally, communities with Community Wildfire Protection Plans in place will be given priority for funding of hazardous fuels reduction projects carried out under the auspices of the HFRA."

The Calhoun County Emergency Management will be working with the Florida Forest Service over the next year on the outreach program for the county citizens on the following programs: Firewise; defensible space, hazardous fuel reduction and fire adaption, and the CWPP for the county.

## **Winter Storms/Freezes**

### Overview



During the winter, Florida has approximately double the amount of hours of sunlight than the states in the northeastern quadrant of the nation, and far milder temperatures. Mild and sunny winters are Florida's norm, and the State lies within the extreme southern portion of the Northern Hemisphere humid subtropical climate zone, noted for its long hot and humid summers and mild and wet winters. Mean average temperatures during Florida's coldest month (January) range from the lower 50s to high 60s in the Northern region where Calhoun County is located.

Winter storms may include extreme cold temperatures (freeze), high winds, snow, and ice, all of which have the potential to impact people, structures, and infrastructure. During the winter, the North Florida region is occasionally invaded by massive cold fronts that originate far to the north and the results are carried to the Southern states. Although the temperature within these air masses rises significantly during their passage to Florida, they are capable of bringing intense cold to the State.

### **Winter Storm Watches and Warnings**

- ✓ A winter storm watch indicates that severe winter weather may affect your area.
- ✓ A winter storm warning indicates that severe winter weather conditions are definitely on the way.
- ✓ A blizzard warning means that large amounts of falling or blowing snow and sustained winds of at least 35 miles per hour are expected for several hours.

Some Characteristics of Winter Storms include strong winds, extreme cold and ice storms.

- Strong Winds: Sometimes winter storms are accompanied by strong winds creating dangerous wind chill. Strong winds with 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. Infants and elderly people are most susceptible. Because of the mild climate in Florida, "extreme cold", relative to what Floridians are unaccustomed to, can be near freezing temperatures. Freezing temperatures can cause severe damage to 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.

Besides rain, precipitation from winter storms may include sleet and freezing rain.

- Sleet: Sleet forms when snow falls through a layer of warm air and then refreezes in a layer of cold air just above the surface. The ice pellets formed can accumulate and cause problems for drivers. Many times, depending upon the temperature, sleet falls during a transition period before changing to snow or a cold rain.
- Freezing Rain: Freezing Rain forms when snow falls in a pocket of warm air and melts. The rain droplets are

then collected near freezing in a layer of cold air just above the surface and freeze as ice on contact.

### Geographic Area

The risk of the occurrence of a winter storm or freeze does not vary across Calhoun County. The entire county is equally vulnerable.

### Historical Occurrences

Florida has experienced occasional cold fronts that can bring high winds and relatively cooler temperatures for the entire state, with high temperatures that could remain into the 40s and 50s (4 to 15 °C) and lows of 20s and 30s (-7 to 4 °C) for few days in the northern and central parts of Florida, although below-freezing temperatures are very rare in the southern part of the state. The lowest temperature ever recorded in the state is -2°F.

The State has experienced a number of severe or disastrous freezes when the majority of the winter crops were lost. Since December 1889, there have been at least 22 recorded severe freezes. Notably, in March 1993, the Blizzard of 1993 or the "superstorm of 1993" which dumped record amounts of snow on an area that stretched from Alabama to New England. The storm left more than 170 people dead and caused hundreds of thousands of people to be without power for several days. Total damages were estimated at upward of \$800 million. Calhoun was impacted by freezing rain, and wind during this event.

**Table xxx Calhoun County, Historical Winter Storm Occurrence,  
January 1, 1950- December 2, 2019**

Incident Date	Location	Event	Deaths	Injuries	Property Damage	Crop Damage
1/28/2014	Calhoun	Winter Storm	0	0	\$200,000	0
Total						\$200,000

Source: NCDC, NOAA

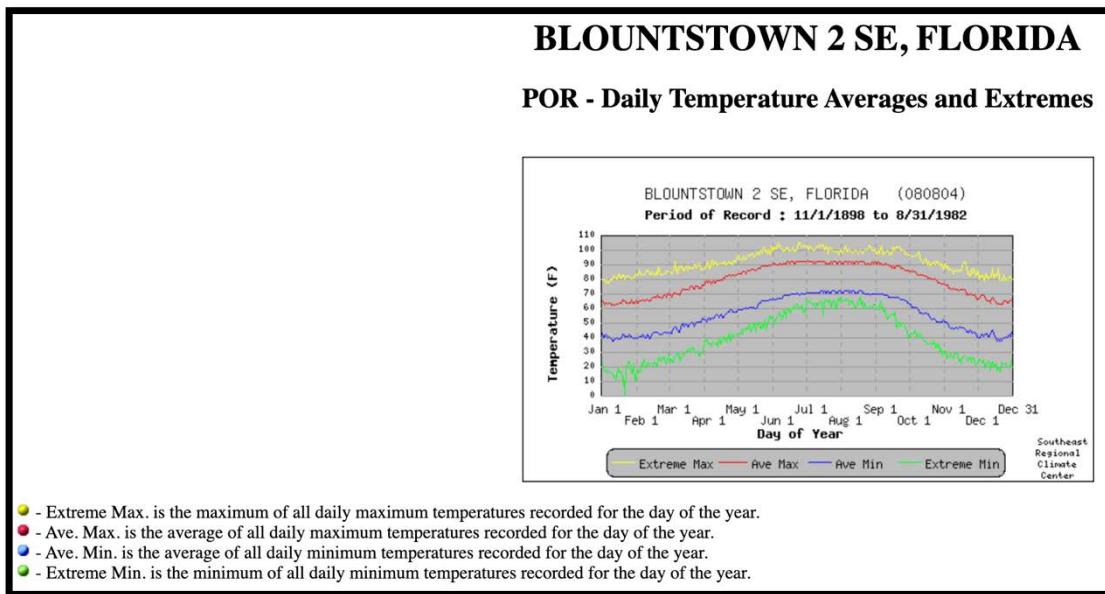
[https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Winter+Storm&beginDate\\_mm=01&beginDate\\_dd=01&beginDate\\_yyyy=1951&endDate\\_mm=12&endDate\\_dd=14&endDate\\_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA](https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28Z%29+Winter+Storm&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=1951&endDate_mm=12&endDate_dd=14&endDate_yyyy=2019&county=CALHOUN%3A13&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=12%2CFLORIDA)

### Hazard Narrative

1. 1/28/2014, Calhoun County, the third winter storm to impact the NWS Tallahassee County warning area in five years brought a wintry mix of precipitation to virtually the entire forecast area. The predominate precipitation types were sleet and freezing rain. Specifics to the property damage was not recorded.

As reported by the Southeast Regional Climate Center, Historical Climate Summaries for Florida, Blountstown, Florida, period of record, daily extremes and averages, November 1, 1898 – August 31, 1982, Blountstown experienced a 0°F on one occasion (extreme minimum temperature) as observed in Figure 4xxx (exact date is not stated).

Figure 4xxx. – Blountstown, Daily Temperature Averages and Extremes



Source: <https://sercc.com/cgi-bin/sercc/cliMAIN.pl?fl0804>

### Probability of Future Events



Calhoun County has limited vulnerability to moderate freezes every two or three years and severe freezes possibly once every fifteen to twenty years. Therefore the probability of Calhoun County experiencing winter freezes is minimal.

### Risk and Vulnerability Assessment –Minor (Impact Magnitude)

Although freezes pose a major hazard to the agriculture industry on a recurring basis and are a significant threat to the economic vitality of the state's vital agriculture industry, it does not pose a threat to buildings.

Agriculture is the most vulnerable asset of the County to winter storms/freezing temperatures. The direct physical effects of winter storms/freezing temperatures in Calhoun County can have a disastrous impact on the agricultural with crop loss.

This could be an added burden and critical for Calhoun County since Hurricane Michael's economic impact on the County's agriculture which was decimated. Read details below.

**Calhoun County AG Losses related to Hurricane Michael (REVIEW/FEEDBACK)** - same data as above

As stated by the UF/IFAS Economic Impact Analysis Program (EIAP) and the Florida Forest Service, the timber and cropland information:

**Timber:** 324,000 acres suffered severe and catastrophic damage, with 75-95% (243,000 – 307,000 acres) of it totally destroyed. Using an extremely conservative estimate of \$1,000 /acre timber value across the county, that equates to a loss of \$324,000,000 in Calhoun County.

**Cropland (loss):**

- ✓ Cotton: \$7 million
- ✓ Peanuts: \$1 million
- ✓ Greenhouse/Nursery: \$1 million

## Section 5

### Mitigation Strategy

Requirement 201.6(c)(3)(i): Does the Plan include goals to reduce/avoid long term vulnerabilities to the identified hazards?

Requirement 201.6(c)(3): Does the Plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs?

Requirement 201.6(c)(3)(ii): Does the Plan address whether or not each jurisdiction participates in the National Flood Insurance Program (NFIP) and how they will continue to comply with NFIP requirements?

Requirement 201.6(c)(3)(ii): Does the Plan identify and analyze a comprehensive range (different alternatives) of specific mitigation actions and projects to reduce the impacts from hazards?

Requirement 201.6(c)(3)(iv): Does the Plan identify mitigation actions for every hazard posing a threat to each participating jurisdiction?

Requirement: Does the identified mitigation actions and projects have an emphasis on new and existing buildings and infrastructure?

Requirement 201.6(c)(3)(iii): Does the Plan explain how the mitigation actions and projects will be prioritized (including cost benefit review)?

Requirement: Does the Plan identify the position, office, department, or agency responsible for implementing and administering the action/project, estimated cost, potential funding sources and expected timeframes for completion?

Requirement: Does the LMS identify the local planning mechanisms where hazard mitigation information and/or actions may be incorporated?

Requirement: Does the plan describe each community's process to integrate the data, information, and hazard mitigation goals and actions into other planning mechanisms?

Requirement 201.6(c)(4)(ii): The updated plan must explain how the jurisdictions incorporated the mitigation plan, when appropriate, into other planning mechanisms as a demonstration of progress in local hazard mitigation efforts.

The Calhoun County Local Mitigation Strategy outlines the goals and objectives that will lead mitigation efforts in each participating jurisdiction (i.e. the City of Blountstown, the Town of Altha, and Unincorporated Calhoun County) over the next 5 years. The implementation plan to accomplish these initiatives is offered below, while specific measures for each jurisdiction are listed in Appendix xxx.

The following procedures in updating the Calhoun County Mitigation Strategy include:

- ✓ Reevaluate and approve mitigation goals and objectives
- ✓ Review and examine the existing mitigation projects/initiatives and/or action items

- ✓ Identify new mitigation projects/initiatives and/or action items
- ✓ Prioritize all mitigation projects/initiatives and/or action items
- ✓ Determine all appropriate funding sources

Each of these components ensures that the County has an established mitigation strategy that helps reduce its vulnerability.

## Mitigation Goals and Objectives

Mitigation Goals are comprehensive long-term policy and vision statements that explain what is to be achieved putting the mitigation strategy into action.

The revised 2019 mitigation goals and objectives listed below were developed and updated by the LMS Working Group after reviewing the 2015 LMS goals, objectives, mitigation project/action item list and successful accomplishments.

Most importantly, discussion and input of the mitigation goals and objectives were critiqued and analyzed after the catastrophic impact the County suffered from Hurricane Michael. With careful consideration and input "new" goals were developed and agreed upon by the Working Group for the 2019 LMS Plan update.

These new LMS goals and objectives demonstrate the communities' commitment to the priorities and continued need to address specific mitigation issues. The following groups participated in the revisions:

- Calhoun County Board of County Commissioners
- Calhoun County Emergency Management
- Calhoun County Building and Road Departments
- Calhoun County Sheriff's Office
- Calhoun County School District
- Calhoun County Planner & GIS
- City of Blountstown Fire Department
- Town of Altha Police Department
- Private business and local citizens

The mitigation goals main objectives are to reduce or avoid the long-term vulnerability for the citizens and property to the effects of the profiled hazards addressed in the risk assessment area in Section 4.

- ✓ They reflect the updated risk assessment,
- ✓ They were analyzed and re-evaluated which lead to the current mitigation projects that will reduce the vulnerability for each jurisdiction,
- ✓ They support the changes made in the mitigation priority list, and
- ✓ They provided the direction needed to reflect the current State of Florida goals for mitigating hazards within the counties.



In addition to the risk assessment details, the following methods of criteria were considered:

- (A) SMART goals are Specific, Measurable, Attainable, Realistic and Timely
- (B) STAPLEE criteria include consideration of whether or not the goal is:
  - ✓ SOCIALLY acceptable and fair
  - ✓ TECHNICALLY feasible, provides a long-term solution, and considers secondary impact(s)
  - ✓ ADMINISTRATIVELY possible with regard to local resources and capacity
  - ✓ POLITICALLY supported
  - ✓ LEGAL (the community has the legal authority to enforce)
  - ✓ ECONOMICALLY beneficial and affordable, including outside funding source(s)
  - ✓ ENVIRONMENTALLY appropriate, meeting all regulations and having no negative effects

The 2019 mitigation goals address the vulnerability of the County citizens, the critical facilities, and the private and public buildings. Improving public awareness of hazard risk and mitigation and ensuring that the entire community has the knowledge on how to prepare for and respond to all hazard events.

**Table 5 xxx – Calhoun County Mitigation Goals and Objectives**

Mitigation Goals	Objectives
<b>Goal 1: Protect human health, safety and welfare</b>	1.1 Take measures to protect all vulnerable populations 1.2 Ensure the protection of critical facilities 1.3 Support disaster mitigation measures to increase shelter capacity 1.4 Organize and rank proposed capital improvement projects to protect public health and safety, to fulfill the County's commitment to provide facilities, or to preserve full use of existing facilities 1.5 Prioritize all future development to be built away from high hazard areas 1.6 Promote countywide inter-mobility for ingress and egress, such as mitigated roads and bridges
<b>Goal 2: Promote public awareness of hazard risk and mitigation</b>	2.1 Improve public outreach and access to hazard information, data, and maps to enhance understanding of natural hazards and the risk they pose 2.2 Promote protective measures and knowledge of natural and non-natural hazards so the community citizens are prepared for and respond to such hazards
<b>Goal 3: Support public and private property protection</b>	3.1 Implement mitigation programs that promote reliability of lifeline systems to minimize impacts from hazards, and expedite recovery in an emergency 3.2 Promote post-disaster mitigation as part of recovery and repair 3.2 Integrate effective mitigation strategies into capital improvement projects throughout the County
<b>Goal 4: Coordinate on a regional level in order to leverage mitigation resources</b>	4.1 Encourage a more interactive regional disaster mitigation education program to reduce future hazard losses 4.2 Promote regional water supply and sewer collection systems 4.3 Increase hazard response training with agencies throughout the region

Goal 5: Protect natural and community resources including but not limited to infrastructure, environmental, recreational and historic resources	5.1      Use every opportunity to mitigate vulnerable infrastructure
Goal 6: Promote better floodplain management and risk awareness for all hazards	6.1      Utilize resources for participation in the National Flood Insurance Program (NFIP) Community Rating System (CRS) in each community 6.2      Increase outreach information about base flood elevations communitywide

### Summary Overview of the Goals and Policy Objectives

As Calhoun County's LMS plan continues to evolve, the goals will be reviewed on an annual basis at an LMS meeting to ensure that they are applicable to meeting the unique needs of the community. The LMS Goals and Objectives were currently reviewed and updated with the Working Group in December 2019. Details were confirmed with the Calhoun County COMP and all updates were provided in this LMS update. After the needed changes, it was determined by the Working Group members that the goals and objectives met the needs for the county and were incorporated in this LMS annual plan update.

## Mitigation Initiatives

### Existing Authorities, Policies, Programs & Resources

With regard to mitigation, these are the existing authorities, policies, programs and resources for each of the three jurisdictions in Calhoun County.

#### Calhoun County

Calhoun County is governed by a County Commission, composed of elected officials from five districts who participate with the LMS Working Group. The Calhoun County Emergency Management Office is responsible for initiating all Working Group activities, maintaining the plan, and leading most mitigation project activities in coordination with the other local departments and agencies. It is fortunate for Calhoun County that many local government representatives are active Working Group members who understand the value of mitigation.

#### Calhoun Resources, Policies & Programs

The County's mitigation resources reside in several areas and the county continues to actively pursue mitigation grant funding and understands how to leverage multiple fund sources to achieve mitigation activities. The current County

elected officials and staff are well aware of the challenges faced during times of disaster as recognized during and after Hurricane Michael.

For a community of its size and limited resources, Calhoun County has an excellent mitigation grant program, administered by the emergency management director. The most serious limitation facing the County with regard to mitigation efforts is the financial capacity to find matching funds for mitigation grant projects, and funding for additional staff to manage the complexities of the grants themselves. Calhoun has a strong history of applying for and receiving mitigation grants in spite of this resource limit, possibly due to the political will to prioritize these efforts.

## (REVIEW/FEEDBACK)

Other County Programs – I will need a list of county grant programs and status to write about existing details – xxx – if applicable – or if I should remove specific programs as listed below

### *Mitigation Grants for Residential and Commercial Properties*

The County and City of Blountstown continue to encourage and support grant applications for retrofitting existing structures by participating in all HMGP grant cycles and the annual federal grant programs such as the Flood Mitigation Assistance (FMA) Program and the Pre-Disaster Mitigation (PDM) Program. A particular obstacle is the lack of local cost share.

### *FEMA's Hazard Mitigation Grant Program (HMGP)*

The County applies for all available federal funding including post-disaster HMGP grants. Discuss details from 4399  
xxx

### *FEMA Department of Homeland Security Annual Funding*

The County takes advantage of annual funding through the State of Florida to implement various preventative measures such as emergency response training and planning activities.

### *State Housing Initiatives Partnership (SHIP) Program*

The Calhoun County building department manages the SHIP program – xxx , which provides funds to local governments as an incentive to create partnerships that produce and preserve affordable homeownership and multifamily housing. The program was designed to serve low and moderate income families. Although the replacement of windows, doors, roofs and other housing elements are considered to be maintenance activities, because these items are installed or constructed in accordance with current building codes this results in homes that are stronger and more protected against potential damages from natural hazards. The county has been implementing this program since its inception in the early 1990's.

### *Calhoun County Historic Preservation*

The old County Courthouse is experiencing deterioration of its beautiful exterior brick façade; the grout is disintegrating due to age. Beginning early 2015 the County will use this historic preservation grant to repair and secure the façade from further deterioration – need update - xxx

### *State of Florida Hurricane Shelter Retrofit Grant*

Calhoun County has obtained state funding for the wind retrofit of the Blountstown High School that will provide new hurricane impact resistant windows and opening protection for 4 buildings on this school campus. After completion of the project, the school will add over 1500 more shelter spaces. – Is this completed or remove? -xxx

## **City of Blountstown – confirm xxxx**

The City of Blountstown is the county seat and is governed by a City Council composed of four council members and a mayor. The City Manager is an active member of the LMS Working Group. A contracted building inspector implements all of the development and permitting activities for the City, including the enforcement of the City's flood damage prevention ordinance. A Public Works Director cares for local infrastructure such as roads and bridges, and emergency management services are handled through coordination between the City Manager's office and the Chief of Police.

### **Blountstown Resources, Policies & Programs**

The City of Blountstown does not have the resources to maintain any regular mitigation programs. Policies that would be considered as hazard mitigation exist within the land development and flood codes. The City does contract with a firm that applies for grants for some mitigation projects, including road hardening, and infrastructure repair or maintenance. For private property mitigation, there is an overall lack of ability to meet any local cost shares for federal mitigation grants.

## **Town of Altha – xxx**

The Town of Altha is a small (1.4 square miles) rural town established in the early 20<sup>th</sup> century and incorporated in 1946. There was an estimated 2018 population of 517 people. The town is governed by a town council composed of council members who are active with the LMS Working Group. Altha maintains and has an inter-local agreement with the county for the implementation of development and permitting in the town. (insert specifics about the police chief - xxx)

### **Altha Resources, Policies & Programs**

Due to its small staff and limited financial resources Altha has very limited capacity to implement mitigation programs on its own. – xxx discuss any mitigation grants

## **NFIP data is ok – just need feedback on information above on resources, policies and programs**

### **National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements**

As stated by FEMA... "The NFIP is aimed at reducing the impact of flooding on private and public structures. This is achieved by providing affordable insurance for property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. Overall, the program reduces the socio-economic impact of disasters by promoting the purchase and retention of Risk Insurance in general, and National Flood Insurance in particular."



Source: <https://www.fema.gov/national-flood-insurance-program>

### **Floodplain Management and the National Flood Insurance Program**

The largest threat facing the county and its jurisdictions is flooding, primarily in the form of washed out roads and bridges. In the 1990's the County acquired and demolished most of the residential structures that flooded, leaving only FEMA NFIP-listed repetitive loss structures xxx (as of 2019) and a small number of others that are not covered by a

flood policy. Residents who live along the Chipola or Apalachicola Rivers do not typically experience floodwaters in their homes, but often cannot get in or out of their property except by boat when the rivers rise.

Numerous conversations with local residents show that this is an accepted way of life for the most part; people watch the river gauges and relocate temporarily to a friend or relative's home until the waters recede. With less than 15,200 residents, people know and care for each other during times of need, and the Calhoun County Emergency Management Office reaches out to vulnerable populations on a regular basis with offers of assistance to relocate or provide unmet needs.

### **Compliance with National Flood Insurance Program (NFIP)**

#### **NFIP Statistics**

The City of Blountstown, the Town of Altha and Unincorporated Calhoun County participate with the National Flood Insurance Program. Also, Calhoun County has 101 Flood Insurance Policies in force.

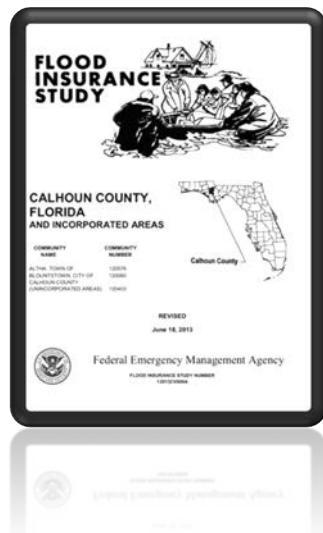
**Table 5.xxx - Calhoun County Participation in the NFIP as of 1/1/2020**

CID #	Community Name	County	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
120403	Calhoun County	Calhoun County	2/10/1978	6/18/1987	6/18/2013	6/18/1987	No
120060	City of Blountstown	Calhoun County	5/24/1974	5/1/1980	6/18/2013	5/1/1980	No
120578	Town of Altha	Calhoun County		12/06/2000	6/18/2013	3/26/2014	No

**Table 5.xxx - NFIP Insurance Report as of 9/30/2018**

Community Name	Policies In-Force	Insurance In-force whole \$	Written Premium In-force
Calhoun County	68	\$13,455,200	51,307
City of Blountstown	33	\$6,489,600	30,615
<b>Total</b>	<b>101</b>	<b>\$19,944,800</b>	<b>81,922</b>

## Calhoun County NFIP Overview



As of 9/30/2018, see table 5xxx, there are currently 101 flood insurance policies in force. The most current FEMA Flood Insurance Rate Map (FIRM) was updated and became effective June 18, 2013 and detailed studies (especially flood hazard areas within the County) were performed in the Flood Insurance Study (FIS) # 12013CV000A by FEMA and the Northwest Florida Water Management District.

In 2013, the County revised and adopted its flood damage prevention ordinance. Development pressure is low to moderate in the unincorporated portions of the county. The County building inspector is the local floodplain administrator for the county; he keeps elevation certificates for floodplain development in his office. The 2013 FEMA Flood Insurance Rate Maps are not printed out, but the public can view the maps online in the building inspector's office, in the planning and land use office, the Calhoun County Emergency Management office or on the Northwest Florida Water Management District website. Drainage ditches and retention ponds are maintained by the county's road department on a regular and as needed basis.

Calhoun County (NFIP community id# 120403) was accepted into the National Flood Insurance Program (NFIP) on June 18, 1987 and remains in good standing. As of September 30, 2018 there are 68 flood policies in effect in the unincorporated areas of the county. The community had an NFIP Community Assistance Contact interview on June 2, 2009 and no major issues were identified.

### The City of Blountstown

The City of Blountstown (NFIP community id# 120060) was accepted into the National Flood Insurance Program (NFIP) on May 1, 1980 and remains in good standing. As of September 30, 2018 there are 33 flood policies in effect in the City of Blountstown. The community had an NFIP Community Assistance Contact interview on June 2, 2009 and no major issues were identified.

The City also revised and adopted its flood damage prevention ordinance before the June 18, 2013 maps became effective. The City floodplain administrator feels that the new maps are not based upon reality, stating that the maps show areas of the city that "never flood" as being in the special flood hazard area, for example on the northwest side of the city. A contractor conducts all building and permitting in the City and oversees implementation of the local flood ordinance. Drainage infrastructure is maintained by the Public Works Director and staff; drainage ditches and ponds are maintained on an annual basis and additionally as needed.

Blountstown's floodplain is fairly extensive, as it is located on the western banks of the Apalachicola River. The entire eastern section of the city is an AE zone with elevations of between 54 and 58 feet above sea level (NAVD 83.) This area includes primarily residential structures, some decades old but some new and elevated according to appropriate codes. Still, the floodplain administrator describes flooding even in this part of the city as "nuisance flooding" for the most part, and residents typically apply the same type as relaxed approach to potential flooding as described above in the discussion about countywide flooding— "watch the gauge and move in with someone on higher ground if it looks like a flood's coming down the river."

In the eastern portion of the city, Sutton Creek flows in from the northwest and out the south side of the city; this creek includes a regulated floodway that encapsulates a small dammed lake, which was created for the purposes of sediment detention. Elsewhere in the city are small unnumbered A zones, and scattered AH zones.

Downtown Blountstown (an area comprising less than one-half square mile) is primarily constructed on the lower end of one of the north-south ridges, and is for the most part, not in the FEMA mapped floodplain.

## The Town of Altha

The Town of Altha was accepted into the National Flood Insurance Program on March 26, 2014 (NFIP community id# 120578.) Calhoun County's building official will utilize the new ordinance when implementing building code and other development regulations in Altha. As of September 30, 2018 there have not yet been any flood policies purchased.

The 2013 FEMA FIRMs show a small unnumbered A zone entering the town boundaries on the north west side, the furthest limit of an unnamed creek flowing from the Ring Jaw Branch to the north. In the southwest corner of the town, Hollis Branch creek extends northeastward approximately a half mile into a wooded area, with AE zone elevations ranging from 130 feet to 159 feet above sea level (NAVD.) In the southeastern section of town an unnumbered A zone south of county road 274, covering less than a fourth of the SE quadrant of the town. Finally, in the northeastern corner of town another unnumbered A zone curves through the area; this is part of Graves Creek to the east. There appears to be no construction in these special flood hazard areas. The town experiences only "nuisance flooding" from time to time. When heavy rains fall, the unnamed creek to the northwest expands southward toward county road 274, causing minor temporary standing water on that road.

The town does not implement development regulations but has an inter-local agreement with the county for this purpose. The 2013 Town of Altha flood damage prevention ordinance is a minimum standard ordinance based upon the State of Florida's model. This ordinance is used by the county for review of development in Altha's special flood hazard areas.

## Continued Compliance with NFIP

The Calhoun County Emergency Management monitors map areas that are prone to frequent floods and track repetitive loss properties. At this time according to the xxx, xxx Calhoun County does not have any repetitive loss properties in the county. After a disaster all damaged structures are inspected and the damage documented. The office also maintains flood mitigation information for the county citizens to review on flooding issues, which include retrofitting, safety, insurance, maps, historical data, and many other sources of information.

Calhoun County will continue to participate in the NFIP. The following actions have been identified, analyzed, and prioritized as necessary steps to remain in compliance with the program and continue to:

- Enforce the most current Florida Building Code, Land Development Code, Comprehensive Plans, and Code of Ordinances;
- Provide current Special Flood Hazard Area Maps for analysis and review which are located at the Building Department;
- Inform citizens with outreach programs to the public with special emphasis for the properties lying in the repetitive flood areas; (xxx if applicable)
- Provide up-to-date Flood Insurance Rate Maps (FIRM) information to all interested parties (details can be obtained at the NWFWM, Flood Information Portal link)
- Monitor all elevation certificates and maintain records and copies for anyone to review;
- Assist local insurance agents with obtaining correct FIRM's and flood insurance rates;
- Participate in all hazard mitigation efforts to include working with Calhoun County's Emergency Management to maintain and monitor hazard data for future planning;
- Submit all information to FEMA necessary to keep current FIRM's as accurate as possible; and
- Participate whenever possible in any future flood studies.

## Community Rating System (CRS)

The Community Rating System (CRS) is a voluntary program for National Flood Insurance Program (NFIP) participating communities. This program's goals are to reduce flood damages to insurable property, strengthen and support the

insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management. CRS has been developed to provide incentives in the form of premium discounts for communities to go beyond the minimum floodplain management requirements to develop extra measures to provide protection from flooding.

As of the 10/1/2016 Community Rating System Eligible Communities Report, Calhoun County and its jurisdictions do not participate in the CRS. Calhoun County and the City of Blountstown recognize the value of participating in the Community Rating System, but neither jurisdiction is able to commit the necessary resources to developing an application at this time.

### **Identification and Analysis of the County's Mitigation Projects**

The LMS consists of mitigation projects that are designed to minimize potential losses to natural disasters identified in the risk assessment. The strategy provides for maintaining existing protection mechanisms provided in the county and municipal government comprehensive plans, code of ordinances, land development regulations (LDR) and other implementation mechanisms. The strategy also provides for identifying future local government capital improvements, which, among other purposes, mitigate adverse impacts from natural disasters, and a public information program to educate county residents of the need to prevent and mitigate damage caused by natural disasters.

As part of its strategy, the county will maintain its NFIP status with the goal to work on the CRS certificate for the City of Blountstown. The county and its associated municipality will also use any updated floodplain maps prepared as a result of the FEMA Floodplain Map Modernization Program and Repetitive Loss Initiative. The county and its associated municipality, when feasible, will also use any products produced through the FEMA's on-going field and database verification projects for repetitive loss properties.

The risk assessment identifies the county is most susceptible to flooding, hurricanes and tropical storms, wildfires, tornadoes, drought, and thunderstorm/wind events. The county and its associated municipality evaluate their comprehensive plans and land development regulations for modifications to improve mitigation measures, with special emphasis on these occurrences.

An important goal for the Calhoun County Emergency Management office is to develop a program on improving its recordkeeping with regards to natural disasters. Over the next five to ten years, the Emergency Management will file and document "impact" details and photos on specific hazard events, which will enhance the LMS plan with a more accurate vulnerability analysis.

The EM Department continues to maintain a list of repetitive loss structures and properties (xxx have to see if this is applicable). (As noted earlier, the county does not have any repetitive loss properties at this time). - xxxx The county with the assistance of other related agencies implements a public education campaign regarding construction within floodable areas, the use of burn bans, emergency water conservation regulations, as well as minimum housing codes with regards to minimum building standards. The EM Director is in discussion with the Florida Forest Service on implementing a program with the use of Firewise construction and landscaping practices. (This is a current mitigation initiative on the LMS project list). – make sure this project is on the current LMS Project list. -xxxx

### **Implementation of the Mitigation Projects**

All mitigation projects, initiatives or action items were carefully reviewed, analyzed, and revised according to the list of mitigation projects that were developed and updated in the 2019 LMS Plan. Appendix xxx contains the list of all mitigation projects for the identified hazards with detailed specifics.

The Calhoun County LMS project or strategy list includes actions that address the reduction of hazards on new as well as existing buildings and infrastructure and will provide updated project status over the last 5 years, if the project was completed, deferred, deleted or if any new projects that have been added as a result of a hazard event.

### Prioritization Process and Benefit-Cost Review

The prioritization process developed requires the identification of projects or initiatives that will reduce property damage, be cost-effective, and will protect the health, safety and welfare of Calhoun County's citizens and meet the other mitigation benefits noted. Although the prioritization process includes economic considerations, the mitigation projects should be analyzed for the benefit cost based on the guidelines set forth by the state and FEMA.

The process of initiating a detailed and formal Benefit-Cost Analysis (BCA) can be a very time-consuming and tedious process and require professional expertise. The Calhoun County LMS Working Group determined for this updated LMS plan that it wasn't feasible to do a formal and extensive analysis on all of the current mitigation projects at this time. However, it is noted that if required for future mitigation projects to be funded, that a formal BCA will be performed utilizing the required expertise to execute the required benefit-cost ratio.

Instead of the detailed BCA, the LMS Working Group developed an initial list of mitigation projects or initiatives and a priority score. Each mitigation project or initiative identified for funding will be cost- effective, technically feasible, contribute to the overall strategy outlined in the Local Mitigation Strategy, and be acceptable to regulatory agencies. The prioritization process for the mitigation projects was accomplished by the County LMS Working Group and officials from the respective local governments.

After the projects have been determined for each jurisdiction, they are assigned a priority score. This score is a long-term characterization value directly associated with each specific initiative based on its own merits at the time it was first proposed by the individual participant. The priority is intended to serve as a guideline for the Working Group regarding the relative desirability of implementation of a specific mitigation initiative in relation to the other proposed initiatives incorporated into the plan.

The scoring is based on selected criterion, including an estimated number of people who will benefit and the cost to implement each initiative. These scores are assigned according to the knowledge and discretion of the Working Group and are not considered exact technical estimates. The mitigation projects scoring with higher point totals have first priority. However, it would be a mistake to assume that only top priority initiatives should be considered for funding, as the priority projects often require significant resources and/or money. In a post-disaster situation, for example after a significant hurricane event, the amount of money available for hazard mitigation projects could be as little as \$30,000 or as much as \$1 million or more. Therefore, it is important to have initiatives or projects with a range of costs that are rationally prioritized so that the jurisdictions can get the most value for the mitigation money they receive. Furthermore, simply because a mitigation initiative has high associated costs does not mean it is not cost effective.

A mitigation initiative or project may yield significant benefits over the lifetime of the project that far outweighs the initial costs. In lieu of conducting formalized benefit-cost analyses, order of magnitude cost estimates were made by the Calhoun County Working Group assuming that less expensive projects would be easier to obtain funding for and could be implemented more readily.

The mitigation initiatives were assigned priority scores based upon the following criteria according to the Calhoun County's Goals and Objectives for local mitigation and the program funding requirements of FEMA. The projects are then prioritized utilizing the prioritization criteria outlined below. The LMS Working Group may evaluate these criteria annually, recommending changes to prioritization criteria that are deemed necessary.

Criteria includes:

- ✓ Number of people (from 1 to 10,000 or more) who will benefit
- ✓ The risk rating, according to the community, for the addressed hazard
- ✓ Immediate need or post-disaster priority
- ✓ Enhancement of special needs population or promotion of hazard awareness
- ✓ Reduction of risk to structures that have been repetitively damaged
- ✓ Critical facility or infrastructure
- ✓ Environmentally sound
- ✓ Technically feasible
- ✓ Encourage cooperation among government entities
- ✓ Cost effective

The point awarding system for establishing a priority score for each mitigation project is outlined in Table 5.xx. The maximum priority score for the project is 100.

**Table 5xxxx – Point System for the LMS Projects or Initiatives**

Criteria	Category	Scoring
Number of people who will benefit	10,000 or more	10
	1,000 or more	8
	100 or more	6
	10 or more	4
	1 or more	2
Risk rating for the addressed hazard	40 or more	10
	30 – 39	8
	20- 29	6
	10-19	4
	Less than 10	2
Immediate need or post-disaster priority	Yes	10
	No	0
Enhancement of special needs population or promotion of hazard awareness	Yes	10
	No	0
Reduction of risk to structures that have been repetitively damaged	Yes	10
	No	0
Critical facility or infrastructure	Yes	10
	No	0
Environmentally sound	Yes	10
	No	0
Technically feasible	Yes	10
	No	0
Encourage cooperation among government entities	Yes	10
	No	0

Cost effective	Yes	10
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In developing the prioritization procedures, it is not the intent to direct that the projects be accomplished in their prioritized order. The purpose of the ranking is to indicate the overall importance of the project to the local mitigation efforts. This system also designates which projects are the first to be implemented after a disaster or when resources do become available.

After a natural disaster event receives a presidential declaration and Calhoun County was designated as a result of the disaster; the county will be eligible for the Hazard Mitigation Grant Program (HMGP) funding. Once the county receives the disaster designation the LMS Working Group will meet to analyze the damage that was sustained. Then in respect to the current conditions within the county, changes in policy and overall mitigation needs, prioritization of projects to be funded will be reviewed for the specific declared disaster.

### **Calhoun County Mitigation Projects, Initiatives or Action Items**

Appendix xxx contains the mitigation projects or initiatives master list which includes the (new, current, ongoing, deferred, completed and deleted) projects for the county. It will describe the mitigation project, identify if the hazard has been mitigated, if the goals were achieved through the completion of the project, the funding source, the agency responsible for implementation, the estimated cost or total final costs, the timeframe for completion, and details on the progress of the mitigation project.

These mitigation projects or initiatives are action items for the identified hazards in Section 4 and address the reduction of hazards on new as well as existing buildings and infrastructure. They are as follows:

- ✓ the new, ongoing, and deferred mitigation projects - (the deferred projects remain active and will be pursued as funding sources are identified or priorities change due to disaster events)
- ✓ the mitigation projects that have been completed over the last five years
- ✓ the mitigation projects that were determined to be removed or deleted

### **Analysis of the Comprehensive Range of Mitigation Projects or Initiatives**

Table 5.xxx determines that Calhoun County has a "comprehensive range" of specific mitigation projects that will address the goals to reduce or avoid long-term vulnerability for each jurisdiction.

**Table 5.xxx – Comprehensive Range of Mitigation Projects For Each Jurisdiction**

Natural Hazards Profiled	Unincorporated Calhoun County	City of Blountstown	Town of Altha
Dam Levee Failures			
Drought/Heat Waves			
Flooding			
Hurricanes/Tropical Storms			
Riverine Erosion			
Sinkholes			
Thunderstorms, Hail, Lightning and Strong Winds			

Tornadoes			
Wildfires			
Winter Storms/Freezing Temperatures			

Appendix xxxx outlines the current mitigation projects or initiatives for each jurisdiction within the county including specifics on the natural hazards that will be mitigated, the agency responsible of overseeing the project, analysis of the initiative and potential funding source, and what jurisdiction will benefit from the mitigation project.

### Potential Funding Sources for the Mitigation Projects

Mitigation projects implemented by the County and the municipalities will be dependent on available funding. It is anticipated that the County will seek federal, state, and local funds to assist in the implementation of action items involving capital improvements and/or additional personnel. In addition to local and county matching funds, there are hosts of funding sources available to counties of all sizes.

Table 5.xxx is a current list of possible funding sources that can be used for the mitigation projects.

**Table 5xxx - Funding Sources**

Clean Water State Revolving Funds (CWSRF)	The Clean Water State Revolving Fund (CWSRF) program is a federal-state partnership that provides communities a permanent, independent source of low-cost financing for a wide range of water quality infrastructure projects.
Community Assistance Program State Support Services Element (CAP-SSSE)	The Community Assistance Program – State Support Services Element (CAP-SSSE) program derives its authority from the National Flood Insurance Act of 1968, as amended, the Flood Disaster Protection Act of 1973 and from 44 CFR Parts 59 and 60. This program provides funding to states to provide technical assistance to communities in the National Flood Insurance Program (NFIP) and to evaluate community performance in implementing NFIP floodplain management activities. In this way, CAP-SSSE helps to: Ensure that the flood loss reduction goals of the NFIP are met, Build state and community floodplain management expertise and capability and Leverage state knowledge and expertise in working with their communities.
Community Development Block Grant (CDBG)	The Community Development Block Grants (CDBG) provide for long-term needs, such as acquisition, rehabilitation, or reconstruction of damaged properties and facilities and redevelopment of disaster-affected areas. Funds may also be used for emergency response activities, such as debris clearance and demolition, and extraordinary increases in the level of necessary public services. Eligible projects can include; <ul style="list-style-type: none"> <li>• Voluntary acquisition, or if appropriate, elevation of storm damaged structures;</li> <li>• Relocation payments for displaced people and businesses;</li> <li>• Rehabilitation or reconstruction of residential and commercial buildings;</li> <li>• Assistance to help people buy homes, including down payment assistance and interest rate subsidies; and</li> <li>• Improvements to public sewer and water facilities.</li> </ul>

<b>Conservation Reserve Program (CRP)</b>	CRP is a land conservation program administered by Farm Service Agency. In exchange for a yearly rental payment, farmers enrolled in the program agree to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality. Contracts for land enrolled in CRP are 10-15 years in length. The long-term goal of the program is to re-establish valuable land cover to help improve water quality, prevent soil erosion, and reduce loss of wildlife habitat.
<b>County Incentive Grant Program</b>	This program provides grants to counties, to improve a transportation facility which is located on the State Highway System or which relieves traffic congestion on the State Highway System. To be eligible for consideration, projects must be consistent, to the maximum extent feasible, with local metropolitan planning organization plans and local government comprehensive plans.
<b>Economic Adjustment Assistance (EAA) Program</b>	The EAA program provides a wide range of technical, planning, and public works and infrastructure assistance in regions experiencing adverse economic changes that may occur suddenly or over time. These adverse economic impacts may result from a steep decline in manufacturing employment following a plant closure, changing trade patterns, catastrophic natural disaster, a military base closure, or environmental changes and regulations.
<b>Emergency Conservation Program (ECP)</b>	The Emergency Conservation Program (ECP) helps farmers and ranchers to repair damage to farmlands caused by natural disasters and to help put in place methods for water conservation during severe drought. The ECP does this by giving ranchers and farmers funding and assistance to repair the damaged farmland or to install methods for water conservation.
<b>Emergency Management Performance Grant (EMPG)</b>	The purpose of the EMPG Program is to provide federal grants to states to assist state, local, territorial, and tribal governments in preparing for all hazards, as authorized by the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (42 U.S.C. §§ 5121 et seq.) and Section 662 of the Post Katrina Emergency Management Reform Act of 2006, as amended (6 U.S.C. § 762). Title VI of the Stafford Act authorizes FEMA to make grants for the purpose of providing a system of emergency preparedness for the protection of life and property in the United States from hazards and to vest responsibility for emergency preparedness jointly in the federal government and the states and their political subdivisions. The Federal Government, through the EMPG Program, provides necessary direction, coordination, and guidance, and provides necessary assistance, as authorized in this title, to support a comprehensive all hazards emergency preparedness system.

<b>Emergency Management Preparedness and Assistance Trust Fund/ Municipal Competitive Grant Program</b>	<p>The Emergency Management Competitive Grant Program and Municipal Competitive Grant Program provide competitive grants to state or regional agencies, local governments, and private non-profit organizations to implement projects that will further state and local emergency management objectives. The Municipal Competitive Grant Program provides competitive grants to municipalities that are legally constituted, have an authorized, established, and maintained emergency management program, and have signed the Statewide Mutual Aid Agreement (SMAA). Applications are accepted in the following four categories under both programs:</p> <ul style="list-style-type: none"> <li>• Projects that will promote public education on disaster preparedness and recovery issues.</li> <li>• Projects that will enhance coordination of relief efforts of statewide private sector organizations, including public-private business partnership efforts.</li> <li>• Projects that will improve the training and operations capabilities of agencies assigned lead or support responsibilities in the State Comprehensive Emergency Management Plan.</li> <li>• Other projects that will further state and local emergency management objectives which have been designated by the State of Florida as priorities in the applicable Notice of Fund Availability.</li> </ul>
<b>Environmental Education (EE) Grant</b>	<p>The purpose of the Environmental Education Grant (EEG) is to provide financial support for projects, which design, demonstrate or disseminate environmental education projects, methods, or techniques. Projects must focus on one of the following: (1) improving environmental education teaching skills; (2) education teachers, students, or the public about human health problems; (3) building State, local, or Tribal government capacity to develop environmental education programs; (4) educating communities through community-based organizations; or (5) educating general public through print, broadcast, or other media.</p>
<b>Federal Highway Administration, Planning &amp; Environment, Intermodal and Statewide Programs</b>	<p>The intent of the Federal Highway Administration (FHWA) Intermodal and Statewide Programs is the expeditious development and management of high-quality feasibility studies with FHA funds. Within the context of Title 23 U.S.C. or in 23 CFR guidelines, the meaning of feasibility has the following parts:</p> <ul style="list-style-type: none"> <li>• The degree to which given alternative modes, management strategy, design or location is economically justified.</li> <li>• The degree to which such an alternative is considered preferable from an environmental or social perspective.</li> <li>• The degree to which eventual construction and operation of such an alternative can be financed and managed.</li> </ul>
<b>Florida Forever</b>	<p>Florida Forever is Florida's premier conservation and recreation lands acquisition program, a blueprint for conserving natural resources and renewing Florida's commitment to conserve the state's natural and cultural heritage.</p>
<b>Fire Prevention and Safety Grants (FP&amp;S)</b>	<p>The <u>Fire Prevention and Safety Grants</u> (FP&amp;S) are part of the Assistance to Firefighters Grants (AFG), and are administered by the <u>Federal Emergency Management Agency</u> (FEMA). FP&amp;S Grants support projects that enhance the safety of the public and firefighters from fire and related</p>

	<p>hazards. The primary goal is to target high-risk populations and reduce injury and prevent death. Eligibility includes fire departments, national, regional, state, and local organizations, Native American tribal organizations, and/or community organizations recognized for their experience and expertise in fire prevention and safety programs and activities. Private non-profit and public organizations are also eligible.</p>
<b>Flood Control Projects</b>	Through the U.S. Army Corps of Engineers, the flood control program helps reduce flood damages through projects not specifically authorized by Congress.
<b>Flood Mitigation Assistance Program (FMA)</b>	<p>The Flood Mitigation Assistance program (FMA) helps States and communities identify and implement measures to reduce or eliminate the long-term risk of flood damage to homes and other structures insurable under the National Flood Insurance Program (NFIP). Projects may include:</p> <ul style="list-style-type: none"> <li>• elevation, relocation, or demolition of insured structures;</li> <li>• acquisition of insured structures and property;</li> <li>• dry flood proofing of insured structures;</li> <li>• minor, localized structural projects that are not fundable by State or other Federal programs (e.g., erosion-control and drainage improvements);</li> <li>• beach nourishment activities such as planting of dune grass; and</li> <li>• State agencies, participating NFIP communities, or qualified local organizations.</li> </ul>
<b>Flood Plain Management Services</b>	Through the U.S. Army Corps of Engineers, to promote appropriate recognition of flood hazards in land and water use planning and development through the provision of flood and flood plain related data, technical services, and guidance.
<b>Florida Communities Trust (FCT)</b>	Florida Communities Trust assists communities in protecting important natural resources, providing recreational opportunities and preserving Florida's traditional working waterfronts through the competitive criteria in the Parks and Open Space Florida Forever Grant Program and the Stan Mayfield Working Waterfronts Florida Forever Grant Program. These local land acquisition grant programs provide funding to local governments and eligible non-profit organizations to acquire land for parks, open space, greenways and projects supporting Florida's seafood harvesting and aquaculture industries.
<b>Florida Hurricane Catastrophe Fund (FHCF)</b>	The FHCF is a State of Florida reinsurance program that can reduce the long-term economic impacts of hurricanes by maintaining the states property insurance capacity through providing reimbursement to participating insurers for a portion of catastrophic hurricane losses. Insurers that write residential property insurance on structures and their contents are required to participate and pay a premium based on their maximum hurricane exposure. Companies can select three coverage option levels - 45, 75, or 90% of covered losses above their retention. Premiums paid by participating insurers into the fund may be included in policyholder rates the same as the expense of reinsurance. Companies must

	demonstrate to the Office of Insurance Regulation that there is no overlap between the FHCF premium included in their rate filing and their Acat load, covering either private reinsurance or catastrophe reserves being set aside on a taxable basis.
Hazard Mitigation Grant Program (HMGP)	The HMGP program helps States and communities implement long-term hazard mitigation measures following a major disaster declaration. The program's objectives are to prevent or reduce the loss of life and property from natural hazards, to implement State or local Mitigation Strategies, to enable mitigation measures to be implemented during immediate recovery from a disaster, and to provide funding for previously identified mitigation measures that benefit the disaster area.
Land and Water Conservation Fund (LWCF) Grants	The LWCF State Assistance Program was established by the LWCF Act of 1965 (Section 6, Land and Water Conservation Fund Act of 1965, as amended; Public Law 88-578; 16 U.S.C. 4601-4 et seq.) to stimulate a nationwide action program to assist in preserving, developing, and assuring to all citizens of the United States of present and future generations such quality and quantity of outdoor recreation resources as may be available and are necessary and desirable for individual active participation. The program provides matching grants to States and through States to local units of government, for the acquisition and development of public outdoor recreation sites and facilities. Grant funds are also available, to States only, for fulfilling the statewide comprehensive outdoor recreation planning requirements of the program.
National Hurricane Program (NHP)	The National Hurricane Program (NHP) conducts assessments and provides tools and technical assistance to State and local agencies in developing hurricane evacuation plans. The program is a multi-agency partnership, involving the Federal Emergency Management Agency (FEMA), the National Oceanic & Atmospheric Association, the National Weather Service, the U.S. Department of Transportation, the U.S. Army Corps of Engineers, and numerous other Federal agencies. NHP receives \$5.86 million in annual funding, which consists of \$2.91 million for FEMA program activities and \$2.95 million for the Emergency Management Performance Grant program, which is directed into general State funds for hurricane preparedness and mitigation activities.
Nonpoint Source Implementation Grants	The 319 Program provides formula grants to the States to implement Nonpoint source projects and programs in accordance with Section 319 of the Clean Water Act. Examples of previously-funded projects include best management practices (BMPs) installation for animal waste; design and implementation of BMP systems for stream, lake, and estuary watersheds; basin-wide landowner education program; and lake projects previously funded under the CWA Section 314 Clean Lakes Program. Funding priority is to promote the development and implementation of watershed-based plans, focusing on watersheds with water quality impairments caused by nonpoint sources, which result in improved water quality in impaired waters.

<b>Pollution Prevention Grants Program, Environmental Protection Agency (EPA)</b>	This grant program provides project grants to states to implement pollution prevention projects. The grant program is focused on institutionalizing multimedia pollution (air, water, land) prevention as an environmental management priority, establishing prevention goals, providing direct technical assistance to businesses, conducting outreach, and collecting and analyzing data.
<b>Pre-Disaster Mitigation Assistance Program (PDM)</b>	The Pre-Disaster Mitigation (PDM) program provides funds for hazard mitigation planning and projects on an annual basis. The PDM program was put in place to reduce overall risk to people and structures, while at the same time, also reducing reliance on federal funding if an actual disaster were to occur.
<b>Protection of Highways, Bridges, and Public Works</b>	Through the U.S. Army Corps of Engineers, to provide protection of highways, highway bridges, essential public works, churches, hospitals, schools, and other nonprofit public services endangered by flood caused erosion.
<b>Public Assistance (PA)</b>	The mission of the Federal Emergency Management Agency's (FEMA) Public Assistance (PA) Grant Program is to provide assistance to State, Tribal and local governments, and certain types of Private Nonprofit organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President. Through the PA Program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain Private Non-Profit (PNP) organizations. The PA Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.
<b>Public Works Impact Projects Program (PWIP)</b>	To provide financial assistance in the construction of public facilities for the purpose of providing immediate useful work to unemployed and underemployed persons in the designated project areas.
<b>Repetitive Flood Claims (RFC) Program</b>	The Repetitive Flood Claims (RFC) grant program provides funding to reduce or eliminate the long-term risk of flood damage to structures insured under the National Flood Insurance Program (NFIP) that have had one or more claim payments for flood damages. The long-term goal of RFC is to reduce or eliminate claims under the NFIP through mitigation activities that are in the best interest of the National Flood Insurance Fund (NFIF). RFC funds may only mitigate structures that are located within a State or community that cannot meet the cost share or management capacity requirements of the Flood Mitigation Assistance (FMA) program.

<b>Residential Construction Mitigation Program (RCMP)</b>	<p>The Residential Construction Mitigation Program (RCMP) is allocated \$7,000,000 a year. The Mobile Home Tie-Down Program is provided 40% of this funding and 10% is provided to Florida International University for Hurricane Research. The remaining \$3,500,000 is provided to eligible subgrantees for the performance of allowable activities. All projects are reviewed for eligibility and must meet cost-effectiveness requirements.</p>
<b>Self-Determination Act – Title III – County Funds</b>	<p>The Self-Determination Act (SRS Act) has recently been reauthorized and now includes specific language regarding the Firewise Communities program. Counties seeking funding under Title III must use the funds to perform work under the Firewise Communities program. Counties applying for Title III funds to implement Firewise activities can assist in all aspects of a community's recognition process, including conducting or assisting with community assessments, helping the community create an action plan, assisting with an annual Firewise Day, assisting with local wildfire mitigation projects, and communicating with the state liaison and the national program to ensure a smooth application process. Counties that previously used Title III funds for other wildfire preparation activities such as the Fire Safe Councils or similar would be able to carry out many of the same activities as they had before.</p>
<b>Severe Repetitive Loss Program (SRL)</b>	<p>The Severe Repetitive Loss (SRL) grant program was designed to provide funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the NFIP.</p> <p>SRL Properties are residential properties:</p> <ul style="list-style-type: none"> <li>• That have at least four NFIP claim payments over \$5,000 each, when at least two such claims have occurred within any ten-year period, and the cumulative amount of such claims payments exceeds \$20,000; or</li> <li>• For which at least two separate claims payments have been made with the cumulative amount of the building portion of such claims exceeding the value of the property, when two such claims have occurred within any ten-year period.</li> </ul> <p>Residential projects include:</p> <ul style="list-style-type: none"> <li>• Acquisition and demolition or relocation</li> <li>• Elevation and retrofit</li> <li>• Mitigation reconstruction</li> <li>• Dry flood-proofing of historical structures</li> <li>• Minor physical flood control projects</li> </ul> <p>The Federal/Non-Federal cost share is 75/25 % with up to 90% Federal cost-share funding for projects approved in states, territories, and federally-recognized Indian tribes with FEMA-approved Standard or Enhanced Mitigation Plans or Indian tribal plans that include a strategy for mitigating existing and future SRL properties. Florida is an Enhanced Plan state and so receives 90% Federal cost-share.</p>

<b>Small County Road Assistance Program (SCRAP)</b>	The purpose of this program is to assist small county governments in resurfacing and reconstructing county roads. In determining a county's eligibility for assistance under this program, the department may consider whether the county has attempted to keep county roads in satisfactory condition, including the amount of local option fuel tax imposed by the county. The department may also consider the extent to which the county has offered to provide a match of local funds with state funds provided under the program.
<b>Small County Outreach Program (SCOP)</b>	<p>The purpose of this program is to assist small county governments in repairing or rehabilitating county bridges, paving unpaved roads, addressing road-related drainage improvements, resurfacing or reconstructing county roads, constructing capacity or safety improvements to county roads. Small counties shall be eligible to compete for funds that have been designated for the Small County Outreach Program for projects on county roads. The Department shall fund 75% of the cost of projects on county roads funded under the program. Any initial bid costs or project overruns after the letting that exceed the Department's participation as stated, will be at the county's expense. This will help ensure that the funds are utilized on as many projects as possible.</p> <p>The county must have a population of 150,000 or less as determined by the most recent official estimate pursuant to Section 186.901, Florida Statutes. The county has attempted to keep county roads in satisfactory condition, which may be evidenced through an established pavement management plan. The county must provide 25% of the project costs and may be in the form of matching local funds (i.e., in-kind services). Such matching funds will be deducted from the project costs as part of the county's contribution.</p>
<b>Special Economic Development and Adjustment Assistance Program-Sudden and Severe Economic Dislocation (SSED) and Long Term Economic Deterioration (LTED)</b>	The Economic Adjustment Program Grants assist State and local areas in the development and/or implementation of strategies designed to address structural economic adjustment problems resulting from sudden and severe economic dislocation (SSED) such as plant closings, military base closures and defense contract cutbacks, and natural disasters, or from long-term economic deterioration (LTED) in the area's economy. Grants may be made to develop an Economic Adjustment Strategy Grant, or to implement such strategies. Implementation grants may be made for the construction of public facilities, business development and financing (including revolving loan funds), technical assistance, training or any other activity that addresses the economic adjustment problem.
<b>State Homeland Security Program (SHSP)</b>	SHSP supports the implementation of state Homeland Security Strategies to address the identified planning, organization, equipment, training, and exercise needs to prevent, protect against, mitigate, respond to, and recover from acts of terrorism and other catastrophic events. SHSP also provides funding to implement initiatives in the State Preparedness Report. The State Administrative Agency (SAA) is the only entity eligible to apply to FEMA for SHSP funds. The allocation methodology for FY 2012

	SHSP is based on three factors: minimum amounts as legislatively mandated, DHS' risk methodology, and anticipated effectiveness based on the strength of the Investment Justification (IJ). Each State and territory will receive a minimum allocation under SHSP using the thresholds established in the 9/11 Act. All 50 States, the District of Calhoun, and Puerto Rico will receive 0.35 percent of the total funds allocated for grants under Section 2003 and Section 2004 of the Homeland Security Act of 2002, as amended by the 9/11 Act, for SHSP.
<b>Transportation Equity Act for the 21st Century, Surface Transportation Program (STP)</b>	The Surface Transportation Program (STP) funds may be used by State and local governments for any roads (including the National Highway System) that are not functionally classified as local or rural minor collectors. Each State sets aside 10% of STP funds for transportation enhancements, which can include water-related projects, such as wetland mitigation and implementation of control technologies to prevent polluted highway runoff from reaching surface water bodies. Other transportation enhancements include landscaping and other scenic beautification, pedestrian and bicycle trails, archaeological planning and research, preservation of abandoned railway corridors, historic preservation, sidewalk modifications to comply with Americans with Disabilities Act, natural habitat or wetland mitigation efforts, Intelligent Transportation System (ITS) capital improvements and environmental and pollution abatement projects.
<b>Water and Waste Disposal Loans and Grants</b>	This program provides water and waste disposal facilities and services to low income rural communities whose residents face significant health risks. Funds may be used for 100% construction costs to construct, enlarge, extend, or otherwise improve a community water or sewer system; extend service lines and connect individual residences to a system. The program allows applicants to make grants directly to individuals to extend service lines, connect resident's plumbing to system, pay reasonable charges and fees for connecting to system, installation of plumbing and related fixtures, and construction in dwelling of a bathroom.
<b>Water Pollution Control Program Grants</b>	Section 106 of the Clean Water Act authorizes EPA to provide federal assistance to states and interstate agencies to establish and implement ongoing water pollution control programs. Prevention and control measures supported by pollution control programs include permitting, development of water quality standards and total maximum daily loads, surveillance, ambient water quality monitoring, and enforcement; advice and assistance to local agencies; and the provision of training and public information. Increasingly, EPA and states are working together to develop basin-wide approaches to water quality management. The Water Pollution Control Program is helping to foster a watershed protection approach at the state level by looking at states' water quality problems holistically and targeting the use of limited finances available for effective program management.

<b>Watershed Protection and Flood Prevention (WFPO)</b>	The Watershed and Flood Prevention Operations (WFPO) Program (Watershed Operations) includes the Flood Prevention Operations Program authorized by the Flood Control Act of 1944 (P.L. 78-534) and the provisions of the Watershed Protection and Flood Prevention Act of 1954 (P.L. 83-566). The Flood Control Act originally authorizes the Secretary of Agriculture to install watershed improvement measures in 11 watersheds, also known as pilot watersheds, to reduce flood, sedimentation, and erosion damage; improve the conservation, development, utilization, and disposal of water; and advance the conservation and proper utilization of land. The Watershed Protection and Flood Prevention Act provides for cooperation between the Federal government and the States and their political subdivisions in a program to prevent erosion, floodwater, and sediment damage; to further the conservation, development, utilization, and disposal of water; and to further the conservation and proper utilization of land in authorized watersheds. The Watershed and Flood Prevention Operations (WFPO) Program provides technical and financial assistance to States, local governments and Tribes (project sponsors) to plan and implement authorized watershed project plans.
<b>Wildland Urban Interface Community and Rural Fire Assistance, Program 15.228</b>	This program is designed to implement the National Fire Plan and assist communities at risk from catastrophic wildland fires. The program provides grants, technical assistance, and training for community programs that develop local capability, including: assessment and planning, mitigation activities, and community and homeowner education and action; Hazardous fuels reduction activities, including the training, monitoring or maintenance associated with such hazardous fuels reduction activities, on federal land, or on adjacent nonfederal land for activities that mitigate the threat of catastrophic fire to communities and natural resources in high risk areas. Enhancement of knowledge and fire protection capability of rural fire districts through assistance in education and training, protective clothing and equipment purchase, and mitigation methods on a cost share basis.

### Administration of Mitigation Projects, Initiatives or Action Items

It is anticipated that Calhoun County, the City of Blountstown and the Town of Altha with regards to any mitigation project(s) that are included in the LMS, will apply for and administer grants for actions within their respective jurisdictions. The following lists of agencies are responsible for carrying out the identified mitigation projects (if applicable) that are contained in the LMS as well as the functions they provide.

#### Calhoun County Emergency Management

Emergency Management is the lead agency responsible to research, develop, evaluate, write, maintain, and update the LMS Plan. The office is also responsible for managing and overseeing all details for the communities to prepare for, respond to, recover from and mitigate against natural, technological and man-made hazards. The Emergency Management Director is responsible for implementing and administrating the mitigation projects, including researching and identifying funding sources and providing timeframes for the completion of the project.

#### Calhoun County Fire/Rescue

Identify and recommend mitigation goals that will reduce and/or lessen the impact of wildfires within their jurisdiction. Provide education and training that will assist in accomplishing the mitigation goals and objectives. The Fire Chief will

take the lead in implementing and administrating the mitigation project, including researching and identifying funding sources and providing timeframes for the completion of the project

#### Calhoun County Health Department

Identify and recommend mitigation goals that will reduce and/or lessen the impact for the county residents health and safety within their jurisdiction. Provide education and training that will assist in accomplishing the mitigation goals and objectives. The Health Department Representative will take the lead in implementing and administrating the mitigation project, including researching and identifying funding sources and providing timeframes for the completion of the project.

#### Calhoun County Building Departments

Identify, develop and recommend changes to the building and zoning codes that will eliminate or lessen the impact of disasters. Assure enforcement of all existing building and land development regulations. The building official is responsible for implementing and administrating the mitigation project, including researching and identifying funding sources and providing timeframes for the completion of the project.

#### Calhoun County School Board

The Board is responsible for construction and maintenance of public schools used as emergency shelters. The School Board will be responsible for implementation of mitigation actions proposed for public school buildings. The School Board Superintendent is responsible for implementing and administrating the mitigation project, including researching and identifying funding sources and providing timeframes for the completion of the project.

#### Calhoun County Road Department (**REVIEW/FEEDBACK**)

Provide technical assistance and advice on identifying and accomplishing mitigation actions to improve the design, construction and placement of roads, bridges, culverts, etc., that will eliminate or lessen the impact of disasters. The xxxx is responsible for implementing and administrating the mitigation project, including researching and identifying funding sources and providing timeframes for the completion of the project.

#### Florida Forest Service

Provide technical assistance and advice on all aspects of wildfire issues including identification and accomplishment of mitigation actions designed to reduce the loss of life and real property. The Wildfire Mitigation Specialist is responsible for implementing and administrating the mitigation project, including researching and identifying funding sources and providing timeframes for the completion of the project.

#### Florida Department of Transportation

Provide technical assistance and advice on identifying and accomplishing mitigation actions to improve the design, construction and placement of roads, bridges, culverts, etc., that will eliminate or lessen the impact of disasters. The FDOT District Three Representative for the area is responsible for implementing and administrating the mitigation project, including researching and identifying funding sources and providing timeframes for the completion of the project.

#### Florida Division of Emergency Management (FDEM)

Provide technical assistance and funding when available; in all aspects of emergency management in order to better able the county to prepare for, respond to, recover from, and mitigate against natural, technological and man-made hazards.

#### Northwest Florida Water Management District (NFWMD)

Provide technical assistance and advice on identifying and accomplishing mitigation actions to help reduce or eliminate the impact of flooding in the County. The NFWMD Representative is responsible for implementing and administrating

the mitigation project, including researching and identifying funding sources and providing timeframes for the completion of the project.

## Section 6

### Plan Evaluation and Maintenance

Requirement 201.6(d)(3): Was the plan revised to reflect changes in development?

Requirement: Was the plan revised to reflect progress in local mitigation efforts?

Requirement: Was the plan revised to reflect changes in priorities since the plan was previously approved?

Requirement: Does the plan identify how, when, and by whom the plan will be monitored (how will implementation be tracked) over time?

Requirement: Does the plan identify how, when, and by whom the plan will be evaluated?

Requirement 201.6(c)(4)(i): Does the plan identify how, when, and by whom the plan will be updated during the 5-year cycle?

Requirement 201.6(c)(4)(iii): Is there discussion of how the communities will continue public participation in the plan maintenance process?

#### Changes in Development

The Calhoun County Local Mitigation Strategy serves as a guide for hazard mitigation activities on a community-wide basis. The LMS reflects the developing needs of the communities as the county experiences growth and changes in relation to hazard vulnerability. Land use modification and development can affect a variety of infrastructure issues such as roads, bridges, sewers, electrical grids and ecological considerations such as water quality.

There have been one significant change in development in Calhoun County since the last LMS Plan was approved.

#### Calhoun County Airport



##### Project Description/Scope of Work:

**T-Hangar:** New construction of two 13,650 sf T-Hangar Buildings. Each T-Hangar has 12 individual hangar bays and each bay is equipped with its own hydro swing hydraulic hangar door. The construction of each building consists of a pre-engineered structural steel frame and building system. During this project approximately 20,000 sf of new apron was added while maintaining airport operations throughout the entire project.

**AWOS System:** Installation of new (AWOS) in accordance with FAA Order 6560.20 at the Calhoun County Airport. The project was completed in three phases: mobilization, construction, and coordination, testing and commissioning with FAA as a turn-key project. Airport operations were maintained during the complete project.

**Commercial Hangar & Apron Extension:** Design/Building and new construction of a 10,000 sf commercial hangar with interior shop space and installation of a 60X22 hydraulic swing door. During this project approximately 80,000 sf of new apron was added while maintaining airport operations throughout the entire project.

**Project Overview:**

Cathey Construction

Completion Date: xxx

Cost for Project: xxx

## (REVIEW/FEEDBACK)

**Current Update:** After completing the scope of work and upgrading the Calhoun County Airport, on October 10, 2018, winds from Hurricane Michael decimated and destroyed the newly update airport. The airport is in the recovery and rebuilding phase through insurance and public assistance and is inoperable at this time on the LMS Plan Update.

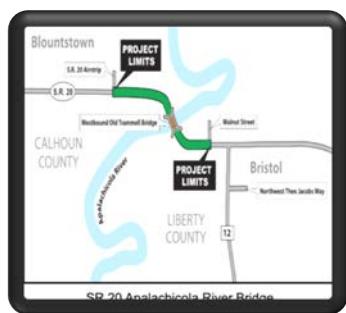


## Proposed Changes in Development

- A. Community Development Block Grant (CDBG) Program. The program helps communities fund infrastructure improvements and housing rehabilitation.

**Project Description:** Calhoun County was awarded \$750,000 to improve existing county roads and drainage, and to install fire hydrants. These projects are expected to benefit near 100 household including more than 80 low to moderate income households.

- B. State Road (SR) 20 Trammel Bridge PD&E Study



**Project Description:** The intent of this study is to evaluate multiple alternatives relative to the future of the SR 20 Apalachicola River Bridge No. 470029 (Westbound Old Trammel Bridge) and how these alternatives will impact motor vehicle and navigation activities along the project area, as well as identify how the bridges function provides service to the local community area.

**Project Overview:**

FDOT

Project Number: 439202-2

Work Type: PD&E Study

Status: Pre-Construction Underway

Project Length: 1.597 miles

Estimated Completion: Winter 2020

Source: <https://nwflroads.com/projects/439202-2>

## Completed Mitigation Projects

There were numerous mitigation projects identified in the 2015 LMS plan with immense expectations on mitigating several hazards that the county experiences (i.e. flooding, hurricanes, tropical storms, severe thunderstorms and wind events). Over the last 5 years, the County has completed several mitigation projects : four retrofits with generator installation on three shelters and impact glass on the health department; and 59 road improvement projects reinforcing headwalls, pipe replacement, culvert enlargements, widening roads, and best practices on stormwater runoff protection. These completed mitigation projects protect human health, safety and welfare, and support public and private property protection. The project description and hazard mitigated are summarized in table 6 xxx. Additional details on the completed mitigation projects are described in Appendix xxx.

**Table 6 xxx - Completed Local Mitigation Strategy Projects/Initiatives over the last 5 years ( 2015 -2019)**

Description of Mitigation Project	Hazards Mitigated
Retrofit Altha School for Emergency Shelter, Installation of a generator.	All hazards
Retrofit Blountstown High School for Emergency Shelter, Installation of a generator.	All hazards
Retrofit Blountstown Middle School for Emergency Shelter, Installation of a generator.	All hazards
Installation of Impact Glass on the Calhoun County Health Department Building	Hurricanes, Wind, Severe Thunderstorms
Cain Road/Fortner Road- During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Bear Head Road - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area. Best Practices for Stormwater runoff protection should be implemented. (Examples: Seed, Mulch, Sod, Land Blankets, Rip Rap, Ditch paving).	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Flander Grade Road - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area. Best Practices for Stormwater runoff protection should be implemented. (Examples: Seed, Mulch, Sod, Land Blankets, Rip Rap, Ditch paving).	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Jim Durham Road (portion of road) - Surface Improvement: During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Miller Road -During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area. Best Practices for Stormwater runoff protection should be implemented. (Examples: Seed, Mulch, Sod, Land Blankets, Rip Rap, Ditch paving).	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Parrish Lake Road West (@ Dairy Farm; low water crossing) -Surface Improvement: During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms

Pike Price Road (Low water crossing) - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Big Mac Road -Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Buddy Johnson Road - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area. Best Practices for Stormwater runoff protection should be implemented. (Examples: Seed, Mulch, Sod, Land Blankets, Rip Rap, Ditch paving).	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Buzzard Bay Road -Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Charlie Wood Road - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Coley Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Widen CR 69 South (SR 71 to CR 275 SE); To reduce future damage/closure, the road needs to be widened, culverts under the road enlarged and headwalls reinforced. In addition, the roadbed may need to be elevated in very-low lying areas.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Davis-Peacock Road -Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Fred Tyre Road -During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area. Best Practices for Stormwater runoff protection should be implemented. (Examples: Seed, Mulch, Sod, Land Blankets, Rip Rap, Ditch paving).	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Grady Tew Road - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area. Best Practices for Stormwater runoff protection should be implemented. (Examples: Seed, Mulch, Sod, Land Blankets, Rip Rap, Ditch paving).	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms

Hanna Tower Road East - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Iola Road / aka G.U. Parker Road (@ low water crossing south of Neal Camp) -Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Ira Fowler Road - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Jack Strickland Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Jap Austin Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Jesse Stone Road -During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area. Best Practices for Stormwater runoff protection should be implemented. (Examples: Seed, Mulch, Sod, Land Blankets, Rip Rap, Ditch paving).	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Jim Green Road - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area. Best Practices for Stormwater runoff protection should be implemented. (Examples: Seed, Mulch, Sod, Land Blankets, Rip Rap, Ditch paving).	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Jimmy Branton Road -Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Jimmy Yon Road - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area. Best Practices for Stormwater runoff protection should be implemented. (Examples: Seed, Mulch, Sod, Land Blankets, Rip Rap, Ditch paving)	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Jody Fields Road - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area. Best Practices for Stormwater runoff protection should be implemented. (Examples: Seed, Mulch, Sod, Land Blankets, Rip Rap, Ditch paving)	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms

K.B. Jones Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
L.K. Lona Road - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Lake Lillian - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Lakeshore Blvd. - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Leonard McCroan Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Leonard Varnum Road (West) -During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Lois Fowler Road - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area. Best Practices for Stormwater runoff protection should be implemented. (Examples: Seed, Mulch, Sod, Land Blankets, Rip Rap, Ditch paving).	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Long Leaf Nursery Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Mac Shiver Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Mac's Nursery Road @ Cypress Creek - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.  Matthew Wood Road - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area. Best Practices for Stormwater runoff protection should be implemented. (Examples: Seed, Mulch, Sod, Land Blankets, Rip Rap, Ditch paving).	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
McGill Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the	Flooding, Hurricanes,

culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Tropical Storms, Severe Thunderstorms
Mossy Pond Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
NE Look & Tremble Street - Needs Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
NE North Street - Needs Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Ocheessee Landing Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Parrish Lake Road East - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Parrish Lake Road West - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Pike Price Road - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Roy Golden Road (Widen to 24' and resurface); To reduce future damage/closure, the road needs to be widened, culverts under the road enlarged and headwalls reinforced. In addition, the roadbed may need to be elevated in very-low lying areas.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Roy Golden Road @Simmons Creek - Pipe replacement/low water crossing/ Headwall	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
S.A. Bryant Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Shelton Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the	Flooding, Hurricanes,

culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Tropical Storms, Severe Thunderstorms
Smith Tower Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Suggs Attaway Road -Surface Improvement: During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Surfside Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
T Patterson Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Troy McCroan Road @Thomas Mill Creek - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area. Best Practices for Stormwater runoff protection should be implemented. (Examples: Seed, Mulch, Sod, Land Blankets, Rip Rap, Ditch paving)	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Van Lierop Road (also Stafford Creek Road) - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Wiley Hutto Road – Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Willard Smith Road - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area. Best Practices for Stormwater runoff protection should be implemented. (Examples: Seed, Mulch, Sod, Land Blankets, Rip Rap, Ditch paving).	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Woody Road - Surface Improvement; During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
Alliance Road - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area.	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms

Bagget Loop - During heavy rains and flooding, the culvert capacity is quickly exceeded and flood waters cover the road, closing the road to traffic. In addition, the flood waters cause extensive damage to the roadbed, culvert and headwalls. To reduce future damage/closure, the culverts under the road needs to be enlarged and the headwalls reinforced. In addition, the roadbed may need to be elevated and permanently surfaced near the culvert area. Best Practices for Stormwater runoff protection should be implemented. (Examples: Seed, Mulch, Sod, Land Blankets, Rip Rap, Ditch paving).	Flooding, Hurricanes, Tropical Storms, Severe Thunderstorms
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## Deleted Mitigation Projects

There were xxx LMS projects that was determined by the Working Group that they should be deleted or removed from the mitigation project list.

### LMS Plan Evaluation, Maintenance and Update

The Calhoun County Emergency Management Director in conjunction with the Calhoun County LMS Working Group will coordinate the monitoring, evaluation, and revisions of the LMS Plan. The Working Group will meet at least once on an annual basis to update and review the effectiveness of the Local Mitigation Strategy.

At the LMS meeting, the Working Group Members review the following topics:

- ✓ Any significant changes to the hazard risk or vulnerability section of the plan;
- ✓ Analyze and evaluate each mitigation project or initiative and provide an update on the status: If the mitigation project has been completed, if the project will need to be removed or deleted, if there are any new mitigation projects that need to be added, and if there are any changes in the priority ranking of mitigation initiatives;
- ✓ Review the Repetitive Loss Property data;
- ✓ Analyze the Mitigation Goals and Objectives to see if they still meet the needs for the community;
- ✓ Audit any updates to the County's critical facilities list; and
- ✓ Examine the vulnerability assessment data and maps, if necessary.

As a result of these efforts from the meeting, any important changes as well as the information required in accordance with Florida Statue Chapter 27P-22 will be submitted to the Florida Division of Emergency Management, Mitigation Planning Section within the timeframe outlined in the statute.

If in the event a disaster should occur, or other type of emergency in the county, the Working Group may choose to meet early in the recovery and then redevelopment phase, soon after damage assessments are conducted. At this point, the current strategy will be reviewed and necessary changes made based on lessons learned from the response and recovery phase of the disaster. Also, new mitigation projects might be identified as a result of the disaster event and will be considered and added to the mitigation project list if deemed viable.

The Working Group will begin the 5-year update process as close to the 18-months prior to the expiration of the LMS Plan. The plan update will be based on an evaluation and analysis of the risk and vulnerability assessment. The intent is to incorporate any changes in the estimate of replacement costs, new scientific data on hazards, the affects hazards

have on the communities, changes in growth patterns, and if there are any reductions in vulnerability due to completion of mitigation projects.

Once the risk assessment is updated, the Working Group will utilize this information and evaluate the goals, objectives, and actions contained in the LMS to determine if they are still applicable. The most recent review and discussion on the LMS Goals and Objectives were reviewed in December 2019 by the Working Group and were determined that they meet the needs for the County.

Also, the Working Group will evaluate whether or not the communities have the resources available to implement current and new programs and projects. The updated LMS will also capture the planning process followed during the update of the Plan.

During the 5-year LMS evaluation and revision process, at least one public meeting will be conducted and include elected and appointed County officials, each participating municipality, and the general public, for consideration of the proposed comments or changes. Upon final coordination between these groups and formal approval from FDEM, the updated Local Mitigation Strategy will be presented to the Board of County Commissioners and the governing bodies of the municipality for their approval and adoption.

## Continued Public Involvement (REVIEW/FEEDBACK)

**Public Participation** – Educating the County citizens on mitigation and public safety is an important issue for the Emergency Management (EM) Department especially since Hurricane Michael. Many residents have expressed interest in volunteering with Emergency Management and as time evolves, the more active your citizens are in mitigation and preparedness, the safer they will be response and recovery phase.

Listed below are the public outreach activities currently being conducted by the Emergency Management.

- ✓ Calhoun County Emergency Management advertises all LMS meetings in the local paper, on the EM Facebook page (which many residents read and view) and place a meeting flyer for those who don't use the internet and need to be informed at the County Courthouse.
- ✓ Calhoun County Emergency Management developed a mitigation survey and participated in a winter festival in 2019. Numerous attendees stopped by and visited the booth to provide feedback on the survey and to share other comments on mitigation efforts for the County. The goal is to continue to reach out and interact with the Calhoun citizens and survey how the EM Department will continue to educate the community on mitigation and safety.
- ✓ Calhoun County Fire Rescue participates in "Show & Tell" quarterly for all schools within the county.
- ✓ Calhoun County Fire Rescue utilizes the month of October ... Fire Prevention Month to disseminate fire safety information to the citizens.
- ✓ Florida Forest Service brings Smokey Bear to the schools to educate the kids in wildfire safety tips and techniques.
- ✓ Department of Health conducts an outreach program in the low-income housing areas and disseminates information to the residents.



- ✓ Calhoun County Emergency Management conducts disaster safety presentations at the Rotary, Chamber and various churches.

The LMS Working Group will hold scheduled meetings throughout the 5-year mitigation planning process cycle. All meetings will be public meetings as required by Article I, 24 (b) of the Florida Constitution and any exceptions to this law would have to be duly noted. There will be an opportunity at every meeting for the public citizens to provide comment on the Local Mitigation Strategy and planning process for updating the LMS.

A legal notice of all County LMS meetings will be advertised on the online websites and in the following printed newspapers prior to each meeting inviting and encouraging the public to attend and participate:

There were several opportunities to include the public citizens in the LMS planning:

- ✓ Calhoun County website (under the county announcements link for the upcoming meetings):  
[www.calhouncountyfl.gov/](http://www.calhouncountyfl.gov/)
- ✓ All LMS Meeting Notices were advertised in The County Record and will continue for the future meetings:  
[www.thecountyrecord.net/](http://www.thecountyrecord.net/)
- ✓ LMS Meeting Notices were announced at the County Commissioner's meetings and details were available on the meeting minutes
- ✓ A copy of the LMS plan is advertised and available at the Clerk's Office.

The LMS Working Group will offer those who are interested in the County mitigation efforts, and unable to attend the LMS meeting, an opportunity to review the plan and submit formal comments. A draft LMS Plan, meeting notices, agendas, minutes, and any other relevant materials presented at the County LMS meetings will be available for review at the Calhoun County Emergency Management office.

The LMS Working Group will hold at least one public meeting to solicit formal comments from the public prior to the final plan approval. After approval by the County LMS Working Group, the revised plan and appropriate crosswalk will be submitted to the State for review and final approval.

Upon receiving an "approved pending adoption" letter from the State of Florida, the Working Group will present the updated plan to the County Commission as well as the Council Members of the City of Blountstown, and the Town of Altha for approval and adoption. At least one jurisdiction must adopt the updated plan within one year of receiving "approved pending adoption" letter in order to receive a final approval. All other jurisdictions must adopt the updated plan in order to be eligible for federal mitigation grant funds.