

Washington County, Alabama
Hazard Mitigation Plan
2016



The Alabama Tombigbee Regional Commission prepared this plan with guidance from the Washington County Emergency Management Agency and the Washington County Hazard Mitigation Planning Committee.

For additional copies or if you have comments or suggestions, contact:

Washington County EMA
P.O. Box 146
Chatom, AL 36518
(251)-847-2668

Alabama Tombigbee Regional
Commission
107 Broad Street
Camden, AL 36726
(334) 682-4234

May 2016

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Appendix 1: Planning Process Documentation

**Summary of Changes Made in Plan Update
Section I. The Hazard Mitigation Plan**

The Hazard Mitigation Plan section of the plan was reorganized and underwent minor revisions.

I. THE HAZARD MITIGATION PLAN

1.1 Washington County Natural Hazards Mitigation Plan

The Washington County, Alabama Natural Hazards Mitigation Plan is a multi-jurisdictional, multi-hazard mitigation plan. This plan fulfills the requirements set forth by the Federal Disaster Mitigation Act of 2000 (DMA 2000). It meets all eligibility requirements set forth by the Federal Emergency Management Agency (FEMA) for grant assistance. This plan geographically covers the entire county including all unincorporated areas and the municipalities of Chatom, McIntosh, and Millry.

1.2 Authority

Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (public Law 93-228, as amended), Title 44 Code of Federal Regulations, as amended by Part 201 of the Disaster Mitigation Act of 2000 requires that all state and local governments develop a Hazard Mitigation Plan as a condition of receiving federal disaster assistance.

1.3 Funding

Funding for this update to the Washington County Mitigation Plan was made available through the Pre Disaster Mitigation Grant Program (PDM). The Alabama Tombigbee Regional Commission assisted the Washington County EMA with the development of the plan.

1.4 Scope

The Washington County, Alabama Natural Hazards Mitigation Plan includes all incorporated and unincorporated areas in Washington County. The plan addresses all natural hazards identified by the Federal Emergency Management Agency. All natural hazards that may affect Washington County and its residents are identified. Hazard mitigation strategies are discussed in terms of short term and long-term goals. Responsibility for implementation of strategies is discussed and possible funding sources are identified.

1.5 Purpose

“Mitigation is the cornerstone of emergency management. It's the ongoing effort to lessen the impact disasters have on people's lives and property through damage prevention and flood insurance (<http://www.fema.gov/fima/>).” The Washington County, Alabama Natural Hazards Mitigation Plan is an effort to evaluate and identify all natural hazards, which may affect Washington County. It presents mitigation strategies that address each hazard identified. This plan is only one of many steps Washington County will take to achieve a safer, more hazard resistant environment for its residents.

1.6 Multi-Jurisdictional Planning Participation

All four jurisdictions in Washington County along with the school system participated in the planning process. The participating jurisdictions are Washington County, Chatom, McIntosh, and Millry. The Washington County Board of Education also participated. Participation included completing hazard questionnaires, supplying information on critical facilities, and providing project lists. Each participant will also formally adopt the plan. Table 1.1 outlines plan participants that will formally adopt the plan.

Washington County, Alabama Hazard Mitigation Plan
Section I. The Hazard Mitigation Plan

Table 1.1 Washington County Hazard Mitigation Plan Participants	
Continuing Participants	New Participants
Town of Chatom	Washington County Board of Education
Town of McIntosh	
Town of Millry	
Washington County Commission	

Developed by the Alabama Tombigbee Regional Commission on May 5, 2016

Source: Washington County Hazard Mitigation Planning Committee

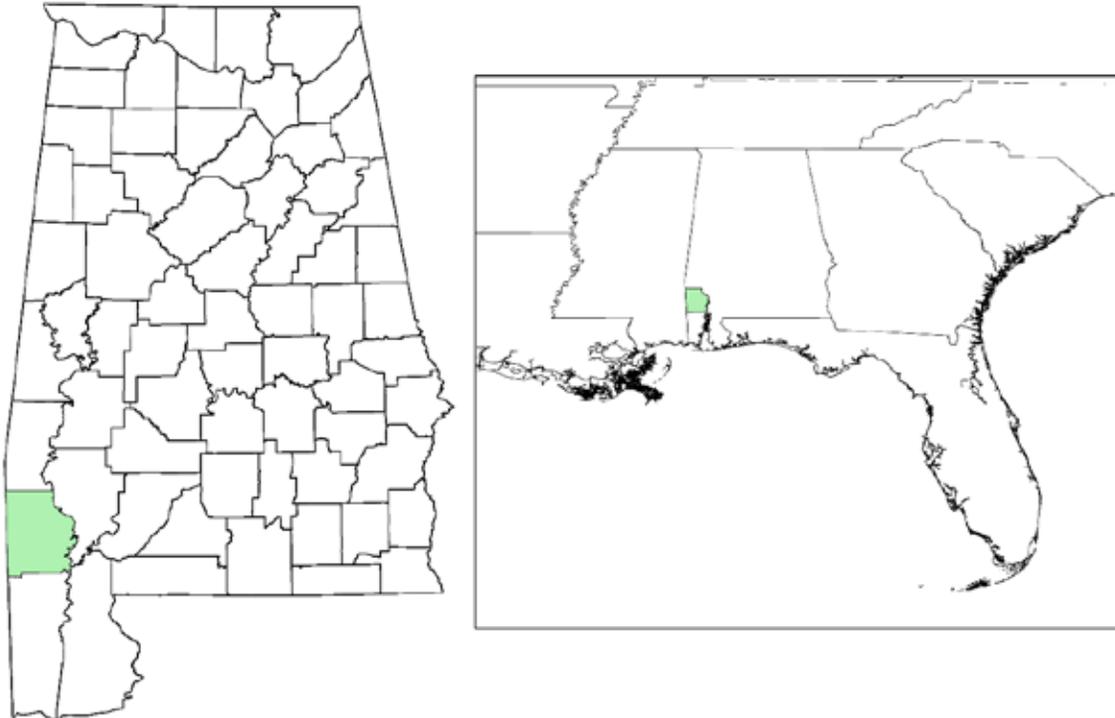
**Summary of Changes Made in Plan Update
Section II. County Profile**

The County Profile section was updated with current demographic and socioeconomic information.

II. COUNTY PROFILE

Washington County was created on June 4, 1800 as a county of the Mississippi Territory. It originally encompassed 26,400 square miles and was divided into 16 Mississippi and 29 Alabama counties. It was named in honor of President George Washington. The county is bordered by Mobile, Clarke, and Choctaw counties in Alabama and Wayne and Green in Mississippi (Figure 2.1). The county spans an area of 1,081 square miles. It is the sixth largest county, with regards to area, in Alabama.

Figure 2.1 Map of Washington County in Relation to the State of Alabama and Southeast U.S

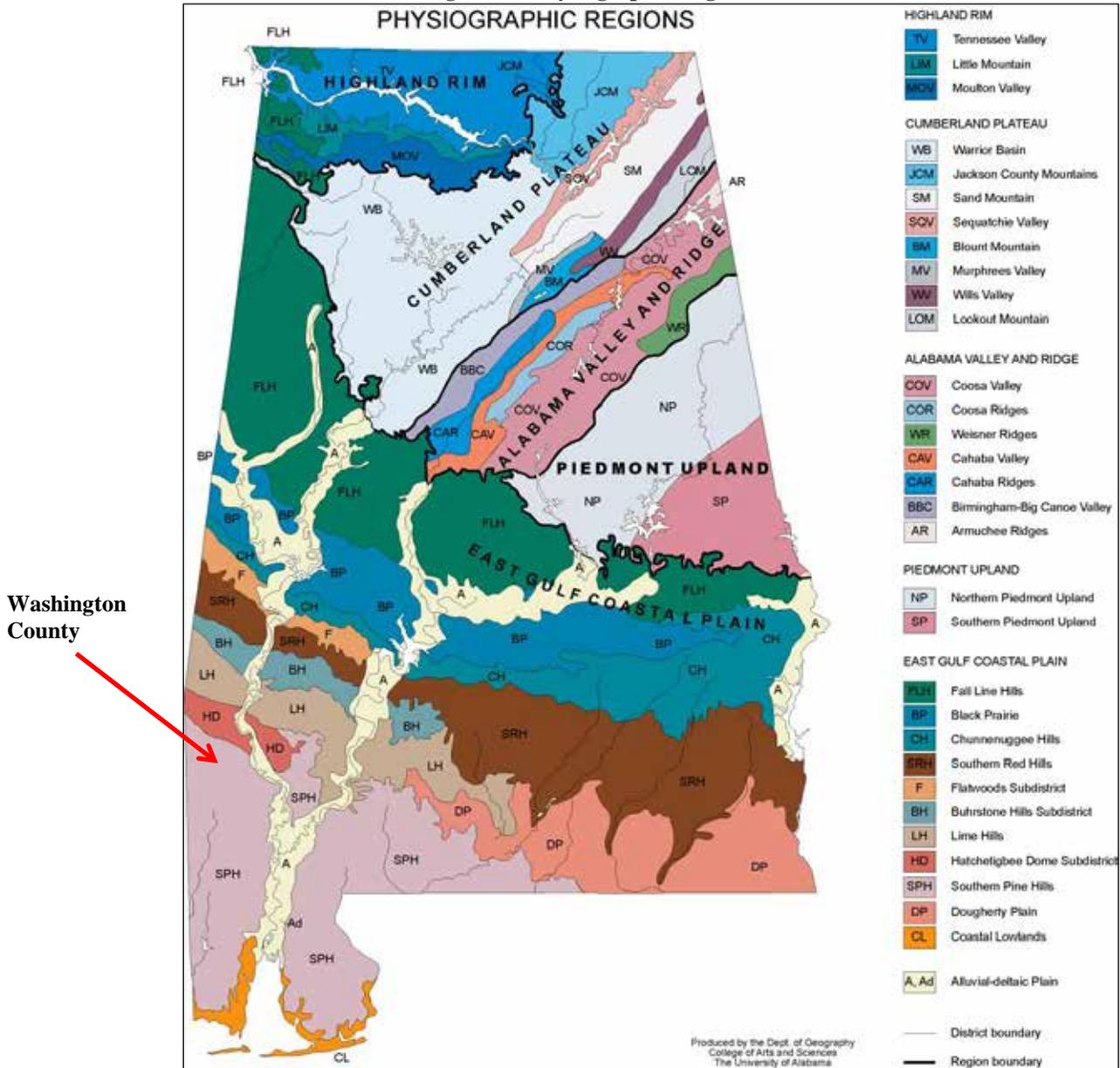


Map produced by the Alabama Tombigbee Regional Commission
Source data US Census Bureau TIGER Line files
May 2016

2.1 Geology

Washington County lies in the East Gulf Coastal Plain. Geologic units range from the Cretaceous to Holocene. These units are sedimentary in origin and consist of sand, clay, gravel, silt, limestone, marl, chalk, and quartz. Figure 2.2 provides a map of the physiographic regions of Alabama with Washington County's location identified.

Figure 2.2 Physiographic Regions of Alabama



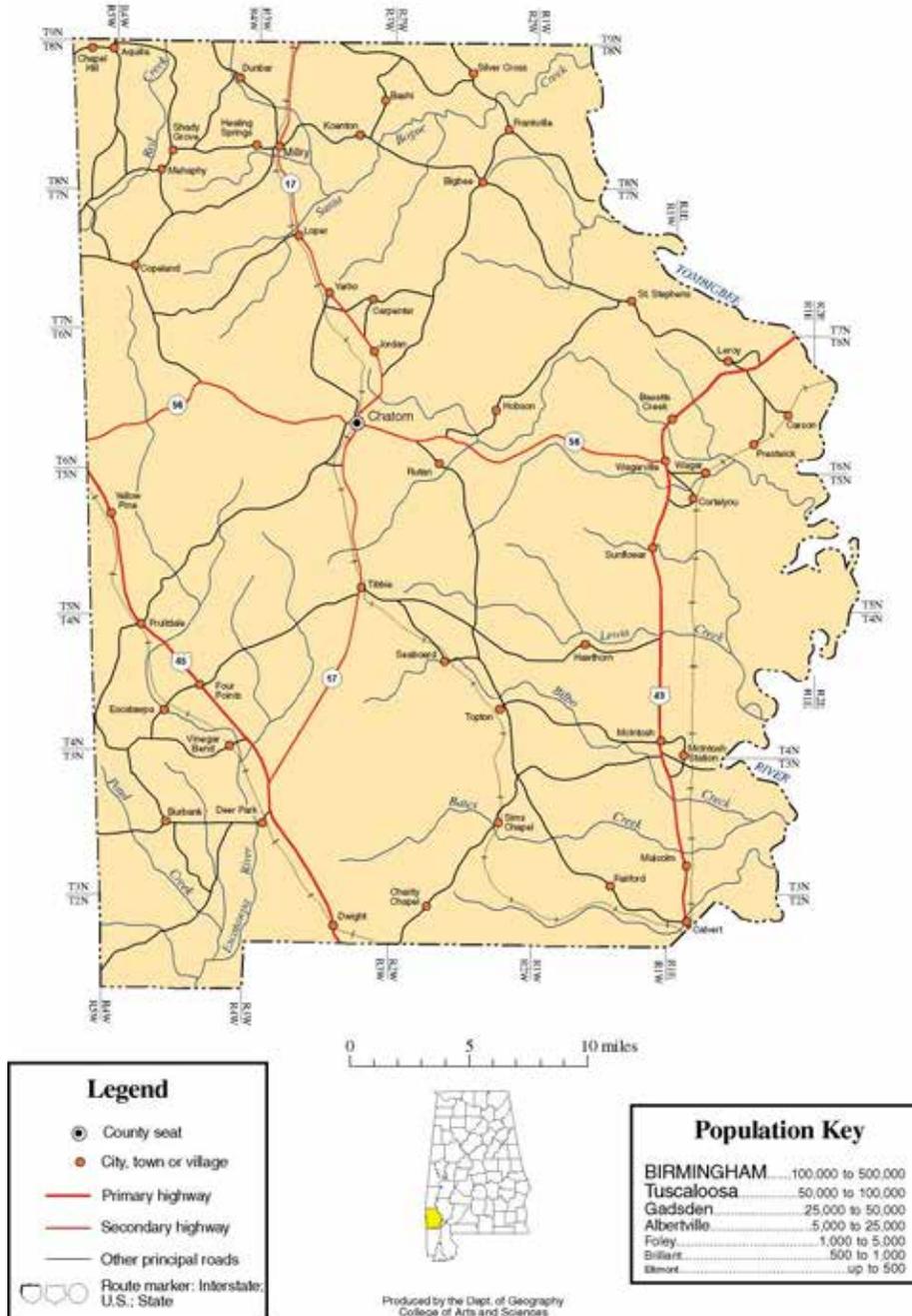
Source: Cartographic Research Laboratory, The University of Alabama
http://alabamamaps.ua.edu/contemporarymaps/alabama/physical/al_physio.jpg
 Accessed on 5/5/2016

2.2 Transportation

Roads

Washington County has an extensive network of county roads. United States Highways 43 and 45 bisect the county. These roads along with Alabama Highways 17 & 56 are the most heavily travelled roads in the county. Figure 2.3 shows the county's major roads.

Figure 2.3 Washington County

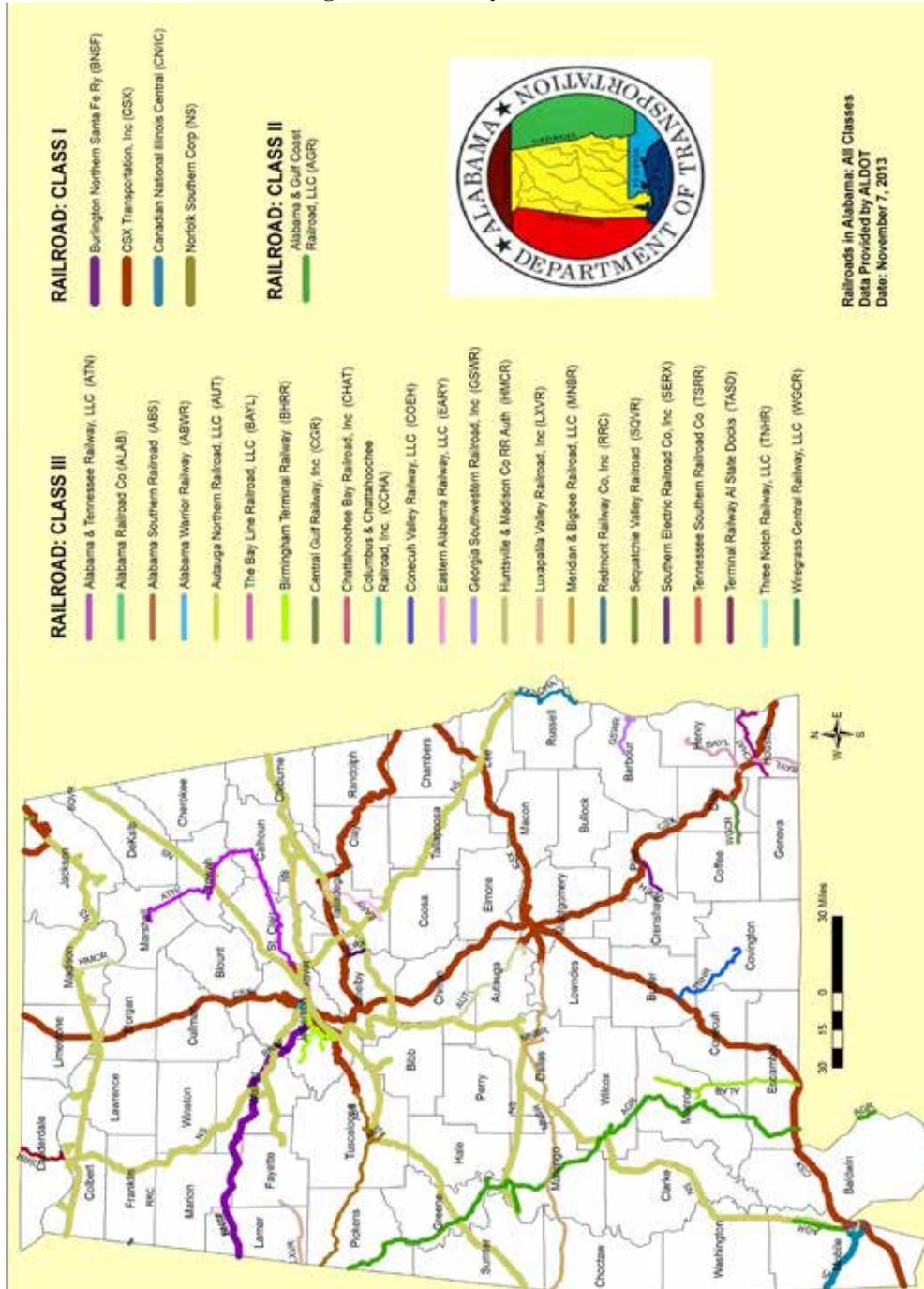


Source: Cartographic Research Laboratory, The University of Alabama
<http://alabamamaps.ua.edu/contemporarymaps/alabama/counties/dallas.jpg>
 Accessed on 5/5/2016

Railroads

There is one railroad in operation in Washington County (Figure 2.4). Norfolk Southern operates a Class I railroad in the county. Class I railroads have annual carrier operating revenues over \$250 million dollars. Major commodities transported through Washington County include coal and industrial products.

Figure 2.4 Railways in Alabama



Source: Alabama Rail Directory, June 2014

2.3 Economy

The economy of Washington County is dependent largely upon manufacturing. Table 2.1 provides a list of the major employers in the county.

Table 2.1 Washington County Major Employers		
Name	Product	# of Employees
BASF	Chemical	400
Washington County Schools	Education	400
Olin	Chemical	300
PowerSouth	Electrical	175
Huntsman	Chemical	170
Tate & Lyle	Chemical	100
Washington County Commission	Government	100
Jacobs Contracting	Contracting	65
HydroVac	Maintenance	40
First Community Bank	Financial	30

Source: <http://mobilechamber.com/wp-content/uploads/2016/02/Washington-County-charts-major-employers.pdf>
Last Accessed: May 20, 2016

2.4 Utilities and Communications

Electricity Providers: Clarke-Washington Electric Cooperative, Alabama Power, Power South Electric Cooperative

Natural Gas: Conoco-Phillips, South Alabama Gas, Bay Gas, and Clarke- Mobile Gas District

Water: Chatom Utilities, Deer Park-Vinegar Bend, Frankville Water, Fruitdale Water System, Hobson Water System, Leroy Water, McIntosh Water, Millry Water, St. Stephens Water, Tibbie Water, Wagarville Water, Washington County Water Authority

Sanitary Sewer: Town of Chatom, Town of Millry, Five Points Sewer District
Electronic Communications: AT&T, Millry Communications

Newspapers: *The Washington County News*, *The South Alabamian*

2.5 Social and Economic Characteristics

Table 2.2 provides general demographic information on Washington County. This information was taken from the American Community Survey 2010-2014 5-Year Estimates.

Table 2.2 Washington County Demographic Profile	
Population	17,137
Male	8,508
Female	8,629
White	11,225
Black	4,169
American Indian	1,405
Other	338
Median Age	40.2
Total households	6,218
Total Housing Units	8,386
Occupied Housing Units	6,218
Population 3 and Over Enrolled in School	4,015
Percent high school graduate or better	82%
Percent bachelor's degree or higher	10.3%
Median Household Income	\$44,731
Per Capita Income	\$20,737
Individuals below the poverty level	15.9%

Developed by the Alabama Tombigbee Regional Commission
Source: United States Census Bureau, American Community Survey 2014
Accessed on 5/6/2016

There are three municipalities in the county. These municipalities are Chatom, McIntosh, and Millry. Chatom is the largest city and county seat. Table 2.3 gives basic social characteristics of these populations.

Table 2.3 Social Characteristics by Municipality			
Place	Chatom	McIntosh	Millry
Population	1,237	238	535
Minority Percent	30.1	64.6	37.6
Percent 65 Years and Older	24.9	6.3	21.8
Percent Under Age 18	17.7	34.5	21.9
Median Age	50.6	32	39.2
Per Capita Income	22,541	19,198	22,261
Median Household Income	33,867	49,306	35,500
Individuals Below Poverty Level	20.9	15.9	27.7
Housing Units	510	118	255

Developed by the Alabama Tombigbee Regional Commission
Source: US Census Bureau, American Community Survey 2014
Accessed on May 6, 2016

Chatom covers the largest area of all the municipalities in the county (Table 2.4). McIntosh has the highest housing and population densities.

Table 2.4 Housing and Population Densities by Municipality					
Municipality	Total Area*	Housing Units	Housing Density**	Population	Population Density**
Chatom	10.9	510	47	1,237	113.5
McIntosh	1	118	118	238	238
Millry	7.7	255	33.1	535	69.5

*square miles

**density per square mile of land

Developed by the Alabama Tombigbee Regional Commission
Source: US Census Bureau, American Community Survey 2014
Accessed on 5/6/2016

Summary of Changes Made in Plan Update Section III. Planning Process

The Planning Process was updated and restructured. The planning process section was extensively revised by the Alabama Tombigbee Regional Commission (ATRC). Committee and stakeholders lists were updated to reflect current information. The participating jurisdiction section was to add more detail on how each jurisdiction participated. Appendix 1 was added to the plan to document the planning process. This appendix is referred to during the discussion of the process in this section. A section containing synopses of the changes made to each section was also added. The section on existing plans was added to this section.

III. PLANNING PROCESS

The Washington County, Alabama Natural Hazards Mitigation Plan was updated in the spring of 2016. The Alabama Tombigbee Regional Commission worked with the Washington County Emergency Management Agency to update and develop the plan. The Washington County EMA gathered jurisdiction specific information and met with the planning committee prior to ATRC being hired to compile the plan. The plan was developed with the guidance of the Hazard Mitigation Planning Committee. The purpose of this committee was to ensure the interests and concerns of everyone in Washington County were addressed. The committee was re-evaluated for the update and new appointees were identified for the entire five-year planning cycle.

3.1 Hazard Mitigation Planning Committee

The Washington County, Alabama Natural Hazards Mitigation Plan was developed with the guidance of the Hazard Mitigation Planning Committee. The committee was appointed for the entire five-year planning cycle.

The mission of the Washington County Hazard Mitigation Planning Committee is to oversee and establish a comprehensive natural hazard mitigation planning process that:

- Engages public participation and support;
- Facilitates Federal, state, regional and local agencies' coordination;
- Constantly monitors and evaluates the potential risks of natural hazards to life and property;
- Actively mobilizes all available community resources and measures to mitigate the threats of natural hazards; and,
- Results in programmed actions with specific results.

The Washington County EMA Director outlined the participation requirements for this plan update. Each member of the committee was notified of these requirements in writing and at the committee meeting. All members stated they understood the requirements. The requirements were as follows:

- Attendance by them, or a representative, at each of the HMPC meetings
- If unable to attend a meeting, follow up by communicating with the Washington County EMA through personal visits, phone calls, correspondence, email or fax
- Timely submission of information necessary for the draft plan
- Full cooperation among the members of each municipality with the Washington County EMA and ATRC.

The Hazard Mitigation Planning Committee met on April 13, 2015 at the Washington County Courthouse. The sign in sheet from the meeting is included in Appendix 1, pages A1. Former EMA Director Danny Walker personally contacted committee members that were unable to attend the update meeting. He met with these members and updated jurisdiction specific information.

**Washington County, Alabama Hazard Mitigation Plan
Section III. Planning Process**

Each member of the Committee contributed his/her opinion on the following:

- ✓ review of hazards (risk assessment),
- ✓ identification of existing plans,
- ✓ review and update of critical facilities,
- ✓ review and update of goals, objectives, and possible projects;
- ✓ review and update of plan maintenance guidelines.

Table 3.1 provides a summary of committee activity:

Table 3.1 Hazard Mitigation Planning Committee Participation						
Jurisdiction	Participant	Attended Committee Meetings/Met with EMA	Provided Information via Email	Provided Information via Fax	Provided Information via Phone	Reviewed Draft Plan
Washington County EMA	Danny Walker/Mike Barnett-Director	X	X	X	X	X
Town of Chatom	Harold Crouch-Mayor/ Dale Singleton-Utilities	X		X		X
Town of McIntosh	Wilbert Dixon-Mayor	X		X		X
Town of Millry	Chris Edmunds-Chief of Police	X		X		X
Washington County BOE	Tim Savage-Superintendent	X	X			X
Washington County Sheriff's Department	Richard Stringer-Sheriff	X				
Washington County Health Department	David Kelly	X				
Alabama Forestry Commission-Washington County	Roy Thornton-Forest Ranger	X	X			X
Washington County Commission	Commissioners: Joseph Abston, Allen Bailey, Johnny Guy, Willie Long, Jr., Mark Platt	X				

Table 3.1 Hazard Mitigation Planning Committee Participation						
Jurisdiction	Participant	Attended Committee Meetings/Met with EMA	Provided Information via Email	Provided Information via Fax	Provided Information via Phone	Reviewed Draft Plan
Washington County Engineer's Office	Matthew Rouse-Engineer	X				

**Compiled by the Alabama Tombigbee Regional Commission on May 20, 2016
Source: Washington County Hazard Mitigation Planning Process**

3.2 Interagency and Intergovernmental Coordination

A wide range of state, regional, county, and local entities were contacted regarding the update process. Information was requested from many. Many were contacted as stakeholders. All entities were invited to the committee meeting by mail. Table 3.2 provides a listing of everyone invited to participate and the extent to which they did.

**Washington County, Alabama Hazard Mitigation Plan
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Table 3.2 Participation Summary for Planning Committee and Stakeholders

Entity	Natural Hazards Committee	Contacted As Stakeholder	Attended Meetings/Met with EMA	Provided Information	Reviewed Draft	Did Not Participate
Washington County EMA, Director	X		X	X (critical facility information, projects, goals/objectives)	X	
Washington County School System, Superintendent	X		X	X (critical facility information, projects, goals/objectives)	X	
Alabama Forestry Commission-Washington County, Washington County Forester	X		X	X (wildfire information)	X	
Town of Chatom, Mayor	X		X	X (critical facility information, projects, goals/objectives, hazard information)	X	
Town of Millry, Police Chief	X		X	X (critical facility information, projects, goals/objectives, hazard information)	X	
Town of McIntosh, Police Chief	X		X	X (critical facility information, projects, goals/objectives, hazard information)	X	
Washington County Commission, Chairman & Commissioners	X		X	X (critical facility information, projects, goals/objectives, hazard information)	X	

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National Weather Service, Meteorologist In Charge		X		X (storm event data)		X
Washington County Department of Public Health	X		X			X
Community Action Agency, Director		X				X
Alabama Cooperative Extension Service, Washington County Agent		X				X
Washington County Sheriff's Office, Sheriff	X		X	X		
Choctaw County Commission, EMA Director		X				X
Clarke County Commission, EMA Director		X				X
Mobile County Commission, EMA Director		X				X
Wayne County Commission, EMA Director		X				X
Green County Commission, EMA Director		X				X

**Developed by the Alabama Tombigbee Regional Commission on May 20, 2016
Source: Washington County Hazard Mitigation Planning Process**

3.3 Public Involvement

An important aspect of the planning process is involving the public at every step. Washington County EMA and ATRC took steps to involve the public at every juncture. The committee meeting held on April 13, 2015 was also a public meeting. A public meeting notice was posted throughout the county advertising the meeting. Notices were posted at Town Halls, Senior Citizen Centers, and the County Courthouse.

No members of the general public attended this meeting. If members of the public had attended, their opinions and ideas regarding the hazard mitigation information presented would have been recorded and incorporated into the plan. During the next plan update, the county will expand its public outreach. The EMA will reach out to the local radio station to help promote the meetings. The county will also use social media, such as Facebook, to promote meetings. Survey Monkey or an equivalent online survey website will be used to gather public opinion on hazard issues. Special attention will be given to encouraging neighboring counties (Choctaw, Clarke, Mobile, Wayne, and Green) to participate. EMA will contact them directly to solicit their participation.

The draft plan was also posted for the public's review on the Alabama Tombigbee Regional Commission's website (atrcregion6.org). Copies of the draft plan were also available for the public's review at the Washington County EMA offices. Notice of the draft plan's availability for review was posted throughout the county at Town Halls and the County Courthouse. For the next update, the county will also post notices at local senior centers, volunteer fire departments, and libraries to encourage participation. No comments from the public were received on the draft plan. For the next update, the county will advertise the draft plan's availability in the local newspaper.

A public hearing to receive public comments was also held by each jurisdiction prior to adopting the resolution approving this plan. These meetings were held on the following dates:

- ✓ Town of Chatom – (date of meeting prior to adoption to be inserted)
- ✓ Town of McIntosh – (date of meeting prior to adoption to be inserted)
- ✓ Town of Millry – (date of meeting prior to adoption to be inserted)
- ✓ Washington County Commission – (date of meeting prior to adoption to be inserted)
- ✓ Washington County School System – (date of meeting prior to adoption to be inserted)

3.4 Participating Jurisdictions

All jurisdictions within Washington County have participated in the planning process and will adopt the final plan by formal resolution. Both school systems have also participated and will adopt the plan. Participating entities and the extent of their participation are as follows:

- ✓ Town of Chatom: Reviewed jurisdiction specific information and submitted updates, reviewed draft plan
- ✓ Town of McIntosh: Reviewed jurisdiction specific information and submitted updates, reviewed draft plan
- ✓ Town of Millry: Reviewed jurisdiction specific information and submitted updates, reviewed draft plan
- ✓ Washington County Commission: Reviewed jurisdiction specific information and

- submitted updates, reviewed draft plan
- ✓ Washington County Board of Education: Provided system specific information, reviewed draft

3.5 Update Process

The Washington County EMA initially began the update process under the direction of the previous EMA Director. The update process began with a full review of the existing Washington County, Alabama Natural Hazards Mitigation Plan by the Washington County EMA. The EMA began gathering updated information and arranged a planning meeting. The County was invited to submit a PDM application in July of 2015 for funding to help update the plan. Upon approval of the PDM grant, the County procured ATRC to help update the plan. ATRC did not facilitate the 2010 planning process, so the entire plan was revisited. There are extensive changes in the plan's layout and structure. The following is a brief discussion of the changes:

- ✓ The Hazard Mitigation Plan: The Hazard Mitigation Plan section of the plan was reorganized and revised.
- ✓ County Profile: The County Profile section was updated with current information.
- ✓ Planning Process: The Planning Process was updated and restructured. The planning process section was extensively revised by the Alabama Tombigbee Regional Commission (ATRC). Committee and stakeholders lists were updated to reflect current information. The participating jurisdiction section was to add more detail on how each jurisdiction participated. Appendix 1 was added to the plan to document the planning process. This appendix is referred to during the discussion of the process in this section. A section containing synopses of the changes made to each section was also added. The section on existing plans was added to this section.
- ✓ Risk Assessment: The Risk Assessment section was reviewed, updated, and reorganized. ATRC reviewed each hazard and researched to find sources that could help give more detailed information regarding risk. Past occurrences were updated using the Storm Events Database. The committee was asked to assign a risk level and probability category to each hazard. No attendee requested any changes be made to the risk level assigned to any hazard in the previous plan.

A section on Assessing Vulnerability was also added to the Risk Assessment. American Community Survey information was used to identify affected populations and socially vulnerable populations by hazard. Property records were used to get updated building stock numbers for the county. The Identification of Critical Facilities section was compiled in this section along with the Planned Critical Facilities Section. A current land use map and population projection figures are provided in this section to address development trends.

- ✓ Ongoing Mitigation Assessment: This section provides the Existing Authorities, Policies, Programs, and Resources by Jurisdiction. A table was added to detail capabilities by jurisdiction. Capabilities were determined by talking with each jurisdiction via phone and/or in person. Information on the Washington County EMA is provided in Section B.

- ✓ Mitigation Goals, Objectives, and Actions by Jurisdiction: This section provides goals, objectives and actions for each participating jurisdiction. Each participating jurisdiction reviewed their information from the previous plan. Each jurisdiction reviewed their information and either confirmed there were no revisions or submitted changes.
- ✓ Plan Maintenance: The plan maintenance process was reviewed by ATRC at the request of the Washington County EMA and Hazard Mitigation Planning Committee. The Incorporation into Existing Planning Mechanisms section is provided to outline information by jurisdiction.

As noted above, the update process consisted of one Natural Hazards Steering Committee meeting held on April 13, 2015 at the Washington County Courthouse this meeting was also a public involvement meeting. All other correspondence took place via phone, fax, and email; all correspondence is on file at the Washington County EMA Office.

The draft plan was available for review and comment on ATRC's website, atrcregion6.org. No comments were received on the draft plan.

3.6 Integration with Existing Plans

Many reports, plans, and information sources were consulted during the update process. These plans were consulted for various types of information. The Alabama Tombigbee Regional Commission reviewed these documents and incorporated them as deemed necessary. All sources of information are cited throughout the plan. These sources include:

- ✓ United States Census Bureau, Census 2010 & American Community Survey (socio-economic information)
- ✓ Alabama State Data Center Population Projections
- ✓ Alabama State Data Center Estimates (population, housing units, income)
- ✓ NOAA and NWS records (updated past occurrences)
- ✓ Flood Insurance Rate Maps, Flood Insurance Study (reviewed flood boundaries)
- ✓ A Strategic Plan for the Alabama Tombigbee Region. (reviewed strategies with regional goals)
- ✓ Southern Wildfire Risk Assessment Summary Report for Washington County (reviewed county's wildfire risk and areas at highest risk)
- ✓ State of Alabama :State Hazard Mitigation Plan Update (hazard information, review for consistency)
- ✓ Washington County, Alabama Soils Survey (soils information)
- ✓ US Corps of Engineers National Inventory of Dams (dam inventory)

Table 3.3 lists other policies, organizations, and plans were also referred to during the development of the plan:

**Washington County, Alabama Hazard Mitigation Plan
Section III. Planning Process**

Table 3.3 Local Mitigation Assessment Documents and Policies Considered

Washington County	Town of Chatom	Town of McIntosh	Town of Millry
Member NFIP	Member NFIP	Zoning Ordinance	Member NFIP
Flood Ordinance	Flood Ordinance	Regional Hazmat Team	Flood Ordinance
Building Codes	Zoning Ordinance	Police Force	Regional Hazmat Team
County Engineer	Subdivision regulations	Volunteer Fire Department	Volunteer Fire Department
Road & Bridge Department	Ability to tax	Rescue Squad	
Sheriff's Office	Regional Hazmat Team		
Regional Hazmat Team	Volunteer Fire Department		
Volunteer Fire Departments	Police Department		
Rescue Squad	Hospital		

**Compiled by the Alabama Tombigbee Regional Commission
Source: Local Resources
Created 5/20/2016**

Summary of Changes Made in Plan Update Section IV. Risk Assessment

The Risk Assessment section was reviewed, updated, and reorganized. ATRC reviewed each hazard and researched to find sources that could help give more detailed information regarding risk. Past occurrences were updated using the Storm Events Database. The committee was asked to assign a risk level and probability category to each hazard. No attendee requested any changes be made to the risk level assigned to any hazard in the previous plan.

A section on Assessing Vulnerability was also added to the Risk Assessment. American Community Survey information was used to identify affected populations and socially vulnerable populations by hazard. Property records were used to get updated building stock numbers for the county. The Identification of Critical Facilities section was compiled in this section along with the Planned Critical Facilities Section. A current land use map and population projection figures are provided in this section to address development trends.

IV. RISK ASSESSMENT

4.1 Hazard Profiles

The Washington County Hazard Mitigation Planning Committee examined and classified the risk associated with each hazard using the following guidelines:

- High: Hazards which occur more frequently and/or have a high potential for damage associated with them.
- Medium: Hazards that occur occasionally and/or have a significant potential for damage.
- Low: Hazards with a low probability of occurrence and/or little to no damage potential.
- No Risk: Hazards to which the county is not susceptible.

The committee also used information in the risk assessment and personal knowledge to classify each hazard with regards to probability. The following guidelines were followed:

- High: Probability of major damage in the next 1-10 years
- Medium: Probability of major damage in the next 10-50 years
- Low: Probability of major damage in the next 100 years
- Very Low: major damage not expected

A. Avalanche

Hazard Classification: No Risk

Avalanches are masses of snow, which slide down mountain slopes. They occur when snow becomes dislodged or unstable on a mountain slope. Washington County is not susceptible to this hazard according to the US Forest Service National Avalanche Center.

B. Coastal Erosion

Hazard Classification: No Risk

Coastal erosion is the breakdown and movement of rock and soil from coastal locations by processes such as weathering. Wind and water are two common moving forces in this process. Washington County is not a coastal location; therefore, Washington County is not at risk of this hazard.

C. Dam Failure

Hazard Classification: High

Dams provide flood control, water supply, hydroelectric power, river navigation, wildlife habitat, and recreational opportunities. Dams can fail for one or a combination of the following reasons:

- Overtopping caused by floods that exceed the capacity of the dam
- Deliberate acts of sabotage
- Structural failure of materials used in dam construction
- Movement and/or failure of the foundation supporting the dam

- Settlement and cracking of concrete or embankment dams
- Piping and internal erosion of soil in embankment dams
- Inadequate maintenance and upkeep

The State of Alabama is the only state without a dam safety program. The condition of most dams in the state is unknown. According to the Association of State Dam Safety Officials, “The dams that are rated in Alabama are either federally owned or fall under the safety regulatory jurisdiction of the federal government. The lack of inspection and identification of safety deficiencies in the overwhelming majority of dams puts people, infrastructure and the environment at risk.” The number of “Not Rated” dams reported is likely much lower than the actual number due to the lack of accurate dam safety inventory information.

The only dam inventory available for Washington County is the National Inventory of Dams (NID). NID information is considered outdated and in most instances counties have a significantly higher number of dams. The NID lists 15 dams as being located in Washington County. The NID consists of dams meeting at least one of the following criteria: 1) High hazard classification - loss of one human life is likely if the dam fails, 2) Significant hazard classification - possible loss of human life and likely significant property or environmental destruction, 3) Equal or exceed 25 feet in height and exceed 15 acre-feet in storage, 4) Equal or exceed 50 acre-feet storage and exceed 6 feet in height.

The areas that would be affected by dam failure in the county varies by dam. During a dam failure, a large quantity of water is released which inundates everything in its path. No dams in Washington County are classified as having high hazard potential in the NID; meaning their failure or misoperation would probably result in the loss of human life. Five dams are listed in the significant risk category meaning their failure or misoperation would probably not result in the loss of life, but would result in economic loss, environmental damage, and disruption of lifeline facilities. The remaining ten dams in the county are listed as at low risk meaning that their failure or misoperation would not result in the loss of life and only minimal economic or environmental damage.

The failure of the Coffeetown Lock and Dam could potentially affect Washington County. Although the dam is located in Choctaw County, water from a failure would reach Washington County within thirty minutes. The Corps of Engineers has operating procedures and plans to monitor and prevent this type of failure from occurring.

Historical Occurrences

There are no recorded instances of dam failure in Washington County.

Probability of Occurrence

Due to the lack of information available for dams in Washington County, the probability of dam failure occurring is difficult to quantify. The Alabama Office of Water Resources is in the process of inventorying dams throughout the state. Once this inventory is complete, more accurate estimates on risk and probability of occurrence can be made. Based on the information available at this time, dam failure is considered to have a very low probability of causing major damage.

D. Drought

Hazard Classification: High

The National Weather Service defines drought as a persistent and abnormal moisture deficiency having adverse impacts on vegetation, animals, and people. The four commonly identified types of drought are discussed below:

- Meteorological droughts occur when precipitation departs from normal amounts, high temperatures may also play a role in this type of drought.
- Hydrological droughts are deficiencies in surface or subsurface water levels.
- Agricultural droughts occur when there is not enough soil moisture to support crop growth.
- Socioeconomic Drought occurs when the demand for water exceeds the supply as a result of a weather-related supply shortfall.

A drought's severity depends on numerous factors, including duration, intensity, and geographic extent as well as regional water supply demands by humans and vegetation. Due to its multidimensional nature, drought is difficult to define in exact terms and also poses difficulties in terms of comprehensive risk assessments.

Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering of effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.

Drought can be measured numerous ways. Washington County used local information along with information provided by the Drought Mitigation Center's Drought Monitor to assess risk. Table 4.1 provides a description of the monitor's classification scheme.

Table 4.1 US Drought Monitor Classification Scheme

Category	Description	Possible Impacts	Palmer Drought Index	CPC Soil Moisture Model (Percentiles)	USGS Weekly Streamflow (Percentiles)	Standardized Precipitation Index (SPI)	Objective Short and Long-term Drought Indicator Blends (Percentiles)
D0	Abnormally Dry	Going into drought; short-term dryness slowing planting, growth of crops or pastures. Coming out of drought; some lingering water deficits; pastures or crops not fully recovered	-1.0 to -1.9	21-30	21-30	-0.5 to -0.7	21-30
D1	Moderate Drought	Some damage to crops, pastures; streams, reservoirs, or wells low; some water shortages developing or imminent; voluntary water use restrictions requested	-2.0 to -2.9	11-20	11-20	-0.8 to -1.2	11-20
D2	Severe Drought	Crop or pasture losses likely; water shortages common; water restrictions imposed	-3.0 to -3.9	6-10	6-10	-1.3 to -1.5	6-10
D3	Extreme Drought	Major crop/pasture losses; widespread water shortages or restrictions	-4.0 to -4.9	3-5	3-5	-1.5 to -1.9	3-5
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies	-5.0 or less	0-2	0-2	-2.0 or less	0-2

Source: United States Drought Monitor
<http://droughtmonitor.unl.edu/AboutUs/ClassificationScheme.aspx>
Last Accessed on 5/5/2016

The entire county is at the same risk for drought conditions. Some degree of drought is common in Southern Alabama during the summer months. Under normal conditions frequent afternoon thunderstorms produce enough precipitation to alleviate drought concerns; however, over the past five years according to the US Drought Monitor, Washington County has experienced some degree of drought conditions. It is probable that the county could experience D4 or exceptional drought for a period of weeks or even months.

Drought conditions are expected to occur in Washington County in the future. Droughts can affect the water supply available for residents in the county. Residents that rely on private wells may face significant issues during drought periods. Farmers that rely on water sources dependent on precipitation may also face challenges watering their livestock. Drought conditions can also damage crops causing economic losses for farmers. Drought conditions also provide an environment more susceptible to wildfire. With drought conditions in place, water supply to fight wildfires may be affected. Droughts may lead to recreation and navigation issues along the main rivers and streams.

Historical Occurrences

Drought conditions have occurred numerous times in Washington County. In 2012, 2013, and 2014 moderate drought conditions were experienced in the county. In 2011, extreme drought conditions occurred.

Probability of Occurrence

Although the probability of a drought occurring is impossible to quantitatively define, it is realistic to rate Washington County as being at a moderate risk for drought. There has been some degree of drought occur in the past, but these conditions are usually manageable. No damage estimates are available for these occurrences, but some degree of agricultural loss would have occurred. With regards to major damage occurring, the probability of drought of this magnitude occurring is medium (10-50 years).

E. Earthquake

Hazard Classification: Low

An earthquake occurs when two blocks of the earth suddenly slip past one another. The surface where they slip is called the fault or fault plane. The location below the earth's surface where the earthquake starts is called the hypocenter, and the location directly above it on the surface of the earth is called the epicenter. Earthquakes may occur along the edges of tectonic plates or along faults.

The USGS defines a fault as, "A fault is a fracture or zone of fractures between two blocks of rock. Faults allow the blocks to move relative to each other. This movement may occur rapidly, in the form of an earthquake - or may occur slowly, in the form of creep. Faults may range in length from a few millimeters to thousands of kilometers. Most faults produce repeated displacements over geologic time. During an earthquake, the rock on one side of the fault suddenly slips with respect to the other. The fault surface can be horizontal or vertical or some arbitrary angle in between."

Intensity is a number assigned to an earthquake to describe its severity in terms of its effects on the earth and humans and their structures. The most commonly used scale for measuring the intensity of earthquakes is the Modified Mercalli Scale (Table 4.2).

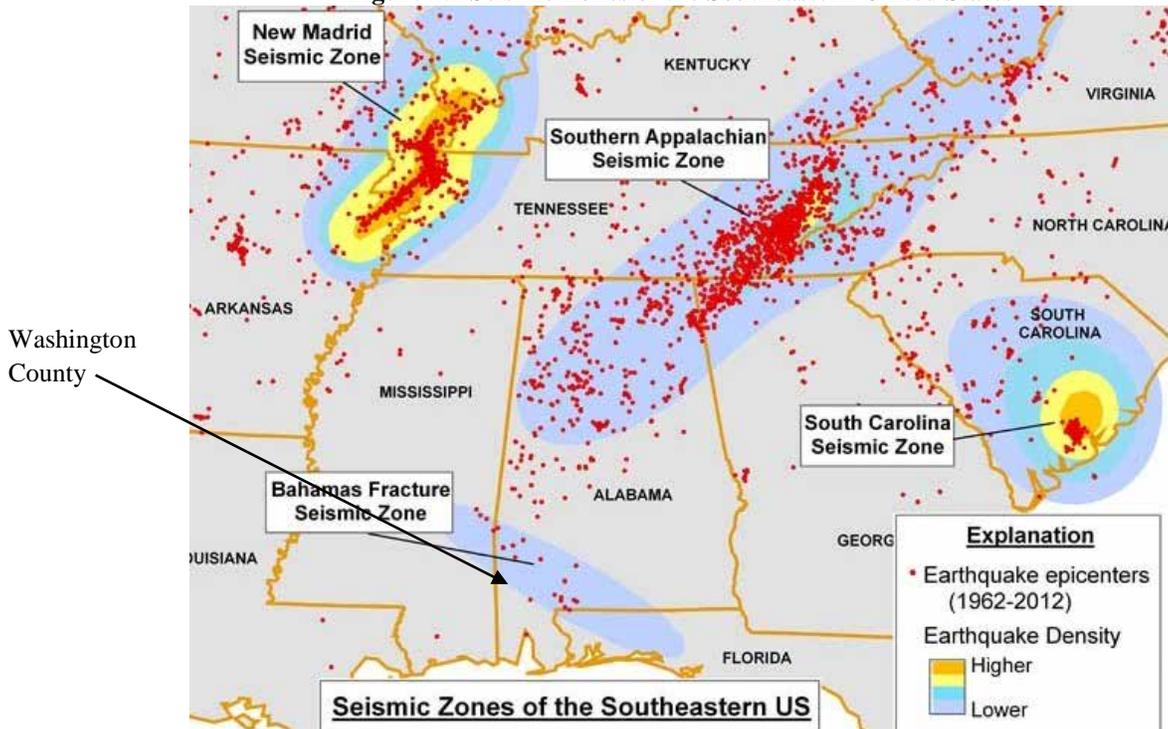
Table 4.2 Modified Mercalli Earthquake Measurement Scale

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Source: United States Geologic Survey
<http://earthquake.usgs.gov/learn/topics/mercalli.php>
Last Accessed on 5/5/2016

Although many areas of the United States are better known for their susceptibility, earthquakes do occur in Alabama. There are four seismic zones that affect the state; these zones are the New Madrid Seismic Zone, Southern Appalachian Seismic Zone, Bahamas Fracture Seismic Zone, and the South Carolina Seismic Zone (SCSZ). A portion of Washington County is located in the Bahamas Fracture Seismic Zone (Figure 4.1).

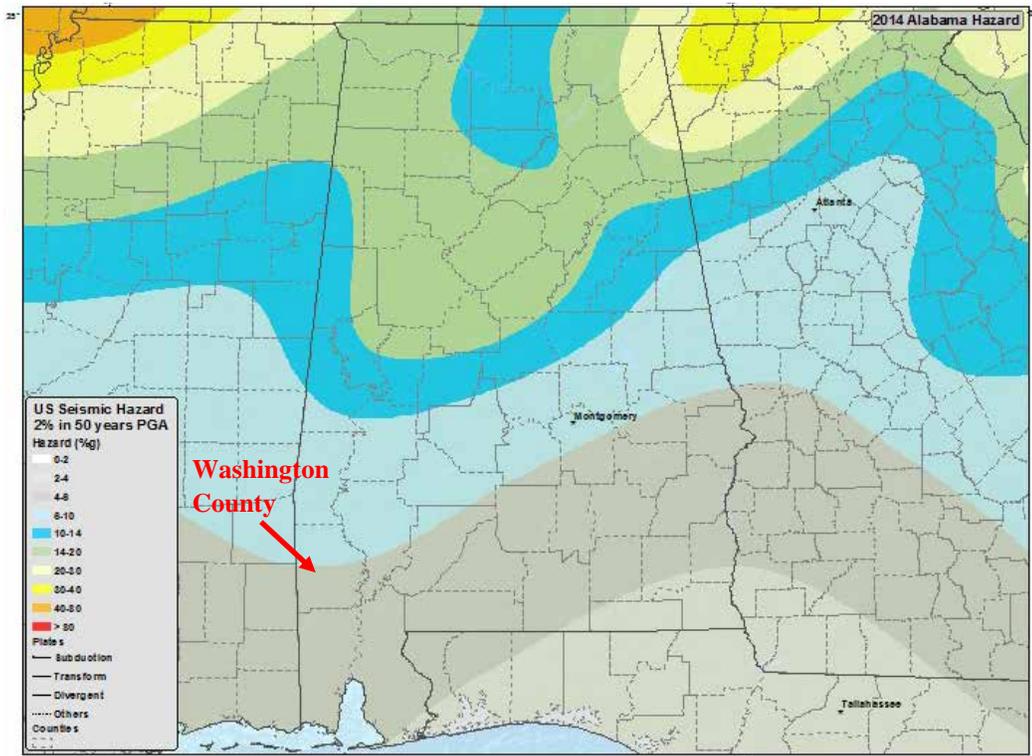
Figure 4.1 Seismic Zones of the Southeastern United States



Source: Geological Survey of Alabama
http://gsa.state.al.us/gsa/geologichazards/Quakes_AL.htm
Accessed on 5/5/2016

Washington County is moderately susceptible to earthquakes caused by movement along faults. Figure 4.2 is the seismic hazard map for Alabama. The National Seismic Hazard Maps are derived from seismic hazard curves calculated on a grid of sites across the United States that describe the annual frequency of exceeding a set of ground motions. The northern half of the county of the county lies within the 6-10%, and the southern half lies in the 4-6% designation.

Figure 4.2 Seismic Hazard Map of Alabama 2014

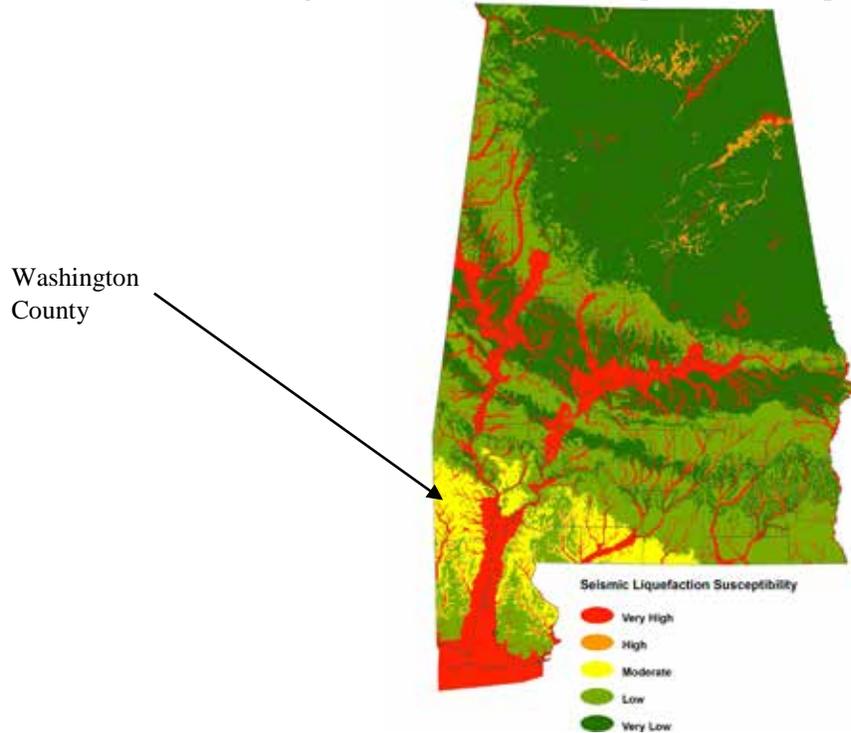


Source: United States Geological Survey
<http://earthquake.usgs.gov/earthquakes/states/alabama/hazards.php>
Accessed on 5/5/2016

In the central and eastern United States, a potential risk from strong earthquakes is liquefaction. “Liquefaction occurs when vibrations or water pressure within a mass of soil cause the soil particles to lose contact with one another. As a result, the soil behaves like a liquid, has an inability to support weight and can flow down very gentle slopes. This condition is usually temporary and is most often caused by an earthquake vibrating water-saturated fill or unconsolidated soil (geology.com).”

The State of Alabama Emergency Management Agency along with the Geological Survey of Alabama produced a statewide map highlighting areas at risk of liquefaction during a moderate to strong magnitude earthquake. Figure 4.3 is the statewide liquefaction risk map. One can see that Washington County has significant area susceptible to liquefaction. These areas lie in the floodplains of the Tombigbee and Escatawpa Rivers, which primarily consist of unconsolidated soils.

Figure 4.3 Statewide Seismic Liquefaction Susceptibility Map



Source: State Hazard Mitigation Plan Update, April 2013

Historical Occurrences

There is one historical record of an earthquake occurring in Washington County. A small quake was reported near Millry in the northern part of the county. This quake occurred on May 22, 1997. This quake's magnitude was recorded as 2.7.

Probability of Occurrence

A portion of the county is located in an active seismic zone and there is one historical earthquake on record; the committee feels the probability of occurrence is low.

F. Extreme Temperatures

Hazard Classification: High

EXTREME HEAT

Extreme heat is defined as temperatures that are ten or more degrees or higher than average daily temperatures and last for several weeks.

Heat can be deadly regardless of the length of time it persists. The National Weather Service issues three types of heat related advisories:

- Excessive Heat Outlooks: Issued when the potential exists for an excessive heat event in the next 3-7 days. An Outlook provides information to those who need considerable lead

time to prepare for the event, such as public utility staff, emergency managers and public health officials.

- Excessive Heat Watches: Issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is still uncertain. A Watch provides enough lead time so that those who need to prepare can do so, such as cities officials who have excessive heat event mitigation plans.
- Excessive Heat Warning/Advisories: Issued when an excessive heat event is expected in the next 36 hours. These products are issued when an excessive heat event is occurring, is imminent, or has a very high probability of occurring. The warning is used for conditions posing a threat to life. An advisory is for less serious conditions that cause significant discomfort or inconvenience and, if caution is not taken, could lead to a threat to life.

The National Weather Service’s heat index chart is given below (Table 4.3). The heat index is a measure of how hot it feels outside. Humidity is factored into this calculation. In Washington County, high temperatures and high humidity occur on a regular basis during the summer months.

Table 4.3 NOAA’s National Weather Service Heat Index
Temperature (°F)

	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity
 Caution
 Extreme Caution
 Danger
 Extreme Danger

Source: National Oceanic and Atmospheric Administration
<http://www.nws.noaa.gov/os/heat/index.shtml#heatindex>
 Last Accessed on 5/5/2016

Health conditions that result from extreme heat range from mild to severe. These conditions include sunburn, heat cramps, heat exhaustion, and heat stroke. A description of each of these conditions follows:

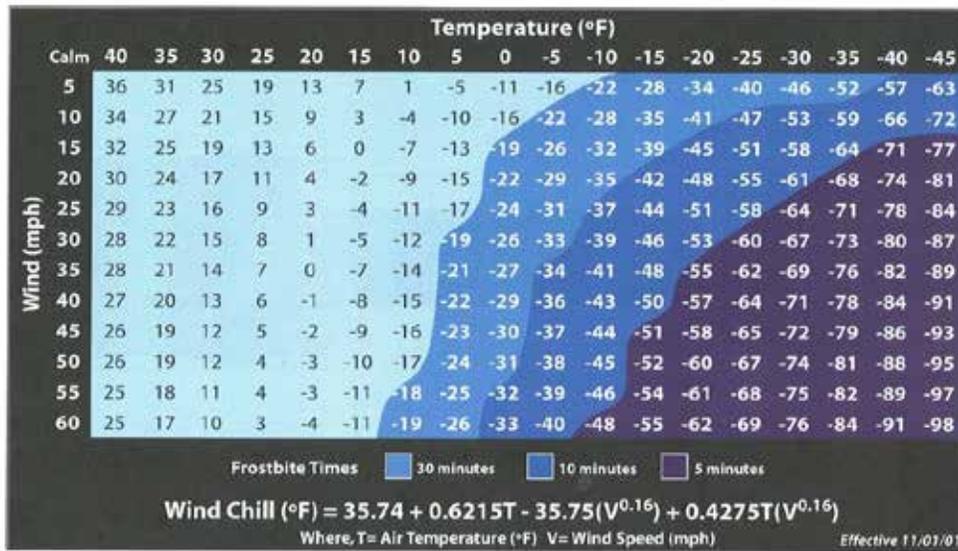
- Heatstroke is considered a medical emergency and is often fatal. It exists when rectal temperature rises above 105°F as a result of environmental temperatures. Patients may be delirious, stuporous, or comatose. The death to care ratio in reported cases averages about 15%.

- Heat Exhaustion is much less severe than heatstroke. The body temperature may be normal or slightly elevated. A person suffering from heat exhaustion may complain of dizziness, weakness or fatigue. The primary cause of heat exhaustion is fluid and electrolyte imbalance. The normalization of fluids will typically alleviate the situation.
- Heat Syncope is typically associated with exercise by people who are not acclimated to exercise. The symptom is a sudden loss of consciousness. Consciousness returns promptly when the person lies down. The cause is primarily associated with circulatory instability as a result of heat. The condition typically causes little or no harm to the individual.
- Heat Cramps are typically a problem for individuals who exercise outdoors but are unaccustomed to heat. Similar to heat exhaustion it is thought to be a result of a mild imbalance of fluids and electrolytes.

EXTREME COLD

Extreme cold temperatures can occur in Washington County during the winter months. NOAA defines extreme cold in the South as temperatures near freezing as extreme cold. Wind chill is also important when discussing extreme cold temperatures. Wind Chill is a measure of how wind and cold actually feel on exposed skin, not the actual temperature. Table 4.4 provides information on wind chill factors.

Table 4.4 NOAA’s National Weather Service Wind Chill Chart



Source: National Oceanic and Atmospheric Administration
<http://www.nws.noaa.gov/om/winter/windchill.shtml>
Last Accessed on 5/5/2016

The risks associated with extreme cold temperatures are similar to those of extreme heat. Exposure to freezing temperatures can cause potentially life-threatening conditions such as hypothermia and frostbite:

- Frostbite is damage to body tissue caused by extreme cold. A wind chill of -20° Fahrenheit (F) with light winds will cause frostbite in just 30 minutes. Frostbite causes a

loss of feeling and a white or pale appearance in extremities, such as fingers, toes, ear lobes or the tip of the nose.

- Hypothermia is a condition brought on when the body temperature drops to less than 95°F, and it can kill. For those who survive, there is likely to be lasting damage to the kidneys, liver and pancreas. Warning signs include uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and apparent exhaustion.

In general, the elderly and young children are more vulnerable to extreme temperatures. People without air conditioning and/or heating systems installed in their homes are also at a higher risk. Persons who work outdoors are also more susceptible to the effects of extreme temperatures.

Extreme temperatures can also damage vegetation and crops leading to economic losses. Livestock and chickens are also affected by heat, leading to additional costs for farmers trying to protect their herds.

Extremely cold temperatures can also lead to waterlines freezing and rupturing, leading to temporary loss of service. Repairing these ruptures leads to additional costs for the water system. Pipes in homes are also at risk of freezing and rupturing leading to property damage.

The entire county is at the same risk for both extreme hot and cold temperatures. During the summer months, temperatures and heat indices above 100 degrees are possible for weeks at a time. During the winter months, temperatures and wind chills at or below freezing are possible for 48-72 hours at a time.

Historical Occurrences

There are no occurrences of extreme heat or extreme cold temperatures on record for Washington County; however, it is known that have occurred.

Probability of Occurrence

It is known that the occurrences of these events are more frequent than reported. It can be expected that the county will continue to experience both extreme heat and cold temperatures on an occasional basis. The county classifies the probability of major damage occurring as a result of these events to be medium (10-50 year period).

G. Flooding

Hazard Classification: Moderate

A flood is a general and temporary condition where two or more acres of normally dry land or two or more properties are inundated by water or mudflow (floodsmart.gov). Many conditions can lead to flooding including hurricanes, overtopped levees, outdated or clogged drainage systems and rapid accumulation of rainfall. According to the National Weather Service, the most common types of flooding in the United States are:

- Flash flooding: Flash floods generally develop within 6 hours of the immediate cause. Causes of flash flooding include heavy rain, ice or debris jams, and levee or dam failure. These floods exhibit a rapid rise of water over low-lying areas. In some cases, flooding

may even occur well away from where heavy rain initially fell. There are many reasons that flash floods occur, but one of the most common is the result of copious amounts of rainfall from thunderstorms that cause flash flooding. This can also occur when slow-moving or multiple thunderstorms move over the same area. These sudden downpours can rapidly change the water levels in a stream or creek and turn small waterways into violent, raging rivers. Urban areas are especially prone to flash floods due to the large amounts of concrete and asphalt surfaces that do not allow water to penetrate into the soil easily.

- River flooding: River flooding occurs when river levels rise and overflow their banks or the edges of their main channel and inundate areas that are normally dry. River flooding can be caused by heavy rainfall, dam failures, rapid snowmelt and ice jams. The National Weather Service issues Flood Warnings for designated River Forecast Points where a flood stage has been established.

River flooding is classified as Minor, Moderate, or Major based on water height and impacts along the river that have been coordinated with the NWS and local officials. Minor river flooding means that low-lying areas adjacent to the stream or river, mainly rural areas and farmland and secondary roadways near the river flood. Moderate flooding means water levels rise high enough to impact homes and businesses near the river and some evacuations may be needed. Larger roads and highways may also be impacted. Major flooding means that extensive rural and/or urban flooding is expected. Towns may become isolated and major traffic routes may be flooded. Evacuation of numerous homes and business may be required.

There is an additional level of flooding known as record flooding. In many cases this falls into the major flood category, but it doesn't have to. A record flood is simply one where the water reaches a level higher than it ever has been recorded before. Therefore, record flooding can cause extensive damage or even no damage or other negative impacts at all.

- Flooding from Tropical Systems/Hurricanes: When people think of tropical storms and hurricanes they typically think of strong winds, yet the highest percentage of all tropical cyclone deaths are due to flooding. Coastal flooding generally occurs with a land-falling or near-land system such as a Tropical Storm or Hurricane. Storm surge and large waves produced by hurricanes pose the greatest threat to life and property along the coast. The destructive power of storm surge and large battering waves can result in loss of life; destruction of buildings; erosion of beaches and dunes; and damage to roads and bridges along the coast. Storm surges undermine building foundations by constant agitation of the water piled high by the tropical cyclone. The end result can be a complete demolition of homes and businesses.

Tropical cyclones can cause flooding in the U.S. each spring through fall. While the official hurricane Season runs from June to November in the Atlantic and May to November in the Pacific, tropical storms have been known to occur outside of this timeframe. Tropical cyclones can bring copious amounts of precipitation onshore. The

majority of the heaviest rain occurs to the right of the center of the storm; however, it should be noted that rain bands on both sides of the system can produce heavy rain.

- **Burn scars/debris flows:** In areas where wildfires have occurred, vegetation may have been burned away and soil properties may have been altered, leaving behind bare ground that tends to repel water. This is called a burn scar. When rain falls over a burn scar, the ground is unable to absorb the moisture, leaving the water to collect or run across the surface of the ground towards the lowest point. Wildfires are common in the western U.S.; however, wildfires occur in all 50 states, so this type of flooding is possible anywhere.

Without vegetation to hold the soil in place, flooding can produce mud and debris flows. When normally dry soil becomes overly saturated, it can reach a point where it turns to a liquid state and flows downhill, essentially becoming a river of mud. Mud and debris flows can destroy homes, wash out bridges and roadways, and knock down trees. They can also deposit large amounts of mud and other debris on previously clear surfaces, damaging or burying everything in their path. Areas where ground cover has recently changed dramatically, such as an area impacted by a wildfire, can be at a higher risk for mudflows.

- **Dry Wash:** In dry areas of the U.S. significant rainfall can quickly cause flooding. For example, much of the year the desert southwest is very dry. However, each summer, the weather pattern changes, bringing moisture and thunderstorms into the area. Because of the heat and arid climate, the ground is quite hard and unable to absorb much of the precipitation that does fall. The water from these storms rushes to low-lying areas, often into a canyon or dried up river bed.
- **Dam Breaks/Levee Failure:** Dam failure or levee breaches can occur with little warning. Intense storms may produce a flash flood in a few minutes or hours while other failures and breaches can take much longer to occur, from days to weeks. Causes of dam failure vary from natural causes such as prolonged rainfall, landslides, earthquakes, or erosion to human causes such as improper maintenance and design, negligent operation, or sabotage and terrorism. Dam failures are categorized into three groups: overtopping, in which the water level exceeds the top of the dam; excessive seepage, in which water seeps through the ground; and structural failure, where part of the dam doesn't complete its job sufficiently.

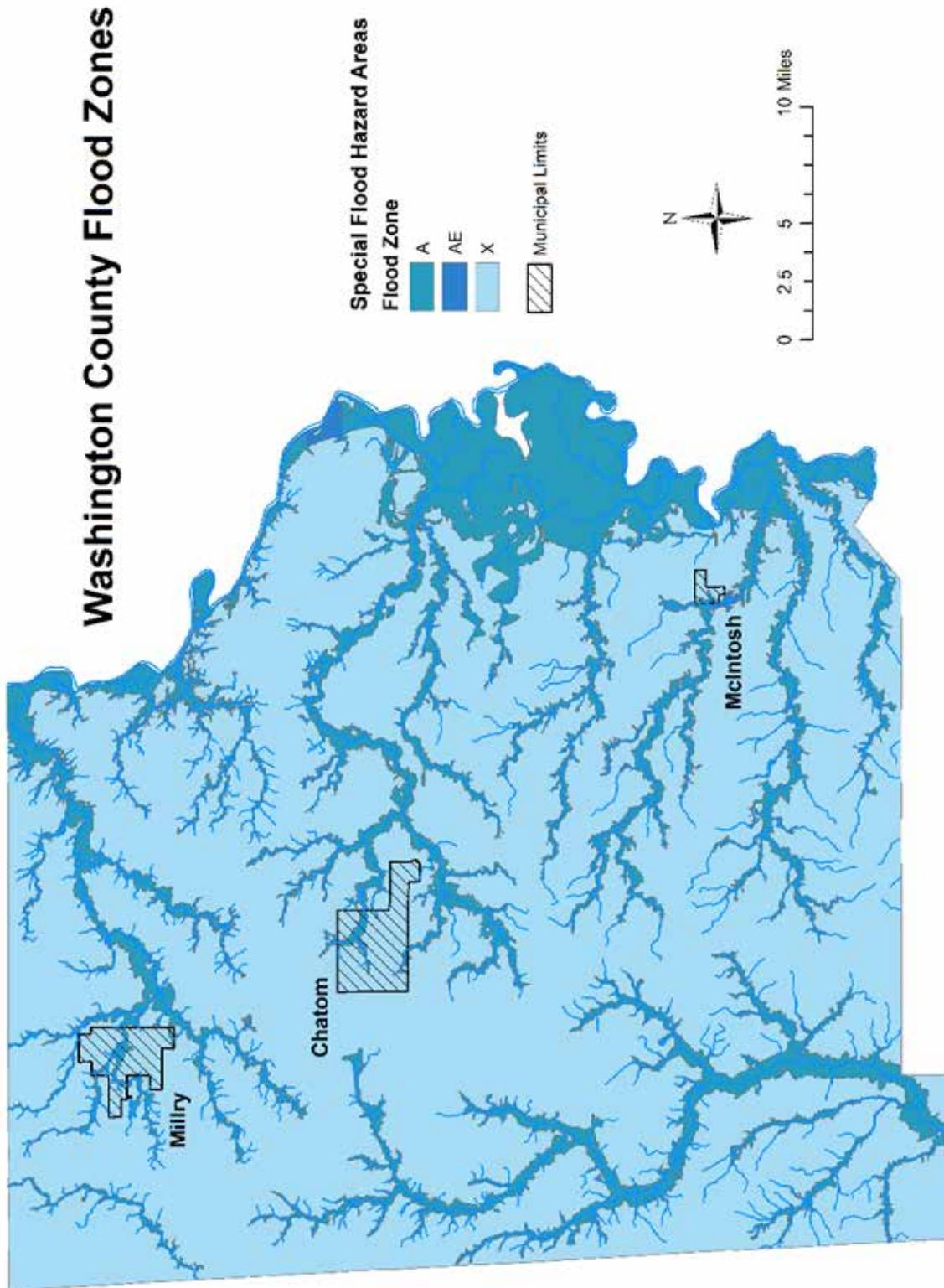
Flooding to some extent occurs every year in Washington County. The county experiences both flash and riverine flooding.

RIVERINE FLOODING

Riverine flooding occurs along rivers and their tributaries and usually occurs after periods of heavy rainfall. Washington County has experienced some flood damages, but generally damage from flooding is not a major problem. According to the State Mitigation Plan Update for Alabama, approximately 11,619 residents live in the 1-Percent-Annual-Chance Flood Hazard Area. Roughly, this is seventy percent of the county's population.

The National Flood Hazard Layer (NFHL) is a digital database that contains flood hazard mapping data from FEMA's National Flood Insurance Program (NFIP). This map data is derived from Flood Insurance Rate Map (FIRM) databases and Letters of Map Revision (LOMRs). Figures 4.4 uses the NFHL to identify Washington County's Flood Zones, these zones are mainly along the Tombigbee and Escatawpa Rivers and their tributaries.

Figure 4.4 Washington County Flood Zones



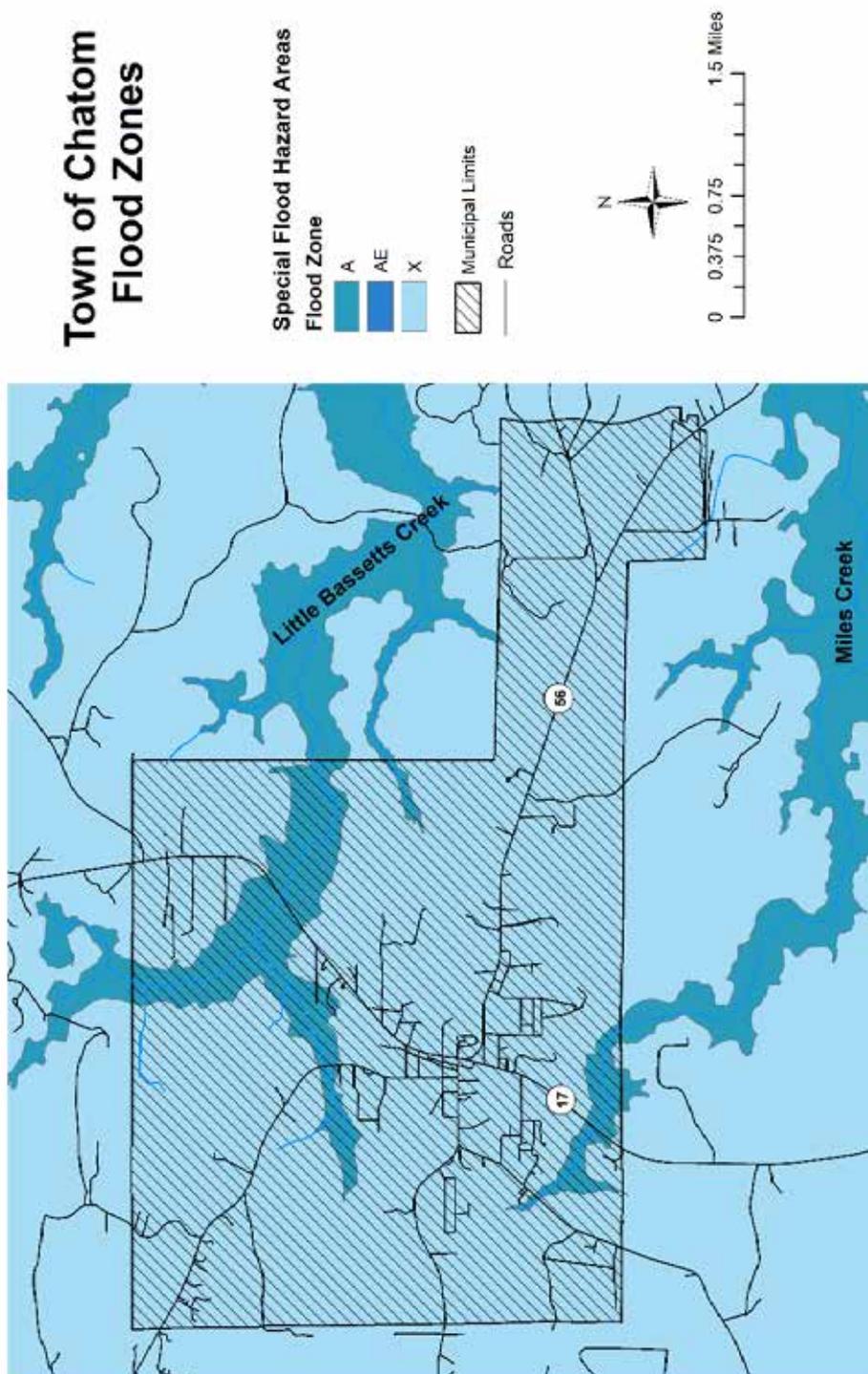
Map Created by the Alabama Tombigbee Regional Commission

April 29, 2016

Source: National Flood Hazard layer, Version 1.1.1.0

Figure 4.5 provides a flood zone maps for the Town of Chatom. Along Little Bassetts Creek and Miles Creek areas are designated Zone A.

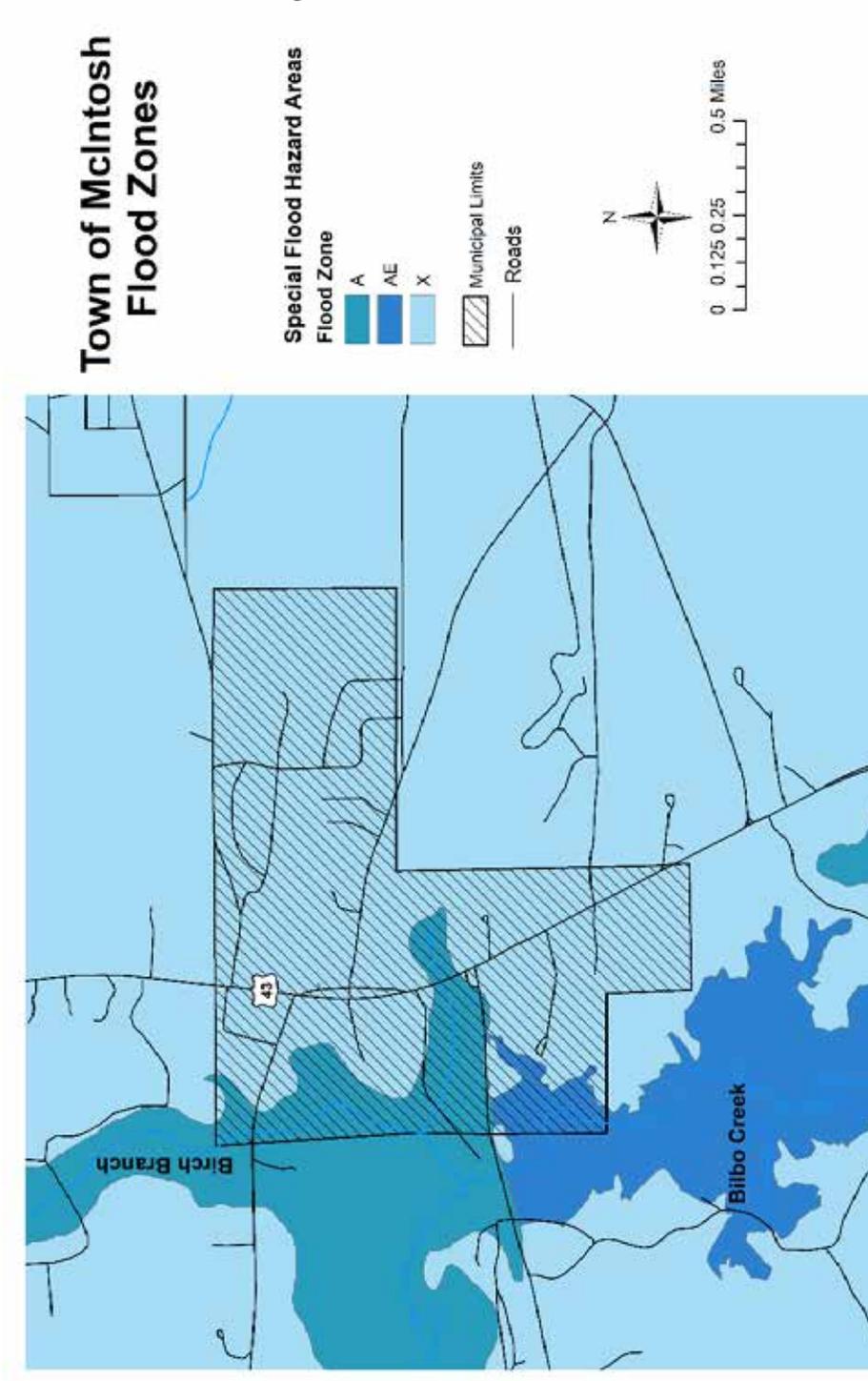
Figure 4.5 Chatom Flood Zones



Map Created by the Alabama Tombigbee Regional Commission
April 29, 2016
Source: National Flood Hazard layer, Version 1.1.1.0

Figure 4.6 provides a flood zone maps for the Town of McIntosh. Zone AE is designated along Bilbo Creek. Zone A is designated along Birch Branch.

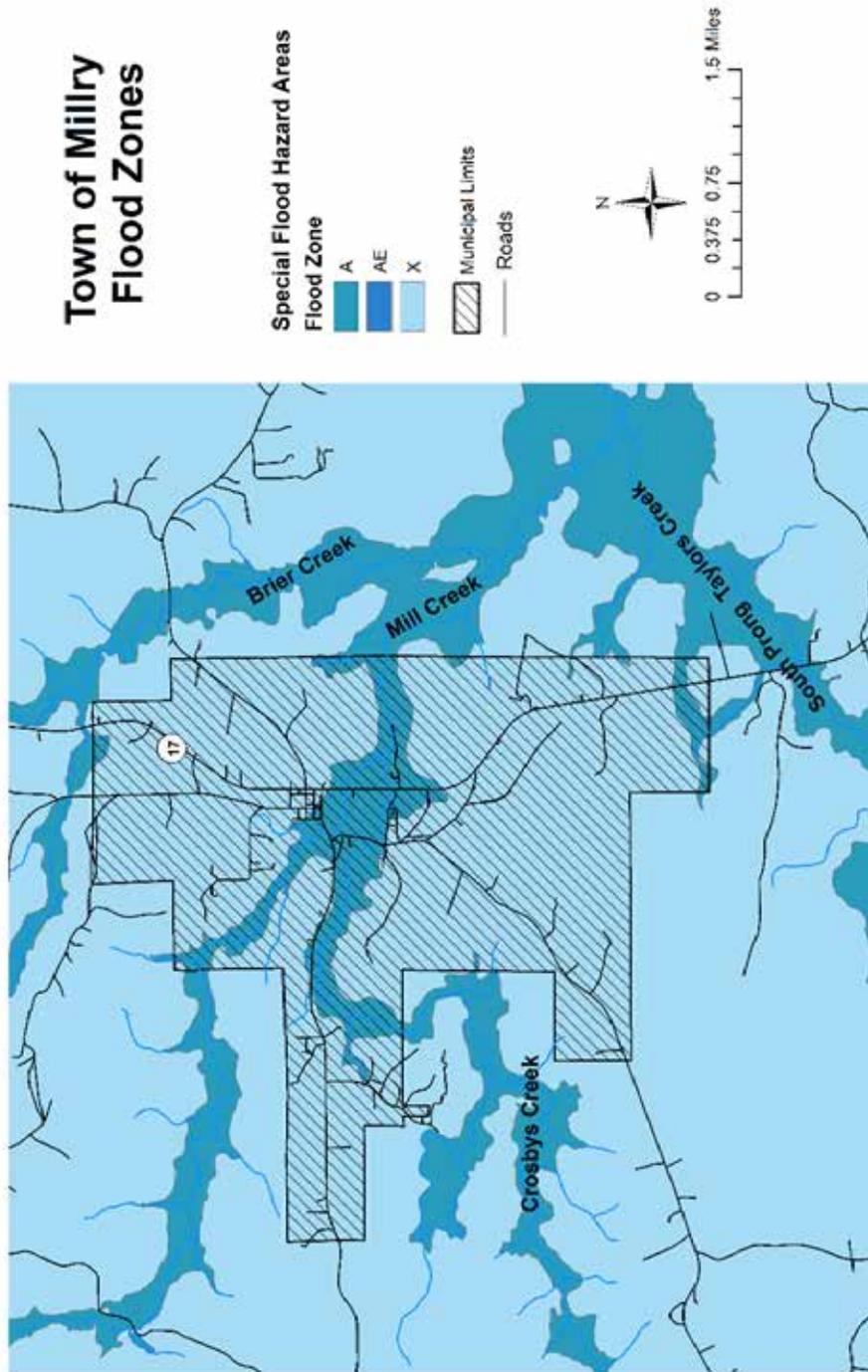
Figure 4.6 McIntosh Flood Zones



Map Created by the Alabama Tombigbee Regional Commission
April 29, 2016
Source: National Flood Hazard layer, Version 1.1.1.0

Figure 4.7 provides a flood zone maps for the Town of Millry. Zone AE is designated along Bilbo Creek. Zone A is designated along Birch Branch.

Figure 4.7 Millry Flood Zones



Map Created by the Alabama Tombigbee Regional Commission
April 29, 2016

Source: National Flood Hazard layer, Version 1.1.1.0

Washington County, Chatom, and Millry are active participants in the National Flood Insurance Program (NFIP). The Town of McIntosh is not a participant and is currently sanctioned. Table 4.5 gives a breakdown of each jurisdiction’s participation information.

Table 4.5 NFIP Participation- Washington County		
Jurisdiction	Date of Entrance into Program	Current Effective Map Date
Washington County	8/1/1987	10/16/2012
Chatom	9/29/2006	10/16/2012
Millry	9/29/2006	10/16/2012
Communities not Participating in NFIP		
McIntosh	8/1/1988 (Sanction Date)	10/16/2012

**Table Compiled by the Alabama Tombigbee Regional Commission
April 29, 2016**

Source: Community Status Book

There is one repetitive loss property in Washington County. It is classified as a nonresidential structure by the NFIP program.

FLASH FLOODING

Flash flooding has a rapid onset and often leads to utility and infrastructure damage. Flash flooding can occur at any location due to the nature of the hazard. The lack of drainage infrastructure, undersized drainage infrastructure, and damaged drainage infrastructure can exacerbate flash flooding. Roads often suffer the greatest impacts as their base layer becomes compromised from standing water. Standing water also lead to cracks and damage to asphalt. Due to their nature, these floods are very dangerous. Often times these events are localized and have a rapid onset, making them hard to predict. Deaths occur each year from vehicles being swept away in flood waters. A mere six inches of fast-moving flood water can knock over an adult. It takes only two feet of rushing water to carry away most vehicles, including pickups and SUVs.

Often flash flooding events in the county are associated with the remnants of tropical systems moving inland from the Gulf of Mexico. The county has experienced a significant amount of rainfall as a result of these systems.

Historical Occurrences

The Tombigbee and Escatawpa Rivers along with their tributaries have been the principal source of flooding in Washington County. Flash floods have occurred in localized areas of the county as a result of damaged, inadequate, or non-existent drainage infrastructure.

There are sixteen recorded occurrences of flash flooding in Washington County since 1997 (Table 4.6).

Table 4.6 Washington County Flash Flood Occurrences					
Location	Date	Deaths	Injuries	Property Damage	Crop Damage
St Stephens	5/28/1997	0	0	\$2,000.00	\$0.00
Countywide	1/7/1998	0	0	\$20,000.00	\$0.00
Countywide	9/28/1998	0	0	\$0.00	\$0.00
North Portion	1/30/1999	0	0	\$5,000.00	\$0.00
Millry	3/13/1999	0	0	\$3,000.00	\$0.00
Countywide	3/3/2001	0	0	\$30,000.00	\$0.00
Millry	4/3/2001	0	0	\$3,000.00	\$0.00
North Portion	3/31/2005	0	0	\$0.00	\$0.00
Countywide	7/6/2005	0	0	\$0.00	\$0.00
Countywide	8/29/2005	0	0	\$0.00	\$0.00
Yellow Pine	10/22/2007	0	0	\$0.00	\$0.00
Millry	4/11/2008	0	0	\$0.00	\$0.00
Copeland	4/18/2008	0	0	\$0.00	\$0.00
Escatawpa	9/1/2008	0	0	\$4,000.00	\$0.00
McIntosh	3/27/2009	0	0	\$0.00	\$0.00
McIntosh	3/22/2012	0	0	\$0.00	\$0.00
Totals:		0	0	\$67,000.00	\$0.00

Source: NOAA Storm Events Database
<https://www.ncdc.noaa.gov/stormevents/>
Last Accessed on 5/5/2016

Probability of Occurrence

The probability of flooding occurring in the county is considered medium. The county is both subject to flash and riverine flooding. Incidences and damages have been reported as a result of both.

H. Hurricanes/Tropical Storms

Hazard Classification: High

Tropical systems are best described by the National Hurricane Center:

“A tropical cyclone is a rotating, organized system of clouds and thunderstorms that originates over tropical or subtropical waters and has a closed low-level circulation. Tropical cyclones rotate counterclockwise in the Northern Hemisphere. They are classified as follows:

- Tropical Depression: A tropical cyclone with maximum sustained winds of 38 mph (33 knots) or less.
- Tropical Storm: A tropical cyclone with maximum sustained winds of 39 to 73 mph (34 to 63 knots).
- Hurricane: A tropical cyclone with maximum sustained winds of 74 mph (64 knots) or higher. In the western North Pacific, hurricanes are called typhoons; similar storms in the Indian Ocean and South Pacific Ocean are called cyclones.

- Major Hurricane: A tropical cyclone with maximum sustained winds of 111 mph (96 knots) or higher, corresponding to a Category 3, 4 or 5 on the Saffir-Simpson Hurricane Wind Scale.

Tropical cyclones forming between 5 and 30 degrees North latitude typically move toward the west. Sometimes the winds in the middle and upper levels of the atmosphere change and steer the cyclone toward the north and northwest. When tropical cyclones reach latitudes near 30 degrees north, they often move northeast.”

Washington County is at risk of experiencing the effects of the Atlantic Hurricane Season which occurs between June 1st and November 30th annually.

Once a tropical system reaches hurricane strength, the Saffir-Simpson scale estimates potential property damage based on a hurricane’s sustained wind speed. The scale gives a 1-5 ranking. Hurricanes rated Category 3 and higher are considered major hurricanes. They are associated with significant damage and loss of life. Table 4.7 gives a basic description of the scale.

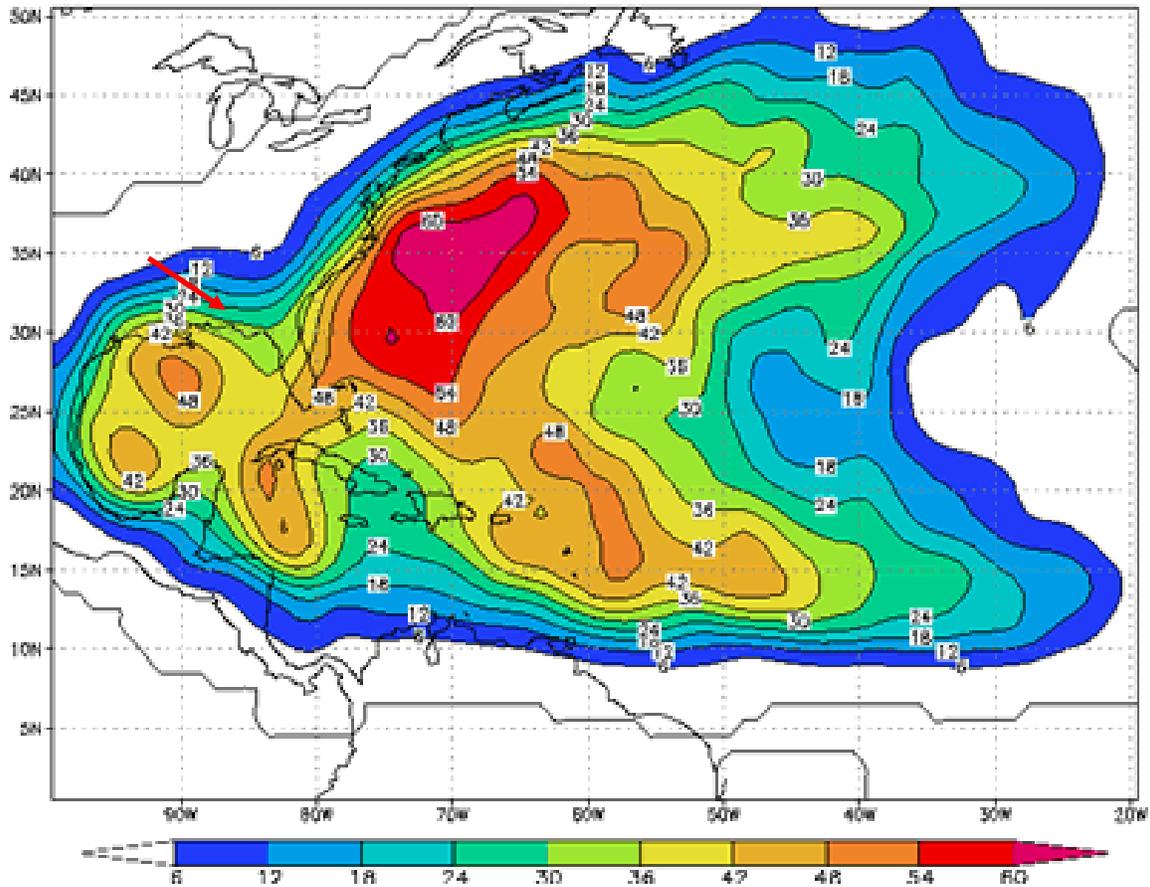
Table 4.7 Saffir Simpson Hurricane Wind Scale		
Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph 64-82 kt 119-153 km/h	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of 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	Extremely dangerous winds will cause extensive damage: 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	Devastating damage will occur: 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	Catastrophic damage will occur: 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	Catastrophic damage will occur: 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
<http://www.nhc.noaa.gov/aboutsshws.php>
Last Accessed: 5/16/2016

The Atlantic Oceanographic and Meteorological Laboratory analyzed hurricane activity from 1944-1999. A map showing probabilities of a strike that will affect the area sometime during

the season was created. Figure 4.8 is the result of this analysis. It shows the results drawn from total hits from hurricanes or storms within one hundred miles of the location. Washington County lies within the 24% probability range.

Figure 4.8 Empirical Probability of a Named Storm



Source: Atlantic Oceanographic and Research Laboratory
<http://www.aoml.noaa.gov/hrd/tcfaq/G11.html>
Last accessed on 5/5/2016

Washington County could be directly affected by a major hurricane (Category 3 or higher), leading to significant property damage and possible injuries and/or death. The county is especially at risk for high winds, heavy rainfall, and spin off tornadoes associated with tropical systems. The impact of these events can range from localized to extensive. Flooding may lead to property damage, disruption in utility services, roadway damage, injury to residents, and death. High winds can also cause significant damage to homes, buildings, and utility infrastructure. The threat of injury and death is also present. Spin off tornadoes present the risks associated with tornadoes in general. Spinoff tornadoes are usually weak EF-0 to EF-1 tornadoes, but nevertheless are dangerous.

Historical Occurrences

In the past Washington County has experienced the effects of tropical systems. The county received damage from hurricanes Frederick (1979), Erin (1995), Opal (1995), Georges (1998), Ivan (2004), Dennis (2005), and Katrina (2005).

Based on the information provided in this assessment, this hazard is ranked as high with regards to risk level.

Probability of Occurrence

All areas within Washington County are at the same risk of experiencing the effects of hurricanes. The county primarily is subject to intense rains and high winds. Areas that are prone to flash flooding and low lying areas are more susceptible to flooding from significant rainfall. Washington County ranks hurricanes/tropical storms as high with regards to probability of occurrence.

I. Landslide

Classification of Hazard: Low

Landslides are the downward and outward movement of slope-forming soil, rock, and vegetation under the influence of gravity. Landslides can occur naturally and they can be triggered by human-induced changes. A number of the common causes of landslides are given below:

- Weaknesses in composition or structure of the rock or soil
- High precipitation
- Changes in ground-water level
- Seismic activity
- Construction or mining activity
- Over-steepening of slopes
- Changes in surface water runoff
- Heavy loads on slopes

Certain areas are more prone to landslides due to their slope, moisture, and geology. Areas prone to landslides include:

- areas near existing older landslides,
- areas on or at the base of slopes,
- areas in or at the base of drainage hollows,
- areas at the base or top of an old fill slope,
- areas at the base or top of a steep cut slope, and
- developed hillsides where leach field septic systems are used.

Figure 4.9 illustrates landslide incidence and susceptibility. Washington County has low incidence and moderate susceptibility. Low incidence translates into less than 1.5% of the area being at risk. Landslides could occur in these areas, ranging in size from less than an acre affected to 5 acres affected.

- Heavy construction or weight at the ground surface
- Drainage problems
- Collapse of underground mines
- Excessive rainfall.

There are three types of sinkholes. A description and illustration (Figure 4.10) of each follows

Figure 4.10 Types of Sinkholes

- Dissolution:



Rainfall and surface water percolate through joints in the limestone. Dissolved carbonate rock is carried away from the surface and a small depression gradually forms.



On exposed carbonate surfaces, a depression may focus surface drainage, accelerating the dissolution process. Debris carried into the developing sinkhole may plug the outflow, ponding water and creating wetlands.

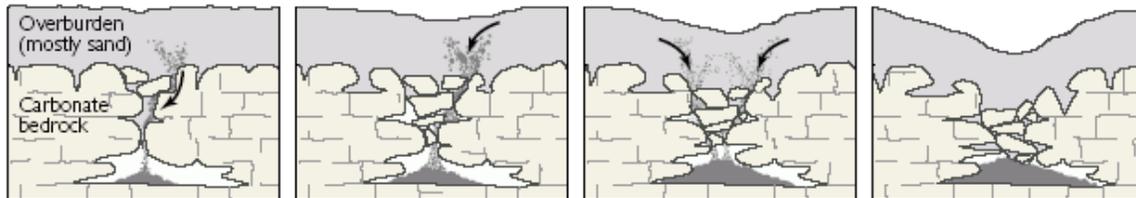
- Cover subsidence:

Granular sediments spill into secondary openings in the underlying carbonate rocks.

A column of overlying sediments settles into the vacated spaces (a process termed "piping").

Dissolution and infilling continue, forming a noticeable depression in the land surface.

The slow downward erosion eventually forms small surface depressions 1 inch to several feet in depth and diameter.



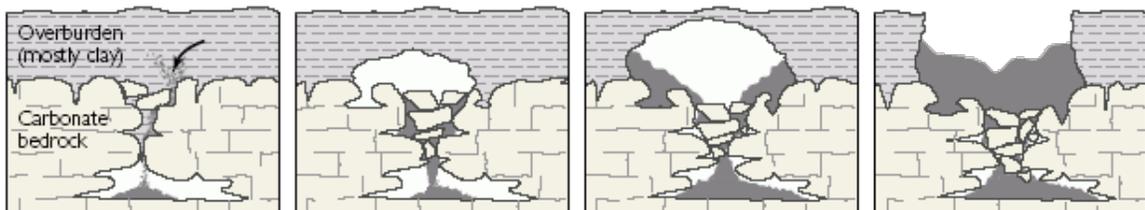
- Cover collapse

Sediments spill into a cavity.

As spalling continues, the cohesive covering sediments form a structural arch.

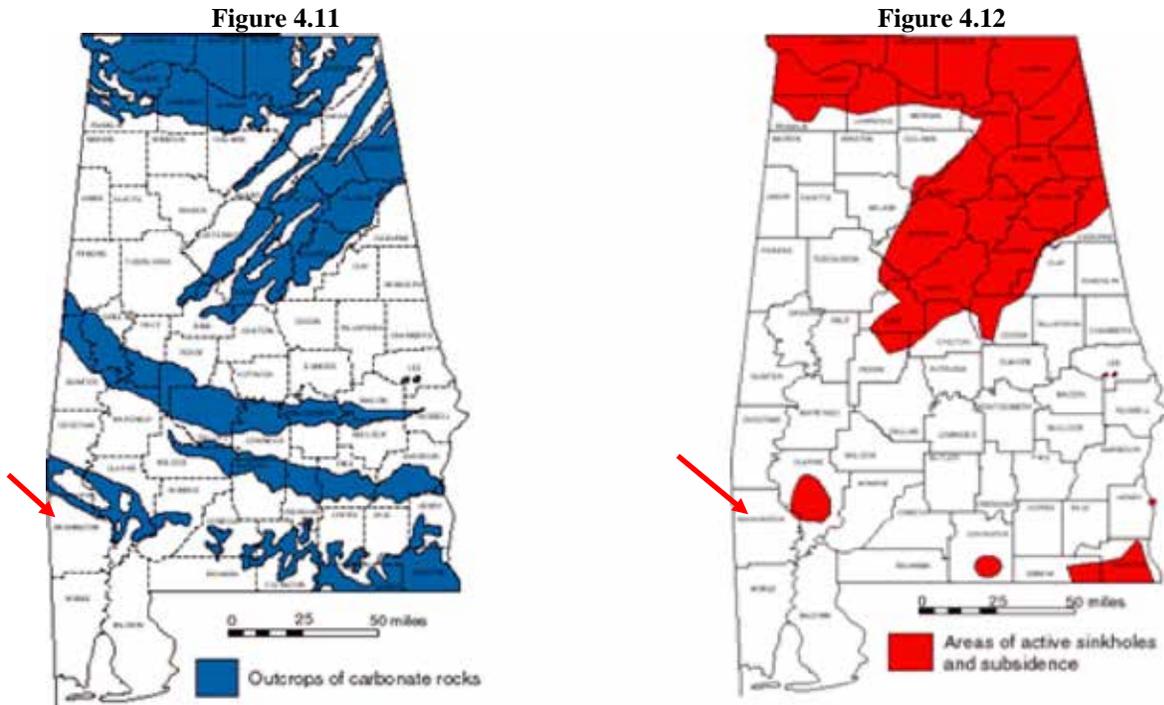
The cavity migrates upward by progressive roof collapse.

The cavity eventually breaches the ground surface, creating sudden and dramatic sinkholes.



Source: United States Geological Survey
<http://water.usgs.gov/edu/sinkholes.html>
Last Accessed on 5/16/2016

Subsidence generally occurs in areas with carbonate bedrock or underlying abandoned mines. Carbonate rocks underlie a small swath of northeast Washington County (Figure 4.11), but there are no reported areas of active subsidence in this part of the county (Figure 4.12).



Source: Geological Survey of Alabama
<http://www.gsa.al.state.us>
Last accessed on 5/5/2016

Subsidence can lead to changes in elevation; damage to structures such as storm drains, sanitary sewers, roads, railroads, canals, levees and bridges; structural damage to public and private buildings; and damage to wells. Most commonly, though, subsidence is known for causing an increase in the potential for flooding.

Historical Occurrences

There are no historical occurrences of subsidence in Washington County.

Probability of Occurrence

Washington County is at a slight risk for land subsidence and more specifically sinkholes. A small portion of the county is underlain with carbonate rocks which are highly susceptible to subsidence; however, the county rates this hazard as having a low probability of causing major damage.

K. Severe Storms (Hail, High Winds, Lightning, Thunderstorms)

Hazard Classification: High

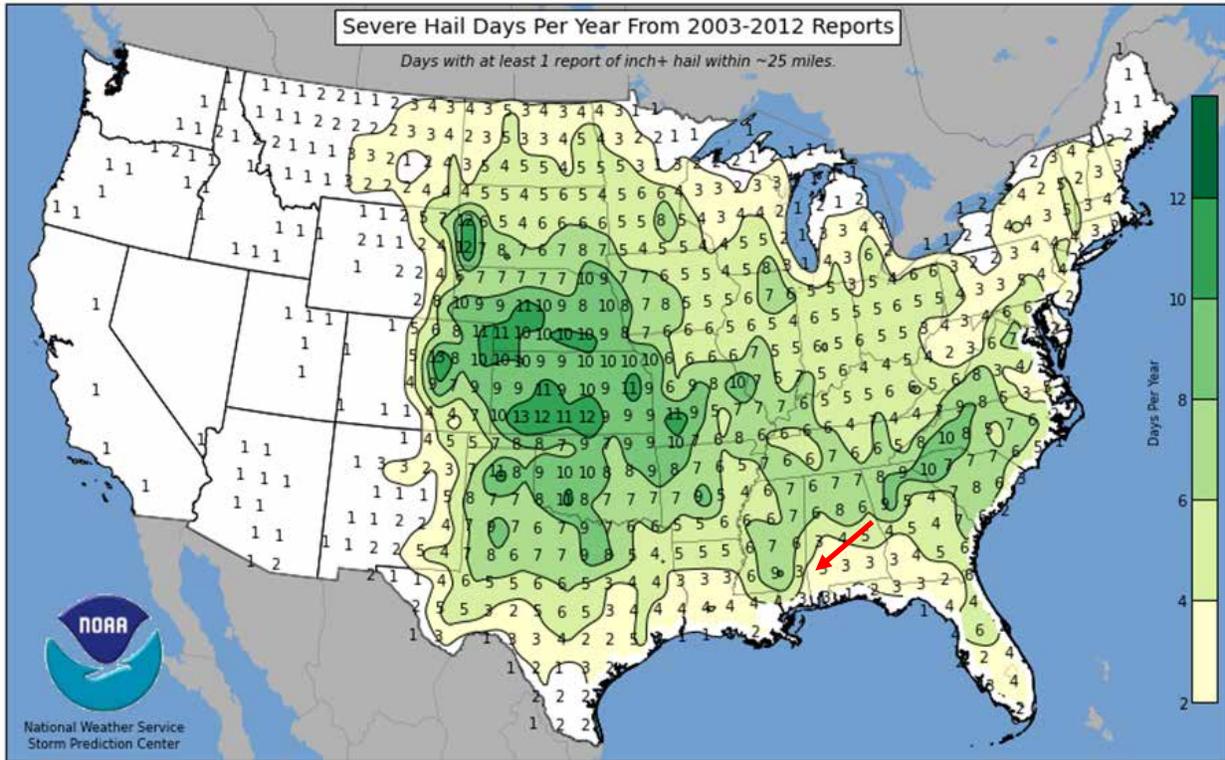
Hail, high winds, lightning, and thunderstorms will all be grouped into the category of severe storms in this analysis.

HAIL

Hail is precipitation in the form of irregular pellets or balls of ice more than 5 mm in diameter. Hail forms when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere where they freeze into ice. Hail can lead to injuries and significant property damage. The county has experienced hail up to 2.75 inches. It is possible that the county could experience hail that is greater than 4 inches or H10.

Figure 4.13 illustrates the average number of severe hail days each year. Washington County lies within the 3 days per year range.

Figure 4.13 Severe Hail Days per Year from 2003-2012 Reports



Source: National Oceanic and Atmospheric Administration
<http://www.spc.noaa.gov/wcm/2013/HAIL.png>
 Last Accessed: 5/22/2016

Tables 4.8 and 4.9 provide information on the Torro Hail Intensity Scale. In the past Washington County has experienced hail up to H7 or tennis ball size.

Table 4.8 TORRO Hailstorm Intensity Scale				
	Intensity Category	Typical Hail Diameter (mm)*	Probable Kinetic Energy, J-m ²	Typical Damage Impacts
H0	Hard Hail	5	0-20	No damage
H1	Potentially Damaging	5-15	>20	Slight general damage to plants, crops
H2	Significant	10-20	>100	Significant damage to fruit, crops, vegetation
H3	Severe	20-30	>300	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25-40	>500	Widespread glass damage, vehicle bodywork damage
H5	Destructive	30-50	>800	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-60		Bodywork of grounded aircraft dented, brick walls pitted
H7	Destructive	50-75		Severe roof damage, risk of serious injuries
H8	Destructive	60-90		(Severest recorded in the British Isles) Severe damage to aircraft bodywork

H9	Super Hailstorms	75-100		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	>100		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Source: The Tornado and Storm Research Organisation
<http://www.torro.org.uk/site/hscale.php>
Last Accessed 5/3/2016

Size code*	Maximum Diameter (mm)	Description
0	5-9	Pea
1	10-15	Mothball
2	16-20	Marble, grape
3	21-30	Walnut
4	31-40	Pigeon's egg > squash ball
5	41-50	Golf ball > Pullet's egg
6	51-60	Hen's egg
7	61-75	Tennis ball > cricket ball
8	76-90	Large orange > Soft ball
9	91-100	Grapefruit
10	>100	Melon

* The Size Code is the maximum reported size code accepted as consistent with other reports and evidence.

Source: The Tornado and Storm Research Organisation
<http://www.torro.org.uk/site/hscale.php>
Last Accessed 5/3/2016

HIGH WIND

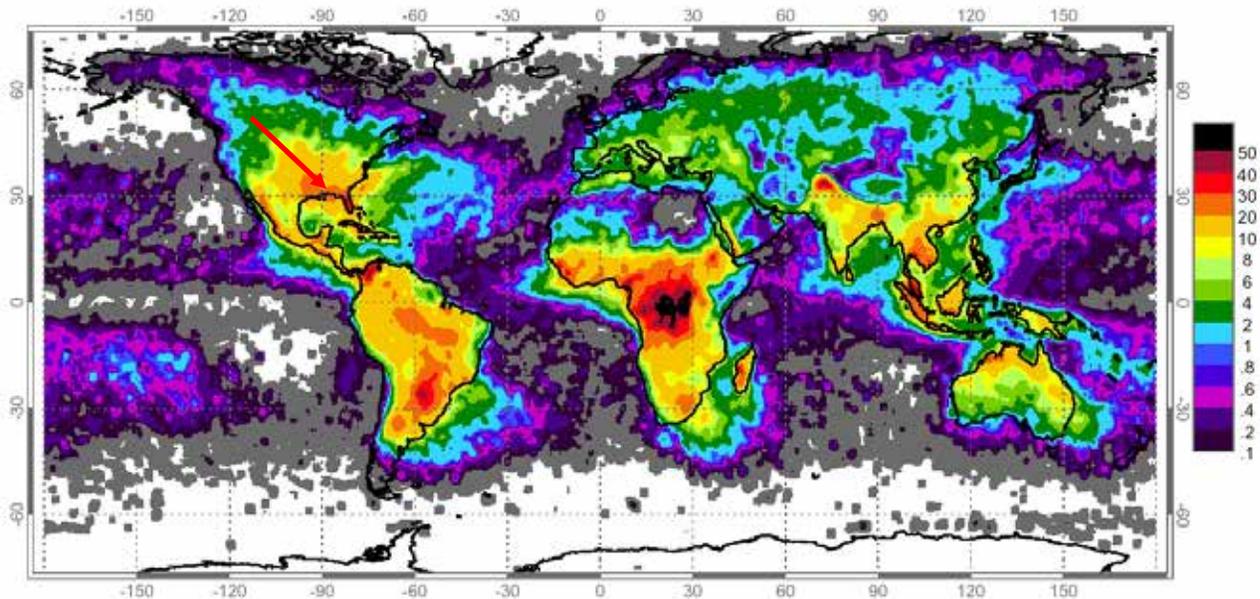
High winds are defined as winds 40 mph or greater lasting for an hour or longer, or winds of 58 mph or greater for any duration. High winds can lead to property damage and interruption in utility services. Trees may fall into homes and structures. Varying degrees of damage may occur depending on the structure and size of the tree. Persons in these structures are at risk of death and injury. Trees can fall across power lines leading to outages that can last several days.

LIGHTNING

“Lightning is a rapid discharge of electrical energy in the atmosphere. The resulting clap of thunder is the result of a shock wave created by the rapid heating and cooling of the air in the lightning channel. (http://www.lightningsafety.noaa.gov/resources/lightning3_050714.pdf)”. Lightning is one of the most deadly weather occurrences in the United States.

Figure 4.14 shows the worldwide distribution of lightning strikes. Washington County lies within the 20 flashes/km²/year range, which is significant.

Figure 4.14 Distribution of Worldwide Lightning Strikes
Units: flashes/km²/yr.



Source: National Aeronautics and Space Administration
http://science.nasa.gov/media/medialibrary/2001/12/02/ast05dec_1_resources/lightningmap_large.gif
Accessed: 5/3/2016

Lightning is a very dangerous hazard. Lightning is responsible for deaths every year in the state. People often believe they aren't at risk and stay outside when lightning is near. A lightning strike can lead to death or serious injury. Lightning can also strike homes and trees leading to property damage. Lightning strikes can also cause a disruption in utility services.

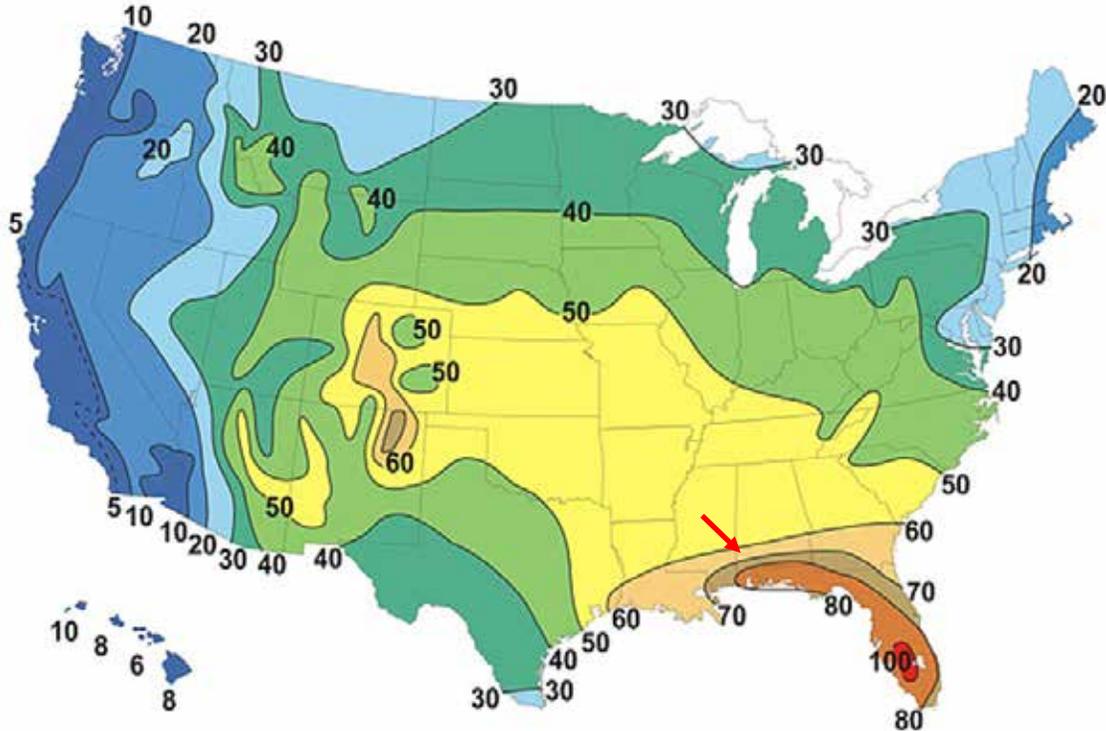
THUNDERSTORM

“A thunderstorm is a local storm produced by a cumulonimbus cloud and accompanied by lightning and thunder (<http://w1.weather.gov/glossary/index.php?letter=t>).” According to the National Weather Service there are four types of thunderstorms:

- Ordinary Cell: A single cell consisting of a onetime updraft and onetime downdraft. They are short lived and typically not severe.
- Multi-cell Cluster: Thunderstorms that form in clusters with numerous cells in various stages of development merging together.
- Multi-cell Line: Thunderstorms which form in a line which can extend laterally for hundreds of miles. Also known as “squall lines”, they can persist for many hours and produce damaging winds and hail. Tornadoes may form on the leading edge of squall lines, but they primarily produce “straight line” winds. Derechos are long-lived strong squall lines that can travel hundreds of miles and can produce considerable wind and hail damage.
- Supercell: Highly organized storms characterized by updrafts that can attain speeds over 100 mph. They are able to produce large hail and strong, violent tornadoes that can produce damaging outflow in excess of 100 mph.

Washington County is susceptible to each of the four types of thunderstorms described here. Figure 4.15 illustrates the average number of days of thunderstorms per year for the United States. Washington County lies within the 60-70 days per year range.

Figure 4.15 Average Number of Thunderstorm Days Each Year



Source: National Oceanic and Atmospheric Administration
http://www.srh.noaa.gov/jetstream/tstorms/tstorms_intro.htm
Accessed on 5/3/2016

Historical Occurrences

All of these events have occurred in the county. Damages and injuries have also occurred as a result of these events.

Table 4.10 provides a record of historical occurrences of hail in the county. There have been 77 occurrences with property damage totaling \$1,470,000.00 and crop damage totaling \$25,000.00.

Table 4.10 Washington County Hail Events						
Location	Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Washington County	3/24/1957	1.00 in.	0	0	\$0.00	\$0.00
Washington County	4/22/1971	2.00 in.	0	0	\$0.00	\$0.00
Washington County	3/24/1975	1.75 in.	0	0	\$0.00	\$0.00
Washington County	5/27/1977	0.75 in.	0	0	\$0.00	\$0.00
Washington County	3/22/1981	0.75 in.	0	0	\$0.00	\$0.00
Washington County	3/24/1984	1.00 in.	0	0	\$0.00	\$0.00
Washington County	4/3/1984	0.75 in.	0	0	\$0.00	\$0.00
Washington County	5/3/1984	1.00 in.	0	0	\$0.00	\$0.00

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Table 4.10 Washington County Hail Events						
Location	Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Washington County	4/15/1985	0.75 in.	0	0	\$0.00	\$0.00
Washington County	3/15/1986	1.25 in.	0	0	\$0.00	\$0.00
Washington County	4/18/1988	1.75 in.	0	0	\$0.00	\$0.00
Washington County	6/9/1988	0.75 in.	0	0	\$0.00	\$0.00
Washington County	11/4/1988	0.75 in.	0	0	\$0.00	\$0.00
Washington County	4/4/1989	1.75 in.	0	0	\$0.00	\$0.00
Washington County	5/19/1989	0.75 in.	0	0	\$0.00	\$0.00
Millry	3/6/1996	1.75 in.	0	0	\$0.00	\$0.00
Millry	12/12/1996	0.75 in.	0	0	\$0.00	\$0.00
Escatawpa	12/12/1996	0.75 in.	0	0	\$0.00	\$0.00
Sims Chapel	12/12/1996	0.75 in.	0	0	\$0.00	\$0.00
Fruitdale	4/21/1997	0.75 in.	0	0	\$0.00	\$0.00
McIntosh	4/21/1997	0.75 in.	0	0	\$0.00	\$0.00
Chatom	4/22/1997	0.75 in.	0	0	\$0.00	\$0.00
Chatom	4/22/1997	0.75 in.	0	0	\$0.00	\$0.00
Millry	4/22/1997	0.88 in.	0	0	\$0.00	\$0.00
McIntosh	5/23/1997	1.00 in.	0	0	\$0.00	\$0.00
Wagarville	5/23/1997	0.75 in.	0	0	\$0.00	\$0.00
St Stephens	6/22/1997	0.75 in.	0	0	\$0.00	\$0.00
Escatawpa	11/1/1997	0.75 in.	0	0	\$0.00	\$0.00
Chatom	11/1/1997	0.75 in.	0	0	\$0.00	\$0.00
McIntosh	1/22/1998	0.75 in.	0	0	\$0.00	\$0.00
Fruitdale	3/5/1998	1.00 in.	0	0	\$0.00	\$0.00
Frankville	4/8/1998	0.75 in.	0	0	\$0.00	\$0.00
Deer Park	4/17/1998	2.75 in.	0	0	\$50,000.00	\$20,000.00
Deer Park	4/17/1998	1.75 in.	0	0	\$10,000.00	\$5,000.00
McIntosh	5/3/1998	0.75 in.	0	0	\$0.00	\$0.00
Fruitdale	3/9/1999	1.75 in.	0	0	\$0.00	\$0.00
Fruitdale	3/20/1999	1.00 in.	0	0	\$0.00	\$0.00
Millry	3/3/2000	1.00 in.	0	0	\$0.00	\$0.00
Deer Park	4/13/2000	0.75 in.	0	0	\$0.00	\$0.00
Wagarville	8/31/2000	0.75 in.	0	0	\$0.00	\$0.00
Sunflower	9/5/2000	0.75 in.	0	0	\$0.00	\$0.00
Sunflower	3/3/2001	0.75 in.	0	0	\$0.00	\$0.00
Vinegar Bend	3/12/2001	2.00 in.	0	0	\$0.00	\$0.00
Millry	4/4/2001	1.75 in.	0	0	\$0.00	\$0.00
Chatom	5/28/2001	0.75 in.	0	0	\$0.00	\$0.00
Chatom	6/19/2002	0.88 in.	0	0	\$0.00	\$0.00
Millry	7/21/2002	0.75 in.	0	0	\$0.00	\$0.00
Millry	8/2/2002	1.00 in.	0	0	\$0.00	\$0.00

Table 4.10 Washington County Hail Events						
Location	Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Fruitdale	12/19/2002	0.75 in.	0	0	\$0.00	\$0.00
Fruitdale	3/13/2003	0.75 in.	0	0	\$0.00	\$0.00
Leroy	3/13/2003	0.75 in.	0	0	\$0.00	\$0.00
Fruitdale	4/25/2003	1.75 in.	0	0	\$10,000.00	\$0.00
Tibbie	4/25/2003	1.00 in.	0	0	\$0.00	\$0.00
Yarbo	5/2/2003	1.75 in.	0	0	\$0.00	\$0.00
Chatom	5/2/2003	2.50 in.	0	0	\$1,400,000.00	\$0.00
Frankville	5/2/2003	0.75 in.	0	0	\$0.00	\$0.00
Leroy	5/2/2003	0.75 in.	0	0	\$0.00	\$0.00
Chatom	5/3/2003	0.75 in.	0	0	\$0.00	\$0.00
Yellow Pine	5/3/2003	1.00 in.	0	0	\$0.00	\$0.00
Seaboard	5/3/2003	1.75 in.	0	0	\$0.00	\$0.00
Chatom	8/6/2003	0.88 in.	0	0	\$0.00	\$0.00
McIntosh	6/24/2004	0.75 in.	0	0	\$0.00	\$0.00
Millry	11/27/2004	0.75 in.	0	0	\$0.00	\$0.00
Fruitdale	3/22/2005	0.75 in.	0	0	\$0.00	\$0.00
Tibbie	3/22/2005	0.75 in.	0	0	\$0.00	\$0.00
Malcolm	6/15/2005	0.75 in.	0	0	\$0.00	\$0.00
Hawthorn	5/8/2006	0.88 in.	0	0	\$0.00	\$0.00
Millry	5/9/2006	1.00 in.	0	0	\$0.00	\$0.00
Leroy	5/9/2006	1.00 in.	0	0	\$0.00	\$0.00
Topton	2/18/2009	2.00 in.	0	0	\$0.00	\$0.00
Sunflower	4/15/2011	1.75 in.	0	0	\$0.00	\$0.00
Millry	4/15/2011	1.75 in.	0	0	\$0.00	\$0.00
Topton	6/7/2011	1.00 in.	0	0	\$0.00	\$0.00
Leroy	3/31/2013	1.75 in.	0	0	\$0.00	\$0.00
Leroy	3/31/2013	1.75 in.	0	0	\$0.00	\$0.00
Frankville	3/22/2015	1.00 in.	0	0	\$0.00	\$0.00
Vinegar Bend	4/17/2015	1.00 in.	0	0	\$0.00	\$0.00
Totals:			0	0	\$1,470,000.00	\$25,000.00

Source: NOAA Storm Events Database
<https://www.ncdc.noaa.gov/stormevents/>
 Last Accessed on 5/5/2016

Table 4.11 provides information pertaining to the ten lightning occurrences in the county. It is felt by the county that this number is low as more occurrences are known to have occurred. The events on record resulted in \$239,000.00 in property damage.

Table 4.11 Washington County Lightning Occurrences					
Location	Date	Deaths	Injuries	Property Damage	Crop Damage
Chatom	12/1/1996	0	0	\$50,000.00	\$0.00
Chatom	1/24/1997	0	0	\$30,000.00	\$0.00
Chatom	4/22/1997	0	0	\$1,000.00	\$0.00
Chatom	5/27/1997	0	0	\$5,000.00	\$0.00
Yellow Pine	1/23/1999	0	0	\$30,000.00	\$0.00
Tibbie	6/22/2001	0	1	\$0.00	\$0.00
St Stephens	7/15/2002	0	0	\$40,000.00	\$0.00
McIntosh	7/19/2002	0	0	\$8,000.00	\$0.00
Chatom	2/6/2004	0	0	\$50,000.00	\$0.00
Millry	4/22/2005	0	0	\$25,000.00	\$0.00
Totals:		0	1	\$239,000.00	\$0.00

Source: NOAA Storm Events Database
<https://www.ncdc.noaa.gov/stormevents/>
 Last Accessed on 5/5/2016

Table 4.12 provides the list of thunderstorm wind events on record for the county. There are 112 events on record with property damage totaling \$4,050,000.00 and no crop damages. Seven injuries have been reported as a result of these events.

Table 4.12 Washington County Thunderstorm Occurrences						
Location	Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Washington County	3/11/1968	0 kts.	0	0	\$0.00	\$0.00
Washington County	5/7/1976	0 kts.	0	0	\$0.00	\$0.00
Washington County	3/20/1980	0 kts.	0	0	\$0.00	\$0.00
Washington County	5/3/1983	0 kts.	0	0	\$0.00	\$0.00
Washington County	12/3/1983	0 kts.	0	0	\$0.00	\$0.00
Washington County	12/3/1983	0 kts.	0	0	\$0.00	\$0.00
Washington County	3/24/1984	0 kts.	0	0	\$0.00	\$0.00
Washington County	10/21/1984	0 kts.	0	1	\$0.00	\$0.00
Washington County	6/25/1985	0 kts.	0	0	\$0.00	\$0.00
Washington County	9/23/1985	0 kts.	0	0	\$0.00	\$0.00
Washington County	3/12/1986	0 kts.	0	0	\$0.00	\$0.00
Washington County	5/18/1986	0 kts.	0	0	\$0.00	\$0.00
Washington County	5/18/1986	0 kts.	0	0	\$0.00	\$0.00
Washington County	7/30/1986	0 kts.	0	0	\$0.00	\$0.00
Washington County	6/9/1988	0 kts.	0	0	\$0.00	\$0.00
Washington County	11/20/1988	0 kts.	0	0	\$0.00	\$0.00

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Table 4.12 Washington County Thunderstorm Occurrences						
Location	Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Washington County	7/1/1989	0 kts.	0	0	\$0.00	\$0.00
Washington County	2/10/1990	0 kts.	0	0	\$0.00	\$0.00
Washington County	5/21/1990	0 kts.	0	0	\$0.00	\$0.00
Washington County	8/30/1990	0 kts.	0	0	\$0.00	\$0.00
Washington County	12/3/1990	0 kts.	0	0	\$0.00	\$0.00
Washington County	5/5/1991	0 kts.	0	0	\$0.00	\$0.00
Washington County	5/5/1991	0 kts.	0	0	\$0.00	\$0.00
Washington County	5/25/1993	0 kts.	0	0	\$0.00	\$0.00
Washington County	5/25/1993	0 kts.	0	0	\$0.00	\$0.00
Washington County	3/25/1994	0 kts.	0	0	\$0.00	\$0.00
Chatom	4/11/1995	0 kts.	0	0	\$1,000.00	\$0.00
Chatom	4/21/1995	0 kts.	0	0	\$500.00	\$0.00
Millry	10/27/1995	0 kts.	0	0	\$2,000.00	\$0.00
Chatom	11/2/1995	0 kts.	0	0	\$2,000.00	\$0.00
Leroy	12/18/1995	0 kts.	0	0	\$5,000.00	\$0.00
McIntosh	1/26/1996	50 kts.	0	0	\$2,000.00	\$0.00
Hawthorn	2/19/1996	55 kts.	0	0	\$2,500.00	\$0.00
Millry	2/19/1996	60 kts.	0	0	\$15,000.00	\$0.00
Chatom	2/19/1996	55 kts.	0	0	\$10,000.00	\$0.00
Deer Park	3/18/1996	60 kts.	0	0	\$1,500.00	\$0.00
Deer Park	9/8/1996	50 kts.	0	0	\$1,500.00	\$0.00
Millry	12/12/1996	50 kts.	0	0	\$1,500.00	\$0.00
Tibbie	1/24/1997	50 kts.	0	0	\$1,500.00	\$0.00
Tibbie	4/22/1997	50 kts.	0	0	\$1,500.00	\$0.00
Fruitdale	4/22/1997	50 kts.	0	0	\$1,500.00	\$0.00
Millry	5/23/1997	50 kts.	0	0	\$2,000.00	\$0.00
Millry	5/28/1997	50 kts.	0	0	\$1,000.00	\$0.00
McIntosh	5/28/1997	50 kts.	0	0	\$1,000.00	\$0.00
Chatom	7/16/1997	50 kts.	0	0	\$5,000.00	\$0.00
Chatom	11/1/1997	50 kts.	0	0	\$2,500.00	\$0.00
Wagarville	11/1/1997	50 kts.	0	0	\$2,500.00	\$0.00
Tibbie	1/7/1998	60 kts.	0	0	\$25,000.00	\$0.00
Millry	2/26/1998	50 kts.	0	0	\$3,000.00	\$0.00
Deer Park	4/17/1998	80 kts.	0	0	\$200,000.00	\$0.00
Deer Park	4/17/1998	60 kts.	0	0	\$20,000.00	\$0.00
Fruitdale	4/17/1998	60 kts.	0	0	\$5,000.00	\$0.00
Countywide	6/5/1998	80 kts.	0	0	\$1,500,000.00	\$0.00

**Washington County, Alabama Hazard Mitigation Plan
Section IV. Risk Assessment**

Table 4.12 Washington County Thunderstorm Occurrences

Location	Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Chatom	1/2/1999	55 kts.	0	0	\$10,000.00	\$0.00
Yarbo	7/25/1999	50 kts.	0	0	\$4,000.00	\$0.00
Millry	8/25/1999	50 kts.	0	0	\$3,000.00	\$0.00
Frankville	1/10/2000	50 kts. E	0	0	\$5,000.00	\$0.00
Fruitdale	3/3/2000	55 kts. E	0	0	\$5,000.00	\$0.00
Dwight	3/3/2000	50 kts. E	0	0	\$5,000.00	\$0.00
Deer Park	4/3/2000	60 kts. E	0	0	\$8,000.00	\$0.00
Fairford	4/3/2000	60 kts. E	0	0	\$5,000.00	\$0.00
Leroy	7/11/2000	60 kts. E	0	0	\$15,000.00	\$0.00
Wagarville	7/26/2000	55 kts. E	0	0	\$5,000.00	\$0.00
Wagarville	7/30/2000	60 kts. E	0	0	\$5,000.00	\$0.00
Wagarville	8/10/2000	60 kts. E	0	0	\$20,000.00	\$0.00
Vinegar Bend	8/27/2000	55 kts. E	0	0	\$5,000.00	\$0.00
Millry	12/16/2000	55 kts. E	0	0	\$10,000.00	\$0.00
Chatom	1/19/2001	55 kts. E	0	0	\$10,000.00	\$0.00
McIntosh	1/19/2001	55 kts. E	0	0	\$8,000.00	\$0.00
McIntosh	3/12/2001	75 kts. E	0	6	\$1,000,000.00	\$0.00
Deer Park	6/11/2001	55 kts. E	0	0	\$8,000.00	\$0.00
Chatom	6/14/2001	55 kts. E	0	0	\$5,000.00	\$0.00
Tibbie	6/22/2001	55 kts. E	0	0	\$5,000.00	\$0.00
Millry	8/17/2001	50 kts. E	0	0	\$8,000.00	\$0.00
Deer Park	8/20/2001	50 kts. E	0	0	\$5,000.00	\$0.00
Vinegar Bend	10/13/2001	55 kts. E	0	0	\$5,000.00	\$0.00
Wagarville	10/13/2001	50 kts. E	0	0	\$15,000.00	\$0.00
Tibbie	1/19/2002	50 kts. E	0	0	\$15,000.00	\$0.00
Chatom	4/8/2002	55 kts. E	0	0	\$10,000.00	\$0.00
Fairford	4/8/2002	55 kts. E	0	0	\$25,000.00	\$0.00
McIntosh	7/19/2002	50 kts. E	0	0	\$10,000.00	\$0.00
Vinegar Bend	7/30/2002	50 kts. E	0	0	\$8,000.00	\$0.00
Chatom	12/24/2002	60 kts. E	0	0	\$80,000.00	\$0.00
Sunflower	5/3/2003	50 kts. EG	0	0	\$5,000.00	\$0.00
Malcolm	8/6/2003	50 kts. EG	0	0	\$5,000.00	\$0.00
Yarbo	4/30/2005	50 kts. EG	0	0	\$15,000.00	\$0.00
Yarbo	7/30/2006	50 kts. EG	0	0	\$8,000.00	\$0.00
Millry	8/15/2006	50 kts. EG	0	0	\$8,000.00	\$0.00
Yarbo	4/14/2007	78 kts. EG	0	0	\$500,000.00	\$0.00
Chatom	12/20/2007	50 kts. EG	0	0	\$12,000.00	\$0.00

Table 4.12 Washington County Thunderstorm Occurrences						
Location	Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Vinegar Bend	1/31/2008	50 kts. EG	0	0	\$15,000.00	\$0.00
Chatom	1/31/2008	50 kts. EG	0	0	\$12,000.00	\$0.00
Silas	4/11/2008	50 kts. EG	0	0	\$10,000.00	\$0.00
Fruitdale	8/12/2008	50 kts. EG	0	0	\$12,000.00	\$0.00
Topton	2/18/2009	50 kts. EG	0	0	\$15,000.00	\$0.00
Millry	5/3/2009	52 kts. EG	0	0	\$10,000.00	\$0.00
Frankville	8/3/2010	52 kts. EG	0	0	\$10,000.00	\$0.00
Vinegar Bend	8/3/2010	52 kts. EG	0	0	\$5,000.00	\$0.00
Fruitdale	6/7/2011	52 kts. EG	0	0	\$5,000.00	\$0.00
Vinegar Bend	6/7/2011	52 kts. EG	0	0	\$3,000.00	\$0.00
Deer Park	6/7/2011	52 kts. EG	0	0	\$10,000.00	\$0.00
Bigbee	3/31/2013	61 kts. EG	0	0	\$4,000.00	\$0.00
St Stephens	7/23/2013	52 kts. EG	0	0	\$2,000.00	\$0.00
Frankville	7/23/2013	52 kts. EG	0	0	\$2,000.00	\$0.00
Wagarville	4/28/2014	52 kts. EG	0	0	\$10,000.00	\$0.00
Wagarville	6/21/2014	52 kts. EG	0	0	\$3,000.00	\$0.00
Deer Park	4/25/2015	52 kts. EG	0	0	\$1,000.00	\$0.00
Chatom	7/4/2015	52 kts. EG	0	0	\$5,000.00	\$0.00
Sunflower	7/4/2015	52 kts. EG	0	0	\$10,000.00	\$0.00
McIntosh	7/4/2015	52 kts. EG	0	0	\$5,000.00	\$0.00
Frankville	8/8/2015	70 kts. EG	0	0	\$200,000.00	\$0.00
McIntosh	8/8/2015	61 kts. EG	0	0	\$10,000.00	\$0.00
Totals:			0	7	\$4,050,000.00	\$0.00

Source: NOAA Storm Events Database
<https://www.ncdc.noaa.gov/stormevents/>
Last Accessed on 5/5/2016

The entire county has the same risk for these hazards. These events have occurred throughout the county. Often these events have a small area of impact, such as hail or lightning. Countywide occurrences may also occur during spring and summer when large storm systems move through the state. The risk level assigned to these hazards is high.

Probability of Occurrence

All of these events have occurred historically in Washington County. These events have resulted in property and crop damage on numerous occasions. The county rates these events as having a high probability of occurrence.

L. Tornado

Hazard Classification: High

The National Weather Service defines a tornado as, “A violently rotating column of air in contact with the ground and extending from the base of a thunderstorm <http://www.srh.noaa.gov/oun/severewx/glossary4.php#Tornado>.” The occurrence of tornadoes cannot be predicted, but past occurrences and basic weather patterns can be used to identify areas more susceptible.

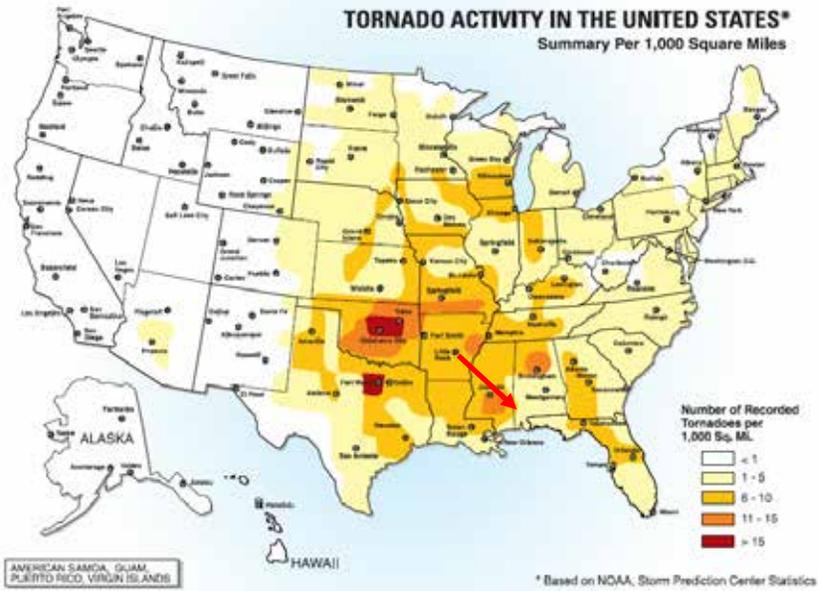
Table 4.13 shows the Fujita-Pearson scale. This scale is used to classify the intensity of tornadoes. Historically, the strongest tornado the county has experienced has been an EF-3.

Table 4.13 Fujita- Pearson Tornado Scale						
FUJITA SCALE			DERIVED EF SCALE		OPERATIONAL EF SCALE	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

Source: <http://www.spc.noaa.gov/faq/tornado/ef-scale.html>
Last Accessed on 5/22/2016

Figure 4.16 shows tornado activity per 1,000 square miles, the majority of Washington County falls in the one to five tornados per square mile range, but a small portion of the western part of the county falls in the six to ten range. The United States Wind Zone map (Figure 4.17) shows how intense and frequent strong winds occur across the United States. Northern portions of Washington County lie in Wind Zone IV, which has design wind speed of 250 miles per hour. The remainder of the county lies in Wind Zone III, which has a design speed of 250 mph. Design wind speed is the wind speed that homes should be constructed to withstand. Locations within this zone have historically had the most intense and frequent occurrences of tornadoes and strong winds.

Figure 4.16 Tornadoes per 1,000 square miles.



Source: Federal Emergency Management Agency
<http://www.fema.gov/pdf/library/2ismsec1.pdf>
Last accessed on 5/5/2016

Figure 4.17 Wind Zones in the United States

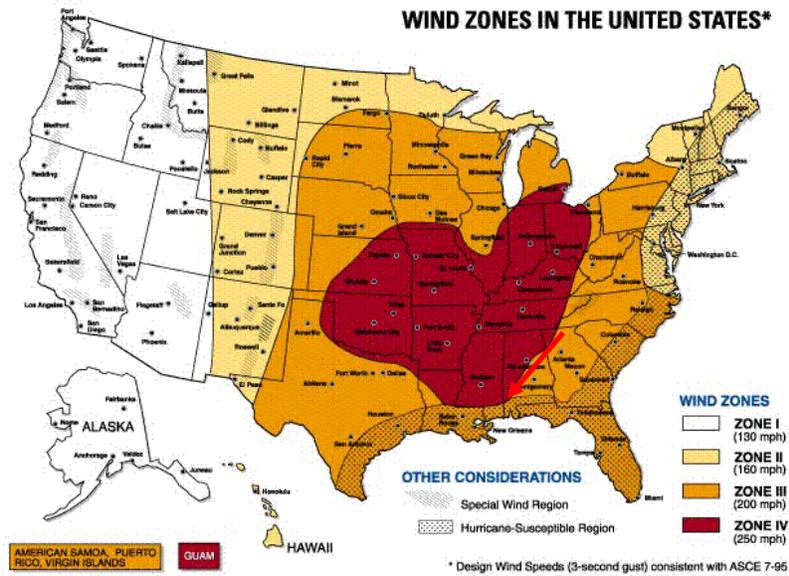


Figure 1.2 Wind zones in the United States

Source: Federal Emergency Management Agency
<http://www.fema.gov/graphics/fima/tsfsm01.gif>
Last accessed on 5/5/2016

The entire county is at the same risk for tornadoes. EF3 is the highest rating on records of historical occurrences. EF 5 strength tornadoes are possible in the county. There is also the possibility of long track tornadoes occurring.

Tornadoes bring damage and devastation to affected areas. Significant property damage is possible. Utility infrastructure is often damaged or destroyed leading to extended outages. Economically important businesses and industries can be destroyed leading to unemployment. Injuries and death are possible. Hospitals can be overwhelmed with injured residents.

Historical Occurrences

There are 26 tornadoes on record for Washington County. These occurrences range in magnitude from F0-F3. Three deaths and four injuries have resulted from these events. Over \$6 million of property damage has occurred. Table 4.14 provides a listing of the occurrences in the county.

Table 4.14 Washington County Tornado Occurrences						
Location	Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Washington County	6/29/1969	F0	0	0	\$2,500.00	\$0.00
Washington County	3/3/1970	F2	0	0	\$25,000.00	\$0.00
Washington County	9/16/1971	F2	0	0	\$25,000.00	\$0.00
Washington County	9/16/1971	F1	0	0	\$25,000.00	\$0.00
Washington County	3/2/1972	F2	0	0	\$2,500.00	\$0.00
Washington County	3/16/1976	F2	0	0	\$25,000.00	\$0.00
Washington County	3/24/1984	F2	0	0	\$250,000.00	\$0.00
Washington County	9/23/1985	F1	0	0	\$250.00	\$0.00
Washington County	11/4/1988	F2	0	0	\$0.00	\$0.00
Copeland	3/18/1996	F0	0	0	\$5,000.00	\$0.00
Millry	3/18/1996	F0	0	0	\$5,000.00	\$0.00
Malcolm	12/19/2002	F0	0	0	\$8,000.00	\$0.00
Fruitdale	12/23/2002	F0	0	0	\$8,000.00	\$0.00
Leroy	12/24/2002	F0	0	0	\$15,000.00	\$0.00
Millry	12/24/2002	F0	0	0	\$8,000.00	\$0.00
Leroy	7/6/2005	F0	0	0	\$15,000.00	\$0.00
Jordan	11/15/2006	F1	0	0	\$750,000.00	\$0.00
McIntosh	1/10/2009	EF1	0	0	\$2,500,000.00	\$0.00
Yellow Pine	3/10/2010	EF0	0	0	\$0.00	\$0.00
Malcolm	4/8/2010	EF0	0	0	\$0.00	\$0.00
Yellow Pine	4/15/2011	EF1	0	0	\$300,000.00	\$0.00
Yarbo	4/15/2011	EF2	0	1	\$50,000.00	\$0.00
Escatawpa	4/15/2011	EF3	3	3	\$2,000,000.00	\$0.00
Deer Park	12/25/2012	EF1	0	0	\$0.00	\$0.00
Bigbee	2/10/2013	EF1	0	0	\$30,000.00	\$0.00
Chatom Municipal Airport	11/17/2014	EF1	0	0	\$100,000.00	\$0.00
Totals:			3	4	\$6,149,250.00	\$0.00

Source: NOAA Storm Events Database
<https://www.ncdc.noaa.gov/stormevents/>
Last Accessed on 5/5/2016

Since the last mitigation plan update, there have been numerous tornadoes in Washington County. The following is a brief description of these events:

- Yellow Pine: On March 3, 2010 a rain wrapped tornado crossed U.S. Highway 45 north of Fruitdale, moving northeast. Minor tree damage was observed.
- Malcolm: On April 8, 2010 a brief EF-0 tornado occurred on Happy Hill Road just west of Highway 43. The tornado only affected one residence, producing minor damage. The most notable damage to the home was a blown out window, a damaged doorway, and minor roof damage. Portions of wood fencing were also damaged. Several pine trees were either snapped or downed as a result of the tornado. A few telephone poles were also damaged just to the northeast of the home on Happy Hill Road. The tornado path was 300 yards and the width was 75-100 yards. Maximum winds were 75 mph.
- Yellow Pine: On April 15, 2011 a tornado crossed into Washington County, Alabama from State Line, Mississippi. It strengthened to EF-1 intensity as it moved into the Laton Hill area along Highway 56 producing damage to several homes, outbuildings, and trees along a 200 yard wide path. One home had a chimney collapse with significant damage to the garage. Other single family homes had sections of the roofing material removed. One manufactured home in the Laton Hill area off Highway 56 and County Road 11 was reported by EMA officials to be completely destroyed.
- Yarbo: On April 15, 2011 touched down near Highway 17, moving east and widening to 150 yards. East of Highway 17 the tornado lifted a single story wood frame home off of its concrete masonry unit pier foundation and rolled it about 100 yards. The home disintegrated as it was blown or rolled to the northeast. Trees were snapped, twisted and blown over in a 150 yard wide path to the east. One person inside the home was seriously injured with several broken ribs.
- Escatawpa: On April 11, 2015 a tornado moved into southwest Washington County from the Leakesville area of Greene County Mississippi. The tornado tracked near County Road 8 where several mobile homes were damaged or destroyed. Three fatalities and three injuries occurred in a destroyed mobile home in Deer Park on Box Road. The tornado lifted just prior to reaching Highway 45. Extensive tree damage nearly 400 yards wide was noted in several areas along the path.
- Bigbee: On February 10, 2013 a tornado touched down in a deeply wooded area west of County Road 34 in eastern Washington County. The tornado quickly intensified to EF-1 strength as it crossed County Road 34 damaging the roofs of a few homes and blowing down numerous pine trees. The tornado continued northeast across the Tombigbee river crossing into Clarke County.
- Chatom Municipal Airport: On November 17, 2014 a tornado first touched down along Highway 56 and moved northeast where it hit a house and caused minor roof damage and broken windows. In the same area, a poorly constructed barn was severely damaged. The tornado continued northeast, where it hit a hunting camp and flipped 3 campers. The storm continued northeast and caused damage along St. Stephens Ave. where a chicken coop was damaged and a tree fell on a mobile home. The tornado continued northeast and crossed the Tombigbee River into Clarke County.

Probability of Occurrence

Based on the information presented, tornadoes are rated as having a high probability of occurrence.

M. Tsunami

Hazard Classification: No Risk

“A tsunami is a sea wave of local or distant origin that results from large-scale seafloor displacements associated with large earthquakes, major submarine slides, or exploding volcanic islands (http://earthquake.usgs.gov/image_glossary/tsunami.html).” Tsunamis occur predominately in the Pacific Ocean and more specifically as a result of seismic activity in the “Ring of Fire” of the Pacific Rim. Washington County is not at risk of this hazard.

N. Volcano

Hazard Classification: No Risk

Volcanoes are accumulations of volcanic materials erupted through volcanic vents on Earth’s surface. Within the United States the risk from volcanic activity is only prevalent in the Pacific Northwest, Alaska, and Hawaii. The state of Alabama is not identified as being at risk for volcanic activity.

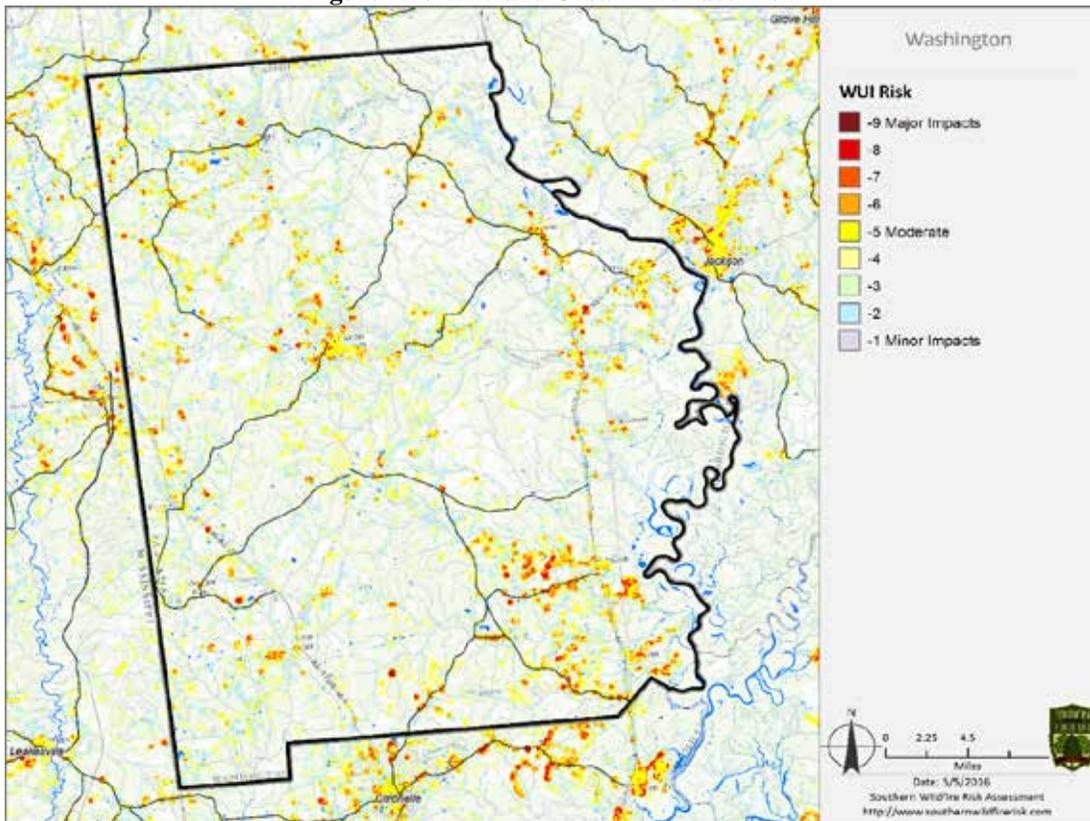
O. Wildfire

Hazard Classification: Medium

Wildfires are responsible for burning thousands of acres of land each year. These fires are uncontrolled and in dry conditions can spread rapidly through the surrounding vegetation and in some cases structures. There are two types of wildfires; these are wildland fires and urban-wildland interface fires. Wildland fires are those fires that occur in areas where the only development is utilities or infrastructure. Urban-wildland fires occur in areas where development occurs near or within the vegetative cover.

Washington County used the *Southern Wildlife Risk Assessment Summary Report – Washington* to analyze the county’s susceptibility to wildfires. Figure 4.18 illustrates the Wildland Urban Interface (WUI) Risk Index layer. The WUI Risk is a rating of the potential impact a wildfire would have on people and their homes. Table 4.15 shows that approximately 38,950 acres of the land area in the county is classified as experiencing moderate or above impacts from WUI fires.

Figure 4.18 Wildland Urban Interface Risk



Source: *Southern Wildlife Risk Assessment Summary Report – Washington*
Report generated 5/5/2016

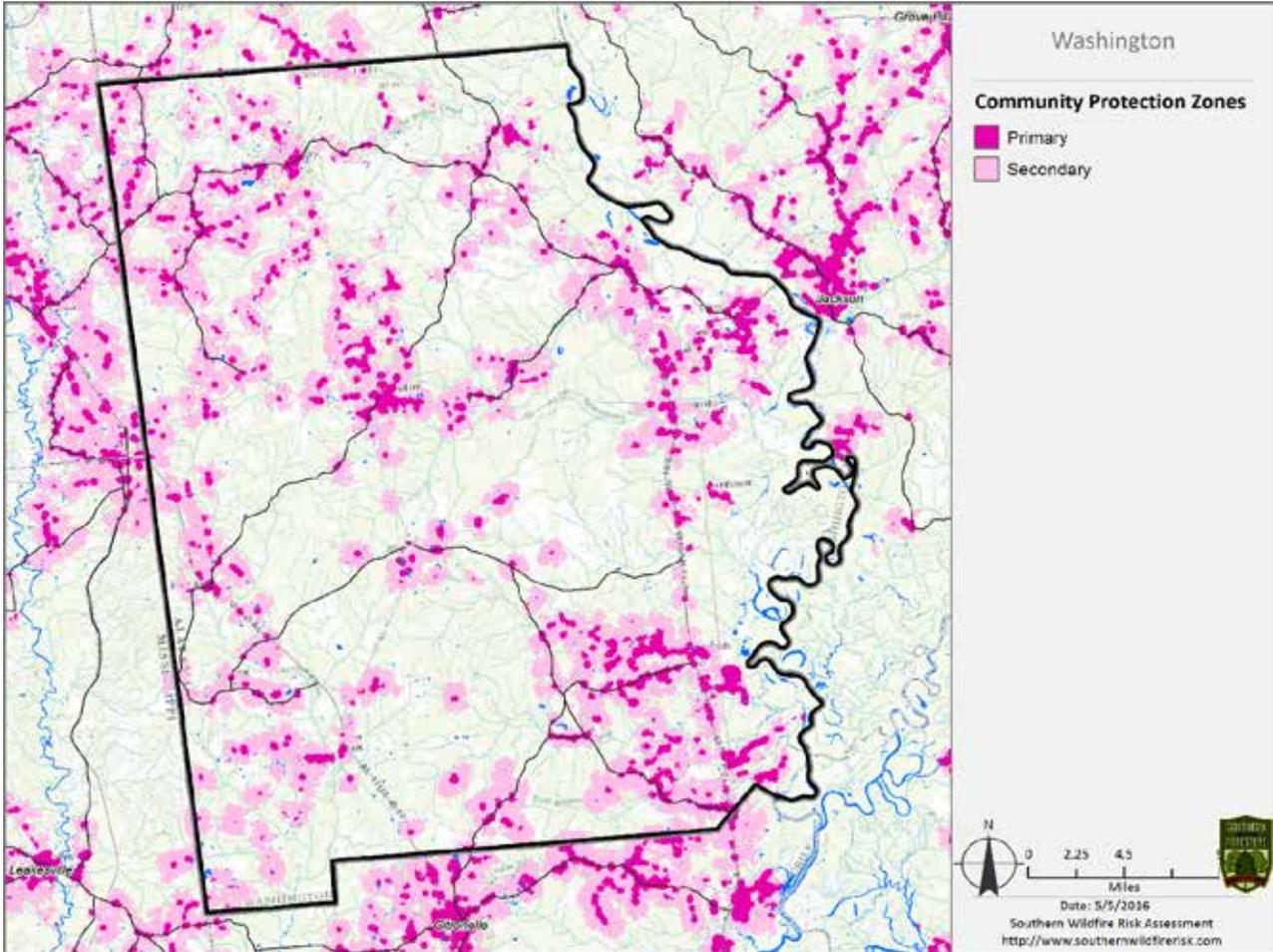
Table 4.15 Wildland Urban Interface Risk Index for Washington County

Class	Acres	Percent
-9 Major Impacts	54	0.0%
-8	1,522	0.8%
-7	6,128	3.2%
-6	9,534	5.0%
-5 Moderate	21,712	11.3%
-4	57,512	30.1%
-3	32,612	17.0%
-2	49,274	25.7%
-1 Minor Impacts	13,011	6.8%
Total	191,359	100.0%

Source: *Southern Wildlife Risk Assessment Summary Report – Washington*
Report generated 5/5/2016

Figure 4.19 depicts Community Protection Zones (CPZ) in Washington County. These zones represent those areas considered the highest priority for mitigation planning activities. These zones are based on population densities and surrounding fire behavior potential. Secondary CPZs are designated using rate of spread data to determine the areas that are within a 2-hour fire spread distance. It can be seen that primary CPZs are dispersed throughout the county. As seen in Table 4.16, approximately 46,361 acres in the county is in a primary CPZ.

Figure 4.19 Community Protection Zones- Washington County



Source: Southern Wildlife Risk Assessment Summary Report – Washington
Report generated 5/5/2016

Table 4.16 Acres in Primary and Secondary CPZs for Washington County

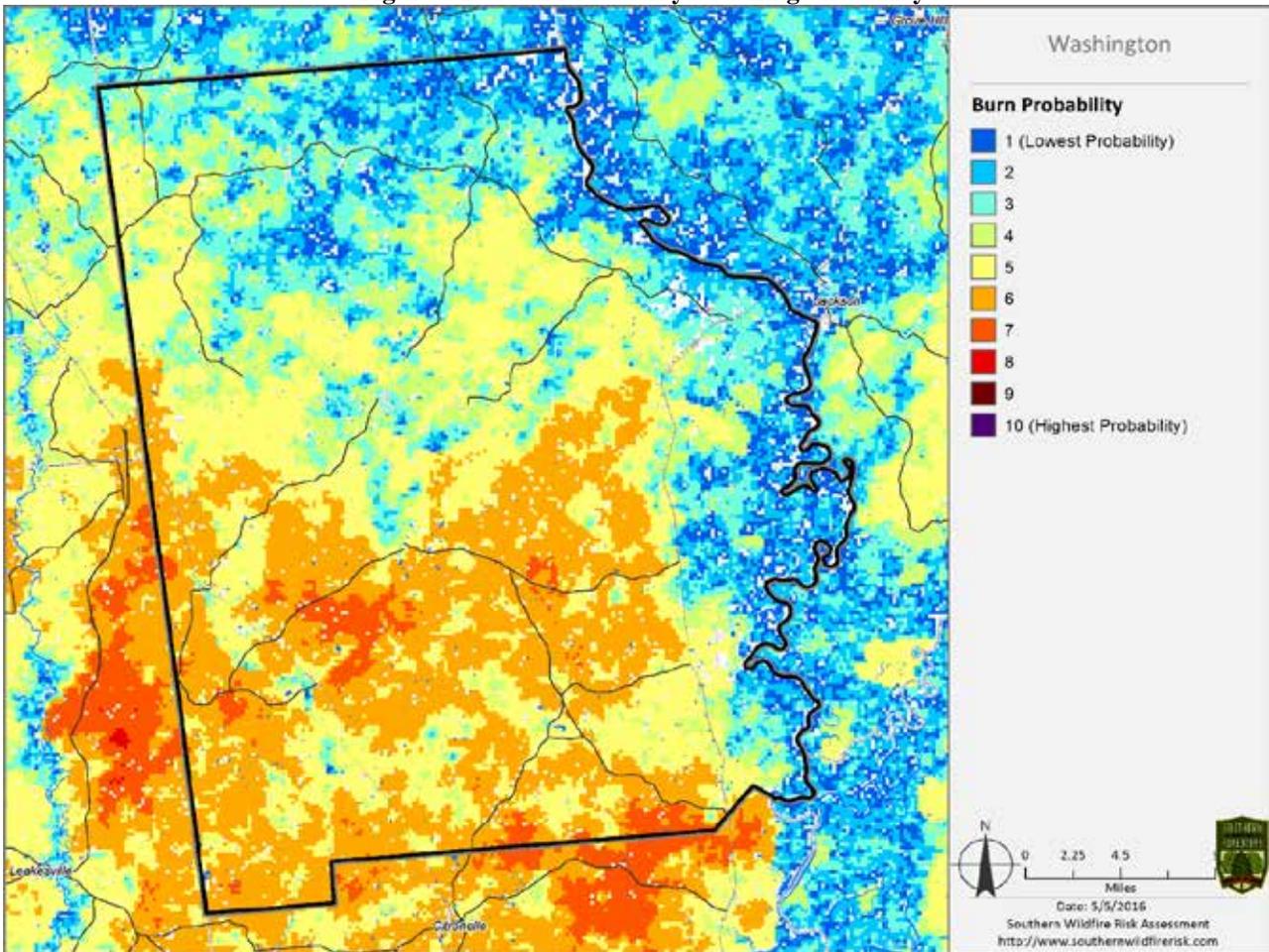
Class	Acres	Percent
Primary	39,390	20.2%
Secondary	155,942	79.8%
Total	195,332	100.0%

Source: Southern Wildlife Risk Assessment Summary Report – Washington
Report generated 5/5/2016

The county experiences a number of wildfires each year. It is possible that the county could experience multiple large wildfires that could char between 75-80% of the county. The impacts of wildfires can vary. The fires are unpredictable and fast spreading leading to serious risks to human life. First responders are at a high risk when dealing with these events. Property is at significant risk along with crops and vegetation. Wildlife is affected and can even be killed as a result of these events.

Figure 4.20 shows the burn probability for Washington County. The burn probability of an area is the probability of an area burning given current landscape conditions, percentile weather, historical ignition patterns and historical fire prevention and suppression efforts. The areas with the highest burn probability are located in the southern half of the county. Table 4.17 shows that large area of the county has a moderate or higher burn probability. Based on this information, this hazard is rated as having a medium probability of an occurrence causing major damage.

Figure 4.20 Burn Probability- Washington County



Source: *Southern Wildlife Risk Assessment Summary Report – Washington*
Report generated 5/5/2016

Table 4.17 Acres in Each Burn Probability Category for Washington County

Class	Acres	Percent
1	34,013	5.2%
2	62,759	9.5%
3	96,200	14.6%
4	84,735	12.9%
5	186,684	28.4%
6	178,545	27.1%
7	15,379	2.3%
8	0	0.0%
9	0	0.0%
10	0	0.0%
Total	658,316	100.0%

Source: Southern Wildlife Risk Assessment Summary Report – Washington Report generated 5/5/2016

Historical Occurrences

The Alabama Forestry Commission-Washington County Office provided a number of occurrences and acres burned for the years 2010-2014 for fires they responded to during that time period. Over the five year period the Forestry Commission responded to 461 fires, which burned 7,736.25 acres.

Information from the Alabama Forestry Commission gives a more detailed look at occurrences in the county. Table 4.18 provides occurrence information for the years 2010- September 2015.

Table 4.18 Washington County Fire Occurrences 2010-September 2015			
Year	Number of Fires	Acres Burned	Average Number of Acres Burned
2010	93	1,676.05	18.02
2011	113	2,150.55	19.03
2012	39	682.75	17.51
2013	45	1,560.85	34.69
2014	98	760.65	7.76
2015 (through 9/15)	73	905.40	12.40
Totals	461	7,736.25	16.78

Probability of Occurrence

Wildfires occur in Washington County every year. The extent and intensity of these fires cannot be predicted. The Hazard Mitigation Planning Committee assigns a medium probability to this hazard.

P. Winter Storms

Hazard Classification: Medium

Winter storms can encompass any of the following:

- **Blizzard:** Winds of 35 mph or more with snow and blowing snow reducing visibility to less than ¼ mile for 3 hours or more.
- **Blowing snow:** Wind-driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind.
- **Snow squalls:** Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant.
- **Snow showers:** Snow falling at varying intensities for brief periods of time. Some accumulation is possible.
- **Snow flurries:** Light snow falling for short durations with little or no accumulation.
- **Freezing rain:** Frozen precipitation melts in warm air, as rain falls and freezes on cold surfaces as a sheet of ice.
- **Sleet:** Frozen precipitation melts and refreezes into sleet before hitting ground

The National Weather Service monitors winter weather conditions and may issue the following type of alerts:

- **Winter Storm Outlook** - Winter storm conditions are possible in the next 2 to 5 days.
- **Winter Weather Advisory** - Winter weather conditions are expected to cause significant inconveniences and may be hazardous. When caution is used, these situations should not be life threatening.
- **Winter Storm Watch** - Winter storm conditions are possible within the next 36 to 48 hours. People in a watch area should review their winter storm plans and stay informed about weather conditions.
- **Winter Storm Warning** - Life-threatening, severe winter conditions have begun or will begin within 24 hours. People in a warning area should take precautions immediately.

Washington County is at risk for winter weather conditions. These conditions are on an occasional basis and generally are light snowfall and sleet. The entire county is at the same risk for this hazard. The county could experience blizzard conditions that result in a foot or more of snow.

Washington County is not accustomed to winter weather conditions. Snow can immobilize the county, stranding commuters and disrupting emergency and medical services. Large accumulations of snow can cause roofs to collapse and knock down trees and power lines. Homes and farms may be isolated for days and unprotected livestock may be lost. Due to its climate, many homes in the county are not insulated to the extent needed in winter weather situations, putting residents at risk for frostbite and hypothermia. Also, crop damage is a prime

economic concern in the county. Winter weather often occurs in the spring leading to loss of crops.

Accumulations of ice can bring down trees and topple utility poles and communication towers. Ice can disrupt communications and power for days while utility companies repair extensive damage. Even small accumulations of ice can be extremely dangerous to motorists and pedestrians. Bridges and overpasses are particularly dangerous because they freeze before other surfaces.

Historical Occurrences

There are ten occurrences of winter storm related weather on record for Washington County. These occurrences have led to \$15,000.00 in property damage.

Table 4.19 Washington County Winter Weather Occurrences					
Type	Date	Deaths	Injuries	Property Damage	Crop Damage
Sleet	1/27/2000	0	0	\$0.00	\$0.00
Winter Storm	12/21/2000	0	0	\$15,000.00	\$0.00
Winter Storm	1/1/2001	0	0	\$0.00	\$0.00
Winter Storm	1/2/2002	0	0	\$0.00	\$0.00
Heavy Snow	1/19/2008	0	0	\$0.00	\$0.00
Winter Weather	12/11/2008	0	0	\$0.00	\$0.00
Winter Storm	2/12/2010	0	0	\$0.00	\$0.00
Winter Storm	2/12/2010	0	0	\$0.00	\$0.00
Winter Storm	2/12/2010	0	0	\$0.00	\$0.00
Sleet	1/28/2014	0	0	\$0.00	\$0.00
Totals		0	0	\$15,000.00	\$0.00

Source: NOAA Storm Events Database
<https://www.ncdc.noaa.gov/stormevents/>
 Last Accessed on 5/5/2016

Probability of Occurrence

Washington County is not at high risk for winter storms. The county experiences an event on the average of once every 2-3 years. The probability of an event causing major damage is ranked as medium (10-50 years).

4.2 Washington County Risk Assessment Summary Tables

The following pages provide a set of tables summarizing the information provided in the Risk Assessment.

Table 4.20 Washington County Hazard Summary Table

Hazard	Risk	Chatom	McIntosh	Millry	Source	Reason
Avalanche	NR	NR	NR	NR	National Avalanche Center	No risk of avalanches.
Coastal Erosion	NR	NR	NR	NR	FEMA Coastal Erosion Hazards Reports	Washington County is an inland area
Dam Failure	H	H	H	H	USACE National Inventory of Dams	Flooding concerns, high & significant risk dams
Drought	H	H	H	H	United States Drought Monitor NOAA National Climatic Data Center	Historic incidents
Earthquake	L	L	L	L	Alabama Geologic Survey	Proximity to Southeast Seismic zones
Extreme Temperatures	H	H	H	H	National Oceanic and Atmospheric Administration	Historic incidents
Flooding	M	M	M	M	National Oceanic and Atmospheric Administration Flood Insurance Study for Washington County, Alabama National Flood Insurance Program Maps	Historic incidents with damage Flood plain areas
Hurricanes/Tropical Storms	H	H	H	H	National Hurricane Center	Historic incidents with damage
Landslides	L	L	L	L	Alabama Geologic Survey	Susceptible areas
Land Subsidence	L	L	L	L	Alabama Geologic Survey	Susceptible areas

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Severe Storms (Hail, High Wind, Lightning, Thunderstorms)	H	H	H	H	National Weather Service Storm Database	Historic incidents with damage
Tornadoes	H	H	H	H	NWS Tornado Database	Historic incidents with damage
Tsunami	NR	NR	NR	NR	FEMA	Washington County is an inland area
Volcano	NR	NR	NR	NR	FEMA	No volcanic activity nearby
Wildfire	M	M	M	M	Southern Wildfire Risk Assessment	Historic incidents
Winter Storms	M	M	M	M	NOAA National Climatic Data Center	Historic incidents

RISK: NR= No Risk, L=Low, M=Medium, H=High

**Table compiled by the Alabama Tombigbee Regional Commission
Information from the Risk Assessment
May 20, 2016**

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Table 4.21 Washington County Past Occurrences Summary Table				
Hazard	Unincorporated	Chatom	McIntosh	Millry
Avalanche				
Coastal Erosion				
Dam Failure	None	None	None	None
Drought	Not Available	Not Available	Not Available	Not Available
Earthquake	Not Available	Not Available	Not Available	Not Available
Extreme Temperatures <i>Heat</i> <i>Cold</i>	Not Available	Not Available	Not Available	Not Available
Flood <i>Riverine</i> <i>Flash</i>	Not Available 11	Not Available 0	Not Available 2	Not Available 3
Hurricane/Tropical Systems	Not Available	Not Available	Not Available	Not Available
Landslides	Not Available	Not Available	Not Available	Not Available
Land Subsidence	Not Available	Not Available	Not Available	Not Available
Severe Storms <i>Hail</i> <i>Lightning</i> <i>High Wind</i> <i>Thunderstorms</i>	5 3 Not available 80	8 5 Not available 14	5 1 Not available 7	10 1 Not available 11
Tornado	22	1	1	2
Tsunami				
Volcano				
Wildfire	Not Available	Not Available	Not Available	Not Available
Winter Storms	10	Not Available	Not Available	Not Available

**Table compiled by the Alabama Tombigbee Regional Commission
Information from the Risk Assessment
August 15, 2015**

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Table 4.22 Washington County Damage Summary Table				
Hazard	Unincorporated	Chatom	McIntosh	Millry
Avalanche				
Coastal Erosion				
Dam Failure				
Drought	Not Available	Not Available	Not Available	Not Available
Earthquake				
Extreme Temperatures	Not Available	Not Available	Not Available	Not Available
Heat				
Cold				
Flood				
Riverine	Not Available	Not Available	Not Available	Not Available
Flash	\$61,000	Not Available	Not Available	\$6,000
Hurricane/Tropical Systems	Not Available	Not Available	Not Available	Not Available
Land Slide	Not Available	Not Available	Not Available	Not Available
Land Subsidence	Not Available	Not Available	Not Available	Not Available
Severe Storms				
Hail	\$95,000	\$1,400,000	Not Available	Not Available
Lightning	\$70,000	\$136,000	\$8,000	\$25,000
High Wind	Not Available	Not Available	Not Available	Not Available
Thunderstorms	\$2,785,500	\$165,000	\$1,036,000	\$63,500
Tornado	\$3,536,250	\$100,000	\$2,500,000	\$13,000
Tsunami				
Volcano				
Wildfire	Not Available	Not Available	Not Available	Not Available
Winter Storms	Not Available	Not Available	Not Available	Not Available

**Table compiled by the Alabama Tombigbee Regional Commission
Information from the Risk Assessment
May 20, 2016**

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4.23 Washington County Probability of Occurrence Summary Table				
Hazard	Unincorporated	Chatom	McIntosh	Millry
Avalanche				
Coastal Erosion				
Dam Failure	Very Low	Very Low	Very Low	Very Low
Drought	Medium	Medium	Medium	Medium
Earthquake	Low	Low	Low	Low
Extreme Temperatures	Medium	Medium	Medium	Medium
Heat				
Cold				
Flood	Medium	Medium	Medium	Medium
Riverine				
Flash				
Hurricane/Tropical Systems	High	High	High	High
Landslide	Low	Low	Low	Low
Land Subsidence	Low	Low	Low	Low
Severe Storms	High	High	High	High
Hail				
Lightning				
High Wind				
Thunderstorms				
Tornado	High	High	High	High
Tsunami				
Volcano				
Wildfire	Medium	Medium	Medium	Medium
Winter Storms	Medium	Medium	Medium	Medium

High: Probability of major damage in the next 1-10 years

Medium: Probability of major damage in the next 10-50 years

Low: Probability of major damage in the next 100 years

Very Low: major damage not expected

**Table compiled by the Alabama Tombigbee Regional Commission
Information from the Risk Assessment
May 20, 2016**

4.3 Washington County Risk Assessment- Overview of Extent and Impact of Identified Hazards

Table 4.24 Washington County Impact and Extent Summary				
Hazard	Unincorporated	Chatom	McIntosh	Millry
Avalanche				
Coastal Erosion				
Dam Failure	Immediate area inundated with food water 6-8 feet deep, death/injury, property damage, wildlife habitats destroyed, livestock killed	Immediate area inundated with food water 6-8 feet deep, death/injury, property damage, wildlife habitats destroyed, livestock killed	Immediate area inundated with food water 6-8 feet deep, death/injury, property damage, wildlife habitats destroyed, livestock killed	Immediate area inundated with food water 6-8 feet deep, death/injury, property damage, wildlife habitats destroyed, livestock killed
Drought	D4 drought, crop loss, public health concern, wildfire susceptibility	D4 drought, crop loss, public health concern, wildfire susceptibility	D4 drought, crop loss, public health concern, wildfire susceptibility	D4 drought, crop loss, public health concern, wildfire susceptibility
Earthquake	3-6 on Richter Scale, Property damage, injury			
Extreme Temperatures	Temperatures above 100° or at or below 32°, crop and livestock loss, public health concern	Temperatures above 100° or at or below 32°, crop and livestock loss, public health concern	Temperatures above 100° or at or below 32°, crop and livestock loss, public health concern	Temperatures above 100° or at or below 32°, crop and livestock loss, public health concern
Flood (riverine & flash flood)	8-10" of water, Road closures, property damage, injury or loss of life	8-10" of water, Road closures, property damage, injury or loss of life	8-10" of water, Road closures, property damage, injury or loss of life; Alabama River crests 15 feet above flood stage	8-10" of water, Road closures, property damage, injury or loss of life

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Table 4.24 Washington County Impact and Extent Summary

Hazard	Unincorporated	Chatom	McIntosh	Millry
Hurricane	Category 3-4, Heavy flood and wind damage, loss of life, injuries, temporary loss of utilities, timber loss	Category 3-4, Heavy flood and wind damage, loss of life, injuries, temporary loss of utilities, timber loss	Category 3-4, Heavy flood and wind damage, loss of life, injuries, temporary loss of utilities, timber loss	Category 3-4, Heavy flood and wind damage, loss of life, injuries, temporary loss of utilities, timber loss
Landslide	3-4 acres in size, Road damage, environmental damage	3-4 acres in size, Road damage, environmental damage	3-4 acres in size, Road damage, environmental damage	3-4 acres in size, Road damage, environmental damage
Land Subsidence	Up to 10 meters in size, Property damage			Up to 10 meters in size, Property damage
Severe Storms (Hail, High Wind, Lightning, and Thunderstorms)	Large hail (4-5"), sustained winds over 50 mph for hours, 20-25 lightning strikes per hour, property damage, crop loss, death, injury	Large hail (4-5"), sustained winds over 50 mph for hours, 20-25 lightning strikes per hour, property damage, crop loss, death, injury	Large hail (4-5"), sustained winds over 50 mph for hours, 20-25 lightning strikes per hour, property damage, crop loss, death, injury	Large hail (4-5"), sustained winds over 50 mph for hours, 20-25 lightning strikes per hour, property damage, crop loss, death, injury
Winter Storms	8-12" of snow, blizzard conditions, 3-5" of ice, Tree damage, utility damage, property damage	8-12" of snow, blizzard conditions, 3-5" of ice, Tree damage, utility damage, property damage	8-12" of snow, blizzard conditions, 3-5" of ice, Tree damage, utility damage, property damage	8-12" of snow, blizzard conditions, 3-5" of ice, Tree damage, utility damage, property damage
Tornado	F0-F5 Extensive property damage possible, death, injury			
Tsunami				
Volcano				
Wildfire	All 994 square miles of the county affected, Property, timber, and revenue losses, death, injury	All 10.9 square miles of the town affected, Property, timber, and revenue losses, death, injury	All 1 square miles of the city affected, Property, timber, and revenue losses, death, injury	All 7.7 square miles of the city affected, Property, timber, and revenue losses, death, injury

**Table compiled by the Alabama Tombigbee Regional Commission
Information from the Risk Assessment
May 20, 2016**

4.4 Washington County Vulnerability Assessment- Overview of Hazard Vulnerability and Impact

DAM FAILURE

There are 15 dams listed in the NID for Washington County. Of these dams, none are listed as high risk dams. During a dam failure, a large quantity of water is released which inundates everything in its path. Humans, crops, livestock, and infrastructure can all be affected by the inundation. Due to there not being a comprehensive inventory of dams or their conditions, the population at risk from failure can only be estimated. Using available information, the population at risk for dam failure is minimal, less than 1%.

DROUGHT

All 17,137 residents of Washington County are at risk to the effects of drought. Droughts would affect agriculture and water supply the most. Economic losses due to insufficient water for large agricultural operations could be significant. Livestock could be lost due to a long term drought. The population that depends on private wells for water could be without water for weeks or months at a time. In addition, during droughts the risk of wildfire is greater and the resources available to fight them are affected.

EARTHQUAKE

The effects of earthquakes in Washington County are expected to be minimal. Minor shaking and rattling of pictures and small objects is expected. The northern half of the county is at a slightly higher risk.

EXTREME TEMPERATURES

Both extreme heat and extreme cold have occurred in Washington County. Extreme temperatures lead to serious agricultural and livestock issues. Both cold and hot temperatures can affect the robustness of crops and livestock. Extreme heat can lead to heatstroke, heat cramps, heat syncope, and heat exhaustion. A widespread extreme heat event could possibly overcrowd local clinics and emergency rooms with persons suffering from the heat's effects. Increased use of electricity to run fans and air conditioners may also put a strain on electric utilities. Extreme cold temperatures can lead to frostbite and hypothermia. The elderly population, in particular, is extremely vulnerable to both hot and cold conditions. All 17,137 residents of Washington County are at risk to the effects of extreme temperatures.

FLOOD

Flash floods may lead to property damage or loss depending on severity. Their rapid onset makes them even more deadly. Often waters rise so quickly that people have little time to protect themselves. These floods can also lead to death and injury. Flash flooding on roadways is a major risk. Many times drivers underestimate water depth and become stranded in floodwaters. Due to the nature of flash floods, every resident of the county is at risk. Lower areas and areas with poor drainage are at higher risks, but it is impossible to give an approximate number of residents living in these areas.

River flooding is also a risk along the Tombigbee and Escatawpa Rivers. Floods may lead to property damage or loss depending on severity. Flooding can lead to agricultural and livestock related losses. Floods may also lead to death and injury. According to the State Mitigation Plan

Update for Alabama, approximately 11,619 residents live in the 1-Percent-Annual-Chance Flood Hazard Area in Washington County. Roughly, this is seventy percent of the population in the county.

HURRICANE/TROPICAL SYSTEM

Atlantic hurricane season is from June 1 to November 30. Over the past fifty years Washington County has been affected by hurricanes. Severe storms, tornadoes, high winds, hail, torrential rains, river flooding, and flash flooding are all associated with hurricanes as they move inland. Potentially all of Washington County's residents and structures are at risk. The loss of life, property and possessions is common. Interruption of utility and communication service is expected. Washington County is far enough inland that advance warning of the approaching storm can be heeded and residents can prepare themselves. In instances where spawned tornadoes and flash flooding occurs, warning time may be short or nonexistent increasing risk factors. In addition, low-lying areas and areas prone to flooding are at higher risk of hurricane related flood damage but it is impossible to give an approximate number of residents living in these areas.

LANDSLIDE

There are no historical occurrences of landslides in Washington County. The county as a whole is at a very low susceptibility for landslides. It is impossible to determine an accurate estimate of the population vulnerable to landslides, but it would be less than 5% of the total population.

LAND SUBSIDENCE

Subsidence can lead to changes in elevation; damage to structures such as storm drains, sanitary sewers, roads, railroads, canals, levees and bridges; structural damage to public and private buildings; and damage to wells. Most commonly, though, subsidence is known for causing an increase in the potential for flooding. Washington County is at a slight risk for subsidence. A very small percentage of the population would be at risk, less than 5%.

SEVERE STORMS

Damage from severe storms can have a wide range of severity. Common incidences are a result of falling trees and flying debris. Lightning can cause substantial property damage and death. Utility disruption and blocked roadways are common. Historically, Washington County has experienced these storms every year with varying frequency and intensity. Hailstones as large as 2.5 inches have occurred in the county. Winds of eighty knots have been recorded during these events within the county. Generally severe storms follow no common track or an exact pathway; therefore, the whole county (population and building stock) is at risk.

TORNADO

There are two tornado seasons in Alabama; these are in May and November. Tornadoes are not constrained to follow any definite path, so every area and every resident of Washington County is at risk. A tornadoes path is generally 300-400 yards wide and four miles long (NOAA 1973). Areas within that path may suffer from slight to severe damage depending on the tornadoes strength. Injury and death can occur as a result of even the weakest tornado. In Washington County, historically there have been tornadoes as strong as EF3 recorded.

The effects of any tornado may be far reaching. Life, property, and personal items are all at risk. Interruption of electric, telephone and other utility and communications services may occur. Transportation corridors may be blocked or in some cases destroyed. Debris must be removed and this is often a costly task. Citizens may suffer from posttraumatic syndrome, depression, anxiety, and grief for lost loved ones. Also another concern in rural areas, such as Washington County, is housing and providing for storm victims. When large storms with widespread damage and injuries occur, these areas have a more difficult time providing adequate aid to all who are in need.

Overall, the entire county is at the same risk of tornadoes, but some populations and structures are at a higher risk. The highest potential for death or injuries resulting from tornadoes occurs in areas with higher population densities. As reviewed in the County Profile section of this report, the area that is the most densely populated is McIntosh. The occurrence of dense housing also increases the probability of not only death or injury, but also property damage. McIntosh also has the highest housing density in the county. Other areas that are more vulnerable to damage from a tornado include areas with high percentages of mobile homes. These structures are not capable of withstanding the strong winds associated with tornadoes as well as traditional housing. In Washington County, there are high percentages of mobile homes throughout the county.

WILDFIRE

Due to the large areas of forest-covered land in Washington County, wildfires are a real threat to all residents of Washington County. These fires can ignite and spread quickly, charring everything in their path. In Washington County, wildfires are a threat to the residents' property and health. These fires not only threaten the lives of residents, but also may cause respiratory problems for many residents. Smoke from these fires may lead to limited visibility along roadways increasing the probability of accidents. In addition to these effects, wildfires in Washington County threaten the economic livelihood of the county. The economy has a large timber component that could be damaged by wildfire.

WINTER STORMS

Winter storms are a rare occurrence in Washington County, but when they do occur they have a significant impact. Local governments do not have snow removal equipment on hand. Local drivers are not used to driving in those adverse conditions and automobile accidents are common occurrences. Ice and snow can weigh down limbs and power lines causing them to break under pressure, resulting in power failure and property damage. During extended times of power failure, residents and businesses are not equipped with backup generators. Also many homes may not be properly insulated leading to health concerns. The impacts of these storms are generally the result of the infrequency of their occurrence. All residents of Washington County are vulnerable to winter storms because these storms have no defined track.

4.5 Washington County Vulnerability Assessment- Affected Populations and Buildings Summary

Table 4.25 Population Potentially Affected by Hazard by Jurisdiction					
Hazard	Countywide	Unincorporated	Chatom	McIntosh	Millry
Avalanche					
Coastal Erosion					
Dam Failure					
Drought	17,137	15,127	1,237	238	535
Earthquake					
Extreme Temperatures	17,137	15,127	1,237	238	535
Heat					
Cold					
Flood	17,137	15,127	1,237	238	535
Riverine					
Flash					
Hurricane/Tropical Systems	17,137	15,127	1,237	238	535
Landslide					
Land Subsidence					
Severe Storms	17,137	15,127	1,237	238	535
<i>Hail</i>					
<i>Lightning</i>					
<i>High Wind</i>					
<i>Thunderstorms</i>					
Tornado	17,137	15,127	1,237	238	535
Tsunami					
Volcano					
Wildfire	17,137	15,127	1,237	238	535
Winter Storms	17,137	15,127	1,237	238	535

**Table compiled by the Alabama Tombigbee Regional Commission
Information from the Risk Assessment and American Survey Five Year Estimates 2009-2013
May 20, 2016**

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Table 4.26 Buildings Vulnerable to Hazard by Jurisdiction					
Hazard	Countywide	Unincorporated	Chatom	McIntosh	Millry
Avalanche					
Coastal Erosion					
Dam Failure					
Drought	7,114	6,603	517	143	317
Earthquake	*	*	*	*	*
Extreme Temperatures <i>Heat</i> <i>Cold</i>	7,114	6,603	517	143	317
Flood Riverine Flash	7,114	6,603	517	143	317
Hurricane/Tropical Systems	7,114	6,603	517	143	317
Landslide	*	*	*	*	*
Land Subsidence	*	*	*	*	*
Severe Storms <i>Hail</i> <i>Lightning</i> <i>High Wind</i> <i>Thunderstorms</i>	7,114	6,603	517	143	317
Tornado	7,114	6,603	517	143	317
Tsunami					
Volcano					
Wildfire	7,114	6,603	517	143	317
Winter Storms	7,114	6,603	517	143	317

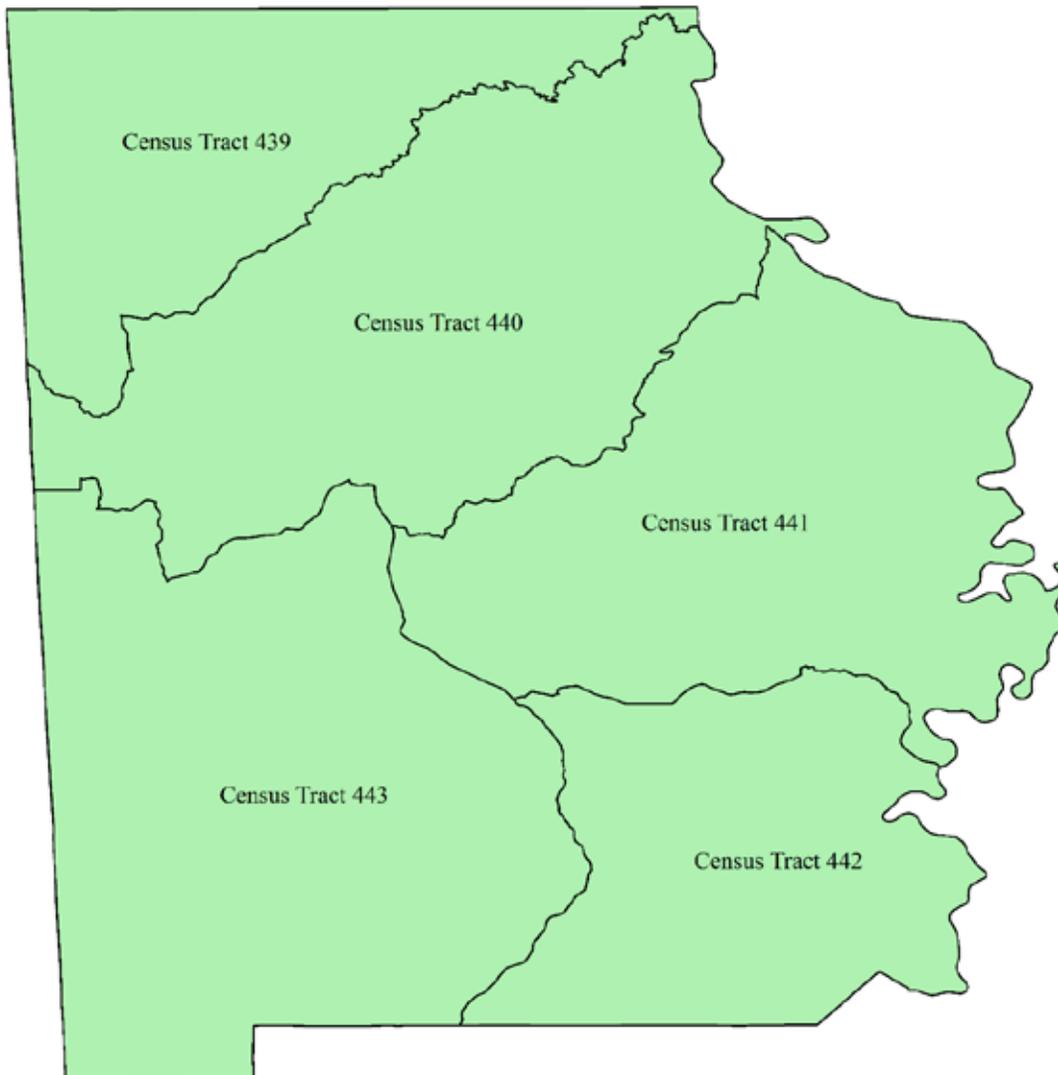
*insufficient data available

**Table compiled by the Alabama Tombigbee Regional Commission
Information from Washington County Property Records
May 20, 2016**

4.6 Washington County Vulnerability Assessment- Identification of Vulnerable Populations

Location is not the only factor in determining vulnerability. Social and economic characteristics can also be studied to determine vulnerability. Certain populations are generally more affected by any type of natural hazard and their after effects. These populations can be defined in terms of social, racial, and economic characteristics. The following section identifies Washington County's socially vulnerable populations by jurisdiction. Figure 4.21 is a map that shows the census tracts in the county. These tracts will be referred to in the discussion below. Table 4.27 provides basic demographic, economic, and housing information for the county.

Figure 4.21 Washington County Census Tracts



Map produced by the Alabama Tombigbee Regional Commission
Source: 2012 TIGER Line Files
Created 5/20/2016

Table 4.27 Washington County Demographic Information by Census Tract*				
Tract	Percent of Individuals Below Poverty Level	Percent of Population Under 18	Percent of Population Over 65	Percent of Housing Units that are Mobile Homes
439	24.7	17.8	18.1	24.8
440	23.7	23.9	20.8	20.1
441	34.1	24.2	12.8	25.5
442	20.1	26.9	10.3	34.1
443	21.2	25.8	15.5	25.2

**Shaded areas indicate the tract is above the county average for that indicator.*

Compiled by the Alabama Tombigbee Regional Commission
Source: American Community Survey Five Year Estimates 2010-2014
Created 5/20/2016

The indicators provided in Table 4.27 can be used to determine populations that are considered socially vulnerable. Individuals under the poverty level do not have the resources necessary to recover from hazard events. It can be seen that the eastern portion of the central section of the county has over one third of the population living under the poverty level. With regards to age, both the population over 65 and the population under 18 are considered more vulnerable. There is a larger percentage of the population under 65 in the northern part of the county and a larger percentage under 18 in the southern part of the county. Mobile homes are also considered more vulnerable to hazards. Concentrations of these can be found in the southern half of the county.

4.7 Washington County Vulnerability Assessment- Critical Facilities

Washington County used the following criteria to identify critical facilities:

- A facility that is critical to the health and welfare of the entire jurisdiction. They become essential in the event of a natural disaster. These facilities include police stations, fire stations, schools, and hospitals.
- A facility which is a lifeline that provides the jurisdiction with necessities such as potable water.
- Transportation corridors necessary to keep the jurisdiction connected.
- Facilities that house persons with special needs (jails, nursing homes). They may also include locations where large groups often meet.
- Facilities where potential losses, both human and economic, are high.

Tables 4.28-34 provides the critical facility listing for Washington County.

TABLE 4.28 CHATOM CRITICAL FACILITIES	
FACILITY NAME	REPLACEMENT VALUE
Chatom Municipal Complex	\$620,336
Chatom Police Department	
Chatom City	\$132,613
Chatom Community Center Shelter	\$883,586
Chatom Sewer Plant	\$2,098,775
TOTALS	\$3,735,310

TABLE 4.29 MCINTOSH CRITICAL FACILITIES	
FACILITY NAME	REPLACEMENT VALUE
Police Department (vehicles – 10)	\$700,000 (150,000)
Fire Department	\$274,000 building \$275,000 trucks
Town Hall	\$1,200,000
Meeting Hall	\$125,000
Safe Room (in progress)	\$600,000
Street Department (plus equipment)	\$50,000
Library	\$326,193
Parks and Recreation (building + equipment)	\$127,000
TOTALS	\$3,827,193

TABLE 4.30 MILLRY CRITICAL FACILITIES	
FACILITY NAME	REPLACEMENT VALUE
Millry Town Hall/Police Department	\$254,616
Millry Volunteer Fire Department	\$143,222
Town of Millry Water + Sewer	\$1,122,173
Millry Pediatric Clinic	\$120,000 (agreed value)
Town of Millry Brown House	\$125,000 (agreed value)
Town of Millry Garage	\$114,577
TOTALS	\$1,879,588

TABLE 4.31 WASHINGTON COUNTY CRITICAL FACILITIES	
FACILITY NAME	REPLACEMENT VALUE
Courthouse	\$100,000,000
Central Office	\$2,000,000
Frank Turner Hall	\$2,500,000
Old Health Department Building	\$2,000,000
TOTALS	\$106,500,000

TABLE 4.32 WASHINGTON COUNTY SCHOOL SYSTEM CRITICAL FACILITIES

FACILITY NAME	VALUE BUILDING	CONTENTS
Chatom Elementary K-4	\$6,258,000	\$2,166,152
Fruitdale High School K-12	\$9,933,854	\$2,528,896
Leroy High School K-12	\$12,472,379	\$3,440,639
McIntosh Elementary K-5	\$5,894,127	\$1,621,429
McIntosh High School 6-12	\$9,287,687	\$3,109,613
Millry High School K-12	\$14,327,488	\$3,266,145
Washington County High School 5-12	\$18,928,694	\$5,645,071
Washington County Career Technical Center	\$3,007,604	\$1,035,495
Washington County Bus Barn	\$392,222	\$136,051
Washington County School Bus Fleet 56 @ \$84,000 per bus	\$4,704,000	
Lighting and Athletic Fields	\$2,273,878	\$100,00
Band and Athletic Trailers		\$150,000
TOTALS	\$87,479,933	\$23,199,491

4.8 Washington County Vulnerability Assessment- Critical Facilities by Hazard

Table 4.33 breaks critical facilities down by total exposure to each hazard by participant. The sum of replacement costs of all buildings affected by each hazard was used to compute these numbers.

Table 4.33 Critical Facilities by Hazard					
Hazard	Washington County	Chatom	McIntosh	Millry	Washington County Schools
Avalanche					
Coastal Erosion					
Dam Failure	None	None	None	None	
Drought					
Earthquake	Not Available	Not Available	Not Available	Not Available	
Extreme Temperatures <i>Heat</i> <i>Cold</i>					
Flood <i>Riverine</i> <i>Flash</i>	\$106,500,000	\$3,827,193	\$3,827,193	\$1,879,588	\$23,199,491
Hurricane/Tropical Systems	\$106,500,000	\$3,827,193	\$3,827,193	\$1,879,588	\$23,199,491
Landslides					
Land Subsidence					
Severe Storms <i>Hail</i> <i>Lightning</i> <i>High Wind</i> <i>Thunderstorms</i>	\$106,500,000	\$3,827,193	\$3,827,193	\$1,879,588	\$23,199,491
Tornado	\$106,500,000	\$3,827,193	\$3,827,193	\$1,879,588	\$23,199,491
Tsunami					
Volcano					
Wildfire	\$106,500,000	\$3,827,193	\$3,827,193	\$1,879,588	\$23,199,491
Winter Storms	\$106,500,000	\$3,827,193	\$3,827,193	\$1,879,588	\$23,199,491

4.9 Washington County Vulnerability Assessment- Analyzing Development Trends

Figure 4.22 is a land use map for Washington County. Green, brown, and yellow shades represent forest, pastureland, and shrubs. The majority of Washington County is forested land. There are also significant areas of flood plains along the Tombigbee and Escatawpa Rivers. Red indicates developed land. Chatom, McIntosh, and Millry are indicated by the red tones on the map. Table 4.28 gives population estimates for the county based on the 2010 Census. The population is projected to steadily decline over the next twenty five years. Based on the supplied information, there will be no major land use changes in the county in the foreseeable future.

Development patterns were reviewed and no growth or decline was observed which would have impacted the jurisdictions vulnerability. No changes were made.

Figure 4.22 Washington County Land Use Map

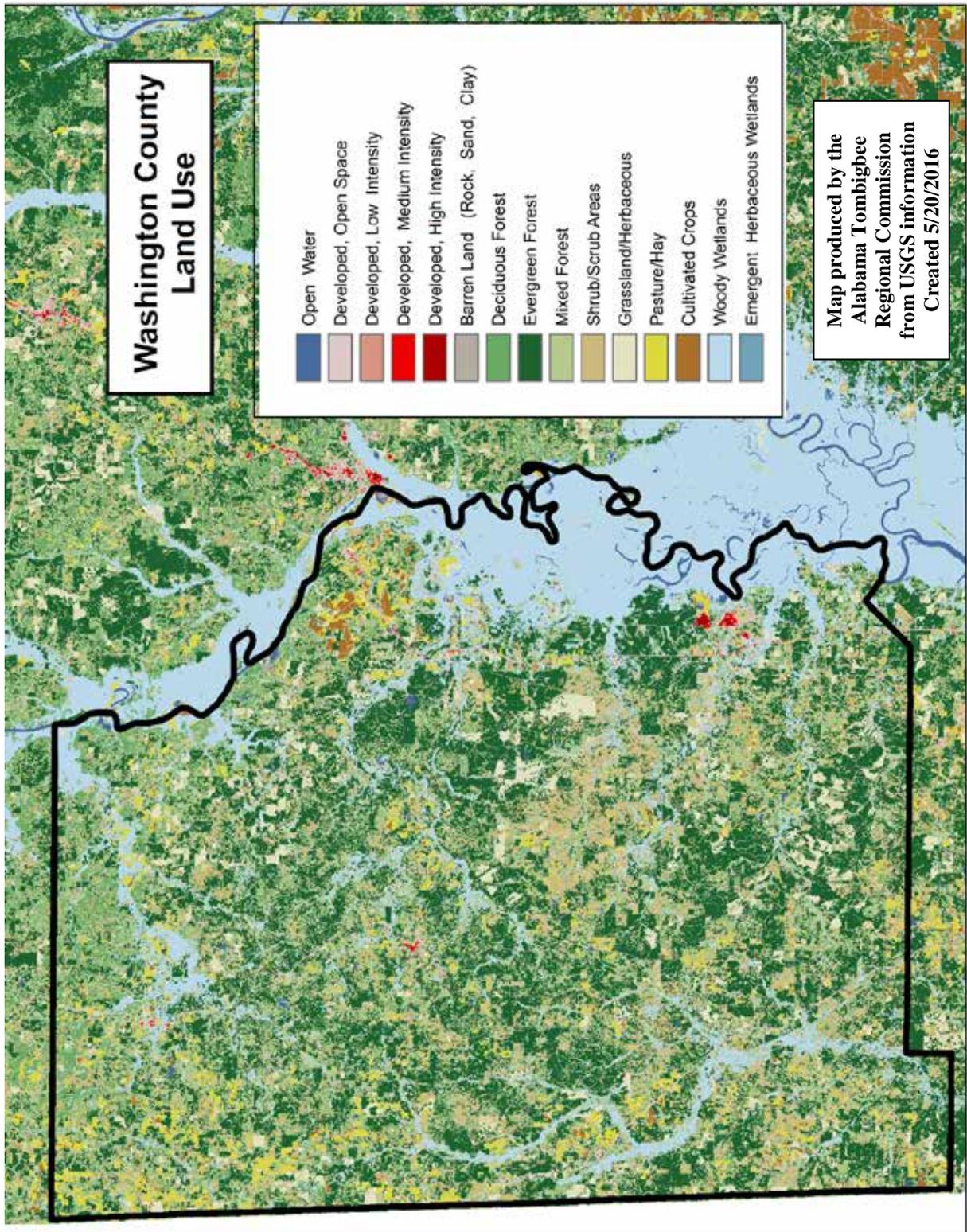


Table 4.34 Population Projections 2015-2040										
Washington County Population 2000-2010 and Projections 2015-2040										
	Census	Census							Change 2010- 2040	
	2000	2010	2015	2020	2025	2030	2035	2040	Number	Percent
Washington	18,097	17,581	16,510	16,220	15,916	15,584	15,235	14,883	-2,698	-15.3

The following are a list of planned critical facilities in the county: No participants identified any planned critical facilities.

Summary of Changes Made in Plan Update Section V. Ongoing Mitigation Assessment

This section provides the Existing Authorities, Policies, Programs, and Resources by Jurisdiction. A table was added to detail capabilities by jurisdiction. Capabilities were determined by talking with each jurisdiction via phone and/or in person. Information on the Washington County EMA is provided in Section B.

V. Ongoing Mitigation Assessment

5.1 Existing Authorities, Policies, Programs, and Resources by Jurisdiction

A brief assessment was conducted by each jurisdiction before goals, objectives, and strategies were discussed. This assessment was completed by contacting local officials by phone, regional planning commission knowledge, and internet research. Table 3.3 on page 21 details the results of the assessment by jurisdiction.

The extent to which each jurisdiction can expand on existing policies and programs varies. In the State of Alabama, home rule is limited by its Constitution. While municipalities have the power to levy taxes (subject to constitutional limitations on ad valorem taxes), adopt zoning regulations, annex property, select and change their form of government, construct streets and assess the cost against the abutting property, engage in redevelopment and urban renewal projects and establish public agencies to operate hospitals, libraries, recreational facilities, counties do not. Counties that hold these powers have received them through legislative acts, which are written at the local level and presented to the state legislature.

With regards to zoning ordinances, jurisdictions with ordinances in place may amend them to address any issues that may arise as long as adequate public notice and a public comment period are given. These jurisdictions have planning commissions that hear all requests with regards to the ordinances. For municipalities with no zoning ordinances, ordinances can be drafted and enacted as long as adequate public notice and a public comment period are given. In order for the Washington County Commission to enact a zoning ordinance, an act must be passed by the Alabama legislature in Montgomery. At this time, there is no indication that jurisdictions without ordinances in place desire to enact a new set of ordinances.

Each jurisdiction in the county has the ability to enforce building codes to the extent it sees fit. Depending on budget and available personnel, these jurisdictions may modify the extent of their enforcement at any time. Funding for public works, utility departments, police, and fire also depend on each jurisdiction's available funding. Taxes are the most significant source of funding for these activities. Municipalities may enact new taxes without legislative approval, but county's may not.

Comprehensive planning is an area where every jurisdiction has the opportunity to analyze hazard mitigation. As jurisdictions decide to develop these plans, they will be encouraged to consider mitigation and include it in strategies and goals.

5.2 WASHINGTON COUNTY EMERGENCY MANAGEMENT AGENCY

The Washington County EMA Director is available 24 hours a day. The EMA Office is located in Chatom. The Washington County EMA is capable of communicating with all law enforcement, emergency medical, fire, search and rescue personnel, amateur radio users, adjacent jurisdictions, and the State Emergency Operations Center by phone and radio.

Summary of Changes Made in Plan Update Section VI. Mitigation Goals, Objectives, and Strategies

Mitigation Goals, Objectives, and Actions by Jurisdiction: This section provides goals, objectives and actions for each participating jurisdiction. Each participating jurisdiction reviewed their information from the previous plan. Each jurisdiction reviewed their information and either confirmed there were no revisions or submitted changes. This section was reorganized.

VI. MITIGATION GOALS, OBJECTIVES, AND STRATEGIES

The Washington County Hazard Mitigation Planning Committee's vision statement for the county's mitigation planning program is:

Washington County, its communities, and municipalities envision active resistance to the threats of nature to human life and property through publicly supported mitigation measures with proven results. The communities within Washington County commit to reduce the exposure and risk of natural hazards by activating all available resources through cooperative intergovernmental and private sector initiatives and augmenting public knowledge and awareness.

6.1 Comprehensive Mitigation Strategies

Washington County approached this planning process in the same manner as previous versions of this plan. The six categories of a comprehensive hazard mitigation program, which were developed by FEMA, were used as a guide. This section presents the long-term strategies for mitigation of natural hazards. The County reviewed these strategies and felt they were still relevant at this time.

1. Goal for Prevention. Manage the development of land and buildings to minimize risks of loss due to natural hazards by adopting and administering ordinances, regulations, and programs to minimize risks of loss due to natural hazards.

- 1.1 Flood Plain Management Regulations: Effectively administer and enforce local floodplain management regulations.
- 1.2 Building and Technical Codes: Review local codes for effectiveness of standards to protect buildings and infrastructure from hazard damages.
- 1.3 Community Shelters and Safe Rooms: Ensure the protection of communities from tornadoes and severe storms.
- 1.4 Detailed Plans and Targeted Studies: Conduct special studies, as needed, to identify hazard risks and mitigation measures.

2. Goal for Property Protection. Protect structures and their occupants and contents from the damaging effects of natural hazards. These activities include retrofitting existing structures to increase their resistance to damage and exposure of occupants to harm; relocating vulnerable structures and occupants from natural hazard locations; and conversion of developed land to permanent open space through acquisition and demolition of existing structures.

- 2.1 Building Retrofits: Encourage retrofitting of older homes constructed before the enactment of flood plain regulations (pre-FIRM buildings) to safeguard against damages.
- 2.2 Insurance: Maintain insurance riders for flood damages.

3. Goal for Public Education and Outreach. Educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.

3.1 Map Information: Increase public access to FIRM information.

3.2 Outreach Projects: Conduct regular public events to inform the public of hazards and mitigation measures.

3.3 Library: Use local library resources to educate the public on hazard risks and mitigation alternatives.

3.4 Environmental Education: Use school resources for public education on hazards and mitigation measures.

4. Goal for Natural Resources Protection. Preserve and restore the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.

4.1 Urban Forestry Programs: Maintain a healthy forest that can help mitigate the damaging impacts of flooding, erosion, landslides, and wild fires within urban areas.

5. Goal for Emergency Services. Improve the efficiency, timing, and effectiveness of response and recovery efforts for natural hazard disasters.

5.1 Disaster Warning: Improve public warning systems.

5.2 Weather Radios: Improve public access to weather alerts.

6. Goal for Structural Projects. Apply engineered structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of hazards, where feasible, cost effective, and environmentally suitable.

6.1 Drainage System Maintenance: Improve maintenance programs for streams and drainage ways.

These measures are summarized in Table 6.1.

**Washington County, Alabama Hazard Mitigation Plan
Section VI. Mitigation Program**

Table 6.1 Mitigation Measures

Mitigation Measure#	Goal	Program Objective	Mitigation Measure	Status
1.1.1	Prevention	Flood Plain Management Regulations	Continue the Town of Chatom and the Town of Millry as regular members of the NFIP	Completed
1.1.2	Prevention	Flood Plain Management Regulations	Train County Engineer/Flood Plain Manager through programs offered through the State Flood Plain Manager. Note: County Engineer & EMA met w/ State FIRM personnel to review proposed digitized map program	Ongoing
1.1.3	Prevention	Flood Plain Management Regulations	Maintain a library of technical assistance and guidance materials to support the County Engineer/Flood Plain Manager	Ongoing
1.2.1	Prevention	Building and Technical Codes	Promote good construction practices and proper code enforcement to eliminate most structural problems during natural hazard events.	Not yet enacted in Washington Co. Only the Towns of Chatom and McIntosh have adopted codes that will aid in problem elimination.
1.3.1	Prevention	Community Shelters and Safe Rooms	Encourage the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.	Ongoing study
1.3.2	Prevention	Community Shelters and Safe Rooms	Retrofit public schools with community shelters.	Planned
1.3.3	Prevention	Community Shelters and Safe Rooms	Encourage the construction of safe rooms in new and existing construction.	Ongoing
1.3.4	Prevention	Community Shelters and Safe Rooms	Distribute FEMA Publication 320 - Taking Shelter From the Storm: Building a Safe Room in Your House – to local homebuilders and homeowners	Publications posted at WC Library; builders are aware of the need.
1.4.1	Prevention	Detailed Plans and Targeted Studies	Seek a countywide update of all FIRMs in digital format, with an emphasis on detailed studies of developed and developing areas with elevations provided and floodways delineated.	Planned

**Washington County, Alabama Hazard Mitigation Plan
Section VI. Mitigation Program**

Table 6.1 Mitigation Measures

Mitigation Measure#	Goal	Program Objective	Mitigation Measure	Status
2.1.1	Property Protection	Building Retrofits	Seek funding sources, such as Community Development Block Grant funds, to assist low income home owners with building retrofits to protect against flood damage.	Planned
2.2.1	Property Protection	Insurance	Promote the purchase of flood insurance coverage by property owners and renters in high-risk flooding areas.	Insurance agencies have been contacted making flood insurance available to anyone that desires Coverage.
3.1.1	Public Education and Outreach	Map Information	Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through local trade publications and newspaper announcements.	Complete: FIRM information in both the EMA office and the County Engineer's office.
3.2.1	Public Education and Outreach	Outreach Projects	Promote mitigation and severe weather awareness, through an annual severe weather awareness event.	All-hazards bulletins distributed to Co offices and to the general public.
3.3.1	Public Education and Outreach	Library	Obtain free publications from FEMA, NWS, USGS, and other federal and state agencies and deposit these materials with local libraries.	Ongoing
3.4.1	Public Education and Outreach	Environmental Education	Distribute hazard mitigation brochures to area schools for distribution to students.	Ongoing
4.1.1	Natural Resources Protection	Urban Forestry Programs	Seek technical assistance through the Alabama Cooperative Extension System and/or the Alabama Forestry Commission with Best Management Practices (BMPs) for channel and drainage system maintenance.	Under Evaluation
5.1.1	Emergency Services	Disaster Warning	Upgrade the County's alerting system by adopting ALERT-FM as the method of choice	Ongoing
5.1.1.a	Emergency Services	Disaster Warning	Promote acceptability and operability of the new alerting system.	Ongoing

**Washington County, Alabama Hazard Mitigation Plan
Section VI. Mitigation Program**

Table 6.1 Mitigation Measures				
Mitigation Measure#	Goal	Program Objective	Mitigation Measure	Status
5.2.1	Emergency Services	Weather Radios	Support efforts to distribute weather radios to low-income households. ⁵	Ongoing
5.2.2	Emergency Services	Weather Radios	Promote the use of weather radios in households and businesses.	Ongoing
6.1.1	Structural Projects	Drainage System Maintenance	Prepare and implement standard operating procedures for drainage system maintenance.	Under Evaluation

6.2 Overview of Selection of Mitigation Measures

In the selection of mitigation strategies, each jurisdiction was reminded to consider the following: consistency with goals and objectives, funding options, political support, public support, public safety, education, legality, preservation of the environment, reduction of risk to new and existing infrastructure/buildings, and staff capability. Only strategies that jurisdictions felt were feasible with regards to these standards were selected.

All participants were reminded to consider the reduction of the effects of hazards on new and existing infrastructure/buildings, a number of strategies identified in the plan directly addresses this requirement (FEMA requirement §201.6 (c)(3)(ii)). These strategies include:

- retrofitting facilities to increase wind resistance (all jurisdictions)
- drainage and storm water management projects to protect existing infrastructure from flooding (all jurisdictions)
- enforcement of zoning ordinances to ensure no new development occurs in hazard prone areas (all jurisdictions)
- enforcement of flood ordinances to ensure no development occurs in flood prone areas(all jurisdictions)

6.3 Cost-Benefit Review, Status, and Priority of Selected Measures

Once strategies were selected they were analyzed in terms of costs and benefits. A cost/benefit classification of Low, Moderate, or High was assigned to each action. These classifications are defined below:

- Low (L): Benefits: Projects benefitting only a small percentage of the population, or provides short-term benefits. Costs: Projects likely to cost over \$100,000 that require additional funding and/or staffing and are complicated to implement.
- Moderate (M): Benefits: Projects that would benefit a larger percentage (over 30%) in the jurisdiction, or alleviates the problem for several years. Costs: These projects that may need additional funding or staffing outside of normal operations, with estimated costs between \$10,000 and \$100,000.
- High (H): Benefits: Projects that benefit over 50% of the population and are long-term solutions. Costs: projects that can be implemented by existing personnel

Strategies were also assigned a status and priority. The status of a measure is self-explanatory and the following categories are used:

Status

Complete- Action has been completed

Partially Complete- A percentage of the project has been completed

Active- Project is underway

Planned- Project is planned, but contingent on available funding

The priority ranking of each measures relates to the importance of the measure. The Planning Committee prioritized the available mitigation measures and projects according to the following principal criteria:

1. Economic Considerations:

- *Availability of funds.*
- *Benefits to be derived from the proposed measure.*
- *Costs.*
- *Economic feasibility.*
- *Impact on local economy.*
- *Economic development goals.*

2. Social Considerations:

- *Environmental justice.*
- *Neighborhood impact.*
- *Community support.*
- *Impact on social and cultural resources.*

3. Environmental Considerations:

- *National Environmental Policy Act (NEPA).*
- *State and local environmental regulations.*
- *Environmental conservation goals.*

4. Administrative, Legal, and Political Considerations:

- *Staffing.*
- *Maintenance.*
- *Timing.*
- *Legal authority.*
- *Political support.*

5. Technical Considerations:

- *Technical feasibility*

The following categories were used to classify priority:

Priority

Low (L) - Actions classified as needed (5-7 year timeframe)

Medium (M) - Actions classified as important (3-5 year timeframe)

High (H) - Actions classified as most important (1-3 year timeframe)

All strategies are to be considered only possibilities at this point. These actions must be considered only possibilities due to budgetary and political concerns.

6.4 Mitigation Measures by Participant

The following tables present the five-year mitigation action programs for each participating community and a listing of proposed priority projects to be considered for funding over the five-year planning cycle by FEMA grant programs. The mitigation action program of each jurisdiction assigns priority for implementation of each measure, lead responsibility for implementation, and the time frame for implementation. For each mitigation measure, the program goal, program objectives, hazard(s) addressed, and the possible funding sources for all measures are also noted in the tables. The overall intent of these mitigation action programs and priority projects is to reduce the effects of each hazard, with a special emphasis on new and existing buildings and infrastructure.

**Washington County, Alabama Hazard Mitigation Plan
Section VI. Mitigation Program**

Table 6.2 Washington County Mitigation Action Program

Note: Mitigation Measures shown in italics are countywide actions that apply to all jurisdictions and are coordinated through the EMA.

Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Status	Possible Funding Source	Cost-Benefit
1.1.2	Prevention	Flood Plain Management Regulations	High	Washington County	Flooding	Active	Local	High
1.1.3	Prevention	Flood Plain Management Regulations	High	Washington County	Flooding	Active	Local	High
<i>1.3.1</i>	<i>Prevention</i>	<i>Community Shelters and Safe Rooms</i>	<i>High</i>	<i>Mayors, Commission Chair</i>	<i>Tornado, Severe Storms, Hurricanes</i>	<i>Active</i>	<i>Local, PDM, HMGP</i>	<i>High</i>
<i>1.3.2</i>	<i>Prevention</i>	<i>Community Shelters and Safe Rooms</i>	<i>Low</i>	<i>Mayors, Commission Chair, School Board</i>	<i>Tornado, Severe Storms, Hurricanes</i>	<i>Active</i>	<i>Local, CDBG, HMGP, PDM, ALDOE</i>	<i>Low</i>
<i>1.3.3</i>	<i>Prevention</i>	<i>Community Shelters and Safe Rooms</i>	<i>High</i>	Washington County	<i>Tornado, Severe Storms, Hurricanes</i>	<i>Active</i>	<i>Local, PDM, HMGP</i>	<i>High</i>
<i>1.3.4</i>	<i>Prevention</i>	<i>Community Shelters and Safe Rooms</i>	<i>High</i>	Washington County	<i>Tornado, Severe Storms, Hurricanes</i>	<i>Active</i>	<i>Local, PDM, HMGP</i>	<i>High</i>
<i>1.4.1</i>	<i>Prevention</i>	<i>Detailed Plans and Targeted Studies</i>	<i>Low</i>	Washington County	<i>Flooding</i>	<i>Planned</i>	<i>HMGP, PDM, FMA, Local</i>	<i>Moderate</i>
<i>2.1.1</i>	<i>Property Protection</i>	<i>Building Retrofits</i>	<i>Low</i>	Washington County	<i>Flooding</i>	<i>Planned</i>	<i>CDBG, FEMA, Local</i>	<i>Low</i>
2.2.1	Property Protection	Insurance	High	Washington County	Flooding	Active	Local	High
3.1.1	Public Education and Outreach	Map Information	Low	Washington County	ALL	Active	Local	High

Table 6.2 Washington County Mitigation Action Program

Note: Mitigation Measures shown in italics are countywide actions that apply to all jurisdictions and are coordinated through the EMA.

Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Status	Possible Funding Source	Cost-Benefit
<i>3.2.1</i>	<i>Public Education and Outreach</i>	<i>Outreach Projects</i>	<i>High</i>	Washington County	<i>ALL</i>	<i>Active</i>	<i>Local</i>	<i>High</i>
<i>3.3.1</i>	<i>Public Education and Outreach</i>	<i>Library</i>	<i>High</i>	Washington County	<i>ALL</i>	<i>Active</i>	<i>Local</i>	<i>High</i>
<i>3.4.1</i>	<i>Public Education and Outreach</i>	<i>Environmental Education</i>	<i>High</i>	Washington County	<i>ALL</i>	<i>Active</i>	<i>Local</i>	<i>High</i>
<i>4.1.1</i>	<i>Natural Resources Protection</i>	<i>Urban Forestry Programs</i>	<i>Low</i>	Washington County	<i>ALL</i>	<i>Planned</i>	<i>Local</i>	<i>High</i>
<i>5.1.1</i>	<i>Emergency Services</i>	<i>Disaster Warning</i>	<i>High</i>	Washington County	<i>ALL</i>	<i>Active</i>	<i>Local/ Foundation Grants</i>	<i>High</i>
<i>5.2.1</i>	<i>Emergency Services</i>	<i>Weather Radios</i>	<i>High</i>	Washington County	<i>ALL</i>	<i>Active</i>	<i>Local/ Foundation Grants</i>	<i>High</i>
<i>5.2.2</i>	<i>Emergency Services</i>	<i>Weather Radios</i>	<i>High</i>	Washington County	<i>ALL</i>	<i>Active</i>	<i>Local/ Foundation Grants</i>	<i>High</i>
<i>6.1.1</i>	<i>Structural Projects</i>	<i>Drainage System Maintenance</i>	<i>Low</i>	<i>Mayors, County Commission</i>	<i>Flooding</i>	<i>Planned</i>	<i>Local, PDM, HMGP</i>	<i>High</i>

Table 6.3 Chatom Mitigation Action Program

Note: Mitigation Measures shown in italics are countywide actions that apply to all jurisdictions and are coordinated through the EMA.

Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Timeline	Possible Funding Source	Cost-Benefit
1.1.1	Prevention	Flood Plain Management Regulations	High	Town of Chatom	Flooding	Active	Local	High
1.2.1	Prevention	Building and Technical Codes	High	Town of Chatom	ALL	Active	Local	High
<i>1.3.1</i>	<i>Prevention</i>	<i>Community Shelters and Safe Rooms</i>	<i>High</i>	Town of Chatom	<i>Tornado, Severe Storms, Hurricanes</i>	<i>Active</i>	<i>Local, PDM, HMGP</i>	<i>High</i>
<i>1.3.3</i>	<i>Prevention</i>	<i>Community Shelters and Safe Rooms</i>	<i>High</i>	Town of Chatom	<i>Tornado, Severe Storms, Hurricanes</i>	<i>Active</i>	<i>Local, PDM, HMGP</i>	<i>Low</i>
<i>1.3.4</i>	<i>Prevention</i>	<i>Community Shelters and Safe Rooms</i>	<i>High</i>	Town of Chatom	<i>Tornado, Severe Storms, Hurricanes</i>	<i>Active</i>	<i>Local, PDM, HMGP, FMA</i>	<i>High</i>
<i>1.4.1</i>	<i>Prevention</i>	<i>Detailed Plans and Targeted Studies</i>	<i>Low</i>	Town of Chatom	<i>Flooding</i>	<i>Active</i>	<i>Local, PDM, HMGP, FMA</i>	<i>Moderate</i>
<i>2.1.1</i>	<i>Property Protection</i>	<i>Building Retrofits</i>	<i>Low</i>	Town of Chatom	<i>Flooding</i>	<i>Active</i>	<i>CDBG, FEMA</i>	<i>Low</i>
2.2.1	Property Protection	Insurance	High	Town of Chatom	<i>Flooding</i>	Active	<i>Local, PDM, HMGP</i>	<i>High</i>
3.1.1	Public Education and Outreach	Map Information	Low	Town of Chatom	<i>Flooding</i>	Active	<i>Local, PDM, HMGP</i>	<i>High</i>
<i>3.2.1</i>	<i>Public Education and Outreach</i>	<i>Outreach Projects</i>	<i>High</i>	Town of Chatom	<i>ALL</i>	<i>Active</i>	<i>Local, PDM, HMGP</i>	<i>High</i>

Table 6.3 Chatom Mitigation Action Program

Note: Mitigation Measures shown in italics are countywide actions that apply to all jurisdictions and are coordinated through the EMA.

Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Timeline	Possible Funding Source	Cost-Benefit
<i>3.3.1</i>	<i>Public Education and Outreach</i>	<i>Library</i>	<i>High</i>	Town of Chatom	<i>ALL</i>	<i>Active</i>	<i>Local, PDM, HMGP</i>	<i>High</i>
<i>3.4.1</i>	<i>Public Education and Outreach</i>	<i>Environmental Education</i>	<i>High</i>	Town of Chatom	<i>ALL</i>	<i>Active</i>	<i>Local, PDM, HMGP</i>	<i>High</i>
<i>4.1.1</i>	<i>Natural Resources Protection</i>	<i>Urban Forestry Programs</i>	<i>Low</i>	Town of Chatom	<i>ALL</i>	<i>Active</i>	<i>Local/Alabama Forestry Commission</i>	<i>High</i>
<i>5.2.1</i>	<i>Emergency Services</i>	<i>Weather Radios</i>	<i>High</i>	Town of Chatom	<i>ALL</i>	<i>Planned</i>	<i>Local, PDM, HMGP</i>	<i>High</i>
<i>6.1.1</i>	<i>Structural Projects</i>	<i>Drainage System Maintenance</i>	<i>Low</i>	Town of Chatom	<i>FL</i>	<i>Active</i>	<i>Local, PDM, HMGP</i>	<i>High</i>

Table 6.4 McIntosh Mitigation Action Program

Note: Mitigation Measures shown in italics are countywide actions that apply to all jurisdictions and are coordinated through the EMA.

Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Timeline	Possible Funding Source	Cost-Benefit
<i>1.2.1</i>	<i>Prevention</i>	<i>Building and Technical Codes</i>	<i>High</i>	Town of McIntosh	<i>ALL</i>	<i>Active</i>	<i>Local</i>	<i>High</i>
<i>1.3.1</i>	<i>Prevention</i>	<i>Community Shelters and Safe Rooms</i>	<i>High</i>	Town of McIntosh	<i>Tornado, Severe Storms, Hurricanes</i>	<i>Active</i>	<i>Local, PDM, HMGP, CDBG</i>	<i>High</i>

Table 6.4 McIntosh Mitigation Action Program

Note: Mitigation Measures shown in italics are countywide actions that apply to all jurisdictions and are coordinated through the EMA.

Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Timeline	Possible Funding Source	Cost-Benefit
<i>1.3.3</i>	<i>Prevention</i>	<i>Community Shelters and Safe Rooms</i>	<i>High</i>	Town of McIntosh	<i>Tornado, Severe Storms, Hurricanes</i>	<i>Active</i>	<i>Local, PDM, HMGP, CDBG</i>	<i>Low</i>
<i>1.3.4</i>	<i>Prevention</i>	<i>Community Shelters and Safe Rooms</i>	<i>High</i>	Town of McIntosh	<i>Tornado, Severe Storms, Hurricanes</i>	<i>Active</i>	<i>Local, PDM, HMGP, CDBG</i>	<i>High</i>
<i>1.4.1</i>	<i>Prevention</i>	<i>Detailed Plans and Targeted Studies</i>	<i>Low</i>	Town of McIntosh	<i>Flooding</i>	<i>Active</i>	<i>Local, PDM, HMGP, FMA</i>	<i>Moderate</i>
<i>2.1.1</i>	<i>Property Protection</i>	<i>Building Retrofits</i>	<i>Low</i>	Town of McIntosh	<i>Flooding</i>	<i>Active</i>	<i>CDBG, FEMA</i>	<i>Low</i>
<i>3.2.1</i>	<i>Public Education and Outreach</i>	<i>Outreach Projects</i>	<i>High</i>	Town of McIntosh	<i>ALL</i>	<i>Active</i>	<i>Local, PDM, HMGP, FMA</i>	<i>High</i>
<i>3.3.1</i>	<i>Public Education and Outreach</i>	<i>Library</i>	<i>High</i>	Town of McIntosh	<i>ALL</i>	<i>Active</i>	<i>Local, PDM, HMGP, FMA</i>	<i>High</i>
<i>3.4.1</i>	<i>Public Education and Outreach</i>	<i>Environmental Education</i>	<i>High</i>	Town of McIntosh	<i>ALL</i>	<i>Active</i>	<i>Local, PDM, HMGP, FMA</i>	<i>High</i>
<i>4.1.1</i>	<i>Natural Resources Protection</i>	<i>Urban Forestry Programs</i>	<i>Low</i>	Town of McIntosh	<i>ALL</i>	<i>Active</i>	<i>Local/Alabama Forestry Commission</i>	<i>High</i>
<i>5.2.1</i>	<i>Emergency Services</i>	<i>Weather Radios</i>	<i>High</i>	Town of McIntosh	<i>ALL</i>	<i>Active</i>	<i>Local, PDM, HMGP, FMA</i>	<i>High</i>
<i>6.1.1</i>	<i>Structural Projects</i>	<i>Drainage System Maintenance</i>	<i>Low</i>	Town of McIntosh	<i>Flooding</i>	<i>Active</i>	<i>Local, PDM, HMGP, FMA, CDBG</i>	<i>High</i>

Table 6.5 Millry Mitigation Action Program

Note: Mitigation Measures shown in italics are countywide actions that apply to all jurisdictions and are coordinated through the EMA.

Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Timeline	Possible Funding Source	Cost-Benefit
1.1.1	Prevention	Flood Plain Management Regulations	High	Town of Millry	Flooding	Active	Local	High
<i>1.3.1</i>	<i>Prevention</i>	<i>Community Shelters and Safe Rooms</i>	<i>High</i>	Town of Millry	<i>Tornado, Severe Storms, Hurricanes</i>	<i>Active</i>	<i>Local, PDM, HMGP</i>	<i>High</i>
<i>1.3.3</i>	<i>Prevention</i>	<i>Community Shelters and Safe Rooms</i>	<i>High</i>	Town of Millry	<i>Tornado, Severe Storms, Hurricanes</i>	<i>Active</i>	<i>Local, PDM, HMGP</i>	<i>Low</i>
<i>1.3.4</i>	<i>Prevention</i>	<i>Community Shelters and Safe Rooms</i>	<i>High</i>	Town of Millry	<i>Tornado, Severe Storms, Hurricanes</i>	<i>Active</i>	<i>Local, PDM, HMGP</i>	<i>High</i>
<i>1.4.1</i>	<i>Prevention</i>	<i>Detailed Plans and Targeted Studies</i>	<i>Low</i>	Town of Millry	Flooding	<i>Planned</i>	<i>Local, PDM, HMGP, FMA</i>	<i>Moderate</i>
<i>2.1.1</i>	<i>Property Protection</i>	<i>Building Retrofits</i>	<i>Low</i>	Town of Millry	Flooding	<i>Planned</i>	<i>CDBG, FEMA</i>	<i>Low</i>
<i>3.2.1</i>	<i>Public Education and Outreach</i>	<i>Outreach Projects</i>	<i>High</i>	Town of Millry	<i>ALL</i>	<i>Active</i>	<i>Local, PDM, HMGP, FMA</i>	<i>High</i>
<i>3.3.1</i>	<i>Public Education and Outreach</i>	<i>Library</i>	<i>High</i>	Town of Millry	<i>ALL</i>	<i>Active</i>	<i>Local, PDM, HMGP, FMA</i>	<i>High</i>
<i>3.4.1</i>	<i>Public Education and Outreach</i>	<i>Environmental Education</i>	<i>High</i>	Town of Millry	<i>ALL</i>	<i>Active</i>	<i>Local, PDM, HMGP, FMA</i>	<i>High</i>
<i>4.1.1</i>	<i>Natural Resources Protection</i>	<i>Urban Forestry Programs</i>	<i>Low</i>	Town of Millry	<i>ALL</i>	<i>Planned</i>	<i>Local/Alabama Forestry Commission</i>	<i>High</i>

Table 6.5 Millry Mitigation Action Program

Note: Mitigation Measures shown in italics are countywide actions that apply to all jurisdictions and are coordinated through the EMA.

Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Timeline	Possible Funding Source	Cost-Benefit
<i>5.2.1</i>	<i>Emergency Services</i>	<i>Weather Radios</i>	<i>High</i>	Town of Millry	<i>ALL</i>	<i>Active</i>	<i>Local, PDM, HMGP, FMA</i>	<i>High</i>
<i>5.2.2</i>	<i>Emergency Services</i>	<i>Weather Radios</i>	<i>High</i>	Town of Millry	<i>ALL</i>	<i>Active</i>	<i>Local, PDM, HMGP, FMA</i>	<i>High</i>
<i>6.1.1</i>	<i>Structural Projects</i>	<i>Drainage System Maintenance</i>	<i>Low</i>	Town of Millry	<i>Flooding</i>	<i>Planned</i>	<i>Local, PDM, HMGP, FMA, CDBG</i>	<i>High</i>

Table 6.6 Washington County School System Mitigation Action Program

Note: Mitigation Measures shown in italics are countywide actions that apply to all jurisdictions and are coordinated through the EMA.

Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Timeline	Possible Funding Source	Cost-Benefit
1.3.2	Prevention	Provide storm shelters at all county schools	Low	Washington County Schools	Flooding	Planned	HMGP/ALSDE Funds/ Local Funds	Low
1.3.2	Prevention	Purchase generators for each school	Low	Washington County Schools	Tornado, Severe Storms, Hurricanes	Planned	HMGP/ALSDE Funds/ Local Funds	Low
1.3.2	Prevention	Retrofitting of schools	Low	Washington County Schools	Tornado, Severe Storms, Hurricanes	Planned	HMGP/ALSDE Funds/ Local Funds	Low
3.4.1	Public Education and Outreach	Train all staff in hazard safety	High	Washington County Schools	ALL	Active	HMGP/ALSDE Funds/ Local Funds	High
3.4.1	Public Education and Outreach	Provide hazard information to students	High	Washington County Schools	ALL	Active	HMGP/ALSDE Funds/ Local Funds	High
5.1.1	Emergency Services	Install security surveillance and other notification technologies at all schools	Low	Washington County Schools	ALL	Planned	HMGP/ALSDE Funds/ Local Funds	Moderate
6.1.1	Structural Projects	Correct storm water/drainage issues on school campuses	Low	Washington County Schools	Flooding	Planned	HMGP/ALSDE Funds/ Local Funds	Low

Summary of Changes Made in Plan Update Section VII. Plan Maintenance

Plan Maintenance: The Incorporation into Existing Planning Mechanisms section is provided to outline information by jurisdiction.

VII. Plan Maintenance

The planning cycle for the Washington County, Alabama Hazard Mitigation Plan is five years. The Natural Hazards Steering Committee determined this planning cycle based on FEMA's guidelines. If FEMA changes their guidelines, the county's guidelines will be adjusted accordingly. In addition the plan maintenance section was compiled using suggestions from the Hazard Mitigation Planning Committee.

7.1 Hazard Mitigation Planning Committee Structures

The structure of the committee will be kept as they were for the development of this plan. The Hazard Mitigation Planning Committee will be appointed by position. The following is the list of agencies or positions that will be requested to serve on the committee. These individuals may also appoint someone to serve on their behalf.

- ✓ Washington EMA, EMA Director- Committee Chair
- ✓ Washington County Board of Education, Superintendent
- ✓ Town of Chatom, Mayor
- ✓ Town of McIntosh, Mayor
- ✓ Town of Millry, Mayor
- ✓ Washington County Sheriff's Department, Sheriff
- ✓ Washington County Road and Bridge, Engineer
- ✓ Washington County Commission, Commissioners
- ✓ Washington County Health Department, Director
- ✓ Alabama Forestry- Washington County, Forester

7.2 Monitoring and Evaluation of the Plan

The county has not followed the Mitigation Plan review process outlined in the 2010 plan, the EMA has underwent a number of staff changes. The EMA Director did review the plan on an annual basis, but it was not reviewed by the Hazard Mitigation Planning Committee annually. The plan was also reviewed by the EMA Director after the county was included in a disaster declaration in 2011 (April tornado outbreak). The plan was found to be sufficient after this event.

The County has decided to keep the annual review process adopted during the last update. The Hazard Mitigation Planning Committee (HMPC) will oversee plan maintenance during the five-year framework of the Action Plan. The Washington County EMA Director will serve as the committee's facilitator, responsible for holding meetings as often as needed, assigning specific tasks necessary to monitor and update the plan to committee members, and serving as the committee's liaison with those assigned implementation responsibilities in the Action Plan. The facilitator will also serve as the committee's liaison with participating municipalities and the Washington County Commission. Any resident may request appointment to the committee through the EMA office or a committee member. New members may be nominated by any committee member and then approved by the committee.

After the initial plan is finalized and adopted, the committee will meet once per year to perform the following activities:

- Evaluate the effectiveness of previously-implemented mitigation actions;
- Explain why any actions are not completed or behind schedule;
- Address changing land use patterns and new developments; and,
- Identify any changes in risk assessment and/or risk vulnerability.

The EMA Director will schedule the annual meeting at a time and location convenient to all committee members. All annual meetings will be advertised in the local newspaper and open to the public.

7.3 Updating the Plan

The Washington County Natural Hazards Mitigation Plan will be updated every five years as required by FEMA. The EMA director will begin making arrangements for the plan's update eighteen months before expiration. The process of updating the plan will be undertaken in the same way as the development of this update. The Hazard Mitigation Planning Committee will reconvene for the plan update.

The public participation component will be modified to encourage more participation. At least two public meetings will be held to involve the public in the update process. These meetings will be advertised in the county newspaper. The EMA will also identify local citizen groups such as senior centers, civic groups, and neighborhood associations to which hazard mitigation presentations can be made. Survey Monkey or an equivalent online survey website will be used to gather public opinion on hazard issues.

Special attention will be given to encouraging neighboring counties' EMA offices (Clarke, Mobile, Choctaw, Green (MS), Wayne (MS)) to participate. EMA will contact them directly to solicit their participation. The county will also consult with the following agencies during the plan formation stage: Alabama Department of Transportation (ALDOT), Alabama Department of Environmental Management (ADEM), Alabama Historical Commission (AHC), US Army Corps of Engineers (USACE), US Fish and Wildlife (USFW), National Resource Conservation Service (NRCS), public utilities, institutions of higher education, large employers in the county, community service programs, American Red Cross, and local chambers of commerce. Included in the public utilities group will be invitations to each private water system in the county. These systems are not eligible applicants for FEMA funding and did not participate in this planning process. During the next update they will be encouraged to participate, so the county may apply on their behalf.

Drafts of the updated plan will be available for public comment. Once comments are received and incorporated when necessary, the plan will be submitted to AEMA and FEMA for review.

7.4 Incorporation into Existing Planning Mechanisms

The Washington County, Alabama Hazard Mitigation Plan will be incorporated into existing planning mechanisms in all participating jurisdictions.

Washington County Commission: No formal planning is in place for unincorporated areas in Washington County. If the county undertakes any planning effort, such as a comprehensive plan, mitigation goals and objectives will be reflected. No strategies will be included that would hinder the natural hazard mitigation goals and objectives.

Town of Chatom: The Town of Chatom will consider hazard mitigation while considering adjustments to zoning ordinances. No ordinances will be modified in such a way that mitigation efforts will be hindered. Hazard mitigation goals, objectives, and strategies will be reviewed and incorporated in the event the town undertakes a comprehensive planning process.

Town of McIntosh: The Town of McIntosh will consider hazard mitigation while considering adjustments to zoning ordinances. No ordinances will be modified in such a way that mitigation efforts will be hindered. Hazard mitigation goals, objectives, and strategies will be reviewed and incorporated in the event the town undertakes a comprehensive planning process.

Town of Millry: The Town of Millry will consider hazard mitigation if it decides to adopt a zoning ordinance. Hazard mitigation goals, objectives, and strategies will be reviewed and incorporated in the event the city develops a comprehensive plan.

7.5 Continued Public Involvement

In the event revisions that affect all jurisdictions are deemed necessary to the plan, the Hazard Mitigation Planning Committee will convene to approve all amendments/revisions. The public will also be encouraged to attend these meetings to provide input.

All jurisdictions and the EMA will encourage public participation in mitigation planning by emphasizing its purpose and importance during weather related events such as Severe Weather Awareness Week, Hurricane Preparedness Week, Summer Weather Safety Week, and Winter Weather Awareness Week.

Hard copies of the plan will be available to the public by submitting a request to the EMA. A copy of the plan will be on file at the EMA office and available for review. Copies of the plan will also be available in each jurisdiction. The plan will be available for download online. Information regarding where to send comments on the plan is provided inside of the front cover of the document. The EMA will be responsible for keeping a file of all comments received. All comments will be considered annually during the review of the plan. No public comments have been received to be integrated into this update.

APPENDIX 1

Danny Walker

Washington County School System
Possible Mitigation Goals, Objectives, Strategies

Goals

- ❖ Provide better warning system to students.
- ❖ Minimize the loss of life and injury to students.
- ❖ Ensure continuity of education system.
- ❖ Ensure safety of campuses from hazards.
- ❖ Minimize vulnerability to natural hazards.

Other goals:

Objectives

- ❖ Get weather sirens at schools.
- ❖ Storm shelters at schools.
- ❖ Retrofit school buildings.
- ❖ Correct drainage/storm water management issues on campuses.

Other Objectives:

Strategies

Mitigation Action	Hazard Addressed	Funding Source
Provide storm shelters at all county schools	All	HMGP/ALSDE Funds/Local Funds
Purchase generators for each school	All	HMGP/ALSDE Funds/Local Funds
Retrofitting of schools	Tornadoes, Severe Storms	HMGP/ALSDE Funds/Local Funds
Tornado Sirens	Tornadoes	HMGP/Local Funds
Correct storm water/ drainage issues on school campuses	Flooding	HMGP/ALSDE Funds/Local Funds
Train all staff in hazard safety	All	Local Funds
Install security surveillance and other notification technologies at all schools	All	ALSDE Funds/Local Funds
Provide hazard information to students	All	Local Funds

Other Strategies:

Washington County School System Critical facilities:

Examples: schools, bus shop, central office, etc...

Facility Name	Value Building	Contents
Chatom Elementary K-4	\$ 6,258,000.00	\$ 2,166,152.00
Fruitdale High School K-12	\$ 9,933,854.00	\$ 2,528,896.00
Leroy High School K-12	\$ 12,472,379.00	\$ 3,440,639.00
McIntosh Elementary K-5	\$ 5,894,127.00	\$ 1,621,429.00
McIntosh High School 6-12	\$ 9,287,687.00	\$ 3,109,613.00
Millry High School K-12	\$ 14,327,488.00	\$ 3,266,145.00
Washington County High School 5-12	\$ 18,928,694.00	\$ 5,645,071.00
Washington County Career Technical Center	\$ 3,007,604.00	\$ 1,035,495.00
Washington County Bus Barn	\$ 392,222.00	\$ 136,051.00
Washington County School Bus Fleet 56 @ 84,000 per bus	\$ 4,704,000.00	
Lighting and Athletic Fields	\$ 2,273,878.00	\$ 100,000.00
Band and Athletic Trailers		\$ 150,000.00
TOTALS	\$ 87,479,933.00	\$ 23,199,491.00

6.3 Mitigation Action Programs.

(See key to abbreviations at end of chapter).

Table 6-2. Washington County Mitigation Action Program

Note: Mitigation Measures shown in italics are countywide actions that apply to all jurisdictions and are coordinated through the EMA.

WASHINGTON COUNTY MITIGATION ACTION PROGRAM									
Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Timeline	Possible Funding Source		
1.1.2	Prevention	Flood Plain Management Regulations	High	Commission Chair	FL	Ongoing	EXIST	Yes	
1.1.3	Prevention	Flood Plain Management Regulations	High	CE	FL	Ongoing	EXIST		
1.3.1	Prevention	Community Shelters and Safe Rooms	High	Mayors, Commission Chair	TO, SS, HU	Ongoing	TBD	NO SAFE ROOMS	COMMUNITY SHELTERS
1.3.2	Prevention	Community Shelters and Safe Rooms	Low	Mayors, Commission Chair, School Board	TO, SS, HU	Ongoing	TBD		
1.3.3	Prevention	Community Shelters and Safe Rooms	High	EMA / ARC	TO, SS, HU	Ongoing	TBD		
1.3.4	Prevention	Community Shelters and Safe Rooms	High	EMA / ARC	TO, SS, HU	Ongoing	EXIST		
1.4.1	Prevention	Detailed Plans and Targeted Studies	Low	CE	FL	After 2008			FEMA Map Modernization Program (Countywide) Yes
2.1.1	Property Protection	Building Retrofits	Low	CE/FP, EMA	FL	After 2008	CDBG, FEMA		NO

WASHINGTON COUNTY MITIGATION ACTION PROGRAM

Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Timeline	Possible Funding Source
2.2.1	Property Protection	Insurance	High	CE/PPM, EMA	FL	Ongoing	EXIST
3.1.1	Public Education and Outreach	Map Information	Low	CE/PPM, EMA	FL	Ongoing	EXIST
3.2.1	Public Education and Outreach	Outreach Projects	High	EMA / ARC	ALL	Ongoing	TBD
3.3.1 ¹	Public Education and Outreach	Library	High	EMA / ARC	ALL	Ongoing	EXIST
3.4.1	Public Education and Outreach	Environmental Education	High	EMA	ALL	Ongoing	EXIST
4.1.1	Natural Resources Protection	Urban Forestry Programs	Low	CE	ALL	After 2008	TBD
5.1.1 ²	Emergency Services	Disaster Warning	High	EMA	ALL	Ongoing	TBD
5.2.1 ³	Emergency Services	Weather Radios	High	EMA	ALL	Ongoing	TBD
5.2.2	Emergency Services	Weather Radios	High	EMA	ALL	Ongoing	TBD
6.1.1	Structural Projects	Drainage System Maintenance	Low	Mayors, County Commission, CE	FL	After 2008	EXIST

¹ Revised: now "ongoing"

² Revised Disaster Warning; 2007 to Ongoing; Funding Source TBD

³ Revised Weather Radios; Funding Source TBD

IDENTIFICATION OF CRITICAL FACILITIES

- A. A critical facility is critical to the health and welfare of the entire jurisdiction. They become essential in the event of a natural disaster. These facilities include police stations, fire stations, schools, and hospitals.
- B. Critical facilities are lifelines that provide the jurisdiction with necessities such as potable water.
- C. Critical facilities include the transportation corridors necessary to keep the jurisdiction connected.
- D. Critical facilities include those facilities that house persons with special needs (jails, nursing homes). They may also include locations where large groups often meet.
- E. Critical facilities include those in which potential losses, both human and economic, are high.

Facility Name:	Replacement Value
Police Department (Vehicles-10)	700,000 (150,000)
Fire Department (Building + 5 trucks)	274,000 Bldg → 275,000 Trucks
Town Hall	\$1,200,000
Meeting Hall	\$125,000
safe Room (In progress)	\$600,000
Street Department (Plus equip)	50,000
Library (Bldg + equipment)	\$326,193
Parks and Recreation	\$127,000

Town of McIntosh
P.O. Box 385
McIntosh, AL 36551

Table 6-4. McIntosh Mitigation Action Program

Note: Mitigation Measures shown in italics are countywide actions that apply to all jurisdictions and are coordinated through the EMA.

MCINTOSH MITIGATION ACTION PROGRAM						
Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s) Timeline	Possible Funding Source
1.2.1	Prevention	Building and Technical Codes	High	BO	ALL	Ongoing EXIST
1.3.1	Prevention	Community Shelters and Safe Rooms	High	Mayors, Commission Chair	TO, SS, HU	Ongoing TBD
1.3.2	Prevention	Community Shelters and Safe Rooms	Low	Mayors, Commission Chair, School Board	TO, SS, HU	Ongoing TBD
1.3.3	Prevention	Community Shelters and Safe Rooms	High	EMA / ARC	TO, SS, HU	Ongoing TBD
1.3.4	Prevention	Community Shelters and Safe Rooms	High	EMA / ARC	TO, SS, HU	Ongoing EXIST
1.4.1 ¹	Prevention	Detailed Plans and Targeted Studies	Low	CE/PPM	FL	Ongoing <i>FEMA Map Modernization Programs</i>
2.1.1 ²	Property Protection	Building Retrofits	Low	CE/PPM, EMA	FL	Ongoing CDBG, FEMA
3.2.1	Public Education and Outreach	Outreach Projects	High	EMA / ARC	ALL	Ongoing TBD

¹ Revised: now "ongoing"

² Revised: now "ongoing"

MCINTOSH MITIGATION ACTION PROGRAM

Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Timeline	Possible Funding Source
3.3.1 ³	Public Education and Outreach	Library	High	EMA/ARC	ALL	Ongoing ⁴	EXIST
3.4.1	Public Education and Outreach	Environmental Education	High	EMA	ALL	Ongoing	EXIST
4.1.1	Natural Resources Protection	Urban Forestry Programs	Low	CE	ALL	Ongoing ⁴	TBD
5.1.1	Emergency Services	Disaster Warning	High	EMA	ALL	2011	State Grant
5.2.1	Emergency Services	Weather Radios	High	EMA	ALL	Ongoing	Exist
5.2.2	Emergency Services	Weather Radios	High	EMA	ALL	Ongoing	TBD
6.1.1	Structural Projects	Drainage System Maintenance	Low	Waynes County Commission, CE	FL	Ongoing	EXIST

³ Revised: now "ongoing"

CHATOM

IDENTIFICATION OF CRITICAL FACILITIES

- A. A critical facility is critical to the health and welfare of the entire jurisdiction. They become essential in the event of a natural disaster. These facilities include police stations, fire stations, schools, and hospitals.
- B. Critical facilities are lifelines that provide the jurisdiction with necessities such as potable water.
- C. Critical facilities include the transportation corridors necessary to keep the jurisdiction connected.
- D. Critical facilities include those facilities that house persons with special needs (jails, nursing homes). They may also include locations where large groups often meet.
- E. Critical facilities include those in which potential losses, both human and economic, are high.

Facility Name	Replacement Value
Chatom Municipal Complex	\$620,336
Chatom Police Dept	
Chatom City Bldg	\$133,613
Chatom Comm (Center shelter)	\$843,586
Chatom Sewer Plant	\$2,098,775

Table 6-3. Chatham Mitigation Action Program

Note: Mitigation Measures shown in italics are countywide actions that apply to all jurisdictions and are coordinated through the EMA.

Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Timeline	Possible Funding Source	
1.1.1 ⁴	Prevention	Flood Plain Management Regulations	High	Mayor	FL	Ongoing	EXIST	BY DOCUMENT complete
1.1.2	Prevention	Flood Plain Management Regulations	High	CE/PPM, BO	FL	Ongoing	EXIST	complete
1.1.3	Prevention	Flood Plain Management Regulations	High	CE/PPM, BO	FL	Ongoing	EXIST	complete
1.2.1	Prevention	Building and Technical Codes	High	BO	ALL	Ongoing	EXIST	complete
1.3.1	Prevention	Community Shelters and Safe Rooms	High	Mayors, Commission Chair	TO, SS, HU	Ongoing	TBD	USED WITHIN
1.3.2	Prevention	Community Shelters and Safe Rooms	Low	Mayors, Commission Chair, School Board	TO, SS, HU	Ongoing	TBD	WITHIN
1.3.3	Prevention	Community Shelters and Safe Rooms	High	EMA / ARC	TO, SS, HU	Ongoing	TBD	WITHIN
1.3.4	Prevention	Community Shelters and Safe Rooms	High	EMA / ARC	TO, SS, HU	Ongoing	EXIST	WITHIN
1.4.1 ⁵	Prevention	Detailed Plans and Targeted Studies	Low	CE/PPM	FL	Ongoing		FEMA Map MODERNIZATION PROGRAM (COUNTYWIDE) UP TO DATE
2.1.1 ⁶	Property Protection	Building Retrofits	Low	CE/PPM, EMA	FL	Ongoing	CDBG, FEMA	AS NEEDED

⁴ Revised: now "ongoing"
⁵ Revised: now "ongoing"
⁶ Revised: now "ongoing"

CHATOM MITIGATION ACTION PROGRAM

Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Timeline	Possible Funding Source
2.2.1	Property Protection	Insurance	High	CE/FPM, EMA	FL	Ongoing	EXIST
3.1.1	Public Education and Outreach	Map Information	Low	CE/FPM, EMA	FL	Ongoing	EXIST
3.2.1	Public Education and Outreach	Outreach Projects	High	EMA / ARC	ALL	Ongoing	TBD
3.3.1 ⁷	Public Education and Outreach	Library	High	MAYOR / COUNCIL EMERGENCY	ALL	Ongoing	EXIST
3.4.1	Public Education and Outreach	Environmental Education	High	EMA	ALL	Ongoing	EXIST
4.1.1	Natural Resources Protection	Urban Forestry Programs	Low	CE	ALL	Ongoing	TBD
5.1.1 ⁸	Emergency Services	Disaster Warning	High	EMA	ALL	2011	TBD, ALEMA VIA MEDIA
5.2.1	Emergency Services	Weather Radios	High	EMA	ALL	Ongoing	TBD
6.1.1 ⁹	Structural Projects	Drainage System Maintenance	Low	Majors	FL	Ongoing	EXIST

⁷ Revised: now "ongoing";
⁸ 2007 now is 2011; funding source is both to be determined and ALEMA grant
⁹ Revised: now "ongoing"

Chief Chris Lammie
251-242-1243
cedmund508@gmail.com

Milky

IDENTIFICATION OF CRITICAL FACILITIES

- A. A critical facility is critical to the health and welfare of the entire jurisdiction. They become essential in the event of a natural disaster. These facilities include police stations, fire stations, schools, and hospitals.
- B. Critical facilities are lifelines that provide the jurisdiction with necessities such as potable water.
- C. Critical facilities include the transportation corridors necessary to keep the jurisdiction connected.
- D. Critical facilities include those facilities that house persons with special needs (jails, nursing homes). They may also include locations where large groups often meet.
- E. Critical facilities include those in which potential losses, both human and economic, are high.

Facility Name	Replacement Value
Milky Town Hall / Police Dept	\$ 254,616
Milky Vol Fire Dept.	\$ 143,222
Town of Milky Water & Sewer	\$ 1,122,173
Milky Pediatric Clinic	\$ 120,000 - Agreed Value
Town of Milky Brown House	\$ 125,000 Agreed Value
Town of Milky Garage	\$ 114,577

Table 6-5. Millry Mitigation Action Program

Note: Mitigation Measures shown in *italics> are countywide actions that apply to all jurisdictions and are coordinated through the EMA.*

MILLRY MITIGATION ACTION PROGRAM									
Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Timeline	Possible Funding Source		
1.1.1	Prevention	Flood Plain Management Regulations	High	Mayor	FL	2006	EXIST		Yes
1.3.1	Prevention	<i>Community Shelters and Safe Rooms</i>	High	<i>Mayors, Commission Chair</i>	TO, SS, HU	Ongoing	TBD		Yes
1.3.2	Prevention	<i>Community Shelters and Safe Rooms</i>	Low	<i>Mayors, Commission Chair, School Board</i>	TO, SS, HU	Ongoing	TBD		Yes
1.3.3	Prevention	<i>Community Shelters and Safe Rooms</i>	High	EMA / ARC	TO, SS, HU	Ongoing	TBD		
1.3.4	Prevention	<i>Community Shelters and Safe Rooms</i>	High	EMA / ARC	TO, SS, HU	Ongoing	EXIST		
1.4.1	Prevention	<i>Detailed Plans and Targeted Studies</i>	Low	CE/PPM	FL	After 2008		FEMA Map Modernization Program (Countywide)	UNKNOWN
2.1.1	Property Protection	<i>Building Retrofits</i>	Low	CE/PPM, EMA	FL	After 2008	CDBG, FEMA		NO
3.2.1	Public Education and Outreach	<i>Outreach Projects</i>	High	EMA / ARC	ALL	Ongoing	TBD		NO
3.3.1	Public Education and Outreach	<i>Library</i>	High	EMA / ARC	ALL	2005	EXIST		NO

MILITARY MITIGATION ACTION PROGRAM

Mitigation Measure #	Goal	Program Objective	Priority	Lead Responsibility	Hazard(s)	Timeline	Possible Funding Source
3.4.1	Public Education and Outreach	Environmental Education	High	EMA	ALL	Ongoing	EXIST NO
4.1.1	Natural Resources Protection	Urban Forestry Programs	Low	CE	ALL	After 2008	TBD UNKNOWN
5.1.1 ⁴	Emergency Services	Disaster Warning	High	EMA	ALL	Ongoing	Exist Yes
5.2.1 ⁵	Emergency Services	Weather Radios	High	EMA	ALL	Ongoing	Exist Yes
5.2.2	Emergency Services	Weather Radios	High	EMA	ALL	Ongoing	TBD
6.1.1	Structural Projects	Drainage System Maintenance	Low	Mayors, County Commission, CE	FL	After 2008	EXIST Yes

⁴ revised: now "ongoing"; revised funding source to "exist"
⁵ revised funding source to "exist"

