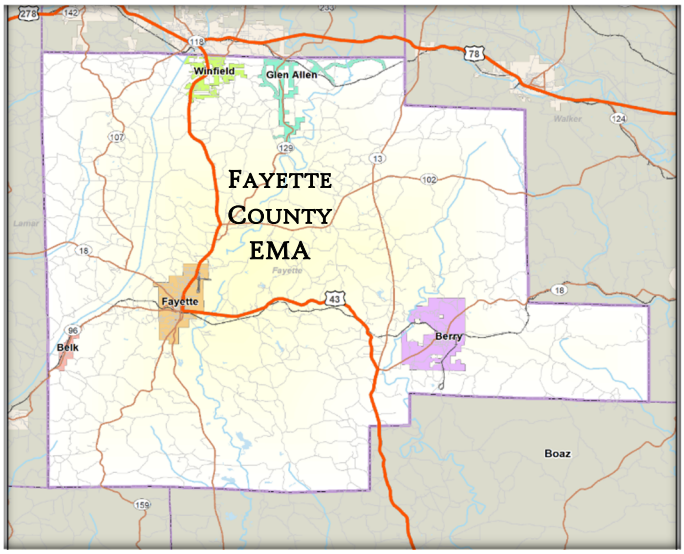
2020 Fayette County Multi-Hazard Mitigation Plan

Volume I – Comprehensive Plan



Belk, Berry, Fayette, Glen Allen,
and Unincorporated Fayette County

Prepared by the Fayette County EMA and
Hazard Mitigation Planning Committee
FEMA Approved: June 30, 2022

2020 Fayette County Multi-Hazard Mitigation Plan

Town of Belk, Town of Berry, City of Fayette,
Town of Glen Allen, and Fayette County, Alabama

Fayette County Hazard Mitigation Planning Committee

Russ Taylor, County EMA Director
Shannon Taylor, City of , Fire Chief
Robert Aldridge, Town of Glen Allen, Councilman
Amy Aldridge, County Fire Association Secretary
Doug Reynolds, Boley VFD, Fire Chief
Frank Seale, Medical Center, Manager of Quality and Security
Ronni Rena Brasher, Alabama Cooperative Extension System, County Director
Shelley Jones, Northwest Alabama Mental Health, Executive Director
Heather Collins, County Board of Education, Head Nurse
Jennifer Sanford, County High School, Assistant Principal
Josh Knight, County Engineer

Contact

Russ Taylor, Director
Fayette County EMA
103 1st Ave NW
Fayette, AL 35555
205-904-8276
rtaylor@fayetteco.net

The preparation and publication of this plan was funded in part by a FEMA grant under the Hazard Mitigation Grant Program awarded by the Alabama EMA to the Fayette County Commission.

Submission Date: December 17, 2021
Resubmission Date: May 31, 2022
Final Approval: June 30, 2022

Acknowledgments

Fayette County
Emergency Management Agency

Russ Taylor, Director

Planning Assistance by:

Celeste Boydston, CPB Design Solutions, LLC.
Candace Snipes, GIS and Hazus-MH Specialist

Contents

List of Maps

List of Tables

List of Charts

Volume II. Appendices

List of Maps

List of Tables

List of Charts

List of Figures

Volume III. Fayette County Community Action Programs

Executive Summary

I. Introduction

The 2020 Fayette County Multi-Hazard Mitigation Plan is the third update of the 2004 Fayette County Natural Hazard Mitigation Plan. This plan has served and continues to serve as a guide for all communities and agencies that have participated in the preparation of this plan through the Hazard Mitigation Planning Committee (HMPC). The HMPC was comprised of representatives of the unincorporated areas of Fayette County, representatives from the City of Fayette and the towns of Belk, Berry and Glen Allen. Also serving on the HMPC were representatives from the Fayette County Board of Education, Fayette County Fire Association, and area medical services. This plan update fulfills the requirements of the Federal Disaster Mitigation Act of 2000 (DMA 2000) as administered by the Alabama Emergency Management Agency (AEMA) and the Federal Emergency Management Agency (FEMA) Region IV.

II. Authority

In 2000 the Federal Government passed Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), 42 U. S.C. 5165 as amended by the Disaster Mitigation Act of 2000 (DMA) (P.L. 106-390), to encourage states, tribes, and local governments to undertake a risk-based approach to reducing risks to natural hazards through mitigation planning. Regulations were passed through 44 CFR Part 201 to assist in meeting the goals of the Stafford Act. These Federal regulations describe the requirement for a State Mitigation Plan as a condition of pre- and post-disaster assistance as well as the mitigation plan requirement for local and Tribal governments as a condition of receiving hazard mitigation assistance. 44 CFR 201.6(d)(3) requires that a local jurisdiction must review and revise its local plan to reflect any changes and resubmit it for approval within five years in order to remain eligible for mitigation grant funding.

FEMA oversees the hazard mitigation process for the Federal Government. It reviews all hazard mitigation plans for compliance with the federal requirements and provides feedback to the states and local governments. Through guides that have been produced by FEMA, those charged with complying with the federal regulations are equipped to fulfill the requirements set forth by the Federal Government. FEMA states that “Developing hazard mitigation plans help state, tribal and local governments to:

- Increase education and awareness on natural hazards and community vulnerabilities;
- Build partnerships with government, organizations, businesses, and the public to reduce risk;
- Identify long-term strategies for risk reduction with input from stakeholders and the public;
- Identify cost-effective mitigation actions that focus resources on the greatest risks areas;
- Integrate planning efforts and risk reduction with other community planning efforts;

- Align risk reduction with other state, tribal or community objectives; (and)
- Communicate priorities to potential funders."

This plan update sets out to achieve the objectives stated above.

III. Organization of the Plan

The 2020 Fayette County Multi-Hazard Mitigation Plan is organized similarly to the previous versions of the Fayette County hazard mitigation plan and parallels the 44 CFR Section 201.6 Federal requirements for a local mitigation plan, as interpreted by Local Mitigation Planning Handbook, FEMA, March 2013. Each chapter of the 2020 plan update references the requirements of 44 CFR Section 201.6 that it addresses and includes a summary the updates to the 2014 plan.

The plan is comprised of three volumes:

Volume I	*Comprehensive Plan*
	Executive Summary
Chapter 1	Introduction
Chapter 2	Prerequisites
Chapter 3	Community Profiles
Chapter 4	The Planning Process
Chapter 5	Risk Assessment
Chapter 6	Mitigation Strategy
Chapter 7	Plan Maintenance Process

Volume II	*Appendices*
A	Federal Requirements for Local Mitigation Plans
B	Community Mitigation Capabilities
C	2014 Plan Implementation Status
D	Hazard Ratings and Descriptions
E	Hazard Profile Data
F	Identification and Analysis of Mitigation Measures
G	Committee Meeting Documentation
H	Community Involvement Documentation
I	Multi-Jurisdictional Participation Activities
J	Adopting Resolution

Volume III *Community Action Programs*

III. Highlights of the Plan

This update to the 2014 Fayette County Multi-Hazard Mitigation Plan revaluates the risks that hazards pose to the jurisdictions of Fayette County. Through discussions and written exercises, the HMPC assisted in compiling the information presented in this plan. The strategies presented serve as possible solutions for local governments to employ in their ongoing efforts to reduce community vulnerabilities. The plan also presents findings of the evaluation of the 2014 mitigation strategy that shows the mitigation measures that worked, and those that did not. A number of strategies from the previous plan have been deleted because they were not feasible and new measures have been added based off the findings of this planning process.

This plan includes detailed descriptions of the hazards that affect Fayette County; each jurisdiction's vulnerability to the hazards; mitigation strategies that can be used to reduce or eliminate the risks posed by the hazards; the mitigation measures each jurisdiction chose to implement over the next 5 years; and how the HMPC plans to continue evaluate the progress of the plan over that same time period. This update added the hazard category pandemics and infectious diseases.

Volume I - Comprehensive Plan

Chapter 1. Introduction

Chapter 1 introduces the development of the plan update and lists the jurisdictions that participated in the planning process. It provides information about funding possibilities for the mitigation strategies presented in the plan and the eligibility requirements to qualify for FEMA hazard mitigation assistance grants. Summaries of previous editions of the Fayette County plans are included along with information about the organization of the 2020 plan.

Chapter 2. Prerequisites

Chapter 2 details the requirement of plan approval for eligibility of certain grants mentioned in Chapter 1. It lays out the steps that must be taken to qualify for FEMA funds and how the HMPC set out to meet those qualifications throughout the plan update process.

Chapter 3. Community Profiles

Chapter 3 provides information about the participating jurisdictions, painting a picture of each community so the reader can get a better understanding of the area that is impacted by the different hazards and the limitations faced by the communities. Included in this chapter for each community are geographic setting and history, government, physical features, climate, demographics, economy, utilities, media, and transportation. All of these play an important role in fulfilling the mitigation strategies chosen by the jurisdictions.

Chapter 4. The Planning Process

Chapter 4 details the planning process for this update including the makeup of the Hazard Mitigation Planning Committee. Due to the COVID-19 outbreak during the planning process, the

planning timetable was extended in an attempt to ensure the process could continue safely. Tentatively planned public participation events were cancelled. The public was still afforded opportunities through the plan website and their jurisdictional meetings to participate in the planning process.

The chapter describes opportunities for involvement in the planning process, how the plan was prepared and how the plan could be incorporated into other plans and documents. It also covers the plan review and update process.

Chapter 5. Risk Assessment

Chapter 5 covers the hazards that impact the communities and the vulnerability of the communities to the hazards listed. The chapter begins with risk assessments of the different hazards. This assessment includes a description of the hazards that occur or might occur within Fayette County. Included in the description are the location, extent and intensity of the hazard; previous hazard events; and the probability of future events. A listing of the hazards and the impacts they have on the jurisdictions is included to demonstrate jurisdictional differences.

The chapter then addresses the vulnerabilities of structures within the jurisdictions to the hazards from the risk assessment. The HMPC utilized Hazus-MH and other sources to analyze the economic impacts of the hazards on the communities using flooding and earthquake scenarios.

Chapter 6. Mitigation Strategy

Chapter 6 presents the mitigation strategies chosen by the HMPC and their evaluation process. It covers the goals and objectives set forth in previous plans and carried forward to this update. Those goals and objectives are aligned with FEMA's program categories as follows:

- Prevention. Adopting and administering ordinances, regulations, and programs that manage the development of land and buildings to minimize risks of loss due to hazards.
- Property Protection. Protecting structures as well as their occupants and contents from the damaging effects of natural, human-caused, and technological hazard occurrences, including retrofitting existing structures to increase their resistance to damage and to reduce exposure of occupants to harm; relocating vulnerable structures and occupants from hazard locations; and conversion of developed land to permanent open space through acquisition and demolition of existing structures.
- Education and Outreach. Educating and informing staff and the public about the risks of hazards and the techniques available to reduce threats to life and property.
- Natural Resources Protection. Preserving and restoring 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.
- Structural Projects. Engineering structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of a hazard on a community.

The chapter also presents the process for choosing the mitigation measures each jurisdiction would implement over the next five years. It discusses the jurisdictions' capabilities and the status of implementation of the 2014 mitigation strategy for each community. Through the evaluation of capabilities and the success or failure of the past mitigation strategies, the communities chose measures for this update. Chapter Six provides information on the prioritization of measures through the use of the STAPLEE evaluation method and includes a multi-jurisdictional table of all mitigation measures assigned to the different jurisdictions. The jurisdictions chose mitigation measures that were realistic in reaching each communities' goals.

Chapter 7. Plan Maintenance Process

Chapter 7 covers the process for maintaining the hazard mitigation plan. Once the plan has been adopted, it must be maintained until the next update. This section delineates the steps to be taken to monitor, evaluate and update the plan. Also included in the chapter are methods to incorporate the mitigation plan update into other planning mechanisms and steps to include participation of the public in the plan maintenance process. Forms for evaluating the plan and mitigation measures throughout the five-year time period have been included.

Volume II – Appendices

Volume II contains the Appendices. The appendices are most of the supporting documents for the plan update. Supporting documents that were not included in Volume II are available for review at the offices of the Fayette County EMA.

Appendix A - **Federal Requirements for Local Mitigation Plans** - 44 CFR Sec. 201.6 requirements for local mitigation plans.

Appendix B - Community Mitigation Capabilities - The results of the capabilities assessment for each jurisdiction conducted during the plan update.

Appendix C - 2014 Plan Implementation Status – The results of the evaluation of the implementation status of the mitigation measures for each jurisdiction from the 2014 plan update.

Appendix D - Hazard Ratings and Descriptions – The results of the hazard ratings exercise by the HMPC for identifying hazards for inclusion in the 2020 plan update. Descriptions of the hazards in the plan update are included in this appendix.

Appendix E - Hazard Profile Data - Records of hazard events that impacted Fayette County from the National Weather Service and the National Climatic Data Center.

Appendix F - Alternative Mitigation Measures - Lists of mitigation measures considered during the mitigation strategy selection process.

Appendix G - Committee Meeting Documentation – Documentation of the HMPC meetings during the planning process.

Appendix H - Community Involvement Documentation – Documentation of the efforts to include the community in the planning process.

Appendix I - Multi-Jurisdictional Participation Activities - Records of jurisdictional participation in the planning process and adoption of the plan.

Appendix J - Adopting Resolution – Copy of a model resolution for plan adoption by the governing bodies of the jurisdictions.

Volume III – Community Action Programs

Volume III contains individual tables for each jurisdiction which assigns priority to selected mitigation measures, establishes a general completion schedule, assigns responsibility for carrying out the measures, estimates costs if available, and identifies potential funding sources, including potential eligibility for FEMA Hazard Mitigation Assistance Programs. The HMPC chose measures that are within the legal authority of the jurisdiction and those they believe will be achievable administratively, politically, technically, economically, and environmentally over the next five years.

Other documents and materials kept on file in the Fayette County EMA office include but are not limited to:

- 2020 Hazus-MH global reports for earthquakes and floods;
- Meeting records of the Hazard Mitigation Planning Committee since it was first established in 2004; and
- Documentation in support of the original 2004 plan and its 2009, 2014 and 2020 updates.

Chapter 1 – Introduction

1.1 Plan Development

The 2020 Fayette County Multi-Hazard Mitigation Plan is the third update of the 2005 Fayette County Natural Hazard Mitigation Plan. This plan has served, and continues to serve, as a guide for all communities and agencies that have participated in the preparation of this plan through the Hazard Mitigation Planning Committee (HMPC). The participating jurisdictions in the development of this plan include all unincorporated areas of Fayette County, the City of Fayette, and the towns of Belk, Berry, Glen Allen. Other participants include the Fayette County School Board and the Fayette County Fire Association. This plan fulfills the requirements of the Federal Disaster Mitigation Act of 2000 (DMA 2000) as administered by the Alabama Emergency Management Agency (AEMA) and the Federal Emergency Management Agency (FEMA) Region IV.

1.2 Authority

Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), 42 U. S.C. 5165 as amended by the Disaster Mitigation Act of 2000 (DMA) (P.L. 106-390), provides for states, tribes, and local governments to undertake a risk-based approach to reducing risks to natural hazards through mitigation planning. The National Flood Insurance Act of 1968, as amended, 42 U. S. C. 4001 *et seq*. reinforced the need and requirement for mitigation plans, linking flood mitigation assistance to state, tribal and local mitigation plans.

Through regulations in 44 CFR Part 201, FEMA has implemented the various hazard mitigation planning provisions which also permit human-caused and technological hazards to be addressed in a local mitigation plan. These Federal regulations describe the requirement for a state mitigation plan as a condition of pre- and post-disaster assistance as well as the mitigation plan requirement for local and tribal governments as a condition of receiving hazard mitigation assistance. 44 CFR 201.6(d)(3) requires that a local jurisdiction review and revise its local plan to reflect any changes and resubmit it for approval within five years of FEMA approval in order to remain eligible for mitigation grant funding.

1.3 Funding

The Fayette County EMA applied to the Alabama EMA for planning grant funds in 2018 to complete the 5-year update of the 2014 Fayette County Multi-Hazard Mitigation Plan. In October 2019, the Alabama EMA awarded a $20,000.00 planning grant funded through the FEMA Hazard

Mitigation Grant Program (HMGP) to the Fayette County Commission to fund 75% of the total cost of the five-year plan update for all incorporated and unincorporated areas within Fayette County. The Fayette County Commission furnished the remaining 25% of the total cost through in-kind services. The total cost for the plan update was $26,667.00.

1.4 Eligibility for FEMA Hazard Mitigation Assistance Grants

Adoption of this plan is the initial step towards continuing eligibility for FEMA Hazard Mitigation Assistance (HMA) grant assistance to participating localities. FEMA programs that require a current hazard mitigation plan for local jurisdictions include the Hazard Mitigation Grant Program, the Building Resilient Infrastructure and Communities Program - formerly the Pre-Disaster Mitigation Grant Program, and the Flood Mitigation Assistance Program. A brief outline of each of these programs is included below.

The Hazard Mitigation Grant Program (HMGP) is authorized by Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (the Stafford Act), Title 42, U.S. Code (U.S.C.) 5170c. It provides opportunities for communities to undertake mitigation measures to reduce the risk of loss of life and property from future disasters during the reconstruction process following a disaster. Following a Presidential major disaster declaration, funding becomes available in the areas of the state requested by the Governor. The amount of HMGP funding offered is based upon the estimated total of Federal assistance for disaster recovery under the declaration: up to 15 percent of the first $2 billion of the total estimated disaster assistance, up to 10 percent for amounts between $2 billion and $10 billion, and up to 7.5 percent for amounts between $10 billion and $35.333 billion. For states with enhanced hazard mitigation plans, up to 20 percent for estimated amounts of disaster assistance not to exceed $35.333 billion can become available.

In 2020, the Building Resilient Infrastructure and Communities Program (BRIC) replaced the Pre-Disaster Mitigation Grant Program (PDM). BRIC continues to provide funds to states, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. The emphasis of BRIC is to work "toward research-supported, proactive investment in community resilience." FEMA anticipates BRIC funds will be available for plans and projects that demonstrate innovative approaches to partnerships, such as shared funding mechanisms, and/or project design that reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. BRIC grants are awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds. For FY 2018, $250 million in Pre-Disaster Mitigation funding was available nationwide.

The Flood Mitigation Assistance Program (FMA) was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP). FEMA provides FMA funds to assist states and communities with the implementation of measures that reduce or eliminate the long-term risk of flood

damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program. For FY 2018, $160 million in FMA funding was available nationwide. Seventy million of the $160 million was set aside for community flood mitigation proposals. Two types of FMA grants are available to communities:

- *Planning Grants* to prepare Comprehensive Flood Mitigation Plans
- *Project Grants* to implement measures to reduce flood losses, such as elevation, acquisition, or relocation of NFIP-insured structures. Priority is given to properties that have incurred repetitive flood insurance losses.

In addition to the above-mentioned grant programs, there are two programs that require a current hazard mitigation plan at the state level but not at the local level for FEMA funds to be available to the state. Those are the Public Assistance (PA) Grant Program – Categories C-G, and the Fire Management Assistance Grant Program.

The Public Assistance (PA) Grant Program (Categories C-G) provides assistance to state, tribal and local governments, and certain types of Private Nonprofit organizations to quickly respond to and recover from major disasters or emergencies declared by the President. Through categories C – G of the PA Program, FEMA provides supplemental federal disaster grant assistance for the repair, replacement, or restoration of public infrastructure and facilities and the facilities of certain Private Non-Profit (PNP) organizations that were damaged by the declared disaster. The PA Program can also be used to protect these damaged facilities from future events through hazard mitigation measures.

The Fire Management Assistance Grant Program (FMAG) provides grants to states, local and tribal governments. Funds can be used for the "mitigation, management, and control of fires on publicly or privately owned forests or grasslands," where destruction poses such a threat that could result in a major disaster declaration. The state submits a request for assistance to FEMA at the time a "threat of major disaster" exists. The process is expedited with a FEMA decision made within hours. The FMAG provides a 75 percent federal cost share with the state for eligible firefighting costs, such as "expenses for field camps; equipment use, repair, and replacement; tools, materials, and supplies; and mobilization and demobilization activities."

1.5 Previous Editions of the Fayette County Hazard Mitigation Plans

The planning process for the first hazard mitigation plan for Fayette County began in January 2005 with the appointment of the Hazard Mitigation Planning Committee (HMPC) by the Local Emergency Planning Committee of the Fayette County Emergency Management Agency (EMA). The committee first convened in January 2005. In July 2005, the plan was approved and adopted by the county and all participating municipalities.

The scope of the 2005 Fayette County Natural Hazards Mitigation Plan was the unincorporated and incorporated areas within Fayette County. The plan addressed all natural hazards deemed to

threaten property and people within the county. Both short- and long-term hazard mitigation strategies were addressed, implementation tasks assigned, and funding alternatives identified.

The first plan update process began in September 2007 after the Alabama EMA awarded the Alabama Association of Regional Councils (AARC) a planning grant. In turn, funds were passed through to the West Alabama Regional Commission to pay 75% of the plan update costs. The West Alabama Regional Commission planners worked under the direction of the Fayette County EMA Director and the Hazard Mitigation Planning Committee. The 2009 plan included all incorporated and unincorporated areas of Fayette County and addressed human-caused hazards in addition to the natural hazards addressed in the first plan. The City of Winfield, which partially lies within Fayette County, chose to participate in the Fayette County planning process, although its primary location is Marion County. The 2009 plan was adopted by all municipalities, the Fayette County School Board, the Fayette County Fire Association, and the West Alabama Regional Commission. FEMA approved the plan on October 7, 2009.

In January 2014, the Hazard Mitigation Planning Committee (HMPC) reconvened to update the 2009 plan as the 2014 Fayette County Multi-Hazard Mitigation Plan. The Fayette County Commission contracted with Lehe Planning, LLC, to prepare the updated plan under the direction of the HMPC and the Fayette County EMA Director, James Sanders. The firm's manager, James E. Lehe, AICP, a professional urban planner, served as the Planning Coordinator for the update. The 2014 HMPC represented unincorporated Fayette County, the towns of Belk, Berry, Glen Allen, and the City of Fayette as well as the Fayette County School Board and the Fayette County Fire Association. The City of Winfield chose to participate in Marion County's hazard mitigation plan. The HMPC convened seven meetings to oversee the drafting of the plan update and hosted a community event to inform the public of the plan findings and recommendations and solicit public comments. The 2014 planning process continued the unified approach among all Fayette County communities and continues to guide Fayette County communities in their ongoing efforts to mitigate vulnerabilities.

1.6 The 2020 Fayette County Multi-Hazard Mitigation Plan Update

In October 2019, the AEMA awarded Fayette County a PDM grant to assist in financing the update to the hazard mitigation plan as the 2020 Fayette County Multi-Hazard Mitigation Plan. Under the direction of the Fayette County EMA Director, Russ Taylor, the HMPC reconvened to prepare the update to the plan. Invited to participate on the Hazard Mitigation Planning Committee were representatives from the county, the towns of Glen Allen, Berry, and Belk, and the City of Fayette. Area fire departments, schools, and the medical community participated in the planning process.

Because of the size of the county and the limited population, the first meeting in January 2020, was scheduled during the evening hoping to encourage participation since most people would have difficulty making the meetings during the day. Along with the EMA Director and plan facilitator, there were three others in attendance; two from Glen Allen and one from Fayette Medical Center. A second kick-off meeting was held in February during the day and there were eight attendees in addition to the

EMA Director and plan facilitator. During the kick-off meetings the representatives provided hazard and community information through discussions and worksheets. After the meeting in February, the COVID-19 outbreak began and due to uncertainty, the scheduled meetings were postponed until guidance was provided on meeting protocols. A meeting was scheduled for June after consulting various HMPC members; however, due to the pandemic and other obligations, only the EMA director and plan facilitator were in attendance. It was decided that one-on-one jurisdictional meetings would be best in order to obtain the necessary information for this plan update. Those jurisdictional meetings were held with representatives from Fayette County and the City of Fayette. The towns of Berry and Belk gave authorization to the EMA director to represent them through a signed resolution. The town of Glen Allen worked with the EMA director through email and telephone communications to provide information on their portion of the plan. More information about the planning process can be found in Chapter 4. It is the hope of the EMA director that this plan will guide Fayette County communities in their ongoing efforts to mitigate hazard related vulnerabilities.

Chapter 2 – Prerequisites

2.1 Federal Prerequisites

This chapter addresses the Prerequisites of 44 CFR Sections 201.6(a)(1) and (4) and (c)(5), as follows:

"Section 201.6(a) *Plan requirements.*

(1) A local government must have a mitigation plan approved pursuant to this section in order to receive HMGP project grants. ... A local government must have a mitigation plan approved pursuant to this section in order to apply for and receive mitigation project grants under all other mitigation grant programs.
(4) Multi-jurisdictional plans (*e.g.* watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan

Section 201.6(c) *Plan content.* The plan shall include the following:
(5) *Documentation* that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted."

2.2 Plan Approval Required for Mitigation Grants Eligibility

FEMA approval of this plan is the first step in assuring continued eligibility for FEMA grant assistance to participating localities and school districts, under the following hazard mitigation assistance programs: the Hazard Mitigation Grant Program (HMGP), the Building Resilient Infrastructure and Communities Grant Program (BRIC) – Formerly the Pre-Disaster Mitigation Grant Program (PDM), the Flood Mitigation Assistance Program (FMA), Categories C – G of the Public Assistance (PA) Grant Program, and the Fire Management Assistance Grant Program (FMAG). Following plan approval, pending adoption, the plan must be formally adopted by the governing bodies of the participating jurisdictions and school districts, and they must submit their adopting resolutions to FEMA through the Alabama EMA in order to receive official FEMA approval. Participants are allowed twelve months from the time of FEMA's notification of conditional approval pending adoption to adopt the plan. If the plan is not approved by FEMA and/or locally adopted by resolution of the governing body, the jurisdiction or school board will forfeit eligibility to apply for and receive project grants under any of the FEMA hazard mitigation assistance programs until they have a FEMA approved plan. Hazard

mitigation assistance programs have additional requirements for grant eligibility depending on the program's funding source.

2.3 Multi-Jurisdictional Participation

The Fayette County EMA serves as the lead coordinating agency for mitigation planning in Fayette County. They have been coordinating mitigation activities with all Fayette County jurisdictions since the 2005 plan was first approved. Fayette County; the towns of Belk, Berry, and Glen Allen; the City of Fayette; the Fayette County School Board; and some area fire association participated in the update of the existing plan. In addition to the participating jurisdictions, other stakeholders affected by the plan, including federal, state, and regional agencies, business interests, academia, and non-profits contributed to the drafting of this Plan. For a more detailed explanation of the organization of the HMPC and the participation of stakeholders in the planning process see Chapter 4 "The Planning Process."

The plan update process presented opportunities for multi-jurisdictional participation. Appendix I "Multi-Jurisdictional Participation Activities," lists the types of participation afforded the participants and their level of involvement. Due to the size of the jurisdictions within Fayette County and the COVID-19 outbreak, participation was limited. The towns of Berry and Belk were represented by the EMA director during the planning process through a resolution of representation.

2.4 Multi-Jurisdictional Plan Adoption

Following public notice and hearing, the 2020 Fayette County Multi-Hazard Mitigation Plan has been adopted by the governing bodies of each participating jurisdiction, as well as the Fayette County School Board. The jurisdictional governing bodies adopted the plan following notification by the Alabama EMA that the plan had received conditional approval from FEMA pending adoption. Adoption by all participating jurisdictions took place within one year of the notification of FEMA conditional approval. A certified copy of each adopting resolution was transmitted to FEMA through the Alabama EMA. The plan was formally approved by FEMA on the date that they received the first resolutions. The date of approval begins the next five-year planning cycle. FEMA then issued a final approval notification. An example of an adopting resolution can be found in Appendix J "Adopting Resolution". Copies of each jurisdictions' and the school board's resolution are on file at the EMA and with each jurisdiction.

Chapter 3 – Community Profiles

3.1 Federal Advisory Guidance for Community Profiles

Guidance from FEMA's Local Multi-Hazard Mitigation Planning Guidance, July 1, 2008 advisory on page 27, suggests that community profile information be included in a mitigation plan for context:

> *The planning team should consider including a current description of the jurisdiction in this section or in the introduction of the plan. The general description can include a socio-economic, historic, and geographic profile to provide a context for understanding the mitigation actions that will be implemented to reduce the jurisdiction's vulnerability.*

FEMA published an update to the above-referenced 2008 advisory guidance, Local Mitigation Planning Handbook, March 2013. This latest guidance advises that community assets be identified in step 2 of Task 5 *Conduct a Risk Assessment.* This step requires identification of "People, Economy, Built Environment, and Natural Environment," all of which are profiled herein and incorporated into the vulnerability components found in sections 5.4 through 5.9 of Chapter 5 "Risk Assessment" in this 2020 plan update.

3.2 Summary of Plan Updates

All sections of the Community Profile chapter have been edited to include more detailed community descriptions, maps, and data.

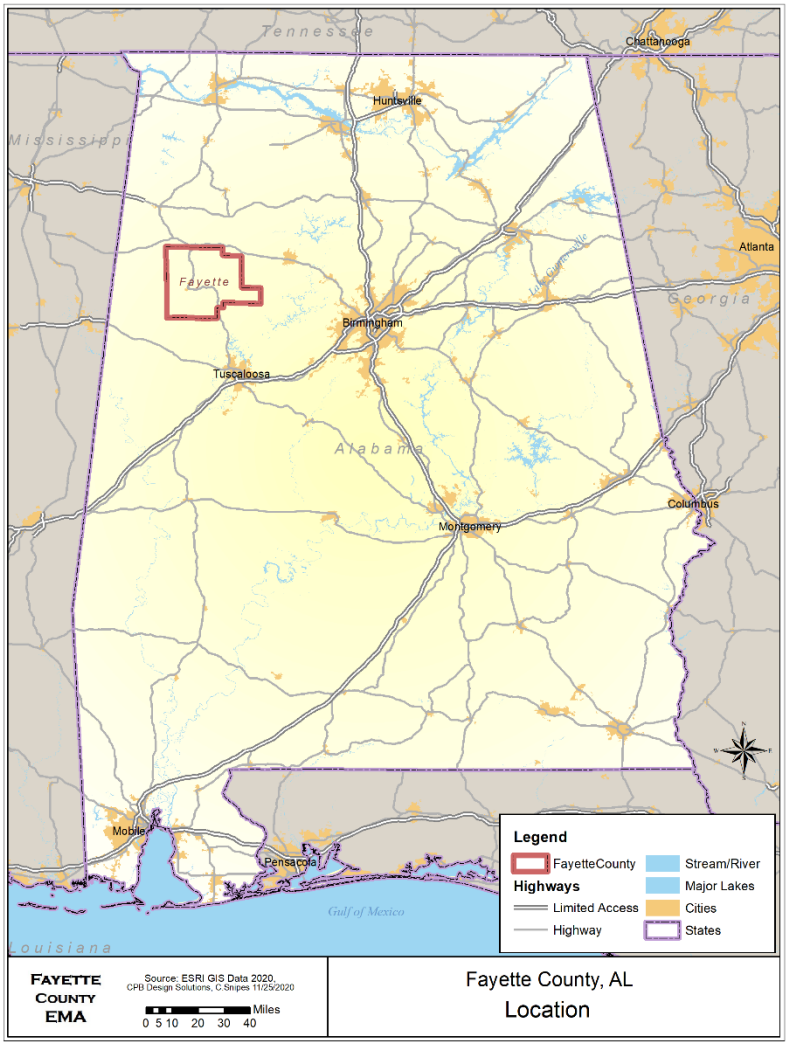
3.3 Geographic Setting and History

Fayette County was first visited by Hernando DeSoto and his crew in 1540. He was searching for gold and treasure and traversed the Sipsey River, Coal Fire Creek, Bear Creek, Buttahatchee River, and Luxapalilla Creek. Two hundred and fifty years later, settlers visited the area. In 1814, after the Battle of Horseshoe Bend, the area saw an influx of immigrants. Fayette County was established on December 20, 1824, by the Alabama State Legislature following General Lafayette's tour of Alabama

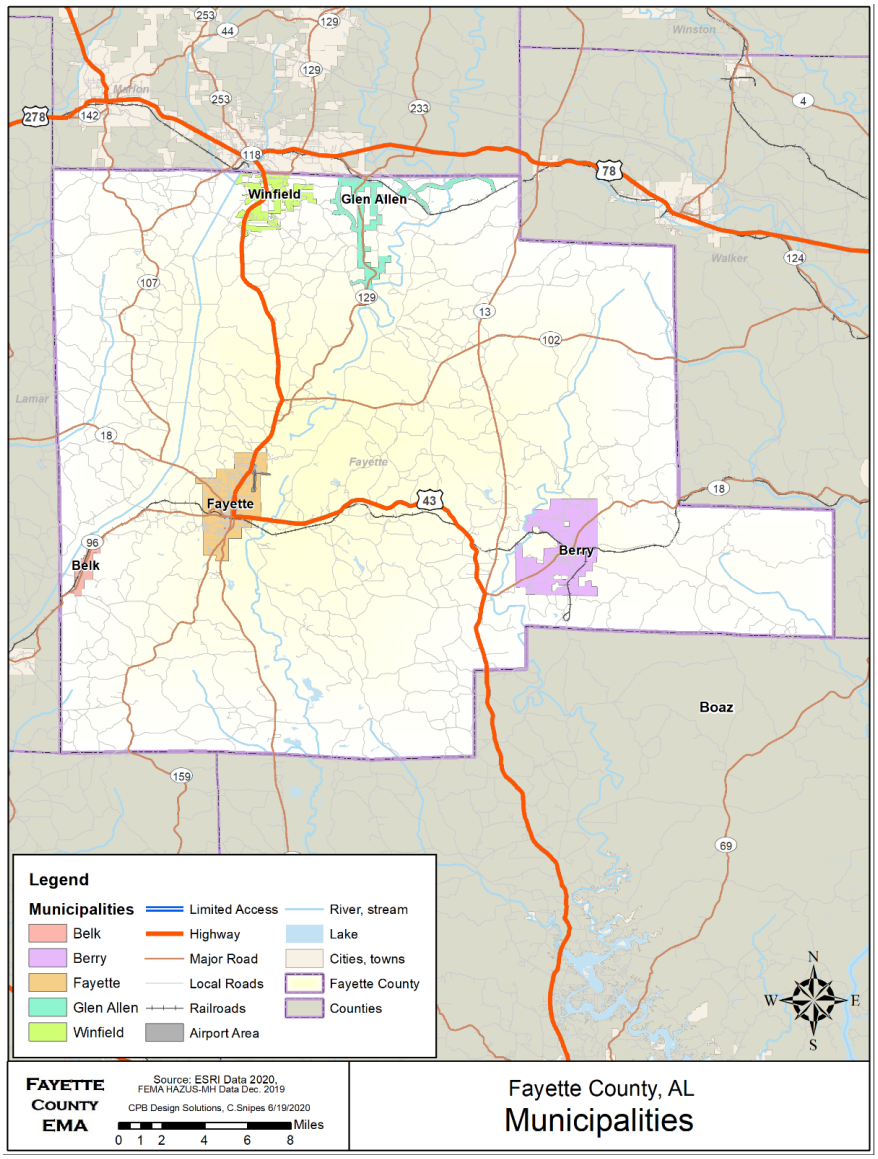
and is so named in his honor. Fayette County is located in northwestern Alabama and is home to the longest free-flowing swamp and stream system in the state – the Sipsey River. The area is rich in timber and fertile farming land.

Fayette County is bound to the west by Lamar County, the north by Marion County, the east by Walker County and the south by Tuscaloosa and Pickens Counties. The county was created from portions of Marion, Pickens, Walker, and Tuscaloosa Counties and contains the City of Fayette and the towns of Belk, Berry, Glen Allen and Winfield. The City of Winfield and the Town of Glen Allen are located in both Fayette County and Marion County. Map 3-1 shows the location of Fayette County in relation to the State of Alabama. Map 3-2 shows the municipalities in Fayette County. Much of the information in the descriptions of the jurisdictions that follow are from the website Encyclopedia of Alabama.

Map 3-1. Fayette County Location



Map 3-2. Fayette County Municipalities



Prior to becoming a county, the state legislature created the first highway project through the Fayette area known as the Byler (Toll) Road which was completed in 1822. This road linked Tuscaloosa to Nashville through the Tennessee Valley. This roadway broadened the citizens' ability to trade with, and work for, outside markets.

The county established its first post office and courthouse in 1826 and its first school in 1838, Fayetteville Male and Female Academy. Citizens of Fayette County were overwhelmingly opposed to secession from the Union and young men joined both sides of the fight. More than 250 Fayette County men went into hiding as a show of opposition to the conflict. After the Civil War, in 1867, the county was divided in half and Jones County was created.

In 1887 coal was discovered in Fayette County and natural gas and oil were discovered in 1910. Collection of these natural resources replaced agriculture as the primary industry in the county. More recently, the county has turned to other industry to sustain the economy.

Town of Belk

The Town of Belk is located in the southwestern portion of Fayette County and was established in 1887 along a rail line built by the Elyton and Aberdeen Railroad Company. Belk was originally known as Mulberry Tank Junction, but its name was changed to Belk in 1901. Luxapalila Creek runs to the west of town, and a grist mill was a main source of revenue in the early years. The town incorporated in January 1969 in order to qualify for federal grants. They used the funds to build a new water system so they could provide quality water to the citizens and attract industry.

Belk is approximately 1.4 square miles and the town is home to Georgia-Pacific Sawmill. The town also has a U.S. Post Office and a community center. State Road 96 runs through the middle of the town and the Luxapalila Railroad has a line that runs to Columbus, Mississippi that transports forest products and waste materials from the sawmill.

Town of Berry

The Town of Berry is located in the southeastern portion of Fayette County. It is approximately 11 square miles, including 10.77 square miles of land and .01 square mile of water. In the 1880's Thompson Berry owned a cotton gin and gristmill and was one of the early landowners. When the Georgia-Pacific Railroad built a line connecting Birmingham, Alabama to Columbus, Mississippi in 1882, the Berry family donated land for the depot and the creation of the town. The town was incorporated in 1883 and named after the Berry family in their honor. State Road 18 and County Road 63 intersect at the center of town.

The town was plagued by fires in the late 19th and early 20th centuries. The first school, which was built in 1891, burned down and then was rebuilt in 1895. In 1902 and 1913, fires severely damaged the downtown business area, but the businesses were rebuilt.

Alabama Christian College, founded by the Church of Christ, operated in Belk from 1912 to 1922. Phone service was provided to the area in 1906, electricity in 1925 and municipal water in 1935.

City of Fayette

The City of Fayette is located in central Fayette County and is the county seat. It was originally named Lafayette in honor of the French general. Land in the area was inexpensive in the 1800's and it was fertile which attracted settlers from other states where farmers had depleted the land. Fayette was originally incorporated as Fayette Court House on January 15, 1821 in order to avoid confusion with other towns named Lafayette throughout the state. The first mail route for Fayette was established in 1818.

The population more than tripled between 1830 and 1860. During the 1860's the economy collapsed and over half the population moved out of the City of Fayette due to the Civil War. The town did not start to grow again until the 1890's. The laying of the railroad south of town prompted the town to slowly relocate around the railroad and depot. The area the rail ran through was low and flat terrain which often held water after rain events and was named "Frog Level". As businesses moved toward the depot the town became known as Frog Level and the post office was named Frog Level Post Office. Other name changes occurred until November 8, 1898 when the name was changed to Fayette.

A massive fire swept through Fayette on March 26, 1911 burning most of the businesses, some residences, and the courthouse. The city rebuilt and put into place an ordinance that required all new buildings be made from block or masonry in order to avoid another devastating fire. The rebuilding of the city brought many jobs to the area.

Throughout the years from 1930 to today, the city has seen booms in population and then declines, related to the economy and war. In 1830 the City of Fayette had a population of 3,547; the current population is 4,327. The city's economy has been in a state of flux with the increase and decrease in population throughout the centuries. With the closing of area coal mines, new industry has been pursued by the city and manufacturing in the area is increasing once again.

Fayette has 8.55 square miles of land area and .08 square mile of water and is home to the Richard Arthur Field airport. US Hwy 43 intersects the center of the city, and the city has an aquatics park, art museum, and civic center for public enjoyment and is the home of Bevill State Community College.

Town of Glen Allen

The Town of Glen Allen is located in north-central Fayette County and south-central Marion County. It was originally known as Stewart's Gap after the post office located in the area. In 1885 the town's name was changed to Glen Allen after two engineers who worked on the railroad. The railroad was an integral part of the town, allowing it to be a major shipping point for such commodities as sand, railroad crossties, cotton, cotton seed, lumber, sassafras oil and coal. The Patterson Hotel was built in 1895. The hotel provided food and rest for those traveling through the area and is still standing today.

In May 1959, Glen Allen was incorporated, and a new water and sewer system was completed in 1967. The town is comprised of 6.55 square miles of land and .01 square miles of water. It was incorporated in 1959 and Studhorse Creek runs north-to-south through the town.

3.4 Government

The City of Fayette serves as the Fayette County seat and is the center for local business and trade. The Fayette County Commission is composed of six commissioners that are elected by the voters in their districts. The probate judge serves as the commission chairman.

All municipalities are governed by a mayor-council form of government, as described below:

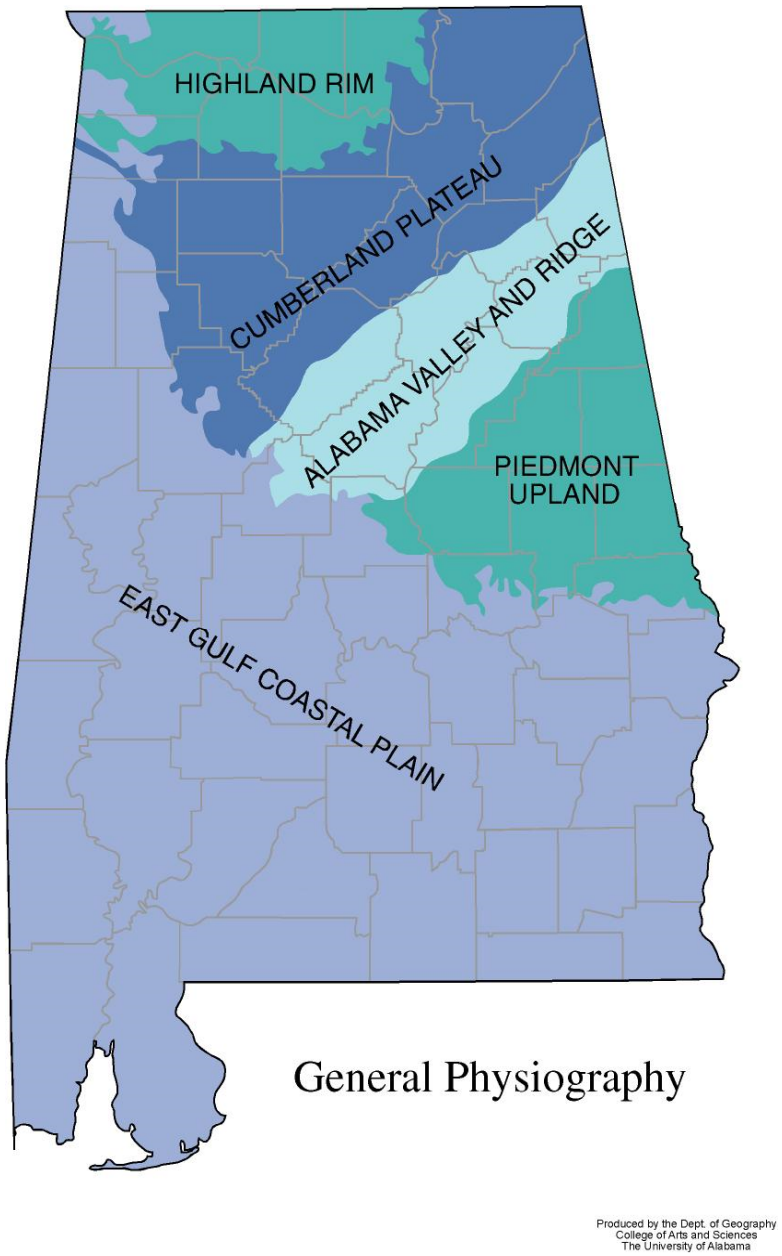
- The City of Fayette is governed by a mayor and a five-member city council.
- The Town of Berry is comprised of a mayor and five council members.
- The Town of Belk is governed by a mayor and a four-member town council.
- The Town of Glen Allen is governed by a mayor and five-member town council.

3.5 Physical Features

Fayette County encompasses 630 square miles of land area and approximately 1.7 square miles of water. It is located within the Cumberland Plateau and East Gulf Coastal Plain physiographic province of Alabama. The Encyclopedia of Alabama defines the Cumberland Plateau as "flat-topped high-elevation plateaus separated by deep, steep-sided valleys". The Warrior and Tennessee River systems drain most of the Cumberland Plateau. It is characterized by Paleozoic sandstone, shale, and limestone geologic features. The East Gulf Coastal Plain is "flat and relatively featureless in some areas, but elsewhere it consists of rounded and eroded hills, topographic features known as cuestas and flatwoods, and the floodplains of the Alabama, Tombigbee, and Black Warrior rivers" (Encyclopedia of Alabama). The East Gulf Coastal Plain is characterized by Mesozoic and Cenozoic sediments.

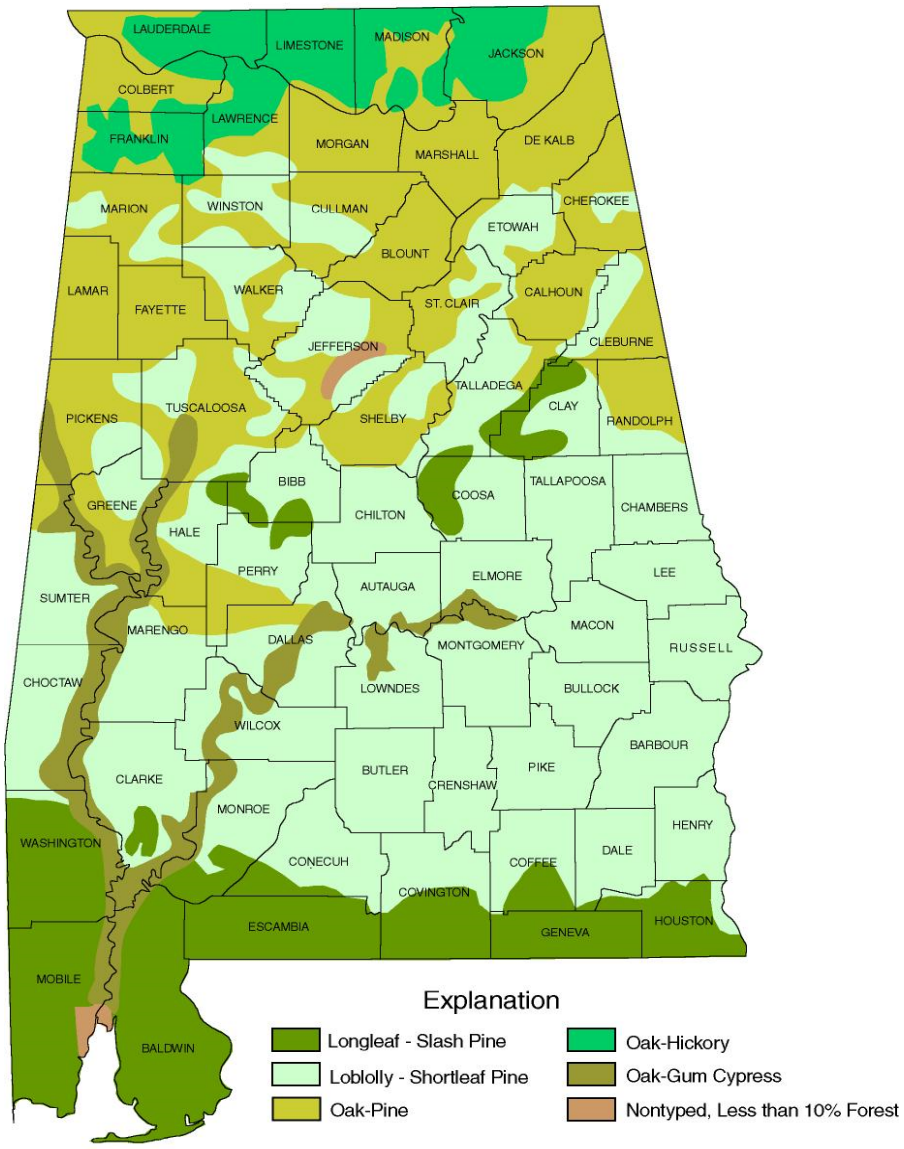
The Sipsey River, a tributary of the Tombigbee River, flows through the center of Fayette County, and the North River, a tributary of the Upper Black Warrior River, flows through the eastern portion of the county. Flowing south to north in the western half of the county is Luxpalila Creek, a tributary of the Upper Tombigbee River. The Sipsey River is one of the last free-flowing swamp streams in Alabama and provides a tourist attraction for canoers and fishermen. Fayette County's location within this physiographic region is depicted in Map 3-3 "General Physiography".

Map 3-3. General Physiography



The dominant varieties of trees in Fayette County are oak and pine which are typically used for furniture, paneling, flooring, and roofing. Fayette County's location within Alabama's distribution of forest types is depicted in Map 3-4 "Alabama Forest Types."

Map 3-4. Alabama Forest Types



3.6 Climate

Fayette County has hot, humid summers and mild winters. The average annual temperature in the county is 61.9°F, with the average winter temperature of 48°F and average summer temperature of 79°F. The average total annual precipitation is 59 inches. Snowfall is very rare, averaging approximately 1 inch annually. Table 3-1 presents additional climate observations.

Table 3-1. Fayette County Weather Observations

Weather Category	Observation
Average Winter Temperature	48° F
Average Winter Minimum Temperature	30° F
Lowest Temperature	-5° F
Average Summer Temperature	79° F
Average Summer Maximum Temperature	91° F
Highest Temperature	92° F
Total Annual Precipitation	59 inches
Heaviest One-Day Rainfall	17 inches
Average Season Snowfall	1.0 inch

Source: Bestplaces.net & Southeast Regional Climate Center, 2020

3.7 Demographics

General demographic information that is gathered through the US Census Bureau is provided in the following sections. An important demographic which is not included is those individuals with disabilities. Disabled individuals present a unique challenge when it comes to ensuring the safety of these individuals, be it through ADA accessible shelters or making sure those who are electricity dependent have the proper provisions to ensure uninterrupted electricity during hazard events. According to the Health and Human Services data on EmPOWER, there are approximately 207 electricity dependent individuals residing in Fayette County as of 2020. These are just individuals who rely on Medicare and Medicaid services so the overall number of electricity dependent individuals could be larger. These individuals should be considered in all aspects of the planning process.

Population Growth and Density

Fayette County experienced a decrease in population from 2000 to 2010 of 6.8% followed by an additional decline from 2010 to 2018 of 4.9%. All jurisdictions in Fayette County showed a decline with the City of Fayette showing the sharpest decline from 2010 to 2018, falling 6.7%. Table 3-2 shows the population of the county and its jurisdictions, as well as their percent change from 2000-2010 and 2010-2018 according to the U. S. Census Bureau.

Table 3-2. Fayette County Population Change from 2000 to 2018

Jurisdiction	2000	2010	Number Change	Percent Change	2018 Estimated	Number Change	Percent Change
Fayette County	18,495	17,241	-1,254	-6.8%	16,433	-808	-4.9%
Belk	214	215	1	0.5%	205	-10	-4.9%
Berry	1,238	1,148	-90	-7.3%	1,098	-50	-4.6%

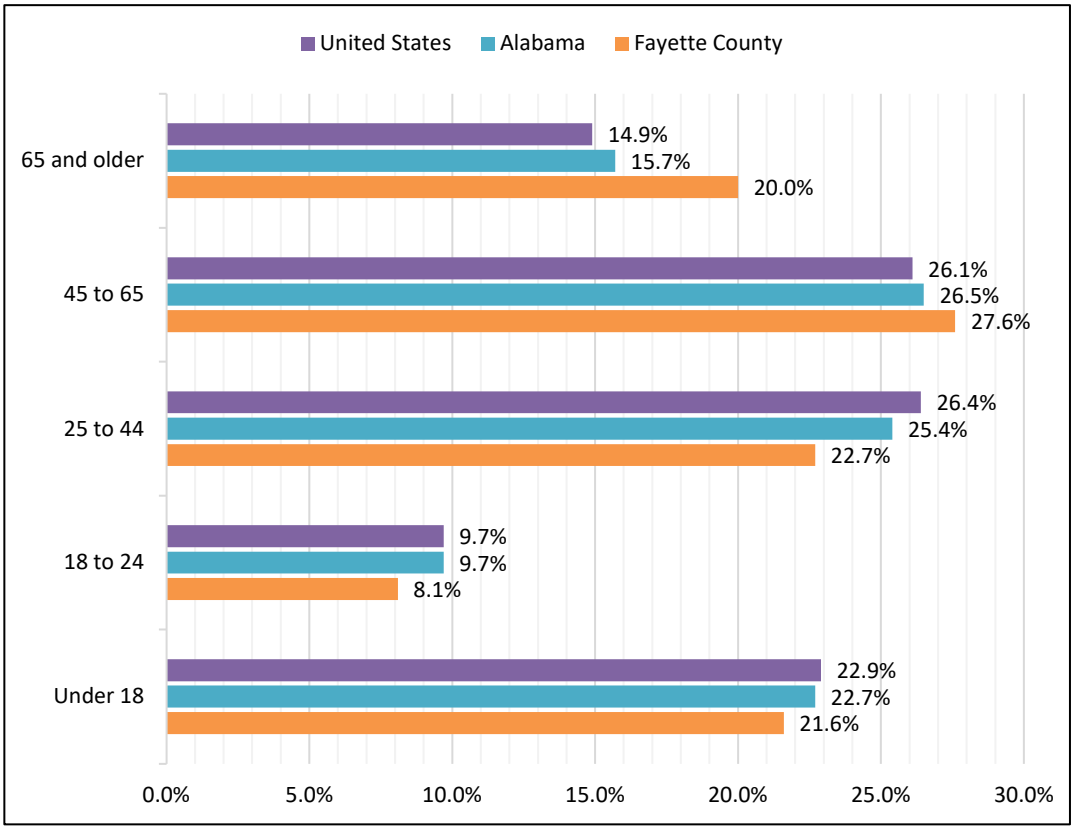
Jurisdiction	2000	2010	Number Change	Percent Change	2018 Estimated	Number Change	Percent Change
Fayette	4,922	4,619	-303	-6.2%	4,327	-292	-6.7%
Glen Allen	442	510	68	15.4%	487	-23	-4.7%

Source: U.S. Census Bureau, 2018

Age Distribution

Data from the US Census Bureau 2018 indicates that Fayette County's age distribution is slightly older than the populations of Alabama but comparable to the United States. Just under thirty percent of Fayette County's population is under the age of 25. The low percentage of people between 18 and 24 years may be contributed to the pursuit of college degrees outside the county. Residents between 45 and 64 years of age make up almost 50% of the population. Twenty percent of the Fayette County population is 65 years of age or older which is important to note because this age group requires certain accommodations such as specialized healthcare and residential facilities as well as elderly and public assistance programs. It is important to be cognizant of this subset of the population, especially during severe weather events. Comparisons to the State of Alabama and the United States show relatively no difference in age distribution other than in the 65 and older age group. Chart 3-1 breaks down population by age groups.

Chart 3-1. Population by Age, Fayette County



Sources: US Census Bureau, 2018

Racial Composition

Fayette County is predominantly White, comprising 85.5% of the population. The second largest population is made up of African Americans who make up over 25% of the population of the City of Fayette and almost 20% of the population of the town of Glen Allen. People of Hispanic origin make up a very small portion of the population, as do Asian Americans. Table 3-3 shows the breakdown by race for the County as well as its jurisdictions.

Table 3-3. Population by Race and Hispanic Origin, Fayette County

Community	White	Black African American	American Indian	Asian	Other Race	Two or More Races	Hispanic (of any race)
Fayette County	85.5%	12.1%	0%	0.5%	0%	1.9%	1.7%
Belk	100%	0%	0%	0%	0%	0%	0%
Berry	95.2%	4.0%	0%	0.3%	0%	0.4%	0%
Fayette	67.6%	25.8%	0%	1.2%	0%	5.4%	4.0%
Glen Allen	80.1%	18.9%	0%	0%	0%	1.0%	0%

Source: U.S. Census Bureau 2017

Gender

Table 3-4 shows population distribution by gender in Fayette County jurisdictions. The overall gender distribution of the population for the county is relatively equal with females outnumbering the males only slightly. The location that is an exception where men make up a greater percentage of the population than women is in the Town of Belk.

Table 3-4. Population by Gender, Fayette County

Community	Male	Female
Fayette County	49.2%	50.8%
Belk	51.4%	48.6%
Berry	45.1%	54.9%
Fayette	48.0%	52.0%
Glen Allen	46.4%	53.6%

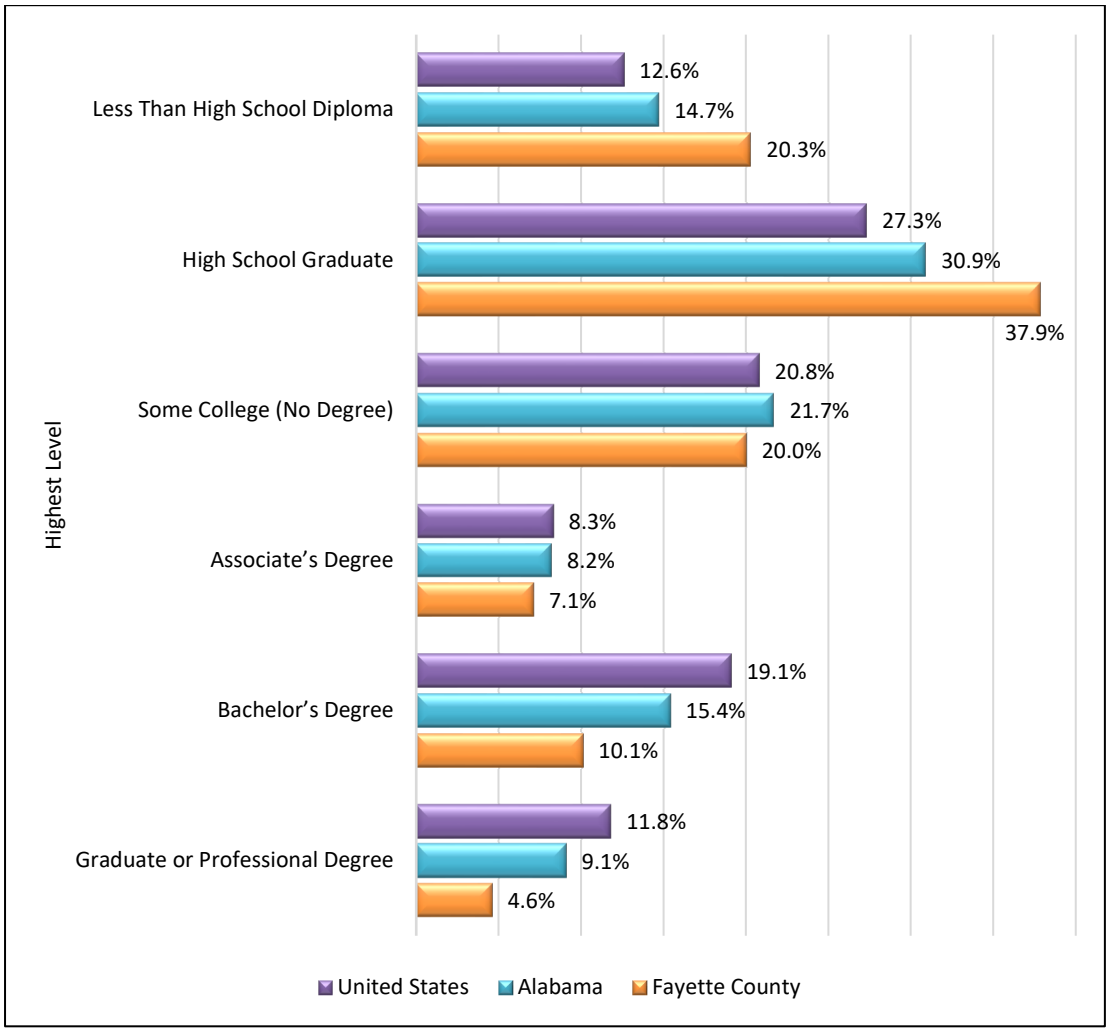
Source: U.S. Census Bureau 2017

Educational Attainment

Fayette County exhibits lower levels of educational attainment as measured by the highest level of education received for residents aged 25 and older, than either Alabama or the United States as shown in Chart 3-2. Just over 20% of the population have less than a high school diploma. Approximately 40% of residents in Fayette County (age 25+) have attained a high school diploma but

did not pursue their education further. Approximately forty percent of Fayette County residents have some college experience with less than 5% holding a graduate or professional degree.

Chart 3-2. Educational Attainment of Population Ages 25 Years or Older, Fayette County



Source: U.S. Census Bureau 2017

Income

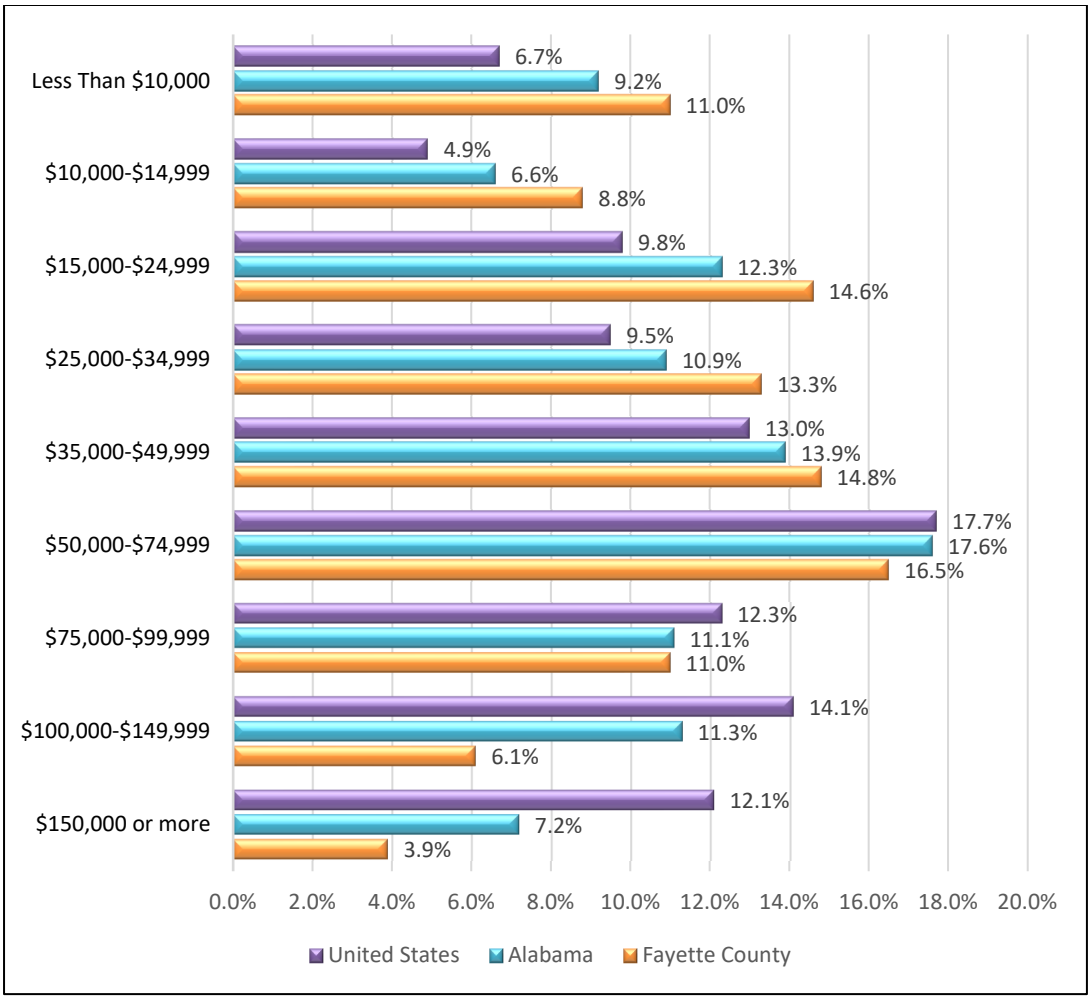
The median household income for Fayette County is $36,541, which represents a 10.4% increase since 2014. The median household income for the State of Alabama is $46,472, and the average household income for the United States is $57,652. The Town of Glen Allen claims the highest median income in the county at $46,250 which is close to the median of the state but still well below the median for the United States. The income distribution of Fayette County shows that just under 50% of the population earns less than $50,000 and just over 50% earns $50,000 or more. This compares to almost 70% of Americans earning more than $50,000 per year. Table 3-5 and Chart 3-3 depict the median household income and poverty level data comparison for the jurisdictions in Fayette County, the State of Alabama, and the United States. The poverty level was $24,600 for a family of four in 2017.

Table 3-5. Comparison of Income and Poverty Levels

Geographic Area	Median Household Income	Persons Below Poverty Level	Percent Below Poverty Level
Fayette County	$36,541	2,967	18.1%
Belk	$24,583	76	30.8%
Berry	$25,938	477	34.8%
Fayette	$32,074	1,038	24.7%
Glen Allen	$46,250	47	11.4%
Alabama	$46,472	849,699	18.0%
U.S.	$57,652	45,650,345	14.6%

Source: US Census Bureau 2017

Chart 3-3. Household Income Distribution, Fayette County

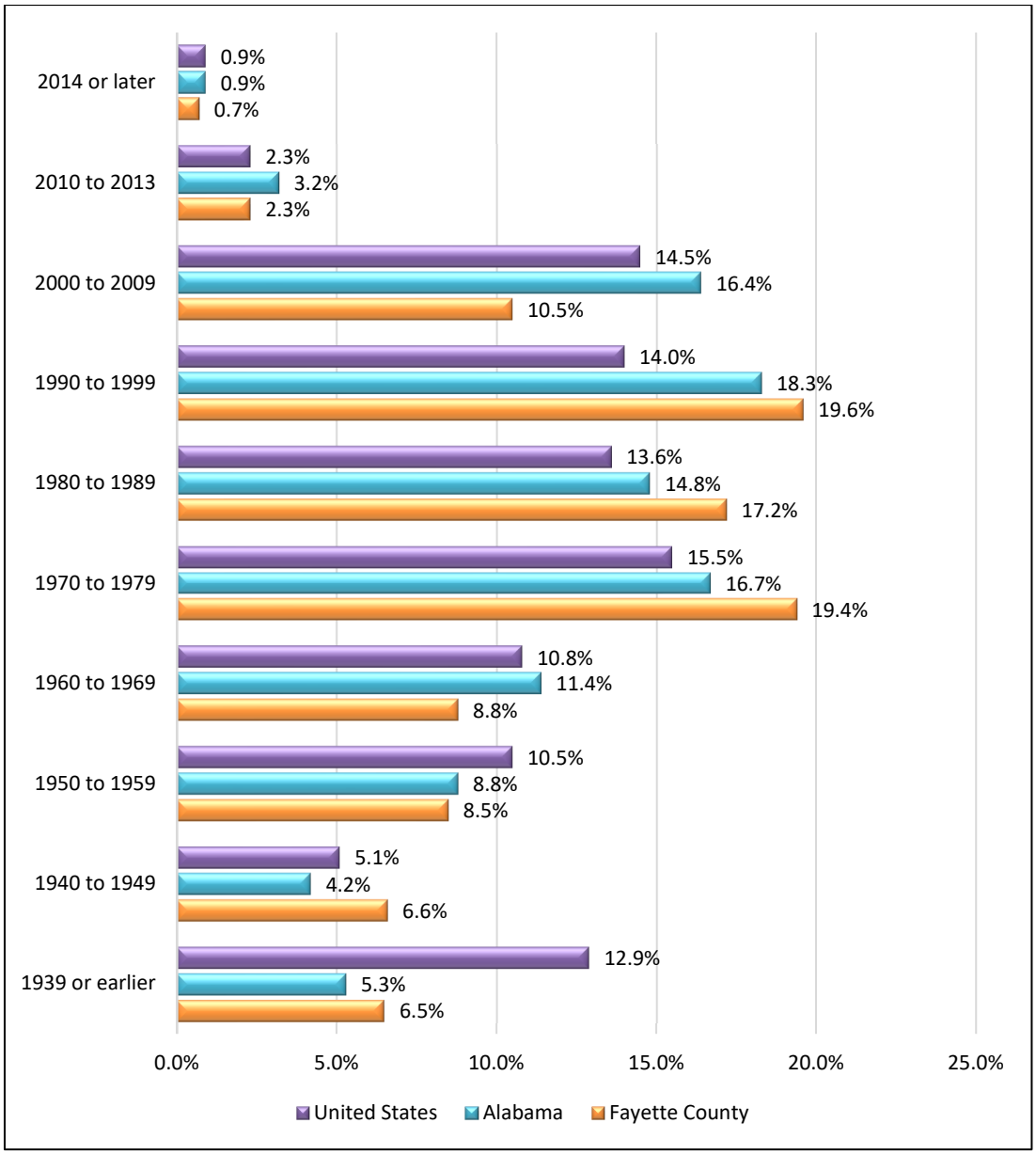


Source: U.S. Census Bureau 2017

Housing

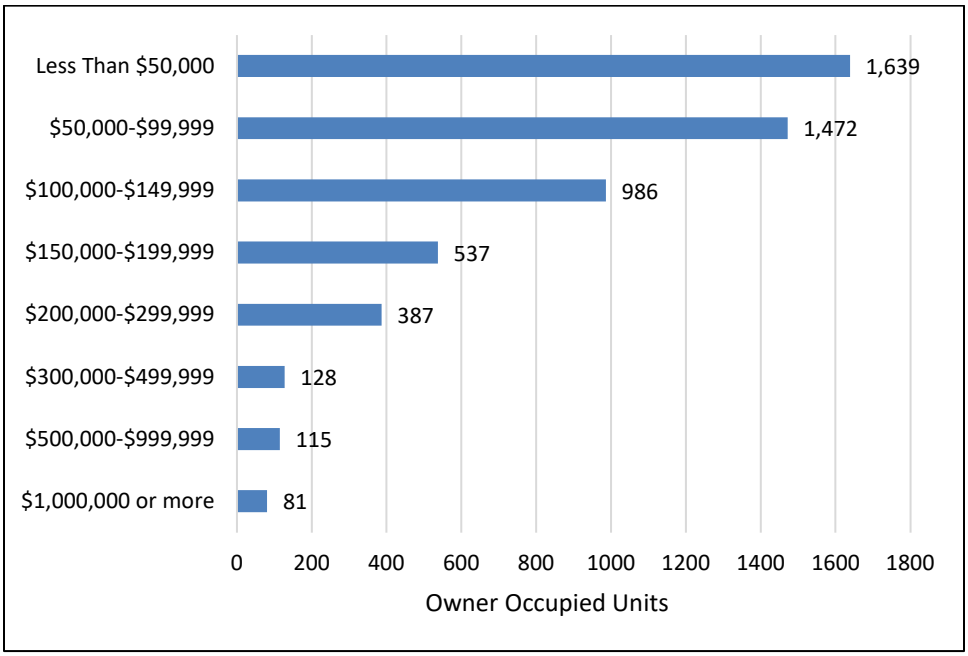
The housing stock is very similar in age to the State of Alabama and is in line with housing in the United States, except in the 1939 or earlier time period. Chart 3-4 "Housing Stock by Age" indicates that the majority of houses in Fayette County were constructed before 1989, comprising more than half of the total percentage of housing (67%). The median value for a home in Fayette County was $83,800 in 2018. The number of housing units by range of value is shown in Chart 3-5.

Chart 3-4. Housing Stock by Age, Fayette County



Source: U.S. Census Bureau 2017

Chart 3-5. Housing Units by Value, Fayette County



Source: U.S. Census Bureau 2017

3.8 Economy

Business and Industry

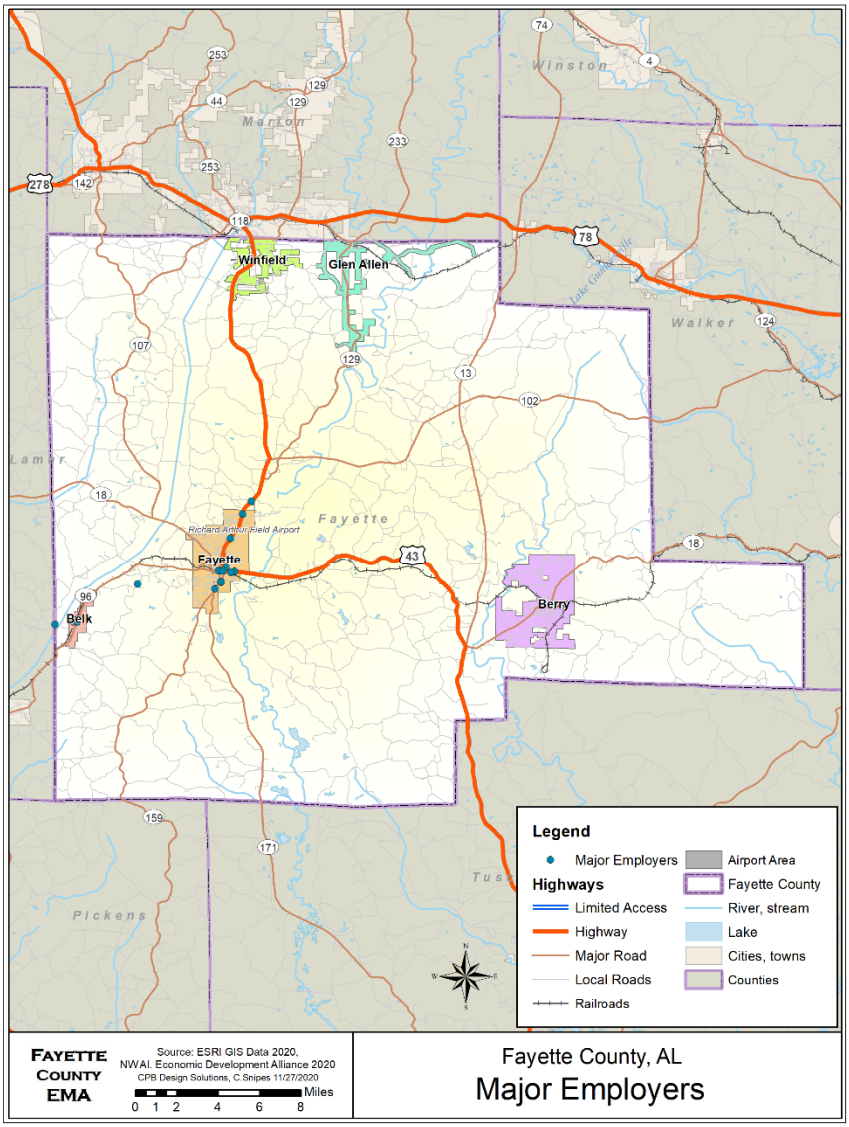
During the nineteenth century, Fayette County's economy was predominantly farming. The main crops were cotton and corn. Today, Fayette County's predominant industry is manufacturing even though companies such as Jim Walters and Best Manufacturing are no longer in the area. New industry such as Fayette Fabrication have been established. Educational services, health care and government make up a significant portion of the employed population (48%), including Fayette Medical Center and the Fayette County Board of Education. Table 3-6 "Major Employers" lists the companies with at least 50 employees or more. Map 3-5 shows the major employers of Fayette County.

Table 3-6. Major Employers, Fayette County

Company	City	Employees	Industry
N & N Transport Inc.	Belk	51	Local Trucking, Without Storage
Assoc Retarded Citizens Lamar Co.	Fayette	52	Individual and Family Services
Bevill State Community College	Fayette	54	Junior Colleges
Fayette City Hall	Fayette	54	Executive Offices
Fayette Elementary School	Fayette	74	Elementary and Secondary Schools
Industrial Board of Cy Fayette	Fayette	74	Legislative Bodies
Fayette Probate Court	Fayette	85	Courts
Lumber Remanufacturing Svc Inc.	Belk	50	Sawmills and Planing Mills, General

Company	City	Employees	Industry
Dal-Tile International	Fayette	90	Commercial Tile
Fayette County Commission	Fayette	100	Executive Offices
Georgia Pacific Corporation	Belk	106	Lumber Mill
Phifer Wire	Fayette	125	Woven Fabric for Backer Board
Fayette Fabrication	Fayette	130	Fabrication for Automotive
Ox Bodies, TREI Inc.	Fayette	220	Truck and Bus Bodies
Wal-Mart Supercenter	Fayette	220	Department Stores
Showa Glove Co.	Fayette	250	Fabric Dress and Work Gloves
Fayette County Board Education	Fayette	330	Elementary and Secondary Schools
Fayette Medical Center	Fayette	380	General Medical and Surgical Hospitals

Map 3-5. Fayette County Major Employers



3.9 Utilities

Electricity is provided by Alabama Power Company and Tombigbee Electric Co-op, and natural gas is available from the Fayette Gas Board and the Berry Gas Board. Water and sewer services are provided by municipal or rural systems, such as Berry Water Department, Fayette City Water, Fayette County Water Authority, Fayette Waste Water Treatment, and Fayette Water Works Plant. The City of Fayette operates a solid waste collection program and the county relies on the company Waste Management to provide garbage service to the county.

3.10 Media

Most of the radio, television, and cable companies that serve Fayette County residents are dedicated to informing their audiences of impending emergencies. These broadcasters have partnered with the Fayette County Emergency Management Agency to deliver emergency notifications. Many of the radio stations maintain continuous severe weather coverage in the occurrence of a weather event.

TV and Radio

Fayette County residents are offered cable or satellite TV by Spectrum, Comcast, DIRECTV LLC, Dish Network, and CenturyLink. Most of the television stations serving the Fayette County market (ABC 33/40, CBS 42, NBC 13, and Fox 6) feature live Doppler radar and certificated meteorologists. WLDX AM 990/97.1 FM is a local radio station located in Fayette.

Newspapers

The residents of Fayette County have access to the Times-Record (local newspaper), Tuscaloosa News, and the Birmingham News.

Telephone, Cellular, and Internet Services

Century Link, AT&T, Viasat, Spectrum, Earthlink and Verizon provide internet and telephone services to the areas in and around Fayette County. Tombigbee Electric Co-op is constructing a fiber loop known as Freedom Fiber which will provide internet services to some of Fayette County once it is complete.

3.11 Transportation

Interstates

US-43 is the major state roadway serving Fayette County, as well as State Highways 13, 18 and 171. See Map 3-6 “Fayette County Transportation Facilities”.

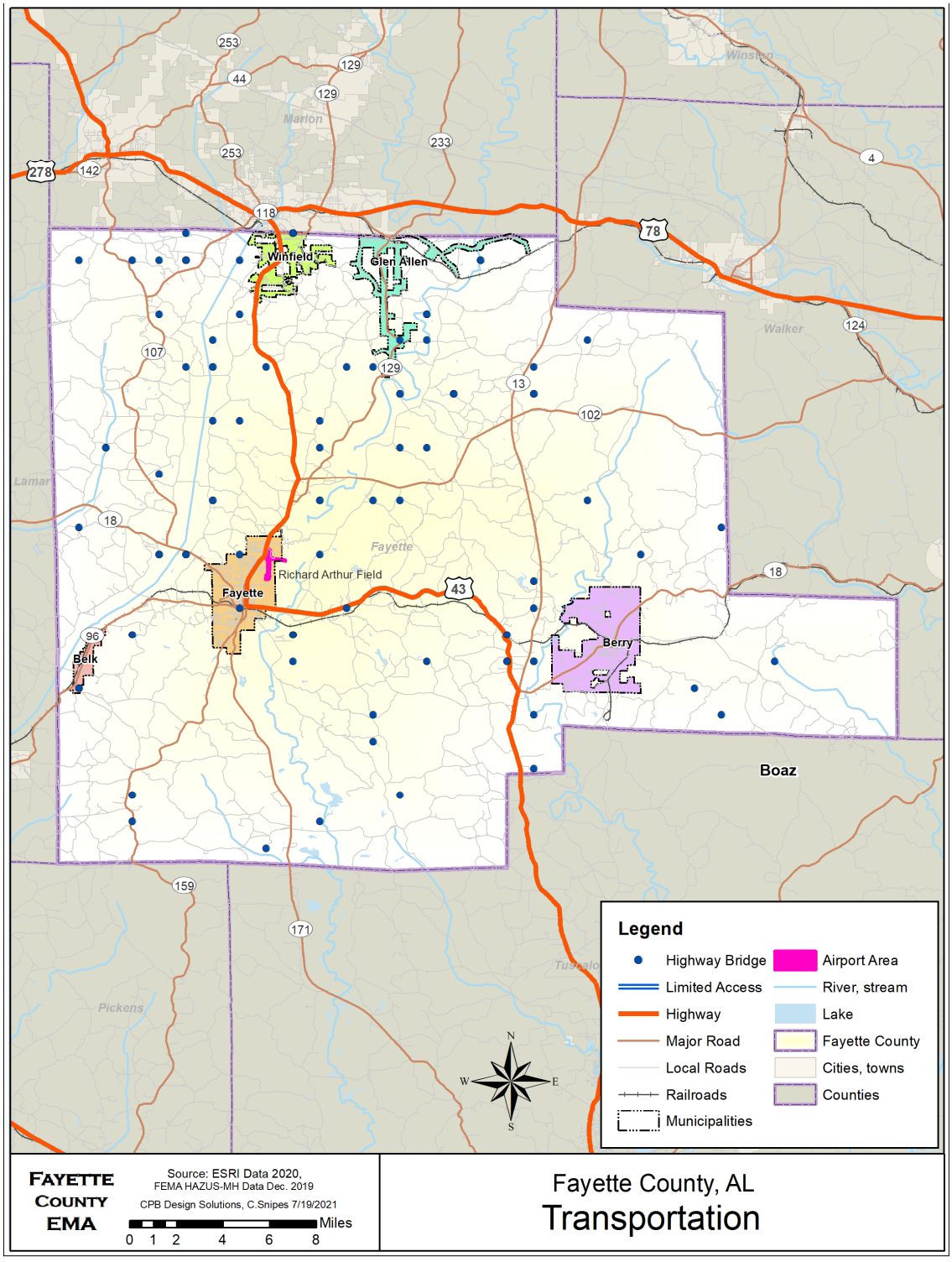
Railway

Fayette County is served by two major rail providers: Burlington Northern Santa Fe (BNSF) and Norfolk Southern. Glen Allen Rail has main line access to BNSF lines for the loading and unloading of coal, petroleum coke, and anthracite. They also provide access to Norfolk Southern for handling bulk liquids and pneumatic solids. See Map 3-6.

Airports

The county is served by one non-commercial airport, Richard Arthur Field, near the City of Fayette. See Map 3-6.

Map 3-6. Fayette County Transportation Facilities



Chapter 4 - The Planning Process

4.1 Federal Requirements for the Planning Process

This chapter of the Plan addresses the Planning Process requirements of 44 CFR Section 201.6 (b) and (c)(1) and the process for the plan review and update requirements of Section 201.6 (d)(3), as follows:

> "201.6(b) *Planning process.* An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:
>
> (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
>
> (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and
>
> (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information. "
>
> "201.6 (c) *Plan content.* The plan shall include the following:
>
> (1) Documentation of the *planning process* used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved."

"201.6 (d) *Plan review.*

> (3) A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding."

4.2 Summary of Plan Updates

Changes to Chapter Four of the 2014 plan include a new arrangement to the order of the sections and the combining of the section on public involvement with the opportunities for involvement section. The Hazard Mitigation Planning Committee was reorganized to include some new members and a new information gathering tool, "Thoughts Sheets," was incorporated into the planning process.

4.3 The Fayette County Hazard Mitigation Planning Committee

The Fayette County Hazard Mitigation Planning Committee (HMPC), comprised of representatives from the incorporated jurisdictions within Fayette County and organizations concerned with hazard mitigation, guided the development of this plan. The following is a list of those who participated in the planning process and the jurisdictions and/or organizations they represented.

Russ Taylor, Fayette County EMA Director
Shannon Taylor, City of Fayette, Fire Chief
Robert Aldridge, Town of Glen Allen, Councilman
Amy Aldridge, Fayette County Fire Association Secretary
Doug Reynolds, Boley VFD, Fire Chief
Frank Seale, Fayette Medical Center, Manager of Quality and Security
Ronni Rena Brasher, Alabama Cooperative Extension System, Fayette County Director
Shelley Jones, Northwest Alabama Mental Health, Executive Director
Heather Collins, Fayette County Board of Education, Head Nurse
Jennifer Sanford, Fayette County High School, Assistant Principal
Josh Knight, Fayette County Engineer

The towns of Belk and Berry passed a resolution requesting the Fayette County EMA represent them during the planning process. Copies of the "Resolution for Representation" for Belk and Berry are on file at the EMA office.

4.4 Opportunities for Involvement in the Planning Process

At the start of the planning process, the EMA Director and plan coordinator planned to involve the public and local and regional agencies throughout the planning process. The groups would be provided opportunities to participate from being active participants during committee meetings to offering comments through the plan website (hazardmitigationplans.com), emails, or other avenues. Preparations were being made to have the HMPC members be active participants in community events between April and August 2020 to bring awareness to the public about mitigation and to improve participation in the planning process. Most unfortunately, the community events were cancelled due to COVID-19 and public involvement in the planning process was limited.

Once the draft plan was complete, the public and area agencies were encouraged through the media, emails, and jurisdictional websites, to participate in reviewing and commenting on the plan. Drafts of the plan chapters were published on the plan website where an evaluation form for the plan was provided. Also included on the website was a public survey about hazards and their impact on their communities. An image of the home page of the website is on the final page of this chapter.

At the end of the planning process, the public was invited to attend the Fayette County Commission meeting in November 2021 where the plan was presented for adoption. The EMA director publicized the plan in the local newspaper. Additional public hearings were held by all jurisdictions for plan adoption by each of the governing bodies, allowing individuals a final opportunity for public comment.

Data for the plan update was collected from agencies such as the National Weather Service, the Geological Survey of Alabama, the Army Corps of Engineers, the Alabama Forestry Commission, and many others. An email was sent to various local and regional agencies with an interest in hazard mitigation, agencies that have the authority to regulate development, and representatives of businesses, academia and other private and non-profit interests notifying them of the draft plan and requesting their input and cooperation. Those agencies which received the notice are listed in the following section. For more detailed documentation and additional discussion of public involvement, see Appendix H “Community Involvement Documentation”.

Federal Agencies

- National Weather Service
- USDA Natural Conservation Service – Alabama District
- U.S. Army Corp of Engineers
- Federal Emergency Management Agency

State Agencies

- Alabama Emergency Management Agency
- Alabama Department of Economic and Community Affairs
- Alabama Department of Environmental Management
- Alabama Department of Transportation
- Alabama Forestry Commission
- Geological Survey of Alabama
- Alabama Historical Commission

Regional Agencies

- West Alabama Regional Commission
- Northwest Alabama Economic Development Alliance

Neighboring Counties (represented by county EMA directors)

- Lamar County

- Marion County
- Walker County
- Tuscaloosa County
- Pickens County

Academia

- Fayette County School District
- Bevill State Community College

Non-Profits and Other Agencies

- West Alabama Chapter – American Red Cross
- Fayette Medical Center
- Fayette Area Chamber of Commerce

In addition to the emails sent out through the Fayette County EMA to area agencies, the Senior Vice President and CFO of the Alabama Rural Electric Association, Karl Rayborn, sent out an email on October 29, 2019, informing all electrical cooperatives in Alabama about the upcoming updates to mitigation plans and the need for them to participate in the planning process of the areas they serve.

There was no feedback provided by the agencies in regard to the plan update other than when their representatives participated in meetings held at the beginning of the planning process.

4.5 How the Plan was Prepared

It was originally determined that multiple HMPC meetings would be held between December 2019 and August 2020 to update the 2014 Fayette County Multi-Hazard Mitigation Plan. The meetings were to begin with a kick-off meeting, followed by hazard specific meetings, then a meeting to discuss mitigation measures and funding, and closing with a final meeting to wrap up the process. Unfortunately, the COVID-19 pandemic outbreak occurred in early 2020 and the process was changed.

The kick-off meeting was scheduled for the evening of December 2, 2019, at the County Cooperative Extension facility in Fayette with the hope that an evening meeting will provide a better opportunity for public involvement. The meeting was rescheduled to January 16, 2020 due to a conflict with a Christmas related activity. The meeting on January 16 was held in the evening at the co-op extension building and five people were in attendance. A formal presentation was prepared but it was decided that due to the small size, an informal meeting would be more appropriate. Discussions involved the planning process, the concerns of the attendees in regard to the hazards that affect their jurisdictions and any events that impacted their areas over the last five years. The members were provided with worksheets to fill out that assess the jurisdiction's capabilities to mitigate hazards, what hazards affect their communities and their impacts, and also the implementation status of the measures from the 2014 plan. While the meeting was informal, some mitigation ideas were developed

through the discussions.

It was decided that due to limited attendance at the first meeting, a second kickoff meeting would be held on February 27, 2020 at one o'clock at the civic center in Fayette. The meeting was attended by 10 people. The meeting covered the following: an overview of what mitigation is, the federal requirements for local mitigation plans, the duties of the HMPC members, an overview of the steps of the planning process and dates for future meetings. The worksheets from the first kick-off meeting were also provided for the attendees to fill out. Examples of the worksheets are included in Appendix G – "Committee Meeting Documentation".

The meetings scheduled for March through May were cancelled month-by-month as the COVID-19 pandemic spread. The topics planned for those meetings were the hazards that affect Fayette County and its jurisdictions. By June 2020, the state had relaxed restrictions on public meetings, so a meeting was scheduled for June 25, 2020 after consulting with the HMPC members. The meeting was held at the City of Fayette Civic Center. It was determined that the meeting would last half a day and lunch would be provided. The meeting topic was all the hazards and their impacts on the jurisdictions. During the meeting, the participants were going to be provided with "Thoughts Sheets" in order to record information about the hazards, their impact on the community, concerns they had about the hazard, and any mitigation ideas the participant thought could help mitigate the impact of hazards. Only the EMA director and plan coordinator were at the meeting. The pandemic made it difficult for representatives to attend the meeting because members were sick, could not risk being exposed to the illness, or due to staff shortages.

Due to the pandemic and the hardship that meetings were placing on the jurisdictions, it was decided that one-on-one meetings would be conducted to discuss the risks to the communities and what mitigation measures should be considered for the plan update. During the individual meetings, the EMA director and/or plan coordinator went over the hazards that affect the jurisdictions, the capabilities the jurisdictions possess that could be leveraged for mitigation, and the status of implementation of the measures from the 2014 plan. Also covered was a list of possible mitigation measures and instructions on how to narrow down the measures through the use of the STAPLEE evaluation method. The representative was instructed to prioritize the measures and assign responsibility and a timeline to each measure. The towns of Belk and Berry passed resolutions for authorization which authorized the EMA director to act on their behalf for the plan update.

The information provided through the one-on-one meetings and the kick-off meeting was incorporated into the plan update. The members were instructed to go to the website to conduct a review of the chapters. A form was provided on the website to assist them with the review. The final task for the members in relation to the plan update was to present the plan to their respective jurisdictions for approval.

On February 22, 2021, the director discussed the progress of the plan at the Fayette County Commission meeting. During the commission meeting on November 8, 2021, the EMA director answered questions related to the plan and the planning process. The County Commission then passed

a resolution to adopt the plan during that meeting.

The final draft plan was submitted to the Alabama Emergency Management Agency for FEMA review and approval, prior to local adoption. This final approved plan was adopted by resolutions of all participating jurisdictions at public hearings of their governing bodies.

4.6 Review and Incorporation of Applicable Plans and Documents

Fayette County is a very rural county comprised of five jurisdictions with limited capabilities for undertaking mitigation actions. Appendix B, "Community Capabilities" documents each jurisdictions' capabilities in the areas of planning and regulatory tools; staffing, technical and fiscal resources; and education and awareness programs. All jurisdictions have the 2014 Fayette County Multi-Hazard Mitigation Plan and floodplain ordinances as mitigation capabilities. Due to their size, the towns of Belk, Berry and Glen Allen have limited planning and regulatory resources to apply toward mitigation. They rely on outside sources such as the county to assist with mitigation. The City of Fayette has the following plans that can incorporate mitigation measures: local emergency operations plan, comprehensive master plan, economic development plan, community wildfire protection plan, building code, site plan review requirements, zoning ordinance, and subdivision regulations.

The county has fewer regulatory tools at its disposal than the city due to the lack of home rule in Alabama. The planning mechanisms for Fayette County include a capital improvements plan, comprehensive plan, economic development plan, local emergency operations plan, stormwater management plan, and subdivision regulations.

This mitigation plan update recognizes the limited capabilities of each community to integrate the recommended actions of this plan. Despite these limitations, any future plans, ordinances or regulations, and future planning documents should, to the extent possible, recognize and integrate the findings of this plan. Specific measures for plan integration were taken into consideration in developing the Community Action Programs for each jurisdiction.

4.7 The Mitigation Plan Review and Update Process

The mitigation plan review and update process resulted in a comprehensive update of the 2014 plan elements, which was achieved through a process that involved the following tasks, among others:

- Update of Community Profiles to reflect changed demographics, economic characteristics, and growth and development trends.
- A review and update of local capabilities to carry out mitigation measures.
- An evaluation of the status and effectiveness of Mitigation Actions adopted in the 2014 plan.
- A reassessment of risks that affect Fayette County and the addition of pandemics and infectious diseases.
- An update of critical facilities and assessment of vulnerabilities.

- The use of the Hazus – MH reports for floods and earthquakes.
- An examination of development trends and exposure to risks.
- A review and commitment to support the 2018 State goals for hazard mitigation.
- Identification and analysis of a comprehensive range of mitigation alternatives.
- A prioritization of mitigation actions and projects.
- Creation of community action programs for each jurisdiction that reflect the results of the plan update.

4.8 Opportunities for Public Comment on the Plan

The Fayette County EMA invited public input into and feedback on the mitigation plan through open meetings and an internet website: hazardmitigationplans.com. Each jurisdiction had a representative on the committee who could bring forward resident input and concerns with the towns of Berry and Belk represented by the EMA director. There was an email link available through the website for comments as well as access to the hazard assessment questionnaire. (Refer to "Appendix H - Community Involvement Documentation" for further explanation and documentation.)

Some jurisdictions conducted public hearings in their communities prior to the plan's submission to the AEMA. There was an additional hearing as required by State law for each jurisdiction prior to adopting this Plan by resolution. The original resolutions and public hearing minutes are kept on file at the Fayette County EMA offices.

While efforts were made to involve the public in the planning process, members of the public did not attend the hearings held prior to plan submission, nor did they provide feedback on the website.

Fayette County Multi-Hazard Mitigation Plan Update

CLICK HERE to go to the Citizen's Survey on Fayette County Hazards

The Fayette County Hazard Mitigation Planning Committee (HMPC) encourages all citizens, governmental agencies, school boards, colleges, universities, businesses, industries, utilities, and others within Fayette County and neighboring jurisdictions to participate in the 5-year update of the Multi-Hazard Mitigation Plan. Please review the information provided on this website and offer your recommendations and ideas on how we can make Fayette County and its jurisdictions safer communities. Please check back monthly throughout the planning process to see new or updated information.

What is the 2020 plan update?
The 2020 Fayette County Multi-Hazard Mitigation Plan is an update of the 2014 Fayette County Multi-Hazard Mitigation Plan. It is a multi-jurisdictional, multi-hazard mitigation plan for all communities that have participated in the preparation of the plan. The plan fulfills the requirements of the Federal Disaster Mitigation Act of 2000 (DMA 2000), as administered by the Alabama Emergency Management Agency (AEMA) and the Federal Emergency Management Agency (FEMA) Region IV.

The first plan for Fayette County was created in 2004 and there has been an update to the plan every five years. The plan covers the entire county including all unincorporated areas, the Towns of Belk, Berry, Glen Allen, and the City of Fayette. The 2020 planning process will continue the unified approach among all Fayette County communities, and it will continue to guide Fayette County communities in their ongoing efforts to mitigate vulnerabilities.

The Fayette County Hazard Mitigation Planning Committee
The Hazard Mitigation Planning Committee meets regularly to oversee the drafting of the 2020 plan update. The various hazards that occur within Fayette County and their effects are discussed with suggestions on ways to mitigation their impacts. Funding sources to assist in mitigation measures are also considered. Committee members participate in planning exercises and other activities throughout the planning process. All are welcome and encouraged to attend, you do not have to be a member of the Committee.

HMPC Planning Schedule - Due to COVID-19 the meeting schedule was changed.
Thursday, January 16, 2020 - 5:30 pm at the 4H Center
Thursday, February 27, 2020 -1:00 pm at the Fayette Civic Center
Thursday, March 19, 2020 – 1:00 pm TBD (cancelled)
Thursday, April 23, 2020 – 1:00 pm TBD (cancelled)
Thursday, May 21, 2020 – 1:00 pm TBD (cancelled)
Thursday, June 25, 2020 – 1:00 pm Fayette Civic Center
Public Meeting is to be determined

Draft Sections of the Plan
As the plan is in the drafting phase, the HMPC welcomes your comments and suggestions. Please take time to review each of the sections as they are drafted. The link below will link you to the chapter review webpage.

CLICK HERE to review chapters of the Fayette County Multi-Hazard Mitigation Plan

Chapter 5 – Risk Assessment

In accordance with the Risk Assessment requirements of 44 CFR Section 201.6 (c) (2), this chapter and the associated appendices provide justification for the selection of hazards addressed in this plan update. The risk assessments for the hazards presented in this chapter identify the hazards that affect the jurisdictions within Fayette County and provide historical data on the impact the hazard has had on the jurisdiction. Vulnerability assessments are included in this chapter which analyze the jurisdiction's vulnerability to the hazards. This data is the basis for the mitigation strategy discussed in Chapter Six – "Mitigation Strategy".

5.1 Summary of Plan Updates

The 2020 Fayette County Multi-Hazard Mitigation Plan's Risk Assessment chapter has been redesigned. The order of sections has been modified, the category pandemic and infectious diseases has been added to the list of hazards, human-caused and technological hazards have been separated, and data and maps have been updated. Most of the hazard occurrences mentioned in this section are within the 2015-2020 time period. Some noteworthy events prior to 2015 have been included in this chapter; however, most pre-2015 events have been moved to Appendix E "Fayette County Hazard Profile Data".

5.2 Hazard Identification

Not all hazards affect all jurisdictions within Fayette County. Some hazards are determined by geology or location. When determining which hazards should be included in this plan update, the planning team consulted various sources.

1. The 2014 Fayette County Multi-Hazard Mitigation Plan. Fayette County's 2014 plan identified the following hazards in Chapter 5 – "Risk Assessment": tornadoes, severe storms, floods, winter storms/freezes, hurricanes, droughts/heat waves, wildfires, dam/levee failures, landslides, earthquakes, sinkholes, and human-caused and technological hazards. Since the hazards still impact Fayette County, they were retained for this plan update and the hazard category "pandemic and infectious diseases" was added.

2. The Hazard Identification Worksheet. The HMPC members completed the "Hazard Identification Worksheet" for their jurisdiction. They provided their assessment on different factors in relation to each hazard. For natural hazards, the respondent recorded what percentage of the jurisdiction would be affected by the hazard, the probability of occurrence within a certain time frame, and the extent of the threat. For pandemic and infectious diseases, human-caused and technological hazards, the respondent recorded their degree of concern and how much of an impact the hazard has on the jurisdiction. Sections 5-8 and 5-9 detail the analysis of the results.

3. List of Federally-Declared Disasters. A Presidential Major Disaster Declaration puts into motion long-term federal recovery programs, some of which are matched by state programs, and designed to help disaster victims, businesses, and public entities. The 31 Declarations that have been issued that include Fayette County since 2000 are included in the following table. The hazard most covered in the disaster declarations that affect Fayette County is severe storms with 16 declarations, followed by tornadoes with 12, hurricanes at 12, and flooding with 11. Many of the disasters did not directly impact the county; however, many declarations allow for state-wide hazard mitigation funding which includes Fayette County. (See "HM" under "Declaration Type" in Table 5-1.)

Table 5-1. Summary of Federally-Declared Disasters 2000-2020

Disaster Number	Disaster Type	Date	Declaration Type*
1317	Winter Storm	02/18/2000	HM
1322	Severe storms, flooding	03/17/2000	HM
1352	Tornadoes	12/18/2000	HM
1362	Severe storms, flooding	03/05/2001	IA, PA-ABCDEFG
1399	Severe storms, tornadoes	12/07/2001	IA, DH, IFG, SBA, PA-ABCDEFG
1438	Tropical Storm Isidore	10/09/2002	HM
1442	Severe storms, tornadoes	11/14/2002	DH, IA, IFG, SBA
1549	Hurricane Ivan	09/15/2004	IA, HM
1593	Hurricane Dennis	07/10/2005	HM
1605	Hurricane Katrina	08/29/2005	HM
3237	Hurricane Katrina evacuation	09/10/2005	PA-AB, DFA
1687	Severe storms, tornadoes	03/03/2007	HM
3292	Hurricane Gustav	08/30/2008	SA, PA-B
1789	Hurricane Gustav	09/10/2008	HM
1797	Hurricane Ike	09/26/2008	HM
1835	Severe storms, tornadoes, straight-line winds, flooding	04/28/2009	HM
1836	Severe storms, tornadoes, straight-line winds, flooding	05/08/2009	HM
1842	Severe storms, tornadoes, straight-line winds, flooding	06/03/2009	HM
1866	Tropical Storm Ida	12/22/2009	HM
1870	Severe storms, flooding	12/31/2009	HM
1908	Severe storms, tornadoes, straight-line winds, flooding	05/03/2010	HM
3319	Severe storms, tornadoes, straight-line winds	04/27/2011	PA-B

Disaster Number	Disaster Type	Date	Declaration Type*
1971	Severe storms, tornadoes, straight-line winds, flooding	04/28/2011	IA,PA-AB, DFA, HM
4052	Severe storms, tornadoes, straight-line winds, flooding	02/21/2012	HM
4082	Hurricane Isaac	09/21/2012	HM
4251	Severe storms, tornadoes, straight-line winds, flooding	01/22/2016	HM
3389	Hurricane Irma	09/11/2017	HM
4546	Severe storms, flooding	05/21/2020	PA, HM
4554	Severe storms, Straight-line Winds, Tornadoes	07/10/2020	HM
3545/4563	Hurricane Sally	09/14/2020	PA-ABCDEF, HM
4573	Hurricane Zeta	12/10/2020	HM

* Declaration Type Key	
IA – Individual assistance	A – Debris removal
PA – Public assistance	B – Protective measures
DH – Disaster housing	C – Roads and bridges
CC – Crisis counseling	D – Water control facilities
DFA – Direct federal assistance	E – Public buildings
DUA – Disaster unemployment assistance	F – Public utilities
HM – Hazard mitigation	G – Recreation
IFG – Individual and family grant	SA – Stafford Act
IHP - Individuals and households	403C – Department of Defense
SBA – Small Business Administration	

Source: FEMA, Region IV

4. The 2018 Alabama State Plan. The 2018 update of the Alabama State Plan served as an additional resource for identifying local hazards. The hazards identified by the State were compared against the list for the jurisdictions in Fayette County. The state plan includes some hazards that only affect the southern part of the state such as coastal flooding, storm surge, coastal land change, sea level rise and tsunamis. Since Fayette County is approximately 230 miles north of the coast, those hazards do not directly impact the county and therefore are not included in this plan. This update to the 2014 plan for Fayette County includes pandemic and infectious diseases, human-caused, and technological hazards which the state plan does not include.

5. Other Hazard Identification Sources. Other sources for identifying hazards included the following resources:

   - Local knowledge and expertise of the Fayette County EMA Director and HMPC members;
   - Extensive internet research; and
   - Records of the National Weather Service and NOAA Storm Events Database.

Previous plans have included dollar amounts for damages, deaths, and injuries from the NCDC; however, due to the inaccuracy of that data, it is not included in this chapter. The raw data from the NCDC, including cost estimates, injuries, and deaths, is included in Appendix E– "Fayette County Hazard Profile Data".

5.3 Hazard Profiles

This plan update includes the same natural, human-caused, and technological hazards as those in the 2014 Fayette County Multi-Hazard Mitigation Plan with the addition of pandemic and infectious diseases. While this plan is the five-year update to the 2014 plan, the planning process occurred throughout 2020 during the COVID-19 Pandemic and the committee felt pandemic and infectious diseases should be addressed in this update. The hazards identified as impacting the Fayette County jurisdictions by the HMPC are listed in Table 5-2 "Identified Fayette County Hazards." This table of identified hazards notes multiple natural hazards that may be associated with and/or caused by other hazard events. In depth descriptions of the hazards presented in this chapter can be found in Appendix D – "Fayette County Hazard Ratings and Descriptions".

Table 5-2. Identified Fayette County Hazards

Hazards	Associated Hazards	Jurisdictions Affected
Severe Storms	Thunderstorms Hail Lightning High Winds Tornadoes Floods Landslides Wildfires	All
Tornadoes	High Winds Severe Storms Lightning Hail	All
Flash Floods	Landslides	Unincorporated areas Belk Fayette Glen Allen
Riverine Floods	Landslides	Unincorporated areas Belk Fayette Glen Allen
Hurricanes	Tropical Storms Tropical Depressions Severe Storms High Winds Floods Tornadoes	All

Hazards	Associated Hazards	Jurisdictions Affected
Winter Storms and Extreme Cold	Snowstorms Ice Storms Freezes	All
Extreme Heat	Drought Wildfires Heat Waves	All
Droughts	Wildfires Sinkholes Erosion Landslides	All
Wildfires	Landslides	All
Earthquakes	Landslides Sinkholes Dam Failure	All
Landslides	Wildfires	Unincorporated areas Fayette Glen Allen
Sinkholes		Unincorporated areas Fayette Glen Allen
Dam Failures	Floods	Unincorporated areas Fayette Glen Allen
Human-Caused	Floods Earthquake	All
Technological	Dam Failure	All
Pandemic and Infectious Diseases		All

There may be more events that impact Fayette County than recorded in this section; however, due to the rural nature of the county, many events may have made no noticeable impact and therefore were not reported.

5.3.1 Severe Storms

According to the Hazard Mitigation Planning Committee severe storms are rated as the highest natural hazard threat to Fayette County communities. NOAA records confirm these public perceptions. Severe storms are common in Fayette County and can bring thunderstorms, lightning, heavy rains, high winds, and hail. These storms are also occasionally responsible for tornadoes in the

area. Fayette County is most susceptible to severe storms during the spring, summer, and late fall.

Location of Severe Storms

All areas of Fayette County have experienced frequent severe storms, including thunderstorms, straight-line winds, heavy precipitation, hail, and lightning and share equal risks for all degrees of severe storms throughout the year. Since severe storms lack geographic centers and boundaries, they cannot be substantively mapped.

Extent and Intensity of Potential Severe Storms

The extent of each storm event varies according to storm intensity and duration. Storm intensity is measured by the storm's characteristics. Heavy or prolonged rain can cause flooding and lightning might start wildfires. Straight-line winds from the storms can cause damage to property or trees which can cause power and transportation disruptions. In some instances, these storms will spawn a tornado which can cause immense damage to property and infrastructure. All of the hazards that accompany these severe storms can threaten the safety of those within the disaster area.

Previous Occurrences of Severe Storms

According to National Climatic Data Center (NCDC) records, there were 14 severe storms comprised of 10 thunderstorm/high wind events and six hail events reported in Fayette County between 2015 and 2020. According to those statistics, Fayette County can expect an average of 2.3 severe storm events per year with at least one event each year including hail.

Included in some of the severe storms between 2015 and 2020 were episodes of hail ranging in size from one inch to one and three quarters inches. Based on the data from the NCDC, hail can be expected to occur in at least 1 severe storm per year. March and April are the months in which hail events are most likely to occur. There were no records of lightning damages in any of the recorded storms from 2015-2020. Table 5-3 shows the number of each notable hazard event related to severe storms per year between 2015 and 2020.

Table 5-3. Severe Storms 2015-2020

Year	Total Severe Storms	Hazards Included in Severe Storms		
		Hail	Lightning	Thunderstorm & Strong Wind
2015	2	1	0	1
2016	1	1	0	1
2017	4	1	0	3
2018	0	0	0	0
2019	6	3	0	4
2020	1	0	0	1
Total	14	6	0	10
Annual Avg.	2.3	1	0	1.7

Source: National Climatic Data Center 2020

Most of the reported damage from severe storms in Fayette County is from downed trees and hail. The trees block the roadways and pull-down powerlines causing power outages. On April 28, 2014, a roof was blown off a home in Glen Allen. The house was located west of a tornado path.

One of the largest storms to affect Fayette County occurred on February 16, 2001. Fayette County reported numerous trees and power lines blown down throughout the county. A number of the trees fell onto automobiles and homes causing major damage. A doctor's office had its roof torn off in Fayette, and one mobile home was overturned. No injuries were reported. A large "bow echo or derecho," a long-lived and widespread convective windstorm, swept across much of the northern two-thirds of Alabama. The windstorm moved into western Alabama around 1:41 PM and exited the eastern counties around 4:38 PM. Wind gusts were estimated between 60 and 105 mph during the event. These gusts produced extensive wind damage throughout the entire area, similar to F0 and F1 tornado damage. The American Red Cross estimated that at least 2,500 homes throughout the state were damaged or destroyed. Major electrical transmission lines were down in Tuscaloosa and Fayette Counties. Alabama Power estimated that at least 400,000 homes and businesses were initially without power, which is one third of their total customers. According to Alabama Power, this event ranked as the third highest ever for power outages in the state of Alabama.

Probability of Future Severe Storm Events

Frequent annual severe storms are guaranteed to occur in the future. Past trends show annual occurrences of thunderstorms that bring hail are going to continue throughout all Fayette County jurisdictions. High winds and thunderstorms occur with approximately 80% of the severe storms, hail with about 50%, while events with severe lightning is rare. Regarding the impact of climate change on severe storms, the National Climatic Data Center attributes the increase of frequency of thunderstorms, in part, to human-induced atmospheric changes.

While the residents of Fayette County cannot keep severe storms from occurring, they can work to lessen the impact of such events. Public shelters and safe spaces can be made available to the public and an awareness campaign about safety measures can lead to less property damage and better protected lives. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken to lessen the impact of severe storms.

5.3.2 Tornadoes

Along with severe storms, the members of the hazard mitigation planning committee considered tornadoes as one of the greatest weather threats to the Fayette County communities. This evaluation is based on hazard exposure, the intensity of the risk, and the probability of future occurrence.

According to NOAA's National Climatic Data Center, there are an average of 1,253 tornadoes per year in the United States. The NCDC looked at the years 1991-2010 to arrive at that average. During that same time period, NCDC determined that Alabama averages 44 tornadoes a year. Map 5-1 shows the average number of tornadoes in the different states between 1991 and 2010. Of the 44 tornadoes, 1.7 are rated as EF3 to EF5. Tornado strength is indicated by the Enhanced Fujita Scale, which is shown in Table 5-4.

Map 5-1. Average Number of Tornadoes in US, 1991-2010

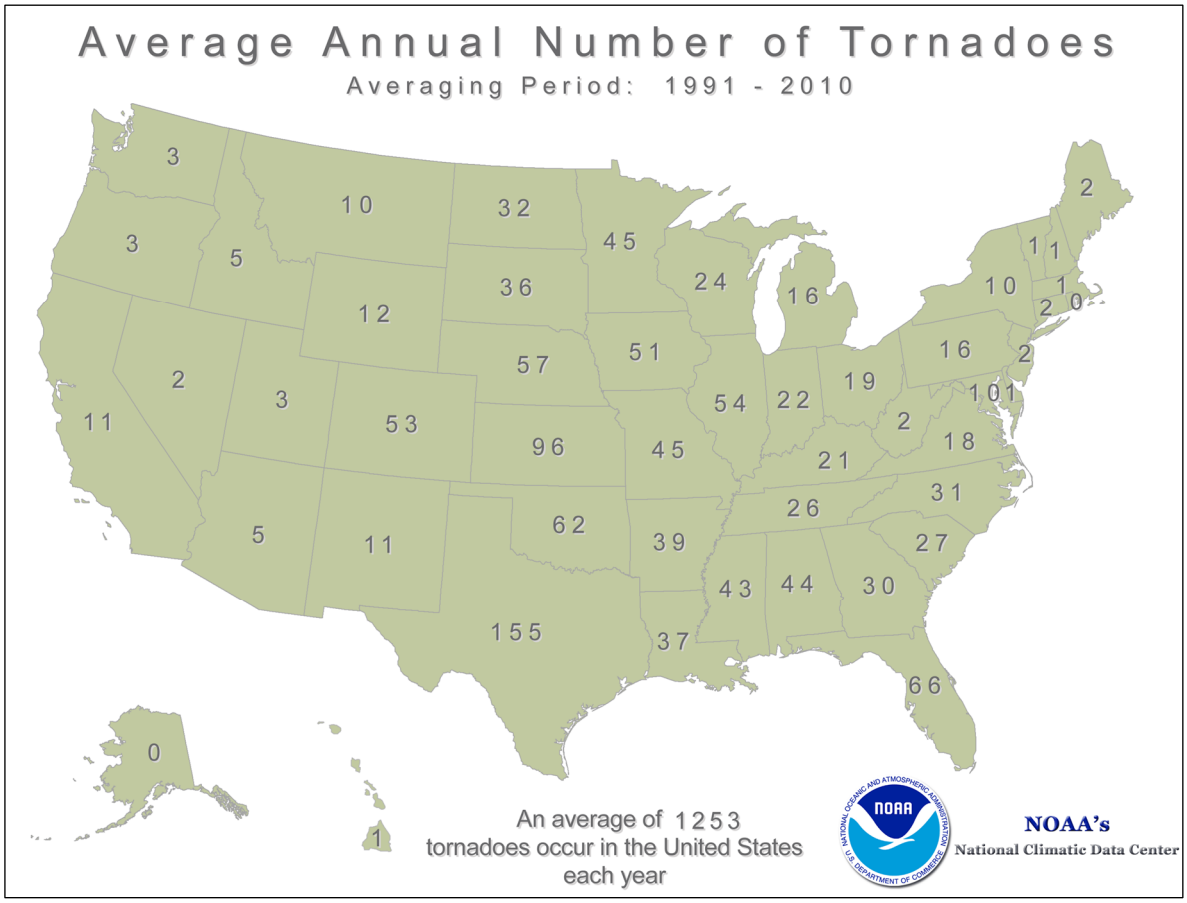


Table 5-4. Enhanced Fujita Scale

EF-Scale	Typical Damage
EF-0 (65-85 MPH)	Light damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF-1 (86-110 MPH)	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF-2 (111-135 MPH)	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF-3 (136-165 MPH)	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF-4 (166-200 MPH)	Devastating damage. Whole frame houses Well-constructed houses and whole frame houses completely leveled; cars thrown, and small missiles generated.
EF-5 (>200 MPH)	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yd.); high-rise buildings have significant structural deformation; incredible phenomena will occur.

EF-Scale	Typical Damage
EF (NO RATING)	Inconceivable damage. Should a tornado with the maximum wind speed in excess of EF-5 occur, the extent and types of damage may not be conceived. A number of missiles such as iceboxes, water heaters, storage tanks, automobiles, etc. will create serious secondary damage to structures.

Source: NOAA, Storm Prediction Center, 2014

Tornadoes can occur anytime of the year; however, as can be seen in Chart 5-1, most tornadoes that impact Alabama occur in the spring, with an uptick again in November. The month of April is the most active month for tornadic activity. Chart 5-2 shows that tornadoes traveling through Dixie Alley tend to hit between 2 PM and 8 PM with the most activity around 4 PM.

Chart 5-1. Tornadoes by Month in Alabama, 1950-2019

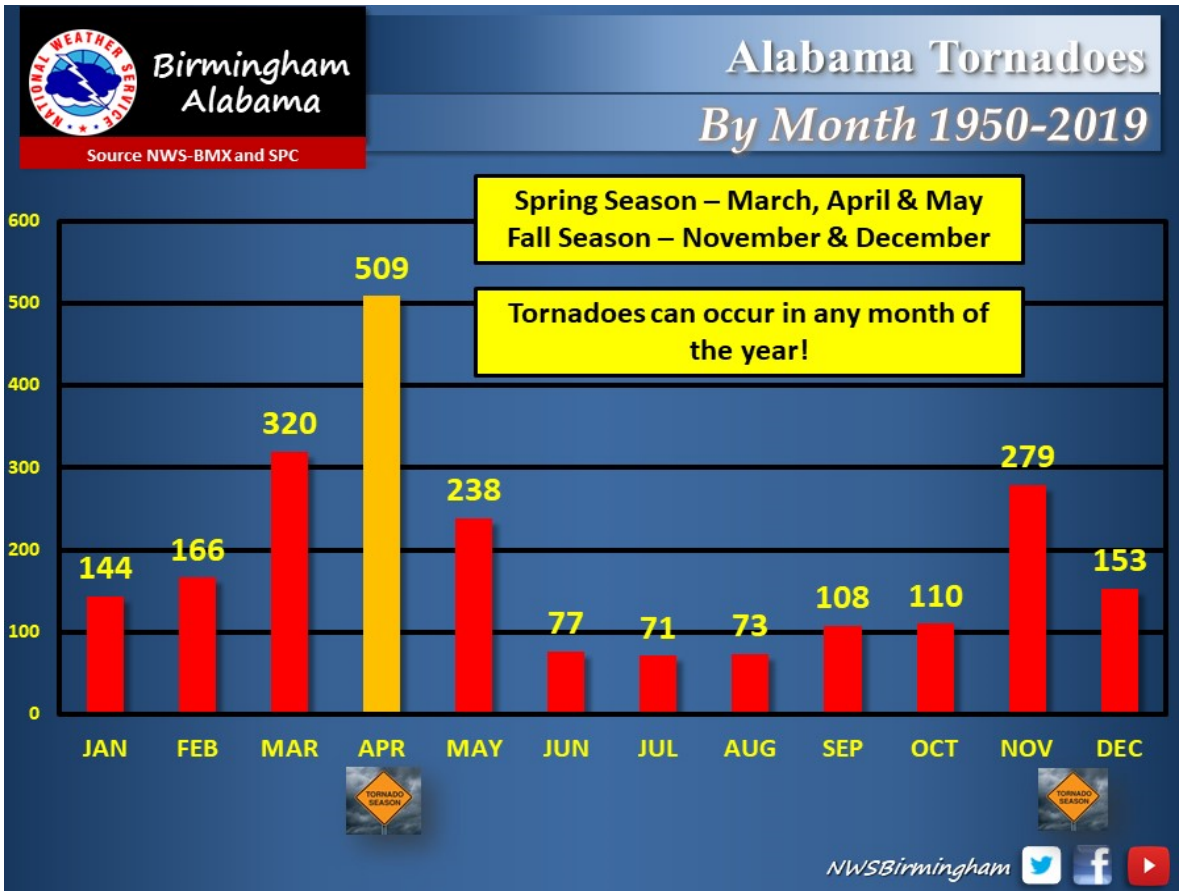
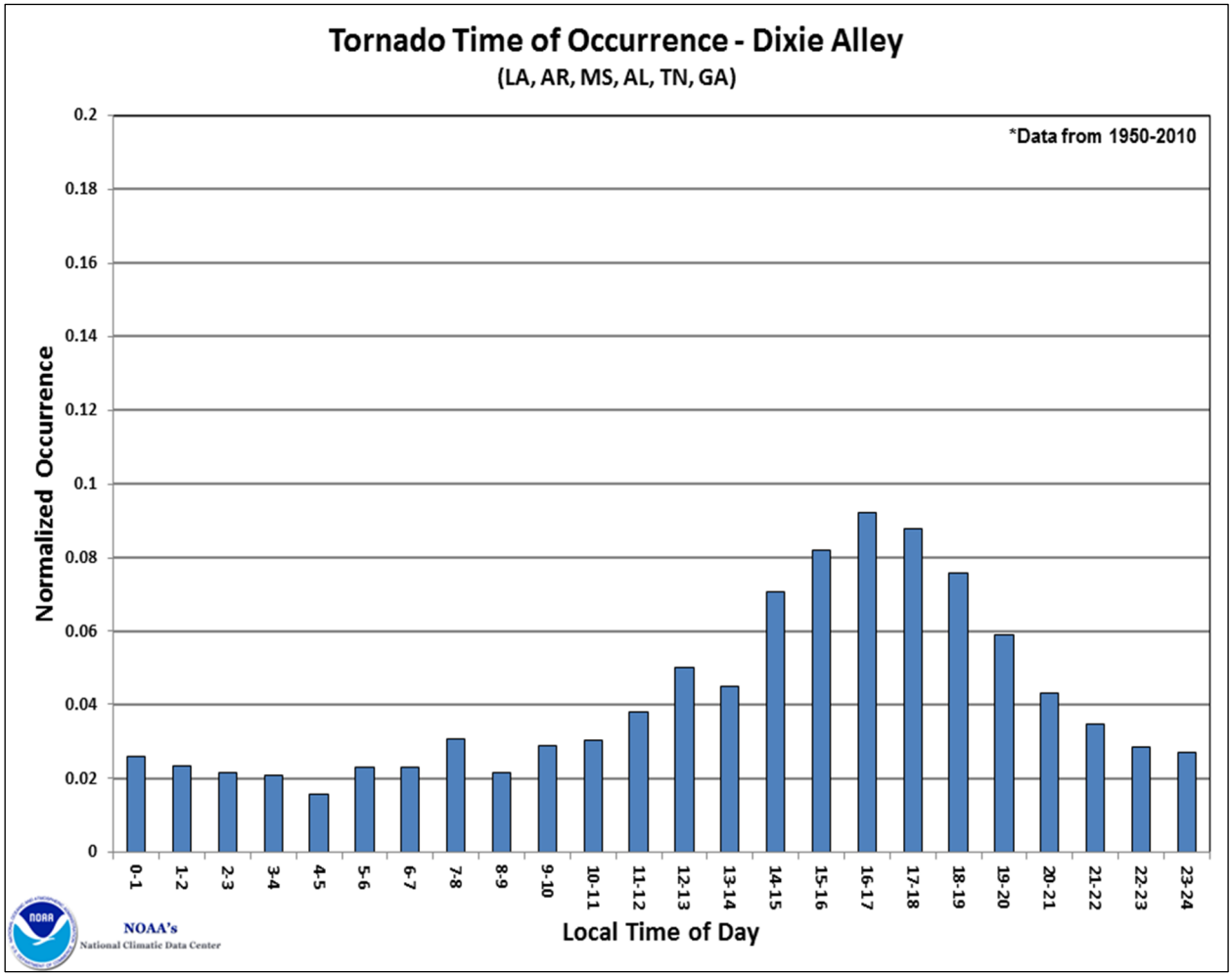


Chart 5-2. Time of Occurrence for Tornadoes in Dixie Alley, 1950-2010



Extent and Intensity of Potential Tornadoes

Tornadoes pose a significant threat to Fayette County communities. The Hazard Mitigation Planning Commission (HMPC) ranked tornadoes second among all hazards in terms of exposure, risk, and probability of future occurrences (see Appendix D "Hazard Ratings and Descriptions"). In Fayette County, tornadoes occur almost yearly and can be severe. As shown on Map 5-2, the average tornado impacting Fayette is an EF2 and most originate within the county. Table 5-5 lists the strength of the tornadoes from 2014-2020. Seven of the tornadoes were an EF1 and five were EF0.

Map 5-2. Fayette County Tornadoes, 1950-2018

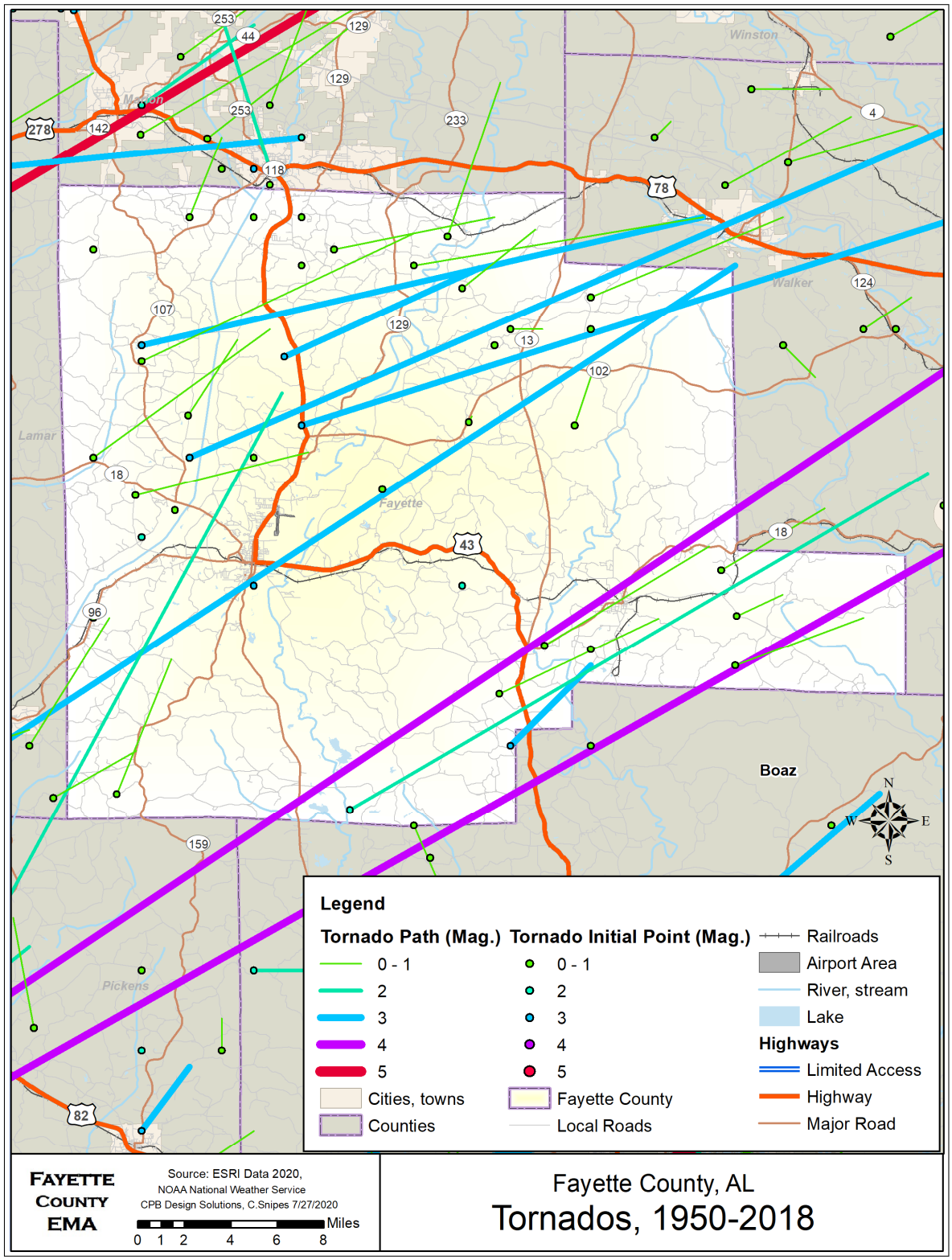


Table 5-5. Annual Summary of Tornado Events, 2014-2020

BEGIN DATE	MAGNITUDE OF TORNADO (EF-SCALE)
04/28/2014	EF1
02/02/2016	EF1
03/31/2016	EF0
03/31/2016	EF1
03/31/2016	EF1
11/29/2016	EF0
08/31/2017	EF1
02/23/2019	EF0
02/23/2019	EF1
04/12/2020	EF1
04/12/2020	EF0
04/12/2020	EF0

Source: National Weather Service

The primary effects from tornadoes in Fayette County include loss of life; property damage; infrastructure destruction and damage; and sanitation and water delivery interruption. Other impacts from tornadoes include the need for shelters for those who lost their homes due to destruction; inability to travel due to damaged roadways or destroyed automobiles; disruption in utilities causing hardships for those impacted; and an increase in disease carrying insects and lack of potable water due to poor sanitation and water delivery disruptions.

Previous Occurrences of Tornadoes

The tornadoes that have touched down over the last five years have done very little damage to structures. NCDC reports numerous incidents of uprooted trees and damages to outbuildings but no real damage to any substantial structures which is attributed to the rural nature of the county.

Between 2014 and 2020 there were 12 recorded tornado events. Multiple tornadoes touched down on a single date twice between 2014 and 2020. The average strength of the tornadoes during that time was EF1. According to NCDC records, since 1996 four deaths and 8 injuries have been reported as associated with tornadoes in Fayette County with the 4 deaths and 4 of the injuries occurring from the tornadoes on April 27, 2011. There were no recorded deaths or injuries for the tornadoes between 2014 and 2020.

On April 27th, 2011, at least 28 tornadoes touched down in central Alabama, causing over a thousand injuries and 248 deaths within the state. A tornado with an EF-1 rating touched down in Fayette County in the early morning of April 27, lasting eight minutes and traveling 7.3 miles and causing significant damage to the town of Berry. This tornado injured four people. The second tornado, rated an EF-4, ripped through several counties, including Fayette, causing severe damage. A third tornado, rated EF-3, struck Fayette County destroying trees, a house, and outbuildings. Four people died in Fayette County as a result of these tornadoes.

One of the most damaging single tornado events occurred November 24, 2001. What was the longest tornado of the day began at 10:55 AM about two-tenths of a mile inside Pickens County, about 5.8 miles southwest of Kennedy. The tornado traveled across southeastern Lamar County damaging or destroying a number of structures south and east of Kennedy. The tornado traveled on a northeast track moving into Fayette County at 11:07 am. It went across the western and northern sections of the City of Fayette, doing serious damage to a number of structures.

From the City of Fayette, the tornado traveled across mostly rural areas damaging structures and downing numerous trees and power lines. The tornado crossed into Walker County at 11:41 am, south-southwest of Carbon Hill before ending. The total path length has been estimated at 38.9 miles with a Fujita-scale rating high of F3. The tornado began with F0 damage in Pickens County, but strengthened to F3 intensity in southern Lamar County. It weakened some as it moved across Fayette County where the Fujita rating was an F2. The path was 300 yards wide in Lamar County, but was estimated to have decreased to about 90 yards wide across much of Fayette County. Two people were killed in a mobile home in Lamar County just southwest of Kennedy, and one person was injured. No deaths or injuries were reported in Pickens, Fayette, or Walker counties.

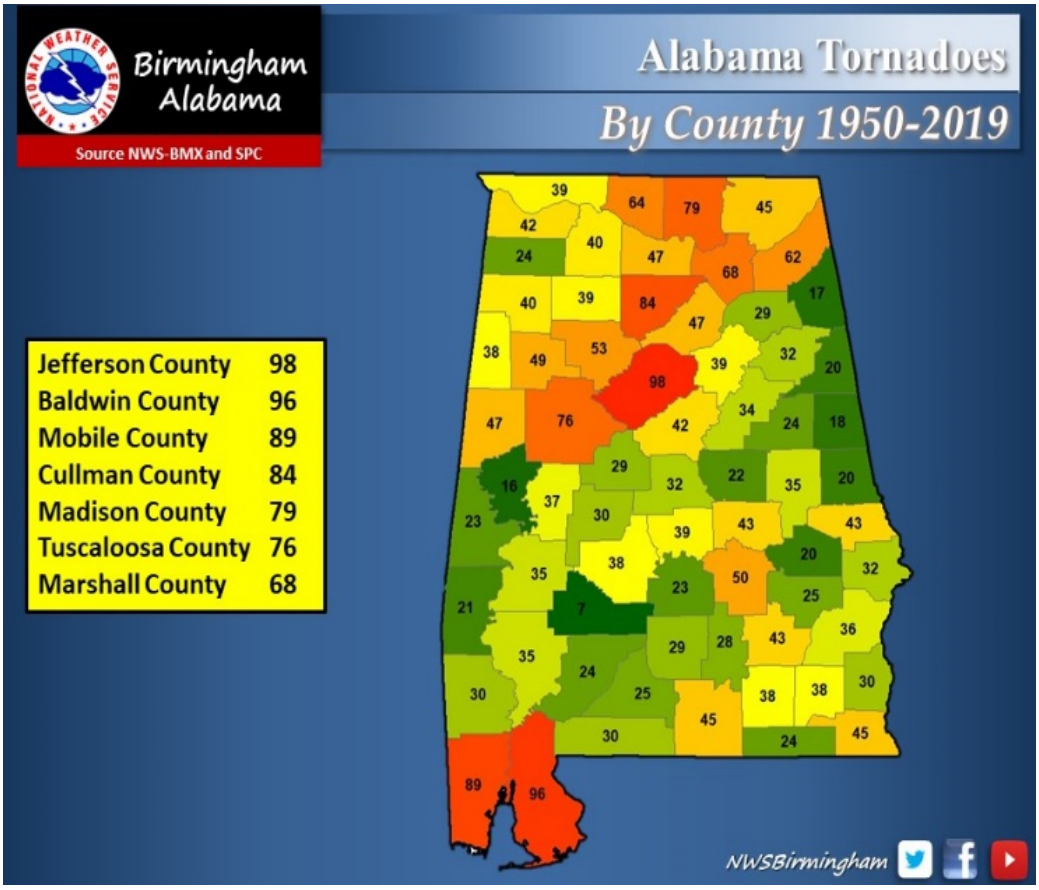
Probability of Future Tornado Events

Even though tornadoes are known to be unpredictable in location, frequency, and intensity, based on past records, Fayette County will experience tornadic activity at some point each year. Springtime is the most likely time for tornadic activity followed by a historical spike in November. There has been discussion in meteorological circles that climate change may result in future increases of tornado events in the southeast. Jeff Trapp, a professor of atmospheric science at Purdue University indicates that, “while it's unclear how the intensity or frequency of tornadoes will increase, there may be more days featuring conditions ripe for twisters. We would see an increase in the number of days that could be favorable for severe thunderstorm and tornado formation. The tornado season, which varies by region, could be expanded".

Based on historical data, Fayette County can anticipate continued annual tornadic events causing minor structural damage. Map 5-3 shows that Fayette County has the 12th highest number of recorded tornadoes in Alabama. According to the Alabama State Plan, Fayette County ranked 17th when ranking the counties according to property damage caused by tornadoes between 1950 and 2017.

As with severe storms, public awareness about preparing for tornadic events and the availability of shelters, and dependable warning systems are necessary to lessen the impact of these types of hazards. More information about mitigation measures that can be enacted can be found in Chapter Six – “Mitigation Strategy”.

Map 5-3. Alabama Tornadoes by County 1950-2019



5.3.3 Floods

Fayette County is comprised of 2 square miles of water, 0.27% of its territory. Due to this statistic combined with its extensive undeveloped land, the Hazard Mitigation Planning Committee considers flooding a low to moderate concern to Fayette County communities.

Flooding in Fayette County involves either flash floods or riverine floods. Flash floods are instances where heavy rainfall over-saturates the ground and overwhelms drainage infrastructure meant to carry rainwater away. This type of flood comes on quickly, often in less than 6 hours, and the waters can move very fast which can be dangerous. Flash floods can occur in any location at any time of year and can cause damage to roads, property, and even injury or death. Records show that occasional storm bursts exceeding four inches of rain in a short period of time can force evacuations of homes, road and bridge closings, damage to vehicles, and flooding of buildings.

Riverine flooding usually occurs when very intense or prolonged rainfall cause the waterways of the county to exceed their capacity. It can also be caused by the failure of a dam, as discussed under the section “Dam Failure”. Fayette County experiences riverine flooding, primarily along local streams and tributaries of the Sipsey River and Luxapallila Creek.

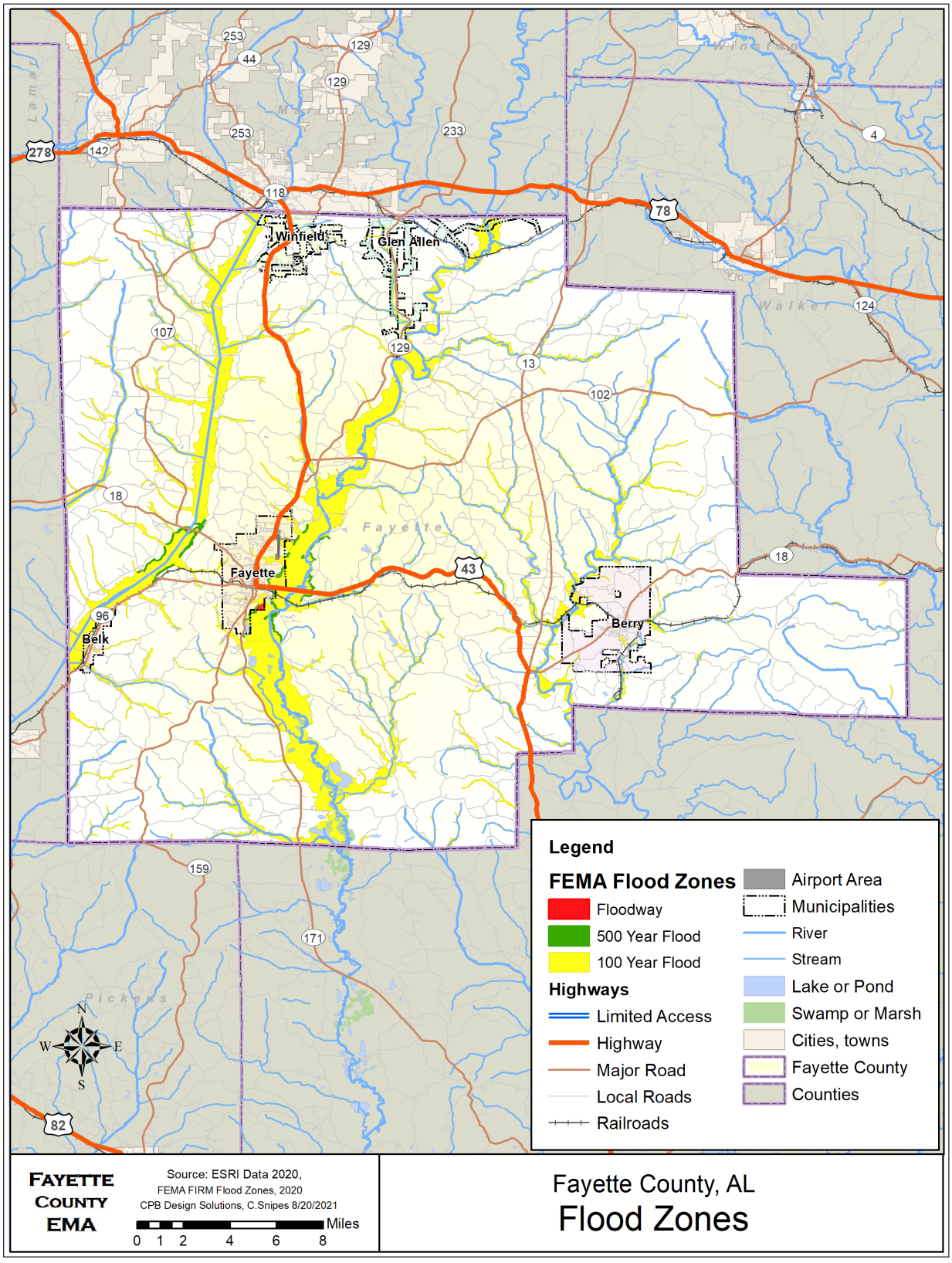
Location of Potential Floods

Flash floods are not limited to or restricted by low lying areas or areas that are considered floodplains; they are common and occur equally throughout the county as rain falls too quickly to be absorbed by the ground and overwhelms storm drainage systems. Impervious surfaces and saturated areas increase the possibility of flash flood events as does poorly maintained drainage systems.

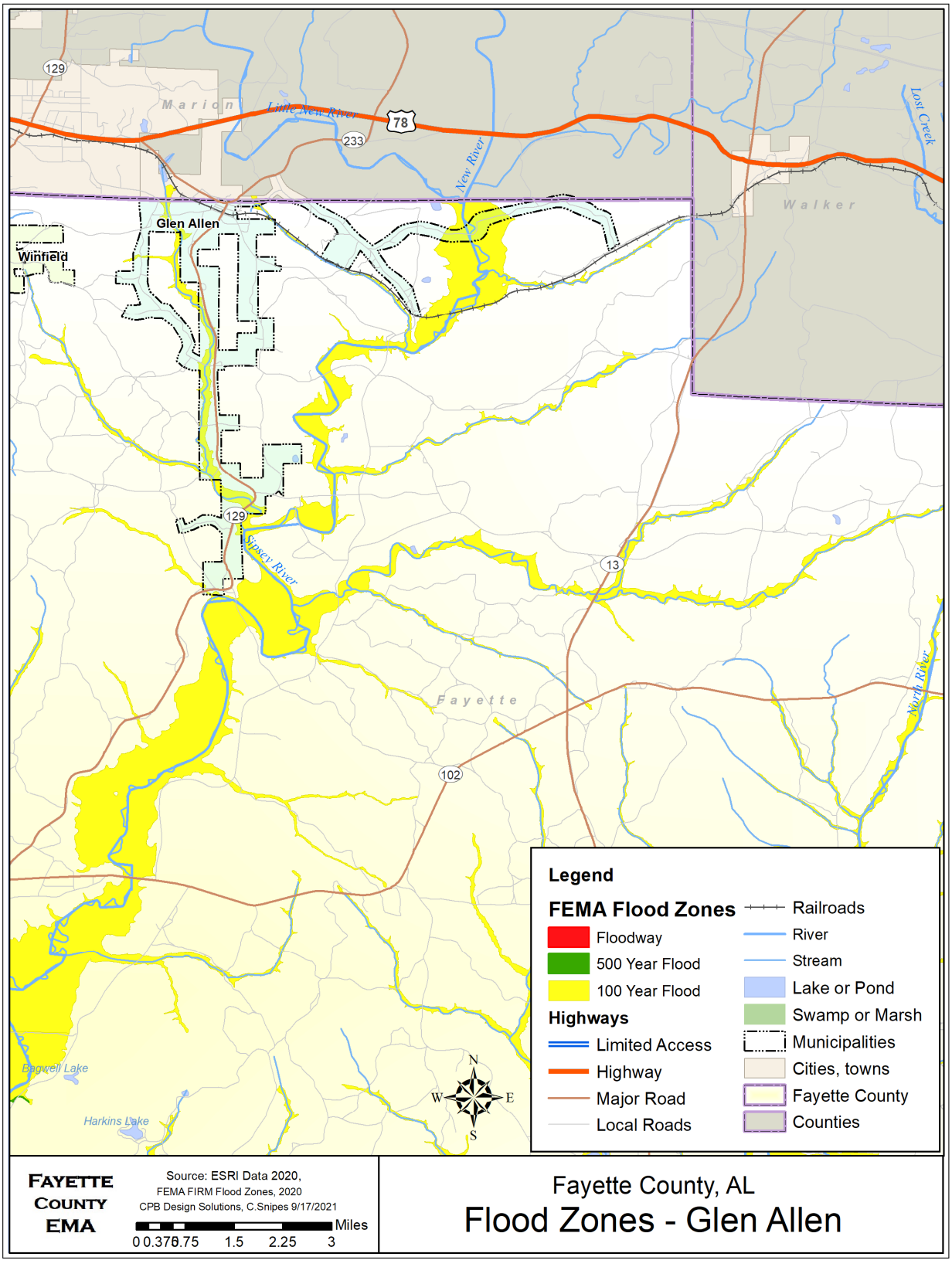
Map 5-4 "Fayette County Flood Zones" shows the location of the 100-year and 500-year flood zones which mainly run in a north/south direction in the central and western portion of the county either emanating from the Sipsey River or Luxapallila Creek and their tributaries. Maps 5-5 through 5-9 show the flood zones for Glen Allen, the City of Fayette, Belk, and Berry respectively. The only floodway in Fayette County is located in the southeastern corner of the City of Fayette as shown on Map 5-7. As can be seen on the maps, the 500-year flood zones run along the eastern border of the City of Fayette and a portion of Luxapallila Creek.

Map 5-10 shows the topography of Fayette County around Luxapallila Creek and the Sipsey River. Map 5-11 shows a closer view of the Sipsey River south of the City of Fayette. As shown on the maps, most of the area around the Luxapallila and Sipsey is undeveloped land, used mainly for agriculture, timber production, or hunting. Although there are areas of significant 100-year flood zones, the lack of development in those areas result in limited flood related issues.

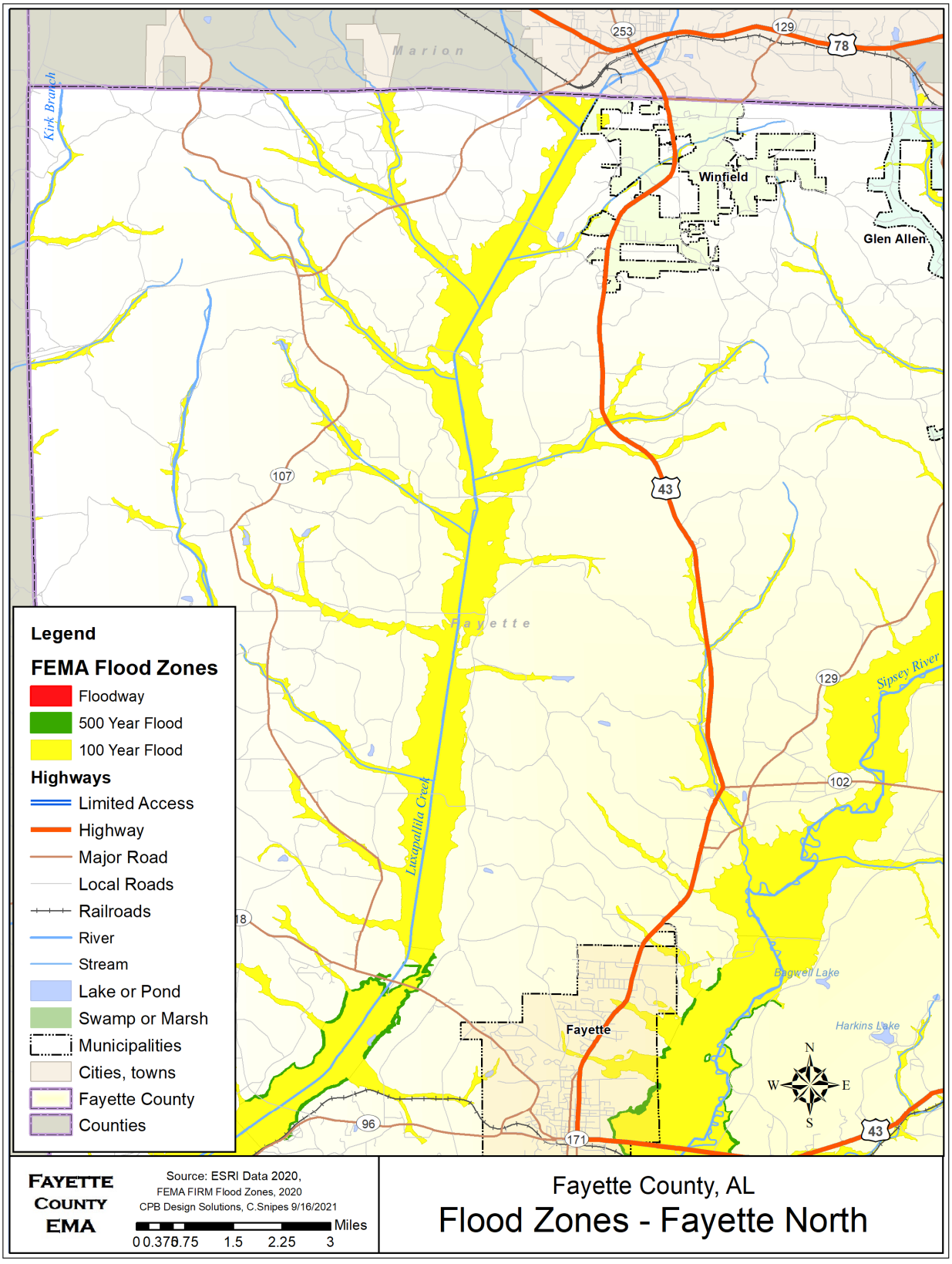
Map 5-4. Fayette County Flood Zones



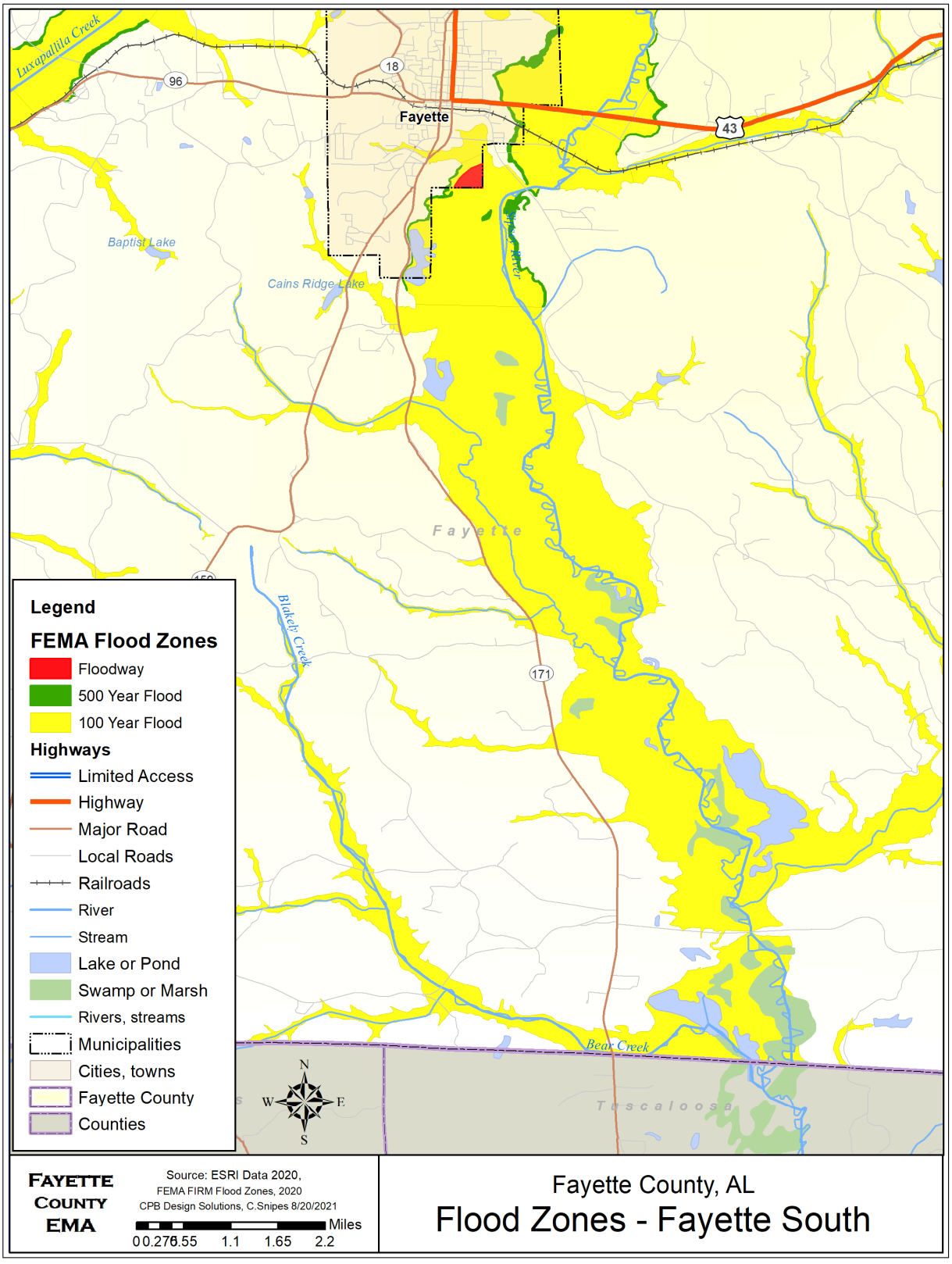
Map 5-5. Town of Glen Allen Flood Zones



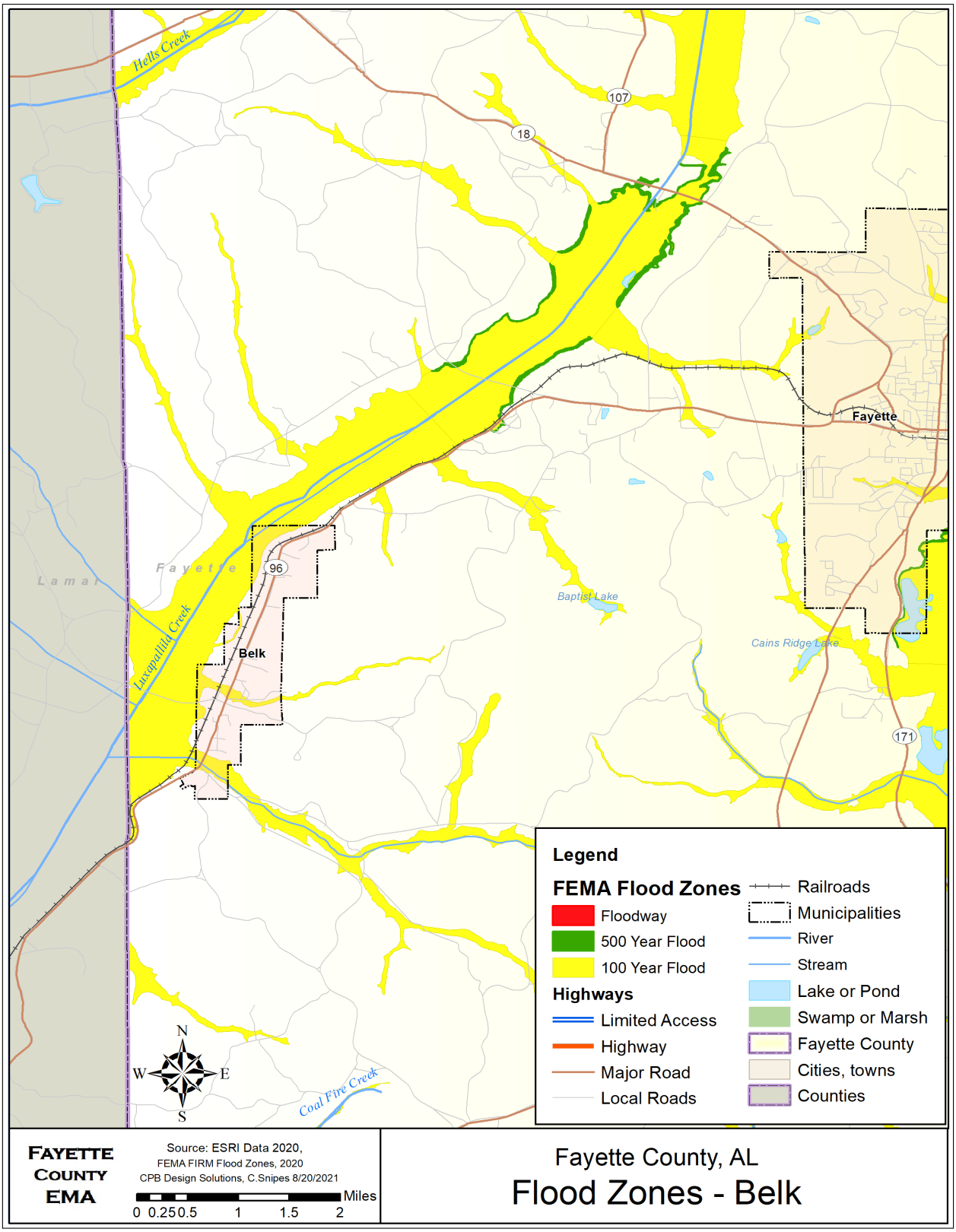
Map 5-6. City of Fayette (North) Flood Zones



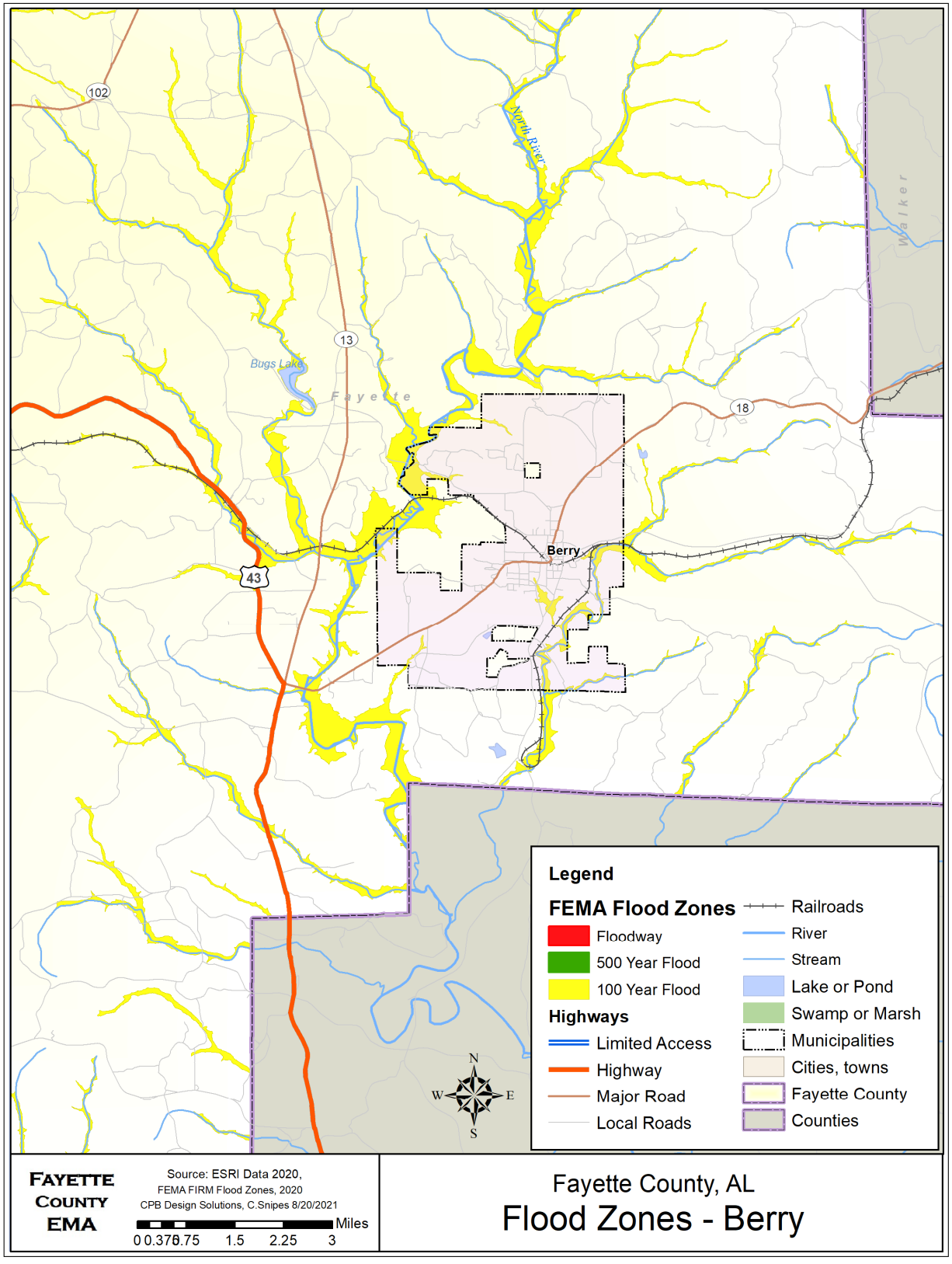
Map 5-7. City of Fayette (South) Flood Zones



Map 5-8. Town of Belk Flood Zones



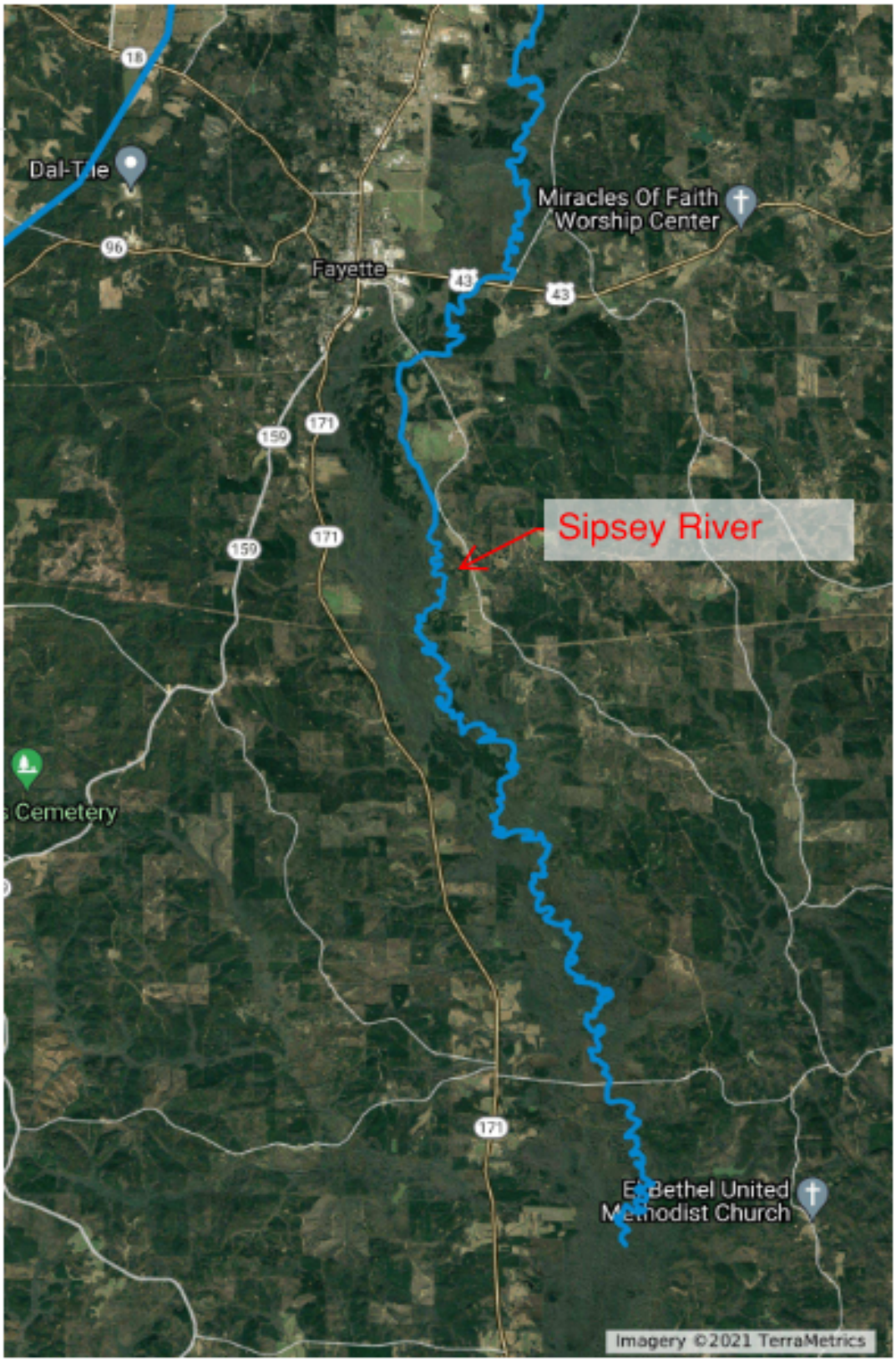
Map 5-9. Town of Berry Flood Zones



Map 5-10. Luxapallila Creek and Sipsey River Surrounding Topography

© Google Maps

Map 5-11. South Portion of Sipsey River Surrounding Topography



© Google Maps

Extent and Intensity of Potential Floods

There are three main river basins within Fayette County. They are the Luxapallila, Sipsey and Upper Black Warrior River Basins. Most of the rivers and tributaries throughout the county drain into one of these three basins. Some also empty into the Middle Tombigbee-Lubbub, Lower Black Warrior and Mulberry Fork Basins. Map 5-12 shows Fayette County with the 3 main basins delineated.

There are two main flooding sources in Fayette County as indicated in the Flood Insurance Study of 2010. They are the Sipsey River and Luxapallila Creek. The flood depths for these flooding sources along with other tributaries per HAZUS are included on Maps 5-13 through 5-18. The maps also show which basin is impacted by the different waterways.

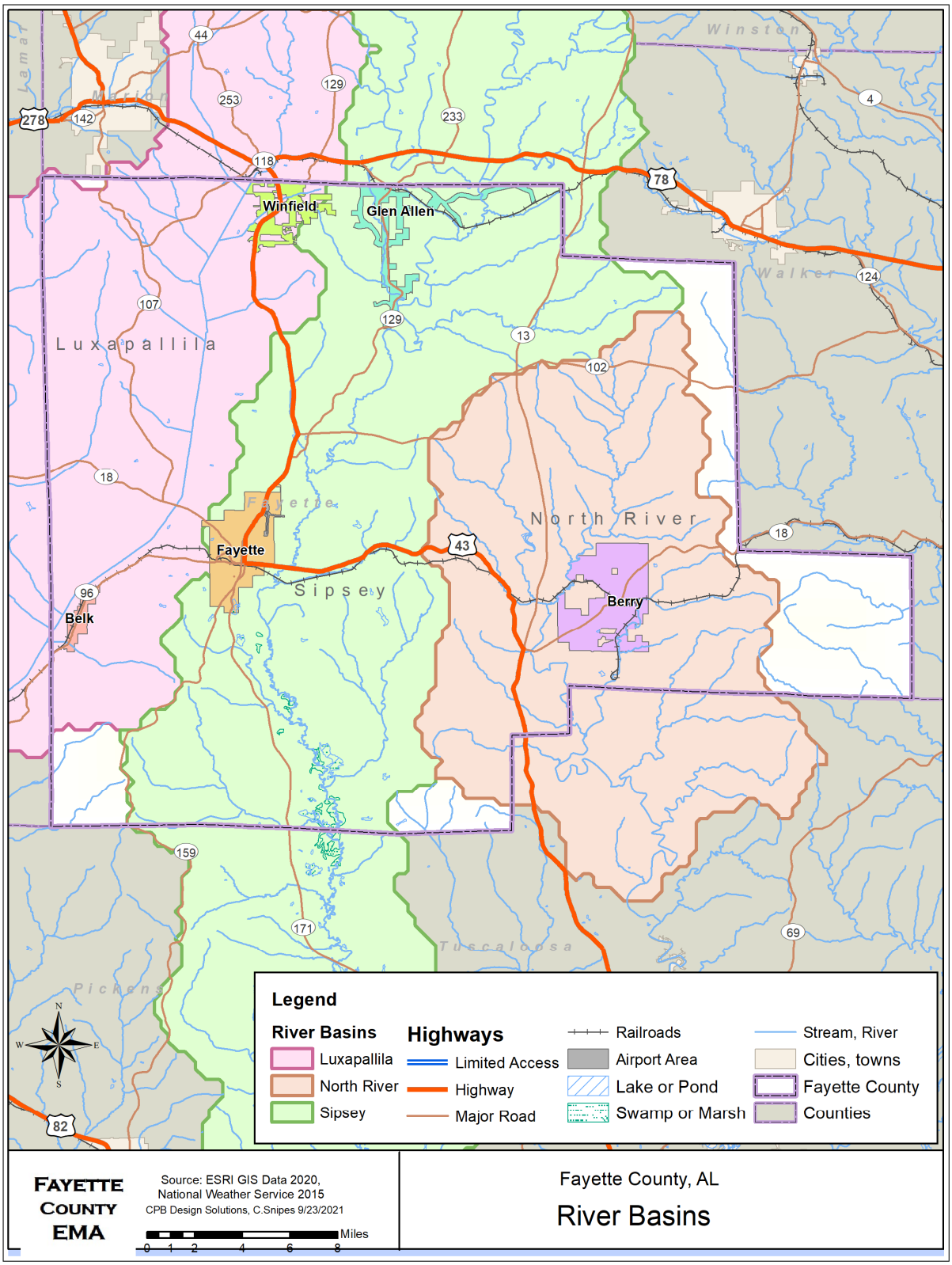
The extent of riverine floods varies according to the amount of rainfall, the rate of storm water flow, and the capacity of the receiving channel to discharge flood waters. Due to the straightening and deepening of Luxapallila Creek by the Army Corps of Engineers, the water within the Luxapallila moves efficiently through the channel and seldom breaches its banks. The Sipsey River has not been altered by the Army Corps and therefore retains its original shape, winding its way across the county often doubling back on itself resulting in a wider floodplain footprint than that of the Luxapallila. The Sipsey is considered a swampy, low-lying river which lends itself to be easily backed up due to downed trees, beaver dams, and similar obstructions.

Due to what Russ Taylor, Fayette County EMA Director, calls "generational mitigation techniques", there are limited impacts due to riverine flooding within Fayette County. Taylor defines generational mitigation techniques as mitigation measures that are taken by each generation, such as not building where they know it will flood. Due to the knowledge of such areas being passed from generation to generation, development within those areas is almost non-existent.

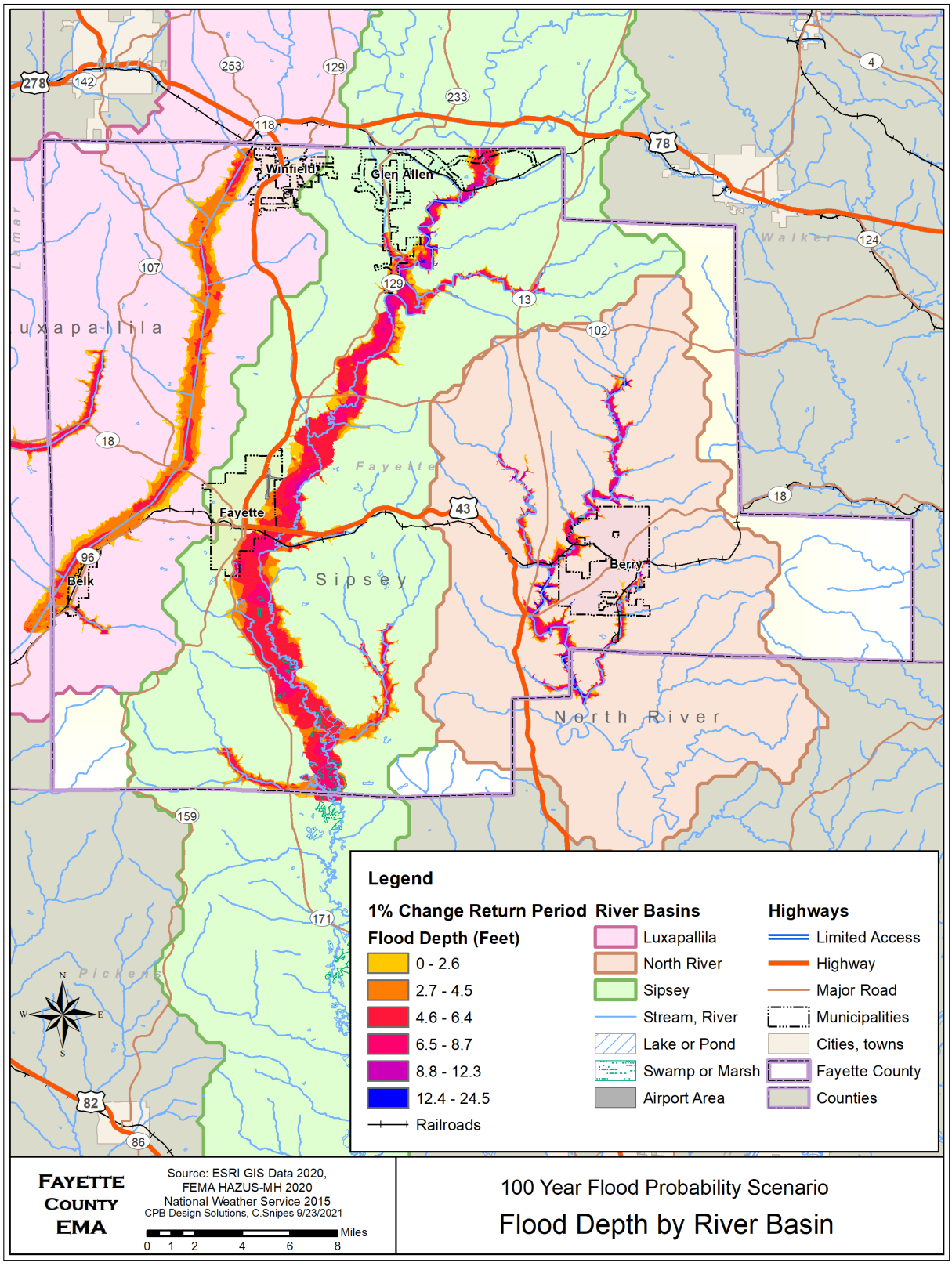
Flash flooding events can vary in intensity depending upon the amount and rate of precipitation that falls during a period of time, where the rainfall occurs, and the quality of the drainage system. The effects of a flash flood could range from several inches of water on the road which requires caution when driving to an event of rushing water that floods buildings and sweeps cars away.

Possible impacts from floods in Fayette County include loss of life; property and infrastructure damage; crop damage; and dam failure. Other impacts from flooding include rising water levels that can quickly sweep people along in its path; rapidly moving water destroying anything in its path, leaving hazardous mold and conditions ideal for insect breeding; periods of standing water killing inadaptable plants; flowing water removing sediment and nutrients from the soil; and breached dams allowing water to flood into the surrounding floodplain, resulting in destruction of crops and property.

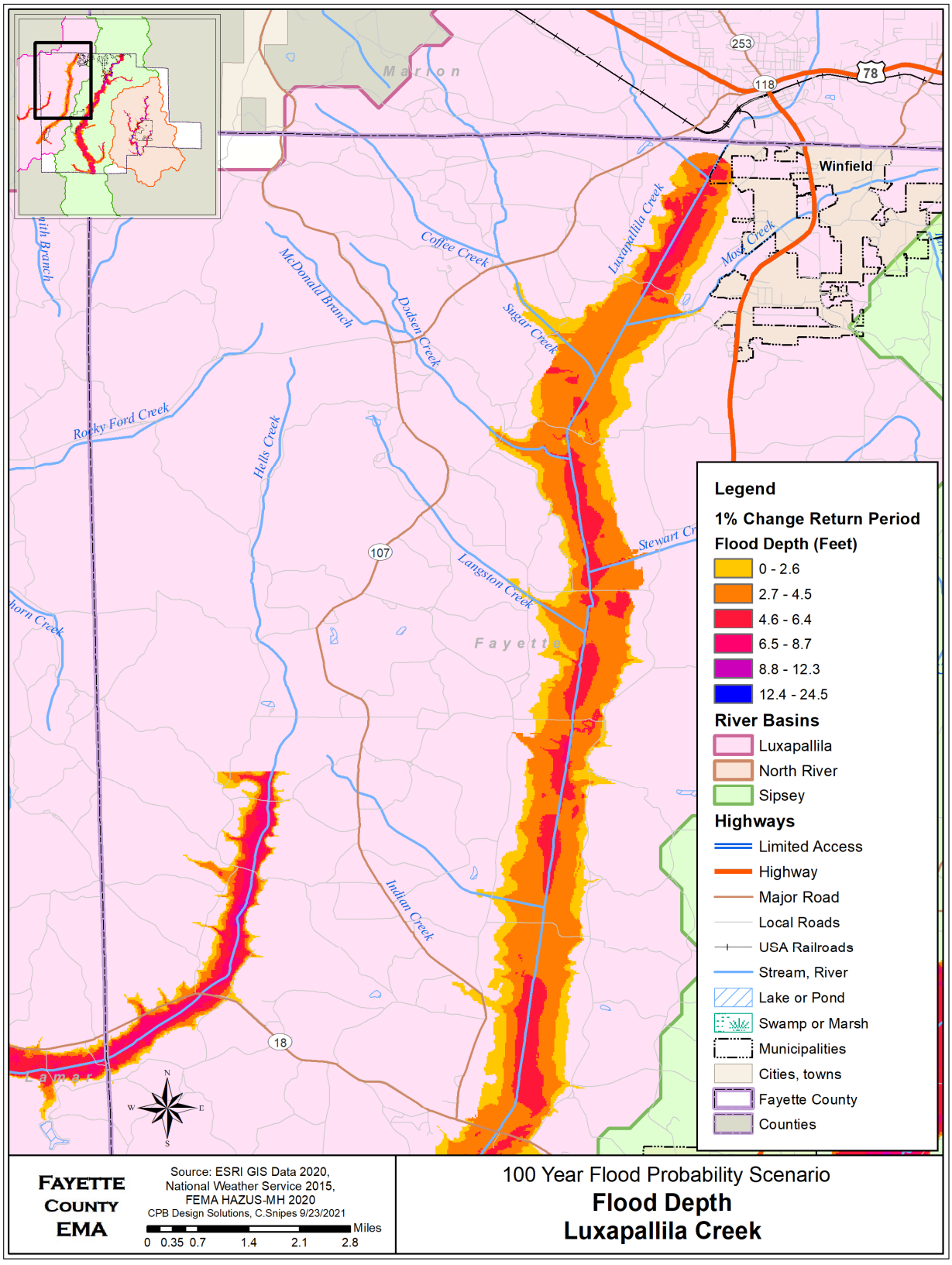
Map 5-12. River Basins of Fayette County



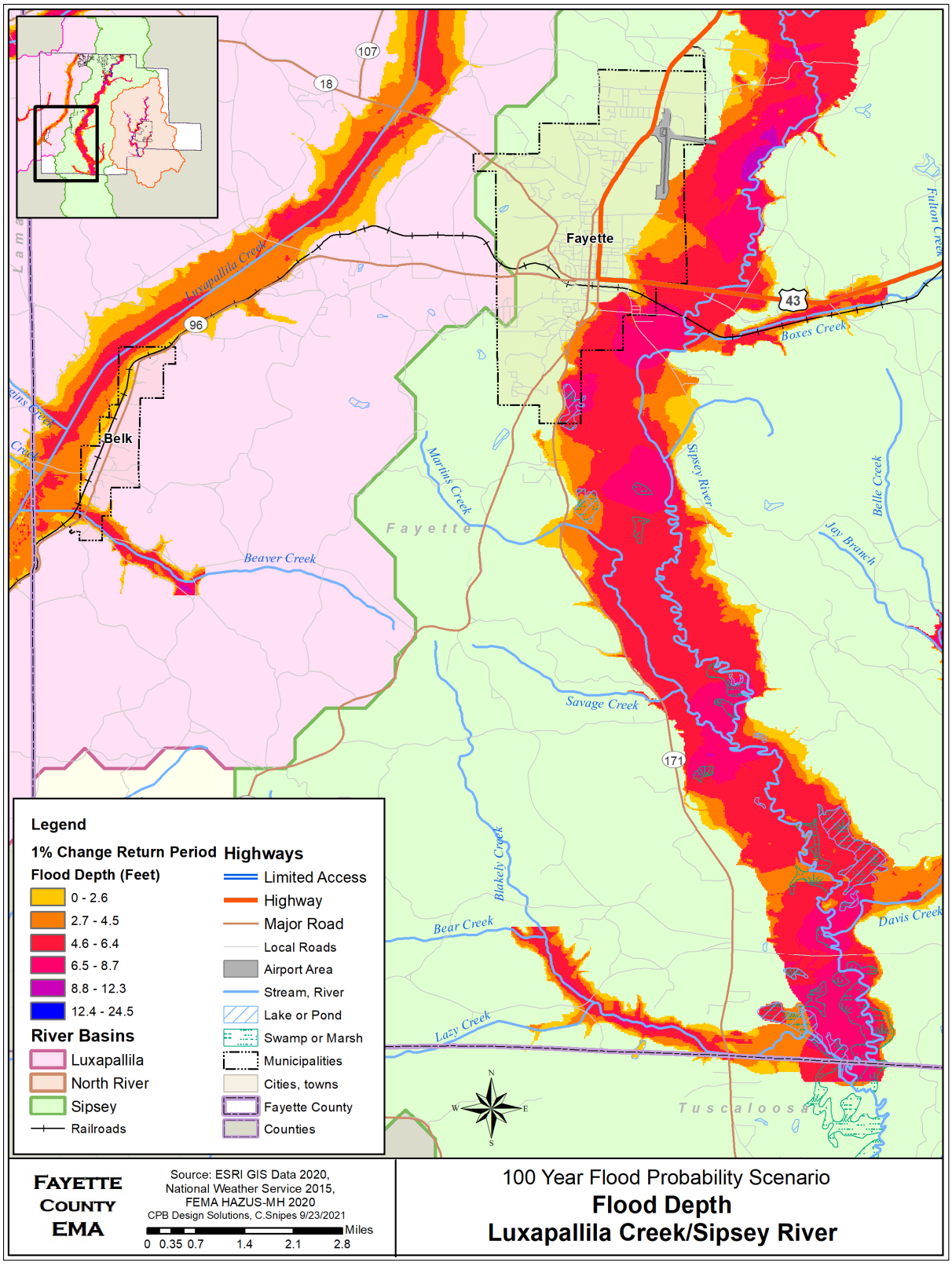
Map 5-13. River Basins of Fayette County - Flood Depths



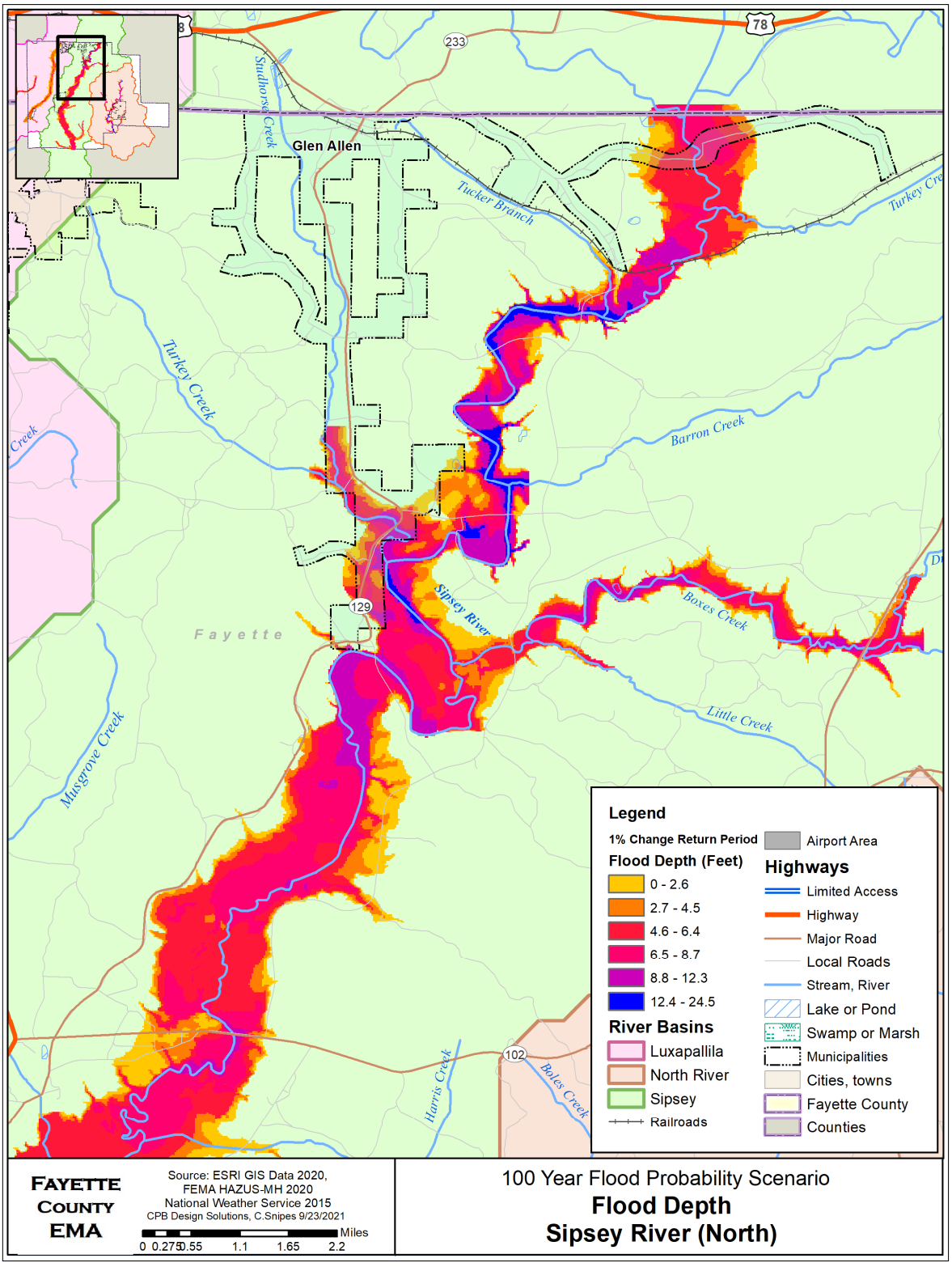
Map 5-14. Flood Depths -Luxapallila Creek (North)



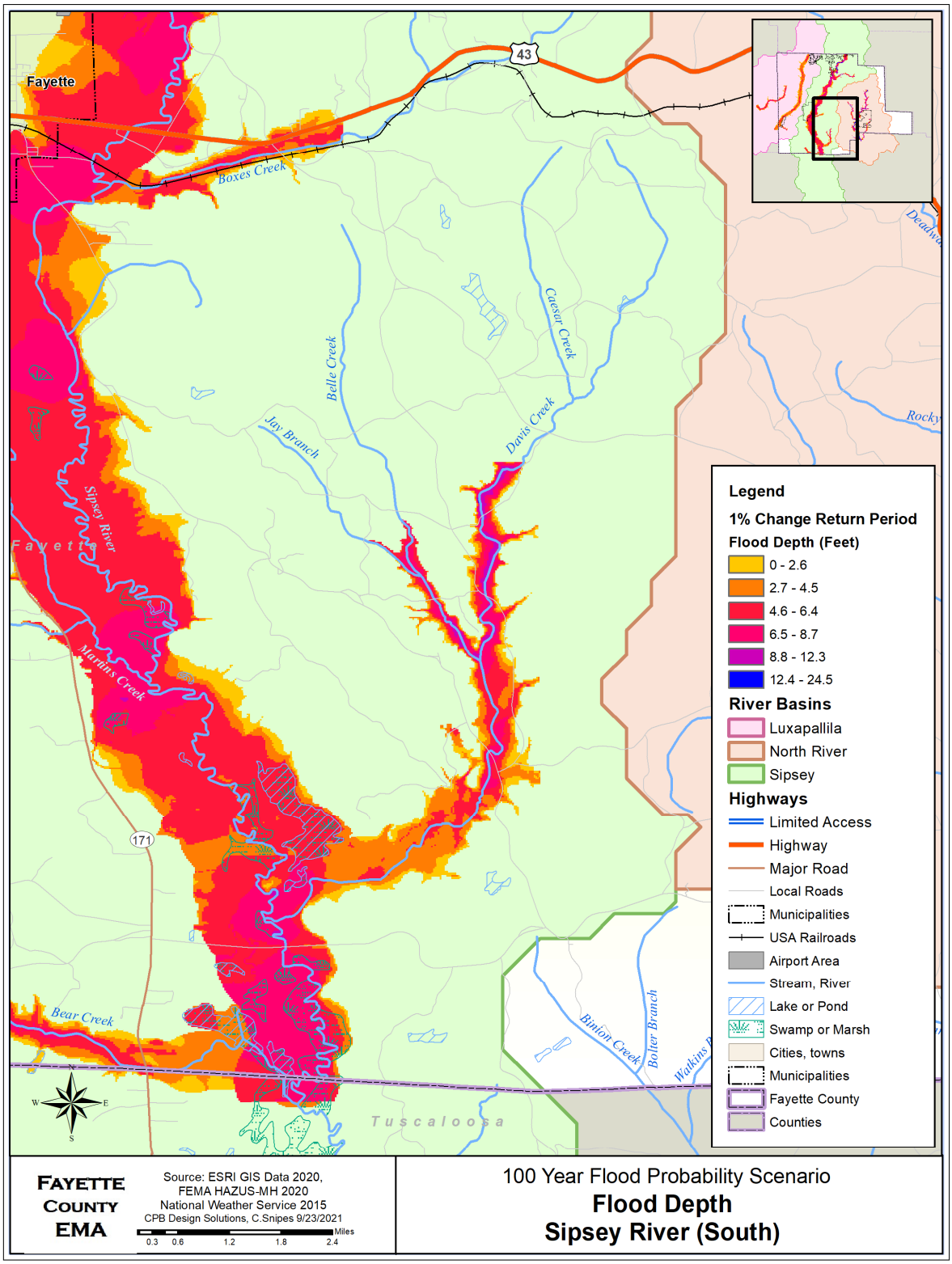
Map 5-15. Flood Depths -Luxapallila Creek (South) and Sipsey River (South)



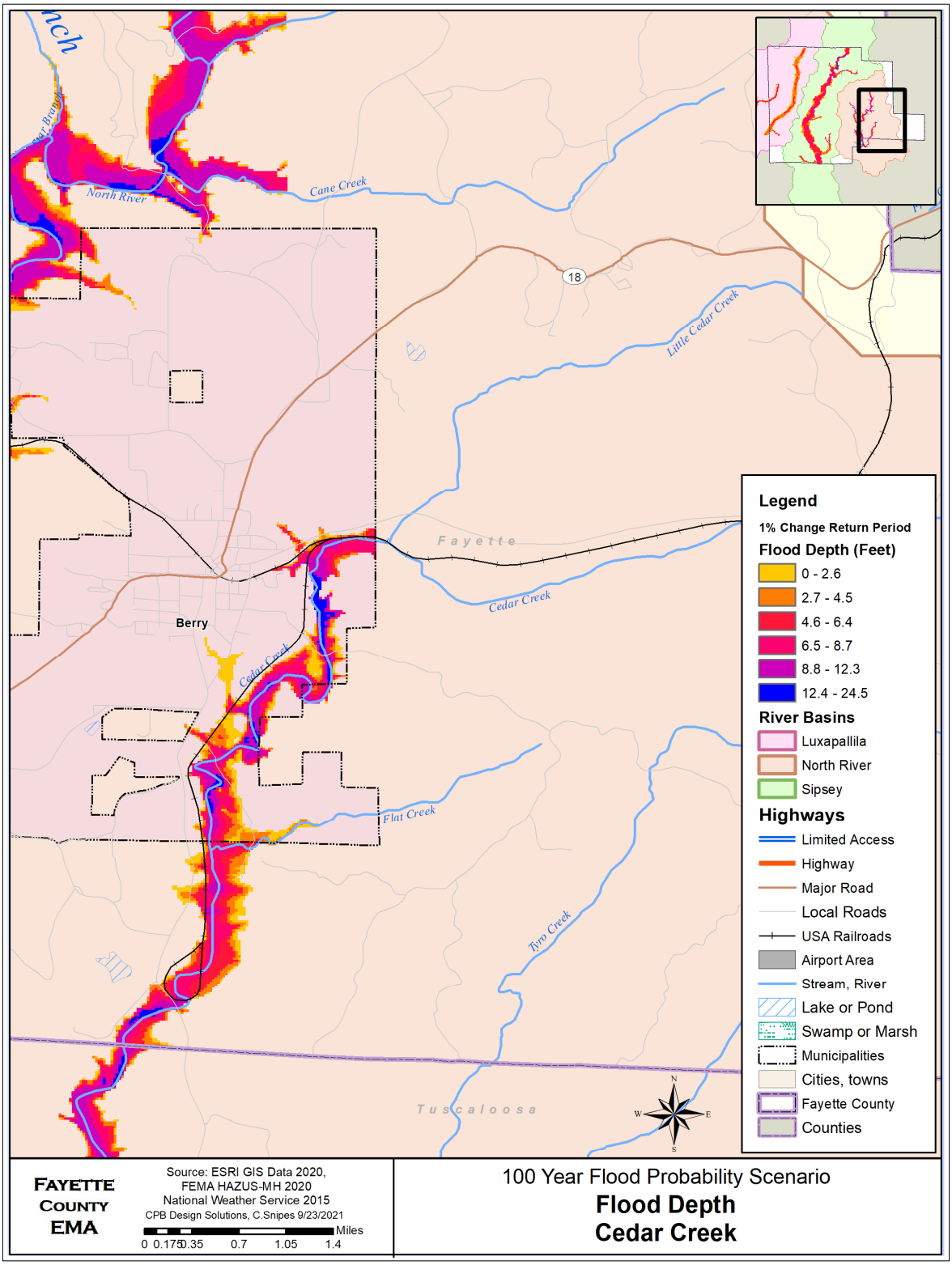
Map 5-16. Flood Depths -Sipsey River (North) and Boxes Creek



Map 5-17. Flood Depths -Sipsey River (South) and Tributaries



Map 5-18. Flood Depths -Cedar Creek



Previous Occurrences of Floods

Flash flooding is the main type of flooding that occurs in Fayette County. This is largely due to inadequately sized, poorly maintained, or dated drainage systems. Some systems have not been upsized to compensate for increases in runoff due to impervious surfaces; other systems are not properly maintained, allowing buildup of materials within storm drains or ditches; while other drainage systems have exceeded their years of viability and have not been replaced since they were built resulting in collapsed pipes and culverts causing the backup of water and results in overtopping the roadways causing washouts and damage to culverts. The municipalities, county, and state perform some level of maintenance on their ditches and drainage systems; however, resources are limited, and many structures are in need of replacement.

According to the Alabama State Plan, Fayette County is 57th in reported floods between 1996 and 2017 with 11 floods reported, which averages to approximately 1 event every two years. Table 5-6 shows the events between 2010 and 2020 listed in the NCDC hazard events tables. Events from prior years can be found in Appendix E.

Table 5-6. Flood Events, 2010-2020

Year	Type	Event Narrative
3/9/2011	Flash Flood	Several streets were flooding in they Fayette area.
4/20/2011	Flash Flood	Flooding was observed across the northern portions of Fayette County, described as where flooding had not been observed in a long time.
5/8/2012	Flash Flood	Heavy rainfall resulted in water 6 inches deep across streets in downtown Fayette.
7/4/2013	Flash Flood	A culvert was washed out on Jackson Robertson Road, just off of Sand Springs Road.

Source: National Climatic Data Center, 2020

Although flooding was not included in the NCDC data, there were reports of damage to roadways in the county and the city of Fayette. In 2020, Fayette County was included in the FEMA-4546-DR for Public Assistance due to flooding that occurred between February 5th and March 6th. The main flooding areas in the past have involved the following roadways: County Roads 21, 36, 79, and 83. Other trouble areas include Bluewater Trace, Rushing Road, Providence Street, Maddox Road, Lakeview Circle Drive, McDonald Road, and west of Main Street between 2nd and 3rd Avenues. In order to address these issues application to FEMA has been submitted to improve culverts in the area and the installation of a retention pond.

Probability of Future Flood Events

Past trends indicate that periods of heavy rainfall can create flooding throughout Fayette County. Fayette County should expect approximately one flood event every 2 years, with the severity of damage varying from one year to the next. The occurrence of 100- and 500-year flood events are unlikely, with damages expected to be minimal.

With respect to climate change, an increase in temperature and moisture in the air can lead to heavier precipitation events: however, the causes of flooding are varied, including improper land uses on floodplains, surface paving, and the quality of storm drainage systems. The extent of damages can also vary dependent upon quality of flood forecasting, settlement patterns, warning systems, and citizens' adherence of the recommendations of authority with regards to the flood warnings.

As long as the citizens' situational awareness and due diligence continues to direct the development of the county around the flood areas, impacts from flooding should remain at a very low level. Measures include maintenance of existing systems and proper planning for future developments such as the construction of curbs and storm sewer projects to reduce the flooding and rerouting flood waters to uninhabited locations as the City of Fayette has done in the past.

While there are some mitigation measures the jurisdictions can do, some causes of flooding might require outside help to rectify, possibly through state regulation since the county's hands are tied on many measures due to their lack of home rule. Such measures include regulation in regard to the placement of fiber optic cable. The shallow placement of cables inhibits the proper maintenance of ditches. When county crews perform maintenance on the ditches, many cables become damaged and therefore the proper depth for the ditches cannot be maintained. Regulations for utilities in rural counties such as Fayette must be enacted at the state level. More mitigation measures in relation to floods can be found in Chapter Six – "Mitigation Strategy".

5.3.4 Droughts

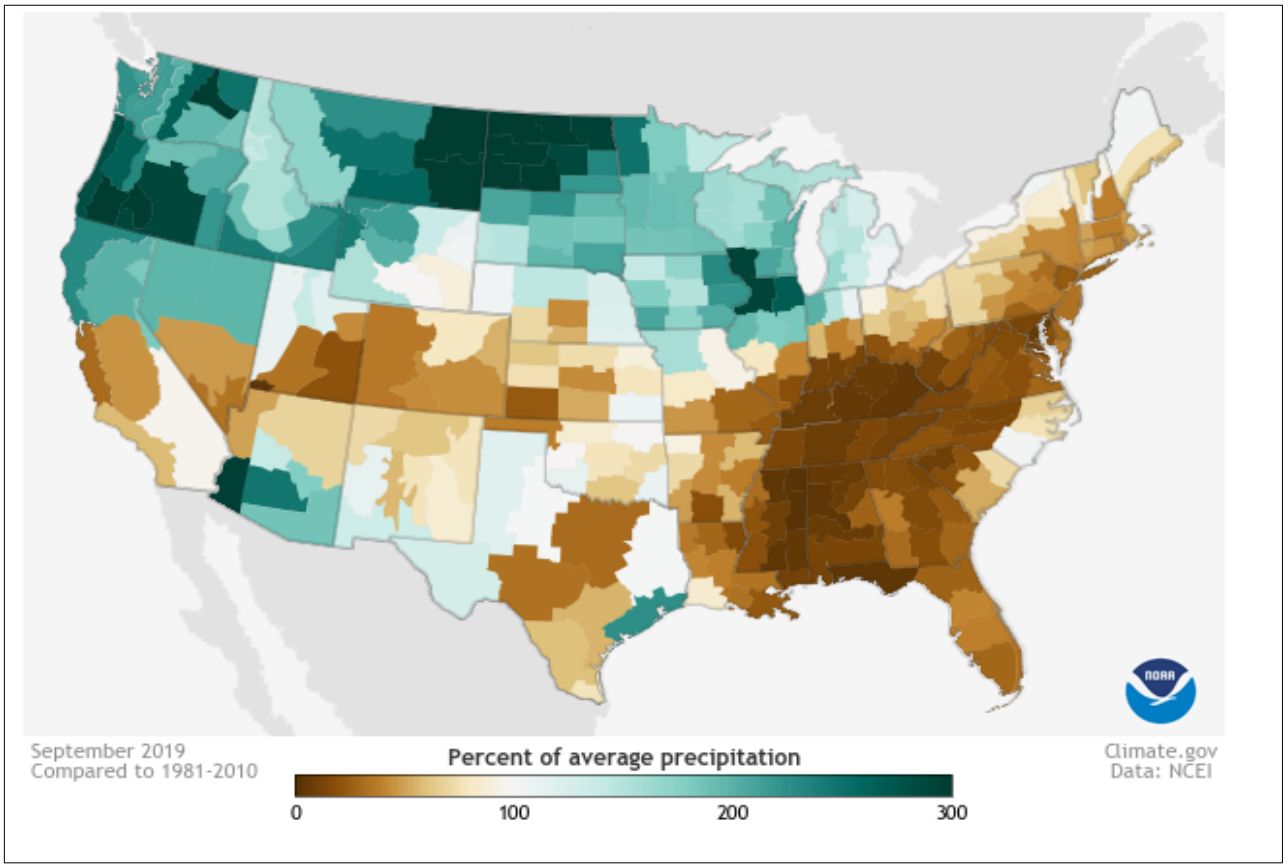
A drought is an event of prolonged shortages in the water supply, whether atmospheric, surface water or ground water. A drought can last for months or years and can be declared after as few as 15 days. It can have a substantial impact on the ecosystem and agriculture of the affected region, harm to the local economy, and increase the risk for wildfires. Periods of heat can significantly worsen drought conditions by hastening evaporation of water vapor. After severe drought, erosion and landslides often occur because when it rains the vegetation has died and will not hold soil.

Agriculture-related disasters and disaster designations are quite common during times of drought. Many counties in the United States have been designated as disaster areas in the past several years, even in years of record crop production. Livestock is affected because there is no healthy land to graze on, and farmers are forced to use hay that was intended as winter feed.

A drought phenomenon known as "flash drought" occurred in September 2019. The September flash drought impacted all of the southeastern states. Generally, droughts are caused by a lack of precipitation over an extended period of time. In contrast, a flash drought is preceded not just by a lack of rain, but also very high temperatures and/or an extensive number of sunny days. Even if the dry period is not especially severe, the very high temperatures combined with the abundance

of sunny days can pull moisture from the ground quickly. NOAA National Weather Service's Climate Prediction Center defines a flash drought as "an event during which an area experiences degradation by two or more drought categories in a four-week period, based on the U.S. Drought Monitor." Map 5-19 shows the areas impacted by the flash drought of September 2019 and Table 5-7 delineates drought classifications as outlined by the US Drought Monitor.

Map 5-19. Areas Impacted by the Flash Drought of September 2019



Precipitation anomalies represented as a percent of average precipitation for the United States during September 2019. Brown areas refer to areas with below-average amounts of precipitation while green-blue represents areas with above-average monthly precipitation. During September, record-breaking dryness enveloped the southeastern United States stretching into the Tennessee and Ohio Valleys. A flash drought occurred as a result. Climate.gov image using data from the National Centers for Environmental Information (NCEI).

Table 5-7. US Drought Monitor Classifications

Category	Description	Possible Impacts
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
D1	Moderate Drought	Some damage to crops, pastures
		Streams, reservoirs, or wells low, some water shortages developing or imminent
		Voluntary water-use restrictions requested
D2	Severe Drought	Crop or pasture losses likely
		Water shortages common
		Water restrictions imposed
D3	Extreme Drought	Major crop/pasture losses
		Widespread water shortages or restrictions
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses
		Shortages of water in reservoirs, streams, and wells creating water emergencies

Location of Potential Droughts

Droughts occur countywide, affecting all Fayette County jurisdictions equally. Some areas may be more susceptible to the ill-effects of drought such as agricultural areas and areas with vulnerable water supplies. During 2016, 2017, and 2018, Fayette County was included in the Secretarial Disaster Designations by the Secretary of Agriculture. By designating a county as either a primary or contiguous disaster county, emergency loans can be made available to the agricultural producers suffering losses. Other emergency assistance programs have used the designations to trigger eligibility for their disaster assistance programs such as the Farm Service Agency disaster assistance program.

Extent and Intensity of Potential Droughts

Droughts in Fayette County cause problems for the agriculture industry and can lead to infrastructure issues due to excessively dry ground. The dry ground can cause cracks and potholes in roadways which cause transportation issues and the lack of support around water distribution piping can lead to the pipe shifting and breaking causing water disruption. The impact on the livestock and crops can be devastating both economically and to the animals. The dry vegetation is a perfect condition for wildfires to spread very quickly. A water supply shortage will result in damage to the

sewer system, a lack of hydroelectric power causing brownouts or blackouts, and the necessity for water to be transported into the area.

Previous Occurrences of Potential Droughts

The flash drought of September 2019 was a significant event. Throughout the summer, temperatures were slightly warmer than average and summer precipitation across much of the Gulf was slightly below average. At the same time, rainfall amounts along the Mississippi and Missouri Rivers into the Tennessee Valley were much higher than average. Then, due to a lack of rain from tropical storms and hurricanes, Alabama saw its temperatures soar and record the driest September in the last 125 years.

On October 22, 2016, a drought emergency was declared due to a review of current and anticipated conditions and reported impacts, including rainfall, streamflow, reservoir, and ground water levels. The combination of little rainfall, above normal temps, falling reservoir and ground water levels were mitigated with water conservation. The drought rating from October to December 2016 was D3 and from January through April 2017 was a D2. This drought continued until May of 2017. The winter months of November, December and January of that time were exceptionally dry; the driest of any months between January 2015 and December 2020. Water conservation efforts were employed to try to mitigate the effects of the drought. Table 5-8 shows a breakout of the drought intensity rating during this period.

Table 5-8. Annual Summary of Drought, Fayette County, 2016-2017

Date	Event	Information
10/18/2016	Drought	Extreme Drought Conditions (D3) developed.
11/1/2016	Drought	Drought intensity stayed at Extreme (D3).
12/1/2016	Drought	Drought classification remained at (D3) Extreme.
1/1/2017	Drought	Above normal rainfall helped reduce the drought intensity from a D3 to a D2.
2/1/2017	Drought	Below normal rainfall and above normal temperatures maintained the drought intensity at D2.
3/1/2017	Drought	Near normal rainfall during the month of March maintained the drought intensity at D2.
4/1/2017	Drought	Near normal rainfall during the month of April maintained the drought intensity at D2.
5/1/2017	Drought	Significant rainfall during the month of May lowered the drought intensity to a D1 category.

The most significant drought event in the state occurred in 2007. With drought conditions carrying over from 2006, by late spring of 2007 the drought moved up to a D4 Exceptional Drought intensity ranking, the highest intensity, which is characterized by widespread crop and pasture losses, wildfires, and severe shortages of water resources in reservoirs, streams, and wells. This drought was

so severe and widespread that it affected almost the entire southeastern United States. Drought conditions continued through the end of 2008. As a result of this extended period of drought, crop yields were disappointing, livestock suffered because ponds and wells dried up, trees became brittle and weak causing them to snap more easily during storms, lake and river levels fell leaving boats stranded on land and making waterways throughout the South impassable. Lawns across the county dried up and died as water restrictions were put into place. The Exceptional Drought intensity rating persisted throughout 2008 until being lifted on December 16, 2008. State Agriculture Commissioner Ron Sparks referred to this event as the worst drought in 30-40 years.

Probability of Future Drought Events

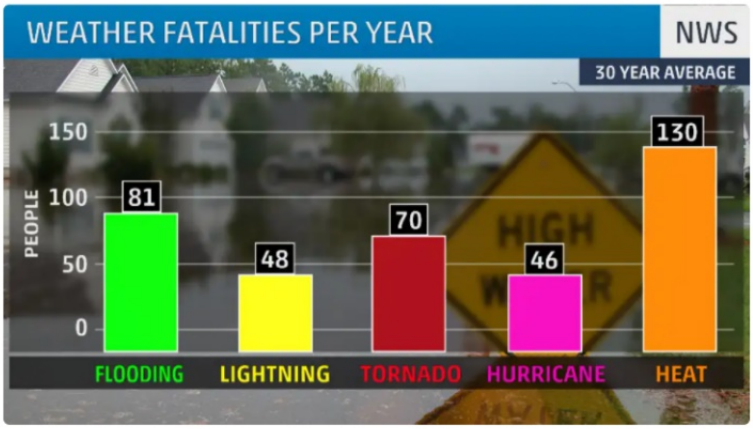
All of Fayette County is susceptible to drought and therefore this hazard is a legitimate issue for Fayette County that is likely to occur in the future. Drought can occur anytime of the year, as can be seen by the severely dry months of November - December 2016, and January 2017. While there is no way to prevent a drought from occurring, certain measures can be taken to better prepare the citizens for such events. Public awareness and planning efforts, especially in relation to water resources, are vital in lessening the impact of drought. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken to address drought and its impact.

5.3.5 Extreme Heat

Extreme heat is when there are 2 or more consecutive days with temperatures of 10°F or more above the average during the summer months. For some regions, temperatures above 90°F with high levels of humidity and a high heat index constitute extreme heat conditions. Heat waves are extended periods of extreme heat.

According to NOAA, the number one weather related killer in the US between 1986 and 2015 was extreme heat. As shown on Chart 5-3, the 30-year average for extreme heat related deaths was 130 per year followed by a rate of 81 deaths per year for flooding. That is a 60% difference in deaths between the two hazards.

Chart 5-3. Weather Fatalities Per Year, US



Heat has caused the most deaths on an annual basis during the last 30 years (1986-2015). (NOAA)

Location of Potential Extreme Heat

Extreme heat events cover the entire county.

Extent and Intensity of Potential Extreme Heat

Extreme heat is very dangerous for people and animals. It also impacts plants, buildings, roads, and infrastructure. Excessive heat is dependent on location and a person's acclimation to the heat. According to Michael N. Sawka, Ph.D., a physiologist with Georgia Tech, "When temperatures become dangerous varies wildly, based on an individual's acclimation to the climate, dress, exertion level and whether any pre-existing conditions, such as heart disease, are present." The excessive heat can lead to drought conditions and the extremely dry vegetation can contribute to wide spreading wildfires.

Heat Indexes are used to determine the risk of extreme heat events. The heat index is what the temperature feels like to the human body when relative humidity is combined with the air temperature. Table 5-9 shows classification of risk by the Heat Index and its effect on the body. Heat indexes of 90°F and above are dangerous with heat indexes of 103°F and higher extremely dangerous.

Table 5-9 . Heat Index

Classification	Heat Index	Effect on the body
Caution	80°F - 90°F	Fatigue possible with prolonged exposure and/or physical activity
Extreme Caution	90°F - 103°F	Heat stroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity
Danger	103°F - 124°F	Heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity
Extreme Danger	125°F or higher	Heat stroke highly likely

Effects on the agriculture industry within Fayette County, involve crops, livestock, and poultry. Since there is no cooling off period at nighttime during extreme heat events, the crops that rely on cooler nighttime temperatures in order to thrive are negatively impacted. The livestock also require the opportunity to cool off at night and when they are unable to adequately lower their body temperatures, they produce less milk, have slower growth, and have reduced reproduction rates. The poultry in chicken houses can also be greatly impacted from the heat if the cooling mechanisms in place fail. Some chicken houses can hold up to 20,000 chickens and if they are not kept at an acceptable temperature, they will perish.

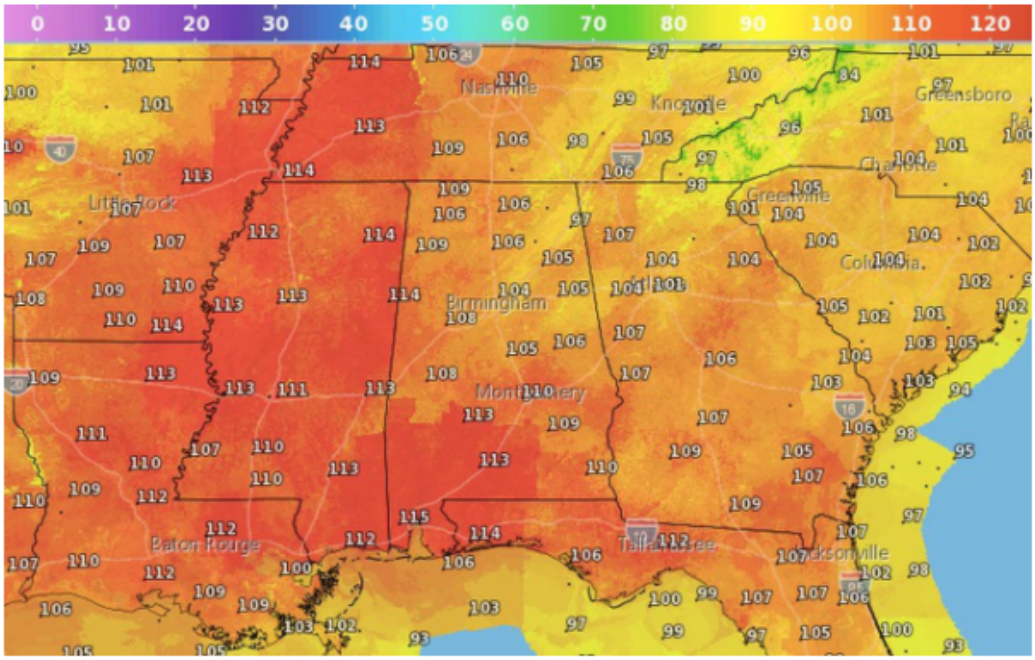
The increased demand for electricity during times of high heat cause stress on the electric grid. This stress can lead to brownouts or blackouts. Also, the increased temperature negatively affects the efficiency of transmission lines. These issues can greatly impact critical facilities, the elderly and those who are electricity dependent for special needs.

Transportation is impacted because, depending on the products used in the construction of the roadways, the roads can "melt" causing them to become soft and sticky. When this happens, vehicles have a greater difficulty in gaining traction to stop, resulting in cars skidding. The railways also encounter structural issues. During times of excessive heat, the rails can expand and distort. If the trains do not reduce their speeds to accommodate for such changes, the trains can derail.

Previous Occurrences of Potential Extreme Heat Events

In June 2015 there was an extreme heat event. Between June 15 and June 24, there was a heat wave that resulted in a heat advisory being issued on June 23, 2015. On August 13, 2019, the heat index reached 104°F in Fayette County. Map 5-20 shows the heat indexes for the southeast on August 13, 2019.

Map 5-20. Heat Indexes for August 13, 2019, Southeastern US



Source: Al.com

Probability of Future Extreme Heat Events

All of Fayette County is susceptible to heat waves. According to the National Climatic Data Center, "scientists know that atmospheric moisture plays an important role in heat waves. They tend to occur more frequently in dry conditions with low humidity, but heat waves in high humidity can

take their toll on the population, livestock, and wildlife." Mitigation measures can be implemented to lessen the effects of extreme heat events such as activating cooling centers, ensuring proper functioning of utilities, and public awareness campaigns. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken to lessen the impact of extreme heat events.

5.3.6 Winter Storms and Extreme Cold

In general, the state of Alabama does not experience winter storms often; however, Fayette County is more likely to experience winter storms than is typical for the state as a whole. These storms are rare and usually mild with light snow or short periods of freezing rain. According to the National Weather Service (NWS), the county receives, on average, 1.3 inches of snowfall annually with about one event per year.

Winter temperatures in Fayette County are generally moderate, with an average temperature of 44.6° F and average minimums at 33° F. Extreme cold temperatures are rare but do occur. These rare temperature lows can result in burst plumbing in homes, burst water distribution pipes under roadways and bridges, and occasional deaths due to lack of sufficient heating or exposure to cold. The lowest recorded temperature of -5° F occurred in 1949. See Table 5-10 for Fayette County winter weather observations .

Table 5-10. Fayette County Winter Weather Observations

Category	Observation
Average Winter Temperature	48° F
Average Winter Minimum Temperature	30° F
Lowest Temperature (January 11, 1949)	-5° F
Average Season Snowfall	1 inch
Largest Snowfall (January 6, 1950)	14.2 inches

Source: SE Regional Climate Center/National Weather Service, 2019

Location of Potential Winter Storms and Extreme Cold

Fayette County and its participating jurisdictions are equally likely to experience winter storms and extreme cold events which may include snow, freezing rains, and extreme temperature lows. All areas of the county are equally exposed to these types of weather events.

Extent and Intensity of Winter Storms and Extreme Cold

Fayette County experiences annual disruptions and some damages due to severe winter storms and extreme cold. The yearly average snowfall is 1.3 inches, but some events have produced major disruptions and damages. Winter temperatures on average are above freezing at 44°F, but occasional freezes do occur.

Winter storms and extreme cold events in Fayette County cause transportation disruptions when they occur due to the inexperience of residents in handling these hazardous conditions, black ice on the roadways, and potholes developing due to frozen and cracked roads. Heavy snowfall or icing conditions can cause limbs to fall, roofs to collapse and utility lines to be damaged causing issues with communications and power. These issues can result in loss of life due to structural damage to residences, a lack of access to heat due to utility disruption or vehicular accidents. Water distribution pipes have broken due to excessive cold causing water to be shut-off to businesses and residents while repairs are being done. Other issues caused by winter storms and extreme cold events are agricultural damage to crops and livestock resulting in economic damages. Fayette County has a large number of chicken houses and many of those can sustain losses due to lack of heat due to power outages or structural damage to the chicken houses.

Previous Occurrences of Winter Storms and Extreme Cold

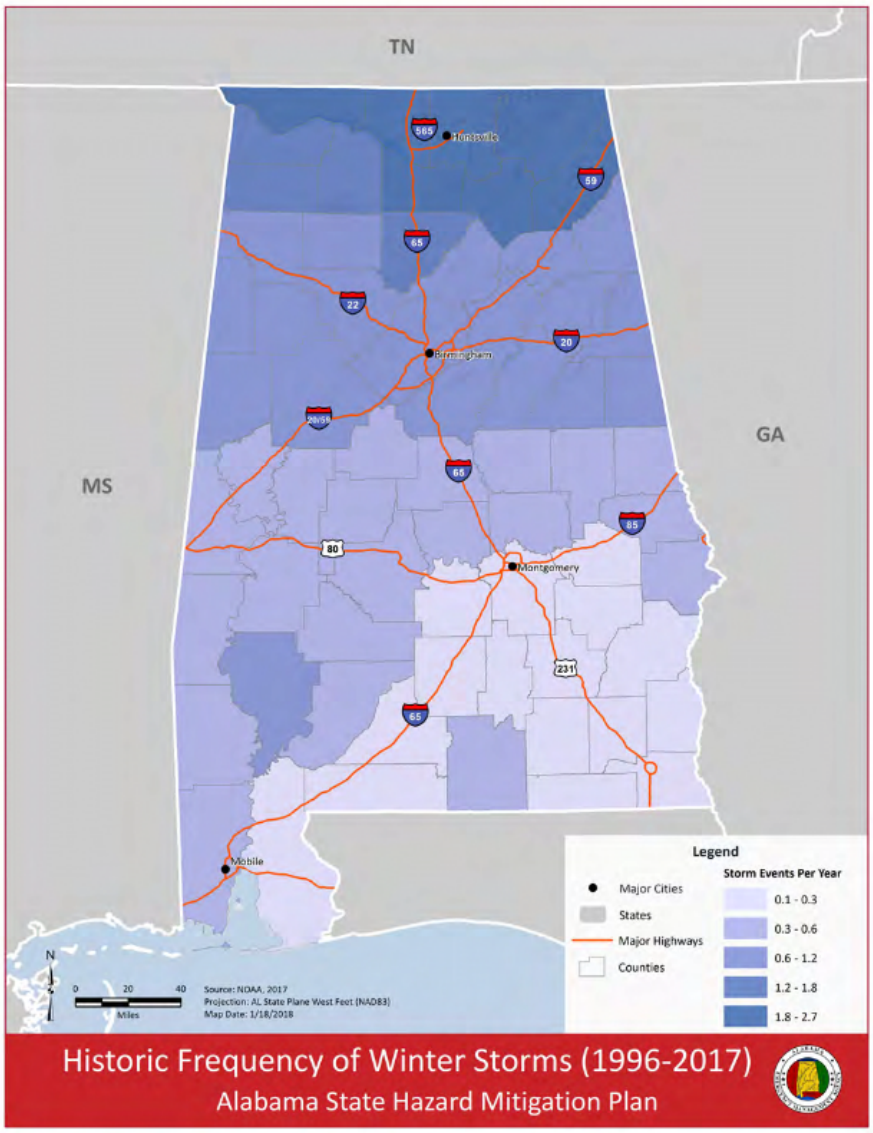
Between 2015 and 2020 there were 3 winter weather related events recorded by NCDC. On February 25, 2015, three to ten inches of snow was recorded in Fayette County. In March of 2015 there was one half inch of sleet reported on the 5th and on December 8, 2017, there was a winter storm with 2-3 inches of snow recorded. Winter events since 1993 can be found in Appendix E.

Probability of Future Winter Storm and Extreme Cold Events

Winter storms and extreme cold will continue to affect Fayette County on an annual basis, to some extent. The risks associated with the average annual hazard are slight, but the more infrequent, severe winter storms have potentially severe risks. These severe winter events can cause major transportation disruptions, lengthy power outages, substantial property damages, and loss of life.

Map 5-21 shows the higher relative frequency of winter storms in North Alabama from 1996-2017 and indicates that Fayette County has approximately 0.6 to 1.2 winter storms per year. With an increase of moisture in the atmosphere, it is probable that precipitation will get heavier and under the right conditions could lead to heavier snowfall. Mitigation measures can be implemented to lessen the effects of winter storm events such as better protection of utilities and roadway preparedness, warming shelters for people in need and participation in winter weather exercises. Chapter Six – “Mitigation Strategy” addresses different mitigation measures that can be undertaken to lessen the impact of these hazards.

Map 5-21. Alabama Winter Storm Interval (1996-2017)



Source: State of Alabama Hazard Mitigation Plan, 2018

5.3.7 Hurricanes

Hurricane season in the northern Atlantic Ocean, which affects the United States, begins on June 1, and ends on November 31. These months accompany warmer sea surface temperatures, which is a required element to produce the necessary environment for hurricane development.

Hurricanes impact regions in a variety of ways. The intensity of the storm, the speed of the winds, whether the storm moves through a region quickly or whether it stalls over one area all are variables toward the physical damage the storm will cause. Storm surges, high winds, and heavy rains are the three primary elements of hurricanes, while tornadoes and inland flooding are potential secondary elements caused in the wake of the storm. Although Fayette County is approximately 230 miles inland from the Gulf Coast, it is not immune to the damaging effects of hurricanes.

Location of Potential Hurricanes

Fayette County is at a low risk for a direct hit by a hurricane due to its position several hundred miles inland from the Alabama coastline. Although Fayette County does not feel the effects of storm surges, other effects including heavy rain, flooding, and tornadoes often have significant impacts on the county. For example, in 1995 Hurricane Opal made landfall in the Florida Panhandle near Pensacola Beach. Opal then moved across the state of Alabama destroying trees, signs, and power lines with her high winds. Heavy rain fell quickly across the county causing flooding along the banks of creeks and streams.

Extent and Intensity of Potential Hurricanes

Inland hurricanes will dissipate by the time they reach Fayette County, which is located about 230 miles from the closest Gulf Coast landfall location. The after-effects of the hurricane can still impact the county, but it would be downgraded to either a tropical depression or tropical storm. If rated as a tropical depression, it would present with maximum sustained winds of 38 mph or less. If rated as an inland tropical storm, maximum sustained winds could go as high as 73 mph. High wind gusts of up to 67 mph can cause trees, signs, and power lines to topple; damage buildings; and cause sustained utility outages. These types of damage, similar to those of a low-level tornado, could result in bodily injury or even death.

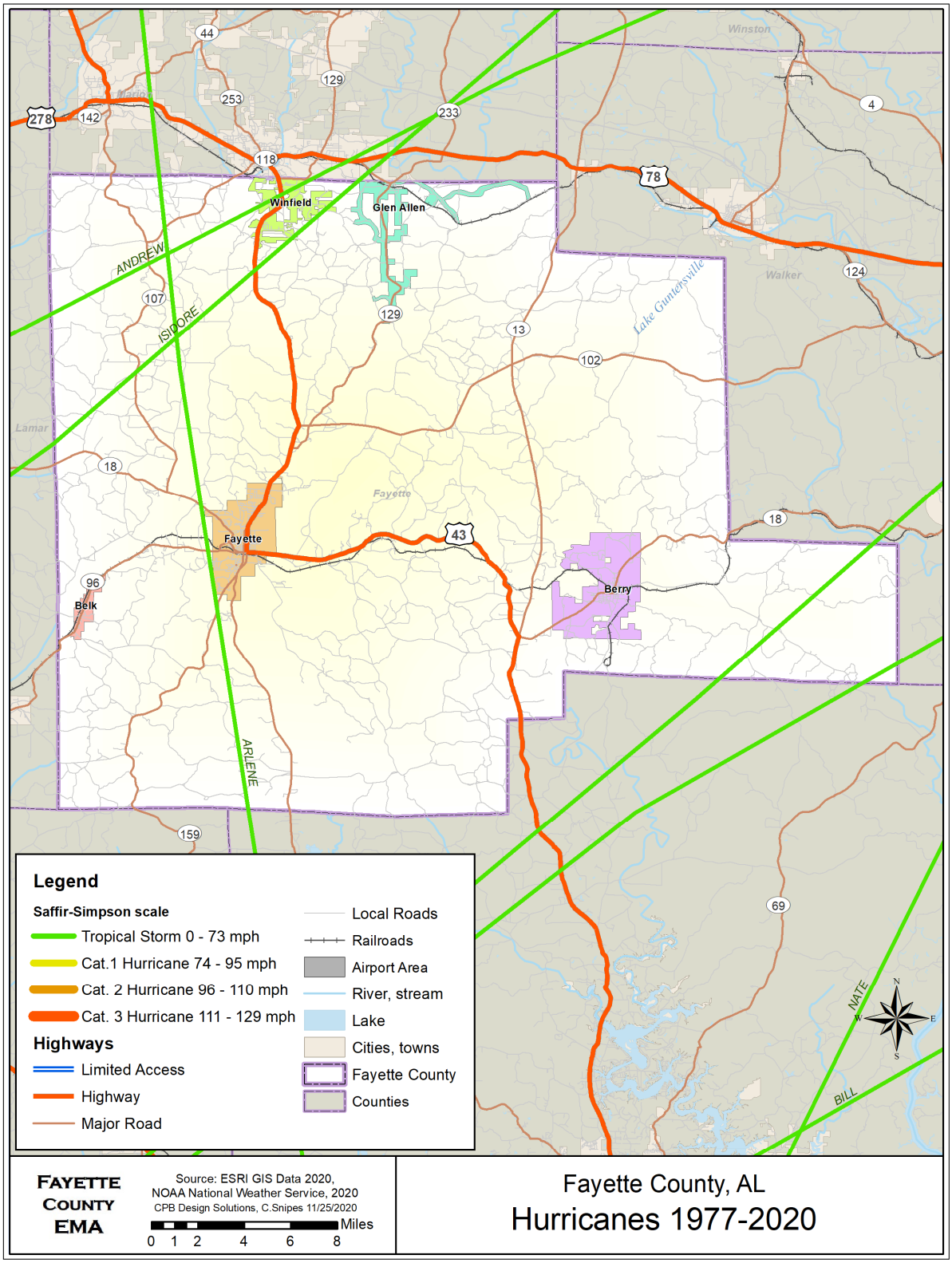
According to hurricane records, half of all hurricanes produce one or more tornadoes. If a tornado develops as a result of a hurricane, it will typically do so within 12 hours of landfall and during daylight hours. This timeframe is within reach of Fayette County. Normally, a tornado watch will follow the projected inland path of a hurricane.

Tropical storms and depressions are often responsible for heavy rain events that can cause flooding. A weak tropical storm or depression moving slowly, or lingering can cause more damage due to flooding than some fast-moving storms. The last recorded hurricane event for Fayette County was Hurricane Isaac in 2012.

Previous Occurrences of Hurricanes

A significant weather event for Fayette County involving a hurricane occurred on September 16, 2004. Hurricane Ivan made landfall around 1:00 AM CST near Gulf Shores, Alabama. By 10 PM, the storm had passed through Fayette County as a tropical depression with sustained winds of 35 mph and gusts of up to 60 mph. The storm knocked down trees and powerlines and dropped several inches of rain. Map 5-22 shows paths of the hurricanes and tropical storms since 1977 demonstrating that all areas of Fayette County have been equally affected. Other hurricanes affecting Fayette County since 2004 include the remnants of Dennis on July 10, 2005, Katrina on August 29, 2005, and Isaac, September 21, 2012.

Map 5-22. Hurricane Paths, 1977-2020



Probability of Future Hurricane Events

As is the case with most natural hazards, past records are no guarantee of the probability of future events affecting Fayette County. Given its inland location of over 200 miles north of the Gulf Coast, Fayette County can continue to expect the remnants of frequent Gulf Coast hurricanes and occasional direct impacts of tropical depressions. Hurricane path records since 1977 show the likelihood of continued direct paths through or near Fayette County. The county's location within ten hours of a Gulf Coast hurricane landfall would result in the hurricane dissipating to tropical depression or tropical storm status by the time it reaches Fayette County. The probable impacts of tropical depressions or tropical storms directly passing through or near Fayette County would be damages resulting from high wind gusts above 65 mph, heavy rainfall causing localized flooding of streams and drainage ways, and possible tornadoes.

It is theorized that climate change may affect future hurricane events. The hurricane season has been expanded in recent years. The typical April through November hurricane season is lasting longer. According to Meteorologist Jeff Masters, this extension is likely due to warmer seawater and an increase of moisture in the atmosphere. While the effect of climate change on winds is debatable , there is a general consensus that sea levels are rising, and water temperatures are increasing as a direct result of global warming which is expanding the time that hurricanes and tropical storms are occurring and potentially making landfall each year.

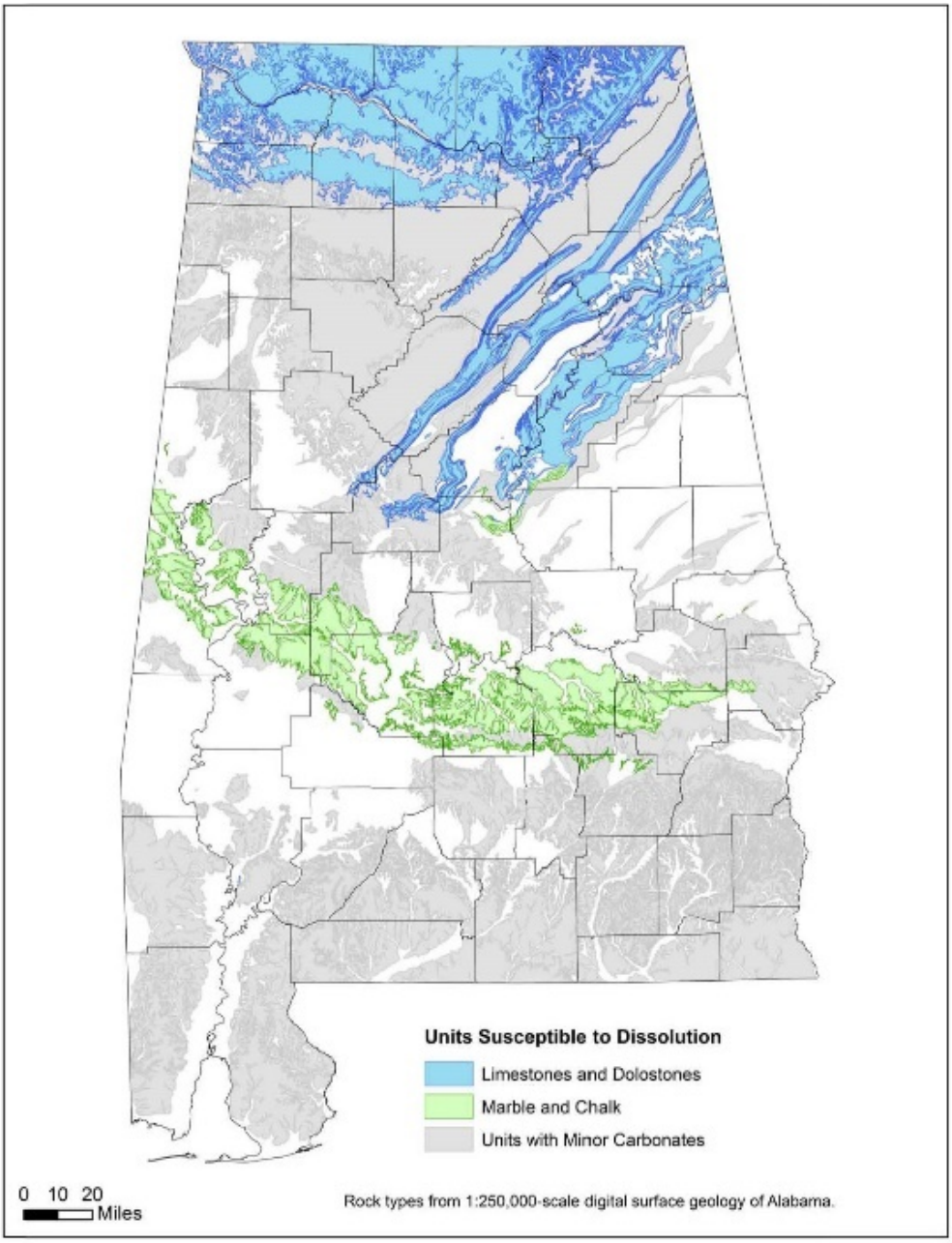
Mitigation measures are the same for hurricanes as for severe storms and tornadoes because the remnants of the hurricane are usually in the form similar to a severe storm or a tornado that impact Fayette County. Mitigation measures for such events can be found in Chapter Six – "Mitigation Strategy".

5.3.8 Sinkholes

Sinkholes, a form of land subsidence, occur naturally where limestone, salt, or other rocks below the ground surface are dissolved by circulating groundwater. As the rock dissolves, spaces and caverns develop underground. The land usually stays intact until the underground spaces become too large to support the ground at the surface. When the ground loses its support, it will collapse, forming a sinkhole. Sinkholes can be small or so large they consume an automobile or a house. Certain activities can increase the potential for sinkholes in these areas, such as: periods of drought, excessive rainfall, the age of the well pump, and construction. Map 5-23 shows these areas with minor carbonate rocks in Fayette County.

While most land collapse is caused by the natural process of the dissolving of limestone over time, human activity can also accelerate land collapse. Human activities that may trigger subsidence include mining and the withdrawal of groundwater. Vibrations from machinery, cars, and drilling equipment can exacerbate sinkholes. In addition to human activity, droughts and excessive rainfall can also lead to the formation of sinkholes. During a drought, the groundwater table falls and caves that are normally filled with water may lose the support that the water provided. Eventually, cracks formed during the drought period will cause the roof of the cavity to fail resulting in sinkholes.

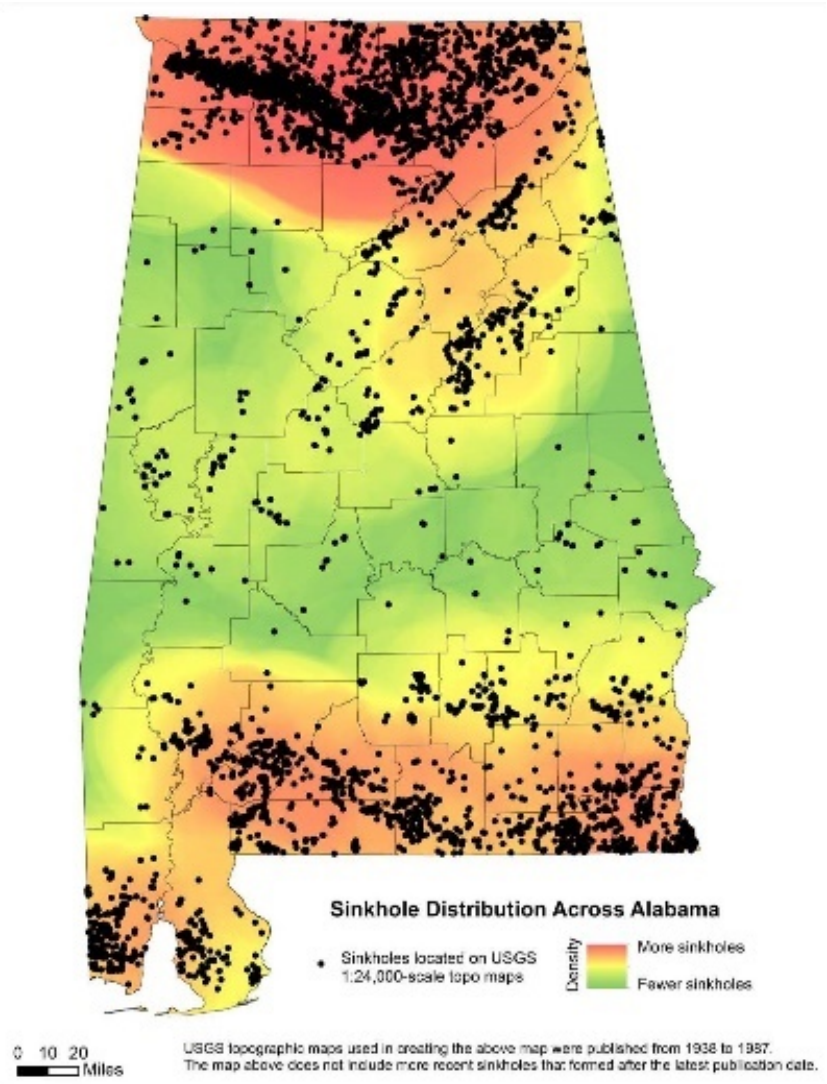
Map 5-23. Sinkhole Susceptibility, Alabama



Location of Potential Sinkholes

According to a statewide mapping project of sinkholes completed in 2010 by the Geological Survey of Alabama (GSA), sinkhole development has occurred throughout Alabama, mainly in the northern and southern portions of the state as shown on Map 5-24. There are only three sinkholes mapped in Fayette County with two on the northern county line and one located near Berry. Most of Fayette County is undeveloped and sparsely populated and therefore there could be sinkholes that have not been discovered and so remain unmapped.

Map 5-24. Sinkhole Density in Alabama



Extent and Intensity of Potential Sinkholes

The extensive coal mining conducted in the eastern portion of the county indicates that there is potential for sinkholes to occur. Mine subsidence occurs when an area overlying a mine, typically no more than 50 feet of vertical distance between the seam and the surface, collapses into the mine. The extent of the damage is usually localized. A mine sinkhole occurs most often with abandoned mines since active mines companies are required to perform at a depth sufficient enough to avoid subsidence. This area includes the Town of Berry, and the unincorporated areas of Howard, Studdard Crossroads, Cleveland, Bankston, Salem, Boley, Concord, and New Hope. Although there have not been any injuries or property damage due to these mines, their presence, particularly the older mines in the northwest part of the county, warrants consideration of sinkholes.

Previous Occurrences of Sinkholes

The GSA estimates over 6,400 sinkholes in Alabama with only three located in Fayette County. There may be more sinkholes in the county; however, there are no regulations requiring individuals to report sinkholes and most of the county is sparsely populated so there may be some yet to be mapped.

Probability of Future Sinkhole Events

Fayette County lacks a history of sinkholes as well as the geological conditions conducive to sinkholes; therefore, the probability of future naturally induced sinkhole events is minimal for all jurisdictions. As shown on Map 5-9 , there are no Karst regions in Fayette County; however, sinkholes can be triggered by a change in the local environment that affects the soil mass. Ongoing data collection by the Geological Survey of Alabama might reveal unknown conditions that raise the likelihood of sinkholes within Fayette County.

Care must be taken by those involved in activities that can lead to possible land collapse and work toward lessen the impact of such activities. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken to lessen the impact of sinkholes.

5.3.9 Landslides

A landslide is defined by the United States Geological Survey as the movement of rock, debris, or earth down a slope. Various natural and man-induced triggers can cause a landslide.

Naturally induced landslides occur as a result of weakened rock composition, heavy rain, changes in groundwater levels, or seismic activity. Human activity such as construction or mining can also lead to landslides. Often the land has been compromised by deforestation, erosion or weak bedrock which allows the triggering event to cause the landslide. Geologic formations in a given area are key factors when determining landslide susceptibility. The three underlying geologic formations present within the region are the Coker, Gordo, and Tuscaloosa groups. These groups are classified as having low to moderate susceptibility to slope failure.

Primary effects from landslide in Fayette County can include property damage, impassable roads, sediment erosion and underground infrastructure damage. Destruction of structures in the path of a landslide is dependent on its force. Material from the landslide can damage or destroy roadways as well as block passage which can disrupt travel and business activities. Landslides can also remove vital vegetation and trees which protect hillsides leading to erosion. Underground pipes and wiring can be dislodged causing disruption in vital services.

The Geologic Survey of Alabama (GSA) has studied the potential for landslides throughout Alabama. Geographic Information System (GIS) data provided by the GSA for this plan, classifies landslide susceptibility and incidence as follows:

1. Landslide susceptibility. Susceptibility is the probable degree of response to landslide triggers, such as cutting or excavation, loading of slopes, or unusually high rainfall.

Generally, unusually high rainfall or changes in existing conditions can initiate landslide movement in areas where rocks and soils have experienced numerous landslides in the past. The potential for landslides is classified into one of the following categories:

- *High susceptibility* - greater than 15% of a given area is susceptible to land sliding;
- *Moderate susceptibility* – 1.5% to 15% of a given area is susceptible to land sliding; or
- *Low susceptibility* – less than 1.5% of a given area is susceptible to land sliding.
- *No susceptibility indicated* - susceptibility is the same as or lower than incidence.

2. Landslide incidence. Landslide incidence is the number of landslides that have occurred. These areas are classified according to the percentage of the area affected by landslides, as follows:

- *High incidence* - greater than 15% of a given area has previously experienced land sliding;
- *Medium incidence* - 1.5% to 15% of a given area has previously experienced land sliding; or
- *Low incidence* – less than 1.5% of a given area has previously experienced land sliding.

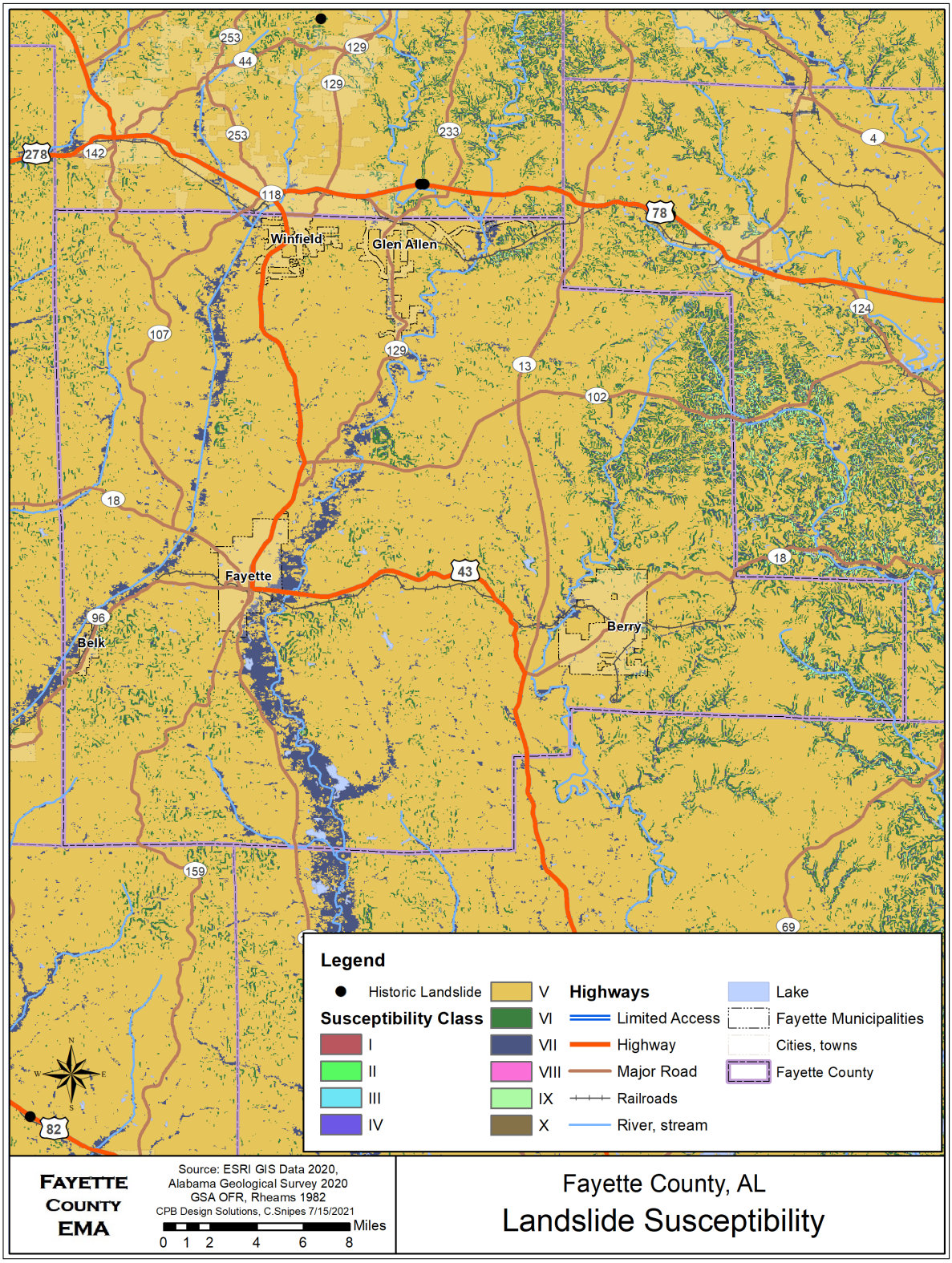
Location of Potential Landslides

All jurisdictions in Fayette County, as shown in Map 5-25 "Fayette County Landslide Susceptibility," are rated as having a low degree of susceptibility to landslides, other than near waterways. None of the 454 reported landslides in the state of Alabama were located in the county.

Extent and Intensity of Potential Landslides

According to the GSA data, most of Fayette County is an area of low susceptibility to landslides, including Belk, Fayette, and Glen Allen. Along waterways throughout Fayette County there are areas of high susceptibility to landslides including a portion of the City of Fayette. These same areas, however, have a low incidence. Map 5-25 shows the landslide susceptibility for Fayette County.

Map 5-25. Fayette County Landslide Susceptibility



Previous Occurrences of Landslides

There have been no recorded incidences of landslides in Fayette County. As with certain other hazards such as sinkholes, there may have been landslide events but due to the rural nature of the county, they may have gone unnoticed.

Probability of Future Landslide Events

The probability of future landslides is unlikely for all jurisdictions in Fayette County. If landslides occur, they will likely be minor resulting from construction activities. Proper measures should be taken during construction to ensure landslide activity is closely monitored so proper precautions can be taken to warn people about the possibility of an impact from the event. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken in regard to landslides.

5.3.10 Earthquakes

Earthquakes occur when portions of the earth slip past each other. The surface above the slippage is the fault. The area below the surface where the earthquake starts is the hypocenter and the location directly above the hypocenter on the surface of the earth is the epicenter. Associated with earthquakes are foreshocks, mainshocks and aftershocks. Not all earthquakes have foreshocks which are smaller earthquakes that occur before the main earthquake. The largest main earthquake is the mainshock and smaller earthquakes that follow the mainshock are known as aftershocks. Aftershocks always occur and they can last for weeks, months, and even years after the mainshock.

Earthquakes occur around seismic zones; it is where the earthquake tends to focus. Fayette County falls within the Southern Appalachian Seismic Zone. Seismic hazard zones describe the degree of threat to areas within the seismic zone. Typically, the closer to the center of the seismic zone the higher the seismic hazard zone. Fayette County is located in an area of low seismic hazard.

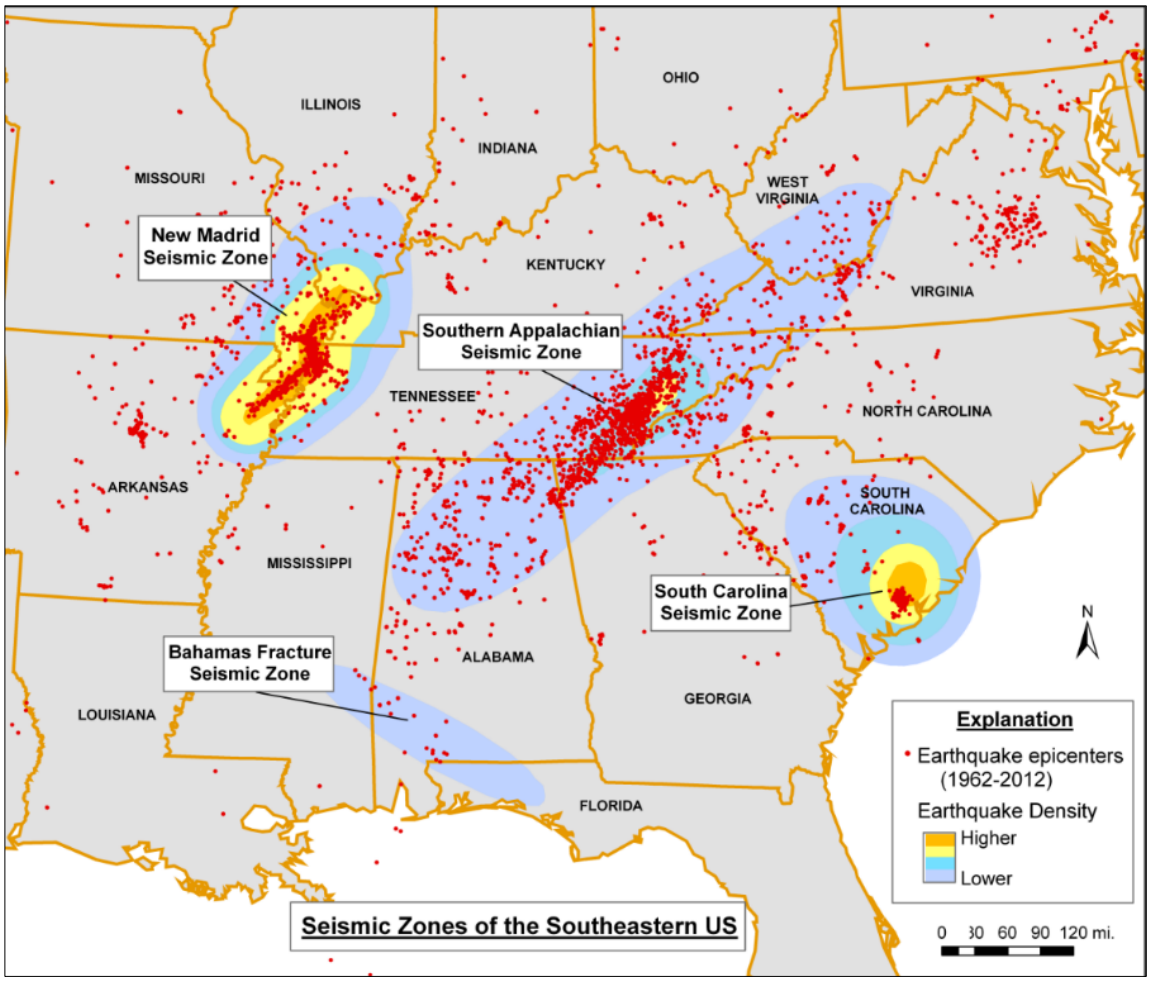
Because Fayette County is affected by the Southern Appalachian Seismic Zone, earthquake potential is likely, although potential for significant shaking is very low. Damage could be catastrophic in Fayette County if a powerful earthquake were to occur because buildings have not been constructed to withstand such a powerful force. The last significant earthquake that affected Alabama was the 1895 New Madrid earthquake. This quake is estimated to have been a 6.8 in magnitude on the Richter scale and was moderately felt throughout the southeastern United States. The New Madrid Seismic Zone runs along the Mississippi River. Geologists agree that another major earthquake along the New Madrid Seismic Zone could cause chimneys to fall, glass to break, and walls to crack in Fayette County.

Small earthquakes can occur due to human activity. Those activities include extraction of mining products, ground water or oil. This can cause an earthquake because it will change the stress on the plates below the surface causing a shift. Another cause is overloading the Earth's surface where there was not a load before, adding stress to faults, such as the impoundment of water behind dams. One more human activity that can cause earthquakes is when fluid that has been extracted from the

Earth is injected back into it. The use of disposal wells cause faults to slip due to the wastewater from oil or gas production being forced back into the Earth.

There have been moderate levels of seismic energy released by the Southern Appalachian Seismic Zone (SASZ) for hundreds of years. The area around the SASZ has many old faults that developed during the forming of the Appalachian Mountains; however, no active seismic faults are known to have reached the surface. Map 5-26 shows the location of faults associated with SASZ running through Fayette County.

Map 5-26. Seismic Zones in Southeastern United States



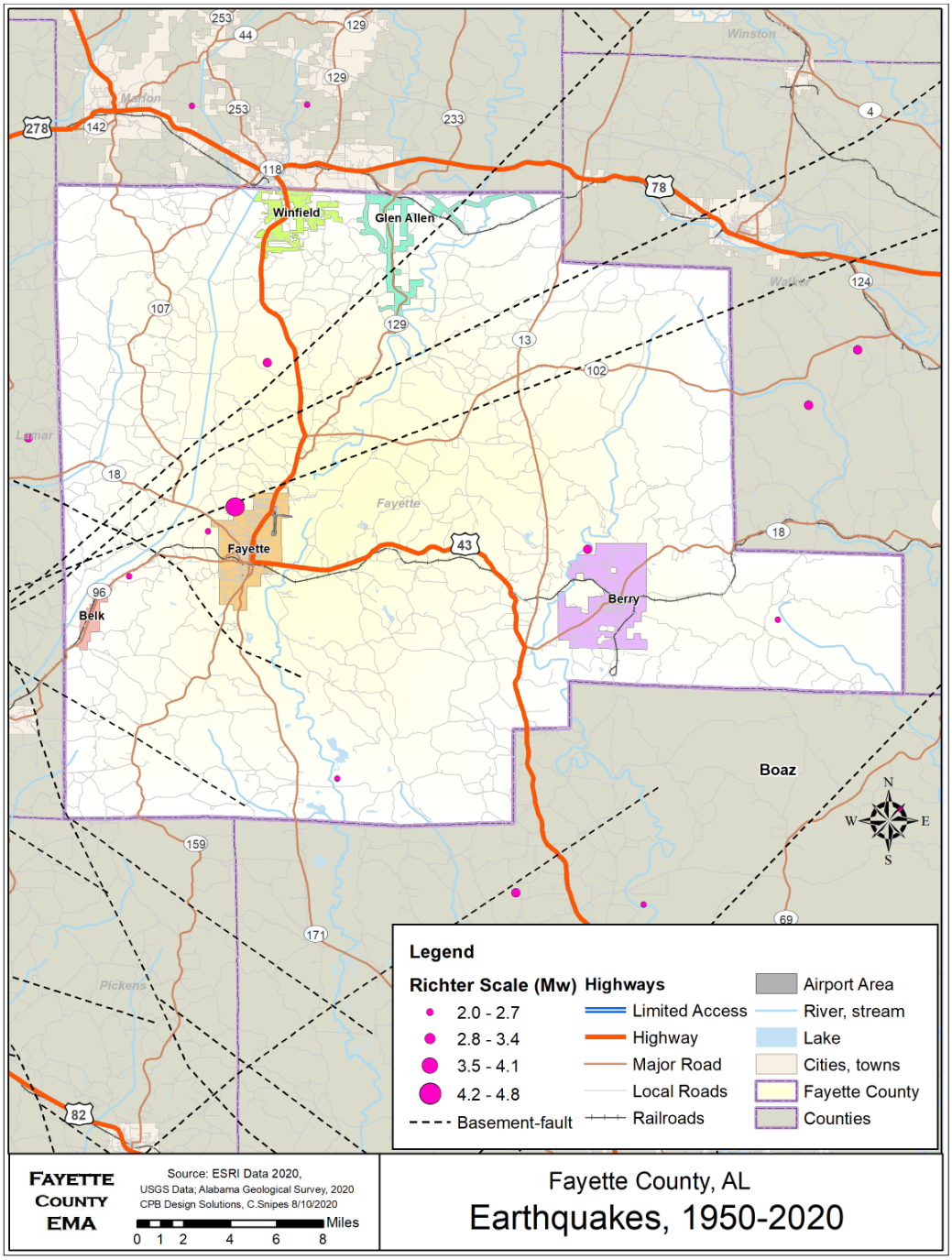
Source: Geological Survey of Alabama

Location of Potential Earthquakes

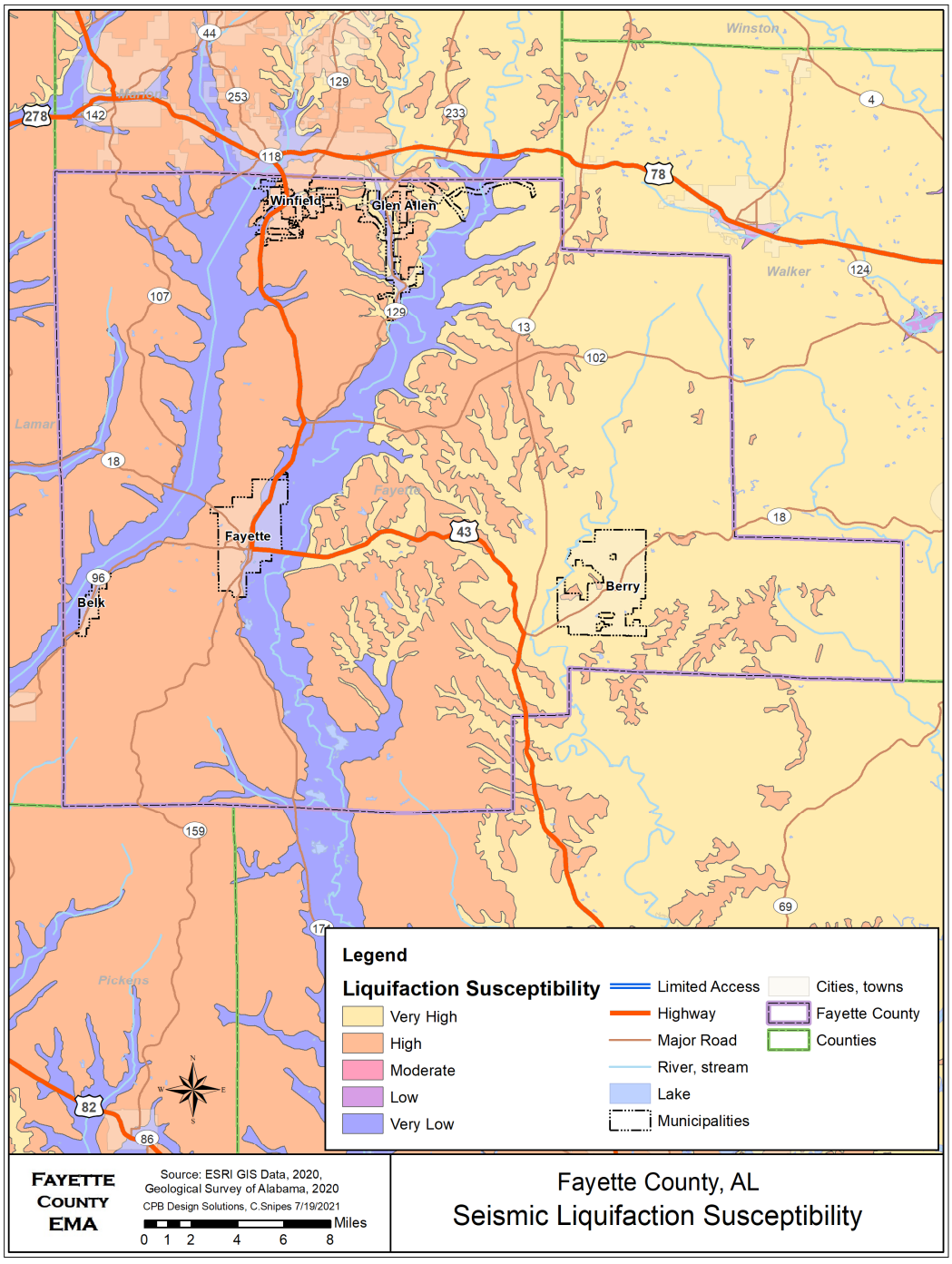
All of Fayette County has a moderate degree of susceptibility to earthquakes, but the impacts can vary depending on the magnitude and epicenter location. Map 5-27, generated from 2020 GIS data supplied by the Geological Survey of Alabama (GSA), show locational variations in soil liquefaction throughout Fayette County. Damages to buildings and infrastructure depend not only on the energy released during an earthquake but also underlying soils and geological characteristics. For instance, structures built upon loose sediments of riverine floodplains along the Sipsey River and

North River are more likely to be damaged than structures built in higher elevations. Liquefaction is most likely to occur in soils with high water content within parts of these flood plains. Given the natural physical features of Fayette County, ground-shaking potential and seismic liquefaction susceptibility are moderate to high in Belk, Fayette, and Glen Allen with little to no susceptibility in Berry. More information about earthquakes can be found in Appendix D.

Map 5-27. Earthquake Epicenters and Fault Lines



Map 5-28. Earthquake Liquefaction Potential



Extent and Intensity of Potential Earthquakes

According to the Geological Survey of Alabama (GSA), recent seismograph records indicate that earthquakes are frequent across the state but are usually small enough that they are not felt, and damage reports of incidents have been relatively minor. One potential effect of earthquakes

could be damage to dams which could lead to further impacts. The intensity of the impact of an earthquake will depends on the epicenter location and the magnitude.

Losses depend on several factors including the nature of building construction, population density, topography and soil conditions, and distance from the epicenter. An earthquake's magnitude can be a poor indicator of hazard impact because the duration of ground shaking is not factored into the magnitude rating. It is the duration of the shaking that causes the damage to contents and nonstructural components. While collapse of structures can be a great loss, collapse is caused mainly by large magnitude earthquakes, and earthquakes of this size are rare. For any given earthquake, few structures will actually collapse. Most damage will be associated with contents and nonstructural components. Structures built with more flexible materials, such as steel framing, are preferred. Wood frame construction, which constitutes a high percentage of homes in the United States, also tends to flex rather than crack or crumble, but is more susceptible to fire.

Building codes have historically been utilized to address construction standards to mitigate damages for earthquakes and other hazards. Older structures, non-compliant structures, and lack of knowledge of proper seismic protection measures remain a problem. In order to reduce loss of lives and property, wider adoption of improved construction methods for both residential and important critical facilities such as hospitals, schools, dams, power, water, and sewer utilities are needed.

The intensity of shaking and observed effects of an earthquake is measured according to the Modified Mercalli Intensity Scale, shown in Table 5-11, and the magnitude is the measure of energy released by the earthquake on a scale of 1 to 12, with a magnitude 7 being felt on land and causing some damage. Most human-caused earthquakes, resulting from fracking or induction of wastewater from oil and gas production, result in a 1-3 on the intensity scale.

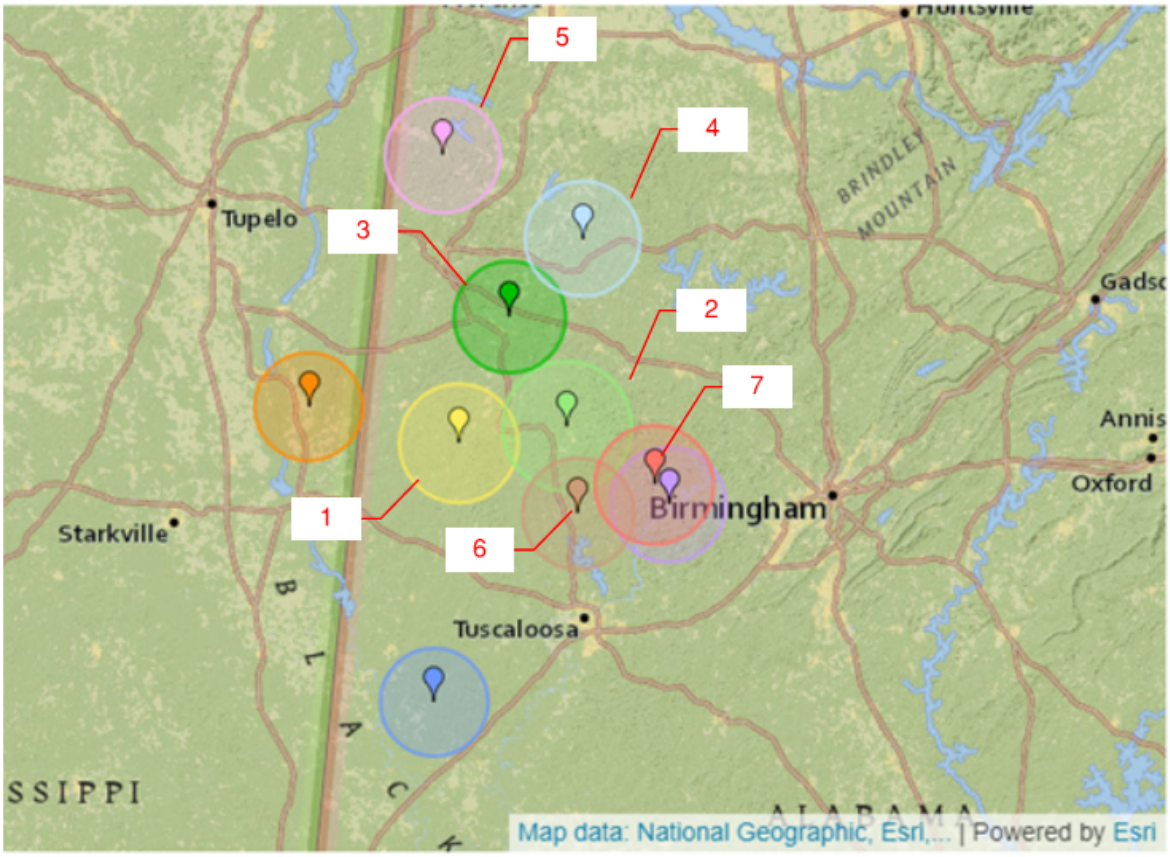
Table 5-11. Modified Mercalli Intensity Scale

Class	Intensity
I	Not felt
II	Felt by persons at rest, on upper floors, or favorably placed.
III	Felt indoors. Vibration like passing of light trucks.
IV	Vibration like passing of heavy trucks.
V	Felt outdoors. Small unstable objects displaced or upset.
VI	Felt by all. Furniture moved. Weak plaster/masonry cracks.
VII	Difficult to stand. Damage to masonry and chimneys.
VIII	Partial collapse of masonry. Frame houses moved.
IX	Masonry seriously damaged or destroyed.
X	Many buildings and bridges destroyed.
XI	Rails bent greatly. Pipeline severely damaged.
XII	Damage nearly total.

Previous Occurrences of Earthquakes

Map 5-29 "2015-2019 Earthquake Locations, Fayette County" shows the location and Table 5-12 shows the magnitude of recorded earthquakes in the Fayette County area over that four year period as reported by earthquaketrack.com. The most active location is around the Town of Berry.

Map 5-29. 2015-2019 Earthquake Locations, Fayette County



earthquaketrack.com

Table 5-12. 2015-2020 Earthquake Location and Magnitude, Fayette County

Event Number	Year	Location	Magnitude	Depth
1	2020	Fayette	2.6	0 km
2	2020	Berry	2.9	1 km
3	2019	Winfield	2.0	0 km
4	2017	Haleyville	2.3	5 km
5	2017	Red Bay	2.3	4 km
6	2016	Berry	2.6	1 km
7	2015	Berry	2.3	1 km

earthquaketrack.com

Probability of Future Earthquake Events

As can be seen by the previous maps, earthquakes are active in Fayette County; however, they are not impactful, so they often go unnoticed. Fayette County can expect to continue to have earthquake events occur with little to no damage. If a powerful earthquake were to occur, damage could be catastrophic in Fayette County because buildings have not been constructed to withstand such a powerful force and the only area that has building codes is the City of Fayette.

Public awareness about earthquakes and how to prepare for them, including securing items within and around homes and businesses, are some mitigation measures that can be taken by Fayette County citizens. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken to lessen the impact of these earthquakes.

5.3.11 Wildfires

The two primary categories of wildfires experienced in Alabama are wildland fires and interface fires. The National Wildfire Coordinating Group (NWCG) defines wildland fire as including both wildfire and prescribed fire, "where wildfire is an unplanned, unwanted wildland fire, and prescribed fire is any fire intentionally ignited by management actions to meet specific objectives." Wildland fires are fueled exclusively by natural vegetation. Fayette County has vast forested lands, grass lands, and brush to fuel wildfires.

Interface fires are fueled by both vegetation and the built-up environment. This is known as the wildland-urban interface. Interface fires increase with urban-to-rural movement increasing risk of human-caused wildfires. Interface fires are found on the outskirts of the towns and the City of Fayette.

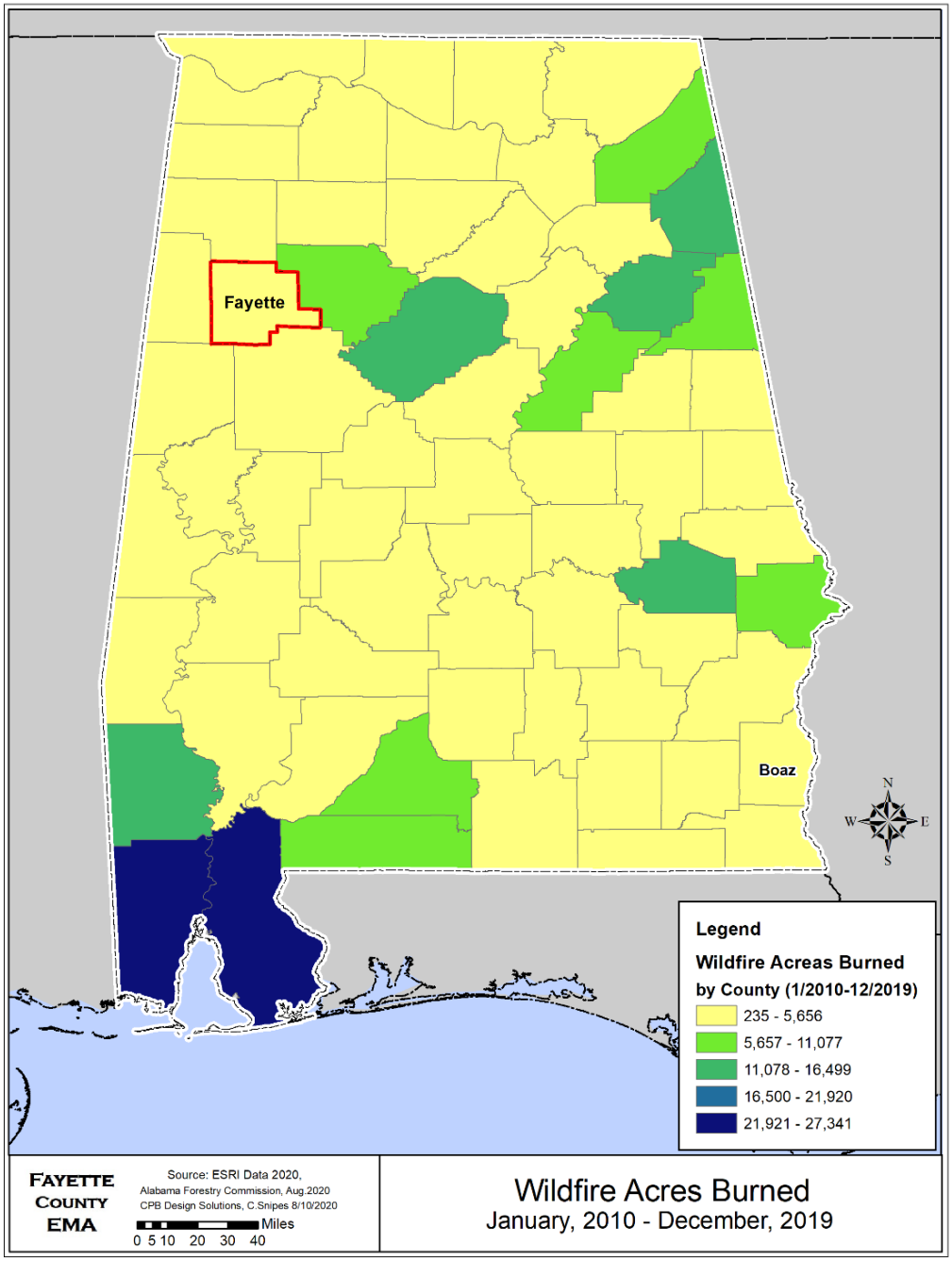
In order to curb the occurrence and effects of wildfires, prescribed burns and other forms of forest fuel control are implemented. Without the practice of prescribed burns, thinning, mowing, and the use of herbicides, vegetation that will spread fires can proliferate causing more of a threat with the additional fuel sources for wildfires.

A major problem in relation to wildfires is non-permitted burns. The people setting these fires are ill-equipped to handle the fire as it gets larger, and the fire gets out of control and widespread damage occurs. The state implements burn bans during times of high fire risk which make it illegal to set fire to forest, grass, woods, wildlands, marshes; build a campfire or bonfire; burn trash, debris, or other materials, including no forestry directed open burns or prescribed burns.

Location of Potential Wildfires

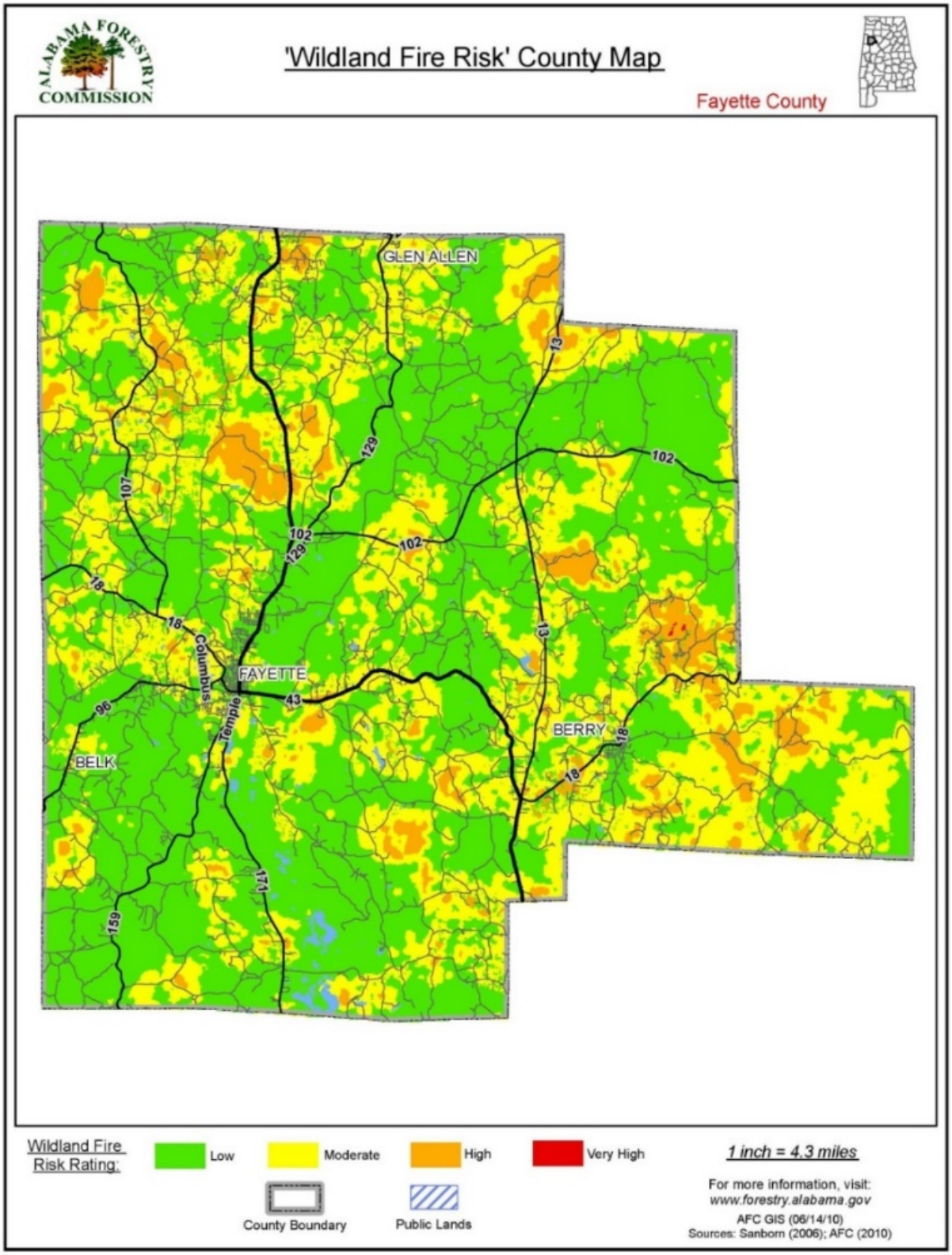
Rural areas of unincorporated Fayette County are the most likely areas to encounter wildfires; however, wildfires can occur in any area where there is the proper fuel, topography, and weather mix. Map 5-30 shows that Fayette County is on par with the majority of the counties in Alabama in acres burned with between 235 and 5,656 wildfires in the period of January 2010 to December 2019.

Map 5-30. Wildfire Acres Burned, January 2010 - December 2019

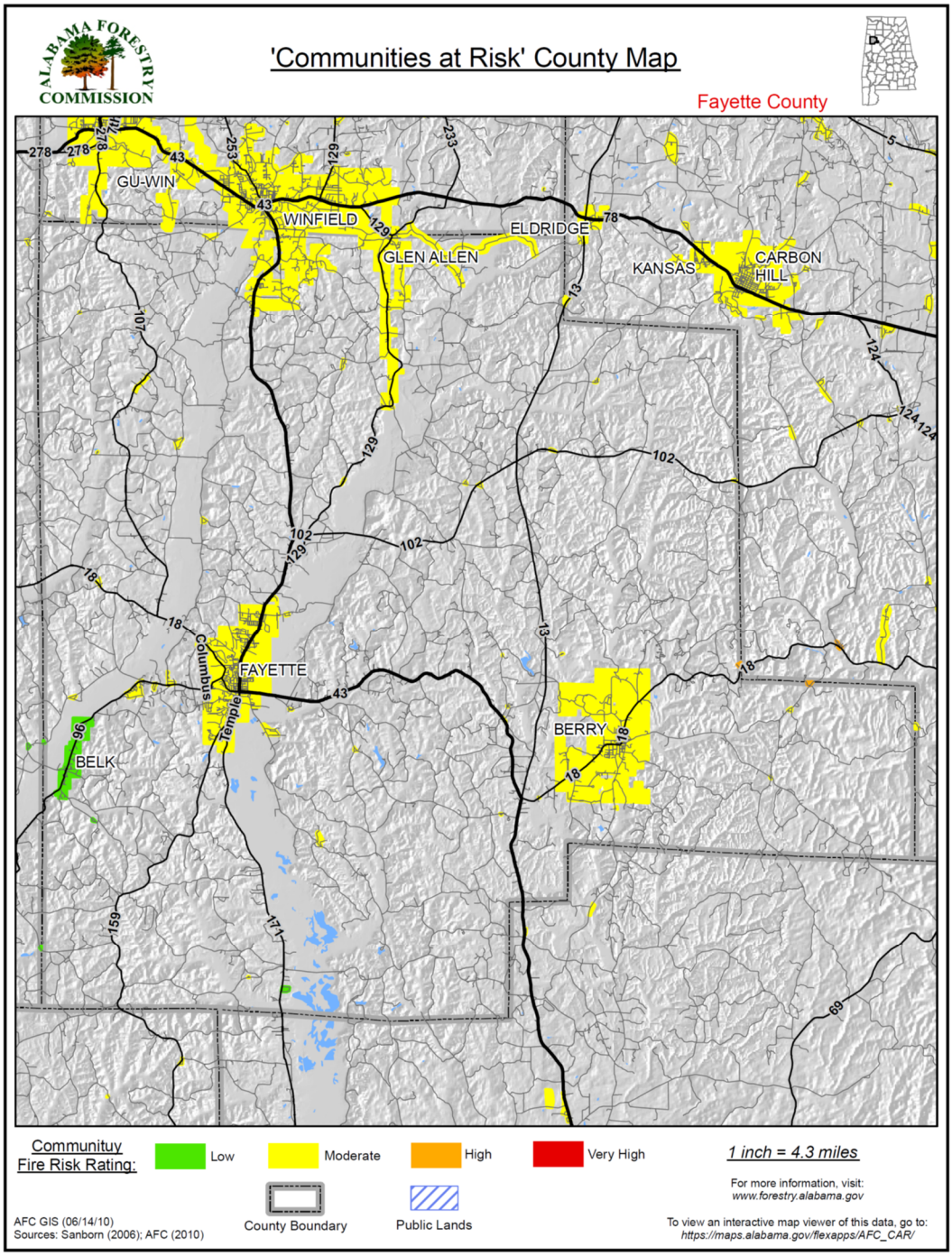


Map 5-31 "Wildland Fire Risk County Map" shows that all of Fayette County falls between low and moderate risk for wildland fire with patches of high risk scattered throughout the county. There is one very high risk area located northeast of Berry. The vulnerable wildland-urban interface makes all incorporated areas equally at risk and Map 5-32 "Fayette Communities at Risk," denotes areas throughout the county at various risk levels for wildfires.

Map 5-31. Fayette County Wildland Fire Risk



Map 5-32. Fayette County Communities at Risk

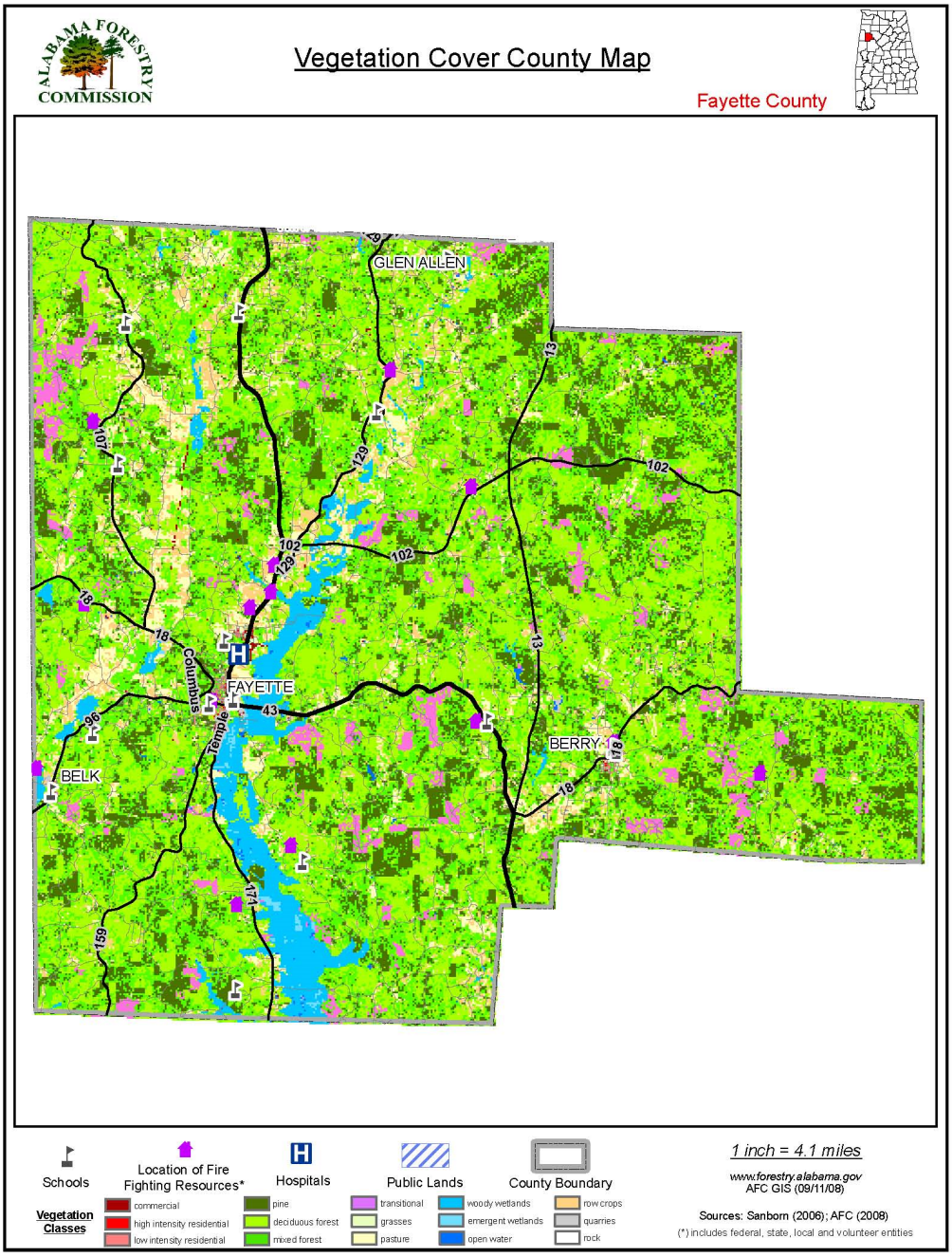


Extent and Intensity of Potential Wildfires

Fayette County has ample wild fuel sources with 333,600 acres of forestland and is prone to drought and thunderstorms which increase the potential intensity of wildfires significantly because dry vegetation is likely to catch fire and spread quickly when struck by lightning.

The weather is a natural contributor to wildfire occurrences. Extreme dry weather creates the perfect conditions for woodlands ready to spread fire rapidly. Droughts increase the inflammability of vegetation and pose greater difficulty in suppressing fires. Map 5-33 shows the vegetation cover in Fayette County. In the midst of the 2006-2008 drought, in March 2007, a very dry month, there were approximately 1,000 acres a day burned in the State of Alabama. In addition to drought, lightning can strike woodlands setting them on fire and trees that had been downed through severe weather events can add to the vegetative fuels to make timber for fires.

Map 5-33. Fayette County Vegetation Cover



The Southern Group of State Foresters have developed a mapping system that shows the fire intensity in a certain area. Map 5-34 shows the fire intensity for Fayette County. The classes for the fire intensity are as follows:

Class 1, Very Low:
Very small, discontinuous flames, usually less than 1 foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and non-specialized equipment.

Class 2, Low:
Small flames, usually less than two feet long; small amount of very short range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.

Class 3, Moderate:
Flames up to 8 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.

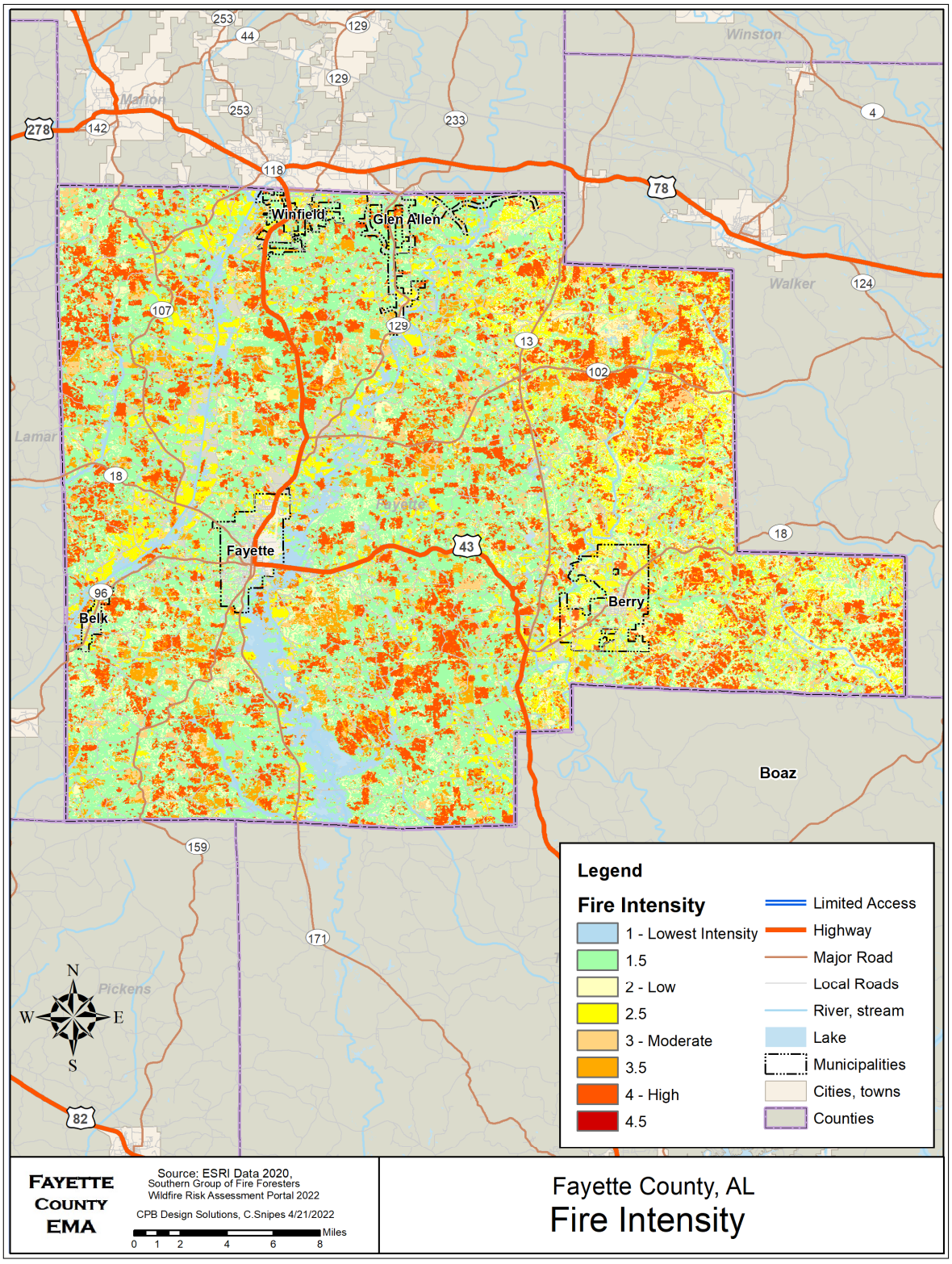
Class 4, High:
Large Flames, up to 30 feet in length; short-range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property.

Class 5, Very High:
Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property.

Limited firefighting resources are stretched during periods when numerous fires occur and can compound the risk and extent of wildfire damages. Fayette County has one full-time fire department and twelve volunteer fire departments. Fayette County has a Forestry Commission office and relies on response from neighboring counties through a mutual aid agreement. Low water pressure due to poorly maintained water distribution systems limit the ability to properly put out fires which can lead to the spread of fires.

The primary effects from a wildfire include loss of property or livestock, and the destruction of the wilderness and crops. Hazardous results from a significant wildfire in Fayette County include widespread fires destroying everything flammable, leaving people homeless and businesses destroyed; inability of fenced- in livestock to escape the path of a wildfire, potentially causing death by smoke inhalation; possible destruction of entire forests due to extremely hot fires; and loss of an entire year's crop through burning of all vegetation.

Map 5-34. Fayette County Fire Intensity



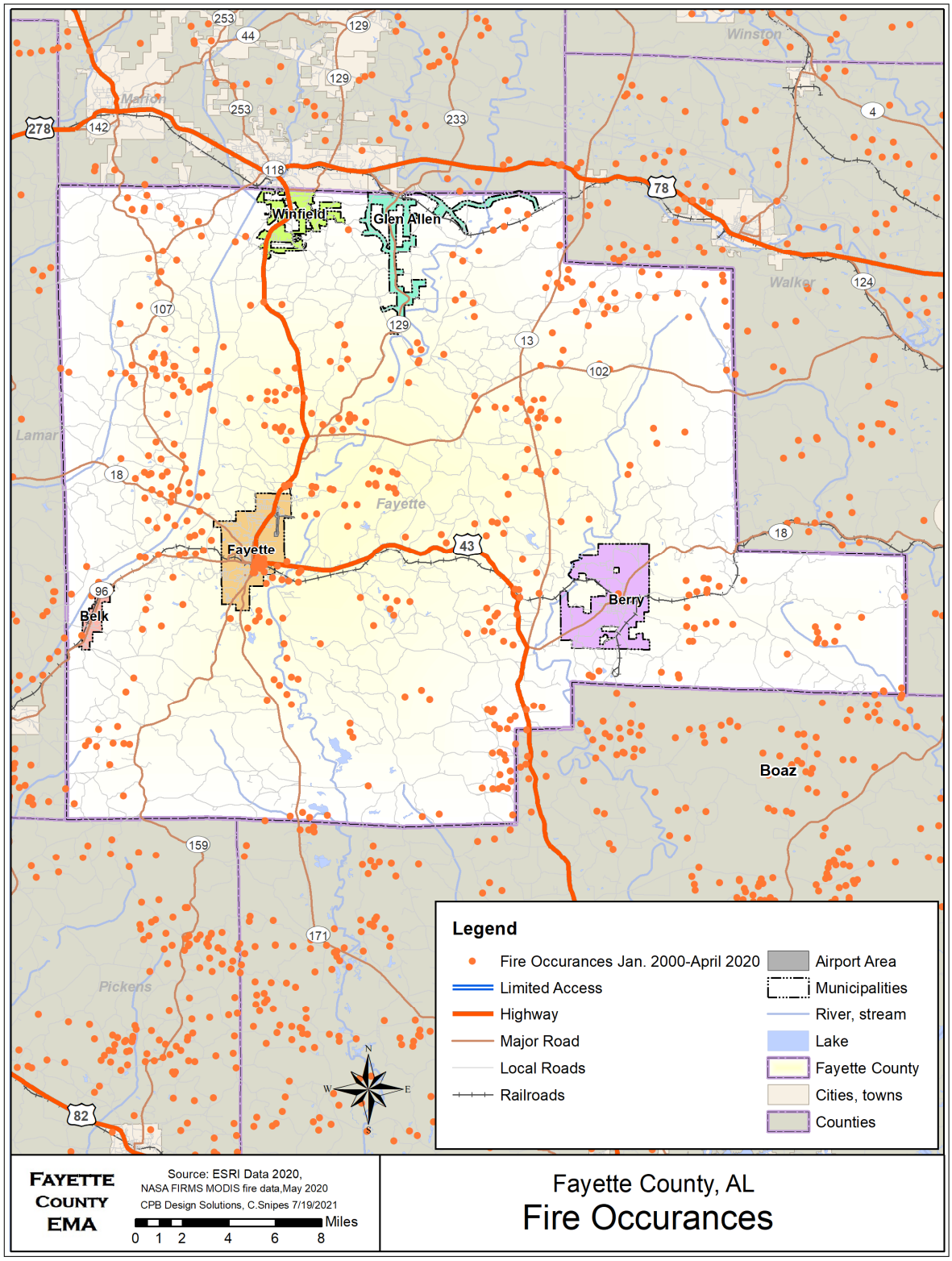
Past Occurrences of Wildfires

There were 1,195 wildfires in Alabama that burned over 14,000 acres during the severe drought of October 2016. On October 5 there was a fire warning issued due to the drought, lack of precipitation, high probability of fuel ignition, shortage of manpower and resources, and low humidity. This warning was well-warranted.

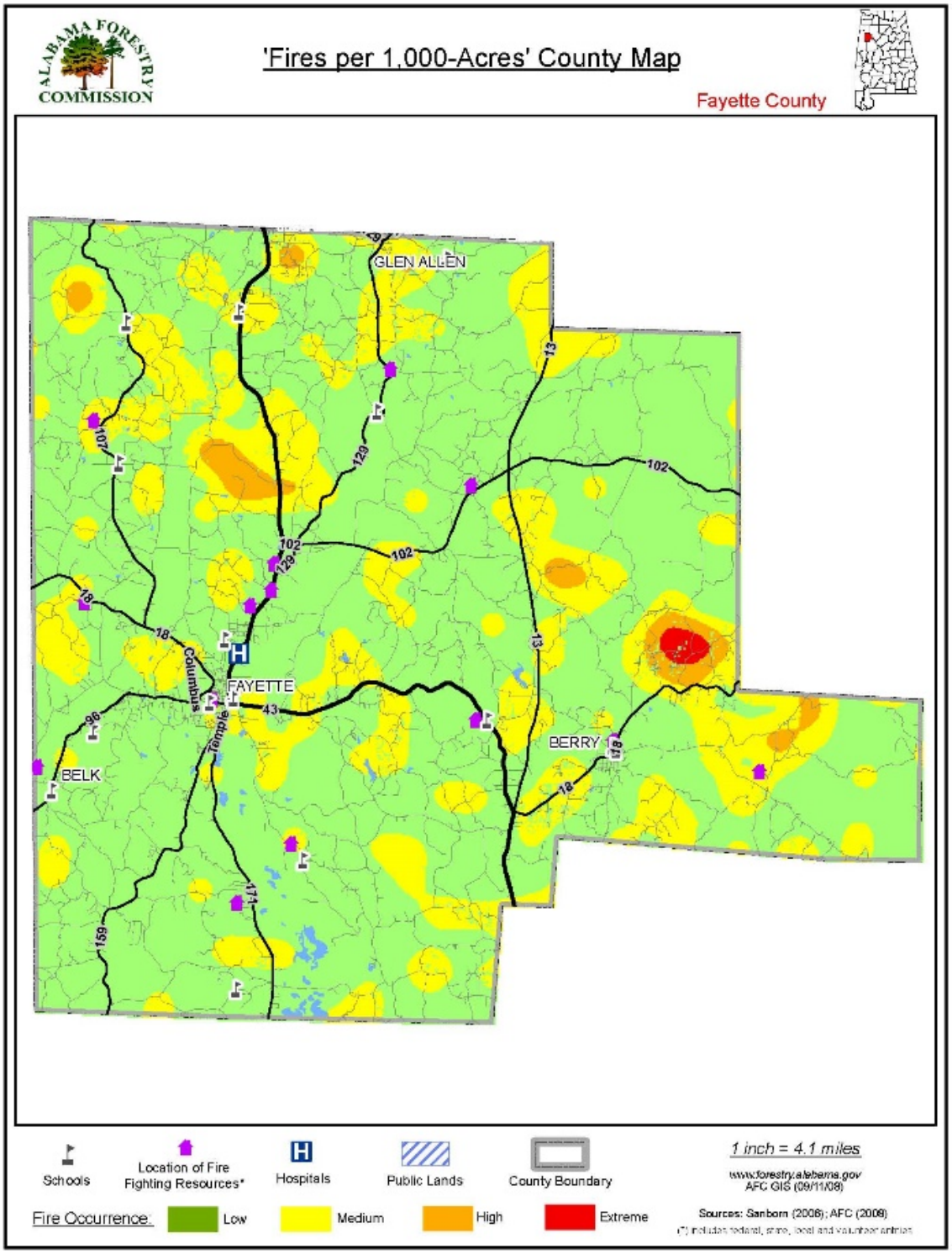
According to the Alabama Forestry Commission, between January 1, 2009, and December 31, 2018, there were 164 fires that burned a total of 1, 450 acres. Fayette County averaged 16.4 fires per year, with an average of 145 acres burned per year. Fayette County ranks 49th among 67 Alabama counties for number of fires and 53rd for acres burned.

Map 5-35 “Fayette County Fire Occurrences” shows the location of wildfires in Fayette County between January 2000 and April 2020. These wildfire occurrence areas generally coincide with areas denoted as low to high-risk areas on Map 5-36 “Fayette County Wildfire Risk.” The areas at highest risk in Fayette County are just north of the City of Fayette and the area around unincorporated Pea Ridge. These areas are ranked as “Extreme” or “High” on both the fire susceptibility and fire occurrence indexes.

Map 5-35. Fayette County Fire Occurrences



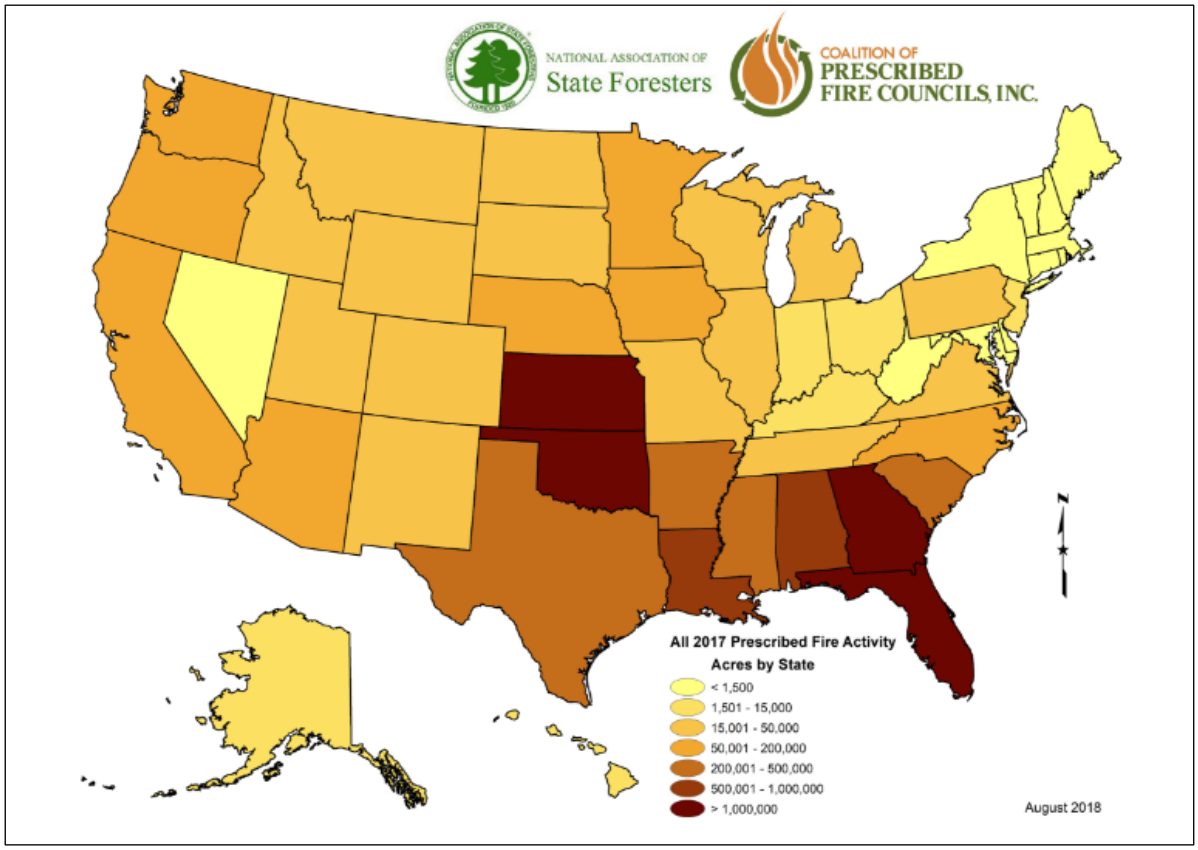
Map 5-36. Fayette County Fires per 1,000 Acres



Probability of Future Wildfire Events

Alabama, under the direction of the Alabama Forestry Commission, is in the top ten states that perform prescribed burns which tend to lower the amount of wildfire spread. Also, the county has concentrated their efforts on education of the public and improved training and resources for the volunteer fire departments around the county. Map 5-37 shows the state of Alabama's efforts with prescribed burns compared to the rest of the country for 2017.

Map 5-37. Prescribed Fire Activity, 2017



As long as the county continues to conduct prescribed burns and educate their citizens about wildfires, the number of fires and spread should remain at a reasonable level. Also, if legislation can be enacted to require timber companies to burn off remaining debris from timber removal, the county should continue to see less intense wildfires. Another measure that can be taken to minimize the impact of wildfires, is for citizens to allow the county to aid in the removal of fallen trees and debris from storm damage throughout the county after storm events, especially in large debris fields. Chapter Six – "Mitigation Strategy" addresses these mitigation measures and more that can be undertaken to lessen the impact of these wildfires.

5.3.12 Dam or Levee Failures

Dam or levee failures occur when a dam or levee is breached, and the impounded water is suddenly released. The resulting damage from a breach can far exceed any flood damage in the area. Since a failure would most likely occur during times of heavy rain, a failure would exacerbate existing flooding conditions. A failure is usually the result of neglect, unsound construction, or structural damage attributable to an earthquake or other hazard. Dam/levee failures have the potential to cause significant damage including human casualties for extended distances because of the force and volume of water; however, dam failures are rare.

The Army Corps of Engineers has estimated that the state of Alabama has almost 2,300 dams across the state, but the number is not certain, and neither is the condition of about 98% of the dams because Alabama is the only state in the country that does not have a system in place for dam inspection and safety. There have been attempts to create a program but none of the proposed legislation has passed. The dam safety regulations would establish the protocol for construction, alteration, repair, operation, abandonment, and removal of dams to be administered by a licensed engineer. The program would operate within the Alabama Department of Economic and Community Affairs (ADECA) Office of Water Resources.

Location of Potential Dam or Levee Failures

The National Inventory of Dams lists thirteen dams in Fayette County. They are all earthen dams which were constructed for recreation and are located in unincorporated areas of Fayette County. The dams' locations make it so that their failure will have little to no impact on structures within the county. A portion of Alabama Highway 171 in the City of Fayette acts as a levee. Table 5-13 lists the dams and provides information on which body of water it is located, year completed, height, maximum storage, and maximum discharge and Map 5-38 shows the locations of the dams in Fayette County.

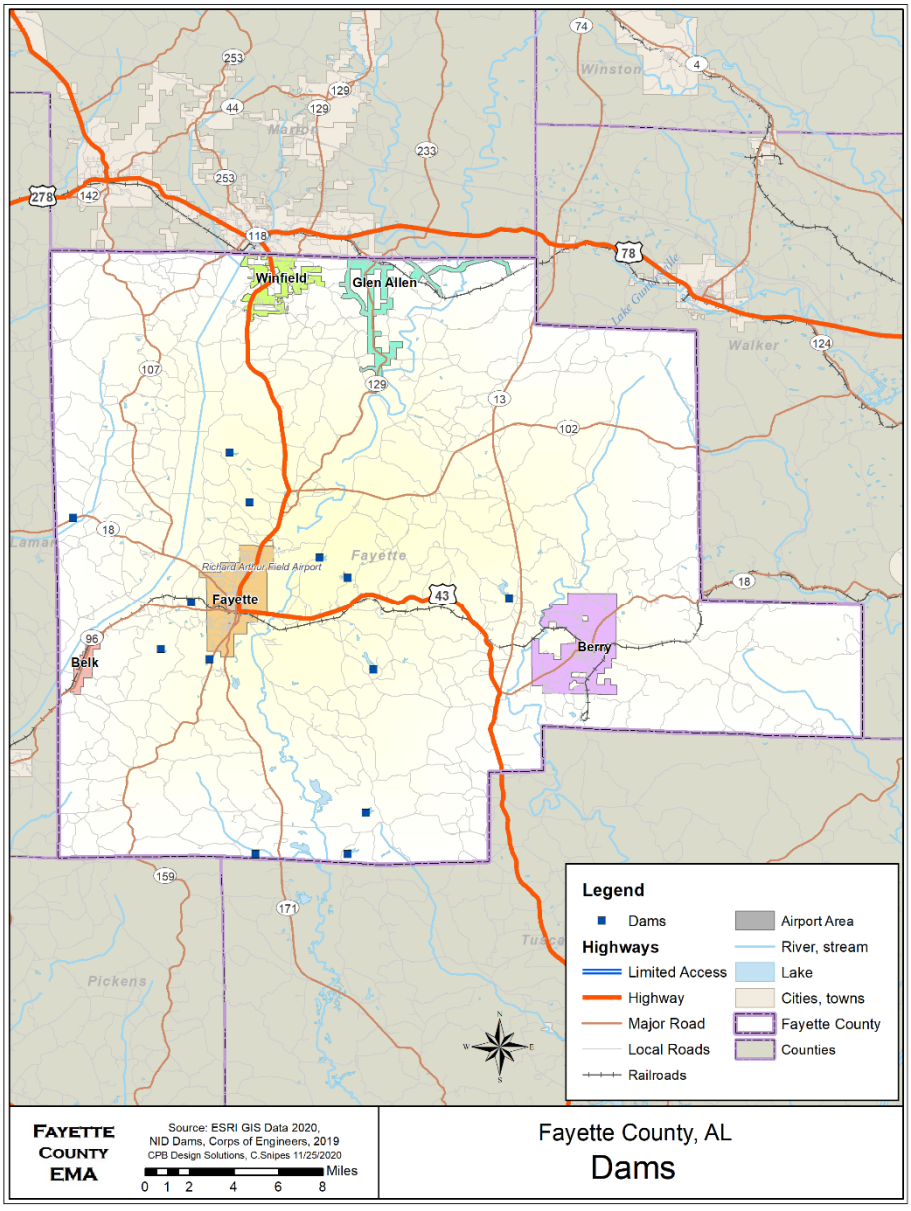
Table 5-13. Fayette County Dams

Dam Name	River	Year Completed	Height (ft.)	Max Storage (Acre ft)	Max Discharge (Ft^3/sec)
Bagwell Lake	TR-Sipsey River - Offstream	1962	25	120	50
Barnett Lake Dam	TR- Davis Creek	1960	25	242	163
Bugs Lake Dam aka Bays Lake Dam	Clear Creek	1952	28	1583	1579
Cains Ridge Dam	TR-Martins Creek- Offstream	1980	17	199	600
Fayette County Public Lake Dam	-	-	-	-	-
Freeman Lake Dam	TR-Bear Creek	1962	25	105	600
Harkins Lake Dam	TR-Fulton Creek	1956	35	330	600
Killingsworth Lake Dam	TR-Sipsey River	1967	31	374	1

Dam Name	River	Year Completed	Height (ft.)	Max Storage (Acre ft)	Max Discharge (Ft^3/sec)
Mitchum Lake Dam	TR-Sipsey River-Offstream	1955	30	156	600
Robertson Pond	TR-Luxapillila River	1998	23	176	210
Watkins Lake Dam	TR-Luxapallila Creek	1950	18	107	405
William D. Rowland Dam	TR – Hells Creek	1994	23	145	190
WW Bobo Dam	TR-Luxapallila Creek	1955	15	95	154

Source: Army Corps of Engineers

Map 5-38. Fayette County Dams



Extent and Intensity of Potential Dam or Levee Failure

The US Army Corps of Engineers rates the effects of dam failures on surrounding areas as either high, significant, or low. Three of the dams within Fayette County were ranked high hazard, six as significant and five as low. All of the dams are located in unincorporated areas of Fayette County and do not pose any substantial risk to the communities; therefore, the hazard ratings for these dams are deemed inaccurate and they should all be considered low at this time. The extent of damage from dam failure, other than to agricultural property, is almost non-existent.

Previous Occurrences of Dam or Levee Failures

Bays Lake Dam failed in 1980. The dam created a privately owned mill pond which failed due to heavy rainfall. After the failure, the US Army Corps of Engineers replaced the dam with an earthen dam and has been monitoring ever since.

Probability of Future Dam or Levee Failure Events

The implementation of dam safety programs and regulations, and the monitoring of the structural integrity of the dams should aid in mitigating dam failure. The largest dam, which is located at Bugs Lake, is monitored by the US Corps of Engineers and therefore the risk of failure of this dam should be very low. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken to mitigate these hazards.

5.3.13 Human-Caused Hazards

The term "human-caused hazards" has different definitions even when one consults FEMA and Department of Homeland Security documentation. For the purposes of this plan, we will use the definition provide by FEMA's Emergency Management Institute (EMI). According to FEMA's EMI, human-caused hazards are defined as "hazards that rise from deliberate, intentional human actions to threaten or harm the well-being of others." These hazards include workplace violence, terrorist acts and cyberterrorism. Unintentional hazards caused by humans, are covered in the next section "Technological Hazards".

The official definition for terrorism can be found in 28 CFR, Section 0.85. It defines terrorism as "...the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives." The Federal Bureau of Investigation (FBI) further characterizes terrorism as "either domestic or international, depending on the origin, base, and objectives of the terrorist organization."

For this plan the following human-caused hazard risks were assessed: biological, chemical, nuclear, and radiological agents; arson or incendiary attack; armed attacks; intentional hazardous materials releases; agriterrorism; and cyberterrorism. The main concerns for the HMPC members in relation to human-caused hazards are cyberterrorism, agriterrorism and arson.

Location of Potential Human-Caused Hazards

Acts of violence, terrorism or cyber security attacks can occur anywhere, at any time, with little to no warning; therefore, the potential for an attack in Fayette County is present. While all citizens

of Fayette County should be aware of the threat of human-caused hazards, research shows that certain considerations should be made to determine those that are considered at higher risk. Those considerations include areas of international, national, or regional importance, military and civilian government facilities, airports, large cities, and high-profile landmarks. Other factors to consider are large public gatherings such as festivals and parades, water and food supplies including agricultural areas, utilities, financial institutions, and corporate centers. Since terrorists can ship explosives or chemical and biological agents to any location through the mail or other systems, there is no location that is not a potential target.

Extent and Intensity of Potential Human-Caused Hazards

Terrorist attacks can be quite severe, with the potential for widespread damage to property and infrastructure and major loss of life and casualties, within any jurisdiction. Impacts of such events are determined by the method of attack, the amount of force applied and the density of population in the area of the attack. Some human-caused events can trigger other hazards such as wildfires, flooding due to destruction of dams, and environmental problems due to contamination by chemical or biological agents.

An active shooter could mean loss of life, and as a large percentage of active shooter situations occur in schools, this loss of life could include children. All areas of the county are equally susceptible to active shooter events. Agriterrorism would result in severe economic damage to the county if it involved the poultry industry since poultry is the number one industry for employment in the county.

The impact of cyber-attacks varies depending on the level of the technological breach and the data that is exposed through the breach. Such a breach could have financial or privacy violation consequences for business, government, and private citizens. Cyber security threats always pose a risk, more so today than ten years ago. Threats include social engineering (via Facebook, Twitter, LinkedIn), advanced persistent threats (gaining access to information in an organization), cloud security breaches, malware, and botnets. Also, now that more organizations are using alternative devices, such as iPads, iPhones, Android and Windows-operating smart phones for work-related purposes, attackers have more opportunity to gain access via the Web or through apps.

Previous Human-Caused Hazard Occurrences

With Fayette County being a rural county with no major metropolitan areas, there have been very few human-caused occurrences. There was a bomb threat called into the Fayette County Courthouse which upon investigation shown there was no bomb present and therefore no real threat.

Probability of Future Human-Caused Hazard Events

Human-caused hazards are very unpredictable . There is very little warning if there is going to be a human-caused event and most often none at all. While there are no major venues for sporting or cultural events, such as stadiums for professional or college football, or large shopping malls which would serve as targets, all areas within Fayette County are at risk for some form of human-caused hazard event. Even though Fayette County is a rural, less populous county, they are still at risk of

certain types of attacks. In order to mitigate the threats to either stop or lessen the impact, everyone must be more aware of what is happening around them and take steps to increase security around themselves and others, including with their computers and internet. Mitigation measures that can aid in this are presented in Chapter Six – "Mitigation Strategy".

5.3.14 Technological Hazards

According to FEMA, the term technological hazards refers to hazards that "originate from technological or industrial accidents, infrastructure failures, or certain human activities. These hazards cause the loss of life or injury, property damage, social and economic disruption, or environmental degradation, and often come with little to no warning." This plan refers to events that are not intentional such as: chemical spill, industrial accident at a facility, industrial accident during transport, and the failure of supervisory control and data acquisition system or other critical infrastructure component.

Location of Potential Human-Caused and Technological Hazards

All Fayette County jurisdictions are subject to technological hazards with some being at a greater risk due to their proximity to hazardous material storage sites or transportation routes. Map 5-39 shows the locations of hazardous materials storage, six of which are located in or near the City of Fayette and one is located in Town of Belk. All four incorporated areas along with the county have railroads running through them and the potential for a hazardous material spill due to derailing is a real risk. Also, US 43 traverses the City of Fayette and the county which is another risk for hazardous materials release if an accident during transport was to occur.

Extent and Intensity of Potential Human-Caused and Technological Hazards

Hazardous material events can have effects that range from minor inconvenience, such as the overturning of a gasoline tanker with no spillage, to disastrous, such as a spill into the waterway from a chemical manufacturing plant.

Previous Technological Hazard Occurrences

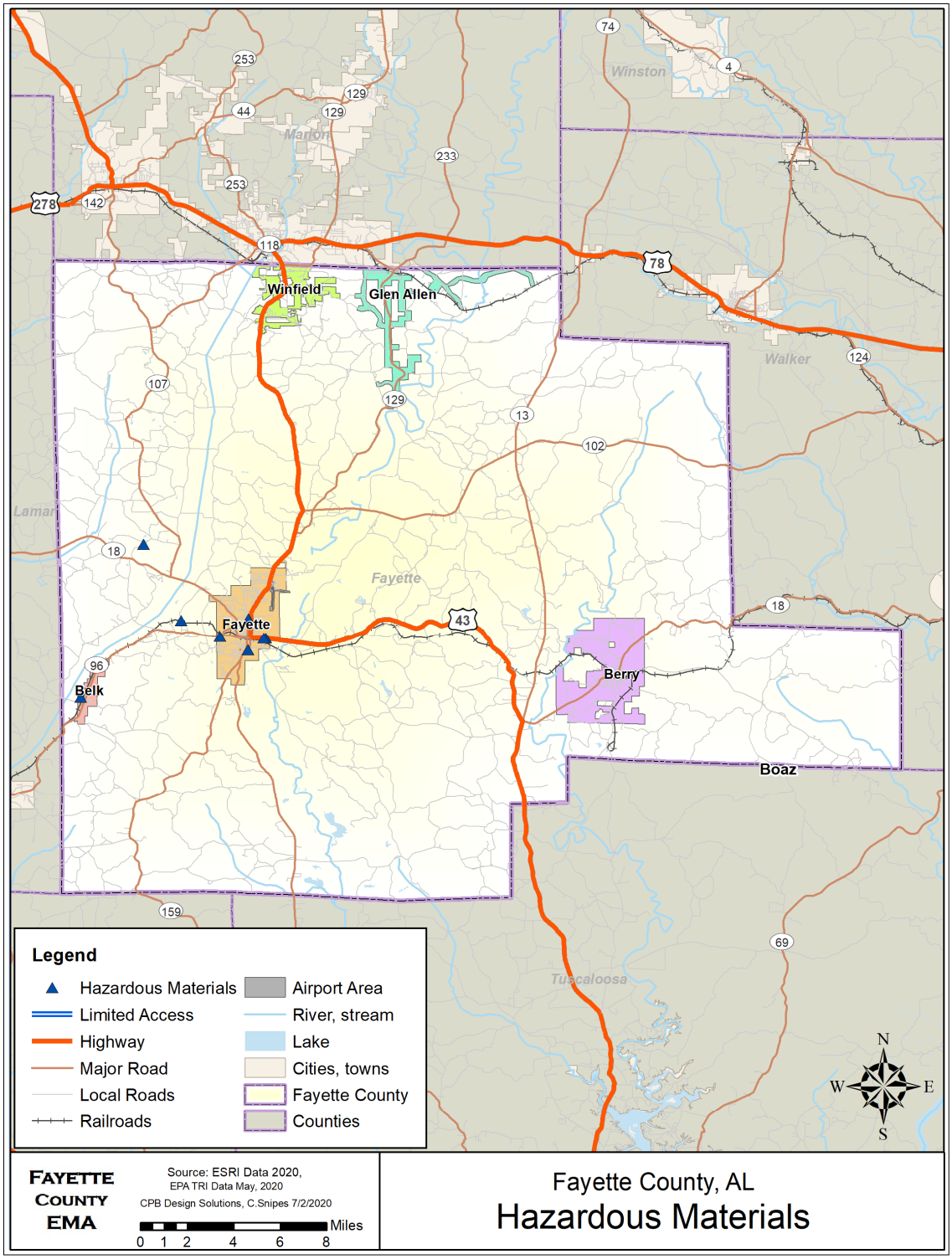
Fayette County has a few hazardous materials events. The extent of hazardous materials spills can be minimal to severe, sometimes costing thousands of dollars for clean-up. The extent of technological hazard impacts can be quite severe, with potential for widespread damage to property and infrastructure and major loss of life and casualties, within any jurisdiction.

On January 25, 2018, a diesel sheen was seen on Luxapalila Creek and the sheen was traced back to property owned by ST Bunn Construction. Luxapalila Creek is the primary water supply for the Fayette Water Board. The water intake is approximately 1 mile downstream from the spill site. Clean up of the site was conducted by a private contractor and overseen by the Alabama Department of Environmental Management.

In 2005, the County experienced a fuel spill into a creek near Covin. The spill originated from West Oil Supply located in Winfield. Local responders from both Fayette and Marion counties

coordinated efforts to utilize booms and pads to soak up the spill successfully. Clean-up costs were reported at roughly $14,110.

Map 5-39. Fayette Hazardous Materials Sites



Probability of Future Technological Hazard Events

Technological hazards are very unpredictable. There is no way to determine if there is going to be a technological hazard at any certain time and all times of year and locations are at risk for these hazards. Care must be taken by those involved with handling, storing, and transporting hazardous materials. Since Fayette County is susceptible to tornadoes and earthquakes, special effort must be taken to secure all chemicals in the event of these hazards occurring. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken to lessen the impact of these technological hazards.

5.3.15 Pandemic and Infectious Diseases

A pandemic is a disease that affects or attacks the population covering a wide geographical area, including several countries, and/or continent(s). Pandemics typically cause sudden, pervasive illness in all age groups on a global scale. The exact size and extent of an infected population is dependent upon how easily the illness is spread, the mode of transmission and the amount of contact between infected and uninfected individuals.

Infectious diseases are also highly contagious and are spread person-to-person, but can also be spread by animals and insects, depending on the disease. A person can also get some diseases by ingesting contaminated food or water or by exposure to organisms in the environment. The transmission rate of infectious disease will depend on the mode of transmission of a given illness. A commonly occurring infectious disease, Influenza, also known as the flu, is a contagious illness that is caused by the influenza virus and most commonly attacks the respiratory tract in humans.

Pandemic and infectious disease events can affect large populations. The transmission rates of pandemic illnesses are often higher in denser areas where there are large concentrations of people. Pandemic events can also occur after other disasters, particularly floods, when there is the potential for bacteria to grow and contaminate water.

Location of Potential Pandemic and Infectious Diseases

Pandemic and infectious disease risks are possible in all jurisdictions in Fayette County with the areas with the largest population having the greatest risk due to the potential for a contagion to easily spread from person to person.

Extent and Intensity of Pandemic and Infectious Diseases

The extent and intensity of a pandemic or infectious disease threat in Fayette County is dependent on the aggressiveness of the virus or bacteria in question, its ability to spread, mode of transmission and amount of contact between infected and uninfected people. Population density and the level of social interaction in any infected area can influence the overall impact of any communicable disease. Some pandemics occur after natural disasters, especially flood events, when bacteria have the opportunity to grow and contaminate water

The extent of a pandemic may be worsened since outbreaks across the region leads to the inability to obtain assistance from surrounding areas since they are investing all their resources in fighting the disease in their own area. Also, different treatments and special supplies might be in high demand leading to a short supply or no availability in a time of need.

Previous Pandemic and Infectious Diseases Occurrences

While there have been many episodes of influenza in Alabama and Fayette County, there have been no schools closed due to the flu. In January 2018, Governor Kay Ivey issued a declaration of a statewide public health emergency due to the flu. The COVID-19 pandemic has caused major disruptions throughout the country resulting in school closings, among other precautions to avoid the spread of the disease.

Probability of Future Pandemic and Infectious Diseases Hazard Events

Infectious diseases will occur more frequently than pandemics with some strain of influenza impacting Fayette County every year. The magnitude of such an event will be dependent on the strain and the availability of a vaccine for that particular strain of flu. Pandemics will also occur but a much lower rate; however, when they do appear, the consequences can be far reaching and very impactful; harming people and the economy, and at times, animals.

Being a majority rural county lowers the risk of widespread casualty due to a pandemic or infectious diseases event but does not eliminate the risk. This type of environment can lead to complacency. Many people who live in Fayette County work outside the area where they can be exposed to the disease and bring it back to Fayette County so due diligence is necessary.

People must be well educated in how infectious diseases and pandemics are spread and how to prevent their transmission. The county should work with the health care industry and health departments to ensure educational materials are available and supplies that might be needed to address an outbreak are not expired and readily available. More information on mitigation measures to address pandemics and infectious diseases and pandemics can be found in Chapter Six – "Mitigation Strategy".

5.4 Vulnerability of Structures within Each Jurisdiction

This section of Chapter Five includes an inventory of existing and future buildings, critical facilities, and infrastructure within Fayette County. An analysis of the vulnerability of these structures to the hazards addressed in the risk assessment was conducted and its findings are presented. Vulnerability in this chapter refers to the exposure of buildings, critical facilities, and infrastructure to a particular hazard and their susceptibility to damage from the hazard. "Buildings" refer to all walled and roofed structures. Section 5.5, "Estimate of Dollar Losses to Vulnerable Structures," applies loss estimates to the inventory discussed in this section.

As demonstrated in the hazard profile section of this risk assessment, the jurisdictions located in Fayette County are equally at risk from most hazards. Riverine floods, sinkholes, landslides, and dam failures are location-specific hazards and the vulnerability of structures within the jurisdictions will

vary. Pandemics and infectious diseases are not covered in this section because they do not impact structures.

Inventory Methodology

Structure inventories were collected in three steps.

1) FEMA's Hazus-MH computer program was utilized to inventory the number and property values of structures within Fayette County. Hazus-MH is a risk assessment software used for projecting losses from floods, hurricane winds, and earthquakes. The latest edition of Hazus-MH software (version 4.2) was utilized. A Level 1 analysis was run which utilized data provided with the software to calculate damages at the county level. Because data accuracy tends to diminish when scenarios are run on smaller areas, Hazus analyses below the county level were not performed.

2) Growth rates and growth multipliers were applied to the Hazus-MH data of existing building values to estimate 2040 building values and exposure. The population projections and Hazus-generated structure counts and values are approximate but were helpful in determining areas of need when choosing and prioritizing mitigation measures.

3) Maps and tables of critical facilities were created using GIS data. The GIS data came from Fayette County sources, Geological Survey of Alabama, USGS, National Weather Service, NFIP, U.S. Census Bureau, Alabama State Data Center, and the Alabama Forestry Commission.

Hazus-MH includes critical facilities, infrastructure, and user-defined facilities in their analysis. The following are the types of structures recognized by Hazus that fall under the classifications of critical facilities, infrastructure, and user-defined facilities.

Critical Facilities

- Essential Facilities. These critical facilities are essential to the health and welfare of the entire Fayette County population and are particularly critical following hazard events. Emergency response facilities (police, fire, and emergency management), medical care facilities (hospitals and other care facilities), schools, and shelters for evacuation are all examples of essential facilities.

- High Potential Loss Facilities. These are facilities that will likely cause a large amount of loss if they are damaged. These critical facilities include military installations, nuclear power plants, hazardous materials sites, and dams.

Infrastructure

- Transportation Systems Lifeline. These facilities are vital to providing services during times of disasters. They include highways, bridges, tunnels, heavy/light railways, airports, buses, ports, and waterways.

- Utility Systems Lifeline. These facilities are essential lifelines that include potable water, wastewater, natural gas, oil, electric, and communications systems.

Other

- User-Defined Facilities. The user may include additional facilities or systems unique to their study region which are not included in the general Hazus-MH listing of critical facilities and infrastructure.

Hazus-MH Structure Inventory

Hazus-MH refers to the geographic study area as the "region", which is all of Fayette County, including all unincorporated areas and four municipalities. A more complete description of the planning region is presented in Chapter 3 "Community Profiles." The descriptions presented in this section were generated by the Hazus-MH Global Reports for county-wide assessments of flooding and earthquakes. 2010 Census data was used for the region description in the Hazus-MH analysis. The Fayette County region is generally described by Hazus-MH, as follows:

- The geographical size of the region is 629 square miles.
- The region contains 1,731 census blocks within 5 census tracts.
- There were over 7,000 households in the region, with a total population of 17,241 people (Census 2010 data).
-

Building Inventory

Hazus-MH estimates that there are approximately 8,462 buildings in the region, which have an estimated replacement value (excluding contents) of around $1.5 billion (Year 2014 dollars). Table 5-14 shows the building value of all structures within Fayette County per Hazus in terms of 2014 dollars. Table 5-15 breaks out the building inventory into percentages by the following occupancy types: agriculture, commercial, education, government, industrial, religion, residential (single family) and residential (other). Existing dollar values of the structures within the region, divided by occupancy type, are presented in Table 5-16 and Chart 5-4.

Seventy-six percent of the occupancy type is residential and residential accounts for 76% of the value of the buildings in the region. Residential is followed by commercial and industrial occupancies for the most building and highest values.

Table 5-14. Hazus-MH Building Value Data

County	Building Value (thousands)		
	Residential	Non-Residential	Total
Fayette	$147,978	$365,359	$1,513,337

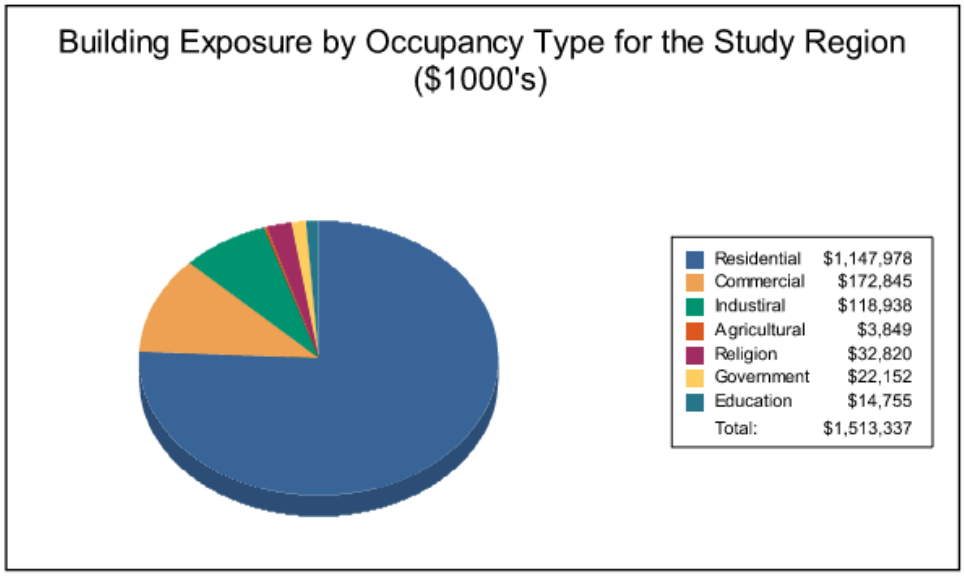
Table 5-15. Hazus-MH Building Inventory by Occupancy Type

Occupancy	Count	Share
Agriculture	25	0.3%
Commercial	342	11.4%
Education	12	1.0%
Government	23	1.5%
Industrial	110	7.9%
Religion	46	2.2%
Residential	5977	75.9%
Total	8462	100%

Table 5-16. Building Exposure by Occupancy Type

Occupancy	Existing Exposure ($1,000)	% Of Total
Agriculture	$3,849	0.25%
Commercial	$172,845	11.42%
Education	$14,755	0.97%
Government	$22,152	1.46%
Industrial	$118,938	7.86%
Religious	$32,820	2.17%
Residential	$1,147,978	75.86%
Total	$1,513,337	100.00%

Chart 5-4. Hazus-MH Building Exposure by Occupancy Type



Hazus also separates the structures by construction type. The types of material presented are wood, steel, concrete, precast, reinforced masonry, unreinforced masonry, and manufactured housing. This information is important because the materials used in construction determine how stable the structures will be during certain hazard events. As shown in Table 5-17, in the Fayette County region, wood frame construction makes up 70% percent of the building inventory. This high percentage can be attributed to the number of residential buildings in the area. Manufactured housing accounts for approximately 21% of the structures, which is important to note due to their vulnerability to most hazards.

Table 5-17. Hazus-MH Building Inventory by Construction Type

Construction Type	Count	Share
Wood	5888	69.57%
Steel	255	3.01%
Concrete	44	0.52%
Precast	19	0.22%
Reinforced Masonry	60	0.71%
Unreinforced Masonry	451	5.33%
Manufactured Housing	1746	20.63%
Total	8,463	100%

Most hazards are county-wide and therefore the vulnerability to the structures within Fayette County are equal. While all structures have an equal probability of being impacted by region-wide hazards such as severe storms and tornadoes, residential structures will have a higher percentage of being impacted by a hazard over all other structures since they comprise 76% of the building stock in Fayette County and are spread throughout the county. The categories of government, education, and religion each have less than 3% of the buildings in the region; however, even though those buildings make up a small percentage of the building inventory, depending on when a disaster hits, the consequences could be devastating due to the number of people in the structure at the time of the disaster.

Location-specific hazards, such as flooding, wildfires, dam failures, sinkholes, and landslides can vary from minimal exposure to as much as 100% of a community's total geographic area. The percent exposure can be applied to the structure inventories to derive a general estimate of vulnerable structures by hazard. Although this does not yield a precise estimate, it provides a general indication of the number and types of structures exposed to each hazard within each jurisdiction. Table 5-18 shows the percentage of buildings exposed to a hazard by jurisdiction as determined by the risk assessment and other sources.

Table 5-18. Hazard Exposure Rates by Jurisdiction

Identified Hazard	Unincorporated Fayette County	Belk	Berry	Fayette	Glen Allen
Tornadoes	100%	100%	100%	100%	100%
Severe Storms	100%	100%	100%	100%	100%
Floods - Flash	25%	50%	1%	75%	75%
Floods - Riverine	15%	10%	10%	20%	10%
Hurricanes	100%	100%	100%	100%	100%
Winter Storms	100%	100%	100%	100%	100%
Extreme Cold	100%	100%	100%	100%	100%
Droughts	100%	100%	100%	100%	100%
Extreme Heat	100%	100%	100%	100%	100%
Wildfires	100%	50%	50%	50%	75%
Dam Failures	15%	0%	0%	0%	0%
Landslides	10%	0%	5%	10%	5%
Earthquakes	100%	100%	100%	100%	100%
Sinkholes	1%	0%	0%	0%	1%
Pandemics/Infectious Disease	100%	100%	100%	100%	100%
Human-Caused	100%	100%	100%	100%	100%
Technological	100%	100%	100%	100%	100%

Critical facilities and infrastructure have been apportioned to each jurisdiction on the basis of population distribution. Table 5-19 shows this distribution.

Table 5-19. 2018 Population Distribution by Jurisdiction

Jurisdiction	2018 Estimate	% Of Total
Fayette County	16,433	100%
Belk	205	1.2%
Berry	1,098	6.7%
Fayette	4,327	26.3%
Glen Allen	487	3.0%
Unincorporated	10,316	62.8%

To project populations for each jurisdiction, the annual growth rate for each jurisdiction was calculated based upon population growth between 2000 and 2018. The unincorporated area projection is the countywide population less the total of all municipal populations. This is shown in Table 5-20.

Table 5-20. Annual Growth Rates by Jurisdiction

Jurisdiction	2000	2018	Number Change 2000-2018	Percent Change	Annual Growth Rate
Fayette County	18,495	16,433	-2,062	-11.15%	-0.65%
Belk	214	205	-9	-4.21%	-0.24%
Berry	1,238	1,098	-140	-11.31%	-0.66%
Fayette	4,922	4,327	-595	-12.09%	-0.71%

Jurisdiction	2000	2018	Number Change 2000-2018	Percent Change	Annual Growth Rate
Glen Allen	442	487	45	10.18%	0.54%
Unincorporated	11,679	10,316	-1,363	-11.67%	-0.69%

If the population trend from 2000 to 2018 continues, all of Fayette County's jurisdictions are expected to decline in population other than Glen Allen. Fayette County's projected annual growth is -13% between 2018 and 2040 as shown on Table 5-21. The largest decline is expected to be in the City of Fayette with a projected decline of -15%, followed by both unincorporated Fayette County and Berry at -14%. Belk is expected to have a population reduction of -5%. Glen Allen is expected to gain 13% in population between 2018 and 2040. Since 76% of the building inventory is residential, building inventory can be expected to change according to each jurisdiction's growth multiplier. Using the numbers obtained from the growth projections and multipliers, the projected population distribution by jurisdiction for Fayette County in 2040 is presented in Table 5-22.

Table 5-21. Projected Growth 2018 - 2040

Jurisdiction	Estimated 2018	Annual Growth Rate	Projected 2040	Projected Change 2018-2040	Percent Change 2018-2040	2040 Growth Multiplier
Fayette County	16,433	-0.65%	14,224	-2,209	-13%	0.87
Belk	205	-0.24%	195	-10	-5%	0.95
Berry	1,098	-0.66%	948	-150	-14%	0.86
Fayette	4,327	-0.71%	3,697	-630	-15%	0.85
Glen Allen	487	0.54%	548	61	13%	1.13
Unincorporated	11,679	-0.69%	8,865	-1,451	-14%	0.86

Table 5-22. 2040 Population Distribution by Jurisdiction

Jurisdiction	2040 Population	% Of Total
Fayette County	14,224	100%
Belk	195	1%
Berry	948	7%
Fayette	3,697	26%
Glen Allen	548	4%
Unincorporated	8,865	62%

Taking the growth projections and applying them to the existing values for buildings in Fayette County, future values can be estimated. Table 5-23 applies future values to the building values by jurisdiction by separating the building inventory into residential and non-residential and then

multiplying by the growth multiplier for that jurisdiction. The unincorporated areas of Fayette County have the highest residential and non-residential values followed by the City of Fayette.

Table 5-23. Building Values by Jurisdiction

Jurisdiction	Building Value ($1,000)					
	Existing Residential	Future Residential	Existing Non-Residential	Future Non-Residential	Existing Total	Future Total
Fayette County	$1,147,978	$998,741	$362,359	$15,252	$1,513,337	$1,316,603
Belk	$13,776	$13,087	$4,348	$4,131	$18,160	$17,252
Berry	$76,915	$66,146	$24,278	$20,879	$101,394	$87,198
Fayette	$301,918	$256,630	$95,300	$81,005	$398,008	$338,306
Glen Allen	$34,439	$38,916	$10,871	$12,284	$45,400	$51,302
Unincorporated	$720,930	$620,000	$227,561	$195,703	$950,376	$817,323

The same process was applied to the building count by occupancy and jurisdiction as shown in Table 5-24. Residential is projected to remain the largest occupancy of buildings in Fayette County followed by commercial and industrial. Table 5-25 applies the percent of exposure to the hazards from Table 5-18 and the growth multiplier to the existing building value per jurisdiction and provide an estimate of building exposure per hazard for each jurisdiction. All structures are equally susceptible to impacts from severe storms, tornadoes, winter storms, drought, extreme heat, earthquakes, hurricanes, human-caused, and technological hazards. There is minor threat of damages from sinkholes, dam failure, and landslides for the incorporated areas of Fayette County. Those hazards will most likely impact the unincorporated areas.

Table 5-24. Building Count by Occupancy and Jurisdiction

Jurisdiction	Building Count by Occupancy													
	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future
	Agric.		Commercial		Education		Govt.		Industrial		Religion		Residential	
Fayette County	25	22	342	298	12	10	23	20	110	96	46	40	7904	6876
Belk	0	0	4	4	0	0	0	0	1	1	1	1	95	90
Berry	2	1	23	20	1	1	2	1	7	6	3	3	530	455
Fayette	7	6	90	76	3	3	6	5	29	25	12	10	2079	1767
Glen Allen	1	1	10	12	0	0	1	1	3	4	1	2	237	268
Unincorporated	16	14	215	185	8	6	14	12	69	59	29	25	4964	4269

Table 5-25. Building Exposure by Jurisdiction and Hazard

Identified Hazard	Building Exposure ($1000s) by Jurisdiction									
	Unincorporated Fayette County		Belk		Berry		Fayette		Glen Allen	
	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future
Tornadoes	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Severe Storms	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Floods - Flash	$1,513,337	$658,302	$9,080	$8,626	$1,014	$872	$298,506	$253,730	$34,050	$38,477
Floods - Riverine	$227,001	$197,490	$1,816	$1,725	$10,139	$8,720	$79,602	$67,661	$4,540	$5,130
Hurricanes	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Winter Storms	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Extreme Cold	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Droughts	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Extreme Heat	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Wildfires	$1,513,337	$1,316,603	$9,080	$8,626	$50,697	$43,599	$199,004	$169,153	$34,050	$38,477
Dam Failures	$227,001	$197,490	$0	$0	$0	$0	$0	$0	$0	$0
Landslides	$151,334	$131,660	$0	$0	$5,070	$4,360	$39,801	$33,831	$2,270	$2,565
Earthquakes	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Sinkholes	$15,133	$13,166	$0	$0	$0	$0	$0	$0	$454	$513
Pandemics/Infectious Disease	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Human-Caused	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Technological	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302

Critical Facilities Inventory

Included among the building inventory is the critical facilities category which is divided into the two groups: essential facilities and high potential loss facilities. Each group is described below and the estimated number of each type of facility in Fayette County, as provided by Hazus, are noted.

(1) Essential facilities - Hazus-MH includes hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. Hazus-MH estimates the numbers and types of essential facilities within the region, as follows:

- ✓ 1 hospital with a total bed capacity of 183 beds;
- ✓ 7 schools;
- ✓ 13 fire stations
- ✓ 1 emergency operations center; and
- ✓ 3 police stations.

(2) High potential loss facilities – Hazus-MH includes dams, levees, hazardous materials sites, military installations, and nuclear power plants. There are no military installations or nuclear power plants included in the analysis, so they are not included in the list of high potential loss facilities. Hazus-MH estimates the numbers and types of high potential loss facilities, as follows:

- ✓ 12 dams, with three classified as "high hazard;" and
- ✓ 8 hazardous materials sites.

Hazus-MH estimates there are 26 essential facilities within Fayette County. When there are increases in population, the number of essential facilities typically increase in proportion to the growth of the area; however, Fayette is projected to have a decline in population between 2018 and 2040 continuing the pattern of decrease seen between 2000 and 2018. If the population does decrease, it is unlikely that the number of critical facilities serving the area would decline; therefore, the number of facilities should remain constant.

Table 5-26. Hazus-MH Essential Facilities Data

Classification	Existing Estimate
Hospitals	1 (183 total bed capacity)
Fire Stations	13
Police Stations	3
EOC	1
Schools	7

Table 5-27. Hazus-MH High Potential Loss Facilities Data

Classification	Existing Estimate
Dams	12
Hazard Materials Sites	8

Transportation and Utility Lifeline Inventories

Lifeline inventories are divided into two groups, transportation systems and utility systems. Hazus-MH estimates the total value of the lifeline inventory at approximately $1.225 billion, with estimated replacement costs of around $920 million in transportation and $305 million in utility infrastructure. Tables 5-28 and 5-29 break out the components within each system.

Transportation systems – Hazus-MH classifies highways, railways, light rail, bus, ports, ferry, and airports under the transportation system lifeline inventory list. Fayette County does not have light rail, bus, or ferry services so they are not included in the analysis. Most of the at-risk transportation system components are highway road segments and bridges, which are most vulnerable to flooding and earthquakes. Transportation infrastructure inventories appear below.

Table 5-28. Hazus-MH Transportation Systems Lifeline Inventory

System	Component	No. of Locations or No. of Segments	Replacement Value ($millions)
Highway (111.85 miles)	Bridges	108	57.00
	Segments	17	786.60
	Tunnels	0	0
		Subtotal	*$843.60*
Railways	Bridges	0	0
	Facilities	0	0
	Segments	6	28.50
	Tunnels	0	0
		Subtotal	*$28.50*
Airport	Facilities	1	10.65
	Runways	1	38.00
		Subtotal	*$48.60*
		Total	$920.70

Utility systems - Hazus-MH classifies potable water, wastewater, natural gas, crude and refined oil, electric power, and communications under utility system lifeline. Fayette County does not have any crude or refined oil systems, so they are not included in the analysis. The types of utilities most vulnerable to hazards in Fayette County are electric power lines, and water and wastewater facilities. Severe storms, tornadoes, and flooding pose the greatest threat to these facilities. Human-caused and technological hazards also pose a threat to these facilities.

Table 5-29. Hazus-MH Utilities Systems Lifeline Inventory

System	Component	No. of Locations or No. of Segments	Replacement value ($millions)
Potable Water	Distribution Lines	NA	61.40
	Facilities	2	60.00
	Pipelines	0	0
		Subtotal	*$121.40*
Wastewater	Distribution Lines	NA	36.80
	Facilities	2	119.90
	Pipelines	0	0
		Subtotal	*$156.70*
Natural Gas	Distribution Lines	NA	24.60
	Facilities	3	2.90
	Pipelines	0	0
		Subtotal	*$27.50*
Communication	Facilities	1	.10
		Subtotal	*$.10*
		Total	$305.60

Local Inventories of Critical Facilities and Infrastructure

Data from the US Company Database (2020), the participating jurisdictions, the Army Corps of Engineers, and the Fayette County EMA was compiled to create a local inventory of critical facilities as well as transportation and utility lifelines in Fayette County. The following pages contain maps and tables showing the locations of major critical facilities and utility lifelines. Due to the ruralness of the county, many facilities on the following tables are listed as located in Fayette even though they are located outside the city limits of Fayette.

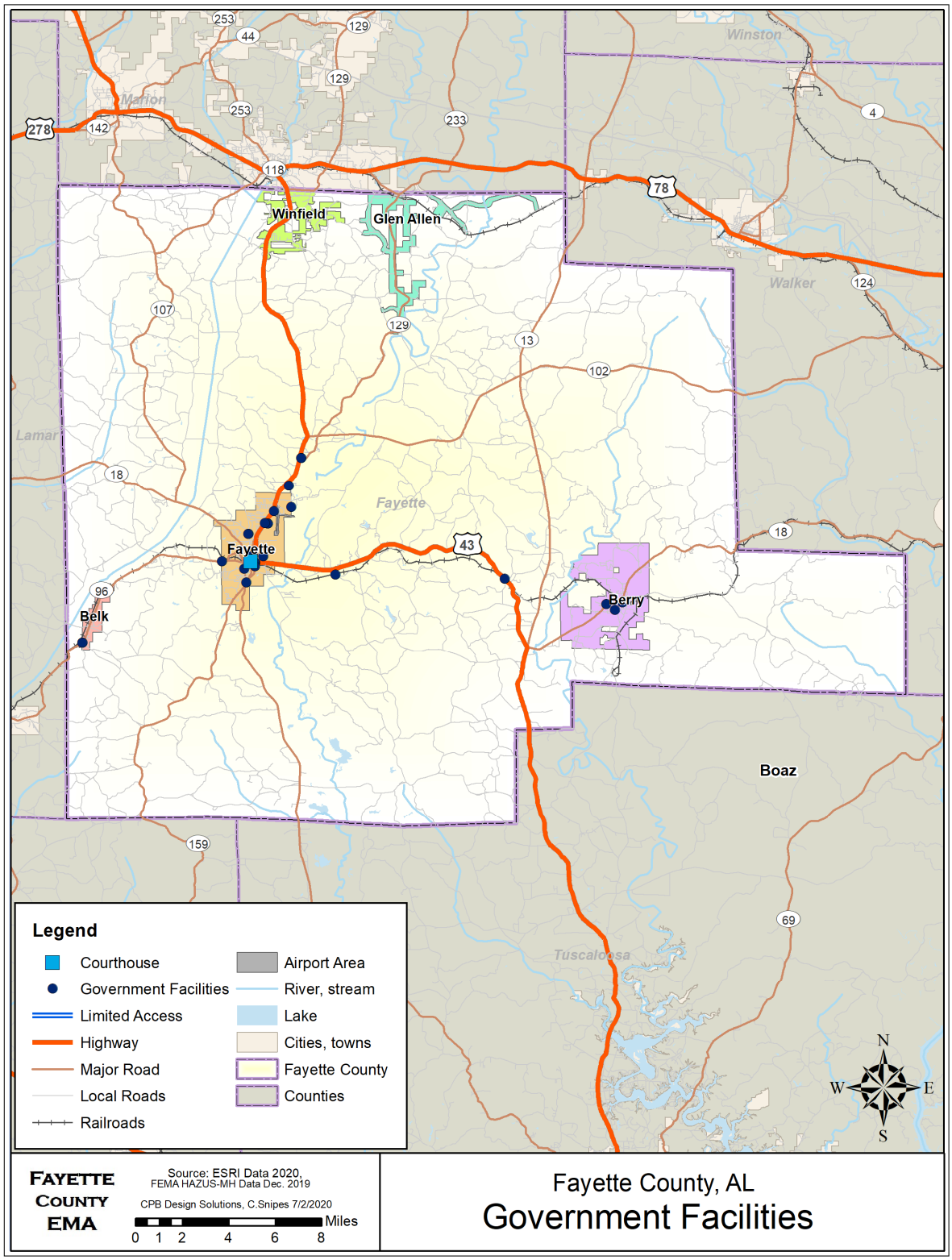
There are 46 government agencies within 31 buildings throughout Fayette County, excluding public safety. Eight of the government buildings are federally owned buildings such as post offices and military offices. Six government buildings are state buildings and ten are related to county government business. The majority of these buildings can be found within the municipalities, but a few are located in unincorporated areas.

Table 5-30. Fayette County Government Facilities

Agency	Type	Address	CITY
Alabama Dept. Transportation	Regulation, Administration of Transportation	432 12th St NW	Fayette
Alabama Forestry Commission	Forestry Services	5434 Highway 171 N	Fayette
Alabama Human Resources Dept.	Administration of Social and Manpower Programs	410 16th St NE	Fayette
Belk Town Hall	Executive Offices	7633 Highway 96	Belk
Berry City Hall	Executive Offices	30 School Ave	Berry
Fayette Board of Registrars	Legislative Bodies	103 1st Ave NW # 4	Fayette
Fayette City Civil Air Patrol	Legislative Bodies	110 21st St NE	Fayette
Fayette City Hall	Executive Offices	102 2nd Ave SE	Fayette
Fayette County Small Claims Court	Courts	113 Temple Ave N	Fayette
Fayette Co Farm Service Agency	Regulation of Agricultural Marketing	245 County Road 26 S	Fayette
Fayette Co Memorial Library	Libraries	326 Temple Ave N	Fayette
Fayette Commissioners Court	Courts	103 1st Ave NW	Fayette
Fayette County Child Welfare	Administration of Social and Manpower Programs	410 16th St NE	Fayette
Fayette County Circuit Judge	Courts	113 Temple Ave N	Fayette
Fayette County Commission	Executive Offices	103 1st Ave NW Ste. 2	Fayette
Fayette County Drivers' License	Regulation, Administration of Transportation	103 1st Ave NW	Fayette
Fayette County Extension Office	Legislative Bodies	650 McConnell Loop	Fayette
Fayette County Health Dept.	Administration of Public Health Programs	215 1st Ave NW	Fayette
Fayette County Juvenile Probation	Legislative Bodies	113 Temple Ave N	Fayette
Fayette County Lake	Legislative Bodies	529 County Road 134	Fayette
Fayette County Revenue Commission	Finance, Taxation, And Monetary Policy	113 Temple Ave N	Fayette
Fayette County Road Shop	Legislative Bodies	1112 Highway 96	Fayette
Fayette County School Bus Shop	Administration of Educational Programs	407 5th Ave NE	Fayette

Agency	Type	Address	CITY
Fayette County Veteran Affairs	Legislative Bodies	103 1st Ave NW	Fayette
Fayette Examiners of Accounts	Legislative Bodies	113 Temple Ave N	Fayette
Fayette Judge of Probate	Courts	113 Temple Ave N	Fayette
Fayette Probate Tag Office	Legislative Bodies	113 Temple Ave N	Fayette
Industrial Board of City of Fayette	Legislative Bodies	102 2nd Ave SE	Fayette
National Guard	National Security	17510 Highway 18 E	Berry
Natural Resource Conservation	Legislative Bodies	103 1st Ave NW	Fayette
Northwest AL Mental Health Center	Administration of Public Health Programs	123 2nd Ave NW	Fayette
Park Rec Board City Fayette	Land, Mineral, And Wildlife Conservation	102 2nd Ave SE	Fayette
Revenue Commissioners Office	Finance, Taxation, And Monetary Policy	113 Temple Ave N	Fayette
State of Alabama	Legislative Bodies	1620 Temple Ave N	Fayette
Town of Glen Allen	Legislative Bodies	156 Highway 129 S	Glen Allen
Tri County Mr-Dd Board	General Government	423 2nd Ave SE	Fayette
US Army National Guard Recruiting	National Security	2335 6th Ave NE	Fayette
US Office of Economic Opportunity-Community Action	Administration of Social and Manpower Programs	316 2nd Ave NE	Fayette
US Post Office	U.S. Postal Service	10745 Highway 18 E	Bankston
US Post Office	U.S. Postal Service	7660 Highway 96	Belk
US Post Office	U.S. Postal Service	107 Federal Ave	Berry
US Post Office	U.S. Postal Service	152 Highway 129 S	Glen Allen
US Post Office Main	U.S. Postal Service	223 Temple Ave N	Fayette
US Social Security Administration	Administration of Social and Manpower Programs	405 6th St SW	Fayette
Veterans Affairs Services	Administration of Veterans' Affairs	103 1st Ave NW	Fayette

Map 5-40. Fayette County Government Facilities

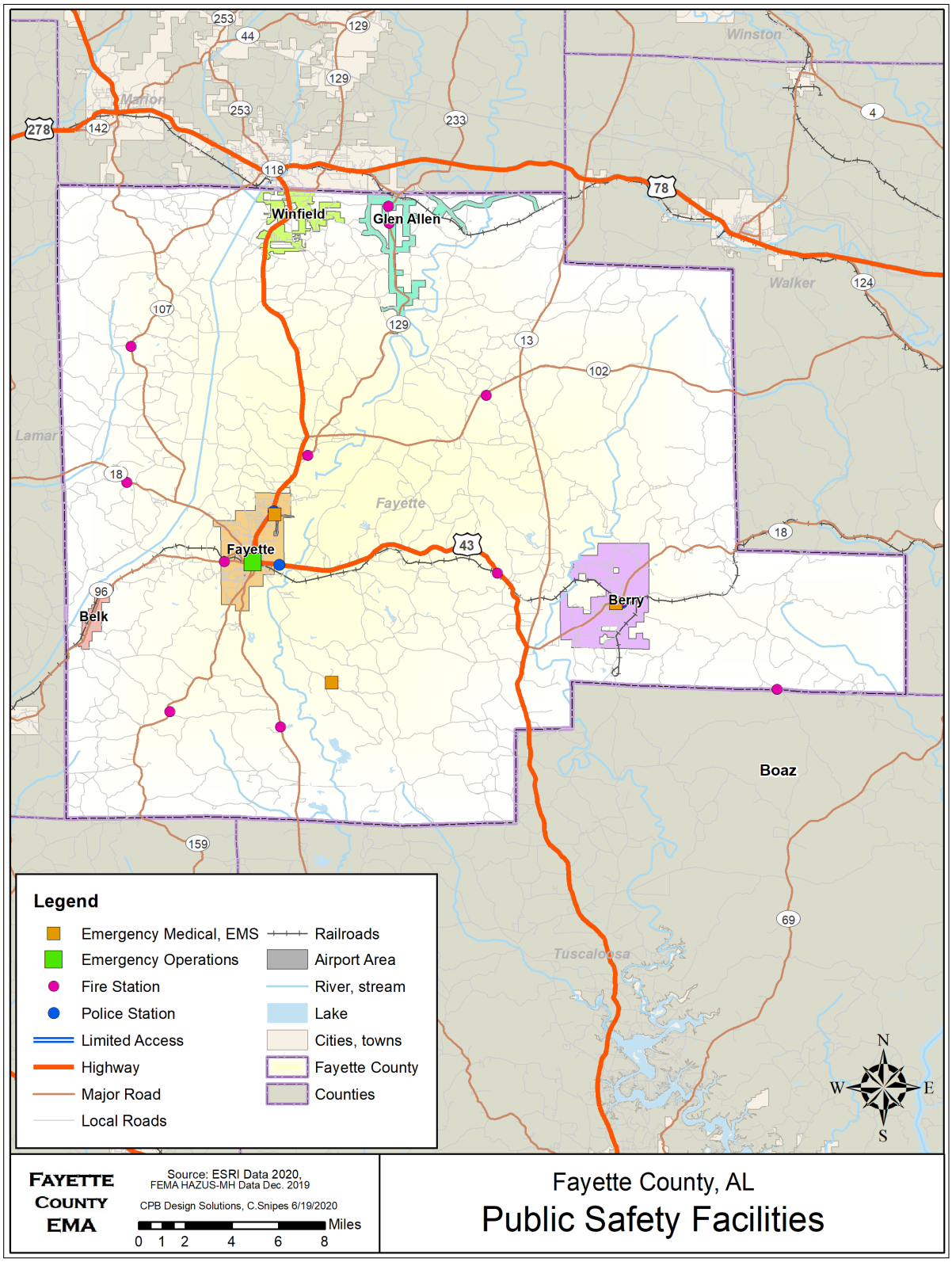


There are 25 agencies at 12 locations providing public safety services to the residents of Fayette County. The majority of these facilities are for fire and/or rescue, with 9 of the facilities housing volunteer fire departments. There are two police stations, the Fayette County Sherriff's Department, and the City of Fayette Police Department. There is one EOC and one E-911 facility.

Table 5-31. Fayette County Public Safety Facilities

Agency	Type	Address	City
Bankston/Stough Volunteer Fire Dept.	Fire Protection	10385 Highway 18 E	Bankston
Belk Volunteer Fire Dept.	Fire Protection	7633 Highway 96	Belk
Berry Rescue Squad	Fire Protection	17780 Highway 18 E	Berry
Boley Volunteer Fire Dept.	Fire Protection	1969 County Road 57	Berry
Fayette City Fire Dept.	Fire Protection	118 1st Ave NE	Fayette
Fayette Co EMA	Legislative Bodies	103 1st Avenue NW, Suite 2	Fayette
Fayette County E911 District	Legislative Bodies	118 1st Ave NE	Fayette
Fayette Police Dept.	Police Protection	118 1st Ave NE	Fayette
Fayette Sheriff's Dept.	Police Protection	113 1st Ave W	Fayette
Fowler Crossroads Volunteer Fire Dept.	Fire Protection	170 Prospect Rd	Bankston
Glen Allen Fire Dept.	Fire Protection	164 Highway 129	Glen Allen
Kirkland Bluff Wayside Volunteer Fire Dept.	Fire Protection	7973 Highway 107	Fayette
Lawrence Mill Volunteer Fire Dept.	Fire Protection	700 County Road 80	Fayette
Mt. Vernon Volunteer Fire Dept	Fire Protection	6169 Highway 18 W	Fayette
Sheriff's Office	Police Protection	113 1st Ave NW	Fayette
Stonewall Volunteer Fire Dept	Fire Protection	6897 County Road 35	Fayette
Walnut Lane Volunteer Fire Dept.	Fire Protection	7838 Highway 171 S	Fayette

Map 5-41. Fayette County Public Safety Facilities

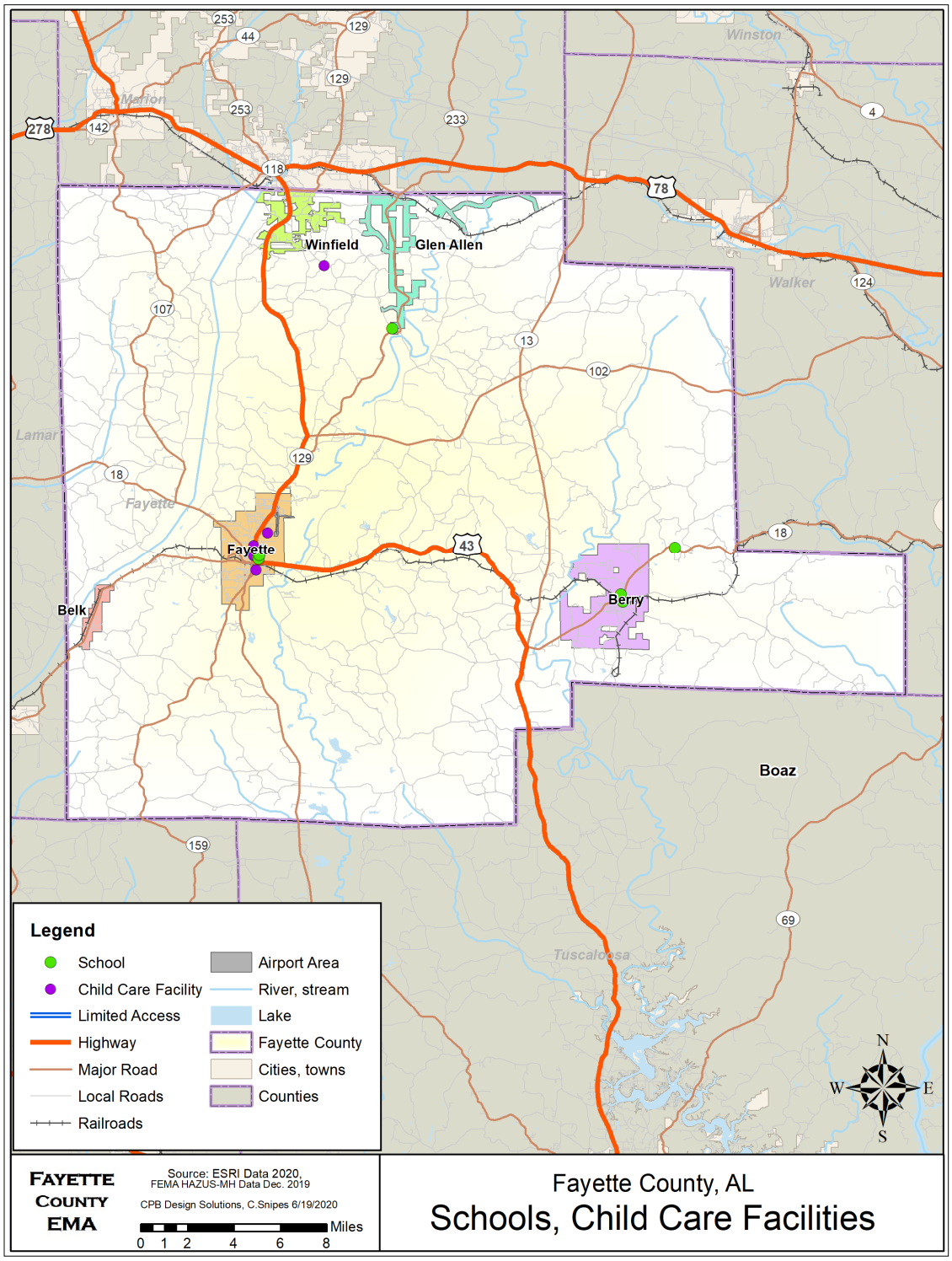


There are nine elementary/secondary schools and one junior college located in Fayette County. Fayette County oversees the elementary and secondary school system for the jurisdictions. The schools are located mostly in the City of Fayette and also south of Glen Allen and within the town of Berry. There is also the Alabama Cooperative Extension Agency, an Auburn University affiliate located in Fayette. There are daycare centers located in the City of Fayette and one west of Glen Allen in the county.

Table 5-32. Fayette County Schools

School	Type	Address	City
Alabama Co-Operative Extension Office	Colleges and Universities	650 McConnell Loop	Fayette
Berry Elementary School	Elementary and Secondary Schools	341 School Ave	Berry
Berry High School	Elementary and Secondary Schools	18242 Highway 18 E	Berry
Bevill State Community College - Adult Education	Adult Education	631 1st St SW	Fayette
Bevill State Community College	Junior Colleges	2631 Temple Ave N	Fayette
Fayette County Board Education	Elementary and Secondary Schools	103 1st Ave NW	Fayette
Fayette Elementary School	Elementary and Secondary Schools	509 2nd St NE	Fayette
Fayette High School	Elementary and Secondary Schools	202 Tiger Dr	Fayette
Fayette Middle School	Elementary and Secondary Schools	418 3rd Ave NE	Fayette
First Baptist Preschool	Elementary and Secondary Schools	208 2nd Ave NE	Fayette
Hubbertville High School	Elementary and Secondary Schools	7360 County Road 49	Fayette

Map 5-42. Fayette County Schools

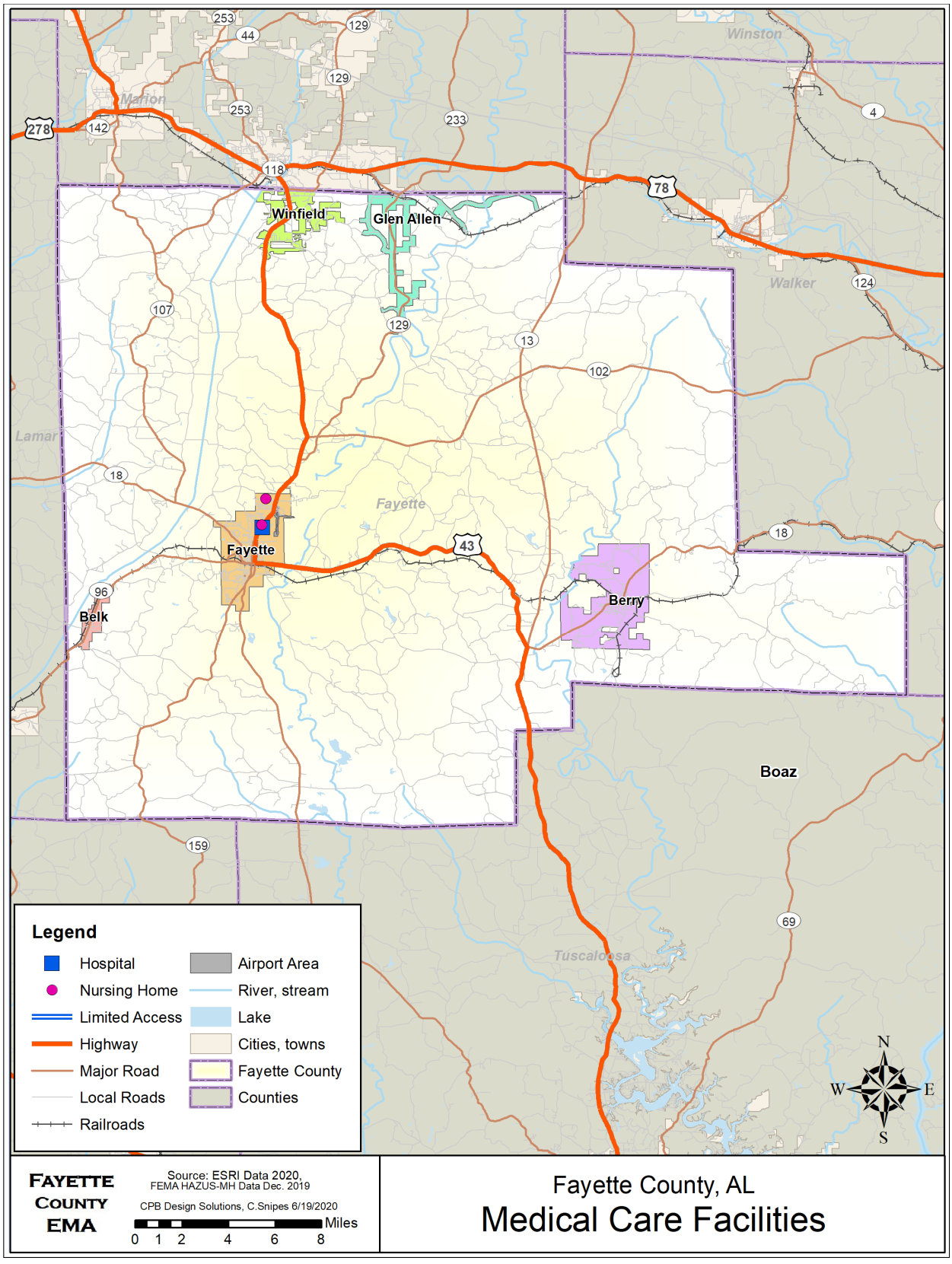


Fayette County has one general hospital, one mental health facility, and three elderly care facilities. Each of these facilities are located in the City of Fayette.

Table 5-33. Fayette County Hospital and Elderly Care Facilities

Name	Type	Address	City
Fayette Medical Center	General Medical & Surgical Hospital	1653 Temple Ave N	Fayette
Northwest Alabama Mental Health	Mental Health Hospital	123 2nd Ave NW	Fayette
Morningside of Fayette	Residential Care	404 25th St NW	Fayette
Fayette Medical Center Long Term Care	Residential Care	1653 Temple Ave N	Fayette
Fayette County Aging Program	Residential Care	431 Center Rd	Fayette

Map 5-43. Fayette County Hospitals and Elderly Care Facilities

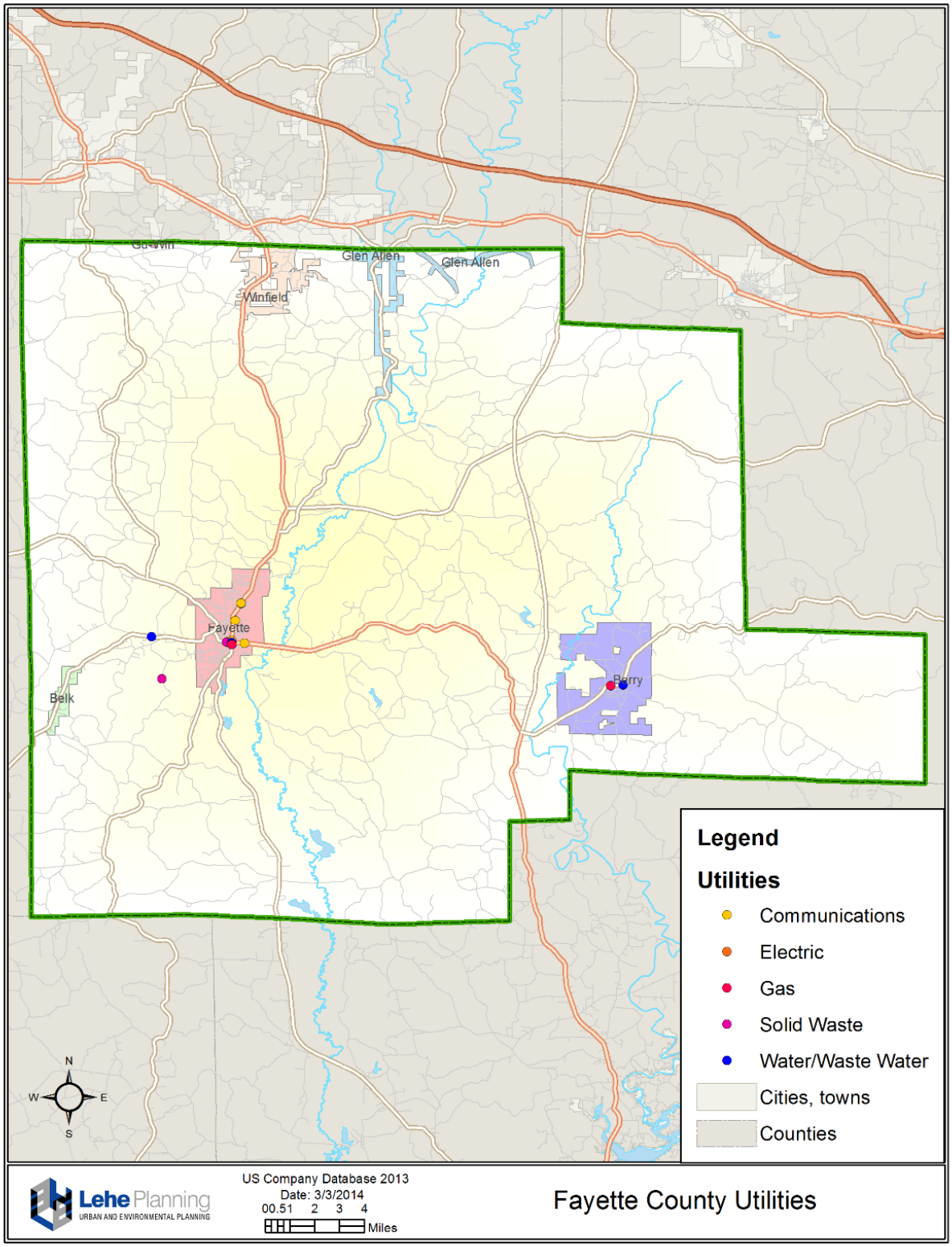


Alabama Power Company provides electricity to Fayette County. Gas is provided by the City of Fayette and the Town of Berry. There are 3 water facilities, one in the City of Fayette, one in Berry and one in the county. Wastewater services are available to city residents by the City of Fayette while those outside the city utilize septic systems.

Table 5-34. Fayette County Utility Facilities

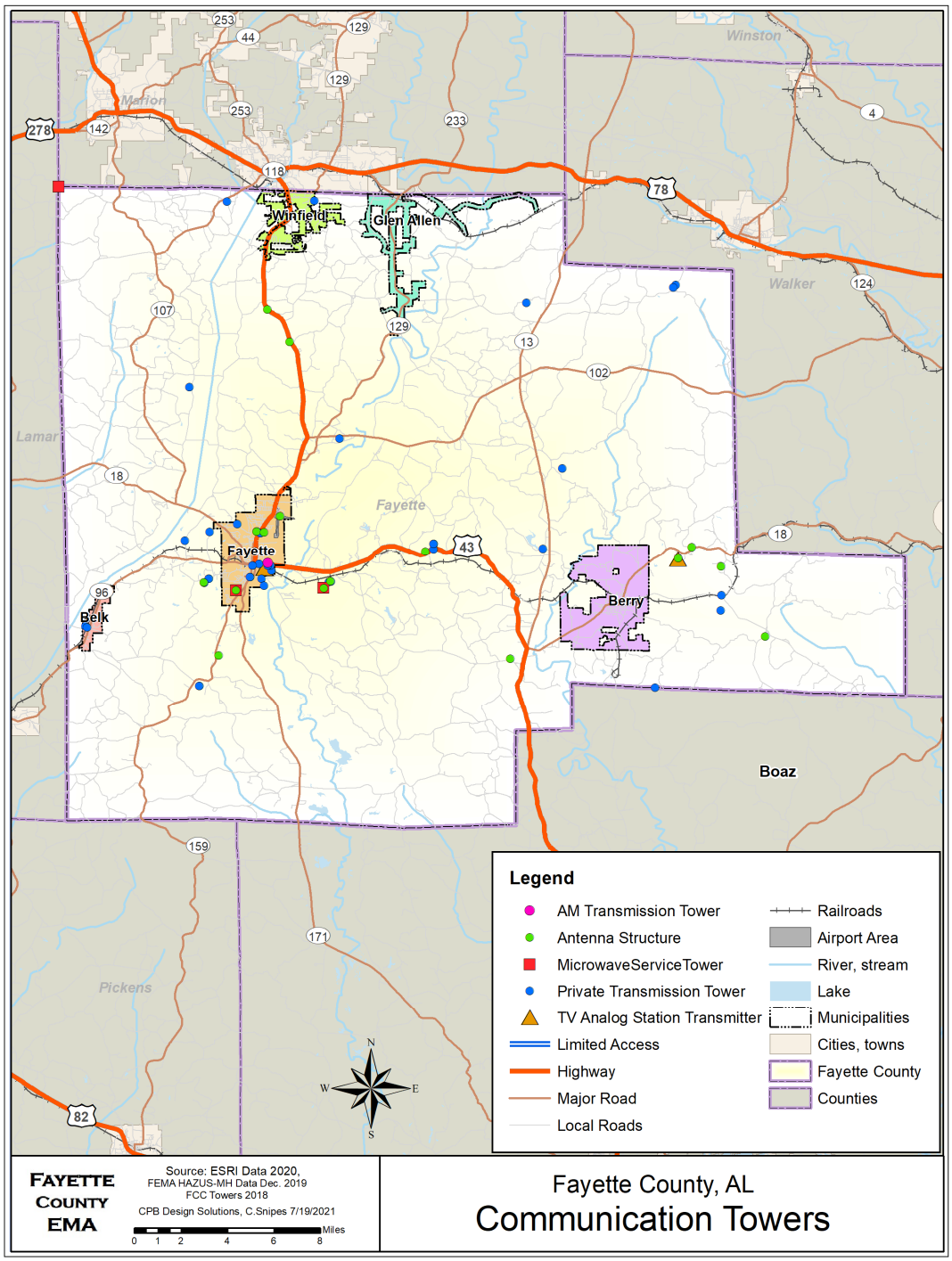
Company	Address	City	Type
Alabama Power Company	1534 Temple Ave N	Fayette	Electric
Berry Gas Board Inc	17720 Highway 18 E	Berry	Gas
Berry Water Dept	30 School Ave	Berry	Water
Fayette City Water	311 2nd Ave SE	Fayette	Water/Wastewater
Fayette County Water Authority	214 Columbus St W	Fayette	Water
Fayette Water Works Plant	2592 Highway 96	Fayette	Water
Gas Board City of Fayette	315 2nd Ave SE	Fayette	Gas
Water Plant	102 2nd Ave Ne	Fayette	Water
WLDX Radio AM 990	733 Columbus St E	Fayette	Communications

Map 5-44. Fayette County Utilities



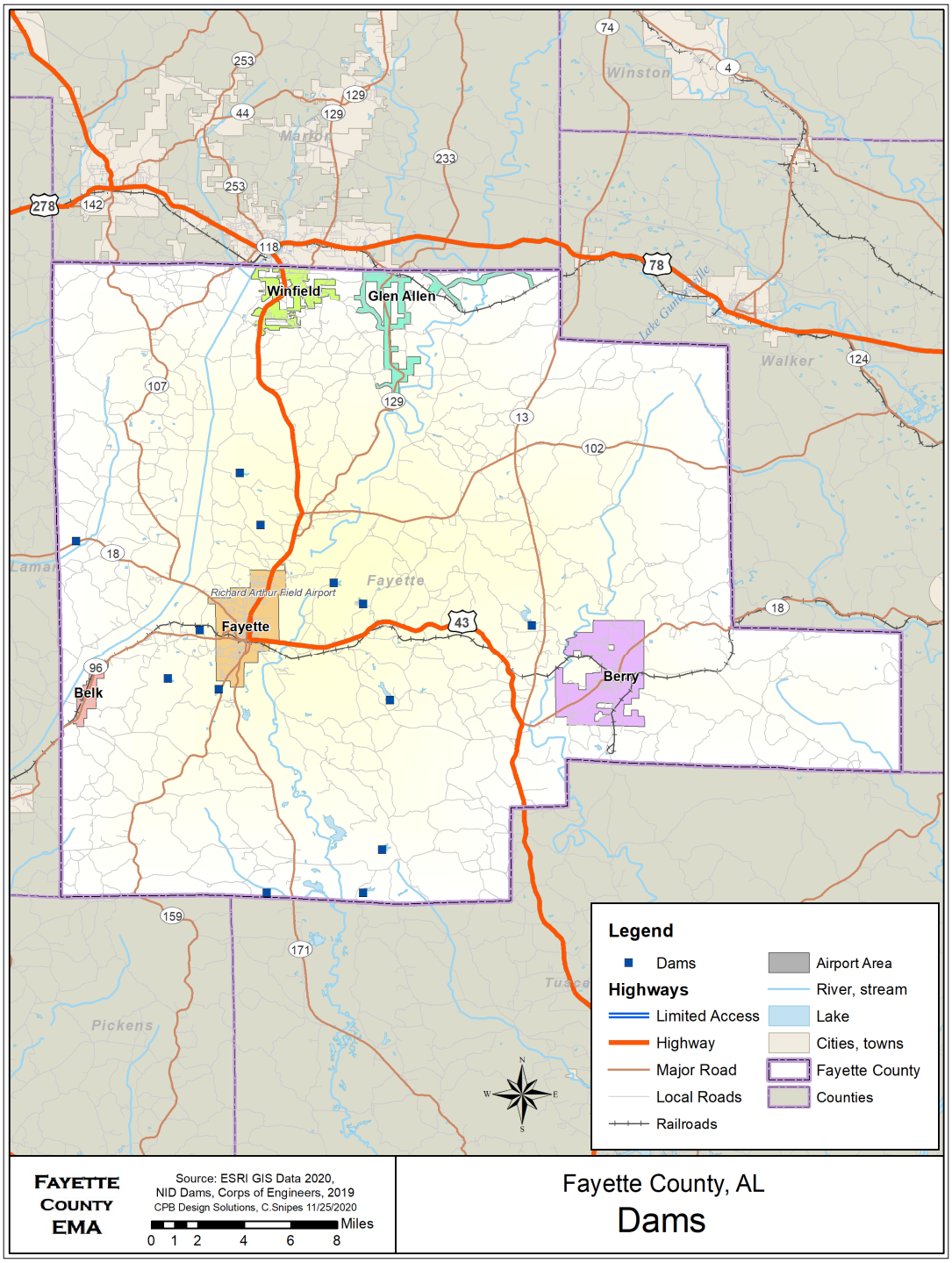
Communications towers are located within and near the municipalities of Fayette County but are lacking throughout the unincorporated areas leading to spotty communications for those traveling through the county.

Map 5-45. Fayette County Communication Facilities



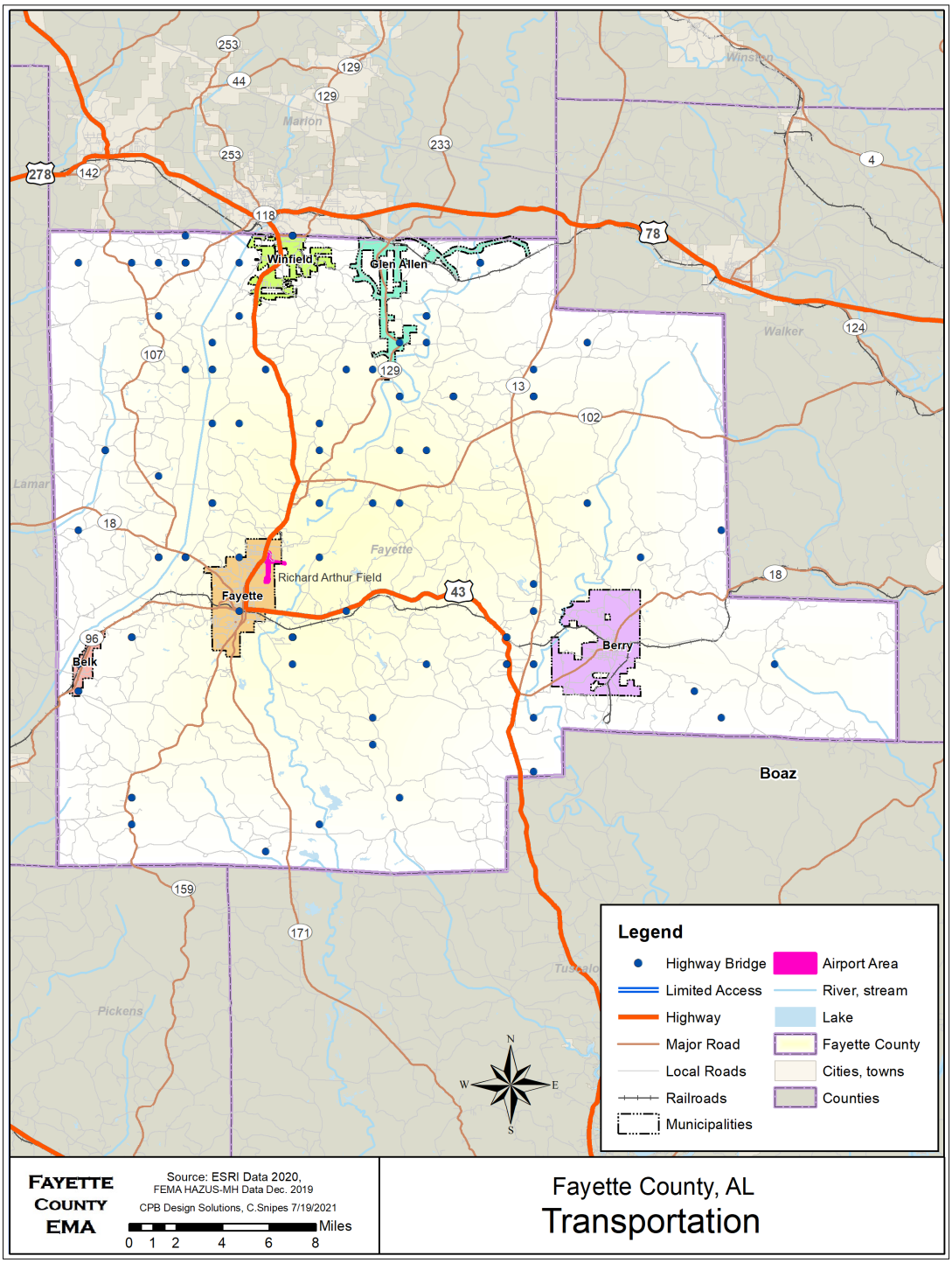
There are thirteen earthen dams throughout Fayette County. They are located in the central and southern areas of the county and not close to any significantly developed areas. A listing of the dams in the county is provided in Table 5-13.

Map 5-46. Fayette County Dams



US-43 is the major state roadway serving Fayette County, as well as State Highways 13, 18 and 171. Burlington Northern Santa Fe (BNSF) and Norfolk Southern rail lines run through the county and there is one airport serving non-commercial air traffic located near the City of Fayette. There are over 500 miles of unpaved roads maintained by the county.

Map 5-47. Fayette County Transportation Infrastructure



Fayette County has a total of 108 bridges. The bridges in Fayette County are impacted by a number of hazards and many of the aging structures are approaching the need for replacement. Over half of the bridges are over 50 years old and twenty-four of those were built before 1941. Three of the bridges located in Fayette County are owned by individual jurisdictions, 74 by the county and 31 by the state.

Table 5-35. Fayette County Bridges

Location	Owner	Year Built
CO RD 68	County Highway Agency	1919
US 43	State Highway Agency	1925
US 43	State Highway Agency	1925
US 43	State Highway Agency	1925
CO RD 207	County Highway Agency	1926
US 43	State Highway Agency	1926
US 43	State Highway Agency	1926
US 43	State Highway Agency	1926
US 43	State Highway Agency	1926
US 43	State Highway Agency	1926
CO RT 38	County Highway Agency	1928
CO RT 0	County Highway Agency	1928
CO RT 06	County Highway Agency	1928
CO RD 00	County Highway Agency	1928
CO RD 00	County Highway Agency	1928
SR 18	State Highway Agency	1929
SR 18	State Highway Agency	1929
SR 96	State Highway Agency	1929
4TH AVE S	City Highway Agency	1933
US 78	State Highway Agency	1936
3RD AVE N	City Highway Agency	1937
COUNTY ROAD	County Highway Agency	1940
COUNTY ROAD	County Highway Agency	1940
SR 61	State Highway Agency	1940
CO RD 87	County Highway Agency	1946
SR 129	State Highway Agency	1948
CO RT 24	County Highway Agency	1949
CO RT 36	County Highway Agency	1949
CO RT 36	County Highway Agency	1949
CO RD 93	County Highway Agency	1950
CO RT 46	County Highway Agency	1951
CO RT 35	County Highway Agency	1952
CO RT 10	County Highway Agency	1952
CO RT 10	County Highway Agency	1952
CO RT 10	County Highway Agency	1952

Location	Owner	Year Built
CO RT 35	County Highway Agency	1952
CO RT 35	County Highway Agency	1952
CO RD 37	County Highway Agency	1954
CO RD	County Highway Agency	1954
COUNTY ROAD 53	County Highway Agency	1956
COUNTY ROAD	County Highway Agency	1957
SR 13	State Highway Agency	1957
SR 13	State Highway Agency	1957
SR 13	State Highway Agency	1957
CO RD	County Highway Agency	1958
CO RD 37	County Highway Agency	1958
CO RD 50	County Highway Agency	1958
CO RD 06	County Highway Agency	1958
CO RD 06	County Highway Agency	1958
CO RD 53	County Highway Agency	1959
CO RD	County Highway Agency	1960
0	County Highway Agency	1960
CO RD 12	County Highway Agency	1961
CO RD 89	County Highway Agency	1963
CO RT 42	County Highway Agency	1964
CO RT 42	County Highway Agency	1964
CO RD 23	County Highway Agency	1964
COUNTY ROAD 00	County Highway Agency	1965
CO RD 49	County Highway Agency	1967
COUNTY ROAD 00	County Highway Agency	1968
CO RD 10	County Highway Agency	1969
CO RD 10	County Highway Agency	1969
COUNTY ROAD	County Highway Agency	1969
COUNTY ROAD	County Highway Agency	1970
COUNTY ROAD 00	County Highway Agency	1970
COUNTY ROAD	County Highway Agency	1970
CLARK BOTTOM RD	County Highway Agency	1970
US 43	State Highway Agency	1973
US 43	State Highway Agency	1973
US 43	State Highway Agency	1973
US 43	State Highway Agency	1973
CO RT 24	County Highway Agency	1974
COUNTY ROAD 0	County Highway Agency	1974
1ST STREET W	City Highway Agency	1975
COUNTY ROAD 0	County Highway Agency	1975
COUNTY ROAD	County Highway Agency	1975
COUNTY ROAD 00	County Highway Agency	1978

Location	Owner	Year Built
COUNTY ROAD 0	County Highway Agency	1978
COUNTY RT #215	County Highway Agency	1979
COUNTY ROAD	County Highway Agency	1979
OVERHEAD RD	County Highway Agency	1982
HELLS CREEK ROAD	County Highway Agency	1983
HELLS CREEK RD	County Highway Agency	1983
CO RT 17	County Highway Agency	1984
SAND SPRINGS RD	County Highway Agency	1984
PENDER ROAD	County Highway Agency	1984
SKELTON ROAD	County Highway Agency	1984
SR 18	State Highway Agency	1984
SR 96	State Highway Agency	1984
SR 96	State Highway Agency	1984
SR 96	State Highway Agency	1984
SR 96	State Highway Agency	1984
CO RD 352	County Highway Agency	1985
DEAVERS HILL ROAD	County Highway Agency	1985
COUNTY ROAD062	County Highway Agency	1986
COUNTY ROAD 0	County Highway Agency	1986
CO RD	County Highway Agency	1986
WESLEY CHAPEL RD	County Highway Agency	1986
SR 102	State Highway Agency	1986
ASHCRAFT CORNER	County Highway Agency	1987
HOUSH CHAPEL RD	County Highway Agency	1988
TIDWELL ROAD	County Highway Agency	1988
SR 18	State Highway Agency	1993
SR 18	State Highway Agency	1993
SR 18	State Highway Agency	1994
SR 18	State Highway Agency	1994
42	County Highway Agency	1995
WESLEY CHAPEL ROAD	County Highway Agency	1998

5.5 Estimate of Dollar Losses to Vulnerable Structures

This section provides estimates of damages to vulnerable structures identified in Section 5.4. Loss estimates are calculated using the structure, contents, and function of each asset. The following definitions and calculations are used for loss estimation.

- ✓ *Structure loss*– (% damage) X ($ replacement value of the structure)
- ✓ *Content loss*– (% damage) X ($ replacement value of the contents)
- ✓ *Functional Loss*- indirect effects of the hazard, such as the days of interruptions in operations that an asset incurs during an event.

When calculating loss estimates for hazards with existing damage records, we utilized loss estimates from the most probable severity. If a hazard effects a certain location the loss estimate evaluated structures at that location. These loss estimates are not precise; however, they can provide the user with a rough estimate on the benefits of a mitigation project, and they can also assist with the selection and prioritization of mitigation measures for the jurisdictions. While the previous sections addressed future values, the damage estimates in this section only apply to existing conditions.

Loss Estimate Methodology

Three methods of data collection were used to estimate the economic and structural losses due to hazards in Fayette County. One source was the program Hazus-MH. Hazus is a computer program developed by FEMA and the National Institute of Building Sciences that models hazard events and maps out their impact on a region. Hazus-MH uses approximations and algorithms to estimate losses, so results do not reflect actual losses with certainty. These loss estimates are most useful for judging a hazard's risk relative to other hazards and the vulnerability of a structure relative to other structures, rather than as absolute measures of likelihood and economic appraisal.

There are three levels of analysis within Hazus and the accuracy of the data increases with the level of analysis. For this plan, a level 1 analysis was run which utilizes the national data set that was provided with Hazus-MH. Numbers provided in the Hazus-MH reports are not based on actual field inventories, which is beyond the scope of this planning process; however, the information provided through Hazus can still assist in the planning process. The analysis run by Hazus-MH for Fayette County provided general economic and structural loss estimates for floods, earthquakes, and hurricanes. Hazus-MH provides data at the county level. Jurisdictional values were extrapolated using the county data.

The second method for estimating loss was researching past events. Historical records of past events were examined, and the data was applied where applicable. The following data sets and records were referenced:

1. NFIP insurance claims data since 1978.
2. NOAA, National Climatic Data Center damage assessments.
3. National Weather Service Alabama Tornado database.
4. Alabama State Hazard Mitigation Plan, 2018 update, Section 3.3 "Vulnerability Assessment and Loss Estimation." According to the state plan, Fayette County is ranked 45 out of 67 in terms of hazard losses by county.

The final method was calculating losses across the jurisdictions based on population, numbers of structures in an area, and exposure to the hazards by jurisdiction. Table 5-36 shows the population in the area and Table 5-37 shows the structures in the region by occupancy type and their value.

Table 5-36. Population Distribution by Jurisdiction, 2018

Jurisdiction	2018 Estimate	% Of Total
Fayette County	16,433	100%
Belk	205	1.2%
Berry	1,098	6.7%
Fayette	4,327	26.3%
Glen Allen	487	3.0%
Unincorporated	10,316	62.8%

Table 5-37. Building Exposure by Occupancy Type

Occupancy	Existing Exposure ($1,000)	% Of Total
Agriculture	$3,849	0.25%
Commercial	$172,845	11.42%
Education	$14,755	0.97%
Government	$22,152	1.46%
Industrial	$118,938	7.86%
Religious	$32,820	2.17%
Residential	$1,147,978	75.86%
Total	$1,513,337	100.00%

HAZUS-MH Loss Estimates

Hazus-MH analyses were conducted by a qualified GIS professional with advanced Hazus training. Studies, maps, and reports were prepared for this plan update from the analyses. The analyses run included flood, earthquake, and hurricane scenarios. One hundred- and five-hundred-year probability of return analyses were performed for earthquakes and hurricanes, and the one-hundred-year flood event was used for the flood analysis. The following Hazus-MH reports are on file with the Fayette County EMA and available for public review:

- Hazus-MH: Flood Global Risk Report, November 11, 2020
  Scenario – 100 Year Flood Event
- Hazus-MH: Quick Assessment Report, November 11, 2020
- Hazus: Earthquake Global Risk Report, August 13, 2020
  Scenario – Fayette 100 Year Earthquake (5.0 Magnitude) Probability
- Hazus: Earthquake Global Risk Report, August 13, 2020
  Scenario – Fayette 500 Year Earthquake (5.0 Magnitude) Probability
- Hazus: Hurricane Global Risk Report, August 13, 2020
  Scenario – Fayette 100 Year Earthquake (5.0 Magnitude) Probability
- Hazus: Hurricane Global Risk Report, August 13, 2020
  Scenario – Fayette 500 Year Earthquake (5.0 Magnitude) Probability

The building related losses are divided into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with the inability to operate a business because of the damage sustained during the event. Business interruption losses also include temporary living expenses for those people displaced from their homes because of the hazard event.

Hazus-MH 100-Year Flood Analysis

According to FEMA, a "100-year flood has a one percent chance of being equaled or exceeded during any given year. It can also be termed the "one percent" flood since this relates the event to an annual time period instead of a 100-year time period." A 100-year flood event scenario for Fayette County was run using Hazus-MH for this plan update. Not all jurisdictions are at equal risk from a 100-year flood event. Table 5-38 itemizes the overall "Quick Assessment" results for the 100-year flood event. Map 5-48 shows the 100- and 500-year flood zones for Fayette County.

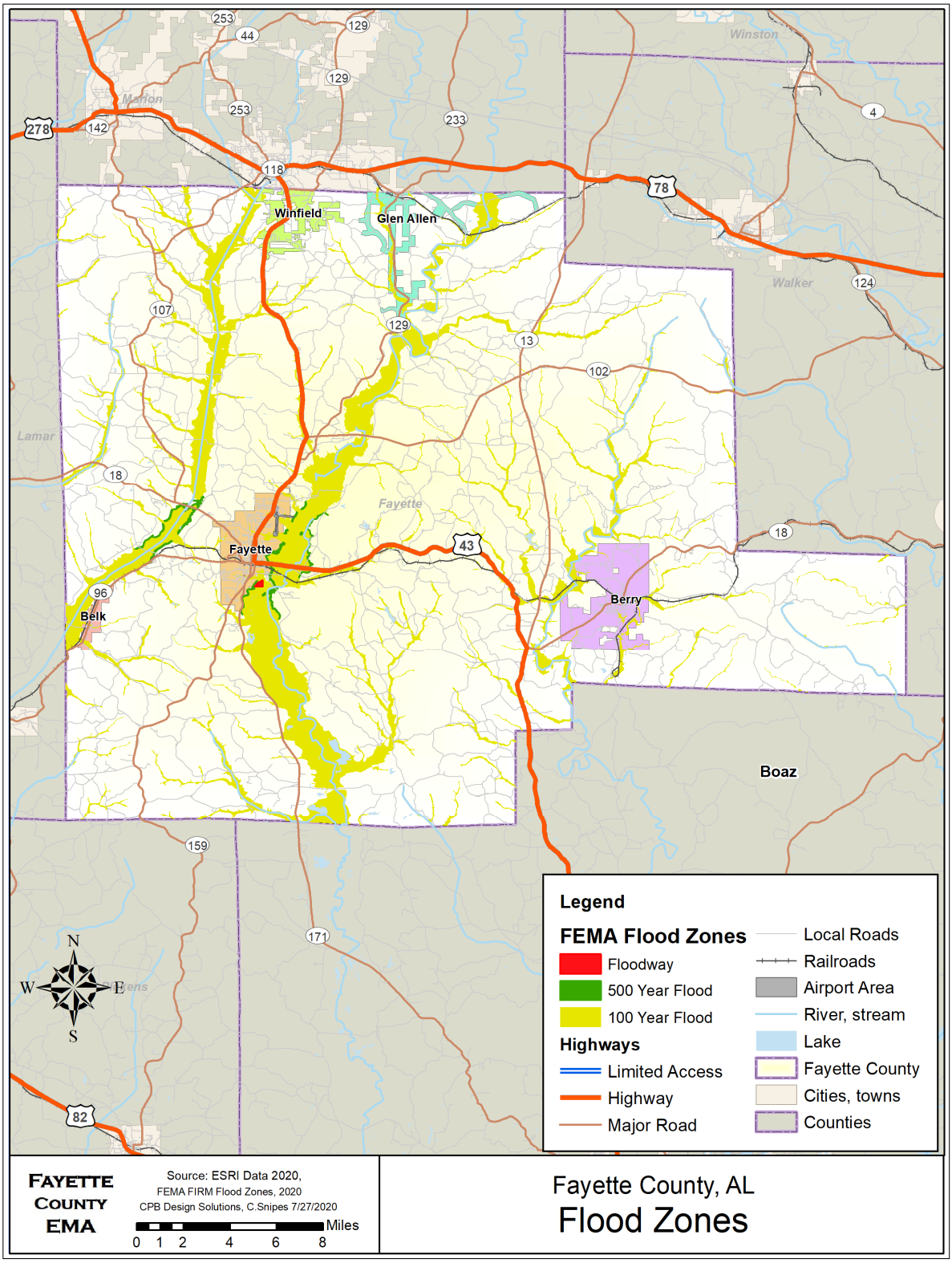
Table 5-38. HAZUS-MH Flood Module Quick Assessment Results

Fayette County 100 Year Flood Event	
Area (Square Miles)	629
Number of Residential Buildings	7,904
Number of All Buildings	8,462
Number of Persons in the Region	17,000
Residential Building Exposure ($ millions)	$1,148
Total Building Exposure ($ millions)	$1,513
Displaced Population (# of households)	388
Short Term Shelter Requirements (# of people)	22
Residential Property (Capital Stock) Losses ($ millions)	$26
Total Property (Capital Stock) Losses ($ millions)	$96
Business Interruptions (Income) Losses ($ millions)	$62
Total Economic Losses ($ millions)	$184

Hazus estimates that a 100-year flood event would moderately damage 80 buildings, over 80 percent of the total number of buildings at risk of flooding in Fayette County. The event would destroy one building. Of the buildings moderately damaged by the flood event, 2 are commercial, 2 are government, 12 are industrial and 63 are residential. The building that is destroyed is a residence. Sixty-four structures were constructed with wood, 10 were steel, 3 were masonry and 2 were concrete. None of the buildings were manufactured homes.

It is estimated that 388 households will be displaced: approximately 1,163 people. "Displaced" includes those households that evacuate from within or near the inundation area. 22 people will seek temporary shelter in public shelters.

Map 5-48. Fayette County Flood Zones



Of the 34 essential facilities in Fayette County, one police station is predicted to have at least moderate damage and another one is expected to have loss of use. The total economic loss for all of Fayette County is estimated at $158.13 million which is 36.03% of the total replacement value of the buildings in the scenario that was run by Hazus. The total building related losses are estimated at $95.86 million and is broken out as follows: $31.45M in structural damage, $54.43M damage to contents, $9.98M inventory loss, $8.87M relocation loss, $43.74M wage loss, and $3.07M rental income loss. Of the damage, industrial accounted for 40% of the building related losses followed by residential at 21% and commercial at 13%. Other uses account for 26% of economic loss.

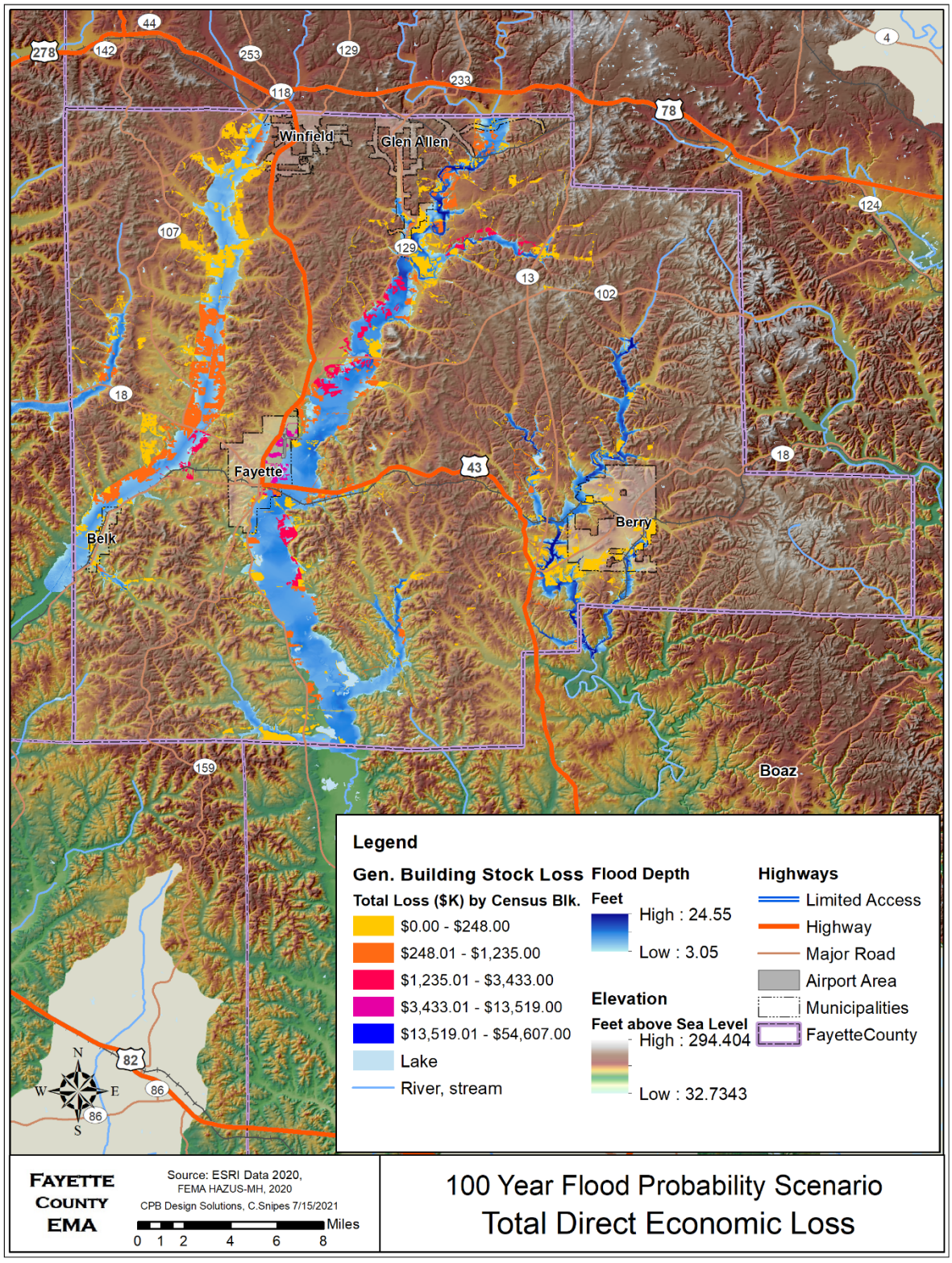
The following table shows jurisdictional loss estimates, which were obtained by dividing the county's total losses by each jurisdiction's share of the 2018 county population.

Table 5-39. Total Economic Losses by Jurisdiction

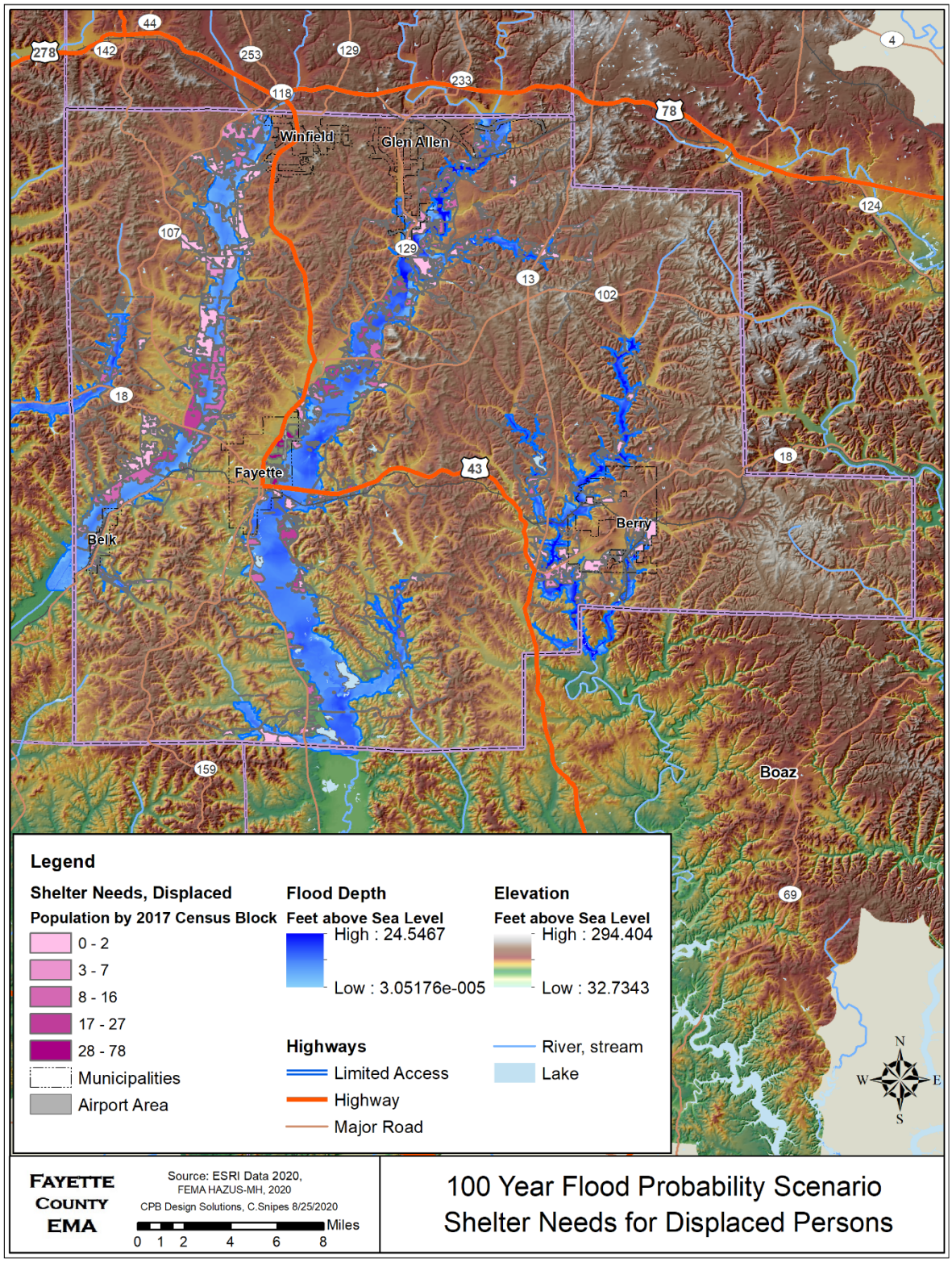
Jurisdiction	Share of Losses	Total Economic Losses ($ millions)
Belk	1.2%	$2.2
Berry	6.7%	$12.3
Fayette	26.3%	$48.4
Glen Allen	3.0%	$5.4
Unincorporated	62.8%	$115.6
Fayette County	100%	$184

Map 5-49 shows the value of the buildings exposed to a 100-year flood event and Map 5-50 reveals shelter requirements if a 100-year flood event occurred in Fayette County.

Map 5-49. Value of Buildings Exposed to 100 Year Flood



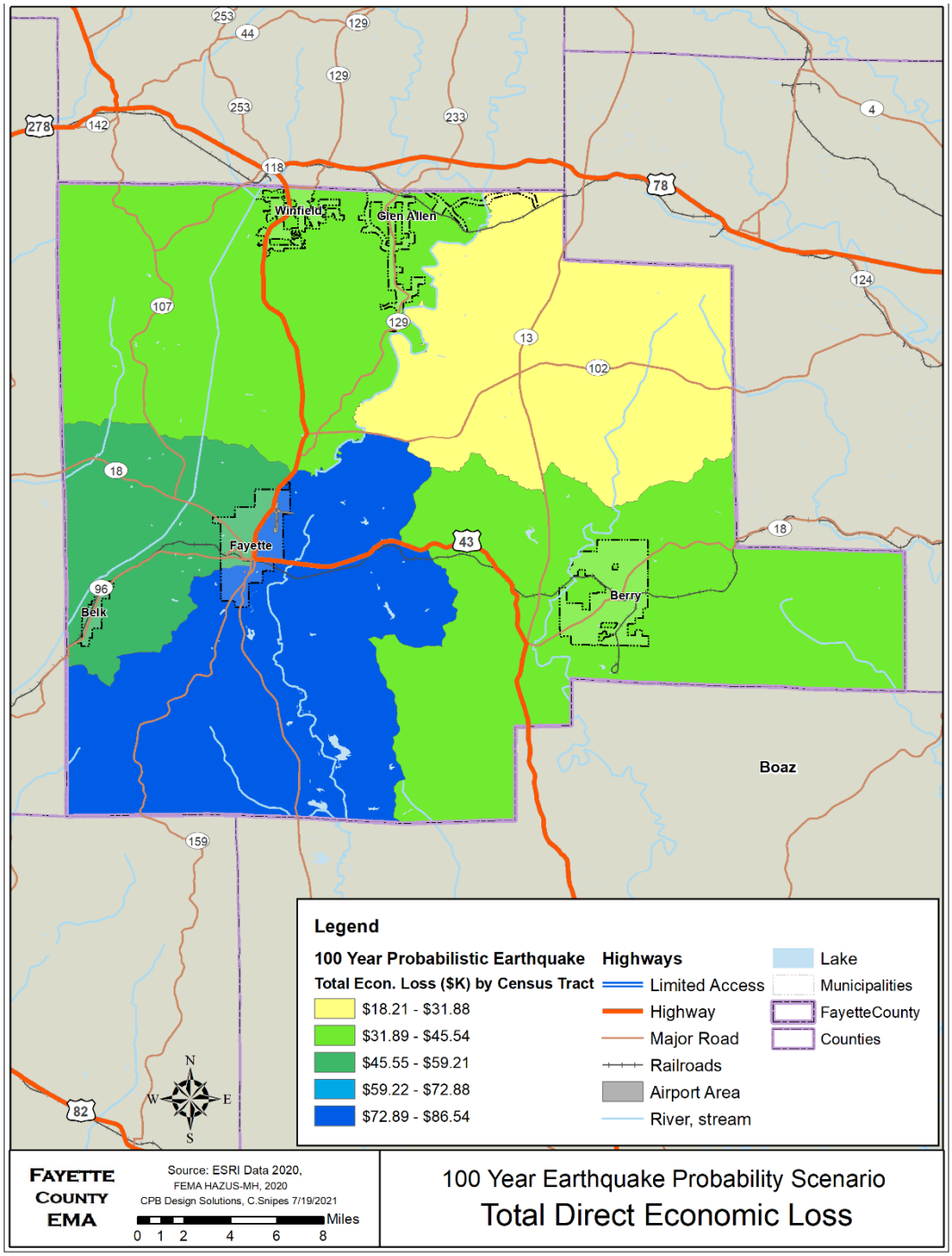
Map 5-50. Shelter Requirements for 100 Year Flood Event



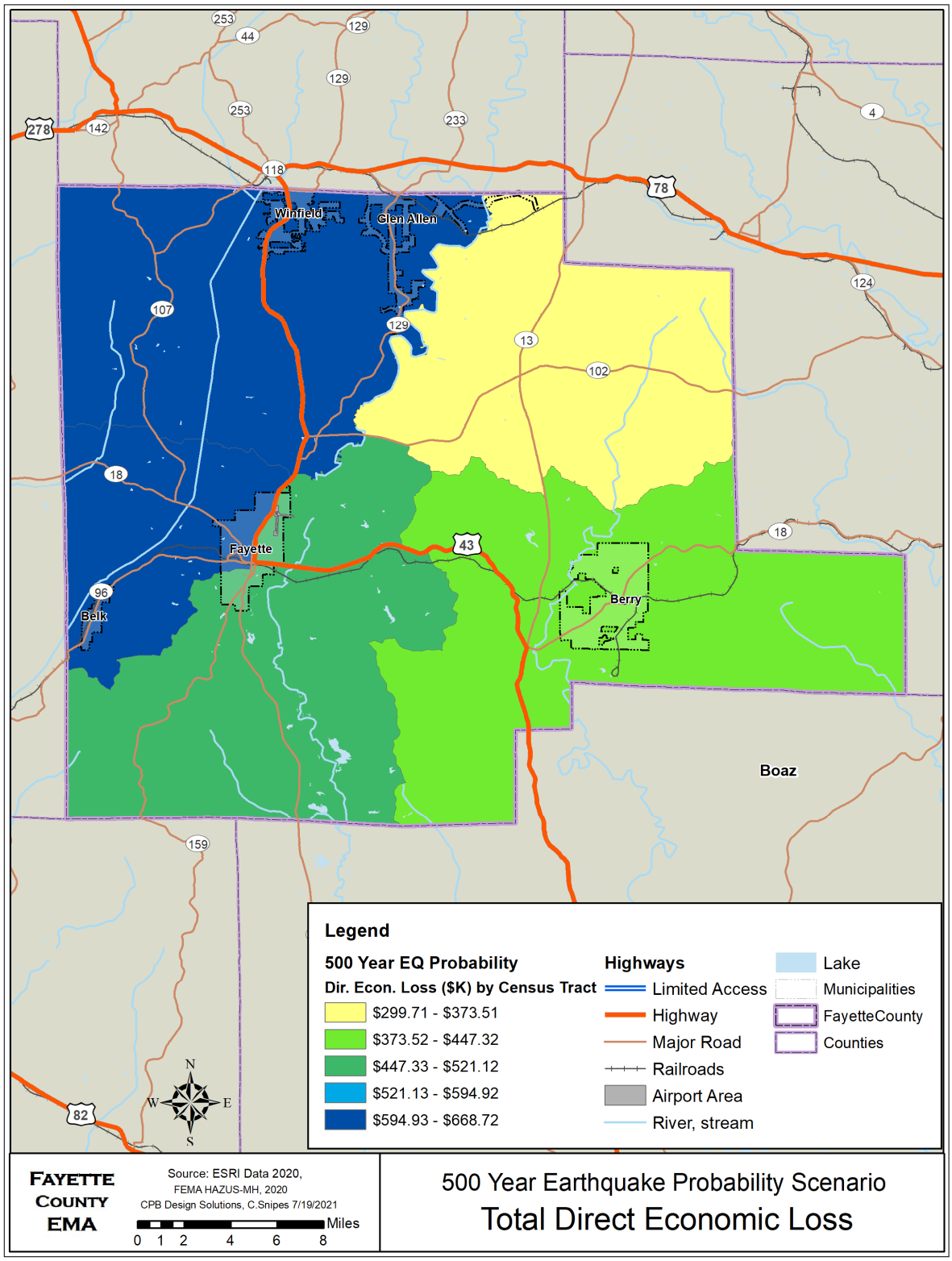
Hazus-MH Earthquake Analysis

A 100-year and 500-year earthquake probability analysis was run for Fayette County. All jurisdictions within Fayette County are at risk from earthquakes. Maps 5-51 and 5-52 show the distribution of economic losses related to a 100- year and 500-year event, respectively.

Map 5-51. 100-year Earthquake Economic Loss Impacts



Map 5-52. 500-year Earthquake Economic Loss Impact



The essential facilities should not have severe damage; however, it is estimated that 97% of the beds would be available for use by patients already in the hospital and those injured by the earthquake immediately after a 100-year event, and 81% after a 500-year event. At the end of 30 days, 100% of hospital beds should be available from the 100-year event and 99% from the 500-year event.

The transportation systems within Fayette County should only suffer minor damage from ground failure only. Utility systems should also do well during the earthquake events sustaining only a few leaks and breaks in the pipelines.

The Hazus analysis estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. In the 100-year analysis, the model estimates no households will be displaced with no need for temporary shelter in a public shelter. The 500-year analysis estimated 2 households displaced with 2 people seeking temporary shelter.

The total economic loss estimated from the earthquakes are 0.26 million dollars and 9.61 million dollars for a 100-year and 500-year event, respectively. These values include building and lifeline related losses based on the region's available inventory.

For a 100-year event the total building related loss estimate is 0.24 million dollars. This value is broken out as follows: 23% in structural damage, 4% damage to contents, 0% inventory loss, 17% relocation loss, 10% wage loss, 5% capital related, 34% non-structural, and 7% rental income loss. Of the damage residential accounted for 90% of the building related losses followed by commercial at 6% and industrial at 1.8%.

For a 500-year event the total building related loss estimate is 0.26 million dollars. This value is broken out as follows: 14% in structural damage, 16% damage to contents, 1% inventory loss, 11% relocation loss, 6% wage loss, 3% capital related, 44% non-structural, and 4% rental income loss. Of the damage, residential accounted for 91% of the building related losses followed by at 5.65% commercial and industrial at 1.79.

In both scenarios manufactured homes had the larger percent of total building inventory of area impacted. Wooden structures and unreinforced masonry buildings had over 10% of their stock impacted by both events.

Results from the 100- and 500-year probability scenarios are presented in Tables 5-40 and 5-41 and Charts 5-5 and 5-6.

Table 5-40. Building Exposure by Occupancy to 100- and 500-Year Earthquake Event

Occupancy	100-Year Probability		500-Year Probability	
	Structure Count	Percent of Total Building Inventory of Area	Structure Count	Percent of Total Building Inventory of Area
Agriculture	0.21	0.43%	2.46	0.39%
Commercial	3.02	6.24%	35.38	5.65%

Occupancy	100-Year Probability		500-Year Probability	
	Structure Count	Percent of Total Building Inventory of Area	Structure Count	Percent of Total Building Inventory of Area
Education	0.1	0.21%	1.18	0.19%
Government	0.18	0.37%	2.29	0.37%
Industrial	0.89	1.84%	11.18	1.79%
Other Residential	33.87	69.99%	313.24	50.06%
Religion	0.43	0.89%	4.46	0.71%
Residential	9.69	20.02%	255.60	40.84%
Total	48.39	100%	625.79	100%

Table 5-41. Building Exposure by Construction Type to 100- and 500-Year Earthquake Event

Construction Type	100-Year Probability		500-Year Probability	
	Structure Count	Percent of Total Building Inventory of Area	Structure Count	Percent of Total Building Inventory of Area
Wood	5.45	11.33%	222.67	35.41%
Steel	1.6	3.27%	24.05	3.84%
Concrete	0.23	0.47%	3.96	0.63%
Precast	0.28	0.57%	2.52	0.4%
Reinforced Masonry	0.43	0.88%	4.90	0.78%
Unreinforced Masonry	7.37	15.04%	67.09	10.70%
Manufactured Housing	32.94	67.22%	300.63	47.95%
Total	49	100%	627	100%

Chart 5-5. Economic Loss, 100-Year Earthquake Scenario

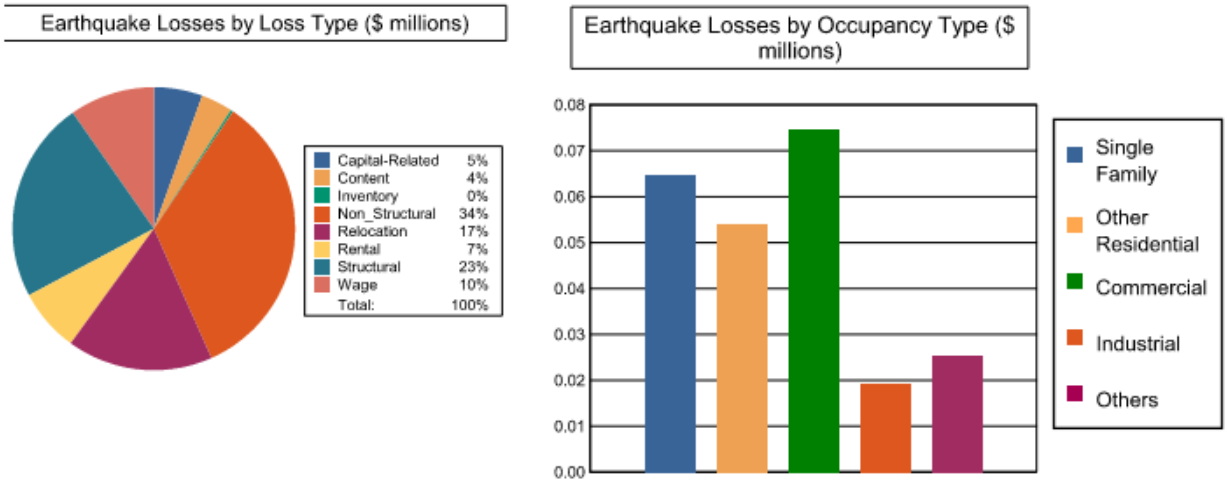
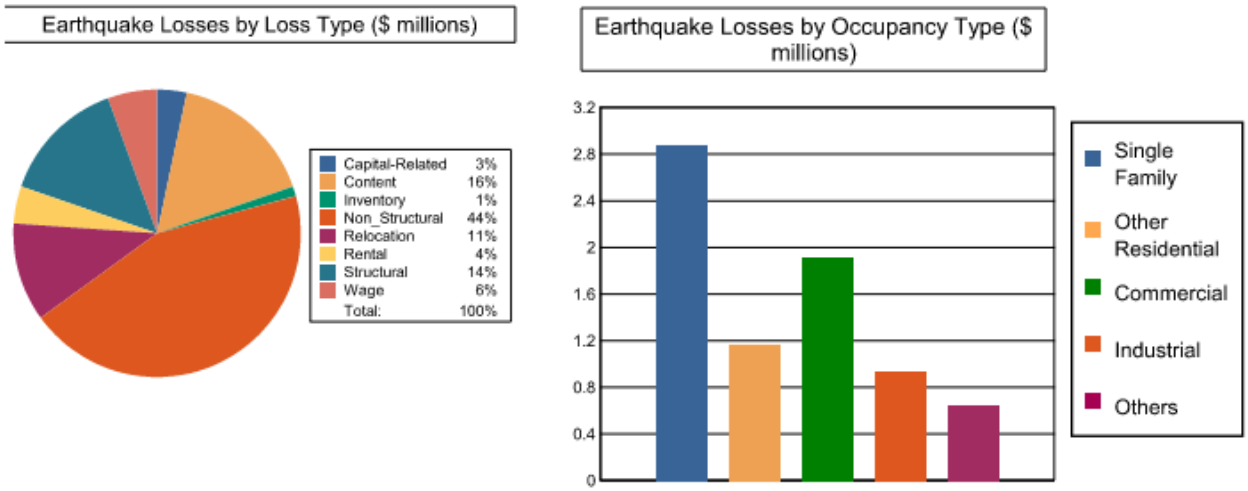


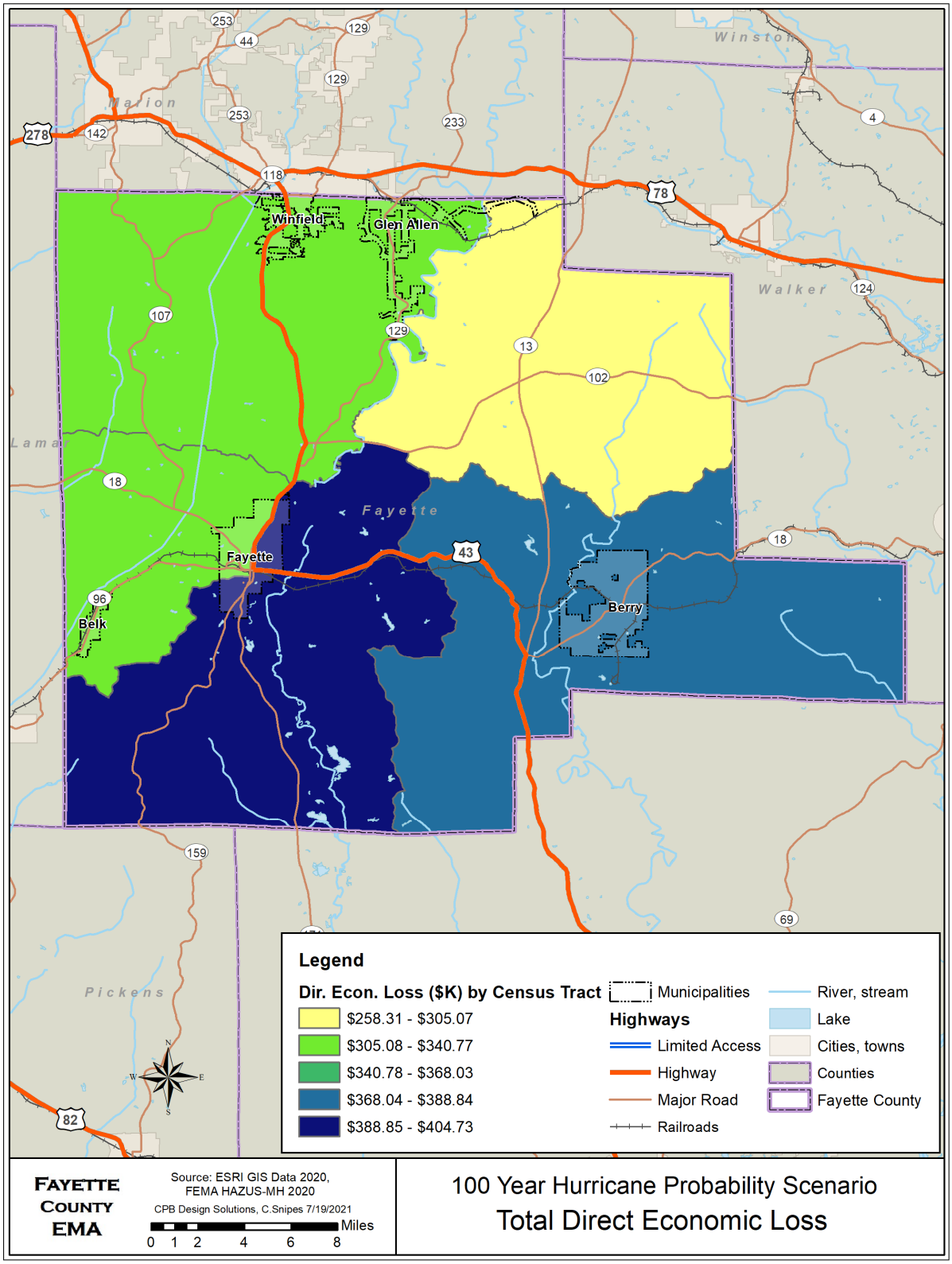
Chart 5-6. Economic Loss, 500 Year Earthquake Scenario



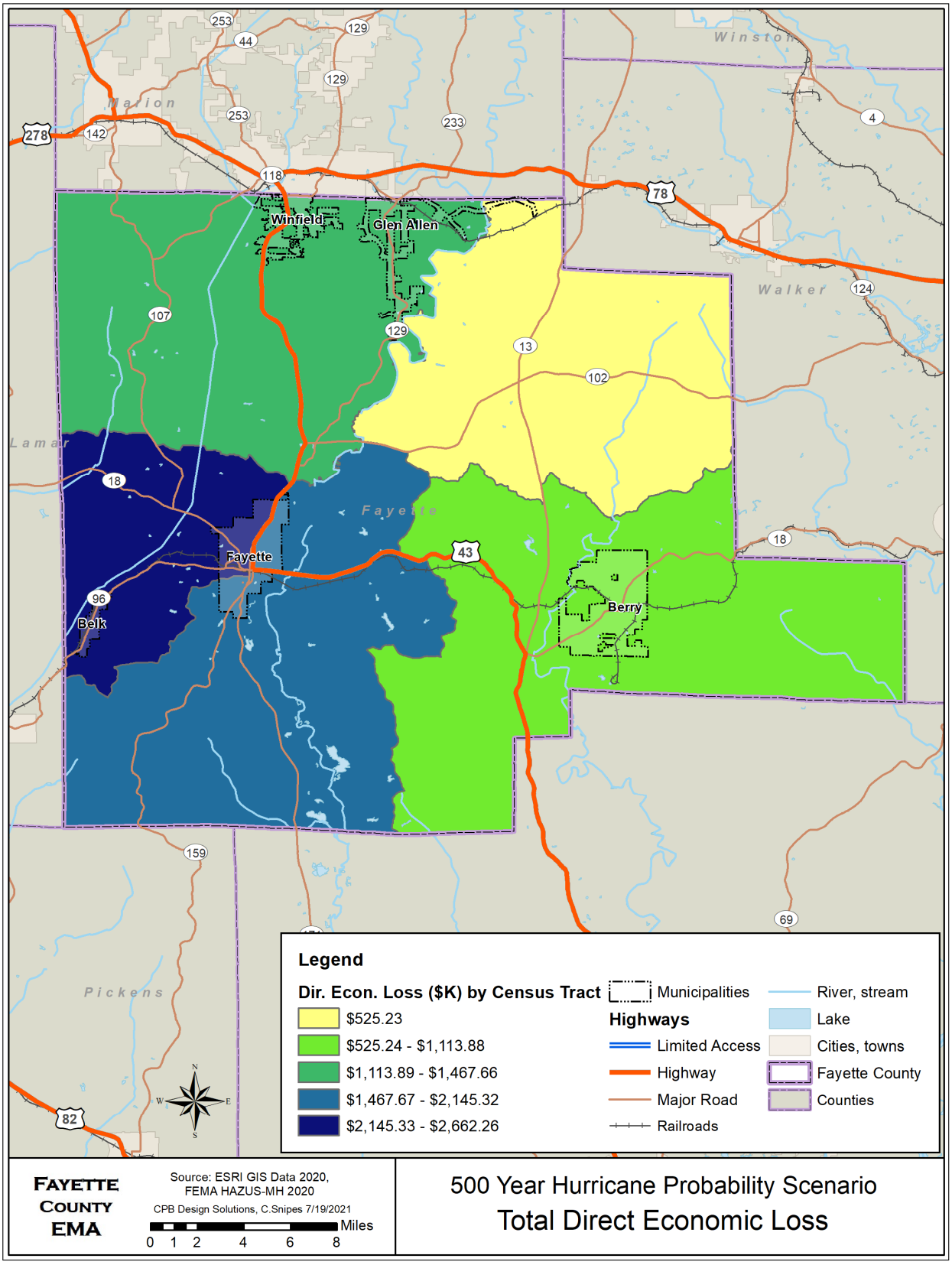
Hazus-MH Hurricane Analysis

The Hazus specialist ran a 100-year and 500-year hurricane probability analysis for Fayette County. All jurisdictions within Fayette County are at risk from earthquakes; however, the analysis did not show any significant impact from hurricanes. While there has been significant damage from storms and tornadoes that develop from hurricanes, due to the distance from hurricane events, Hazus reports very little loss for the county caused by the hurricane itself. Maps 5-53 and 5-54 show the distribution of economic losses related to a 100- year and 500-year event, respectively.

Map 5-53. 100-Year Hurricane Economic Loss Impacts



Map 5-54. 500-Year Hurricane Economic Loss Impact



According to the analysis, the expected building damage from a 100-year event is approximately 3% of the buildings having minor damage and less than 1% sustaining moderate damage. No buildings would incur severe or total destruction. A 500-year event shows approximately 14% of the buildings having minor damage and a little less than 1% sustaining moderate damage. It is possible that less than 0.15% of buildings would sustain severe damage from a 500-year event with no buildings having total destruction.

The building occupancy that has the highest percentage of minor damage for a 100-year event is industrial while residential has the highest percentage of minor damage for a 500-year event. For both the 100-year and 500-year event the occupancy with the highest percentage of moderate damage is agriculture. The occupancy with the greatest percentage of severe damage for a 500-year event is industrial.

The essential facilities should not have any expected damage. It is estimated that 100% of the beds would be available for use by patients already in the hospital and those injured by the hurricane immediately after a 100-year or 500-year event. Also, the analysis does not expect any need for temporary shelter for the citizens since none are expected to be displaced for either event.

The total economic loss estimated from the hurricanes are 1.7 million dollars and 7.9 million dollars for a 100-year and 500-year event, respectively. These values represent the replacement value of the region's buildings.

For a 100-year event the total building related loss estimate is 0.24 million dollars. The property damage is estimated to be 75% structure, 25% contents and 0% inventory. For business interruption loss it is estimated that 100% will be related to relocation. Of the damage residential accounted for 98% of the building related losses followed by commercial and industrial.

For a 500-year event the total building related loss estimate is 8 million dollars. This value is broken out as either property damage or business interruption loss. Property damage values - 75% in structural damage, 25% damage to contents, and 0% inventory loss. For business interruption loss - 0% income, 75% Relocation, 25% Rental, and 0% for wages. Of the damage, residential accounted for 97% of the building related losses followed by industrial then commercial occupancies.

Results from the 100- and 500-year probability scenarios are presented in Tables 5-42 and 5-43.

Table 5-42. Building Exposure by Occupancy, Hurricane Event

Occupancy	Structure Count	Percent of Total Building Inventory of Area	Dollar Exposure (1,000 dollars)
Agriculture	25	0.3	$3,849
Commercial	342	4	$172,845
Education	12	0.1	$14,755

Occupancy	Structure Count	Percent of Total Building Inventory of Area	Dollar Exposure (1,000 dollars)
Government	23	0.3	$22,152
Industrial	110	1.3%	$118,938
Religion	46	0.5%	$32,820
Residential	7904	93%	$1,147,978

Table 5-43. Building Exposure by Construction Type, Hurricane Event

Construction Type	Structure Count	Percent of Total Building Inventory of Area
Wood	5,888	70%
Steel	253	3%
Concrete	64	0.76%
Masonry	509	6%
Manufactured Housing	1,747	21%

Loss Estimates Based on Historical Records

Tornado Loss Estimates

According to the NOAA National Climatic Data Center and National Weather Service (NWS) records, Fayette County has been the site of 36 tornadoes from 1996 to 2020, averaging approximately 1.4 annually. These tornadoes caused 4 deaths, 8 injuries, and property damages of over $13.414 million.

Severe Storms Loss Estimates

As reported in Appendix E, National Climatic Data Center (NCDC) records show frequent annual severe storm occurrences from 1996 to 2020. The database shows 113 severe storm events for Fayette County—roughly 7 per year. The database also shows approximately $1.067 million in property damage and $18,000 in crop damage since 1996.

Flood Loss Estimates

The National Climatic Data Center (NCDC) Storm Events Database recorded 11 flash flood events for Fayette County for the 1997-2020 period averaging to about 1 flash flood event every other year. Recorded damage costs were $125,000 between 1997 and 2020.

Winter Storms/Extreme Cold Estimates

The National Climatic Data Center (NCDC) estimated that 15 winter storm/extreme cold events occurred in the period between 1996 and 2020. Damages amounted to $551,000 over that time period.

Loss Estimates for Remaining Hazards

Historical data is not sufficient to estimate losses for the remaining hazards identified in this Plan. In some cases, there have been no recorded events, such as landslides, and in other cases, no damages resulted from an event, as is the case for instances of extreme heat events, earthquakes, dam failure, or sinkholes.

Recommended Risk Assessment Measures

The Mitigation Strategy of this Plan (Chapter 6) should include both short-term and long-term measures to improve the completeness and reliability of loss estimates. These measures should carry out the following general objectives:

- ✓ Critical Facilities Assessments. Assess critical facilities (hospitals, schools, fire and police stations, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.
- ✓ Geographic Information Systems (GIS). Maintain a comprehensive database of hazard locations, socio-economic data, infrastructure, and critical facilities inventories.
- ✓ Planning Studies. Conduct special plans and studies, as needed, to identify hazard risks and develop mitigation projects.

5.6 General Description of Land Uses and Development Trends

This section looks at how development impacts a community's vulnerability to a hazard. If development is not carefully assessed, it can aggravate existing conditions or even create new impacts from hazard events. By overseeing development, a jurisdiction can ensure that steps are taken to not worsen the impacts of hazards and possibly rectify certain negative impacts caused by hazards. Development can exacerbate vulnerability in several ways, including:

- Development moving into areas prone to flooding, landslides, and other location-specific hazards due to growth.
- Impervious surfaces, such as roads and parking lots, can increase urban runoff and thereby exacerbate flooding unless proper measures such as drainage improvements or retention ponds are employed.
- Encroaching on the wildland-urban interface with new residential, commercial, and industrial development without care taken to reduce the risk for wildfires can increase the threat to the community for wildfires.

- Increases in population can stretch scarce water resources in times of drought.

Past Trends

Table 5-44 depicts population trends from 2000-2018 for Fayette County. As can be seen, between 2000 and 2010 the population declined in all jurisdictions other than Belk and Glen Allen. Between 2010 and 2018 the population in all the jurisdiction declined with a county wide decline of approximately 5%.

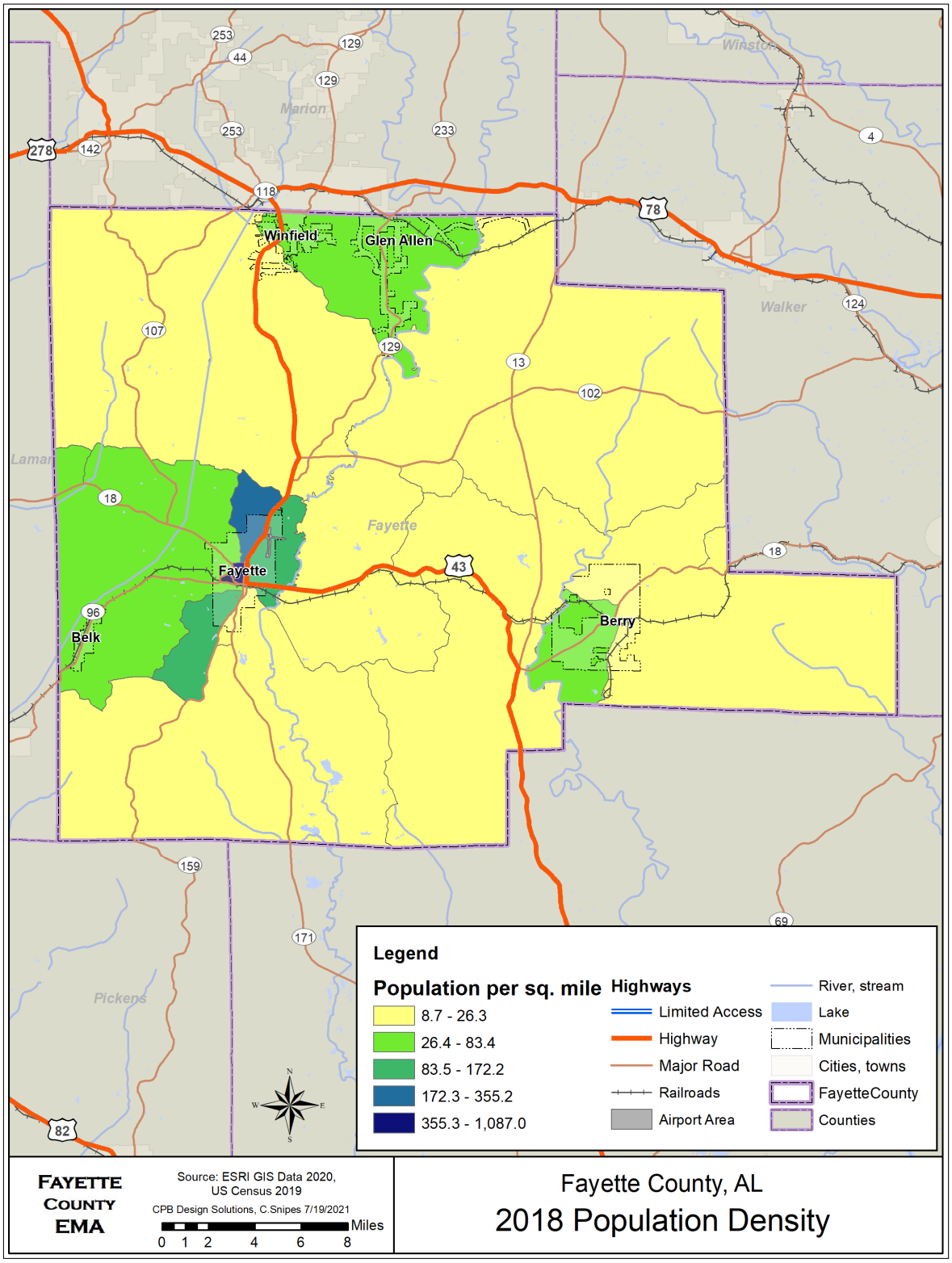
Table 5-44. Fayette County Historic Growth Trends

Jurisdiction	2000	2010	Number Change	Percent Change	2018	Number Change	Percent Change
Fayette County	18,495	17,241	-1,254	-6.78%	16,433	-808	-4.69%
Belk	214	215	1	0.47%	205	-10	-4.65%
Berry	1238	1148	-90	-7.27%	1,098	-50	-4.36%
Fayette	4911	4619	-292	-5.95%	4,327	-292	-6.32%
Glen Allen	442	510	68	15.38%	487	-23	-4.51%
Unincorporated	11,679	10,749	-930	-7.96%	10,316	-433	-4.03%

US Census Bureau:

With an estimated 2018 population of 4,327, the City of Fayette is the largest city in Fayette County, followed by approximately 1,098 people residing in Berry. Those residing in unincorporated parts of Fayette County dominate the population figures, at 10,316**.** Map 5-55 shows the population density (people per square mile) for Fayette County in 2018. The densest area is located in the City of Fayette.

Map 5-55. Fayette County Population Density, 2018



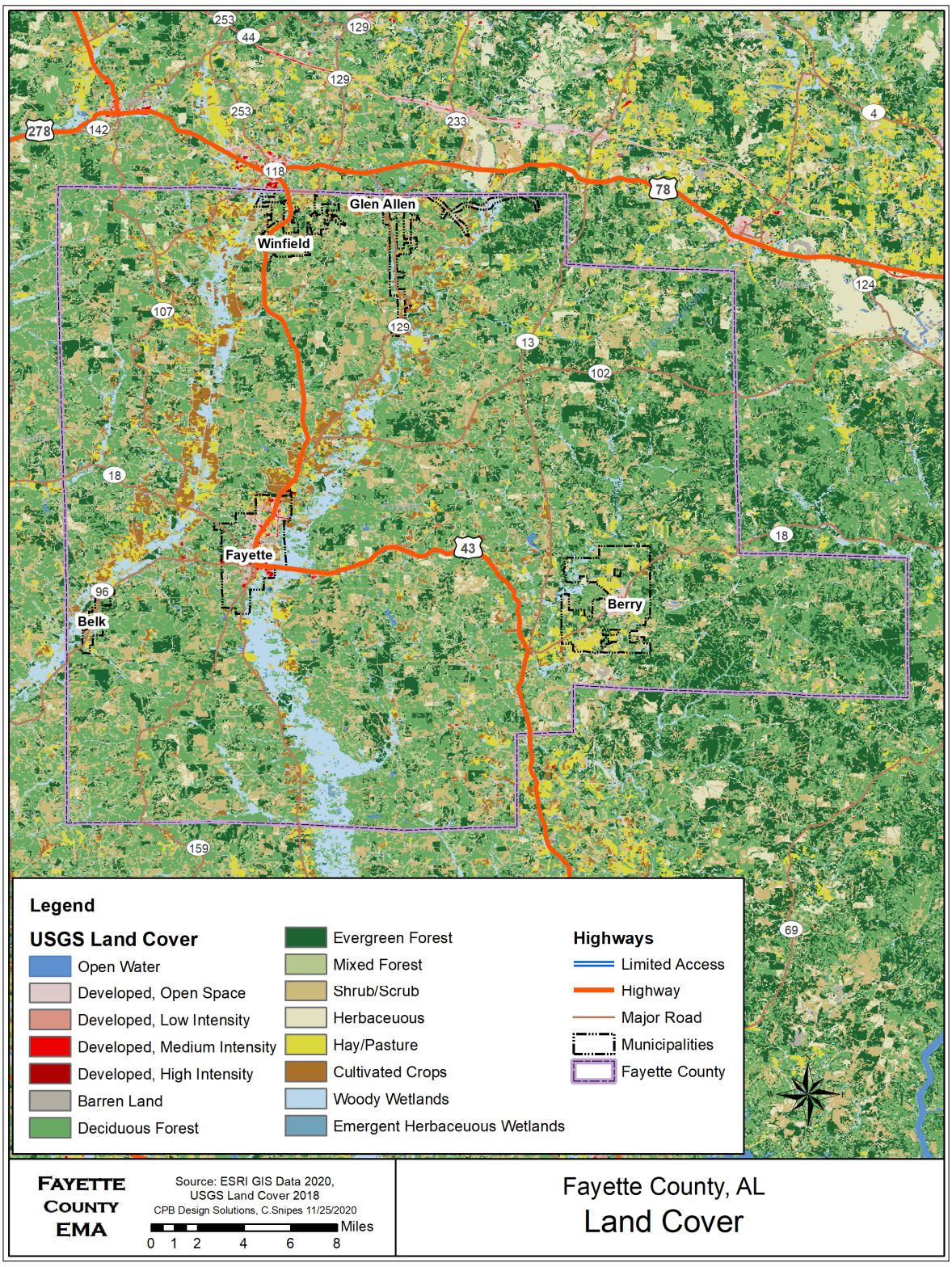
Land Cover and Land Use

Fayette County is made up of approximately 630 square miles of land and about 1.7 square miles of water. The County is located within the Cumberland Plateau and characterized by sandstone, shale, and limestone. The Warrior and Tennessee Rivers drain most of the Cumberland Plateau. The Sipsey River, a tributary of the Tombigbee River, flows through the center of Fayette County; the North River, a tributary of the Upper Black Warrior River, flows through the eastern portion of the county.

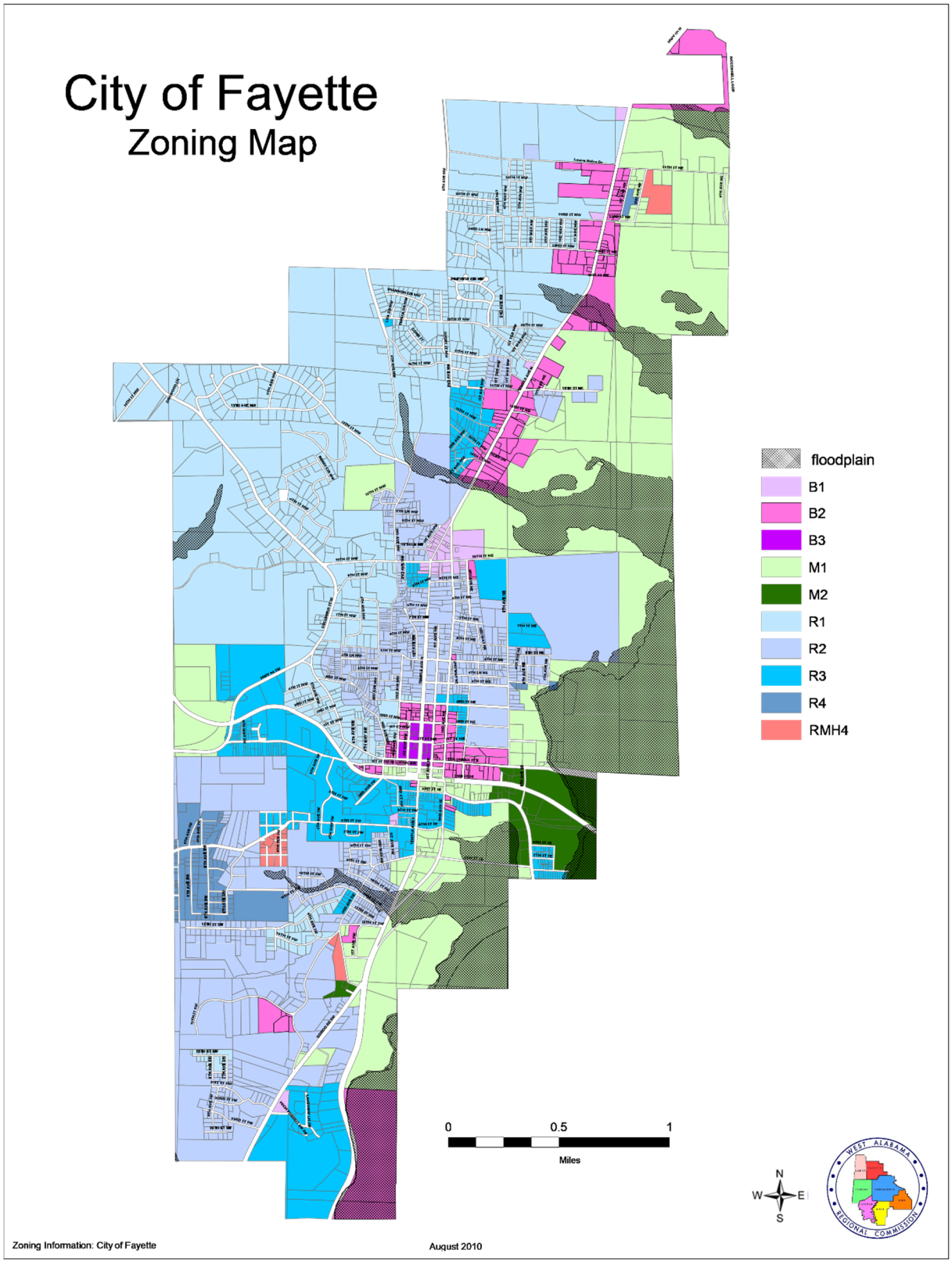
Fayette County has approximately 333,600 acres of forestland (Alabama Forestry Commission, 2011). Map 5-56 "Land Cover" shows that the majority of Fayette County is deciduous forest with evergreen forest, pasture, and cultivated crops interspersed throughout.

Fayette County is predominantly agricultural with some urbanization within the incorporated communities. The most densely developed areas lie within Fayette's city limits. The City of Fayette has a Master Land Use plan that includes "guidance for land use, community design and zoning, proposed community facilities and services, protection of natural resources, historic and cultural resources and recommendations for economic development and fiscal improvements." *fayetteal.org/planning* The current land use of the city is shown on Map 5-57. Over half the land use is currently residential. Businesses are located north of 18 along Highway 43. There is a mobile home subdivision located in the southwest portion of Fayette. Heavy manufacturing is placed along the eastern route of Highway 43. Light manufacturing is around the airport and the eastern part of the city. The floodplain borders the manufacturing zones.

Map 5-56. Fayette County Land Cover



Map 5-57. City of Fayette Zoning



Future Trends

Table 5-45 presents projected growth in Fayette County and its jurisdictions between 2018 and 2040. Fayette County's population decline between 2018 and 2040 nears 13%. These projections are based on historical data and do not reflect current economic development efforts in Fayette County or throughout the State.

Table 5-45. Population Projections by Jurisdiction

Jurisdiction	Estimated 2018	Annual Growth Rate	Projected 2040	Projected Change 2018-2040	Percent Change 2018-2040	2040 Growth Multiplier
Fayette County	16,433	-0.65%	14,224	-2,209	-13%	0.87
Belk	205	-0.24%	195	-10	-5%	0.95
Berry	1,098	-0.66%	948	-150	-14%	0.86
Fayette	4,327	-0.71%	3,697	-630	-15%	0.85
Glen Allen	487	0.54%	548	61	13%	1.13
Unincorporated	11,679	-0.69%	8,865	-1,451	-14%	0.86

Source: Derived from U.S. Census

Economic development prospects

Fayette County's predominant industry is manufacturing. Companies such as Fayette Fabrication, Fayette Glove Company, and Ox Bodies, Inc. comprise the larger employers in this industry. Georgia Pacific, the paper company, has a facility in Belk. Educational services, healthcare, and social assistance make up a significant portion of the employed population, with Fayette Medical Center as the largest employer in the county. Those employers with more than 100 employees and their trade are listed below.

- Fayette County Commission-Executive Offices
- Ox Bodies Inc-Truck and Bus Bodies
- Wal-Mart Supercenter-Department Stores
- Showa Glove Co- Gloves
- Fayette County Board Education-Elementary and Secondary Schools
- Fayette Fabrication-Fabrication for Automotive
- Fayette Medical Center-General Medical and Surgical Hospitals
- Phifer Wire – Woven Fabric
- Georgia Pacific Corporation – Lumber Mill

Fayette County is one of three counties in Northwest Alabama forming the C3 of Northwest Alabama Economic Development Alliance. The other two counties are Marion and Lamar. The C3 Alliance works to promote environments conducive to business location and expansion, creating jobs for the three counties. A campus for Bevill State Community College is located in Fayette County, along with a local art museum, civic center, and multi-purpose complex with equestrian and RV facilities.

The efforts of the economic alliance and the training programs available at Beville State will hopefully reverse the trend toward a decrease in population.

5.7 Repetitively Damaged NFIP-Insured Structures

FEMA defines "repetitive loss property" as properties that have two or more losses of at least $1,000 and have been paid under the National Flood Insurance Program (NFIP) within any 10-year period. According to the State NFIP Coordinator, Fayette County and its municipalities have zero repetitively damaged properties. Table 5-46 describes the number of policies in force.

Table 5-46. NFIP Policies and Repetitive Loss Claims

Community Name	Total NFIP Policies	Repetitive Loss Structures	Total RL Claims	Total RL Losses	Total Insurance in Force
Belk	1	0	0	$0	$35,000
Berry	0	0	0	$0	$0
City of Fayette	6	0	0	$0	$1,278,900
Glen Allen	1	0	0	$0	$22,000
Unincorporated Fayette County	10	0	0	$0	$1,122,400
Totals	20	0	0	$0	$2,458,300

Source: NFIP State Coordinator, 2021

While the jurisdictions within Fayette County and the unincorporated areas do not show any repetitive loss to structures according to the NFIP, there have been repetitive losses to infrastructure throughout the county such as culverts and bridges.

5.8 Summary of Hazards and Community Impacts

Table 5-47 summarizes each jurisdiction's vulnerability. Community impacts include the following descriptions and measurements:

Location. Location measures the geographic extent of the identified hazard in one of three ways, as follows:

1) *Community-wide* - the entire geographic area is affected;
2) *Partial* - a significant portion of the community is affected; or
3) *Minimal* - a negligible area is affected.

Probability. Probability measures the likelihood of the hazard occurring within the community, based on historical incidence. The scale for frequency runs as follows:

1) *Very high* - annually;
2) *High* - every two to three years;
3) *Moderate* - every three to ten years;

4) *Low* - every ten years; or
5) *Very low* - rare.

Extent. Extent measures the severity of the hazard and its potential to cause casualties, business losses, and damage to structures. The scale utilized runs as follows:

1) *Devastating* - the potential for devastating casualties, business losses, and structure damage;
2) *Significant* - the potential for some casualties and significant, but less than devastating, business losses and structure damage;
3) *Moderate* – moderate potential for economic losses and structure damage; or
4) *Slight* – slight or minimal potential for economic losses and structure damage.

Exposure. Exposure measures the percentage of structures within the community, including buildings, critical facilities, and infrastructure lifelines, that are exposed to the hazard. The classifications are defined as follows:

1) *High* - includes more than approximately 25 percent of the structures;
2) *Medium* - includes 10 percent to 25 percent of the structures; or
3) *Low* - includes less than 10 percent of the structures.

Damage Potential. Damage potential measures the damage that can be expected should an event take place. The classifications are defined as follows:

1) *High* - a hazard could damage more than 5 percent of the structures in a community;
2) *Medium* - a hazard could damage between 1 and 5 percent of the structures in a community; or
3) *Low* - a hazard could damage fewer than 1 percent of the structures in a community.

Table 5-47. Summary of Hazards and Community Impacts

Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location (Geographic Extent of Hazard in the Community)	Probability (Frequency of Hazard Occurrence in the Community)	Extent (Magnitude or Severity of Hazard in the Event of Occurrence)	Level of Exposure (Degree of Structures Exposed to the Hazard)	Level of Damage Potential (Percentage of Likely Damage to Exposed Structures)
Severe Storms	Uninc. Communities	Community-wide	Very High	Significant	High	Low
	Belk	Community-wide	Very High	Significant	High	Low
	Berry	Community-wide	Very High	Significant	High	Low
	Fayette	Community-wide	Very High	Significant	High	Low
	Glen Allen	Community-wide	Very High	Significant	High	Low
Tornadoes	Uninc. Communities	Community-wide	High	Devastating	High	High
	Belk	Community-wide	High	Devastating	High	High
	Berry	Community-wide	High	Devastating	High	High
	Fayette	Community-wide	High	Devastating	High	High
	Glen	Community-wide	High	Devastating	High	High
Floods	Uninc. Communities	Partial	High	Moderate	Low	Low
	Belk	Partial	Moderate	Moderate	Low	Low
	Berry	Partial	Moderate	Moderate	Low	Low
	Fayette	Partial	Very High	Significant	Medium	Medium
	Glen Allen	Partial	Moderate	Moderate	Low	Low

Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location (Geographic Extent of Hazard in the Community)	Probability (Frequency of Hazard Occurrence in the Community)	Extent (Magnitude or Severity of Hazard in the Event of Occurrence)	Level of Exposure (Degree of Structures Exposed to the Hazard)	Level of Damage Potential (Percentage of Likely Damage to Exposed Structures)
Droughts	Uninc. Communities	Community-wide	High	Moderate	High	Low
	Belk	Community-wide	High	Moderate	High	Low
	Berry	Community-wide	High	Moderate	High	Low
	Fayette	Community-wide	High	Moderate	High	Low
	Glen Allen	Community-wide	High	Moderate	High	Low
Winter Storms	Uninc. Communities	Community-wide	Moderate	Significant	High	Low
	Belk	Community-wide	Moderate	Significant	High	Low
	Berry	Community-wide	Moderate	Significant	High	Low
	Fayette	Community-wide	Moderate	Significant	High	Low
	Glen Allen	Community-wide	Moderate	Significant	High	Low
Hurricanes	Uninc. Communities	Community-wide	Low	Moderate	High	Low
	Belk	Community-wide	Low	Moderate	High	Low
	Berry	Community-wide	Low	Moderate	High	Low
	Fayette	Community-wide	Low	Moderate	High	Low
	Glen Allen	Community-wide	Low	Moderate	High	Low

Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location (Geographic Extent of Hazard in the Community)	Probability (Frequency of Hazard Occurrence in the Community)	Extent (Magnitude or Severity of Hazard in the Event of Occurrence)	Level of Exposure (Degree of Structures Exposed to the Hazard)	Level of Damage Potential (Percentage of Likely Damage to Exposed Structures)
Sinkholes (Land Subsidence)	Uninc. Communities	Minimal	Very Low	Slight	Low	Low
	Belk	Minimal	Very Low	Slight	Low	Low
	Berry	Minimal	Very Low	Slight	Low	Low
	Fayette	Minimal	Very Low	Slight	Low	Low
	Glen Allen	Minimal	Very Low	Slight	Low	Low
Landslides	Uninc. Communities	Minimal	Very Low	Slight	Low	Low
	Belk	Minimal	Very Low	Slight	Low	Low
	Berry	Minimal	Very Low	Slight	Low	Low
	Fayette	Minimal	Very Low	Slight	Low	Low
	Glen Allen	Minimal	Very Low	Slight	Low	Low
Earthquakes	Uninc. Communities	Community-wide	Low	Slight	High	Medium
	Belk	Community-wide	Low	Slight	High	Medium
	Berry	Community-wide	Low	Slight	High	Medium
	Fayette	Community-wide	Low	Slight	High	Medium
	Glen Allen	Community-wide	Low	Slight	High	Medium

Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location (Geographic Extent of Hazard in the Community)	Probability (Frequency of Hazard Occurrence in the Community)	Extent (Magnitude or Severity of Hazard in the Event of Occurrence)	Level of Exposure (Degree of Structures Exposed to the Hazard)	Level of Damage Potential (Percentage of Likely Damage to Exposed Structures)
Wildfires	Uninc. Communities	Partial	Very High	Severe	Medium	High
	Belk	Partial	Moderate	Slight	Low	High
	Berry	Partial	Moderate	Slight	Low	High
	Fayette	Partial	Moderate	Slight	Low	High
	Glen Allen	Partial	Moderate	Slight	Low	High
Dam/Levee Failures	Uninc. Communities	Minimal	Very Low	Slight	Low	Low
	Belk	Minimal	Very Low	Slight	Low	Low
	Berry	Minimal	Very Low	Slight	Low	Low
	Fayette	Minimal	Very Low	Slight	Low	Low
	Glen Allen	Minimal	Very Low	Slight	Low	Low
Manmade and Technological Hazards	Uninc. Communities	Community-wide	Very High	Varies	High	Varies
	Belk	Community-wide	Very High	Varies	High	Varies
	Berry	Community-wide	Very High	Varies	High	Varies
	Fayette	Community-wide	Very High	Varies	High	Varies
	Glen Allen	Community-wide	Very High	Varies	High	Varies

5.9 Risks that Vary Among the Jurisdictions

This Plan has strongly emphasized the variations in risks among jurisdictions. In particular, the following sections contain specific references to jurisdictional variations:

- Hazard identification. Each jurisdiction was independently assessed to identify pertinent hazards, based on the sources noted in Section 5.3 "Identification of Hazards Affecting Each Jurisdiction." Descriptions of hazards can be found in Appendix D, "Hazard Identification, Ratings and Descriptions".
- Hazard profiles. Each of the hazard profiles in Section 5.3 notes how the location, extent, past occurrences, and probability of future events may vary among all jurisdictions. Maps are included, where possible, to emphasize the locations of hazards in relation to jurisdictional limits.
- Summary of Community Impacts. Table 5-47 "Summary of Hazards and Community Impacts" summarizes how hazards impact each jurisdiction.

Risk may vary among jurisdictions, as described in Table 5-48 "Jurisdictional Risk Variations." This table presents an overview of the common and unique risks within each jurisdiction and the unique characteristics of those risks. The risk variations table uses the following terms, as defined here:

Variation of Risks. Measures whether a risk is common or unique, as follows:

1) *Common risk* - affects all areas equally; or
2) *Unique risk* - affects certain jurisdictions with varying probability and extent.

Location. Indicates whether a hazard's impact varies within the community, as follows:

1) *Specific locations* - the hazard only threatens particular parts of the jurisdiction; or
2) *Not unique* - the hazard affects all parts of the jurisdiction.

Probability. Probability measures the likelihood of the hazard occurring within the community, based on historical incidence. The scale for frequency runs as follows:

1) *Very high* - annually;
2) *High* - every two to three years;
3) *Moderate* - every three to ten years;
4) *Low* - every ten years; or
5) *Very low* - rare.

Extent. Extent measures the severity of the hazard and its potential to cause casualties, business losses, and damage to structures. The scale utilized runs as follows:

1) *Devastating* - the potential for devastating casualties, business losses, and structure damage;
2) *Significant* - the potential for some casualties and significant, but less than devastating, business losses and structure damage;
3) *Moderate* – moderate potential for economic losses and structure damage; or
4) *Slight* – slight or minimal potential for economic losses and structure damage.

.

Table 5-48. Jurisdictional Risk Variations

Hazard	Variation of Risks	Jurisdiction	Hazard's Unique Risk Characteristics		
			Location	Probability	Extent
Severe Storms	Common Risks	Uninc. Communities	Not Unique	Very High	Slight
		Belk	Not Unique	Very High	Slight
		Berry	Not Unique	Very High	Slight
		Fayette	Not Unique	Very High	Slight
		Glen Allen	Not Unique	Very High	Slight
Tornadoes		Uninc. Communities	Not Unique	High	Significant
		Belk	Not Unique	High	Significant
		Berry	Not Unique	High	Significant
		Fayette	Not Unique	High	Significant
		Glen Allen	Not Unique	High	Significant
Winter Storms	Common Risks	Uninc. Communities	Not Unique	Very High	Slight
		Belk	Not Unique	Very High	Slight
		Berry	Not Unique	Very High	Slight
		Fayette	Not Unique	Very High	Slight
		Glen Allen	Not Unique	Very High	Slight
Droughts	Common Risks	Uninc. Communities	Not Unique	High	Slight
		Belk	Not Unique	High	Slight
		Berry	Not Unique	High	Slight
		Fayette	Not Unique	High	Slight
		Glen Allen	Not Unique	High	Slight

Hazard	Variation of Risks	Jurisdiction	Hazard's Unique Risk Characteristics		
			Location	Probability	Extent
Hurricanes	Common Risks	Uninc. Communities	Not Unique	Moderate	Moderate
		Belk	Not Unique	Moderate	Moderate
		Berry	Not Unique	Moderate	Moderate
		Fayette	Not Unique	Moderate	Moderate
		Glen Allen	Not Unique	Moderate	Moderate
Floods	Unique Risks	Uninc. Communities	Specific Locations	Very High	Moderate
		Belk	Specific Locations	Moderate	Moderate
		Berry	Specific Locations	Moderate	Moderate
		Fayette	Specific Locations	Very High	Moderate
		Glen Allen	Specific Locations	Moderate	Moderate
Dam/Levee Failures	Unique Risks	Uninc. Communities	Specific Locations	Very Low	Slight
		Belk	Specific Locations	Very Low	Slight
		Berry	Specific Locations	Very Low	Slight
		Fayette	Specific Locations	Very Low	Slight
		Glen Allen	Specific Locations	Very Low	Slight
Wildfires	Unique Risks	Uninc. Communities	Specific Locations	Very High	Moderate
		Belk	Specific Locations	Moderate	Moderate
		Berry	Specific Locations	Moderate	Moderate
		Fayette	Specific Locations	Moderate	Moderate
		Glen Allen	Specific Locations	Moderate	Moderate

Hazard	Variation of Risks	Jurisdiction	Hazard's Unique Risk Characteristics		
			Location	Probability	Extent
Sinkholes (Land Subsidence)	Unique Risks	Uninc. Communities	Specific Locations	Very Low	Slight
		Belk	Specific Locations	Very Low	Slight
		Berry	Specific Locations	Very Low	Slight
		Fayette	Specific Locations	Very Low	Slight
		Glen Allen	Specific Locations	Very Low	Slight
Earthquakes	Common Risks	Uninc. Communities	Not Unique	Low	Moderate
		Belk	Not Unique	Low	Moderate
		Berry	Not Unique	Low	Moderate
		Fayette	Not Unique	Low	Moderate
		Glen Allen	Not Unique	Low	Moderate
Landslides	Unique Risks	Uninc. Communities	Specific Locations	Very Low	Slight
		Belk	Specific Locations	Very Low	Slight
		Berry	Specific Locations	Very Low	Slight
		Fayette	Specific Locations	Very Low	Slight
		Glen Allen	Specific Locations	Very Low	Slight
Manmade and Technological	Common Risks	Uninc. Communities	Not Unique	High	Moderate
		Belk	Not Unique	High	Moderate
		Berry	Not Unique	High	Moderate
		Fayette	Not Unique	High	Moderate
		Glen Allen	Not Unique	High	Moderate

Chapter 5 – Risk Assessment

In accordance with the Risk Assessment requirements of 44 CFR Section 201.6 (c) (2), this chapter and the associated appendices provide justification for the selection of hazards addressed in this plan update. The risk assessments for the hazards presented in this chapter identify the hazards that affect the jurisdictions within Fayette County and provide historical data on the impact the hazard has had on the jurisdiction. Vulnerability assessments are included in this chapter which analyze the jurisdiction's vulnerability to the hazards. This data is the basis for the mitigation strategy discussed in Chapter Six – "Mitigation Strategy".

5.1 Summary of Plan Updates

The 2020 Fayette County Multi-Hazard Mitigation Plan's Risk Assessment chapter has been redesigned. The order of sections has been modified, the category pandemic and infectious diseases has been added to the list of hazards, human-caused and technological hazards have been separated, and data and maps have been updated. Most of the hazard occurrences mentioned in this section are within the 2015-2020 time period. Some noteworthy events prior to 2015 have been included in this chapter; however, most pre-2015 events have been moved to Appendix E "Fayette County Hazard Profile Data".

5.2 Hazard Identification

Not all hazards affect all jurisdictions within Fayette County. Some hazards are determined by geology or location. When determining which hazards should be included in this plan update, the planning team consulted various sources.

1. The 2014 Fayette County Multi-Hazard Mitigation Plan. Fayette County's 2014 plan identified the following hazards in Chapter 5 – "Risk Assessment": tornadoes, severe storms, floods, winter storms/freezes, hurricanes, droughts/heat waves, wildfires, dam/levee failures, landslides, earthquakes, sinkholes, and human-caused and technological hazards. Since the hazards still impact Fayette County, they were retained for this plan update and the hazard category "pandemic and infectious diseases" was added.

2. The Hazard Identification Worksheet. The HMPC members completed the "Hazard Identification Worksheet" for their jurisdiction. They provided their assessment on different factors in relation to each hazard. For natural hazards, the respondent recorded what percentage of the jurisdiction would be affected by the hazard, the probability of occurrence within a certain time frame, and the extent of the threat. For pandemic and infectious diseases, human-caused and technological hazards, the respondent recorded their degree of concern and how much of an impact the hazard has on the jurisdiction. Sections 5-8 and 5-9 detail the analysis of the results.

3. List of Federally-Declared Disasters. A Presidential Major Disaster Declaration puts into motion long-term federal recovery programs, some of which are matched by state programs, and designed to help disaster victims, businesses, and public entities. The 31 Declarations that have been issued that include Fayette County since 2000 are included in the following table. The hazard most covered in the disaster declarations that affect Fayette County is severe storms with 16 declarations, followed by tornadoes with 12, hurricanes at 12, and flooding with 11. Many of the disasters did not directly impact the county; however, many declarations allow for state-wide hazard mitigation funding which includes Fayette County. (See "HM" under "Declaration Type" in Table 5-1.)

Table 5-1. Summary of Federally-Declared Disasters 2000-2020

Disaster Number	Disaster Type	Date	Declaration Type*
1317	Winter Storm	02/18/2000	HM
1322	Severe storms, flooding	03/17/2000	HM
1352	Tornadoes	12/18/2000	HM
1362	Severe storms, flooding	03/05/2001	IA, PA-ABCDEFG
1399	Severe storms, tornadoes	12/07/2001	IA, DH, IFG, SBA, PA-ABCDEFG
1438	Tropical Storm Isidore	10/09/2002	HM
1442	Severe storms, tornadoes	11/14/2002	DH, IA, IFG, SBA
1549	Hurricane Ivan	09/15/2004	IA, HM
1593	Hurricane Dennis	07/10/2005	HM
1605	Hurricane Katrina	08/29/2005	HM
3237	Hurricane Katrina evacuation	09/10/2005	PA-AB, DFA
1687	Severe storms, tornadoes	03/03/2007	HM
3292	Hurricane Gustav	08/30/2008	SA, PA-B
1789	Hurricane Gustav	09/10/2008	HM
1797	Hurricane Ike	09/26/2008	HM
1835	Severe storms, tornadoes, straight-line winds, flooding	04/28/2009	HM
1836	Severe storms, tornadoes, straight-line winds, flooding	05/08/2009	HM
1842	Severe storms, tornadoes, straight-line winds, flooding	06/03/2009	HM
1866	Tropical Storm Ida	12/22/2009	HM
1870	Severe storms, flooding	12/31/2009	HM
1908	Severe storms, tornadoes, straight-line winds, flooding	05/03/2010	HM
3319	Severe storms, tornadoes, straight-line winds	04/27/2011	PA-B

Disaster Number	Disaster Type	Date	Declaration Type*
1971	Severe storms, tornadoes, straight-line winds, flooding	04/28/2011	IA,PA-AB, DFA, HM
4052	Severe storms, tornadoes, straight-line winds, flooding	02/21/2012	HM
4082	Hurricane Isaac	09/21/2012	HM
4251	Severe storms, tornadoes, straight-line winds, flooding	01/22/2016	HM
3389	Hurricane Irma	09/11/2017	HM
4546	Severe storms, flooding	05/21/2020	PA, HM
4554	Severe storms, Straight-line Winds, Tornadoes	07/10/2020	HM
3545/4563	Hurricane Sally	09/14/2020	PA-ABCDEF, HM
4573	Hurricane Zeta	12/10/2020	HM

* Declaration Type Key	
IA – Individual assistance	A – Debris removal
PA – Public assistance	B – Protective measures
DH – Disaster housing	C – Roads and bridges
CC – Crisis counseling	D – Water control facilities
DFA – Direct federal assistance	E – Public buildings
DUA – Disaster unemployment assistance	F – Public utilities
HM – Hazard mitigation	G – Recreation
IFG – Individual and family grant	SA – Stafford Act
IHP - Individuals and households	403C – Department of Defense
SBA – Small Business Administration	

Source: FEMA, Region IV

4. The 2018 Alabama State Plan. The 2018 update of the Alabama State Plan served as an additional resource for identifying local hazards. The hazards identified by the State were compared against the list for the jurisdictions in Fayette County. The state plan includes some hazards that only affect the southern part of the state such as coastal flooding, storm surge, coastal land change, sea level rise and tsunamis. Since Fayette County is approximately 230 miles north of the coast, those hazards do not directly impact the county and therefore are not included in this plan. This update to the 2014 plan for Fayette County includes pandemic and infectious diseases, human-caused, and technological hazards which the state plan does not include.

5. Other Hazard Identification Sources. Other sources for identifying hazards included the following resources:

   - Local knowledge and expertise of the Fayette County EMA Director and HMPC members;
   - Extensive internet research; and
   - Records of the National Weather Service and NOAA Storm Events Database.

Previous plans have included dollar amounts for damages, deaths, and injuries from the NCDC; however, due to the inaccuracy of that data, it is not included in this chapter. The raw data from the NCDC, including cost estimates, injuries, and deaths, is included in Appendix E– "Fayette County Hazard Profile Data".

5.3 Hazard Profiles

This plan update includes the same natural, human-caused, and technological hazards as those in the 2014 Fayette County Multi-Hazard Mitigation Plan with the addition of pandemic and infectious diseases. While this plan is the five-year update to the 2014 plan, the planning process occurred throughout 2020 during the COVID-19 Pandemic and the committee felt pandemic and infectious diseases should be addressed in this update. The hazards identified as impacting the Fayette County jurisdictions by the HMPC are listed in Table 5-2 "Identified Fayette County Hazards." This table of identified hazards notes multiple natural hazards that may be associated with and/or caused by other hazard events. In depth descriptions of the hazards presented in this chapter can be found in Appendix D – "Fayette County Hazard Ratings and Descriptions".

Table 5-2. Identified Fayette County Hazards

Hazards	Associated Hazards	Jurisdictions Affected
Severe Storms	Thunderstorms Hail Lightning High Winds Tornadoes Floods Landslides Wildfires	All
Tornadoes	High Winds Severe Storms Lightning Hail	All
Flash Floods	Landslides	Unincorporated areas Belk Fayette Glen Allen
Riverine Floods	Landslides	Unincorporated areas Belk Fayette Glen Allen
Hurricanes	Tropical Storms Tropical Depressions Severe Storms High Winds Floods Tornadoes	All

Hazards	Associated Hazards	Jurisdictions Affected
Winter Storms and Extreme Cold	Snowstorms Ice Storms Freezes	All
Extreme Heat	Drought Wildfires Heat Waves	All
Droughts	Wildfires Sinkholes Erosion Landslides	All
Wildfires	Landslides	All
Earthquakes	Landslides Sinkholes Dam Failure	All
Landslides	Wildfires	Unincorporated areas Fayette Glen Allen
Sinkholes		Unincorporated areas Fayette Glen Allen
Dam Failures	Floods	Unincorporated areas Fayette Glen Allen
Human-Caused	Floods Earthquake	All
Technological	Dam Failure	All
Pandemic and Infectious Diseases		All

There may be more events that impact Fayette County than recorded in this section; however, due to the rural nature of the county, many events may have made no noticeable impact and therefore were not reported.

5.3.1 Severe Storms

According to the Hazard Mitigation Planning Committee severe storms are rated as the highest natural hazard threat to Fayette County communities. NOAA records confirm these public perceptions. Severe storms are common in Fayette County and can bring thunderstorms, lightning, heavy rains, high winds, and hail. These storms are also occasionally responsible for tornadoes in the

area. Fayette County is most susceptible to severe storms during the spring, summer, and late fall.

Location of Severe Storms

All areas of Fayette County have experienced frequent severe storms, including thunderstorms, straight-line winds, heavy precipitation, hail, and lightning and share equal risks for all degrees of severe storms throughout the year. Since severe storms lack geographic centers and boundaries, they cannot be substantively mapped.

Extent and Intensity of Potential Severe Storms

The extent of each storm event varies according to storm intensity and duration. Storm intensity is measured by the storm's characteristics. Heavy or prolonged rain can cause flooding and lightning might start wildfires. Straight-line winds from the storms can cause damage to property or trees which can cause power and transportation disruptions. In some instances, these storms will spawn a tornado which can cause immense damage to property and infrastructure. All of the hazards that accompany these severe storms can threaten the safety of those within the disaster area.

Previous Occurrences of Severe Storms

According to National Climatic Data Center (NCDC) records, there were 14 severe storms comprised of 10 thunderstorm/high wind events and six hail events reported in Fayette County between 2015 and 2020. According to those statistics, Fayette County can expect an average of 2.3 severe storm events per year with at least one event each year including hail.

Included in some of the severe storms between 2015 and 2020 were episodes of hail ranging in size from one inch to one and three quarters inches. Based on the data from the NCDC, hail can be expected to occur in at least 1 severe storm per year. March and April are the months in which hail events are most likely to occur. There were no records of lightning damages in any of the recorded storms from 2015-2020. Table 5-3 shows the number of each notable hazard event related to severe storms per year between 2015 and 2020.

Table 5-3. Severe Storms 2015-2020

Year	Total Severe Storms	Hazards Included in Severe Storms		
		Hail	Lightning	Thunderstorm & Strong Wind
2015	2	1	0	1
2016	1	1	0	1
2017	4	1	0	3
2018	0	0	0	0
2019	6	3	0	4
2020	1	0	0	1
Total	14	6	0	10
Annual Avg.	2.3	1	0	1.7

Source: National Climatic Data Center 2020

Most of the reported damage from severe storms in Fayette County is from downed trees and hail. The trees block the roadways and pull-down powerlines causing power outages. On April 28, 2014, a roof was blown off a home in Glen Allen. The house was located west of a tornado path.

One of the largest storms to affect Fayette County occurred on February 16, 2001. Fayette County reported numerous trees and power lines blown down throughout the county. A number of the trees fell onto automobiles and homes causing major damage. A doctor's office had its roof torn off in Fayette, and one mobile home was overturned. No injuries were reported. A large "bow echo or derecho," a long-lived and widespread convective windstorm, swept across much of the northern two-thirds of Alabama. The windstorm moved into western Alabama around 1:41 PM and exited the eastern counties around 4:38 PM. Wind gusts were estimated between 60 and 105 mph during the event. These gusts produced extensive wind damage throughout the entire area, similar to F0 and F1 tornado damage. The American Red Cross estimated that at least 2,500 homes throughout the state were damaged or destroyed. Major electrical transmission lines were down in Tuscaloosa and Fayette Counties. Alabama Power estimated that at least 400,000 homes and businesses were initially without power, which is one third of their total customers. According to Alabama Power, this event ranked as the third highest ever for power outages in the state of Alabama.

Probability of Future Severe Storm Events

Frequent annual severe storms are guaranteed to occur in the future. Past trends show annual occurrences of thunderstorms that bring hail are going to continue throughout all Fayette County jurisdictions. High winds and thunderstorms occur with approximately 80% of the severe storms, hail with about 50%, while events with severe lightning is rare. Regarding the impact of climate change on severe storms, the National Climatic Data Center attributes the increase of frequency of thunderstorms, in part, to human-induced atmospheric changes.

While the residents of Fayette County cannot keep severe storms from occurring, they can work to lessen the impact of such events. Public shelters and safe spaces can be made available to the public and an awareness campaign about safety measures can lead to less property damage and better protected lives. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken to lessen the impact of severe storms.

5.3.2 Tornadoes

Along with severe storms, the members of the hazard mitigation planning committee considered tornadoes as one of the greatest weather threats to the Fayette County communities. This evaluation is based on hazard exposure, the intensity of the risk, and the probability of future occurrence.

According to NOAA's National Climatic Data Center, there are an average of 1,253 tornadoes per year in the United States. The NCDC looked at the years 1991-2010 to arrive at that average. During that same time period, NCDC determined that Alabama averages 44 tornadoes a year. Map 5-1 shows the average number of tornadoes in the different states between 1991 and 2010. Of the 44 tornadoes, 1.7 are rated as EF3 to EF5. Tornado strength is indicated by the Enhanced Fujita Scale, which is shown in Table 5-4.

Map 5-1. Average Number of Tornadoes in US, 1991-2010

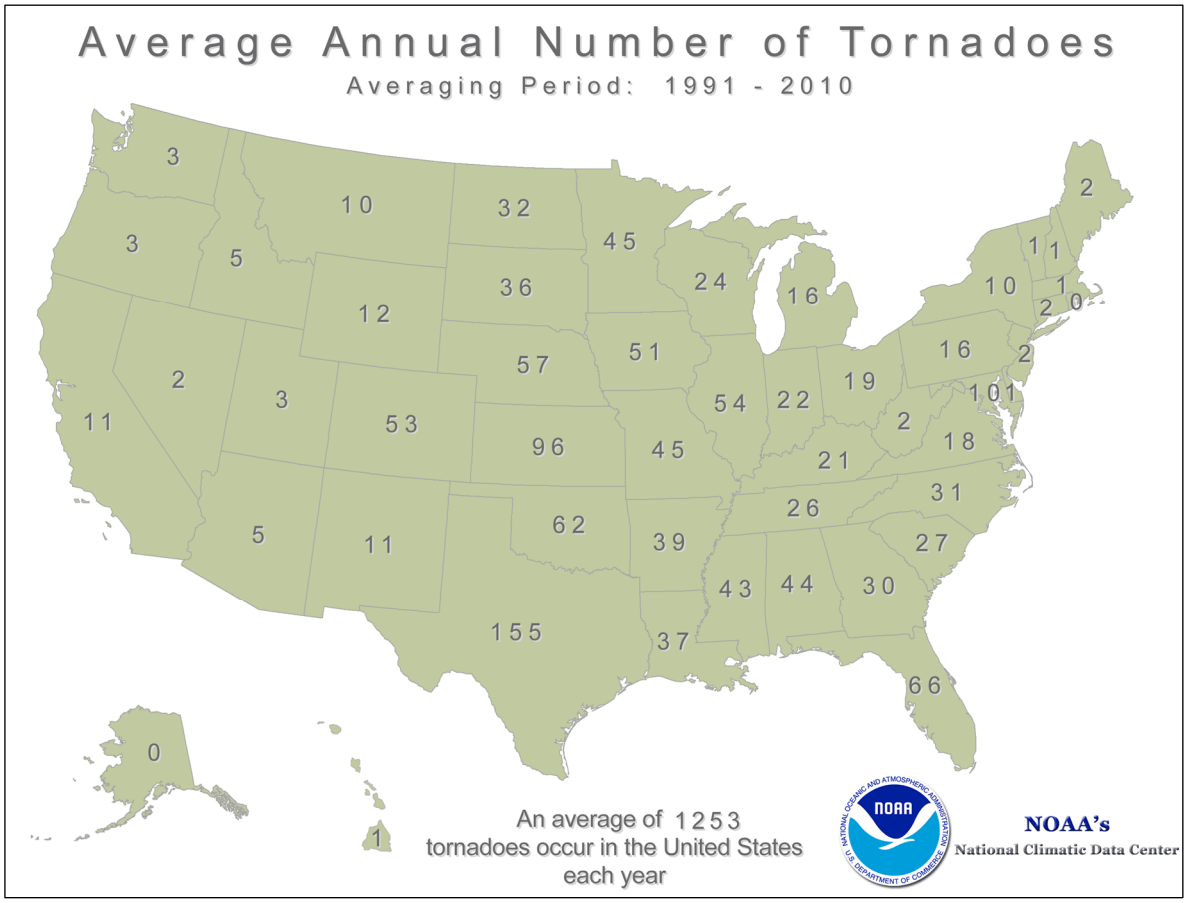


Table 5-4. Enhanced Fujita Scale

EF-Scale	Typical Damage
EF-0 (65-85 MPH)	Light damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF-1 (86-110 MPH)	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF-2 (111-135 MPH)	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF-3 (136-165 MPH)	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF-4 (166-200 MPH)	Devastating damage. Whole frame houses Well-constructed houses and whole frame houses completely leveled; cars thrown, and small missiles generated.
EF-5 (>200 MPH)	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yd.); high-rise buildings have significant structural deformation; incredible phenomena will occur.

EF-Scale	Typical Damage
EF (NO RATING)	Inconceivable damage. Should a tornado with the maximum wind speed in excess of EF-5 occur, the extent and types of damage may not be conceived. A number of missiles such as iceboxes, water heaters, storage tanks, automobiles, etc. will create serious secondary damage to structures.

Source: NOAA, Storm Prediction Center, 2014

Tornadoes can occur anytime of the year; however, as can be seen in Chart 5-1, most tornadoes that impact Alabama occur in the spring, with an uptick again in November. The month of April is the most active month for tornadic activity. Chart 5-2 shows that tornadoes traveling through Dixie Alley tend to hit between 2 PM and 8 PM with the most activity around 4 PM.

Chart 5-1. Tornadoes by Month in Alabama, 1950-2019

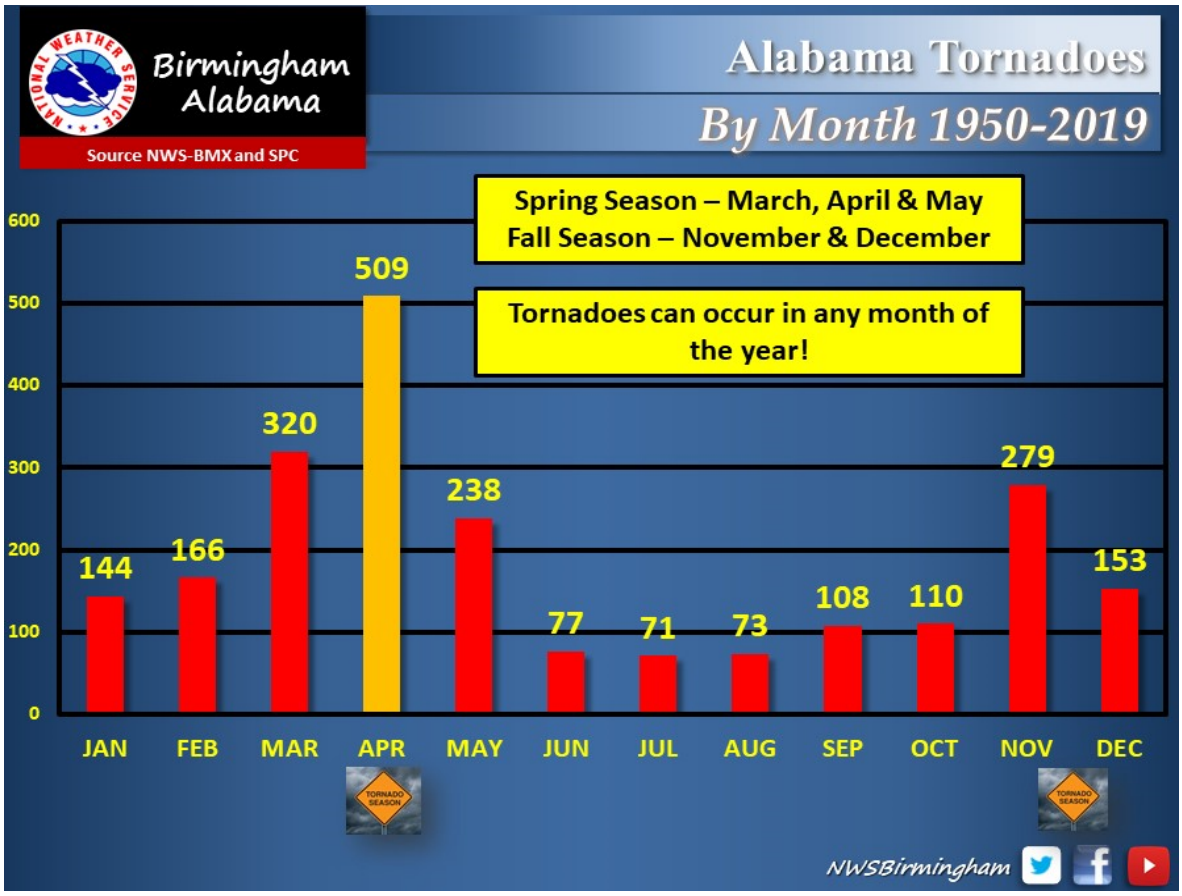
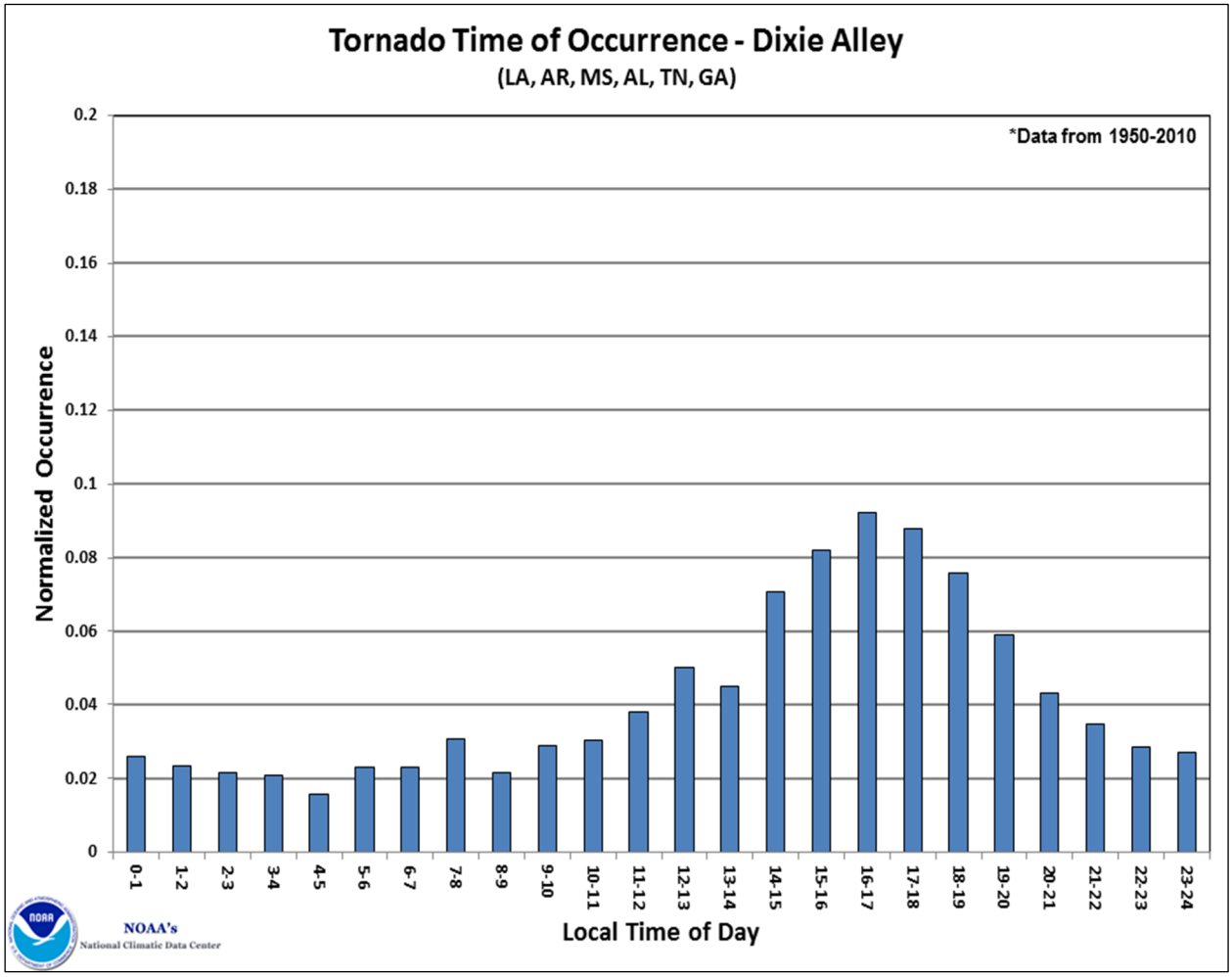


Chart 5-2. Time of Occurrence for Tornadoes in Dixie Alley, 1950-2010



Extent and Intensity of Potential Tornadoes

Tornadoes pose a significant threat to Fayette County communities. The Hazard Mitigation Planning Commission (HMPC) ranked tornadoes second among all hazards in terms of exposure, risk, and probability of future occurrences (see Appendix D "Hazard Ratings and Descriptions"). In Fayette County, tornadoes occur almost yearly and can be severe. As shown on Map 5-2, the average tornado impacting Fayette is an EF2 and most originate within the county. Table 5-5 lists the strength of the tornadoes from 2014-2020. Seven of the tornadoes were an EF1 and five were EF0.

Map 5-2. Fayette County Tornadoes, 1950-2018

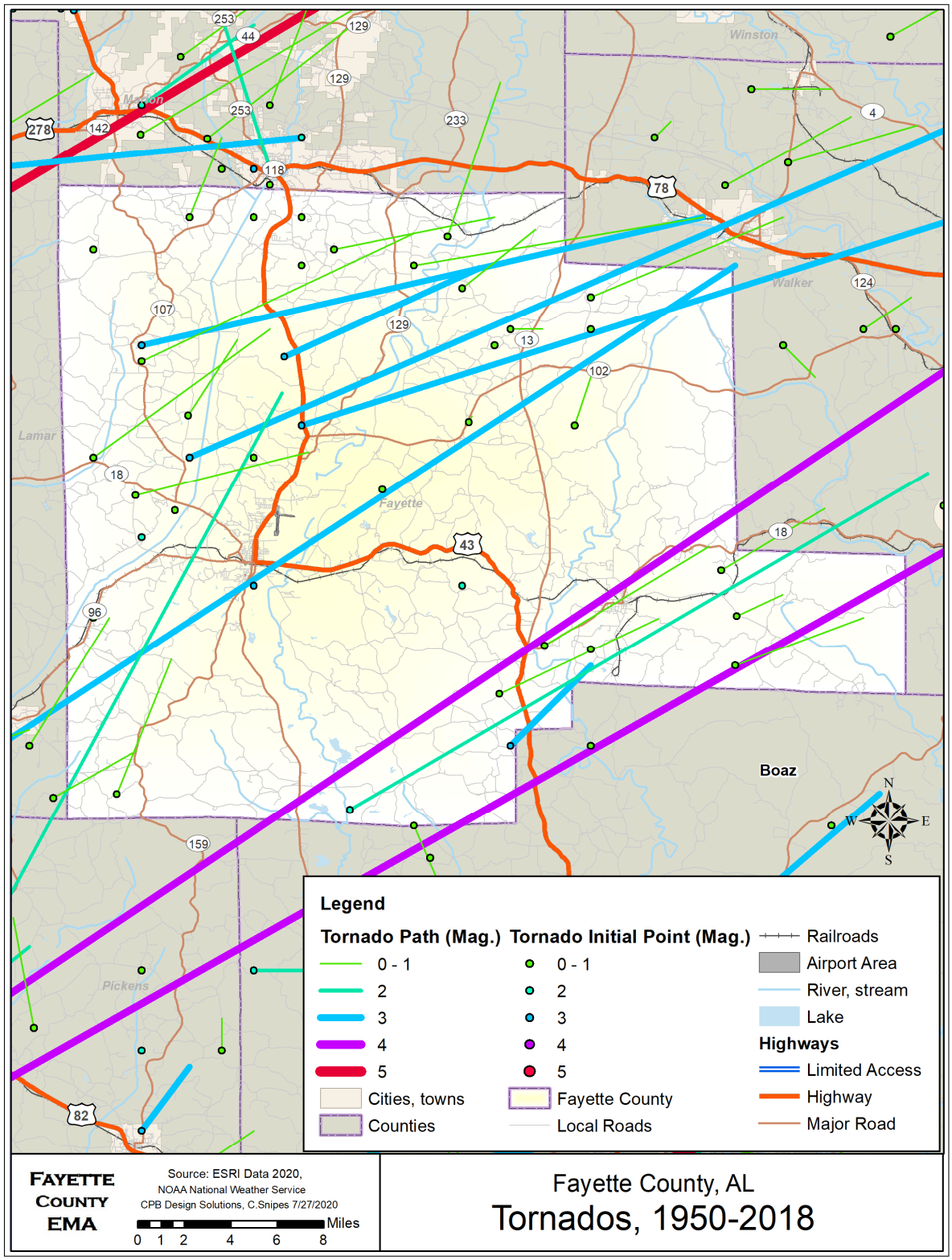


Table 5-5. Annual Summary of Tornado Events, 2014-2020

BEGIN DATE	MAGNITUDE OF TORNADO (EF-SCALE)
04/28/2014	EF1
02/02/2016	EF1
03/31/2016	EF0
03/31/2016	EF1
03/31/2016	EF1
11/29/2016	EF0
08/31/2017	EF1
02/23/2019	EF0
02/23/2019	EF1
04/12/2020	EF1
04/12/2020	EF0
04/12/2020	EF0

Source: National Weather Service

The primary effects from tornadoes in Fayette County include loss of life; property damage; infrastructure destruction and damage; and sanitation and water delivery interruption. Other impacts from tornadoes include the need for shelters for those who lost their homes due to destruction; inability to travel due to damaged roadways or destroyed automobiles; disruption in utilities causing hardships for those impacted; and an increase in disease carrying insects and lack of potable water due to poor sanitation and water delivery disruptions.

Previous Occurrences of Tornadoes

The tornadoes that have touched down over the last five years have done very little damage to structures. NCDC reports numerous incidents of uprooted trees and damages to outbuildings but no real damage to any substantial structures which is attributed to the rural nature of the county.

Between 2014 and 2020 there were 12 recorded tornado events. Multiple tornadoes touched down on a single date twice between 2014 and 2020. The average strength of the tornadoes during that time was EF1. According to NCDC records, since 1996 four deaths and 8 injuries have been reported as associated with tornadoes in Fayette County with the 4 deaths and 4 of the injuries occurring from the tornadoes on April 27, 2011. There were no recorded deaths or injuries for the tornadoes between 2014 and 2020.

On April 27th, 2011, at least 28 tornadoes touched down in central Alabama, causing over a thousand injuries and 248 deaths within the state. A tornado with an EF-1 rating touched down in Fayette County in the early morning of April 27, lasting eight minutes and traveling 7.3 miles and causing significant damage to the town of Berry. This tornado injured four people. The second tornado, rated an EF-4, ripped through several counties, including Fayette, causing severe damage. A third tornado, rated EF-3, struck Fayette County destroying trees, a house, and outbuildings. Four people died in Fayette County as a result of these tornadoes.

One of the most damaging single tornado events occurred November 24, 2001. What was the longest tornado of the day began at 10:55 AM about two-tenths of a mile inside Pickens County, about 5.8 miles southwest of Kennedy. The tornado traveled across southeastern Lamar County damaging or destroying a number of structures south and east of Kennedy. The tornado traveled on a northeast track moving into Fayette County at 11:07 am. It went across the western and northern sections of the City of Fayette, doing serious damage to a number of structures.

From the City of Fayette, the tornado traveled across mostly rural areas damaging structures and downing numerous trees and power lines. The tornado crossed into Walker County at 11:41 am, south-southwest of Carbon Hill before ending. The total path length has been estimated at 38.9 miles with a Fujita-scale rating high of F3. The tornado began with F0 damage in Pickens County, but strengthened to F3 intensity in southern Lamar County. It weakened some as it moved across Fayette County where the Fujita rating was an F2. The path was 300 yards wide in Lamar County, but was estimated to have decreased to about 90 yards wide across much of Fayette County. Two people were killed in a mobile home in Lamar County just southwest of Kennedy, and one person was injured. No deaths or injuries were reported in Pickens, Fayette, or Walker counties.

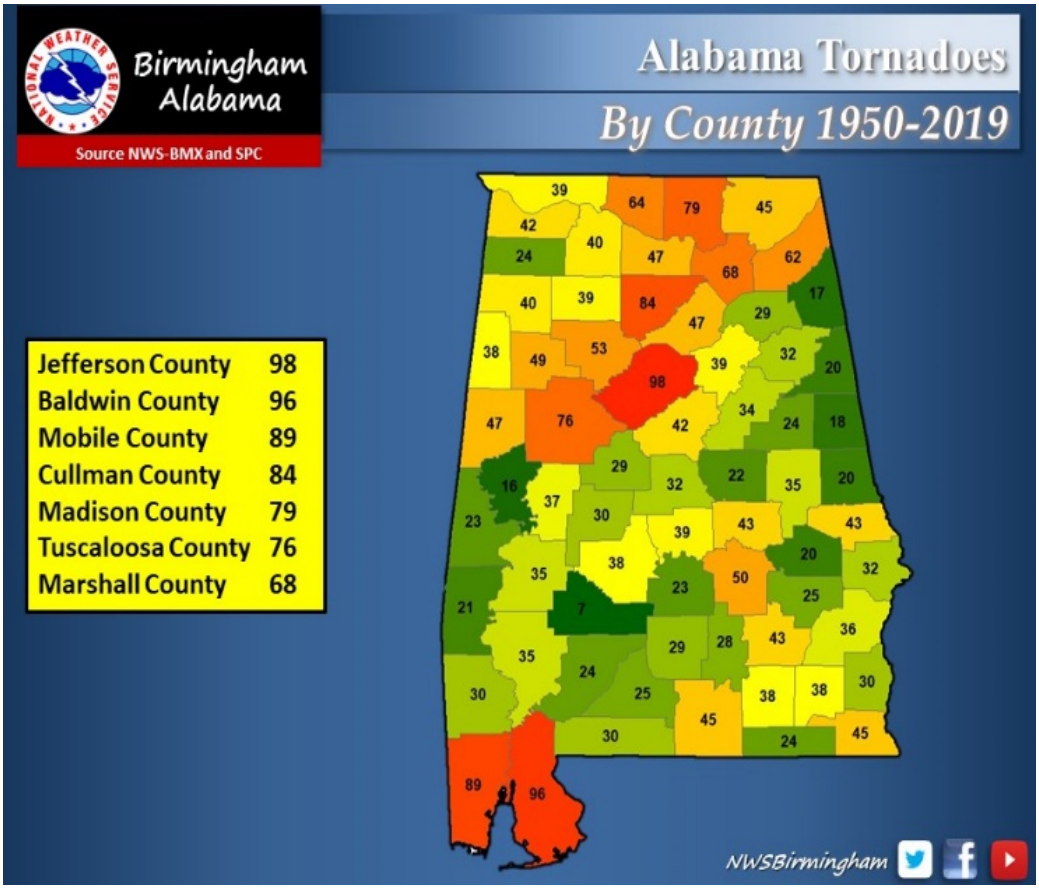
Probability of Future Tornado Events

Even though tornadoes are known to be unpredictable in location, frequency, and intensity, based on past records, Fayette County will experience tornadic activity at some point each year. Springtime is the most likely time for tornadic activity followed by a historical spike in November. There has been discussion in meteorological circles that climate change may result in future increases of tornado events in the southeast. Jeff Trapp, a professor of atmospheric science at Purdue University indicates that, “while it's unclear how the intensity or frequency of tornadoes will increase, there may be more days featuring conditions ripe for twisters. We would see an increase in the number of days that could be favorable for severe thunderstorm and tornado formation. The tornado season, which varies by region, could be expanded".

Based on historical data, Fayette County can anticipate continued annual tornadic events causing minor structural damage. Map 5-3 shows that Fayette County has the 12th highest number of recorded tornadoes in Alabama. According to the Alabama State Plan, Fayette County ranked 17th when ranking the counties according to property damage caused by tornadoes between 1950 and 2017.

As with severe storms, public awareness about preparing for tornadic events and the availability of shelters, and dependable warning systems are necessary to lessen the impact of these types of hazards. More information about mitigation measures that can be enacted can be found in Chapter Six – “Mitigation Strategy”.

Map 5-3. Alabama Tornadoes by County 1950-2019



5.3.3 Floods

Fayette County is comprised of 2 square miles of water, 0.27% of its territory. Due to this statistic combined with its extensive undeveloped land, the Hazard Mitigation Planning Committee considers flooding a low to moderate concern to Fayette County communities.

Flooding in Fayette County involves either flash floods or riverine floods. Flash floods are instances where heavy rainfall over-saturates the ground and overwhelms drainage infrastructure meant to carry rainwater away. This type of flood comes on quickly, often in less than 6 hours, and the waters can move very fast which can be dangerous. Flash floods can occur in any location at any time of year and can cause damage to roads, property, and even injury or death. Records show that occasional storm bursts exceeding four inches of rain in a short period of time can force evacuations of homes, road and bridge closings, damage to vehicles, and flooding of buildings.

Riverine flooding usually occurs when very intense or prolonged rainfall cause the waterways of the county to exceed their capacity. It can also be caused by the failure of a dam, as discussed under the section “Dam Failure”. Fayette County experiences riverine flooding, primarily along local streams and tributaries of the Sipsey River and Luxapallila Creek.

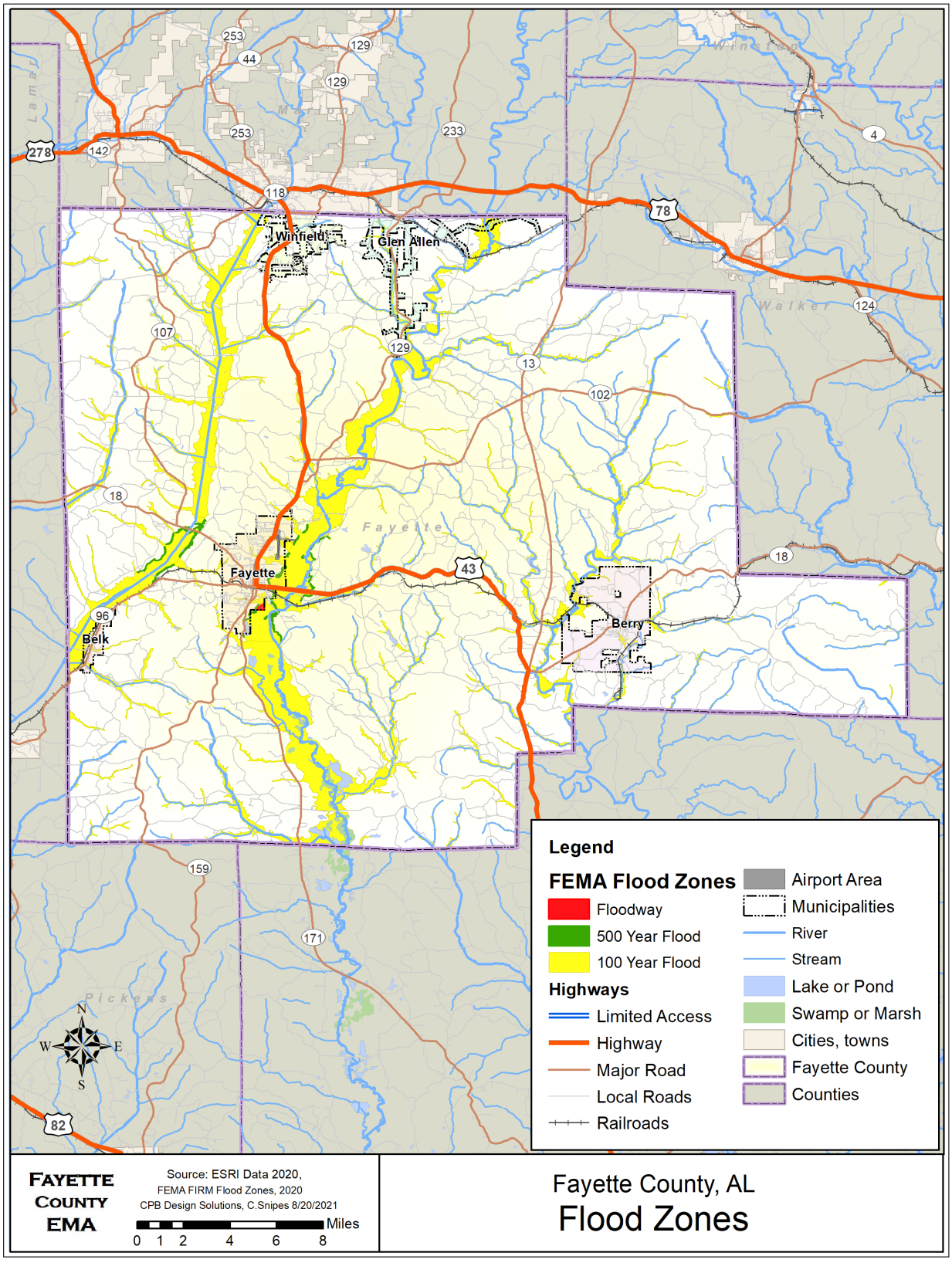
Location of Potential Floods

Flash floods are not limited to or restricted by low lying areas or areas that are considered floodplains; they are common and occur equally throughout the county as rain falls too quickly to be absorbed by the ground and overwhelms storm drainage systems. Impervious surfaces and saturated areas increase the possibility of flash flood events as does poorly maintained drainage systems.

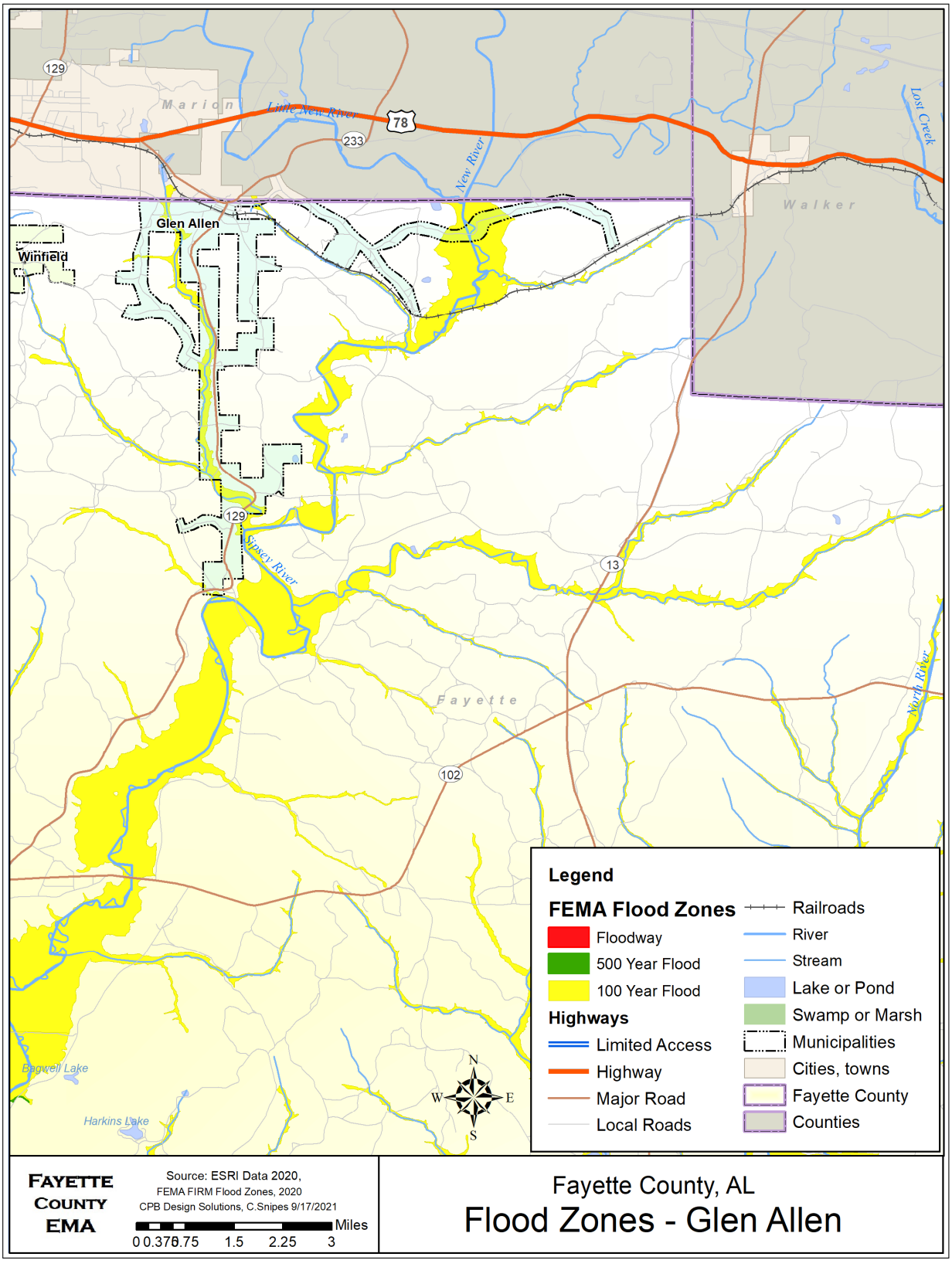
Map 5-4 "Fayette County Flood Zones" shows the location of the 100-year and 500-year flood zones which mainly run in a north/south direction in the central and western portion of the county either emanating from the Sipsey River or Luxapallila Creek and their tributaries. Maps 5-5 through 5-9 show the flood zones for Glen Allen, the City of Fayette, Belk, and Berry respectively. The only floodway in Fayette County is located in the southeastern corner of the City of Fayette as shown on Map 5-7. As can be seen on the maps, the 500-year flood zones run along the eastern border of the City of Fayette and a portion of Luxapallila Creek.

Map 5-10 shows the topography of Fayette County around Luxapallila Creek and the Sipsey River. Map 5-11 shows a closer view of the Sipsey River south of the City of Fayette. As shown on the maps, most of the area around the Luxapallila and Sipsey is undeveloped land, used mainly for agriculture, timber production, or hunting. Although there are areas of significant 100-year flood zones, the lack of development in those areas result in limited flood related issues.

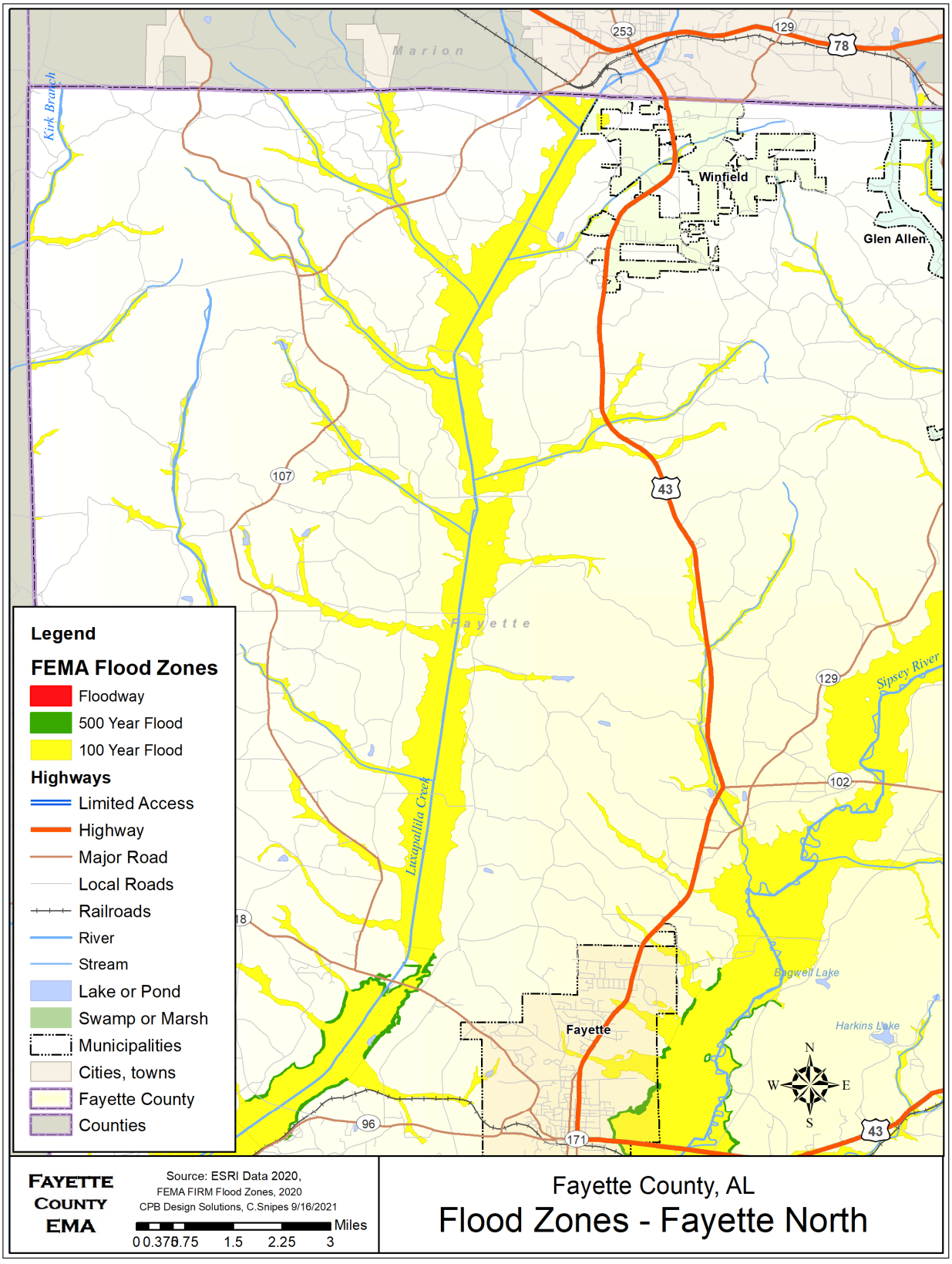
Map 5-4. Fayette County Flood Zones



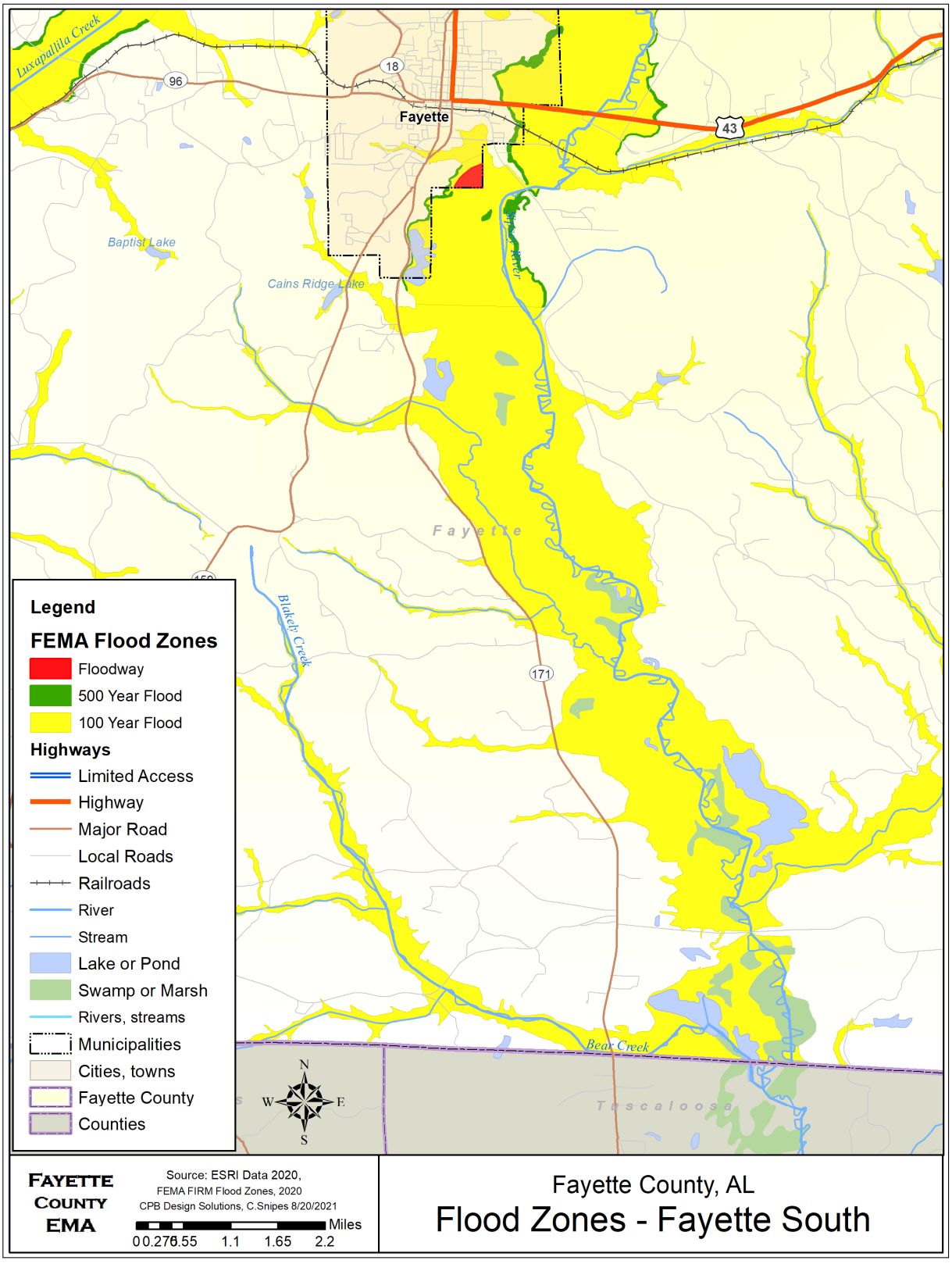
Map 5-5. Town of Glen Allen Flood Zones



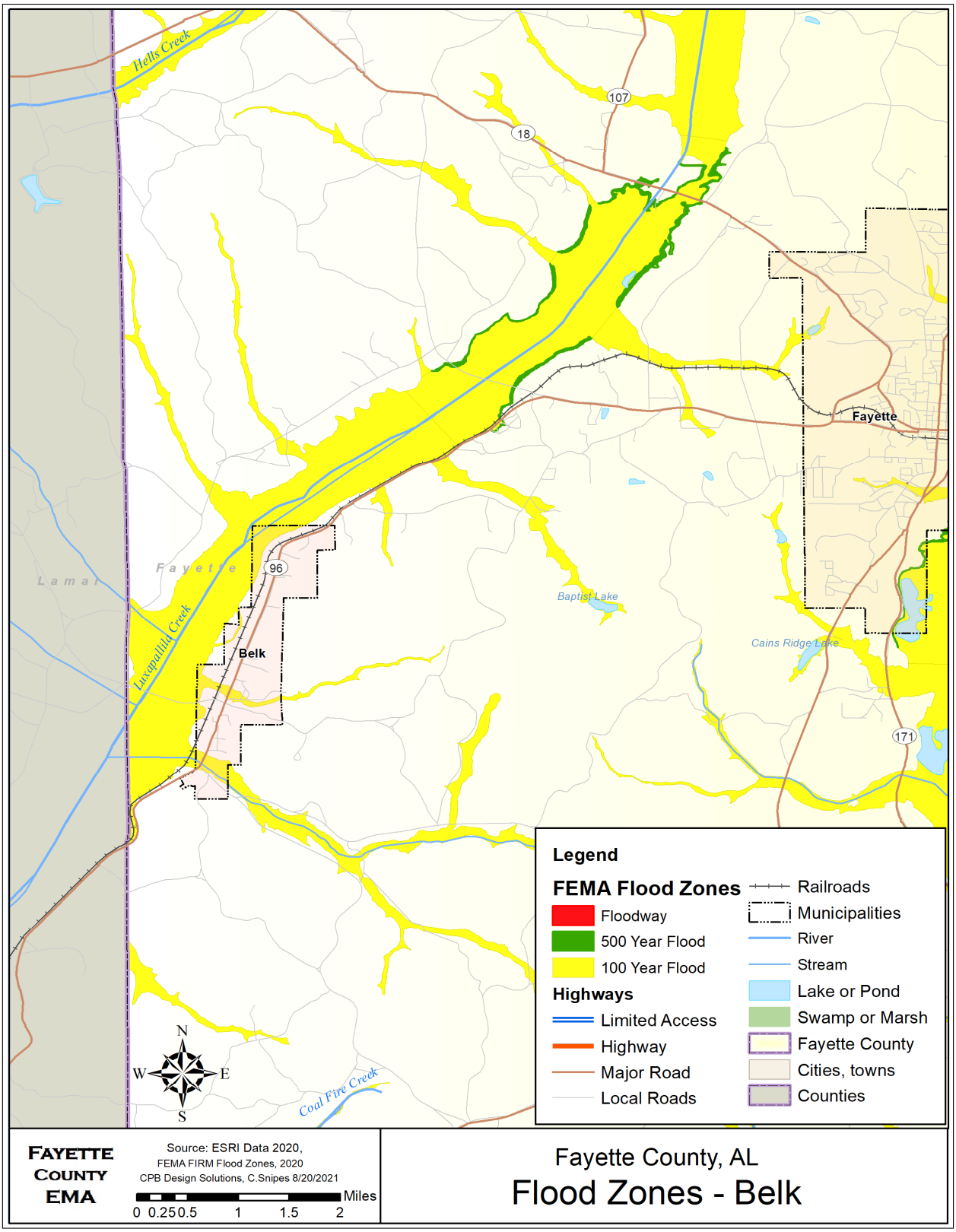
Map 5-6. City of Fayette (North) Flood Zones



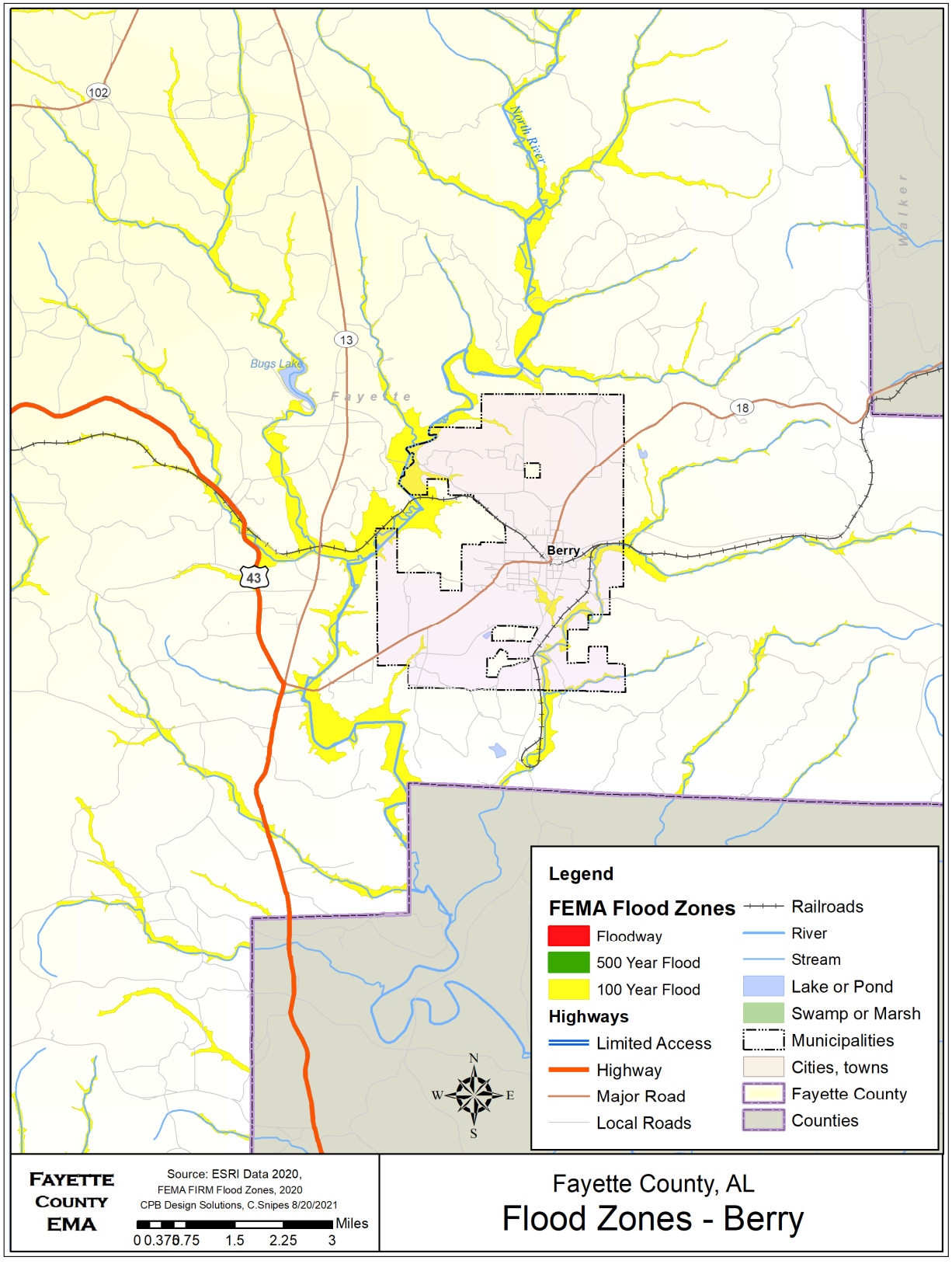
Map 5-7. City of Fayette (South) Flood Zones



Map 5-8. Town of Belk Flood Zones



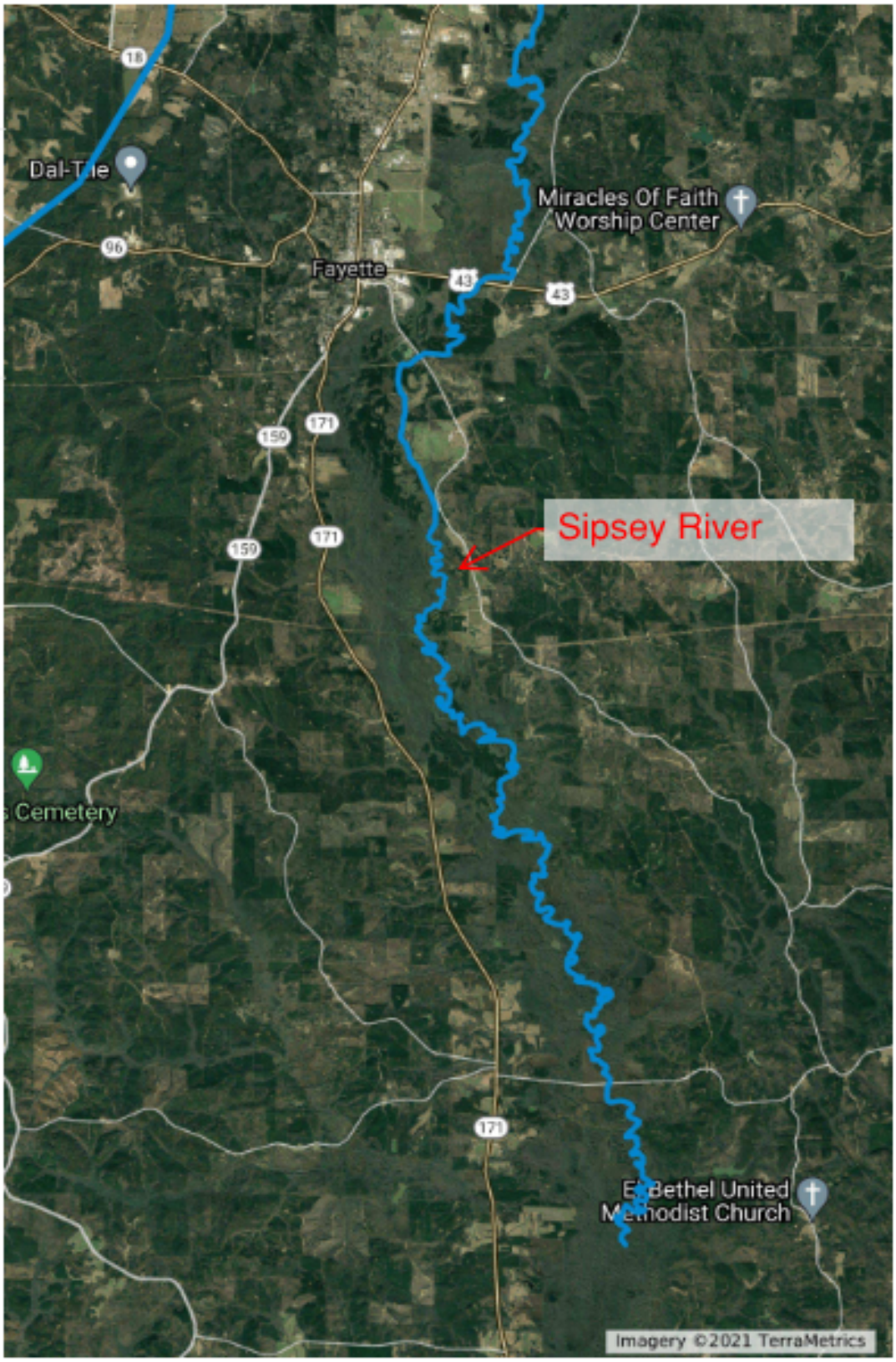
Map 5-9. Town of Berry Flood Zones



Map 5-10. Luxapallila Creek and Sipsey River Surrounding Topography

© Google Maps

Map 5-11. South Portion of Sipsey River Surrounding Topography



© Google Maps

Extent and Intensity of Potential Floods

There are three main river basins within Fayette County. They are the Luxapallila, Sipsey and Upper Black Warrior River Basins. Most of the rivers and tributaries throughout the county drain into one of these three basins. Some also empty into the Middle Tombigbee-Lubbub, Lower Black Warrior and Mulberry Fork Basins. Map 5-12 shows Fayette County with the 3 main basins delineated.

There are two main flooding sources in Fayette County as indicated in the Flood Insurance Study of 2010. They are the Sipsey River and Luxapallila Creek. The flood depths for these flooding sources along with other tributaries per HAZUS are included on Maps 5-13 through 5-18. The maps also show which basin is impacted by the different waterways.

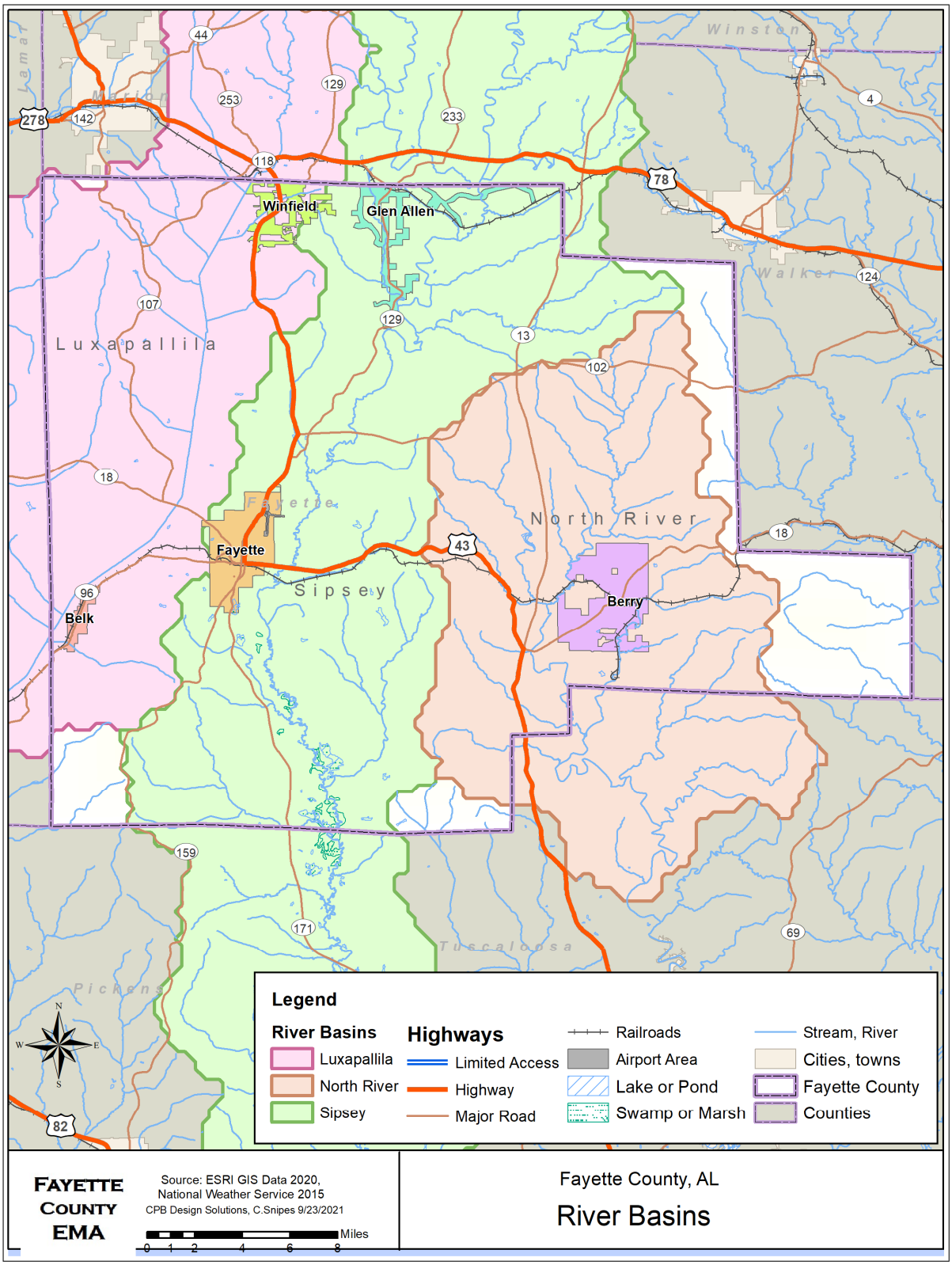
The extent of riverine floods varies according to the amount of rainfall, the rate of storm water flow, and the capacity of the receiving channel to discharge flood waters. Due to the straightening and deepening of Luxapallila Creek by the Army Corps of Engineers, the water within the Luxapallila moves efficiently through the channel and seldom breaches its banks. The Sipsey River has not been altered by the Army Corps and therefore retains its original shape, winding its way across the county often doubling back on itself resulting in a wider floodplain footprint than that of the Luxapallila. The Sipsey is considered a swampy, low-lying river which lends itself to be easily backed up due to downed trees, beaver dams, and similar obstructions.

Due to what Russ Taylor, Fayette County EMA Director, calls "generational mitigation techniques", there are limited impacts due to riverine flooding within Fayette County. Taylor defines generational mitigation techniques as mitigation measures that are taken by each generation, such as not building where they know it will flood. Due to the knowledge of such areas being passed from generation to generation, development within those areas is almost non-existent.

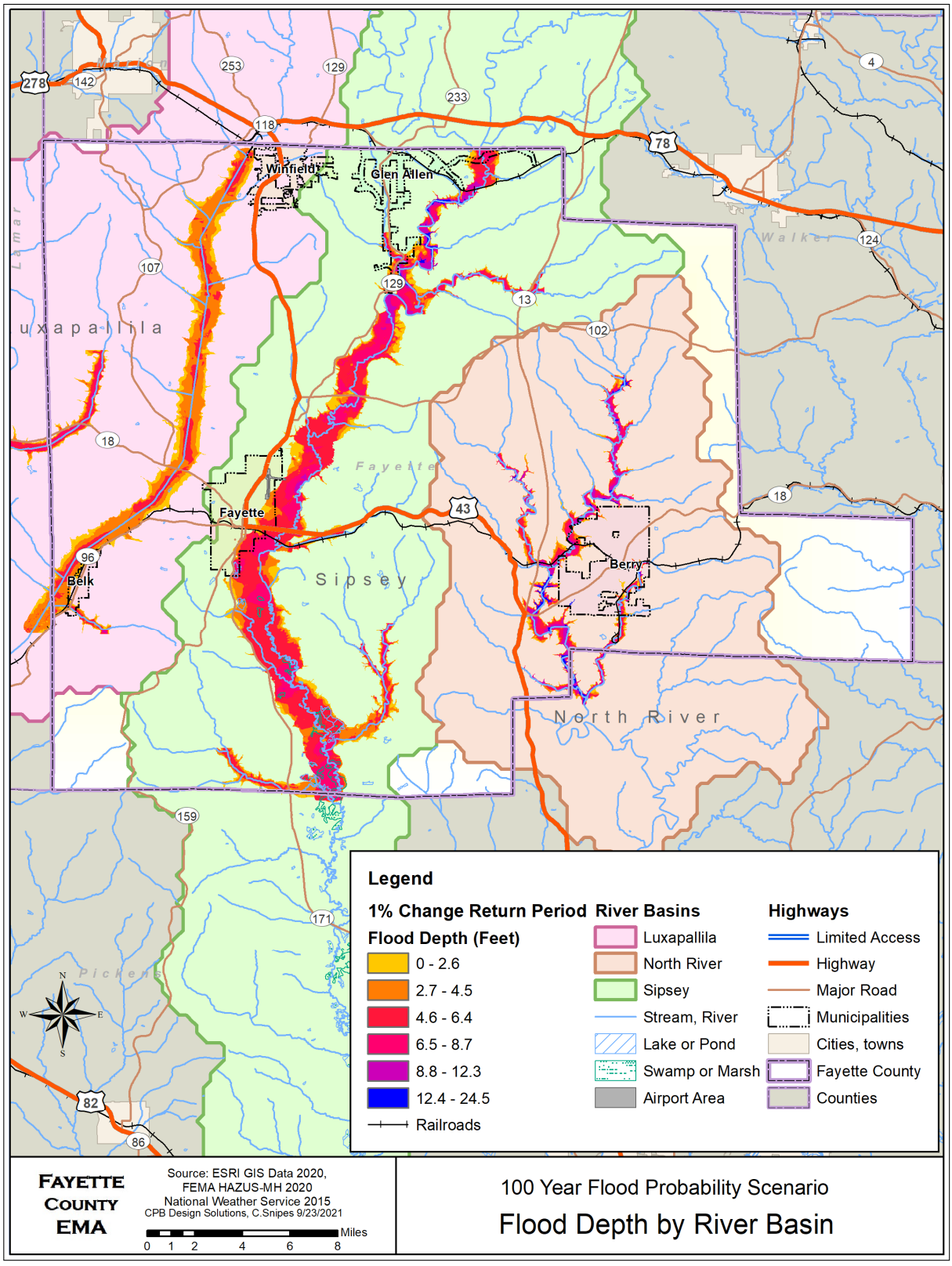
Flash flooding events can vary in intensity depending upon the amount and rate of precipitation that falls during a period of time, where the rainfall occurs, and the quality of the drainage system. The effects of a flash flood could range from several inches of water on the road which requires caution when driving to an event of rushing water that floods buildings and sweeps cars away.

Possible impacts from floods in Fayette County include loss of life; property and infrastructure damage; crop damage; and dam failure. Other impacts from flooding include rising water levels that can quickly sweep people along in its path; rapidly moving water destroying anything in its path, leaving hazardous mold and conditions ideal for insect breeding; periods of standing water killing inadaptable plants; flowing water removing sediment and nutrients from the soil; and breached dams allowing water to flood into the surrounding floodplain, resulting in destruction of crops and property.

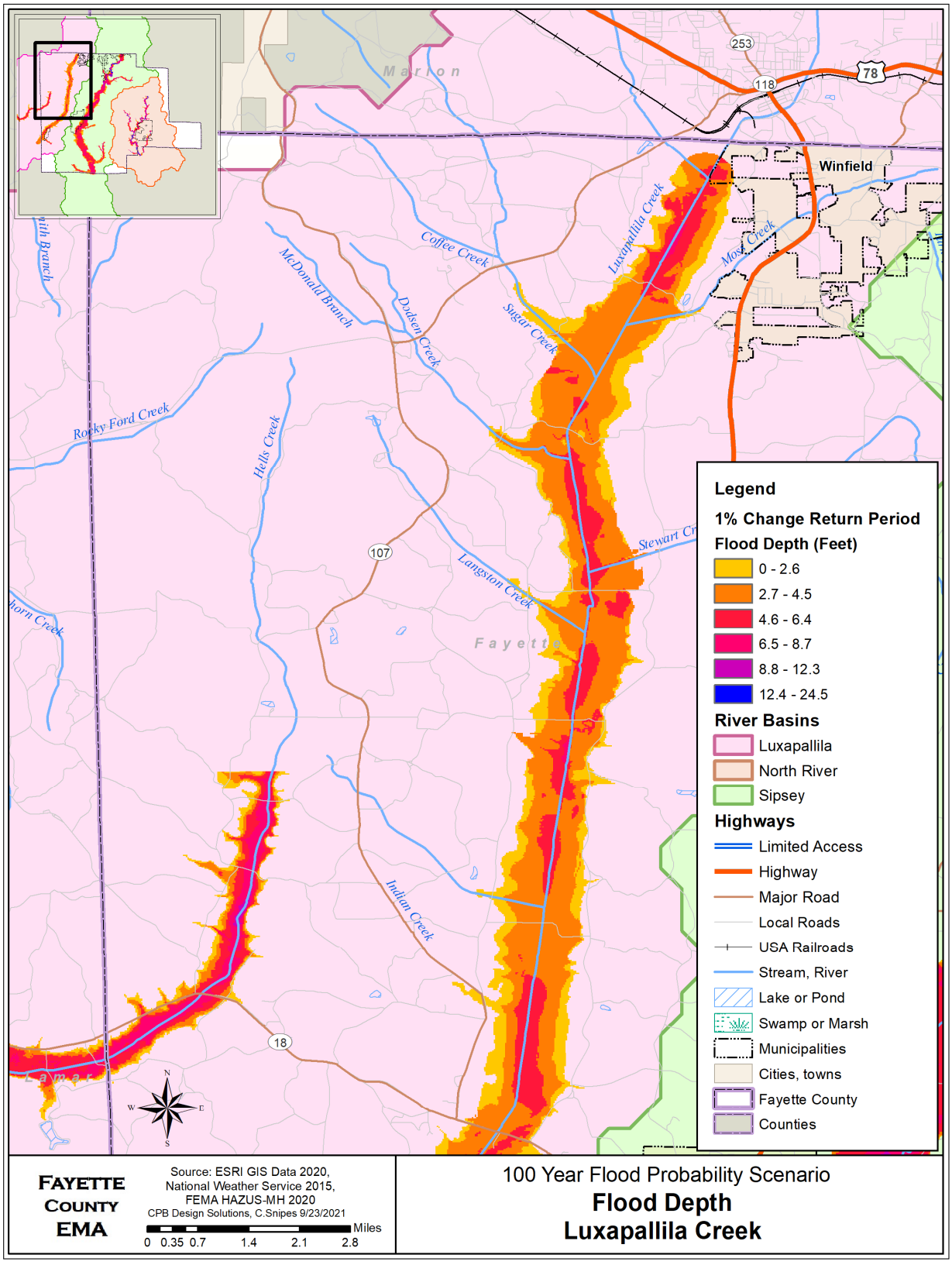
Map 5-12. River Basins of Fayette County



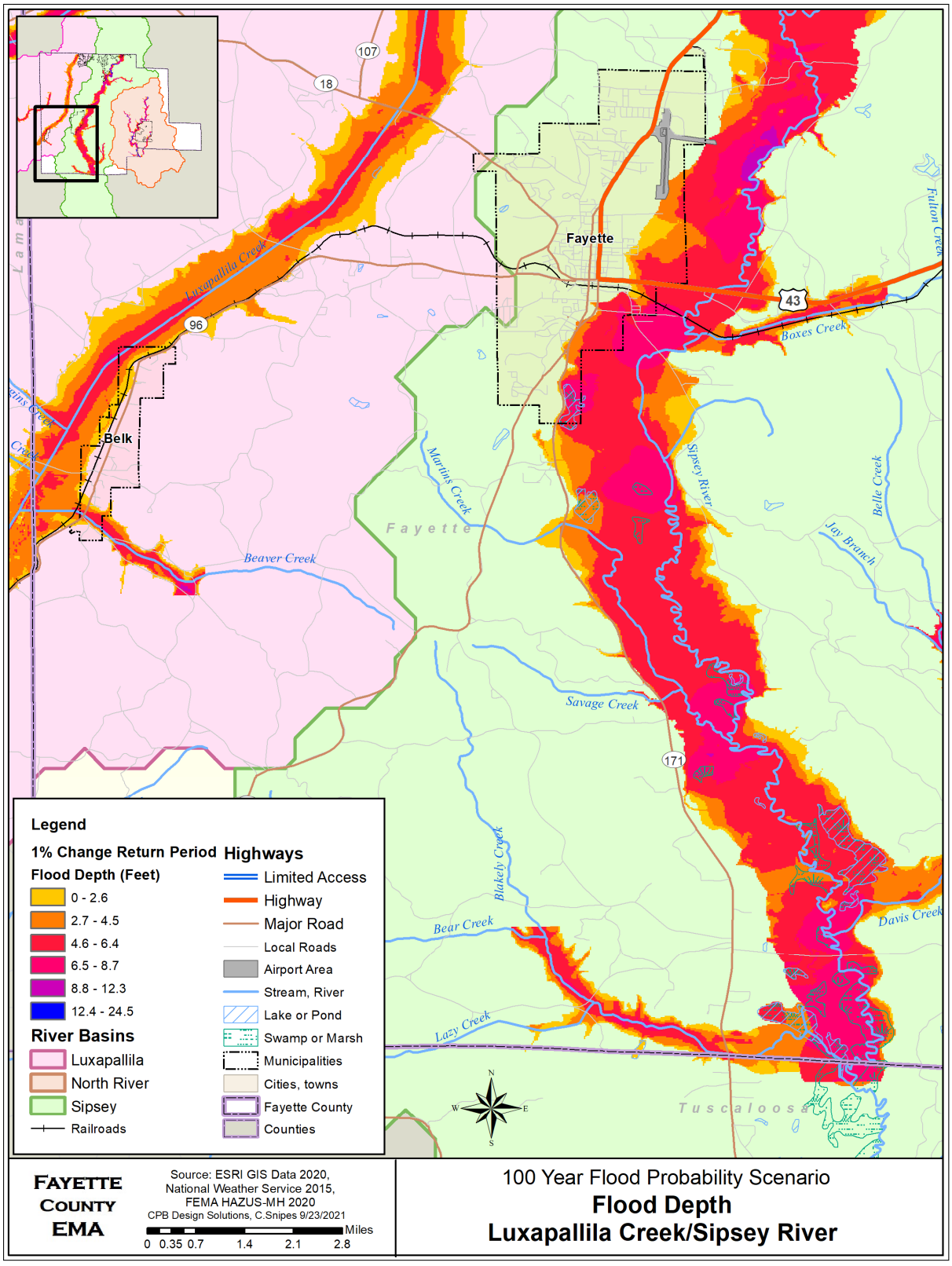
Map 5-13. River Basins of Fayette County - Flood Depths



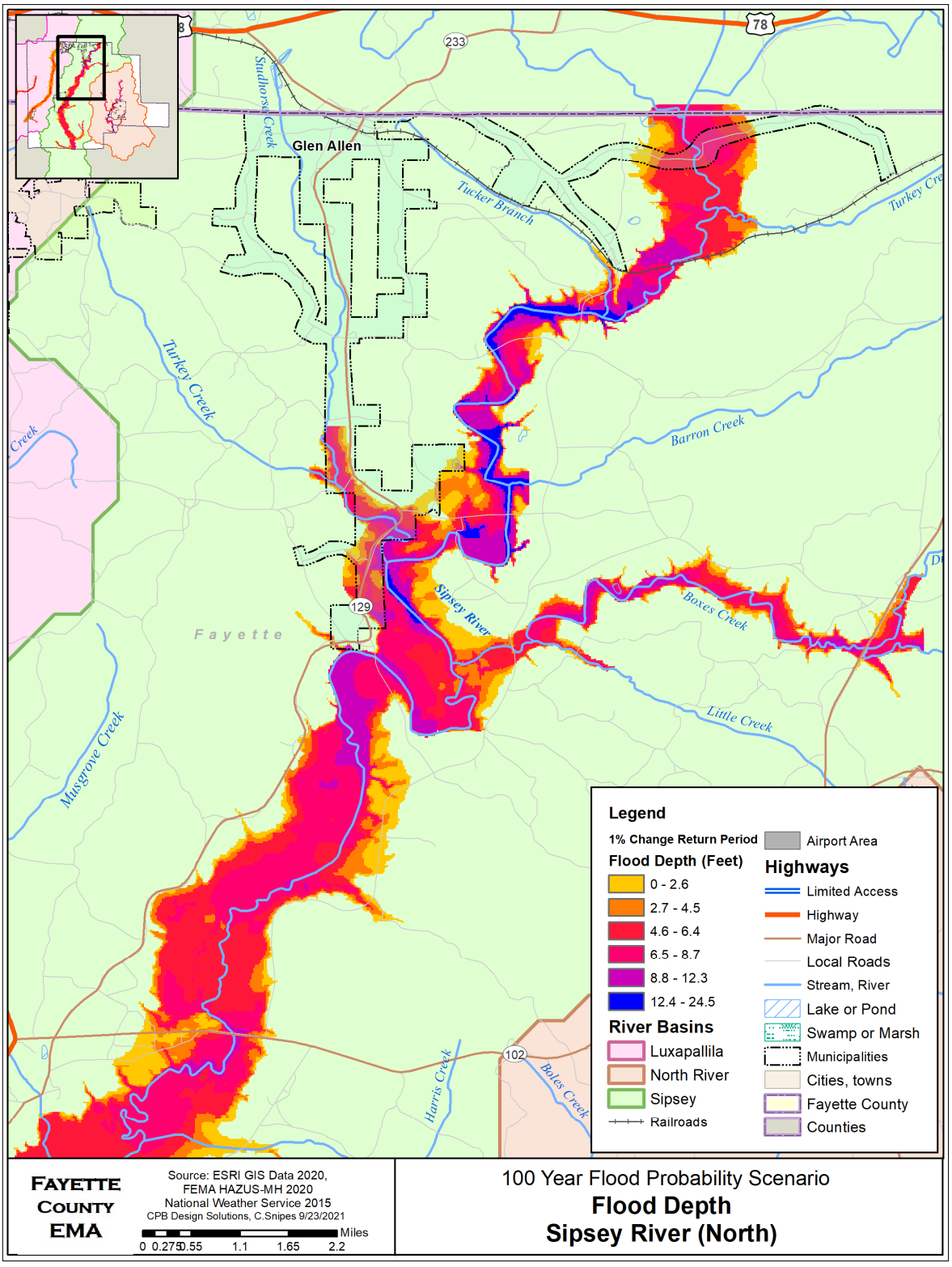
Map 5-14. Flood Depths -Luxapallila Creek (North)



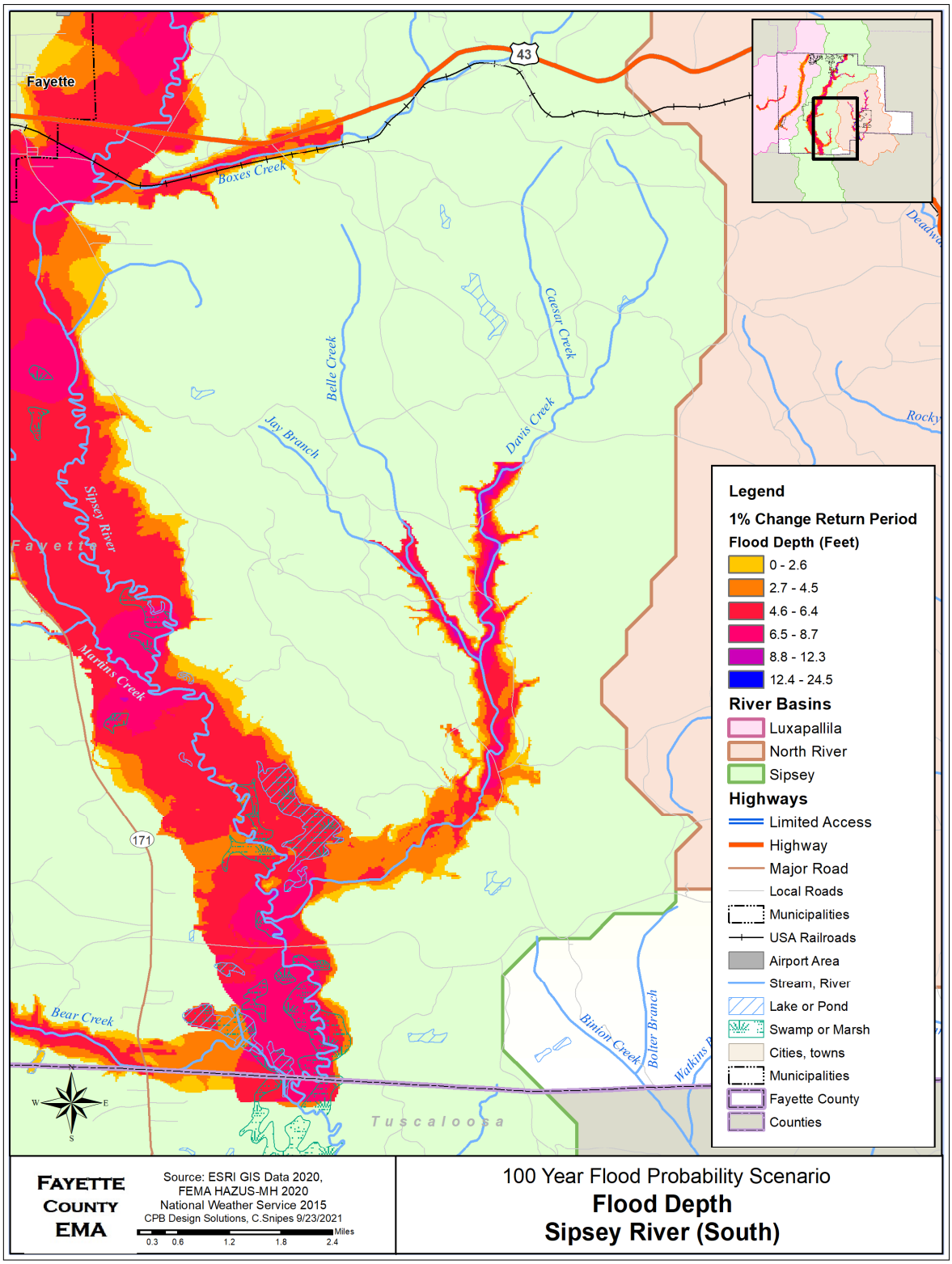
Map 5-15. Flood Depths -Luxapallila Creek (South) and Sipsey River (South)



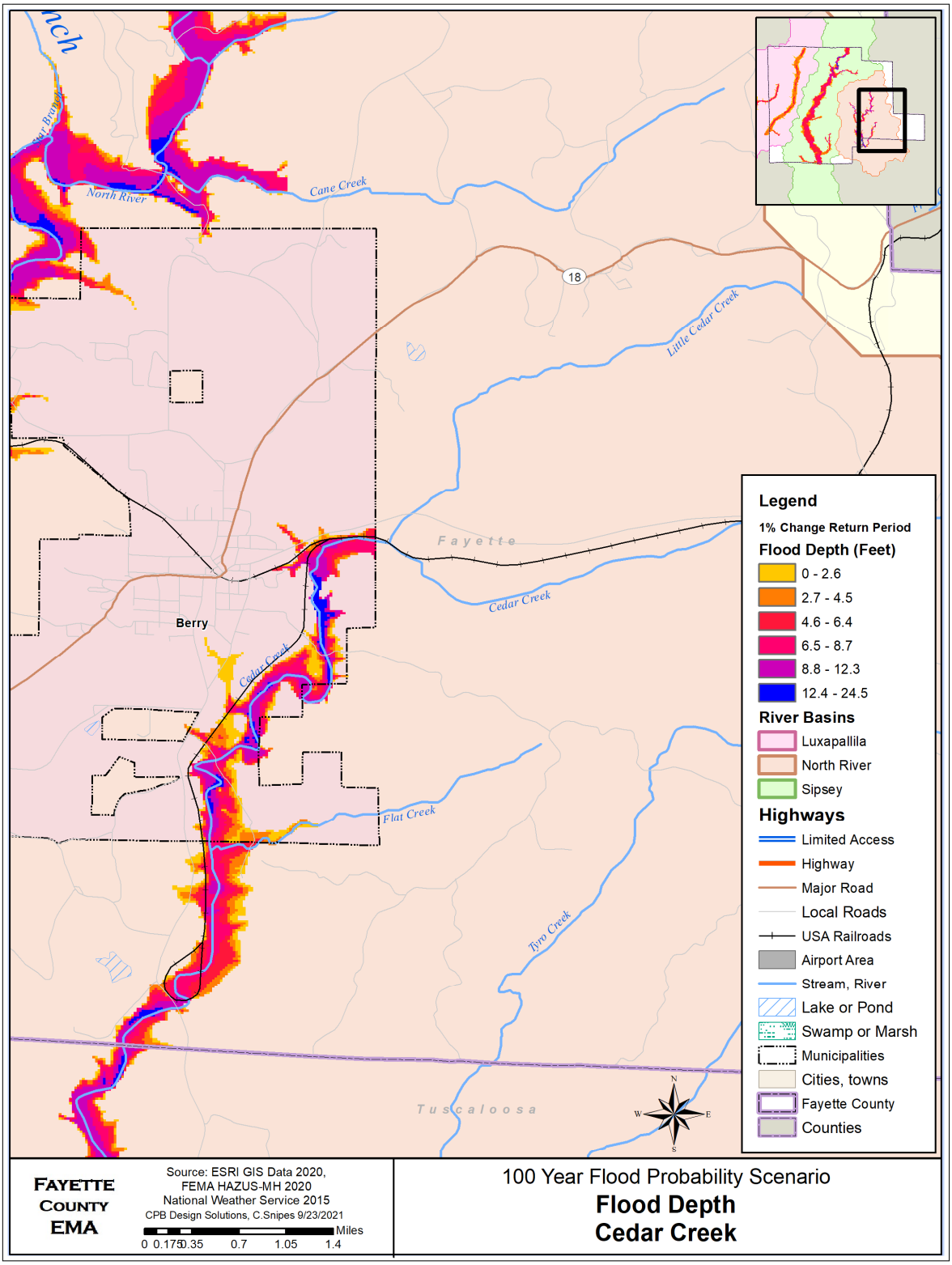
Map 5-16. Flood Depths -Sipsey River (North) and Boxes Creek



Map 5-17. Flood Depths -Sipsey River (South) and Tributaries



Map 5-18. Flood Depths -Cedar Creek



Previous Occurrences of Floods

Flash flooding is the main type of flooding that occurs in Fayette County. This is largely due to inadequately sized, poorly maintained, or dated drainage systems. Some systems have not been upsized to compensate for increases in runoff due to impervious surfaces; other systems are not properly maintained, allowing buildup of materials within storm drains or ditches; while other drainage systems have exceeded their years of viability and have not been replaced since they were built resulting in collapsed pipes and culverts causing the backup of water and results in overtopping the roadways causing washouts and damage to culverts. The municipalities, county, and state perform some level of maintenance on their ditches and drainage systems; however, resources are limited, and many structures are in need of replacement.

According to the Alabama State Plan, Fayette County is 57th in reported floods between 1996 and 2017 with 11 floods reported, which averages to approximately 1 event every two years. Table 5-6 shows the events between 2010 and 2020 listed in the NCDC hazard events tables. Events from prior years can be found in Appendix E.

Table 5-6. Flood Events, 2010-2020

Year	Type	Event Narrative
3/9/2011	Flash Flood	Several streets were flooding in they Fayette area.
4/20/2011	Flash Flood	Flooding was observed across the northern portions of Fayette County, described as where flooding had not been observed in a long time.
5/8/2012	Flash Flood	Heavy rainfall resulted in water 6 inches deep across streets in downtown Fayette.
7/4/2013	Flash Flood	A culvert was washed out on Jackson Robertson Road, just off of Sand Springs Road.

Source: National Climatic Data Center, 2020

Although flooding was not included in the NCDC data, there were reports of damage to roadways in the county and the city of Fayette. In 2020, Fayette County was included in the FEMA-4546-DR for Public Assistance due to flooding that occurred between February 5th and March 6th. The main flooding areas in the past have involved the following roadways: County Roads 21, 36, 79, and 83. Other trouble areas include Bluewater Trace, Rushing Road, Providence Street, Maddox Road, Lakeview Circle Drive, McDonald Road, and west of Main Street between 2nd and 3rd Avenues. In order to address these issues application to FEMA has been submitted to improve culverts in the area and the installation of a retention pond.

Probability of Future Flood Events

Past trends indicate that periods of heavy rainfall can create flooding throughout Fayette County. Fayette County should expect approximately one flood event every 2 years, with the severity of damage varying from one year to the next. The occurrence of 100- and 500-year flood events are unlikely, with damages expected to be minimal.

With respect to climate change, an increase in temperature and moisture in the air can lead to heavier precipitation events: however, the causes of flooding are varied, including improper land uses on floodplains, surface paving, and the quality of storm drainage systems. The extent of damages can also vary dependent upon quality of flood forecasting, settlement patterns, warning systems, and citizens' adherence of the recommendations of authority with regards to the flood warnings.

As long as the citizens' situational awareness and due diligence continues to direct the development of the county around the flood areas, impacts from flooding should remain at a very low level. Measures include maintenance of existing systems and proper planning for future developments such as the construction of curbs and storm sewer projects to reduce the flooding and rerouting flood waters to uninhabited locations as the City of Fayette has done in the past.

While there are some mitigation measures the jurisdictions can do, some causes of flooding might require outside help to rectify, possibly through state regulation since the county's hands are tied on many measures due to their lack of home rule. Such measures include regulation in regard to the placement of fiber optic cable. The shallow placement of cables inhibits the proper maintenance of ditches. When county crews perform maintenance on the ditches, many cables become damaged and therefore the proper depth for the ditches cannot be maintained. Regulations for utilities in rural counties such as Fayette must be enacted at the state level. More mitigation measures in relation to floods can be found in Chapter Six – "Mitigation Strategy".

5.3.4 Droughts

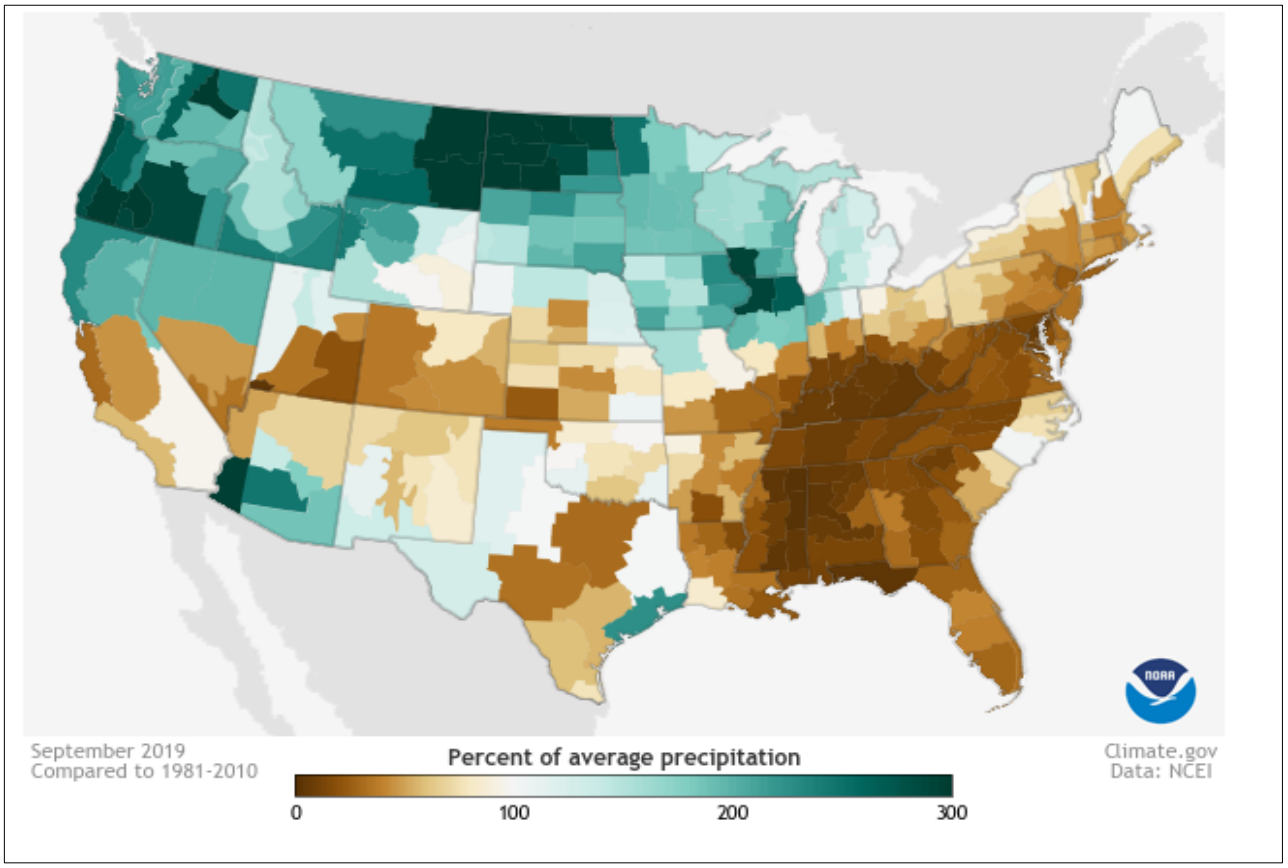
A drought is an event of prolonged shortages in the water supply, whether atmospheric, surface water or ground water. A drought can last for months or years and can be declared after as few as 15 days. It can have a substantial impact on the ecosystem and agriculture of the affected region, harm to the local economy, and increase the risk for wildfires. Periods of heat can significantly worsen drought conditions by hastening evaporation of water vapor. After severe drought, erosion and landslides often occur because when it rains the vegetation has died and will not hold soil.

Agriculture-related disasters and disaster designations are quite common during times of drought. Many counties in the United States have been designated as disaster areas in the past several years, even in years of record crop production. Livestock is affected because there is no healthy land to graze on, and farmers are forced to use hay that was intended as winter feed.

A drought phenomenon known as "flash drought" occurred in September 2019. The September flash drought impacted all of the southeastern states. Generally, droughts are caused by a lack of precipitation over an extended period of time. In contrast, a flash drought is preceded not just by a lack of rain, but also very high temperatures and/or an extensive number of sunny days. Even if the dry period is not especially severe, the very high temperatures combined with the abundance

of sunny days can pull moisture from the ground quickly. NOAA National Weather Service's Climate Prediction Center defines a flash drought as "an event during which an area experiences degradation by two or more drought categories in a four-week period, based on the U.S. Drought Monitor." Map 5-19 shows the areas impacted by the flash drought of September 2019 and Table 5-7 delineates drought classifications as outlined by the US Drought Monitor.

Map 5-19. Areas Impacted by the Flash Drought of September 2019



Precipitation anomalies represented as a percent of average precipitation for the United States during September 2019. Brown areas refer to areas with below-average amounts of precipitation while green-blue represents areas with above-average monthly precipitation. During September, record-breaking dryness enveloped the southeastern United States stretching into the Tennessee and Ohio Valleys. A flash drought occurred as a result. Climate.gov image using data from the National Centers for Environmental Information (NCEI).

Table 5-7. US Drought Monitor Classifications

Category	Description	Possible Impacts
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
D1	Moderate Drought	Some damage to crops, pastures
		Streams, reservoirs, or wells low, some water shortages developing or imminent
		Voluntary water-use restrictions requested
D2	Severe Drought	Crop or pasture losses likely
		Water shortages common
		Water restrictions imposed
D3	Extreme Drought	Major crop/pasture losses
		Widespread water shortages or restrictions
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses
		Shortages of water in reservoirs, streams, and wells creating water emergencies

Location of Potential Droughts

Droughts occur countywide, affecting all Fayette County jurisdictions equally. Some areas may be more susceptible to the ill-effects of drought such as agricultural areas and areas with vulnerable water supplies. During 2016, 2017, and 2018, Fayette County was included in the Secretarial Disaster Designations by the Secretary of Agriculture. By designating a county as either a primary or contiguous disaster county, emergency loans can be made available to the agricultural producers suffering losses. Other emergency assistance programs have used the designations to trigger eligibility for their disaster assistance programs such as the Farm Service Agency disaster assistance program.

Extent and Intensity of Potential Droughts

Droughts in Fayette County cause problems for the agriculture industry and can lead to infrastructure issues due to excessively dry ground. The dry ground can cause cracks and potholes in roadways which cause transportation issues and the lack of support around water distribution piping can lead to the pipe shifting and breaking causing water disruption. The impact on the livestock and crops can be devastating both economically and to the animals. The dry vegetation is a perfect condition for wildfires to spread very quickly. A water supply shortage will result in damage to the

sewer system, a lack of hydroelectric power causing brownouts or blackouts, and the necessity for water to be transported into the area.

Previous Occurrences of Potential Droughts

The flash drought of September 2019 was a significant event. Throughout the summer, temperatures were slightly warmer than average and summer precipitation across much of the Gulf was slightly below average. At the same time, rainfall amounts along the Mississippi and Missouri Rivers into the Tennessee Valley were much higher than average. Then, due to a lack of rain from tropical storms and hurricanes, Alabama saw its temperatures soar and record the driest September in the last 125 years.

On October 22, 2016, a drought emergency was declared due to a review of current and anticipated conditions and reported impacts, including rainfall, streamflow, reservoir, and ground water levels. The combination of little rainfall, above normal temps, falling reservoir and ground water levels were mitigated with water conservation. The drought rating from October to December 2016 was D3 and from January through April 2017 was a D2. This drought continued until May of 2017. The winter months of November, December and January of that time were exceptionally dry; the driest of any months between January 2015 and December 2020. Water conservation efforts were employed to try to mitigate the effects of the drought. Table 5-8 shows a breakout of the drought intensity rating during this period.

Table 5-8. Annual Summary of Drought, Fayette County, 2016-2017

Date	Event	Information
10/18/2016	Drought	Extreme Drought Conditions (D3) developed.
11/1/2016	Drought	Drought intensity stayed at Extreme (D3).
12/1/2016	Drought	Drought classification remained at (D3) Extreme.
1/1/2017	Drought	Above normal rainfall helped reduce the drought intensity from a D3 to a D2.
2/1/2017	Drought	Below normal rainfall and above normal temperatures maintained the drought intensity at D2.
3/1/2017	Drought	Near normal rainfall during the month of March maintained the drought intensity at D2.
4/1/2017	Drought	Near normal rainfall during the month of April maintained the drought intensity at D2.
5/1/2017	Drought	Significant rainfall during the month of May lowered the drought intensity to a D1 category.

The most significant drought event in the state occurred in 2007. With drought conditions carrying over from 2006, by late spring of 2007 the drought moved up to a D4 Exceptional Drought intensity ranking, the highest intensity, which is characterized by widespread crop and pasture losses, wildfires, and severe shortages of water resources in reservoirs, streams, and wells. This drought was

so severe and widespread that it affected almost the entire southeastern United States. Drought conditions continued through the end of 2008. As a result of this extended period of drought, crop yields were disappointing, livestock suffered because ponds and wells dried up, trees became brittle and weak causing them to snap more easily during storms, lake and river levels fell leaving boats stranded on land and making waterways throughout the South impassable. Lawns across the county dried up and died as water restrictions were put into place. The Exceptional Drought intensity rating persisted throughout 2008 until being lifted on December 16, 2008. State Agriculture Commissioner Ron Sparks referred to this event as the worst drought in 30-40 years.

Probability of Future Drought Events

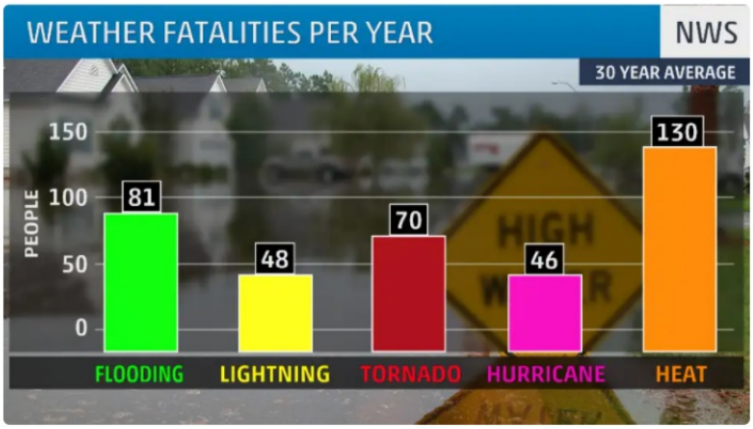
All of Fayette County is susceptible to drought and therefore this hazard is a legitimate issue for Fayette County that is likely to occur in the future. Drought can occur anytime of the year, as can be seen by the severely dry months of November - December 2016, and January 2017. While there is no way to prevent a drought from occurring, certain measures can be taken to better prepare the citizens for such events. Public awareness and planning efforts, especially in relation to water resources, are vital in lessening the impact of drought. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken to address drought and its impact.

5.3.5 Extreme Heat

Extreme heat is when there are 2 or more consecutive days with temperatures of 10°F or more above the average during the summer months. For some regions, temperatures above 90°F with high levels of humidity and a high heat index constitute extreme heat conditions. Heat waves are extended periods of extreme heat.

According to NOAA, the number one weather related killer in the US between 1986 and 2015 was extreme heat. As shown on Chart 5-3, the 30-year average for extreme heat related deaths was 130 per year followed by a rate of 81 deaths per year for flooding. That is a 60% difference in deaths between the two hazards.

Chart 5-3. Weather Fatalities Per Year, US



Heat has caused the most deaths on an annual basis during the last 30 years (1986-2015). (NOAA)

Location of Potential Extreme Heat

Extreme heat events cover the entire county.

Extent and Intensity of Potential Extreme Heat

Extreme heat is very dangerous for people and animals. It also impacts plants, buildings, roads, and infrastructure. Excessive heat is dependent on location and a person's acclimation to the heat. According to Michael N. Sawka, Ph.D., a physiologist with Georgia Tech, "When temperatures become dangerous varies wildly, based on an individual's acclimation to the climate, dress, exertion level and whether any pre-existing conditions, such as heart disease, are present." The excessive heat can lead to drought conditions and the extremely dry vegetation can contribute to wide spreading wildfires.

Heat Indexes are used to determine the risk of extreme heat events. The heat index is what the temperature feels like to the human body when relative humidity is combined with the air temperature. Table 5-9 shows classification of risk by the Heat Index and its effect on the body. Heat indexes of 90°F and above are dangerous with heat indexes of 103°F and higher extremely dangerous.

Table 5-9 . Heat Index

Classification	Heat Index	Effect on the body
Caution	80°F - 90°F	Fatigue possible with prolonged exposure and/or physical activity
Extreme Caution	90°F - 103°F	Heat stroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity
Danger	103°F - 124°F	Heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity
Extreme Danger	125°F or higher	Heat stroke highly likely

Effects on the agriculture industry within Fayette County, involve crops, livestock, and poultry. Since there is no cooling off period at nighttime during extreme heat events, the crops that rely on cooler nighttime temperatures in order to thrive are negatively impacted. The livestock also require the opportunity to cool off at night and when they are unable to adequately lower their body temperatures, they produce less milk, have slower growth, and have reduced reproduction rates. The poultry in chicken houses can also be greatly impacted from the heat if the cooling mechanisms in place fail. Some chicken houses can hold up to 20,000 chickens and if they are not kept at an acceptable temperature, they will perish.

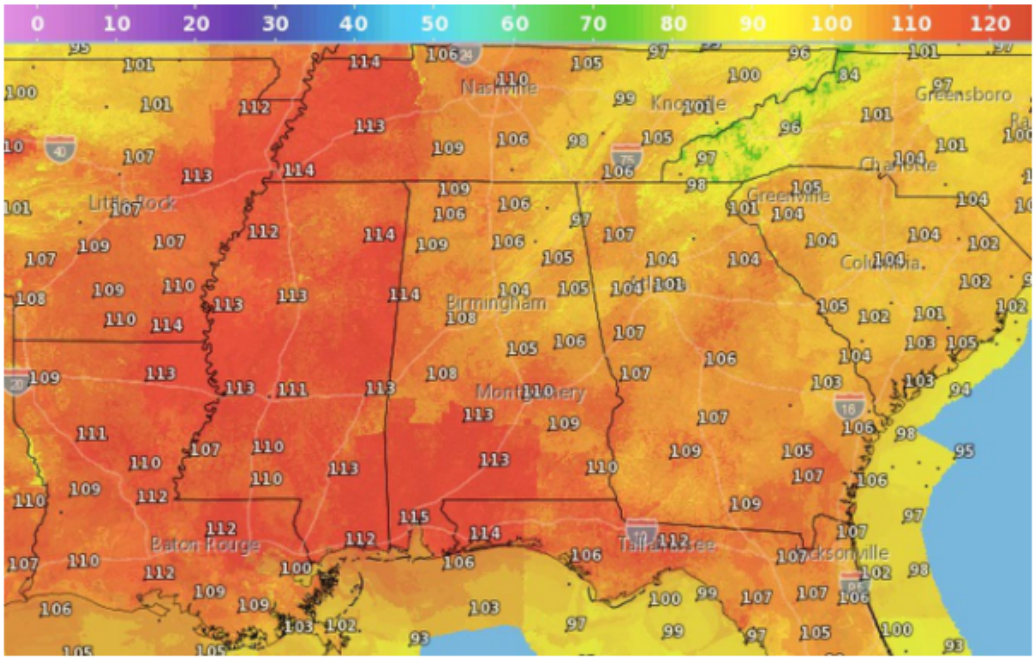
The increased demand for electricity during times of high heat cause stress on the electric grid. This stress can lead to brownouts or blackouts. Also, the increased temperature negatively affects the efficiency of transmission lines. These issues can greatly impact critical facilities, the elderly and those who are electricity dependent for special needs.

Transportation is impacted because, depending on the products used in the construction of the roadways, the roads can "melt" causing them to become soft and sticky. When this happens, vehicles have a greater difficulty in gaining traction to stop, resulting in cars skidding. The railways also encounter structural issues. During times of excessive heat, the rails can expand and distort. If the trains do not reduce their speeds to accommodate for such changes, the trains can derail.

Previous Occurrences of Potential Extreme Heat Events

In June 2015 there was an extreme heat event. Between June 15 and June 24, there was a heat wave that resulted in a heat advisory being issued on June 23, 2015. On August 13, 2019, the heat index reached 104°F in Fayette County. Map 5-20 shows the heat indexes for the southeast on August 13, 2019.

Map 5-20. Heat Indexes for August 13, 2019, Southeastern US



Source: Al.com

Probability of Future Extreme Heat Events

All of Fayette County is susceptible to heat waves. According to the National Climatic Data Center, "scientists know that atmospheric moisture plays an important role in heat waves. They tend to occur more frequently in dry conditions with low humidity, but heat waves in high humidity can

take their toll on the population, livestock, and wildlife." Mitigation measures can be implemented to lessen the effects of extreme heat events such as activating cooling centers, ensuring proper functioning of utilities, and public awareness campaigns. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken to lessen the impact of extreme heat events.

5.3.6 Winter Storms and Extreme Cold

In general, the state of Alabama does not experience winter storms often; however, Fayette County is more likely to experience winter storms than is typical for the state as a whole. These storms are rare and usually mild with light snow or short periods of freezing rain. According to the National Weather Service (NWS), the county receives, on average, 1.3 inches of snowfall annually with about one event per year.

Winter temperatures in Fayette County are generally moderate, with an average temperature of 44.6° F and average minimums at 33° F. Extreme cold temperatures are rare but do occur. These rare temperature lows can result in burst plumbing in homes, burst water distribution pipes under roadways and bridges, and occasional deaths due to lack of sufficient heating or exposure to cold. The lowest recorded temperature of -5° F occurred in 1949. See Table 5-10 for Fayette County winter weather observations .

Table 5-10. Fayette County Winter Weather Observations

Category	Observation
Average Winter Temperature	48° F
Average Winter Minimum Temperature	30° F
Lowest Temperature (January 11, 1949)	-5° F
Average Season Snowfall	1 inch
Largest Snowfall (January 6, 1950)	14.2 inches

Source: SE Regional Climate Center/National Weather Service, 2019

Location of Potential Winter Storms and Extreme Cold

Fayette County and its participating jurisdictions are equally likely to experience winter storms and extreme cold events which may include snow, freezing rains, and extreme temperature lows. All areas of the county are equally exposed to these types of weather events.

Extent and Intensity of Winter Storms and Extreme Cold

Fayette County experiences annual disruptions and some damages due to severe winter storms and extreme cold. The yearly average snowfall is 1.3 inches, but some events have produced major disruptions and damages. Winter temperatures on average are above freezing at 44°F, but occasional freezes do occur.

Winter storms and extreme cold events in Fayette County cause transportation disruptions when they occur due to the inexperience of residents in handling these hazardous conditions, black ice on the roadways, and potholes developing due to frozen and cracked roads. Heavy snowfall or icing conditions can cause limbs to fall, roofs to collapse and utility lines to be damaged causing issues with communications and power. These issues can result in loss of life due to structural damage to residences, a lack of access to heat due to utility disruption or vehicular accidents. Water distribution pipes have broken due to excessive cold causing water to be shut-off to businesses and residents while repairs are being done. Other issues caused by winter storms and extreme cold events are agricultural damage to crops and livestock resulting in economic damages. Fayette County has a large number of chicken houses and many of those can sustain losses due to lack of heat due to power outages or structural damage to the chicken houses.

Previous Occurrences of Winter Storms and Extreme Cold

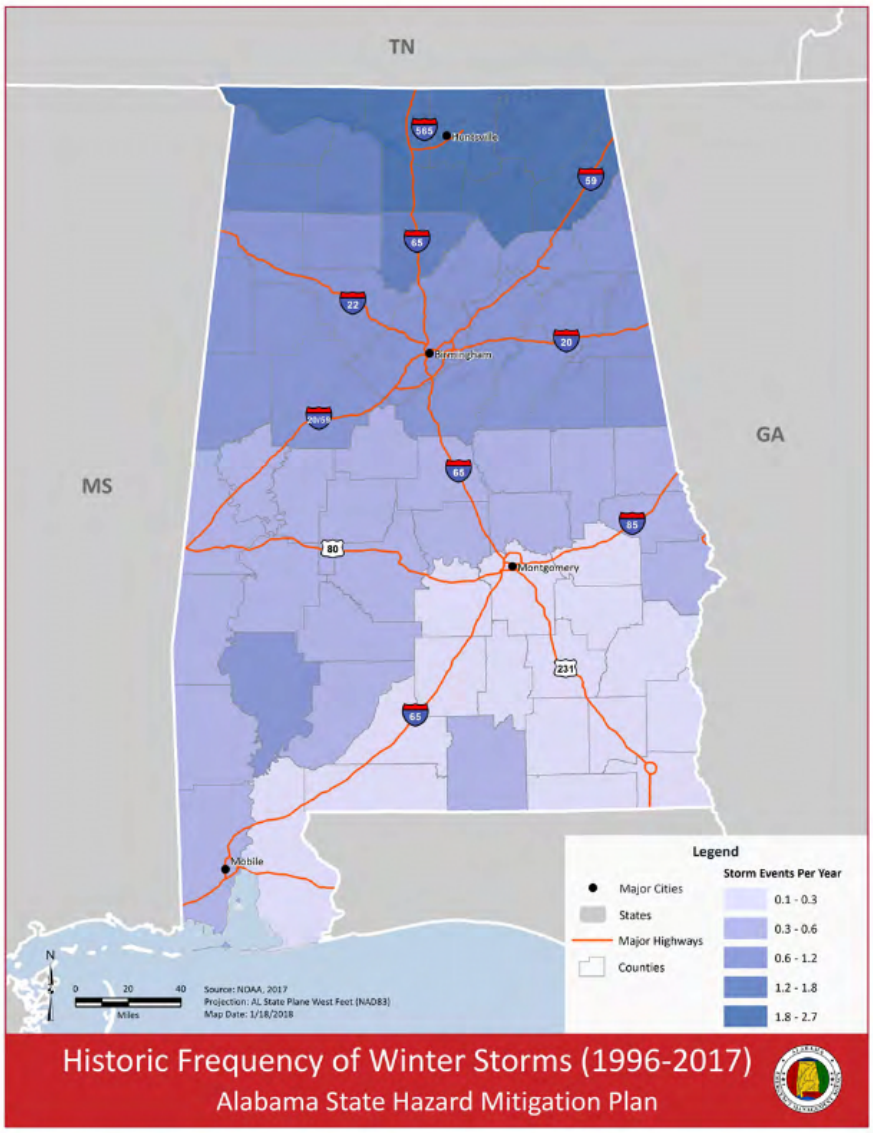
Between 2015 and 2020 there were 3 winter weather related events recorded by NCDC. On February 25, 2015, three to ten inches of snow was recorded in Fayette County. In March of 2015 there was one half inch of sleet reported on the 5th and on December 8, 2017, there was a winter storm with 2-3 inches of snow recorded. Winter events since 1993 can be found in Appendix E.

Probability of Future Winter Storm and Extreme Cold Events

Winter storms and extreme cold will continue to affect Fayette County on an annual basis, to some extent. The risks associated with the average annual hazard are slight, but the more infrequent, severe winter storms have potentially severe risks. These severe winter events can cause major transportation disruptions, lengthy power outages, substantial property damages, and loss of life.

Map 5-21 shows the higher relative frequency of winter storms in North Alabama from 1996-2017 and indicates that Fayette County has approximately 0.6 to 1.2 winter storms per year. With an increase of moisture in the atmosphere, it is probable that precipitation will get heavier and under the right conditions could lead to heavier snowfall. Mitigation measures can be implemented to lessen the effects of winter storm events such as better protection of utilities and roadway preparedness, warming shelters for people in need and participation in winter weather exercises. Chapter Six – “Mitigation Strategy” addresses different mitigation measures that can be undertaken to lessen the impact of these hazards.

Map 5-21. Alabama Winter Storm Interval (1996-2017)



Source: State of Alabama Hazard Mitigation Plan, 2018

5.3.7 Hurricanes

Hurricane season in the northern Atlantic Ocean, which affects the United States, begins on June 1, and ends on November 31. These months accompany warmer sea surface temperatures, which is a required element to produce the necessary environment for hurricane development.

Hurricanes impact regions in a variety of ways. The intensity of the storm, the speed of the winds, whether the storm moves through a region quickly or whether it stalls over one area all are variables toward the physical damage the storm will cause. Storm surges, high winds, and heavy rains are the three primary elements of hurricanes, while tornadoes and inland flooding are potential secondary elements caused in the wake of the storm. Although Fayette County is approximately 230 miles inland from the Gulf Coast, it is not immune to the damaging effects of hurricanes.

Location of Potential Hurricanes

Fayette County is at a low risk for a direct hit by a hurricane due to its position several hundred miles inland from the Alabama coastline. Although Fayette County does not feel the effects of storm surges, other effects including heavy rain, flooding, and tornadoes often have significant impacts on the county. For example, in 1995 Hurricane Opal made landfall in the Florida Panhandle near Pensacola Beach. Opal then moved across the state of Alabama destroying trees, signs, and power lines with her high winds. Heavy rain fell quickly across the county causing flooding along the banks of creeks and streams.

Extent and Intensity of Potential Hurricanes

Inland hurricanes will dissipate by the time they reach Fayette County, which is located about 230 miles from the closest Gulf Coast landfall location. The after-effects of the hurricane can still impact the county, but it would be downgraded to either a tropical depression or tropical storm. If rated as a tropical depression, it would present with maximum sustained winds of 38 mph or less. If rated as an inland tropical storm, maximum sustained winds could go as high as 73 mph. High wind gusts of up to 67 mph can cause trees, signs, and power lines to topple; damage buildings; and cause sustained utility outages. These types of damage, similar to those of a low-level tornado, could result in bodily injury or even death.

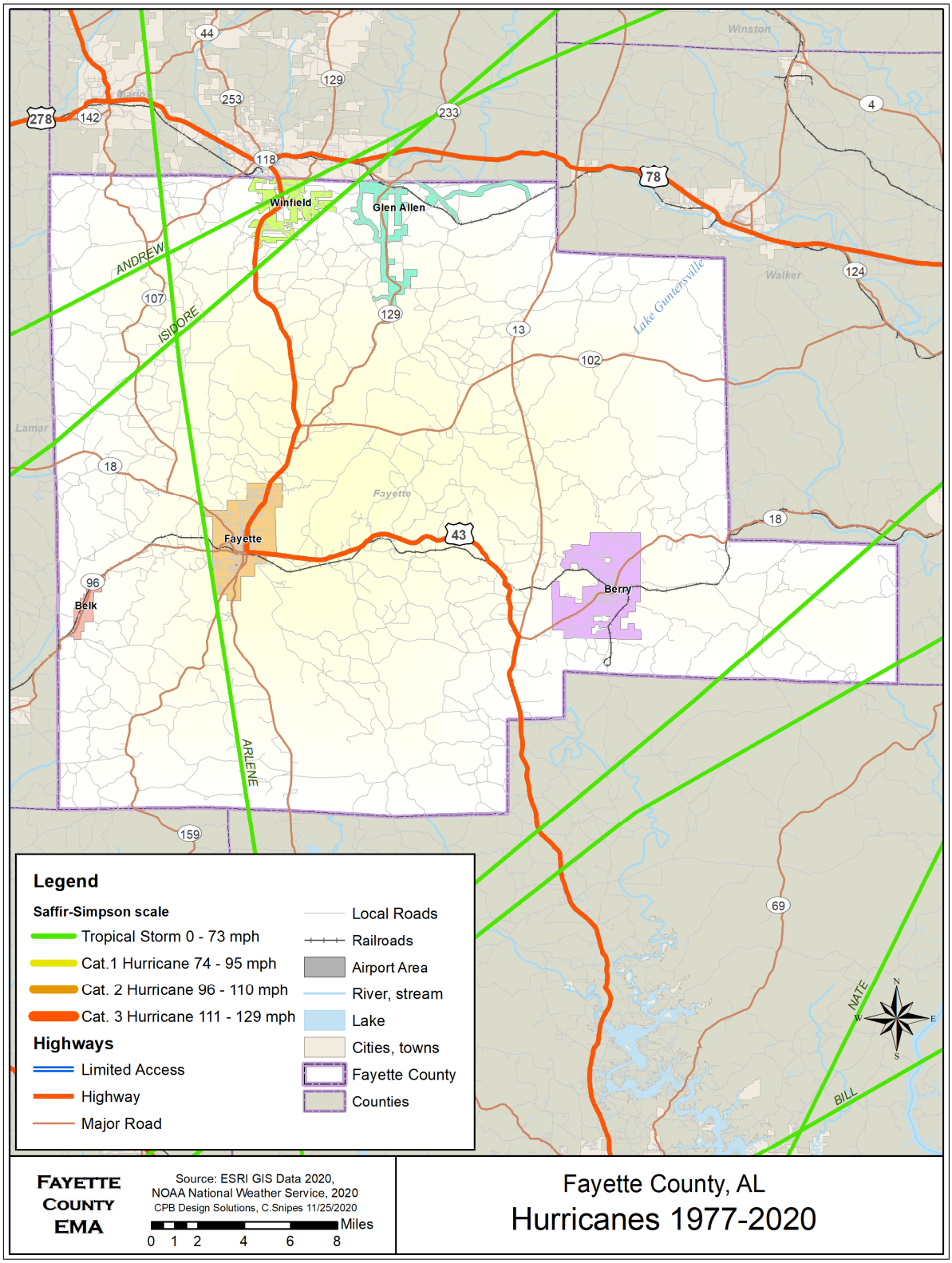
According to hurricane records, half of all hurricanes produce one or more tornadoes. If a tornado develops as a result of a hurricane, it will typically do so within 12 hours of landfall and during daylight hours. This timeframe is within reach of Fayette County. Normally, a tornado watch will follow the projected inland path of a hurricane.

Tropical storms and depressions are often responsible for heavy rain events that can cause flooding. A weak tropical storm or depression moving slowly, or lingering can cause more damage due to flooding than some fast-moving storms. The last recorded hurricane event for Fayette County was Hurricane Isaac in 2012.

Previous Occurrences of Hurricanes

A significant weather event for Fayette County involving a hurricane occurred on September 16, 2004. Hurricane Ivan made landfall around 1:00 AM CST near Gulf Shores, Alabama. By 10 PM, the storm had passed through Fayette County as a tropical depression with sustained winds of 35 mph and gusts of up to 60 mph. The storm knocked down trees and powerlines and dropped several inches of rain. Map 5-22 shows paths of the hurricanes and tropical storms since 1977 demonstrating that all areas of Fayette County have been equally affected. Other hurricanes affecting Fayette County since 2004 include the remnants of Dennis on July 10, 2005, Katrina on August 29, 2005, and Isaac, September 21, 2012.

Map 5-22. Hurricane Paths, 1977-2020



Probability of Future Hurricane Events

As is the case with most natural hazards, past records are no guarantee of the probability of future events affecting Fayette County. Given its inland location of over 200 miles north of the Gulf Coast, Fayette County can continue to expect the remnants of frequent Gulf Coast hurricanes and occasional direct impacts of tropical depressions. Hurricane path records since 1977 show the likelihood of continued direct paths through or near Fayette County. The county's location within ten hours of a Gulf Coast hurricane landfall would result in the hurricane dissipating to tropical depression or tropical storm status by the time it reaches Fayette County. The probable impacts of tropical depressions or tropical storms directly passing through or near Fayette County would be damages resulting from high wind gusts above 65 mph, heavy rainfall causing localized flooding of streams and drainage ways, and possible tornadoes.

It is theorized that climate change may affect future hurricane events. The hurricane season has been expanded in recent years. The typical April through November hurricane season is lasting longer. According to Meteorologist Jeff Masters, this extension is likely due to warmer seawater and an increase of moisture in the atmosphere. While the effect of climate change on winds is debatable , there is a general consensus that sea levels are rising, and water temperatures are increasing as a direct result of global warming which is expanding the time that hurricanes and tropical storms are occurring and potentially making landfall each year.

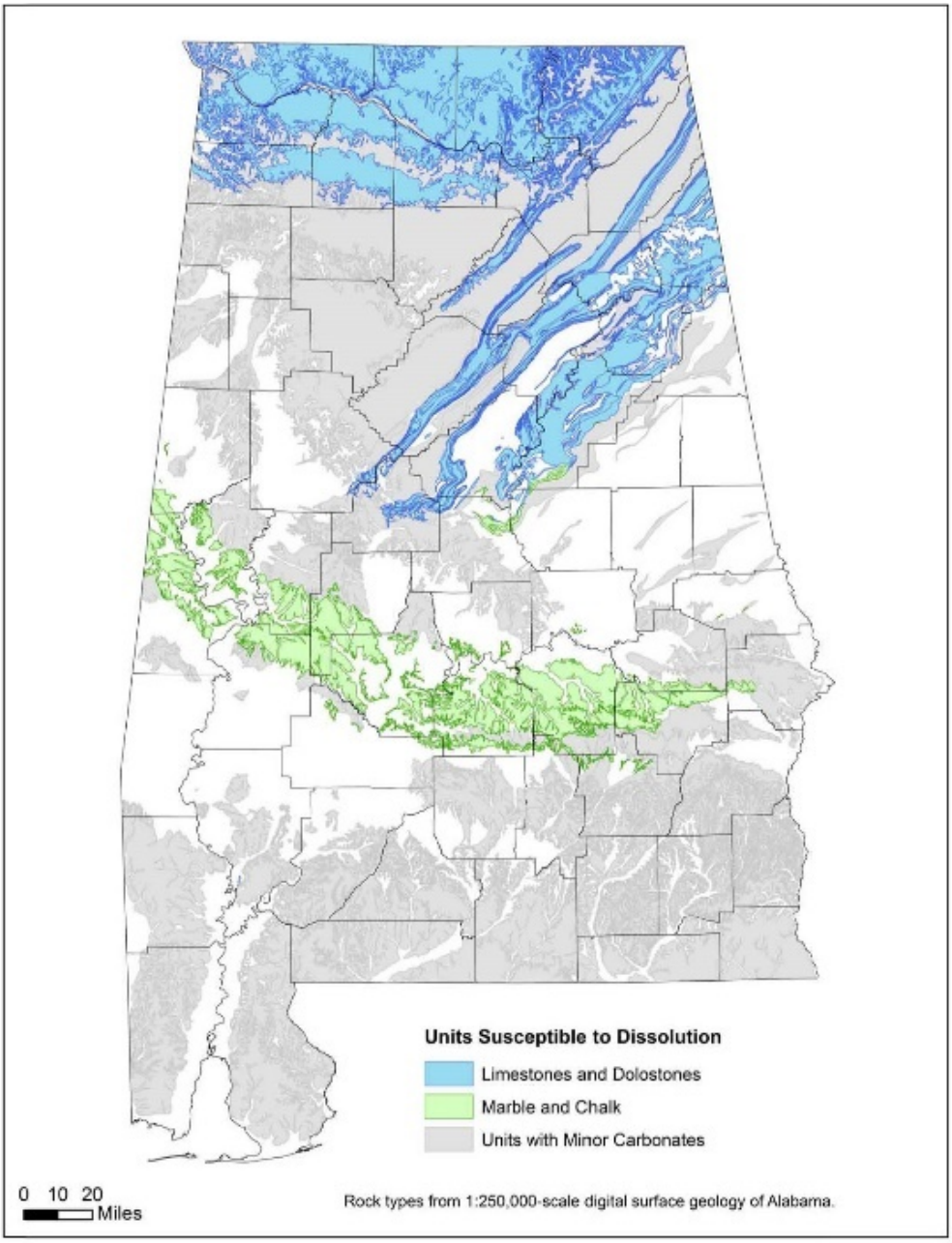
Mitigation measures are the same for hurricanes as for severe storms and tornadoes because the remnants of the hurricane are usually in the form similar to a severe storm or a tornado that impact Fayette County. Mitigation measures for such events can be found in Chapter Six – "Mitigation Strategy".

5.3.8 Sinkholes

Sinkholes, a form of land subsidence, occur naturally where limestone, salt, or other rocks below the ground surface are dissolved by circulating groundwater. As the rock dissolves, spaces and caverns develop underground. The land usually stays intact until the underground spaces become too large to support the ground at the surface. When the ground loses its support, it will collapse, forming a sinkhole. Sinkholes can be small or so large they consume an automobile or a house. Certain activities can increase the potential for sinkholes in these areas, such as: periods of drought, excessive rainfall, the age of the well pump, and construction. Map 5-23 shows these areas with minor carbonate rocks in Fayette County.

While most land collapse is caused by the natural process of the dissolving of limestone over time, human activity can also accelerate land collapse. Human activities that may trigger subsidence include mining and the withdrawal of groundwater. Vibrations from machinery, cars, and drilling equipment can exacerbate sinkholes. In addition to human activity, droughts and excessive rainfall can also lead to the formation of sinkholes. During a drought, the groundwater table falls and caves that are normally filled with water may lose the support that the water provided. Eventually, cracks formed during the drought period will cause the roof of the cavity to fail resulting in sinkholes.

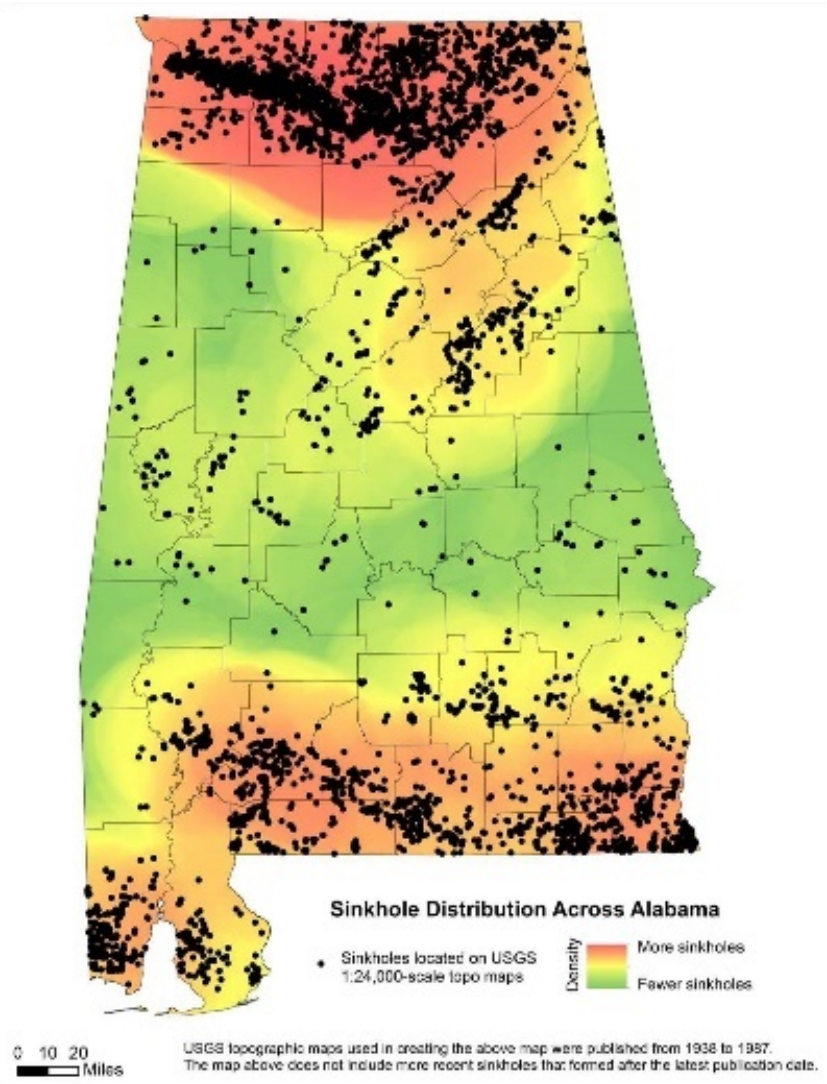
Map 5-23. Sinkhole Susceptibility, Alabama



Location of Potential Sinkholes

According to a statewide mapping project of sinkholes completed in 2010 by the Geological Survey of Alabama (GSA), sinkhole development has occurred throughout Alabama, mainly in the northern and southern portions of the state as shown on Map 5-24. There are only three sinkholes mapped in Fayette County with two on the northern county line and one located near Berry. Most of Fayette County is undeveloped and sparsely populated and therefore there could be sinkholes that have not been discovered and so remain unmapped.

Map 5-24. Sinkhole Density in Alabama



Extent and Intensity of Potential Sinkholes

The extensive coal mining conducted in the eastern portion of the county indicates that there is potential for sinkholes to occur. Mine subsidence occurs when an area overlying a mine, typically no more than 50 feet of vertical distance between the seam and the surface, collapses into the mine. The extent of the damage is usually localized. A mine sinkhole occurs most often with abandoned mines since active mines companies are required to perform at a depth sufficient enough to avoid subsidence. This area includes the Town of Berry, and the unincorporated areas of Howard, Studdard Crossroads, Cleveland, Bankston, Salem, Boley, Concord, and New Hope. Although there have not been any injuries or property damage due to these mines, their presence, particularly the older mines in the northwest part of the county, warrants consideration of sinkholes.

Previous Occurrences of Sinkholes

The GSA estimates over 6,400 sinkholes in Alabama with only three located in Fayette County. There may be more sinkholes in the county; however, there are no regulations requiring individuals to report sinkholes and most of the county is sparsely populated so there may be some yet to be mapped.

Probability of Future Sinkhole Events

Fayette County lacks a history of sinkholes as well as the geological conditions conducive to sinkholes; therefore, the probability of future naturally induced sinkhole events is minimal for all jurisdictions. As shown on Map 5-9 , there are no Karst regions in Fayette County; however, sinkholes can be triggered by a change in the local environment that affects the soil mass. Ongoing data collection by the Geological Survey of Alabama might reveal unknown conditions that raise the likelihood of sinkholes within Fayette County.

Care must be taken by those involved in activities that can lead to possible land collapse and work toward lessen the impact of such activities. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken to lessen the impact of sinkholes.

5.3.9 Landslides

A landslide is defined by the United States Geological Survey as the movement of rock, debris, or earth down a slope. Various natural and man-induced triggers can cause a landslide.

Naturally induced landslides occur as a result of weakened rock composition, heavy rain, changes in groundwater levels, or seismic activity. Human activity such as construction or mining can also lead to landslides. Often the land has been compromised by deforestation, erosion or weak bedrock which allows the triggering event to cause the landslide. Geologic formations in a given area are key factors when determining landslide susceptibility. The three underlying geologic formations present within the region are the Coker, Gordo, and Tuscaloosa groups. These groups are classified as having low to moderate susceptibility to slope failure.

Primary effects from landslide in Fayette County can include property damage, impassable roads, sediment erosion and underground infrastructure damage. Destruction of structures in the path of a landslide is dependent on its force. Material from the landslide can damage or destroy roadways as well as block passage which can disrupt travel and business activities. Landslides can also remove vital vegetation and trees which protect hillsides leading to erosion. Underground pipes and wiring can be dislodged causing disruption in vital services.

The Geologic Survey of Alabama (GSA) has studied the potential for landslides throughout Alabama. Geographic Information System (GIS) data provided by the GSA for this plan, classifies landslide susceptibility and incidence as follows:

1. Landslide susceptibility. Susceptibility is the probable degree of response to landslide triggers, such as cutting or excavation, loading of slopes, or unusually high rainfall.

Generally, unusually high rainfall or changes in existing conditions can initiate landslide movement in areas where rocks and soils have experienced numerous landslides in the past. The potential for landslides is classified into one of the following categories:

- *High susceptibility* - greater than 15% of a given area is susceptible to land sliding;
- *Moderate susceptibility* – 1.5% to 15% of a given area is susceptible to land sliding; or
- *Low susceptibility* – less than 1.5% of a given area is susceptible to land sliding.
- *No susceptibility indicated* - susceptibility is the same as or lower than incidence.

2. Landslide incidence. Landslide incidence is the number of landslides that have occurred. These areas are classified according to the percentage of the area affected by landslides, as follows:

- *High incidence* - greater than 15% of a given area has previously experienced land sliding;
- *Medium incidence* - 1.5% to 15% of a given area has previously experienced land sliding; or
- *Low incidence* – less than 1.5% of a given area has previously experienced land sliding.

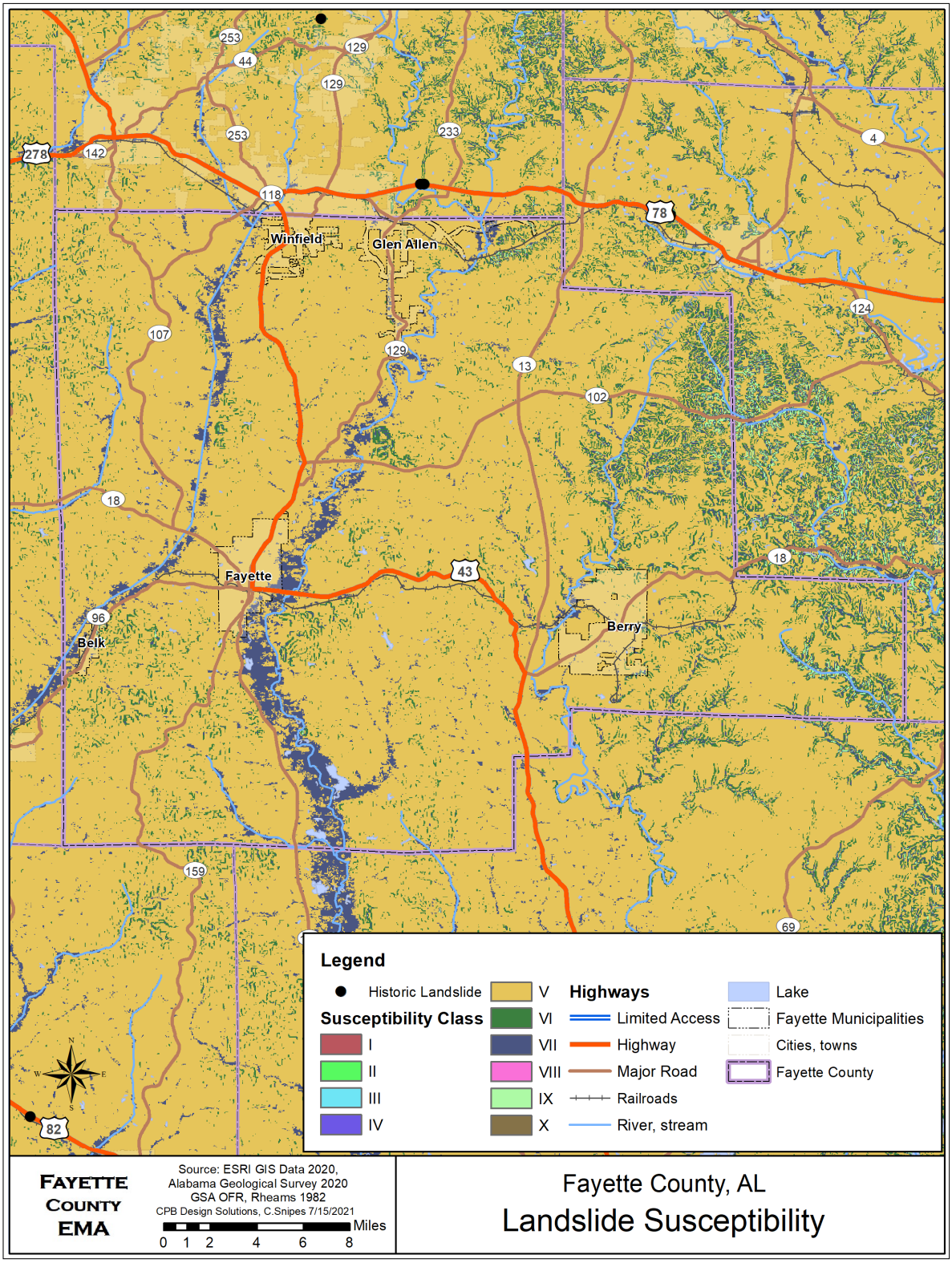
Location of Potential Landslides

All jurisdictions in Fayette County, as shown in Map 5-25 "Fayette County Landslide Susceptibility," are rated as having a low degree of susceptibility to landslides, other than near waterways. None of the 454 reported landslides in the state of Alabama were located in the county.

Extent and Intensity of Potential Landslides

According to the GSA data, most of Fayette County is an area of low susceptibility to landslides, including Belk, Fayette, and Glen Allen. Along waterways throughout Fayette County there are areas of high susceptibility to landslides including a portion of the City of Fayette. These same areas, however, have a low incidence. Map 5-25 shows the landslide susceptibility for Fayette County.

Map 5-25. Fayette County Landslide Susceptibility



Previous Occurrences of Landslides

There have been no recorded incidences of landslides in Fayette County. As with certain other hazards such as sinkholes, there may have been landslide events but due to the rural nature of the county, they may have gone unnoticed.

Probability of Future Landslide Events

The probability of future landslides is unlikely for all jurisdictions in Fayette County. If landslides occur, they will likely be minor resulting from construction activities. Proper measures should be taken during construction to ensure landslide activity is closely monitored so proper precautions can be taken to warn people about the possibility of an impact from the event. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken in regard to landslides.

5.3.10 Earthquakes

Earthquakes occur when portions of the earth slip past each other. The surface above the slippage is the fault. The area below the surface where the earthquake starts is the hypocenter and the location directly above the hypocenter on the surface of the earth is the epicenter. Associated with earthquakes are foreshocks, mainshocks and aftershocks. Not all earthquakes have foreshocks which are smaller earthquakes that occur before the main earthquake. The largest main earthquake is the mainshock and smaller earthquakes that follow the mainshock are known as aftershocks. Aftershocks always occur and they can last for weeks, months, and even years after the mainshock.

Earthquakes occur around seismic zones; it is where the earthquake tends to focus. Fayette County falls within the Southern Appalachian Seismic Zone. Seismic hazard zones describe the degree of threat to areas within the seismic zone. Typically, the closer to the center of the seismic zone the higher the seismic hazard zone. Fayette County is located in an area of low seismic hazard.

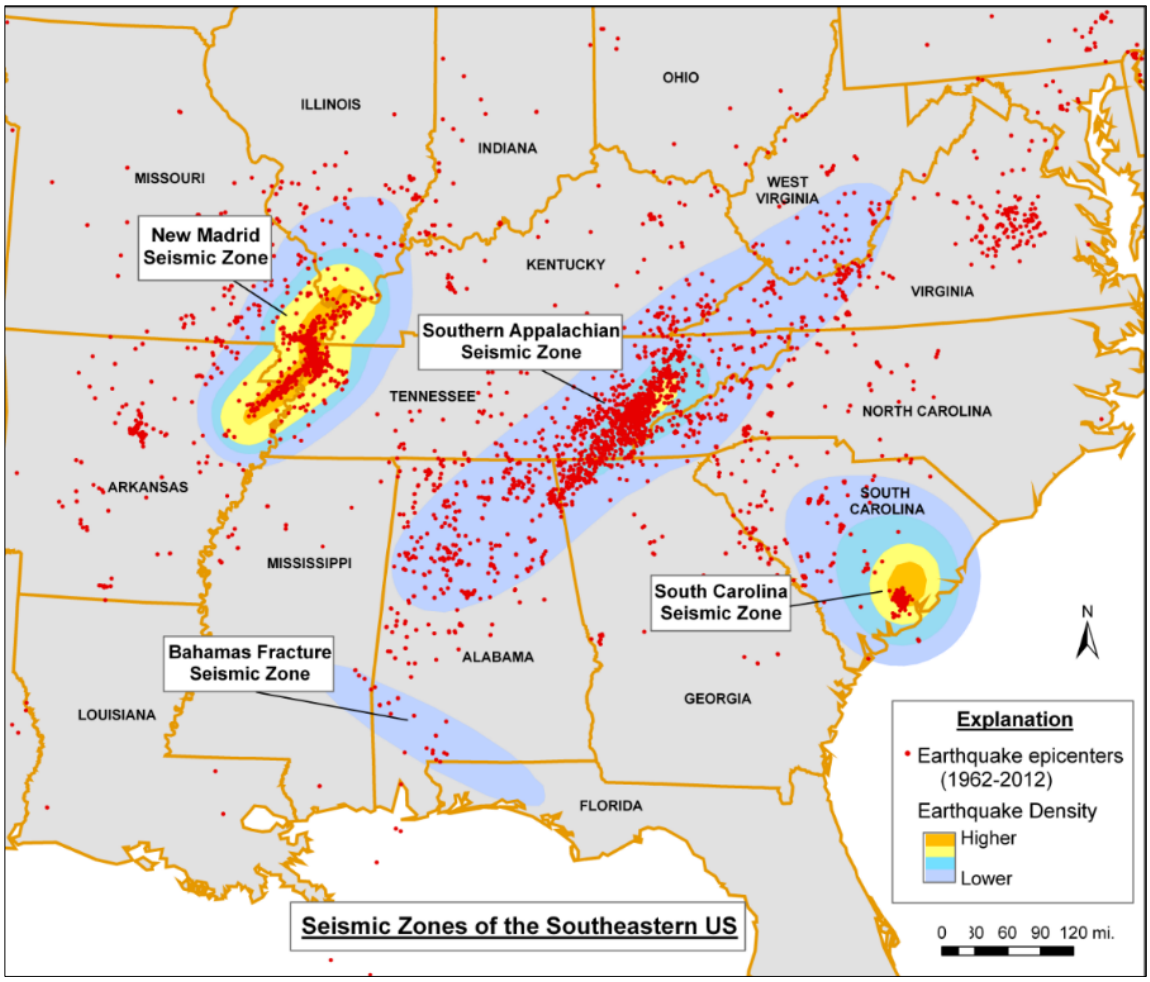
Because Fayette County is affected by the Southern Appalachian Seismic Zone, earthquake potential is likely, although potential for significant shaking is very low. Damage could be catastrophic in Fayette County if a powerful earthquake were to occur because buildings have not been constructed to withstand such a powerful force. The last significant earthquake that affected Alabama was the 1895 New Madrid earthquake. This quake is estimated to have been a 6.8 in magnitude on the Richter scale and was moderately felt throughout the southeastern United States. The New Madrid Seismic Zone runs along the Mississippi River. Geologists agree that another major earthquake along the New Madrid Seismic Zone could cause chimneys to fall, glass to break, and walls to crack in Fayette County.

Small earthquakes can occur due to human activity. Those activities include extraction of mining products, ground water or oil. This can cause an earthquake because it will change the stress on the plates below the surface causing a shift. Another cause is overloading the Earth's surface where there was not a load before, adding stress to faults, such as the impoundment of water behind dams. One more human activity that can cause earthquakes is when fluid that has been extracted from the

Earth is injected back into it. The use of disposal wells cause faults to slip due to the wastewater from oil or gas production being forced back into the Earth.

There have been moderate levels of seismic energy released by the Southern Appalachian Seismic Zone (SASZ) for hundreds of years. The area around the SASZ has many old faults that developed during the forming of the Appalachian Mountains; however, no active seismic faults are known to have reached the surface. Map 5-26 shows the location of faults associated with SASZ running through Fayette County.

Map 5-26. Seismic Zones in Southeastern United States



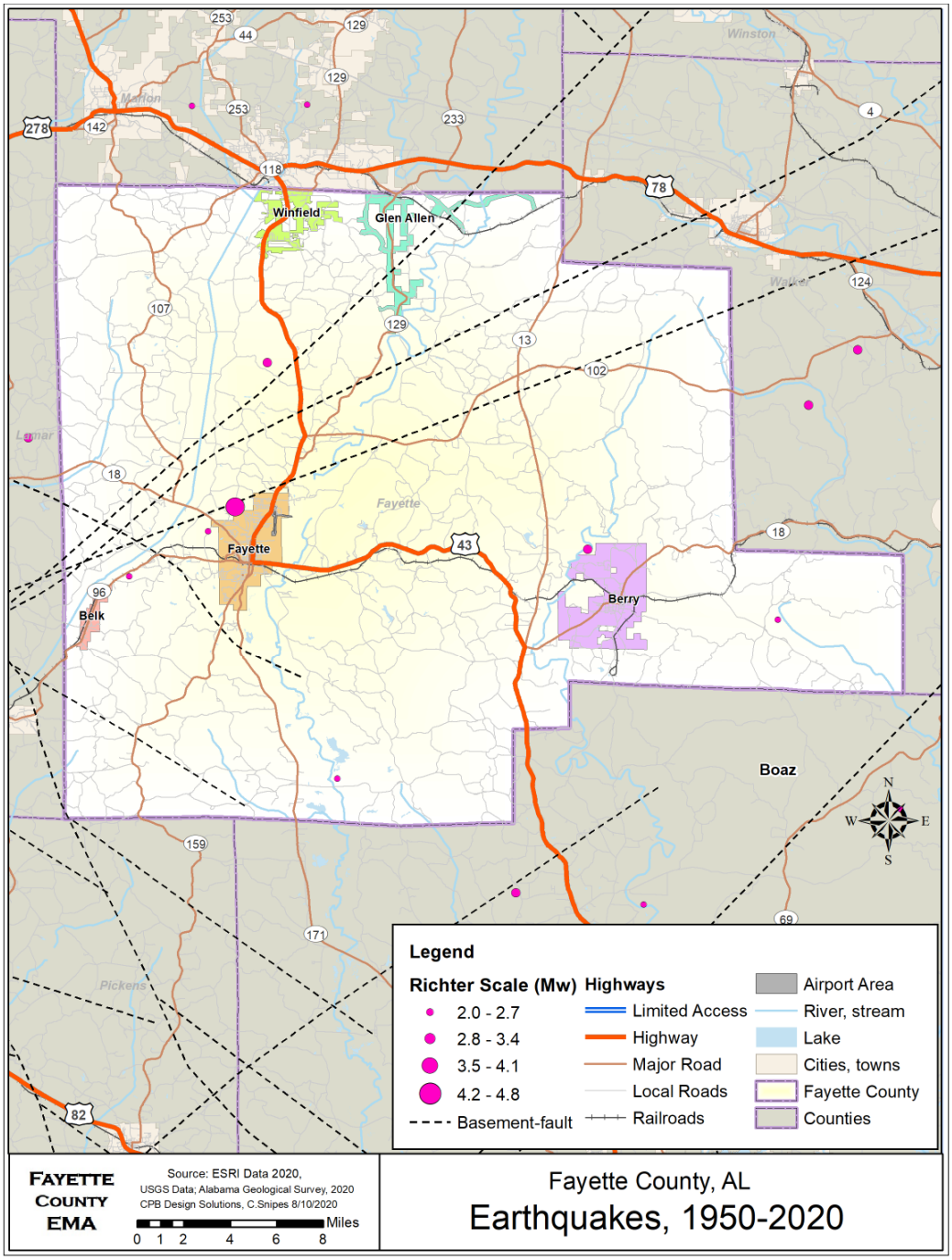
Source: Geological Survey of Alabama

Location of Potential Earthquakes

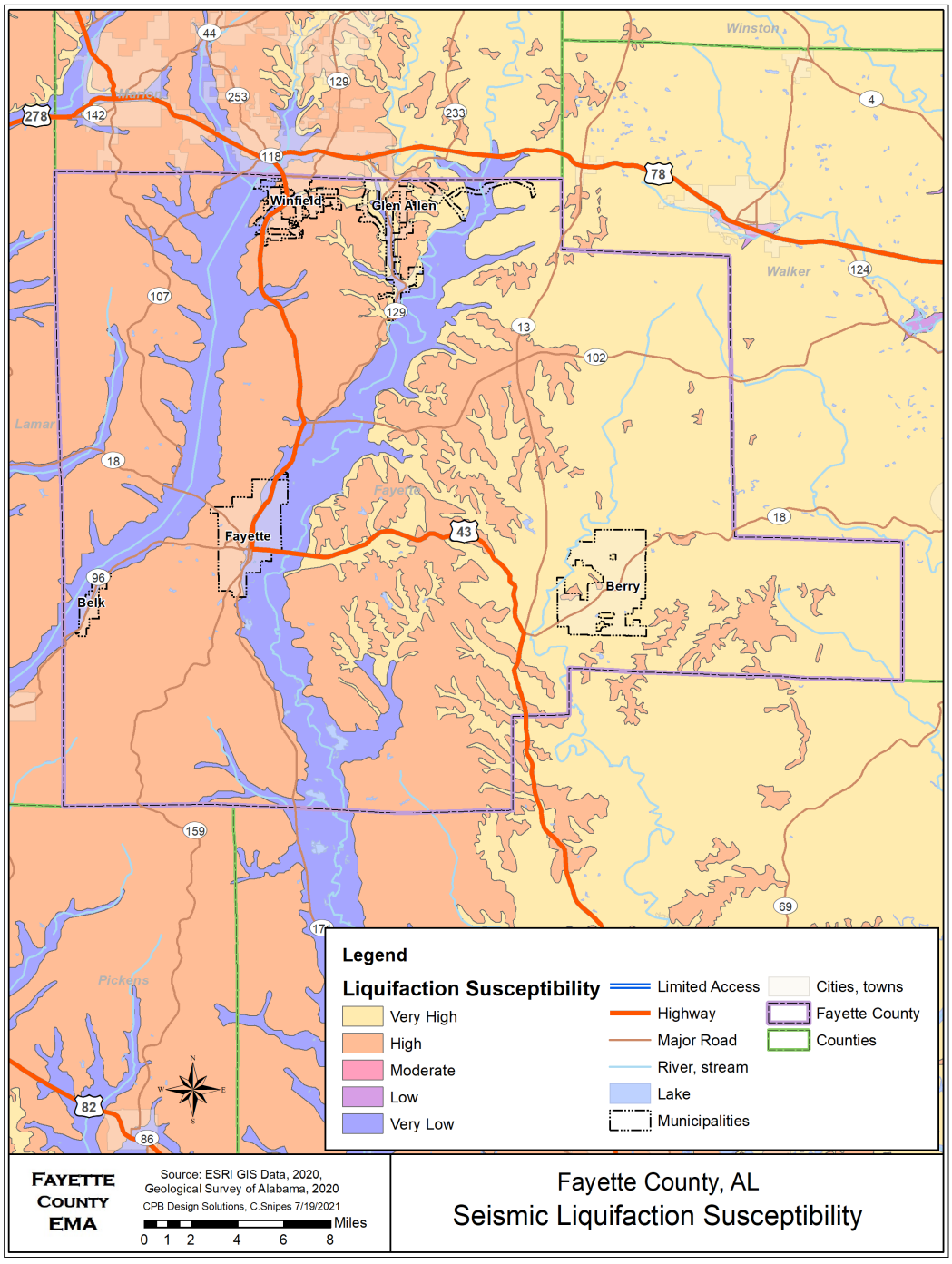
All of Fayette County has a moderate degree of susceptibility to earthquakes, but the impacts can vary depending on the magnitude and epicenter location. Map 5-27, generated from 2020 GIS data supplied by the Geological Survey of Alabama (GSA), show locational variations in soil liquefaction throughout Fayette County. Damages to buildings and infrastructure depend not only on the energy released during an earthquake but also underlying soils and geological characteristics. For instance, structures built upon loose sediments of riverine floodplains along the Sipsey River and

North River are more likely to be damaged than structures built in higher elevations. Liquefaction is most likely to occur in soils with high water content within parts of these flood plains. Given the natural physical features of Fayette County, ground-shaking potential and seismic liquefaction susceptibility are moderate to high in Belk, Fayette, and Glen Allen with little to no susceptibility in Berry. More information about earthquakes can be found in Appendix D.

Map 5-27. Earthquake Epicenters and Fault Lines



Map 5-28. Earthquake Liquefaction Potential



Extent and Intensity of Potential Earthquakes

According to the Geological Survey of Alabama (GSA), recent seismograph records indicate that earthquakes are frequent across the state but are usually small enough that they are not felt, and damage reports of incidents have been relatively minor. One potential effect of earthquakes

could be damage to dams which could lead to further impacts. The intensity of the impact of an earthquake will depends on the epicenter location and the magnitude.

Losses depend on several factors including the nature of building construction, population density, topography and soil conditions, and distance from the epicenter. An earthquake's magnitude can be a poor indicator of hazard impact because the duration of ground shaking is not factored into the magnitude rating. It is the duration of the shaking that causes the damage to contents and nonstructural components. While collapse of structures can be a great loss, collapse is caused mainly by large magnitude earthquakes, and earthquakes of this size are rare. For any given earthquake, few structures will actually collapse. Most damage will be associated with contents and nonstructural components. Structures built with more flexible materials, such as steel framing, are preferred. Wood frame construction, which constitutes a high percentage of homes in the United States, also tends to flex rather than crack or crumble, but is more susceptible to fire.

Building codes have historically been utilized to address construction standards to mitigate damages for earthquakes and other hazards. Older structures, non-compliant structures, and lack of knowledge of proper seismic protection measures remain a problem. In order to reduce loss of lives and property, wider adoption of improved construction methods for both residential and important critical facilities such as hospitals, schools, dams, power, water, and sewer utilities are needed.

The intensity of shaking and observed effects of an earthquake is measured according to the Modified Mercalli Intensity Scale, shown in Table 5-11, and the magnitude is the measure of energy released by the earthquake on a scale of 1 to 12, with a magnitude 7 being felt on land and causing some damage. Most human-caused earthquakes, resulting from fracking or induction of wastewater from oil and gas production, result in a 1-3 on the intensity scale.

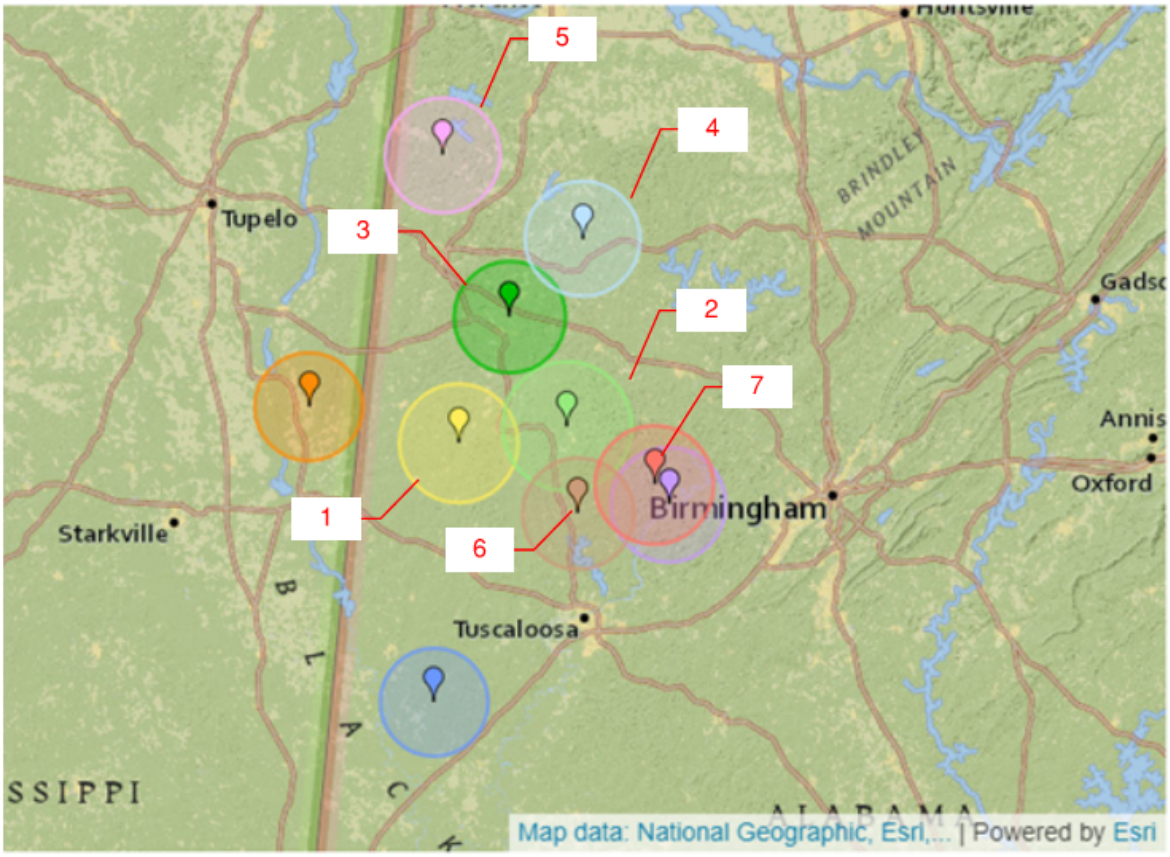
Table 5-11. Modified Mercalli Intensity Scale

Class	Intensity
I	Not felt
II	Felt by persons at rest, on upper floors, or favorably placed.
III	Felt indoors. Vibration like passing of light trucks.
IV	Vibration like passing of heavy trucks.
V	Felt outdoors. Small unstable objects displaced or upset.
VI	Felt by all. Furniture moved. Weak plaster/masonry cracks.
VII	Difficult to stand. Damage to masonry and chimneys.
VIII	Partial collapse of masonry. Frame houses moved.
IX	Masonry seriously damaged or destroyed.
X	Many buildings and bridges destroyed.
XI	Rails bent greatly. Pipeline severely damaged.
XII	Damage nearly total.

Previous Occurrences of Earthquakes

Map 5-29 "2015-2019 Earthquake Locations, Fayette County" shows the location and Table 5-12 shows the magnitude of recorded earthquakes in the Fayette County area over that four year period as reported by earthquaketrack.com. The most active location is around the Town of Berry.

Map 5-29. 2015-2019 Earthquake Locations, Fayette County



earthquaketrack.com

Table 5-12. 2015-2020 Earthquake Location and Magnitude, Fayette County

Event Number	Year	Location	Magnitude	Depth
1	2020	Fayette	2.6	0 km
2	2020	Berry	2.9	1 km
3	2019	Winfield	2.0	0 km
4	2017	Haleyville	2.3	5 km
5	2017	Red Bay	2.3	4 km
6	2016	Berry	2.6	1 km
7	2015	Berry	2.3	1 km

earthquaketrack.com

Probability of Future Earthquake Events

As can be seen by the previous maps, earthquakes are active in Fayette County; however, they are not impactful, so they often go unnoticed. Fayette County can expect to continue to have earthquake events occur with little to no damage. If a powerful earthquake were to occur, damage could be catastrophic in Fayette County because buildings have not been constructed to withstand such a powerful force and the only area that has building codes is the City of Fayette.

Public awareness about earthquakes and how to prepare for them, including securing items within and around homes and businesses, are some mitigation measures that can be taken by Fayette County citizens. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken to lessen the impact of these earthquakes.

5.3.11 Wildfires

The two primary categories of wildfires experienced in Alabama are wildland fires and interface fires. The National Wildfire Coordinating Group (NWCG) defines wildland fire as including both wildfire and prescribed fire, "where wildfire is an unplanned, unwanted wildland fire, and prescribed fire is any fire intentionally ignited by management actions to meet specific objectives." Wildland fires are fueled exclusively by natural vegetation. Fayette County has vast forested lands, grass lands, and brush to fuel wildfires.

Interface fires are fueled by both vegetation and the built-up environment. This is known as the wildland-urban interface. Interface fires increase with urban-to-rural movement increasing risk of human-caused wildfires. Interface fires are found on the outskirts of the towns and the City of Fayette.

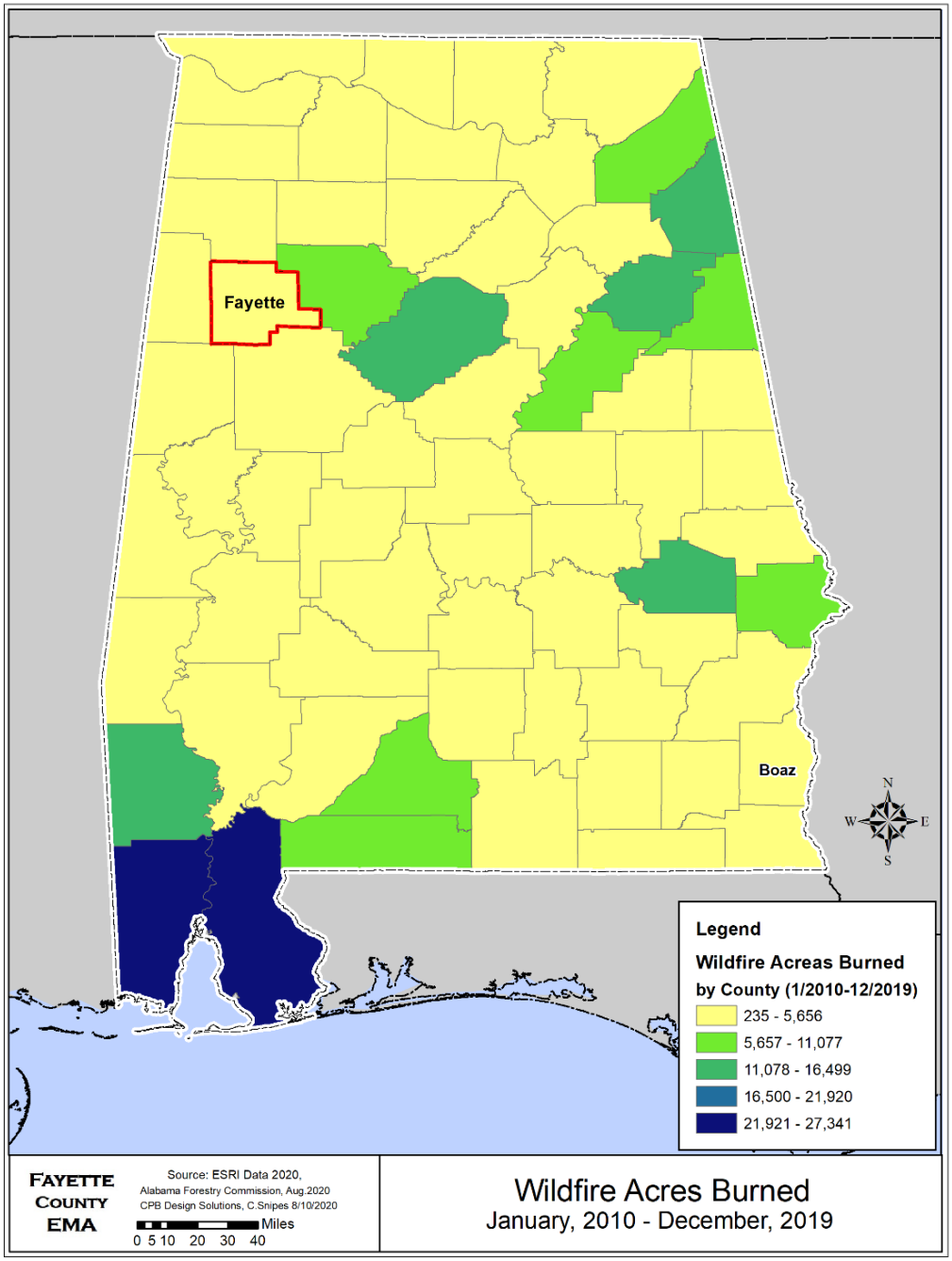
In order to curb the occurrence and effects of wildfires, prescribed burns and other forms of forest fuel control are implemented. Without the practice of prescribed burns, thinning, mowing, and the use of herbicides, vegetation that will spread fires can proliferate causing more of a threat with the additional fuel sources for wildfires.

A major problem in relation to wildfires is non-permitted burns. The people setting these fires are ill-equipped to handle the fire as it gets larger, and the fire gets out of control and widespread damage occurs. The state implements burn bans during times of high fire risk which make it illegal to set fire to forest, grass, woods, wildlands, marshes; build a campfire or bonfire; burn trash, debris, or other materials, including no forestry directed open burns or prescribed burns.

Location of Potential Wildfires

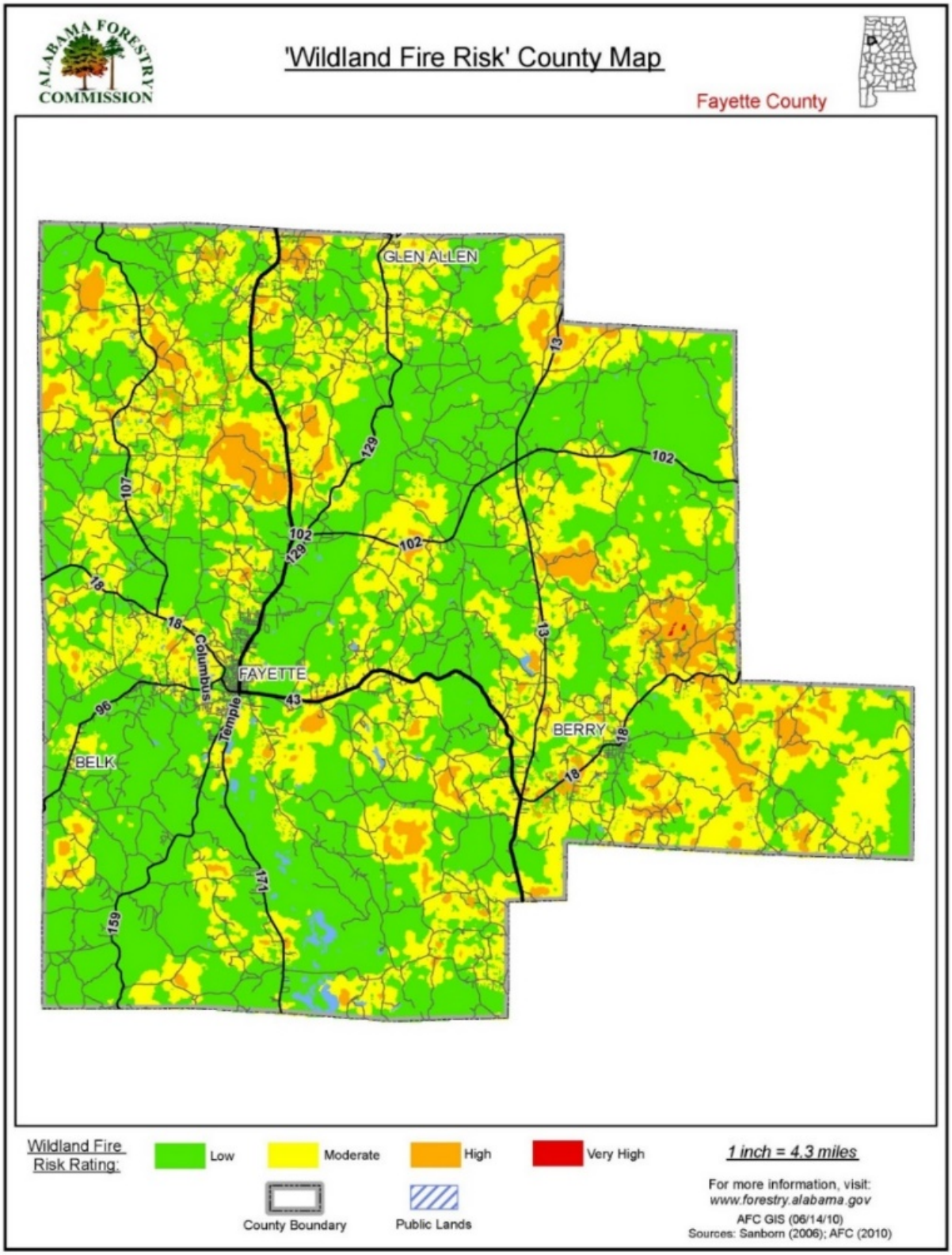
Rural areas of unincorporated Fayette County are the most likely areas to encounter wildfires; however, wildfires can occur in any area where there is the proper fuel, topography, and weather mix. Map 5-30 shows that Fayette County is on par with the majority of the counties in Alabama in acres burned with between 235 and 5,656 wildfires in the period of January 2010 to December 2019.

Map 5-30. Wildfire Acres Burned, January 2010 - December 2019

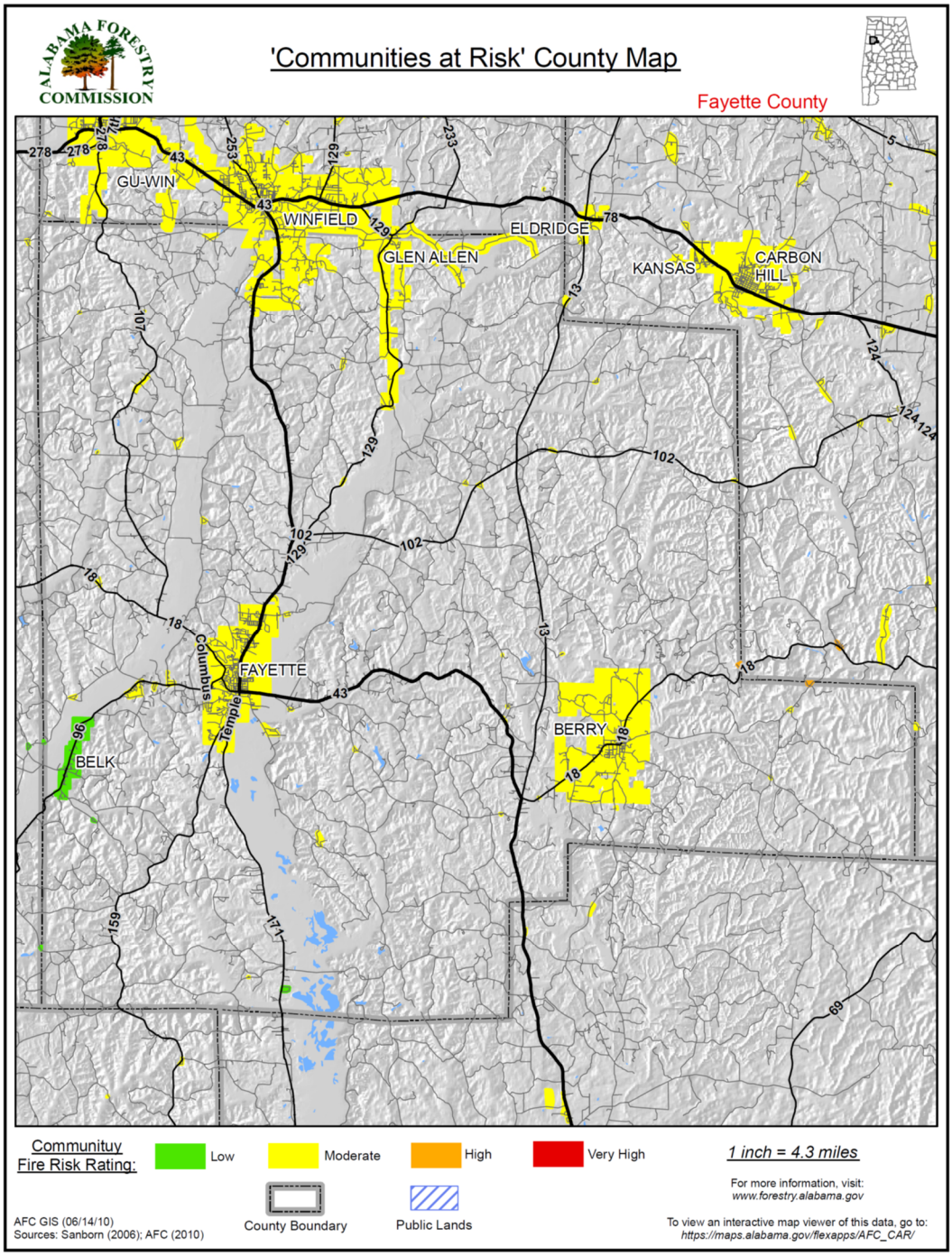


Map 5-31 "Wildland Fire Risk County Map" shows that all of Fayette County falls between low and moderate risk for wildland fire with patches of high risk scattered throughout the county. There is one very high risk area located northeast of Berry. The vulnerable wildland-urban interface makes all incorporated areas equally at risk and Map 5-32 "Fayette Communities at Risk," denotes areas throughout the county at various risk levels for wildfires.

Map 5-31. Fayette County Wildland Fire Risk



Map 5-32. Fayette County Communities at Risk

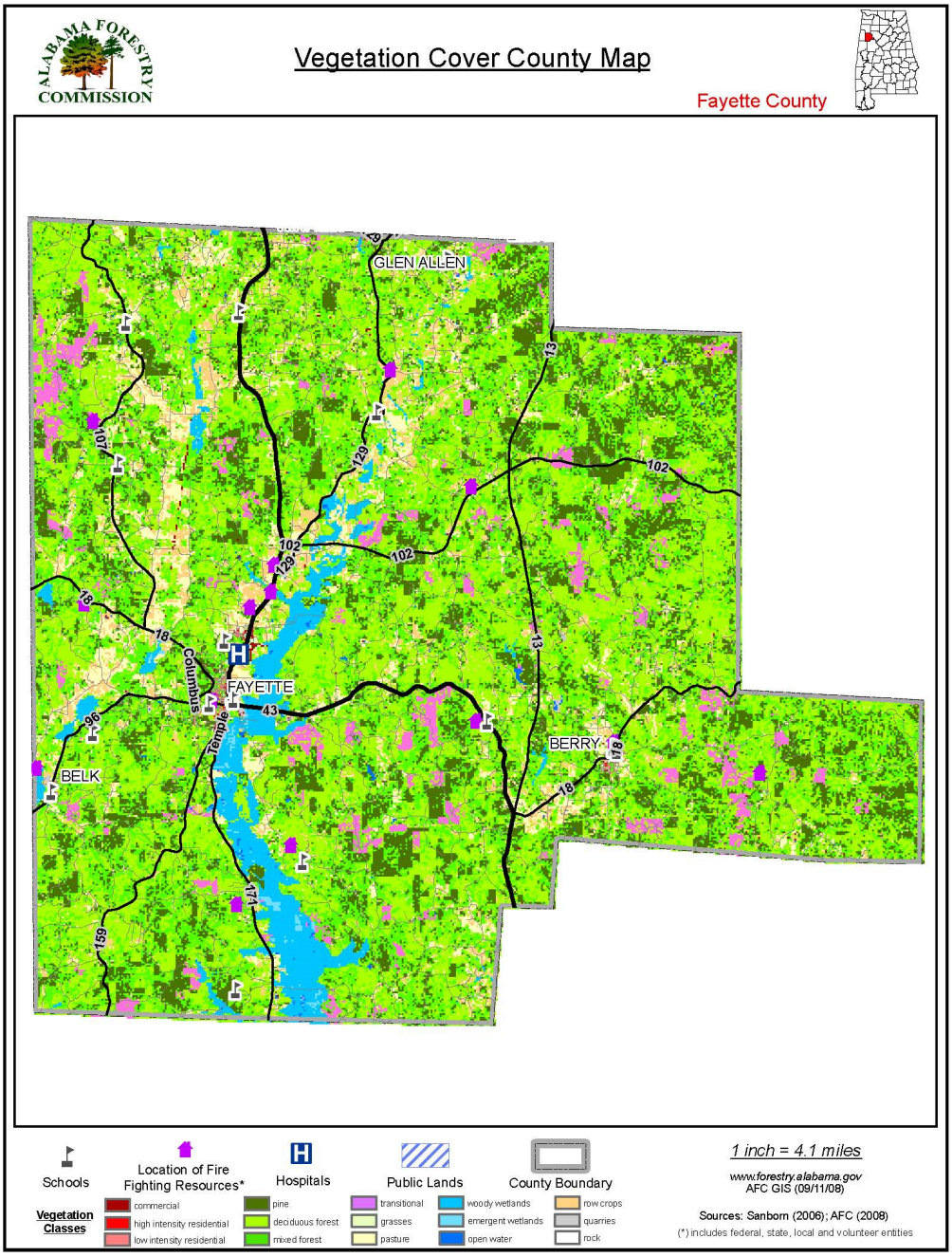


Extent and Intensity of Potential Wildfires

Fayette County has ample wild fuel sources with 333,600 acres of forestland and is prone to drought and thunderstorms which increase the potential intensity of wildfires significantly because dry vegetation is likely to catch fire and spread quickly when struck by lightning.

The weather is a natural contributor to wildfire occurrences. Extreme dry weather creates the perfect conditions for woodlands ready to spread fire rapidly. Droughts increase the inflammability of vegetation and pose greater difficulty in suppressing fires. Map 5-33 shows the vegetation cover in Fayette County. In the midst of the 2006-2008 drought, in March 2007, a very dry month, there were approximately 1,000 acres a day burned in the State of Alabama. In addition to drought, lightning can strike woodlands setting them on fire and trees that had been downed through severe weather events can add to the vegetative fuels to make timber for fires.

Map 5-33. Fayette County Vegetation Cover



The Southern Group of State Foresters have developed a mapping system that shows the fire intensity in a certain area. Map 5-34 shows the fire intensity for Fayette County. The classes for the fire intensity are as follows:

Class 1, Very Low:
Very small, discontinuous flames, usually less than 1 foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and non-specialized equipment.

Class 2, Low:
Small flames, usually less than two feet long; small amount of very short range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.

Class 3, Moderate:
Flames up to 8 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.

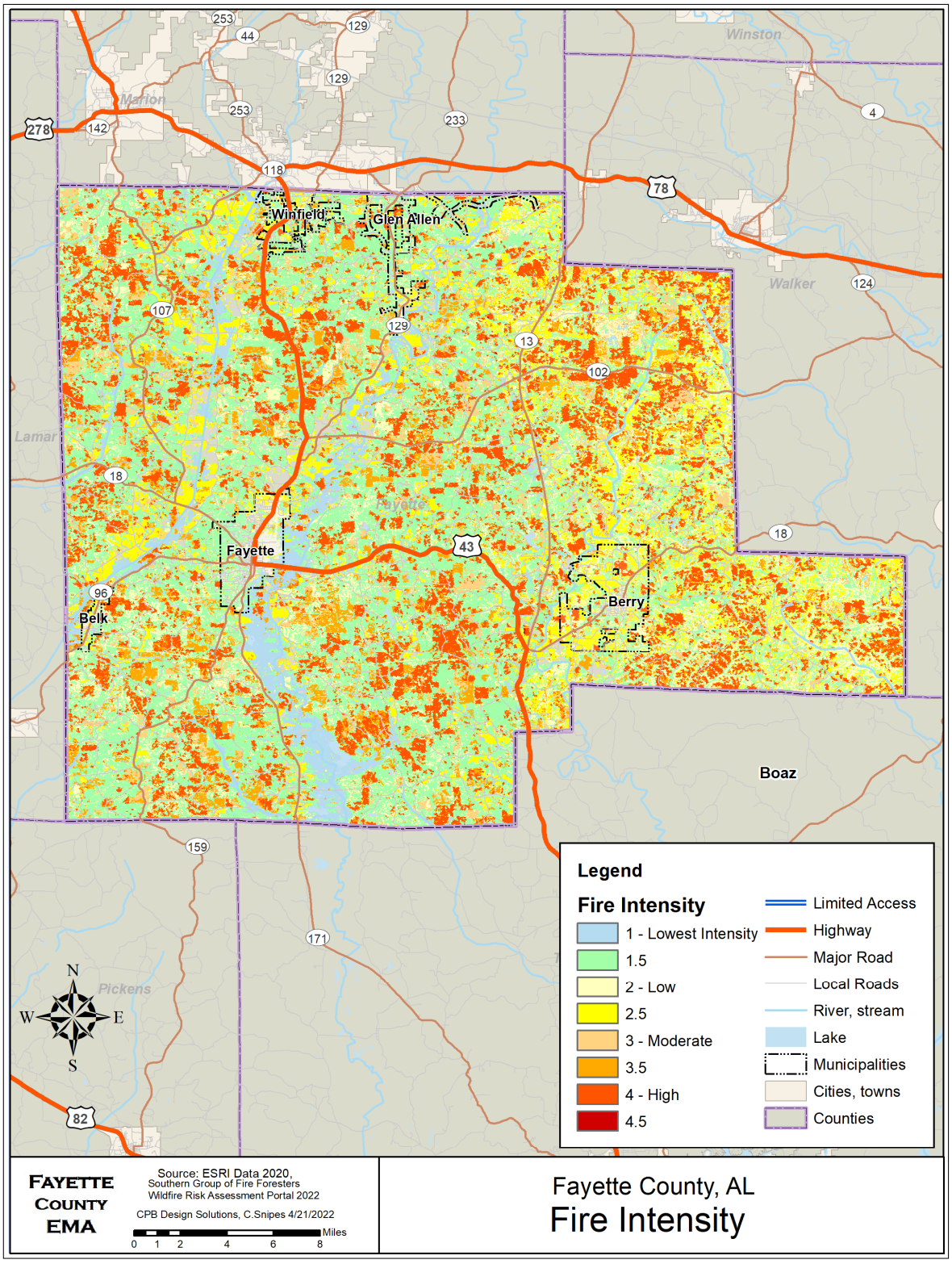
Class 4, High:
Large Flames, up to 30 feet in length; short-range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property.

Class 5, Very High:
Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property.

Limited firefighting resources are stretched during periods when numerous fires occur and can compound the risk and extent of wildfire damages. Fayette County has one full-time fire department and twelve volunteer fire departments. Fayette County has a Forestry Commission office and relies on response from neighboring counties through a mutual aid agreement. Low water pressure due to poorly maintained water distribution systems limit the ability to properly put out fires which can lead to the spread of fires.

The primary effects from a wildfire include loss of property or livestock, and the destruction of the wilderness and crops. Hazardous results from a significant wildfire in Fayette County include widespread fires destroying everything flammable, leaving people homeless and businesses destroyed; inability of fenced- in livestock to escape the path of a wildfire, potentially causing death by smoke inhalation; possible destruction of entire forests due to extremely hot fires; and loss of an entire year's crop through burning of all vegetation.

Map 5-34. Fayette County Fire Intensity



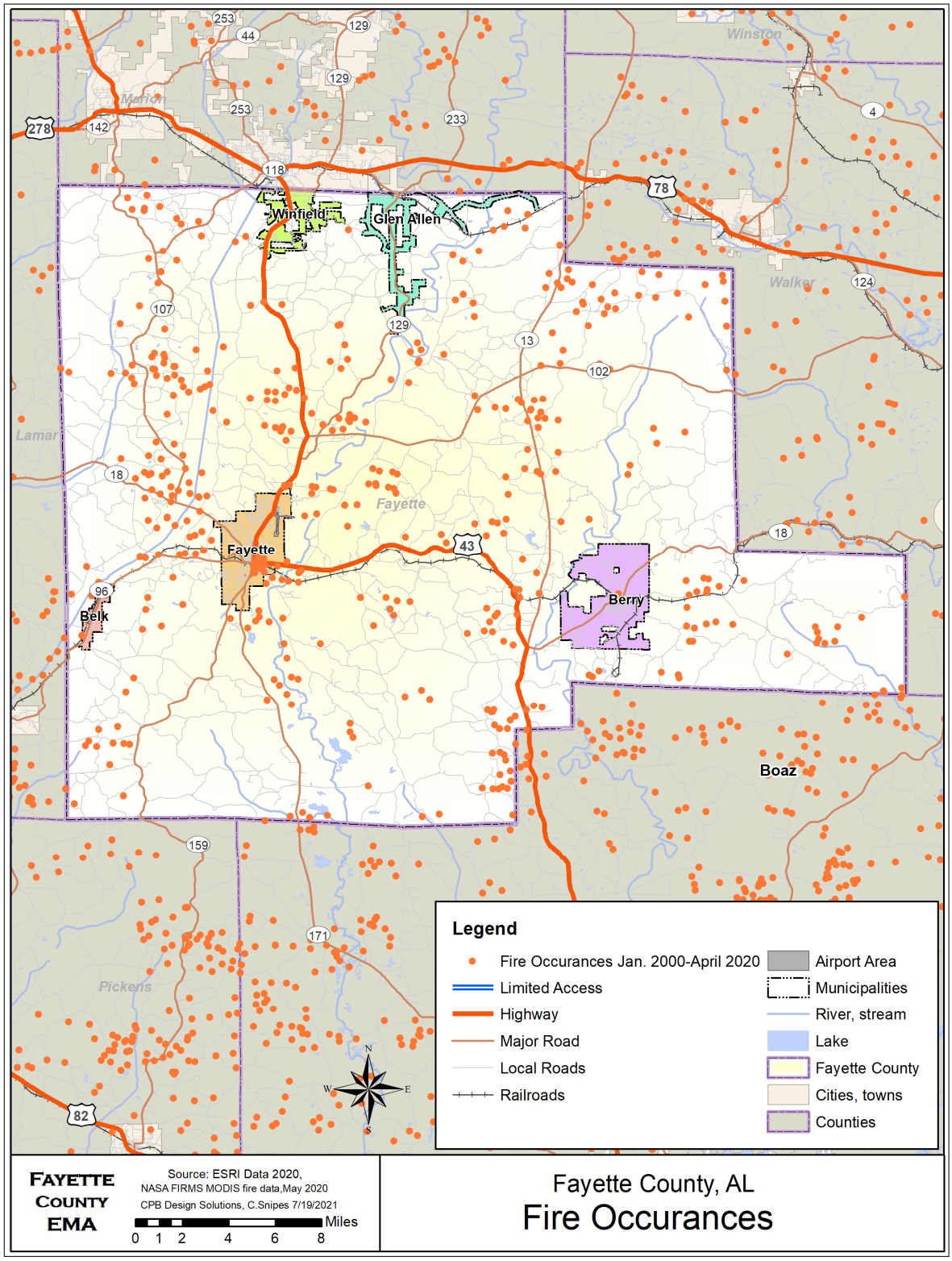
Past Occurrences of Wildfires

There were 1,195 wildfires in Alabama that burned over 14,000 acres during the severe drought of October 2016. On October 5 there was a fire warning issued due to the drought, lack of precipitation, high probability of fuel ignition, shortage of manpower and resources, and low humidity. This warning was well-warranted.

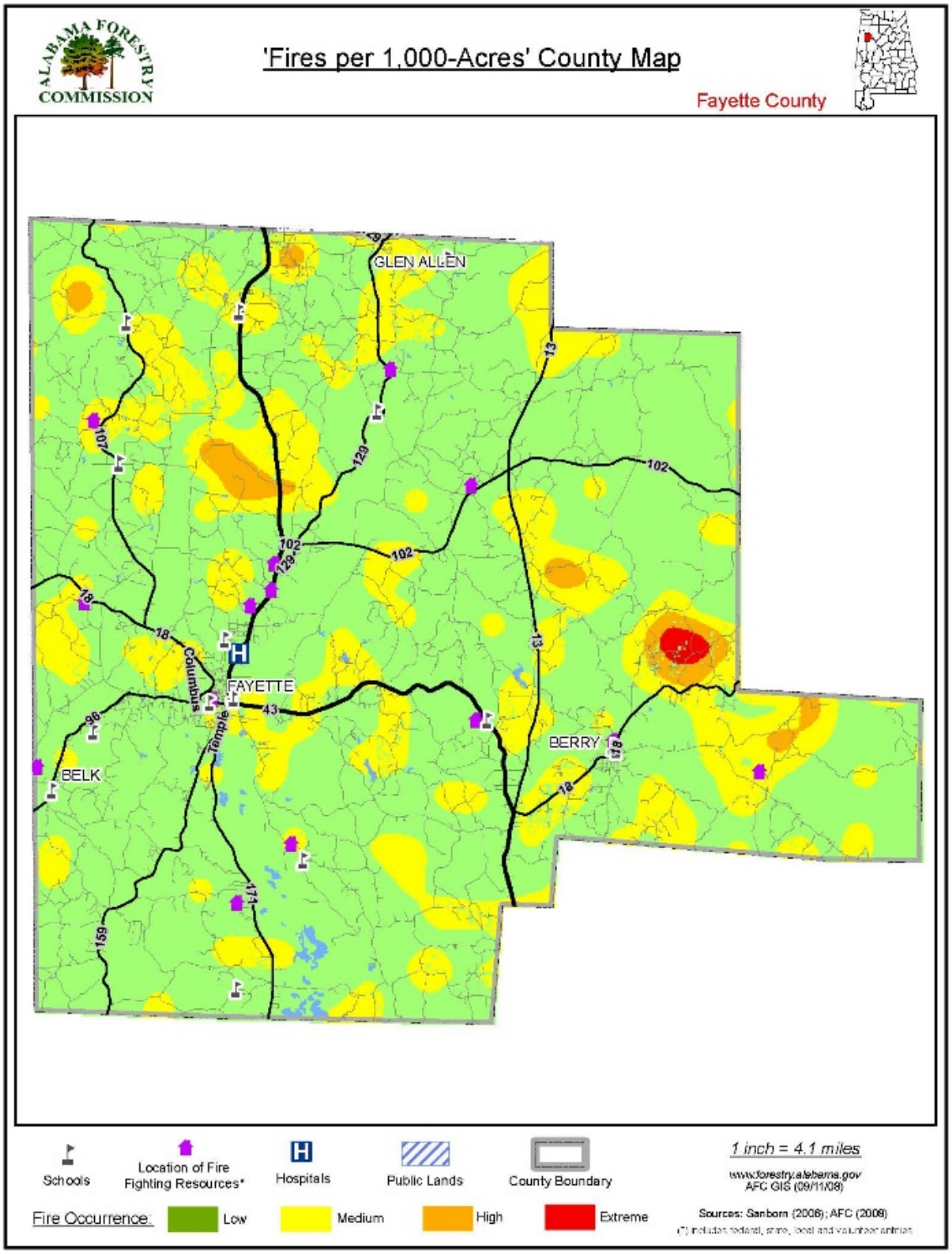
According to the Alabama Forestry Commission, between January 1, 2009, and December 31, 2018, there were 164 fires that burned a total of 1, 450 acres. Fayette County averaged 16.4 fires per year, with an average of 145 acres burned per year. Fayette County ranks 49th among 67 Alabama counties for number of fires and 53rd for acres burned.

Map 5-35 “Fayette County Fire Occurrences” shows the location of wildfires in Fayette County between January 2000 and April 2020. These wildfire occurrence areas generally coincide with areas denoted as low to high-risk areas on Map 5-36 “Fayette County Wildfire Risk.” The areas at highest risk in Fayette County are just north of the City of Fayette and the area around unincorporated Pea Ridge. These areas are ranked as “Extreme” or “High” on both the fire susceptibility and fire occurrence indexes.

Map 5-35. Fayette County Fire Occurrences



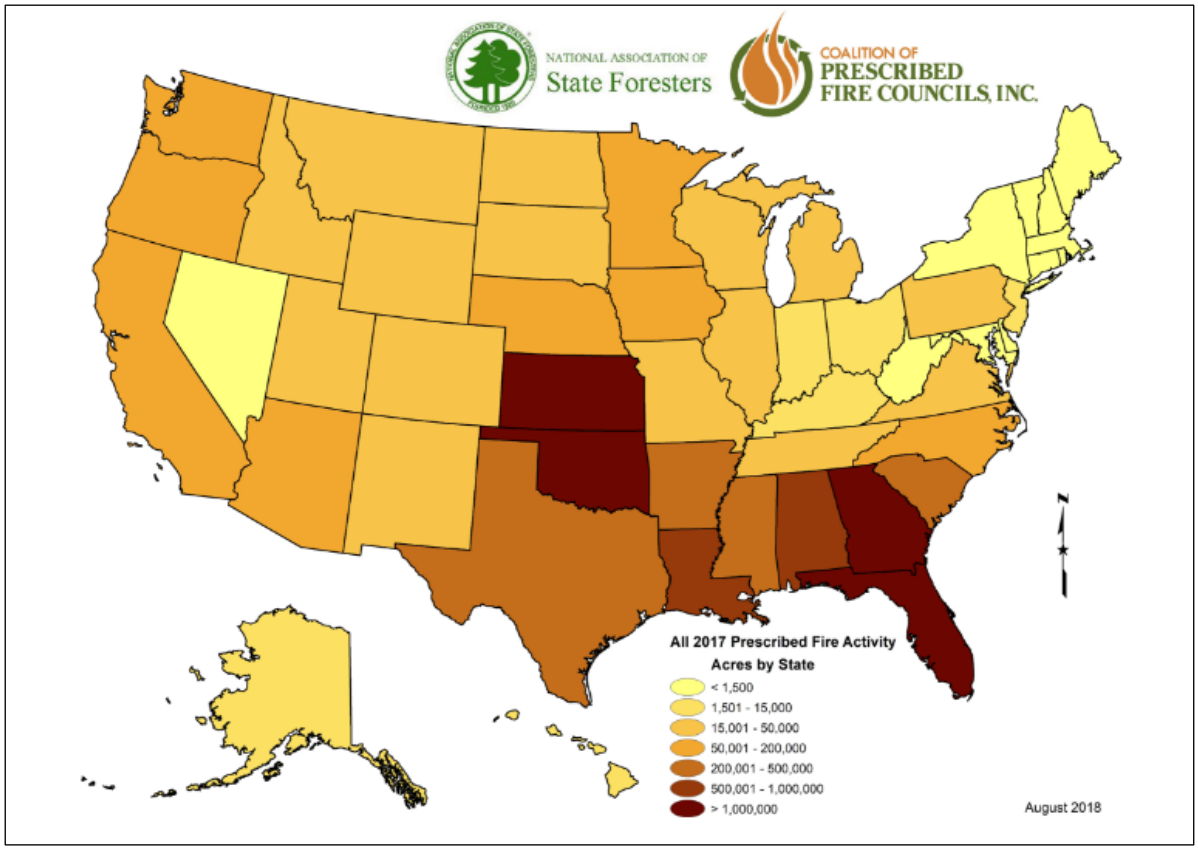
Map 5-36. Fayette County Fires per 1,000 Acres



Probability of Future Wildfire Events

Alabama, under the direction of the Alabama Forestry Commission, is in the top ten states that perform prescribed burns which tend to lower the amount of wildfire spread. Also, the county has concentrated their efforts on education of the public and improved training and resources for the volunteer fire departments around the county. Map 5-37 shows the state of Alabama's efforts with prescribed burns compared to the rest of the country for 2017.

Map 5-37. Prescribed Fire Activity, 2017



As long as the county continues to conduct prescribed burns and educate their citizens about wildfires, the number of fires and spread should remain at a reasonable level. Also, if legislation can be enacted to require timber companies to burn off remaining debris from timber removal, the county should continue to see less intense wildfires. Another measure that can be taken to minimize the impact of wildfires, is for citizens to allow the county to aid in the removal of fallen trees and debris from storm damage throughout the county after storm events, especially in large debris fields. Chapter Six – "Mitigation Strategy" addresses these mitigation measures and more that can be undertaken to lessen the impact of these wildfires.

5.3.12 Dam or Levee Failures

Dam or levee failures occur when a dam or levee is breached, and the impounded water is suddenly released. The resulting damage from a breach can far exceed any flood damage in the area. Since a failure would most likely occur during times of heavy rain, a failure would exacerbate existing flooding conditions. A failure is usually the result of neglect, unsound construction, or structural damage attributable to an earthquake or other hazard. Dam/levee failures have the potential to cause significant damage including human casualties for extended distances because of the force and volume of water; however, dam failures are rare.

The Army Corps of Engineers has estimated that the state of Alabama has almost 2,300 dams across the state, but the number is not certain, and neither is the condition of about 98% of the dams because Alabama is the only state in the country that does not have a system in place for dam inspection and safety. There have been attempts to create a program but none of the proposed legislation has passed. The dam safety regulations would establish the protocol for construction, alteration, repair, operation, abandonment, and removal of dams to be administered by a licensed engineer. The program would operate within the Alabama Department of Economic and Community Affairs (ADECA) Office of Water Resources.

Location of Potential Dam or Levee Failures

The National Inventory of Dams lists thirteen dams in Fayette County. They are all earthen dams which were constructed for recreation and are located in unincorporated areas of Fayette County. The dams' locations make it so that their failure will have little to no impact on structures within the county. A portion of Alabama Highway 171 in the City of Fayette acts as a levee. Table 5-13 lists the dams and provides information on which body of water it is located, year completed, height, maximum storage, and maximum discharge and Map 5-38 shows the locations of the dams in Fayette County.

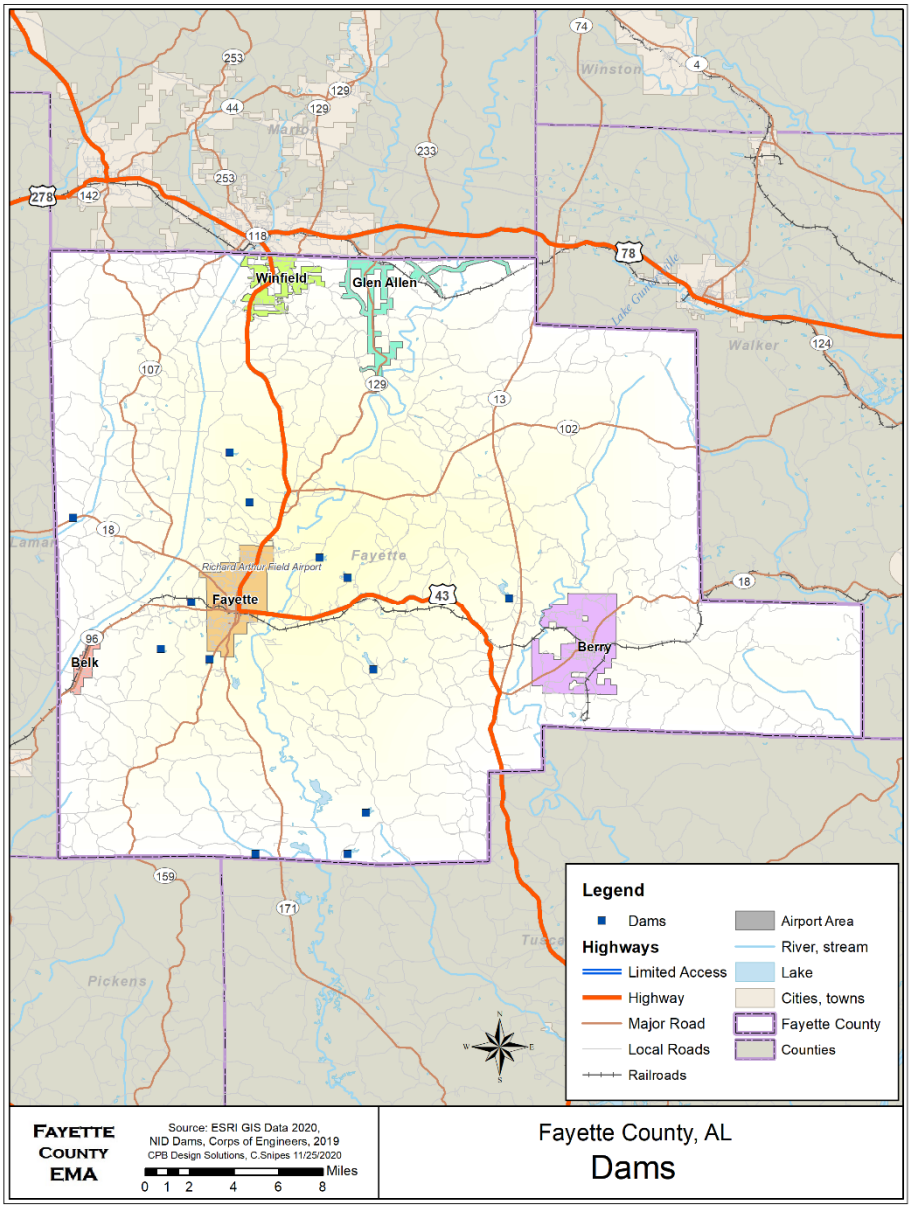
Table 5-13. Fayette County Dams

Dam Name	River	Year Completed	Height (ft.)	Max Storage (Acre ft)	Max Discharge (Ft^3/sec)
Bagwell Lake	TR-Sipsey River - Offstream	1962	25	120	50
Barnett Lake Dam	TR- Davis Creek	1960	25	242	163
Bugs Lake Dam aka Bays Lake Dam	Clear Creek	1952	28	1583	1579
Cains Ridge Dam	TR-Martins Creek- Offstream	1980	17	199	600
Fayette County Public Lake Dam	-	-	-	-	-
Freeman Lake Dam	TR-Bear Creek	1962	25	105	600
Harkins Lake Dam	TR-Fulton Creek	1956	35	330	600
Killingsworth Lake Dam	TR-Sipsey River	1967	31	374	1

Dam Name	River	Year Completed	Height (ft.)	Max Storage (Acre ft)	Max Discharge (Ft^3/sec)
Mitchum Lake Dam	TR-Sipsey River-Offstream	1955	30	156	600
Robertson Pond	TR-Luxapillila River	1998	23	176	210
Watkins Lake Dam	TR-Luxapallila Creek	1950	18	107	405
William D. Rowland Dam	TR – Hells Creek	1994	23	145	190
WW Bobo Dam	TR-Luxapallila Creek	1955	15	95	154

Source: Army Corps of Engineers

Map 5-38. Fayette County Dams



Extent and Intensity of Potential Dam or Levee Failure

The US Army Corps of Engineers rates the effects of dam failures on surrounding areas as either high, significant, or low. Three of the dams within Fayette County were ranked high hazard, six as significant and five as low. All of the dams are located in unincorporated areas of Fayette County and do not pose any substantial risk to the communities; therefore, the hazard ratings for these dams are deemed inaccurate and they should all be considered low at this time. The extent of damage from dam failure, other than to agricultural property, is almost non-existent.

Previous Occurrences of Dam or Levee Failures

Bays Lake Dam failed in 1980. The dam created a privately owned mill pond which failed due to heavy rainfall. After the failure, the US Army Corps of Engineers replaced the dam with an earthen dam and has been monitoring ever since.

Probability of Future Dam or Levee Failure Events

The implementation of dam safety programs and regulations, and the monitoring of the structural integrity of the dams should aid in mitigating dam failure. The largest dam, which is located at Bugs Lake, is monitored by the US Corps of Engineers and therefore the risk of failure of this dam should be very low. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken to mitigate these hazards.

5.3.13 Human-Caused Hazards

The term "human-caused hazards" has different definitions even when one consults FEMA and Department of Homeland Security documentation. For the purposes of this plan, we will use the definition provide by FEMA's Emergency Management Institute (EMI). According to FEMA's EMI, human-caused hazards are defined as "hazards that rise from deliberate, intentional human actions to threaten or harm the well-being of others." These hazards include workplace violence, terrorist acts and cyberterrorism. Unintentional hazards caused by humans, are covered in the next section "Technological Hazards".

The official definition for terrorism can be found in 28 CFR, Section 0.85. It defines terrorism as "...the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives." The Federal Bureau of Investigation (FBI) further characterizes terrorism as "either domestic or international, depending on the origin, base, and objectives of the terrorist organization."

For this plan the following human-caused hazard risks were assessed: biological, chemical, nuclear, and radiological agents; arson or incendiary attack; armed attacks; intentional hazardous materials releases; agriterrorism; and cyberterrorism. The main concerns for the HMPC members in relation to human-caused hazards are cyberterrorism, agriterrorism and arson.

Location of Potential Human-Caused Hazards

Acts of violence, terrorism or cyber security attacks can occur anywhere, at any time, with little to no warning; therefore, the potential for an attack in Fayette County is present. While all citizens

of Fayette County should be aware of the threat of human-caused hazards, research shows that certain considerations should be made to determine those that are considered at higher risk. Those considerations include areas of international, national, or regional importance, military and civilian government facilities, airports, large cities, and high-profile landmarks. Other factors to consider are large public gatherings such as festivals and parades, water and food supplies including agricultural areas, utilities, financial institutions, and corporate centers. Since terrorists can ship explosives or chemical and biological agents to any location through the mail or other systems, there is no location that is not a potential target.

Extent and Intensity of Potential Human-Caused Hazards

Terrorist attacks can be quite severe, with the potential for widespread damage to property and infrastructure and major loss of life and casualties, within any jurisdiction. Impacts of such events are determined by the method of attack, the amount of force applied and the density of population in the area of the attack. Some human-caused events can trigger other hazards such as wildfires, flooding due to destruction of dams, and environmental problems due to contamination by chemical or biological agents.

An active shooter could mean loss of life, and as a large percentage of active shooter situations occur in schools, this loss of life could include children. All areas of the county are equally susceptible to active shooter events. Agriterrorism would result in severe economic damage to the county if it involved the poultry industry since poultry is the number one industry for employment in the county.

The impact of cyber-attacks varies depending on the level of the technological breach and the data that is exposed through the breach. Such a breach could have financial or privacy violation consequences for business, government, and private citizens. Cyber security threats always pose a risk, more so today than ten years ago. Threats include social engineering (via Facebook, Twitter, LinkedIn), advanced persistent threats (gaining access to information in an organization), cloud security breaches, malware, and botnets. Also, now that more organizations are using alternative devices, such as iPads, iPhones, Android and Windows-operating smart phones for work-related purposes, attackers have more opportunity to gain access via the Web or through apps.

Previous Human-Caused Hazard Occurrences

With Fayette County being a rural county with no major metropolitan areas, there have been very few human-caused occurrences. There was a bomb threat called into the Fayette County Courthouse which upon investigation shown there was no bomb present and therefore no real threat.

Probability of Future Human-Caused Hazard Events

Human-caused hazards are very unpredictable . There is very little warning if there is going to be a human-caused event and most often none at all. While there are no major venues for sporting or cultural events, such as stadiums for professional or college football, or large shopping malls which would serve as targets, all areas within Fayette County are at risk for some form of human-caused hazard event. Even though Fayette County is a rural, less populous county, they are still at risk of

certain types of attacks. In order to mitigate the threats to either stop or lessen the impact, everyone must be more aware of what is happening around them and take steps to increase security around themselves and others, including with their computers and internet. Mitigation measures that can aid in this are presented in Chapter Six – "Mitigation Strategy".

5.3.14 Technological Hazards

According to FEMA, the term technological hazards refers to hazards that "originate from technological or industrial accidents, infrastructure failures, or certain human activities. These hazards cause the loss of life or injury, property damage, social and economic disruption, or environmental degradation, and often come with little to no warning." This plan refers to events that are not intentional such as: chemical spill, industrial accident at a facility, industrial accident during transport, and the failure of supervisory control and data acquisition system or other critical infrastructure component.

Location of Potential Human-Caused and Technological Hazards

All Fayette County jurisdictions are subject to technological hazards with some being at a greater risk due to their proximity to hazardous material storage sites or transportation routes. Map 5-39 shows the locations of hazardous materials storage, six of which are located in or near the City of Fayette and one is located in Town of Belk. All four incorporated areas along with the county have railroads running through them and the potential for a hazardous material spill due to derailing is a real risk. Also, US 43 traverses the City of Fayette and the county which is another risk for hazardous materials release if an accident during transport was to occur.

Extent and Intensity of Potential Human-Caused and Technological Hazards

Hazardous material events can have effects that range from minor inconvenience, such as the overturning of a gasoline tanker with no spillage, to disastrous, such as a spill into the waterway from a chemical manufacturing plant.

Previous Technological Hazard Occurrences

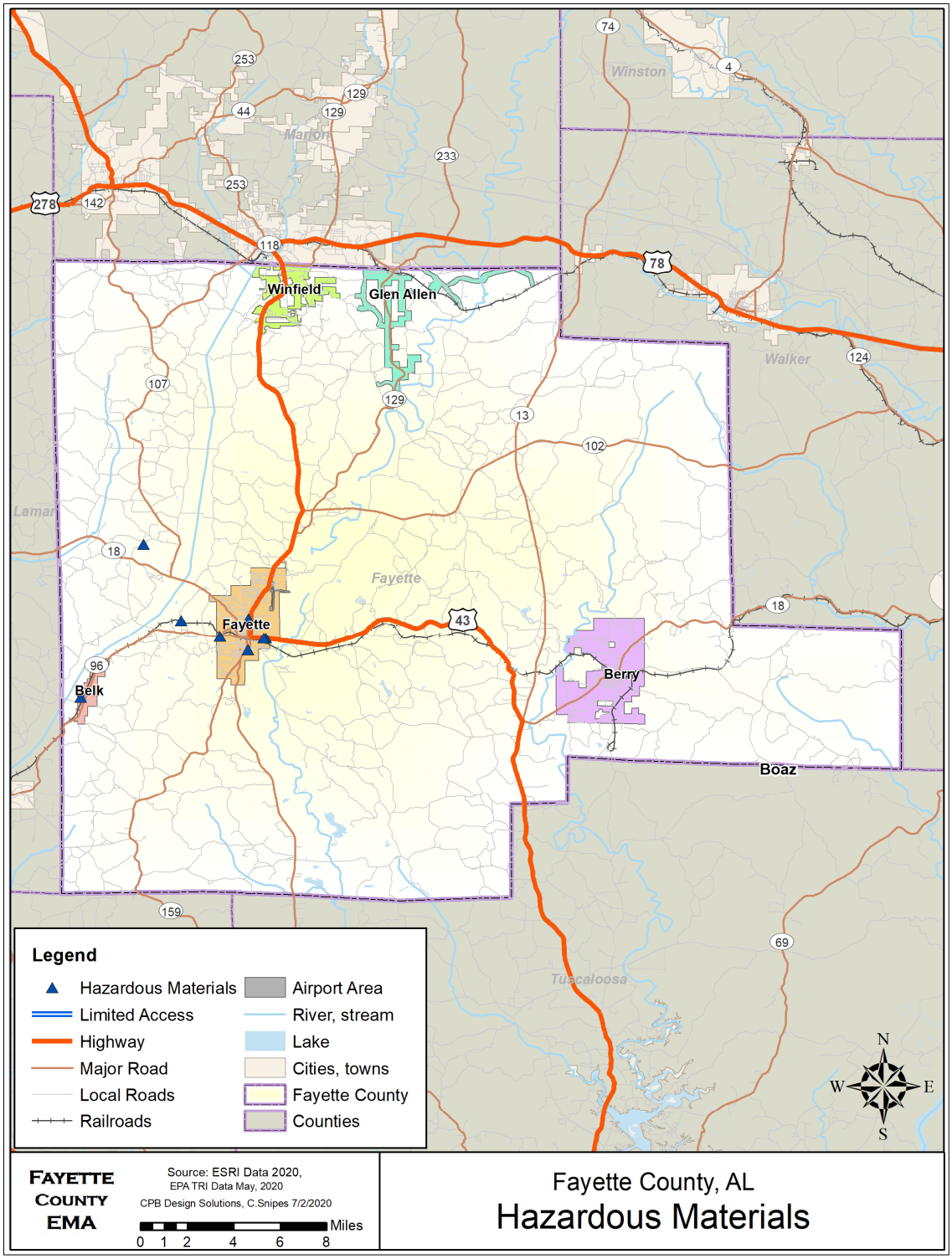
Fayette County has a few hazardous materials events. The extent of hazardous materials spills can be minimal to severe, sometimes costing thousands of dollars for clean-up. The extent of technological hazard impacts can be quite severe, with potential for widespread damage to property and infrastructure and major loss of life and casualties, within any jurisdiction.

On January 25, 2018, a diesel sheen was seen on Luxapalila Creek and the sheen was traced back to property owned by ST Bunn Construction. Luxapalila Creek is the primary water supply for the Fayette Water Board. The water intake is approximately 1 mile downstream from the spill site. Clean up of the site was conducted by a private contractor and overseen by the Alabama Department of Environmental Management.

In 2005, the County experienced a fuel spill into a creek near Covin. The spill originated from West Oil Supply located in Winfield. Local responders from both Fayette and Marion counties

coordinated efforts to utilize booms and pads to soak up the spill successfully. Clean-up costs were reported at roughly $14,110.

Map 5-39. Fayette Hazardous Materials Sites



Probability of Future Technological Hazard Events

Technological hazards are very unpredictable. There is no way to determine if there is going to be a technological hazard at any certain time and all times of year and locations are at risk for these hazards. Care must be taken by those involved with handling, storing, and transporting hazardous materials. Since Fayette County is susceptible to tornadoes and earthquakes, special effort must be taken to secure all chemicals in the event of these hazards occurring. Chapter Six – "Mitigation Strategy" addresses different mitigation measures that can be undertaken to lessen the impact of these technological hazards.

5.3.15 Pandemic and Infectious Diseases

A pandemic is a disease that affects or attacks the population covering a wide geographical area, including several countries, and/or continent(s). Pandemics typically cause sudden, pervasive illness in all age groups on a global scale. The exact size and extent of an infected population is dependent upon how easily the illness is spread, the mode of transmission and the amount of contact between infected and uninfected individuals.

Infectious diseases are also highly contagious and are spread person-to-person, but can also be spread by animals and insects, depending on the disease. A person can also get some diseases by ingesting contaminated food or water or by exposure to organisms in the environment. The transmission rate of infectious disease will depend on the mode of transmission of a given illness. A commonly occurring infectious disease, Influenza, also known as the flu, is a contagious illness that is caused by the influenza virus and most commonly attacks the respiratory tract in humans.

Pandemic and infectious disease events can affect large populations. The transmission rates of pandemic illnesses are often higher in denser areas where there are large concentrations of people. Pandemic events can also occur after other disasters, particularly floods, when there is the potential for bacteria to grow and contaminate water.

Location of Potential Pandemic and Infectious Diseases

Pandemic and infectious disease risks are possible in all jurisdictions in Fayette County with the areas with the largest population having the greatest risk due to the potential for a contagion to easily spread from person to person.

Extent and Intensity of Pandemic and Infectious Diseases

The extent and intensity of a pandemic or infectious disease threat in Fayette County is dependent on the aggressiveness of the virus or bacteria in question, its ability to spread, mode of transmission and amount of contact between infected and uninfected people. Population density and the level of social interaction in any infected area can influence the overall impact of any communicable disease. Some pandemics occur after natural disasters, especially flood events, when bacteria have the opportunity to grow and contaminate water

The extent of a pandemic may be worsened since outbreaks across the region leads to the inability to obtain assistance from surrounding areas since they are investing all their resources in fighting the disease in their own area. Also, different treatments and special supplies might be in high demand leading to a short supply or no availability in a time of need.

Previous Pandemic and Infectious Diseases Occurrences

While there have been many episodes of influenza in Alabama and Fayette County, there have been no schools closed due to the flu. In January 2018, Governor Kay Ivey issued a declaration of a statewide public health emergency due to the flu. The COVID-19 pandemic has caused major disruptions throughout the country resulting in school closings, among other precautions to avoid the spread of the disease.

Probability of Future Pandemic and Infectious Diseases Hazard Events

Infectious diseases will occur more frequently than pandemics with some strain of influenza impacting Fayette County every year. The magnitude of such an event will be dependent on the strain and the availability of a vaccine for that particular strain of flu. Pandemics will also occur but a much lower rate; however, when they do appear, the consequences can be far reaching and very impactful; harming people and the economy, and at times, animals.

Being a majority rural county lowers the risk of widespread casualty due to a pandemic or infectious diseases event but does not eliminate the risk. This type of environment can lead to complacency. Many people who live in Fayette County work outside the area where they can be exposed to the disease and bring it back to Fayette County so due diligence is necessary.

People must be well educated in how infectious diseases and pandemics are spread and how to prevent their transmission. The county should work with the health care industry and health departments to ensure educational materials are available and supplies that might be needed to address an outbreak are not expired and readily available. More information on mitigation measures to address pandemics and infectious diseases and pandemics can be found in Chapter Six – "Mitigation Strategy".

5.4 Vulnerability of Structures within Each Jurisdiction

This section of Chapter Five includes an inventory of existing and future buildings, critical facilities, and infrastructure within Fayette County. An analysis of the vulnerability of these structures to the hazards addressed in the risk assessment was conducted and its findings are presented. Vulnerability in this chapter refers to the exposure of buildings, critical facilities, and infrastructure to a particular hazard and their susceptibility to damage from the hazard. "Buildings" refer to all walled and roofed structures. Section 5.5, "Estimate of Dollar Losses to Vulnerable Structures," applies loss estimates to the inventory discussed in this section.

As demonstrated in the hazard profile section of this risk assessment, the jurisdictions located in Fayette County are equally at risk from most hazards. Riverine floods, sinkholes, landslides, and dam failures are location-specific hazards and the vulnerability of structures within the jurisdictions will

vary. Pandemics and infectious diseases are not covered in this section because they do not impact structures.

Inventory Methodology

Structure inventories were collected in three steps.

1) FEMA's Hazus-MH computer program was utilized to inventory the number and property values of structures within Fayette County. Hazus-MH is a risk assessment software used for projecting losses from floods, hurricane winds, and earthquakes. The latest edition of Hazus-MH software (version 4.2) was utilized. A Level 1 analysis was run which utilized data provided with the software to calculate damages at the county level. Because data accuracy tends to diminish when scenarios are run on smaller areas, Hazus analyses below the county level were not performed.

2) Growth rates and growth multipliers were applied to the Hazus-MH data of existing building values to estimate 2040 building values and exposure. The population projections and Hazus-generated structure counts and values are approximate but were helpful in determining areas of need when choosing and prioritizing mitigation measures.

3) Maps and tables of critical facilities were created using GIS data. The GIS data came from Fayette County sources, Geological Survey of Alabama, USGS, National Weather Service, NFIP, U.S. Census Bureau, Alabama State Data Center, and the Alabama Forestry Commission.

Hazus-MH includes critical facilities, infrastructure, and user-defined facilities in their analysis. The following are the types of structures recognized by Hazus that fall under the classifications of critical facilities, infrastructure, and user-defined facilities.

Critical Facilities

- Essential Facilities. These critical facilities are essential to the health and welfare of the entire Fayette County population and are particularly critical following hazard events. Emergency response facilities (police, fire, and emergency management), medical care facilities (hospitals and other care facilities), schools, and shelters for evacuation are all examples of essential facilities.

- High Potential Loss Facilities. These are facilities that will likely cause a large amount of loss if they are damaged. These critical facilities include military installations, nuclear power plants, hazardous materials sites, and dams.

Infrastructure

- Transportation Systems Lifeline. These facilities are vital to providing services during times of disasters. They include highways, bridges, tunnels, heavy/light railways, airports, buses, ports, and waterways.

- Utility Systems Lifeline. These facilities are essential lifelines that include potable water, wastewater, natural gas, oil, electric, and communications systems.

Other

- User-Defined Facilities. The user may include additional facilities or systems unique to their study region which are not included in the general Hazus-MH listing of critical facilities and infrastructure.

Hazus-MH Structure Inventory

Hazus-MH refers to the geographic study area as the "region", which is all of Fayette County, including all unincorporated areas and four municipalities. A more complete description of the planning region is presented in Chapter 3 "Community Profiles." The descriptions presented in this section were generated by the Hazus-MH Global Reports for county-wide assessments of flooding and earthquakes. 2010 Census data was used for the region description in the Hazus-MH analysis. The Fayette County region is generally described by Hazus-MH, as follows:

- The geographical size of the region is 629 square miles.
- The region contains 1,731 census blocks within 5 census tracts.
- There were over 7,000 households in the region, with a total population of 17,241 people (Census 2010 data).
-

Building Inventory

Hazus-MH estimates that there are approximately 8,462 buildings in the region, which have an estimated replacement value (excluding contents) of around $1.5 billion (Year 2014 dollars). Table 5-14 shows the building value of all structures within Fayette County per Hazus in terms of 2014 dollars. Table 5-15 breaks out the building inventory into percentages by the following occupancy types: agriculture, commercial, education, government, industrial, religion, residential (single family) and residential (other). Existing dollar values of the structures within the region, divided by occupancy type, are presented in Table 5-16 and Chart 5-4.

Seventy-six percent of the occupancy type is residential and residential accounts for 76% of the value of the buildings in the region. Residential is followed by commercial and industrial occupancies for the most building and highest values.

Table 5-14. Hazus-MH Building Value Data

County	Building Value (thousands)		
	Residential	Non-Residential	Total
Fayette	$147,978	$365,359	$1,513,337

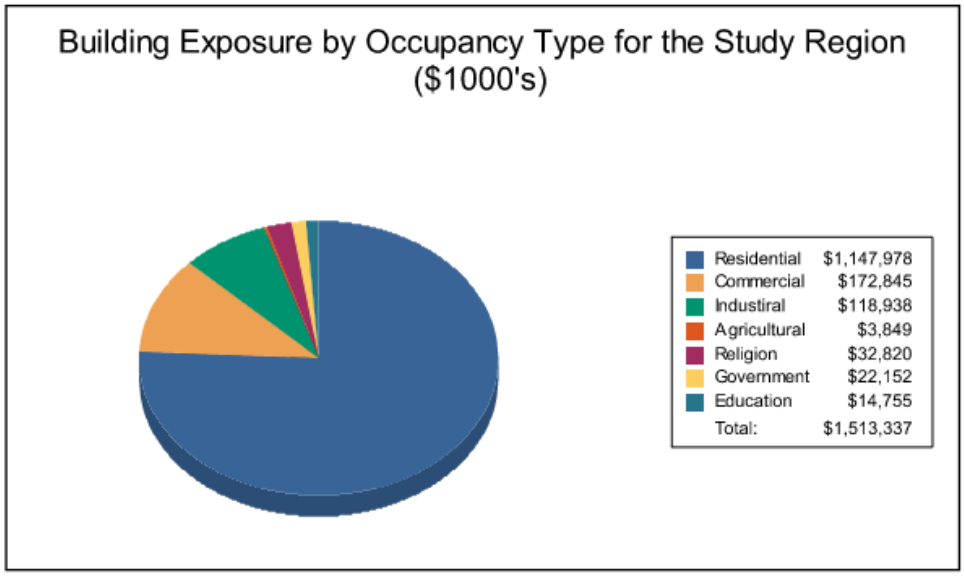
Table 5-15. Hazus-MH Building Inventory by Occupancy Type

Occupancy	Count	Share
Agriculture	25	0.3%
Commercial	342	11.4%
Education	12	1.0%
Government	23	1.5%
Industrial	110	7.9%
Religion	46	2.2%
Residential	5977	75.9%
Total	8462	100%

Table 5-16. Building Exposure by Occupancy Type

Occupancy	Existing Exposure ($1,000)	% Of Total
Agriculture	$3,849	0.25%
Commercial	$172,845	11.42%
Education	$14,755	0.97%
Government	$22,152	1.46%
Industrial	$118,938	7.86%
Religious	$32,820	2.17%
Residential	$1,147,978	75.86%
Total	$1,513,337	100.00%

Chart 5-4. Hazus-MH Building Exposure by Occupancy Type



Hazus also separates the structures by construction type. The types of material presented are wood, steel, concrete, precast, reinforced masonry, unreinforced masonry, and manufactured housing. This information is important because the materials used in construction determine how stable the structures will be during certain hazard events. As shown in Table 5-17, in the Fayette County region, wood frame construction makes up 70% percent of the building inventory. This high percentage can be attributed to the number of residential buildings in the area. Manufactured housing accounts for approximately 21% of the structures, which is important to note due to their vulnerability to most hazards.

Table 5-17. Hazus-MH Building Inventory by Construction Type

Construction Type	Count	Share
Wood	5888	69.57%
Steel	255	3.01%
Concrete	44	0.52%
Precast	19	0.22%
Reinforced Masonry	60	0.71%
Unreinforced Masonry	451	5.33%
Manufactured Housing	1746	20.63%
Total	8,463	100%

Most hazards are county-wide and therefore the vulnerability to the structures within Fayette County are equal. While all structures have an equal probability of being impacted by region-wide hazards such as severe storms and tornadoes, residential structures will have a higher percentage of being impacted by a hazard over all other structures since they comprise 76% of the building stock in Fayette County and are spread throughout the county. The categories of government, education, and religion each have less than 3% of the buildings in the region; however, even though those buildings make up a small percentage of the building inventory, depending on when a disaster hits, the consequences could be devastating due to the number of people in the structure at the time of the disaster.

Location-specific hazards, such as flooding, wildfires, dam failures, sinkholes, and landslides can vary from minimal exposure to as much as 100% of a community's total geographic area. The percent exposure can be applied to the structure inventories to derive a general estimate of vulnerable structures by hazard. Although this does not yield a precise estimate, it provides a general indication of the number and types of structures exposed to each hazard within each jurisdiction. Table 5-18 shows the percentage of buildings exposed to a hazard by jurisdiction as determined by the risk assessment and other sources.

Table 5-18. Hazard Exposure Rates by Jurisdiction

Identified Hazard	Unincorporated Fayette County	Belk	Berry	Fayette	Glen Allen
Tornadoes	100%	100%	100%	100%	100%
Severe Storms	100%	100%	100%	100%	100%
Floods - Flash	25%	50%	1%	75%	75%
Floods - Riverine	15%	10%	10%	20%	10%
Hurricanes	100%	100%	100%	100%	100%
Winter Storms	100%	100%	100%	100%	100%
Extreme Cold	100%	100%	100%	100%	100%
Droughts	100%	100%	100%	100%	100%
Extreme Heat	100%	100%	100%	100%	100%
Wildfires	100%	50%	50%	50%	75%
Dam Failures	15%	0%	0%	0%	0%
Landslides	10%	0%	5%	10%	5%
Earthquakes	100%	100%	100%	100%	100%
Sinkholes	1%	0%	0%	0%	1%
Pandemics/Infectious Disease	100%	100%	100%	100%	100%
Human-Caused	100%	100%	100%	100%	100%
Technological	100%	100%	100%	100%	100%

Critical facilities and infrastructure have been apportioned to each jurisdiction on the basis of population distribution. Table 5-19 shows this distribution.

Table 5-19. 2018 Population Distribution by Jurisdiction

Jurisdiction	2018 Estimate	% Of Total
Fayette County	16,433	100%
Belk	205	1.2%
Berry	1,098	6.7%
Fayette	4,327	26.3%
Glen Allen	487	3.0%
Unincorporated	10,316	62.8%

To project populations for each jurisdiction, the annual growth rate for each jurisdiction was calculated based upon population growth between 2000 and 2018. The unincorporated area projection is the countywide population less the total of all municipal populations. This is shown in Table 5-20.

Table 5-20. Annual Growth Rates by Jurisdiction

Jurisdiction	2000	2018	Number Change 2000-2018	Percent Change	Annual Growth Rate
Fayette County	18,495	16,433	-2,062	-11.15%	-0.65%
Belk	214	205	-9	-4.21%	-0.24%
Berry	1,238	1,098	-140	-11.31%	-0.66%
Fayette	4,922	4,327	-595	-12.09%	-0.71%

Jurisdiction	2000	2018	Number Change 2000-2018	Percent Change	Annual Growth Rate
Glen Allen	442	487	45	10.18%	0.54%
Unincorporated	11,679	10,316	-1,363	-11.67%	-0.69%

If the population trend from 2000 to 2018 continues, all of Fayette County's jurisdictions are expected to decline in population other than Glen Allen. Fayette County's projected annual growth is -13% between 2018 and 2040 as shown on Table 5-21. The largest decline is expected to be in the City of Fayette with a projected decline of -15%, followed by both unincorporated Fayette County and Berry at -14%. Belk is expected to have a population reduction of -5%. Glen Allen is expected to gain 13% in population between 2018 and 2040. Since 76% of the building inventory is residential, building inventory can be expected to change according to each jurisdiction's growth multiplier. Using the numbers obtained from the growth projections and multipliers, the projected population distribution by jurisdiction for Fayette County in 2040 is presented in Table 5-22.

Table 5-21. Projected Growth 2018 - 2040

Jurisdiction	Estimated 2018	Annual Growth Rate	Projected 2040	Projected Change 2018-2040	Percent Change 2018-2040	2040 Growth Multiplier
Fayette County	16,433	-0.65%	14,224	-2,209	-13%	0.87
Belk	205	-0.24%	195	-10	-5%	0.95
Berry	1,098	-0.66%	948	-150	-14%	0.86
Fayette	4,327	-0.71%	3,697	-630	-15%	0.85
Glen Allen	487	0.54%	548	61	13%	1.13
Unincorporated	11,679	-0.69%	8,865	-1,451	-14%	0.86

Table 5-22. 2040 Population Distribution by Jurisdiction

Jurisdiction	2040 Population	% Of Total
Fayette County	14,224	100%
Belk	195	1%
Berry	948	7%
Fayette	3,697	26%
Glen Allen	548	4%
Unincorporated	8,865	62%

Taking the growth projections and applying them to the existing values for buildings in Fayette County, future values can be estimated. Table 5-23 applies future values to the building values by jurisdiction by separating the building inventory into residential and non-residential and then

multiplying by the growth multiplier for that jurisdiction. The unincorporated areas of Fayette County have the highest residential and non-residential values followed by the City of Fayette.

Table 5-23. Building Values by Jurisdiction

Jurisdiction	Building Value ($1,000)					
	Existing Residential	Future Residential	Existing Non-Residential	Future Non-Residential	Existing Total	Future Total
Fayette County	$1,147,978	$998,741	$362,359	$15,252	$1,513,337	$1,316,603
Belk	$13,776	$13,087	$4,348	$4,131	$18,160	$17,252
Berry	$76,915	$66,146	$24,278	$20,879	$101,394	$87,198
Fayette	$301,918	$256,630	$95,300	$81,005	$398,008	$338,306
Glen Allen	$34,439	$38,916	$10,871	$12,284	$45,400	$51,302
Unincorporated	$720,930	$620,000	$227,561	$195,703	$950,376	$817,323

The same process was applied to the building count by occupancy and jurisdiction as shown in Table 5-24. Residential is projected to remain the largest occupancy of buildings in Fayette County followed by commercial and industrial. Table 5-25 applies the percent of exposure to the hazards from Table 5-18 and the growth multiplier to the existing building value per jurisdiction and provide an estimate of building exposure per hazard for each jurisdiction. All structures are equally susceptible to impacts from severe storms, tornadoes, winter storms, drought, extreme heat, earthquakes, hurricanes, human-caused, and technological hazards. There is minor threat of damages from sinkholes, dam failure, and landslides for the incorporated areas of Fayette County. Those hazards will most likely impact the unincorporated areas.

Table 5-24. Building Count by Occupancy and Jurisdiction

Jurisdiction	Building Count by Occupancy													
	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future
	Agric.		Commercial		Education		Govt.		Industrial		Religion		Residential	
Fayette County	25	22	342	298	12	10	23	20	110	96	46	40	7904	6876
Belk	0	0	4	4	0	0	0	0	1	1	1	1	95	90
Berry	2	1	23	20	1	1	2	1	7	6	3	3	530	455
Fayette	7	6	90	76	3	3	6	5	29	25	12	10	2079	1767
Glen Allen	1	1	10	12	0	0	1	1	3	4	1	2	237	268
Unincorporated	16	14	215	185	8	6	14	12	69	59	29	25	4964	4269

Table 5-25. Building Exposure by Jurisdiction and Hazard

Identified Hazard	Building Exposure ($1000s) by Jurisdiction									
	Unincorporated Fayette County		Belk		Berry		Fayette		Glen Allen	
	Existing	Future	Existing	Future	Existing	Future	Existing	Future	Existing	Future
Tornadoes	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Severe Storms	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Floods - Flash	$1,513,337	$658,302	$9,080	$8,626	$1,014	$872	$298,506	$253,730	$34,050	$38,477
Floods - Riverine	$227,001	$197,490	$1,816	$1,725	$10,139	$8,720	$79,602	$67,661	$4,540	$5,130
Hurricanes	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Winter Storms	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Extreme Cold	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Droughts	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Extreme Heat	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Wildfires	$1,513,337	$1,316,603	$9,080	$8,626	$50,697	$43,599	$199,004	$169,153	$34,050	$38,477
Dam Failures	$227,001	$197,490	$0	$0	$0	$0	$0	$0	$0	$0
Landslides	$151,334	$131,660	$0	$0	$5,070	$4,360	$39,801	$33,831	$2,270	$2,565
Earthquakes	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Sinkholes	$15,133	$13,166	$0	$0	$0	$0	$0	$0	$454	$513
Pandemics/Infectious Disease	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Human-Caused	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302
Technological	$1,513,337	$1,316,603	$18,160	$17,252	$101,394	$87,198	$398,008	$338,306	$45,400	$51,302

Critical Facilities Inventory

Included among the building inventory is the critical facilities category which is divided into the two groups: essential facilities and high potential loss facilities. Each group is described below and the estimated number of each type of facility in Fayette County, as provided by Hazus, are noted.

(1) Essential facilities - Hazus-MH includes hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. Hazus-MH estimates the numbers and types of essential facilities within the region, as follows:

- ✓ 1 hospital with a total bed capacity of 183 beds;
- ✓ 7 schools;
- ✓ 13 fire stations
- ✓ 1 emergency operations center; and
- ✓ 3 police stations.

(2) High potential loss facilities – Hazus-MH includes dams, levees, hazardous materials sites, military installations, and nuclear power plants. There are no military installations or nuclear power plants included in the analysis, so they are not included in the list of high potential loss facilities. Hazus-MH estimates the numbers and types of high potential loss facilities, as follows:

- ✓ 12 dams, with three classified as "high hazard;" and
- ✓ 8 hazardous materials sites.

Hazus-MH estimates there are 26 essential facilities within Fayette County. When there are increases in population, the number of essential facilities typically increase in proportion to the growth of the area; however, Fayette is projected to have a decline in population between 2018 and 2040 continuing the pattern of decrease seen between 2000 and 2018. If the population does decrease, it is unlikely that the number of critical facilities serving the area would decline; therefore, the number of facilities should remain constant.

Table 5-26. Hazus-MH Essential Facilities Data

Classification	Existing Estimate
Hospitals	1 (183 total bed capacity)
Fire Stations	13
Police Stations	3
EOC	1
Schools	7

Table 5-27. Hazus-MH High Potential Loss Facilities Data

Classification	Existing Estimate
Dams	12
Hazard Materials Sites	8

Transportation and Utility Lifeline Inventories

Lifeline inventories are divided into two groups, transportation systems and utility systems. Hazus-MH estimates the total value of the lifeline inventory at approximately $1.225 billion, with estimated replacement costs of around $920 million in transportation and $305 million in utility infrastructure. Tables 5-28 and 5-29 break out the components within each system.

Transportation systems – Hazus-MH classifies highways, railways, light rail, bus, ports, ferry, and airports under the transportation system lifeline inventory list. Fayette County does not have light rail, bus, or ferry services so they are not included in the analysis. Most of the at-risk transportation system components are highway road segments and bridges, which are most vulnerable to flooding and earthquakes. Transportation infrastructure inventories appear below.

Table 5-28. Hazus-MH Transportation Systems Lifeline Inventory

System	Component	No. of Locations or No. of Segments	Replacement Value ($millions)
Highway (111.85 miles)	Bridges	108	57.00
	Segments	17	786.60
	Tunnels	0	0
		Subtotal	*$843.60*
Railways	Bridges	0	0
	Facilities	0	0
	Segments	6	28.50
	Tunnels	0	0
		Subtotal	*$28.50*
Airport	Facilities	1	10.65
	Runways	1	38.00
		Subtotal	*$48.60*
		Total	$920.70

Utility systems - Hazus-MH classifies potable water, wastewater, natural gas, crude and refined oil, electric power, and communications under utility system lifeline. Fayette County does not have any crude or refined oil systems, so they are not included in the analysis. The types of utilities most vulnerable to hazards in Fayette County are electric power lines, and water and wastewater facilities. Severe storms, tornadoes, and flooding pose the greatest threat to these facilities. Human-caused and technological hazards also pose a threat to these facilities.

Table 5-29. Hazus-MH Utilities Systems Lifeline Inventory

System	Component	No. of Locations or No. of Segments	Replacement value ($millions)
Potable Water	Distribution Lines	NA	61.40
	Facilities	2	60.00
	Pipelines	0	0
		Subtotal	*$121.40*
Wastewater	Distribution Lines	NA	36.80
	Facilities	2	119.90
	Pipelines	0	0
		Subtotal	*$156.70*
Natural Gas	Distribution Lines	NA	24.60
	Facilities	3	2.90
	Pipelines	0	0
		Subtotal	*$27.50*
Communication	Facilities	1	.10
		Subtotal	*$.10*
		Total	$305.60

Local Inventories of Critical Facilities and Infrastructure

Data from the US Company Database (2020), the participating jurisdictions, the Army Corps of Engineers, and the Fayette County EMA was compiled to create a local inventory of critical facilities as well as transportation and utility lifelines in Fayette County. The following pages contain maps and tables showing the locations of major critical facilities and utility lifelines. Due to the ruralness of the county, many facilities on the following tables are listed as located in Fayette even though they are located outside the city limits of Fayette.

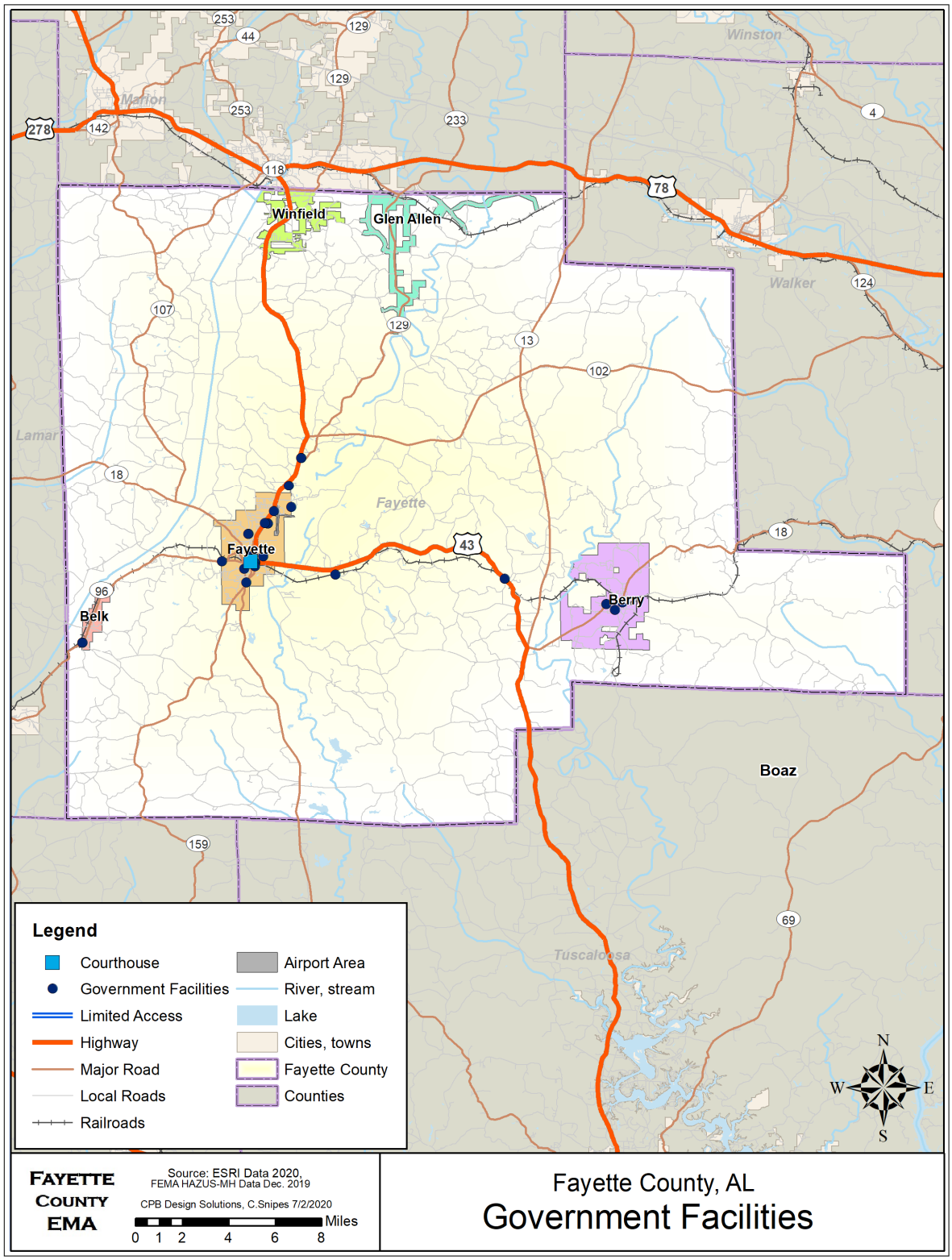
There are 46 government agencies within 31 buildings throughout Fayette County, excluding public safety. Eight of the government buildings are federally owned buildings such as post offices and military offices. Six government buildings are state buildings and ten are related to county government business. The majority of these buildings can be found within the municipalities, but a few are located in unincorporated areas.

Table 5-30. Fayette County Government Facilities

Agency	Type	Address	CITY
Alabama Dept. Transportation	Regulation, Administration of Transportation	432 12th St NW	Fayette
Alabama Forestry Commission	Forestry Services	5434 Highway 171 N	Fayette
Alabama Human Resources Dept.	Administration of Social and Manpower Programs	410 16th St NE	Fayette
Belk Town Hall	Executive Offices	7633 Highway 96	Belk
Berry City Hall	Executive Offices	30 School Ave	Berry
Fayette Board of Registrars	Legislative Bodies	103 1st Ave NW # 4	Fayette
Fayette City Civil Air Patrol	Legislative Bodies	110 21st St NE	Fayette
Fayette City Hall	Executive Offices	102 2nd Ave SE	Fayette
Fayette County Small Claims Court	Courts	113 Temple Ave N	Fayette
Fayette Co Farm Service Agency	Regulation of Agricultural Marketing	245 County Road 26 S	Fayette
Fayette Co Memorial Library	Libraries	326 Temple Ave N	Fayette
Fayette Commissioners Court	Courts	103 1st Ave NW	Fayette
Fayette County Child Welfare	Administration of Social and Manpower Programs	410 16th St NE	Fayette
Fayette County Circuit Judge	Courts	113 Temple Ave N	Fayette
Fayette County Commission	Executive Offices	103 1st Ave NW Ste. 2	Fayette
Fayette County Drivers' License	Regulation, Administration of Transportation	103 1st Ave NW	Fayette
Fayette County Extension Office	Legislative Bodies	650 McConnell Loop	Fayette
Fayette County Health Dept.	Administration of Public Health Programs	215 1st Ave NW	Fayette
Fayette County Juvenile Probation	Legislative Bodies	113 Temple Ave N	Fayette
Fayette County Lake	Legislative Bodies	529 County Road 134	Fayette
Fayette County Revenue Commission	Finance, Taxation, And Monetary Policy	113 Temple Ave N	Fayette
Fayette County Road Shop	Legislative Bodies	1112 Highway 96	Fayette
Fayette County School Bus Shop	Administration of Educational Programs	407 5th Ave NE	Fayette

Agency	Type	Address	CITY
Fayette County Veteran Affairs	Legislative Bodies	103 1st Ave NW	Fayette
Fayette Examiners of Accounts	Legislative Bodies	113 Temple Ave N	Fayette
Fayette Judge of Probate	Courts	113 Temple Ave N	Fayette
Fayette Probate Tag Office	Legislative Bodies	113 Temple Ave N	Fayette
Industrial Board of City of Fayette	Legislative Bodies	102 2nd Ave SE	Fayette
National Guard	National Security	17510 Highway 18 E	Berry
Natural Resource Conservation	Legislative Bodies	103 1st Ave NW	Fayette
Northwest AL Mental Health Center	Administration of Public Health Programs	123 2nd Ave NW	Fayette
Park Rec Board City Fayette	Land, Mineral, And Wildlife Conservation	102 2nd Ave SE	Fayette
Revenue Commissioners Office	Finance, Taxation, And Monetary Policy	113 Temple Ave N	Fayette
State of Alabama	Legislative Bodies	1620 Temple Ave N	Fayette
Town of Glen Allen	Legislative Bodies	156 Highway 129 S	Glen Allen
Tri County Mr-Dd Board	General Government	423 2nd Ave SE	Fayette
US Army National Guard Recruiting	National Security	2335 6th Ave NE	Fayette
US Office of Economic Opportunity-Community Action	Administration of Social and Manpower Programs	316 2nd Ave NE	Fayette
US Post Office	U.S. Postal Service	10745 Highway 18 E	Bankston
US Post Office	U.S. Postal Service	7660 Highway 96	Belk
US Post Office	U.S. Postal Service	107 Federal Ave	Berry
US Post Office	U.S. Postal Service	152 Highway 129 S	Glen Allen
US Post Office Main	U.S. Postal Service	223 Temple Ave N	Fayette
US Social Security Administration	Administration of Social and Manpower Programs	405 6th St SW	Fayette
Veterans Affairs Services	Administration of Veterans' Affairs	103 1st Ave NW	Fayette

Map 5-40. Fayette County Government Facilities

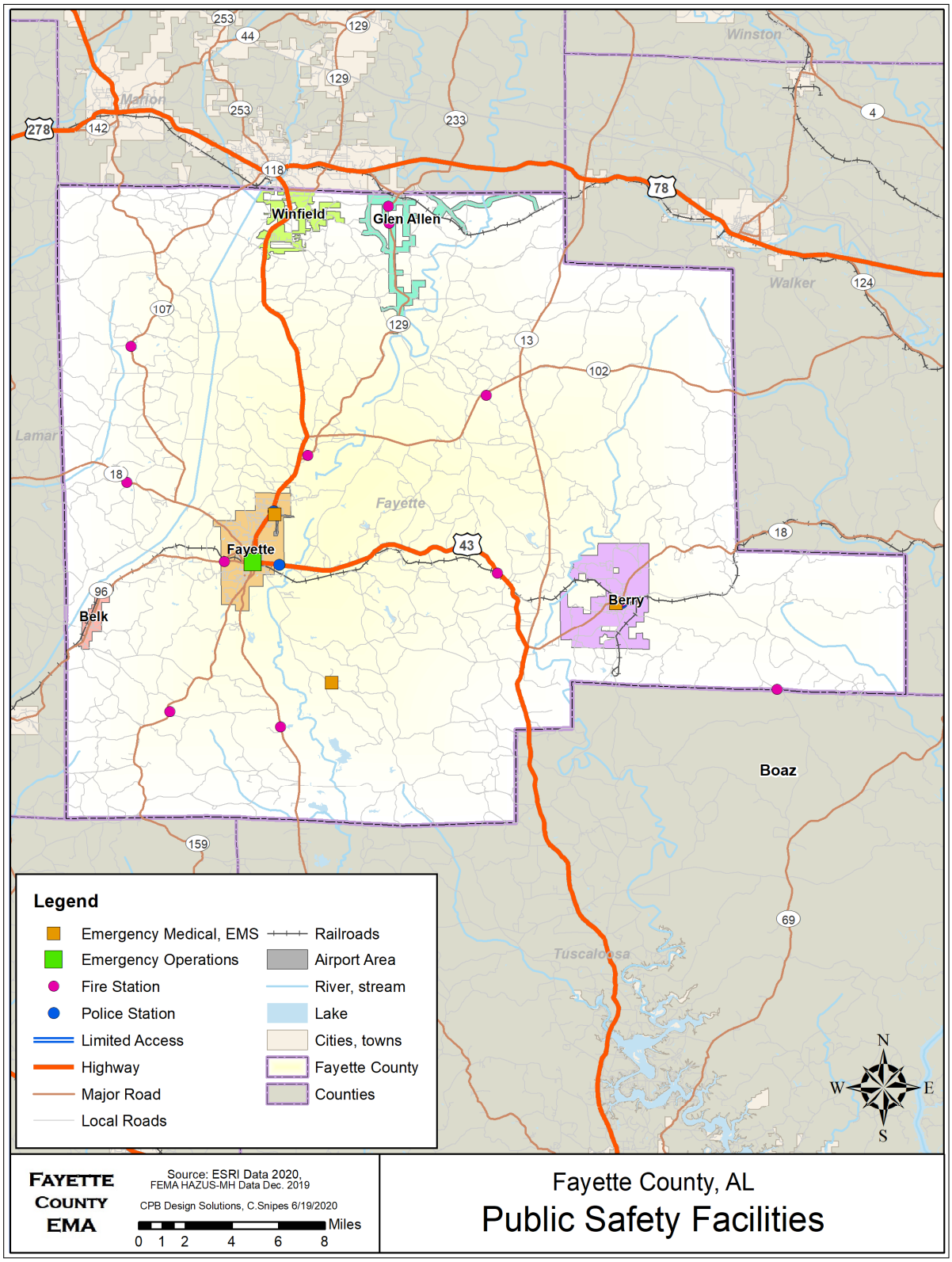


There are 25 agencies at 12 locations providing public safety services to the residents of Fayette County. The majority of these facilities are for fire and/or rescue, with 9 of the facilities housing volunteer fire departments. There are two police stations, the Fayette County Sherriff's Department, and the City of Fayette Police Department. There is one EOC and one E-911 facility.

Table 5-31. Fayette County Public Safety Facilities

Agency	Type	Address	City
Bankston/Stough Volunteer Fire Dept.	Fire Protection	10385 Highway 18 E	Bankston
Belk Volunteer Fire Dept.	Fire Protection	7633 Highway 96	Belk
Berry Rescue Squad	Fire Protection	17780 Highway 18 E	Berry
Boley Volunteer Fire Dept.	Fire Protection	1969 County Road 57	Berry
Fayette City Fire Dept.	Fire Protection	118 1st Ave NE	Fayette
Fayette Co EMA	Legislative Bodies	103 1st Avenue NW, Suite 2	Fayette
Fayette County E911 District	Legislative Bodies	118 1st Ave NE	Fayette
Fayette Police Dept.	Police Protection	118 1st Ave NE	Fayette
Fayette Sheriff's Dept.	Police Protection	113 1st Ave W	Fayette
Fowler Crossroads Volunteer Fire Dept.	Fire Protection	170 Prospect Rd	Bankston
Glen Allen Fire Dept.	Fire Protection	164 Highway 129	Glen Allen
Kirkland Bluff Wayside Volunteer Fire Dept.	Fire Protection	7973 Highway 107	Fayette
Lawrence Mill Volunteer Fire Dept.	Fire Protection	700 County Road 80	Fayette
Mt. Vernon Volunteer Fire Dept	Fire Protection	6169 Highway 18 W	Fayette
Sheriff's Office	Police Protection	113 1st Ave NW	Fayette
Stonewall Volunteer Fire Dept	Fire Protection	6897 County Road 35	Fayette
Walnut Lane Volunteer Fire Dept.	Fire Protection	7838 Highway 171 S	Fayette

Map 5-41. Fayette County Public Safety Facilities

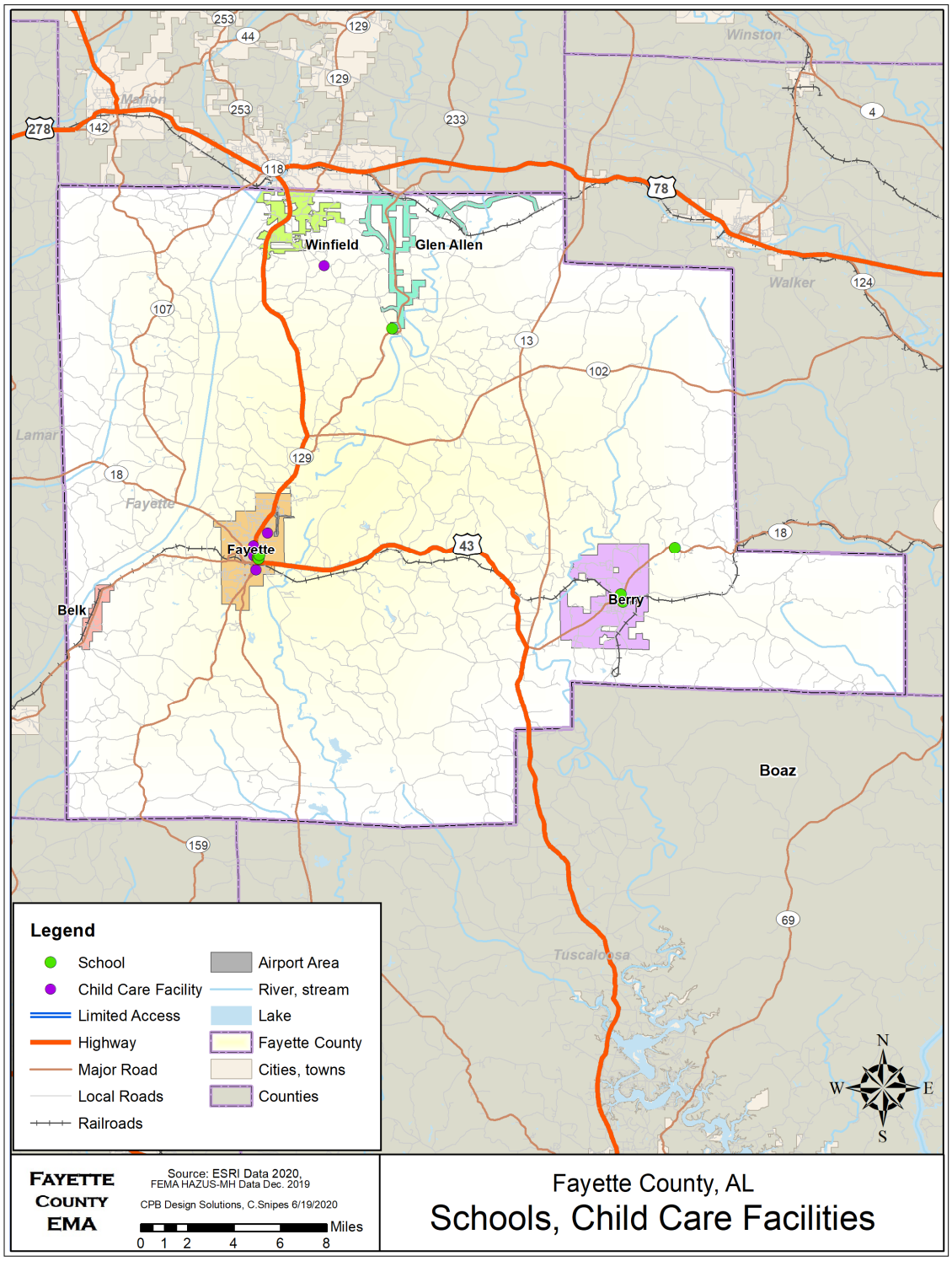


There are nine elementary/secondary schools and one junior college located in Fayette County. Fayette County oversees the elementary and secondary school system for the jurisdictions. The schools are located mostly in the City of Fayette and also south of Glen Allen and within the town of Berry. There is also the Alabama Cooperative Extension Agency, an Auburn University affiliate located in Fayette. There are daycare centers located in the City of Fayette and one west of Glen Allen in the county.

Table 5-32. Fayette County Schools

School	Type	Address	City
Alabama Co-Operative Extension Office	Colleges and Universities	650 McConnell Loop	Fayette
Berry Elementary School	Elementary and Secondary Schools	341 School Ave	Berry
Berry High School	Elementary and Secondary Schools	18242 Highway 18 E	Berry
Bevill State Community College - Adult Education	Adult Education	631 1st St SW	Fayette
Bevill State Community College	Junior Colleges	2631 Temple Ave N	Fayette
Fayette County Board Education	Elementary and Secondary Schools	103 1st Ave NW	Fayette
Fayette Elementary School	Elementary and Secondary Schools	509 2nd St NE	Fayette
Fayette High School	Elementary and Secondary Schools	202 Tiger Dr	Fayette
Fayette Middle School	Elementary and Secondary Schools	418 3rd Ave NE	Fayette
First Baptist Preschool	Elementary and Secondary Schools	208 2nd Ave NE	Fayette
Hubbertville High School	Elementary and Secondary Schools	7360 County Road 49	Fayette

Map 5-42. Fayette County Schools

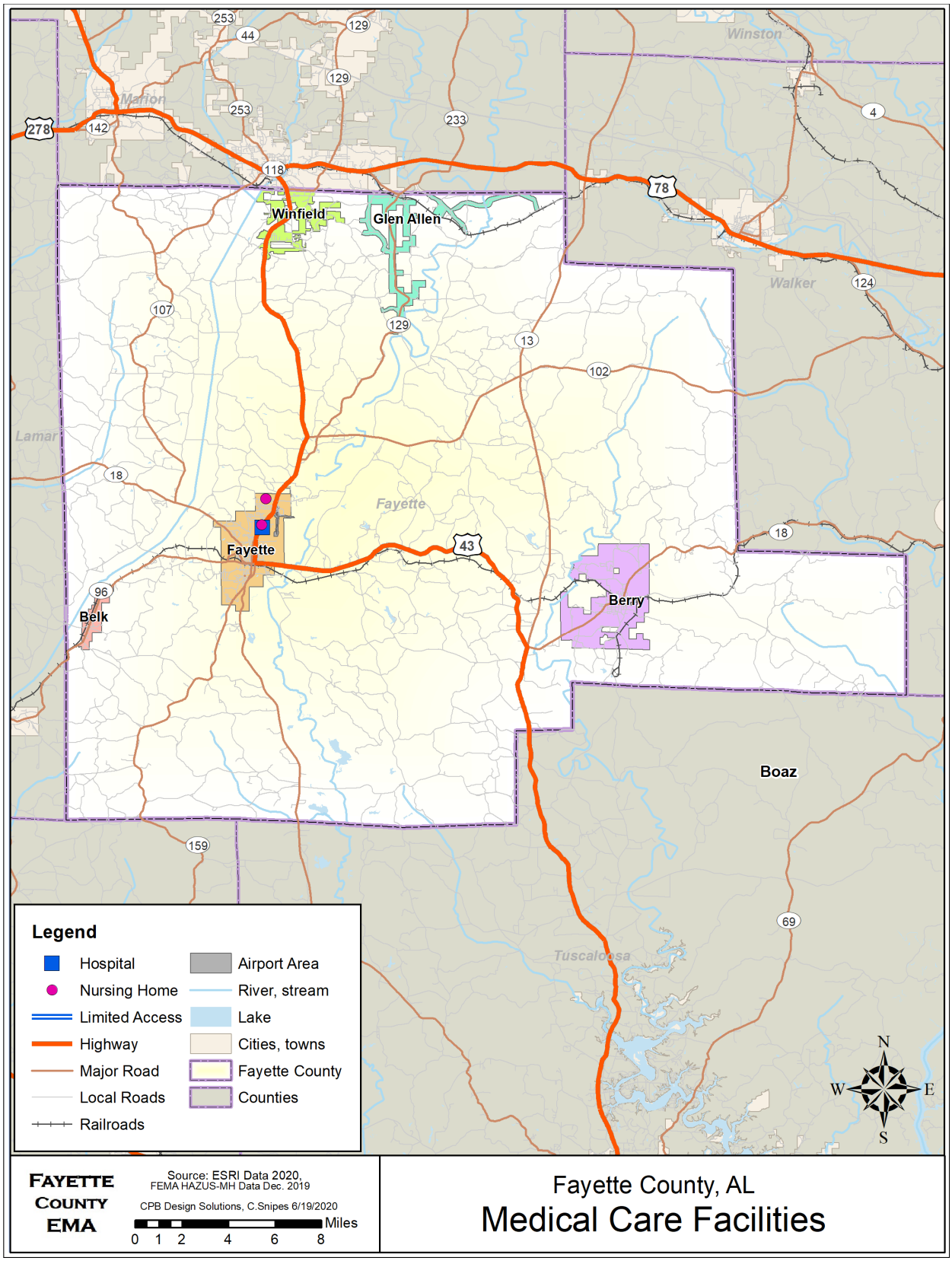


Fayette County has one general hospital, one mental health facility, and three elderly care facilities. Each of these facilities are located in the City of Fayette.

Table 5-33. Fayette County Hospital and Elderly Care Facilities

Name	Type	Address	City
Fayette Medical Center	General Medical & Surgical Hospital	1653 Temple Ave N	Fayette
Northwest Alabama Mental Health	Mental Health Hospital	123 2nd Ave NW	Fayette
Morningside of Fayette	Residential Care	404 25th St NW	Fayette
Fayette Medical Center Long Term Care	Residential Care	1653 Temple Ave N	Fayette
Fayette County Aging Program	Residential Care	431 Center Rd	Fayette

Map 5-43. Fayette County Hospitals and Elderly Care Facilities

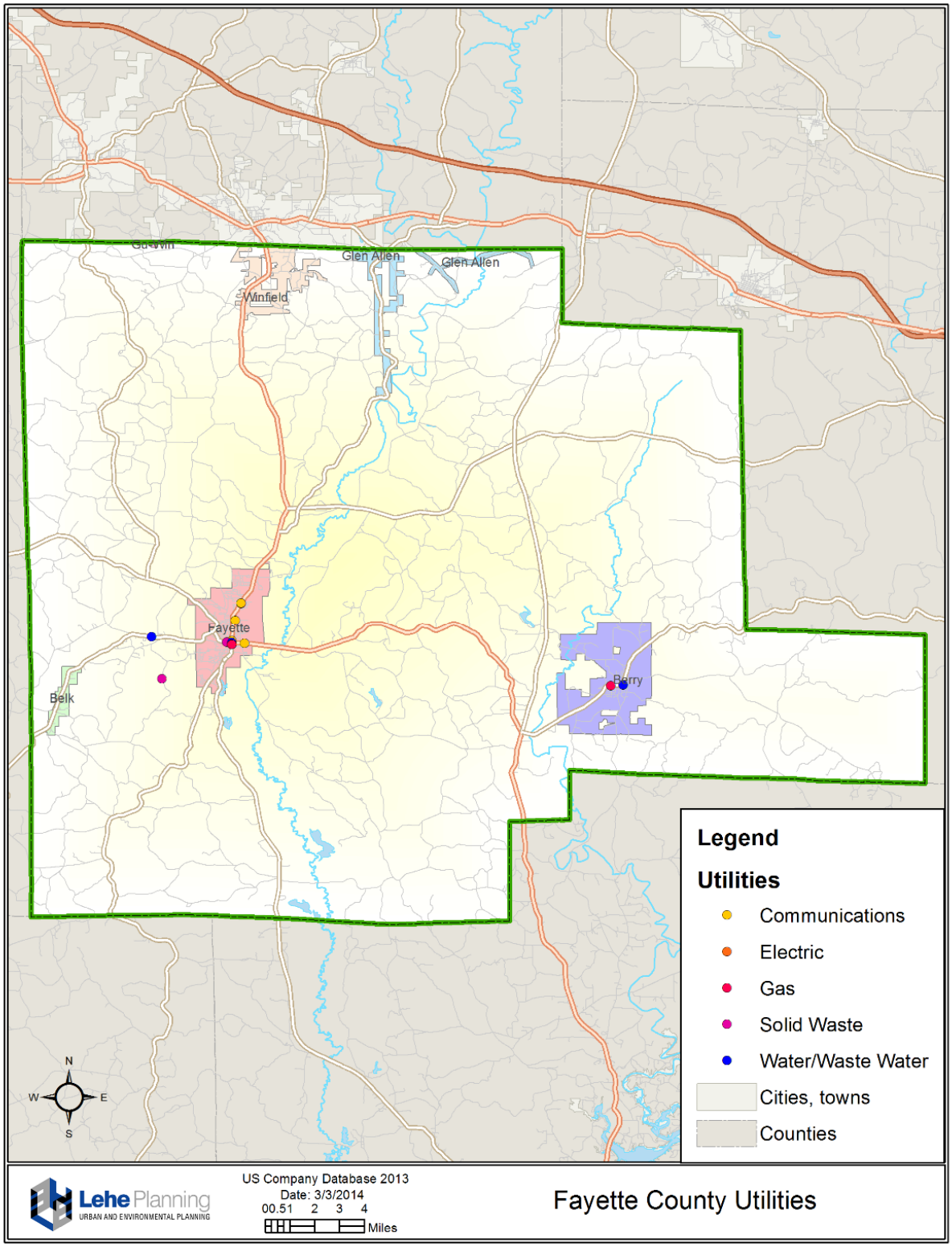


Alabama Power Company provides electricity to Fayette County. Gas is provided by the City of Fayette and the Town of Berry. There are 3 water facilities, one in the City of Fayette, one in Berry and one in the county. Wastewater services are available to city residents by the City of Fayette while those outside the city utilize septic systems.

Table 5-34. Fayette County Utility Facilities

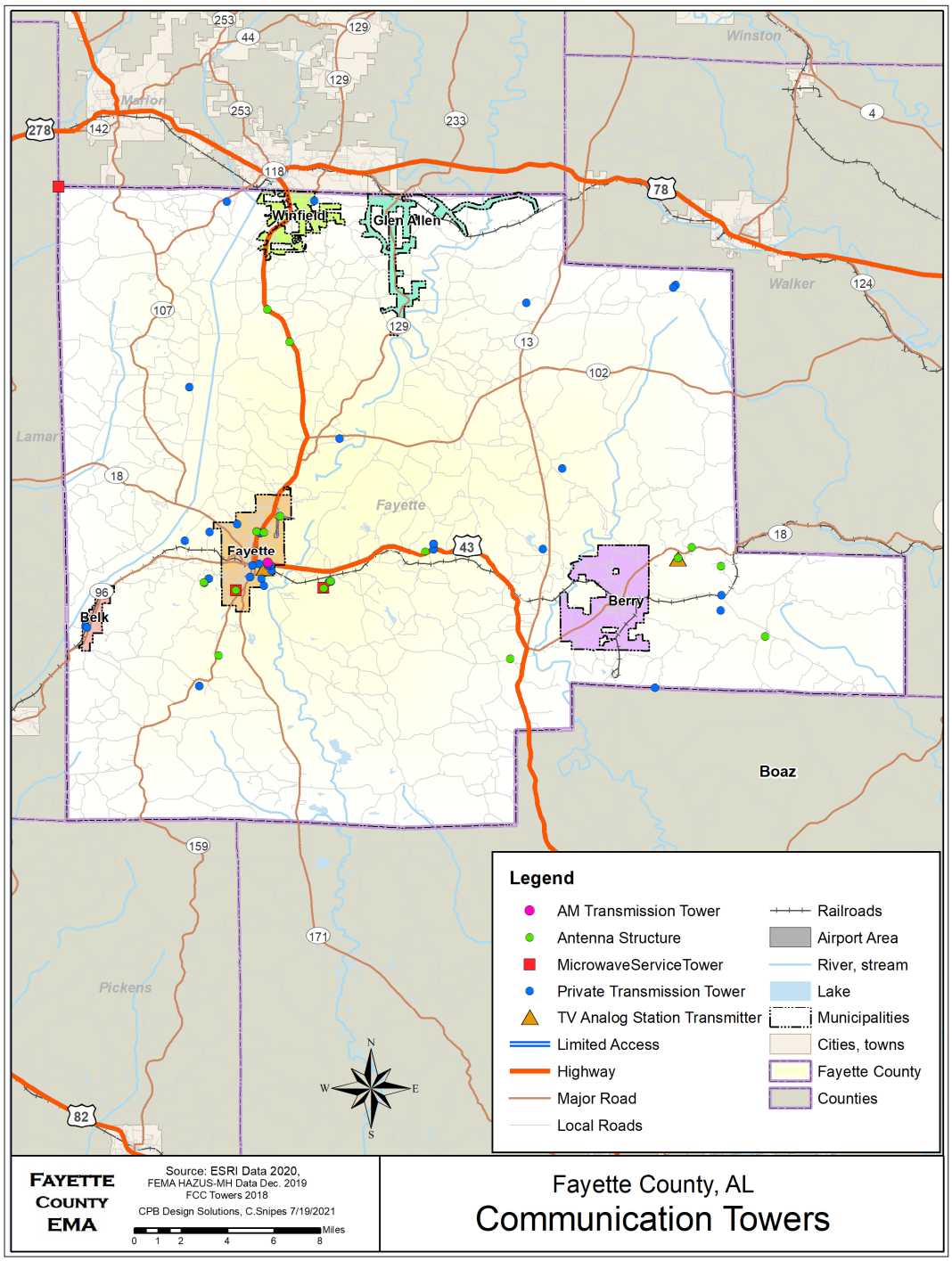
Company	Address	City	Type
Alabama Power Company	1534 Temple Ave N	Fayette	Electric
Berry Gas Board Inc	17720 Highway 18 E	Berry	Gas
Berry Water Dept	30 School Ave	Berry	Water
Fayette City Water	311 2nd Ave SE	Fayette	Water/Wastewater
Fayette County Water Authority	214 Columbus St W	Fayette	Water
Fayette Water Works Plant	2592 Highway 96	Fayette	Water
Gas Board City of Fayette	315 2nd Ave SE	Fayette	Gas
Water Plant	102 2nd Ave Ne	Fayette	Water
WLDX Radio AM 990	733 Columbus St E	Fayette	Communications

Map 5-44. Fayette County Utilities



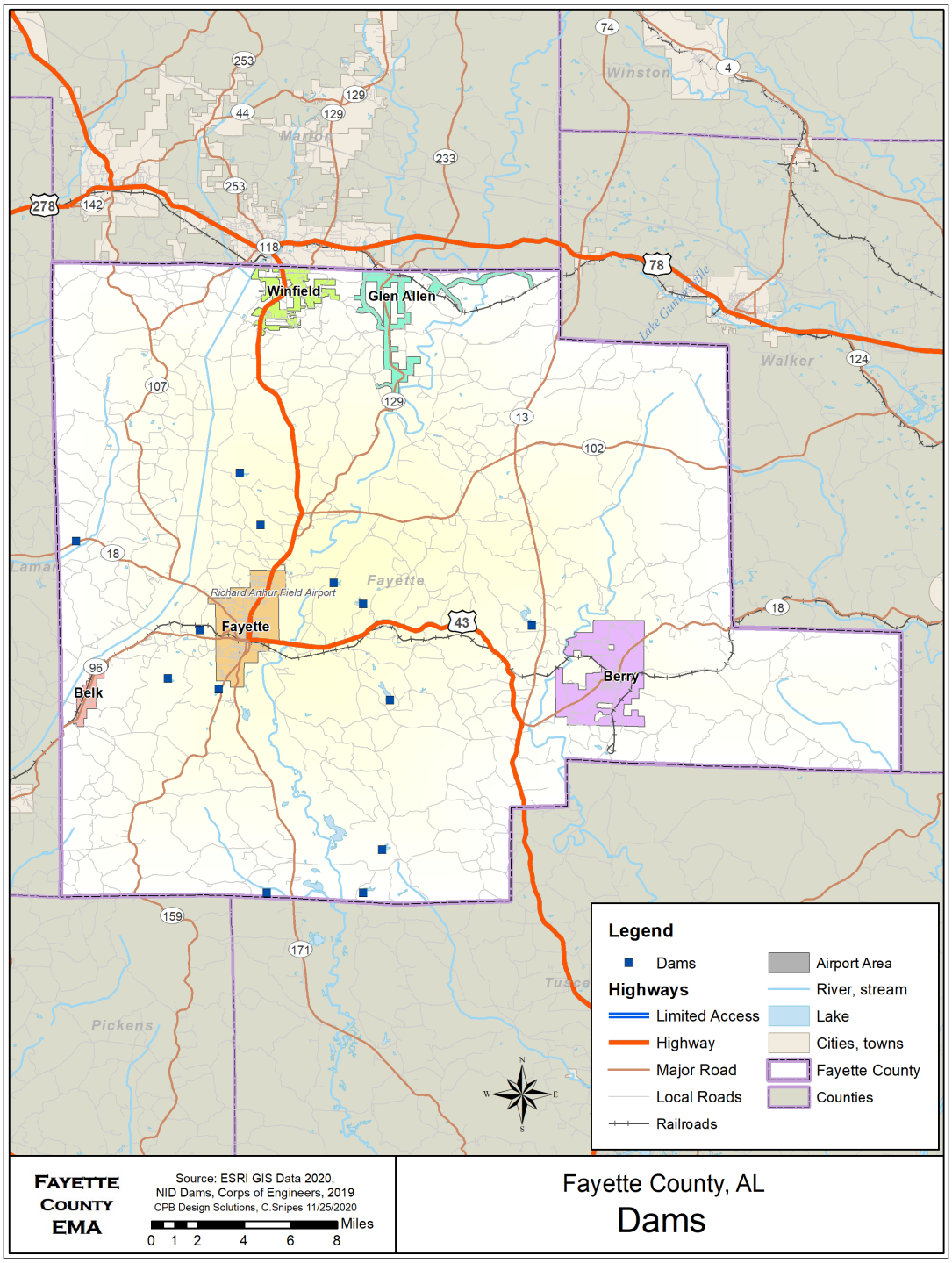
Communications towers are located within and near the municipalities of Fayette County but are lacking throughout the unincorporated areas leading to spotty communications for those traveling through the county.

Map 5-45. Fayette County Communication Facilities



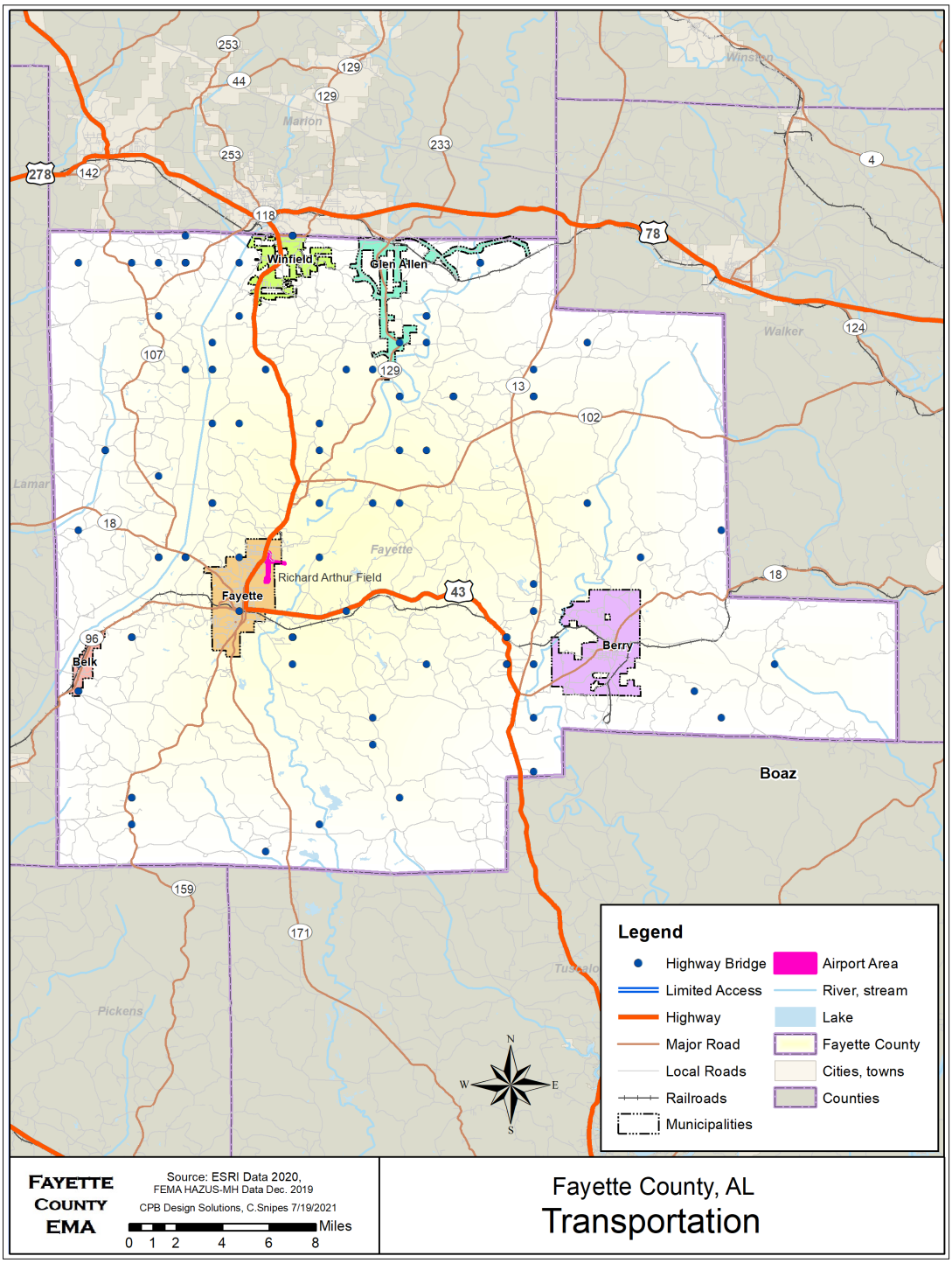
There are thirteen earthen dams throughout Fayette County. They are located in the central and southern areas of the county and not close to any significantly developed areas. A listing of the dams in the county is provided in Table 5-13.

Map 5-46. Fayette County Dams



US-43 is the major state roadway serving Fayette County, as well as State Highways 13, 18 and 171. Burlington Northern Santa Fe (BNSF) and Norfolk Southern rail lines run through the county and there is one airport serving non-commercial air traffic located near the City of Fayette. There are over 500 miles of unpaved roads maintained by the county.

Map 5-47. Fayette County Transportation Infrastructure



Fayette County has a total of 108 bridges. The bridges in Fayette County are impacted by a number of hazards and many of the aging structures are approaching the need for replacement. Over half of the bridges are over 50 years old and twenty-four of those were built before 1941. Three of the bridges located in Fayette County are owned by individual jurisdictions, 74 by the county and 31 by the state.

Table 5-35. Fayette County Bridges

Location	Owner	Year Built
CO RD 68	County Highway Agency	1919
US 43	State Highway Agency	1925
US 43	State Highway Agency	1925
US 43	State Highway Agency	1925
CO RD 207	County Highway Agency	1926
US 43	State Highway Agency	1926
US 43	State Highway Agency	1926
US 43	State Highway Agency	1926
US 43	State Highway Agency	1926
US 43	State Highway Agency	1926
CO RT 38	County Highway Agency	1928
CO RT 0	County Highway Agency	1928
CO RT 06	County Highway Agency	1928
CO RD 00	County Highway Agency	1928
CO RD 00	County Highway Agency	1928
SR 18	State Highway Agency	1929
SR 18	State Highway Agency	1929
SR 96	State Highway Agency	1929
4TH AVE S	City Highway Agency	1933
US 78	State Highway Agency	1936
3RD AVE N	City Highway Agency	1937
COUNTY ROAD	County Highway Agency	1940
COUNTY ROAD	County Highway Agency	1940
SR 61	State Highway Agency	1940
CO RD 87	County Highway Agency	1946
SR 129	State Highway Agency	1948
CO RT 24	County Highway Agency	1949
CO RT 36	County Highway Agency	1949
CO RT 36	County Highway Agency	1949
CO RD 93	County Highway Agency	1950
CO RT 46	County Highway Agency	1951
CO RT 35	County Highway Agency	1952
CO RT 10	County Highway Agency	1952
CO RT 10	County Highway Agency	1952
CO RT 10	County Highway Agency	1952

Location	Owner	Year Built
CO RT 35	County Highway Agency	1952
CO RT 35	County Highway Agency	1952
CO RD 37	County Highway Agency	1954
CO RD	County Highway Agency	1954
COUNTY ROAD 53	County Highway Agency	1956
COUNTY ROAD	County Highway Agency	1957
SR 13	State Highway Agency	1957
SR 13	State Highway Agency	1957
SR 13	State Highway Agency	1957
CO RD	County Highway Agency	1958
CO RD 37	County Highway Agency	1958
CO RD 50	County Highway Agency	1958
CO RD 06	County Highway Agency	1958
CO RD 06	County Highway Agency	1958
CO RD 53	County Highway Agency	1959
CO RD	County Highway Agency	1960
0	County Highway Agency	1960
CO RD 12	County Highway Agency	1961
CO RD 89	County Highway Agency	1963
CO RT 42	County Highway Agency	1964
CO RT 42	County Highway Agency	1964
CO RD 23	County Highway Agency	1964
COUNTY ROAD 00	County Highway Agency	1965
CO RD 49	County Highway Agency	1967
COUNTY ROAD 00	County Highway Agency	1968
CO RD 10	County Highway Agency	1969
CO RD 10	County Highway Agency	1969
COUNTY ROAD	County Highway Agency	1969
COUNTY ROAD	County Highway Agency	1970
COUNTY ROAD 00	County Highway Agency	1970
COUNTY ROAD	County Highway Agency	1970
CLARK BOTTOM RD	County Highway Agency	1970
US 43	State Highway Agency	1973
US 43	State Highway Agency	1973
US 43	State Highway Agency	1973
US 43	State Highway Agency	1973
CO RT 24	County Highway Agency	1974
COUNTY ROAD 0	County Highway Agency	1974
1ST STREET W	City Highway Agency	1975
COUNTY ROAD 0	County Highway Agency	1975
COUNTY ROAD	County Highway Agency	1975
COUNTY ROAD 00	County Highway Agency	1978

Location	Owner	Year Built
COUNTY ROAD 0	County Highway Agency	1978
COUNTY RT #215	County Highway Agency	1979
COUNTY ROAD	County Highway Agency	1979
OVERHEAD RD	County Highway Agency	1982
HELLS CREEK ROAD	County Highway Agency	1983
HELLS CREEK RD	County Highway Agency	1983
CO RT 17	County Highway Agency	1984
SAND SPRINGS RD	County Highway Agency	1984
PENDER ROAD	County Highway Agency	1984
SKELTON ROAD	County Highway Agency	1984
SR 18	State Highway Agency	1984
SR 96	State Highway Agency	1984
SR 96	State Highway Agency	1984
SR 96	State Highway Agency	1984
SR 96	State Highway Agency	1984
CO RD 352	County Highway Agency	1985
DEAVERS HILL ROAD	County Highway Agency	1985
COUNTY ROAD062	County Highway Agency	1986
COUNTY ROAD 0	County Highway Agency	1986
CO RD	County Highway Agency	1986
WESLEY CHAPEL RD	County Highway Agency	1986
SR 102	State Highway Agency	1986
ASHCRAFT CORNER	County Highway Agency	1987
HOUSH CHAPEL RD	County Highway Agency	1988
TIDWELL ROAD	County Highway Agency	1988
SR 18	State Highway Agency	1993
SR 18	State Highway Agency	1993
SR 18	State Highway Agency	1994
SR 18	State Highway Agency	1994
42	County Highway Agency	1995
WESLEY CHAPEL ROAD	County Highway Agency	1998

5.5 Estimate of Dollar Losses to Vulnerable Structures

This section provides estimates of damages to vulnerable structures identified in Section 5.4. Loss estimates are calculated using the structure, contents, and function of each asset. The following definitions and calculations are used for loss estimation.

- ✓ *Structure loss*– (% damage) X ($ replacement value of the structure)
- ✓ *Content loss*– (% damage) X ($ replacement value of the contents)
- ✓ *Functional Loss*- indirect effects of the hazard, such as the days of interruptions in operations that an asset incurs during an event.

When calculating loss estimates for hazards with existing damage records, we utilized loss estimates from the most probable severity. If a hazard effects a certain location the loss estimate evaluated structures at that location. These loss estimates are not precise; however, they can provide the user with a rough estimate on the benefits of a mitigation project, and they can also assist with the selection and prioritization of mitigation measures for the jurisdictions. While the previous sections addressed future values, the damage estimates in this section only apply to existing conditions.

Loss Estimate Methodology

Three methods of data collection were used to estimate the economic and structural losses due to hazards in Fayette County. One source was the program Hazus-MH. Hazus is a computer program developed by FEMA and the National Institute of Building Sciences that models hazard events and maps out their impact on a region. Hazus-MH uses approximations and algorithms to estimate losses, so results do not reflect actual losses with certainty. These loss estimates are most useful for judging a hazard's risk relative to other hazards and the vulnerability of a structure relative to other structures, rather than as absolute measures of likelihood and economic appraisal.

There are three levels of analysis within Hazus and the accuracy of the data increases with the level of analysis. For this plan, a level 1 analysis was run which utilizes the national data set that was provided with Hazus-MH. Numbers provided in the Hazus-MH reports are not based on actual field inventories, which is beyond the scope of this planning process; however, the information provided through Hazus can still assist in the planning process. The analysis run by Hazus-MH for Fayette County provided general economic and structural loss estimates for floods, earthquakes, and hurricanes. Hazus-MH provides data at the county level. Jurisdictional values were extrapolated using the county data.

The second method for estimating loss was researching past events. Historical records of past events were examined, and the data was applied where applicable. The following data sets and records were referenced:

1. NFIP insurance claims data since 1978.
2. NOAA, National Climatic Data Center damage assessments.
3. National Weather Service Alabama Tornado database.
4. Alabama State Hazard Mitigation Plan, 2018 update, Section 3.3 "Vulnerability Assessment and Loss Estimation." According to the state plan, Fayette County is ranked 45 out of 67 in terms of hazard losses by county.

The final method was calculating losses across the jurisdictions based on population, numbers of structures in an area, and exposure to the hazards by jurisdiction. Table 5-36 shows the population in the area and Table 5-37 shows the structures in the region by occupancy type and their value.

Table 5-36. Population Distribution by Jurisdiction, 2018

Jurisdiction	2018 Estimate	% Of Total
Fayette County	16,433	100%
Belk	205	1.2%
Berry	1,098	6.7%
Fayette	4,327	26.3%
Glen Allen	487	3.0%
Unincorporated	10,316	62.8%

Table 5-37. Building Exposure by Occupancy Type

Occupancy	Existing Exposure ($1,000)	% Of Total
Agriculture	$3,849	0.25%
Commercial	$172,845	11.42%
Education	$14,755	0.97%
Government	$22,152	1.46%
Industrial	$118,938	7.86%
Religious	$32,820	2.17%
Residential	$1,147,978	75.86%
Total	$1,513,337	100.00%

HAZUS-MH Loss Estimates

Hazus-MH analyses were conducted by a qualified GIS professional with advanced Hazus training. Studies, maps, and reports were prepared for this plan update from the analyses. The analyses run included flood, earthquake, and hurricane scenarios. One hundred- and five-hundred-year probability of return analyses were performed for earthquakes and hurricanes, and the one-hundred-year flood event was used for the flood analysis. The following Hazus-MH reports are on file with the Fayette County EMA and available for public review:

- Hazus-MH: Flood Global Risk Report, November 11, 2020
  Scenario – 100 Year Flood Event
- Hazus-MH: Quick Assessment Report, November 11, 2020
- Hazus: Earthquake Global Risk Report, August 13, 2020
  Scenario – Fayette 100 Year Earthquake (5.0 Magnitude) Probability
- Hazus: Earthquake Global Risk Report, August 13, 2020
  Scenario – Fayette 500 Year Earthquake (5.0 Magnitude) Probability
- Hazus: Hurricane Global Risk Report, August 13, 2020
  Scenario – Fayette 100 Year Earthquake (5.0 Magnitude) Probability
- Hazus: Hurricane Global Risk Report, August 13, 2020
  Scenario – Fayette 500 Year Earthquake (5.0 Magnitude) Probability

The building related losses are divided into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with the inability to operate a business because of the damage sustained during the event. Business interruption losses also include temporary living expenses for those people displaced from their homes because of the hazard event.

Hazus-MH 100-Year Flood Analysis

According to FEMA, a "100-year flood has a one percent chance of being equaled or exceeded during any given year. It can also be termed the "one percent" flood since this relates the event to an annual time period instead of a 100-year time period." A 100-year flood event scenario for Fayette County was run using Hazus-MH for this plan update. Not all jurisdictions are at equal risk from a 100-year flood event. Table 5-38 itemizes the overall "Quick Assessment" results for the 100-year flood event. Map 5-48 shows the 100- and 500-year flood zones for Fayette County.

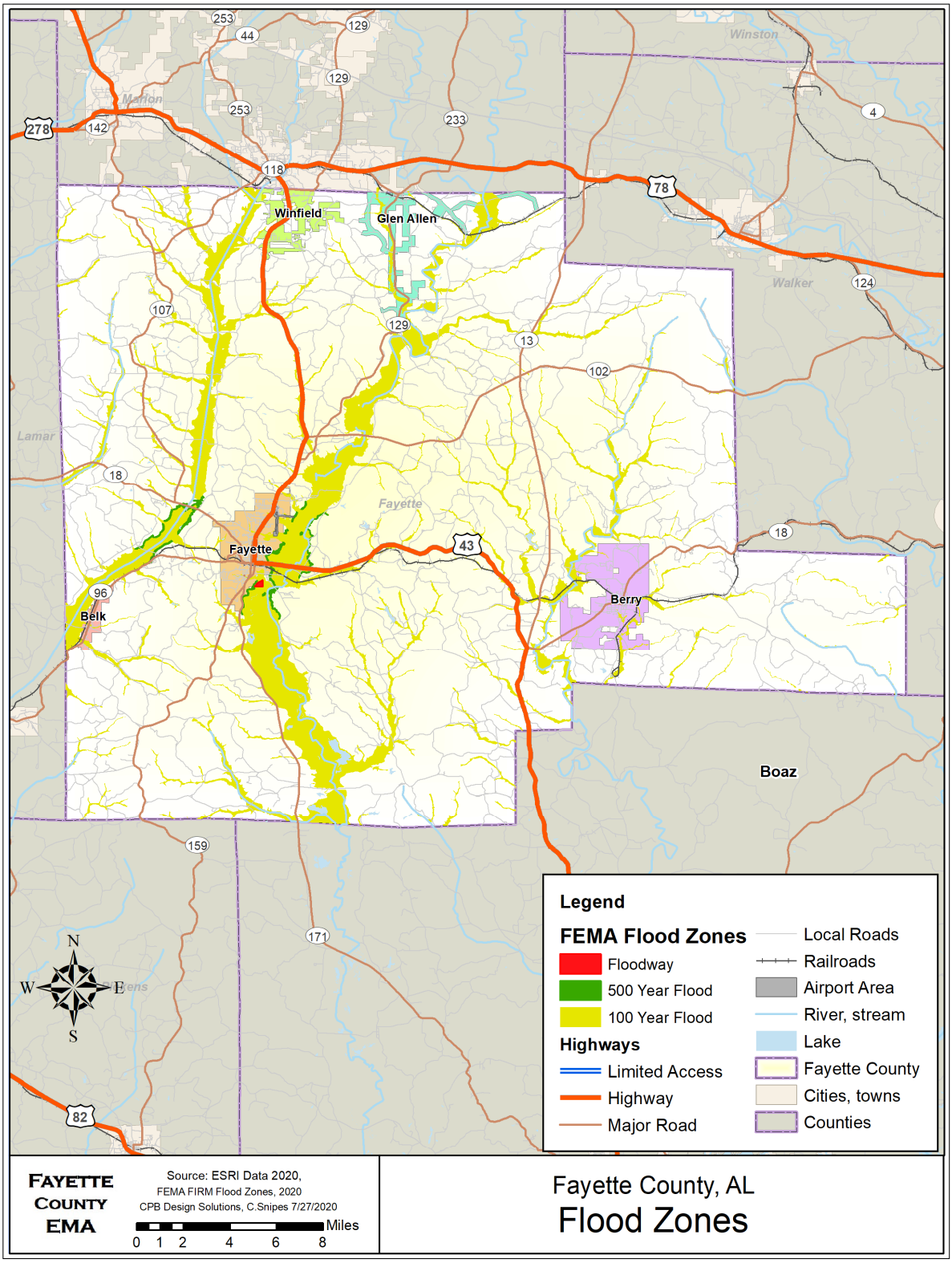
Table 5-38. HAZUS-MH Flood Module Quick Assessment Results

Fayette County 100 Year Flood Event	
Area (Square Miles)	629
Number of Residential Buildings	7,904
Number of All Buildings	8,462
Number of Persons in the Region	17,000
Residential Building Exposure ($ millions)	$1,148
Total Building Exposure ($ millions)	$1,513
Displaced Population (# of households)	388
Short Term Shelter Requirements (# of people)	22
Residential Property (Capital Stock) Losses ($ millions)	$26
Total Property (Capital Stock) Losses ($ millions)	$96
Business Interruptions (Income) Losses ($ millions)	$62
Total Economic Losses ($ millions)	$184

Hazus estimates that a 100-year flood event would moderately damage 80 buildings, over 80 percent of the total number of buildings at risk of flooding in Fayette County. The event would destroy one building. Of the buildings moderately damaged by the flood event, 2 are commercial, 2 are government, 12 are industrial and 63 are residential. The building that is destroyed is a residence. Sixty-four structures were constructed with wood, 10 were steel, 3 were masonry and 2 were concrete. None of the buildings were manufactured homes.

It is estimated that 388 households will be displaced: approximately 1,163 people. "Displaced" includes those households that evacuate from within or near the inundation area. 22 people will seek temporary shelter in public shelters.

Map 5-48. Fayette County Flood Zones



Of the 34 essential facilities in Fayette County, one police station is predicted to have at least moderate damage and another one is expected to have loss of use. The total economic loss for all of Fayette County is estimated at $158.13 million which is 36.03% of the total replacement value of the buildings in the scenario that was run by Hazus. The total building related losses are estimated at $95.86 million and is broken out as follows: $31.45M in structural damage, $54.43M damage to contents, $9.98M inventory loss, $8.87M relocation loss, $43.74M wage loss, and $3.07M rental income loss. Of the damage, industrial accounted for 40% of the building related losses followed by residential at 21% and commercial at 13%. Other uses account for 26% of economic loss.

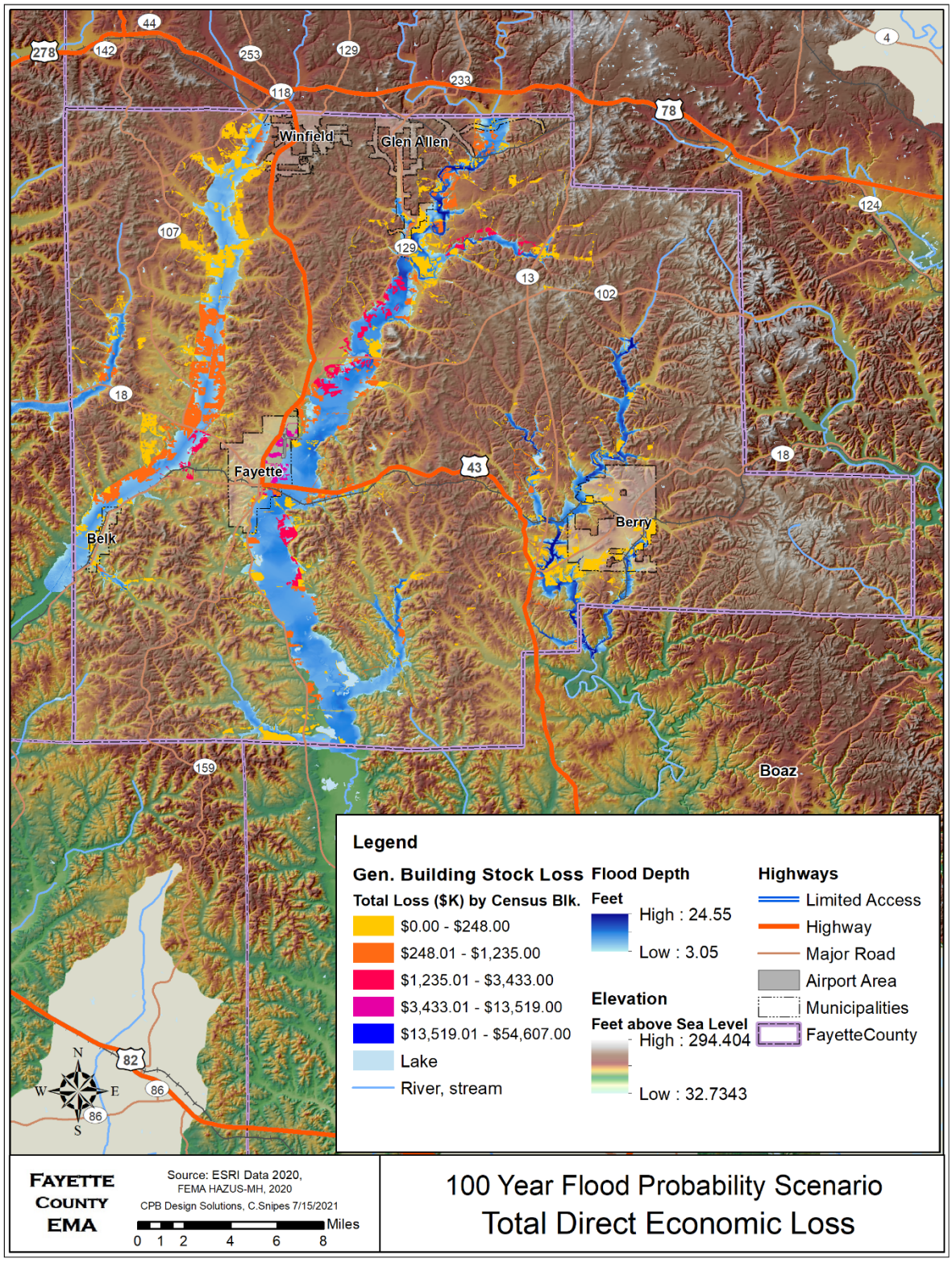
The following table shows jurisdictional loss estimates, which were obtained by dividing the county's total losses by each jurisdiction's share of the 2018 county population.

Table 5-39. Total Economic Losses by Jurisdiction

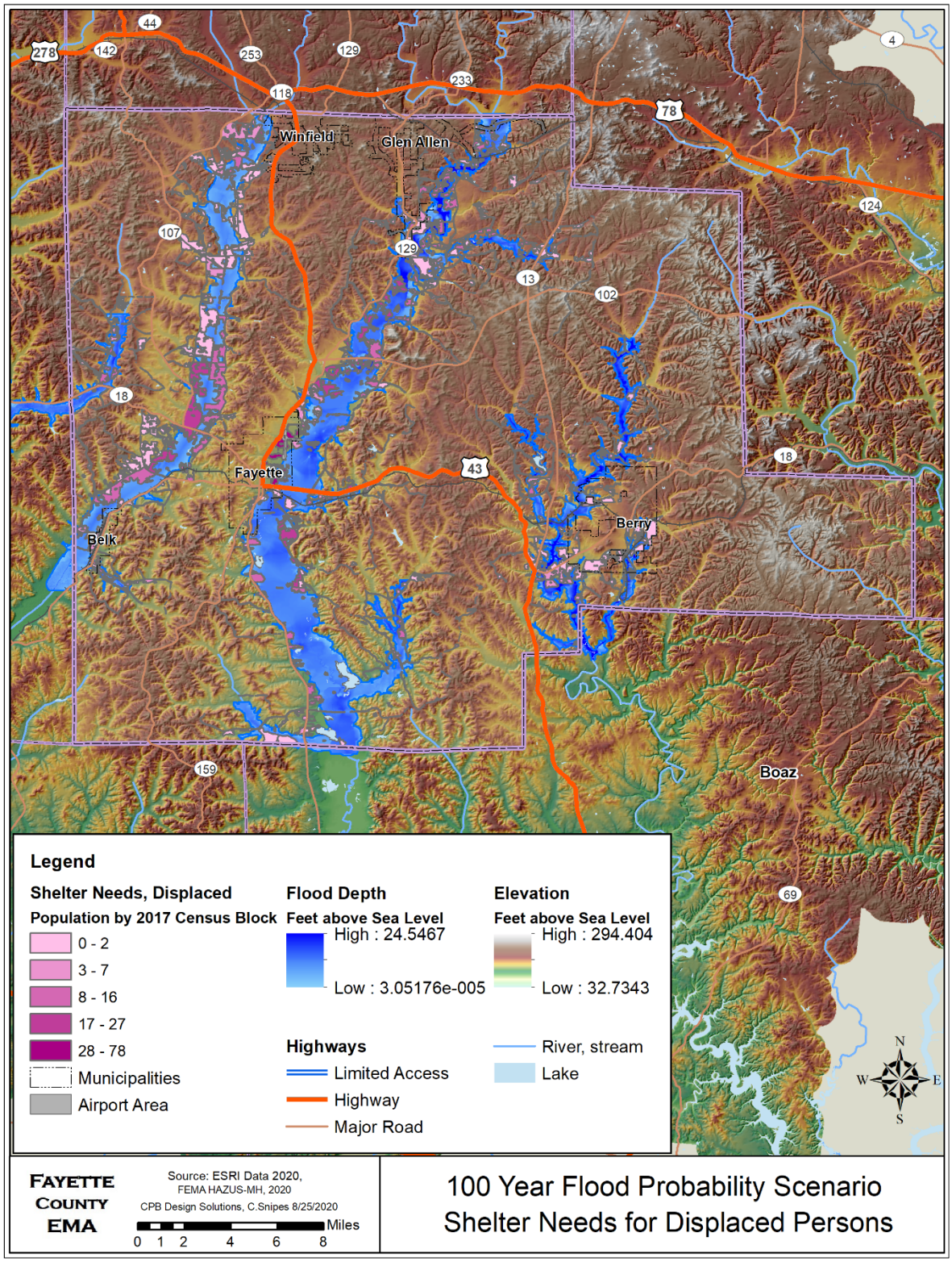
Jurisdiction	Share of Losses	Total Economic Losses ($ millions)
Belk	1.2%	$2.2
Berry	6.7%	$12.3
Fayette	26.3%	$48.4
Glen Allen	3.0%	$5.4
Unincorporated	62.8%	$115.6
Fayette County	100%	$184

Map 5-49 shows the value of the buildings exposed to a 100-year flood event and Map 5-50 reveals shelter requirements if a 100-year flood event occurred in Fayette County.

Map 5-49. Value of Buildings Exposed to 100 Year Flood



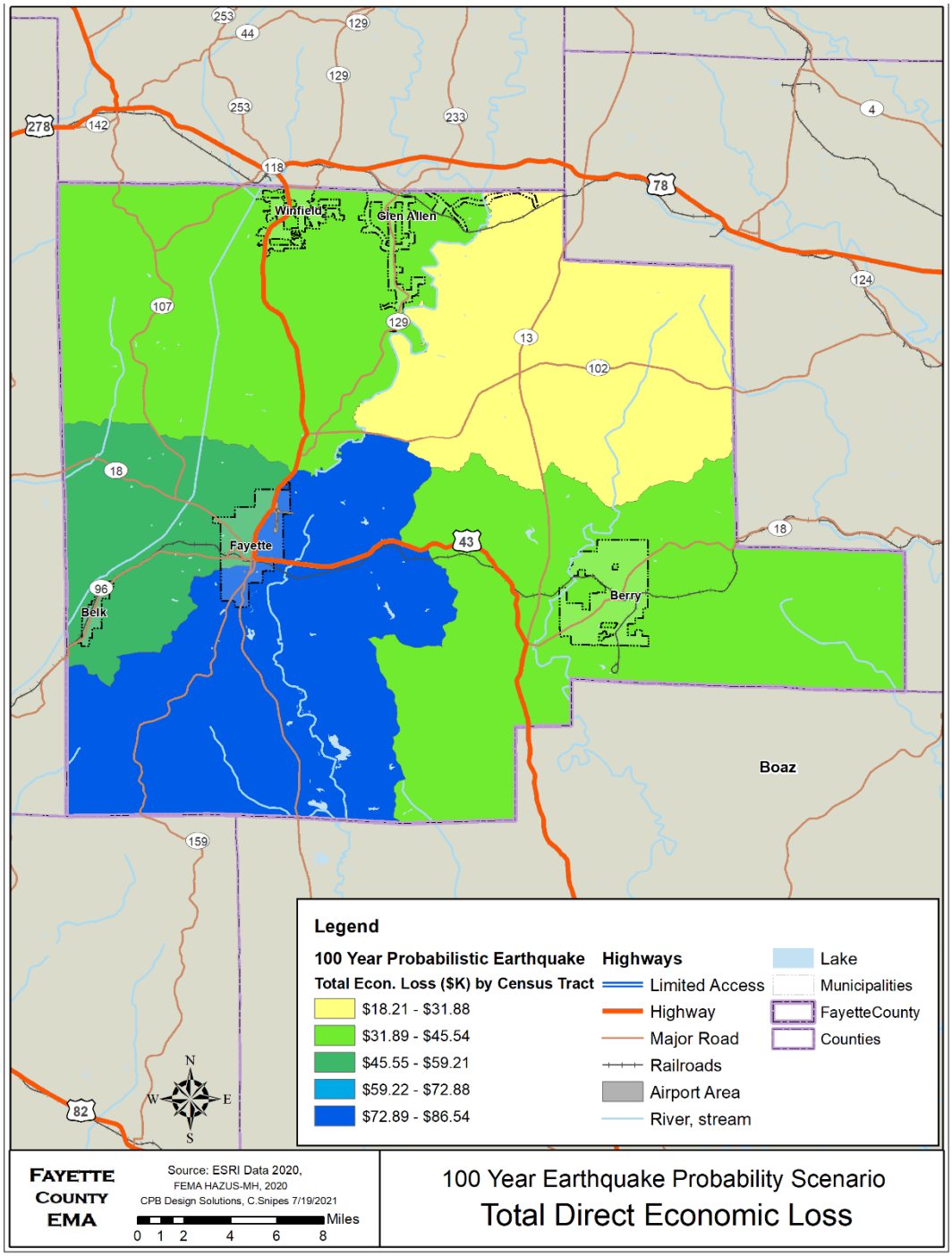
Map 5-50. Shelter Requirements for 100 Year Flood Event



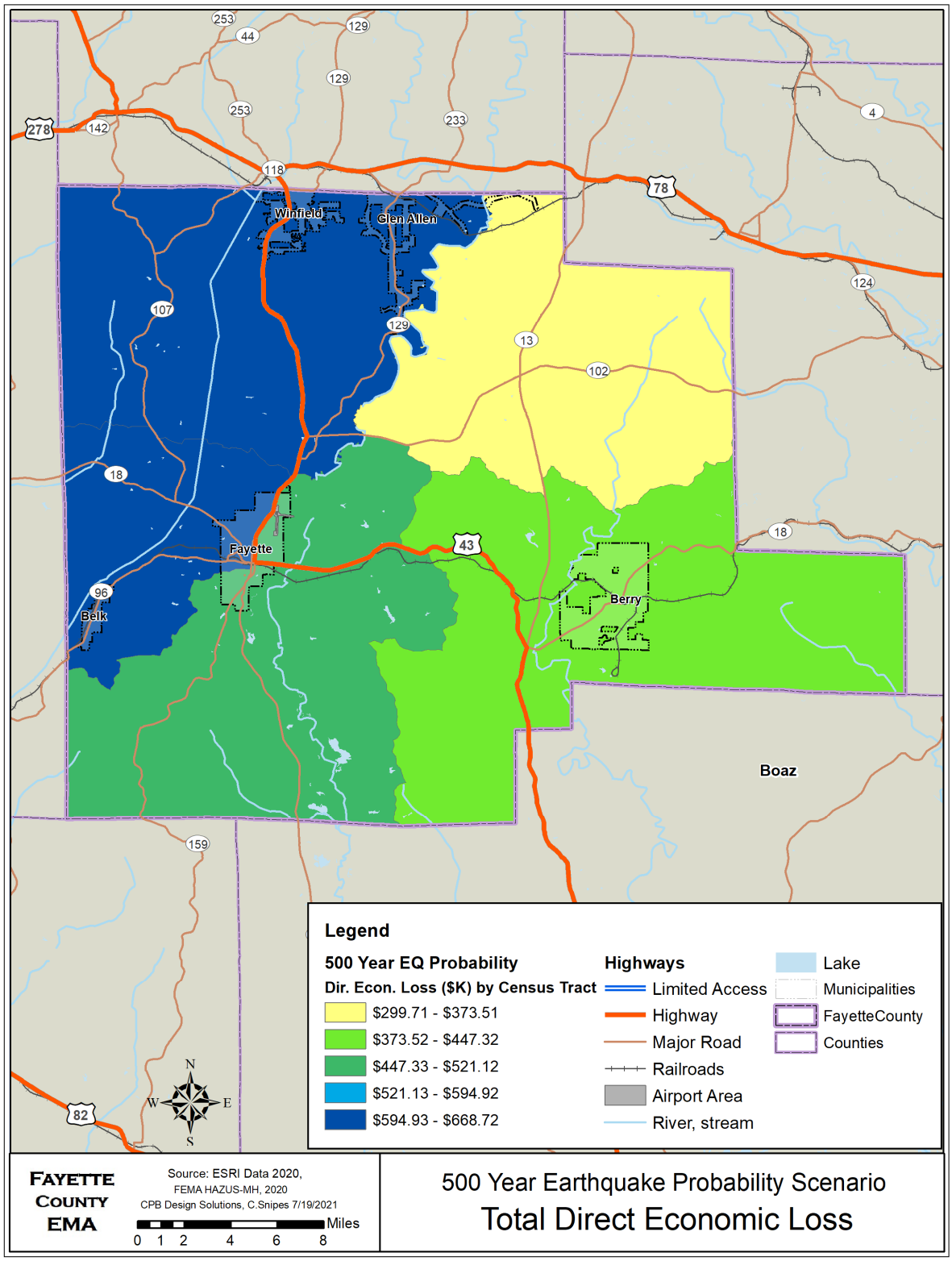
Hazus-MH Earthquake Analysis

A 100-year and 500-year earthquake probability analysis was run for Fayette County. All jurisdictions within Fayette County are at risk from earthquakes. Maps 5-51 and 5-52 show the distribution of economic losses related to a 100- year and 500-year event, respectively.

Map 5-51. 100-year Earthquake Economic Loss Impacts



Map 5-52. 500-year Earthquake Economic Loss Impact



The essential facilities should not have severe damage; however, it is estimated that 97% of the beds would be available for use by patients already in the hospital and those injured by the earthquake immediately after a 100-year event, and 81% after a 500-year event. At the end of 30 days, 100% of hospital beds should be available from the 100-year event and 99% from the 500-year event.

The transportation systems within Fayette County should only suffer minor damage from ground failure only. Utility systems should also do well during the earthquake events sustaining only a few leaks and breaks in the pipelines.

The Hazus analysis estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. In the 100-year analysis, the model estimates no households will be displaced with no need for temporary shelter in a public shelter. The 500-year analysis estimated 2 households displaced with 2 people seeking temporary shelter.

The total economic loss estimated from the earthquakes are 0.26 million dollars and 9.61 million dollars for a 100-year and 500-year event, respectively. These values include building and lifeline related losses based on the region's available inventory.

For a 100-year event the total building related loss estimate is 0.24 million dollars. This value is broken out as follows: 23% in structural damage, 4% damage to contents, 0% inventory loss, 17% relocation loss, 10% wage loss, 5% capital related, 34% non-structural, and 7% rental income loss. Of the damage residential accounted for 90% of the building related losses followed by commercial at 6% and industrial at 1.8%.

For a 500-year event the total building related loss estimate is 0.26 million dollars. This value is broken out as follows: 14% in structural damage, 16% damage to contents, 1% inventory loss, 11% relocation loss, 6% wage loss, 3% capital related, 44% non-structural, and 4% rental income loss. Of the damage, residential accounted for 91% of the building related losses followed by at 5.65% commercial and industrial at 1.79.

In both scenarios manufactured homes had the larger percent of total building inventory of area impacted. Wooden structures and unreinforced masonry buildings had over 10% of their stock impacted by both events.

Results from the 100- and 500-year probability scenarios are presented in Tables 5-40 and 5-41 and Charts 5-5 and 5-6.

Table 5-40. Building Exposure by Occupancy to 100- and 500-Year Earthquake Event

Occupancy	100-Year Probability		500-Year Probability	
	Structure Count	Percent of Total Building Inventory of Area	Structure Count	Percent of Total Building Inventory of Area
Agriculture	0.21	0.43%	2.46	0.39%
Commercial	3.02	6.24%	35.38	5.65%

Occupancy	100-Year Probability		500-Year Probability	
	Structure Count	Percent of Total Building Inventory of Area	Structure Count	Percent of Total Building Inventory of Area
Education	0.1	0.21%	1.18	0.19%
Government	0.18	0.37%	2.29	0.37%
Industrial	0.89	1.84%	11.18	1.79%
Other Residential	33.87	69.99%	313.24	50.06%
Religion	0.43	0.89%	4.46	0.71%
Residential	9.69	20.02%	255.60	40.84%
Total	48.39	100%	625.79	100%

Table 5-41. Building Exposure by Construction Type to 100- and 500-Year Earthquake Event

Construction Type	100-Year Probability		500-Year Probability	
	Structure Count	Percent of Total Building Inventory of Area	Structure Count	Percent of Total Building Inventory of Area
Wood	5.45	11.33%	222.67	35.41%
Steel	1.6	3.27%	24.05	3.84%
Concrete	0.23	0.47%	3.96	0.63%
Precast	0.28	0.57%	2.52	0.4%
Reinforced Masonry	0.43	0.88%	4.90	0.78%
Unreinforced Masonry	7.37	15.04%	67.09	10.70%
Manufactured Housing	32.94	67.22%	300.63	47.95%
Total	49	100%	627	100%

Chart 5-5. Economic Loss, 100-Year Earthquake Scenario

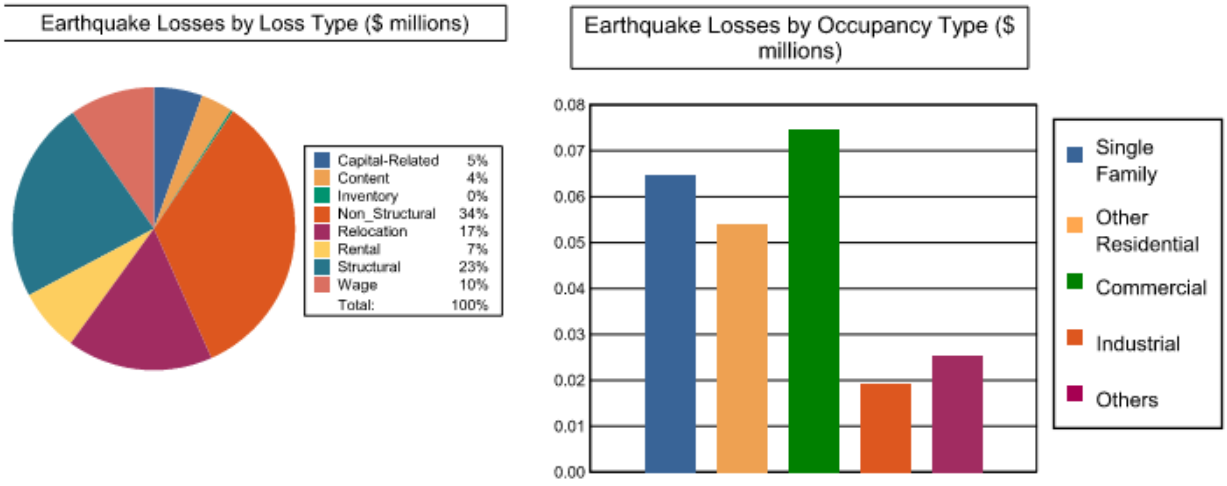
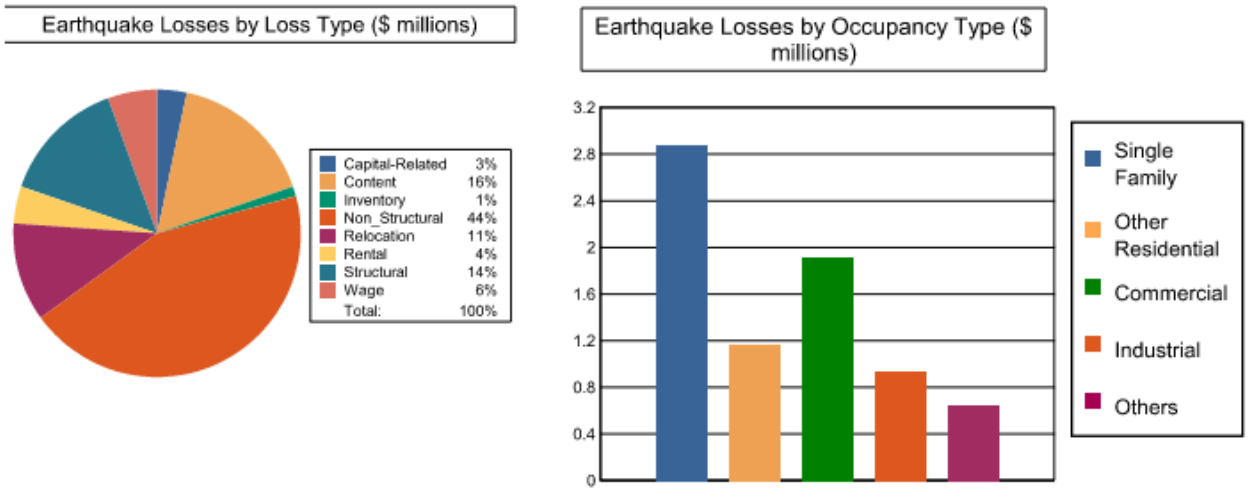


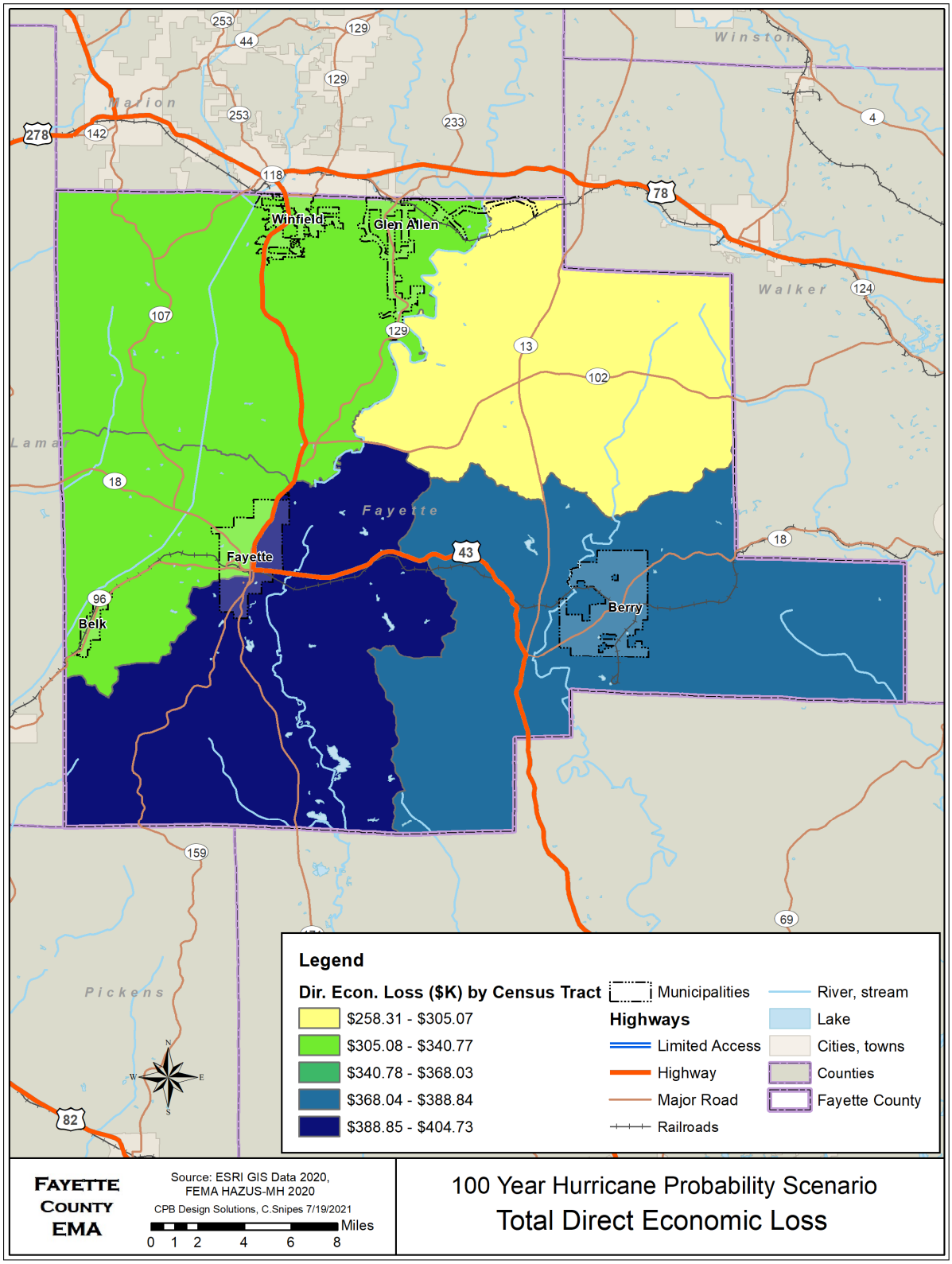
Chart 5-6. Economic Loss, 500 Year Earthquake Scenario



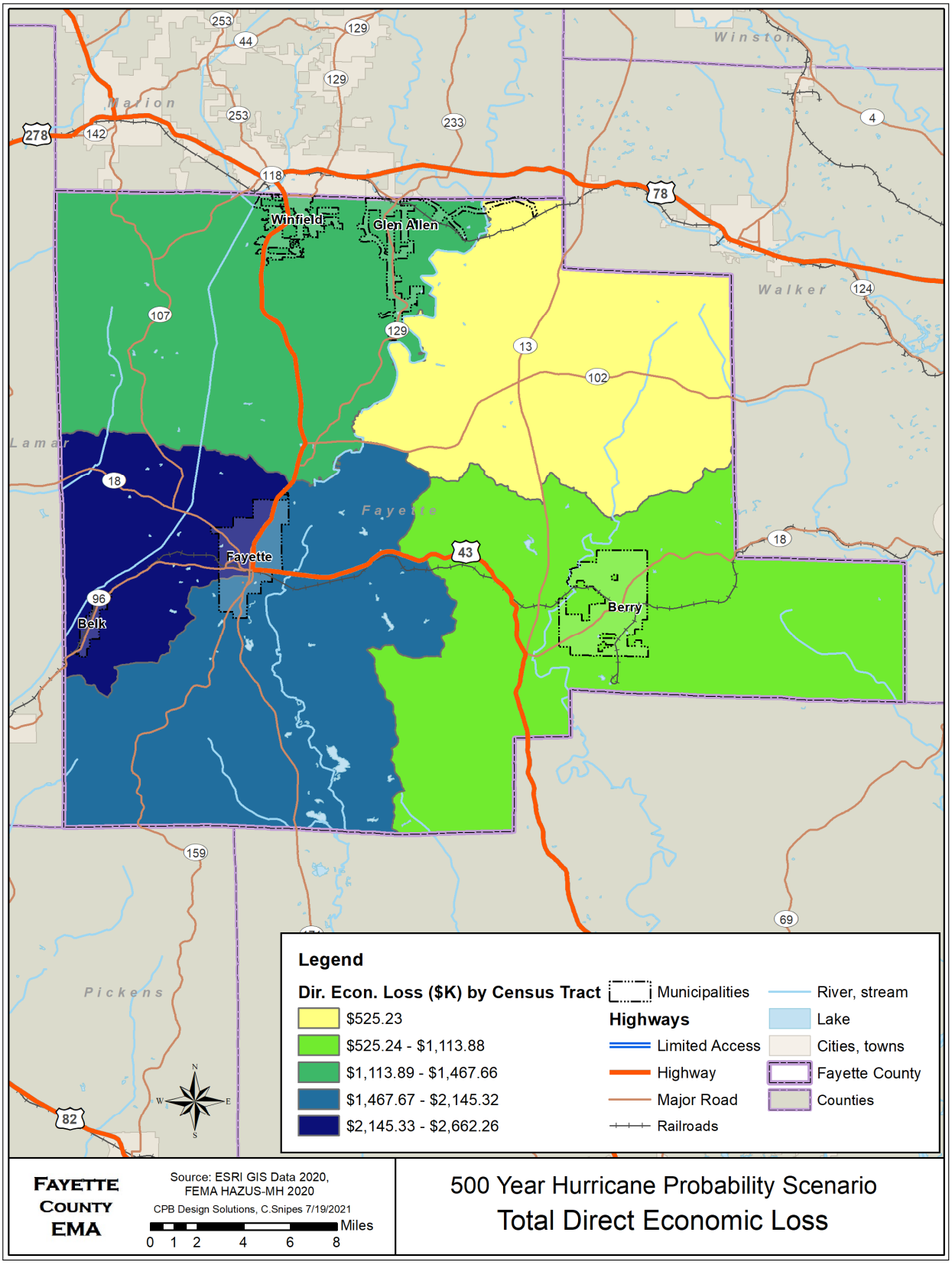
Hazus-MH Hurricane Analysis

The Hazus specialist ran a 100-year and 500-year hurricane probability analysis for Fayette County. All jurisdictions within Fayette County are at risk from earthquakes; however, the analysis did not show any significant impact from hurricanes. While there has been significant damage from storms and tornadoes that develop from hurricanes, due to the distance from hurricane events, Hazus reports very little loss for the county caused by the hurricane itself. Maps 5-53 and 5-54 show the distribution of economic losses related to a 100- year and 500-year event, respectively.

Map 5-53. 100-Year Hurricane Economic Loss Impacts



Map 5-54. 500-Year Hurricane Economic Loss Impact



According to the analysis, the expected building damage from a 100-year event is approximately 3% of the buildings having minor damage and less than 1% sustaining moderate damage. No buildings would incur severe or total destruction. A 500-year event shows approximately 14% of the buildings having minor damage and a little less than 1% sustaining moderate damage. It is possible that less than 0.15% of buildings would sustain severe damage from a 500-year event with no buildings having total destruction.

The building occupancy that has the highest percentage of minor damage for a 100-year event is industrial while residential has the highest percentage of minor damage for a 500-year event. For both the 100-year and 500-year event the occupancy with the highest percentage of moderate damage is agriculture. The occupancy with the greatest percentage of severe damage for a 500-year event is industrial.

The essential facilities should not have any expected damage. It is estimated that 100% of the beds would be available for use by patients already in the hospital and those injured by the hurricane immediately after a 100-year or 500-year event. Also, the analysis does not expect any need for temporary shelter for the citizens since none are expected to be displaced for either event.

The total economic loss estimated from the hurricanes are 1.7 million dollars and 7.9 million dollars for a 100-year and 500-year event, respectively. These values represent the replacement value of the region's buildings.

For a 100-year event the total building related loss estimate is 0.24 million dollars. The property damage is estimated to be 75% structure, 25% contents and 0% inventory. For business interruption loss it is estimated that 100% will be related to relocation. Of the damage residential accounted for 98% of the building related losses followed by commercial and industrial.

For a 500-year event the total building related loss estimate is 8 million dollars. This value is broken out as either property damage or business interruption loss. Property damage values - 75% in structural damage, 25% damage to contents, and 0% inventory loss. For business interruption loss - 0% income, 75% Relocation, 25% Rental, and 0% for wages. Of the damage, residential accounted for 97% of the building related losses followed by industrial then commercial occupancies.

Results from the 100- and 500-year probability scenarios are presented in Tables 5-42 and 5-43.

Table 5-42. Building Exposure by Occupancy, Hurricane Event

Occupancy	Structure Count	Percent of Total Building Inventory of Area	Dollar Exposure (1,000 dollars)
Agriculture	25	0.3	$3,849
Commercial	342	4	$172,845
Education	12	0.1	$14,755

Occupancy	Structure Count	Percent of Total Building Inventory of Area	Dollar Exposure (1,000 dollars)
Government	23	0.3	$22,152
Industrial	110	1.3%	$118,938
Religion	46	0.5%	$32,820
Residential	7904	93%	$1,147,978

Table 5-43. Building Exposure by Construction Type, Hurricane Event

Construction Type	Structure Count	Percent of Total Building Inventory of Area
Wood	5,888	70%
Steel	253	3%
Concrete	64	0.76%
Masonry	509	6%
Manufactured Housing	1,747	21%

Loss Estimates Based on Historical Records

Tornado Loss Estimates

According to the NOAA National Climatic Data Center and National Weather Service (NWS) records, Fayette County has been the site of 36 tornadoes from 1996 to 2020, averaging approximately 1.4 annually. These tornadoes caused 4 deaths, 8 injuries, and property damages of over $13.414 million.

Severe Storms Loss Estimates

As reported in Appendix E, National Climatic Data Center (NCDC) records show frequent annual severe storm occurrences from 1996 to 2020. The database shows 113 severe storm events for Fayette County—roughly 7 per year. The database also shows approximately $1.067 million in property damage and $18,000 in crop damage since 1996.

Flood Loss Estimates

The National Climatic Data Center (NCDC) Storm Events Database recorded 11 flash flood events for Fayette County for the 1997-2020 period averaging to about 1 flash flood event every other year. Recorded damage costs were $125,000 between 1997 and 2020.

Winter Storms/Extreme Cold Estimates

The National Climatic Data Center (NCDC) estimated that 15 winter storm/extreme cold events occurred in the period between 1996 and 2020. Damages amounted to $551,000 over that time period.

Loss Estimates for Remaining Hazards

Historical data is not sufficient to estimate losses for the remaining hazards identified in this Plan. In some cases, there have been no recorded events, such as landslides, and in other cases, no damages resulted from an event, as is the case for instances of extreme heat events, earthquakes, dam failure, or sinkholes.

Recommended Risk Assessment Measures

The Mitigation Strategy of this Plan (Chapter 6) should include both short-term and long-term measures to improve the completeness and reliability of loss estimates. These measures should carry out the following general objectives:

- ✓ Critical Facilities Assessments. Assess critical facilities (hospitals, schools, fire and police stations, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.
- ✓ Geographic Information Systems (GIS). Maintain a comprehensive database of hazard locations, socio-economic data, infrastructure, and critical facilities inventories.
- ✓ Planning Studies. Conduct special plans and studies, as needed, to identify hazard risks and develop mitigation projects.

5.6 General Description of Land Uses and Development Trends

This section looks at how development impacts a community's vulnerability to a hazard. If development is not carefully assessed, it can aggravate existing conditions or even create new impacts from hazard events. By overseeing development, a jurisdiction can ensure that steps are taken to not worsen the impacts of hazards and possibly rectify certain negative impacts caused by hazards. Development can exacerbate vulnerability in several ways, including:

- Development moving into areas prone to flooding, landslides, and other location-specific hazards due to growth.
- Impervious surfaces, such as roads and parking lots, can increase urban runoff and thereby exacerbate flooding unless proper measures such as drainage improvements or retention ponds are employed.
- Encroaching on the wildland-urban interface with new residential, commercial, and industrial development without care taken to reduce the risk for wildfires can increase the threat to the community for wildfires.

- Increases in population can stretch scarce water resources in times of drought.

Past Trends

Table 5-44 depicts population trends from 2000-2018 for Fayette County. As can be seen, between 2000 and 2010 the population declined in all jurisdictions other than Belk and Glen Allen. Between 2010 and 2018 the population in all the jurisdiction declined with a county wide decline of approximately 5%.

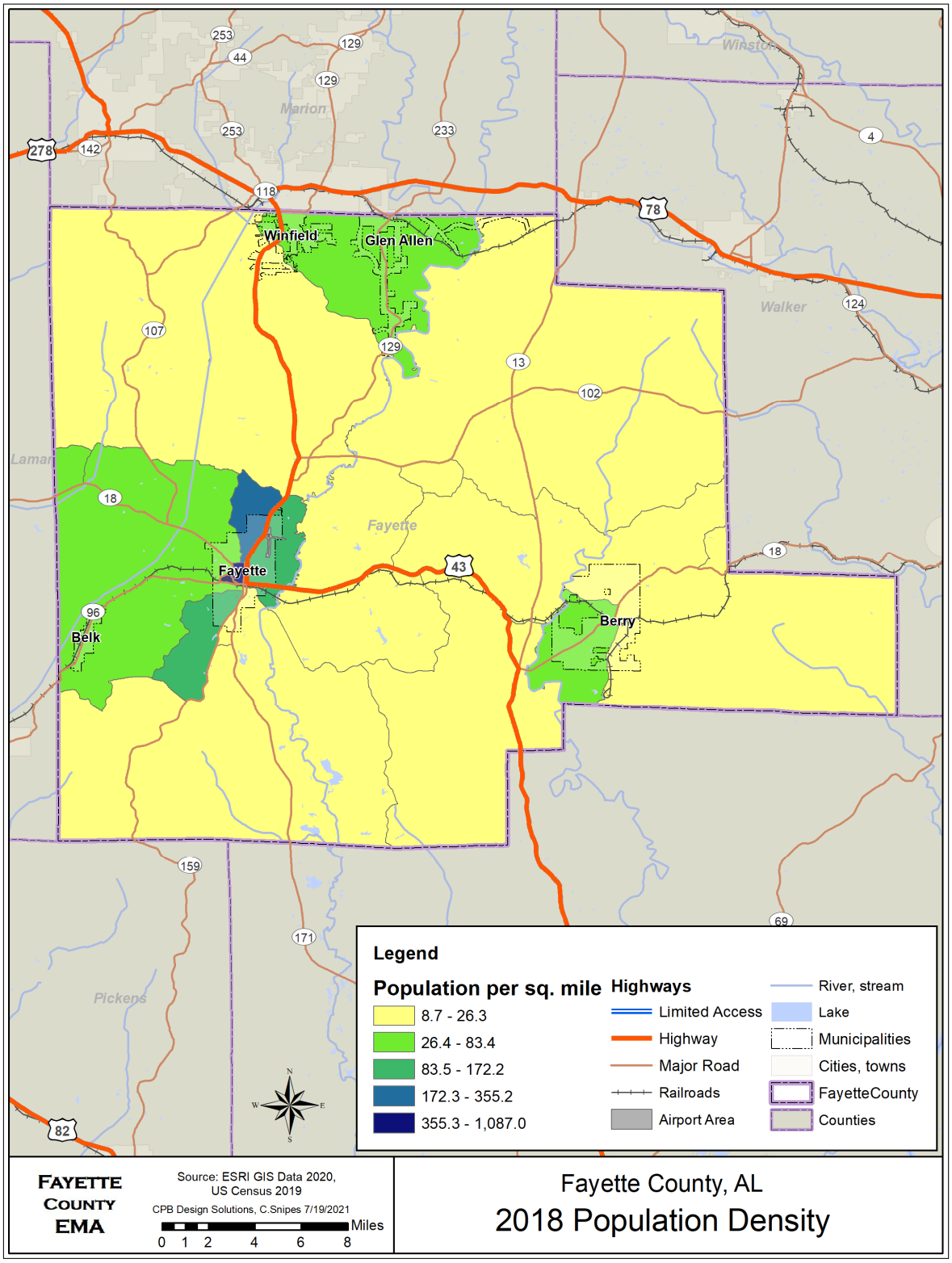
Table 5-44. Fayette County Historic Growth Trends

Jurisdiction	2000	2010	Number Change	Percent Change	2018	Number Change	Percent Change
Fayette County	18,495	17,241	-1,254	-6.78%	16,433	-808	-4.69%
Belk	214	215	1	0.47%	205	-10	-4.65%
Berry	1238	1148	-90	-7.27%	1,098	-50	-4.36%
Fayette	4911	4619	-292	-5.95%	4,327	-292	-6.32%
Glen Allen	442	510	68	15.38%	487	-23	-4.51%
Unincorporated	11,679	10,749	-930	-7.96%	10,316	-433	-4.03%

US Census Bureau:

With an estimated 2018 population of 4,327, the City of Fayette is the largest city in Fayette County, followed by approximately 1,098 people residing in Berry. Those residing in unincorporated parts of Fayette County dominate the population figures, at 10,316**.** Map 5-55 shows the population density (people per square mile) for Fayette County in 2018. The densest area is located in the City of Fayette.

Map 5-55. Fayette County Population Density, 2018



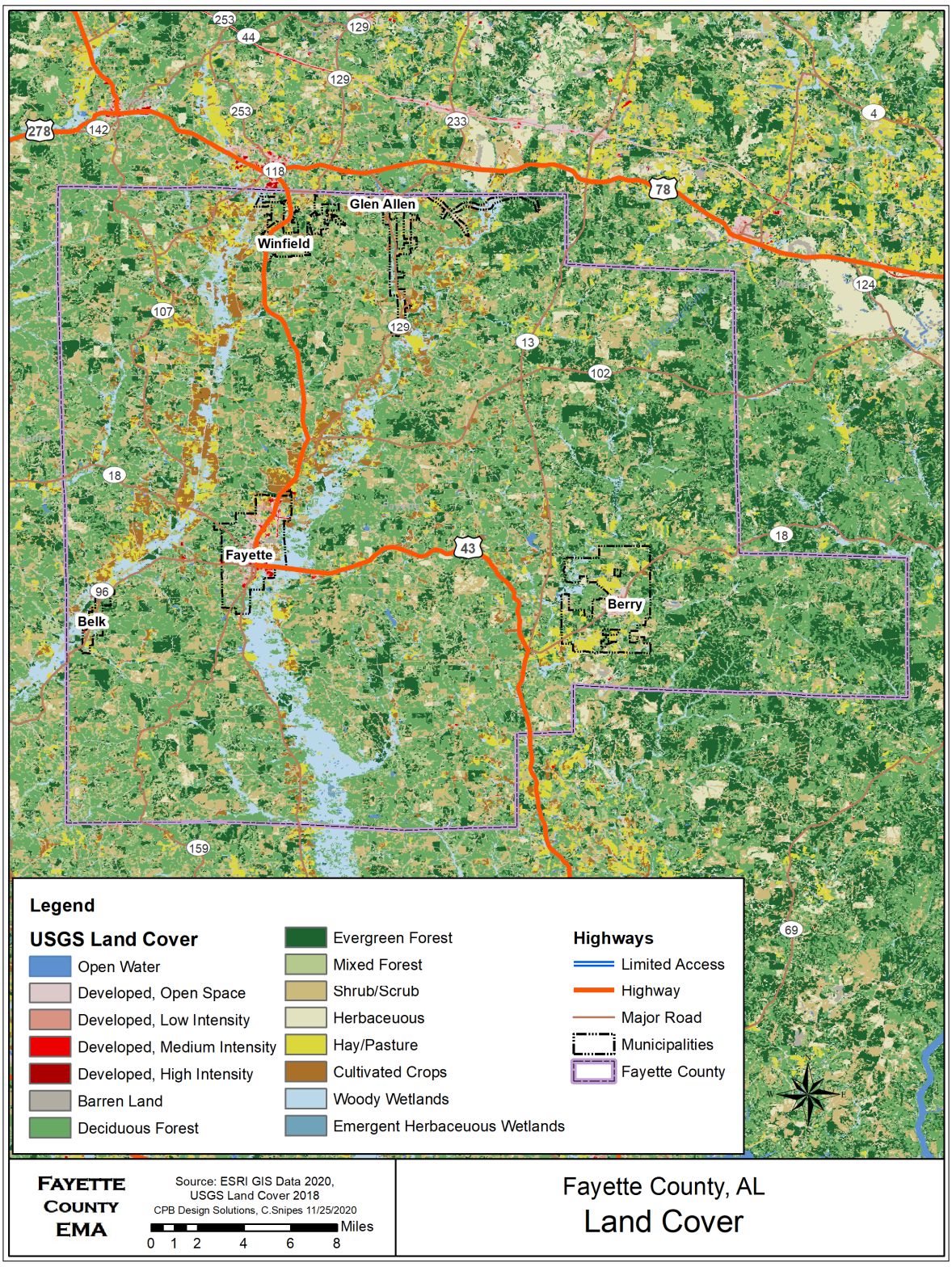
Land Cover and Land Use

Fayette County is made up of approximately 630 square miles of land and about 1.7 square miles of water. The County is located within the Cumberland Plateau and characterized by sandstone, shale, and limestone. The Warrior and Tennessee Rivers drain most of the Cumberland Plateau. The Sipsey River, a tributary of the Tombigbee River, flows through the center of Fayette County; the North River, a tributary of the Upper Black Warrior River, flows through the eastern portion of the county.

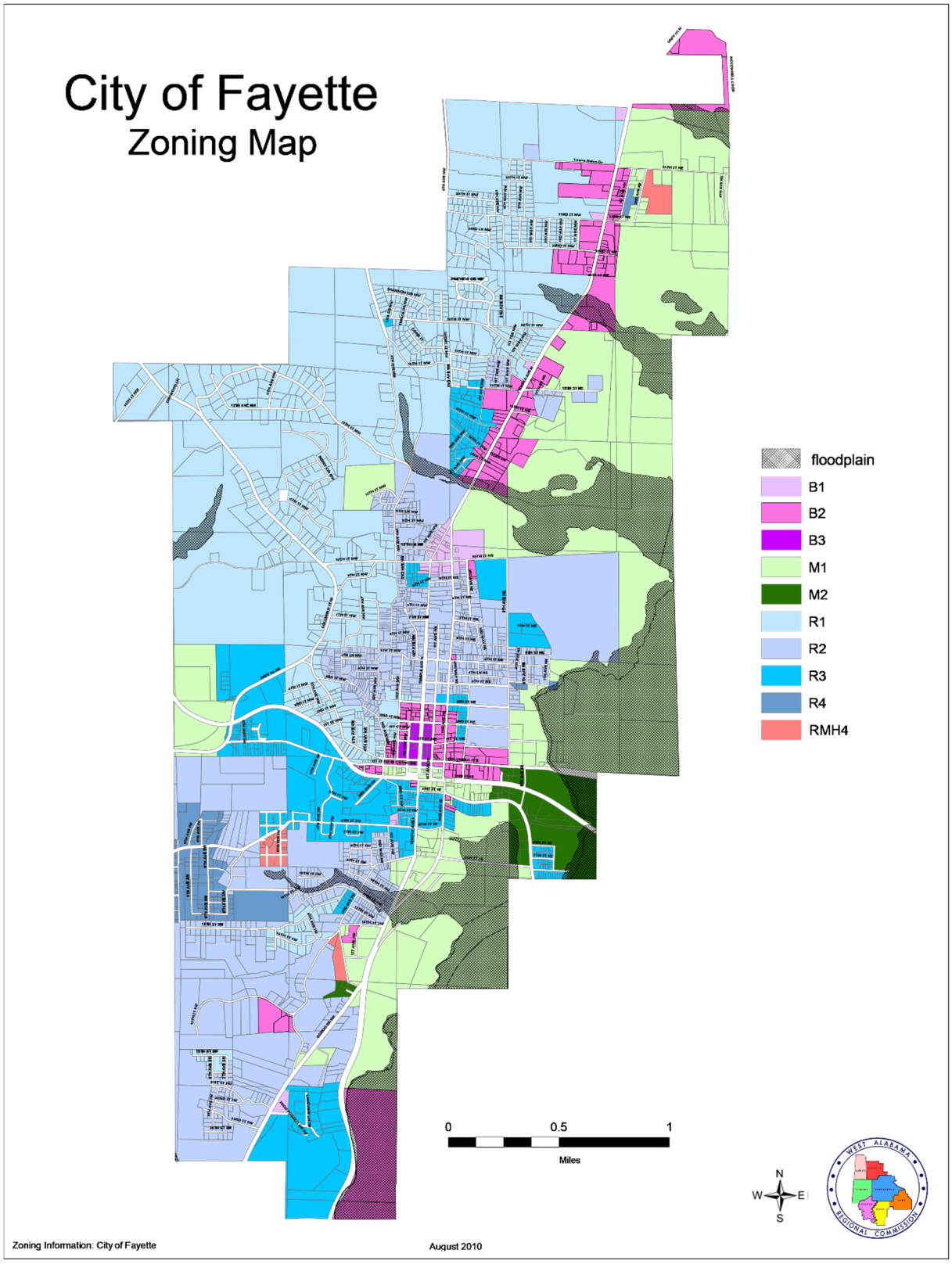
Fayette County has approximately 333,600 acres of forestland (Alabama Forestry Commission, 2011). Map 5-56 "Land Cover" shows that the majority of Fayette County is deciduous forest with evergreen forest, pasture, and cultivated crops interspersed throughout.

Fayette County is predominantly agricultural with some urbanization within the incorporated communities. The most densely developed areas lie within Fayette's city limits. The City of Fayette has a Master Land Use plan that includes "guidance for land use, community design and zoning, proposed community facilities and services, protection of natural resources, historic and cultural resources and recommendations for economic development and fiscal improvements." *fayetteal.org/planning* The current land use of the city is shown on Map 5-57. Over half the land use is currently residential. Businesses are located north of 18 along Highway 43. There is a mobile home subdivision located in the southwest portion of Fayette. Heavy manufacturing is placed along the eastern route of Highway 43. Light manufacturing is around the airport and the eastern part of the city. The floodplain borders the manufacturing zones.

Map 5-56. Fayette County Land Cover



Map 5-57. City of Fayette Zoning



Future Trends

Table 5-45 presents projected growth in Fayette County and its jurisdictions between 2018 and 2040. Fayette County's population decline between 2018 and 2040 nears 13%. These projections are based on historical data and do not reflect current economic development efforts in Fayette County or throughout the State.

Table 5-45. Population Projections by Jurisdiction

Jurisdiction	Estimated 2018	Annual Growth Rate	Projected 2040	Projected Change 2018-2040	Percent Change 2018-2040	2040 Growth Multiplier
Fayette County	16,433	-0.65%	14,224	-2,209	-13%	0.87
Belk	205	-0.24%	195	-10	-5%	0.95
Berry	1,098	-0.66%	948	-150	-14%	0.86
Fayette	4,327	-0.71%	3,697	-630	-15%	0.85
Glen Allen	487	0.54%	548	61	13%	1.13
Unincorporated	11,679	-0.69%	8,865	-1,451	-14%	0.86

Source: Derived from U.S. Census

Economic development prospects

Fayette County's predominant industry is manufacturing. Companies such as Fayette Fabrication, Fayette Glove Company, and Ox Bodies, Inc. comprise the larger employers in this industry. Georgia Pacific, the paper company, has a facility in Belk. Educational services, healthcare, and social assistance make up a significant portion of the employed population, with Fayette Medical Center as the largest employer in the county. Those employers with more than 100 employees and their trade are listed below.

- Fayette County Commission-Executive Offices
- Ox Bodies Inc-Truck and Bus Bodies
- Wal-Mart Supercenter-Department Stores
- Showa Glove Co- Gloves
- Fayette County Board Education-Elementary and Secondary Schools
- Fayette Fabrication-Fabrication for Automotive
- Fayette Medical Center-General Medical and Surgical Hospitals
- Phifer Wire – Woven Fabric
- Georgia Pacific Corporation – Lumber Mill

Fayette County is one of three counties in Northwest Alabama forming the C3 of Northwest Alabama Economic Development Alliance. The other two counties are Marion and Lamar. The C3 Alliance works to promote environments conducive to business location and expansion, creating jobs for the three counties. A campus for Bevill State Community College is located in Fayette County, along with a local art museum, civic center, and multi-purpose complex with equestrian and RV facilities.

The efforts of the economic alliance and the training programs available at Beville State will hopefully reverse the trend toward a decrease in population.

5.7 Repetitively Damaged NFIP-Insured Structures

FEMA defines "repetitive loss property" as properties that have two or more losses of at least $1,000 and have been paid under the National Flood Insurance Program (NFIP) within any 10-year period. According to the State NFIP Coordinator, Fayette County and its municipalities have zero repetitively damaged properties. Table 5-46 describes the number of policies in force.

Table 5-46. NFIP Policies and Repetitive Loss Claims

Community Name	Total NFIP Policies	Repetitive Loss Structures	Total RL Claims	Total RL Losses	Total Insurance in Force
Belk	1	0	0	$0	$35,000
Berry	0	0	0	$0	$0
City of Fayette	6	0	0	$0	$1,278,900
Glen Allen	1	0	0	$0	$22,000
Unincorporated Fayette County	10	0	0	$0	$1,122,400
Totals	20	0	0	$0	$2,458,300

Source: NFIP State Coordinator, 2021

While the jurisdictions within Fayette County and the unincorporated areas do not show any repetitive loss to structures according to the NFIP, there have been repetitive losses to infrastructure throughout the county such as culverts and bridges.

5.8 Summary of Hazards and Community Impacts

Table 5-47 summarizes each jurisdiction's vulnerability. Community impacts include the following descriptions and measurements:

Location. Location measures the geographic extent of the identified hazard in one of three ways, as follows:

1) *Community-wide* - the entire geographic area is affected;
2) *Partial* - a significant portion of the community is affected; or
3) *Minimal* - a negligible area is affected.

Probability. Probability measures the likelihood of the hazard occurring within the community, based on historical incidence. The scale for frequency runs as follows:

1) *Very high* - annually;
2) *High* - every two to three years;
3) *Moderate* - every three to ten years;

4) *Low* - every ten years; or
5) *Very low* - rare.

Extent. Extent measures the severity of the hazard and its potential to cause casualties, business losses, and damage to structures. The scale utilized runs as follows:

1) *Devastating* - the potential for devastating casualties, business losses, and structure damage;
2) *Significant* - the potential for some casualties and significant, but less than devastating, business losses and structure damage;
3) *Moderate* – moderate potential for economic losses and structure damage; or
4) *Slight* – slight or minimal potential for economic losses and structure damage.

Exposure. Exposure measures the percentage of structures within the community, including buildings, critical facilities, and infrastructure lifelines, that are exposed to the hazard. The classifications are defined as follows:

1) *High* - includes more than approximately 25 percent of the structures;
2) *Medium* - includes 10 percent to 25 percent of the structures; or
3) *Low* - includes less than 10 percent of the structures.

Damage Potential. Damage potential measures the damage that can be expected should an event take place. The classifications are defined as follows:

1) *High* - a hazard could damage more than 5 percent of the structures in a community;
2) *Medium* - a hazard could damage between 1 and 5 percent of the structures in a community; or
3) *Low* - a hazard could damage fewer than 1 percent of the structures in a community.

Table 5-47. Summary of Hazards and Community Impacts

Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location (Geographic Extent of Hazard in the Community)	Probability (Frequency of Hazard Occurrence in the Community)	Extent (Magnitude or Severity of Hazard in the Event of Occurrence)	Level of Exposure (Degree of Structures Exposed to the Hazard)	Level of Damage Potential (Percentage of Likely Damage to Exposed Structures)
Severe Storms	Uninc. Communities	Community-wide	Very High	Significant	High	Low
	Belk	Community-wide	Very High	Significant	High	Low
	Berry	Community-wide	Very High	Significant	High	Low
	Fayette	Community-wide	Very High	Significant	High	Low
	Glen Allen	Community-wide	Very High	Significant	High	Low
Tornadoes	Uninc. Communities	Community-wide	High	Devastating	High	High
	Belk	Community-wide	High	Devastating	High	High
	Berry	Community-wide	High	Devastating	High	High
	Fayette	Community-wide	High	Devastating	High	High
	Glen	Community-wide	High	Devastating	High	High
Floods	Uninc. Communities	Partial	High	Moderate	Low	Low
	Belk	Partial	Moderate	Moderate	Low	Low
	Berry	Partial	Moderate	Moderate	Low	Low
	Fayette	Partial	Very High	Significant	Medium	Medium
	Glen Allen	Partial	Moderate	Moderate	Low	Low

Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location (Geographic Extent of Hazard in the Community)	Probability (Frequency of Hazard Occurrence in the Community)	Extent (Magnitude or Severity of Hazard in the Event of Occurrence)	Level of Exposure (Degree of Structures Exposed to the Hazard)	Level of Damage Potential (Percentage of Likely Damage to Exposed Structures)
Droughts	Uninc. Communities	Community-wide	High	Moderate	High	Low
	Belk	Community-wide	High	Moderate	High	Low
	Berry	Community-wide	High	Moderate	High	Low
	Fayette	Community-wide	High	Moderate	High	Low
	Glen Allen	Community-wide	High	Moderate	High	Low
Winter Storms	Uninc. Communities	Community-wide	Moderate	Significant	High	Low
	Belk	Community-wide	Moderate	Significant	High	Low
	Berry	Community-wide	Moderate	Significant	High	Low
	Fayette	Community-wide	Moderate	Significant	High	Low
	Glen Allen	Community-wide	Moderate	Significant	High	Low
Hurricanes	Uninc. Communities	Community-wide	Low	Moderate	High	Low
	Belk	Community-wide	Low	Moderate	High	Low
	Berry	Community-wide	Low	Moderate	High	Low
	Fayette	Community-wide	Low	Moderate	High	Low
	Glen Allen	Community-wide	Low	Moderate	High	Low

Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location (Geographic Extent of Hazard in the Community)	Probability (Frequency of Hazard Occurrence in the Community)	Extent (Magnitude or Severity of Hazard in the Event of Occurrence)	Level of Exposure (Degree of Structures Exposed to the Hazard)	Level of Damage Potential (Percentage of Likely Damage to Exposed Structures)
Sinkholes (Land Subsidence)	Uninc. Communities	Minimal	Very Low	Slight	Low	Low
	Belk	Minimal	Very Low	Slight	Low	Low
	Berry	Minimal	Very Low	Slight	Low	Low
	Fayette	Minimal	Very Low	Slight	Low	Low
	Glen Allen	Minimal	Very Low	Slight	Low	Low
Landslides	Uninc. Communities	Minimal	Very Low	Slight	Low	Low
	Belk	Minimal	Very Low	Slight	Low	Low
	Berry	Minimal	Very Low	Slight	Low	Low
	Fayette	Minimal	Very Low	Slight	Low	Low
	Glen Allen	Minimal	Very Low	Slight	Low	Low
Earthquakes	Uninc. Communities	Community-wide	Low	Slight	High	Medium
	Belk	Community-wide	Low	Slight	High	Medium
	Berry	Community-wide	Low	Slight	High	Medium
	Fayette	Community-wide	Low	Slight	High	Medium
	Glen Allen	Community-wide	Low	Slight	High	Medium

Hazard	Jurisdiction	Community Impacts			Impacts on Vulnerable Community Buildings, Critical Facilities, and Infrastructure	
		Location (Geographic Extent of Hazard in the Community)	Probability (Frequency of Hazard Occurrence in the Community)	Extent (Magnitude or Severity of Hazard in the Event of Occurrence)	Level of Exposure (Degree of Structures Exposed to the Hazard)	Level of Damage Potential (Percentage of Likely Damage to Exposed Structures)
Wildfires	Uninc. Communities	Partial	Very High	Severe	Medium	High
	Belk	Partial	Moderate	Slight	Low	High
	Berry	Partial	Moderate	Slight	Low	High
	Fayette	Partial	Moderate	Slight	Low	High
	Glen Allen	Partial	Moderate	Slight	Low	High
Dam/Levee Failures	Uninc. Communities	Minimal	Very Low	Slight	Low	Low
	Belk	Minimal	Very Low	Slight	Low	Low
	Berry	Minimal	Very Low	Slight	Low	Low
	Fayette	Minimal	Very Low	Slight	Low	Low
	Glen Allen	Minimal	Very Low	Slight	Low	Low
Manmade and Technological Hazards	Uninc. Communities	Community-wide	Very High	Varies	High	Varies
	Belk	Community-wide	Very High	Varies	High	Varies
	Berry	Community-wide	Very High	Varies	High	Varies
	Fayette	Community-wide	Very High	Varies	High	Varies
	Glen Allen	Community-wide	Very High	Varies	High	Varies

5.9 Risks that Vary Among the Jurisdictions

This Plan has strongly emphasized the variations in risks among jurisdictions. In particular, the following sections contain specific references to jurisdictional variations:

- Hazard identification. Each jurisdiction was independently assessed to identify pertinent hazards, based on the sources noted in Section 5.3 "Identification of Hazards Affecting Each Jurisdiction." Descriptions of hazards can be found in Appendix D, "Hazard Identification, Ratings and Descriptions".
- Hazard profiles. Each of the hazard profiles in Section 5.3 notes how the location, extent, past occurrences, and probability of future events may vary among all jurisdictions. Maps are included, where possible, to emphasize the locations of hazards in relation to jurisdictional limits.
- Summary of Community Impacts. Table 5-47 "Summary of Hazards and Community Impacts" summarizes how hazards impact each jurisdiction.

Risk may vary among jurisdictions, as described in Table 5-48 "Jurisdictional Risk Variations." This table presents an overview of the common and unique risks within each jurisdiction and the unique characteristics of those risks. The risk variations table uses the following terms, as defined here:

Variation of Risks. Measures whether a risk is common or unique, as follows:

1) *Common risk* - affects all areas equally; or
2) *Unique risk* - affects certain jurisdictions with varying probability and extent.

Location. Indicates whether a hazard's impact varies within the community, as follows:

1) *Specific locations* - the hazard only threatens particular parts of the jurisdiction; or
2) *Not unique* - the hazard affects all parts of the jurisdiction.

Probability. Probability measures the likelihood of the hazard occurring within the community, based on historical incidence. The scale for frequency runs as follows:

1) *Very high* - annually;
2) *High* - every two to three years;
3) *Moderate* - every three to ten years;
4) *Low* - every ten years; or
5) *Very low* - rare.

Extent. Extent measures the severity of the hazard and its potential to cause casualties, business losses, and damage to structures. The scale utilized runs as follows:

1) *Devastating* - the potential for devastating casualties, business losses, and structure damage;
2) *Significant* - the potential for some casualties and significant, but less than devastating, business losses and structure damage;
3) *Moderate* – moderate potential for economic losses and structure damage; or
4) *Slight* – slight or minimal potential for economic losses and structure damage.

.

Table 5-48. Jurisdictional Risk Variations

Hazard	Variation of Risks	Jurisdiction	Hazard's Unique Risk Characteristics		
			Location	Probability	Extent
Severe Storms	Common Risks	Uninc. Communities	Not Unique	Very High	Slight
		Belk	Not Unique	Very High	Slight
		Berry	Not Unique	Very High	Slight
		Fayette	Not Unique	Very High	Slight
		Glen Allen	Not Unique	Very High	Slight
Tornadoes		Uninc. Communities	Not Unique	High	Significant
		Belk	Not Unique	High	Significant
		Berry	Not Unique	High	Significant
		Fayette	Not Unique	High	Significant
		Glen Allen	Not Unique	High	Significant
Winter Storms	Common Risks	Uninc. Communities	Not Unique	Very High	Slight
		Belk	Not Unique	Very High	Slight
		Berry	Not Unique	Very High	Slight
		Fayette	Not Unique	Very High	Slight
		Glen Allen	Not Unique	Very High	Slight
Droughts	Common Risks	Uninc. Communities	Not Unique	High	Slight
		Belk	Not Unique	High	Slight
		Berry	Not Unique	High	Slight
		Fayette	Not Unique	High	Slight
		Glen Allen	Not Unique	High	Slight

Hazard	Variation of Risks	Jurisdiction	Hazard's Unique Risk Characteristics		
			Location	Probability	Extent
Hurricanes	Common Risks	Uninc. Communities	Not Unique	Moderate	Moderate
		Belk	Not Unique	Moderate	Moderate
		Berry	Not Unique	Moderate	Moderate
		Fayette	Not Unique	Moderate	Moderate
		Glen Allen	Not Unique	Moderate	Moderate
Floods	Unique Risks	Uninc. Communities	Specific Locations	Very High	Moderate
		Belk	Specific Locations	Moderate	Moderate
		Berry	Specific Locations	Moderate	Moderate
		Fayette	Specific Locations	Very High	Moderate
		Glen Allen	Specific Locations	Moderate	Moderate
Dam/Levee Failures	Unique Risks	Uninc. Communities	Specific Locations	Very Low	Slight
		Belk	Specific Locations	Very Low	Slight
		Berry	Specific Locations	Very Low	Slight
		Fayette	Specific Locations	Very Low	Slight
		Glen Allen	Specific Locations	Very Low	Slight
Wildfires	Unique Risks	Uninc. Communities	Specific Locations	Very High	Moderate
		Belk	Specific Locations	Moderate	Moderate
		Berry	Specific Locations	Moderate	Moderate
		Fayette	Specific Locations	Moderate	Moderate
		Glen Allen	Specific Locations	Moderate	Moderate

Hazard	Variation of Risks	Jurisdiction	Hazard's Unique Risk Characteristics		
			Location	Probability	Extent
Sinkholes (Land Subsidence)	Unique Risks	Uninc. Communities	Specific Locations	Very Low	Slight
		Belk	Specific Locations	Very Low	Slight
		Berry	Specific Locations	Very Low	Slight
		Fayette	Specific Locations	Very Low	Slight
		Glen Allen	Specific Locations	Very Low	Slight
Earthquakes	Common Risks	Uninc. Communities	Not Unique	Low	Moderate
		Belk	Not Unique	Low	Moderate
		Berry	Not Unique	Low	Moderate
		Fayette	Not Unique	Low	Moderate
		Glen Allen	Not Unique	Low	Moderate
Landslides	Unique Risks	Uninc. Communities	Specific Locations	Very Low	Slight
		Belk	Specific Locations	Very Low	Slight
		Berry	Specific Locations	Very Low	Slight
		Fayette	Specific Locations	Very Low	Slight
		Glen Allen	Specific Locations	Very Low	Slight
Manmade and Technological	Common Risks	Uninc. Communities	Not Unique	High	Moderate
		Belk	Not Unique	High	Moderate
		Berry	Not Unique	High	Moderate
		Fayette	Not Unique	High	Moderate
		Glen Allen	Not Unique	High	Moderate

Chapter 6 – Mitigation Strategy

6.1 Federal Requirements for the Mitigation Strategy

This chapter of the Plan addresses the Mitigation Strategy requirements of 44 CFR Section 201.6 (c) (3), as follows:

> "201.6 (c)(3) *A mitigation strategy* that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section shall include:
>
> (i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.
>
> (ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.
>
> (iii) An action plan describing how the actions identified in paragraph (c) (3) (ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.
>
> (iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan."

6.2 Summary of Plan Updates

The updates to this chapter include a reorganization of the topics to follow the layout of the sections addressed in the federal requirements in section 6.1. Updates to the goals, objectives and mitigation measures reflect current conditions, the hazard risk assessment, revisions to the jurisdictions' community capabilities, the implementation status of the 2014 Community Action Programs (CAP), the 2018 Alabama State Hazard Mitigation Plan, and participation in the National

Flood Insurance Program (NFIP). New mitigation measures were added to the 2014 CAPs, and measures that were deemed unachievable due to a lack of legal authority or not being technically feasible were removed from the individual jurisdiction's CAPs. The category Education and Awareness was modified from Public Education and Outreach in 2014 to include education of staff members and also to expand the scope of education.

6.3 A Vision for Disaster-Resistant Fayette County Communities

Fayette County and its communities developed a vision for resilient communities for their 2014 plan and this vision has remained unchanged.

The communities of Fayette County envision active resistance to the threats of nature to human life and property through publicly-supported mitigation measures with proven results. Each community within the County embraces a long-term commitment to reduce the exposure and risks of natural and human-caused hazards within its jurisdiction by activating all available resources through cooperative intergovernmental and private sector initiatives, augmenting public knowledge and awareness, and enhancing local mitigation capabilities.

The attainment of this vision requires successful implementation of a comprehensive range of mitigation measures that promote the following underlying principles and purposes:

- Reducing or eliminating risks from natural, human-caused, and technological hazards.
- Reducing the vulnerability of existing, new, and future developments, including buildings and infrastructure.
- Minimizing exposure and vulnerability of people, buildings, critical facilities, and infrastructure to identified hazards.
- Increasing public awareness and support of hazard mitigation.
- Establishing interagency cooperation for conducting hazard mitigation activities.
- Strengthening communications and coordination among citizens and organizations.
- Integrating local hazard mitigation planning with the State of Alabama hazard mitigation planning, local comprehensive planning activities, and emergency operations planning.
- Protecting people and property and reducing losses and damages to buildings and infrastructure.

These actions fulfill goals and objectives that make up the mitigation strategy which reduce or avoid long-term vulnerabilities to the identified hazards.

6.4 Goals and Objectives for Hazard Mitigation

FEMA's program categories for managing successful mitigation programs to ensure resilient communities were used as a guide for the mitigation goals and objectives in the previous plans and

were maintained in this update. Those categories are Prevention, Property Protection, Public Education and Outreach, Natural Resource Protection, and Structural Projects.

- ***Prevention.*** *Adopting and administering ordinances, regulations, and programs that manage the development of land and buildings to minimize risks of loss due to natural hazards.*
- ***Property Protection.*** *Protecting structures as well as their occupants and contents from the damaging effects of natural hazard occurrences, including retrofitting existing structures to increase their resistance to damage and to reduce exposure of occupants to harm; relocating vulnerable structures and occupants from hazard locations; and conversion of developed land to permanent open space through acquisition and demolition of existing structures.*
- ***Public Education and Outreach.*** *Educating and informing the public about the risks of hazards and the techniques available to reduce threats to life and property.*
- ***Natural Resources Protection.*** *Preserving and restoring 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.*
- ***Structural Projects.*** *Engineering structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of a hazard on a community.*

While the general goals remain unchanged, some of the objectives and measures to achieve the goal have been updated. Also, the goals have been broadened to include events rising from human-caused and technological hazards, and pandemic/infectious diseases. The changes to the objectives and mitigation measures take into consideration current conditions, the risk assessment, community capabilities, the status of the measures from the 2014 plan, and compatibility with the 2018 Alabama State Hazard Mitigation Plan. The mitigation actions chosen by the jurisdictions fulfill the goals of this plan update.

Current Conditions and Risk Assessment

In Chapter 5, "Risk Assessment", the hazards that were identified by the jurisdictions as posing a risk to the life and property of those residing in Fayette County were updated to include pandemics and infectious disease. Since the 2014 plan update, especially in 2020, the concern over the risk of pandemics as well as human-caused and technological hazards has grown so they have been included or expanded in this plan update. The following hazards were identified through the risk assessment exercises and are addressed in the mitigation strategy:

- Tornadoes
- Severe Storms
- Floods
- Winter Storms and Extreme Cold
- Droughts
- Extreme Heat
- Wildfires

- Dam Failures
- Hurricanes
- Landslides
- Earthquakes
- Sinkholes
- Pandemics and Infectious Diseases
- Human-Caused Hazards
- Technological Hazards

Community Capabilities

A community's capabilities determine which mitigation objectives they can realistically expect to achieve; therefore, a capabilities assessment was conducted to determine the community's abilities in regard to planning and regulation; education and awareness programs; and staffing and administrative resources, technical resources, and financial resources. Jurisdictions within the State of Alabama have limited abilities to enact and enforce ordinances and regulations because Alabama is one of the few states that does not allow home rule by most of the jurisdictions. As such, Fayette County and its jurisdictions have restrictions on what measures they are allowed to undertake in relation to mitigation.

The capabilities assessment identified gaps or weaknesses that could hinder proposed mitigation activities and possibly exacerbate community hazard vulnerability. This report also helped evaluate whether a proposed mitigation action was deemed practical when considering the local participating jurisdiction's ability to implement the action. Some of the capabilities listed are provided by county departments, like the EMA, and outside sources such as consulting engineers and planning commissions. A summary of each jurisdictions' capabilities is presented below with a more extensive analysis of these capabilities provided in Appendix B "Community Mitigation Capabilities".

Planning and Regulatory Tools

- Town of Belk - *2014 Fayette County Multi-Hazard Mitigation Plan, floodplain ordinance*
- Town of Berry - *2014 Fayette County Multi-Hazard Mitigation Plan, local emergency operations plan, floodplain ordinance*
- City of Fayette - *2014 Fayette County Multi-Hazard Mitigation Plan, local emergency operations plan, comprehensive and master plans, economic development plan, community wildfire protection plan, building code, site plan review requirements, zoning ordinance, subdivision regulations, floodplain ordinance, flood insurance rate maps, maintenance programs to reduce risk, acquisition of land for open space and public recreation uses.*
- Town of Glen Allen - *2014 Fayette County Multi-Hazard Mitigation Plan, floodplain ordinance, flood insurance rate maps*
- Fayette County - *2014 Fayette County Multi-Hazard Mitigation Plan, capital improvements plan, comprehensive and master plans, economic development plan, local emergency operations plan, stormwater management plan, subdivision regulations, floodplain ordinance,*

flood insurance rate maps, acquisition of land for open space and public recreation uses, maintenance programs to reduce risk.

Staffing and Administrative Resources

- Town of Belk – *Mutual aid agreements*
- Town of Berry - *Mutual aid agreements*
- City of Fayette - *Mutual aid agreements, planning commission, zoning commission, chief building official, floodplain administrator, emergency manager, civil engineer, GIS coordinator, economic development plan*
- Town of Glen Allen - *Mutual aid agreements*
- Fayette County - *Mutual aid agreements, floodplain administrator, emergency manager, civil engineer, mitigation planning committee*

Technical Resources

- Town of Belk- *warning systems/services*
- Town of Berry - *warning systems/services*
- City of Fayette - *warning systems/services, grant writing, hazard data and information*
- Town of Glen Allen - *warning systems/services*
- Fayette County - *warning systems/services, grant writing, hazard data and information, Hazus analysis*

Financial Resources

- Town of Belk - *authority to levy taxes for specific purposes, fees for water, sewer, gas, or electric services, incur debt through general obligation bonds and/or special tax bonds, incur debt through private activities, community development block grant, other federal funding programs, state funding programs*
- Town of Berry - *authority to levy taxes for specific purposes, fees for water, sewer, gas, or electric services, incur debt through general obligation bonds and/or special tax bonds, incur debt through private activities, community development block grant, other federal funding programs, state funding programs*
- City of Fayette - *authority to levy taxes for specific purposes, fees for water, sewer, gas, or electric services, incur debt through general obligation bonds and/or special tax bonds, community development block grant, other federal funding programs, state funding programs*
- Town of Glen Allen – *authority to levy taxes for specific purposes, fees for utilities, incur debt through general obligation bonds and/or special tax bonds, incur debt through private activities, CDBG, other federal funding programs, state funding programs*
- Fayette County - *capital improvements project funding, incur debt through general obligation bonds and/or special tax bonds, incur debt through private activities, community development block grant, other federal funding programs, state funding programs*

Education and Awareness Programs

- Town of Belk - *StormReady certification*

- Town of Berry - *StormReady certification, natural disaster or safety related school programs, library*
- City of Fayette - *StormReady certification, local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access, and functional needs populations, etc., natural disaster or safety related school programs, library*
- Town of Glen Allen - *StormReady certification, natural disaster, or safety related school programs*
- Fayette County - *StormReady certification, local citizen groups or non-profit organizations, ongoing public education or information programs (e.g., responsible water use, fire safety, household preparedness, environmental education), natural disaster or safety related school programs, public-private partnership initiatives addressing disaster-related issues, library*

Sparsely populated counties such with limited resources such as Fayette County rely on area agencies and organizations to assist in mitigation and response activities related to hazards. The medical and education agencies in Fayette County possess planning and regulatory tools to aid in mitigating against hazards that impact their services. The medical facilities have comprehensive plans, capital improvement plans, local emergency operations plans, continuity of operations plans, transportation plans, and building codes. The education agencies have comprehensive plans, local emergency operations plans, continuity of operations plans, transportation plans and building codes. The cooperative extension agency has a local emergency operations plan and a continuity of operations plan.

In addition to planning tools, the medical agencies and schools have a number of staffing and technical resources similar to the jurisdictions. They have maintenance programs and regulations that ensure their facilities are following local, state, and federal guidelines for safer buildings. They also have warning systems in place and have grant writing capabilities. The cooperative extension service also has grant writing capabilities.

2014 Community Action Program Implementation Status

In order to provide realistic mitigation measures for this update, information was collected from community officials about the status of measures from the 2014 plan through an implementation status questionnaire. The questionnaire assessed the status of each mitigation measure for the jurisdiction from the community action programs of 2014.

The committee member was instructed to meet with officials responsible for the measure and inquire whether each objective was reached successfully. Measures that were confirmed to be completed within the jurisdiction were recorded as “Completed”. Incomplete efforts toward accomplishing an objective were marked as “No” in the “Completed” column with the respondent being required to notate a reason for the failure to complete the objective. One option for an explanation of an incomplete effort was that the effort was “On-Going” for objectives that the jurisdiction was still working toward. The respondents stated other reasons for non-completion, which

included: “Lack of Funding”, “No Legal Authority”, “Administrative Shortage”, “Lack of Political Support”, and “Not Technically Feasible”. (See Appendix C “2014 Plan Implementation Status” for more information.)

Some mitigation actions for certain jurisdictions from the 2014 plan that were not completed due to “No Legal Authority” or “Not Technically Feasible” were removed from the new mitigation action items for the respective jurisdictions. For those communities that wanted to maintain a measure but did not have the legal authority, wording in the measure was altered so that the measure would be achievable. For example, in the measure *Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings by amending applicable ordinances and regulations,* the word “require” was changed to “encourage”.

Compatibility with the 2018 Alabama State Plan Goals

The vision, goals, and objectives for Fayette County and its jurisdictions are reflective of the 2018 goals from the Alabama State Hazard Mitigation Plan. The State updated their goals in the 2018 plan as follows:

Goal 1: Enhance the comprehensive statewide hazard mitigation system;
Goal 2: Reduce the State of Alabama’s vulnerability and increase resilience to hazards to protect people, property, and natural resources;
Goal 3: Foster public awareness and understanding of their hazard risk and of mitigation opportunities; and
Goal 4: Expand and promote coordination and communication with other government agencies, local governments, other relevant organizations.

Fayette County and its jurisdictions are integral in the state’s hazard mitigation system. Their efforts in addressing the hazards that impact their area help the State of Alabama achieve its mitigation goals. Fayette County’s primary actions align with the State goals, as follows: (a) to reduce the vulnerability of existing, new, and future development of buildings and infrastructure; (b) to minimize exposure and vulnerability of people, buildings, critical facilities, and infrastructure to identified hazards; (c) to increase public awareness and support of hazard mitigation; and (d) to establish interagency cooperation for conducting hazard mitigation activities.

Participation and Compliance with the National Flood Insurance Program (NFIP)

The jurisdictions of Fayette County, Belk, Berry, City of Fayette, and Glen Allen all are members in good standing with the NFIP. All of these jurisdictions had their floodplain maps updated in 2010. All NFIP communities in Fayette County have continued to effectively enforce and keep their floodplain ordinances current since their original entry into the program. Local flood plain ordinance administrators provide technical assistance to applicants and keep abreast of changes in floodplain management requirements through the State NFIP Coordinator. There have been no claims with the NFIP for the jurisdictions within Fayette County. Table 6-1 provides information on the NFIP participation status of Fayette County jurisdictions.

Table 6- 1. NFIP Community Status, Fayette County Jurisdictions

Community ID	Jurisdiction	Current Effective Map Date	Status
010219	Fayette County	06/04/2010	Participating
010083	Belk	06/04/2010	Participating
010255	Berry	06/04/2010	Participating
010084	Fayette	06/04/2010	Participating
010256	Glen Allen	06/04/2010	Participating

Source: NFIP Community Status Book, 09/03/2020

6.5 Mitigation Measure Identification, Prioritization, Implementation and Administration

Data gathered through the risk assessment, implementation status of the 2014 Community Action Programs, and the capabilities assessment was used to update the mitigation measures from the 2014 plan. New measures that were discussed during meetings were incorporated into the new mitigation measures list and sorted according to FEMA's program categories of Prevention, Property Protection, Education and Awareness, Natural Resource Protection, and Structural Projects.

Mitigation Measure Identification

Due to COVID-19, the planning coordinator and EMA director met with the jurisdictions individually to discuss possible mitigation measures for their jurisdictions. An in-depth review of the measures was done by the representatives and they were asked to choose measures they would like to consider. For completion of the review, the jurisdictions were instructed to evaluate the measures using the method known as STAPLEE. STAPLEE examines social, technical, administrative, political, legal, environmental, and economic considerations. The STAPLEE evaluation eliminated many of the measures from the comprehensive list due to such things as the lack of staff and administrative capabilities, and lack of legal authority. If a jurisdiction did not have a capability at the time of the plan update but had reported efforts toward obtaining the capability over the next five years, that mitigation measure was selected for their action program.

The STAPLEE method considers the following areas of concern and responded to many of the questions presented here:

1. *Social Considerations.*
   - *Environmental justice: Will the proposed measure be socially equitable to minority, disadvantaged, and special needs populations, such as the elderly and handicapped?*
   - *Neighborhood impact: Will the measure disrupt established neighborhoods or improve quality of life for affected neighborhoods?*
   - *Community support: Is the measure consistent with community values? Will the affected community support the measure?*

- *Impact on social and cultural resource: Does the measure adversely affect valued local resources or enhance those resources?*

2. *Technical Considerations.*
   - *Technical feasibility: Is the proposal technically possible? Are there technical issues that remain? Does the measure effectively solve the problem or create new problems? Are there secondary impacts that might be considered? Have professional experts been consulted?*

3. *Administrative Considerations.*
   - *Staffing: Does the jurisdiction have adequate staff resources and expertise to implement the measure? Will additional staff, training, or consultants be necessary? Can local funds support staffing demands? Will the measure overburden existing staff load?*
   - *Maintenance: Does the jurisdiction have the capabilities to maintain the proposed project once it is completed? Are staff, funds, and facilities available for long-term project maintenance?*
   - *Timing: Can the measure be implemented in a timely manner? Are the timeframes for implementation reasonable?*

4. *Political Considerations.*
   - *Political support: Does the local governing body support the proposed measure? Does the public support the measure? Do stakeholders support the measure? What advocates might facilitate implementation of the proposal?*

5. *Legal Considerations.*
   - *Legal authority: Does the jurisdiction have the legal authority to implement the measure? What are the legal consequences of taking action to implement the measure as opposed to an alternative action or taking no action? Will new legislation be required?*

6. *Environmental Considerations.*
   - *National Environmental Policy Act (NEPA): Will the measure be consistent with Federal NEPA criteria? How will the measure affect environmental resources, such as land, water, air, wildlife, vegetation, historic properties, archaeological sites, etc.? Can potentially adverse impacts be sufficiently mitigated through reasonable methods?*
   - *State and local environmental regulations: Will the measure follow State and local environmental laws, such as flood plain management regulations, water quality standards, and wetlands protection criteria?*

- *Environmental conservation goals: Will the proposal advance the overall environmental goals and objectives of the community?*

7. *Economic Considerations.*
   - *Availability of funds: Will the measure require Federal or other outside funding sources? Are local funds available? Can in-kind services reduce local obligations? What is the projected availability of required funds during the timeframe for implementation? Where funding is not apparently available, should the project still be considered but at a lower priority?*
   - *Benefits to be derived from the proposed measure: Will the measure likely reduce dollar losses from property damages in the event of a hazard? To what degree?*
   - *Costs: Are the costs reasonable in relation to the likely benefits? Do economic benefits to the community outweigh estimated project costs? What cost reduction alternatives might be available?*
   - *Economic feasibility: Have the costs and benefits of the preferred measure been compared against other alternatives? What is the economic impact of the no-action alternative? Is this the most economically effective solution?*
   - *Impact on local economy: Will the proposed measure improve local economic activities? What impact might the measure have on the tax base?*
   - *Economic development goals: Will the proposal advance the overall economic goals and objectives of the community?*

Mitigation Measure Prioritization

Prioritization of the mitigation actions from the findings of the STAPLEE was done at the same time as the review of the mitigation measures. The jurisdictions were asked to consider the mitigation measures that were chosen and prioritize them as high, medium, or low priority. If a measure under consideration was found to be financially feasible and had high ratings, it was given a higher priority for implementation than measures that fell lower in the rating. Important to the selection process is the estimated cost and availability of funds through local sources and potential FEMA Hazard Mitigation Assistance (HMA) grant programs. Prior to implementation of projects proposed for HMA funding, a detailed benefit-cost analysis (BCA) will be required.

Mitigation Measure Implementation and Administration

Once the jurisdictions chose feasible mitigation measures and ranked them, they were asked to provide a general completion schedule, assign administrative responsibility for carrying out the measures, estimate costs if possible, and identify potential funding sources. The timelines for completion ranged from short-range (2 years or less) to long-range (more than 4 years) or ongoing which are measures that are carried out through the 5-year timeframe.

The person listed under "Lead Responsibility for Carrying Out Measure" is the department, agency, or position within an organization who would oversee or carry out the measure. The Local Floodplain Manager is an administrator designated through the NFIP as the person responsible for enforcing the local ordinance and may be the local engineer or local building official.

Estimated costs and potential funding sources are provided if they are known. FEMA Hazard Mitigation Assistance funds, where noted as a possible funding source, are subject to final eligibility determination, including, among other eligibility criteria, a positive benefit/cost analysis and the availability of funds. It will be imperative that when disaster funds are available that the community action programs be reviewed and any mitigation measures that can be addressed through the use of available funds be strongly considered.

More information about funding sources for mitigation actions can be found at the State EMA's hazard mitigation grant program website: https://ema.alabama.gov/hazard-mitigation-grant-program/ or by contacting the State Hazard Mitigation Officer at telephone number 205-280-2312.

6.6 2020-2025 Fayette County Multi-Jurisdictional Mitigation Action Program

The 2020-2025 Fayette County Multi-Jurisdictional Action Program is presented in Table 6-2 and it contains all the goals, objectives and measures chosen by each of the participating jurisdictions. The communities employing the measure are listed on the table. Also included in the table are the hazards the measures address, whether they affect new or existing buildings or infrastructure and if they are actions or projects. The Community Action Programs in Volume III, which supplements Table 6-2, breaks out the same mitigation goals, objectives, and mitigation measures by community and adds the priority, timeframe for completion, and responsibility for implementation of the measures for each jurisdiction.

While mitigation refers to actions employed to reduce or eliminate risks, and not to preparing for or responding to hazard events, a number of mitigation measures can cross over into both mitigation and response. For example, responding to a flood event by posting warning signs about the danger to prevent injury or death, is both a response and a mitigation measure. Similar actions have been included in the mitigation strategies.

Table 6-2. 2020-2025 Fayette County Multi-Jurisdictional Mitigation Action Program

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
1	**Goal for Prevention. Manage the development of land and buildings to minimize risks of loss due to multiple hazards.**				
1.1	**Comprehensive Plans and Smart Growth. Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.**				
1.1.1	Maintain up-to-date comprehensive plan.	Fayette County City of Fayette Glen Allen	All	Both	Action
1.1.2	Integrate the findings and recommendations of this hazard mitigation plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	Fayette County City of Fayette Glen Allen	All	Both	Action
1.2	**Planning Studies. Conduct special studies, as needed, to identify hazard risks and mitigation measures.**				
1.2.1	Consider conducting detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.	Fayette County City of Fayette	Flooding	Both	Action
1.2.2	Evaluate elevation and culvert sizing of existing roadways in flash flood prone areas to ensure compliance with current standards for design year floods and develop a program for construction upgrades as appropriate.	Fayette County City of Fayette	Flooding	Existing	Action
1.2.3	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, or construct drainage improvements to reduce or eliminate localized flooding.	All Jurisdictions	Flooding	Existing	Action
1.2.4	Identify existing culturally or socially significant structures within participating jurisdictions that have the most potential for losses from disaster events and identify needed structural upgrades.	All Jurisdictions	All*	Both	Action
1.2.5	Inventory and map existing fire hydrants and piping throughout the county and identify areas in need of new fire hydrants and/or areas of insufficient water pressure for fire suppression.	All Jurisdictions	Wildfires	Existing	Action

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
1.2.6	Assist the Alabama Forestry Commission with their Community Wildfire Plan for Fayette County and its jurisdictions.	All Jurisdictions	Wildfires	Both	Action
1.3	**<u>Zoning and Subdivision Regulations</u>. Establish effective zoning and subdivision controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.**				
1.3.1	Encourage new subdivisions to implement fire reduction measures such as maintaining minimum intervals between structures, providing firebreaks, on-site water storage, wide roads, and multiple accesses to reduce fire risks.	City of Fayette	Wildfires	New	Action
1.3.2	Require delineation of floodplain fringe, floodways, and wetlands on all plans submitted with a permit for development within a floodplain.	City of Fayette	Flooding	Both	Action
1.4	**<u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from multi-hazard damages.**				
1.4.1	Promote good construction practices to mitigate structural failures during disaster events.	City of Fayette	Tornadoes Hurricanes Severe Storms Earthquakes Human-Caused	New	Action
1.4.2	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	City of Fayette	Tornadoes Hurricanes Severe Storms Earthquakes	Existing	Action
1.4.3	Review fire safety ordinances to ensure they properly regulate open burning.	Fayette County City of Fayette Glen Allen	Wildfires	Both	Action
1.4.4	Encourage the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings by amending applicable ordinances and regulations.	All Jurisdictions	Tornadoes Hurricanes Severe Storms Human-Caused Technological	New	Action

	Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
1.5	**<u>Floodplain Management Regulations and Programs.</u> Effectively administer and enforce local floodplain management regulations.**				
1.5.1	Promote the adoption of a uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage floodplain management that maintains the natural and beneficial functions of floodplains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	All Jurisdictions	Flooding	Both	Action
1.5.2	Improve flood risk assessment by documenting high water marks post event, verification of FEMA's repetitive loss inventory or revising and updating regulatory floodplain maps.	All Jurisdictions	Flooding	Both	Action
1.5.3	Encourage the training of local floodplain managers through programs offered by the State Floodplain Coordinator and FEMA's training center in Emmitsburg, Maryland.	Fayette County City of Fayette	Flooding	Both	Action
1.5.4	Maintain membership for locally designated floodplain managers in the Association of State Floodplain Managers and the Alabama Association Floodplain Managers and encourage active participation.	Fayette County City of Fayette	Flooding	Both	Action
1.5.5	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Fayette County City of Fayette	Flooding	Both	Action
1.5.6	Update local floodplain ordinance for compliance with current NFIP standards.	All Jurisdictions	Flooding	Both	Action
1.5.7	Continue ongoing relations with the State NFIP Coordinator in relation to floodplain management.	All Jurisdictions	Flooding	Both	Action
1.6	**<u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.**				
1.6.1	Apply for membership in the CRS Program.	Fayette County City of Fayette	Flooding	Both	Action
1.7	**<u>Storm Water Management Regulations.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.**				

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
1.7.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	City of Fayette Glen Allen	Flooding	Both	Action
1.7.2	Develop, adopt, and implement subdivision regulations that require proper stormwater infrastructure design and construction.	City of Fayette	Flooding	Both	Action
1.8	**Open Space Preservation. Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for drainage, parks, conservation areas, and landscaping.**				
1.8.1	Examine regulatory options and feasibility of requiring open space areas for drainage control, recreation, and landscaping.	City of Fayette	Flooding	New	Action
1.9	**Critical Facilities Assessments. Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and other natural and human-caused disaster events.**				
1.9.1	Perform vulnerability assessments of critical facilities, including education facilities, to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards; i.e., protective film inside windows.	All Jurisdictions Schools	All *	Existing	Action
1.9.2	Conduct wildfire vulnerability assessments of critical facilities and other properties in these risk areas and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	All Jurisdictions	Wildfire	Both	Action
1.9.3	Inspect security measures around critical facilities for areas of concern (i.e., cut away areas in security fencing, inoperable cameras) and develop a plan to address the concerns.	All Jurisdictions Schools	Human-Caused	Existing	Action
1.9.4	Perform annual penetration and vulnerability assessments of log files and wire data.	Schools	Human-Caused	Both	Action
1.9.5	Establish Threat Assessment Teams on each campus.	Schools	Human-Caused	Both	Action
1.10	**Geographic Information Systems (GIS) and Information Management. Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories to aid in planning, hazard mitigation and incident reporting.**				

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
1.10.1	Maintain a centralized, countywide hazards and risk assessment database that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, tornado tracks, disaster events and their extents, major drainage structures and a comprehensive inventory of critical facilities, including points of distribution within all jurisdictions. If applicable, add to GIS mapping.	Fayette County	All	Both	Action
1.10.2	Maintain a comprehensive inventory of dams and failure inundation areas within the county and jurisdictions.	Fayette County	Dam Failure	Both	Action
1.10.3	Provide property assessments of areas impacted by hazards for damage/incident reports. If applicable, add to GIS mapping.	Fayette County	All	Both	Action
1.10.4	Develop a centralized County database of all safe rooms and shelters, both pre-disaster and post-disaster, open to the public for all jurisdictions. Include and update those locations in GIS if applicable.	Fayette County	Tornadoes Hurricanes Severe Storms Earthquakes Technological	Existing	Action
1.10.5	Keep up-to-date lists of addresses with private safe rooms and shelters to assist fire departments and emergency services agencies. Coordinate the distribution of these lists to the appropriate local government officials.	All Jurisdictions	Tornadoes Hurricanes Severe Storms Earthquakes	Both	Action
1.10.6	Maintain a listing of locations of special needs groups, including the elderly and those with Alzheimer's. Disseminate that information to emergency personnel.	All Jurisdictions	All	Both	Action
1.10.7	Establish a uniform damage reporting procedure for all jurisdictions to utilize in Fayette County with the Fayette County Emergency Management Agency as the clearinghouse for damage assessment data following disaster events.	Fayette County	All	Both	Action
1.11	**<u>Dam Safety Management.</u> Establish a comprehensive dam safety program.**				

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
1.11.1	Support legislation to establish a State dam safety program.	All Jurisdictions	Dam Failure	Both	Action
1.12	**Prescribed Burn Regulations and Wildfire Management. Create regulations and programs to reduce storm debris.**				
1.12.1	Support legislation to enact regulations for the timber industry to conduct prescribed burns after clearing land to lessen the possibility of wildfires.	All Jurisdictions	Wildfires	N/A	Action
1.12.2	Encourage programs to conduct prescribed burns of large undeveloped areas of downed trees from disaster events to lessen the possibility of wildfires.	All Jurisdictions	Wildfires	N/A	Action
1.13	**Emergency Operations Plans.**				
1.13.1	Maintain and update emergency operations plans.	Fayette County Schools	All	Both	Action
1.13.2	Develop or update continuity of operations plans.	All Jurisdictions	All	Both	Action
2	**Goal for Human Welfare and Property Protection: Protect people, animals, structures, and contents from the damaging effects of hazards.**				
2.1	**Building Relocation. Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.**				
2.1.1	Assist in relocating buildings out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	City of Fayette	Flooding	Existing	Project
2.2	**Building Acquisition. Acquire flood prone buildings and properties and establish permanent open space.**				
2.2.1	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	All Jurisdictions	Flooding	Existing	Action
2.2.2	Assist in acquiring and demolishing flood prone or substantially damaged structures and replace with permanent open space.	All Jurisdictions	Flooding	Existing	Project

	Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
2.3	**<u>Building Elevation.</u> Elevate buildings in hazardous flood areas to safeguard against damages.**				
2.3.1	Assist with the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings.	Fayette County City of Fayette	Flooding	Existing	Project
2.3.2	Assist in repairing or weatherizing existing homes.	Fayette County City of Fayette	Flooding	Existing	Project
2.4	**<u>Building Retrofits.</u> Retrofit vulnerable buildings and their surroundings to protect against multiple hazard damages, including flooding, high winds, tornadoes, hurricanes, severe storms, earthquakes, and human-caused hazards.**				
2.4.1	Assist with retrofitting existing buildings against potential damages from natural and human-caused hazards.	Fayette County City of Fayette	Flooding Tornadoes Hurricanes Severe Storms Earthquakes Human-Caused	Existing	Action
2.5	**<u>Flood Proofing.</u> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.**				
2.5.1	Assist in flood proofing pre-FIRM non-residential buildings, where feasible.	Fayette County City of Fayette	Flooding	Existing	Project
2.6	**<u>Critical Facilities Protection</u>. Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones, construction of new facilities, or implementation of security measures for maximum protection from all hazards.**				
2.6.1	Retrofit critical facilities and infrastructure against potential damages from hazards.	Fayette County City of Fayette	All*	Existing	Project
2.6.2	Encourage the relocation of existing utility lines underground, where feasible and cost effective.	All Jurisdictions	Tornadoes Severe Storms Winter Storms Hurricanes	Existing	Action
2.6.3	Install lightning and/or surge protection on existing critical facilities.	Schools	Lightning	Existing	Project
2.6.4	Encourage the installation of lightning and/or surge protection on new critical facilities.	All Jurisdictions Schools	Lightning	New	Project

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
2.6.5	Conduct tree trimming programs along utility lines.	City of Fayette Glen Allen	Tornadoes Hurricanes Severe Storms Winter Storms	Both	Project
2.6.6	Encourage the enhancement of the security of areas surrounding public facilities, including education facilities. Such measures include replacing or removing landscaping that provides cover for attacks, installing motion activated lighting, secure parking lots through fencing and adequate lighting.	Schools	Human-Caused	Existing	Project
2.6.7	Encourage structural changes to secure the buildings, including schools, i.e., replace vulnerable doors, install automatic door locks for after hours, install alarms and panic alarms, install CCTVs throughout facilities,	Schools	Human-Caused	Existing	Project
2.6.8	Install a public address system throughout public buildings for hazard warnings and shelter-in-place announcements.	Glen Allen Schools	Dam Failure Tornadoes Hurricanes Severe Storms Human-Caused Technological	Both	Project
2.6.9	Minimize visitors' access to buildings and provide badges.	Schools	Human-Caused	Both	Action
2.6.10	Monitor inflow/outflow of network activity on computer systems in critical facilities to protect against cyberterrorism.	All Jurisdictions	Human-Caused	Both	Action
2.6.11	Utilize the DHS' free assessment tool for cybersecurity for local governments to find weak areas in cybersecurity and address the issues found.	All Jurisdictions	Human-Caused	Both	Action
2.6.12	Ensure computer firewalls, virus protections, etc. are up-to-date.	All Jurisdictions	Human-Caused	Both	Action
2.7	**Emergency Power Generation. Assure uninterrupted power supplies during emergency events.**				

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
2.7.1	Install or encourage the installation of backup power generators for critical facilities, including radio stations, and fuel stations.	All Jurisdictions	Tornadoes Hurricanes Severe Storms Winter Storms Earthquakes Human-Caused	Existing	Project
2.7.2	Deploy portable generators to serve as miniature sub-stations to help rapidly restore power to at-risk citizens after a hazard event.	Glen Allen	Tornadoes Hurricanes Severe Storms Winter Storms Earthquakes Human-Caused Technological	Both	Project
2.7.3	Ensure all critical facilities, including facilities serving the elderly and special needs residents perform regular maintenance on their generators including monthly tests and fuel quality checks.	Glen Allen	Tornadoes Hurricanes Severe Storms Winter Storms Earthquakes Human-Caused Technological	Existing	Action
2.8	**<u>Community Shelters and Safe Room Requirements</u>: Provide shelter from multiple hazards for the safety of community residents.**				
2.8.1	Work with county and city leaders in developing standardized procedures for identifying shelters as pre-disaster and post-disaster shelters or safe rooms.	All Jurisdictions Schools	Hurricanes Tornadoes Severe Storms Earthquakes Technological	Both	Action

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
2.8.2	Review existing public shelters and safe rooms in public buildings including schools and recommend new locations and where there are coverage gaps. Include evaluations of ADA compliance and sheltering of animals.	All Jurisdictions Schools	Hurricanes Tornadoes Severe Storms Earthquakes Technological	Existing	Action
2.8.3	Determine how to accommodate individuals with special needs both in the emergency operations plan for the shelter or safe room and in the design of the shelter or safe room, including compliance with the American with Disabilities Act (ADA).	All Jurisdictions Schools	Hurricanes Tornadoes Severe Storms Earthquakes Technological	Both	Action
2.8.4	Evaluate the need for severe weather plans and shelters in essential facilities and other establishments serving the public (e.g., schools, hospitals, and critical facilities).	All Jurisdictions Schools	Hurricanes Tornadoes Severe Storms Earthquakes Technological	Both	Action
2.8.5	Construct new community safe rooms in accessible locations and add safe rooms within new and existing public and institutional buildings, such as schools, colleges and universities, senior centers, community centers, hospitals, and government buildings.	All Jurisdictions Schools	Hurricanes Tornadoes Severe Storms Earthquakes Human-Caused Technological	New	Project
2.8.6	Establish a program for subsidizing individual and community safe room construction in existing facilities.	All Jurisdictions	Hurricanes Tornadoes Severe Storms Earthquakes	Existing	Project
2.8.7	Encourage the construction of safe rooms in new and existing homes and buildings.	All Jurisdictions Schools	Hurricanes Tornadoes Severe Storms Earthquakes	Both	Project

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
2.8.8	Determine which areas at important facilities such as schools and daycare centers are the best locations for occupants during a disaster. Identify and provide directions to the designated "safe place."	All Jurisdictions Schools	Tornadoes Hurricanes Severe Storms Technological	Both	Action
2.8.9	Ensure all public buildings have a refuge plan of where to send people during times of disasters. Encourage posting of the plan in places accessible to the public.	All Jurisdictions Schools	Dam Failure Tornadoes Hurricanes Severe Storms Earthquakes Human-Caused Technological	Both	Action
2.8.10	Ensure all schools have a place of refuge plan for sporting events held outside and proper posting on where it is located.	Schools	Tornadoes Hurricanes Severe Storms Human-Caused	Both	Action
2.8.11	Evaluate the feasibility of constructing an emergency response facility to the south of the railroad tracks which could also serve as a storm shelter.	Glen Allen	All	New	Action
2.9	**Human Health and Welfare Programs. Programs that protect the health of individuals from the effects of hazards.**				
2.9.1	Educate the public about vaccines and immunizations.	Fayette County Schools	Pandemic	N/A	Action
2.9.2	Require school systems to inform parents/guardians about illness at the schools.	Schools	Pandemic	N/A	Action
2.9.3	Ensure school buses include air conditioning when purchasing replacements buses.	Schools	Extreme Heat	N/A	Action
3	**Goal for Education, Outreach and Awareness. Educate and inform the public, and government and agency staff about the risks of hazards and ways to reduce threats to life and property.**				
3.1	**Community Hazard Mitigation Plan Distribution. Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.**				

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
3.1.1	Distribute the 2020 plan to local officials, stakeholders, and interested individuals through internet download.	All Jurisdictions	All	Both	Action
3.2	**Technical Assistance. Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.**				
3.2.1	Provide technical assistance to owners of vulnerable buildings to advise on available building retrofits to protect against hazards damages.	Fayette County City of Fayette Glen Allen	Flooding Tornadoes Hurricanes Severe Storms Earthquakes	Existing	Action
3.3	**Flood Map Information. Increase public access to Flood Insurance Rate Map (FIRM) information.**				
3.3.1	Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners.	All Jurisdictions	Flooding	Both	Action
3.4	**Hazard Insurance Awareness. Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.**				
3.4.1	Promote the purchase of insurance coverage by property owners and renters for flood damages and other hazards in high-risk areas.	All Jurisdictions	Flooding Earthquakes Landslides Sinkholes Human-Caused	Existing	Action
3.4.2	Partner with insurance companies to disseminate information on hazards to citizens, i.e., availability of flood insurance in flood prone areas.	All Jurisdictions	Flooding Earthquakes Landslides Sinkholes Human-Caused	Existing	Action
3.4.3	Promote the purchase of crop insurance by farmers to cover potential losses due to drought.	All Jurisdictions	Drought	Existing	Action
3.5	**Publication Distribution. Use local library resources and other agencies/departments to educate the public on hazard risks and mitigation alternatives through distribution of publications on hazards and hazard mitigation.**				

	Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
3.5.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	Fayette County Berry City of Fayette Glen Allen	All	Both	Action
3.5.2	Distribute awareness materials to citizens, builders and business owners inquiring about flood problems or other flood related questions.	Fayette County City of Fayette Glen Allen	Flooding	Both	Action
3.5.3	Assist the state and the Alabama Cooperative Extension Systems in educating stakeholders and the public about resources available through http://drought.aces.edu regarding the risk of drought and how to prepare for and mitigate the effects of drought.	All Jurisdictions	Drought	N/A	Action
3.6	**Outreach Projects. Conduct regular public events to inform the public of hazards and mitigation measures.**				
3.6.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	All Jurisdictions	All	Both	Action
3.6.2	Distribute material via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	All Jurisdictions	All	Existing	Action
3.6.3	Promote disaster resilience within the business community through workshops, educational materials, and planning guides.	All Jurisdictions	All	Both	Action
3.6.4	Promote awareness of human-caused and technological hazards through workshops, educational materials and planning guides to businesses and the general public.	All Jurisdictions	Human-Caused Technological	Both	Action
3.6.5	Develop a fire safety, protection, and prevention outreach program for builders, developers, and the general public.	Glen Allen	Wildfire	Both	Action

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
3.6.6	Develop an educational public awareness campaign informing citizens of land management and landscaping options to limit wildfire spread.	Glen Allen	Wildfire	Both	Action
3.6.7	Educate homeowners about the urban – wildland interface and proper plantings and landscaping practices to prevent wildfire destruction.	Glen Allen	Wildfire	Both	Action
3.7	**<u>Outreach Programs</u>. Use schools and other community education resources to conduct programs on topics related to hazard risks and mitigation measures.**				
3.7.1	Distribute hazard mitigation brochures to students through area schools.	Schools	All	Both	Action
3.7.2	Educate students and the public about the "See Something, Say Something" program, including who to contact about suspicions.	Schools	Human-Caused	N/A	Action
3.7.3	Promote the education of farmers on groundwater withdrawal and soil and water conservation practices with programs offered by such agencies as the cooperative extension service and USDA.	All Jurisdictions	Drought	N/A	Action
3.7.4	Provide emergency preparedness information for extreme temperature events through an active educational outreach program with specific plans and procedures for senior citizens and people with special needs.	Fayette County Glen Allen	Extreme Cold Extreme Heat	N/A	Action
3.7.5	Educate homeowners about structural and non-structural retrofitting of homes vulnerable to certain hazards.	All Jurisdictions	Tornadoes Hurricanes Severe Storms Earthquakes Flooding	Both	Action
3.7.6	Educate employees in critical facilities about cybersecurity.	All Jurisdictions Schools	Human-Caused	Both	Action
3.7.7	Enhance public safety through awareness and outreach materials to the public with regards to pandemics.	All Jurisdictions	Pandemic	N/A	Action

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
3.7.8	Educate the public about hazard warning systems that are available including the emergency warning system for their cell phones.	Fayette County	Flooding	N/A	Action
3.7.9	Assist the State EMA with notifying the public about dam inundation areas and explaining the risks associated with dam failure in Fayette County.	Fayette County	Dam Failure	Existing	Action
3.7.10	Educate staff members on proper mitigation measures of pandemic preparedness.	All Jurisdictions Schools	Pandemic	N/A	Action
3.7.11	Educate staff members for the utilization of virtual resources for virtual and/or remote learning or communications during closures due to pandemics or other hazards.	Schools	Pandemic Human-Caused Technological	N/A	Action
3.7.12	Upgrade technology devices for students and teachers for utilization during virtual and/or remote learning.	Schools	Pandemic	N/A	Project
3.8	**Training and Webinars. Attend training and educational webinars on mitigation of national human caused and technological hazard.**				
3.8.1	Train additional weather spotters.	Glen Allen	Tornadoes Severe Storms Flooding Hurricanes	N/A	Action
3.8.2	Promote training and attendance by employees at conferences and webinars sponsored by agencies such as FEMA, DHS, ADPH, AEMA and the Fayette County EMA.	City of Fayette Fayette County Glen Allen Schools	All	Both	Action
3.8.3	Encourage completion of the online course FEMA IS-907 on active shooters by employees in critical facilities.	Glen Allen Schools	Human-Caused	N/A	Action
3.8.4	Encourage the participation of groups in programs offered by the Department of Homeland Security; such as courses on Targeted Violence and Terrorism Prevention.	Fayette County Glen Allen Schools	Human-Caused	Both	Action
3.8.5	Encourage local agricultural businesses to participate in the Strategic Partnership Program for agroterrorism programs.	All Jurisdictions	Human-Caused	N/A	Action

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
3.9	**<u>Disaster Warning and Notification.</u> Improve public warning and notification systems.**				
3.9.1	Review existing outdoor warning siren coverage and recommend new locations if and where there are coverage gaps. Install new warning sirens in accordance with the plan recommendations.	Glen Allen	Flooding Tornadoes Hurricanes Severe Storms Earthquakes Dam Failure Human-Caused Technological	Both	Project
3.9.2	Upgrade siren-warning systems.	City of Fayette Glen Allen	Flooding Tornadoes Hurricanes Severe Storms Earthquakes Dam Failure Human-Caused	Both	Project
3.9.3	Upgrade critical communications infrastructure.	All Jurisdictions	All	Both	Project
3.9.4	Establish procedures to warn facilities storing hazardous materials when a hazard event is likely to impact the facility to ensure safety procedures are enacted.	Fayette County Glen Allen	Tornadoes Hurricanes Severe Storms Earthquakes Dam Failure Human-Caused Technological	Existing	Action
3.9.5	Ensure first responders are aware of any chemicals stored at the school including those used in the science department.	Schools	Tornadoes Severe Storms Earthquakes Human-Caused	Both	Action

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
3.10	**<u>Weather Radios Programs</u>. Improve public access to weather alerts.**				
3.10.1	Continue to promote the purchase and usage of NOAA weather radios in all schools, assisted living facilities, hospitals, nursing homes, day care facilities, churches, businesses, industries, and the general public, especially in homes with no outdoor warning siren coverage.	Fayette County Glen Allen	Tornadoes Hurricanes Severe Storms Flooding	Both	Action
3.10.2	Require/encourage the installation of weather radios in all public buildings and places of public assembly.	All Jurisdictions	Tornadoes Hurricanes Severe Storms Flooding	Both	Action
3.10.3	Distribute weather radios to municipal residents and businesses.	All Jurisdictions	Tornadoes Hurricanes Severe Storms Flooding	Both	Action
3.10.4	Instruct residents and business owners on emergency response instructions.	Fayette County City of Fayette Glen Allen	Tornadoes Hurricanes Severe Storms Flooding	Both	Action
3.10.5	Promote the use of weather radios in households and businesses.	All Jurisdictions	Tornadoes Hurricanes Severe Storms Flooding	Both	Action
3.11	**<u>Mass Media Relations and Websites</u>. Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, on-line social networking, and government/agency websites to increase public awareness and distribute public information on hazard mitigation topics.**				
3.11.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and/or loss of life.	All Jurisdictions	All	Both	Action
3.11.2	Increase media coverage of threat and evacuation procedures during peak wildfire times of the year; distribute informational packages in high and moderate wildfire risk areas.	Glen Allen	Wildfire	Both	Action

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
3.11.3	Expand the use of county and city-sponsored websites to disseminate hazard mitigation information.	All Jurisdictions	All	Both	Action
3.11.4	Include hazard information on school websites to disseminate hazard mitigation information with a focus on family safety.	Schools	All	Both	Action
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	**Open Space Easements and Acquisitions. Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, floodplains, and wetlands to assure permanent protection of these natural resources.**				
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other floodplain acquisition efforts.	All Jurisdictions	Flooding	Existing	Project
4.2	**River/Stream Corridor Restoration and Protection. Restore and protect river and stream corridors within areas.**				
4.2.1	Protect wetlands by preventing unsound development that would change their natural condition.	Glen Allen	Flooding	New	Action
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	All Jurisdictions	Flooding	Existing	Action
4.3	**Forestry Programs. Maintain a healthy forest that can help mitigate the damaging impacts of flooding, erosion, landslides, and wildfires inside and outside the urban environment.**				
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	All Jurisdictions	Wildfire	Existing	Action
4.3.2	Increase overall green spaces in cities by planting disaster resistant trees with site and location taken into consideration.	Glen Allen	Wildfire	Both	Action
4.3.3	Develop maintenance programs to clear dead and dry bushes or trees to mitigate wildfires.	Glen Allen	Wildfire	Both	Action
4.3.4	Use controlled burns to decrease the amount of fuel load in the identified moderate and high wildfire hazard areas.	Glen Allen	Wildfire	Both	Project
4.3.5	Encourage Volunteer Fire Departments to improve capabilities for responding to and extinguishing wildfires.	Glen Allen	Wildfire	Both	Action

	Goal, Objectives and Mitigation Measures	Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
4.4	**Water Resources Conservation Programs. Protect water quantity and quality through water conservation programs to mitigate the effects of droughts and assure uninterrupted potable water supplies.**				
4.4.1	Encourage water conservation through public outreach programs prior to a drought event.	All Jurisdictions	Drought	N/A	Action
4.4.2	Improve and retrofit water supply systems to save water during drought events and to eliminate breaks and leaks.	All Jurisdictions	Drought	Both	Project
4.4.3	Encourage the implementation of programs by utilities for water metering and leak detection programs.	Glen Allen	Drought	Both	Action
4.4.4	Enforce water use restrictions during periods of drought to conserve existing water supplies.	City of Fayette Berry	Drought Heat Wave Wildfire	Both	Action
5	**Goal for Natural System and Infrastructure Improvement and Maintenance 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.**				
5.1	**Drainage System and Rights-of-Way Maintenance. Improve maintenance programs for streams and drainage ways.**				
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance. Ensure storm drains and ditches are not blocked and are able to receive water.	All Jurisdictions	Flooding	Both	Action
5.1.2	Employ prescribed burns of natural debris along streams and in ditches to enhance storm drainage.	Glen Allen	Flooding	Both	Project
5.1.3	Develop and adopt winter maintenance procedures that include smart salting techniques and applying deicing agents before severe winter storms happen.	Fayette County City of Fayette Glen Allen	Winter Storm	Both	Action
5.2	**Reservoirs and Drainage System Improvements. Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.**				
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding, including retention and detention ponds.	Fayette County City of Fayette Glen Allen	Flooding	Both	Project

Goal, Objectives and Mitigation Measures		Communities	Hazards Addressed (All * - Indicates all hazards except Pandemics)	Affects New or Existing Building or Infrastructure	Action or Project
5.2.2	Enlarge the existing wastewater facility to adequately handle the demand of both wastewater and storm water during a significant rain event. The current facility is nearing capacity and any increase in demand due to industrial development with increased discharge will need to be addressed.	City of Fayette	Flooding	Existing	Project

Chapter 7–Plan Maintenance Process

7.1 Federal Requirements for the Plan Maintenance Process

This chapter of the Plan addresses the Plan Maintenance Process requirements of 44 CFR Sec. 201.6 (c) (4), as follows:

"Sec. 201.6 (c) *Plan content.* The plan shall include the following:
(4) A *plan maintenance process* that includes:

(i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.
(ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.
(iii) Discussion on how the community will continue public participation in the plan maintenance process."

7.2 Summary of Plan Updates

Changes to the Plan Maintenance Chapter of the Multi-Hazard Mitigation Plan have been made to align with the abilities of Fayette County and its jurisdictions. As was demonstrated throughout the planning process, involvement is limited and so the maintenance process demonstrates how it will realistically be carried out, shifting direct responsibility of plan maintenance from the HMPC to the EMA Director who will rely on members of the HMPC to provide information on their jurisdictions. The sections remain the same with the information edited to include changes to dates and website information. To aid in the plan maintenance process a form adapted from FEMA's Local Mitigation Planning Handbook, 2013 has been added at the end of the chapter along with an additional form that can be used after an emergency or disaster event.

7.3 Monitoring, Evaluating, and Updating the Hazard Mitigation Plan

Ongoing Monitoring of the Plan

The EMA director, with assistance from the jurisdictions, will continually monitor the mitigation measures chosen for implementation to gauge their progress. Annual status reports by the

jurisdictions will be provided to the EMA Director by the end of July for review and should include the following information:

- Mitigation measures that have been completed, including public involvement activities.
- Actions that have been undertaken to implement the scheduled mitigation measure; such as, obtaining funding, permits, approvals or other resources to begin implementation.
- Revisions to the priority, timeline, responsibility, or funding source of a measure and cause for such revisions or additional information or analysis that has been developed that would modify the mitigation measure assignment as initially adopted in the plan.
- Measures that a jurisdiction no longer intends to implement and justification for cancellation.

If an amendment to the plan is necessary due to special opportunities for funding or response to a natural, human-caused, or technological disaster, the EMA Director will present the amendment to the jurisdictions for approval. The ongoing review process may require adjustments to the selection of mitigation measures, priorities, timelines, lead responsibilities, and funding sources presented in the Community Mitigation Action Programs found in Volume III. Adjustments to the five-year plan should be noted to aid in the next update of the plan. A copy of the plan amendment(s) will be submitted to all participating jurisdictions by the Fayette County EMA in a timely manner and filed with the Alabama EMA in order to assist with their mitigation strategies.

Evaluating the Plan

Annual evaluations of progress towards the implementation of the Mitigation Strategy will be overseen by the EMA Director and will include an analysis of the status reports from the jurisdictions. Any discussions and reports related to the mitigation strategies should be documented and the findings should be clearly stated in the next revision. In its annual review, the EMA Director should present the following topics to the jurisdictions to determine the effectiveness of the implementation actions and the need for revisions to the Mitigation Strategy:

- Are there any new potential hazards that have developed and were not addressed in the current plan?
- Have any disasters occurred that are not included in the current plan?
- Are there additional mitigation ideas that need to be incorporated into the current plan?
- What projects or other measures have been initiated, completed, deferred, or deleted?
- Are there any changes in local capabilities to carry out mitigation measures?
- Have funding levels to support mitigation actions either increased or decreased?

Following a presidential declaration or emergency event that significantly impacts all or a portion of Fayette County, the EMA Director will have 60 days to reconvene the HMPC in person. Due to the importance of such a task, the HMPC members should be brought together to discuss and evaluate the responsiveness of the Mitigation Strategy to the event and the effects on the contents of

the Risk Assessment. By coming together close to the time of an emergency or disaster event, the group will more likely develop realistic measures that can be implemented in the future. The Risk Assessment should evaluate the direct and indirect damages, response, and recovery costs (economic impacts) and the location, type, and extents of the damages. The results of the assessment should determine if existing mitigation capabilities should be strengthened and if any new mitigation initiatives should be incorporated into this plan to avoid similar losses from future hazard events. The results of the assessment should determine if new mitigation strategies should be pursued to lessen the impacts of future events. These findings will be provided to the affected jurisdictions for review and will be used during the next five-year update period.

Also, at times of disaster, mitigation measures that qualify for disaster funding should be carefully reviewed and application for funds should be considered. The opportunity to work with the public on hazard awareness is strongest after a disaster and so the committee should make every effort to strengthen the community's knowledge and preparedness for the next event once the community has addressed the immediate needs of those impacted by the event.

An evaluation form, adapted from FEMA's Local Mitigation Planning Handbook, 2013, is included at the end of this chapter for use during the plan evaluation and a form to evaluate mitigation strategies during emergency and disaster events is also included.

Plan Update Process

Updates to the hazard mitigation plan may occur due to changes in federal requirements for review and update of the plan; significant natural, human-caused, or technological hazard event(s) before the expiration of the five-year plan update; or the requirement for a five-year update. For plan updates, the Fayette County EMA will publish a public notice that an update is being initiated and provide information on meeting schedules, how and where to get information about the plan, how to provide comments on the plan, and opportunities for other public involvement activities. For plan updates, the HMPC will be reconvened to carry out the steps necessary to update the plan. For the towns unable to send members to the meetings, a resolution for representation will be required and a representative of the EMA will conduct periodic meetings with the jurisdiction to ensure active participation in the planning process.

For a significant event that occurs prior to the next five-year update, the HMPC will convene within 60 days of the event to discuss the potential need for any amendments to the plan. If there are no significant events that trigger an update, the HMPC will be reconvened in time for the five-year update.

Nine to twelve months before the expiration of the current plan, the initial steps for the five-year update to this plan should begin. An additional year may be required in order to include time for planning grant applications and award.

Once the Hazard Mitigation Planning Committee has been reconvened, the following steps will occur:

Step 1. Review of the most recent FEMA local mitigation planning requirements and guidance.

Step 2. Evaluation of the existing planning process and recommendations for improvements.

Step 3. Examination and revision of the risk assessment, including hazard identification, profiles, vulnerabilities, and impacts on development trends, to ensure accuracy and up to date information.

Step 4. Update of mitigation strategies, goals, and action items, in large part based on the annual plan implementation evaluation input.

Step 5. Evaluation of existing plan maintenance procedures and recommendations for improvements.

Step 6. Compliance with all applicable Federal regulations and directives.

Ninety days prior to the expiration date, a final draft of the revised plan will be submitted to the Alabama EMA for review and comments and then to FEMA for conditional approval. Once FEMA Region IV has issued a conditional approval, the updated plan will be adopted by all participating jurisdictions.

7.4 Incorporation of the Mitigation Plan into Other Planning Mechanisms

The Fayette County Emergency Management Agency incorporates this update into their recent edition of the Fayette County Emergency Operations Plan. The implementation of the individual Community Mitigation Action Programs is the responsibility of each jurisdiction and governmental entity based on priorities, funding availability, capabilities, and other considerations described in Chapter 6 “Mitigation Strategy.” The 2020 Fayette County Multi-Hazard Mitigation Plan is a multi-jurisdictional plan, and as such, the mitigation measures vary according to each jurisdiction’s needs and capabilities.

Mitigation should be a part of the planning mechanisms for all jurisdictions in Fayette County. This mitigation plan should be integrated into existing local plans, regulatory tools, and related programs in order to influence each jurisdiction’s planning decisions concerning land use, development, public facilities, and infrastructure. Although there are not many planning mechanisms in place in Fayette County and its jurisdictions, this plan can still be used as a guide when moving forward with development and also in educating the citizens about hazards and their impacts.

Any updates, revisions, or amendments to the Fayette County Emergency Operations Plan, local comprehensive plans, capital improvement budgets or plans, zoning ordinances and maps, subdivision regulations, building and technical codes, and related development controls should be consistent with the goals, objectives, and mitigation measures adopted in this plan. As part of the

subsequent five-year update process, all local planning mechanisms should again be reviewed for effectiveness, and recommendations for new integration opportunities should be carefully considered.

The greatest strength to combat disasters is through knowledge, and the integration of educational materials and training are an important part of hazard mitigation. Ongoing education programs should stress the importance of managing and mitigating hazard risks. Public information handouts and brochures for emergency preparedness should emphasize hazard mitigation options, where appropriate. Advantage should be taken of opportunities to participate in educating the public at community events and through workshops.

The Fayette County emergency operations planning programs and associated public emergency management activities must incorporate hazard mitigation planning to demonstrate the Fayette County jurisdictions' and EMA's commitment to hazard mitigation.

7.5 Continuing Public Participation in the Plan Maintenance Process

Ongoing public participation is a critical part of maintaining an effective and relevant multi-hazard mitigation plan. In order for the plan to succeed, the public must support mitigation efforts and provide public pressure to get mitigation measures implemented when necessary. The Hazard Mitigation Planning Committee desires involvement of its citizens in the mitigation planning process through participation in discussions and providing feedback and comments on the plan throughout the five-year implementation cycle and interim reviews.

Copies of this 2020 Fayette County Multi-Hazard Mitigation Plan are maintained at the Fayette County EMA office in Fayette and at the principal offices of the jurisdictions that participated in the planning process. Many of the jurisdictions have weblinks to the plan as does the Alabama Emergency Management Agency. Public comments can be mailed, e-mailed, or called into the Fayette County EMA.

When the HMPC reconvenes, the public will be able to express their concerns, ideas, and opinions. At a minimum, public hearings with each jurisdiction will be held during the five-year plan updates, and when amendments to the plan or the update is up for adoption. All HMPC meetings will be open to the public. Public opinion surveys and public involvement activities required for the five-year update will be conducted and may be periodically administered by the Fayette County EMA. Public comments can be mailed, e-mailed, or called into the Fayette County EMA at any time.

Appendix H "Community Involvement Documentation" documents the public involvement activities initiated by the 2020 planning process. Some of these activities will continue throughout the five-year implementation cycle and should be evaluated for effectiveness annually by the EMA Director and Hazard Mitigation Planning Committee. The public outreach and education programs in the mitigation strategies section of this plan commit each jurisdiction to informing the public about mitigation measures which should aid in a better prepared population. The constant monitoring of

these programmed mitigation actions assures ongoing public participation throughout the plan maintenance process.

7.6 Forms to Assist in the Plan Maintenance Process

The following forms can be used during the plan maintenance process. The progress report form is adapted from FEMA's Local Mitigation Planning Handbook, 2013.

Fayette County Mitigation Action Progress Report Form

Plan Year		
Progress Report Period	From Date:	To Date:
Action/Project Title		
Responsible Agency		
Contact Name		
Contact Phone/Email		
Project Status	§ Project completed § Project canceled § Project on schedule § Anticipated completion date:_____ § Project delayed Explain _____	

Summary of Mitigation Action Progress for this Report Period

1. What was accomplished for this action/project during this reporting period?

   _____

   _____

2. What obstacles, problems, or delays did the action/project encounter?

   _____

   _____

3. If not completed, is the action/project still relevant? Should the action/project be changed or revised?

   _____

   _____

4. Other comments

   _____

   _____

Plan Section	Considerations	Explanation
Planning Process	Should new jurisdictions and/or districts be invited to participate in future plan updates?	
	Have any internal or external agencies been invaluable to the mitigation strategy?	
	Can any procedures (e.g., meeting announcements, plan updates) be done differently or more efficiently?	
	Has the Planning Team undertaken any public outreach activities?	
	How can public participation be improved?	
	Have there been any changes in public support and/or decision- maker priorities related to hazard mitigation?	
Capability Assessment	Have jurisdictions adopted new policies, plans, regulations, or reports that could be incorporated into this plan?	
	Are there different or additional administrative, human, technical, and financial resources available for mitigation planning?	
	Are there different or new education and outreach programs and resources available for mitigation activities?	
	Has NFIP participation changed in the participating jurisdictions?	

Plan Section	Considerations	Explanation
Risk Assessment	Has a natural and/or technical or human-caused disaster occurred?	
	Should the list of hazards addressed in the plan be modified?	
	Are there new data sources and/or additional maps and studies available? If so, what are they and what have they revealed? Should the information be incorporated into future plan updates?	
	Do any new critical facilities or infrastructure need to be added to the asset lists?	
	Have any changes in development trends occurred that could create additional risks?	
	Are there repetitive losses and/or severe repetitive losses to document?	
Mitigation Strategy	Is the mitigation strategy being implemented as anticipated? Were the cost and timeline estimates accurate?	
	Should new mitigation actions be added to the Action Plan? Should existing mitigation actions be revised or eliminated from the plan?	
	Are there new obstacles that were not anticipated in the plan that will need to be considered in the next plan update?	
	Are there new funding sources to consider?	
	Have elements of the plan been incorporated into other planning mechanisms?	

Plan Section	Considerations	Explanation
Plan Maintenance Procedures	Was the plan monitored and evaluated as anticipated?	
	What are needed improvements to the procedures?	

Adapted from FEMA's Local Mitigation Planning Handbook, 2013.

Fayette County Hazard Event Mitigation Action Report Form

Plan	**2020 Fayette County Multi-Hazard Mitigation Plan**
Type of Event	
Date of Event	
Days of Impact	
Responsible Agency	
Contact Name	
Contact Phone/Email	

Summary of Hazard Event

1. Area impacted

   _____

   _____

2. Direct damages

   _____

   _____

3. Indirect damages

   _____

   _____

4. Response Costs (Economic)

   _____

   _____

5. Recovery Costs (Economic)

   _____

   _____

6. Should any new mitigation initiatives be incorporated into the plan to avoid similar losses from future events? If you have suggestions of measures that can be taken, please provide them below.

_____

_____

7. Any additional information.

_____

_____

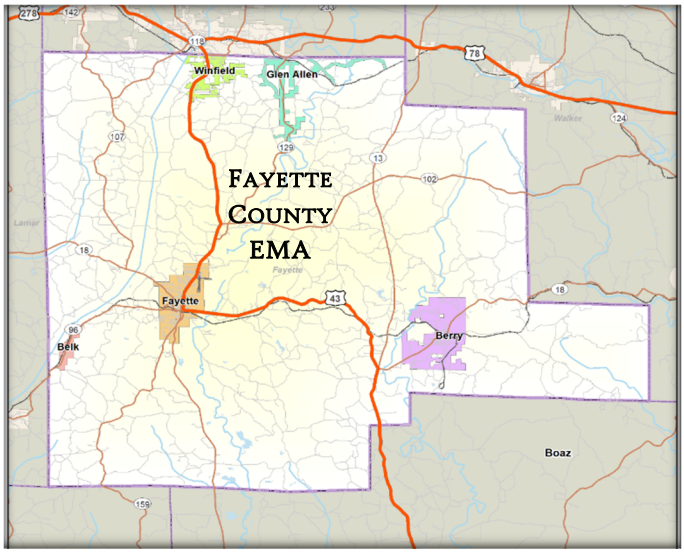
_____

_____

Thank you for your information.

2020 Fayette County Multi-Hazard Mitigation Plan

Volume II – Appendices



Belk, Berry, Fayette, Glen Allen,
and Unincorporated Fayette County

Prepared by the Fayette County EMA and
Hazard Mitigation Planning Committee
FEMA Approved: June 30, 2022

Appendix A
Federal Requirements for
Local Mitigation Plans

App. A – Federal Requirements for Local Mitigation Plans

1.0 Compliance

The 2020 Fayette County Multi-Hazard Mitigation Plan addresses the Local Mitigation Plans requirements of 44 CFR Sec. 201.6.

2.0 44 CFR Sec. 201.6 (2013)

Section 201.6 Local Mitigation Plans. The local mitigation plan is the representation of the jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards. Local plans will also serve as the basis for the State to provide technical assistance and to prioritize project funding.

(a) *Plan requirements.*

(1) A local government must have a mitigation plan approved pursuant to this section in order to receive HMGP project grants. The Administrator may, at his discretion, require a local mitigation plan for the Repetitive Flood Claims Program. A local government must have a mitigation plan approved pursuant to this section in order to apply for and receive mitigation project grants under all other mitigation grant programs.

(2) Plans prepared for the FMA program, described at part 79 of this chapter, need only address these requirements as they relate to flood hazards in order to be eligible for FMA project grants. However, these plans must be clearly identified as being flood mitigation plans, and they will not meet the eligibility criteria for other mitigation grant programs, unless flooding is the only natural hazard the jurisdiction faces.

(3) Regional Directors may grant an exception to the plan requirement in extraordinary circumstances, such as in a small and impoverished community, when justification is provided. In these cases, a plan will be completed within 12 months of the award of the project grant. If a plan is not provided within this timeframe, the project grant will be terminated, and any costs incurred after notice of the grant's termination will not be reimbursed by FEMA.

(4) Multi-jurisdictional plans (*e.g.* watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan. State-wide plans will not be accepted as multi-jurisdictional plans.

(b) *Planning process.* An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;

(2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and non-profit interests to be involved in the planning process; and

(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

(c) *Plan content.* The plan shall include the following:

(1) Documentation of the *planning process* used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

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

(i) A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

(ii) A description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of:

A. The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;

B. An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate;

C. Providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

(iii) For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

(3) A *mitigation strategy* that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section shall include:

(i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

(ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

(iii) An action plan describing how the actions identified in paragraph (c)(2)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

(iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

(4) *A plan maintenance* process *that includes:*

(i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

(ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

(iii) Discussion on how the community will continue public participation in the plan maintenance process.

(5) *Documentation* that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

(d) *Plan review.*

(1) Plans must be submitted to the State Hazard Mitigation Officer (SHMO) for initial review and coordination. The State will then send the plan to the appropriate FEMA Regional Office for formal review and approval. Where the State point of contact for the FMA program is different from the SHMO, the SHMO will be responsible for coordinating the local plan reviews between the FMA point of contact and FEMA.

(2) The Regional review will be completed within 45 days after receipt from the State, whenever possible.

(3) A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding.

(4) Managing States that have been approved under the criteria established by FEMA pursuant to 42 U.S.C. 5170c(c) will be delegated approval authority for local mitigation plans, and the review will be based on the criteria in this part. Managing States will review the plans within 45 days of receipt of the plans, whenever possible, and provide a copy of the approved plans to the Regional Office. [67 FR 8848, Feb. 26, 2002, as amended at 67 FR 61515, Oct. 1, 2002; 68 FR 61370, Oct. 28, 2003; 69 FR 55096, Sept. 13, 2004; 72 FR 61748, Oct. 31, 2007; 74 FR 47482, Sept. 16, 2009]

Appendix B
Community Mitigation Capabilities

App. B - Community Mitigation Capabilities

1.0 Scope and Methodology
2.0 Planning and Regulatory Tools
3.0 Staffing and Technical Resources
4.0 Fiscal Resources
5.0 Education and Awareness Programs

Fayette County is a rural county with approximately 16,000 people. The county is comprised of five municipalities with the City of Fayette as the largest municipality at 4,327 residents. The towns of Glen Allen and Winfield reside in both Fayette County and Marion County. Approximately 10,000 people reside outside incorporated areas, spread throughout the county. The jurisdictions' small size, combined with the county's regulatory limitations due to the home rule law in Alabama, pose a challenge when creating capabilities to mitigate hazards.

This appendix presents the capabilities of Fayette County jurisdictions to implement mitigation strategies. It identifies gaps or weaknesses that could hinder mitigation activities under consideration in this plan. The results of this assessment help determine the types of mitigation activities the jurisdictions can realistically undertake over its five-year action program framework included in Chapter 6 "Mitigation Strategy".

Representatives from some agencies and organizations within Fayette County also provided information on their capabilities. That information is included in this appendix.

1.0 Scope and Methodology

A questionnaire was provided to the HMPC members during the kick-off meeting to ascertain the communities' mitigation capabilities. They were asked if their jurisdiction had the capability, either within the jurisdiction or through a contract with outside sources, such as the West Alabama Regional Commission or a consultant. Due to the size of the jurisdictions, many of them rely on the county for services or use outside sources for engineering or grant writing needs. Without the ability to utilize outside services, a number of the mitigation measures would not be able to be considered.

The following sections break out the capabilities by category and lists each jurisdiction in Fayette County and states which jurisdictions have the capability. The four categories are planning and regulatory tools, staffing and technical resources, fiscal resources, and education and awareness programs. Because Winfield chose to be included with Marion County in their Hazard Mitigation Plan update there is no information on their capabilities in this update.

2.0 Planning and Regulatory Tools

This section is an inventory of planning and regulatory tools the jurisdictions within Fayette County can use to prevent or lessen the impact of hazards. Planning allows the jurisdictions to study areas of concern and determine how to address the findings of the studies. It also allows for the

jurisdictions to plan growth to inhibit future mitigation issues. Regulatory tools provide the ability to ensure the plans for future development are followed and also aid in addressing problems that arise from hazards, such as addressing flooding through stormwater management regulations.

The smaller jurisdictions of Belk, Berry and Glen Allen rely on the county and the regional planning commission for their planning needs. They are participants in the county's hazard mitigation plan, comprehensive plan, economic development plan, community wildfire protection plan, local emergency operations plan, and continuity of operations plan. Berry and Glen Allen have a floodplain ordinance. The towns have an ISO rating of 6/9. Glen Allen has been mapped on a Flood Insurance Rate Map.

In addition to the tools mentioned above, the county has a floodplain ordinance and can acquire land for open space and public recreation use. The county's ISO rating varies throughout the county.

The City of Fayette has a number of planning and regulatory tools at their disposal. They have a comprehensive/master plan, economic development plan, local emergency operations plan, and community wildfire protection plan. They have zoning and subdivision ordinances and have adopted building codes. They also have a floodplain ordinance. They were participants in the development of the county's hazard mitigation plan. The city can acquire land for open space and public recreation use. Fayette has an ISO rating of 5. The city has many of the planning and regulatory tools necessary to enact the mitigation measures from the community action programs. Table B-1 shows the planning and regulatory tools administered by the jurisdictions.

Table B-1. Planning and Regulatory Tools

Planning and Regulatory Tools	Belk	Berry	Fayette County	City of Fayette	Glen Allen
2014 Fayette County Multi-Hazard Mitigation Plan	Y	Y	Y	Y	Y
Comprehensive/Master Plan	N	N	Y	Y	N
Capital Improvements Plan	N	N	N	N	N
Economic Development Plan	N	N	Y	Y	N
Local Emergency Operations Plan	N	Y	Y	Y	N
Continuity of Operations Plan	N	N	Y	N	N
Transportation Plan	N	N	N	N	N
Stormwater Management Plan	N	N	N	N	N
Community Wildfire Protection Plan	N	N	Y	Y	N
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	N	N	Y	Y	N

Planning and Regulatory Tools	Belk	Berry	Fayette County	City of Fayette	Glen Allen
Building Code, Permitting, and Inspections					
Building Code	N	N	N	Y	N
Building Code Effectiveness Grading Schedule (BCEGS) Score	N/A	N/A	N/A	6	N/A
Fire department ISO rating	6/9	6/9	Y	5	6/9
Site plan review requirements	N	N	N	Y	N
Land Use Planning and Ordinances					
Zoning ordinance	N	N	N	Y	N
Subdivision ordinance	N	N	N	Y	N
Floodplain ordinance	N	Y	Y	Y	Y
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	N	N	N	N	N
Flood insurance rate maps	N	N	Y	Y	Y
Acquisition of land for open space and public recreation uses	N	N	Y	Y	N

The medical and education agencies possess planning and regulatory tools to aid in mitigating against hazards that impact their services. The medical facilities have comprehensive plans, capital improvement plans, local emergency operations plans, continuity of operations plans, transportation plans and building codes. The education agencies have comprehensive plans, local emergency operations plans, continuity of operations plans, transportation plans and building codes. The cooperative extension agency has a local emergency operations plan and a continuity of operations plan.

3.0 Staffing and Technical Resources

In order to realize success with mitigation measures, the jurisdictions must have the staff and technical resources to carry out the strategies. Staff must be available to oversee the planning and regulatory related measures and they must have the technical expertise to adequately fulfill the roles. As with the planning and regulatory tools, the towns of Belk, Berry and Glen Allen rely on the county and outside agencies to provide mitigation related staffing and technical resources.

The City of Fayette has a planning commission, building official, floodplain administrator, emergency manager, professional engineer, and GIS coordinator. The county oversees the mitigation planning committee, and has a floodplain administrator, emergency manager, and professional engineer. The County has warning systems strategically located throughout the county and maintains hazard data and information for the county and its jurisdiction as does the City of Fayette.

All five jurisdictions participate in the NFIP, but none have a full-time flood plain administrator. Personnel, such as the county engineer, have been designated to administer the flood plain management ordinance. Mutual aid agreements have been written between the jurisdictions and the

Fire Association and the county has an agreement with the Alabama Department of Transportation. The staffing and administrative capabilities of Fayette County and its participating jurisdictions are shown on Table B-2 as are their mitigation related technical resources.

Table B-2. Staffing and Technical Resources

Staffing and Technical Resources	Belk	Berry	Fayette County	City of Fayette	Glen Allen
Planning Commission	N	N	N	Y	N
Mitigation Planning Committee	N	N	Y	N	N
Mutual aid agreements	Y	Y	Y	N	Y
Staff					
Chief Building Official	N	N	N	Y	N
Floodplain Administrator	N	N	Y	Y	N
Emergency Manager	N	N	Y	Y	N
Community Planner	N	N	N	N	N
Engineer	N	N	Y	Y	N
GIS Coordinator	N	N	N	Y	N
Technical					
Warning Systems/Services	Y	Y	Y	N	Y
Hazard data and information	N	N	Y	Y	N
Grant writing	N	N	Y	Y	N
Hazus analysis	N	N	Y	N	N

The medical agencies and schools have a number of staffing and technical resources similar to the jurisdictions. They have maintenance programs and regulations that ensure their facilities are following local, state, and federal guidelines for safer buildings. They also have warning systems around their campuses and have grant writing capabilities. The cooperative extension service also has grant writing capabilities.

4.0 Fiscal Resources

A major constraint to the completion of previous mitigation measures has been the lack of financial resources. Fayette County is a smaller, rural county with a limited tax base. As such, the ability for local governments to undertake costly hazard mitigation projects and actions is restricted. Information on Fayette County's fiscal capabilities was compiled and the identification of locally available financial resources and the local government's ability to compete for available mitigation grant resources was recorded.

All jurisdictions in Fayette County have qualified for funding from state programs, Community Development Block Grants, and federal sources. The municipalities and the county can also incur debt through general obligation bonds and/or special tax bonds. The towns of Berry and Glen Allen, and the City of Fayette can impose fees for utilities they provide and can also levy taxes for specific purposes. Table B-3 summarizes these fiscal resources.

Table B-3. Fiscal Resources

Fiscal Resources	Belk	Berry	Fayette County	City of Fayette	Glen Allen
Capital improvements project funding	N	N	Y	N	N
Authority to levy taxes for specific purposes	Y	Y	N	Y	Y
Fees for water, sewer, gas, or electric services	Y	Y	N	Y	Y
Impact fees for new development	N	N	N	N	N
Storm water utility fee	N	N	N	N	N
Incur debt through general obligation bonds and/or special tax bonds	Y	Y	Y	Y	Y
Incur debt through private activities	Y	Y	Y	N	Y
Community Development Block Grant	Y	Y	Y	Y	Y
Other federal funding programs	Y	Y	Y	Y	Y
State funding programs	Y	Y	Y	Y	Y

5.0 Education and Awareness Programs

While the use of planning and regulations along with proper staffing are important in realizing mitigation goals and objectives, education and awareness programs are vital, especially in preventing injury or loss of life from hazards. Educating the public and those in mitigation is a low to no cost measure that can, at times, do more for a community than some other measures, are rather easy to implement, and have a very high probability of being achieved.

Most outreach activities are conducted jointly through the Fayette County Emergency Management Agency and its communities. The local schools are willing to assist with the dissemination of information to the community through the students. The schools within Fayette County are all under the Fayette County School District so logistics of getting the information to the schools for distribution to certain segments of the population is relatively simple. The Town of Berry, the City of Fayette, and the county all have public libraries where educational materials can be displayed and provided.

In conjunction with the schools and public libraries, partnerships with the Chamber of Commerce, 4H and Cooperative Extension Service are other avenues for education and awareness campaigns. Table B-4 below summarizes the education and awareness efforts of Fayette County jurisdictions.

Table B-4. Education and Awareness Programs

Education and Awareness	Belk	Berry	Fayette County	City of Fayette	Glen Allen
Local citizen groups or non-profit organizations	N	N	Y	Y	N

Education and Awareness	Belk	Berry	Fayette County	City of Fayette	Glen Allen
Ongoing education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	N	N	Y	N	N
Natural disaster or safety related school programs	N	N	Y	N	Y
StormReady certification	Y	Y	Y	Y	Y
Firewise Communities certification	N	N	N	N	N
Public-private partnership initiatives addressing disaster-related issues	N	N	Y	N	N
Library	N	Y	Y	Y	N

Appendix C
2014 Fayette County Mitigation Plan
Implementation Status

App. C -2014 Fayette County Mitigation Plan Implementation Status

1.0 Scope and Methodology

A requirement when conducting a plan update is a thorough evaluation of the previous plan's mitigation measures. Through this process, the jurisdictions can gauge their progress in addressing the hazards that affect their area. They can determine what works, what does not, and can decide if the mitigation strategy should be continued or if a new course is warranted. Table C-1 included in this appendix shows the implementation status for the 2014 mitigation measures for each jurisdiction from the 2014 Fayette County Multi-Hazard Mitigation Plan.

The Hazard Mitigation Planning Committee (HMPC) members were provided with their community action programs from the 2014 plan at the kick-off meeting and were instructed to indicate the status of their mitigation measures. The mitigation measures involved many different responsible parties so the HMPC members required an extended period of time to gather the information for this exercise. The representatives were instructed that if a measure was not completed, the respondent was to indicate why it was not completed. The suggested reasons for a lack of completion were that the measures were ongoing; there was a lack of funding; they had an administrative shortage; they had no legal authority; it was not technically feasible; or there was no political support for the measure. When creating the mitigation strategy for the next 5 years, the HMPC members referred to the responses from the implementation status exercise and adjusted their measures accordingly. Measures for which they had no legal authority were removed as were measures that did not apply to the jurisdiction. Some measures that were not enacted due to financial constraints or a lack of political support from the 2014 plan were retained because those variables could change over the course of the next five years.

The information in Table C-1 is what was provided in the implementation status report from each jurisdiction. Occasionally a respondent would reply using reasoning other than the 7 recommended responses. Some responded with N/A which meant that the measure is not applicable to the jurisdiction. "NO" implies that the measure was not completed but a reason was not provided.

2.0 Summary of Results

- ✓ The 2014 Fayette County Hazard Mitigation Plan contained approximately 66 mitigation measures. Fifty-six of these mitigation measures were applicable to all the participating jurisdictions.
- ✓ The level of attainment of the measures varied by jurisdiction. According to the responses Fayette County completed or has on-going measures of 69%, Belk 63%, Berry 63%, City of Fayette 27%, and Glen Allen 44%.

- ✓ A number of mitigation measures have been removed from the jurisdiction's individual community action programs for this update because the participants realized that such measures would not be addressed due to extenuating circumstances. For example, if a jurisdiction did not have the legal authority to carry out a measure it was removed from their community action program.

The Key for Table C-1 is as follows:

C = Completed

OG = On Going. This measure was completed and will continue in the 2020 Plan.

NLA = No Legal Authority

NTF = Not Technically Feasible

AS = Administrative Shortage

LOF = Lack of Funding

NPS = No Political Support

N/A= Not applicable

NO= Not completed, no reason provided

Table C-1. 2014 Plan Implementation Status

2014 Mitigation Measure		Fayette County	Belk	Berry	City of Fayette	Glen Allen
1.1.1	Maintain up-to-date comprehensive plans for all jurisdictions. Each plan should address natural hazards exposure and include long term disaster resistance measures. The vulnerability and environmental suitability of lands for future development should be clearly addressed. Local plans should assess the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.				OG	
1.2.1	Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.				NTF	
1.2.2	Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.				NTF	
1.3.1	Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.	LOF	NTF	NTF	LOF	LOF NTF
1.3.2	Identify existing culturally or socially significant structures and critical facilities within participating jurisdictions that have the most potential for losses from natural hazard events and identify needed structural upgrades.	OG	OG	OG	LOF	OG

2014 Mitigation Measure		Fayette County	Belk	Berry	City of Fayette	Glen Allen
1.3.3	Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods and develop a program for construction upgrades as appropriate.	OG	NTF	NTF	LOF LOPS	LOG NTF
1.3.4	Maintain inventory and map of existing fire hydrants throughout the county and identify areas in need of new fire hydrants.	OG	OG	OG	C	OG
1.3.5	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	OG	OG	OG	LOF	OG
1.3.6	Develop an inventory of public and commercial building vulnerable to earthquake damage, focusing on pre 1940 construction and buildings with cripple wall foundations.	C	C	C	NTF	C
1.5.1	Train local flood plain managers through programs offered by the State Flood Plain Coordinator and FEMA's training center in Emmitsburg, Maryland.	NPS LOF	NTF	NTF	AS	N/A
1.5.2	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	LOF	NTF	NTF	OG	N/A
1.5.3	Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage flood plain management that maintains the natural and beneficial functions of flood plains by maximizing the credits that could be obtained for “Higher Regulatory Standards” under the Community Rating System (CRS) Program.	NPS LOF	NTF	NTF	OG	NTF

2014 Mitigation Measure		Fayette County	Belk	Berry	City of Fayette	Glen Allen
1.5.4	Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	LPS	NTF	NTF	AS	NTF
1.5.5	Improve flood risk assessment by documenting high water marks post event, verification of FEMA's repetitive loss inventory and revising and updating regulatory floodplain maps.	OG	OG	OG	LOF	OG
1.6.1	Promote good construction practices and proper code enforcement to mitigate structural failures during natural hazard events.				OG	
1.6.2	Evaluate and revise as appropriate, building codes for roof construction to maximize protection against wind damage from hurricanes, tornadoes, and windstorms; encourage installation of "hurricane clips."				OG	
1.6.3	Relocate existing utility lines underground, where feasible and cost effective, and require, through local subdivision and land development regulations, the placement of all new utility lines underground for large residential subdivisions and commercial developments.				LOF	
1.6.4	Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	OG	NTF	NTF	OG	NTF
1.6.5	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	NTF LPS	NTF	NTF	OG	ALL

2014 Mitigation Measure		Fayette County	Belk	Berry	City of Fayette	Glen Allen
1.6.6	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.	NLA	NPS	NPS	OG	NTF LPS
1.8.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.				NPS	
1.8.2	Develop, adopt, and implement subdivision regulations that require proper stormwater infrastructure design and construction.				NPS	
1.9.1	Support legislation to establish a State dam safety program.	OG	OG	OG	OG	OG
1.10.1	Apply for/maintain membership in the CRS Program; continue to upgrade rating.	LOF	NO	NO	AS	NO
1.11.1	Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	OG	OG	OG	OG	OG
1.11.2	Conduct wildfire vulnerability assessments, including the vulnerability of critical facilities and number of residential properties in these risk areas, and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	OG	OG	OG	OG	OG
2.1.1	Relocate buildings out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.		NTF	NTF	LOPS	NTF
2.2.1	Acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	OG	LOF	LOF	LOF	LOF

2014 Mitigation Measure		Fayette County	Belk	Berry	City of Fayette	Glen Allen
2.2.2	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	OG	OG	OG	AS	NTF
2.3.1	Elevate certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	OG	N/A	N/A	LOF	LOF NTF NPS
2.3.2	Repair, elevate and weatherize existing homes.	LOF	N/A	N/A	LOF	NTF
2.4.1	Flood proof pre-FIRM non-residential buildings, where feasible.	LOF	N/A	N/A	NTF	LOF LPS
2.5.1	Retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and man-made hazards.	LOF	N/A	N/A	LOF	LPS LOF
2.5.2	Provide technical advisory assistance to building owners on available building retrofits to protect against natural hazards damages.				OG	
2.6.1	Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	OG	OG	OG	LPS	OG
2.6.2	Promote the purchase of crop insurance to cover potential losses due to drought.	OG	OG	OG	NTF	OG

2014 Mitigation Measure		Fayette County	Belk	Berry	City of Fayette	Glen Allen
2.7.1	Install backup power for critical facilities.	OG	OG	OG	OG	OG
3.1.1	Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through local trade publications and newspaper announcements.	OG	OG	OG	AS	OG
3.2.1	Participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	OG	OG	OG	OG	OG
3.2.2	Distribute materials, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	OG	OG	OG	OG	OG
3.2.3	Promote disaster resilience within the business community through workshops, educational materials, and planning guides, intended to assist business owners in recovering from a disaster event in a timely manner.	OG	OG	OG	AS	OG
3.2.4	Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.	OG	OG	OG	OG	OG
3.2.6	Distribute public education materials to farmers on soil and water conservation practices.	OG	OG	OG	NLA	OG

2014 Mitigation Measure		Fayette County	Belk	Berry	City of Fayette	Glen Allen
3.3.1	Arrange with the Multiple Listing Service (MLS) to require floodplain location disclosure as a condition for each real estate listing.	OG	N/A	N/A	NLA	LPS
3.4.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	OG	OG	OG	AS	N/A
3.5.1	Distribute hazard mitigation brochures to students through area schools.	OG	N/A	N/A	OG	OG
3.5.2	Educate homeowners about structural and non-structural retrofitting of vulnerable homes.	OG	N/A	N/A	OG	NTF
3.6.1	Distribute the 2014 plan to local officials, stakeholders, and interested individuals through internet download.	OG	OG	OG	LPS	OG
3.7.1	Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	OG	OG	OG	OG	OG
3.8.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	OG	OG	OG	OG	OG
3.9.1	Promote the use of weather radios in households and businesses.	OG	OG	OG	OG	OG
3.9.2	Install weather radios in all public buildings and places of public assembly.	OG	OG	OG	NTF	OG

2014 Mitigation Measure		Fayette County	Belk	Berry	City of Fayette	Glen Allen
3.9.3	Distribute weather radios and emergency response instructions to area residents.	LOPS LOF	OG	OG	LOF	LOF
3.10.1	Upgrade siren-warning systems to provide complete coverage to all jurisdictions.	LOPS NTF LOF	NPS LOF	NPS LOF	LOF	LOF LPS NTF
3.10.2	Upgrade critical communications infrastructure.	OG	OG	OG	LOF	OG
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other flood plain acquisition efforts.	OG	N/A	N/A	LPS	N/A
4.2.1	Keep builders and developers informed of Federal wetlands permitting requirements of the Corps of Engineers.				OG	
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	OG	OG	OG	NTF	OG
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	OG	OG	OG	OG	OG
4.4.1	Enforce water use restrictions during periods of drought to conserve existing water supplies.	OG	OG	OG	NPS	N/A
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	OG	OG	OG	LOF	NTF LOF

2014 Mitigation Measure		Fayette County	Belk	Berry	City of Fayette	Glen Allen
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	OG	OG	OG	NPS	OG
5.2.2	Improve and retrofit water supply systems to save water during drought events and to eliminate breaks and leaks.	OG	OG	OG	NLA NPS	N/A
5.3.1	Construct new community safe rooms in accessible locations and add safe rooms within new and existing public and institutional buildings, such as schools, colleges and universities, senior centers, community centers, hospitals, and government buildings.	OG	OG	C	LOF	LOF
5.3.2	Establish a program for subsidizing individual and community safe room construction in appropriate locations and facilities.	OG	OG	OG	LOF	OG
5.3.3	Encourage the construction of safe rooms in new and existing homes and buildings.	OG	OG	OG	OG	OG

Appendix D
Hazard Ratings and Descriptions

App. D – Hazard Ratings and Descriptions

This appendix provides the results of the hazard identification exercise from the kick-off meetings for the update to the 2014 plan. Also included in this appendix are descriptions of the hazards that are covered in the plan.

1.0 Scope and Methodology

The tables in this appendix show the results of the Hazard Mitigation Planning Committee (HMPC) responses to the hazard identification exercises presented at its kick-off meetings in January and February 2020. These results are not necessarily supported by other resources evaluated in Chapter 5 – Risk Assessment, but are, nonetheless, indicators of the location, probability, and extent of hazards affecting Fayette County jurisdictions. These responses are those perceived by the HMPC membership, based on local knowledge and experience of the members. This exercise serves as a resource to help identify the hazards affecting each jurisdiction and determine the probability and extents (severity or magnitude) and how these measures of community impacts vary among Fayette County jurisdictions. The averages of the ratings compare how the location and impacts of hazards could vary among the jurisdictions. Tables D-1 through D-4 show these results.

2.0 Summary of Results

Location of natural hazards

- ✓ The HMPC has identified the following hazards that could occur in all jurisdictions of Fayette County: severe storms, tornadoes, winter storms, droughts, extreme heat, hail, and lightning.

- ✓ The remaining hazards are location specific and include flash and riverine floods, extreme cold, wildfires, dam failures, erosion, earthquakes, sinkholes, and landslides.

- ✓ Three jurisdictions did not include hurricanes as occurring in their jurisdictions which is most likely due to the fact that the initial hurricane does not cause the risk, it is the hazards that accompany or spin off from the hurricane which usually cause the risk.

Probability of natural hazards

- ✓ According to the HMPC, the natural hazards most likely to occur are tornadoes, severe storms, drought, extreme heat, hail, and lightning.

- ✓ The natural hazards that have some likelihood of occurring are flash floods, riverine flooding, winter storms, extreme cold, wildfires, and erosion.

- ✓ The natural hazards with the lowest probability of occurrence are hurricanes, dam failures, earthquakes, sinkholes, and landslides.

Extent of natural hazards

- ✓ The natural hazards deemed to have the greatest magnitude of damage are tornadoes and severe storms.

- ✓ Flash floods, winter storms, hurricanes, drought, extreme heat, and erosion have the potential for moderate severity on average in Fayette County.

- ✓ Riverine floods, extreme cold, wildfires, dam failures, earthquakes, sinkholes, hail, lightning, and landslides are considered by the HMPC to have a potential severity of low to medium in extent.

Concern for human-caused and technological hazards

- ✓ While human-caused and technological hazards could occur in any location within all jurisdictions; the level of concern by the representatives for the jurisdictions varied.

- ✓ The human-caused and technological hazards that had the greatest amount of concern (an average of 1.5 or above on the hazard tables that follow) were agriterrorism, radiological agent, biological agent, chemical agent, arson, cyberterrorism, industrial accident at a fixed location, industrial accident during transport, and a chemical spill. All jurisdictions were concerned with these hazards except Belk and Berry. Belk and Berry are not concerned about radiological, biological, or chemical agents. The City of Fayette ranked arson high and Belk ranked both Industrial Accident at a fixed location and via transport as high. Glen Allen's greatest concerns were chemical spill, cyberterrorism, and an industrial accident during transport.

- ✓ The remaining human-caused and technological hazards had an average low amount of concern (less than 1.5 average on the hazard tables that follow) by all communities. Belk and Berry were not concerned with a nuclear attack.

Impact of human-caused and technological hazards

- ✓ As with the level of concern by the HMPC members about the human-caused and technological hazards, the perceived level of impact varied depending on the respondent. Even if a jurisdiction registered that there was not a concern with a human-caused or technological hazard, they acknowledged that if one occurred there would be an impact; therefore, they provided feedback on the impact of the hazard event.

- ✓ The hazards with the highest impact rating (an average of 3) were radiological, biological, and chemical agents.

- ✓ The hazards with a moderate level of impact (an average greater than 2 and less than 3) are nuclear attack, armed attack, agriterrorism, arson, conventional bomb, and an intentional hazardous material release. Also included under moderate impact was chemical spill.

- ✓ The hazards deemed to have the least amount of impact (less than an average of 2 on the hazard tables that follow) are cyberterrorism, industrial accident fixed and transport, and control systems failure.

Concern for pandemics and infectious diseases

- ✓ Pandemics and infectious diseases can occur anywhere and affect most everyone. The level of severity is as varied as other natural hazards and are dependent on many variables which have been discussed in Chapter 5. The HMPC members recorded a moderate level of concern for pandemics and infectious diseases, an average of 2.2 as shown on Table D-4.

Impact of pandemics and infectious diseases

- ✓ The foreseen impact by pandemics and infectious diseases by the HMPC averaged as moderate impact.

It is interesting to note that the majority of the plan update process occurred in 2020 during the COVID-19 pandemic. The hazard risk assessment for the plan was done in early 2020, prior to the COVID-19 outbreak. It is believed that if the representatives were asked to re-rank the hazards, concern and impact would rank at a high level for pandemics and infectious diseases.

Table Key.

The following key describes the hazard ratings for Natural Hazards:

Location – 2014 -whether the jurisdiction is affected by the hazard 2019 - percent of the community impacted
2014-
1 = yes
0 = no
2019-
5- 75-100% impacted
4- 50-75% impacted
3- 25-50% impacted
2- 10-25% impacted
1- Less than 10% impacted
0- No area impacted
Probability - the likelihood that the hazard would occur in this jurisdiction
4 - high
3 - medium
2 - low
1 - minimum or none

Extent - the severity or magnitude of the hazard should it occur in this jurisdiction
4 - high
3 - medium
2 - low
1 - minimum or none

The following key describes the hazard ratings for Human-Caused, Technological and Pandemic and Infectious Disease Hazards:

Degree of Concern
0 - None: Do not think about it
1 - Low Level: Consider it but do not believe it will happen
2 - Moderate Level: Think about the possibility of it occurring and is concerned that it can happen
3 - High Level: Very concerned about it happening
Impact
0 - None: No impact on the jurisdiction/agency
1 - Low Level: Minor interruption to or effect on services
2 - Moderate Level: Moderate interruption to or effect on services
3 - High Level: Severe interruption to or effect on services

Table D-1. Fayette County HMPC Identification and Ratings of Natural Hazards

Hazard	Geographic Area	Location (2014)	Location (2019)	Probability (2014)	Probability (2019)	Extent (2014)	Extent (2019)
Tornadoes	Fayette County	1	5	3	3	2	2
	Belk	-	5	-	3	-	3
	Berry	1	5	3	4	3	4
	Fayette	1	5	4	3	5	3
	Glen Allen	1	4	5	3	5	2
	AVERAGE	0.8	4.8	3.0	3.2	3.0	2.8
Severe Storms	Fayette County	1	5	4	3	2	2
	Belk	-	5	-	4	-	3
	Berry	1	5	3	4	2	3
	Fayette	1	5	4	4	5	3
	Glen Allen	1	4	5	3	5	2
	AVERAGE	0.8	4.8	3.2	3.6	2.8	2.6
Flash Floods	Fayette County	1	5	3	3	1	2
	Belk	-	3	-	2	-	1
	Berry	1	0	2	1	1	1
	Fayette	1	4	2	3	2	3
	Glen Allen	1	4	3	3	3	2
	AVERAGE	0.8	3.2	2.0	2.4	1.4	1.8
Riverine Floods (previous plans combined riverine and flash floods together)	Fayette County		2		3		2
	Belk		4		2		1
	Berry		0		1		1
	Fayette		3		3		1
	Glen Allen		1		2		1
	AVERAGE		2.0		2.2		1.2
Winter Storms	Fayette County	1	5	2	1	2	2
	Belk	-	5	-	3	-	2
	Berry	1	5	2	3	2	3
	Fayette	1	5	2	1	2	1
	Glen Allen	1	4	4	2	4	1
	AVERAGE	0.8	4.8	2.0	2	2.0	1.8
Extreme Cold	Fayette County		1		1		1

Hazard	Geographic Area	Location (2014)	Location (2019)	Probability (2014)	Probability (2019)	Extent (2014)	Extent (2019)
	Belk		5		3		2
	Berry		0		1		1
	Fayette		2		1		1
	Glen Allen		1		3		2
	AVERAGE		1.8		1.8		1.4
Hurricanes	Fayette County	1	0	2	1	1	1
	Belk	-	0	-	1	-	1
	Berry	1	0	1	1	1	1
	Fayette	1	5	1	1	1	3
	Glen Allen	1	1	1	2	1	2
	AVERAGE	0.8	1.2	1.0	1.2	0.8	1.6
Droughts	Fayette County	1	5	3	3	2	2
	Belk	-	5	-	4	-	3
	Berry	1	5	2	4	2	2
	Fayette	1	4	3	3	3	1
	Glen Allen	1	5	3	3	3	2
	AVERAGE	0.8	4.8	2.2	3.4	2.0	2
Extreme Heat	Fayette County		5		3		1
	Belk		5		4		2
	Berry		5		4		3
	Fayette		3		3		1
	Glen Allen		5		4		2
	AVERAGE		4.6		3.6		1.8
Wildfires	Fayette County	1	5	2	1	3	2
	Belk	-	0	-	1	-	1
	Berry	1	0	2	1	2	1
	Fayette	1	3	4	3	4	1
	Glen Allen	1	4	3	3	3	1
	AVERAGE	0.8	2.4	2.2	1.8	2.4	1.2

Hazard	Geographic Area	Location (2014)	Location (2019)	Probability (2014)	Probability (2019)	Extent (2014)	Extent (2019)
Dam Failures	Fayette County	0	1	0	1	0	2
	Belk	-	0	-	1	-	1
	Berry	0	0	0	1	0	1
	Fayette	1	2	1	1	1	2
	Glen Allen	0	1	1	1	1	1
	AVERAGE	0.2	0.8	0.4	1	0.4	1.4
Landslides	Fayette County	0	2	0	2	0	2
	Belk	-	0	-	1	-	1
	Berry	1	0	1	1	1	1
	Fayette	0	2	0	1	0	1
	Glen Allen	1	2	1	2	1	1
	AVERAGE	0.4	1.2	0.4	1.4	0.4	1.2
Erosion	Fayette County		5		3		2
	Belk		0		1		1
	Berry		0		1		1
	Fayette		4		3		2
	Glen Allen		2		3		2
	AVERAGE		2.2		2.2		1.6
Earthquakes	Fayette County	1	1	2	1	2	2
	Belk	-	0	-	1	-	1
	Berry	1	5	1	1	1	2
	Fayette	1	0	2	1	1	1
	Glen Allen	1	4	1	2	1	1
	AVERAGE	0.8	2.0	1.2	1.2	1.0	1.4
Sinkholes	Fayette County	0	1	0	1	0	2
	Belk	-	0	-	1	-	1
	Berry	0	0	0	1	0	1
	Fayette	1	2	1	1	1	1
	Glen Allen	1	0	1	1	1	1
	AVERAGE	0.4	0.6	0.4	1	0.4	1.2

Hazard	Geographic Area	Location (2014)	Location (2019)	Probability (2014)	Probability (2019)	Extent (2014)	Extent (2019)
Hail	Fayette County		5		2		1
	Belk		5		4		1
	Berry		5		4		2
	Fayette		3		3		1
	Glen Allen		1		3		1
	AVERAGE		3.8		3.2		1.2
Lightning	Fayette County		5		3		1
	Belk		5		4		1
	Berry		5		4		1
	Fayette		5		3		1
	Glen Allen		4		3		2
	AVERAGE		4.8		3.4		1.2
Manmade and Technological	Fayette County	1	See Tables D-2 & D-3	2	See Tables D-2 & D-3	2	See Tables D-2 & D-3
	Belk	-		-		-	
	Berry	1		1		1	
	Fayette	1		2		2	
	Glen Allen	1		1		1	
	AVERAGE	0.8		1.2		1.2	

Table D-2. Fayette County HMPC Identification and Ratings of Human-Caused Hazards

Human-Caused Hazards	Geographic Area	Degree of Concern	Impact
Armed Attack	Fayette County	1	2
	Belk	2	3
	Berry	1	2
	Fayette	1	2
	Glen Allen	2	2
	Average	1.4	2.2
Agriterrorism	Fayette County	1	3
	Belk	2	2
	Berry	2	2
	Fayette	1	3
	Glen Allen	2	3
	Average	1.6	2.6
Cyberterrorism	Fayette County	2	2
	Belk	1	2
	Berry	2	1
	Fayette	1	1
	Glen Allen	3	2
	Average	1.8	1.6
Radiological Agent	Fayette County	1	3
	Belk	0	1
	Berry	0	3
	Fayette	1	3
	Glen Allen	2	3
	Average	1.5	3
Biological Agent	Fayette County	1	3
	Belk	0	1
	Berry	0	3
	Fayette	1	3
	Glen Allen	2	3
	Average	1.5	3

Human-Caused Hazards	Geographic Area	Degree of Concern	Impact
Chemical Agent	Fayette County	1	3
	Belk	0	1
	Berry	0	3
	Fayette	1	3
	Glen Allen	2	3
	Average	1.5	3
Hazardous Material Release (Intentional)	Fayette County	1	3
	Belk	1	2
	Berry	1	2
	Fayette	1	1
	Glen Allen	2	3
	Average	1.2	2.2
Arson/Incendiary Attack	Fayette County	1	3
	Belk	1	2
	Berry	1	3
	Fayette	3	1
	Glen Allen	2	2
	Average	1.6	2.2
Conventional Bomb/ Improvised Explosive Device	Fayette County	1	3
	Belk	1	3
	Berry	1	3
	Fayette	1	2
	Glen Allen	2	3
	Average	1.2	2.8
Nuclear Attack	Fayette County	1	3
	Belk	0	1
	Berry	0	3
	Fayette	1	3
	Glen Allen	2	3
	Average	0.8	2.6

Table D-3. Fayette County HMPC Identification and Ratings of Technological Hazards

Technological Hazards	Geographic Area	Degree of Concern	Impact
Industrial Accident (Fixed Facility)	Fayette County	1	2
	Belk	3	2
	Berry	2	1
	Fayette	2	1
	Glen Allen	2	1
	Average	2	1.4
Industrial Accident (Transportation)	Fayette County	1	2
	Belk	3	1
	Berry	2	1
	Fayette	1	1
	Glen Allen	3	3
	Average	2	1.6
Controls Failure	Fayette County	1	2
	Belk	1	1
	Berry	1	1
	Fayette	1	2
	Glen Allen	2	3
	Average	1.2	1.8
Chemical Spill	Fayette County	1	3
	Belk	2	3
	Berry	1	1
	Fayette	2	2
	Glen Allen	3	3
	Average	1.8	2.4

Table D-4. Fayette County HMPC Identification and Ratings of Pandemics/Infectious Diseases

Pandemic and Infectious Disease	Geographic Area	Degree of Concern	Impact
Pandemic and Infectious Disease	Fayette County	2	3
	Belk	3	1
	Berry	3	1
	Fayette	1	3
	Glen Allen	2	3
	Average	2.2	2.2

3.0 Hazard Descriptions

Tornadoes Description

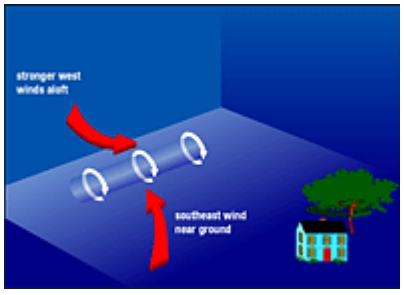
Tornadoes are one of nature's most violent storms, which are characterized by a rapidly rotating column of air extending from the base of a thunderstorm to the ground. In an average year, approximately 1,000 tornadoes are reported across the United States, resulting in over 1,500 injuries and 80 deaths, the greatest number of wind-related deaths. The most violent tornadoes, with wind speeds of 250 mph or more, are capable of tremendous destruction. Damage paths can be more than one mile wide and 50 miles long. Tornadoes can occur anywhere and come in all shapes and sizes.

In Alabama, peak tornado season is generally March through May with a secondary season in late fall; however, tornadoes can strike at any time of the year if the essential conditions are present. Tornadoes in the peak season are often associated with strong, frontal systems that form in central states and move east. Occasionally, large outbreaks of tornadoes occur with this type of weather pattern. Several states may be affected by numerous severe storms and tornadoes.

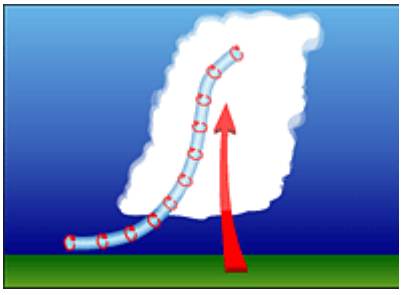
Tornadoes can occur in thunderstorms that develop in warm, moist air masses in advance of eastward-moving cold fronts. These thunderstorms often produce large hail and strong winds, in addition to tornadoes. Thunderstorms spawn tornadoes when cold air overrides a layer of warm air, causing the warm air to rise rapidly. Tornadoes occasionally accompany tropical storms and hurricanes that move over land. They are most common to the right and ahead of the path of the storm center as it comes onshore. The winds produced from wildfires have also been known to produce tornadoes.

The following graphic describes the formation of a tornado:

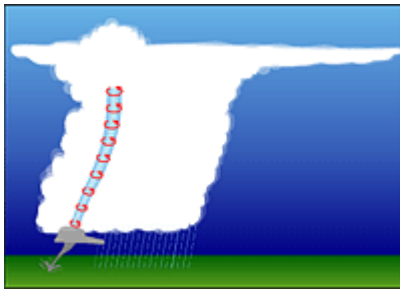
Figure D-1. How a Tornado Forms



▲Before thunderstorms develop, a change in wind direction and an increase in wind speed with increasing height create an invisible, horizontal spinning effect in the lower atmosphere.



▲Rising air within the thunderstorm updraft tilts the rotating air from horizontal to vertical.



▲An area of rotation, 2-6 miles wide, now extends through much of the storm. Most strong and violent tornadoes form within this area of strong rotation.

Woodward OK (Ron Przybylinski)

▲A lower cloud base in the center of the photograph identifies an area of rotation known as a rotating wall cloud. This area is often nearly rain-free. Note rain in the background.

Woodward OK (Ron Przybylinski)

▲Moments later a strong tornado develops in this area. Softball-size hail and damaging "straight-line" winds also occurred with this storm.

Source: Tornadoes – A Preparedness Guide, National Weather Service, February 1995.

Meteorologists rely on weather radar to provide information on developing storms. The National Weather Service is strategically locating Doppler radars across the country which can detect air movement toward or away from the radar. Early detection of increasing rotation aloft within a thunderstorm can allow life-saving warnings to be issued before the tornado forms.

When conditions are favorable for severe weather to develop, a severe thunderstorm or tornado WATCH is issued. Weather Service personnel use information from weather radar, spotters, and other sources to issue severe thunderstorm and tornado WARNINGS for areas where severe weather is imminent. Severe thunderstorm warnings are passed to local radio and television stations and are broadcast over local NOAA Weather Radio stations serving the warned areas. These warnings are also relayed to local emergency management and public safety officials who can activate local warning systems to alert communities.

In 1971, Dr. T. Theodore Fujita of the University of Chicago developed the original F-scale for wind damages, including tornadoes. The original F-scale, however, was recently replaced by an enhanced version effective February 1, 2007. The Enhanced F-scale is a more precise method of tornado damage assessment that classifies damage according to calibrations developed by engineers and meteorologists across 28 different types of damage indicators. The underlying premise is that a tornado scale needs to consider the varying strengths and weaknesses of different types of construction. As with the original F-scale, the enhanced version rates the tornado as a whole based on most intense damage within the path. Historical tornadoes before February 1, 2007, will not be re-evaluated using the Enhanced F-scale.

Table D-5. Enhanced F Scale for Tornado Damage

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: NOAA Storm Prediction Center's On-Line Frequently Asked Questions about Tornadoes (http://www.spc.noaa.gov/faq/tornado/#f-scale3)

Table D-6. Fujita Tornado Damage Scale

SCALE	WIND ESTIMATE *** (MPH)	TYPICAL DAMAGE
F0	< 73	**Light damage.** Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112	**Moderate damage.** Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113-157	**Considerable damage.** Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	158-206	**Severe damage.** Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.

SCALE	WIND ESTIMATE *** (MPH)	TYPICAL DAMAGE
F4	207-260	**Devastating damage.** Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown, and large missiles generated.
F5	261-318	**Incredible damage.** Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds.); trees debarked; incredible phenomena will occur.

Source: NOAA Storm Prediction Center's On-Line Frequently Asked Questions about Tornadoes (http://www.spc.noaa.gov/faq/tornado/#f-scale3)

(The description of tornadoes presented in this section is based upon information extracted from the FEMA How to Guides Understanding Your Risks (FEMA 386-2), FEMA, August 2001, and Using HAZUS-MH for Risk Assessment (FEMA 433), FEMA, August 2004, Tornadoes – A Preparedness Guide, National Weather Service, February 1995, and the NOAA Storm Prediction Center's On-Line Frequently Asked Questions about Tornadoes (http://www.spc.noaa.gov/faq/tornado/#f-scale3).

Severe Storms Description

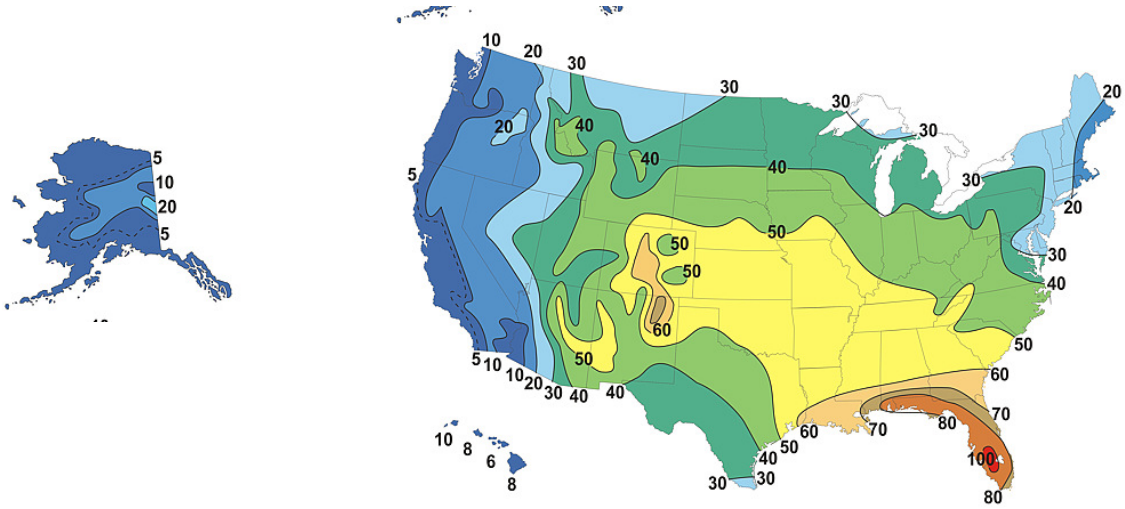
Severe storms, as referred to in this plan, include severe thunderstorms with damaging lightning, hail, and straight-line winds. Severe storms are also associated with tornadoes, hurricanes, and floods, which are described separately in this plan.

Severe storms affect relatively small areas when compared with hurricanes and winter storms. The typical thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. Despite their small size, thunderstorms can be dangerous. Of the estimated 100,000 thunderstorms that occur each year in the United States, about 10 percent are classified as severe. The National Weather Service considers a thunderstorm severe if it produces hail at least 3/4-inch in diameter, winds of 58 mph or stronger, or a tornado.

Thunderstorms are formed by a combination of moisture to form clouds and rain, unstable air, that is, warm air that can rise rapidly, and lift from cold or warm fronts, sea breezes, mountains, or the sun's heat which are capable of lifting air.

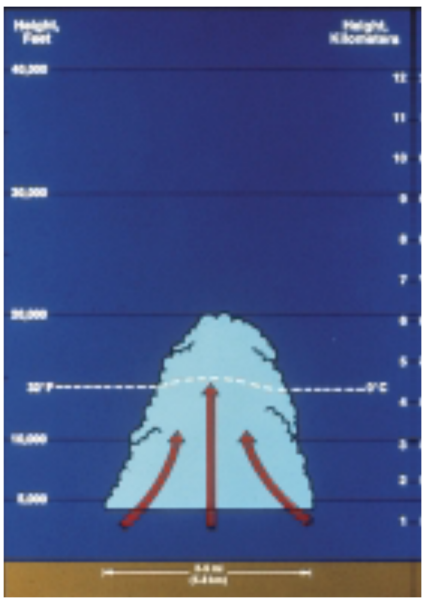
The National Weather Service estimates over 40,000 thunderstorms occur each day world-wide or close to 16 million annually. In the U.S., roughly 100,000 thunderstorms occur each year. The following map shows the average number of thunderstorm days each year throughout the U.S. The most frequent occurrence is in the southeastern states, with Florida having the highest incidence at 80 to 100+ thunderstorm days per year. Alabama's incidence is high at 50 to 80 thunderstorm days per year. Warm, moist air from the Gulf of Mexico and Atlantic Ocean is most readily available to fuel thunderstorm development in this region of the country.

Map D-1. U.S. Average Thunderstorm Days per Year



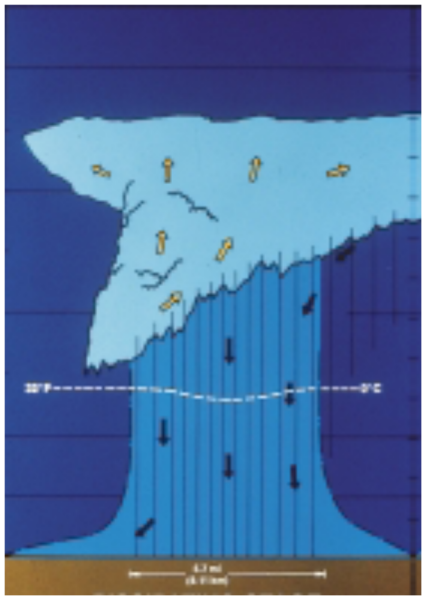
Source: National Weather Service

Figure D-2. Life Cycle of a Thunderstorm



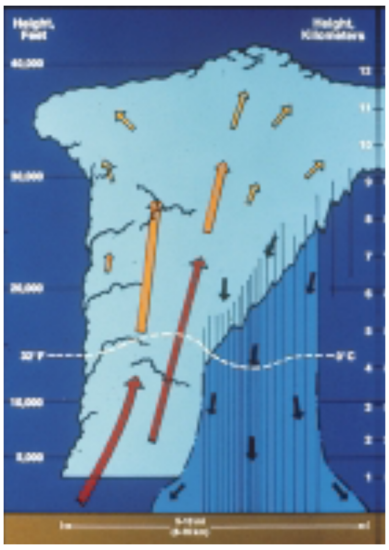
Developing Stage

- Towering cumulus cloud indicates rising air.
- Usually little if any rain during this stage.
- Lasts about 10 minutes.
- Occasional lightning.



Mature Stage

- Most likely time for hail, heavy rain, frequent lightning, strong winds, and tornadoes.
- Storm occasionally has a black or dark green appearance.
- Lasts an average of 10 to 20 minutes but may last much longer in some storms.



Dissipating Stage

- Rainfall decreases in intensity.
- Can still produce a burst of strong winds.
- Lightning remains a danger

Source: National Weather Service

Lightning results from the buildup and discharge of electrical energy between positively and negatively charged areas. Rising and descending air within a thunderstorm separates these positive and negative charges. Water and ice particles also affect charge distribution. A cloud-to-ground lightning strike begins as an invisible channel of electrically charged air moving from the cloud toward the ground. When one channel nears an object on the ground, a powerful surge of electricity from the ground moves upward to the clouds and produces the visible lightning strike.
Here are some facts about lightning from the National Weather Service:

- Lightning causes an average of 80 fatalities and 300 injuries each year.
- Lightning occurs in all thunderstorms.
- Each year lightning strikes the earth 20 million times. The energy from one lightning flash could light a 100-watt light bulb for more than three months.
- Most lightning fatalities and injuries occur when people are caught outdoors in the summer months during the afternoon and evening.
- Lightning can occur from cloud-to-cloud, within a cloud, cloud-to-ground, or cloud-to-air.
- Many fires in the western United States and Alaska are started by lightning.
- The air near a lightning strike is heated to 50,000°F--hotter than the surface of the sun!
- The rapid heating and cooling of the air near the lightning channel causes a shock wave resulting in thunder.

Most thunderstorm wind damage is caused by **straight-line winds**, which can exceed 100 mph. One type of straight-line wind, the downburst, is a small area of rapidly descending air beneath a thunderstorm. A downburst can cause damage equivalent to a strong tornado. Hail stones are large ice particles produced by intense thunderstorms. Strong rising currents of air within a storm, called updrafts, carry water droplets to a height where freezing occurs.

Figure 5-3. Hail

Another damaging effect of severe storms is **hail**. Hail stones are large ice particles that grow in size, becoming too heavy to be supported by the updraft, and fall to the ground. Large stones can fall at speeds faster than 100 mph. Hail causes substantial damage to property and crops each year in the U.S.

(The description of severe storms presented in this section is based upon information extracted from National Weather Service on-line publications at http://www.srh.noaa.gov/jetstream/tstorms/).

Floods

Description

A flood is a natural event for rivers and streams. Excess water from snowmelt, rainfall, or storm surge accumulates and overflows onto the banks and adjacent floodplains. Floodplains are lowlands, adjacent to rivers, lakes, and oceans that are subject to recurring floods.

Hundreds of floods occur each year, making it one of the most common hazards in all 50 states and U.S. territories. Floods kill an average of 150 people a year nationwide. They can occur at any time of the year, in any part of the country, and at any time of day or night. Floodplains in the U.S. are home to over nine million households. Most injuries and deaths occur when people are swept away by flood currents, and most property damage results from inundation by sediment-filled water.

Several factors determine the severity of floods, including rainfall intensity (or other water source) and duration. A large amount of rainfall over a short time span can result in flash flood conditions. A small amount of rain can also result in floods in locations where the soil is saturated from a previous wet period or if the rain is concentrated in an area of impermeable surfaces such as large parking lots, paved roadways, or other impervious developed areas. Topography and ground cover are also contributing factors for floods. Water runoff is greater in areas with steep slopes and little or no vegetative ground cover. Frequency of inundation depends on the climate, soil, and channel slope. In regions where substantial precipitation occurs in a particular season each year, or in regions where annual flooding is derived principally from snowmelt, the floodplains may be inundated nearly every year. In regions without extended periods of below-freezing temperatures, floods usually occur in the season of highest precipitation. In areas where flooding is caused by melting snow, and occasionally compounded by rainfall, the flood season is spring or early summer.

Fortunately, most of the known floodplains in the United States have been mapped by FEMA, which administers the NFIP (National Flood Insurance Program). When a flood study is completed for the NFIP, the information and maps are assembled into a Flood Insurance Study (FIS). An FIS is a compilation and presentation of flood risk data for specific watercourses, lakes, and coastal flood hazard areas within a community and includes causes of flooding. The FIS report and associated maps delineate Special Flood Hazard Areas (SFHAs), designate flood risk zones, and establish base flood

elevations (BFEs), based on the flood that has a 1% chance of occurring annually, or the 100-year flood. Paper FIRMs and FIS reports are gradually being replaced by DFIRMs (digital FIRMs).

The **100-year flood** designation applies to the area that has a 1 percent chance, on average, of flooding in any given year. However, a 100-year flood could occur two years in a row, or once every 10 years. The 100-year flood is also referred to as the **base flood**. The base flood is the standard that has been adopted for the NFIP. It is a national standard that represents a compromise between minor floods and the greatest flood likely to occur in a given area and provides a useful benchmark.

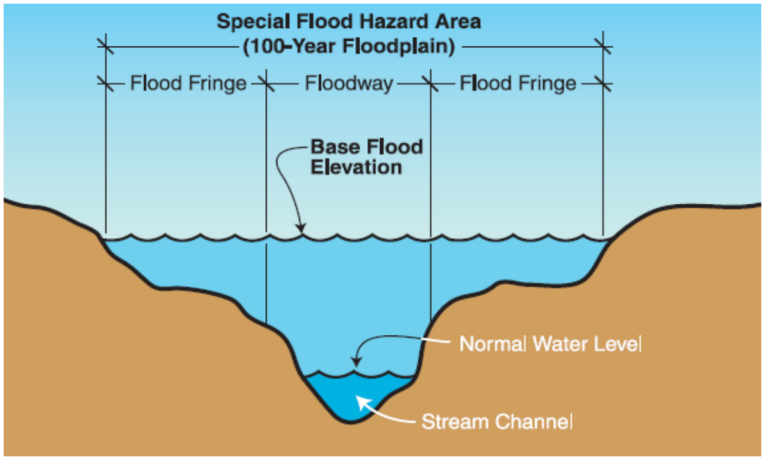
Base Flood Elevation (BFE), as shown on the FIRM, is the elevation of the water surface resulting from a flood that has a 1% chance of occurring in any given year. The BFE is the height of the base flood, usually in feet, in relation to the National Geodetic Vertical Datum (NGVD) of 1929, the North American Vertical Datum (NAVD) of 1988, or other datum referenced in the FIS report.

Special Flood Hazard Area (SFHA) is the shaded A-Zone or V-Zone area on a FIRM that identifies an area that has a 1% chance of being flooded in any given year or the **100-year floodplain**. FIRMs show different floodplains with different zone designations, as shown on Table D-7 "Flood Zone Designations." These are used for insurance rating purposes but are also necessary for flood permitting and flood hazard mitigation planning purposes. The **500-Year Floodplain** is the shaded X-Zone area shown on a FIRM that has a 0.2% chance of being flooded in any given year.

Floodway is the stream channel and that portion of the adjacent floodplain that must remain open to permit passage of the base flood without substantial increases in flood heights. The **Flood Fringe** is the remainder of the 100-year floodplain.

The following graphic shows the components of a floodplain along a stream:

Figure D-4. Flood Plain Cross Section



Source: FEMA

Table D-7. Flood Zone Designations

Flood Zones		
A Zones	100-year floodplain areas of high risk.	
	A	The base floodplain mapped by approximate methods. (i.e., BFEs are not determined). This is often called an unnumbered A zone or an approximate A zone.
	AE	The base floodplain where base flood elevations are provided.
	AO	The base floodplain with sheet flow, ponding, or shallow flooding. Base flood depths (feet above ground) are provided.
	AH	Shallow flooding base floodplain. BFEs are provided.
	A99	Area to be protected from base flood by levees or Federal flood protection systems under construction. BFEs are not determined.
	AR	The base floodplain that results from the de-certification of a previously accredited flood protection system that is in the process of being restored to provide a 100-year or greater level of flood protection.
V Zones	100-year coastal floodplain areas of high risk	
	V	The coastal area subject to a velocity hazard (wave action) where BFEs are not determined on the FIRM.
	VE	The coastal area subject to a velocity hazard (wave action) where BFEs are provided on the FIRM.
X Zones	Areas of minimal to moderate risk outside the 100-year floodplain.	
	Shaded	Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. Also includes areas protected by levees from the 100-year flood and shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.
	Unshaded	Area of minimal flood hazard determined to be outside the 500-year floodplain.
D Zone	Area of undetermined but possible flood hazards.	

Source: FEMA

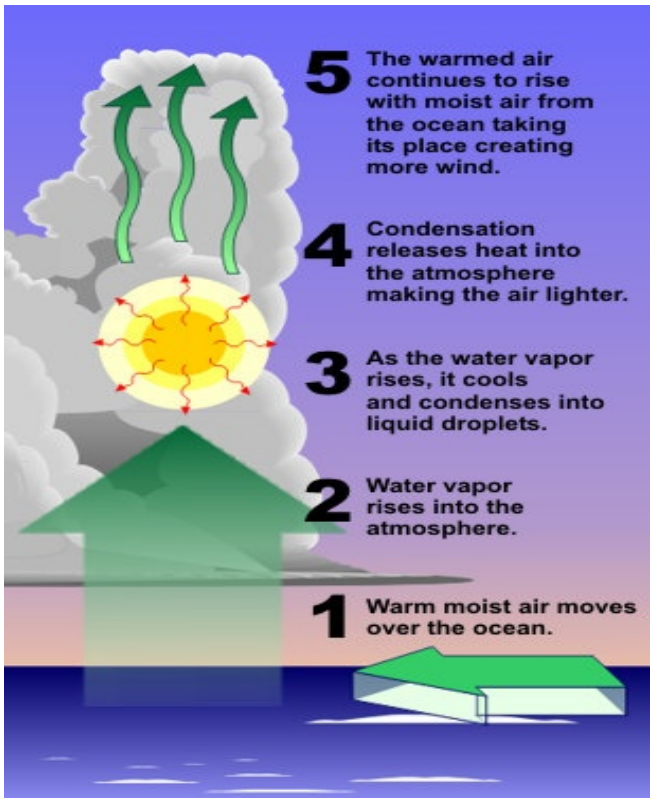
A range of floods, other than just the 100-year flood, could happen within an area. Buildings in very close proximity to a stream or shoreline, for example, might experience flooding much more frequently.

(The description of floods presented in this section is based upon information extracted from the FEMA How to Guide Understanding Your Risks (FEMA 386-2), FEMA, August 2001).

Hurricanes Description

Hurricanes, as referred to in this plan, include all types of tropical cyclones: hurricanes, tropical storms, and tropical depressions. A **tropical cyclone** is a rotating weather system that develops in the tropics. A **tropical depression** is an organized system of persistent clouds and thunderstorms with low level closed circulation and maximum sustained winds of 38 mph or less. A **tropical storm** is an organized system of strong thunderstorms with a well-defined circulation and maximum sustained winds of 39 to 73 mph. All of these tropical cyclones begin as a disturbance. A disturbance may result from a number of different weather events including Easterly Waves, West African Disturbance Line, Tropical Upper Tropospheric Trough, or an Old Frontal Boundary. In order for a tropical disturbance to develop into a hurricane, three things must occur. First, the disturbance must gather energy and heat through contact with warm ocean waters. Next, added moisture evaporated from the sea surface then provides power to the tropical storm. And last, the seedling storm forms a wind pattern near the ocean surface that spirals inward. Warm water is the most important of the three, as it provides the fuel for a disturbance to eventually develop into a hurricane. A **hurricane** is a tropical weather system with a well-defined circulation and sustained winds of 74 mph or higher. Even inland areas, well away from the coastline, can experience destructive winds, tornadoes and floods from tropical storms and hurricanes.

Figure D-5. How a Hurricane Forms



Source: National Hurricane Center (www.nhc.noaa.gov)

The Atlantic hurricane season begins on June 1 and lasts through November. Within the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico annually there are an average of 11 tropical storms, 6 of which become hurricanes. In a typical three-year span, the US coastline is struck an average five times, two that are major hurricanes (category 3 or higher.) Hurricanes pose the greatest threat to life and property, but tropical depressions and storms can also cause extensive damage and loss of life. Hurricanes are categorized on a scale of 1 to 5 based on their sustained wind speed. Herbert Saffir, a consulting engineer in Coral Gables, Florida, and Dr. Robert Simpson, then director of the National Hurricane Center, developed this scale in the 1970's. Category 3-5 hurricanes are considered to be major storms. The Saffir-Simpson scale is based primarily on wind speeds and includes estimates of barometric pressure and storm surge associated with each of the five categories.

Table D-8. Saffir-Simpson Scale

Category	Wind Speed	Storm Surge (feet above normal sea level)	Expected Damage
1	74-95 mph	4-5 ft.	**Minimal**: Damage is done primarily to shrubbery and trees, unanchored mobile homes are damage, some signs are damaged, no real damage is done to structures
2	96-110 mph	6-8 ft.	**Moderate**: Some trees are toppled, some roof coverings are damaged, major damage is done to mobile homes
3	111-130 mph	9-12 ft.	**Extensive**: Large trees are toppled, some structural damage is done to roofs, mobile homes are destroyed, and structural damage is done to small homes and utility buildings.
4	131-155 mph	13-18 ft.	**Extreme**: Extensive damage is done to roofs, windows, and doors; roof systems on small buildings completely fail, some curtain walls fail
5	>155 mph	>18 ft.	**Catastrophic**: Roof damage is considerable and widespread, window and door damage is severe, there are extensive glass failures and entire buildings could fail.

Source: National Hurricane Center

The main parts of a hurricane are the eye, the eye wall, and rain bands. The **eye** of a hurricane is the calmest part. The eye is typically 20-40 miles across and has light winds that do not exceed 15 mph. An eye will usually develop when the maximum sustained wind speed is more than 74mph. The strong rotation around the cyclone balances inflow to the center, causing air to ascend about 10-20 miles from the center forming the eyewall. A vacuum of air at the center is caused due to the strong rotation, the vacuum allows air flowing out of the top of the eyewall to turn inward and sink to replace the loss of air mass near the center. Due to the sinking air, cloud formation is suppressed. The passage of the eye is the calmest part of the hurricane. Since there is a light wind and fair weather, many

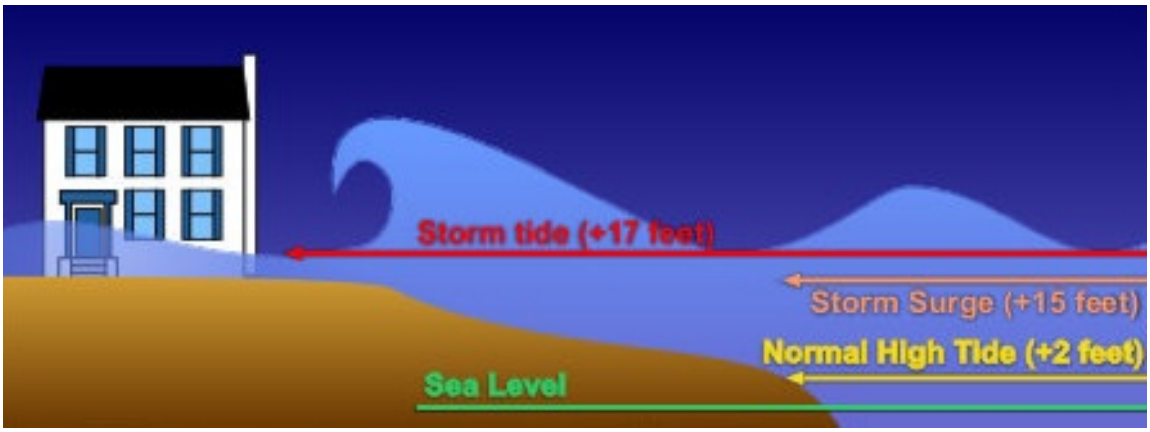
believe that the storm has passed, which can prove dangerous. Immediately after the passage of the eye, the eyewall winds return but in an opposite direction.

The **eyewall** is the part of a hurricane where the strong winds meet the eye. The eyewall is a group of tall thunderstorms that produce heavy rain and the strongest winds within the storm. Changes in the structure of the eye and eyewall can cause changes in the wind speed, which is an indicator of the storm's intensity. An eye may grow or shrink in size and additional eyewalls can form.

The **rain bands** are the outermost part of the hurricane. They are bands of clouds and thunderstorms that trail away from the eyewall in a spiral fashion. These bands produce heavy rain and strong winds, as well as tornadoes.

A hurricane also has additional hazards associated with it, both direct and indirect. The secondary hazards include storm surge, wind gusts, squalls, inland flooding, and tornadoes. **Storm surge** is water that is pushed toward the shore by the winds around the storm. Storm surge combines with the normal tides to create the hurricane storm tide. Wind driven waves also combine into hurricane storm tide. The rise in water level can cause severe flooding in coastal areas. The level of surge is dependent upon the slope of the continental shelf. A shallow slope off of the coast allows a higher surge to inundate the area.

Figure D-6. Storm Surge



Source: NWS Jet Stream- Online School for Weather at
www.srh.noaa.gov/srh/jetstream/tropics/tc_hazards.htm

In addition to storm surge, hurricanes are also known for **damaging winds**. They are rated according to their sustained wind speed. This scale does not account for gusts and squalls. **Gusts** are short and rapid bursts in wind speed. They are caused by turbulence over land mixing faster air aloft to the surface. **Squalls** are longer period of increased wind speeds; they are normally located within the outer rain bands.

Hurricanes, tropical storms, and depressions many times bring torrential rains and flooding. This flooding may last many days after the storm has passed. The strength of the storm does not

always affect the level of flooding. A slow, weak tropical storm can cause more damage due to flooding than a more powerful fast-moving hurricane.

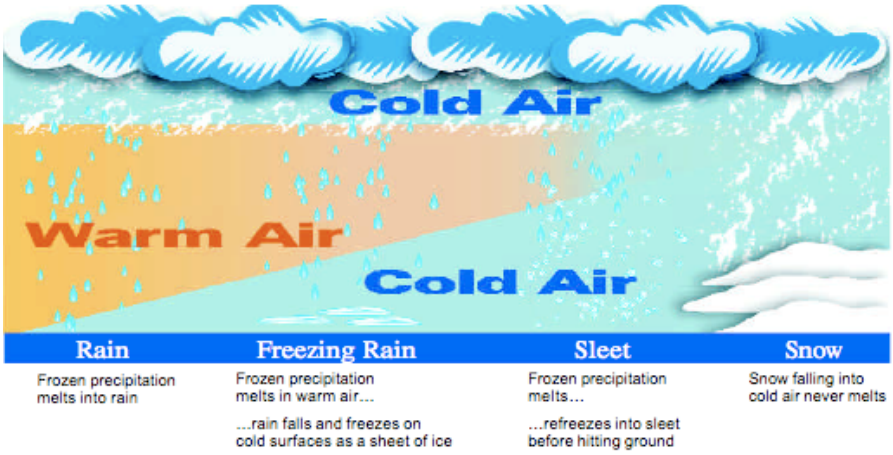
Tornadoes also occur within a tropical cyclone. They are most likely to occur in the right-front quadrant of the storm but can be embedded within the rain bands well away from the center of the storm. Some hurricanes produce no tornadoes, while others develop numerous ones. According to NOAA studies, half of all land falling hurricanes produce at least one tornado. The effects of a tornado, in addition to hurricane force winds, can produce substantial wind damages. A tornado can develop at any point during landfall, but normally occur within 12 hours after landfall, during daylight hours. Due to the likelihood of a tornado within a hurricane, a tornado watch is normally issued along the anticipated path of a hurricane before landfall.

(The description of hurricanes presented in this section is based upon information extracted from the NOAA publication Hurricanes Unleashing Nature's Fury, A Preparedness Guide, Revised January 2007 at http://www.nws.noaa.gov/om/hurricane/pdfs/HurricanesUNF07.pdf and the NWS Jet Stream Online School for Weather at http://www.srh.noaa.gov/srh/jetstream/tropics/tropics_intro.htm).

Winter Storms/Freezes Description

Winter storms and blizzards originate as mid-latitude depressions or cyclonic weather systems, sometimes following the meandering path of the jet stream. A blizzard combines heavy snowfall, high winds, extreme cold, and ice storms. The origins of the weather patterns that cause severe winter storms are primarily from four sources in the continental United States. Winter storms in the southeast region of the United States are usually a result of Canadian and Arctic cold fronts from the north and mid-western states combining with tropical cyclonic weather systems in the Gulf of Mexico. Typical winter storms in the Southeast include ice storms, crop-killing freezes, and occasional snow.

Figure D-7. Types of Winter Precipitation



Source: National Weather Service, Winter Storms, The Deceptive Killers at http://www.weather.gov/os/winter/resources/winterstorm.pdf

Types of events that occur within a winter storm include freezing rain, sleet, blizzards, and frost/freeze. **Freezing rain** is rain that freezes when it hits the ground which coats roads, trees, and power lines. **Sleet** is rain that turns into ice pellets before hitting the ground. A **blizzard** is snowfall

with sustained winds or frequent gusts up to 35mph and considerable amounts of blowing snow. The expectation is that blizzard conditions will last 3 or more hours. Freezes occur when the temperatures will go below freezing. Many times, frost/freezes cause substantial damage to crops.

(The description of winter storms/freezes presented in this section is extracted from NOAA/NWS's publication Winter Storms, The Deceptive Killers, A Preparedness Guide at http://www.weather.gov/os/winter/resources/winterstorm.pdf).

Droughts/Heat Waves Description

A drought can occur almost anywhere, and its features vary from place to place depending on culture and geography. According to the National Drought Mitigation Center (NDMC), there are four ways of measuring drought. First is a **meteorological drought**, which is a decrease in precipitation in some period of time. These are usually region-specific and based on a thorough understanding of regional climatology. Meteorological measurements are the first sign of drought. An **agricultural drought** occurs when there is not enough soil moisture to meet the needs of a particular crop at a particular time. Agricultural drought occurs after a meteorological drought, but before hydrological drought. **Hydrological drought** is deficiencies in surface and subsurface water supplies. It is measured as stream flow and at lake, reservoir, and groundwater levels. There is a time lag between lack of rain and less water in rivers, streams, reservoirs, and lakes. When precipitation is deficient over time, it will show in these water levels. The last type of drought defined by NDMC is a **socioeconomic drought**, which occurs when water shortages begin to affect people. In addition to the impacts discussed above, water level decline due to drought can also cause sinkholes to form.

The draft Alabama Drought Management Plan (2004) by the Office of Water Resources of the Alabama Department of Economic and Community Affairs (ADECA) explains the potential threats of droughts to Alabama and the need for effective drought planning and management, as follows:

In recent years, drought conditions have endangered Alabama's water resources and adversely affected the livelihood of many people. Drought is a natural event that, unlike floods or tornadoes, does not occur in a violent burst but gradually happens; furthermore, the duration and extent of drought conditions are unknown because rainfall is unpredictable in amount, duration, and location. The devastation (environmental, social, and economic) experienced in recent years due to drought conditions has not been successfully mitigated because previous responses to drought conditions at all levels of government has been slow and fragmented, with little focus on preparedness and mitigation. In an effort to be more proactive, the Office of Water Resources worked closely with numerous local, state, and federal agencies and other water resources professionals to develop and implement this statewide approach to drought planning and management.

The State drought plan establishes four phases of drought conditions – drought watch, advisory, warning, and emergency – identified by a compilation of drought indices, which include Crop Moisture Index, Palmer Drought Severity Index, Stream Flow, Reservoir Elevation Level, and Groundwater. Each of these phases requires varying levels of management. The U.S. Drought Monitor by the National Drought Mitigation Center (NDMC) uses a four-tier system to continuously monitor

drought intensity based on another combination of drought indices. D1 is the first drought stage with severe conditions, and D4 is most intense drought stage with exceptional drought conditions. D0 includes drought watch areas that are abnormally dry and on the verge of drought or recovering from drought. The primary adverse physical effects of drought are classified as A (adverse impacts to agricultural crops, pastures, and grasslands) or H (adverse impacts to hydrologic resources for water supply, including rivers, reservoirs, and groundwater).

According to NOAA, extreme heat is the number one weather related killer taking an average of 1,500 people in the U.S. annually. The National Weather Service will issue watches and warnings when the heat index is expected to exceed 105°-110° F for at least two consecutive days. The heat index is given in degrees F and is a measure of how hot it really feels when the relative humidity is added to the actual air temperature.

Table D-9. NOAA's National Weather Service Heat Index

Relative Humidity (%) \ 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: NOAA at http://www.weather.gov/om/heat/index.shtml

(The description of droughts/extreme heat presented in this section is extracted from: National Drought Mitigation Center, Defining Drought: Overview at http://drought.unl.edu/whatis/define.htm and NOAA, Heat Wave: A Major Summer Killer at http://www.noaawatch.gov/themes/heat.php).

Wildfires Description

Wildfires are a serious and growing hazard over much of the United States, posing great threats to life and property, particularly when moving from rural forest or rangeland into developed urban areas. Millions of acres burn every year in the United States as a result of wildfires, causing millions of dollars in damage. Each year more than 100,000 wildfires occur in the United States, almost

90 percent of which are started by humans; the rest are caused by lightning. Weather is one of the most significant factors in determining the severity of wildfires. The intensity of fires and the rate with which they spread is directly related to wind speed, temperature, and relative humidity. Climatic conditions, such as long-term drought, also play a major role in the number and the intensity of wildfires.

A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. They often begin unnoticed and spread quickly and are usually signaled by dense smoke that fills the area for miles around. Naturally occurring and non-native species of grasses, brush, and trees fuel wildfires.

A **wildland fire** is a wildfire in an area in which development is essentially nonexistent, except for roads, railroads, power lines and similar facilities. An **Urban-Wildland Interface fire** is a wildfire in a geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels.

States with a large amount of wooded, brush and grassy areas, such as Alabama, are at highest risk of wildfires. Additionally, areas anywhere that have experienced prolonged droughts or are excessively dry, are also at risk of wildfires. People start more than four out of every five wildfires, usually as debris burns, arson, or carelessness. Lightning strikes are the next leading cause of wildfires. Wildfire behavior is based on three primary factors:

- fuel,
- topography, and
- weather.

The type, and amount of fuel, as well as its burning qualities and level of moisture affect wildfire potential and behavior. The continuity of fuels, expressed in both horizontal and vertical components is also a factor, in that it expresses the pattern of vegetative growth and open areas. Topography is important because it affects the movement of air (and thus the fire) over the ground surface. The slope and shape of terrain can change the rate of speed at which the fire travels. Weather affects the probability of wildfire and has a significant effect on its behavior. Temperature, humidity, and wind (both short and long term) affect the severity and duration of wildfires.

Protecting Alabama's rural areas from wildfire is the number one priority of the Alabama Forestry Commission. Wildfires burn thousands of acres of forestlands in Alabama every year. Through the efforts of the Forestry Commission and local volunteer fire departments, those wildfires are decreasing, but they still take a major toll on Alabama's forest resources.

The Forestry Commission has a modern aggressive detection system that allows it to discover and suppress wildfires in the most efficient way possible. A fleet of airplanes regularly patrols over the forest and looks for wildfires. In addition, the public can report wildfires 24 hours a day through a toll-free telephone system. When a fire is reported, a dispatch center sends Forestry Commission crews and volunteer fire departments as needed to suppress it.

Volunteer fire departments are an essential part of the team when it comes to suppressing wildfires. The Forestry Commission works to help establish, train, and maintain rural community fire departments in every county. This strong partnership of government and volunteer agencies working together provides cost efficient, effective fire service.

The Forestry Commission suppresses a wildfire by building a "fire break" which contains the fire by removing fuel from the fire so it cannot spread. These breaks are built using a bulldozer outfitted with a fire plow, which cuts a three-foot-wide trench across the site, removing all vegetation and exposing bare soil. On hilly sites, these firebreaks are built by hand using rakes and other tools by 20 person crews.

In extreme circumstances where several homes are threatened by a wildfire, the Forestry Commission can call in helicopters with large water buckets. These buckets do not put out the fire but reduce its intensity so that the Commission crew can plow it out. The helicopter service is extremely expensive and is only done in severe fire conditions.

(The description of wildfires presented in this section is based upon information extracted from the FEMA How to Guides Understanding Your Risks (FEMA 386-2), August 2001, Using HAZUS-MH for Risk Assessment How to Guide (FEMA 433), August 2004, and the Alabama Forestry Commission at http://www.forestry.alabama.gov).

Dam/Levee Failures Description

Dam failure or levee failure can occur with little warning. Strong storms may produce a flood in a few hours or minutes for upstream locations, which can cause a dam or levee failure. Flash floods occur within six hours of the beginning of heavy rainfall and dam failure may occur within hours of the first sign of a breach. Dam failures are potentially the worst flood event. There are more than 80,000 dams in the United States according to the 2007 update of the National Inventory of Dams. According to FEMA, one third

of these pose a high or significant hazard to life and property if failure occurs. 56% of dams are privately owned, and the dam owner is responsible for the safety and liability of the dam as well for upkeep, upgrade, and repair. This compounds the risk that is posed due to dam or levee failure.

(The description of dam/levee failures presented in this section is extracted from FEMA, Disaster Types, Dam Failure at http://www.fema.gov/hazard/damfailure/index.shtm).

Landslides Description

Landslides occur and can cause damage in all 50 States, at an annual cost of about $3.5 billion per year (2005). Between 25 and 50 deaths per year in the U.S. are attributable to landslides. Landslides cause damage to the natural environment and economic losses, due to reduced real estate values, decreased agricultural and forestry productivity, among other adverse economic effects.

Severe storms, earthquakes, coastal wave attack, and wildfires can cause widespread slope instability and result in landslides. Landslide danger may be high, even as emergency personnel are providing rescue and recovery services for these other hazard events.

A landslide is a downward and outward movement of slope-forming soil, rock, and vegetation under the influence of gravity, which includes a wide range of ground movement. Numerous types of events, including natural and human-caused changes within the environment, can trigger landslides. Examples of these changes that cause weaknesses in the composition or structures of the rock or soil include heavy rain, changes in ground water level, seismic activity, or construction activity. Human-caused landslides may result from activities such as terracing, cut and fill construction, building construction, mining operations, and changes in irrigation or surface runoff.

There are different types of landslides. **Rock falls** are rapid movement of bedrock characterized by free-fall, bouncing, and rolling. **Slides** are movements of soil or rock along a distinct surface of rupture that separates the slide material from the more stable underlying material. There are two major types of slides: rotational and translational slides. In a **rotational slide** the surface of rupture is curved concavely upward, and the slide block rotates around an axis parallel to the slope contours. A **translational slide** is a mass that moves down and outward along a relatively planar surface with little rotational movement or backward tilting. **Flows** are mass movements of water-saturated material. The movement of flows can be extremely rapid (debris avalanche), very rapid (debris flow) or very slow (earth flow).

Here are some significant landslide facts from the USGS:

- Landslides often accompany earthquakes, floods, storm surges, hurricanes, wildfires, or volcanic activity. They are often more damaging and deadly than the triggering event (examples: the 1964 Alaska earthquake-induced landslides and the 1980 Mount St. Helens volcanic debris flow).
- Human activities and population expansion are major factors in increased landslide damage and costs.
- The May 1980 eruption of Mount St. Helens caused the largest landslide in history— a rockslide-debris avalanche large enough to fill 250 million dump trucks to the brim traveled about 14 miles, destroying nine highway bridges, numerous private and public buildings, and many miles of highways, roads, and railroads. The debris avalanche also formed several new lakes by damming the North Fork Toutle River and its tributaries. These lakes posed hazards to downstream communities because of the possible failure of the dams, which could have resulted in catastrophic flooding.
- Although the National Flood Insurance Act covers certain damage from "mudflows," insurance against landslides is generally unavailable in most areas of the United States. As a result, many victims of landslides resort to litigation in order to recover damages.

(The description of landslides presented in this section is extracted from the Geological Survey of Alabama, Geologic Hazards Section at http://www.gsa.state.al.us/gsa/geologichazards/landslides/index.html and the U.S.G.S. Landslides Hazards Program at http://landslides.usgs.gov).

Earthquakes Description

An earthquake is the shaking and vibration at the surface of the earth resulting from underground movement along a fault plane. Earthquakes are caused by the release of built-up stress within rocks along geologic faults or by the movement of magma in volcanic areas. They usually occur without warning and are usually followed by aftershocks. Earthquakes can affect hundreds of thousands of square miles and cause tens of billions of dollars of damage to property. An earthquake event can cause injury and loss of life to hundreds of thousands of persons and can greatly disrupt the social and economic functioning of the affected area. Secondary hazards during an earthquake may occur, such as surface faulting, liquefaction, sinkholes, and landslides.

Earthquakes are caused by the rupture or sudden movement of a fault where stresses have accumulated along fault planes within the earth's crust. While most earthquakes and active faults occur along the borders of the earth's tectonic plates, other active faults and earthquake zones lie within plates (intraplate).The plates range from less than 10 miles (for young oceanic crust) to 125 miles (for older continental crust), and are in continuous motion, grinding against or ripping away from each other. All of this motion creates stress within the rock and along either side of faults. While rock can bend over time under this stress, if the stress exceeds the rock's elastic limit, a break or sudden shift occurs.

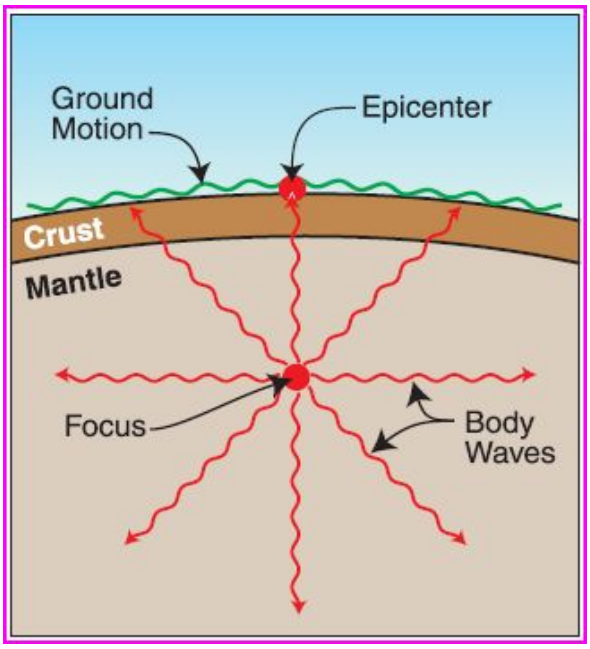
The area of greatest seismic activity in the United States is along the Pacific coast in California and Alaska, but as many as forty states can be characterized as having at least moderate earthquake risk. For example, seismic activity has been recorded in Boston, Massachusetts; New Madrid, Missouri; and Charleston, South Carolina, places not typically thought of as earthquake zones. While some areas have frequent earthquakes, such as in California, forecasting when and where an earthquake will occur is not yet possible. Records show that building inventories in 39 states are vulnerable to earthquake damage.

While most property damage from earthquakes in general is due to nonstructural damage, structural damage and deaths can result from strong magnitude earthquakes or moderate magnitude earthquakes for older structures or structures with lower seismic building designs. Ground shaking is caused by seismic waves generated by the earthquake. The intensity of shaking is influenced by magnitude, distance from the earthquake's epicenter, and regional geology.

Earthquakes create seismic waves that consist of both primary and secondary waves. These waves emanate from the point at which movement first occurs (the focus). While primary waves (body waves) travel within the earth, secondary waves (surface waves), travel through the crust and create the ground shaking that we feel and that can be damaging to structures. See Figure D-8 for illustration of this concept.

In addition to direct structural damage from earthquake shaking, triggered landslides can also damage structures. Earthquake-induced landslides can occur miles from the epicenter and can result from shaking of over-steepened or weak slopes. They can destroy roads, buildings, utilities, and other critical facilities necessary to respond to or recover from an earthquake. As sloped lands are developed, earthquake-induced landslides pose additional threats to homes and infrastructure. Soil type can substantially increase earthquake risk. **Liquefaction** occurs, when ground shaking causes saturated soft soils to change from a solid to a liquid state.

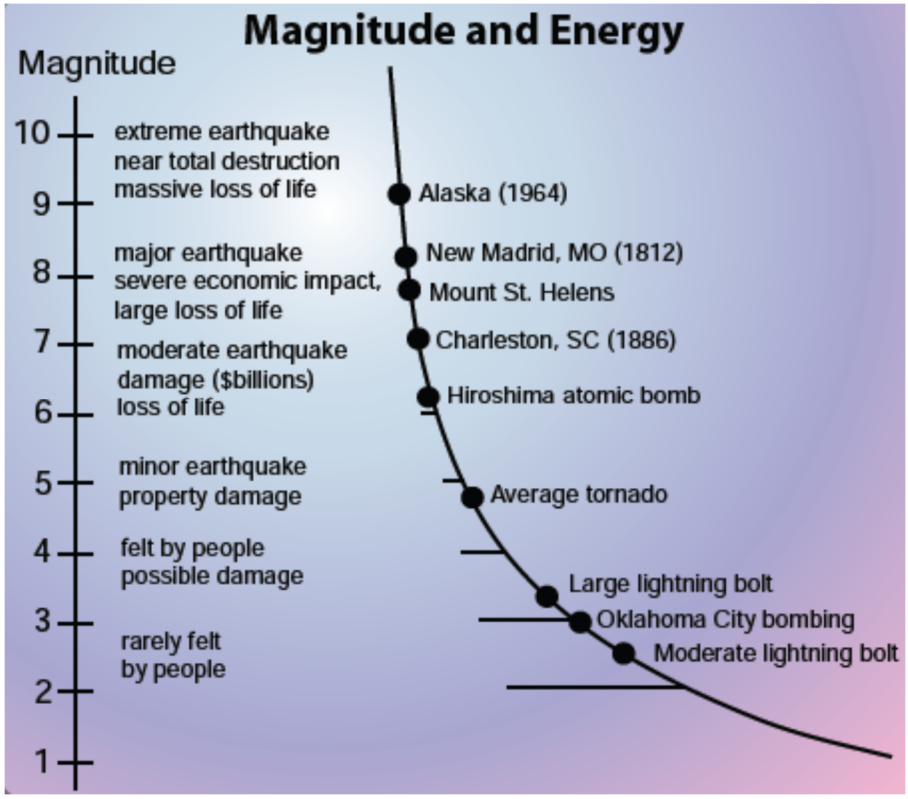
Liquefaction results in the loss of soil strength and three potential types of ground failure: lateral spreading, flow failure, and loss of bearing strength. Buildings and their occupants are at risk when the ground can no longer support buildings and structures. Areas susceptible to liquefaction include areas with high ground water tables and sandy soils. The extreme earthquake damage to San Francisco in 1989 was due to liquefaction of the soil used to fill in waterfront properties.



Amplification (strengthening) of shaking also results in areas with soils that are soft, thick, and/or have high water content, such as floodplains, coastal lowlands, infilled areas, and ancient river or marine deposits. Amplification increases the magnitude of the seismic waves generated by the earthquake.

Seismic activity is described in terms of magnitude and intensity. **Magnitude** describes the total energy released and **intensity** describes the effects at a particular location. Magnitude is defined as the measure of the amplitude of the seismic wave and is expressed by the Richter scale. The **Richter scale** is a logarithmic measurement where an increase in the scale by one whole number represents a tenfold increase in the measured amplitude of the earthquake.

Chart D-1. Earthquake Magnitude Scale



Intensity is defined as the measure of the strength of the shock at a particular location and is expressed by the **Modified Mercalli Intensity (MMI) scale**. The modern MMI scale is a modification by the Italian volcanologist Giuseppe Mercalli of an older 1800s scale. Mercalli's scale was later published in English in 1931 by American seismologists Harry Wood and Frank Neumann and later modified by Charles Richter. The scale consists of a series of certain key responses such as people awakening, movement of furniture, the damage to structures, and total destruction. The *lower* numbers of the intensity scale generally deal with the manner in which the earthquake is felt by people. The *higher* numbers of the scale are based on observed non-structural and structural damage. This scale, composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It does not have a mathematical basis; instead, it is a ranking based on observed effects. Table D-10 below describes the Modified Mercalli Intensity scale and its description of effects.

Table D-10. Modified Mercalli Intensity Scale

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

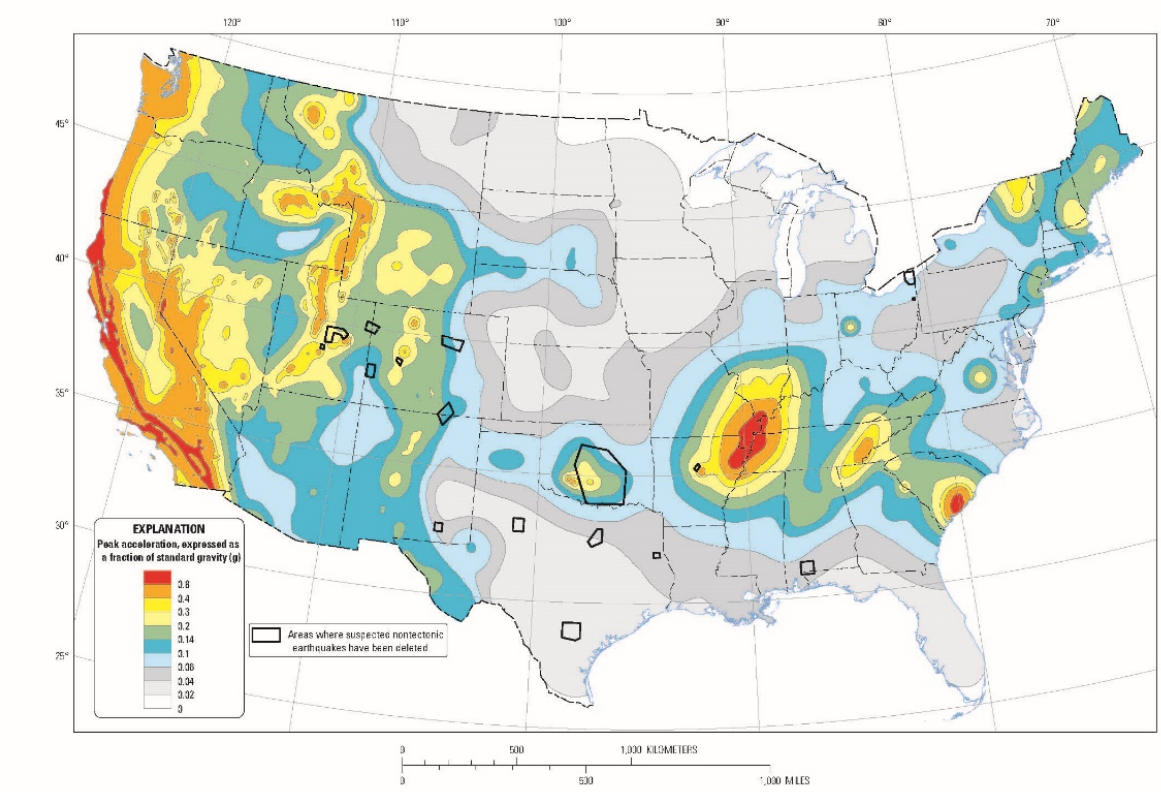
Source: FEMA

Another measurement of seismic activity is **Peak Ground Acceleration (PGA)** which measures the rate of change of motion relative to the rate of acceleration due to gravity. An object falling to Earth will fall faster and faster, until it reaches terminal velocity. This principle is known as **acceleration** and represents the rate at which speed is increasing. This movement can be described by its changing position as a function of time, or by its acceleration as a function of time. The peak acceleration is the maximum acceleration experienced by the object during the course of the earthquake motion. Peak ground acceleration can be measured in *g* (the acceleration due to gravity at the earth's surface is 9.8 meters per second squared). For example, acceleration of the ground surface of 244 cm/sec/sec (where *g* equals 9.8 meters per second squared) equals a PGA of 25.0 percent.

Map D-2 below shows the 2008 Peak Ground Acceleration (PGA) values for the southeast United States with a 2% chance of being exceeded over 50 years. This is a common earthquake measurement that shows three things: the geographic area affected, the level of acceleration that could be exceeded (color scale), and the probability of exceeding that level within a given time period (probability and time stated in the title).

Map D-2. 2014 PGA for U.S.

Peak Ground Acceleration with 2% Probability of Exceedance in 50 Years



Two-percent probability of exceedance in 50 years map of peak ground acceleration

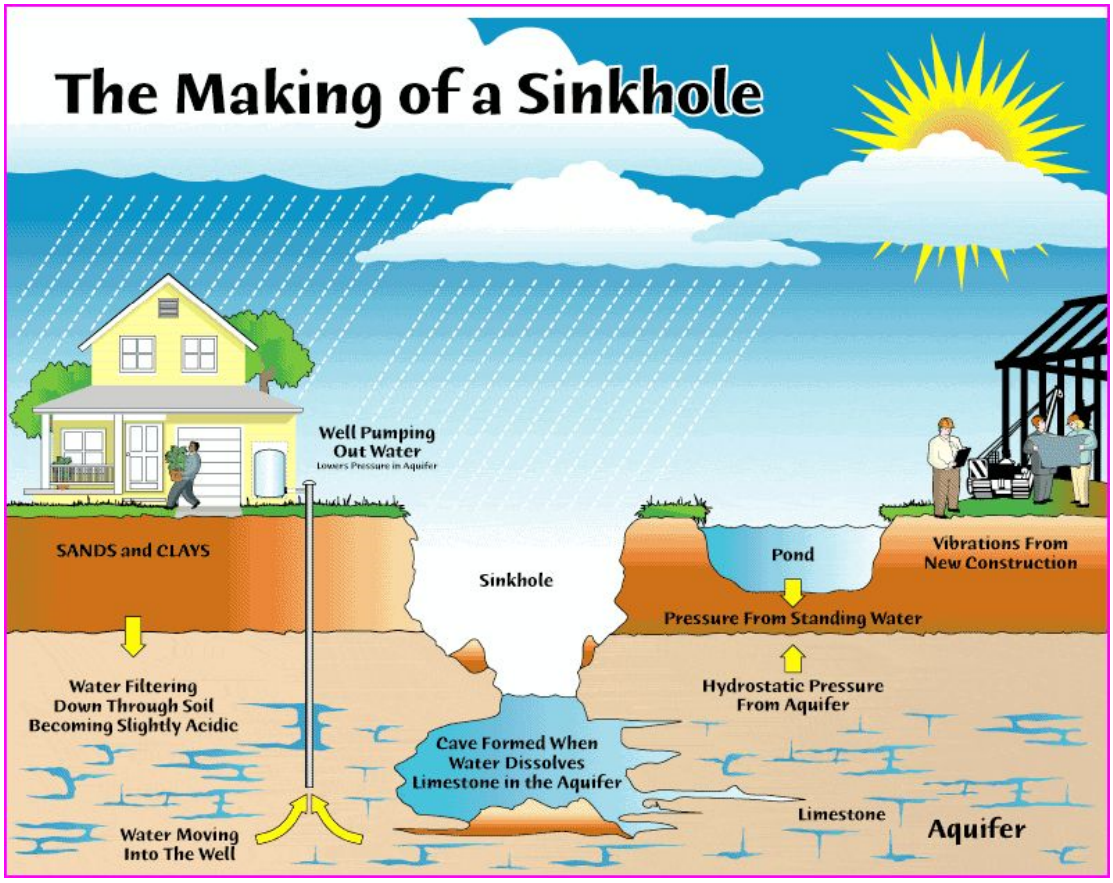
Source: U.S. Geological Survey Earthquake Hazards Program

(The description of earthquakes presented in this section is based upon information extracted from the FEMA How to Guides Understanding Your Risks (FEMA 386-2), August 2001, Using HAZUS-MH for Risk Assessment How to Guide (FEMA 433), August 2004, 2007 Alabama State Hazard Mitigation Plan, U.S. Geological Survey Earthquakes Hazard Program, guidance from the Geological Survey of Alabama, and various FEMA-adopted plans).

Sinkholes (Land Subsidence) Description

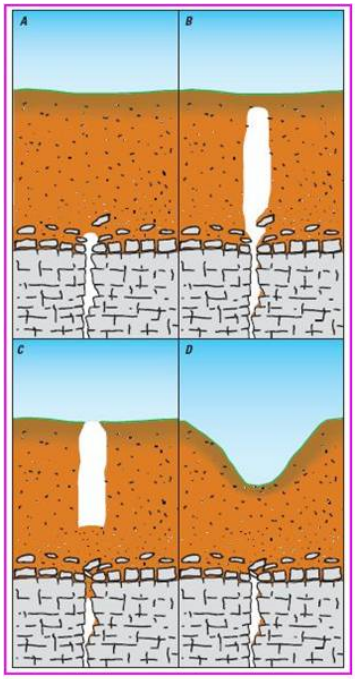
Sinkholes are a naturally occurring geologic feature that can be hazardous to property and the environment. Their formation is due to water dissolving rock below the land surface. The types of rock most susceptible to sinkhole formation are salt and carbonate rocks such as limestone, dolomite, and marble. As bedrock dissolves, voids (such as caves and caverns) develop underground; when a void is large enough, the void's roof collapses, and the ground above falls in, leaving a visible sinkhole at the surface. While some sinkholes form as dramatic instant collapses, the vast majority of sinkholes develop slowly over time, with the ground slowly sinking downward. Although normally no more than a nuisance, some sinkholes can become very large and a house or road may be on top when the collapse occurs. See Figure D-9, which shows the making of a sinkhole. Figure D-10 illustrates the formation of a collapse.

Figure D-9. The Making of a Sinkhole



Source: Southwest Florida Water Management District

Figure D-10. Formation of a Collapse



A - Soil bridges gap where sediment has been washing into a solution enlarged fracture.

B - Over time, the void migrates upward through the soil.

C - After the bridge thins, a sudden collapse occurs.

D - The collapse often plugs the drain and erosion will, after many years, transform the collapse into a more bowl-shaped sinkhole.

Source: U.S. Geological Survey Mid-Continent Geographic Science Center

Sinkholes range in size from a few square feet to hundreds of acres. They may be quite shallow or may extend hundreds of feet deep. The most damage from sinkholes tends to occur in Florida, Texas, Alabama, Missouri, Kentucky, Tennessee, and Pennsylvania. The picture in Figure D-11 shows a sinkhole that quickly opened up causing major damage to a house and yard.

Figure D-11. Sinkhole Collapse of House

Source: U.S. Geological Survey, Water Science for Schools

Water is the most important agent effecting sinkhole development. Areas can become more susceptible to sinkholes when there is a drawdown of groundwater, heavy rains occur, or the land surface is changed. Changes to land such as increased development can add stress to the roof of a void, thus increasing chance of void collapse and sinkhole formation. Drainage for construction purposes or dewatering from mining or quarrying operations can also lower groundwater levels, reducing support for a void's roof. When water resources for populations or agriculture are overused, groundwater drawdown can occur, increasing likelihood of sinkhole development. Groundwater levels can also be lowered naturally during times of drought, when groundwater is not replenished by rainfall. Conversely, heavy rainfall can also lead to increased sinkhole development as rock dissolution increases or underground washouts occur, eroding supporting rock and soil.

Sinkholes also threaten water and environmental resources by draining streams, lakes, reservoirs, and wetlands, and creating pathways for transmitting surface waters directly into underlying aquifers. Where these pathways are developed, movement of surface contaminants into the underlying aquifer systems can persistently degrade ground-water resources. In some areas, sinkholes are used as storm drains, and because they are a direct link with the underlying aquifer systems it is important that their drainage areas be kept free of contaminants. Conversely, when sinkholes become plugged, they can cause flooding by capturing surface-water flow and can create new wetlands, ponds, and lakes.

(The description of sinkholes presented in this section is based upon information extracted from the FEMA How to Guide Understanding Your Risks (FEMA 386-2), FEMA, August 2001, and other sources from the Geological Survey of Alabama Geological Hazards Program, Southwest Florida Water Management District, and the U.S. Geological Survey Mid-Continent Geographic Science Center).

Human-Caused and Technological Hazards Description

Human-caused and technological hazards are hazards that originate from human activity. The two categories of human-caused and technological hazards are **technological hazards** and **terrorism**. Technological hazards are accidental with unintended consequences. They often include the manufacture, transportation, storage and use of hazardous materials. The definition of terrorism has been established by Federal law, as follows: *"Terrorism includes the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives." 28 CFR Section 0.85.* In comparison to technological hazards, acts of terrorism are not accidental and the consequences are intentional.

Technological hazards are divided into three categories: fixed facility industrial accident, transportation industrial accident, and the failure of a supervisory control system. For an industrial accident, the hazard will either exist at a fixed location such as a manufacturing plant or storage facility, or while in transport, i.e., in a vehicle that is transporting it from one location to another, or while it is moving through a pipeline from one location to another. Supervisory control system failure will affect which ever component within the system it is directing and the extents of the damage possible due to failure are usually easy to predict.

Terrorism includes: the use of weapons of mass destruction – biological, chemical, nuclear, and radiological weapons, explosives, and incendiary devices; arson; armed attacks; agriterrorism; an intentional hazardous materials release; industrial sabotage; and cyber-terrorism. It can be carried out domestically or internationally, by known or unknown assailants, locally or from a distance.

Human-caused and technological hazards are very difficult to assess, terrorism more so than technological hazards. Since terrorism involves the human mind and what actions a person may choose to take, the what, where, how and when is largely unpredictable. On the other hand, with technological hazards, since they primarily involve hazardous materials, the assessment of the manufacture, storage, transportation and use of the materials can at least answer to some degree the where, what, and how and those answers can aid in the mitigation of some possible technological disasters. For this reason: ***the scope of human-caused and technological hazards addressed by the Mitigation Strategy in this plan is limited to mitigation of fixed location technological hazards involving hazardous materials***.

The extent of the effects of a human-caused hazard can range from localized to widespread, depending on the type of incident, the mode of application, duration, dynamic/static characteristic and mitigating conditions. A conventional bomb could damage a building in which it was placed, or an entire city can be in danger if a hazardous material is released into the water supply. Three noted modes of force to the built environment involved by Human-caused hazards are: contamination, energy, and failure or denial or service. If a hazard remains for an extended period of time, the damage can be far reaching; however, if the hazard lasts for only a short time, the damage can usually be quickly determined and response can be swift and the disaster contained. A dynamic hazard is more damaging and unpredictable than a static hazard. Mitigating conditions can be deterrents or they can at least lessen the effects of a hazard at a certain location which also affects the extent of a disaster.

When trying to mitigate human-caused hazards, measures must address security, unknown risks, and civil liberties; concerns not raised by natural disasters. The events will usually occur in specific locations and mitigation measures can usually aid in the alleviation of human-caused disasters. Those specific locations are known as critical facilities. In addition to the facilities usually addressed in vulnerability assessments for natural hazards, the following critical infrastructure is usually assessed: agriculture and food, water, public health, emergency services, defense industrial base, telecommunications, energy, transportation, banking and finance, chemicals, and hazardous materials, and postal and shipping. Threats to infrastructure can be carried out by anyone who has the knowledge, opportunity, and desire to do harm. They can be anyone from terrorists to upset employees and are therefore largely unidentifiable.

Table D-11 “Event Profiles for Terrorism and Technological Hazards,” (from the FEMA “How to Guide” for human-caused and technological hazards) explains the ways in which human-caused and technological hazards can interact with the built environment. As presented in the FEMA Guide, for each type of hazard, the following factors are addressed:

- ***Application mode*** describes the human act(s) or unintended event(s) necessary to cause the hazard to occur.
- ***Duration*** is the length of time the hazard is present on the target. For example, the duration of a tornado may be just minutes, but a chemical warfare agent such as mustard gas, if not remediated, can persist for days or weeks under the right conditions.
- The ***dynamic/static characteristic*** of a hazard describes its tendency, or that of its effects, to either expand, contract, or remain confined in time, magnitude, and space. For example, the physical destruction caused by an earthquake is generally confined to the place in which it occurs, and it does not usually get worse unless there are aftershocks or other cascading failures; in contrast, a cloud of chlorine gas leaking from a storage tank can change location by drifting with the wind and can diminish in danger by dissipating over time.
- ***Mitigating conditions*** are characteristics of the target and its physical environment that can reduce the effects of a hazard. For example, earthen berms can provide protection from bombs; exposure to sunlight can render some biological agents ineffective; and effective perimeter lighting and surveillance can minimize the likelihood of someone approaching a target unseen. In contrast, *exacerbating conditions* are characteristics that can enhance or magnify the effects of a hazard. For example, depressions or low areas in terrain can trap heavy vapors, and a proliferation of street furniture (trash receptacles, newspaper vending machines, mailboxes, etc.) can provide concealment opportunities for explosive devices.

Table D-11. Event Profiles for Terrorism and Technological Hazards

Human-caused Hazard	Application Mode	Hazard Duration	Extent of Effects; Static/Dynamic	Mitigating and Exacerbating Conditions
Biological Agent	Liquid or solid contaminants can be dispersed using sprayers/aerosol generators or by point or line sources such as munitions, covert deposits and moving sprayers.	Biological agents may pose viable threats for hours to years depending on the agent and the conditions in which it exists.	Depending on the agent used and the effectiveness with which it is deployed, contamination can be spread via wind and water. Infection can be spread via human or animal vectors.	Altitude of release above ground can affect dispersion; sunlight is destructive to many bacteria and viruses; light to moderate wind will disperse agents but higher winds can break up aerosol clouds; the micrometeorological effects of buildings and terrain can influence aerosolization and travel of agents.

Human-caused Hazard	Application Mode	Hazard Duration	Extent of Effects; Static/Dynamic	Mitigating and Exacerbating Conditions
Chemical Agent	Liquid/aerosol contaminants can be dispersed using sprayers or other aerosol generators; liquids vaporizing from puddles/ containers; or munitions.	Chemical agents may pose viable threats for hours to weeks depending on the agent and the conditions in which it exists.	Contamination can be carried out of the initial target area by persons, vehicles, water, and wind. Chemicals may be corrosive or otherwise damaging over time if not remediated.	Air temperature can affect evaporation of aerosols. Ground temperature affects evaporation of liquids. Humidity can enlarge aerosol particles, reducing inhalation hazard. Precipitation can dilute and disperse agents but can spread contamination. Wind can disperse vapors but also cause target area to be dynamic. The micro-meteorological effects of buildings and terrain can alter travel and duration of agents. Shielding in the form of sheltering in place can protect people and property from harmful effects.
Arson/ Incendiary Attack	Initiation of fire or explosion on or near target via direct contact or remotely via projectile.	Generally, minutes to hours.	Extent of damage is determined by type and quantity of device/accelerant and materials present at or near target. Effects generally static other than cascading consequences, incremental structural failure, etc.	Mitigation factors include built-in fire detection and protection systems and fire-resistive construction techniques. Inadequate security can allow easy access to target, easy concealment of an incendiary device and undetected initiation of a fire. Non-compliance with fire and building codes as well as failure to maintain existing fire protection systems can substantially increase the effectiveness of a fire weapon.
Cyber-terrorism	Electronic attack using one computer system against another.	Minutes to days.	Generally, no direct effects on built environment.	Inadequate security can facilitate access to critical computer systems, allowing them to be used to conduct attacks.

Human-caused Hazard	Application Mode	Hazard Duration	Extent of Effects; Static/Dynamic	Mitigating and Exacerbating Conditions
Nuclear Bomb	Detonation of nuclear device underground, at the surface, in the air or at high altitude.	Light/heat flash and blast/shock wave last for seconds; nuclear radiation and fallout hazards can persist for years. Electromagnetic pulse from a high-altitude detonation lasts for seconds and affects only unprotected electronic systems.	Initial light, heat, and blast effects of a subsurface, ground or air burst are static and are determined by the device's characteristics and employment; fallout of radioactive contaminants may be dynamic, depending on meteorological conditions.	Harmful effects of radiation can be reduced by minimizing the time of exposure. Light, heat and blast energy decrease logarithmically as a function of distance from seat of blast. Terrain, forestation, structures, etc. can provide shielding by absorbing and/or deflecting radiation and radioactive contaminants.
Hazardous Material Release (fixed facility or transportation)	Solid, liquid and/or gaseous contaminants may be released from fixed or mobile containers.	Hours to days.	Chemicals may be corrosive or otherwise damaging over time. Explosion and/or fire may be subsequent. Contamination may be carried out of the incident area by persons, vehicles, water, and wind.	As with chemical weapons, weather conditions will directly affect how the hazard develops. The micrometeorological effects of buildings and terrain can alter travel and duration of agents. Shielding in the form of sheltering in place can protect people and property from harmful effects. Non-compliance with fire and building codes as well as failure to maintain existing fire protection and containment features can substantially increase the damage from a hazardous materials release.
Armed Attack	Tactical assault or sniping from remote location.	Generally, minutes to days.	Varies based upon the perpetrators' intent and capabilities.	Inadequate security can allow easy access to target, easy concealment of weapons and undetected initiation of an attack.

Human-caused Hazard	Application Mode	Hazard Duration	Extent of Effects; Static/Dynamic	Mitigating and Exacerbating Conditions
Conventional Bomb/ Improvised Explosive Device	Detonation of explosive device on or near target; delivery via person, vehicle, or projectile.	Instantaneous; additional "secondary devices" may be used, lengthening the time duration of the hazard until the attack site is determined to be clear.	Extent of damage is determined by type and quantity of explosive. Effects generally static other than cascading consequences, incremental structural failure, etc.	Overpressure at a given standoff is inversely proportional to the cube of the distance from the blast; thus, each additional increment of standoff provides progressively more protection. Terrain, forestation, structures, etc. can provide shielding by absorbing and/or deflecting energy and debris. Exacerbating conditions include ease of access to target; lack of barriers/shielding; poor construction; and ease of concealment of device.

(The information presented in this section was extracted from the FEMA How to Guide Integrating Human-caused Hazards into Mitigation Planning, FEMA 386-7 Version 2.0, FEMA, September 2003).

2.13 Pandemics and Infectious Disease

Infectious diseases are illnesses caused by organisms such as bacteria, viruses, parasites and fungi. These diseases can be transmitted directly or indirectly from person to person, and some can even be transferred to humans from animals. Exposure to infectious diseases is not uncommon and some common ones are the common cold, influenza, chicken pox and stomach viruses. Some infectious diseases like polio, measles, and tuberculosis have been all but eradicated in the United States due to vaccines and improvements in other prevention practices and treatments. Herd immunity has also lessened the effects of many of the more common types of disease.

A pandemic is a global outbreak of an infectious disease that results in infection of an extensive number of people. Pandemics are very rare but can cause major disruptions due to compromising the health of citizens, taking lives and even compromising the economy. Most pandemics are the result of mutations of existing diseases, resulting in a new disease that the populous has yet to develop an immunity to. In addition to a lack of immunity, creation of a vaccine can take months which can delay the control of the spread of the disease, leading to more people getting sick and possibly dying. During a pandemic, healthcare resources are often overwhelmed so treatments are unable to be offered efficiently due to lack of supplies, manpower, and space for patients.

There have been 6 pandemics in the United States since 1918. Four of these pandemics were influenza pandemics, including the H1N1 pandemic in 2009. The Zika Virus pandemic affected the

United States from 2015-2016 and the most recent pandemic, COVID-19, began at the end of 2019 and is still ongoing at the time of this plan update.

Influenza is a virus that is transmitted by person-to-person contact, usually through coughing or sneezing. There is an influenza season every year in the winter in the United States and a vaccine is available for the most common strain of the virus. However, occasionally the virus mutates and a pandemic can occur. There have been four influenza pandemics in the United States in the past century. The Spanish Influenza Pandemic in 1918 claimed the lives of 675,000 Americans and 50 million people worldwide. From 1957-1958, the influenza pandemic was caused by the H2N2 virus and killed 116,000 people in the United States during that time. Ten years later, in 1968, another influenza pandemic hit the United States; the virus that caused this pandemic was the H3N2 virus and caused the deaths of 100,000 Americans, most of them over the age of 65. More recently, the H1N1 virus caused an influenza pandemic in 2009 which killed over 12,000 people in the United States. The unusual thing about this particular strain of influenza is that the deaths were primarily in those under the age of 65 where most influenza viruses cause death for those over 65. Medical experts believe that future influenza pandemics, although rare, are inevitable.

The Zika Virus pandemic lasted from 2015-2016. The virus was transmitted by mosquitoes carrying the virus or by sexual contact with an infected person. Effects of Zika virus are usually mild; however, unborn babies are most at risk because the virus can cause microcephaly, an abnormally small cranium, which can result in delays in mental and physical development and even death of the fetus. There were 43 cases of Zika-related microcephaly in the United States between 2015 and 2016. In total, there were over 5,000 cases of the virus across the country during the peak year of the pandemic in 2016. There is no vaccine or cure for Zika but pest control can help to prevent the spread of the virus by controlling the mosquito population. The virus has all but disappeared in the United States and there were no cases reported in 2018 or 2019 that originated from within the US.

Most recently, the COVID-19 pandemic, which has affected the United States extensively, developed in China in 2019 and spread around the world quickly and aggressively. Within a month of the first report to the World Health Organization, the virus was declared a world health emergency. Since its beginning and as of December 2020, COVID-19 has killed over 1.54 million people worldwide, 282,000 of those occurring in the United States. This virus is a new form of coronavirus which means that there is no immunity to this particular strain and there is also no vaccine. Also, there is no cure for COVID-19 and most people are able to overcome the virus with rest and symptom management. Others who recover from the virus require hospitalization to address the symptoms which can include impaired lung function requiring the use of oxygen treatment and, in some cases, a ventilator. Those most at risk for serious complications or death from COVID-19 are the elderly, the immunocompromised, or those with existing respiratory disorders.

It is prudent for a response plan to be created before a pandemic occurs with allowances made for multiple potential scenarios. These response measures should include securing access to supplies and space to treat infected persons. Preventative measures should also be included to address reduction of the spread of a pandemic level infectious disease. Schools and hospitals are particularly at risk for the spread of infectious disease so special consideration should be given to these venues in any response plan. Limiting travel to and from the area is a possible mitigation measure for inclusion when preparing to address a pandemic.

Appendix E
Fayette County Hazard Profile Data

App. E - Hazard Profile Data

1.0 Records of Previous Occurrences of Hazard Events

This appendix contains records of previous occurrences of hazard events reported in Section 5.3 "Hazard Profiles," for events reported by the National Weather Service and National Climatic Data Center. The following is information about the storm data provided by the National Weather Service and its limitations as presented in the document NATIONAL WEATHER SERVICE INSTRUCTION 10-1605. Dated July 16, 2018.

Storm Data Disclaimer. Storm Data is an official publication of the National Oceanic and Atmospheric Administration (NOAA) which documents:

a. The occurrence of storms and other significant weather phenomena having sufficient intensity to cause loss of life, injuries, significant property damage, and/or disruption to commerce;

b. Rare, unusual, weather phenomena that generate media attention, such as snow flurries in South Florida or the San Diego coastal area; and

c. Other significant meteorological events, such as record maximum or minimum temperatures or precipitation that occur in connection with another event.

While Storm Data serves as official input to the NWS verification system for select programs, the primary purpose of Storm Data is to accurately describe events, regardless of the impact on verification scores.

Some information appearing in Storm Data may be provided by or gathered from sources outside the National Weather Service (NWS), such as the media, law enforcement and/or other government agencies, emergency managers, private companies, individuals, etc. An effort is made to use the best available information, but because of time and resource constraints, information from these sources may be unverified by the NWS. Accordingly, the NWS does not guarantee the accuracy or validity of the information. Further, when information appearing in Storm Data originated from a source outside the NWS (frequently credit is provided), Storm Data users requiring additional information should contact that source directly.

Legend for NCDC Data

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Table E-1. Fayette County Tornado Events, 1996-2020

36 TORNADO events were reported in **Fayette County, Alabama** between **01/01/1996** and **12/31/2020**.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Totals:					**4**	**8**	**13.414M**	**0.00K**
FAYETTE	1/22/1999	16:52	Tornado	F0	0	0	15.00K	0.00K
BANKSTON	4/3/2000	10:39	Tornado	F1	0	1	85.00K	0.00K
BELK	11/24/2001	11:07	Tornado	F3	0	0	800.00K	0.00K
FAYETTE	11/10/2002	18:52	Tornado	F3	0	3	500.00K	0.00K
FAYETTE	11/10/2002	20:15	Tornado	F3	0	0	200.00K	0.00K
BERRY	11/10/2002	21:10	Tornado	F1	0	0	45.00K	0.00K
BELK	9/25/2005	13:26	Tornado	F1	0	0	70.00K	0.00K
FAYETTE	9/25/2005	14:00	Tornado	F0	0	0	0.00K	0.00K
FAYETTE	3/13/2006	16:45	Tornado	F0	0	0	27.00K	0.00K
BANKSTON	3/13/2006	16:55	Tornado	F1	0	0	8.00K	0.00K
NEWTONVILLE	3/13/2006	17:46	Tornado	F0	0	0	1.00K	0.00K
BLUFF	3/1/2007	14:59	Tornado	EF1	0	0	50.00K	0.00K
NEWTONVILLE	2/6/2008	2:51	Tornado	EF2	0	0	100.00K	0.00K
BERRY	2/6/2008	3:04	Tornado	EF0	0	0	10.00K	0.00K
BAZEMORE	5/8/2008	12:06	Tornado	EF1	0	0	25.00K	0.00K
BELK	3/26/2009	2:21	Tornado	EF1	0	0	50.00K	0.00K
COVIN	5/2/2009	16:20	Tornado	EF0	0	0	0.00K	0.00K
BANKSTON	4/24/2010	19:06	Tornado	EF1	0	0	77.00K	0.00K
ALTA	4/24/2010	19:21	Tornado	EF1	0	0	20.00K	0.00K
BERRY	4/27/2011	4:03	Tornado	EF1	0	4	1.400M	0.00K
NEWTONVILLE	4/27/2011	15:15	Tornado	EF1	0	0	81.00K	0.00K
ALTA	4/27/2011	15:29	Tornado	EF3	4	0	6.600M	0.00K
HUBERTVILLE	4/27/2011	17:06	Tornado	EF3	0	0	3.000M	0.00K
COVIN	1/30/2013	5:18	Tornado	EF1	0	0	0.00K	0.00K
BAZEMORE	4/28/2014	18:35	Tornado	EF1	0	0	250K	0.00K
NEWTONVILLE	2/2/2016	17:36	Tornado	EF1	0	0	0.00K	0.00K
BLUFF	3/31/2016	18:03	Tornado	EF1	0	0	0.00K	0.00K

BAZEMORE	3/31/2016	18:27	Tornado	EF1	0	0	0.00K	0.00K
ALTA	3/31/2016	19:05	Tornado	EF0	0	0	0.00K	0.00K
HUBERTVILLE	11/29/2016	20:06	Tornado	EF1	0	0	0.00K	0.00K
BELK	8/31/2017	14:58	Tornado	EF1	0	0	0.00K	0.00K
COVIN	2/23/2019	18:08	Tornado	EF1	0	0	0.00K	0.00K
HUBERTVILLE	2/23/2019	18:38	Tornado	EF0	0	0	0.00K	0.00K
NEWTONVILLE	4/12/2020	15:25	Tornado	EF0	0	0	0.00K	0.00K
NEWTONVILLE	4/12/2020	15:34	Tornado	EF0	0	0	0.00K	0.00K
BERRY	4/12/2020	15:41	Tornado	EF1	0	0	0.00K	0.00K
Totals:					**4**	**8**	**13.414M**	**0.00K**

Source: National Climatic Data Center

Table E-2. Fayette County Heavy Rain Events, 1996-2020

1 HEAVY RAIN events were reported in **Fayette County, Alabama** between **01/01/1996** and **12/31/2020**.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Totals:					**0**	**0**	**0.00K**	**0.00K**
FAYETTE	4/4/2011	17:36	Heavy Rain		0	0	0.00K	0.00K
Totals:					**0**	**0**	**0.00K**	**0.00K**

Source: National Climatic Data Center

Table E-3. Fayette County Thunderstorm and High Wind Events, 1996-2020

113 THUNDERSTORM WINDS events were reported in **Fayette County, Alabama** between **01/01/1996** and **12/31/2020**.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Totals:					**1**	**3**	**1.067M**	**18.00K**
FAYETTE (ZONE)	1/18/1996	18:00	High Wind	40 kts.	0	0	20.00K	0.00K
FAYETTE	3/25/1996	3:30	Thd st/Wind	50 kts.	0	0	20.00K	0.00K
BERRY	4/20/1996	21:13	Thd st/Wind	1 kts.	0	0	25.00K	0.00K

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
FAYETTE	4/22/1996	23:15	Thd st/Wind	60 kts.	0	0	75.00K	4.00K
FAYETTE	7/14/1996	17:10	Thd st/Wind	50 kts.	0	0	15.00K	2.00K
BANKSTON	2/21/1997	6:30	Thd st/Wind	50 kts.	0	0	5.00K	2.00K
CONCORD	2/21/1997	7:10	Thd st/Wind	50 kts.	0	0	5.00K	0.00K
FAYETTE	3/19/1998	21:00	Thd st/Wind	50 kts.	0	0	3.00K	0.00K
FAYETTE	4/16/1998	18:45	Thd st/Wind	50 kts.	0	0	10.00K	0.00K
COUNTYWIDE	6/5/1998	4:25	Thd st/Wind	55 kts.	0	0	45.00K	10.00K
FAYETTE	6/5/1998	13:55	Thd st/Wind	50 kts.	0	0	5.00K	0.00K
FAYETTE	6/13/1998	5:00	Thd st/Wind	50 kts.	0	0	10.00K	0.00K
FAYETTE	2/27/1999	18:10	Thd st/Wind	55 kts.	0	0	5.00K	0.00K
FAYETTE (ZONE)	11/2/1999	5:00	High Wind	45 kts.	0	0	4.00K	0.00K
HUBERTVILLE	3/3/2000	17:32	Thd st/Wind	50 kts. E	0	0	1.00K	0.00K
BLUFF	3/30/2000	1:15	Thd st/Wind	55 kts. E	0	0	0.00K	0.00K
COUNTYWIDE	7/20/2000	15:55	Thd st/Wind	55 kts. E	0	0	10.00K	0.00K
FAYETTE	7/26/2000	15:15	Thd st/Wind	50 kts. E	0	0	3.00K	0.00K
FAYETTE	11/8/2000	22:30	Thd st/Wind	50 kts. E	0	0	2.00K	0.00K
FAYETTE	2/9/2001	17:04	Thd st/Wind	55 kts. E	0	0	8.00K	0.00K
FAYETTE	2/9/2001	17:06	Thd st/Wind	50 kts. E	0	0	4.00K	0.00K
COUNTYWIDE	2/16/2001	14:08	Thd st/Wind	75 kts. E	0	0	250.00K	0.00K
COUNTYWIDE	2/21/2001	23:20	Thd st/Wind	55 kts. E	0	0	20.00K	0.00K
FAYETTE	5/20/2001	18:20	Thd st/Wind	55 kts. E	1	3	35.00K	0.00K
FAYETTE	5/20/2001	18:54	Thd st/Wind	55 kts. E	0	0	15.00K	0.00K
FAYETTE	3/30/2002	3:00	Thd st/Wind	50 kts. E	0	0	2.00K	0.00K
BLUFF	8/20/2002	17:38	Thd st/Wind	50 kts. E	0	0	3.00K	0.00K
HUBERTVILLE	5/5/2003	17:48	Thd st/Wind	50 kts. EG	0	0	5.00K	0.00K
COUNTYWIDE	5/7/2003	10:09	Thd st/Wind	55 kts. EG	0	0	11.00K	0.00K
COUNTYWIDE	6/11/2003	12:52	Thd st/Wind	50 kts. EG	0	0	4.00K	0.00K
FAYETTE	5/31/2004	0:55	Thd st/Wind	50 kts. EG	0	0	3.00K	0.00K
FAYETTE (ZONE)	9/16/2004	9:00	High Wind	50 kts. EG	0	0	65.00K	0.00K
FAYETTE	5/31/2004	1:00	Thd st/Wind	50 kts. EG	0	0	8.00K	0.00K
COUNTYWIDE	1/13/2005	8:20	Thd st/Wind	50 kts. EG	0	0	7.00K	0.00K
HUBERTVILLE	4/30/2005	1:28	Thd st/Wind	52 kts. EG	0	0	4.00K	0.00K
NEWTONVILLE	4/30/2005	2:28	Thd st/Wind	52 kts. EG	0	0	11.00K	0.00K

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
FAYETTE (ZONE)	6/11/2005	18:00	Strong Wind	40 kts. EG	0	0	6.00K	0.00K
COUNTYWIDE	3/9/2006	15:55	Thd st/Wind	63 kts. EG	0	0	50.00K	0.00K
COUNTYWIDE	4/7/2006	23:00	Thd st/Wind	55 kts. EG	0	0	20.00K	0.00K
BERRY	4/7/2006	23:35	Thd st/Wind	50 kts. EG	0	0	2.00K	0.00K
FAYETTE	4/7/2006	23:39	Thd st/Wind	50 kts. EG	0	0	2.00K	0.00K
COUNTYWIDE	5/10/2006	10:40	Thd st/Wind	50 kts. EG	0	0	10.00K	0.00K
BAZEMORE	5/31/2006	16:30	Thd st/Wind	50 kts. EG	0	0	5.00K	0.00K
FAYETTE	7/18/2006	14:45	Thd st/Wind	50 kts. EG	0	0	3.00K	0.00K
FAYETTE	7/18/2006	22:00	Thd st/Wind	50 kts. EG	0	0	5.00K	0.00K
FAYETTE	7/20/2006	18:00	Thd st/Wind	50 kts. EG	0	0	5.00K	0.00K
NEWTONVILLE	8/5/2006	16:22	Thd st/Wind	50 kts. EG	0	0	3.00K	0.00K
FAYETTE	7/23/2007	13:34	Thd st/Wind	39 kts. EG	0	0	1.00K	0.00K
FAYETTE	8/25/2007	16:31	Thd st/Wind	50 kts. EG	0	0	10.00K	0.00K
COVIN	1/8/2008	19:20	Thd st/Wind	50 kts. EG	0	0	1.00K	0.00K
FAYETTE	1/8/2008	19:30	Thd st/Wind	50 kts. EG	0	0	1.50K	0.00K
BAZEMORE	4/11/2008	13:15	Thd st/Wind	65 kts. EG	0	0	20.00K	0.00K
BANKSTON	6/9/2008	19:05	Thd st/Wind	50 kts. EG	0	0	1.00K	0.00K
FAYETTE	7/22/2008	14:30	Thd st/Wind	40 kts. EG	0	0	0.50K	0.00K
FAYETTE	7/31/2008	16:25	Thd st/Wind	40 kts. EG	0	0	1.00K	0.00K
BERRY	12/10/2008	0:25	Thd st/Wind	55 kts. EG	0	0	10.00K	0.00K
HUBERTVILLE	2/27/2009	8:35	Thd st/Wind	50 kts. EG	0	0	0.50K	0.00K
FAYETTE (ZONE)	3/28/2009	4:45	Strong Wind	43 kts. EG	0	0	5.00K	0.00K
FAYETTE	4/2/2009	19:17	Thd st/Wind	50 kts. EG	0	0	5.00K	0.00K
STOUGH	4/2/2009	19:18	Thd st/Wind	50 kts. EG	0	0	1.00K	0.00K
FAYETTE (ZONE)	4/12/2009	21:00	Strong Wind	45 kts. EG	0	0	30.00K	0.00K
FAYETTE	4/19/2009	13:47	Thd st/Wind	40 kts. EG	0	0	2.00K	0.00K
BELK	6/12/2009	14:31	Thd st/Wind	50 kts. EG	0	0	20.00K	0.00K
BLUFF	6/12/2009	18:06	Thd st/Wind	50 kts. EG	0	0	2.00K	0.00K
BELK	6/12/2009	18:13	Thd st/Wind	55 kts. EG	0	0	10.00K	0.00K
FAYETTE	6/14/2009	9:42	Thd st/Wind	40 kts. EG	0	0	0.50K	0.00K
BAZEMORE	7/30/2009	16:32	Thd st/Wind	50 kts. EG	0	0	2.00K	0.00K
HUBERTVILLE	7/30/2009	16:35	Thd st/Wind	50 kts. EG	0	0	2.00K	0.00K

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
BERRY	12/8/2009	22:25	Thd st/Wind	50 kts. EG	0	0	2.00K	0.00K
BANKSTON	4/24/2010	7:20	Thd st/Wind	50 kts. EG	0	0	20.00K	0.00K
GLEN ALLEN	6/2/2010	18:00	Thd st/Wind	55 kts. EG	0	0	15.00K	0.00K
BLUFF	8/4/2010	20:04	Thd st/Wind	45 kts. EG	0	0	1.50K	0.00K
BLUFF	8/15/2010	18:30	Thd st/Wind	60 kts. EG	0	0	5.00K	0.00K
FAYETTE R ARTHUR ARP	2/24/2011	22:34	Thd st/Wind	60 kts. EG	0	0	5.00K	0.00K
FAYETTE R ARTHUR ARP	2/24/2011	22:37	Thd st/Wind	60 kts. EG	0	0	10.00K	0.00K
GLEN ALLEN	2/24/2011	22:42	Thd st/Wind	50 kts. EG	0	0	2.00K	0.00K
FAYETTE	4/11/2011	16:43	Thd st/Wind	50 kts. EG	0	0	15.00K	0.00K
ROSSLAND CITY	4/11/2011	16:47	Thd st/Wind	50 kts. EG	0	0	8.00K	0.00K
BLUFF	4/20/2011	4:35	Thd st/Wind	50 kts. EG	0	0	1.00K	0.00K
BELK	4/20/2011	4:39	Thd st/Wind	40 kts. EG	0	0	0.50K	0.00K
BELK	4/20/2011	4:48	Thd st/Wind	40 kts. EG	0	0	1.00K	0.00K
BLUFF	4/20/2011	20:40	Thd st/Wind	60 kts. EG	0	0	20.00K	0.00K
ROSSLAND CITY	6/5/2011	15:00	Thd st/Wind	50 kts. EG	0	0	1.00K	0.00K
FAYETTE (ZONE)	9/5/2011	10:25	Strong Wind	39 kts. EG	0	0	5.00K	0.00K
FAYETTE	4/5/2012	16:07	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
BANKSTON	5/6/2012	18:37	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
COVIN	6/11/2012	17:41	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
BANKSTON	6/11/2012	18:12	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
FAYETTE R ARTHUR ARP	12/20/2012	7:33	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
FAYETTE	3/18/2013	13:26	Thd st/Wind	55 kts. EG	0	0	0.00K	0.00K
BAZEMORE	4/11/2013	13:30	Thd st/Wind	60 kts. EG	0	0	0.00K	0.00K
FAYETTE	4/11/2013	13:54	Thd st/Wind	55 kts. EG	0	0	0.00K	0.00K
FAYETTE	6/17/2013	15:45	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
COVIN	7/23/2013	11:20	Thd st/Wind	55 kts. EG	0	0	0.00K	0.00K
BANKSTON	7/23/2013	11:27	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
FAYETTE	2/20/2014	21:45	Thd st/Wind	55 kts. EG	0	0	0.00K	0.00K
GLEN ALLEN	4/4/2014	4:00	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
GLEN ALLEN	4/28/2014	18:38	Thd st/Wind	65 kts. EG	0	0	0.00K	0.00K
BERRY	6/9/2014	19:21	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
HUBERTVILLE	12/6/2014	3:55	Thd st/Wind	55 kts. EG	0	0	0.00K	0.00K
GLEN ALLEN	7/14/2015	18:26	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
COVIN	3/31/2016	18:08	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
HUBERTVILLE	4/30/2017	11:55	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
BLUFF	6/23/2017	12:05	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
ROSSLAND CITY	6/23/2017	12:18	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
HOWARD	7/6/2017	15:33	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
BLUFF	4/18/2019	17:49	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
FAYETTE R ARTHUR ARP	4/18/2019	17:53	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
BANKSTON	6/20/2019	1:06	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
BERRY	6/20/2019	1:11	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
BAZEMORE	8/7/2019	18:20	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
BANKSTON	8/20/2019	17:56	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
FAYETTE	1/11/2020	11:45	Thd st/Wind	50 kts. EG	0	0	0.00K	0.00K
Totals:					**1**	**3**	**1.067M**	**18.00K**

Source: National Climatic Data Center

Table E-4. Fayette County Lightning Events, 1996 - 2020

1 LIGHTNING event was reported in **Fayette County, Alabama** between **01/01/1996** and **12/31/2020**.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Totals:					**0**	**0**	**50.00K**	**10.00K**
FAYETTE	8/25/2007	16:31	Lightning		0	0	50.00K	10.00K
Totals:					**0**	**0**	**50.00K**	**10.00K**

Source: National Climatic Data Center

Table E-5. Fayette County Hail Events, 1996 - 2020

42 HAIL events were reported in **Fayette County, Alabama** between **01/01/1996** and **12/31/2020**.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Totals:					**0**	**0**	**31.00K**	**13.00K**
FAYETTE	3/18/1996	16:50	Hail	1.75 in.	0	0	20.00K	10.00K
BERRY	4/20/1996	21:13	Hail	0.75 in.	0	0	0.00K	2.00K
FAYETTE	1/24/1997	18:05	Hail	0.75 in.	0	0	5.00K	1.00K
FAYETTE	5/2/1997	20:50	Hail	1.75 in.	0	0	5.00K	0.00K
BLUFF	3/3/2000	17:22	Hail	1.00 in.	0	0	1.00K	0.00K
FAYETTE	3/10/2000	17:00	Hail	0.75 in.	0	0	0.00K	0.00K
FAYETTE	4/4/2001	5:15	Hail	0.75 in.	0	0	0.00K	0.00K
FAYETTE	6/3/2001	13:00	Hail	0.75 in.	0	0	0.00K	0.00K
BLUFF	8/20/2002	17:30	Hail	0.75 in.	0	0	0.00K	0.00K
FAYETTE	5/2/2003	13:51	Hail	0.75 in.	0	0	0.00K	0.00K
GLEN ALLEN	8/3/2003	13:40	Hail	0.75 in.	0	0	0.00K	0.00K
NEWTONVILLE	3/13/2005	15:53	Hail	0.75 in.	0	0	0.00K	0.00K
FAYETTE	3/22/2005	20:03	Hail	0.88 in.	0	0	0.00K	0.00K
NEWTONVILLE	4/3/2006	1:19	Hail	0.88 in.	0	0	0.00K	0.00K
BERRY	4/3/2006	1:49	Hail	0.75 in.	0	0	0.00K	0.00K
FAYETTE	4/7/2006	22:15	Hail	0.75 in.	0	0	0.00K	0.00K
FAYETTE	7/18/2006	20:45	Hail	1.00 in.	0	0	0.00K	0.00K
BLUFF	3/1/2007	14:55	Hail	1.75 in.	0	0	0.00K	0.00K
BELK	1/8/2008	19:20	Hail	1.00 in.	0	0	0.00K	0.00K
NEWTONVILLE	4/11/2008	13:35	Hail	1.00 in.	0	0	0.00K	0.00K
GLEN ALLEN	7/5/2008	18:40	Hail	0.88 in.	0	0	0.00K	0.00K
NEWTONVILLE	2/27/2009	20:48	Hail	0.75 in.	0	0	0.00K	0.00K
FAYETTE	4/10/2009	3:20	Hail	1.75 in.	0	0	0.00K	0.00K
BANKSTON	5/2/2009	17:41	Hail	1.00 in.	0	0	0.00K	0.00K
BERRY	5/2/2009	17:47	Hail	1.75 in.	0	0	0.00K	0.00K
NEWTONVILLE	5/6/2009	7:47	Hail	0.75 in.	0	0	0.00K	0.00K
HOWARD	3/12/2010	3:40	Hail	1.00 in.	0	0	0.00K	0.00K
BANKSTON	4/24/2010	7:20	Hail	0.75 in.	0	0	0.00K	0.00K

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
FAYETTE	4/4/2011	16:26	Hail	1.00 in.	0	0	0.00K	0.00K
HUBERTVILLE	9/14/2011	18:30	Hail	1.00 in.	0	0	0.00K	0.00K
FAYETTE	3/2/2012	15:42	Hail	0.75 in.	0	0	0.00K	0.00K
HUBERTVILLE	3/2/2012	20:28	Hail	1.00 in.	0	0	0.00K	0.00K
HUBERTVILLE	5/21/2012	22:01	Hail	1.00 in.	0	0	0.00K	0.00K
HUBERTVILLE	5/21/2012	22:10	Hail	1.00 in.	0	0	0.00K	0.00K
BANKSTON	5/21/2012	22:18	Hail	1.00 in.	0	0	0.00K	0.00K
NEWTONVILLE	6/9/2014	18:50	Hail	1.5 in.	0	0	0.00K	0.00K
NEWTONVILLE	3/31/2015	16:03	Hail	1 in.	0	0	0.00K	0.00K
BELK	3/31/2016	18:06	Hail	1 in.	0	0	0.00K	0.00K
FAYETTE	3/1/2017	14:24	Hail	1 in.	0	0	0.00K	0.00K
FAYETTE	3/14/2019	14:12	Hail	1.75 in.	0	0	0.00K	0.00K
BERRY	4/6/2019	17:45	Hail	1 in.	0	0	0.00K	0.00K
FAYETTE	4/7/2019	15:14	Hail	1.5 in.	0	0	0.00K	0.00K
Totals:					**0**	**0**	**31.00K**	**13.00K**

Source: National Climatic Data Center

Table E-6. Fayette County Flood Events, 1996 - 2020

11 FLOOD events were reported in **Fayette County, Alabama** between **01/01/1996** and **12/31/2020**.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
COUNTYWIDE	1/7/1998	9:30	Flash Flood		0	0	30.00K	5.00K
COUNTYWIDE	4/3/2000	9:00	Flash Flood		0	0	30.00K	0.00K
COUNTYWIDE	2/5/2004	21:00	Flash Flood		0	0	5.00K	0.00K
COUNTYWIDE	2/5/2004	23:30	Flash Flood		0	0	5.00K	0.00K
FAYETTE	1/6/2009	12:30	Flash Flood		0	0	10.00K	0.00K
FAYETTE	9/18/2009	19:00	Flash Flood		0	0	10.00K	0.00K
FAYETTE	9/20/2009	18:00	Flash Flood		0	0	0.00K	0.00K
FAYETTE	3/9/2011	5:00	Flash Flood		0	0	0.00K	0.00K
HUBERTVILLE	4/20/2011	20:45	Flash Flood		0	0	30.00K	0.00K
FAYETTE	5/8/2012	18:26	Flash Flood		0	0	0.00K	0.00K
HUBERTVILLE	7/4/2013	16:30	Flash Flood		0	0	0.00K	0.00K
Totals:					**0**	**0**	**120.00K**	**5.00K**

Source: National Climatic Data Center

Table E-7. Fayette County Hurricane and Tropical Storm Events, 1996 – 2020

2 HURRICANE & TROPICAL STORM events were reported in **Fayette County, Alabama** between **01/01/1996** and **12/31/2020**.	**Mag**: Magnitude **Dth**: Deaths **Inj**: Injuries **PrD**: Property Damage **CrD**: Crop Damage

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Totals:					**0**	**0**	**555.00K**	**0.00K**
FAYETTE (ZONE)	7/10/2005	17:00	Tropical Storm		0	0	55.00K	0.00K
FAYETTE (ZONE)	8/29/2005	17:00	Tropical Storm		0	0	500.00K	0.00K
Totals:					**0**	**0**	**555.00K**	**0.00K**

Source: National Climatic Data Center

Table E-8. Fayette County Winter Storms/Freezes Events, 1996 - 2020

15 SNOW & ICE events were reported in **Fayette County, Alabama** between **01/01/1996** and **12/31/2020**.	**Mag**: Magnitude **Dth**: Deaths **Inj**: Injuries **PrD**: Property Damage **CrD**: Crop Damage

Location	Date	Time	Type	Dth	Inj	PrD	CrD
Totals:				**0**	**0**	**550.00K**	**1.00K**
FAYETTE (ZONE)	1/6/1996	20:00	Winter Storm	0	0	10.00K	1.00K
FAYETTE (ZONE)	2/1/1996	15:00	Winter Storm	0	0	15.00K	0.00K
FAYETTE (ZONE)	2/16/1996	2:00	Winter Storm	0	0	15.00K	0.00K
FAYETTE (ZONE)	12/23/1998	2:00	Ice Storm	0	0	500.00K	0.00K
FAYETTE (ZONE)	12/21/1999	4:00	Ice Storm	0	0	0.00K	0.00K
FAYETTE (ZONE)	1/27/2000	21:00	Winter Storm	0	0	10.00K	0.00K
FAYETTE (ZONE)	3/1/2009	0:00	Heavy Snow	0	0	0.00K	0.00K
FAYETTE (ZONE)	1/9/2011	14:35	Winter Storm	0	0	0.00K	0.00K
FAYETTE (ZONE)	2/9/2011	16:10	Heavy Snow	0	0	0.00K	0.00K
FAYETTE (ZONE)	1/28/2014	8:00	Winter Weather	0	0	0.00K	0.00K
FAYETTE (ZONE)	2/11/2014	6:00	Winter Weather	0	0	0.00K	0.00K
FAYETTE (ZONE)	2/12/2014	15:00	Heavy Snow	0	0	0.00K	0.00K

Location	Date	Time	Type	Dth	Inj	PrD	CrD
FAYETTE (ZONE)	2/25/2015	13:00	Heavy Snow	0	0	0.00K	0.00K
FAYETTE (ZONE)	3/5/2015	5:30	Sleet	0	0	0.00K	0.00K
FAYETTE (ZONE)	12/8/2017	8:00	Winter Storm	0	0	0.00K	0.00K
Totals:				**0**	**0**	**550.00K**	**1.00K**

Source: National Climatic Data Center

Table E-9. Fayette County Extreme Cold Events, 1996 - 2020

4 TEMPERATURE EXTREMES events were reported in **Fayette County, Alabama** between **01/01/1996** and **12/31/2020**.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Totals:					**0**	**0**	**0.00K**	**1.000M**
FAYETTE (ZONE)	2/3/1996	18:00	Cold/Wind Chill		0	0	0.00K	0.00K
FAYETTE (ZONE)	3/7/1996	8:00	Cold/Wind Chill		0	0	0.00K	1.000M
FAYETTE (ZONE)	1/24/2003	0:00	Extreme Cold/Wind Chill		0	0	0.00K	0.00K
FAYETTE (ZONE)	1/6/2014	21:00	Cold/Wind Chill		0	0	0.00K	0.00K
Totals:					**0**	**0**	**0.00K**	**1.000M**

Source: National Climatic Data Center

Table E-10. Fayette County Drought Events, 1996 - 2020

22 DROUGHT events were reported in **Fayette County, Alabama** between **01/01/1996** and **12/31/2020**.

Mag: Magnitude
Dth: Deaths
Inj: Injuries
PrD: Property Damage
CrD: Crop Damage

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Totals:					**0**	**0**	**0.00K**	**0.00K**
FAYETTE (ZONE)	7/18/2006	7:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	8/1/2006	0:00	Drought		0	0	0.00K	0.00K

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
FAYETTE (ZONE)	9/1/2006	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	3/27/2007	6:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	4/1/2007	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	5/1/2007	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	6/1/2007	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	7/1/2007	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	8/1/2007	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	9/1/2007	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	10/1/2007	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	11/1/2007	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	12/1/2007	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	1/1/2008	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	2/1/2008	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	3/1/2008	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	4/1/2008	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	5/1/2008	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	6/1/2008	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	7/29/2008	6:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	8/1/2008	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	10/12/2010	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	10/18/2016	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	11/1/2016	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	12/1/2016	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	1/1/2017	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	2/1/2017	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	3/1/2017	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	4/1/2017	0:00	Drought		0	0	0.00K	0.00K
FAYETTE (ZONE)	5/1/2017	0:00	Drought		0	0	0.00K	0.00K
Totals:					**0**	**0**	**0.00K**	**0.00K**

Source: National Climatic Data Center

Table E-11. Fayette County Extreme Heat Events, 1996 - 2020

6 TEMPERATURE EXTREMES events were reported in **Fayette County, Alabama** between **01/01/1996** and **12/31/2020**.	**Mag**: Magnitude **Dth**: Deaths **Inj**: Injuries **PrD**: Property Damage **CrD**: Crop Damage

Location	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Totals:					**0**	**10**	**0.00K**	**0.00K**
FAYETTE (ZONE)	2/23/1996	8:00	Heat		0	0	0.00K	0.00K
FAYETTE (ZONE)	8/8/2007	12:00	Heat		0	10	0.00K	0.00K
FAYETTE (ZONE)	6/28/2012	12:00	Heat		0	0	0.00K	0.00K
FAYETTE (ZONE)	7/1/2012	12:00	Heat		0	0	0.00K	0.00K
FAYETTE (ZONE)	7/2/2012	12:00	Heat		0	0	0.00K	0.00K
FAYETTE (ZONE)	7/4/2012	12:00	Heat		0	0	0.00K	0.00K
Totals:					**0**	**10**	**0.00K**	**0.00K**

Source: National Climatic Data Center

Appendix F
Alternative Mitigation Measures

App. F – Identification and Analysis of Mitigation Measures

1.0 Alternative Mitigation Measures

This appendix documents the range of alternative mitigation measures considered by the Hazard Mitigation Planning Committee (HMPC) in the development of its mitigation strategy and its selection of final action programs for each participating community. The list provided here is all inclusive and includes many measures that the jurisdictions are unable to consider at this time but might be possible in future plans. Measures developed through the planning process have been included in this list.

This documentation supports the Federal requirement that the plan must identify and analyze "a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure" (44 CFR Section 201.6 (c)(3)(ii)). Included here are the following supporting documents:

1. Types of Mitigation Measures. This list describes the comprehensive range of mitigation measures by program area type (Prevention, Protection, Education, Outreach, and Awareness, Natural Resources Protection, and Natural System and Infrastructure Improvement and Maintenance Projects), which was one resource provided to the HMPC in completing the exercise listed above.

2. Table of Alternative Mitigation Measures. This summary table identifies a measure as an action or project, whether new or existing buildings and infrastructure are affected, and the hazard effects that would be reduced by the measure. Some measures affect people and not structures so the cell under what structure (new or existing) is affected is left blank.

2.0 Types of Mitigation Measures

Prevention Measures. Prevention measures involve adopting and administering ordinances, regulations, programs, and plans that can influence the development of land and buildings to minimize risks of loss due to natural and human-caused hazards.

- *Comprehensive Plans and Smart Growth.* Comprehensive plans guide future development over a long-range framework through land use, community facilities, economic development, environmental conservation, public infrastructure, and related planning. Effective comprehensive planning can help create safer and more sustainable communities with improved disaster resistance. By incorporating "Smart Growth" principles in a community's comprehensive plan, a community can improve the effectiveness and responsiveness of its comprehensive plan to hazards identified in the mitigation planning process. Smart Growth

can result in safe growth through these fundamental principles of sustainable community development: (a) promote compact infill development vs. urban sprawl, (b) preserve open space and protect the natural and beneficial functions of flood plains, coastal zones, wetlands, hillsides, and other vulnerable locations; and (c) steer growth away from hazardous areas. A comprehensive plan can designate vulnerable lands for open space uses that would not be incompatible with occasional hazard events. For instance, vulnerable areas subject to flooding, dam failure inundation, landslide risk, and land subsidence could be planned for parks, greenways, wildlife refuges, and other open space uses. For a comprehensive plan to be truly effective, the hazard vulnerability of lands and buildings assessed through the mitigation planning process should influence a community's comprehensive plan for future land use and development patterns, community facilities, and infrastructure. The comprehensive plan should direct growth toward the most suitable land areas and avoid exposure of new buildings and infrastructure to high-risk hazard locations assessed in the mitigation plan. Equally important to the effectiveness of a comprehensive plan, is the integration of planning strategies. A community's mitigation strategy should be carried over into the goals, objectives, and policies of its comprehensive plan.

- *Capital Improvements Plans (CIP).* A CIP can recommend the setting aside of funds for public improvements, including water and sewer service extensions, new community facilities, land acquisitions for open space, emergency service facilities, improvements to retrofit or relocate vulnerable critical facilities, and other capital improvements that can be tied to both the comprehensive plan and the mitigation plan. The CIP schedules capital projects over a 5-6-year time frame, with funding identified. The capital expenditure requirements of high priority projects within a hazard mitigation plan may be included in a CIP. A CIP for public infrastructure improvements, when combined with zoning and land development controls, can establish a growth management program to direct the location and timing of new development in accordance with a comprehensive plan and smart growth principles to avoid hazard areas.
- *Planning Studies.* Planning for areas of special consideration might be considered in certain situations. These planning studies might evaluate the feasibility of various mitigation alternatives to address a specific hazard concern, such as a detailed flood hazard mitigation plan for a stream that updates hydrology, generates new flood profiles, and evaluates economic feasibility of structural and non-structural alternatives using sophisticated economic models. Another example would be geologic investigations to identify areas subject to landslides and recommendations for corrective measures.
- *Zoning and Land Development Controls.* The zoning ordinance is the primary tool to regulate development in vulnerable areas by limiting development. Zoning can be combined with a variety of related land development controls and special purpose ordinances. Growth management controls of density and infrastructure improvements may reduce risks in areas exposed to severe hazards, such as flooding, landslides, sinkholes, and other location specific hazards. Limited density controls could be applied to certain zones to discourage future development, or vulnerable areas could be zoned for recreation or agricultural uses or other

uses that are compatible with the natural restrictions of the location. Landscaping standards can be incorporated into zoning ordinances to set aside minimum areas for tree and vegetation plantings. Planting areas can be used for drainage and help cool urban environments, as well as improve appearances. Tolerant species can be used to mitigate the effects of drought conditions, often referred to as "xeriscapes." Other special purpose ordinances might address hillside development by placing limits or setting minimum standards for building construction in steeply-sloped areas that are prone to landslides. Transfer of development rights (TDR) programs are another tool for growth management by allowing landowners to transfer the right to develop one parcel of land to a different parcel of land. This could benefit the developer if incentives are given for building in suitable land areas and not building in hazardous areas.

- *Subdivision Regulations.* These regulations govern how land can be divided into separate lots or sites. Subdivision plats can be required to show hazard areas, such as flood zones, areas subject to landslides, and potential sinkhole locations. The regulations should establish minimum buildable lot areas that are sufficient to meet property protection objectives. Requiring new subdivisions to space buildings, install fire hydrants, and provide adequate access are some of the measures available to reduce the risks of fires.
- *Building and Technical Codes.* Standards can be incorporated into building and technical codes that address resistance against natural hazard threats for all new and substantially improved or repaired buildings. The International Code Series are the latest available codes. Building codes can prohibit loose masonry, overhangs, etc. that might be affected by earthquakes. Building code standards for roof materials and spark arrestors can mitigate fires. Standards can be set for roof construction to protect against wind damage from hurricanes, tornadoes, and severe storms. Performance standards for foundation supports, utility protection, also add to building protection. Design standards can mandate that quality building products and construction applications are used. These codes can better assure quality constructed structures, which are more likely to withstand high winds, severe storms, and other natural hazards. A site plan review process as part of local building permitting can ensure that site elements are organized and planned to lessen the effects of potential hazards on new development.
- *Flood Plain Management Programs.* Participation in the NFIP (National Floodplain Insurance Program) is based on a community agreement with FEMA to meet minimum program requirements, including the adoption and continuing enforcement of a flood plain management ordinance. Flood Insurance Rate Maps (FIRM) are not only a tool for managing flood plain development, but the maps also create broad-based awareness of flood hazards. Flood Insurance Studies and accompanying FIRMs provide the data needed to administer floodplain management programs and to establish flood insurance rates for new and existing buildings. Often, Flood Insurance Rate Maps need updates to reflect changing developing in a given watershed. This may require comprehensive and detailed hydrologic and hydraulic modeling and improved topographic mapping to modernize existing maps. Updated FIRMs may also be needed in "Approximate" flood zones where no flood elevations or profiles are

available. DFIRMS or Digital FIRMS can be created for computer and on-line access to maps and data. The Community Rating System (CRS) Program of the (NFIP) is an option that covers all flood hazard mitigation program elements. The CRS rewards communities for conducting a full range of flood mitigation programs that exceed the minimum NFIP requirements by awarding points to achieve a rating classification. Total points determine the class of a community. The higher the class, the more savings to flood insurance holders and more recognition to the successes of the local flood plain management program. With or without CRS participation, a community can establish "Higher Regulatory Standards" for flood plain management. Floodplain management regulations do not prohibit development in the special flood hazard area; instead, the regulations impose construction standards to minimize damages. Communities may adopt more stringent standards than those set forth by the NFIP, such as additional building elevation requirements, additional limitations on building enclosures, and other standards designed to better mitigate flood damages. Another method to improve the effectiveness of flood plain management programs is to appoint a Certified Floodplain Manager (CFM) who has passed minimum criteria of the Association of State Floodplain Managers to administer the community's ordinance and program.

- *Storm Water Management Regulations*. Development outside of a floodplain can contribute significantly to flooding by creating impervious surfaces or altering natural drainage management systems, which increase storm water runoff. Storm water management is usually addressed in subdivision regulations or other land development controls. Developers are typically required to build retention or detention basins to minimize any increase in runoff rates caused by new or expanded impervious surfaces, or new drainage systems. Generally, there is a prohibition against storm water leaving the site at a rate higher than it did before the development based on a given design storm. One technique is to use wet basins as part of the landscaping plan of a development. It might even be possible to site these basins based on a watershed analysis. Since detention only controls the runoff rates and not volumes, other measures may be applied for storm water infiltration, such as, swales, infiltration trenches, vegetative filter strips, and permeable paving blocks for parking areas. Erosion and sedimentation control regulations not only assure improved water quality but help preserve the carrying capacity of drainage ways and reduce localized flooding. These regulations are typically a component of a larger storm water management program or included in a storm water management ordinance.
- *Open Space Preservation.* Preserving open space is the most effective method for preventing damages. Open space preservation for flood control should not, however, be limited to the flood plain, since other areas within the watershed may contribute to runoff that exacerbates flooding. Comprehensive plans can identify areas to be preserved by acquisition. Other means, such as purchasing easements or accepting donations of land are also available. Open space can also be protected through maintenance agreements with the landowners, or by requiring developers to dedicate land for parks, public facilities, and drainage.
- *Critical Facilities Assessments.* Assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) can address

building and site vulnerabilities to hazards and identify damage control measures in the event of severe weather and other natural hazards. This type of assessment can result in a plan to identify a variety of mitigation retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and disaster events.

- *Geographic Information Systems (GIS).* GIS applies computer technology to hazard mitigation planning by linking data to maps. Detailed property information, socioeconomic data, critical facilities inventories, and hazard locations, among other relevant information, can be continuously updated to provide a complete assessment resource for mitigation planning and other planning studies. HAZUS-MH is a risk assessment tool developed by FEMA to apply loss estimation models for earthquakes, hurricane winds, and flooding within a GIS framework.
- *Dam Safety Management.* A comprehensive dam safety program should begin with dam failure inundation maps. These areas should be kept clear of new development and preserved as open space to prevent future damages. Flood plain regulations could establish minimum building elevations based on predicted flood elevation in the event of dam failure. Regular dam safety inspections identify risks of failures.
- *Open Burning Regulations.* Open burning restrictions can be enforced to prevent the spread of wildfires, especially during times of drought when emergency measures could be enacted.
- *Public Right-of-Way Maintenance Regulations.* An effective drainage system maintenance program should also include regulations that prevent dumping and littering in ditches and stream channels and require adjoining property owners to keep these areas clear of fallen trees, limbs, dead brush, and any other debris. These efforts not only prevent obstructions to drainage but can also help mitigate wildfires.
- *Technology Programs.* Modern technology has created new opportunities for improving planning systems to support hazard mitigation. These systems can serve dual functions - to monitor hazard events as they happen for disaster warning purposes and to forecast and simulate events for advance planning purposes. The U.S. Geologic Survey (USGS) ALERT gage networks for select rivers and streams allow the National Weather Service (NWS) to handle early recognition of flooding. Local gages to cover high risk flood areas can be integrated into these systems with local EMA access. New technology has become available to monitor tornado activities. A comprehensive system can tie a variety of gages into a single automated network to monitor rainfall, river/stream stages, icy bridges and highways, tornadoes, winds, water quality, chemical spills into water ways, and hazardous air emissions. Remote cameras can enhance the monitoring capabilities of the system. These systems when used to simulate events can test a variety of mitigation alternatives, such as flood simulations, evaluation of structural alternatives on flood levels, and damage estimates from simulated events.
- *Safe Room/Shelter Requirements.* Some communities have enacted safe room or shelter requirements for new housing construction and require community shelters for manufactured home parks, apartment complexes, and other planned residential communities.

Human Welfare and Property Protection Measures. Property protection measures protect structures and their occupants and contents from the damaging effects of natural hazard occurrences, including retrofitting existing structures to increase their resistance to damage and exposure of occupants to harm; relocating vulnerable structures and occupants from hazard locations; and conversion of developed land to permanent open space through acquisition and demolition of existing structures. Programs that protect individuals from the impact to health by hazards.

- *Building Relocations.* Moving structures out of vulnerable areas, such as high-risk flood plains, dam inundation areas, landslide zones, and land subsidence areas, is a sure way to protect against damage. Relocation is expensive, however, so this approach should not be used except in extreme circumstances, where there are no practical alternatives.
- *Acquisition Projects.* Acquisition of land in a highly vulnerable zone protects against damages and casualties and converts problem areas into community assets, with accompanying environmental benefits. Acquisition, followed by demolition and conversion of land to permanent open space, is the most appropriate strategy for those buildings that have experienced recurring flood damages and flood insurance claims. This method might also be considered for older buildings with finish floor elevations several feet below predicted flood elevation. Often buildings are too expensive to move or are dilapidated and not worth saving or protecting. Acquisition, like relocation, can be very expensive. Benefit-cost analysis must be used to be certain the damages avoided outweigh the acquisition costs. Less costly alternatives might also be investigated.
- *Building Elevations.* Elevating a flood-prone building above the base flood elevation is sometimes the best flood mitigation strategy. The building could be raised above the flood elevation to prevent interior water damage. This approach could be less costly than relocation or acquisition, and if properly designed the elevated buildings could be less disruptive than creating vacant lots as a result of relocations or acquisitions. Elevation is required by local flood plain regulations for new and substantially improved buildings in a floodplain and is a commonly-practiced flood hazard prevention method.
- *Building Retrofits.* Existing buildings can be retrofitted to safeguard against possible damages. In addition to flood proofing or elevating existing buildings in a flood plain, other retrofits could protect buildings against natural hazards. Retrofitting to add braces/ roof straps and remove overhangs protects against high winds. Storm shutters and applying Mylar to windows and glass surfaces protects from shattering glass during hurricanes and severe storms. Tie downs of major appliances and other contents may reduce earthquake damage.
- *Flood Proofing.* If a building cannot be elevated, it may be flood proofed. This approach works well in areas of low flood threat and with nonresidential buildings. Flood proofing can be accomplished through barriers to flooding, or by treatment to the structure itself.
    - ✓ *Dry flood proofing* seals a building against the water by coating the walls with waterproofing compounds or plastic sheeting. Openings, such as doors, windows, etc.

are closed. Sometimes, manual intervention may be required to implement dry flood proofing, such as installing removable flood shields at doorways.

- ✓ *Wet flood proofing* is usually considered a last resort measure since water is intentionally allowed into the building in order to minimize pressure on the structure. This is best applied to unfinished areas, such as warehouses and garages where contents are elevated.
- ✓ *Barriers*, such as small levees, floodwalls, and berms can keep floodwaters from reaching a building. These are most useful in areas subject to shallow flooding.
- ✓ *Other flood proofing approaches* range from moving valuable items to higher floors to rebuilding the floodable area. An advantage over other approaches is that simply by moving household goods out of the range of floodwaters, thousands of dollars can be saved in damages.

- *Critical Facilities Protection*. Protecting critical facilities is vital. Efforts should be made to retrofit or relocate existing facilities located in high-risk zones or construct new facilities for maximum protection from hazards. Protection of facilities includes not only buildings but also utilities, bridges, and other critical infrastructure.
- *Emergency Power Generation.* Maintaining power in the event of loss during severe storms and other natural hazards is vital for the continuing operation of critical facilities, especially, emergency services, hospitals, elderly housing, water distribution, sewer treatment, and other facilities. Power shutdowns could cause major disruptions and consequential damages. Relatively low-cost portable generations can supply temporary power to small critical facilities, households, and small businesses.
- *Human Welfare.* Protecting the public from hazards such as pandemics and infectious diseases through collaboration between surrounding communities and state and federal agencies. It is vital that the communities communicate the levels of preparedness and needs to those in the healthcare community to ensure everything is in place to address the impact of the event.

Education, Outreach and Awareness. Public education and awareness methods educate and inform the public about the risks of hazards and the techniques available to reduce threats to life and property.

- *Community Hazard Mitigation Plan Distribution.* Internet downloads and CDs are some of the means for mass distribution of the mitigation plan to the public. A fold-out, poster-size summary document could be printed for mass mailings or a special summary document could be published in the Sunday edition of the local newspaper.
- *Flood Map Information.* Flood Insurance Rate Maps (FIRM) developed by FEMA outline the boundaries of the flood hazard areas and provide other valuable information on flooding conditions. These maps can be used by anyone interested in a particular property to

determine if it is flood-prone. NFIP communities can provide this information to the real estate agents, builders, developers, and homeowners as a public service.

- *Outreach Projects and Programs*. Outreach projects are proactive; they give the public information even if they have not asked for it. Outreach projects are designed to encourage people to seek out more information and take steps to protect themselves and their properties. Outreach programs work, although awareness is not enough. People need to know what they can do about the hazards, so projects should include information on protection measures. Locally designed and run programs are often more effective than national advertising. The following are just a few of the examples of outreach activities:
  - ✓ City or county government newsletters with articles on hazard mitigation.
  - ✓ Notices directed to floodplain residents encouraging the purchase of flood insurance.
  - ✓ Displays in public buildings, malls, festivals, fairs, and other public assembly places, including colorful GIS maps, brochures, and information handouts.
  - ✓ Newspaper articles and special sections addressing hazards.
  - ✓ Radio and TV news releases and interviews shows.
  - ✓ A flood proofing video for cable TV programs and for loan to organizations.
  - ✓ A detailed property owner handbook tailored for local conditions.
  - ✓ Presentations at meetings of neighborhood groups.
- *Hazard Insurance Awareness.* Above and beyond standard property insurance, coverage may be available to property owners for protection against flood damages, if the property is in a community that participates in the National Flood Insurance Program. Any local insurance agent is able to sell flood insurance policies under rules and rates set by FEMA. Flood insurance may also be advisable for properties located in dam inundation areas. Flood insurance is also available for areas outside of mapped flood zones. Flood damage may still occur outside of a flood plain as a result of poor drainage or other causes. Property owners may also purchase additional insurance riders for specific hazard coverages, such as insurance riders for earthquake, landslides, or sinkhole damage.
- *Real Estate Disclosure.* Disclosure of information regarding flood-prone properties is important if potential buyers are to be in a position to mitigate damage. Federally regulated lending institutions are required to advise applicants that a property is in the floodplain. However, this requirement needs to be met only days prior to closing, and by that time, the applicant is typically committed to the purchase. State laws and local real estate practice can help by making this information available to prospective buyers early in the process.
- *Library*. Your local library can serve as a repository for pertinent information on hazards and methods of protection. Some libraries also maintain their own public information campaigns, augmenting the activities of the various governmental agencies involved in hazard mitigation.
- *Technical Assistance.* Certain types of technical assistance are available from the local technical and professional staff to advise on various mitigation alternatives to property owners. Community officials can also set up a service delivery program to provide one-on-one sessions with property owners. An example of technical assistance is the hazard audit, in which

a specialist visits a property. The specialist advises the owner of alternative protection measures.

- *Education Programs*. Education can be a great mitigation tool. The earlier education begins the better. Education programs for children can be taught in the schools, park and recreation departments, conservation associations, or youth organizations. An activity can be as involved as course curriculum development or as simple as an explanatory sign near a river. Education programs do not have to be limited to children. Adults can benefit from knowledge of hazards and mitigation measures, and local officials, loaded with this knowledge, can make more informed decisions on mitigation actions.
- *Mass Media Relations.* Newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, and on-line social networking are some of the ever-changing mass media tools available for increasing public awareness and distributing public information on hazard mitigation topics. Effective media relations are essential to a comprehensive outreach program.
- *NOAA Weather Radio Programs.* The use of inexpensive weather radios in homes and businesses are another means for advance warning and can be promoted as a public service. Some localities may choose to purchase these radios in bulk and distribute them to residents at little or no cost. A corporate sponsor can bear some or all of the costs.
- *Training and Webinars.* Staying up on the latest findings in regard to the hazards that impact the communities is important along with new mitigation techniques and funding. With so much training and information available through the internet, the jurisdictions can find many resources to help them with issues that arise due to the hazards. Departments and agencies such as the Department of Homeland Security and FEMA have courses on cybersecurity, addressing human-caused hazards and funding sources for mitigation actions and projects; many that are of no cost. Jurisdictions should take advantage of such training.
- *Disaster Warning and Notification.* The most important measure for all hazards is warning systems. Getting the message out to the people in the area that a hazard event is about to or is occurring is vital in saving lives. There are many avenues for warning citizens and the jurisdictions should employ as many as feasible. Those avenues include but are not limited to cell phone alerts, televised notices, warning sirens, weather radio announcements, AM/FM radio alerts, permanent signs at danger areas, and digital informational signage above highways.

Natural Resources Protection Measures. Natural resources protection measures 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.

- *Wetlands Protection.* Wetlands are capable of storing large amounts of floodwaters, slowing and reducing downstream flows, and filtering the water. Any development that is proposed

in a wetland is regulated by either federal and/or state agencies. Depending on the location, the project might fall under the jurisdiction of the U.S. Army Corps of Engineers, which in turn, calls upon several other agencies to review the proposal. Communities may also have local wetland ordinances. Generally, the goal is to protect wetlands by preventing development that would adversely affect them. Mitigation techniques are often employed, which might consist of creating a wetland on another site to replace what would be lost through the development.

- *Open Space Easements and Acquisitions.* Acquiring easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, flood plains, and wetlands, assures permanent protection. Acquisitions can be made by a land trust or a public agency to benefit the public welfare. Often, property owners may be willing to dedicate lands and easements for tax advantages.
- *River/Stream Corridor Restoration and Protection.* Restoration and protection of stream or riverbanks and riparian zones help restore the natural and beneficial functions to manage floods and filter runoff. Streams should also be protected from dumping. Often, greenways or linear parks along these corridors provide amenities that are compatible with natural functions.
- *Urban Forestry Programs.* A number of cities nationwide have participated in formal urban forestry programs. Urban forestry programs which follow Tree City USA guidelines for public lands and rights-of-way help maintain healthy tree cover for multiple mitigation purposes. Protection and maintenance of the urban forest is especially helpful for the mitigation of wildfires, hillside erosion and landslides, and restoration of stream and river corridors. Combined with effective landscaping regulations, both private and public spaces can be addressed.
- *Water Resources Conservation Programs.* Protection of water quantity and quality through water conservation programs can help mitigate the effects of droughts.

Natural System and Infrastructure Improvement and Maintenance Projects. Structural projects measures are engineering structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of a hazard on a community.

- *Reservoirs*. Reservoirs control flooding by holding water behind dams or in storage basins. After a flood peaks, water is released or pumped out slowly at a rate the river downstream can handle. Reservoirs are suitable for protecting existing development, and they may be the only flood control measure that can protect development close to a watercourse. They are most efficient in deeper valleys or on smaller rivers where there is less water to store. Reservoirs might consist of man-made holes dug to hold the approximate amount of floodwaters, or even abandoned quarries. As with other structural projects, reservoirs projects have drawbacks, as follows:
    - expensive

  - occupy a lot of land
  - require periodic maintenance
  - may fail to prevent damage from floods that exceed design levels
  - may eliminate the natural and beneficial functions of the floodplain.

  Reservoirs should only be used after a thorough watershed analysis that identifies the most appropriate location and ensures that they would not cause flooding somewhere else. Because they are so expensive and usually involve more than one community, they are typically implemented with the help of state or federal agencies, such as the Army Corps of Engineers.

- *Levees/Floodwalls.* A commonly known structural flood control measure is either a levee (a barrier of earth) or a floodwall made of steel or concrete erected between the watercourse and the land.
- *Drainage Modifications.* These include man-made ditches and storm sewers that help drain areas where the surface drainage system is inadequate or where underground drainage ways may be safer or more attractive. These approaches are usually designed to carry the runoff from smaller, more frequent storms.
- *Storm Sewers.* Mitigation techniques for storm sewers include installing new sewers, enlarging small pipes, street improvements, and preventing back flow. Because drainage ditches and storm sewers convey water faster to other locations, improvements are only recommended for small local problems where the receiving body of water can absorb the increased flows without increased flooding. In many developments, streets are used as part of the drainage system, to carry or hold water from larger, less frequent storms. The streets collect runoff and convey it to a receiving sewer, ditch, or stream. Allowing water to stand in the streets and then draining it slowly can be a more effective and less expensive measure than enlarging sewers and ditches.
- *Drainage System Maintenance.* Ongoing maintenance of streams and drainage channels is necessary if these facilities are to function effectively and efficiently over time. Maintenance of channel growth within or near stream and river channels is important for bank stabilization and to prevent obstructions of drainage flows. Often sediment buildup can impede stream flow. Regular maintenance is necessary for public drainage systems, including constructed components, such as, ditches, culverts, and bridges and natural components, such as swales, intermittent and perennial streams, and stream and river overbank areas. Maintenance assures adequate conveyance of storm and flood waters. Other maintenance programs to clear dead and dry brush and fallen trees can not only prevent obstructions to drainage but also mitigate wildfires.
- *Dam Modifications.* Unsafe dams can be removed or modified to lessen the risks of dam failure, such as spillway enlargements to lessen hydraulic loads.
- *Ground Stabilization.* Unstable areas susceptible landslides or sinkholes may be stabilized to lessen risk of failure.

- *Community Storm Shelter/Safe Room Construction.* Freestanding, single-purpose community storm shelters or safe rooms within a building used for other purposes can be constructed to provide temporary shelter from hurricanes, tornadoes, and severe storms.

Table F-1. Alternative Types of Mitigation Measures

TYPES OF MITIGATION MEASURES	Action or Project	Affects New or Existing Buildings and Infrastructure	Tornadoes	Flooding	Severe Storms	Winter Storms	Hurricanes	Drought	Extreme Heat	Earthquakes	Wildfires	Dam or Levee Failures	Landslides	Sinkholes	Human-Caused	Technological	Pandemic/Infectious Disease
PREVENTION MEASURES																	
Comprehensive Plans and Smart Growth	Action	Both		X			X				X	X	X	X			
Planning Studies	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Zoning and Subdivision Regulations	Action	Both		X			X				X	X	X	X	X		
Building and Technical Codes	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	X		
Floodplain Management Regulations and Programs	Action	Both		X								X					
Community Rating System Program	Action	Both		X													
Storm Water Management Regulations	Action	Both		X	X												
Open Space Preservation	Action	Both		X			X				X		X	X			
Critical Facilities Assessments	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Geographic Information Systems	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Dam Safety Management	Action	Both		X								X					
Prescribed Burn Regulations & Wildfire Management	Action	Both									X						
Emergency Operations Plans	Action		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

TYPES OF MITIGATION MEASURES	Action or Project	Affects Existing or New Buildings and Infrastructure	Tornadoes	Flooding	Severe Storms	Winter Storms	Hurricanes	Droughts	Extreme Heat	Earthquakes	Wildfires	Dam or Levee Failures	Landslides	Sinkholes	Human-Caused	Technological	Pandemic / Infectious Disease
HUMAN WELFARE AND PROPERTY PROTECTION MEASURES																	
Building Relocation	Project	Existing		X			X						X	X			
Building Acquisition	Project	Existing		X			X						X	X			
Building Elevation	Project	Existing		X													
Building Retrofits	Project	Existing	X	X	X	X	X	X		X	X				X		
Flood Proofing	Project	Existing		X													
Critical Facilities Protection	Project	Existing	X	X	X	X	X	X		X	X				X		
Emergency Power Generation	Project	Both	X		X	X	X			X					X	X	
Community Shelters and Safe Room Requirements	Action	Both	X		X		X				X						
Human Health and Welfare Programs	Action	N/A	X						X								
EDUCATION, OUTREACH, AND AWARENESS MEASURES																	
Community Hazard Mitigation Plan Distribution	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Technical Assistance	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Flood Map Information	Action	Both		X			X										
Hazard Insurance Awareness	Action	Both	X	X			X			X	X		X	X	X		
Publication Distribution	Action	Both	X	X	X	X	X	X		X	X	X	X	X	X	X	X
Outreach Projects	Action	Both	X	X	X	X	X	X		X	X	X	X	X	X	X	X
Outreach Programs	Action	Both	X	X	X	X	X	X		X	X	X	X	X	X	X	X
Training and Webinars	Action		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Disaster Warning and Notification	Action		X	X	X	X	X		X	X	X	X			X	X	X
Weather Radio Programs	Action	Existing	X	X	X	X	X	X		X							
Mass Media Relations and Websites	Action	Both	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

TYPES OF MITIGATION MEASURES	Action or Project	Affects Existing or New Buildings and Infrastructure	Tornadoes	Flooding	Severe Storms	Winter Storms	Hurricanes	Droughts	Extreme Heat	Earthquakes	Wildfires	Dam or Levee Failures	Landslides	Sinkholes	Human-Caused	Technological	Pandemic / Infectious Disease
NATURAL RESOURCES PROTECTION MEASURES																	
Open Space Easements and Acquisitions	Both	Both		X			X	X			X		X	X			
River/Stream Corridor Restoration and Protection	Both	Both		X													
Forestry Programs	Both	Both									X						
Water Resources Conservation Programs	Action							X									
STRUCTURAL MEASURES																	
Drainage System and Rights-of-Way Maintenance	Project	Both	X	X	X	X	X				X						
Reservoirs and Drainage System Improvements	Project	Both		X													

Appendix G
Committee Meeting Documentation

App. G - Committee Meeting Documentation

1.0 Establishment of the Hazard Mitigation Planning Committee

The Hazard Mitigation Planning Committee (HMPC) was convened in 2004 to write the first mitigation plan to comply with requirements of the Federal Disaster Mitigation Act of 2000 (DMA 2000). The jurisdictions within Fayette County decided to join together to create a multi-jurisdictional plan under the guidance of the Fayette County Emergency Management Agency. The HMCP was reorganized in 2009 and 2014 to update the plan in compliance with DMA 2000 and reconvened in 2019 for this update.

2.0 Committee Meetings

Following the award of FEMA HMGP planning funds in October 2019, the Hazard Mitigation Planning Committee conducted a kick-off meeting on January 16, 2020, to begin the planning process. Another kick-off meeting was held on February 27, 2020 due to limited attendance in January. During the kick-off meetings the attendees filled out worksheets relating to the risks of hazards in their jurisdictions, the capabilities of the jurisdictions and the implementation status of the mitigation measures from 2014.

Meetings that were scheduled for the spring of 2020 were cancelled due to the COVID-19 pandemic. The next scheduled meeting was on June 25, 2020 and as a result of the pandemic and extenuating circumstances it was poorly attended. Due to the uncertainty of the pandemic and restrictions on meetings, it was decided that one-on-one meetings with the jurisdictions would be best to ensure completion of the planning process. The EMA director met with the towns of Belk and Berry and both the EMA director and plan facilitator met with the Fayette County and the City of Fayette's representatives. The representatives of Glen Allen were unable to meet in person; however, they communicated via email and telephone in order to provide the information needed for this plan update.

During the individual meetings with jurisdictional representatives, a review of the hazards that affect the jurisdictions and the mitigation related capabilities the communities possess was conducted. Also reviewed was the status of the community action programs from the 2014 plan. A list of possible mitigation measures was presented along with instructions on how to narrow down the measures through the use of the STAPLEE evaluation method. The representative was instructed to prioritize the measures and assign responsibility and a timeline to each measure. The towns of Belk and Berry passed resolutions for authorization which authorized the EMA director to act on their behalf for the plan update.

The completed worksheets and results of meeting discussions were used in the formation of this plan update. The completed exercises are maintained on file in the Fayette County EMA offices. The agendas and sign-in sheets are included in this appendix. For a more in-depth discussion of the composition and role of the HMPC, see Chapter 4 “The Planning Process”.

3.0 Meeting Agendas and Sign-in Sheets

This section documents the HMPC’s meeting activities during the drafting phase of this plan, including who was involved in these meetings. Included here are the meeting agendas and sign-in sheets.

Kick-off Meeting
Fayette County Hazard Mitigation Planning Committee
January 16, 2020
Fayette County Cooperative Extension Center

Call to Order

Introductions

2020 Multi-Hazard Mitigation Plan

What it is – regulations describing the original plan and updates
Why it is needed – in order to get funding in event of an emergency

What the roles of the participants will be – provide information on their jurisdictions/areas of expertise – I need to know how these hazards affect you. They affect people differently

Overview of the planning process – Have set meetings to discuss the findings as a group on events and on mitigation measures

- Kickoff Meeting – January 16, 2020
- Meeting 1 – Severe Storms/Tornadoes/Hurricanes/Flooding - February
- Meeting 2 – Droughts/Heatwaves/Wildfires/Sinkholes/Landslides - March
- Meeting 3 – Winter Storms/Earthquakes/Dam-Levee Failure - April
- Meeting 4 - Human-Made/Health Services/Hazardous Materials - May
- Meeting 5 – Mitigation Measures - June
- Meeting 6 – Funding Mitigation Measures - August
- Community Meeting

Information gathering

Capabilities Assessment
Hazard Identification
Any information about hazard events in the last 5 years
Mitigation Review

Closing

FAYETTE COUNTY
MULTI-HAZARD MITIGATION PLANNING COMMITTEE
January 16, 2020

Name	Email	Jurisdiction/Agency
Russ Taylor	facoema@centurytel.net	Fayette County EMA
Celeste Boydston	cpbdesignsolutions@gmail.com	
Amy Aldridge	hub-lady@yahoo.com	Glen Allen VFD
Robert Aldridge		City of Glen Allen
Frank Seale	Vadus.Seale@dchsystem.com	Fayette Medical Center

Kick-off Meeting
Fayette County Hazard Mitigation Planning Committee
February 27, 2020
Fayette Civic Center

Call to Order

Introductions

2020 Multi-Hazard Mitigation Plan

What it is – regulations describing the original plan and updates
Why it is needed – in order to get funding in event of an emergency

What the roles of the participants will be – provide information on their jurisdictions/areas of expertise – I need to know how these hazards affect you. They affect people differently

Overview of the planning process – Have set meetings to discuss the findings as a group on events and on mitigation measures

- Kickoff Meeting – January 16, 2020 & February 26, 2020
- Meeting 1 – Severe Storms/Tornadoes/Hurricanes/Flooding – March
- Meeting 2 – Droughts/Heatwaves/Wildfires/Sinkholes/Landslides - April
- Meeting 3 – Winter Storms/Earthquakes/Dam-Levee Failure - May
- Meeting 4 - Human-Made/Health Services/Hazardous Materials - June
- Meeting 5 – Mitigation Measures - July
- Meeting 6 – Funding Mitigation Measures - August
- Community Meeting

Information gathering

Capabilities Assessment
Hazard Identification
Any information about hazard events in the last 5 years
Implementation Status

Closing

FAYETTE COUNTY
MULTI-HAZARD MITIGATION PLANNING COMMITTEE
February 27, 2020

Name	Email	Jurisdiction/Agency
Amy Aldridge	hub_lady@yahoo.com	Glen Allen VFD
Doug Reynolds	N/A	Boley VFD
Shannon Taylor	staylor@fayettefiredept.com	City of Fayette
Jason Mullenix	jason.mullenix@dch system.com	Fayette Medical Center
Jennifer Sanford	jsanford@fayette.k12.al.us	FCHS
Heather Collins	hcollins@fayette.k12.al.us	Fayette Co BOE
Ronni Rena Brasher	rrb00006@aces.edu	AL Cooperative Extension System
Shelley Joner	Shelleyj@nwamhc.com	Northwest AL Mental Health
Celeste Boydston	cpbdesignsolutions@gmail.com	
Russ Taylor	facoema@centurytel.net	Fayette County EMA

Fayette County Hazard Mitigation Planning Committee
June 25, 2020
Fayette Civic Center

Call to Order

Introductions

Topic: Hazards and Their Risk

Any questions from the kick-off meetings

Gather remaining exercises from kick-off meeting

Discussion on hazards affecting Fayette County

- Severe Storms/Tornadoes/Hurricanes/Flooding
- Droughts/Heatwaves/Wildfires/Sinkholes/Landslides
- Winter Storms/Earthquakes/Dam-Levee Failure
- Human-Made/Health Services/Hazardous Materials

Remaining Meetings:

- Meeting 5 – Mitigation Measures - July
- Meeting 6 – Funding Mitigation Measures - August
- Community Meeting

Information gathering

Capabilities Assessment
Hazard Identification
Any information about hazard events in the last 5 years
Implementation Status

Questions

Closing

FAYETTE COUNTY
MULTI-HAZARD MITIGATION PLANNING COMMITTEE
June 25, 2020

Name	Email	Jurisdiction/Agency
Celeste Boydston	cpbdesignsolutions@gmail.com	CPB Design Solutions.
Russ Taylor	fayoema@centurytel.net	Fayette County EMA

4.0 Example Worksheets/Exercises

Included are examples of blank exercises/worksheets that were provided to the jurisdictions to complete. The implementation status worksheets were tailored to the jurisdictions. The example provided is specific for Fayette County.

Capability Assessment Worksheet

Jurisdiction/Agency: _____

Local mitigation capabilities are existing authorities, policies, programs, and resources that reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete the tables and questions in the worksheet as completely as possible.

Planning and Regulatory

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards. Please indicate which of the following your jurisdiction has in place.

Plans	Yes/No Year
Comprehensive/Master Plan	
Capital Improvements Plan	
Economic Development Plan	
Local Emergency Operations Plan	
Continuity of Operations Plan	
Transportation Plan	
Stormwater Management Plan	
Community Wildfire Protection Plan	
Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation) -	

Building Code, Permitting, and Inspections	Yes/No	Are codes enforced?
Building Code		
Building Code Effectiveness Grading Schedule (BCEGS) Score		
Fire department ISO rating		
Site plan review requirements		
Land Use Planning and Ordinances	**Yes/No**	**Is the ordinance administered and enforced?**
Zoning ordinance		
Subdivision ordinance		
Floodplain ordinance		
Natural hazard specific ordinance (stormwater, steep slope, wildfire)		
Flood insurance rate maps		
Acquisition of land for open space and public recreation uses		
Other -		

Administrative and Technical

Identify whether your community has the following administrative and technical capabilities. These include staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions. For smaller jurisdictions without local staff resources, if there are public resources at the next higher level government that can provide technical assistance, indicate so in your comments.

Administration	Yes/No	Department/Agency and Position
Planning Commission		
Mitigation Planning Committee		
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)		
Mutual aid agreements		
Staff	**Yes/No FT/PT[1]**	**Department/Agency and Position**
Chief Building Official		
Floodplain Administrator		
Emergency Manager		
Community Planner		
Civil Engineer		
GIS Coordinator		
Other -		

1 Full-time (FT) or part-tim (PT) position

Technical	Yes/No
Warning systems/services (Reverse 911, outdoor warning signals)	
Hazard data and information	
Grant writing	
Hazus analysis	
Other -	

Financial

Identify whether your jurisdiction has access to or is eligible to use the following funding resources for hazard mitigation.

Funding Resource	Access/Eligibility (Yes/No)
Capital improvements project funding	
Authority to levy taxes for specific purposes	
Fees for water, sewer, gas, or electric services	
Impact fees for new development	
Storm water utility fee	
Incur debt through general obligation bonds and/or special tax bonds	
Incur debt through private activities	
Community Development Block Grant	
Other federal funding programs	
State funding programs	
Other -	

Education and Outreach

Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information.

Program/Organization	Yes/No
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	
Natural disaster or safety related school programs	
StormReady certification	
Firewise Communities certification	
Public-private partnership initiatives addressing disaster-related issues	
Please list programs referenced above:	

Adapted from FEMA's Local Mitigation Planning Handbook
And Lehe Planning, LLC Questionnaires

Hazard Identification Worksheet

Please fill out the tables based on your experience and knowledge of the listed hazards. The ratings below will help you fill out the tables. If you believe a hazard is not relevant please put N/A in the table.

Natural Hazards:

% LOCATIONS AFFECTED – Please write what percentage of the jurisdiction would be affected by the hazard Less than 10%, 10-25%, 25-75%, 75-100%

PROBABILITY OF THE HAZARD

- **Unlikely**: Less than 1 percent probability of occurrence in the next year or a recurrence interval of greater than every 100 years.
- **Occasional**: 1 to 10 percent probability of occurrence in the next year or a recurrence interval of 11 to 100 years.
- **Likely**: 10 to 90 percent probability of occurrence in the next year or a recurrence interval of 1 to 10 years
- **Highly Likely**: 90 to 100 percent probability of occurrence in the next year or a recurrence interval of less than 1 year.

EXTENT OF THREAT

- **Weak**: Resulting in little to no damage
- **Moderate**: Resulting in some damage and loss of services for days
- **Severe**: Resulting in devastating damage and loss of services for weeks or months
- **Extreme**: Resulting in catastrophic damage and uninhabitable conditions

Humanmade Hazards:

DEGREE OF CONCERN

- **None**: Do not think about it
- **Low Level**: Consider it but do not believe it will happen
- **Moderate Level**: Think about the possibility of it occurring and is concerned that it can happen
- **High Level**: Very concerned about it happening

IMPACT

- **None**: No impact on the jurisdiction/agency
- **Low Level**: Minor interruption to or effect on services
- **Moderate Level**: Moderate interruption to or effect on services
- **High Level**: Severe interruption to or effect on services

Hazards Summary Worksheet

Jurisdiction/Agency: _____

Natural Hazard	% Location Affected	Probability of the Hazard	Extent of the Threat	Comments
Dam/Levee Failure				
Drought/Heat Waves				
Earthquake				
Erosion				
Extreme Cold				
Extreme Heat				
Flood - Flash				
Flood - Riverine				
Hail				
Hurricane				
Landslide				
Lightning				
Severe Storms				
Subsidence				
Tornado				
Wildfire				
Winter Storms/Freezes				

Humanmade Hazard	Degree of Concern	Impact	Concerns
Conventional bomb/improvised explosive device			
Biological agent			
Chemical agent			
Nuclear bomb			
Radiological agent			
Arson/incendiary attack			
Cyberterrorism			
Agriterrorism			
Armed Attack			
Chemical Spill			
Hazardous material release (intentional)			
Pandemic			
Industrial Accident (fixed facility)			
Industrial Accident (transportation)			
Failure of Supervisory Control and Data Acquisition system or other Critical Infrastructure Component			

Thoughts on Severe Storms, Floods, Tornadoes and Hurricanes

Please use the space below to provide information about severe storms, flooding, tornadoes and hurricanes within Fayette County that have occurred within the last 5 years. Information that will be helpful for the update of the Multi-Hazard Mitigation Plan includes: The hazard event, where the event occurred, when the event occurred, other hazards associated with it, the results of the event, and any suggestions you have to lessen the impact of the hazard.

IE ~ Flooding. Brindley, Mississippi. January 23, 2017. Main Street between 1st and 3rd Avenue. Results of Hurricane Jan. Standing water for 2 days after storm. Clogged storm drains from debris (leaves, garbage, branches) and old clay drainage pipes. Routine cleaning of pipes. Investigate the quality of the pipes.

Fayette County 2014 Community Action Program Implementation Status

Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Completed Yes/No	Reason not Completed: Ongoing Measure, Lack of Funding, Administrative Shortage, Lack of Political Support, Not Technically Feasible, No Legal Authority
Maintain a centralized, countywide natural hazards and risk assessment database in GIS that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, major drainages structures, dams/levees, hurricane surge areas, tornado tracks, disaster events and their extents, and a comprehensive inventory of critical facilities within all jurisdictions.	County Commission		
Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.	County Commission		
Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.	County Commission		
Identify existing culturally or socially significant structures and critical facilities within participating jurisdictions that have the most potential for losses from natural hazard events and identify needed structural upgrades.	County Engineer		
Evaluate elevation and culvert sizing of existing roadways in flash flood-prone areas to ensure compliance with current standards for design year floods, and develop a program for construction upgrades as appropriate.	County Engineer		
Maintain inventory and map of existing fire hydrants throughout the county, and identify areas in need of new fire hydrants.	Fire Department		
Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	County Commission		
Develop an inventory of public and commercial building vulnerable to earthquake damage, focusing on pre 1940 construction and buildings with cripple wall foundations.	County Commission		

Fayette County 2014 Community Action Program Implementation Status

Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Completed Yes/No	Reason not Completed: Ongoing Measure, Lack of Funding, Administrative Shortage, Lack of Political Support, Not Technically Feasible, No Legal Authority
Train local flood plain managers through programs offered by the State Flood Plain Coordinator and FEMA's training center in Emmitsburg, Maryland.	County Commission		
Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Floodplain Manager		
Promote the adoption of uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage flood plain management that maintains the natural and beneficial functions of flood plains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	County Commission		
Maintain membership for locally designated flood plain managers in the Association of State Flood Plain Managers and the Alabama Association Flood Plain Managers and encourage active participation.	County Commission		
Improve flood risk assessment by documenting high water marks post event, verification of FEMA's repetitive loss inventory and revising and updating regulatory floodplain maps.	Floodplain Manager		
Ensure fire safety ordinances properly regulate open burning, the use of liquid fuel and electric space heaters.	County Engineer		
Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	County Engineer		
Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.	County Commission		
Support legislation to establish a State dam safety program.	County Commission		

Fayette County 2014 Community Action Program Implementation Status

Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Completed Yes/No	Reason not Completed: Ongoing Measure, Lack of Funding, Administrative Shortage, Lack of Political Support, Not Technically Feasible, No Legal Authority
Apply for/maintain membership in the CRS Program; continue to upgrade rating.	Floodplain Manager		
Perform vulnerability assessments of critical facilities to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards.	TBD		
Conduct wildfire vulnerability assessments, including the vulnerability of critical facilities and number of residential properties in these risk areas, and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	Fire Department		
Relocate buildings out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	County Engineer		
Acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	County Engineer		
Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	County Engineer		
Elevate certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings; where feasible, elevation is preferable to flood proofing.	County Engineer		
Repair, elevate and weatherize existing homes for low- to moderate-income families.	County Engineer		
Flood proof pre-FIRM non-residential buildings, where feasible.	County Engineer		

Fayette County 2014 Community Action Program Implementation Status			
Goal, Objectives and Mitigation Measures	**Lead Responsibility for Carrying Out Measure**	**Completed Yes/No**	**Reason not Completed: Ongoing Measure, Lack of Funding, Administrative Shortage, Lack of Political Support, Not Technically Feasible, No Legal Authority**
Retrofit existing buildings, critical facilities, and infrastructure against potential damages from natural and manmade hazards.	County Engineer		
Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.	County Commission		
Promote the purchase of crop insurance to cover potential losses due to drought.	County Commission		
Install backup power for critical facilities.	County Commission		
Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through local trade publications and newspaper announcements.	County Commission		
Participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	County Commission and EMA		
Distribute materials, via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	County Commission and EMA		
Promote disaster resilience within the business community through workshops, educational materials and planning guides, intended to assist business owners in recovering from a disaster event in a timely manner.	County Commission and EMA		
Distribute outreach materials to citizens, builders and business owners inquiring about a flood problem, a building permit or other natural hazard related questions.	County Commission and EMA		

Fayette County 2014 Community Action Program Implementation Status

Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Completed Yes/No	Reason not Completed: Ongoing Measure, Lack of Funding, Administrative Shortage, Lack of Political Support, Not Technically Feasible, No Legal Authority
Distribute public information brochures.	County Commission and EMA		
Distribute public education materials to farmers on soil and water conservation practices.	County Commission and EMA		
Arrange with the Multiple Listing Service (MLS) to require floodplain location disclosure as a condition for each real estate listing.	County Commission		
Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	County Commission and EMA		
Distribute hazard mitigation brochures to students through area schools.	County Commission and EMA		
Educate homeowners about structural and non-structural retrofitting of vulnerable homes.	County Commission		
Distribute the 2014 plan to local officials, stakeholders, and interested individuals through internet download.	County Commission and EMA		
Provide technical assistance to homeowners, builders, and developers on flood protection alternatives.	Floodplain Manager		
Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and loss of life.	County Commission and EMA		

Fayette County 2014 Community Action Program Implementation Status			
Goal, Objectives and Mitigation Measures	**Lead Responsibility for Carrying Out Measure**	**Completed Yes/No**	**Reason not Completed: Ongoing Measure, Lack of Funding, Administrative Shortage, Lack of Political Support, Not Technically Feasible, No Legal Authority**
Promote the use of weather radios in households and businesses.	County Commission		
Install weather radios in all public buildings and places of public assembly.	County Commission		
Distribute weather radios and emergency response instructions to area residents.	County Commission		
Upgrade siren-warning systems to provide complete coverage to all jurisdictions.	County Commission		
Upgrade critical communications infrastructure.	County Commission		
Increase open space acquisitions through the FEMA HMA Grant Programs and other flood plain acquisition efforts.	County Commission		
Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	County Engineer		
tilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	County Commission		
Enforce water use restrictions during periods of drought to conserve existing water supplies.	County Commission		
Prepare and implement standard operating procedures and guidelines for drainage system maintenance.	County Engineer		
Construct drainage improvements to reduce or eliminate localized flooding in identified problem drainage areas.	County Commission		

Fayette County 2014 Community Action Program Implementation Status

Goal, Objectives and Mitigation Measures	Lead Responsibility for Carrying Out Measure	Completed Yes/No	Reason not Completed: Ongoing Measure, Lack of Funding, Administrative Shortage, Lack of Political Support, Not Technically Feasible, No Legal Authority
Improve and retrofit water supply systems to save water during drought events and to eliminate breaks and leaks.	County Commission		
Construct new community safe rooms in accessible locations and add safe rooms within new and existing public and institutional buildings, such as schools, colleges and universities, senior centers, community centers, hospitals, and government buildings.	County Commission		
Establish a program for subsidizing individual and community safe room construction in appropriate locations and facilities.	County Commission		
Encourage the construction of safe rooms in new and existing homes and buildings.	County Commission		

Appendix H
Community Involvement Documentation

App. H - Community Involvement Documentation

1.0 Community Involvement Opportunities

This Appendix includes additional documentation of the community involvement opportunities in the planning process for the Fayette County 2020 plan update, which are summarized below. (See Chapter 4 "Planning Process" for a complete discussion of community involvement in the planning process.

1. The Fayette County Hazard Mitigation Planning Committee (HMPC). This Committee, which was first established in 2004 to oversee the original plan, was reorganized in 2008 to oversee the 2009 update, in January 2014 to prepare the 2014 update and then in November 2019 to write this update. Its primary purposes are to oversee all hazard mitigation planning activities and ensure the plan's ongoing monitoring and implementation. The HMPC represents all Fayette County jurisdictions, as well as interested stakeholder organization. There were 3 HMPC meetings and multiple one-on-one jurisdictional held during the plan update process. The original plan for seven meetings was altered due to the outbreak of COVID-19. The meetings during the drafting phase of the 2020 plan update were open to public attendance and participation. (For documentation of HMPC meetings, refer to Appendix G "Committee Meeting Documentation", and for a more detailed discussion of the HMPC, refer to Chapter 4 "The Planning Process").

2. The 2020 Fayette County Multi-Hazard Mitigation Plan Website. The website hazardmitigationplans.com was active during the drafting phase of the 2020 update. The website was created to encourage those concerned with hazard mitigation to become involved in the process of updating the 2020 Fayette County Multi-Hazard Mitigation Plan. The website contained the most recent draft sections of the plan, meeting schedules, and encouraged public comments through a dedicated email account through the website. The website also provided an opportunity for comment on the plan and hazards within their communities. The most recently adopted plan is maintained on the Fayette County EMA website at http://www.fayettecountyal.com/EMA.

3. Community Meetings. Due to COVID restrictions, the plan was presented to the Fayette County Commission by the EMA Director and plan facilitator on behalf of the HMPC. Prior to the commission meeting, the EMA director was a guest on the local radio station where he informed the public about the plan and the plan's website. The EMA director encouraged those listening to read the plan and send comments through the website. The commission meeting was announced on the local radio stations and in the local newspaper.

4. Interagency Involvement. Invitations to review the plan update on the website were sent to agencies and organizations representing neighboring counties, Federal and State governmental agencies, businesses, educational institutions and school boards, and other interested private and non-profit stakeholders in the hazard mitigation planning process.

5. Public Hearings Prior to Adoption. A final opportunity for public comment was afforded immediately before adoption by each local governing body. Following the close for public comments, the plan was adopted by the governing bodies of each jurisdiction.

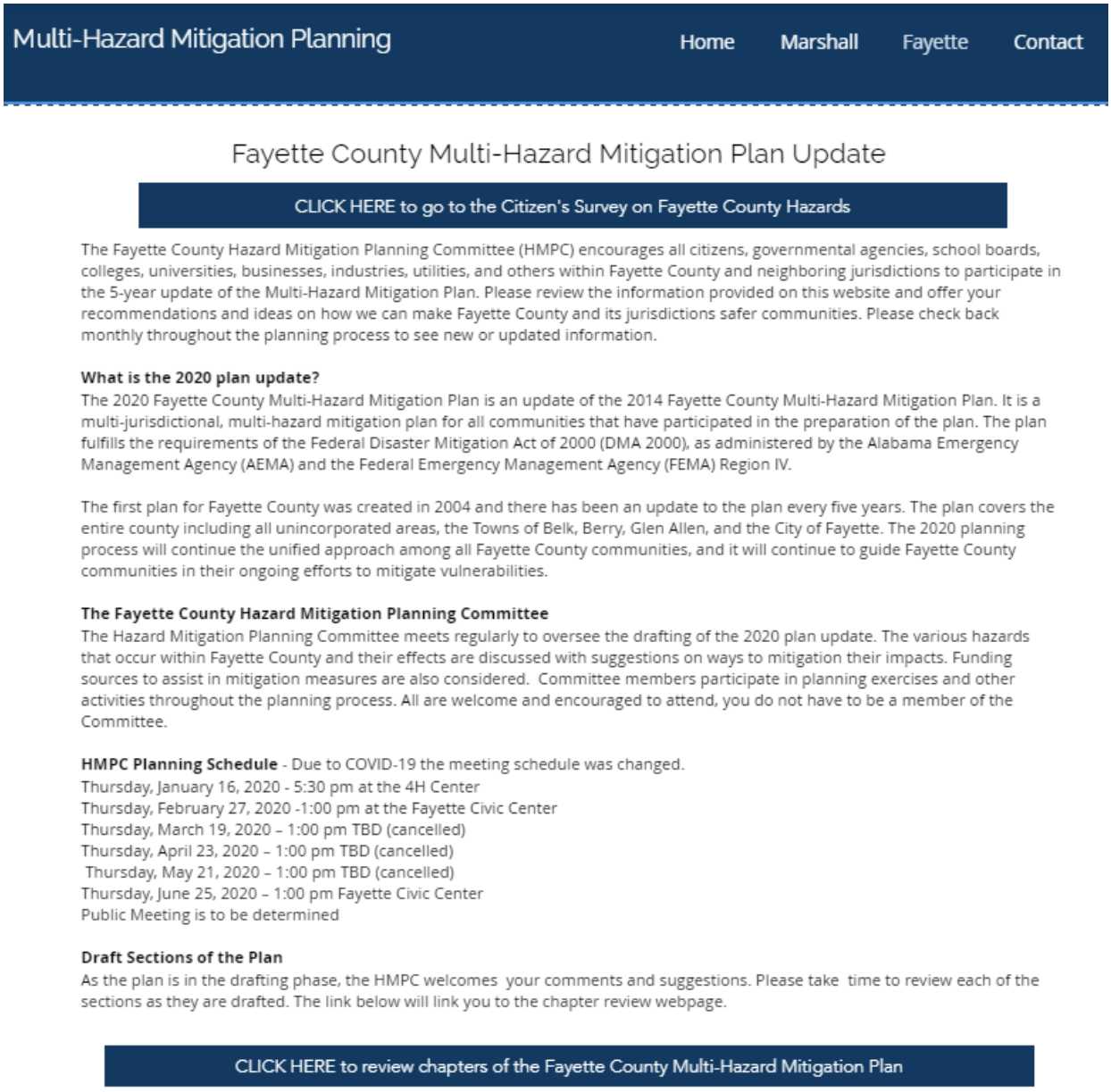
2.0 Documentation

This Appendix includes the following documentation of community involvement activities and opportunities:

- An image of the 2014 Fayette County Multi-Hazard plan update website at hazardmitigationplans.com.
- The hazard assessment form that was posted on the website.
- The plan draft comments form that was hosted on the website.
- A copy of the community notification that was submitted to the media for advertising the availability of the plan for review.
- The notification sent to interested agencies, organizations, and stakeholders to review the plan.

Image of the 2020 Fayette County Multi-Hazard Mitigation Plan website at hazardmitigationplans.com

Part One -



Multi-Hazard Mitigation Planning

Home Marshall Fayette Contact

Fayette County Multi-Hazard Mitigation Plan Update

CLICK HERE to go to the Citizen's Survey on Fayette County Hazards

The Fayette County Hazard Mitigation Planning Committee (HMPC) encourages all citizens, governmental agencies, school boards, colleges, universities, businesses, industries, utilities, and others within Fayette County and neighboring jurisdictions to participate in the 5-year update of the Multi-Hazard Mitigation Plan. Please review the information provided on this website and offer your recommendations and ideas on how we can make Fayette County and its jurisdictions safer communities. Please check back monthly throughout the planning process to see new or updated information.

What is the 2020 plan update?

The 2020 Fayette County Multi-Hazard Mitigation Plan is an update of the 2014 Fayette County Multi-Hazard Mitigation Plan. It is a multi-jurisdictional, multi-hazard mitigation plan for all communities that have participated in the preparation of the plan. The plan fulfills the requirements of the Federal Disaster Mitigation Act of 2000 (DMA 2000), as administered by the Alabama Emergency Management Agency (AEMA) and the Federal Emergency Management Agency (FEMA) Region IV.

The first plan for Fayette County was created in 2004 and there has been an update to the plan every five years. The plan covers the entire county including all unincorporated areas, the Towns of Belk, Berry, Glen Allen, and the City of Fayette. The 2020 planning process will continue the unified approach among all Fayette County communities, and it will continue to guide Fayette County communities in their ongoing efforts to mitigate vulnerabilities.

The Fayette County Hazard Mitigation Planning Committee

The Hazard Mitigation Planning Committee meets regularly to oversee the drafting of the 2020 plan update. The various hazards that occur within Fayette County and their effects are discussed with suggestions on ways to mitigation their impacts. Funding sources to assist in mitigation measures are also considered. Committee members participate in planning exercises and other activities throughout the planning process. All are welcome and encouraged to attend, you do not have to be a member of the Committee.

HMPC Planning Schedule - Due to COVID-19 the meeting schedule was changed.
Thursday, January 16, 2020 - 5:30 pm at the 4H Center
Thursday, February 27, 2020 -1:00 pm at the Fayette Civic Center
Thursday, March 19, 2020 – 1:00 pm TBD (cancelled)
Thursday, April 23, 2020 – 1:00 pm TBD (cancelled)
Thursday, May 21, 2020 – 1:00 pm TBD (cancelled)
Thursday, June 25, 2020 – 1:00 pm Fayette Civic Center
Public Meeting is to be determined

Draft Sections of the Plan

As the plan is in the drafting phase, the HMPC welcomes your comments and suggestions. Please take time to review each of the sections as they are drafted. The link below will link you to the chapter review webpage.

CLICK HERE to review chapters of the Fayette County Multi-Hazard Mitigation Plan

Website Part Two -

2020 Multi-Hazard Mitigation Public Survey Fayette County, Alabama

We appreciate your taking the time to fill out this survey. Mitigation is vital in protecting the people and communities of Fayette County. By working together to mitigate the effects of natural and man-made hazards, we can lessen the impacts of many hazards and hopefully save lives. Your input helps us by providing insight into the areas that need to be addressed and also to show the state and federal governments that we are doing what we can to mitigate the hazards so if the time comes that we need assistance, we will qualify for funding.

* Required

Name of your community *

- [ ] Belk
- [ ] Berry
- [ ] Glen Allen
- [ ] City of Fayette
- [ ] Unincorporated Fayette County

Mark all the hazards that affect your community. *

- [ ] Flood
- [ ] Tornadoes
- [ ] Earthquakes
- [ ] Wildfires
- [ ] Landslides
- [ ] Winter Storms
- [ ] Severe Storms
- [ ] Hurricanes
- [ ] Dam Failure
- [ ] Drought
- [ ] Sinkholes
- [ ] Heat Waves
- [ ] Pandemics
- [ ] Cyberterrorism
- [ ] Terrorist Attack
- [ ] Active Shooter
- [ ] Chemical Spill at a fixed location
- [ ] Chemical Spill during transport
- [ ] Other: _____

Do you have any specific concerns about any of the above hazards?

Your answer

Do you have any suggestions on how to mitigate (lessen) the impacts of the hazards?

Your answer

THANK YOU FOR YOUR TIME

Website Part Three

Click on the chapter button to download corresponding chapters for the 2020 Fayette County Multi-Hazard Mitigation Plan. Feel free to provide feedback on the associated chapters. Thank you for your time.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

CHAPTER 1 - INTRODUCTION

CHAPTER 2 - PREREQUISITES

CHAPTER 3 - COMMUNITY PROFILES

CHAPTER 4 - PLANNING PROCESS

CHAPTER 5 - RISK ASSESSMENT

CHAPTER 6 - MITIGATION STRATEGY

CHAPTER 7 - PLAN MAINTENANCE

APP A - FEDERAL REQUIREMENTS

APP B - COMMUNITY CAPABILITIES

APP C - 2014 IMPLEMENTATION

APP D - HAZARD RATINGS

APP E - HAZARD PROFILES

APP F - ALT. MITIGATION MEASURES

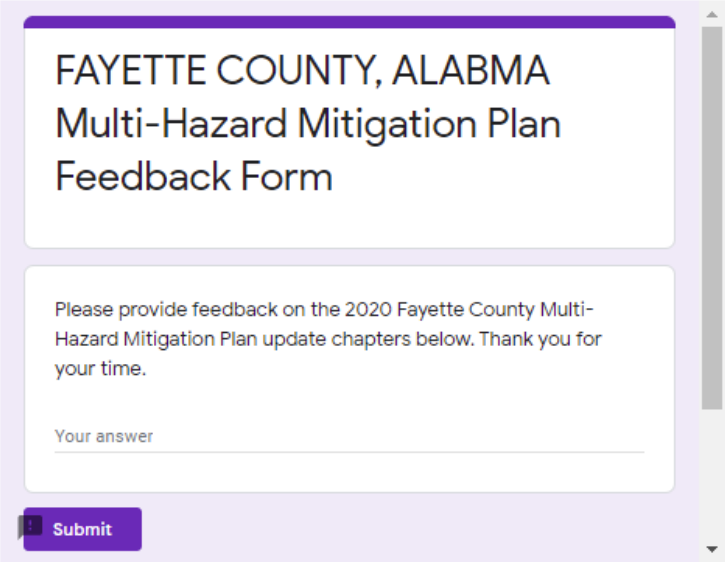
APP G - HMPC MTG DOCUMENTATION

APP H - COMMUNITY INVOLVEMENT

APP F - ALT. MITIGATION MEASURES

APP J - ADOPTING RESOLUTIONS

COMMUNITY ACTION PROGRAMS



Press release about the plan update final review published November 4, 2021

Fayette EMA Director asks residents to review Hazard Mitigation Plan

Fayette County Emergency Management Agency (EMA) Director Russ Taylor says the county's Hazard Mitigation Plan has recently been updated and is available for review for area residents.

Fayette County residents who want to review the Fayette County Multi-Hazard Mitigation Plan may do so by going online to https://hazardmitigationplans.com

While reviewing the plan at the website, residents will be able to make comments and offer suggestions if they choose.

When comments or suggestions are made at the site, agency officials will annotate and document those comments or suggestions appropriately.

The Fayette County Hazard Mitigation Planning Committee encourages the public, government agencies, colleges and universities, neighboring jurisdictions, businesses and industries, and others concerned with hazard mitigation to become involved in the process of updating the current plan.

The public's input is desired so that local and state officials can use the collected information to update future plans that will help make Fayette County's communities safer places to live.

The Hazard Mitigation Plan is a multi-jurisdictional guide for all Fayette County communities, and it fulfills the requirements of the Federal Disaster Mitigation Act of 2000 (DMA 2000) as administered by the Alabama Emergency Management Agency (AEMA) and the Federal Emergency Management Agency (FEMA) Region IV.

Email to area agencies from the planning team about the ability to review the plan online and to submit comments sent on November 1, 2021

Hello,

Fayette County EMA has been in the process of updating the Hazard Mitigation Plan for Fayette County. This is a 5-year update required by the Disaster Mitigation Act of 2000.

The draft update is ready for review and inputs. Please clink on the following link or copy and paste it into your browser: https://www.hazardmitigationplans.com/fayette to review the plan in its entirety. If you have any inputs to the plan please email those to this email address: facoema@centurytel.net

Your feedback and comments are important to us and we look forward to your input.

Thank you,

Russ Taylor ALEM, CLEM

Fayette County EMA Director

103 First Ave NW Suite 8

Fayette, AL 35555

Office (205) 904 8276

EOC (205) 259 7003

Cell (205) 442 9042

Appendix I
Multi-Jurisdictional Participation Activities

App. I -Multi-Jurisdictional Participation Activities

1.0 Participation Requirements

According to 44 CFR Section 201.6(a)4, "Multi-jurisdictional plans may be accepted, as appropriate, as long as each jurisdiction has participated in the process…" The table in this appendix illustrates each jurisdiction's participation within Fayette County in the plan update; qualifying it as a Multi-Jurisdictional Plan.

Each jurisdiction was given the opportunity to participate in every step of the plan update, from the two kick-off meetings to the signing and adoption of the resolutions. The first kickoff meeting was held on January 16, 2020 and the second on February 26, 2020. Meeting materials were forwarded to representative that were unable to attend. Future meetings that were scheduled for the spring were cancelled due to the COVID-19 pandemic. An attempt at meeting once again in person on June 25, 2020 was unsuccessful as those who were going to participate were unable to. The towns of Belk and Berry signed resolutions authorizing the EMA to act on their behalf during the planning process. The towns were asked to provide information about hazards, mitigation capabilities and implementation status of their 2014 mitigation measures and also to participate in the mitigation strategies portion of the process.

The plan administrator and EMA director held multiple meetings to discuss the plan and decided to meet individually with the jurisdictions in July and August with precautions in place to keep everyone safe, to work on the mitigation strategies in order to complete the plan. All jurisdictions, except Glen Allen participated in a one-one-one meetings. The representatives from Glen Allen were unable to participate in any in-person meetings during the COVID outbreak. They did however complete the exercises and fill out the mitigation measure worksheets.

2.0 Participation Documentation

A total of number of 3 HMPC meetings and 4 one-on-one jurisdictional meetings were held during the planning process. Numerous communications via telephone and email occurred during the updating of the plan. Members of the Fayette County School Board, Fire Association, area Volunteer Fire Departments, and the medical community participated in the planning process.

Table I-1 is a summary of the dates and activities for each meeting and which jurisdiction or agency participated. An X indicates direct meeting attendance and X indicates the activities the participants chose to participate. Conclusions of the activities are shown in Appendices B through F, and information on the meetings is included in Appendices G and H.

Table I-1. Multi-Jurisdictional Participation

Multi-Jurisdictional Meeting Attendance and Activity Participation Fayette County 2020 Plan Update	Fayette Co.	Belk *	Berry *	City of Fayette	Glen Allen	Fire Association	Fayette Medical Ctr.	Fayette County BOE
Kick-off Meeting - January 16, 2020	X				X	X	X	
Kick-off Meeting - February 26, 2020	X			X	X	X	X	X
Meeting 1 – March	Cancelled							
Meeting 2 - April	Cancelled							
Meeting 3 - May	Cancelled							
Meeting 4 – June 25, 2020	X							
Meeting 5 - July	Cancelled							
Meeting 6 - August	Cancelled							
One-on-One Jurisdictional Meetings	X	X	X	X	X			X
Presentation of Plan to Governing Body for Review	X							
Public Hearing Prior to Adoption	X							
Worksheets and Questionnaires								
Hazard Risk Assessment	X	X	X	X	X	X	X	X
Jurisdictional Mitigation Capabilities	X	X	X	X	X			
Implementation Status	X	X	X	X	X			
Mitigation Measures Evaluation	X	X	X	X	X			X

X Denotes participation in meeting or activity

Denotes not an activity for them

* Belk and Berry were represented by the Fayette County EMA through an authorized representation resolution passed by their town councils.

Appendix J
Adopting Resolution

App. J – Adopting Resolution

1.0 Purpose

The sample resolution presented here serves as a model for the governing bodies of the participating jurisdictions to adopt the 2020 plan update following a public hearing. Each jurisdiction may modify the sample to fit their particular legal form. The resolutions from the jurisdictions that adopted this plan are on file with the AEMA and FEMA and also can be found at the Fayette County EMA office.

2.0 Sample Adopting Resolution

RESOLUTION OF THE (GOVERNING BODY)

A RESOLUTION ADOPTING THE 2020 FAYETTE COUNTY MULTI-HAZARD MITIGATION PLAN, IN FULFILLMENT OF THE FEDERAL DISASTER MITIGATION ACT OF 2000 AND THE LOCAL MITIGATION PLAN REQUIREMENTS OF 44 C.F.R. SECTION 201.6 AND FEMA LOCAL MULTI-HAZARD MITIGATION PLANNING GUIDANCE

WHEREAS, The Federal Disaster Mitigation Act of 2000 (DMA 2000), as administered by the Alabama Emergency Management Agency (AEMA) and the Federal Emergency Management Agency (FEMA) provides Federal assistance to local governments to alleviate suffering and damage from disasters, and broadens existing relief programs to encourage disaster preparedness plans and programs, coordination and responsiveness, insurance coverage, and hazard mitigation measures; and,

WHEREAS, the DMA 2000 requirements for local mitigation plans are set forth in 44 C.F.R. Section 201.6 and the Local Mitigation Planning Handbook, FEMA, March 2013; and,

WHEREAS, as a prerequisite for each Fayette County jurisdiction to continue to qualify for FEMA mitigation grant assistance programs, the DMA 2000 requires the five-year update of the Fayette County Hazard Mitigation Plan, 2014 Plan Update, which was approved by FEMA on October 7, 2015; and,

WHEREAS, the AEMA had awarded a $26,667.00 planning grant funded through the FEMA Hazard Mitigation Grant Program (HMGP) to the Fayette County Commission to fund 75% of the total cost of the five-year plan update for all jurisdictions within Fayette County; and,

WHEREAS, the 2020 Fayette County Multi-Hazard Mitigation Plan has been prepared in accordance with DMA 2000 requirements under the direction of the Fayette County Hazard Mitigation Planning Committee with the support of the Fayette County EMA, on behalf of all of the jurisdictions within Fayette County; and,

WHEREAS, said mitigation plan addresses all natural , human-caused, and technological hazards deemed to threaten property and people within the unincorporated and incorporated areas of Fayette County; and,

WHEREAS, the Federal planning criteria require formal adoption of the FEMA-approved plan update by each participating jurisdiction.

NOW THEREFORE, BE IT RESOLVED that the 2020 Fayette County Multi-Hazard Mitigation Plan is hereby adopted and immediately made effective.

ADOPTED this the _____ day of _____, 2021.

APPROVED: _____

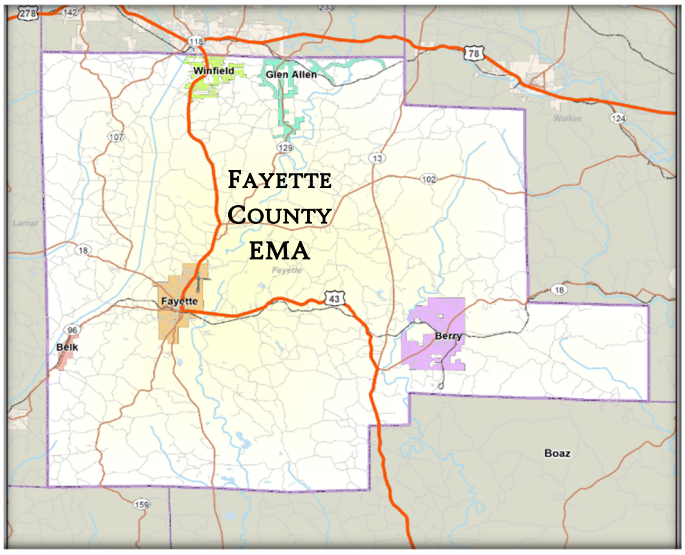
ITS: _____

ATTEST: _____

ITS: _____

2020 Fayette County Multi-Hazard Mitigation Plan

Volume III – Community Action Programs



Belk, Berry, Fayette, Glen Allen,
and Unincorporated Fayette County

Prepared by the Fayette County EMA and
Hazard Mitigation Planning Committee
FEMA Approved: June 30, 2022

Acknowledgments

Fayette County
Emergency Management Agency

Russ Taylor, Director

The preparation and publication of this plan was funded in part by a FEMA grant under the Hazard Mitigation Grant Program awarded by the Alabama EMA to the Fayette County Commission.

Submission Date: December 17, 2021
Resubmission Date: May 31, 2022
Final Approval: June 30, 2022

Volume III
Fayette County
Community Action Programs

Community Action Programs

1.0 Development of Community Action Programs

The Community Action Programs are a listing of the mitigation measures the individual jurisdictions chose to pursue over the next five years. The representatives reviewed the list of measures provided during the one-on-one meetings and selected the measures that were deemed applicable after a thorough evaluation.

The original list of mitigation measures was based on the previous measures from the 2014 Fayette County, Alabama, Multi Hazard Mitigation Plan, the 2018 Alabama State Hazard Mitigation Plan, and suggestions from the Hazard Mitigation Planning Committee. The mitigation measures from the 2014 plan were used as base measures for the HMPC to consider for the plan update. To that list, action items that are listed in the 2018 Alabama State Hazard Mitigation Plan were added. Mitigation actions the HMPC developed through various exercises that were not covered by either the 2014 plan or the 2018 state plan were added to the list. In addition to those main sources listed above, various mitigation guides and publications published by FEMA in its "How-to" series were consulted for mitigation measures to include in the list as were other published mitigation plans.

As noted in 6.5 "Mitigation Measure Identification, Prioritization, Implementation and Administration", the representatives analyzed the possible listed measures by conducting a STAPLEE evaluation and then prioritized the selected measures and assigned responsibility for each measure. The Community Action Plans in this appendix provide the following information:

- The goals, objective and mitigation measures;
- The hazards addressed by the measure;
- The priority level assigned to the measure;
- The timeline for the measure;
- The lead responsible party for the implementation of the measure;
- Whether the measure is an action or a project;
- The estimated cost to implement the measure; and
- Possible funding source(s) for implementing the measure.

2.0 Community Action Programs for Each Jurisdiction

This section presents the Community Action Programs adopted by each of the participating jurisdictions and the Fayette County Board of Education. For a comprehensive listing of the measures and the jurisdictions that chose to implement the measure, see Table 6-7 in Chapter Six.

Notes for the CAPs:

- Action programs are in alphabetical order by jurisdiction.
- The Local Floodplain Manager is an administrator designated through the NFIP as the person responsible for enforcing the local ordinance and may be the Local Engineer or Local Building Official.
- Priorities are *High*, *Medium*, and *Low*.
- Timelines are *Short-Range* (less than 2 years), *Mid-Range* (2-5years), *Long-Range* (more than 5 years) or *On-Going*
- Potential funding sources are identified. FEMA Hazard Mitigation Assistance funds, where noted as a possible funding source, are subject to final eligibility determination, including, among other eligibility criteria, a positive benefit/cost analysis, and the availability of funds.
- Human-caused hazards are intentional acts by people to cause harm such as terrorism, armed assault, and cyberterrorism.
- Technological hazards are accidental disaster events such as chemical spills or hazardous materials releases at a fixed site or during transport.

Abbreviations:

- EMA - Fayette County Emergency Management Agency
- FD – Fire Department
- FEMA – Federal Emergency Management Agency
- FMA - Flood Mitigation Assistance
- HMA – Hazard Mitigation Assistance
- IT – Information Technology Department
- MUB – Municipal Utilities Board
- PD – Police Department
- TBD - To Be Determined

2020 - 2025 Fayette County Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1	**Goal for Prevention. Manage the development of land and buildings to minimize risks of loss due to multiple hazards.**							
1.1	**Comprehensive Plans and Smart Growth. Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.**							
1.1.1	Maintain up-to-date comprehensive plan.	All		On-Going	Commission	Action	TBD	Existing Funds or HMGP
1.1.2	Integrate the findings and recommendations of this hazard mitigation plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	All		On-Going	Commission	Action	TBD	Existing Funds
1.2	**Planning Studies. Conduct special studies, as needed, to identify hazard risks and mitigation measures.**							
1.2.1	Consider conducting detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.	Flooding		On-Going	Commission	Action	TBD	ADECA CDBG

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.2.2	Evaluate elevation and culvert sizing of existing roadways in flash flood prone areas to ensure compliance with current standards for design year floods and develop a program for construction upgrades as appropriate.	Flooding		On-Going	Engineer	Action	No Additional Cost	Existing Funds
1.2.3	Identify problem drainage areas where drainage improvements could be made to reduce or eliminate localized flooding.	Flooding	Medium	On-Going	Engineer	Action	TBD	Existing Funds
1.2.4	Identify existing culturally or socially significant structures within participating jurisdictions that have the most potential for losses from disaster events and identify needed structural upgrades.	All*		On-Going	Engineer	Action	No Additional Cost	Existing Funds
1.2.5	Inventory and map existing fire hydrants and piping throughout the county and identify areas in need of new fire hydrants and/or areas of insufficient water pressure for fire suppression.	Wildfires		On-Going	Fire Dept	Action	No Additional Cost	Existing Funds

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
1.2.6	Assist the Alabama Forestry Commission with their Community Wildfire Plan for Fayette County.	Wildfire		Long-Range	Fire Dept	Action	No Additional Cost	Existing Funds
1.4	**<u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from multi-hazard damages.**							
1.4.3	Review fire safety ordinances to ensure they properly regulate open burning.	Wildfires		Short-Range	Fire Dept	Action	No Additional Cost	Existing Funds
1.4.4	Encourage the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings by amending applicable ordinances and regulations.	Tornadoes Hurricanes Severe Storms Human-Caused Technological	High	On-going	Commission	Action	No Additional Cost	Existing Funds
1.5	**<u>Floodplain Management Regulations and Management.</u> Effectively administer and enforce local floodplain management regulations.**							

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.5.1	Promote the adoption of a uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage floodplain management that maintains the natural and beneficial functions of floodplains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Flooding	Medium	Long-Range	Commission	Action	No Additional Cost	Existing Funds
1.5.2	Improve flood risk assessment by monitoring flood events and damages, documenting high water marks post event, verification of FEMA's repetitive loss inventory and revising and updating regulatory floodplain maps.	Flooding	High	On-Going	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.5.3	Encourage the training of local floodplain managers through programs offered by the State Floodplain Coordinator and FEMA's training center in Emmitsburg, Maryland.	Flooding	High	On-Going	Commission	Action	TBD	Existing Funds
1.5.4	Maintain membership for locally designated floodplain managers in the Association of State Floodplain Managers and the Alabama Association Floodplain Managers and encourage active participation.	Flooding	Low	On-Going	Commission	Action	No Additional Cost	Existing Funds

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.5.5	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Flooding	High	On-Going	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.5.6	Update local floodplain ordinance for compliance with current NFIP standards.	Flooding	High	On-Going	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.5.7	Continue ongoing relations with the State NFIP Coordinator in relation to floodplain management.	Flooding	High	On-Going	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.6	**<u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.**							
1.6.1	Apply for membership in the CRS Program; continue to upgrade rating.	Flooding	Medium	Long-Range	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.9	**<u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and other natural and human-caused disaster events.**							

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.9.1	Perform vulnerability assessments of critical facilities, including education facilities, to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards; i.e., protective film inside windows.	All *	High	On-Going	TBD	Action	TBD	Existing Funds
1.9.2	Conduct wildfire vulnerability assessments of critical facilities and other properties in these risk areas and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	Wildfire	High	On-Going	Fire Dept	Action	No Additional Cost	Existing Funds
1.9.3	Inspect security measures around critical facilities for areas of concern (i.e., cut away areas in security fencing, inoperable cameras) and develop a plan to address the concerns.	Human-Caused	Medium	On-Going	Commission Schools	Action	No Additional Cost	Existing Funds
1.9.4	Perform annual penetration and vulnerability assessments of log files and wire data.	Human-Caused	Low	On-Going	Schools	Action	No Additional Cost	Existing Funds
1.9.5	Establish Threat Assessment Teams on each campus.	Human-Caused	Low	Short-Range	Schools	Action	No Additional Cost	Existing Funds
1.10	**<u>Geographic Information Systems (GIS) and Information Management</u>. Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories to aid in planning, hazard mitigation and incident reporting.**							

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.10.1	Maintain a hazards and risk assessment database that is accessible to local planners and emergency management personnel, including such data as, flood zones, geohazards, tornado tracks, disaster events and their extents, major drainage structures and a comprehensive inventory of critical facilities, including points of distribution within all jurisdictions. If applicable, add to GIS mapping.	All	High	On-Going	Commission	Action	No Additional Cost	Existing Funds
1.10.2	Maintain a comprehensive inventory of dams and failure inundation areas within the county and jurisdictions.	Dam Failure	High	On-Going	EMA	Action	No Additional Cost	Existing Funds
1.10.3	Provide property assessments of areas impacted by hazards for damage/incident reports. If applicable, add to GIS mapping.	All	Low	On-Going	Public Safety FD EMA	Action	No Additional Cost	Existing Funds
1.10.4	Develop a centralized County database of all safe rooms and shelters, both pre-disaster and post-disaster, open to the public for all jurisdictions. Include and update those locations in GIS if applicable.	Tornadoes Hurricanes Severe Storms Earthquakes Technological	Medium	On-Going	EMA	Action	No Additional Cost	Existing Funds

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.10.5	Keep up-to-date lists of addresses with private safe rooms and shelters to assist fire departments and emergency services agencies. Coordinate the distribution of these lists to the appropriate local government officials.	Tornadoes Hurricanes Severe Storms Earthquakes	High	On-Going	Fire Dept	Action	No Additional Cost	Existing Funds
1.10.6	Maintain a listing of locations of special needs groups, including the elderly and those with Alzheimer's. Disseminate that information to emergency personnel.	All	High	On-Going	Fire Dept Public Safety	Action	No Additional Cost	Existing Funds
1.10.7	Establish a uniform damage reporting procedure with the Fayette County Emergency Management Agency as the clearinghouse for damage assessment data following disaster events.	All	Low	Short-Range	EMA	Action	No Additional Cost	Existing Funds
1.11	**<u>Dam Safety Management.</u> Establish a comprehensive dam safety program.**							
1.11.1	Support legislation to establish a State dam safety program.	Dam Failure	Low	On-Going	Commission	Action	No Additional Cost	Existing Funds
1.12	**<u>Prescribed Burn Regulations and Wildfire Management.</u> Create regulations and programs to reduce storm debris.**							

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.12.1	Maintain and update emergency operations plans.	All	High	On-Going	Fire Dept Public Safety EMA	Action	No Additional Cost	Existing Funds
1.12.2	Encourage programs to conduct prescribed burns of large undeveloped areas of downed trees from disaster events to lessen the possibility of wildfires.	Wildfires	Low	On-Going	Fire Dept	Action	No Additional Cost	Existing Funds
1.13	**Emergency Operations Plans.**							
1.13.1	Maintain and update emergency operations plans.	All	High	On-Going	Schools	Action	TBD	Existing Funds
1.13.2	Develop or update continuity of operations plans.	All	High	On-Going	EMA	Action	TBD	Existing Funds
2	**Goal for Human Welfare and Property Protection: Protect people, animals, structures and contents from the damaging effects of hazards.**							
2.2	**Building Acquisition. Acquire flood prone buildings and properties and establish permanent open space.**							

2020 - 2025 Fayette County Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.2.1	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Flooding	Low	On-Going	Engineer	Action	TBD	FEMA HMA Grant
2.2.2	Acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Flooding	Low	On-Going	Engineer	Project	TBD	FEMA HMA Grant
2.3	**<u>Building Elevation.</u> Elevate buildings in hazardous flood areas to safeguard against damages.**							
2.3.1	Assist with the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings.	Flooding	Low	On-Going	Engineer	Project	TBD	FEMA HMA Grant
2.3.2	Assist in repairing or weatherizing existing homes.	Flooding	Low	On-Going	Engineer	Project	TBD	FEMA HMA Grant
2.4	**<u>Building Retrofits.</u> Retrofit vulnerable buildings and their surroundings to protect against multiple hazard damages, including flooding, high winds, tornadoes, hurricanes, severe storms, earthquakes, and human-caused hazards.**							

2020 - 2025 Fayette County Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.4.1	Assist with retrofitting existing buildings against potential damages from natural and human-caused hazards.	Flooding Tornadoes Hurricanes Severe Storms Earthquakes Human-Caused	Low	On-Going	Engineer	Action	TBD	FEMA HMA Grant
2.5	**<u>Flood Proofing.</u> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.**							
2.5.1	Assist in flood proofing pre-FIRM non-residential buildings, where feasible.	Flooding	Low	On-Going	Engineer	Project	TBD	FEMA HMA Grant
2.6	**<u>Critical Facilities Protection</u>. Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones, construction of new facilities, or implementation of security measures for maximum protection from all hazards.**							
2.6.1	Retrofit critical facilities and infrastructure against potential damages from hazards.	All*	High	On-Going	Engineer	Project	TBD	FEMA HMA Grant
2.6.2	Encourage the relocation of existing utility lines underground, where feasible and cost effective.	Tornadoes Severe Storms Winter Storms Hurricanes	Medium	On-Going	Engineer	Action	No Additional Cost	Existing Funds
2.6.3	Install lightning and/or surge protection on existing critical facilities.	Lightning	High	On-Going	Schools	Project	TBD	FEMA HMA

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
2.6.4	Require lightning and/or surge protection on new critical facilities.	Lightning	High	On-Going	Commission Schools	Project	No Additional Cost	Existing Funds
2.6.6	Encourage the enhancement of the security of areas surrounding public facilities. Such measures include replacing or removing landscaping that provides cover for attacks, installing motion activated lighting, secure parking lots through fencing and adequate lighting.	Human-Caused	Medium	On-Going	Schools	Action	No Additional Cost	Existing Funds
2.6.7	Encourage structural changes to secure the buildings, i.e., replace vulnerable doors, install automatic door locks for after hours, install alarms and panic alarms, install CCTVs throughout facilities	Human-Caused	Medium	On-Going	Schools	Action	No Additional Cost	Existing Funds
2.6.8	Install a public address system throughout public buildings for hazard warnings and shelter-in-place announcements.	Dam Failure Tornadoes Hurricanes Severe Storms Human-Caused Technological	Medium	On-Going	Schools	Project	TBD	ADECA CDBG

2020 - 2025 Fayette County Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.6.9	Minimize visitors' access to buildings and provide badges.	Human-Caused	Low	On-Going	Schools	Action	TBD	DHS Grant
2.6.10	Monitor inflow/outflow of network activity on computer systems in critical facilities to protect against cyberterrorism.	Human-Caused	Low	On-Going	Commission	Action	No Additional Cost	Existing Funds
2.6.11	Utilize the DHS' free assessment tool for cybersecurity for local governments to find weak areas in cybersecurity and address the issues found.	Human-Caused	Low	On-Going	Commission	Action	No Additional Cost	Existing Funds
2.6.12	Ensure computer firewalls, virus protections, etc. are up-to-date.	Human-Caused	Low	On-Going	Commission	Action	No Additional Cost	Existing Funds
2.7	**<u>Emergency Power Generation.</u> Assure uninterrupted power supplies during emergency events.**							
2.7.1	Install or encourage the installation of backup power generators for critical facilities, including radio stations, and fuel stations.	Tornadoes Hurricanes Severe Storms Winter Storms Earthquakes Human-Caused	Medium	On-Going	Commission	Project	TBD	BRIC HMGP
2.8	**<u>Community Shelters and Safe Rooms</u>: Provide shelter from multiple hazards for the safety of community residents.**							

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.8.1	Work with jurisdictional leaders in developing standardized procedures for identifying shelters as pre-disaster and post-disaster shelters or safe rooms.	Hurricanes Tornadoes Severe Storms Earthquakes Technological	High	On-Going	Commission Schools	Action	No Additional Cost	Existing Funds
2.8.2	Review existing public shelters and safe rooms in public buildings including schools and recommend new locations and where there are coverage gaps. Include evaluations of ADA compliance and sheltering of animals.	Hurricanes Tornadoes Severe Storms Earthquakes Technological	High	Mid-Range	Commission Schools	Action	No Additional Cost	Existing Funds
2.8.3	Determine how to accommodate individuals with special needs both in the emergency operations plan for the shelter or safe room and in the design of the shelter or safe room, including compliance with the American with Disabilities Act (ADA).	Hurricanes Tornadoes Severe Storms Earthquakes Technological	High	On-Going	Commission Schools	Action	No Additional Cost	Existing Funds
2.8.4	Evaluate the need for severe weather plans and shelters in essential facilities and other establishments serving the public (e.g., schools, hospitals, and critical facilities).	Hurricanes Tornadoes Severe Storms Earthquakes Technological	High	Short-Range	Commission Schools	Action	No Additional Cost	Existing Funds

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.8.5	Construct new community safe rooms in accessible locations and add safe rooms within new and existing public and institutional buildings, such as schools, colleges and universities, senior centers, community centers, hospitals, and government buildings.	Hurricanes Tornadoes Severe Storms Earthquakes Human-Caused Technological	Medium	Long-Range	Commission Schools	Project	TBD	FEMA HMA Grant
2.8.6	Establish a program for subsidizing individual and community safe room construction in existing facilities.	Hurricanes Tornadoes Severe Storms Earthquakes	Low	Long-Range	Commission	Project	TBD	FEMA HMA Grant
2.8.7	Encourage the construction of safe rooms in new and existing homes and buildings.	Hurricanes Tornadoes Severe Storms Earthquakes	Medium	On-Going	Commission Schools	Project	No Additional Cost	Existing Funds
2.8.8	Determine which areas at important facilities such as schools and daycare centers are the best locations for occupants during a disaster. Identify and provide directions to the designated “safe place.”	Tornadoes Hurricanes Severe Storms Technological	Medium	On-Going	Public Safety Schools	Action	TBD	Existing Funds

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.8.9	Ensure all public buildings have a refuge plan of where to send people during times of disasters. Encourage posting of the plan in places accessible to the public.	Dam Failure Tornadoes Hurricanes Severe Storms Earthquakes Human-Caused Technological	High	Short-Range	Commission Schools	Action	No Additional Cost	Existing Funds
2.8.10	Ensure all schools have a place of refuge plan for sporting events held outside and proper posting on where it is located.	Tornadoes Hurricanes Severe Storms Human-Caused	High	Short-Range	Schools	Action	TBD	Existing Funds
2.9	**<u>Human Health and Welfare Programs</u>. Programs that protect the health of individuals from the effects of hazards.**							
2.9.1	Educate the public about vaccines and immunizations.	Pandemic	Low	On-Going	Health Dept Schools	Action	No Additional Cost	Existing Funds
2.9.2	Require school systems to inform parents/guardians about illness at the schools.	Pandemic	Low	On-Going	Schools	Action	No Additional Cost	Existing Funds
2.9.3	Ensure school buses include air conditioning when purchasing replacements buses.	Extreme Heat	Low	On-Going	Schools	Action	No Additional Cost	Existing Funds

2020 - 2025 Fayette County Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3	**Goal for Education, Outreach and Awareness. Educate and inform the public, and government and agency staff about the risks of hazards and ways to reduce threats to life and property.**							
3.1	**Community Hazard Mitigation Plan Distribution. Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.**							
3.1.1	Distribute the 2020 plan to local officials, stakeholders, and interested individuals through internet download.	All	High	On-Going	Commission EMA	Action	No Additional Cost	Existing Funds
3.2	**Technical Assistance. Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.**							
3.2.1	Provide technical assistance to owners of vulnerable buildings to advise on available building retrofits to protect against hazards damages.	Flooding	Medium	On-Going	Floodplain Manager Engineer	Action	No Additional Cost	Existing Funds
3.3	**Flood Map Information. Increase public access to Flood Insurance Rate Map (FIRM) information.**							
3.3.1	Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through local trade publications, newspaper announcements and other media related outreach events.	Flooding	High	On-Going	Floodplain Manager	Action	TBD	FEMA CTP

2020 - 2025 Fayette County Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.4	**Hazard Insurance Awareness. Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.**							
3.4.1	Promote the purchase of insurance coverage by property owners and renters for flood damages and other hazards in high-risk areas.	Flooding Earthquakes Landslides Sinkholes Human-Caused	Low	On-Going	Commission	Action	No Additional Cost	Existing Funds
3.4.2	Partner with insurance companies to disseminate information on hazards to citizens, i.e., availability of flood insurance in flood prone areas.	Flooding Earthquakes Landslides Sinkholes Human-Caused	Low	On-Going	Commission Floodplain Manager	Action	No Additional Cost	Existing Funds
3.4.3	Promote the purchase of crop insurance by farmers to cover potential losses due to drought.	Drought	Low	On-Going	Commission	Action	No Additional Cost	Existing Funds
3.5	**Publication Distribution. Use local library resources and other agencies/departments to educate the public on hazard risks and mitigation alternatives through distribution of publications on hazards and hazard mitigation.**							
3.5.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	All	Medium	On-Going	Commission	Action	No Additional Cost	Existing Funds

2020 - 2025 Fayette County Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.5.3	Assist the state and the Alabama Cooperative Extension Systems in educating stakeholders and the public about resources available through http://drought.aces.edu regarding the risk of drought and how to prepare for and mitigate the effects of drought.	Flooding	Medium	On-Going	EMA	Action	No Additional Cost	Existing Funds
3.6	**Outreach Projects. Conduct regular public events to inform the public of hazards and mitigation measures.**							
3.6.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and severe Weather Week.	All	Medium	On-Going	EMA	Action	No Additional Cost	Existing Funds
3.6.2	Distribute material via the internet and other Media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	All	High	On-Going	Commission EMA	Action	No Additional Cost	Existing Funds
3.6.3	Promote disaster resilience within the business community through workshops, educational materials, and planning guides.	All	High	On-Going	Commission EMA	Action	TBD	Existing Funds

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.6.4	Promote awareness of human-caused and technological hazards through workshops, educational materials and planning guides to businesses and the general public.	Human-Caused Technological	High	On-Going	Commission EMA	Action	TBD	Existing Funds
3.7	**<u>Outreach Programs</u>. Use schools and other community education resources to conduct programs on topics related to hazard risks and mitigation measures.**							
3.7.1	Distribute hazard mitigation brochures to students through area schools.	All	Medium	On-Going	Schools EMA	Action	TBD	Existing Funds
3.7.2	Educate students and the public about the "See Something, Say Something" program, including who to contact about suspicions.	Human-Caused	Low	On-Going	Schools	Action	No Additional Cost	Existing Funds
3.7.4	Provide emergency preparedness information for extreme temperature events through an active educational outreach program with specific plans and procedures for senior citizens and people with special needs.	Extreme Cold Extreme Heat	Medium	On-Going	Commission	Action	No Additional Cost	Existing Funds
3.7.5	Educate homeowners about structural and non-structural retrofitting of homes vulnerable to certain hazards.	Tornadoes Hurricanes Severe Storms Earthquakes Flooding	Low	On-Going	Commission	Action	No Additional Cost	Existing Funds

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
3.7.6	Educate employees in critical facilities about cybersecurity.	Human-Caused	Medium	On-Going	Commission Schools	Action	No Additional Cost	Existing Funds
3.7.7	Enhance public safety through awareness and outreach materials to the public with regards to pandemics.	Pandemic	Low	On-Going	Public Health Dept	Action	No Additional Cost	Existing Funds
3.7.8	Educate the public about hazard warning systems that are available including the emergency warning system for their cell phones.	Flooding	High	On-Going	EMA	Action	No Additional Cost	Existing Funds
3.7.9	Assist the State EMA with notifying the public about dam inundation areas and explaining the risks associated with dam failure in Fayette County.	Dam Failure	Low	On-Going	EMA	Action	No Additional Cost	Existing Funds
3.7.10	Educate staff members on proper mitigation measures of pandemic preparedness.	Pandemic	High	On-Going	Schools	Action	No Additional Cost	Existing Funds
3.7.11	Educate staff members for the utilization of virtual resources for virtual and/or remote learning or communications during closures due to pandemics or other hazards.	Pandemic Human-Caused Technological	Medium	On-Going	Schools	Action	No Additional Cost	Existing Funds

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.7.12	Upgrade technology devices for students and teachers for utilization during virtual and/or remote learning.	Pandemic	Medium	On-Going	Schools	Project	TBD	State BOE Grant Funds
3.8	**Training and Webinars. Attend training and educational webinars on mitigation of national human caused and technological hazard.**							
3.8.2	Promote training and attendance by employees at conferences and webinars sponsored by agencies such as FEMA, DHS, APHD, AEMA and the Fayette County EMA.	All	High	On-Going	Commission Schools	Action	TBD	Existing Funds
3.8.3	Encourage completion of the online course FEMA IS-907 on active shooters by employees in critical facilities.	Human-Caused	Medium	On-Going	Commission Schools	Action	No Additional Cost	Existing Funds
3.8.5	Encourage local agricultural businesses to participate in the Strategic Partnership Program for agroterrorism programs.	Human- Caused	Medium	On-Going	Commission	Action	No Additional Cost	Existing Funds
3.9	**Disaster Warning and Notification. Improve public warning and notification systems.**							
3.9.3	Upgrade critical communications infrastructure.	All	High	On-Going	Commission	Project	TBD	FEMA HMA Grant

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.9.4	Establish procedures to warn facilities storing hazardous materials when a hazard event is likely to impact the facility to ensure safety procedures are enacted.	Tornadoes Hurricanes Severe Storms Earthquakes Dam Failure Human-Caused Technological	High	Long-Range	EMA	Action	No Additional Cost	Existing Funds
3.9.5	Ensure first responders are aware of any chemicals stored at the school including those used in the science department.	Tornadoes Severe Storms Earthquakes Human-Caused	High	Short-Range	Schools	Action	No Additional Cost	Existing Funds
3.10	**<u>Weather Radios</u>. Improve public access to weather alerts.**							
3.10.1	Continue to promote the purchase and usage of NOAA weather radios in all schools, assisted living facilities, hospitals, nursing homes, day care facilities, churches, businesses, industries, and the general public, especially in homes with no outdoor warning siren coverage.	Tornadoes Hurricanes Severe Storms Flooding	Medium	On-Going	EMA	Action	No Additional Cost	Existing Funds
3.10.2	Require/encourage the installation of weather radios in all public buildings and places of public assembly.	Tornadoes Hurricanes Severe Storms Flooding	Medium	On-Going	Commission	Action	No Additional Cost	Existing Funds

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.10.3	Distribute weather radios and emergency response instructions to municipal residents and businesses.	Tornadoes Hurricanes Severe Storms Flooding	High	On-Going	Commission	Action	TBD	FEMA HMA Grant
3.10.4	Instruct residents and business owners on emergency response instructions.	Tornadoes Hurricanes Severe Storms Flooding	High	On-Going	EMA Fire Dept Public Safety	Action	No Additional Cost	Existing Funds
3.10.5	Promote the use of weather radios in households and businesses.	Tornadoes Hurricanes Severe Storms Flooding	High	On-Going	Commission	Action	No Additional Cost	Existing Funds
3.11	**<u>Mass Media Relations and Websites</u>. Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, on-line social networking, and government/agency websites to increase public awareness and distribute public information on hazard mitigation topics.**							
3.11.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and/or loss of life.	All	High	On-Going	Commission EMA	Action	No Additional Cost	Existing Funds
3.11.3	Expand the use of city-sponsored websites to disseminate hazard mitigation information.	All	High	On-Going	Commission EMA Fire Dept Public Safety	Action	No Additional Cost	Existing Funds

2020 - 2025 Fayette County Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.11.4	Include hazard information on school websites to disseminate hazard mitigation information with a focus on family safety.	All	Medium	Short-Range	Schools	Action	No Additional Cost	Existing Funds
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	**Open Space Easements and Acquisitions. Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, floodplains, and wetlands to assure permanent protection of these natural resources.**							
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other floodplain acquisition efforts.	Flooding	Low	Long-Range	Commission	Project	TBD	FEMA HMA Grant
4.2	**River/Stream Corridor Restoration and Protection. Restore and protect river and stream corridors within areas.**							
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Flooding	Medium	On-Going	Engineer	Action	No Additional Cost	Existing Funds
4.3	**Forestry Programs. Maintain a healthy forest that can help mitigate the damaging impacts of flooding, erosion, landslides, and wildfires inside and outside the urban environment.**							
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	Wildfire	Medium	On-Going	Commission	Action	No Additional Cost	Existing Funds
4.4	**Water Resources Conservation Programs. Protect water quantity and quality through water conservation programs to mitigate the effects of droughts and assure uninterrupted potable water supplies.**							

2020 - 2025 Fayette County Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
4.4.1	Encourage water conservation through public outreach programs prior to a drought event.	Drought	Low	On-Going	Commission	Action	No Additional Cost	Existing Funds
4.4.2	Improve and retrofit water supply systems to save water during drought events and to eliminate breaks and leaks.	Drought	Low	Long-Range	Commission	Project	TBD	FEMA HMA Grant
5	**Goal for Natural System and Infrastructure Improvement and Maintenance 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.**							
5.1	**Drainage System and Rights-of-Way Maintenance. Improve maintenance programs for streams and drainage ways.**							
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance. Ensure storm drains and ditches are not blocked and are able to receive water.	Flooding	High	On-Going	Engineer	Action	No Additional Cost	Existing Funds
5.1.3	Develop and adopt winter maintenance procedures that include smart salting techniques and applying deicing agents before severe winter storms happen.	Winter Storm	Low	Mid-Range	Commission	Action	No Additional Cost	Existing Funds
5.2	**Reservoirs and Drainage System Improvements. Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.**							

2020 - 2025 Fayette County Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding.	Flooding	High	On-Going	Commission	Project	TBD	FEMA HMA Grant

2020 - 2025 Belk Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1	**Goal for Prevention. Manage the development of land and buildings to minimize risks of loss due to multiple hazards.**							
1.2	**Planning Studies. Conduct special studies, as needed, to identify hazard risks and mitigation measures.**							
1.2.3	Identify problem drainage areas where drainage improvements could be made to reduce or eliminate localized flooding.	Flooding	High	Mid-Range	Town Council	Action	No Additional Cost	Existing Funds
1.2.4	Identify existing culturally or socially significant structures that have the most potential for losses from disaster events and identify needed structural upgrades.	All*	High	Long-Range	Town Council	Action	No Additional Cost	Existing Funds
1.2.5	Inventory and map existing fire hydrants and piping throughout the county and identify areas in need of new fire hydrants and/or areas of insufficient water pressure for fire suppression.	Wildfires	Low	Mid-Range	Town Council Water Dept Fire Dept	Action	No Additional Cost	Existing Funds

2020 - 2025 Belk Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.2.6	Assist the Alabama Forestry Commission with their Community Wildfire Plan for Fayette County.	Wildfire	Low	Long-Range	Fire Department	Action	No Additional Cost	Existing Funds
1.4	**<u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from multi-hazard damages.**							
1.4.4	Encourage the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings by amending applicable ordinances and regulations.	Tornadoes Hurricanes Severe Storms Human-Caused Technological	Medium	On-Going	Town Council	Action	No Additional Cost	NA
1.5	**<u>Floodplain Management Regulations and Management.</u> Effectively administer and enforce local floodplain management regulations.**							
1.5.1	Promote the adoption of a uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage floodplain management that maintains the natural and beneficial functions of floodplains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Flooding	Low	Long-Range	Floodplain Manager	Action	No Additional Cost	NA

2020 - 2025 Belk Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.5.2	Improve flood risk assessment by monitoring flood events and damages, documenting high water marks post event, verification of FEMA's repetitive loss inventory and revising and updating regulatory floodplain maps.	Flooding	Medium	Long-Range	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.5.6	Update local floodplain ordinance for compliance with current NFIP standards.	Flooding	HIgh	Mid-Range	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.5.7	Continue ongoing relations with the State NFIP Coordinator in relation to floodplain management.	Flooding	Low	On-Going	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.9	**Critical Facilities Assessments. Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and other natural and human-caused disaster events.**							
1.9.1	Perform vulnerability assessments of critical facilities, including education facilities, to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards; i.e., protective film inside windows.	All *	High	On-Going	Town Council	Action	TBD	Existing Funds

2020 - 2025 Belk Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.9.2	Conduct wildfire vulnerability assessments of critical facilities and other properties in these risk areas and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	Wildfire	Medium	On-Going	Fire Department	Action	TBD	AFG
1.9.3	Inspect security measures around critical facilities for areas of concern (i.e., cut away areas in security fencing, inoperable cameras) and develop a plan to address the concerns.	Human- Caused	Medium	On-Going	Town Council Sheriff's Office	Action	TBD	Existing Funds
1.9.4	Perform annual penetration and vulnerability assessments of log files and wire data.	Human-Caused	Low	On-Going	Town Council	Action	TBD	Existing Funds
1.10	**<u>Geographic Information Systems (GIS) and Information Management</u>. Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories to aid in planning, hazard mitigation and incident reporting.**							
1.10.5	Keep up-to-date lists of addresses with private safe rooms and shelters to assist fire departments and emergency services agencies. Coordinate the distribution of these lists to the appropriate local government officials.	Tornadoes Hurricanes Severe Storms Earthquakes	Medium	On-Going	Fire Department	Action	No Additional Cost	NA
1.10.6	Maintain a listing of locations of special needs groups, including the elderly and those with Alzheimer's. Disseminate that information to emergency personnel.	All	High	On-Going	Town Council Fire Department	Action	No Additional Cost	Existing Funds

2020 - 2025 Belk Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.11	**Dam Safety Management. Establish a comprehensive dam safety program.**							
1.11.1	Support legislation to establish a State dam safety program.	Dam Failure	Low	On-Going	Town Council	Action	No Additional Cost	NA
1.12	**Prescribed Burn Regulations and Wildfire Management. Create regulations and programs to reduce storm debris.**							
1.12.1	Maintain and update emergency operations plans.	All	Low	On-Going	EMA	Action	No Additional Cost	Existing Funds
1.12.2	Encourage programs to conduct prescribed burns of large undeveloped areas of downed trees from disaster events to lessen the possibility of wildfires.	Wildfires	Low	On-Going	Fire Department	Action	No Additional Cost	NA
1.13	**Emergency Operations Plans.**							
1.13.2	Develop or update continuity of operations plans.	All	Medium	On-Going	Town Council	Action	TBD	ADECA CDBG
2	**Goal for Human Welfare and Property Protection: Protect people, animals, structures and contents from the damaging effects of hazards.**							
2.2	**Building Acquisition. Acquire flood prone buildings and properties and establish permanent open space.**							

2020 - 2025 Belk Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.2.1	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Flooding	Low	On-Going	Floodplain Manager	Action	TBD	FEMA HMA Grant
2.2.2	Acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Flooding	Low	Long-Range	Floodplain Manager	Project	TBD	FEMA HMA Grant
2.6	**<u>Critical Facilities Protection</u>. Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones, construction of new facilities, or implementation of security measures for maximum protection from all hazards.**							
2.6.2	Encourage the relocation of existing utility lines underground, where feasible and cost effective.	Tornadoes Severe Storms Winter Storms Hurricanes	Low	On-Going	Town Council	Action	No Additional Cost	NA
2.6.4	Require lightning and/or surge protection on new critical facilities.	Lightning	Low	On-Going	Town Council	Project	No Additional Cost	Existing Funds

2020 - 2025 Belk Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.6.10	Monitor inflow/outflow of network activity on computer systems in critical facilities to protect against cyberterrorism.	Human-Caused	Low	On-Going	Town Council	Action	TBD	Grants/ Existing Funds
2.6.11	Utilize the DHS' free assessment tool for cybersecurity for local governments to find weak areas in cybersecurity and address the issues found.	Human-Caused	Low	On-Going	Town Council	Action	TBD	Grants/ Existing Funds
2.6.12	Ensure computer firewalls, virus protections, etc. are up-to-date.	Human-Caused	Low	On-Going	Town Council	Action	TBD	Grants/ Existing Funds
2.8	**<u>Community Shelters and Safe Rooms</u>: Provide shelter from multiple hazards for the safety of community residents.**							
2.8.1	Work with county and city leaders in developing standardized procedures for identifying shelters as pre-disaster and post-disaster shelters or safe rooms.	Hurricanes Tornadoes Severe Storms Earthquakes Technological	High	Short-Range	Town Council	Action	No Additional Cost	NA

2020 - 2025 Belk Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
2.8.2	Review existing public shelters and safe rooms in public buildings including schools and recommend new locations and where there are coverage gaps. Include evaluations of ADA compliance and sheltering of animals.	Hurricanes Tornadoes Severe Storms Earthquakes Technological	Low	Mid-Range	Town Council	Action	No Additional Cost	NA
2.8.3	Determine how to accommodate individuals with special needs both in the emergency operations plan for the shelter or safe room and in the design of the shelter or safe room, including compliance with the American with Disabilities Act (ADA).	Hurricanes Tornadoes Severe Storms Earthquakes Technological	Low	Short-Range	Town Council	Action	No Additional Funds	NA
2.8.4	Evaluate the need for severe weather plans and shelters in essential facilities and other establishments serving the public (e.g., schools, hospitals, and critical facilities).	Hurricanes Tornadoes Severe Storms Earthquakes Technological	Low	Short-Range	Town Council	Action	No Additional Funds	NA

2020 - 2025 Belk Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.8.5	Construct new community safe rooms in accessible locations and add safe rooms within new and existing public and institutional buildings, such as schools, colleges and universities, senior centers, community centers, hospitals, and government buildings.	Hurricanes Tornadoes Severe Storms Earthquakes Human-Caused Technological	Medium	Long-Range	Town Council EMA	Project	TBD	FEMA HMA Grant
2.8.7	Encourage the construction of safe rooms in new and existing homes and buildings.	Hurricanes Tornadoes Severe Storms Earthquakes	High	On-Going	Town Council	Action	No Additional Funds	NA
2.8.8	Determine which areas at important facilities such as schools and daycare centers are the best locations for occupants during a disaster. Identify and provide directions to the designated “safe place.”	Tornadoes Hurricanes Severe Storms Technological	High	Mid-Range	Town Council EMA Fire Department	Action	No Additional Cost	NA

2020 - 2025 Belk Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
2.8.9	Ensure all public buildings have a refuge plan of where to send people during times of disasters. Encourage posting of the plan in places accessible to the public.	Dam Failure Tornadoes Hurricanes Severe Storms Earthquakes Human-Caused Technological	Medium	Short-Range	Town Council	Project	TBD	Existing Funds
3	**Goal for Education, Outreach and Awareness. Educate and inform the public, and government and agency staff about the risks of hazards and ways to reduce threats to life and property.**							
3.1	**Community Hazard Mitigation Plan Distribution. Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.**							
3.1.1	Distribute the 2020 plan to local officials, stakeholders, and interested individuals through internet download.	All	High	Short-Range	Town Council	Action	No Additional Cost	Existing Funds
3.4	**Hazard Insurance Awareness. Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.**							
3.4.2	Partner with insurance companies to disseminate information on hazards to citizens, i.e., availability of flood insurance in flood prone areas.	Flooding Earthquakes Landslides Sinkholes Human-Caused	Low	On-Going	Town Council	Action	No Additional Cost	NA

2020 - 2025 Belk Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.5	**Publication Distribution. Use local library resources and other agencies/departments to educate the public on hazard risks and mitigation alternatives through distribution of publications on hazards and hazard mitigation.**							
3.5.3	Assist the state and the Alabama Cooperative Extension Systems in educating stakeholders and the public about resources available through http://drought.aces.edu regarding the risk of drought and how to prepare for and mitigate the effects of drought.	Flooding	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.6	**Outreach Projects. Conduct regular public events to inform the public of hazards and mitigation measures.**							
3.6.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	All	Medium	On-Going	Town Council	Action	No Additional Cost	NA

2020 - 2025 Belk Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.6.2	Distribute material via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	All	Low	On-Going	Town Council	Action	TBD	Existing Funds
3.6.3	Promote disaster resilience within the business community through workshops, educational materials, and planning guides.	All	Low	On-Going	Town Council	Action	No Additional Cost	NA
3.6.4	Promote awareness of human-caused and technological hazards through workshops, educational materials and planning guides to businesses and the general public.	All	Low	On-Going	Town Council	Action	No Additional Cost	NA
3.7	**<u>Outreach Programs</u>. Use schools and other community education resources to conduct programs on topics related to hazard risks and mitigation measures.**							

2020 - 2025 Belk Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.7.3	Promote the education of farmers on groundwater withdrawal and soil and water conservation practices with programs offered by such agencies as the cooperative extension service and USDA.	Drought	Low	On-Going	Town Council	Action	No Additional Cost	NA
3.7.5	Educate homeowners about structural and non-structural retrofitting of homes vulnerable to certain hazards.	Tornadoes Hurricanes Severe Storms Earthquakes Flooding	Medium	On-Going	Town Council Fire Department	Action	No Additional Cost	NA
3.7.6	Educate employees in critical facilities about cybersecurity.	Human-Caused	High	On-Going	Town Council	Action	No Additional Cost	NA
3.7.7	Enhance public safety through awareness and outreach materials to the public with regards to pandemics.	Pandemic	Low	On-Going	Town Council	Action	TBD	Existing Funds
3.7.10	Educate staff members on proper mitigation measures of pandemic preparedness.	Pandemic	High	On-Going	Town Council	Action	No Additional Cost	NA
3.8	**<u>Training and Webinars.</u> Attend training and educational webinars on mitigation of national human caused and technological hazard.**							

2020 - 2025 Belk Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.8.1	Train additional weather spotters.	Tornadoes Severe Storms Flooding Hurricanes	Medium	Mid-Range	Town Council Fire Department	Action	No Additional Cost	NA
3.8.2	Promote training and attendance by employees at conferences and webinars sponsored by agencies such as FEMA, DHS, APHD, AEMA and the Fayette County EMA.	All	Low	On-Going	Town Council	Action	TBD	Existing Funds
3.8.3	Encourage completion of the online course FEMA IS-907 on active shooters by employees in critical facilities.	Human-Caused	Medium	On-Going	Town Council	Action	No Additional Cost	NA
3.8.4	Encourage the participation of groups in programs offered by the Department of Homeland Security; such as courses on Targeted Violence and Terrorism Prevention.	Human-Caused	Low	On-Going	Town Council	Action	No Additional Cost	NA
3.8.5	Encourage local agricultural businesses to participate in the Strategic Partnership Program for agroterrorism programs.	Human-Caused	High	On-Going	Town Council	Action	No Additional Cost	NA
3.9	**Disaster Warning and Notification. Improve public warning and notification systems.**							
3.9.3	Upgrade critical communications infrastructure.	All	Medium	On-Going	Town Council	Project	TBD	Any grant sources

2020 - 2025 Belk Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.10	**<u>Weather Radios</u>. Improve public access to weather alerts.**							
3.10.2	Require/encourage the installation of weather radios in all public buildings and places of public assembly.	Tornadoes Hurricanes Severe Storms Flooding	Medium	On-Going	Town Council	Action	TBD	Existing Funds
3.10.3	Distribute weather radios and emergency response instructions to municipal residents and businesses.	Tornadoes Hurricanes Severe Storms Flooding	Medium	On-Going	Town Council Fire Department	Action	TBD	FEMA HMA Grant
3.10.5	Promote the use of weather radios in households and businesses.	Tornadoes Hurricanes Severe Storms Flooding	High	On-Going	Town Council Fire Department	Action	No Additional Cost	Existing Funds
3.11	**<u>Mass Media Relations and Websites</u>. Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, on-line social networking, and government/agency websites to increase public awareness and distribute public information on hazard mitigation topics.**							
3.11.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and/or loss of life.	All	Low	On-Going	Town Council	Action	No Additional Cost	NA

2020 - 2025 Belk Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.11.3	Expand the use of city-sponsored websites to disseminate hazard mitigation information.	All	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
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	**Open Space Easements and Acquisitions. Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, floodplains, and wetlands to assure permanent protection of these natural resources.**							
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other floodplain acquisition efforts.	Flooding	Low	Long-Range	Town Council	Project	TBD	FEMA HMA
4.2	**River/Stream Corridor Restoration and Protection. Restore and protect river and stream corridors within areas.**							
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Flooding	Medium	On-Going	Town Council	Project	No Additional Cost	NA
4.3	**Forestry Programs. Maintain a healthy forest that can help mitigate the damaging impacts of flooding, erosion, landslides, and wildfires inside and outside the urban environment.**							
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	Wildfire	Medium	On-Going	Town Council Fire Department	Action	No Additional Cost	NA
4.4	**Water Resources Conservation Programs. Protect water quantity and quality through water conservation programs to mitigate the effects of droughts and assure uninterrupted potable water supplies.**							

2020 - 2025 Belk Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
4.4.1	Encourage water conservation through public outreach programs prior to a drought event.	Drought	Medium	On-Going	Town Council	Action	No Additional Cost	NA
4.4.2	Improve and retrofit water supply systems to save water during drought events and to eliminate breaks and leaks.	Drought	Medium	On-Going	Town Council	Project	TBD	Any grant source
5	**Goal for Natural System and Infrastructure Improvement and Maintenance 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.**							
5.1	**Drainage System and Rights-of-Way Maintenance. Improve maintenance programs for streams and drainage ways.**							
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance. Ensure storm drains and ditches are not blocked and are able to receive water.	Flooding	Medium	Long-Range	Town Council	Project	TBD	Grants/ Existing Funds

2020 - 2025 Berry Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1	**Goal for Prevention. Manage the development of land and buildings to minimize risks of loss due to multiple hazards.**							
1.2	**Planning Studies. Conduct special studies, as needed, to identify hazard risks and mitigation measures.**							
1.2.3	Identify problem drainage areas where drainage improvements could be made to reduce or eliminate localized flooding.	Flooding	High	On-Going	Town Council	Action	No Additional Cost	NA
1.2.4	Identify existing culturally or socially significant structures within participating jurisdictions that have the most potential for losses from disaster events and identify needed structural upgrades.	All*	High	Long-Range	Town Council	Action	No Additional Cost	Existing Funds
1.2.5	Inventory and map existing fire hydrants and piping throughout the county and identify areas in need of new fire hydrants and/or areas of insufficient water pressure for fire suppression.	Wildfires	Low	On-Going	Fire Department	Action	No Additional Cost	NA
1.2.6	Assist the Alabama Forestry Commission with their Community Wildfire Plan for Fayette County.	Wildfire	Low	Long-Range	Fire Department	Action	No Additional Cost	Existing Funds

2020 - 2025 Berry Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.4	**Building and Technical Codes. Review local codes for effectiveness of standards to protect buildings and infrastructure from multi-hazard damages.**							
1.4.4	Encourage the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings by amending applicable ordinances and regulations.	Tornadoes Hurricanes Severe Storms Human-Caused Technological	Medium	On-Going	Town Council	Action	No Additional Cost	NA
1.5	**<u>Floodplain Management Regulations and Management.</u> Effectively administer and enforce local floodplain management regulations.**							
1.5.1	Promote the adoption of a uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage floodplain management that maintains the natural and beneficial functions of floodplains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Flooding	Low	Long-Range	Town Council	Action	No Additional Cost	NA
1.5.2	Improve flood risk assessment by monitoring flood events and damages, documenting high water marks post event, verification of FEMA's repetitive loss inventory and revising and updating regulatory floodplain maps.	Flooding	High	Long-Range	Floodplain Manager	Action	No Additional Cost	Existing Funds

2020 - 2025 Berry Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.5.6	Update local floodplain ordinance for compliance with current NFIP standards.	Flooding	Medium	On-Going	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.5.7	Continue ongoing relations with the State NFIP Coordinator in relation to floodplain management.	Flooding	High	On-Going	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.9	**<u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and other natural and human-caused disaster events.**							
1.9.1	Perform vulnerability assessments of critical facilities, including education facilities, to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards; i.e., protective film inside windows.	All *	Low	On-Going	Town Council Fire Department	Action	TBD	Existing Funds
1.9.2	Conduct wildfire vulnerability assessments of critical facilities and other properties in these risk areas and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	Wildfire	Low	On-Going	Fire Department	Action	TBD	AFG

2020 - 2025 Berry Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.9.3	Inspect security measures around critical facilities for areas of concern (i.e., cut away areas in security fencing, inoperable cameras) and develop a plan to address the concerns.	Human-Caused	Medium	On-Going	Town Council	Project	TBD	Any grant source
1.10	**<u>Geographic Information Systems (GIS) and Information Management</u>. Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories to aid in planning, hazard mitigation and incident reporting.**							
1.10.5	Keep up-to-date lists of addresses with private safe rooms and shelters to assist fire departments and emergency services agencies. Coordinate the distribution of these lists to the appropriate local government officials.	Tornadoes Hurricanes Severe Storms Earthquakes	Medium	On-Going	Town Council Fire Department	Action	TBD	Existing Funds
1.10.6	Maintain a listing of locations of special needs groups, including the elderly and those with Alzheimer's. Disseminate that information to emergency personnel.	All	High	On-Going	Town Council Fire Department	Action	No Additional Cost	Existing Funds
1.11	**<u>Dam Safety Management.</u> Establish a comprehensive dam safety program.**							
1.11.1	Support legislation to establish a State dam safety program.	Dam Failure	Low	On-Going	Town Council	Action	No Additional Cost	NA
1.12	**<u>Prescribed Burn Regulations and Wildfire Management.</u> Create regulations and programs to reduce storm debris.**							

2020 - 2025 Berry Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.12.1	Maintain and update emergency operations plans.	All	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
1.12.2	Encourage programs to conduct prescribed burns of large undeveloped areas of downed trees from disaster events to lessen the possibility of wildfires.	Wildfires	Low	On-Going	Town Council Fire Department	Action	No Additional Cost	NA
1.13	**Emergency Operations Plans.**							
1.13.2	Develop a continuity of operations plan.	All	Medium	On-Going	Town Council	Project	TBD	Existing Funds
2	**Goal for Human Welfare and Property Protection: Protect people, animals, structures and contents from the damaging effects of hazards.**							
2.2	**Building Acquisition. Acquire flood prone buildings and properties and establish permanent open space.**							
2.2.1	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Flooding	Low	Long-Range	Floodplain Manager	Action	TBD	FEMA HMA Grant
2.2.2	Acquire and demolish flood prone or substantially damaged structures and replace with permanent open space.	Flooding	Low	Long-Range	Floodplain Manager	Project	TBD	FEMA HMA Grant

2020 - 2025 Berry Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.6	**<u>Critical Facilities Protection</u>. Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones, construction of new facilities, or implementation of security measures for maximum protection from all hazards.**							
2.6.2	Encourage the relocation of existing utility lines underground, where feasible and cost effective.	Tornadoes Severe Storms Winter Storms Hurricanes	High	On-Going	Town Council	Action	No Additional Cost	NA
2.6.4	Require lightning and/or surge protection on new critical facilities.	Lightning	Low	On-Going	Town Council	Project	No Additional Cost	Existing Funds
2.6.10	Monitor inflow/outflow of network activity on computer systems in critical facilities to protect against cyberterrorism.	Human-Caused	Low	On-Going	Town Council	Project	No Additional Cost	Existing Funds
2.6.11	Utilize the DHS' free assessment tool for cybersecurity for local governments to find weak areas in cybersecurity and address the issues found.	Human-Caused	Low	On-Going	Town Council	Project	No Additional Cost	Existing Funds
2.6.12	Ensure computer firewalls, virus protections, etc. are up-to-date.	Human-Caused	Low	On-Going	Town Council	Project	TBD	Existing Funds
2.8	**<u>Community Shelters and Safe Rooms</u>: Provide shelter from multiple hazards for the safety of community residents.**							

2020 - 2025 Berry Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.8.1	Work with county and city leaders in developing standardized procedures for identifying shelters as pre-disaster and post-disaster shelters or safe rooms.	Hurricanes Tornadoes Severe Storms Earthquakes Technological	High	Short-Range	Town Council	Project	No Additional Cost	Existing Funds
2.8.2	Review existing public shelters and safe rooms in public buildings including schools and recommend new locations and where there are coverage gaps. Include evaluations of ADA compliance and sheltering of animals.	Hurricanes Tornadoes Severe Storms Earthquakes Technological	High	Mid-Range	Town Council	Action	No Additional Cost	Existing Funds
2.8.3	Determine how to accommodate individuals with special needs both in the emergency operations plan for the shelter or safe room and in the design of the shelter or safe room, including compliance with the American with Disabilities Act (ADA).	Hurricanes Tornadoes Severe Storms Earthquakes Technological	High	Short-Range	Town Council	Project	No Additional Cost	Existing Funds
2.8.4	Evaluate the need for severe weather plans and shelters in essential facilities and other establishments serving the public (e.g., schools, hospitals, and critical facilities).	Hurricanes Tornadoes Severe Storms Earthquakes Technological	High	Short-Range	Town Council	Project	No Additional Cost	Existing Funds

2020 - 2025 Berry Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
2.8.5	Construct new community safe rooms in accessible locations and add safe rooms within new and existing public and institutional buildings, such as schools, colleges and universities, senior centers, community centers, hospitals, and government buildings.	Hurricanes Tornadoes Severe Storms Earthquakes Human-Caused Technological	Low	On-Going	Town Council	Project	TBD	FEMA HMA Grant
2.8.7	Encourage the construction of safe rooms in new and existing homes and buildings.	Hurricanes Tornadoes Severe Storms Earthquakes	Medium	On-Going	Town Council	Action	No Additional Cost	Existing Funds
2.8.8	Determine which areas at important facilities such as schools and daycare centers are the best locations for occupants during a disaster. Identify and provide directions to the designated “safe place.”	Tornadoes Hurricanes Severe Storms Technological	Medium	Short-Range	Town Council	Action	No Additional Cost	NA
2.8.9	Ensure all public buildings have a refuge plan of where to send people during times of disasters. Encourage posting of the plan in places accessible to the public.	Dam Failure Tornadoes Hurricanes Severe Storms Earthquakes Human-Caused Technological	Medium	Short-Range	Town Council	Action	No Additional Cost	NA

2020 - 2025 Berry Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3	**Goal for Education, Outreach and Awareness. Educate and inform the public, and government and agency staff about the risks of hazards and ways to reduce threats to life and property.**							
3.1	**Community Hazard Mitigation Plan Distribution. Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.**							
3.1.1	Distribute the 2020 plan to local officials, stakeholders, and interested individuals through internet download.	All	High	Short-Range	Town Council EMA	Action	No Additional Cost	Existing Funds
3.3	**Flood Map Information. Increase public access to Flood Insurance Rate Map (FIRM) information.**							
3.3.1	Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners.	Flooding	Medium	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.4	**Hazard Insurance Awareness. Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.**							
3.4.1	Promote the purchase of insurance coverage by property owners and renters for flood damages and other hazards in high-risk areas.	Flooding Earthquakes Landslides Sinkholes Human-Caused	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds

2020 - 2025 Berry Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.4.2	Partner with insurance companies to disseminate information on hazards to citizens, i.e., availability of flood insurance in flood prone areas.	Flooding Earthquakes Landslides Sinkholes Human-Caused	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.4.3	Promote the purchase of crop insurance by farmers to cover potential losses due to drought.	Drought	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.5	**Publication Distribution. Use local library resources and other agencies/departments to educate the public on hazard risks and mitigation alternatives through distribution of publications on hazards and hazard mitigation.**							
3.5.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.		Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.5.3	Assist the state and the Alabama Cooperative Extension Systems in educating stakeholders and the public about resources available through http://drought.aces.edu regarding the risk of drought and how to prepare for and mitigate the effects of drought.	Flooding	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds

2020 - 2025 Berry Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.6	**<u>Outreach Projects.</u> Conduct regular public events to inform the public of hazards and mitigation measures.**							
3.6.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and Severe Weather Week.	All	Medium	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.6.2	Distribute material via the internet and other media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	All	Low	On-Going	Town Council	Action	TBD	Existing Funds
3.6.3	Promote disaster resilience within the business community through workshops, educational materials, and planning guides.	All	Low	On-Going	Town Council	Action	No Additional Cost	NA
3.6.4	Promote awareness of human-caused and technological hazards through workshops, educational materials and planning guides to businesses and the general public.	Human-Caused Technological	Low	On-Going	Town Council	Action	No Additional Cost	NA

2020 - 2025 Berry Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.7	**<u>Outreach Programs</u>. Use schools and other community education resources to conduct programs on topics related to hazard risks and mitigation measures.**							
3.7.3	Promote the education of farmers on groundwater withdrawal and soil and water conservation practices with programs offered by such agencies as the cooperative extension service and USDA.	Drought	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.7.5	Educate homeowners about structural and non-structural retrofitting of homes vulnerable to certain hazards.	Tornadoes Hurricanes Severe Storms Earthquakes Flooding	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.7.6	Educate employees in critical facilities about cybersecurity.	Human-Caused	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.7.7	Enhance public safety through awareness and outreach materials to the public with regards to pandemics.	Pandemic	Low	On-Going	Town Council	Action	TBD	ADPH
3.7.10	Educate staff members on proper mitigation measures of pandemic preparedness.	Pandemic	High	On-Going	Town Council	Action	No Additional Cost	Existing Funds

2020 - 2025 Berry Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.8	**Training and Webinars. Attend training and educational webinars on mitigation of national human caused and technological hazard.**							
3.8.5	Encourage local agricultural businesses to participate in the Strategic Partnership Program for agroterrorism programs.	Human-Caused	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.9	**Disaster Warning and Notification. Improve public warning and notification systems.**							
3.9.3	Upgrade critical communications infrastructure.	All	Medium	On-Going	Town Council	Project	TBD	FEMA HMA Grant
3.10	**Weather Radios. Improve public access to weather alerts.**							
3.10.2	Require/encourage the installation of weather radios in all public buildings and places of public assembly.	Tornadoes Hurricanes Severe Storms Flooding	Medium	On-Going	Town Council	Action	TBD	Existing Funds
3.10.3	Distribute weather radios and emergency response instructions to municipal residents and businesses.	Tornadoes Hurricanes Severe Storms Flooding	Low	On-Going	Town Council	Action	TBD	FEMA HMA Grant

2020 - 2025 Berry Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
3.10.5	Promote the use of weather radios in households and businesses.	Tornadoes Hurricanes Severe Storms Flooding	High	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.11	**<u>Mass Media Relations and Websites</u>. Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, on-line social networking, and government/agency websites to increase public awareness and distribute public information on hazard mitigation topics.**							
3.11.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and/or loss of life.	All	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.11.3	Expand the use of city-sponsored websites to disseminate hazard mitigation information.	All	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
4	**<u>Goal for Natural Resources Protection</u>. 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	**<u>Open Space Easements and Acquisitions.</u> Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, floodplains, and wetlands to assure permanent protection of these natural resources.**							

2020 - 2025 Berry Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other floodplain acquisition efforts.	Flooding	Low	Long-Range	Town Council	Action	TBD	FEMA HMA
4.2	**River/Stream Corridor Restoration and Protection. Restore and protect river and stream corridors within areas.**							
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Flooding	High	Short-Range	Town Council	Action	No Additional Cost	Existing Funds
4.3	**Forestry Programs. Maintain a healthy forest that can help mitigate the damaging impacts of flooding, erosion, landslides, and wildfires inside and outside the urban environment.**							
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	Wildfire	Medium	On-Going	Town Council	Action	No Additional Cost	Existing Funds
4.4	**Water Resources Conservation Programs. Protect water quantity and quality through water conservation programs to mitigate the effects of droughts and assure uninterrupted potable water supplies.**							
4.4.1	Encourage water conservation through public outreach programs prior to a drought event.	Drought	High	On-Going	Town Council	Action	No Additional Cost	Existing Funds
4.4.2	Improve and retrofit water supply systems to save water during drought events and to eliminate breaks and leaks.	Drought	Low	On-Going	Town Council	Project	TBD	ADECA CDBD

2020 - 2025 Berry Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
4.4.4	Enforce water use restrictions during periods of drought to conserve existing water supplies.	Drought Heat Wave Wildfire	Low	On-Going	Town Council	Action	No Additional Cost	NA
5	**Goal for Natural System and Infrastructure Improvement and Maintenance 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.**							
5.1	**Drainage System and Rights-of-Way Maintenance. Improve maintenance programs for streams and drainage ways.**							
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance. Ensure storm drains and ditches are not blocked and are able to receive water.	Flooding	Medium	Short-Range	Town Council	Project	No Additional Cost	NA

2020 - 2025 City of Fayette Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1	**Goal for Prevention. Manage the development of land and buildings to minimize risks of loss due to multiple hazards.**							
1.1	**Comprehensive Plans and Smart Growth. Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.**							
1.1.1	Maintain up-to-date comprehensive plan.	All	High	On-Going	City Council	Action	No Additional Cost	NA
1.1.2	Integrate the findings and recommendations of this hazard mitigation plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	All	High	On-Going	City Council	Action	No Additional Cost	NA
1.2	**Planning Studies. Conduct special studies, as needed, to identify hazard risks and mitigation measures.**							
1.2.1	Consider conducting detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.	Flooding	Medium	Long-Range	City Council	Action	No Additional Cost	NA
1.2.2	Evaluate elevation and culvert sizing of existing roadways in flash flood prone areas to ensure compliance with current standards for design year floods and develop a program for construction upgrades as appropriate.	Flooding	Medium	Long-Range	City Council	Action	No Additional Cost	Existing Funds

2020 - 2025 City of Fayette Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
1.2.3	Identify problem drainage areas, conduct engineering studies, evaluate feasibility, and construct drainage improvements to reduce or eliminate localized flooding.	Flooding	High	On-Going	City Council	Action	No Additional Cost	NA
1.2.4	Identify existing culturally or socially significant structures within participating jurisdictions that have the most potential for losses from disaster events and identify needed structural upgrades.	All*	High	Long-Range	City Council	Action	No Additional Cost	Existing Funds
1.2.5	Inventory and map existing fire hydrants and piping throughout the county and identify areas in need of new fire hydrants and/or areas of insufficient water pressure for fire suppression.	Wildfires	Medium	On-Going	Fire Dept	Action	No Additional Cost	NA

2020 - 2025 City of Fayette Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.2.6	Assist the Alabama Forestry Commission with their Community Wildfire Plan for Fayette County.	Wildfire	Medium	On-Going	Fire Dept	Action	No Additional Cost	Existing Funds
1.3	**<u>Zoning and Subdivision Regulations</u>. Establish effective zoning and subdivision controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.**							
1.3.1	Encourage new subdivisions to implement fire reduction measures such as maintaining minimum intervals between structures, providing firebreaks, on-site water storage, wide roads, and multiple accesses to reduce fire risks.	Wildfire	Low	On-Going	City Council Fire Dept	Action	TBD	Existing Funds
1.3.2	Update zoning regulations to include maximum impervious surface standards for non-residential developments.	Flooding	Low	Mid-Range	City Council	Action	No Additional Cost	Existing Funds
1.4	**<u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from multi-hazard damages.**							
1.4.1	Promote good construction practices and proper code enforcement to mitigate structural failures during disaster events.	Tornadoes Hurricanes Severe Storms Earthquakes Human Caused	Medium	On-Going	City Council	Action	No Additional Cost	Existing Funds

2020 - 2025 City of Fayette Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.4.2	Establish and enforce minimum property maintenance standards that reduce or eliminate unsafe structures.	Tornadoes Hurricanes Severe Storms Earthquakes	Medium	On-Going	City Council	Action	No Additional Cost	Existing Funds
1.4.3	Review fire safety ordinances to ensure they properly regulate open burning.	Wildfires	High	Mid-Range	Fire Dept	Action	No Additional Cost	Existing Funds
1.4.4	Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings by amending applicable ordinances and regulations.	Tornadoes Hurricanes Severe Storms Human-Caused Technological	Medium	On-Going	City Council	Action	TBD	Existing Funds
1.5	**<u>Floodplain Management Regulations and Management.</u> Effectively administer and enforce local floodplain management regulations.**							
1.5.1	Promote the adoption of a uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage floodplain management that maintains the natural and beneficial functions of floodplains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Flooding	High	Long-Range	City Council	Action	No Additional Cost	NA

2020 - 2025 City of Fayette Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
1.5.2	Improve flood risk assessment by monitoring flood events and damages, documenting high water marks post event, verification of FEMA's repetitive loss inventory and revising and updating regulatory floodplain maps.	Flooding	Medium	Long-Range	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.5.3	Encourage the training of local floodplain managers through programs offered by the State Floodplain Coordinator and FEMA's training center in Emmitsburg, Maryland.	Flooding	Low	On-Going	Floodplain Manager	Action	TBD	Existing Funds
1.5.4	Maintain membership for locally designated floodplain managers in the Association of State Floodplain Managers and the Alabama Association Floodplain Managers and encourage active participation.	Flooding	Low	On-Going	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.5.5	Maintain a library of technical assistance and guidance materials to support the local floodplain manager.	Flooding	Low	On-Going	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.5.6	Update local floodplain ordinance for compliance with current NFIP standards.	Flooding	Low	On-Going	Floodplain Manager	Action	No Additional Cost	Existing Funds

2020 - 2025 City of Fayette Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.5.7	Continue ongoing relations with the State NFIP Coordinator in relation to floodplain management.	Flooding	Low	On-Going	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.6	**<u>Community Rating System Program (CRS).</u> Increase participation of NFIP member communities in the CRS Program.**							
1.6.1	Apply for membership in the CRS Program; continue to upgrade rating.	Flooding	Low	Long-Range	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.7	**<u>Storm Water Management.</u> Manage the impacts of land development on storm water runoff rates and to natural drainage systems.**							
1.7.2	Develop, adopt, and implement subdivision regulations that require proper stormwater infrastructure design and construction.	Flooding	High	Short-Range	City Council	Action	No Additional Cost	Existing Funds
1.8	**<u>Open Space Preservation</u>. Minimize disturbances of natural land features and increased storm water runoff through regulations that maintain critical natural features such as open space for drainage, parks, conservation areas, and landscaping.**							
1.8.1	Examine regulatory options and feasibility of requiring open space areas for drainage control, recreation, and landscaping.	Flooding	Medium	Mid-Range	City Council	Action	No Additional Cost	Existing Funds
1.9	**<u>Critical Facilities Assessments.</u> Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and other natural and human-caused disaster events.**							

2020 - 2025 City of Fayette Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.9.1	Perform vulnerability assessments of critical facilities, including education facilities, to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards; i.e., protective film inside windows.	All *	High	On-Going	City Council	Action	TBD	Existing Funds
1.9.2	Conduct wildfire vulnerability assessments of critical facilities and other properties in these risk areas and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	Wildfire	Medium	On-Going	Fire Dept	Action	TBD	AFG
1.9.3	Inspect security measures around critical facilities for areas of concern (i.e., cut away areas in security fencing, inoperable cameras) and develop a plan to address the concerns.	Human-Caused	High	On-Going	Fire Dept	Action	TBD	Existing Funds
1.10	**<u>Geographic Information Systems (GIS) and Information Management</u>. Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories to aid in planning, hazard mitigation and incident reporting.**							

2020 - 2025 City of Fayette Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.10.5	Keep up-to-date lists of addresses with private safe rooms and shelters to assist fire departments and emergency services agencies. Coordinate the distribution of these lists to the appropriate local government officials.	Tornadoes Hurricanes Severe Storms Earthquakes	Low	On-Going	Fire Dept	Action	TBD	Existing Funds
1.10.6	Maintain a listing of locations of special needs groups, including the elderly and those with Alzheimer's. Disseminate that information to emergency personnel.	All	High	On-Going	Fire Dept	Action	No Additional Cost	Existing Funds
1.11	**<u>Dam Safety Management.</u> Establish a comprehensive dam safety program.**							
1.11.1	Support legislation to establish a State dam safety program.	Dam Failure	Medium	On-Going	City Council	Action	No Additional Cost	Existing Funds
1.12	**<u>Prescribed Burn Regulations and Wildfire Management.</u> Create regulations and programs to reduce storm debris.**							
1.12.1	Maintain and update emergency operations plans.	All	High	On-Going	City Council	Action	TBD	Existing Funds

2020 - 2025 City of Fayette Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.12.2	Encourage programs to conduct prescribed burns of large undeveloped areas of downed trees from disaster events to lessen the possibility of wildfires.	Wildfires	Low	On-Going	Fire Dept	Action	No Additional Cost	Existing Funds
1.13	**Emergency Operations Plans.**							
1.13.2	Develop a continuity of operations plan.	All	Medium	On-Going	City Council	Project	TBD	Existing Funds
2	**Goal for Human Welfare and Property Protection: Protect people, animals, structures and contents from the damaging effects of hazards.**							
2.1	**Building Relocation. Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.**							
2.1.1	Assist in relocating buildings out of hazardous flood areas, with emphasis on pre-FIRM residential buildings, where deemed more cost effective than property acquisition or building elevation.	Flooding	Medium	On-Going	Floodplain Manager	Project	TBD	FEMA HMA Grant
2.2	**Building Acquisition. Acquire flood prone buildings and properties and establish permanent open space.**							

2020 - 2025 City of Fayette Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.2.1	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Flooding	Medium	On-Going	Floodplain Manager	Action	TBD	FEMA HMA Grant
2.2.2	Assist in acquiring and demolishing flood prone or substantially damaged structures and replace with permanent open space.	Flooding	Medium	On-Going	Floodplain Manager	Project	TBD	FEMA HMA Grant
2.3	**<u>Building Elevation.</u> Elevate buildings in hazardous flood areas to safeguard against damages.**							
2.3.1	Assist with the elevation of certain buildings in flood prone areas where acquisition or relocation is not feasible, with emphasis on Pre-FIRM buildings.	Flooding	Medium	On-Going	Floodplain Manager	Project	TBD	FEMA HMA Grant
2.3.2	Assist in repairing or weatherizing existing homes.	Flooding	Low	On-Going	City Council	Project	TBD	FEMA HMA Grant
2.4	**<u>Building Retrofits.</u> Retrofit vulnerable buildings and their surroundings to protect against multiple hazard damages, including flooding, high winds, tornadoes, hurricanes, severe storms, earthquakes, and human-caused hazards.**							

2020 - 2025 City of Fayette Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.4.1	Assist with retrofitting existing buildings against potential damages from natural and human-caused hazards.	Flooding Tornadoes Hurricanes Severe Storms Earthquakes Human-Caused	Low	On-Going	Floodplain Manager	Action	TBD	ADECA CDBG
2.5	**<u>Flood Proofing.</u> Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.**							
2.5.1	Assist in flood proofing pre-FIRM non-residential buildings, where feasible.	Flooding	Medium	On-Going	Floodplain Manager	Project	TBD	FEMA HMA Grant
2.6	**<u>Critical Facilities Protection</u>. Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones, construction of new facilities, or implementation of security measures for maximum protection from all hazards.**							
2.6.1	Retrofit critical facilities and infrastructure against potential damages from hazards.	All*	High	On-Going	City Council	Project	TBD	FEMA HMA Grant
2.6.4	Require lightning and/or surge protection on new critical facilities.	Lightning	Medium	On-Going	City Council	Project	No Additional Cost	Existing Funds

2020 - 2025 City of Fayette Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.6.5	Conduct tree trimming programs along utility lines.	Tornadoes Hurricanes Severe Storms Winter Storms	Medium	On-Going	City Council Utility Company	Project	TBD	Existing Funds
2.6.10	Monitor inflow/outflow of network activity on computer systems in critical facilities to protect against cyberterrorism	Human- Caused	Low	On-Going	City Council	Action	TBD	CISA
2.6.11	Utilize the DHS' free assessment tool for cybersecurity for local governments to find weak areas in cybersecurity and address the issues found.	Human- Caused	Medium	On-Going	City Council Police Dept	Action	No Additional Funds	NA
2.6.12	Ensure computer firewalls, virus protections, etc. are up-to-date.	Human- Caused	Medium	On-Going	City Council	Action	TBD	DHS
2.7	**<u>Emergency Power Generation.</u> Assure uninterrupted power supplies during emergency events.**							
2.7.1	Install or encourage the installation of backup power generators for critical facilities, including radio stations, and fuel stations.	Tornadoes Hurricanes Severe Storms Winter Storms Earthquakes Human-Caused	Medium	On-Going	City Council	Project	TBD	Existing Funds and Grants
2.8	**<u>Community Shelters and Safe Rooms</u>: Provide shelter from multiple hazards for the safety of community residents.**							

2020 - 2025 City of Fayette Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
2.8.1	Work with county and city leaders in developing standardized procedures for identifying shelters as pre-disaster and post-disaster shelters or safe rooms.	Hurricanes Tornadoes Severe Storms Earthquakes Technological	Medium	Mid-Range	City Council	Action	TBD	Existing Funds
2.8.2	Review existing public shelters and safe rooms in public buildings including schools and recommend new locations and where there are coverage gaps. Include evaluations of ADA compliance and sheltering of animals.	Hurricanes Tornadoes Severe Storms Earthquakes Technological	Medium	Mid-Range	City Council	Action	TBD	Existing Funds
2.8.3	Determine how to accommodate individuals with special needs both in the emergency operations plan for the shelter or safe room and in the design of the shelter or safe room, including compliance with the American with Disabilities Act (ADA).	Hurricanes Tornadoes Severe Storms Earthquakes Technological	Medium	Mid-Range	City Council	Action	TBD	Existing Funds
2.8.4	Evaluate the need for severe weather plans and shelters in essential facilities and other establishments serving the public (e.g., schools, hospitals, and critical facilities).	Hurricanes Tornadoes Severe Storms Earthquakes Technological	High	Short-Range	City Council	Action	No Additional Cost	Existing Funds

2020 - 2025 City of Fayette Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.8.5	Construct new community safe rooms in accessible locations and add safe rooms within new and existing public and institutional buildings, such as schools, colleges and universities, senior centers, community centers, hospitals, and government buildings.	Hurricanes Tornadoes Severe Storms Earthquakes Human-Caused Technological	Low	Short-Range	City Council	Project	TBD	FEMA HMA Grant
2.8.6	Establish a program for subsidizing individual and community safe room construction in existing facilities.	Hurricanes Tornadoes Severe Storms Earthquakes	Low	Long-Range	City Council EMA	Project	TBD	FEMA HMA Grant
2.8.7	Encourage the construction of safe rooms in new and existing homes and buildings.	Hurricanes Tornadoes Severe Storms Earthquakes	High	On-Going	City Council EMA	Project	No Additional Cost	Existing Funds
2.8.8	Determine which areas at important facilities such as schools and daycare centers are the best locations for occupants during a disaster. Identify and provide directions to the designated “safe place.”	Tornadoes Hurricanes Severe Storms Technological	Medium	On-Going	City Council EMA	Project	No Additional Cost	Existing Funds

2020 - 2025 City of Fayette Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.8.9	Ensure all public buildings have a refuge plan of where to send people during times of disasters. Encourage posting of the plan in places accessible to the public.	Dam Failure Tornadoes Hurricanes Severe Storms Earthquakes Human-Caused Technological	Low	Short-Range	City Council	Project	TBD	Existing Funds
3	**Goal for Education, Outreach and Awareness. Educate and inform the public, and government and agency staff about the risks of hazards and ways to reduce threats to life and property.**							
3.1	**Community Hazard Mitigation Plan Distribution. Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.**							
3.1.1	Distribute the 2020 plan to local officials, stakeholders, and interested individuals through internet download.	All	High	Short-Range	EMA	Action	No Additional Cost	Existing Funds
3.2	**Technical Assistance. Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.**							
3.2.1	Provide technical assistance to owners of vulnerable buildings to advise on available building retrofits to protect against hazards damages.	Flooding Tornadoes Hurricanes Severe Storms Earthquakes	Low	On-Going	City Council	Action	No Additional Cost	Existing Funds
3.3	**Flood Map Information. Increase public access to Flood Insurance Rate Map (FIRM) information.**							

2020 - 2025 City of Fayette Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.3.1	Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through local trade publications, newspaper announcements and other media related outreach events.	Flooding	Medium	On-Going	City Council	Action	TBD	FEMA CTP
3.4	**<u>Hazard Insurance Awareness.</u> Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.**							
3.4.1	Promote the purchase of insurance coverage by property owners and renters for flood damages and other hazards in high-risk areas.	Flooding Earthquakes Landslides Sinkholes Human-Caused	Low	On-Going	City Council	Action	No Additional Cost	NA
3.4.2	Partner with insurance companies to disseminate information on hazards to citizens, i.e., availability of flood insurance in flood prone areas.	Flooding Earthquakes Landslides Sinkholes Human-Caused	Low	On-Going	City Council	Action	TBD	Local Insurers
3.4.3	Promote the purchase of crop insurance by farmers to cover potential losses due to drought.	Drought	Low	On-Going	City Council	Action	TBD	USDA
3.5	**<u>Publication Distribution.</u> Use local library resources and other agencies/departments to educate the public on hazard risks and mitigation alternatives through distribution of publications on hazards and hazard mitigation.**							

2020 - 2025 City of Fayette Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.5.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	All	Low	On-Going	City Council	Action	No Additional Cost	Existing Funds
3.5.2	Distribute FEMA Publication 320 - Taking Shelter from the Storm: Building a Safe Room in Your House - through building permit and inspection offices.	Tornadoes Hurricanes Severe Storms Earthquakes	Medium	On-Going	City Council	Action	No Additional Cost	Existing Funds
3.5.3	Assist the state and the Alabama Cooperative Extension Systems in educating stakeholders and the public about resources available through http://drought.aces.edu regarding the risk of drought and how to prepare for and mitigate the effects of drought.	Flooding	Medium	On-Going	City Council	Action	No Additional Cost	Existing Funds
3.6	**Outreach Projects. Conduct regular public events to inform the public of hazards and mitigation measures.**							

2020 - 2025 City of Fayette Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
3.6.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and severe Weather Week.	All	Low	On-Going	City Council	Action	No Additional Cost	Existing Funds
3.6.2	Distribute material via the internet and other Media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	All	Medium	On-Going	City Council	Action	No Additional Cost	Existing Funds
3.6.3	Promote disaster resilience within the business community through workshops, educational materials, and planning guides.	All	Low	On-Going	City Council	Action	TBD	ADECA CDBG
3.6.4	Promote awareness of human-caused and technological hazards through workshops, educational materials and planning guides to businesses and the general public.	Human-Caused Technological	Low	On-Going	City Council	Action	TBD	ADECA CDBG

2020 - 2025 City of Fayette Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.7	**<u>Outreach Programs</u>. Use schools and other community education resources to conduct programs on topics related to hazard risks and mitigation measures.**							
3.7.3	Promote the education of farmers on groundwater withdrawal and soil and water conservation practices with programs offered by such agencies as the cooperative extension service and USDA.	Drought	Medium	On-Going	City Council	Action	No Additional Cost	Existing Funds
3.7.5	Educate homeowners about structural and non-structural retrofitting of homes vulnerable to certain hazards.	Tornadoes Hurricanes Severe Storms Earthquakes Flooding	Medium	On-Going	City Council	Action	No Additional Cost	Existing Funds
3.7.6	Educate employees in critical facilities about cybersecurity.	Human- Caused	High	On-Going	City Council	Action	No Additional Cost	Existing Funds
3.7.7	Enhance public safety through awareness and outreach materials to the public with regards to pandemics.	Pandemic	Low	On-Going	City Council	Action	TBD	ADPH

2020 - 2025 City of Fayette Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.7.10	Educate staff members on proper mitigation measures of pandemic preparedness.	Pandemic	Medium	On-Going	City Council	Action	No Additional Cost	Existing Funds
3.8	**<u>Training and Webinars.</u> Attend training and educational webinars on mitigation of national human caused and technological hazard.**							
3.8.2	Promote training and attendance by employees at conferences and webinars sponsored by agencies such as FEMA, DHS, ADPH, AEMA and the Fayette County EMA.	All	Medium	On-Going	City Council	Action	No Additional Cost	NA
3.8.5	Encourage local agricultural businesses to participate in the Strategic Partnership Program for agroterrorism programs.	Human-Caused	Low	On-Going	City Council	Action	No Additional Cost	Existing Funds
3.9	**<u>Disaster Warning and Notification.</u> Improve public warning and notification systems.**							

2020 - 2025 City of Fayette Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.9.2	Upgrade siren-warning systems.	Flooding Tornadoes Hurricanes Severe Storms Earthquakes Dam Failure Human-Caused	Medium	Short-Range	City Council	Project	TBD	ADECA CDBG
3.9.3	Upgrade critical communications infrastructure.	All	High	On-Going	City Council	Project	TBD	FEMA HMA Grant
3.10	**<u>Weather Radios</u>. Improve public access to weather alerts.**							
3.10.2	Require/encourage the installation of weather radios in all public buildings and places of public assembly.	Tornadoes Hurricanes Severe Storms Flooding	Medium	On-Going	City Council Fire Dept	Action	TBD	Existing Funds

2020 - 2025 City of Fayette Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.10.3	Distribute weather radios and emergency response instructions to municipal residents and businesses.	Tornadoes Hurricanes Severe Storms Flooding	Low	On-Going	City Council	Action	TBD	FEMA HMA Grant
3.10.4	Instruct residents and business owners on emergency response instructions.	Tornadoes Hurricanes Severe Storms Flooding	Medium	On-Going	City Council Fire Dept Police Dept	Action	TBD	FEMA HMA GRANT
3.10.5	Promote the use of weather radios in households and businesses.	Tornadoes Hurricanes Severe Storms Flooding	High	On-Going	City Council	Action	No Additional Cost	Existing Funds
3.11	**<u>Mass Media Relations and Websites</u>. Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, on-line social networking, and government/agency websites to increase public awareness and distribute public information on hazard mitigation topics.**							
3.11.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and/or loss of life.	All	Medium	On-Going	City Council	Action	No Additional Cost	Existing Funds

2020 - 2025 City of Fayette Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.11.3	Expand the use of city-sponsored websites to disseminate hazard mitigation information.	All	Low	On-Going	City Council	Action	No Additional Cost	Existing Funds
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	**Open Space Easements and Acquisitions. Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, floodplains, and wetlands to assure permanent protection of these natural resources.**							
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other floodplain acquisition efforts.	Flooding	Low	On-Going	Floodplain Manager	Project	TBD	ADECA CDBG
4.2	**River/Stream Corridor Restoration and Protection. Restore and protect river and stream corridors within areas.**							
4.2.2	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Flooding	Medium	On-Going	City Council	Action	No Additional Cost	Existing Funds
4.3	**Forestry Programs. Maintain a healthy forest that can help mitigate the damaging impacts of flooding, erosion, landslides, and wildfires inside and outside the urban environment.**							
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	Wildfire	Medium	On-Going	City Council	Action	No Additional Cost	NA

2020 - 2025 City of Fayette Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
4.4	**Water Resources Conservation Programs. Protect water quantity and quality through water conservation programs to mitigate the effects of droughts and assure uninterrupted potable water supplies.**							
4.4.1	Encourage water conservation through public outreach programs prior to a drought event.	Drought	Low	On-Going	City Council	Action	TBD	AFC
4.4.2	Improve and retrofit water supply systems to save water during drought events and to eliminate breaks and leaks.	Drought	Medium	Mid-Range	City Council	Project	TBD	Any Grant Source
4.4.4	Enforce water use restrictions during periods of drought to conserve existing water supplies.	Drought Extreme Heat Wildfire	Low	On-Going	City Council	Action	TBD	Existing Funds
5	**Goal for Natural System and Infrastructure Improvement and Maintenance 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.**							
5.1	**Drainage System and Rights-of-Way Maintenance. Improve maintenance programs for streams and drainage ways.**							
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance. Ensure storm drains and ditches are not blocked and are able to receive water.	Flooding	Medium	Short-Range	City Council	Action	No Additional Cost	Existing Funds

2020 - 2025 City of Fayette Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
5.1.3	Develop and adopt winter maintenance procedures that include smart salting techniques and applying deicing agents before severe winter storms happen.	Winter Storm	Low	Short-Range	City Council	Action	TBD	Existing Funds
5.2	**<u>Reservoirs and Drainage System Improvements.</u> Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.**							
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding.	Flooding	High	On-Going	City Council	Project	TBD	FEMA HMA Grant
5.2.2	Improve the existing wastewater facility to adequately handle the demand of both wastewater and storm water during a significant rain event. The current facility is nearing capacity and any increase in demand due to industrial development with increased discharge will need to be addressed.	Flooding	High	Short-Range	City Engineer	Project	TBD	ADECA

2020 - 2025 Glen Allen Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1	**Goal for Prevention. Manage the development of land and buildings to minimize risks of loss due to multiple hazards.**							
1.1	**Comprehensive Plans and Smart Growth. Establish an active comprehensive planning program that is consistent with Smart Growth principles of sustainable community development.**							
1.1.1	Maintain up-to-date comprehensive plan.	All	Medium	On-Going	EMA	Action	TBD	Existing Funds
1.1.2	Integrate the findings and recommendations of this hazard mitigation plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.	All	High	On-Going	Town Council	Action	No Additional Cost	NA
1.2	**Planning Studies. Conduct special studies, as needed, to identify hazard risks and mitigation measures.**							
1.2.3	Identify problem drainage areas where drainage improvements could be made to reduce or eliminate localized flooding.	Flooding	Low	On-Going	Floodplain Manager	Action	No Additional Cost	NA
1.2.4	Identify existing culturally or socially significant structures within participating jurisdictions that have the most potential for losses from disaster events and identify needed structural upgrades.	All*	Low	Mid-Range	Town Council	Action	No Additional Cost	Existing Funds

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.2.5	Inventory and map existing fire hydrants and piping throughout the county and identify areas in need of new fire hydrants and/or areas of insufficient water pressure for fire suppression.	Wildfires	Low	Short-Range	Fire Department	Action	TBD	AFG
1.2.6	Assist the Alabama Forestry Commission with their Community Wildfire Plan for Fayette County.	Wildfire	Low	On-Going	Fire Department	Action	No Additional Cost	Existing Funds
1.4	**<u>Building and Technical Codes.</u> Review local codes for effectiveness of standards to protect buildings and infrastructure from multi-hazard damages.**							
1.4.3	Review fire safety ordinances to ensure they properly regulate open burning.	Wildfires	Low	Short-Range	Fire Department	Action	No Additional Cost	Existing Funds

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.4.4	Encourage the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings by amending applicable ordinances and regulations.	Tornadoes Hurricanes Severe Storms Human-Caused Technological	Medium	On-Going	Town Council	Action	No Additional Cost	Existing Funds
1.5	**<u>Floodplain Management Regulations and Management.</u> Effectively administer and enforce local floodplain management regulations.**							
1.5.1	Promote the adoption of a uniform flood hazard prevention ordinance among all NFIP communities. The ordinance standards should encourage floodplain management that maintains the natural and beneficial functions of floodplains by maximizing the credits that could be obtained for "Higher Regulatory Standards" under the Community Rating System (CRS) Program.	Flooding	Low	Long-Range	Town Council	Action	No Additional Cost	NA

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.5.2	Improve flood risk assessment by monitoring flood events and damages, documenting high water marks post event, verification of FEMA's repetitive loss inventory and revising and updating regulatory floodplain maps.	Flooding	Medium	Mid-Range	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.5.6	Update local floodplain ordinance for compliance with current NFIP standards.	Flooding	High	On-Going	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.5.7	Continue ongoing relations with the State NFIP Coordinator in relation to floodplain management.	Flooding	Medium	On-Going	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.7	**Storm Water Management. Manage the impacts of land development on storm water runoff rates and to natural drainage systems.**							
1.7.1	Promote the adoption/enforcement of storm water management regulations that maintain pre-development runoff rates.	Flooding	Low	Mid-Range	Floodplain Manager	Action	No Additional Cost	Existing Funds
1.9	**Critical Facilities Assessments. Perform assessments of critical facilities (hospitals, schools, fire and police stations, emergency operation centers, special needs housing, and others) to address building and site vulnerabilities to hazards, identify damage control and retrofit measures to reduce vulnerability to damage and disruption of operations during severe weather and other natural and human-caused disaster events.**							

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.9.1	Perform vulnerability assessments of critical facilities, including education facilities, to identify retrofit projects to improve the safety of occupants and mitigate damages from hazards; i.e., protective film inside windows.	All *	Medium	On-Going	Town Council	Action	TBD	Existing Funds
1.9.2	Conduct wildfire vulnerability assessments of critical facilities and other properties in these risk areas and prepare a comprehensive inventory to identify high and moderate wildfire risk areas.	Wildfire	Low	On-Going	Fire Department	Action	TBD	AFG
1.9.3	Inspect security measures around critical facilities for areas of concern (i.e., cut away areas in security fencing, inoperable cameras) and develop a plan to address the concerns.	Human-Caused	Medium	On-Going	Fire Department	Action	TBD	AFG
1.10	**<u>Geographic Information Systems (GIS) and Information Management</u>. Maintain a comprehensive database of hazards locations, socio economic data, infrastructure, and critical facilities inventories to aid in planning, hazard mitigation and incident reporting.**							

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.10.5	Keep up-to-date lists of addresses with private safe rooms and shelters to assist fire departments and emergency services agencies. Coordinate the distribution of these lists to the appropriate local government officials.	Tornadoes Hurricanes Severe Storms Earthquakes	Medium	On-Going	Fire Department	Action	No Additional Cost	Existing Funds
1.10.6	Maintain a listing of locations of special needs groups, including the elderly and those with Alzheimer's. Disseminate that information to emergency personnel.	All	Medium	On-Going	Fire Department	Action	No Additional Cost	Existing Funds
1.11	**Dam Safety Management. Establish a comprehensive dam safety program.**							
1.11.1	Support legislation to establish a State dam safety program.	Dam Failure	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
1.12	**Prescribed Burn Regulations and Wildfire Management. Create regulations and programs to reduce storm debris.**							
1.12.1	Maintain and update emergency operations plans.	All	Medium	On-Going	Town Council EMA	Action	No Additional Cost	Existing Funds

2020 - 2025 Glen Allen Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
1.12.2	Encourage programs to conduct prescribed burns of large undeveloped areas of downed trees from disaster events to lessen the possibility of wildfires.	Wildfires	Low	On-Going	Town Council Fire Department	Action	No Additional Cost	Existing Funds
1.13	**Emergency Operations Plans.**							
1.13.2	Develop a continuity of operations plan.	All	Low	On-Going	Town Council	Action	TBD	Existing Funds
2	**Goal for Human Welfare and Property Protection: Protect people, animals, structures and contents from the damaging effects of hazards.**							
2.2	**Building Acquisition. Acquire flood prone buildings and properties and establish permanent open space.**							
2.2.1	Utilize the most recent NFIP repetitive loss property list, and other appropriate sources, to create and maintain a prioritized list of acquisition mitigation projects based on claims paid.	Flooding	Low	Long-Range	Floodplain Manager	Action	TBD	FEMA HMA Grant
2.2.2	Assist in acquiring and demolishing flood prone or substantially damaged structures and replace with permanent open space.	Flooding	Low	Long-Range	Floodplain Manager	Project	TBD	FEMA HMA Grant

2020 - 2025 Glen Allen Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.6	**<u>Critical Facilities Protection</u>. Protect critical facilities from potential damages and occupants from harm in the event of hazards through retrofits or relocations of existing facilities located in high-risk zones, construction of new facilities, or implementation of security measures for maximum protection from all hazards.**							
2.6.2	Encourage the relocation of existing utility lines underground, where feasible and cost effective.	Tornadoes Severe Storms Winter Storms Hurricanes	High	On-Going	Town Council	Action	No Additional Cost	Existing Funds
2.6.4	Require lightning and/or surge protection on new critical facilities.	Lightning	High	On-Going	Town Council	Project	No Additional Cost	Existing Funds
2.6.5	Conduct tree trimming programs along utility lines.	Tornadoes Hurricanes Severe Storms Winter Storms	High	On-Going	Town Council	Project	TBD	Existing Funds
2.6.8	Install a public address system throughout public buildings for hazard warnings and shelter-in-place announcements.	Dam Failure Tornadoes Hurricanes Severe Storms Human-Caused Technological	Low	On-Going	Town Council	Project	TBD	ADECA CDBG

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.6.10	Monitor inflow/outflow of network activity on computer systems in critical facilities to protect against cyberterrorism.	Human-Caused	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
2.6.11	Utilize the DHS' free assessment tool for cybersecurity for local governments to find weak areas in cybersecurity and address the issues found.	Human-Caused	Medium	On-Going	Town Council	Action	No Additional Cost	Existing Funds
2.6.12	Ensure computer firewalls, virus protections, etc. are up-to-date.	Human-Caused		On-Going	Town Council	Action	TBD	DHS CISA
2.7	**<u>Emergency Power Generation.</u> Assure uninterrupted power supplies during emergency events.**							
2.7.1	Install or encourage the installation of backup power generators for critical facilities, including radio stations, and fuel stations.	Tornadoes Hurricanes Severe Storms Winter Storms Earthquakes Human-Caused	Medium	On-Going	Town Council	Project	TBD	FEMA HMA

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.7.2	Deploy portable generators to serve as miniature sub-stations to help rapidly restore power to at-risk citizens after a hazard event.	Tornadoes Hurricanes Severe Storms Winter Storms Earthquakes Human-Caused Technological	Low	Mid-Range	Town Council Fire Department	Project	TBD	Existing Funds
2.7.3	Ensure all critical facilities, including facilities serving the elderly and special needs residents perform regular maintenance on their generators including monthly tests and fuel quality checks.	Tornadoes Hurricanes Severe Storms Winter Storms Earthquakes Human-Caused Technological	High	On-Going	Town Council Fire Department	Action	No Additional Cost	Existing Funds
2.8	**<u>Community Shelters and Safe Rooms</u>: Provide shelter from multiple hazards for the safety of community residents.**							
2.8.1	Work with county and city leaders in developing standardized procedures for identifying shelters as pre-disaster and post-disaster shelters or safe rooms.	Hurricanes Tornadoes Severe Storms Earthquakes Technological	High	Short-Range	Town Council Fire Department	Action	No Additional Cost	Existing Funds

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.8.2	Review existing public shelters and safe rooms in public buildings including schools and recommend new locations and where there are coverage gaps. Include evaluations of ADA compliance and sheltering of animals.	Hurricanes Tornadoes Severe Storms Earthquakes Technological	High	Mid-Range	Town Council	Action	No Additional Cost	Existing Funds
2.8.3	Determine how to accommodate individuals with special needs both in the emergency operations plan for the shelter or safe room and in the design of the shelter or safe room, including compliance with the American with Disabilities Act (ADA).	Hurricanes Tornadoes Severe Storms Earthquakes Technological	High	Short-Range	Town Council	Action	No Additional Cost	Existing Funds
2.8.4	Evaluate the need for severe weather plans and shelters in essential facilities and other establishments serving the public (e.g., schools, hospitals, and critical facilities).	Hurricanes Tornadoes Severe Storms Earthquakes Technological	High	Short-Range	Town Council	Action	No Additional Cost	Existing Funds
2.8.5	Construct new community safe rooms in accessible locations and add safe rooms within new and existing public and institutional buildings, such as schools, colleges and universities, senior centers, community centers, hospitals, and government buildings.	Hurricanes Tornadoes Severe Storms Earthquakes Human-Caused Technological	Medium	On-Going	Town Council	Project	TBD	FEMA HMA Grant

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
2.8.6	Establish a program for subsidizing individual and community safe room construction in existing facilities.	Hurricanes Tornadoes Severe Storms Earthquakes	High	Long-Range	Town Council	Project	TBD	Existing Funds
2.8.7	Encourage the construction of safe rooms in new and existing homes and buildings.	Hurricanes Tornadoes Severe Storms Earthquakes	High	On-Going	Town Council	Project	No Additional Cost	Existing Funds
2.8.8	Determine which areas at important facilities such as schools and daycare centers are the best locations for occupants during a disaster. Identify and provide directions to the designated “safe place.”	Tornadoes Hurricanes Severe Storms Technological	High	Short-Range	Town Council EMA	Action	No Additional Cost	Existing Funds
2.8.9	Ensure all public buildings have a refuge plan of where to send people during times of disasters. Encourage posting of the plan in places accessible to the public.	Dam Failure Tornadoes Hurricanes Severe Storms Earthquakes Human-Caused Technological	High	Short-Range	Town Council	Action	No Additional Cost	NA

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
2.8.11	Evaluate the feasibility of constructing an emergency response facility to the south of the railroad tracks which could also serve as a storm shelter.	All	High	Short-Range	Town Council	Action	TBD	Existing Funds
3	**<u>Goal for Education, Outreach and Awareness</u>. Educate and inform the public, and government and agency staff about the risks of hazards and ways to reduce threats to life and property.**							
3.1	**<u>Community Hazard Mitigation Plan Distribution</u>. Distribute the hazard mitigation plan to elected officials, interested agencies and organizations, businesses, and residents, using all available means of publication and distribution.**							
3.1.1	Distribute the 2020 plan to local officials, stakeholders, and interested individuals through internet download.	All	High	Short-Range	Town Council	Action	No Additional Cost	Existing Funds
3.2	**<u>Technical Assistance</u>. Make qualified local government staff available to advise property owners on various hazard risks and mitigation alternatives.**							

2020 - 2025 Glen Allen Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.2.1	Provide technical assistance to owners of vulnerable buildings to advise on available building retrofits to protect against hazards damages.	Flooding Tornadoes Hurricanes Severe Storms Earthquakes	Low	On-Going	Town Council Fire Department EMA	Action	TBD	Existing Funds
3.3	**Flood Map Information. Increase public access to Flood Insurance Rate Map (FIRM) information.**							
3.3.1	Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through local trade publications, newspaper announcements and other media related outreach events.	Flooding	Low	On-Going	Town Council	Action	TBD	FEMA CTP
3.4	**Hazard Insurance Awareness. Increase public awareness of flood insurance and special riders that may be required for earthquake, landslide, sinkhole, and other damages typically not covered by standard property protection policies.**							
3.4.1	Promote the purchase of insurance coverage by property owners and renters for flood damages and other hazards in high-risk areas.	Flooding Earthquakes Landslides Sinkholes Human-Caused	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.4.2	Partner with insurance companies to disseminate information on hazards to citizens, i.e., availability of flood insurance in flood prone areas.	Flooding Earthquakes Landslides Sinkholes Human-Caused	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.4.3	Promote the purchase of crop insurance by farmers to cover potential losses due to drought.	Drought	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.5	**<u>Publication Distribution.</u> Use local library resources and other agencies/departments to educate the public on hazard risks and mitigation alternatives through distribution of publications on hazards and hazard mitigation.**							
3.5.1	Through local libraries, maintain and distribute free and current publications from FEMA, NWS, USGS, and other federal and state agencies.	All	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.5.2	Distribute FEMA Publication 320 - Taking Shelter from the Storm: Building a Safe Room in Your House - through building permit and inspection offices.	Tornadoes Hurricanes Severe Storms Earthquakes	Medium	On-Going	Town Council	Action	No Additional Cost	Existing Funds

2020 - 2025 Glen Allen Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.5.3	Assist the state and the Alabama Cooperative Extension Systems in educating stakeholders and the public about resources available through http://drought.aces.edu regarding the risk of drought and how to prepare for and mitigate the effects of drought.	Flooding	Medium	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.6	**Outreach Projects. Conduct regular public events to inform the public of hazards and mitigation measures.**							
3.6.1	Continue to participate in environmental awareness events to provide the public information on hazard exposure and mitigation measures, such as City/County Day, Hurricane Awareness Week, and severe Weather Week.	All	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.6.2	Distribute material via the internet and other Media, and other outreach activities and workshops to encourage families and individuals to implement hazard mitigation measures in their homes.	All	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.6.3	Promote disaster resilience within the business community through workshops, educational materials, and planning guides.	All	Medium	On-Going	Town Council	Action	TBD	ADECA CDBG

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
3.6.4	Promote awareness of human-caused and technological hazards through workshops, educational materials and planning guides to businesses and the general public.	Human-Caused Technological	Medium	On-Going	Town Council	Action	TBD	ADECA CDBG
3.6.5	Develop a fire safety, protection, and prevention outreach program for builders, developers, and the general public.	Wildfire	Low	On-Going	Town Council	Action	TBD	Any Grant Source
3.6.6	Develop an educational public awareness campaign informing citizens of land management and landscaping options to limit wildfire spread.	Wildfire	Low	On-Going	Town Council Fire Department	Action	TBD	AFG
3.6.7	Educate homeowners about the urban – wildland interface and proper plantings and landscaping practices to prevent wildfire destruction.	Wildfire	Low	On-Going	Town Council Fire Department	Action	TBD	AFG
3.7	**Outreach Programs. Use schools and other community education resources to conduct programs on topics related to hazard risks and mitigation measures.**							
3.7.1	Distribute hazard mitigation brochures to students through area schools.	All	Medium	On-Going	Town Council	Action	TBD	Existing Funds or grant sources

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
3.7.3	Promote the education of farmers on groundwater withdrawal and soil and water conservation practices with programs offered by such agencies as the cooperative extension service and USDA.	Drought	Low	On-Going	Town Council	Action	TBD	ADECA
3.7.4	Provide emergency preparedness information for extreme temperature events through an active educational outreach program with specific plans and procedures for senior citizens and people with special needs.	Extreme Cold Extreme Heat	Medium	On-Going	Town Council EMA	Action	TBD	ADPH
3.7.5	Educate homeowners about structural and non-structural retrofitting of homes vulnerable to certain hazards.	Tornadoes Hurricanes Severe Storms Earthquakes Flooding	Medium	On-Going	Town Council	Action	TBD	Existing Funds
3.7.6	Educate employees in critical facilities about cybersecurity.	Human-Caused	Low	On-Going	Town Council	Action	TBD	Existing Funds
3.7.7	Enhance public safety through awareness and outreach materials to the public with regards to pandemics.	Pandemic	Medium	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.7.10	Educate staff members on proper mitigation measures of pandemic preparedness.	Pandemic	Medium	On-Going	Town Council	Action	TBD	Existing Funds

2020 - 2025 Glen Allen Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.8	**<u>Training and Webinars.</u> Attend training and educational webinars on mitigation of national human caused and technological hazard.**							
3.8.1	Train additional weather spotters.	Tornadoes Severe Storms Flooding Hurricanes	Low	On-Going	Town Council Fire Department	Action	No Additional Cost	NA
3.8.2	Promote training and attendance by employees at conferences and webinars sponsored by agencies such as FEMA, DHS, APHD, AEMA and the Fayette County EMA.	All	Low	On-Going	Town Council	Action	No Additional Cost	NA
3.8.3	Encourage completion of the online course FEMA IS-907 on active shooters by employees in critical facilities.	Human-Caused	Low	On-Going	Town Council	Action	No Additional Cost	NA
3.8.4	Encourage the participation of groups in programs offered by the Department of Homeland Security; such as courses on Targeted Violence and Terrorism Prevention.	Human-Caused	Low	On-Going	Town Council	Action	No Additional Cost	NA
3.8.5	Encourage local agricultural businesses to participate in the Strategic Partnership Program for agroterrorism programs.	Human-Caused	Medium	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.9	**<u>Disaster Warning and Notification.</u> Improve public warning and notification systems.**							

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
3.9.1	Review existing outdoor warning siren coverage and recommend new locations if and where there are coverage gaps. Install new warning sirens in accordance with the plan recommendations.	Flooding Tornadoes Hurricanes Severe Storms Earthquakes Dam Failure Human-Caused Technological	Low	Long-Range	Town Council	Project	No Additional Cost	NA
3.9.2	Upgrade siren-warning systems.	Flooding Tornadoes Hurricanes Severe Storms Earthquakes Dam Failure Human-Caused	Low	Mid-Range	Town Council	Project	TBD	ADECA CDBG
3.9.3	Upgrade critical communications infrastructure.	All	Medium	On-Going	Town Council	Project	TBD	FEMA HMA Grant

2020 - 2025 Glen Allen Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.9.4	Establish procedures to warn facilities storing hazardous materials when a hazard event is likely to impact the facility to ensure safety procedures are enacted.	Tornadoes Hurricanes Severe Storms Earthquakes Dam Failure Human-Caused Technological	High	Short-Range	Fire Dept	Action	No Additional Cost	Existing Funds
3.10	**<u>Weather Radios</u>. Improve public access to weather alerts.**							
3.10.1	Continue to promote the purchase and usage of NOAA weather radios in all schools, assisted living facilities, hospitals, nursing homes, day care facilities, churches, businesses, industries, and the general public, especially in homes with no outdoor warning siren coverage.	Tornadoes Hurricanes Severe Storms Flooding	High	On-Going	Town Council Fire Department EMA	Action	No Additional Cost	Existing Funds
3.10.2	Require/encourage the installation of weather radios in all public buildings and places of public assembly.	Tornadoes Hurricanes Severe Storms Flooding	Medium	On-Going	Town Council	Action	No Additional Cost	NA
3.10.3	Distribute weather radios and emergency response instructions to municipal residents and businesses.	Tornadoes Hurricanes Severe Storms Flooding	Medium	On-Going	Town Council	Action	TBD	FEMA HMA Grant

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.10.4	Instruct residents and business owners on emergency response instructions.	Tornadoes Hurricanes Severe Storms Flooding	Medium	On-Going	Town Council	Action	TBD	Existing Funds
3.10.5	Promote the use of weather radios in households and businesses.	Tornadoes Hurricanes Severe Storms Flooding	High	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.11	**<u>Mass Media Relations and Websites</u>. Utilize all available mass media, such as, newspapers, radio, TV, cable access, internet blogs, podcasts, video sharing, on-line social networking, and government/agency websites to increase public awareness and distribute public information on hazard mitigation topics.**							
3.11.1	Maintain appropriate media relationships to ensure the public is informed of hazard threats and means to mitigate property damages and/or loss of life.	All	Medium	On-Going	Town Council	Action	No Additional Cost	Existing Funds
3.11.2	Increase media coverage of threat and evacuation procedures during peak wildfire times of the year; distribute informational packages in high and moderate wildfire risk areas.	Wildfire	Low	On-Going	Town Council	Action	TBD	Existing Funds

2020 - 2025 Glen Allen Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
3.11.3	Expand the use of city-sponsored websites to disseminate hazard mitigation information.	All	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
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	**Open Space Easements and Acquisitions. Acquire easements and fee-simple ownership of environmentally beneficial lands, such as hillsides, floodplains, and wetlands to assure permanent protection of these natural resources.**							
4.1.1	Increase open space acquisitions through the FEMA HMA Grant Programs and other floodplain acquisition efforts.	Flooding	Low	Long-Range	Town Council	Project	TBD	FEMA HMA
4.2	**River/Stream Corridor Restoration and Protection. Restore and protect river and stream corridors within areas.**							
4.2.1	Protect wetlands by preventing unsound development that would change their natural condition.	Flooding	Low	On-Going	Town Council	Action	No Additional Cost	Existing Funds
4.2.3	Adopt and/or enforce regulations prohibiting dumping and littering within river and stream corridors.	Flooding	Medium	On-Going	Town Council	Action	No Additional Cost	Existing Funds
4.3	**Forestry Programs. Maintain a healthy forest that can help mitigate the damaging impacts of flooding, erosion, landslides, and wildfires inside and outside the urban environment.**							

2020 - 2025 Glen Allen Community Action Program								
	Goal, Objectives and Mitigation Measures	**Hazards Addressed All * - Indicates all hazards except Pandemics**	**Priority High, Medium, Low**	**Timeline Short-Range, Mid-Range, Long-Range, On-Going**	**Lead Responsibility for Carrying Out Measure**	**Action or Project**	**Estimated Cost**	**Funding Source**
4.3.1	Utilize technical assistance available from the Alabama Cooperative Extension System with Best Management Practices (BMP).	Wildfire	Medium	On-Going	Town Council	Action	No Additional Cost	NA
4.3.2	Increase overall green spaces in cities by planting disaster resistant trees with site and location taken into consideration.	Wildfire	Medium	On-Going	Town Council	Action	TBD	ADECA
4.3.3	Develop maintenance programs to clear dead and dry bushes or trees to mitigate wildfires.	Wildfire	Medium	Short-Range	Town Council	Action	TBD	AFG
4.3.4	Use controlled burns to decrease the amount of fuel load in the identified moderate and high wildfire hazard areas.	Wildfire	Low	On-Going	Fire Department	Project	TBD	AFG
4.3.5	Encourage Volunteer Fire Departments to improve capabilities for responding to and extinguishing wildfires.	Wildfire	High	Short-Range	Town Council Fire Department	Action	No Additional Cost	NA
4.4	**<u>Water Resources Conservation Programs.</u> Protect water quantity and quality through water conservation programs to mitigate the effects of droughts and assure uninterrupted potable water supplies.**							
4.4.1	Encourage water conservation through public outreach programs prior to a drought event.	Drought	Medium	On-Going	Town Council	Action	No Additional Cost	Existing Funds
4.4.2	Improve and retrofit water supply systems to save water during drought events and to eliminate breaks and leaks.	Drought	Low	Mid-Range	Town Council	Project	No Additional Cost	Existing Funds

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
4.4.3	Encourage the implementation of programs by utilities for water metering and leak detection programs.	Drought	High	On-Going	Town Council	Action	No Additional Cost	Existing Funds
5	**Goal for Natural System and Infrastructure Improvement and Maintenance 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.**							
5.1	**Drainage System and Rights-of-Way Maintenance. Improve maintenance programs for streams and drainage ways.**							
5.1.1	Prepare and implement standard operating procedures and guidelines for drainage system maintenance. Ensure storm drains and ditches are not blocked and are able to receive water.	Flooding	Medium	Mid-Range	Town Council	Action	No Additional Cost	Existing Funds
5.1.2	Employ prescribed burns of natural debris along streams and in ditches to enhance storm drainage.	Flooding	Low	Mid-Range	Town Council Fire Department	Project	TBD	Existing Funds
5.1.3	Develop and adopt winter maintenance procedures that include smart salting techniques and applying deicing agents before severe winter storms happen.	Winter Storm	Low	Long-Range	Town Council	Action	TBD	Existing Funds
5.2	**Reservoirs and Drainage System Improvements. Control flooding through reservoirs and other structural improvements, where deemed cost effective and feasible, such as levees/floodwalls, diversions, channel modifications, dredging, drainage modifications, and storm sewers.**							

2020 - 2025 Glen Allen Community Action Program								
Goal, Objectives and Mitigation Measures		Hazards Addressed All * - Indicates all hazards except Pandemics	Priority High, Medium, Low	Timeline Short-Range, Mid-Range, Long-Range, On-Going	Lead Responsibility for Carrying Out Measure	Action or Project	Estimated Cost	Funding Source
5.2.1	Construct drainage improvements to reduce or eliminate localized flooding.	Flooding	Medium	Long-Range	Town Council	Project	TBD	FEMA HMA Grant