State Hazard Mitigation Plan
Update

Prepared for:
Alabama Emergency Management Agency
5898 County Road 41
P.O. Drawer 2160
Clanton, AL 35026

ATKINS

Prepared by:
Atkins
1616 East Millbrook Road
Suite 310
Raleigh, NC 27609
www.atkinsglobal.com/northamerica

Final

01115-LC-13

Section 1 Table of Contents 1-1

Section 2 Executive Summary 2-1

2.1 Background 2-1
2.2 Organization of the Plan 2-1
2.3 Highlights of the Plan 2-2
2.3.1 Approval and Adoption 2-2
2.3.2 The Planning Process 2-2
2.3.3 Risk Assessment 2-3
2.3.4 Mitigation Strategy 2-3
2.3.5 Coordination of Local Planning 2-4
2.3.6 Plan Maintenance 2-4
2.3.7 Enhanced Mitigation Plan Elements 2-5

Section 3 Plan Approval, Adoption and Assurances 3-1

3.1 Final Rule Requirements for the Plan Adoption Process 3-2
3.2 Plan Approval and Adoption Process 3-2
3.2.1 Background 3-2
3.2.2 AEMA Review and Approval 3-2
3.3 Formal Adoption Document(s) 3-2
3.4 Assurances 3-3

Section 4 The Planning Process 4-1

4.1 Final Rule Requirements for the Planning Process 4-2
4.2 Coordination with State and Federal Agencies and Interested Groups 4-2
4.2.1 Agency Coordination During Development of 2010 State Hazard Mitigation Plan 4-2

4.3 Integration into Other Ongoing State Planning Efforts 4-4
4.3.1 Summary 4-4
4.3.2 Ongoing State Planning Efforts and Integration Process 4-5
4.3.3 Potential Improvements 4-11
4.3.3.1 Completed Improvements 4-13
4.4 Integration into Other FEMA Mitigation Programs and Initiatives 4-13
4.4.1 Summary 4-13
4.4.2 List of Ongoing FEMA Mitigation Programs and Initiatives 4-14
4.4.3 Integration Process and Potential Improvements 4-14
4.5 Description of the Planning Process 4-16
4.5.1 How the Plan was Prepared and Updated 4-16
4.5.2 Who was Involved in the Planning Process 4-21
4.5.3 How Other Agencies Participated in the Planning Process 4-26
4.5.4 Summary of Review, Analysis and Update of Each Section 4-27

Section 5 Risk Assessment 5-1

5.1 Final Rule Requirements for Risk Assessments 5-2
5.2 Overview of Type and Location of All Natural Hazards That Can Affect the State 5-3

5.2.1 Flooding 5-7
5.2.2 High Winds (Hurricanes, Tornadoes and Windstorms) 5-17
5.2.3 Winter Storms 5-35
5.2.4 Landslides 5-39
5.2.5 Sinkholes and Land Subsidence 5-44
5.2.6 Earthquakes 5-49
5.2.7 Drought 5-61
5.2.8 Hail 5-65
5.2.9 Wildfire 5-69
5.2.10 Extreme Temperatures 5-75
5.2.11 Lightning 5-78
5.2.12 Dam Failure 5-80
5.2.13 Tsunamis 5-84
5.2.13 Sea Level Rise 5-85

5.3 Methodology for Identifying Natural Hazards for Additional Analysis 5-87
5.4 Vulnerability Assessment and Loss Estimation 5-89
5.4.1 State-owned Facilities and Analysis Methodology 5-90
5.4.2 General Risk 5-91
5.4.3 Flood Risk 5-102
5.4.3.1 Summary of Local Risk Assessments 5-102
5.4.3.2 Statewide Risk Assessment 5-102
5.4.3.3 State-owned Facilities in Flood Hazard Areas 5-117
5.4.4 Wind Risk 5-120
5.4.4.1 Summary of Local Risk Assessments 5-120
5.4.4.2 Statewide Risk Assessment for Wind 5-120
5.4.4.3 Potential Dollar Losses to State Facilities in High Wind Hazard Areas 5-128
5.4.5 Seismic Risk 5-128
5.4.5.1 Summary of Local Risk Assessments 5-128
5.4.5.2 Statewide Risk Assessment for Earthquakes 5-129
5.4.5.3 Potential Dollar Losses to State Facilities in Seismic Hazard Areas 5-135
5.4.6 General Summary and Recommendations 5-135
5.5 Jurisdictions Most Threatened and Vulnerable to Damage and Loss 5-137
5.5.1 Jurisdictions Most Vulnerable to Damage and Loss from Floods 5-137
5.5.2 Jurisdictions Most Vulnerable to Damage and Loss from High Winds 5-138
5.5.3 Jurisdictions Most Vulnerable to Damage and Loss from Earthquakes 5-140
5.5.4 Jurisdictions Most Vulnerable to Damage and Loss from Three Most Significant Hazards Statewide 5-140
5.6 Impacts of Development Trends on Vulnerability 5-142
5.6.1 Population Growth Trends and the Impact on Vulnerability 5-142
5.6.2 Economic Development and Transportation Improvement Impacts on Vulnerability 5-148

Section 6 Mitigation Strategy 6-1

6.1 Final Rule Requirements for Mitigation Strategy 6-2
6.2 State Mitigation Strategy 6-2
6.3 State Hazard Mitigation Goals 6-3
6.4 Discussion and Evaluation of State Pre- and Post-Disaster Hazard Management Policies, Programs and Capabilities 6-4
6.4.1 Discussion and Evaluation of State Pre- and Post-Disaster Hazard Management Policies 6-5
6.4.2 Discussion and Evaluation of State Pre- and Post-Disaster Hazard Management Programs 6-7
6.4.3 Discussion and Evaluation of State Pre- and Post-Disaster Hazard Management Capabilities 6-10
6.5 Evaluation of State Laws, Regulations, Policies and Programs Related to Hazard Mitigation and Development in Hazard Prone Areas 6-11
6.5.1 Evaluation of State Laws Related to Hazard Mitigation and Development in Hazard Prone Areas 6-11
6.5.2 Evaluation of State Regulations Related to Hazard Mitigation and Development in Hazard Prone Areas 6-13
6.5.3 Evaluation of State Policies Related to Hazard Mitigation and Development in Hazard Prone Areas 6-14
6.5.4 Evaluation of State Programs Related to Hazard Mitigation and Development in Hazard Prone Areas 6-15
6.6 State Funding Capabilities for Hazard Mitigation Projects 6-16
6.7 General Description and Analysis of the Effectiveness of Local Mitigation Policies, Programs and Capabilities 6-21
6.8 Identification, Evaluation and Prioritization of Mitigation Actions 6-25
6.8.1 Identification and Evaluation of Mitigation Actions 6-26
6.8.2 Mitigation Actions 6-26
6.8.3 Prioritization of Mitigation Actions 6-35
6.8.4 Addressing Cost-Effectiveness, Environmental Soundness, Technical Feasibility 6-37
6.8.5 Mitigation Action Plan 6-37
6.9 Identification of Funding Sources 6-64
6.9.1 Federal 6-64
6.9.2 State and Local Funding 6-72

Section 7 Coordinating Local Planning 7-1

7.1 Final Rule Requirements for Coordination of Local Mitigation Planning 7-2
7.2 Development and Update of Local Mitigation Plans 7-2
7.2.1 Development of Local Hazard Mitigation Plans 7-2
7.3 Process for Reviewing, Coordinating and Linking the State and Local Plans 7-11
7.3.1 Review and Incorporation of Local Plan Information into the State Plan Update 7-11
7.3.2 Future Local Plan Review and Incorporation 7-18
7.4 Criteria for Prioritizing Jurisdictions to Receive Funds under Existing Programs 7-19
7.4.1 Jurisdictions with Highest Risk 7-20
7.4.2 Repetitive Loss Properties 7-20
7.4.3 Most Intense Development Pressure 7-21

7.4.4 Maximizing Benefits According to Benefit-Cost Review of Local Projects 7-21
7.4.5 Prioritization of Communities to Receive Planning Grants 7-21

Section 8 Plan Maintenance 8-1

8.1 Final Rule Requirements for Plan Maintenance Process 8-2
8.2 Method for Monitoring, Evaluating and Updating the Plan 8-2
8.2.1 Background 8-2
8.2.2 Method for Monitoring the Plan 8-3
8.2.3 System for Evaluating the Plan 8-3
8.2.4 System for Updating the Plan 8-4
8.3 System for Monitoring Mitigation Measures and Project Closeouts 8-5
8.3.1 Monitoring Mitigation Measures 8-5
8.3.2 Monitoring Project Closeouts 8-5
8.4 System for Reviewing Progress on Achieving Goals 8-5
8.5 System for Reviewing Progress on Activities and Projects in the State Mitigation Strategy 8-6

Section 9 Enhanced Plan Elements 9-1

9.1 Alabama Enhanced State Hazard Mitigation Plan Compliance with Standard State Plan Requirements 9-2
9.1.1 Introduction 9-2
9.2 Alabama Enhanced State Hazard Mitigation Plan Integration with Other Planning Initiatives 9-2
9.2.1 Introduction 9-2
9.2.2 Strategy to Promote Hazard Mitigation Integration to Other Planning Initiatives 9-2
9.2.3 Mitigation Planning Initiatives 9-3
9.2.3.1 State Hazard Mitigation Plan 9-3
9.2.3.2 Alabama Drought Management Plan 9-3
9.2.3.3 Alabama Coastal Area Management Plan 9-4
9.2.3.4 Alabama Coastal Impact Assistance Program 9-4
9.2.3.5 Homeowner's Handbook to Prepare for Natural Hazards 9-4
9.2.3.6 Alabama Emergency Management Accreditation Program 9-4
9.2.3.7 Forestry Resources Handbook 9-5
9.2.3.8 Disaster Recovery Program and Fund 9-5
9.2.3.9 AEMA Risk Assessment Mapping Tool 9-5
9.2.3.10 THIRA 9-6
9.2.4 Lead Agencies 9-6
9.2.4.1 ADECA 9-7
9.2.4.2 ADCNR 9-7
9.2.5 The State Hazard Mitigation Team
9.2.6 Alabama Association of Regional Councils (AARC) and the Regional Planning Councils (RPCs) 9-9
9.2.7 County Emergency Management Agencies 9-10
9.2.8 The Alabama Planning Institute 9-10
9.2.9 Institute for Emergency Preparedness (IEP, Jacksonville State University) 9-11
9.2.10 The Association of State Floodplain Managers 9-11

9.2.11 The Alabama Department of Environmental Management 9-11
9.2.12 The Geologic Survey of Alabama (GSA).....9-12
9.2.13 Emergency Management Program Grants (EMPG).....9-12
9.2.14 Alabama Comprehensive Planning and Smart Growth 9-12
9.2.15 State and Regional Economic Development 9-13
9.2.16 Integration with FEMA Mitigation Programs and Initiatives 9-14
9.2.16.1 Hazard Mitigation Assistance Unified Guidance Programs (HMGP, PDM, FMA, RFC, SRL).....9-15
9.2.16.1.a Hazard Mitigation Grant Program (HMGP).....9-15
9.2.16.1.b Pre-Disaster Mitigation Grant Program (PDM) .9-16
9.2.16.1.c Flood Mitigation Assistance Program (FMA) 9-17
9.2.16.1.d Repetitive Flood Claims Grant Program (RFC) .9-17
9.2.16.1.e Severe Repetitive Loss Grant Program (SRL) ..9-17
9.2.16.2 National Flood Insurance Program.....9-18
9.2.16.3 Risk MAP 9-19
9.2.16.4 Hazus-MH.....9-19
9.2.16.5 FEMA Technical Documents 9-20

9.3 Alabama Enhanced State Hazard Mitigation Plan Project Implementation Capability 9-21
9.3.1 Background.....9-21
9.3.2 Mitigation Project Eligibility Criteria.....9-21
9.3.3 Alabama's System for Ranking Mitigation Measures According to the State's Eligibility Criteria (and Eligibility Criteria for Multi-Hazard Mitigation Measures) 9-22
9.3.4 Changes to Eligibility Requirements 9-24
9.3.5 System to Determine the Cost-Effectiveness of Mitigation Measures 9-24
9.3.5.1 Standby Technical Services Contract.....9-25
9.3.5.2 Access FEMA Technical Assistance to Gather Technical Data to Support BCAs 9-26
9.3.5.3 Developing and Maintaining Proficiency of Existing Staff 9-26
9.3.5.4 Identifying and Securing Technical Support from Other State Agencies.....9-26
9.3.5.5 Changes to System of Determining the Cost Effectiveness of Mitigation Measures 9-27

9.4 Alabama Enhanced State Hazard Mitigation Plan Program Management Capability 9-27
9.4.1 Background.....9-27
9.4.2 AEMA's Performance in Meeting Mitigation Grant Program Timeframes.....9-27
9.4.2.1 Application Process 9-28
9.4.2.2 Eligibility and Feasibility 9-29
9.4.2.3 Complete Application Packages 9-29
9.4.2.4 Extensions 9-30
9.4.3 AEMA's Performance in Meeting Environmental Reviews and Benefit-Cost Analyses Project Reviews 9-31
9.4.3.1 Environmental Reviews 9-31
9.4.3.2 Benefit-Cost Analysis.....9-32
9.4.4 AEMA's Performance in Meeting Quarterly Progress and Financial Reports Requirements 9-32

9.4.4.1 Quarterly Progress Reports 9-32
9.4.4.2 Financial Reports 9-33
9.4.5 AEMA's Performance in Completion of Projection and Grants 9-33
9.4.2.5 Closeout Procedures 9-33
9.5 Alabama Enhanced State Hazard Mitigation Plan Assessment of Mitigation Actions 9-34
9.5.1 Background 9-34
9.5.2 System and Strategy for Assessing Completed Mitigation Projects 9-35
9.5.2.1 Background 9-35
9.5.2.2 Process for Determining Cost Avoidance 9-36
9.5.3 Agencies that will be Involved 9-37
9.5.4 Timeframe for Carrying Out Assessments 9-38
9.5.5 Tracking Potential Losses Avoided by Project 9-39
9.5.6 Verification that Assessments will be Completed by Next Plan Update 9-39
9.6 Alabama Enhanced State Hazard Mitigation Plan Effective Use of Available Mitigation Funding 9-40
9.6.1 Background 9-40
9.6.2 Alabama's Effectiveness in Using Mitigation Programs to Achieve the Goals in the State Hazard Mitigation Plan 9-40
9.6.2.1 Developing and Integrating Hazard Mitigation Statewide 9-41
9.6.2.2 Risk Reduction 9-41
9.6.3 Grant Program Funding and Numbers of Mitigation Projects Administered by AEMA 9-42
9.6.4 Severe Repetitive Loss (SRL) and Repetitive Flood Claim (RFC) Programs 9-43
9.6.5 Risk and Vulnerability Assessments of Critical State Facilities 9-44
9.7 Alabama Enhanced State Hazard Mitigation Plan Commitment to a Comprehensive Mitigation Program 9-44
9.7.1 Introduction 9-44
9.7.2. Local Mitigation Planning Support 9-45
9.7.3 Statewide Program of Hazard Mitigation 9-47
9.7.4 Flood Map Modernization Program 9-48
9.7.5 State Match Support of Local Mitigation Projects 9-48
9.7.6 Building Codes and Standards 9-49
9.7.7 Integration of Mitigation into Post-Disaster Recovery Operations 9-49
9.7.8 Identifying and Mitigation Risks to Buildings Identified as Necessary to Post-Disaster Response and Recovery Operations 9-49

List of Appendices

Appendix A Disaster Mitigation Act of 2000 (106−390−October 30, 2000)
Appendix B Final Rule (44 CFR Parts 201 and 206 Hazard Mitigation Planning and Hazard Mitigation Grant Program)
Appendix C Executive Order 19
Appendix D Composition of State Hazard Mitigation Planning Council [Team]
Appendix E Alabama State Hazard Mitigation Council Technical Advisory Committee Membership
Appendix F Approval and Implementation
Appendix G Glossary of Acronyms and Terms
Appendix H General Descriptions of Hazards that Affect Alabama
Appendix I Overview of FEMA Mitigation Grant Programs
Appendix J Local Capability Table
Appendix K Comments Received From SHMT and FEMA
Appendix L Meeting Minutes
Appendix M Alabama State Hazard Mitigation Team Meeting Sign-in Sheets
Appendix N Record of Changes
Appendix O Repetitive and Severe Repetitive Flood Loss Mitigation Strategy

List of Figures

Figure 4.3-1 Risk MAP Project Schedule (tenative) 4-8
Figure 5.2-1 Riverine Flood Hazard Areas 5-8
Figure 5.2-2 Mobile and Baldwin Counties Hurricane Surge Map 5-10
Figure 5.2-3 Tornado Shelter Design Wind Speeds 5-18
Figure 5.2-4 Hurricane Shelter Design Wind Speeds 5-19
Figure 5.2-5 Illustration of Design Wind Speeds 5-20
Figure 5.2-6 Extent of Inland Winds for a Category 4 Hurricane Moving Forward at 25 mph 5-21
Figure 5.2-7 Extent of Inland Winds for a Category 2 Hurricane Moving Forward at 14 mph 5-21
Figure 5.2-8 April 27, 2011 Tornado Tracks and Magnitude 5-30
Figure 5.2-9 Tornadoes per Square Mile per County, 1950-2012 5-33
Figure 5.2-10 Alabama Tornado Threat Contour Map, Annual Coverage Fraction (ACF), 1950 – 2011 5-34
Figure 5.2-11 Alabama Winter Storm Return Interval by County 5-38
Figure 5.2-12 Statewide Landslide Incidence and Susceptibility 5-43
Figure 5.2-13 Karst Areas in State Most Likely to Experience Sinkholes and Subsidence; Sinkhole Incidence 5-48
Figure 5.2-14 Seismic Zones of the Southeastern United States 5-50
Figure 5.2-15 Historical Earthquake Epicenters, Mapped Surface Faults, and Approximate Locations of Buried Faults in the State 5-51
Figure 5.2-16 Susceptibility to Liquefaction During a Moderate to Strong Magnitude Earthquake 5-52
Figure 5.2-17 Historical Earthquakes of Alabama (1886-2012) 5-54
Figure 5.2-18 Intensity Map for the 1916 Earthquake of October 18, 1916 5-55
Figure 5.2-19 Intensity Map for the Escambia County Earthquake of October 24, 1997 5-57
Figure 5.2-20 Intensity Map for the April 29, 2003 Earthquake near Fort Payne, Alabama 5-58
Figure 5.2-21 Peak Ground Acceleration (%g) with 2% Probability of Exceedance in 50 Years 5-60

Figure 5.2-22 Palmer Drought Severity Index Map for State of Alabama, Month of May (1885 – 2012) 5-64
Figure 5.2-23 Alabama Hailstorm Return Interval by County 5-68
Figure 5.2-24 Total Acres Burned by Wildfire 1997-2012....5-73
Figure 5.2-25 Number of Fires per Year per Square Mile 1997-2012 5-74
Figure 5.2-26 Alabama High Hazard Dams by County....5-83
Figure 5.4-1 Annual Loss Estimates from Flooding Extracted from Local Hazard Mitigation Plans....5-96
Figure 5.4-2 Annual Loss Estimates from Hurricanes Extracted from Local Hazard Mitigation Plans....5-97
Figure 5.4-3 Annual Loss Estimates from Tornadoes Extracted from Local Hazard Mitigation Plans....5-98
Figure 5.4-4 Annual Loss Estimates from Windstorms Extracted from Local Hazard Mitigation Plans....5-99
Figure 5.4-5 Total Annual Loss Estimates from Selected Hazards Extracted from Local Hazard Mitigation Plans....5-100
Figure 5.4-6 Number of NFIP Claims in Alabama, 1978-2012 5-106
Figure 5.4-7 Number of NFIP Repetitive Loss Claims in Alabama, 1974-2012 5-110
Figure 5.4-8 Alabama Population in 1-Percent-Annual-Chance Flood Hazard Area, Graphical Depiction 5-113
Figure 5.4-9 Average Annual Tornado Loss 1950-2012 5-124
Figure 5.4-10 Total Annualized Building Losses 5-134
Figure 5.6-1 Population Density for Alabama in 2010 5-144
Figure 5.6-2 Projected County Population Growth for 2010-2040....5-147
Figure 7.2-1 Alabama Association of Regional Councils: Areas Covered by Regional Planning Councils....7-3

List of Tables

Table 4.5-1 Summary of State Hazard Mitigation Team Meetings, Including Count of Federal and Non-Federal Attendance 4-20
Table 5.2-1 Federal Disaster Declarations in Alabama (Through October 1, 2012)....5-4
Table 5.2-2 Disaster Declarations from Hurricanes in Alabama....5-13
Table 5.2-3 Flood Probability Terms 5-16
Table 5.2-4 Probability (very likely = probability > 0.9) of Alabama Sandy Beaches to Experience Erosion during Hurricane Landfall 5-17
Table 5.2-5 Annual Tornado Summary (May 31, 2012) 5-30
Table 5.2-6 Wildfires in Alabama 1997-2012....5-70
Table 5.2-7 Annual Observed Maximum Temperatures (1980-2011) Statewide....5-76
Table 5.2-8 Annual Observed Minimum Temperatures Statewide (1980-2010) 5-77
Table 5.3-1 Qualitative Rankings of 16 Initial Hazards, based on Probability of Occurrence and Mitigation Potential....5-88
Table 5.4-1 Summary of Annual Potential Loss Estimates Extracted from Local Hazard Mitigation Plans for Specific Hazards....5-91
Table 5.4-2 Total Potential Loss Estimates from Local Hazard Mitigation Plans 5-94
Table 5.4-3 Summary of Flood Insurance Claims Statistics for Alabama Counties 5-103
Table 5.4-4 NFIP Statewide Claims Data Summary....5-105
Table 5.4-5 NFIP Claims Data Analysis: Selected Parameters....5-105
Table 5.4-6 Summary of Key Repetitive Loss Claims Statistics for Alabama Counties 5-107
Table 5.4-7 NFIP Repetitive Loss Data Analysis Statewide Summary....5-109

Table 5.4-8 NFIP Repetitive Loss Data Analysis: Selected Parameters 5-109
Table 5.4-9 Estimated Population in the 1-Percent-Annual-Chance-Flood Hazard Area by County 5-111
Table 5.4-10 Estimated Average Annualized Loss in the 1-Percent-Annual-Chance-Flood Hazard Area by County 5-115
Table 5.4-11 State-owned Facilities within FEMA Flood Zones 5-118
Table 5.4-12 State-Owned Facilities within NOAA Surge Inundation Limits for Different Levels of Hurricanes in Mobile and Baldwin Counties 5-119
Table 5.4-13 Values Used for Monetary Conversion of Tornado Deaths and Injuries 5-120
Table 5.4-14 Summary of Tornado Risk by County.....5-121
Table 5.4-15 Past Tornado Damages and Future Risk by Category.....5-123
Table 5.4-16 Hazus Calculation of Dollar Losses.....5-126
Table 5.4-17 Hazus Hurricane Analysis: Selected Parameters.....5-128
Table 5.4-18 Estimated Seismic Risk to Alabama Counties; Annualized Direct Physical Losses to Buildings and Building Contents 5-130
Table 5.4-19 Estimated Seismic Risk to Alabama Counties; Annualized Business Losses to Relocation, Inventory, Wages, and Rental Income 5-132
Table 5.4.20 State-owned Facilities within GSA “Very High” Liquefaction Zone.....5-135
Table 5.5-1 Expected Future Flood Losses for the Seven Most At-Risk Counties in Alabama, Based on National Flood Insurance Program Records.....5-137
Table 5.5-2 Number of Repetitive Loss Properties, Based on National Flood Insurance Program Records for the Seven Most At-Risk Counties in Alabama 5-137
Table 5.5-3 Population in 1.0-percent Annual Chance Floodplain for the Seven Most At-Risk Counties in Alabama 5-138
Table 5.5-4 Average Annualized Loss Estimates for the 1.0-percent Annual Chance Floodplain (Hazus-MH MR 4 modeling) for the Seven Most At-Risk Counties in Alabama.....5-138
Table 5.5-5 Potential Tornado Damage for the Seven Most At-Risk Counties in Alabama (Based on Historical Annual Average) 5-139
Table 5.5-6 Potential Hurricane Wind Damage for the Seven Most At-Risk Counties in Alabama (Based on Annual Total Loss 5-139
Table 5.5-7 Potential Tornado Damage for the Seven Most At-Risk Counties in Alabama Based on Annual Total Loss 5-139
Table 5.5-8 Potential Wind Storm Damage for the Seven Most At-Risk Counties in Alabama Based on Annual Total Loss 5-140
Table 5.5-9 Seismic Risk of Seven Most Populous At-Risk Counties in Alabama 5-140
Table 5.5-10 Number of Appearances in Top Seven Rankings for All Hazards (List Shows Only Counties with Three or More Appearances).....5-141
Table 5.6-1 Alabama’s Population Growth from 2000-2011.....5-143
Table 5.6-2 Alabama County 2010 Population and Future Population Projections Through 2040 5-145
Table 6.4-1 CRS Class and Discount.....6-9
Table 6.4-2 Alabama Participating CRS Communities and CRS Class 6-9
Table 6.7-1 StormReady Counties, Communities and Supporters Since October 2012.....6-24
Table 6.8-1 Recent Disasters (2004 – 2012).....6-26
Table 6.8-2 Additional Completed / Ongoing Actions Supporting State Hazard Mitigation Plan6-28
Table 6.8-3 Mitigation Action Plan 6-38
Table 7.2-1 Summary of Development of Local Hazard Mitigation Plans 7-4
Table 7.2-2 Summary of Status of Local Hazard Mitigation Plan Updates as of December 31, 2009.....7-9
Table 7.3-1 Summary of Review of Local Hazard Identification and Profiles.....7-13
Table 7.3-2 Projected Loss Estimates from Available Local Plan Risk Assessments.....7-15
Table 7.3-3 Review of Local Goals and Actions in Terms of State Goals 7-17

Section 2 – Executive Summary

2.1 Background

On October 20, 2000, the United States Congress passed the Disaster Mitigation Act of 2000, also known as DMA2K. A copy of the Act is included as **Appendix A**. Among its other features, DMA2K established a requirement that in order to remain eligible for federal disaster assistance and grant funds, States and localities must develop and adopt hazard mitigation plans. On February 26, 2002, the Federal Emergency Management Agency (FEMA) published an Interim Final Rule (IFR) that provided the guidance and regulations under which such plans must be developed. The Final Rule (FR) was released in October of 2007 and technical corrections were made in September of 2009. The Final Rule on standard state mitigation plans and enhanced state mitigation plans are found in the Code of Federal Regulations at 44 CFR Parts 201.4 and 201.5 (October 1, 2010). The FR provides detailed descriptions of both the planning process that States and localities are required to observe, as well as the contents of the plan that emerges. It is included as **Appendix B**.

Additionally, the Flood Insurance Reform Act of 2004 (P.L. 108-264) created two new grant programs: the Severe Repetitive Loss (SRL) and Repetitive Flood Claim (RFC) programs. The Act also modified the existing Flood Mitigation Assistance (FMA) program. One of the provisions of this Act is that if a State includes certain elements as required by the Act, the State is be eligible for an increased federal cost share (90/10) for projects funded under the Flood Mitigation Assistance and Severe Repetitive Loss programs that address mitigation of severe repetitive loss properties.[1] Alabama has addressed the repetitive loss provisions required by the Act in **Appendix O** of this plan. The Biggert-Waters Flood Insurance Reform Act of 2012 extends the National Flood Insurance Program (NFIP) through 2017 and included several reforms included eliminating subsidized insurance rate of repetitive loss properties.

On October 17, 2004, the State of Alabama officially adopted the initial Alabama Statewide Hazard Mitigation Plan in response to the requirements of DMA2K and the IFR Section 201.4(a). In addition Section 201.4(d) mandates that a state update its plan every three years "to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities." The first update of this plan was approved on October 19, 2007. The 2013 version of this plan is the third update in response to the DMA2K requirements.

The State Alabama will continue to comply with all applicable Federal statutes and regulations related to hazard mitigation planning during the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c). Further, the State of Alabama and will amend its plan whenever necessary to reflect changes in State or Federal laws and statutes as required in 44 CFR 13.11(d).

2.2 Organization of the Plan

The Alabama Hazard Mitigation Plan is organized to parallel the structure provided in the Final Rule (FR). The plan has ten sections.

[1] The Flood Mitigation Assistance, Repetitive Flood Claims, and Severe Repetitive Loss grant programs now fall under the Hazard Mitigation Assistance (HMA) grants program which was established on June 1, 2010.

Section 1 Table of Contents and Lists
Section 2 Executive Summary
Section 3 Approval and Adoption
Section 4 Planning Process
Section 5 Risk Assessment
Section 6 Mitigation Strategy
Section 7 Coordination of Local Planning
Section 8 Plan Maintenance
Section 9 Enhanced Mitigation Plan Elements
Section 10 Appendices

There are references to the FR throughout the plan; where possible these provide specific section and subsection notations for the convenience of reviewers.

The 2013 plan update follows this same basic structure as previous versions, and the beginning of each section includes a table summarizing the significant changes. A summary of planning activities from previous version of this plan is included throughout this plan, where appropriate. The complete descriptions of previous plan development efforts can be found in the 2004, 2007 and 2010 versions.

2.3 Highlights of the Plan

The purpose of the Plan is to rationalize the process of identifying and implementing appropriate hazard mitigation actions across the State. The document includes a detailed characterization of natural hazards Statewide; a risk assessment that describes potential losses to physical assets, people and operations; a set of goals, objectives, strategies and actions that will guide the State's mitigation activities; and a detailed plan for implementing and monitoring the required aspects of the Plan. The following provides a brief summary of each section of the Plan.

2.3.1 Approval and Adoption

Section 3 of the Plan describes the Plan approval and adoption process and provides assurances as required by the FR. It also includes documents related to Plan adoption, including an approval letter from the Director of the Alabama Emergency Management Agency (AEMA), and a letter of endorsement and support from the Governor.

The Alabama State Hazard Mitigation Plan was adopted by the Governor through the authority delegated to AEMA. As noted elsewhere in the plan (see **Section 4**), each State Hazard Mitigation Team (SHMT) member was provided a full draft copy of the plan for review, comment and endorsement prior to adoption by the Governor. AEMA retains the comments and changes. The Plan was approved by the Director of the Alabama Emergency Management Agency, through authority delegated by the Governor.

Upon completion, this Plan Update will be approved and adopted through the same mechanism used for previous versions of this plan.

2.3.2 The Planning Process

Section 4 of the Plan includes a detailed description of the planning process and the individuals and agencies who were involved. The process used to develop the initial Plan was closely modeled on the FEMA "How-To" series for hazard mitigation planning.

As the process of developing the 2004 Plan began, Alabama Governor Bob Riley signed Executive Order No. 19 (EO 19). EO 19 established the State Hazard Mitigation Council (also referred to as the State Hazard Mitigation Team or SHMT throughout this document), directed the members of the SHMT to participate in the process and reiterated the importance of the plan for the State. The Governor delegated responsibility for overseeing development of the plan to the AEMA. The SHMT was the core group responsible for all decisions about planning process and content. For the initial plan, the SHMT met four times during development of the plan and, during the meetings, considered and approved/amended aspects of it. A list of the SHMT members and other agencies involved in the planning process is provided in **Appendix D**.

Executive Order 19 has remained valid for the plan updates, leaving the SHMT intact with AEMA as the lead agency for the plan updates. For the 2013 update, AEMA and its consultant team developed a strategy for updating each section of the plan. This strategy was reviewed and approved by the SHMT at its first meeting. AEMA then led the update of all sections of the plan. Subject matter experts on the SHMT were solicited for specific information regarding hazards, risks, capabilities and strategies. SHMT members were also asked to review mitigation strategies from the 2010 Plan for which they were responsible and asked to provide new mitigation actions that they may pursue in the future.

After all sections were completed and comments incorporated, the Plan was submitted to the SHMT in January 2013 for review prior to submission to FEMA.

Section 4 provides more detailed summaries of the meetings held for the development of the 2013 update, including the three SHMT meetings. Detailed meeting minutes of each meeting can be found in **Appendix L**.

2.3.3 Risk Assessment

Section 5 includes a detailed description of the process that was used to identify, assess and prioritize Alabama's natural hazard risks. The initial part of **Section 5.2** provides hazard profiles for 19 natural hazards. **Section 5.3** then describes a ranking system that was used to reduce the list of significant hazards to those that would be afforded a detailed risk assessment. **Section 5.5** provides detailed risk assessments for these hazards, and **Section 5.6** follows with a summary of the jurisdictions that are most at risk from these three hazards.

As part of the plan update process, the team reevaluated its hazards based on new and current information and modified its risk assessments based on newly available data. These hazards were then evaluated based on newly acquired data and risk assessment were performed on the most threatening hazards to incorporate current data. Jurisdictions were then ranked based on their vulnerability and risk.

2.3.4 Mitigation Strategy

Section 6 is a description of the State's mitigation strategy, goals, actions and capabilities. The strategy and goals were reviewed and revised, as required, as part of the 2013 update. This process is detailed in **Section 4**, and the changes are reflected throughout **Section 6**. The State hazard mitigation strategy now reads (changes shown in bold):

> Reduce **vulnerability** through collaborative actions and policies that limit the effects of natural hazards on the citizens and physical assets of Alabama.

The State Hazard Mitigation Team and AEMA developed six goals for hazard mitigation, in support of this general strategy. These goals were revisited for the 2013 update to be confirmed as valid or revised by the SHMT. The SHMT voted to replace the word "risk" with the word "vulnerability" in Goal 2. As a result of these changes, Goal 2 was identical to Goal 4. Therefore, Goal 4 was eliminated and its objectives were added to Goal 2 as Objectives 2.5 and 2.6. In addition, former Goal 5 was changed to Goal 4 and former Goal 6 was changed to Goal 5. . Further details can be found in **Section 6.** The changes to Goals are shown below(changes shown in bold):

Goal 1: Enhance the comprehensive statewide hazard mitigation system.

Goal 2: Reduce the State of Alabama's **vulnerability** from natural hazards.

Goal 3: Reduce vulnerability of new and future development.

Goal 4: Foster public support and acceptance of hazard mitigation.

Goal 5: Expand and Promote interagency hazard mitigation cooperation.

The SHMT members updated the actions relating to their agency. Each agency provided an implementation status, funding source, and priority for their actions. In addition, new actions were provided where appropriate.

2.3.5 Coordination of Local Planning

Section 7 describes how the state provides assistance and guidance to local jurisdictions for developing their hazard mitigation plans, how information from the state and local plans are linked and integrated, and how the state prioritizes funding opportunities for local jurisdictions. For the 2013 plan update, every county in the state had an approved mitigation plan. In addition, all but one county has approved updates. In addition, a University level plan has been developed for Jacksonville State University and the Poarch Band of Creek Indians has developed a Tribal hazard mitigation plan. The process used to incorporate local plan information was the same as that used in the 2007 and 2010 updates. Section 7 reviews and incorporates local plan hazard identification, loss data, and mitigation strategy information to ensure consistency between the state and local levels. This update also discusses how the state facilitated the completion of the local plans, the current status of the local plan update process, and a summary of how the state has prioritized funding for local mitigation projects over the past three years.

2.3.6 Plan Maintenance

Section 8 describes how the plan will be periodically evaluated and updated. The Final Rule requires that the State Hazard Mitigation Plan be updated and re-submitted to FEMA for re-approval every three years. In addition to meeting this requirement, AEMA will review the plan annually, based on criteria that are described in **Section 8.2**. The criteria to be evaluated are:

1. Changes in risk;
2. Changes in laws, policies, or regulations at the state or local level;
3. Changes in State agencies or their procedures;
4. Significant changes in funding sources or capabilities;
5. Progress on mitigation actions or new mitigation actions that the State is considering;
6. Changes in the composition of the State Hazard Mitigation Team; and
7. Major changes to local or multi-jurisdictional hazard mitigation plans.

In addition, AEMA may initiate the review process under the following conditions:

1. After a major disaster declaration;
2. At the request of the Governor; and
3. When significant new risks or vulnerabilities are identified.

Section 8.2 describes the process that AEMA will use to initiate and complete the periodic reviews and updates. The interim reviews may be relatively simple, but the three-year update is expected to comprise a comprehensive update and multi-stage process similar to the initial development of the plan.

Other parts of **Section 8** describe how the State will monitor mitigation activities and measure progress toward achieving the goals that are described in **Section 6**.

2.3.7 Enhanced Mitigation Plan Elements

The Final Rule (Section 201.5) describes requirements for states to achieve “enhanced mitigation plan” status and become eligible for increased funding through certain grant programs.

The State began working towards achieving enhanced plan status shortly after the initial plan was approved and adopted; however, a number of significant disasters forced AEMA to shift priorities towards response and recovery efforts. The State resumed work on the enhanced plan elements following completion of the 2007 plan update. The state completed the enhanced plan requirements for the 2010 update but was found to be noncompliant with the Enhanced Plan Elements. AEMA intends to reapply for enhanced plan status but is delaying the submission until after the completion of Disaster 1971 (April 2011 Tornadoes). A FEMA specialist reviewed the AEMA program and recommended the state delayed submission of the Enhanced Plan until after all funds had been allocated since so the state has been efficient and showed a high level of capability with the disaster. (The state is on track to have all funds obligated within 24 months of the disaster declaration date.) Currently, submission of the Enhanced Plan is anticipated for January 2014.

Section 3 - Plan Approval, Adoption and Assurances

This section of the plan addresses requirements of Final Rule (FR) Section 201.4 (c) (6) and (7). A copy of the FR is provided for reference in **Appendix B** of this document.

Contents of this Section

3.1 Final Rule Requirements for the Plan Adoption Process
3.2 Plan Approval and Adoption Process
3.3 Formal Adoption Document(s)
3.4 Assurances

Section	What has been updated?
3.1	• References to Interim Final Rule changed to reflect Final Rule.
3.2	• This section was revised to reflect the 2013 plan update process.
3.3	• Formal adoption documents will be provided after FEMA's review and conditional approval of the plan.
3.4	• The required assurances will be included as part of the formal adoption documents.

3.1 Final Rule Requirements for the Plan Adoption Process

The Final Rule (201.4 (c) (6)) requires the State Hazard Mitigation Plan to include the following elements

i. "*A Plan Adoption Process.* The plan must be formally adopted by the State prior to submittal to FEMA for final review and approval."

ii. *"Assurances.* The plan must include assurances that the State will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c). The State will amend its plan whenever necessary to reflect changes in State or Federal laws and statutes as required in 44 CFR 13.11(d)."

3.2 Plan Approval and Adoption Process

3.2.1 Background

Executive Order No. 19 **(Appendix C)** delegates plan development and approval authority to the Director of the Alabama Emergency Management Agency (AEMA). As discussed in earlier sections, the Order also designates specific agencies and organizations Statewide to participate as members of a State Hazard Mitigation Council (also called the Team or SHMT throughout this document).

The SHMT last approved this plan in September 2010 and has been involved with the 2013 Plan Update process. Meeting minutes document the presentation materials and discussions. Minutes are provided in **Appendix L**.

Currently, the SHMT is in the process of reviewing each plan section update and will provide comments and feedback as appropriate for incorporation into the plan. After comments are incorporated, the Team will be provided with a detailed briefing on all proposed changes and additions to the plan. Each member of the SHMT will have a second opportunity to review and approve the document prior to submission to FEMA.

3.2.2 AEMA Review and Approval

After the all comments are compiled and incorporated, the Director of AEMA will review the document for approval and formal adoption on behalf of the Governor as was the case in previous versions.

3.3 Formal Adoption Document(s)

By agreement between FEMA Region IV and AEMA, the official adoption documents will be provided after FEMA's final review and conditional approval of the Plan.

3.4 Assurances

The assurances required by FR Section 201.4 (c) (7) will be included in **Appendix F** of this plan, the AEMA letter of approval.

This page left intentionally blank

Section 4 – The Planning Process

This section of the plan addresses requirements of Final Rule (FR) Section 201.4 (b) and (c) (1). A copy of the FR is provided for reference in **Appendix B** of this document.

Contents of this Section

4.1 Final Rule Requirements for the Planning Process
4.2 Coordination with State and Federal Agencies and Interested Groups
4.3 Integration into other Ongoing State Planning Efforts
4.4 Integration into other FEMA Mitigation Programs and Initiatives
4.5 Description of the Planning Process

Section	What has been updated?
4.1	• References to Interim Final Rule changed to reflect Final Rule.
4.2	• This section was updated to include information on participating entities during the 2013 State Plan update process. • This section was updated to consolidate information from previous versions of the plan.
4.3	• All mitigation-related planning activities throughout the State were reviewed and updated. • The section was revised to reflect current mitigation planning activities throughout the state. • The Potential Improvements section was reviewed and updated by AEMA or the appropriate state agency. • A subsection (4.3.3.1) was added to reflect completed improvements by the State.
4.4	• This section was revised to reflect all recent and ongoing FEMA mitigation initiatives and grant programs. • The section was then updated to reflect current information and activities for the 2013 Plan update.
4.5	• This section was updated to reflect the 2013 Plan update process.

4.1 Final Rule Requirements for the Planning Process

The Final Rule (FR) Subsection 201.4 (b) states the following:

> "An effective planning process is essential developing and maintaining a good plan. The mitigation planning process should include coordination with other State agencies, appropriate Federal agencies, interested groups, and be integrated to the extent possible with other ongoing State planning efforts as well as other FEMA mitigation programs and initiatives."

The FR Subsection 201.4 (c) (1) requires that the plan include:

> "Description of the *planning process* used to develop the plan, including how it as prepared, who was involved in the planning process, and how other agencies participated."

4.2 Coordination with State and Federal Agencies and Interested Groups

4.2.1 Agency Coordination During Development of the 2013 State Hazard Mitigation Plan

Most agency coordination was achieved by assembling the State Hazard Mitigation Council (also referred to as the State Hazard Mitigation Team, or SHMT, throughout this plan). Activities of this entity are more thoroughly discussed in **Section 4.5 (Description of the Planning Process)**. Beyond the activities of the SHMT, the following summarizes efforts to involve other agencies in the planning process.

Coordination to Incorporate Local Hazard Mitigation Plans

The Final Rule requires that state hazard mitigation plans contain a review of FEMA approved local hazard mitigation planning efforts including risk assessments and mitigation goals and actions. Much progress has been made with local level planning. When the initial State Hazard Mitigation Plan was developed in 2004, no local hazard mitigation plans had been approved. The number of approved plans (and approved updated plans) has increased with each update process. By the 2010 State Hazard Mitigation Plan Update, all counties had an approved plan in place. With the 2013 State Plan Update, most counties now have approved updates in place. Coordination between AEMA, local Emergency Management Agencies (EMAs) and the 12 Regional Planning Councils helped to make this possible.

When AEMA began the 2007 Statewide Hazard Mitigation Plan update process, 64 out of 67 counties in the State had FEMA approved local hazard mitigation plans. Therefore, the local hazard mitigation plans could be reviewed directly, and appropriate information could be extracted and incorporated into the state plan update. Information from the local risk assessment and mitigation strategy sections was extracted and incorporated into this plan. This process helped to ensure that the statewide planning effort was a both a "top-down" and "bottom-up" approach as it pertains to the relationship between the local and state plans.

The coordination between AEMA and the RPCs continued into the 2010 update as local plans required updates. In 2010 update, the RPCs were the primary entity updating the local plans. However, RPC involvement in local mitigation planning has declined for the 2013 state plan update. There is limited funding for this activity. However, local plans continue to be updated via local governments and contractors, and AEMA and the RPCs continue to coordinate. For the 2013 update, all counties, except one, have an approved updated plan in place. The process used beginning with the 2007 State Plan Update to extract information from local plans was repeated for the 2013 State Plan Update. The integration of local plans is described thoroughly in **Section 7.4** and referenced throughout the plan.

Coordination to Complete the Risk Assessment

AEMA also consulted with several state and federal agencies represented on the SHMT to obtain information and guidance while updating the Risk Assessment section. NOAA (National Oceanic and Atmospheric Administration) was contacted to obtain SLOSH data was for coastal area analysis. (Note: This analysis was completed using data from the Army Corps of Engineers (USACE) in previous version of this plan.) FEMA Region IV was contacted to obtain data on NFIP claim data. The Alabama Department of Economic and Community Affairs Office of Water Resources (ADECA-OWR) provided information on drought, dam failure, flood mapping, and Risk MAP. The Geological Survey of Alabama (GSA) provided substantial information on landslides, earthquakes, subsidence and sinkholes for inclusion in the hazard profiles as well. The Alabama Forestry Commission (AFC) provided wildfire data for the risk assessment including acres burned for each county. In addition, many of the aforementioned agencies also lead and incorporate statewide mitigation programs, as discussed in **Section 4.3** (Integration into Other Ongoing State Planning Efforts).

AEMA continues to coordinate with State agencies to identify state owned and/or operated critical facility information for incorporation into the plan. The FR states that “State owned critical or operated facilities…shall be addressed.” For the 2013 update of this plan, a database of geocoded critical facilities exists and was provided by the Department of Finance- Risk Management Division, permitting GIS spatial overlay analysis.

Coordination to Complete the Mitigation Strategy

AEMA also coordinated with members of the SHMT whose agency was named as “Responsible Agency” for mitigation actions in the initial plan. State agency representatives were asked to do the following:

- Review and provide an update for their mitigation actions from the 2010 plan; and
- Identify any new mitigation actions that they were interested in pursuing.

Coordination with FEMA During the Planning Process

AEMA and FEMA continued to coordinate for the 2013 Plan update. FEMA Region IV participated in the Plan update process by providing technical assistance. FEMA provided detailed technical assistance by interpreting FR planning requirements and assisting AEMA in integrating these into the final product. FEMA also provided data for the Risk Assessment. FEMA representatives also assisted by providing general guidance on the plan update process. These activities are described in more detail in **Section 4.5**.

4.3 Integration into Other Ongoing State Planning Efforts

4.3.1 Summary

State-level planning efforts related to hazard mitigation planning are primarily the responsibility of three agencies:

- Alabama Emergency Management Agency (AEMA);

- Alabama Department of Economic and Community Affairs (ADECA): Office of Water Resources (ADECA-OWR), Community and Economic Development Programs (ADECA-CEDP), and Community Development Block Grant (CDBG) Disaster Recovery Program; and
- Alabama Department of Conservation and Natural Resources (ADCNR), Coastal Zone Management Program (CZMP).

These three agencies are responsible for the administrative and planning functions for hazard mitigation planning, the National Flood Insurance Program (NFIP), the Community Development Block Grant Program (CDBG), disaster recovery planning, and the CZMP.

Other significant state-level planning efforts related to hazard mitigation are supported by the following State agencies, Federal agencies, and interested groups, all of which are represented on the SHMT:

State agencies:

- Alabama Forestry Commission (AFC);
- Geological Survey of Alabama (GSA);
- Alabama Department of Agriculture and Industries;
- Alabama Department of Environmental Management (ADEM); and
- Alabama Department of Transportation (ALDOT).

Federal agencies:

- U.S. Army Corps of Engineers, Mobile and Nashville Districts (USACE);
- U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA);
- U.S. Department of Commerce, NOAA, National Weather Service, Huntsville, Birmingham, Mobile, and Tallahassee Offices (NWS);
- U.S. Department of Agriculture, Forest Service (USFS);
- U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS);
- U.S. Department of Agriculture, Rural Development (RD); and
- U.S. Geological Survey, Alabama District (USGS).

Other groups:

- American Planning Association, Alabama Chapter, Alabama Planning Institute (API);
- Alabama Association of Regional Councils (AARC); and

- Alabama Association of State Floodplain Managers (AAFM).

4.3.2 Ongoing State Planning Efforts and Integration Process

As noted above, AEMA works closely with several agencies to ensure ongoing planning efforts and integration. The agencies with substantial mitigation integration include the Regional Planning Councils (RPCs), Alabama Association of Floodplain Managers (AAFM), Alabama Department of Economic and Community Affairs (ADECA), Alabama Department of Coastal and Natural Resources (ADCNR), Geological Survey of Alabama (GSA), and the Alabama Forestry Commission (AFC). Additional information on integration can be found in **Section 9: Enhanced Plan Elements**, as integration is required for enhanced plan status.

Regional Planning Councils

FEMA has a long-standing relationship with the RPCs beginning with the 2004 version of the State Hazard Mitigation Plan. AEMA recruited assistance from the twelve Regional Planning Councils (RPCs) within the State of Alabama, represented by the AARC. The RPCs had agreements in place with AEMA to develop local hazard mitigation plans for some counties within their jurisdictions. Since 2004, AEMA has provided considerable technical support and training to RPC planners to gain proficiency in hazard mitigation planning. Several of the RPCs have a mitigation planner on staff to provide ongoing planning services to all jurisdictions within their respective regions.

The RPCs completed 47 county-level plans from 2004 to 2005. In 2006, AEMA provided additional funding to seven of the twelve RPCs to update 34 plans across the State. To date (2013 update), the RPCs continue to be involved in mitigation planning and have contributed to 41 of the 67 currently approved county-level plans. However, with the 2013 update, a trend towards using consultants to complete the plan updates was observed. Further, many of the RPCs are no longer completing mitigation plans due to lack of funding so the decline is RPC mitigation planning is expected to continue.
Complete details about the local hazard mitigation plan development and update process are included in **Section 7.2**.

However, it should be noted that the RPCs are also involved in comprehensive planning activities with local jurisdictions (counties, cities, and towns) and other local or regional interest groups, either by directly developing and updating the plans or assisting in development of the local comprehensive plans. With a thorough knowledge of hazard mitigation planning and strong partnership with AEMA, the RPCs work with the local agencies to integrate hazard mitigation planning into local and regional comprehensive planning initiatives. AEMA continues to improve and solidify this process.

The RPCs often work in conjunction with the Alabama Planning Institute (API) to provide regular training to local planning officials and planners throughout Alabama. The Alabama Planning Institute, housed within the University of North Alabama Center for Continuing Education, is sponsored by the Alabama Chapter of the American Planning Association. The Institute has a long-standing and successful record of achievement, and its courses are always in high demand. Topics in hazard mitigation have been recently added to the API courses, and AEMA continues to work to expand these course offerings to emphasize the integration of hazard mitigation planning into local and regional comprehensive planning processes.

Alabama Association of Floodplain Managers (AAFM)

Alabama established its own chapter of State Floodplain Managers in 2008. As demonstrated in the past, the Association offers technical support materials for flood hazard mitigation planning and offers a certification program, the Certified Floodplain Manager (CFM), for State and local officials involved with floodplain management.

Alabama Department of Economic and Community Affairs-Office of Water Resources (ADECA-OWR)

ADECA-OWR serves as a lead agency in statewide hazard mitigation planning. ADECA-OWR oversees the Drought Management Program, administers the National Flood Insurance Program (NFIP) (see **Section 4.4** for additional discussion of NFIP integration), and oversees the State's Dam Safety Program. ADECA's Community and Economic Development Programs Office administers the CDBG program, including the Disaster Recovery Initiative (DRI) and administers grants for local planning activities. Lastly, ADECA-OWR oversees the State's flood mapping program, including Risk MAP, a FEMA program.

The OWR completed the Alabama Drought Management Plan in 2004 following completion of the 2004 State Hazard Mitigation Plan (this is the most current version as of the 2013 State Hazard Mitigation Plan update). The risk assessments and mitigation strategies of the drought plan are integrated into the mitigation strategies of this plan in **Section 6**. According to the plan,

> *The Alabama Drought Management Plan defines a process to address drought and drought related activities, such as monitoring climatic conditions, vulnerability assessments, impact assessments, response and mitigation. This plan creates a statewide regional structure to identify the different areas impacted by drought conditions, identify risks associated with drought conditions and identify ways to possibly avoid droughts and when drought emergencies cannot be avoided, identify ways to mitigate the impacts of droughts. These objectives are accomplished through the development of drought triggers and indicators and by providing guidance on responses to drought conditions for the various sectors impacted by droughts.*

On June 24, 2011, Governor Bentley issued Executive Order 19 on Drought Planning and Management, formally tasking OWR to support drought planning throughout the state and streamlining the organizational structure.

OWR has also been working to organize an Alabama Dam Security and Safety Program. Legislation to establish this program has been under development for several. ADECA-OWR continues to move forward with the inventory but dam safety legislation is not pending at this time. The program proposes an up-to-date inventory and survey of private dams in Alabama. This inventory should strengthen public safety and emergency response operations in the event of a dam related disaster. In addition to the inventory, the program proposes regular inspections and permitting (certification) of certain dams for increased protection of life and property in the event of dam failure.

Annual CDBG program funds are administered through ADECA and used for community development projects at the local level. Funds support a variety of projects including, but not limited to, public infrastructure improvements, housing, and economic development initiatives.

ADECA reserves a portion of CDBG funds for local planning grants. These grants may be used for developing and updating comprehensive plans. Up to $50,000 may be awarded to a community. The grant provides a funding mechanism for addressing hazard risks and incorporating hazard mitigation actions into local comprehensive plans. CDBG funds are sometimes allocated following a major disaster. ADECA, through the Disaster Recovery Initiative (DRI), administered a special Congressional appropriation through the CDBG program for supplemental funding to aid community recovery and mitigation for communities affected by Hurricane Katrina. This was also used after Ivan. CDBG funds were also used following the April 2011 tornadoes.

ADECA also established a Long Term Recovery program with a full time State Coordinator in response to Hurricane Katrina in 2005 to coordinate long term disaster recovery planning. ADECA worked alongside the FEMA Long Term Recovery Team to prepare a Long Term Recovery Plan for the communities of Mobile County. The plan was adopted by all communities and incorporated by amendment into local mitigation plans. Following the April 2011 tornadoes, the Governor established ADECA as the official coordinating agency for long term community recovery efforts through Executive Order Number 18 (June 13, 2011). During this process, six areas of recovery were identified and task forces assigned to each: housing, economic recovery, infrastructure, health and social services, community planning and capability building and natural and cultural resources. The long term recovery program is locally driven but draws on guidance from ADECA. Nine communities participated in long-term recovery efforts following the April 2011 tornadoes: Cordova, Geiger, Hackleburg, Holt, Jefferson County, Phil Campbell, Pleasant Grove, Rainsville and DeKalb County, and Sipsey. Planning is currently still in progress.

ADECA is also leading the State's involvement in Risk MAP (Mapping, Assessment and Planning). Risk MAP, a FEMA initiative, builds on the flood map modernization program to provide additional deliverables and a more holistic approach. For example, a major goal of Risk MAP is public outreach and awareness. There is a focus to deliver products (such as flood mapping documents) with additional guidance on how to use to the product within a community. Further, Risk MAP serves to increase risk awareness and resilience in Alabama. Map Modernization focused on county-wide studies, whereas Risk MAP focuses on Watershed Studies that cross political boundaries but follow hazard boundaries. Risk MAP also encourages actions, as result of findings, to reduce the risk to life and property.

Risk MAP projects in Alabama are underway in several watersheds throughout the state, though none are complete at this time. Community meetings with the communities in two of the initially modeled watersheds are scheduled for January 2013. In addition, there is a joint storm surge study with Florida that should be completed in Spring 2013. Preliminary Coastal Flood Maps, also through Risk MAP are anticipated to be completed in 2014.

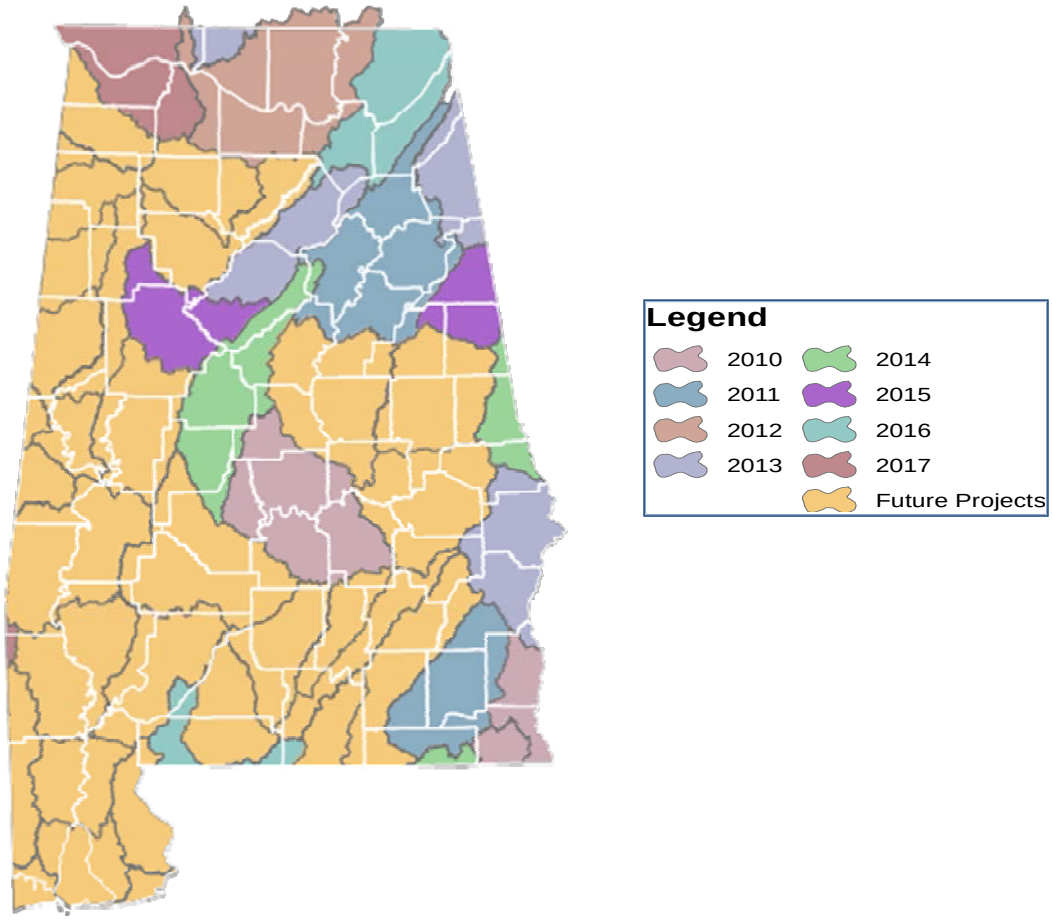


Figure 4.3-1
Risk MAP Project Schedule (tentative)
Source: Courtesy of ADECA-OWR, 2012

As the State agency that oversees the implementation of the NFIP, ADECA is pleased to report that since 9/1/2010, 46 new jurisdictions have joined the NFIP. This brings the total number of participating jurisdictions to 428. Also since 2010, 26 individuals have earned their CFM certification. This brings the total number of CFMs in the State to 112.

Alabama Department of Conservation and Natural Resources (ADCNR)

The Coastal Zone Management Program (CZMP) is jointly administered through ADCNR and the ADEM. ADCNR is responsible for grant management, planning and policy development, and ADEM is responsible for permitting, regulatory, and enforcement.

The ADCNR, State Land Division, Coastal Section administers the Alabama Coastal Area Management Program (ACAMP), a program designed to balance preservation, conservation, enhancement and development of coastal resources, while promoting a sustainable economy in coastal areas. An important component of the program is natural hazards mitigation. In light of this, the Director of ADCNR has been assigned to the SHMT. Planning efforts are coordinated with ADCNR through:

- Discussions of planning activities and mitigation plans with key staff;
- Review of the ACAMP; and
- Review of the Alabama Coastal Impact Assistance Program (CIAP) Plan.

The U.S. Congress authorized the CIAP in October 2000, pursuant to the H.R. 5548-2001 Amendment to the Outer Continental Shelf Lands Act. Alabama developed its first CIAP Plan in June 2001. U.S. Congress re-established the CIAP in August 2005 by Section 384 of The Energy Policy Act of 2005 (Public Law 109-59) for funds between 2007 and 2010. The CIAP was passed to assist coastal states with mitigating environmental impacts, related directly or indirectly, to Outer Continental Shelf oil and gas production. Just six states, including 67 coastal political subdivisions are eligible for these funds. . The ADCNR, Coastal Section entered into a contract with the South Alabama Regional Planning Commission (SARPC) to assist with the development of the plan and to work with the two county governments in the development of their plans. AEMA is currently working with the ADCNR, Coastal Section and the SARPC to identify mitigation opportunities.

A CIAP Plan must be approved by the Bureau of Ocean Energy Management, Regulation and Enforcement before funding can be received. The State received $51,000,000 for CIAP projects in FY 2007 and 2008. The money was distributed between the State, Baldwin County Commission, and Mobile County Commission to implements CIAP projects. This is the last finalized CIAP Plan document available. The last noted CIAP Plan was for FY 2010 to be submitted in 2011. The U.S. Congress authorizes the funds for the following uses:

- Projects and activities for the conservation, protection or restoration of coastal areas, including wetlands;
- Mitigation of damage to fish, wildlife or natural resources;
- Planning assistance and the administrative costs of complying with CIAP;
- Implementation of a federally approved marine, coastal or comprehensive conservation management plan; and
- Mitigation of the impact of OCS activities through funding of onshore infrastructure projects and public service needs.

As of May 17, 2010, states with an approved four-year CIAP Plan may submit applications for 2010 funds. Funds not addressed in the approved Plan will be eligible to a State with the submission and approval of an Amendment to a State Plan. An Amendment to a State Plan should contain all the components required in the Plan. This is the process that continues as of the 2013 State Hazard Mitigation Plan update.

In the past, the ADCNR, Coastal Section has provided grant funds to local communities to fund hazard mitigation plans and plan updates. This has included Baldwin County, Orange Beach and Gulf Shores. At this time, no such grants are in place. However, prior to each fiscal year, the ADCNR, State Lands, Coastal Section issues a request for proposals under which hazard mitigation projects, plans and plan updates are an eligible category that may receive Federal funding if a project receives a priority ranking.

Projects which have potential impacts on Alabama's coastal resources are regulated through the ADEM permitting and enforcement programs. These regulated projects include the following activities:

- Construction on Gulf-fronting properties;
- Commercial and residential development on properties greater than 5 acres;
- Projects with impacts on wetlands and/or water bottoms;
- Construction of new or expansion of existing marinas;
- Installation of groundwater wells with a capacity greater than 50 GPM;
- Siting, construction and operation of energy facilities;
- Shoreline stabilization projects; and
- Discharges to coastal waters.

In 2011, the Coastal Section completed a preparedness guide titled, "Homeowner's Handbook to Prepare for Natural Hazards." The handbook was funded through a Sea Grant and is being modeled off of the University of Hawaii's version of a similar document. The purpose of the handbook is to reduce the risk of natural hazards on people and property. It will provide homeowners with basic guidance on how to prepare for nearly any hazard event, including hurricanes, tsunamis, earthquake, and several other hazards. The Coastal Section is working directly with AEMA and intends to include information from the Alabama Hazard Mitigation Plan into their handbook. This is a prime example of AEMAs demonstration of integration needed for the enhanced plan status. The Coastal Section is also soliciting involvement from other agencies and did so at the second State Hazard Mitigation Team meeting. The Alabama Forestry Commission is one such agency that is committed to partnering with the Coastal Section.

Geological Survey of Alabama (GSA)

The Geological Survey of Alabama (GSA) supports mitigation planning for geological hazards including sinkholes, earthquakes, and landslides. GSA has developed and maintains maps showing the distribution of known sinkholes, faults, underground mines, and landslides. The agency also maintains maps of ecologic formations, complete with descriptions of the characteristics, and prepares reports of findings and recommendations. The GSA also maintains records of historical earthquakes and monitors current seismic activity. In March of 2010, GSA completed a statewide basement fault map and is working to complete a soil amplification/liquefaction map. The GSA also has mapped earthquake epicenters, liquefaction susceptibility and landslide susceptibility for the 2013 Plan update. Both of these items have been incorporated into the Risk Assessment. The information and technical resources of the GSA are critical to the statewide risk assessment of this plan and the development of mitigation strategies that respond to pervasive geological hazards across the State. In addition, the GSA conducts public outreach through the distribution of educational brochures on geological hazards.

Alabama Forestry Commission (AFC)

The Alabama Forestry Commission incorporated mitigation elements into its Forestry Resources Handbook. The AFC partnered with several agencies, including AEMA, to complete the handbook. AEMA provided hazard mitigation expertise throughout the development including information from the State Hazard Mitigation Risk Assessment to incorporate into the handbook. AEMA was present during the AFC's strategy development process when the AFC and partnering agencies identified 9 threats, one of which was storms (catastrophic events, floods, hurricanes, etc). AEMA provided mitigation expertise on the storm section of the Forestry Resources Assessment Handbook. Mitigation was made a priority for both urban and rural

settings. In urban setting mitigation priorities were to remove debris and incorporate lessons learned from previous plans. In rural settings, mitigation priorities included developing community wildfire mitigation plans and incorporating scalability.

Other hazard mitigation initiatives by Federal agencies are described in **Section 6.9**. These are primarily funding mechanisms to augment state and local mitigation activities.

4.3.3 Potential Improvements

The State of Alabama has many opportunities to strengthen or improve the integration of its existing statewide planning initiatives. These opportunities were first identified in the 2007 version of the plan, and were included in subsequent plan updates. Several items have been completed which are listed in 4.3.3.1 following this subsection. Below lists the potential improvements and their status:

- Continue to use the AARC to disseminate planning information among local government planning. This agency became the main source of information sharing when the All Hazards Task Force dissolved in 2010.
    - This agency continues sharing information as of the 2013 State Plan update.

- Continue NFIP training and enlarge the scope of training to address other natural hazards. The lead hazard mitigation planning agencies (defined as Alabama Department of Economic and Community Affairs, Alabama Department of Environmental Management, Forestry Commission of Alabama, Geological Survey of Alabama, and Alabama Department of Conservation and Natural Resources) can improve coordination and delivery of mitigation planning courses to interested individuals throughout the State. The AARC can also become a partner in enlarging training opportunities along with the Alabama Planning Institute (API). Expanded and coordinated training presents one of the best opportunities to assure integration of planning initiatives among State, Federal, and other interest groups, and best deliver hazard mitigation planning principles at the local level.

    - Floodplain Management 101 was conducted on at least 5 occasions, Managing Floodplain Development through the NFIP (L-273) is held once or twice a year, and Basics of Hydrology and Hydraulics and GIS for the Floodplain Manager has been held three times. There are plans to provide training on NFIP Policy and Reform, HAZUS, Community Rating System, Online LOMC, and a Floodplain Management Summary and review in addition to various seminars provided through the Alabama Association of Floodplain Managers conferences.

    - Additional training is also offered through FEMA's Risk MAP program.

    - The AARC works through the state to provide information to local governments. The state is not currently working with API to providing training exercises specific to hazards.

- Additional training for earthquake and hurricane hazards continues:
  - Earthquake: There are several counties at risk to earthquake in Alabama. AEMA works primarily through the Central United States Earthquake Consortium (CUSEC) and FEMA to provided courses to these counties. In the past, seismic courses have also been provided by the Applied Technology Council (ATC). A scheduled course was offered in 2011 as part of a national exercise. There is a CUSEC Earthquake Program Manager's meeting in late 2012.
  - Hurricane: HURREVAC training was conducted in the coastal counties (Baldwin and Mobile). AEMA is also working with the National Hurricane Center to provide information to inland counties affected by wind. HURREVAC training is offered at least once annually. Trainings were held in March 2010, April 2011, and April 2012.

- Maintain a clearinghouse and repository of hazard mitigation plans and technical support publications. AEMA can serve this function and maintain documents and materials in a centralized location for printed distribution and access through the internet.
  - An official clearinghouse has not been established due to funding.

- Coordinate outreach services among statewide planning agencies. A coordinated public outreach program should more effectively communicate the complete plan and keep the public informed of risks and statewide efforts underway to mitigate those risks.

  - AEMA's website is the primary public outreach tool. In Spring 2009, AEMA unveiled a Risk Assessment Mapping Tool on the website. The tool allows the public to determine what risk they are exposed to given their specified location. At present, an individual can zoom to their approximate location and determine hazard affecting the area, recent hazard activity, storm watches. In the event of a disaster, users can also determine evacuation routes and where shelters are located. Prior to the development of this tool, there were few applications available to the public to determine their risk. The League of Municipalities is working to inform municipalities and the public of the new capabilities found on AEMA's website.

  - AEMA is working to revise all of their documents available on the AEMA website to make them more user-friendly. For example, the documents will be easy to search and broken down into smaller, more manageable documents (by subject area), when appropriate.

    - As of the 2013 State Plan update, all documents are online but no changes have been made regarding their readability.

  - AEMA continues to use social media.

- AEMA should work in conjunction with the ADCNR, Coastal Section to update the ACAMP program document, specifically those parts related to natural hazard mitigation.

The resulting information should be incorporated into the State Hazard Mitigation Plan. Updates to the ACAMP program document should be coordinated with the scheduling of updates to the State Hazard Mitigation Plan to assure consistency. The ACAMP should schedule time updates of the ACAMP program document to allow for a direct feed of the latest data from the State Hazard Mitigation Plan into the ACAMP program document.

- AEMA provided input on hazard mitigation planning, post-disaster mitigation planning, repetitive flood loss policies including relocations and buyouts.
- ACAMP updates occur approximately every 5 years; the last completed draft is dated 2011.

4.3.3.1 Completed Improvements

The State of Alabama has worked to complete many of the potential improvements listed above. The following is a list of those accomplishments.

- State association of Floodplain Managers: The Alabama Association of Floodplain Managers was created in 2008.

- AEMA has continuously added new Certified Floodplain Managers (CFM) to its staff.

- NFIP Training: NFIP seminars are provided through the Alabama Association of Floodplain Managers conferences which began in October 2008. There is a Spring training and a Fall training.

- AEMA website: As of 2009, the AEMA website has become a central location for many hazard mitigation documents. The State Hazard Mitigation Plan and all county hazard mitigation plans can be found on the website. In addition, there are links to the Alabama NFIP website, benefit-cost guidance, mitigation grant applications, and several other technical assistance documents.

- AEMA is using social media outlets, including Facebook and Twitter, to reach and educate the public on hazard mitigation measures.

- Continue the functions of the All Hazard Task Force among the Regional Planning Councils: The Task Force was formed as means to exchange mitigation planning information among the RPCs. The Task Forced remained active until 2010. As of the 2013 State Plan update, the All Hazard Task Force has dissolved and is no longer functional. Many of the RPCs are no longer completing mitigation plans, so there is less of a need for a formalized information-sharing network.

4.4 Integration into Other FEMA Mitigation Programs and Initiatives

4.4.1 Summary

AEMA administers and oversees Federal mitigation grant programs for the State of Alabama that are related to hazard mitigation, emergency management and disaster relief, and serves as the lead agency for the State in disaster mitigation efforts. Due in part to the agency's dual roles, AEMA has the opportunity to integrate the dissemination of mitigation information with the FEMA grant application process for the programs listed in **Section 4.4.2**.

The Alabama Office of Water Resources (OWR) administers the National Flood Insurance Program (NFIP) within the State of Alabama, with responsibilities assigned to the State NFIP Coordinator and support staff. The primary responsibilities of the office of the State NFIP Coordinator include facilitating participation in the NFIP among Alabama communities, providing technical support and training to local administrators, and encouraging participation in the Community Rating System (CRS) Program.

4.4.2 List of Ongoing FEMA Mitigation Programs and Initiatives

FEMA Grant Programs (see table in **Appendix I** for an overview of all FEMA grant programs and initiatives):

Hazard Mitigation Assistance (HMA) Grants provide funding for mitigation activities:

- Hazard Mitigation Grant Program (HMGP) – requires a disaster declaration;
- Pre-Disaster Mitigation Grant Program (PDM);
- Flood Mitigation Assistance Program (FMA);
- Repetitive Flood Claims (RFC) Grant Program; and
- Severe Repetitive Loss (SRL) Grant Program.

In addition, Public Assistance money (Public Assistance Grant Program – PA), received following a disaster declaration, can be used towards mitigation projects.

National Flood Insurance Program (NFIP):

- State NFIP Coordination;
- Community Rating System (CRS);

Risk MAP:

- Risk MAP is focused towards the flood hazard and has several goals including addressing gaps in flood hazard data, public awareness/outreach, mitigation planning, enhanced digital platform, and alignment and synergies of risk analysis program to enhance decision-making capabilities. It is not a grant program though it does provide resources to the states to reach the aforementioned goals.

4.4.3 Integration Process and Potential Improvements

The SHMT first identified and reviewed State of Alabama laws, regulations, policies and programs pertaining to mitigation and FEMA sponsored programs and supporting regulations in the 2007 version of this plan. They were reviewed and updated as necessary subsequent versions.

- FEMA Grant Programs:
  - The Alabama EMA administers all FEMA grant programs. It notifies communities and eligible applicants of the availability of program funds, provides applicant briefings and technical assistance, reviews applications for eligibility and compliance, and recommends funding to FEMA. AEMA serves as the grantee of FEMA grant awards and oversees the implementation of funded projects by subgrantees (communities and other eligible applicants). AEMA should continue to facilitate and monitor grant awards to eligible applicants.
    - AEMA continues to administer and monitor the grant process.
  - Consistency of project applications with local mitigation plans is required by AEMA to assure integration of local mitigation activities with the hazard mitigation planning process.
  - The grant award process can be improved by adhering to an established prioritization criteria presented in the State plan.
    - The grant award process using the prioritization criteria is now adhered to as of the 2007 State Plan update.
  - Beginning with projects for disaster number 4052 (Severe Storms, Tornadoes, Straight-line Winds, and Flooding) which occurred on January 2012, project applications will be submitted online. In addition, money will be allocated to counties and they will be able to decide how to spend their grant money. Previously, applications were used for a variety of projects but the Governor would decide how a majority of the money was spent (for example, several safe rooms were completed as a result of the April Tornadoes).
- National Flood Insurance Program (NFIP)
  - The NFIP Coordinator should continue to maintain a five-year plan for its community assistance programs.
  - The State NFIP Coordinator and staff should continue to provide statewide support for local participation in the NFIP, facilitating NFIP membership, assisting with flood hazard prevention ordinance development and Federal compliance, providing training and technical support to local floodplain ordinance administrators, encouraging the floodplain management practices of the NFIP, and promoting flood insurance.
    - NFIP guidance and support continues throughout the state.

- The NFIP staff should continue to regularly conduct Community Assistance Visits (CAVs) among NFIP participating communities throughout the State. During these visits the staff should not only check for program compliance but offer guidance and support for improved flood hazard mitigation practices.
    - The State Floodplain manager stated that hazard mitigation is discussed at each Community Assistance Visit.
- In addition to regular NFIP participation, the State office should encourage Community Rating System (CRS) program participation by NFIP communities and assist current CRS communities to continually seek higher CRS classifications.
- The NFIP Coordinator should continue working closely with the Alabama EMA to assure strong integration of local flood hazard mitigation practices into local and state hazard mitigation planning policies.
- The OWR should complete its statewide flood map modernization program for the State, including the development of Digital Flood Insurance Rate Maps (DFIRMs) that will readily provide flood GIS data for local and statewide risk assessments for hazard mitigation planning.
    - The map modernization program will be completed in 2010. The Risk Map program was initiated in 2009, and will replace the map modernization program.
- The State NFIP Coordinator should continue to conduct formalized training and distribute technical publications to local floodplain administrators, building officials, public works engineers, planners, and state and local officials involved in hazard mitigation.
- Coordinate with ADECA to establish an Alabama Chapter of the Association of State Floodplain Managers in conjunction with the State of Mississippi Floodplain Managers Association to further improve participation in the NFIP.
    - As Noted in **Section 4.3.3**, an Alabama Chapter of the Association of State Floodplain Managers has been established independent of the Mississippi Chapter.

4.5 Description of the Planning Process

4.5.1 How the Plan was Prepared and Updated

The 2013 Alabama State Hazard Mitigation Plan is the fourth version of this plan. The initial plan (2004) was prepared in general accordance with the processes established in the How-To Guides produced by the FEMA, and the requirements of the February 26, 2002 IFR. Minor changes have been made to the IFR in subsequent years (including becoming the Final Rule) but none that have affected the state planning efforts. The initial planning process established many of the vital functions that continue through the update process. As discussed below, early

in the development of the initial plan, Governor Riley signed Executive Order 19 **(Appendix C)** on February 24, 2004, which accomplished the following:

- Established the SHMT (see **Appendix D** for full membership).
- Encouraged representatives from all State agencies to attend SHMT meetings.
- Directed all State agencies to participate in the development of the plan by providing services as directed by the SHMT.
- Encouraged agencies and other interested parties to participate in the planning process by providing comments and information via meetings, surveys, questionnaires and other means.
- Directed the SHMT to assist in prioritizing and selecting of hazard and pre-disaster mitigation grant program project applications.
- Directed the SHMT to meet when called by the Chair and remain in place until the three-year update to the plan has been approved by FEMA.
- Directed the SHMT to prepare the State Hazard Mitigation plan.

Each version of this plan was approved by the SHMT, adopted by the AEMA Director on behalf of the Governor, and approved by FEMA. Specific information on the initial plan and initial update planning process can be found in those versions of the plan.

Previous versions of this plan called for the SHMT to reassemble before the next update on an annual basis to review and evaluate the plan in the following areas:

1. Changes in risk;
2. Changes in laws, policies, or regulations at the state or local level;
3. Changes in State agencies or their procedures that may affect mitigation programs or administration of funds;
4. Changes in funding sources or capabilities;
5. Changes in composition of the SHMT;
6. Progress on mitigation actions and new mitigation actions being considered; and
7. Major changes to local hazard mitigation plans.

The SHMT met on December 14, 2011 to meet this task. The meeting, led by AEMA, focused around update for the April 27th tornado events. In addition, the State Hazard Mitigation Officer provided an update of the State Hazard Mitigation Plan. AEMA also maintained contact with the SHMT. In addition, AEMA continued to work on completing the enhanced plan requirements between 2010 and 2012.

FEMA requires that State Hazard Mitigation Plans be updated every three years. AEMA began working on the 2013 plan update in April 2012 and hired a consultant team from Atkins to facilitate the plan update process. This contractor also completed the 2010 State Plan update. FEMA requirements state that plan updates must have provisions for updates to be made to all sections of the plan. As a result, the consultant reviewed and analyzed each section of the plan

and determined that each section would be updated to some degree to meet the FEMA requirements. The planning process exercised to update the plan is described below.

A total of 4 official meetings were held in Alabama, one between the contractor and the state and the remaining three with the SHMT.

A kickoff meeting was held on July 10, 2012 between AEMA and the consultant team to introduce the plan preparers from AEMA and Atkins, determine an initial strategy for updating the plan, and review the project schedule. (Minutes from this meeting, and other plan meetings, are included in **Appendix L**. In addition, Table 4.5-1 provides a summary of attendees and topics covered for each meeting.) In the second half of the day, an official kickoff meeting was held between the consultant team and the SHMT.

The purpose of the first SHMT meeting was to present the project schedule and tasks, including updating the Risk Assessment, Capability Assessment, and Mitigation Strategy; review the roles of Atkins, AEMA, and the SHMT; and discuss the integration of studies and reports from SHMT agencies.

Nathan Slaughter, Project Manager for the plan update and Atkins consultant team, led the meeting. He noted that each section was reviewed and would require some degree of revision to meet FEMA requirements. He confirmed the list of hazards to be profiled, noted that over 3,200 new hazard occurrence events were reported since the 2010 plan update was completed, and solicited additional data from the SHMT. Mr. Slaughter discussed new data and analysis capabilities including updated flood maps and Hazus-MH 2.1. Mr. Slaughter also explained the need to include examples where mitigation was being incorporated into other planning activities throughout the state. Following the project overview, he discussed the roles and responsibilities for the project consultant team, AEMA and the SHMT. The roles and responsibilities were defined as follows:

Atkins:

- Provide technical assistance
    - Planning guidance
    - Federal compliance
- Data collection and analysis
    - Risk assessment
    - Capability assessment
    - Local (county-level) plan integration
    - Summarize results/report findings
    - Enhanced Plan
- Facilitate State Hazard Mitigation Team meetings, workshops and open public meetings
- Document the plan update process
- Plan preparation

AEMA:

- Project management
    - Central point of contact
    - Communication and coordination with the SHMT and FEMA
- Active participation in the planning process

- Data collection and exchange
- Public awareness and stakeholder involvement
- Attend SHMT meetings
- Mitigation strategy development and update
- Plan review and feedback

SHMT:

- Active participation in the planning process
  - Data collection and exchange
  - Public awareness and stakeholder involvement
  - Attend SHMT meetings
  - Mitigation strategy development and update
  - Plan review and feedback

Mr. Slaughter then reviewed the timeline to complete the tasks. Lastly, the attendees held an open discussion to determine if there were any known mitigation integration efforts occurring. Several notable examples came out of this discussion including new landslide and earthquake susceptibility mapping by the GSA: completed DFIRMs for each county, Risk MAP efforts (including non-regulatory products by watershed) through ADECA-OWR, and encouraging hazardous tree management by communities by the Forest Commission.

The second State Hazard Mitigation Team meeting was held on September 25, 2012. The purpose of this meeting was to review the preliminary Risk Assessment findings, updated local plan integration section, and mitigation strategy, as well as discuss the next steps in updating the mitigation actions. This was a lengthy meeting, as several items needed to be covered.

Caroline Cunningham, Atkins' project team member, reviewed the risk assessment hazards and presented the findings, which were well received by the SHMT. The SHMT voted to add coastal erosion and to exclude rogue waves (as requested for inclusion by FEMA). In addition, more information was requested regarding the sea level rise hazard before it would be included. For the risk assessment findings, no major changes were requested by the SHMT. However, they did request more information on the earthquake hazard which was to be discussed at the next SHMT meeting. Following the risk assessment presentation, Mr. Slaughter reviewed the Coordination of Local Planning section, indicating that every county had an approved plan, and 47 counties had updated plans since the last planning effort. Mr. Slaughter then reviewed the Mitigation Strategy with the SMHT.

The 2010 mitigation strategy statement read, "Reduce risks through collaborative actions and policies that limit the effects of natural hazards on the citizens of Alabama and physical assets." The SHMT discussed the statement and decided, through a vote, that minor changes should be made to the statement. The SHMT elected to review the statement as and present it at the next SHMT meeting.

Next, Mr. Slaughter led the team in reviewing the State goals. The SHMT discussed the goals and agreed in general, but voted to make changes to due to semantics. The team decided to review this at the next SHMT meeting along with the mitigation strategy statement. (The Mitigation Strategy is discussed further in Section 6.)

Mr. Slaughter then reviewed the need to update the mitigation actions, and the process for doing so. Each SHMT agency would be responsible for updating actions relevant to their agency. These agencies received an excel spreadsheet with their actions and a deadline to complete the actions. In addition, each agency was encouraged to create new actions to reflect the ongoing mitigation planning process in Alabama.

The third State Hazard Mitigation Team meeting was held on January 15, 2013. Mr. Slaughter from the Atkins' project team led the meeting. The purposes were to discuss adding sea level rise as a hazard, discuss hazard rankings, finalize the state mitigation strategy statement, finalize the wording of the state goals and objectives, and remind SHMT members of the action status requirement.
As a result of this meeting, all items to be addressed were met:
Sea Level Rise was added as hazard

- SHMT noted that is only impacts coastal areas and not the entire state.
- SHMT noted that is a relatively new hazard so it will evolve as more information becomes available.

Hazard rankings were addressed and tweaked.

- Earthquake was moved to moderate probably of occurrence (from high) via a SHMT vote.
- Earthquake was moved to moderate mitigation potential (from high) via a SHMT vote.
- Ranking definition for probably of occurrence was amended to include *significant* historic occurrences (not just all)
- Ranking definition for mitigation potential was amended to address mitigation as it occurs in State of Alabama.

SHMT were reminded to submit any outstanding mitigation action statuses or new actions to be added to the state plan.

As discussed above, there were a total of four (4) meetings during the 2013 plan update process. The table below offers a brief summary of these meetings. In addition, meeting minutes providing a detailed description of each meeting are provided in **Appendix L**.

Table 4.5-1
Summary of State Hazard Mitigation Team Meetings, Including Count of Federal and Non-Federal Attendance

	Place/Date	Subject(s)	Federal	Non-Federal
1	**C/07/10/12**	**Initial meeting of consultants and AEMA team**	**0**	**7**
		• Introduce participants		
		• Need for SHMT		
		• Work plan		
		• Schedule		
		• Initial information needs		

Table 4.5-1
Summary of State Hazard Mitigation Team Meetings, Including Count of Federal and Non-Federal Attendance

	Place/Date	Subject(s)	Federal	Non-Federal
2	**M/07/10/12**	**First general meeting of SHMT**	**1**	**26**
		• Project Overview (updating the risk assessment, capability assessment, local plan integration, and mitigation strategy)		
		• Review the roles of Atkins, AEMA, and SHMT		
		• Review project schedule		
3	**C/09/25/12**	**Second general meeting of SHMT**	**1**	**23**
		• Discussion of project schedule		
		• Review of Risk Assessment findings		
		• Review of Coordination of Local Planning updates		
		• Review of Goals and Objectives		
		• Review of Mitigation Strategy		
		• Review of Capability Assessment		
		• Discussion of how to update and add new mitigation actions		
		• Discussion of hazard mitigation integration efforts in each agency		
4	**C/01/15/13**	**Third general meeting of the SHMT**		
		• Address hazard rankings		
		• Discuss addition of Sea Level Rise		
		• Finalize Mitigation Strategy Statement		
		• Finalize Goals and Objectives		
		• Finalize 2013 action status		

Note:
1. In the place/date column, the abbreviation "B" is Birmingham, "C" is Clanton, and "M" is Montgomery.
2. The Federal and non-Federal agencies attending the meetings can be found in the minutes, **Appendix L**.

In addition to the meetings, there were a number of conference calls and emails between AEMA and the consultant during the plan update process. A draft of the plan was submitted to AEMA in January 2013 for review by the SHMT. The 2013 State Plan Update draft was submitted to FEMA in April 2013 for review.

Following completion of the plan draft, both FEMA and the SHMT had 45 days to review the draft plan. AEMA received all comments and then incorporated them into the plan, where appropriate. A summary of comments is available in **Appendix K**. The plan was resubmitted in August 2013 for final review and approval.

4.5.2 Who was Involved in the Planning Process

The Alabama State Hazard Mitigation Team (SHMT) was the primary mechanism for developing and updating the mitigation plan. The SHMT is, however, part of a larger organization and process. The groups are listed in the bullets below, along with a general description of their respective roles in the process in the following sections.

- The Governor of Alabama;
- Alabama Emergency Management Agency (AEMA);
- State Hazard Mitigation Council (also known as the Team, or SHMT);
- SHMT Technical Advisory Committee;
- Regional Planning Commissions (RPCs); and
- Other Federal and State agencies, Interested Groups, Including Private Non-Profits and Non-Governmental Organizations;
- Citizens; and
- Consultants

The Governor of Alabama

By issuing Executive Order No. 19, the Governor initiated development of the State Hazard Mitigation Team, designated members of the SHMT, outlined their tasks, and directed the Director of AEMA to lead the planning effort. EO 19 is valid until the updated plan has been approved and adopted, so there was no need for a new Executive Order. The Plan Update will be approved and adopted by the Governor through the AEMA Director as was done in previous versions of the plan.

The Alabama Emergency Management Agency (AEMA)

AEMA is the lead agency for development of the plan. Although the SHMT is the group responsible for the actual development and production of the plan, AEMA served as a coordinating entity throughout its development. The Agency facilitated most interactions among various Federal, State and local governments, and provided important oversight and quality control to ensure that the plan and associated process met Federal requirements. AEMA coordinated the update of all aspects of the plan and facilitated coordination among agencies at all levels of government. Further, AEMA helped to establish meeting times and locations. The AEMA Director is also responsible for final approval and adoption of the Plan on behalf of the Governor.

The State Hazard Mitigation Team (SHMT)

The State Hazard Mitigation Team is the key organization in the development of the plan. The group was designated by the Governor via Executive Order 19 (February 24, 2004), and is comprised of a variety of organizations that were originally identified to be on a similar team in a previous administration. Throughout the plan update, minor changes have been made. The complete Team can be found below and in Appendix D. The SHMT (coordinating with AEMA) was responsible for developing and reviewing all substantial plan process and content. The SHMT formally met three times during development of this plan update. These meetings were facilitated by AEMA and its consultant, Atkins.

The SHMT made all final decisions regarding the plan, reviewed drafts, provided comments, and made recommendations to the AEMA Director. Individual representatives of agencies on the SHMT were also asked to provide feedback for their respective agencies, data for development of the risk assessment, and input for the mitigation strategy.

The SHMT was reconvened on July 10, 2012 for a kickoff meeting and as part of the plan update process. The SHMT met again on September 25, 2012 when the draft findings were presented by the consultant. A final meeting with the SHMT and the consultant took place on January 15, 2013. (A summary of these meetings can be found in Section 4.5.1 and detailed meeting minutes can be found in Appendix L).

Executive Order 19 (EO 19) directed the following individuals and agencies to serve as members of the SHMT:

- The Governor or his designee who shall serve as chair;
- The Commissioner of the Department of Agriculture and Industries;
- The Attorney General;
- The Commissioner of the Alabama Department of Conservation and Natural Resources;
- The Director of the Department of Economic and Community Affairs;
- The Director of the Emergency Management Agency;
- The Director of the Alabama Department of Environmental Management;
- The State Forester of the Alabama Forestry Commission;
- The Office of the State Geologist;
- The State Historic Preservation Officer;
- The Commissioner of the Insurance Department;
- The Director of the Governor's Legal Council Office;
- The Director of the Alabama Department of Public Health;
- The Director of the Governor's Public Information Office;
- The Director of the Alabama Department of Public Safety;
- The Commissioner of the Alabama Public Service Commission;
- The Secretary of State;
- The Director of the Department of Transportation;
- The Director of the Alabama Association of Regional Councils;
- The Director of the Alabama League of Municipalities;
- The Director of the Association of County Commissioners;
- The Director of Indian Affairs;
- The Chief of the U.S. Army Corps of Engineers; and
- The Director of the Choctoawhatchee, Pea and Yellow Rivers Watershed Management Authority.

In addition to those individuals and agencies directly assigned to the SHMT, EO 19 requested that the following agencies establish points of contact for the Hazard Mitigation Team:

- The American Red Cross;
- The Military Department;
- The National Weather Service, Birmingham;
- The National Weather Service, Huntsville;

- The National Weather Service, Mobile;
- The National Weather Service, Tallahassee;
- U.S. Air Force, Maxwell AFB;
- U.S. Army, Fort Rucker Army Post; and
- USDA Forest Service.
- Alabama Cooperative Extension System

The Technical Advisory Committee (TAC)

This organization was involved in the 2004 and 2007 plans, to serve in an administrative role. However, it was not re-established for the 2010 update.

The Regional Planning Councils (RPCs)

The RPCs are a group of 12 organizations that provide a variety of services to the counties in their respective regions. All of the counties in Alabama are part of an RPC. Among the many services that the RPCs provide is oversight and coordination of the development and update of county-level hazard mitigation plans. The RPCs are also part of an umbrella organization called the Alabama Association of Regional Councils (AARC) whose Director is a member of the SHMT. During the development of the plan, the AARC Director was responsible for disseminating information about the process and its products to the various RPCs and to generally represent their interests. In addition to these activities, various members of the SHMT and AEMA interacted with the 12 RPCs during development of the county plans to promulgate information about the State Plan and to gather input about the local and county plans to inform the state-level process. The RPCs were formerly enlisted to coordinate with local governments during the plan update process.

Other Federal and State Agencies, Interested Groups, Including Private Non-Profits and Non-Governmental Organizations

Early in the planning process the SHMT and AEMA identified a list of entities that should be involved in the plan development process including federal and state agencies, interested groups, private non-profits and non-governmental organizations. In the first stages of the process these groups were contacted and points of contact identified. Throughout development of the plan, these groups and the points of contact were informed of the planning process and its outcomes. Because EO 19 formally established the SHMT, the Team itself was the only body directly authorized to make decisions about what was included in the plan. However, at many points in the process, these other organizations were invited to review materials related to the plan and comment on them. Representatives from these agencies, groups, and organizations were invited to attend the SHMT meetings and participate in the plan update process.

As noted above, the RPCs provided a conduit for information to flow both from the local communities to AEMA, and vice versa. These agencies and the AARC participated throughout development of the plan by providing representatives at the SHMT meetings, maintaining contact with AEMA and its consultant as the local mitigation plans were being developed and updated, facilitating AEMA participation in the local planning workgroups, and interacting with AEMA and its consultant to provide information about the contents of the local plans. The RPCs had a primary coordination function in the development of local plans throughout the State, guiding development and reviewing local plans, and ensuring that appropriate procedures were

observed throughout. The AARC also served as subgrantee for FEMA hazard mitigation grants via Hazard Mitigation Grant Program "7%" planning funds made available via Disaster Numbers 1438, 1442 and 1466. The RPCs assisted in the plan update process by facilitating coordination with local governments to obtain information regarding their local capabilities. As of late, the AARC does less mitigation planning and planning money tends to go directly to counties.

FEMA provided assistance and support throughout development of this plan. FEMA attended meetings and provided preliminary reviews. AEMA still relies on FEMA for guidance, but not to the extent it did in previous plans. For this update, FEMA guidance has been focused on completed the enhanced plan requirements. For example, a review of the entire AEMA program was conducted by a FEMA specialist which found that the state should delay applying for the enhanced plan status until January 2014 (when disaster 1971 is complete). In addition, FEMA keeps AEMA abreast to the latest requirements needed in the state plan update.

Public Involvement

During previous plans, AEMA tried extensively to involve the public through the AEMA website and public meetings. (A complete description of these efforts can be found in the 2004 and 2007 plans.) However, there was very low public attendance at meetings. Further, no public comments were received on the draft plan which was posted on the AEMA website. It was confirmed by FEMA during the 2007 plan update that public involvement at the state level was not required. Therefore, AEMA opted to capture local comment, concern, and involvement at the local level for subsequent versions of this plan, and will continue to rely on local planning efforts to facilitate public involvement in mitigation planning in the future.

Consultant Assistance in Developing the Plan

In addition to the groups discussed above, AEMA secured the services of a professional consultant to facilitate the planning process and develop some technical materials for the 2013 update. Atkins, the consultant, assisted AEMA and the SHMT in a variety of ways:

- Provided Technical Assistance including planning guidance and federal compliance;
- Collected and analyzed data from the Risk Assessment from the appropriate local, state, and federal agencies;
- Collected and analyzed data from the appropriate state and local agencies for the local and state capability assessments;
- Reviewed county-level plans for incorporation into the State Plan;
- Facilitated SHMT meetings;
- Developed materials for meetings;
- Documented the Plan Update process including meeting minutes;
- Worked with the SHMT to update the Mitigation Strategy (including all actions);
- Assembled and incorporated information into the plan update;
- Prepared the plan documents

4.5.3 How Other Agencies Participated in the Planning Process

Members of the State agencies participated in the planning process in several ways. Their primary means of doing so was by attending the SHMT meetings and participating in discussions and decisions about various plan procedures and components. The entire planning process was carefully documented. Documentation includes invitee lists, participants, materials provided, presentations, discussions, and decisions made by the planning team at the various meetings. Meeting agendas, summaries, and lists of attendees are included in **Appendices L and M.**

A range of Federal agencies were also identified in EO 19. These agencies were invited to all planning meetings and were encouraged to provide input to all aspects of the plan. AEMA was established as the main point of contact for this purpose, and telephone numbers and email addresses were provided on communications with the Federal agencies. Records of all communications (including addressees and subject matter) were carefully maintained throughout development of the plan. This plan includes minutes of all meetings that were conducted as it was being developed. Each set of minutes includes a list of all those in attendance. At least one Federal agency has been present at the SHMT meeting in the 2013 plan update. The meeting minutes are included in **Appendix L.**

Federal Agencies Designated for Participation on the Alabama SHMT through EO 19:

- The U.S. Army Corps of Engineers;
- The American Red Cross (PNP, not a Federal agency; shown here for completeness);
- The Military Department;
- The National Weather Service, Birmingham;
- The National Weather Service, Huntsville;
- The National Weather Service, Mobile;

- The National Weather Service, Tallahassee;
- U.S. Air Force, Maxwell AFB;
- U.S. Army, Fort Rucker Army Post; and
- USDA Forest Service.

4.5.4 Summary of Review, Analysis and Update of Each Section

The following provides a brief summary of the methodology utilized to review, analyze, and update each section of the plan. As mentioned in Section 4.5.1, each section of the plan was reviewed and it was determined that revisions would be required to each section in order to meet FEMA requirements. Beginning with the 2010 version, detailed descriptions of the previous versions of this plan were removed. However, a summary of this information is still provided throughout the document for clarification and to demonstrate changes over time. This was done to keep the document current and user-friendly, while highlighting where mitigation planning capabilities have improved over time. As future updates are conducted, a similar update process will be used.

Section 1 – Table of Contents: Although the overall structure of the Plan remains unchanged, some section titles were altered and some sections were added or deleted to reflect the current version.

Section 2 – Executive Summary: The executive summary was revised so that it was reflective of the 2013 plan update.

Section 3 – Plan Approval, Adoption, and Assurances: Only minor changes were made to this section. These changes were made to reflect the dates for the 2013 plan update process.

Section 4 – The Planning Process:
This section was revised to reflect the 2013 plan update planning process. (Detailed information from the previous versions of this plan were largely removed, unless necessary.) Information identified in the previous plan as a potential improvement or integration effort, was reviewed and updated by AEMA or the appropriate agency (**Section 4.3 and Section 4.4**). In addition, the planning process section, including meeting times, those involved, and procedures were updated to reflect the 2013 update (**Section 4.5**).

Section 5 – Risk Assessment: At the start of the planning process, the list of identified hazards was reviewed by AEMA to determine if any changes should be made based on new information. Each of the hazard profiles was reviewed to determine if more current information was available based on recent studies or actual hazard events. A number of SHMT members provided up-to-date information for inclusion in the hazard profiles section including GSA, ADECA, the National Weather Service, the Office of the State Climatologist, the AARC, the Department of Agriculture and Industry, and the Alabama Forestry Commission. Any new information was included in this update.

The methodology for prioritizing these hazards for further analysis was reviewed by AEMA and the SHMT and determined to still be valid. Hazards were once again ranked according to several criteria discussed in **Section 5.3**. The results called for detailed risk assessments for floods and high winds (tornadoes, wind storms and hurricanes).

The methodologies used in previous versions of the plan to update and maintain the vulnerability assessment and potential loss estimates were reviewed and for the most part reused for the 2013 plan update. Potential loss estimates were updated for the selected hazards (floods, high winds, and earthquakes) using the identified methodologies and the most current data available as described in **Section 5.5**. In addition, dollar values were inflated to 2012 values.

Section 6 – Mitigation Strategy: During the plan update process, the SHMT reviewed and made changes to the State's Mitigation Strategy Statement and Goals at the second and third SHMT meetings (**Section 6.2 and Section 6.3**).

In addition, each SHMT agency was asked to provide an implementation update on each mitigation action described from their agency. Each agency was also encouraged to provide new actions that the agency was interested in pursuing. These were incorporated into the updated section on mitigation actions (**Section 6.8**). The assessments of state capabilities and funding sources (**Section 6.4 thru 6.6 and 6.9**) were reviewed to determine what information was still current and if new capabilities had been added. Sections were revised to reflect this assessment. In addition, the local capabilities were updated and can be found in (**Section 6.7**).

Section 7 – Coordination of Local Planning: In general, this section was updated to reflect information current to the 2013 plan update. The process used to incorporate local plan information was nearly identical to the process used in previous versions. This included a review of local goals, expected losses and hazards identification to ensure consistency between the state and local plans. All 67 counties have an approved plan in place and several counties have approved updates. The information in the updated plans was also reviewed and incorporated into this section.

Section 8 – Plan Maintenance: The method for monitoring, evaluating, and updating was revised slightly to reflect the plan maintenance activities that were proven to be effective since the 2010 plan adoption.

Section 9 – Enhanced Plan Elements: The State of Alabama is submitting the 2013 plan update for Enhanced Plan Status. Therefore, this section has been completed for the 2013 version.

Section 5 – Risk Assessment

This section of the plan addresses requirements of Final Rule (FR) Section 201.4 (c) (2). A copy of the FR is provided for reference in **Appendix B** of this document.

Contents of this Section

5.1 Final Rule Requirements for Risk Assessments
5.2 Overview of Type and Location of All Natural Hazards That Can Affect the State
5.3 Methodology for Identifying Natural Hazards for Additional Analysis
5.4 Vulnerability Assessment and Loss Estimation
5.5 Jurisdictions Most Threatened and Vulnerable to Damage and Loss
5.6 Impacts of Development Trends on Vulnerability

Section	What has been updated in the 2013 version?
5.1	• No substantive revisions. References to Interim Final Rule changed to reflect Final Rule.
5.2	• Editorial changes made throughout. • Edited list of hazards to only include hazards identified for the 2013 plan update. • Updated Table 5.2-1: Federal Disaster Declarations in Alabama to include new disasters for 2013 plan update and disaster numbers. • Incorporated new hazard information and recent hazard events. • Added Sea Level Rise as a new hazard in Section 5.2.14. • Bolstered the Coastal Erosion hazard information. • To the extent possible, historic damage estimates were adjusted to 2012 dollars throughout and the updated values are shown next to the actual historic dollar values. The adjusted values were determined using FEMA's BCA Inflation Calculator.
5.3	• Probability of Occurrence hazard ranking revised to include significant historical occurrences in assessment. • Mitigation Potential hazard ranking revised to specifically be considered mitigation as it occurs at the state level (is it feasible, cost-effective, and occurring?). • Earthquake hazard moved to moderate ranking for probability and mitigation potential.
5.4	• This section was deleted in the 2013 plan update. • It described risk and vulnerability but was deleted because it contained inconsistent language with the remainder of the plan. Pertinent information from this section was removed and added throughout the plan.
5.4	• Note: formerly Section 5.5 • Data derived from county-level plans has been updated. This applies to tables, figures, and narrative. • NFIP claims data and repetitive loss statistics have been updated. This applies to tables, figures, and narrative. • Effective and preliminary DFIRM data has been incorporated to present a complete depiction of flood risk for the entire state. • NCDC-based analysis has been updated with data to May 31, 2012. This applies to tables, figures, and narrative. • Section 5.5.1 State-owned Facilities and Analysis Methodology was added.

	• Hazus loss estimates have been updated to reflect analysis conducted using Hazus-MH 2.1 Patch 1 (released September 2012).
5.5	• Note: formerly Section 5.6 • Listings and rankings of jurisdictions most threatened and vulnerable by hazard type have been updated.
5.6	• Note: formerly Section 5.7 • Population growth numbers and projections have been updated with 2010 U.S. Census data. • Population maps have been updated. • Economic development and transportation improvement information has been revised.
5.8	• Section 5.8 was deleted from the 2013 plan update. • The State-owned facility analysis was incorporated into each hazard subsection within Section 5.5.

5.1 Final Rule Requirements for Risk Assessments

The Final Rule (FR) Subsection (201.4 (c) (2)) requires that the plan include:

"Risk Assessments that provide the factual basis for activities proposed in the strategy portion of the mitigation plan. Statewide risk assessments must characterize and analyze natural hazards and risks to provide a statewide overview. This overview will allow the State to compare potential losses throughout the state and to determine their priorities for implementing mitigation measures under the strategy, and to prioritize jurisdictions for receiving technical and financial support in developing more detailed local risk and vulnerability assessments. The risk assessment shall include the following

(i) An overview of the type and location of all natural hazards that can affect the state, including information on previous occurrences of hazard events, as well as the probability of future hazard events, using maps where appropriate.

(ii) An overview and analysis of the state's vulnerability to the hazards described in paragraph (c) (2), based on estimates provided in local risk assessments as well as the State risk assessment. The State shall describe vulnerability in terms of jurisdictions most threatened by the identified hazards, and most vulnerable to damage and loss associated with hazard events. State-owned critical or operated facilities located in the identified hazard areas shall also be addressed.

(iii) An overview and analysis of potential losses to the identified vulnerable structures, based on estimates provided in local risk assessments as well as the State risk assessment. The State shall estimate the potential dollar losses to State-owned or operated buildings, infrastructure and critical facilities located in the identified hazard areas."

The FR Subsection (201.4 (d)) states:

> "*Review and Updates. Plan must be reviewed and revised to reflect changes in development…"*

5.2 Overview of Type and Location of All Natural Hazards That Can Affect the State

The list of hazards to be included is reviewed by the SHMT with each plan update. This has led to minor adjustments over the years. For example, in the 2007 plan update, a high winds category was created to include hurricane wind, tornadoes, and windstorms. Storm surge from hurricane was grouped into the flood hazard category which also included riverine flooding and flash flood. In addition, tsunami was added as a hazard and all man-made and human-caused hazards were removed. During the 2010 plan update process, no significant changes were made to the list of hazards addressed. For the 2013 plan update, several considerations were made. FEMA, in its 2010 review, recommended that rogue waves, sea level rise, and coastal erosion be included. Although coastal erosion was investigated in the 2010 version, little data existed. The SHMT considered these hazard additions (and expansions) at the September 25, 2012 and January 15, 2013 meetings. It was determined that coastal erosion would be expanded upon based on available data (included in flood), and rogue waves would not be included due to very limited data, few historical occurrences (none known in Alabama), and the low vulnerability. At the January 15, 2013 SHMT meeting, the SHMT voted to include sea level rise.

The hazard list includes ones that have occurred in the past as well as those that may occur in the future. In addition, hazards with the greatest chance of significantly affecting the state and its citizens are included. A variety of sources were used as part of this study to determine hazards that have impacted the state historically or may occur in the future which are consulted for each plan update hazard identification review. These included national, regional, and local sources such as websites, published documents, databases, and maps. Some of the specific sources include:

- Alabama Emergency Management Agency;
- United States Geological Survey (USGS);
- Alabama Disaster Center;
- Alabama Forestry Commission;
- National Oceanic and Atmospheric Administration (NOAA);
- Geological Survey of Alabama (GSA);
- Alabama Department of Economic and Community Affairs (ADECA);
- Federal Emergency Management Agency (FEMA).

Input from experts at these agencies was also solicited during the review of the hazards. Additional details on the process can be found in **Section 4**: Planning Process. The list of 2013 hazards to be included is as follows:

The updated list of hazards for the 2013 plan then became as follows:

1. Floods (riverine flooding, storm surge, flash floods);
2. High Winds (hurricanes, tornadoes, windstorms);
3. Winter/ice storms;
4. Landslides;
5. Sinkholes and Land subsidence;
6. Earthquakes;

7. Drought;
8. Hail;
9. Wildfires;
10. Extreme temperatures;
11. Lightning;
12. Dam failure;
13. Tsunamis; and
14. Sea Level Rise

The SHMT re-affirmed this hazard list at its January 15, 2013 meeting.

An important source for identifying hazards that can affect the state is the record of federal disaster declarations. Since 1960, various parts of Alabama have been declared federal disaster areas. On three occasions (in 1977, 1993, and 2004), the entire state was included in a declaration, each time for a different hazard. The southern counties in the coastal regions are mostly affected by hurricanes and coastal storms, while the northern counties of the state are affected by tornadoes and ice storms, the latter of which may also be accompanied by flooding. **Table 5.2-1** shows the federal disaster declarations in the state from 1960 through the end of September 2012.

Table 5.2-1
Federal Disaster Declarations in Alabama
(Through October 1, 2012)

Date	Disaster Number	Type of Incident	# of Counties Declared
February 27, 1961	109	Floods	Info not available
November 7, 1969	280	Hurricane Camille	2
April 9, 1970	285	Heavy Rain, Tornadoes and Flooding	2
March 27, 1973	369	Tornadoes and Flooding	28
May 29, 1973	388	Severe Storms and Flooding	12
April 4, 1974	422	Tornadoes	20
January 18, 1975	3007	Tornadoes	5
March 14, 1975	458	Severe Storms and Flooding	23
April 23, 1975	464	Severe Storms and Flooding	8
October 2, 1975	488	Severe Storms, Tornadoes and Flooding	15
April 24, 1976	3064	Tornadoes	2
April 9, 1977	532	Severe Storms and Flooding	9
July 20, 1977	3045	Drought	67
August 9, 1978	563	Severe Storms and Flooding	1
March 17, 1979	3074	Flooding	9
April 18, 1979	578	Storms, Wind, and Flooding	28
September 13, 1979	598	Hurricane Frederic	11
April 20, 1980	619	Severe Storms, Tornadoes and Flooding	2
April 10, 1981	638	Severe Storms, Tornadoes and Flooding	1
May 14, 1981	639	Severe Storms and Flooding	1
December 13, 1983	695	Severe Storms, Tornadoes and Flooding	4
May 11, 1984	3088	Severe Storms and Tornadoes	4
September 7, 1985	742	Hurricane Elena	2
November 17, 1989	848	Severe Storms and Tornadoes	2
February 17, 1990	856	Severe Storms, Tornadoes and Flooding	27

Table 5.2-1
Federal Disaster Declarations in Alabama
(Through October 1, 2012)

Date	Disaster Number	Type of Incident	# of Counties Declared
March 21, 1990	861	Severe Storms, Tornadoes and Flooding	33
January 4, 1991	890	Severe Storms and Flooding	12
March 15, 1993	3096	Severe Snowfall and Winter Storm	67
March 3, 1994	1013	Severe Winter Storms, Freezing and Flooding	10
March 30, 1994	1019	Severe Storms, Tornadoes and Flooding	7
July 8, 1994	1034	Severe Storms and Flooding – Tropical Storm Alberto	10
April 21, 1995	1047	Severe Storms, Tornadoes and Flooding	5
October 4, 1995	1070	Hurricane Opal	38
February 23, 1996	1104	Severe Winter Storms, Ice and Flooding	14
March 20, 1996	1108	Severe Storms, Tornadoes and Flooding	3
July 25, 1997	1185	Hurricane Danny	3
March 9, 1998	1208	Flooding, Severe Storm	6
April 9, 1998	1214	Thunderstorms, Tornado	6
September 30, 1998	1250	Hurricane Georges	14
January 15, 1999	1261	Ice Storm, Freezing Rain	11
February 18, 2000	1317	Winter Storm	3
March 17, 2000	1322	Severe Storm, Flooding	2
December 18, 2000	1352	Tornado	11
March 5, 2001	1362	Severe Storm, Flooding	6
December 7, 2001	1399	Severe Storm, Tornado	19
October 9, 2002	1438	Tropical Storm Isidore	2
November 14, 2002	1442	Severe Storm, Tornado	29
May 12, 2003	1466	Severe Storm, Thunderstorms, Tornado, Flooding	24
September 15, 2004	1549	Hurricane Ivan	67
July 10, 2005	1593	Hurricane Dennis	45
August 29, 2005	1605	Hurricane Katrina	22
March 1, 2007	3292	Severe Storms and Tornadoes	7
September 10, 2008	1789	Hurricane Gustav	2
September 26, 2008	1797	Severe Storms and Flooding – Hurricane Ike	2
April 28, 2009	1835	Severe Storms, Flooding, Tornado, and Straight-line Winds	21
May 8, 2009	1836	Severe Storms, Flooding, Tornado, and Straight-line Winds	6
June 3, 2009	1842	Severe Storms, Flooding, Tornado, and Straight-line Winds	4
December 22, 2009	1866	Tropical Storm Ida	2
December 31, 2009	1870	Severe Storms and Flooding	14
May 3, 2010	1908	Severe Storms, Tornadoes, Straight-line Winds, Flooding	3
April 28, 2011	1971/3319	Severe Storms, Tornadoes, Straight-line Winds, Flooding	43
February 1, 2012	4052	Severe Storms, Tornadoes, Straight-line Winds, Flooding	3

Table 5.2-1
Federal Disaster Declarations in Alabama
(Through October 1, 2012)

Date	Disaster Number	Type of Incident	# of Counties Declared
September 21, 2012	4082	Alabama Hurricane Isaac	8

Source: Federal Emergency Management Agency

The following subsections include the results of the hazard identification and profiling process. **Section 5.5** provides detailed risk assessments for the most significant hazards in the state, as identified through a process described in **Section 5.3**. This process has been revisited and reconfirmed in previous updates. The SHMT again revisited the process at its September 25, 2012 meeting; there were no proposed changes.

Section 5.3 includes qualitative probability and mitigation potential ratings for all hazards addressed in this section. This qualitative rating is included at the end of each hazard profiled in this section as a way to address the issue of probability without undertaking detailed studies of all the hazards.

As part of the plan update process, the hazard profile sections of all 67 available local hazard mitigation plans were reviewed to determine what hazards were identified and profiled by local jurisdictions. This process is better described in **Section 7.3**. Some local plans simply provided a table listing what hazards affect the local jurisdictions and what hazards do not. Others provided a ranking system. For the purposes of using consistent information, this plan update discusses hazards that are identified and profiled in the local plans.

Hazard Profiles and Previous Occurrences

The hazards were examined methodically based on the following three aspects, with each aspect considered in detail for the hazards profiled:

- **Nature of the Hazard:** This topic provides basic information about the hazard, including extent (or severity), to explain its nature and distinguish it from other hazards. It also provides a basis for leaders to understand the subsequent vulnerability assessment and loss estimates. The information for this section is drawn mainly from FEMA and other national agencies. **The general descriptions of each hazard can be found in Appendix H.**

- **History of the Hazard:** This section provides background information about previous occurrences. The focus is on disasters and other events that have occurred in Alabama. The information in this section is drawn mainly from the database of historical hazard events in Alabama. In addition to querying the National Climatic Data Center (NCDC) database[1] and other standard hazard information sources, the plan update includes

[1] The National Climatic Data Center (NCDC) Storm Events Database is a product of NOAA's National Environmental Satellite, Data, and Information Service (NESDIS). NCDC receives storm data from the National Weather Service (NWS). The National Weather Service receives their information from a variety of sources, which include, but are not limited to, county, state, and federal emergency management officials; local law enforcement

information on historical hazards that was garnered from the State agency representatives on the SHMT. The plan update includes discussions of the hazard events that have taken place since the initial plan adoption.

- **Probability of the Hazard:** This section discusses the probability (frequency) of the various hazards. The information in this section is drawn from a combination of FEMA and other national sources, State expertise, and the NCDC Storm Event Database for Alabama. Where possible, the probability is discussed in terms of a commonly accepted design event, i.e., the 1.0-percent annual chance flood. For the plan update, the probability of each hazard was reviewed and revised in cases where better information was available.

5.2.1 Flooding

Nature of the Hazard in Alabama

Flooding caused by rainfall occurs to some extent almost every year in almost every part of the state. Flooding occurs most frequently between the months of November and April, with a peak from February through April. Alabama receives an average of 56 inches of rainfall annually,[2] creating a high potential for riverine and flash flooding.

Digital flood hazard data, in the form of effective FEMA Digital Flood Insurance Rate maps (DFIRM) data, is currently available (as of August 2012) for all 67 counties. **Figure 5.2-1** shows the 1-percent-annual-chance floodplain for the state.

officials; skywarn spotters; NWS damage surveys; newspaper clipping services; the insurance industry; and the general public.

[2] According to Wikipedia, The Free Encyclopedia, February 8, 2010.

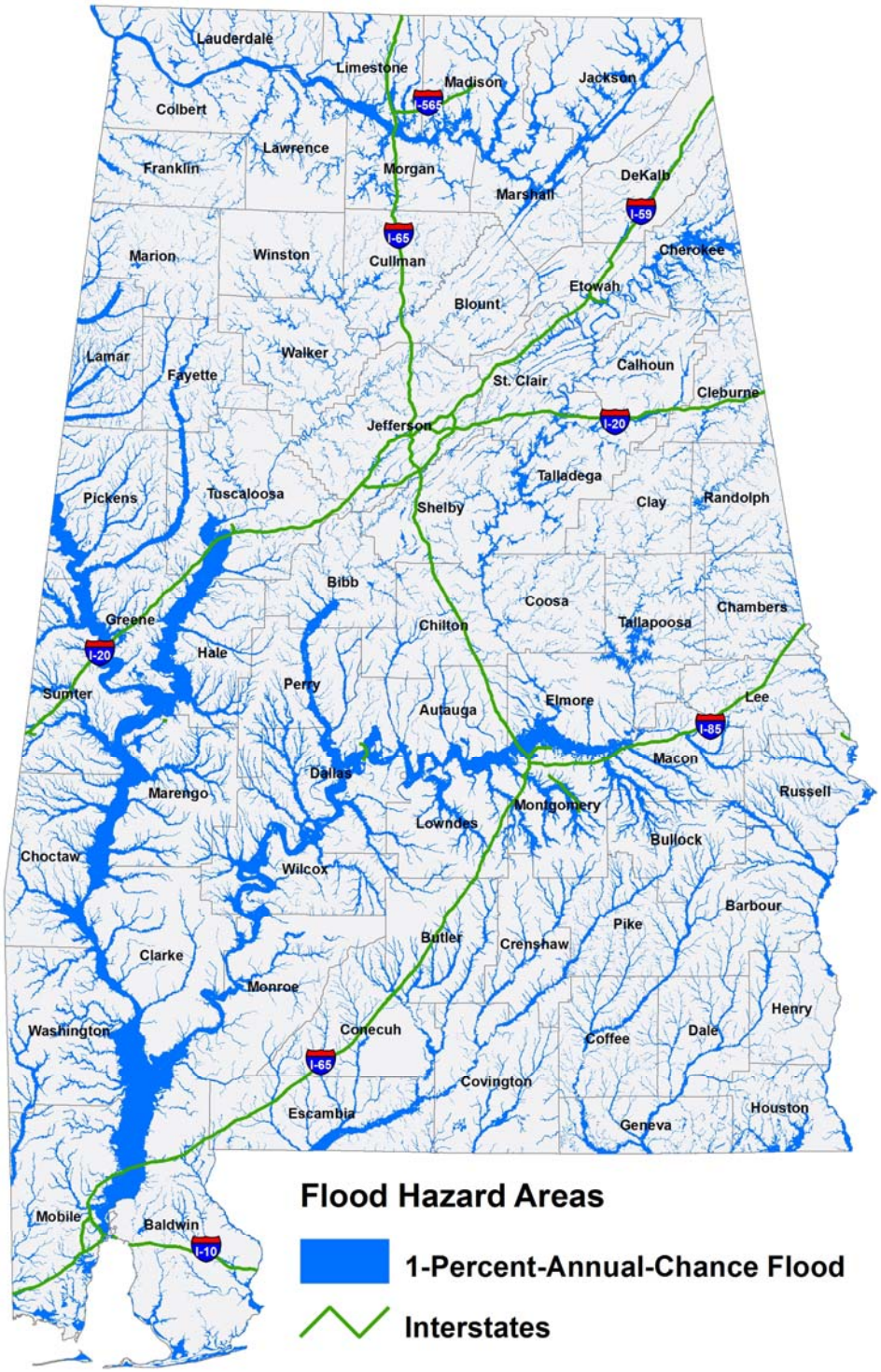


Figure 5.2-1
Riverine Flood Hazard Areas
Source: Federal Emergency Management Agency, 2012

Additionally, Mobile and Baldwin counties are located on the coast of the Gulf of Mexico, creating a high potential for coastal flooding due to storm surge that accompanies tropical storms, hurricanes, and other coastal events (the winds associated with hurricanes are discussed in **Section 5.2.2**). Areas in these two counties that are vulnerable to storm surge inundation are shown in **Figure 5.2-2**. The map used for the 2013 plan update was developed using 2008 NOAA SLOSH data with GIS shapefiles prepared by the Mobile District USACE. It should be noted that SLOSH is a model and not a perfect predictor of location risk. There may be areas outside of those shown on **Figure 5.2-2** that are vulnerable to storm surge.

A review of local hazard mitigation plans revealed that all 67 county plans identified flooding as a hazard to which they are vulnerable.

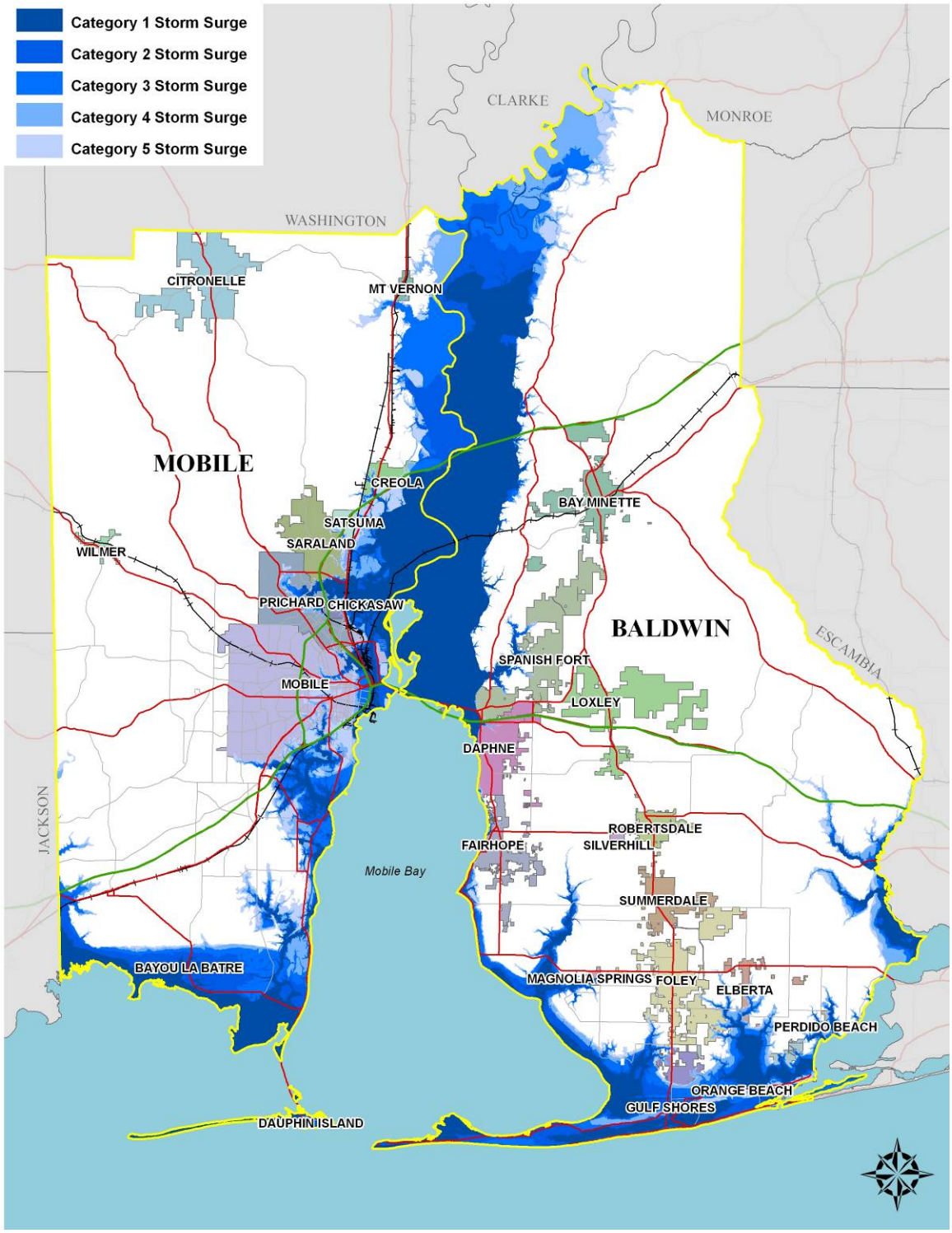


Figure 5.2-2
Mobile and Baldwin Counties Hurricane Surge Map
Source: National Oceanic and Atmospheric Administration SLOSH Product

Flood History in Alabama

Non-Hurricane Related Flood History in Alabama

In the middle of March 1973, the Tennessee Valley region experienced one of its costliest floods in modern history. Heavy rainfall caused flash flooding beginning in the evening hours of Thursday, March 15 in northwest Alabama lasting through the early morning hours of Friday, March 16 across the remainder of north Alabama and in southern middle Tennessee. Flash flooding problems then translated into flooding along area rivers as the rainwater filtered through smaller creeks and streams into larger waterways. As of early 2009, this event still stands as the record flood along many area rivers.

During the 12-month period from February 1990 to January 1991, 63 of 67 counties in the state were included in presidential disaster declarations for flooding. In February 1990, a flood disaster occurred from saturation flooding and the inability of the drainage system to accommodate the large volume of water dumped on the central and northeast parts of the state during the first half of the month. Twenty-seven counties in central and northeastern Alabama received disaster declarations due to repetitive rains over a 15-day period. These counties extend through the central and northeast portion of the state.

Immediately following the February 1990 floods, 33 counties in southern Alabama were included in a March 21, 1990 disaster declaration caused by a series of strong thunderstorms that continuously formed and moved over the same area. With rain falling nearly parallel to the affected river basins, flooding was more severe than in the past flood events, where rain fell across the basins. The USGS reported a greater than 100-year flood event on the Choctawhatchee River at Blue Springs and Newton, on the Pea River near Ariton, and on the Conecuh River at Brantley. Flooding along the Alabama River in Selma and Montgomery was characterized as a 50-year event (NOAA, 1997).

In January 1991, 12 north Alabama counties were declared federal disaster areas resulting from weather conditions over a four-day period. A slow-moving weather front produced a “train-echo” effect in the continuous formation and northeastward movement of thunderstorms over the area. The rainfall amounts across north Alabama spanned from 10 to nearly 16 inches. The water level in rivers and creeks equaled the 1973 record flood. The majority of the damage from this flood was in Madison and Morgan counties. Four of these counties (Cullman, Jackson, Morgan, and Marshall) were also included in the February 1990 declaration discussed above.

On February 5 and 6, 2004, heavy rains fell across a northern section of the state extending from Sumter to DeKalb counties. Doppler radar estimated as much as 8 inches of rainfall fell across some areas. Several roads were temporarily impassable. Numerous creeks and streams quickly rose out of their banks and caused flooding. One railroad trestle was flooded. One highway bridge was completely washed away. Water was standing in yards and fields in some places. Several roads were temporarily impassable. A bridge along State Road 17 was washed out and several other small bridges were washed out. Up to 30 homes were flooded in Jefferson County. Damage was estimated at $337,000 ($426,902 in 2012 dollars).

From November 22 to 24, 2004, up to 4 to 5 inches of rain (and in some areas as much as 12 inches) fell on already saturated grounds causing flash flooding in an area of the state between Tuscaloosa, DeKalb, and Clay counties. A potential dam break situation developed in the afternoon in St. Clair County. The dam eventually failed near the Friendship Community, resulting in significant damage. Runoff from these storms lasted for several hours after the heaviest rains ended. One fatality was reported. In other counties, numerous roads were

reported covered with water and were temporarily impassable. Total damages were estimated to be $946,000 ($1,129,573 in 2010 dollars).

Several days of heavy rains between March 27 and April 6, 2005, caused severe flooding across the southern two thirds of the state. In Mobile and Baldwin counties, as much as 20 inches fell, causing damage to bridges and roadways. In Choctaw County, one fatality was reported when a man tried to cross a bridge that washed away. Two bridges, a retaining wall, and a culvert were totally destroyed in Auburn. Damage estimates across the region were $1,056,000 ($1,298,746 in 2012 dollars).

On July 26, 2005, heavy rains fell in Jefferson and Lee counties causing significant flooding in both Birmingham and Auburn. In Auburn, water was up to 4 feet deep across several roadways. Several automobiles were damaged by floodwaters. Damage in Auburn was estimated at $75,000 ($92,241 in 2012 dollars). Numerous streets and creeks were flooded all over the City of Birmingham. At least 25,000 customers were without power during the storms. Local fire departments performed at least 11 swiftwater rescues. Patton Creek in Vestavia Hills overflowed its banks flooding several homes and businesses. Royal Automotive and Vulcan Lincoln-Mercury reported 40 to 50 vehicles damaged and four or five destroyed. The Vestavia Bowl Family Fun Center received damage due to high water. At least 15 vehicles were stalled in the high water. Damage in Birmingham was estimated at $500,000 ($614,937 in 2012 dollars).

On July 1, 2007, in DeKalb County, an intense thunderstorm produced rainfall that lead to flash flooding in the Big Wills Creek basin in western Fort Payne. The USGS river gage along Big Wills Creek west of Fort Payne registered its 4th highest crest to date at 11.47 feet. Water backed up and flooded several businesses, a residence, and submerged several cars resulting in considerable property damage in the amount of $200,000 ($231,854 in 2012 dollars).

On January 6, 2009, a slow moving frontal system caused several large areas of showers and thunderstorms in central Alabama. Numerous locations saw significant flash flooding due to the heavy rainfall, which later turned into riverine flooding that lasted for several days. Several roads and bridges throughout the region were closed or washed out due to floodwaters. A culvert and a private dam in Etowah County broke, producing up to 12 feet of flooding causing residences to be evacuated. In Walker County, heavy rains resulted in a number of locations becoming flooded and 74 people needing to be rescued. Two deaths and one injury were attributed to this flooding event and the property damage totaled $1,725,000 ($1,884,954 in 2012 dollars).

Several counties were flooded on May 7, 2009. In Autauga County, numerous county roads and city streets suffered extensive damage due to flooding caused by torrential rainfall. At least 32 residences and 6 businesses were damaged, and a mobile home community had to be evacuated due to floodwaters. Elmore County suffered damage similar to that of Autauga County. At least 43 residences, 10 businesses and two churches were flooded and the Millbrook city parks and recreation areas suffered substantial damage. Property damage totaled $4.5 million ($4.9 million in 2012 dollars). In Montgomery County an estimated 10 inches of rain fell in a six-hour timeframe. At least 3 feet of water flowed into the basement of the Statehouse building, and state legislators were forced to relocate to chambers in the old Capitol temporarily. One 67-year-old man drowned when his car was swept away by floodwaters and property damage was estimated to be $1.8 million ($2.0 million in 2012 dollars) in Montgomery alone. Macon, Bullock and Choctaw counties also saw significant flooding and property damage. Rainfall totals were from 3 to 7 inches. Numerous roads were impassible due to the floodwaters.

Flash floods plagued already saturated Northwestern and Central Alabama on May 2-3, 2010. Northwestern Alabama was hardest hit and all areas received 2 to 5 inches of rain over the course of about 24 hours. Lauderdale County reached record flood stage of 23.12 feet on May 3rd. Several roads were washed out due to flooding including County Roads 617 and 637.

Far Northwest Alabama experienced heavy rainfall of 3 to 5 inches resulting in flash flooding on June 28, 2011. Several roads were closed as a result of the flooding.

Hurricane Related Flood History in Alabama
Since 1960, Alabama has been declared under 15 presidential disaster declarations caused by hurricanes and tropical storms (**Table 5.2-2**) out of a total of 62 disaster declarations.

Table 5.2-2
Disaster Declarations from Hurricanes in Alabama

Date	Name
November 1969	Camille
September 1979	Frederic
September 1985	Elena
July 1994	Alberto
October 1995	Opal
July 1997	Danny
September 1998	Georges
September 2002	Isidore
September 2004	Ivan
July 2005	Dennis
August 2005	Katrina
September 2008	Gustav
September 2008	Ike
December 2009	Ida
September 2012	Isaac

Source: FEMA, September 2012

One of Alabama's costliest hurricanes was Hurricane Frederic, a Category 3 event that resulted in widespread damage in south and southwest Alabama. Frederic came ashore on September 12, 1979, and caused extensive damage to parts of Alabama, Florida, and Mississippi. Hurricane Frederic moved over Dauphin Island (near the mouth of Mobile Bay) and inland just west of Mobile with a storm surge of 8 to 12 feet above normal tide from Pascagoula, Mississippi to western Santa Rosa Island, Florida. The damage estimate for Frederic was $2.3 billion ($7.7 billion in 2012 dollars).

Hurricane Elena, a Category 3 storm, made landfall on September 2, 1985, causing extensive damage along the Florida, Mississippi, and Alabama coasts. The eye of the storm passed 30 miles south of Mobile, battering Gulf Shores in Baldwin County, and Dauphin Island in Mobile County. Hurricane tides reached 6 to 8 feet, primarily in an area from Dauphin Island west to Gulfport. Rainfall amounts were relatively light, with 2.35 inches reported in Mobile. The Dauphin Island Sea Lab reported 3 inches of rain from Hurricane Elena. Two counties were declared federal disaster areas on September 7, 1985, due to Elena. Most of the damage from Elena was caused by wind, with additional damage from storm surge and wave action. Shoreline properties in Baldwin and Mobile counties were affected with the most extensive damage concentrated on the western end of Dauphin Island.

On July 3, 1994, Tropical Storm Alberto made landfall in the Destin, Florida/Choctawhatchee Bay area. A lack of upper air movement caused the storm to stall over Alabama and Georgia until July 8. Because the storm did not move far from the Gulf or the Atlantic, it continued to bring moisture from both of these sources into the system. The effects of Alberto can be compared to Hurricane Juan in 1985, which stalled and caused severe flood damage in Louisiana. The most serious and devastating flooding from Alberto occurred along the Choctawhatchee and Pea Rivers as one of the worst floods in Alabama history. Other significant flooding from the same event occurred along the Chattahoochee River, Shoal River, Yellow River, Conecuh River, and lower Tallapoosa River (NOAA, 1997). The 10 southern counties affected in the July 1994 disaster declaration lie predominantly in the Choctawhatchee, Pea, Conecuh, and Chattahoochee River watersheds. These rivers are fed by tributaries, including the Little Choctawhatchee and Chipola Rivers, Whitewater, Patrick, Newton, Cowarts, Limestone, Beaver, Double Bridges, Wedowee, Frog Level, Murder, Uchee, Little Uchee, Hatchechubee, Otter, Shack, Hunter, Tomley, Cane, and Claybank creeks.

Three hurricanes impacted Alabama in 1995. Hurricane Allison caused a scare to Alabama and Florida residents in June of that year. There was relatively little damage, and Alabama was affected only by the evacuees from the Florida coast. Hurricane Erin in August caused extensive crop damage in Escambia County and damages in Baldwin, Washington, Clarke, and other southwestern counties. For Alabama, Hurricane Opal was the most devastating hurricane of the 1995 hurricane season.

In October 1995, Hurricane Opal moved quickly across the panhandle of Florida and into Alabama, resulting in a presidential disaster declaration for 38 counties on October 4, 1995. Opal made landfall near Hurlburt Field, just east of Fort Walton Beach, Florida, on Wednesday, October 4, 1995. Damages extended beyond the Alabama borders into Georgia, North Carolina, South Carolina, and further north all the way to the Great Lakes area. In the coastal Alabama counties of Baldwin and Mobile, storm surge severely eroded beaches; damaged piers, docks, boats, and roads; and flooded low-lying areas. Heavy rains accompanying Opal caused inland flooding. Hurricane Opal pushed an 8-foot storm surge onto Alabama's Gulf Coast. This surge leveled much of the primary dune system. The storm surge covered the coast in a mountain of sand that submerged gulf-front roads, crushed the ground floor and foundation of beach homes and condominiums, and filled swimming pools with sand. The overall effect of Hurricane Opal was a displacement of sand, destruction of the primary dune system, and overall narrowing of the beach in many areas.

Hurricane Danny was the only hurricane that made landfall in the United States during the 1997 Atlantic hurricane season. After crossing the southeastern-most portion of Louisiana, Danny stalled over the Mobile Bay dropping a state record of 36.71 inches of rainfall on Dauphin Island. A storm surge of over 6.5 feet occurred off of Highway 182, midway between Gulf Shores and Fort Morgan, Alabama, in addition to the rainfall. Approximately $63 million ($95.5 million in 2012 dollars) of damage was done to property and crops, mostly from flooding. Additionally, the flooding caused significant coastal erosion along the Gulf Coast and rescues had to be performed from many flooded areas. Two fatalities, one direct and one indirect, were a result of the hurricane. Numerous roads were flooded and impassable for several days.

Hurricane Ivan made landfall on September 16, 2004, in Gulf Shores, on the coast of Baldwin County, Alabama, as a strong Category 3 hurricane with 130 mph winds and a storm surge estimated to be between 10 and 13 feet high. Ivan's storm surge easily overwhelmed the dunes that provide protection for coastal areas of Baldwin and Mobile counties. The Gulf of Mexico

spilled into the developed areas pushing massive amounts of earth landward undermining buildings and roads and opening breaches through the islands. On top of the surge, waves crashed down onto the already battered roads and infrastructure, substantially worsening the damage. According to the USGS, Ivan washed away as much as 164 feet of beach in places. The erosion caused by Ivan's waves and storm surge undermined five-story oceanfront condominium buildings, which were the largest buildings to fail during a hurricane in United States history to that point. The average shoreline erosion was 42 feet in the area where Ivan came ashore, roughly between Alabama's Mobile Bay and Florida's Pensacola Bay in Florida. Ivan also caused flash flooding in inland counties throughout the state.

Hurricane Dennis made landfall on July 10, 2005, at the Santa Rosa Sound in Florida, approximately 25 miles from the Florida-Alabama state line. At this time, Alabama had already received significant rainfall from Tropical Storm Arlene and Hurricane Cindy. Because coastal Alabama was on the western side of the eye of Dennis, it was spared the worst of the storm surge; however, as much as 10 inches of rain fell in some areas causing flash flooding in inland counties throughout the state.

Hurricane Katrina made landfall along the Louisiana-Mississippi border on August 29, 2005, approximately 80 miles east of the Mississippi-Alabama border. While Louisiana and Mississippi received the most catastrophic flood damage, because Alabama was on the eastern side of the system, Mobile County experienced a significant storm surge, higher than in Ivan just the year before. Storm surge throughout coastal Mobile and Baldwin counties ranged from 9 to 14 feet. As Katrina moved inland, it dropped huge amounts of rain throughout the state causing significant flash flooding in inland areas.

Tropical Storm Fay brought heavy rains and caused street flooding and closed several roads near the Bay in Mobile County on August 25, 2008. Radar estimated that 5 to 8 inches of rain fell across the area, with the hardest hit areas being along the Dog River and Bayou Sara. Due to above normal tides, the heavy rains caused water to rapidly rise and several residences had to be evacuated.

On September 1, 2008, Hurricane Gustav caused flooding in the southwest portion of Washington County. Rainfall estimates were between 6 and 8 inches and left standing water in many streets. In Baldwin County, rainfall estimates of 4 to 6 inches also left standing water in the streets. The heaviest rain occurred in Mobile County. Heavy rains along with storm surge caused Bayou Sara to reach the 2nd highest reading in over 10 years. Dauphin Island was flooded and the berm was washed away. Surge heights were estimated at 4 to 7 feet. The water forced several people to evacuate and property damage reached $4.5 billion ($5.0 million in 2012 dollars).

Hurricane Isaac, which made landfall seven years to the day after Hurricane Katrina, was the only hurricane event resulting in a disaster declaration since the 2010 plan update. This Category 1 storm was slow-moving and brought heavy rains and flooding to the state. As Isaac approached, mandatory evacuations were ordered for low lying coastal areas, and a state of emergency was declared by the Governor, thereby activating the state EOP. Nearly 1,000 people used public shelters, Dauphin Island was hit hard with 2,400 residences without power according to the TuscaloosaNews.com.[3] Overall, coastal areas were spared major damage and flooding remained the greatest concern. Due to the slow-moving nature of the storm, many

[3] Reeves, J. 'Spared Isaac's Worst, Alabama Coast looks to holiday." *Associated Press. Tuscaloosa News.com*. 29 August 2012. Web. Oct. 2012 < http://www.tuscaloosanews.com/article/20120829/NEWS/120829750>.

inland counties suffered severe damage due to flooding as well. Ultimately, on September 22, 2012, a federal disaster declaration was approved for the counties of Mobile, Baldwin, and Pickens. As of October 4, 2012 Covington, Dallas, Geneva, Monroe, and Perry Counties were also eligible for federal Public Assistance having suffered more than $2.5 million in combined damages.

Tropical Storm Lee brought flooding throughout most of Alabama on September 3 through 5, 2011. The storm entered South-central Alabama from Mississippi, (holding in the areas) for several hours before slowly moving north. The rain was generally welcomed, alleviating drought conditions in the area, but led to significant flash flooding in many areas. At least 30 swift water rescues were made in the Birmingham area. Many areas received over 8 inches of rainfall, including a record 7.11 inches at the Birmingham-Shuttlesworth International Airport (breaking a previous one-day record of 2.1 inches set in 1949). In addition, several streets were closed in the impacted areas due to flooding.

Probability of Flooding in Alabama

Floods are described in terms of their extent (including the horizontal area affected and the vertical depth of floodwaters) and the related probability of occurrence. Flood studies use historical records to determine the probability of occurrence for different extents of flooding. The probability of occurrence is expressed in percentages as the chance of a flood of a specific extent occurring in any given year. The most widely adopted design and regulatory standard for floods in the United States is the 1-percent-annual-chance flood. The 1-percent–annual-chance flood, also known as the base flood, has a 1 percent chance of occurring in any given year. It is also referred to as the 100-year flood event. This expression is a general way to express the statistical likelihood of a flood; actual recurrence periods are variable from instance to instance.

Smaller floods occur more often than larger (deeper and more widespread) floods. Thus, a flood equal to a 10-year return period has a greater likelihood of occurring in a given year than a 100-year flood. **Table 5.2-3** shows a range of flood recurrence intervals and their probabilities of occurrence.

Table 5.2-3
Flood Probability Terms

Flood Recurrence Intervals	Percent Chance of Occurrence Annually
10-year	10.0%
50-year	2.0%
100-year	1.0%
500-year	0.2%

Source: FEMA, August 2001

Because Alabama has been significantly affected by flooding caused by tropical storms and hurricanes 15 times (in terms of federally declared disasters) in the last 52 years, this historical average indicates that flooding from hurricanes will cause significant damage in Alabama approximately once every 3.5 years (Note this is a statewide estimate. It is likely that flooding may occur more frequently based on location such as those areas identified as 1.0-percent annual chance areas through FEMA DFIRMs.)

Because the impacts of flooding are severe and events can occur throughout the state and can be widespread, the qualitative ranking for probability for flooding is high.

Coastal Erosion

For the 2010 update of this plan, AEMA has decided to introduce the coastal erosion hazard as a potential hazard to be included in future plan updates. A more complete analysis was desired for the 2013 update but limited data exists. There are only two counties in Alabama that have a coastline (Mobile and Baldwin Counties) and the coastal erosion hazard is not included in the risk assessment portions of either of those two local plans.

There is currently a project on-going with the Geological Survey of Alabama titled the Gulf Beach Monitoring and Analysis Project. One of the purposes of this project is to map Gulf beach topographic profiles to assist in coastal erosion monitoring and policy decision-making. This project will provide more definitive scientific information and data about the coastal erosion hazard in Alabama. The SHMT may wish to include results from it in future versions of the coastal erosion hazard assessment.

All coastal areas are subject to coastal erosion. Although erosion is a natural process, severe weather events, such as storm surge and hurricanes, as well as human development, may exacerbate the process. A 2012 study titled "National Assessment of Hurricane-Induced Coastal Erosion Hazards: Gulf of Mexico," studied the impacts of hurricanes on erosion along the Alabama Coast.[4] The study presents the likelihood of erosion occurring by comparing hurricane-induced water levels (including surge and wave action) to beach and dune elevations to determine the probabilities of three types of coastal change: collision, overwash, and inundation. The **Table 5.2-4** below presents the probability of occurrence based on the category of hurricane.

Table 5.2-4
Probability (very likely = probability > 0.9) of Alabama Sandy Beaches to Experience Erosion during Hurricane Landfall

	Category 1	2	3	4	5
Dune Erosion (Collision)	**100**	**100**	**100**	**100**	**100**
Overwash	69	99	100	100	100
Inundation	4	29	74	99	100

Source: http://coastal.er.usgs.gov/hurricanes/erosionhazards/gom/

5.2.2 High Winds (Hurricanes, Tornadoes, and Windstorms)

Nature of the Hazard in Alabama

Alabama is subject to high winds from severe thunderstorms (including straight-line winds), tornadoes and hurricanes. The most severe winds may result from tornadoes or hurricanes, but will vary based upon the location within the state. The two primary methods of addressing this hazard are by designing to resist property damage or life safety. Primarily buildings are designed to resist physical damage to the building during high wind events, but unless it is specifically addressed in the design life safety during high wind events is not addressed.

[4] Stockdon, H.F., Doran, K.J., Thompson, D.M., Sopkin, K.L., Plant, N.G., and Sallenger, A.H., 2012, National Assessment of Hurricane-induced Coastal Erosion Hazards—Gulf of Mexico: U.S. Geological Survey Open-File Report 2012–1084, p.51 p <http://coastal.er.usgs.gov/hurricanes/erosionhazards/gom/>.

Whether designing to resist hurricanes or tornadoes, structures are designed for significantly high wind speeds if life safety is to be addressed. The standard wind speeds used to design buildings address hurricane frequencies that are more frequent (lower wind speeds) and do not address tornadoes.

In order to address the importance of life safety, the International Code Council (ICC) 500-2008 "Standard for the Design and Construction of Shelters," is standard for building tornado and hurricane shelters. (A more specified FEMA 320 and FEMA 361 may be used to develop designs for tornado and/or hurricane "safe rooms".) **Figure 5.2-3** shows the different wind zones used for tornado shelters throughout the state of Alabama based on FEMA 320/361 (August 2008) and the ICC 500 standard. This shows two wind zones throughout the state: the approximate area north of Montgomery in a 250 mile per hour wind zone and the southern portion of the state in a 200 mile per hour wind zone, **Figure 5.2-4** shows the wind speed contours used for designing hurricane shelters using FEMA 320/361 and the ICC 500 standard. Design wind speeds shown in these maps are used by engineers to determine wind pressures (i.e., how strong) a tornado or hurricane shelter should be designed to withstand. (Note: When shelters are designed to resist both hazards the higher of the hurricane or tornado wind speeds are used for design.)

	Design for Wind Speed of **250 MPH**
	Design for Wind Speed of **200 MPH**

Figure 5.2-3
Tornado Shelter Design Wind Speeds
Source: FEMA 320 (clipped to study area)

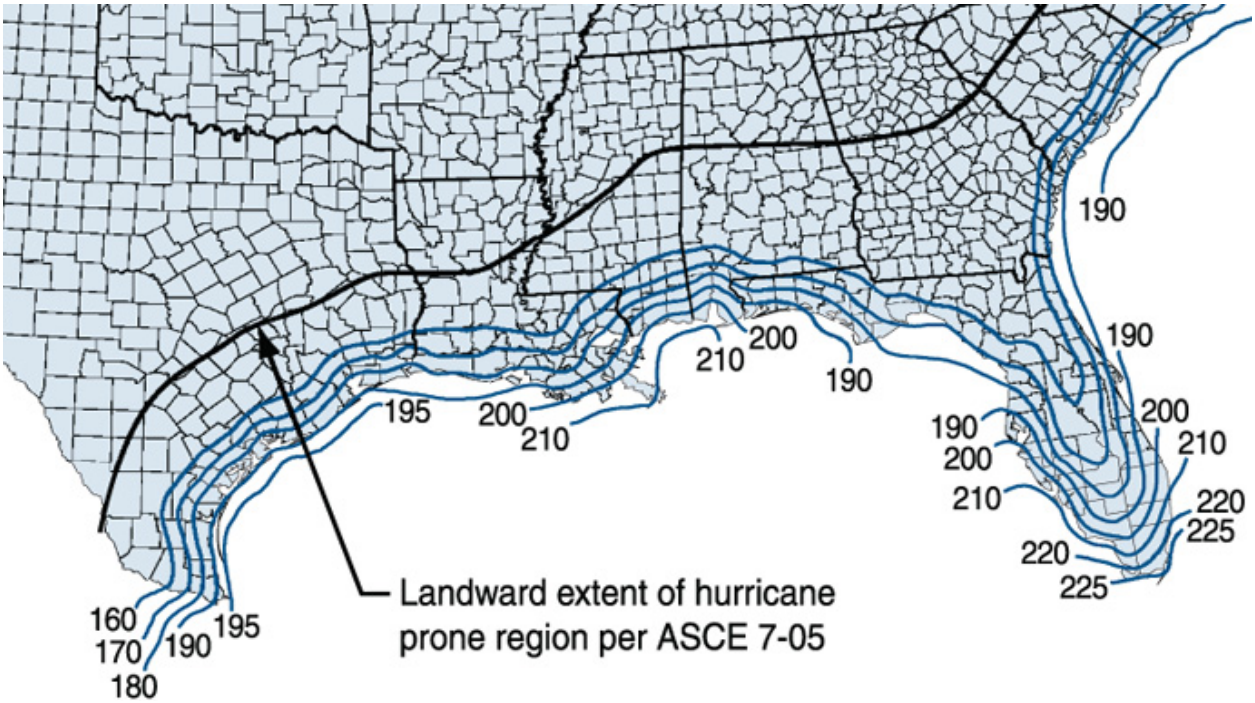


Figure 5.2-4
Hurricane Shelter Design Wind Speeds
Source: FEMA 320 (clipped to study area)

Another method of looking at wind zones is for design standards for non-storm structure buildings. This design standard is primarily developed using wind speed maps from ASCE 7, *Minimum Design Loads for Buildings and Other Structures*. Most building designs currently developed use either the 2005 or the 2010 editions. Each version uses a 3-second peak gust wind speed, which is consistent with current building codes and shelter guidance. The 2005 edition of ASCE 7 is referenced below in **Figure 5.2-5**, which shows the different wind zones throughout the Southeast and is shown here since most of the currently adopted codes in Alabama use this as a reference map. The 2012 International Codes utilize the 2010 edition of ASCE 7 either directly or by reference. Since building designs are developed using wind pressures the version of ASCE 7 by which the wind speed map is used should be followed as the method of calculating wind pressures. Most future building designs will use the 2010 edition of ASCE 7 in order to calculate wind loads on buildings. If not directly referenced in the building code, or if no current building code is used, these standards can also be adopted as the local standard.[5]

[5] While the maps above demonstrate the design wind speeds used to for buildings and storm shelters they cannot be directly compared with the 1-minute sustained wind speeds over water, which are utilized by the Saffir Simpson Hurricane Wind Scale (Appendix H, Table H-3) and must be converted using Table H-4.

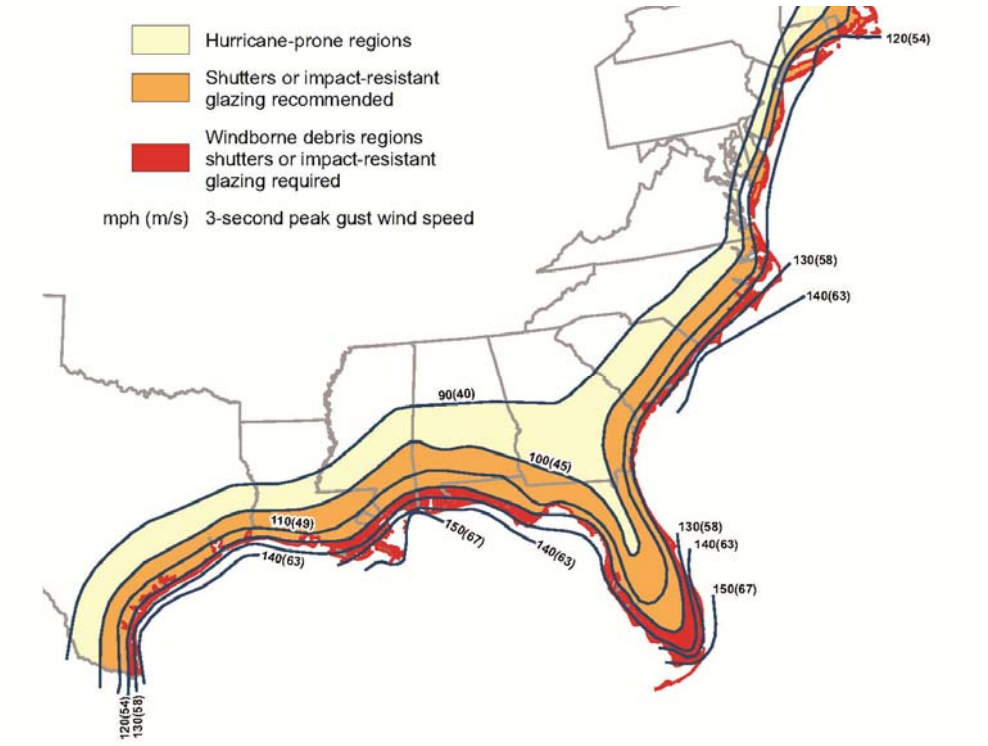


Figure 5.2-5
Illustration of Design Wind Speeds
Source: FEMA P-499 (clipped to study area)

The two coastal counties of Alabama are the most prone to experiencing high winds caused by hurricanes. Hurricanes make landfall at full strength before wind speeds rapidly deteriorate as the storm loses its energy source, the warm ocean waters of the Gulf of Mexico. However, as demonstrated in **Figure 5.2-6**, if a fast moving Category 4 hurricane hits the state, the lower two thirds of the state are prone to receiving hurricane force winds (greater than 74 mph). Even the northernmost portion of the state may experience winds in excess of 58 mph for that same storm. As demonstrated in **Figure 5.2-7**, even a typical Category 2 hurricane is capable of spreading tropical storm force winds (greater than 39 mph) over nearly the entire state with areas as far north as Montgomery receiving winds in excess of 58 mph.

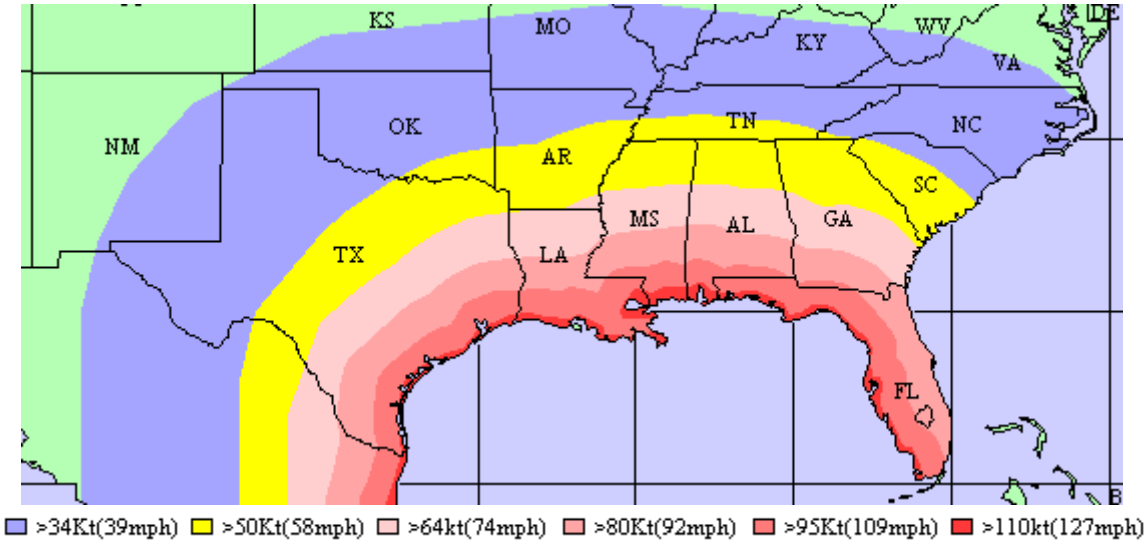


Figure 5.2-6
Extent of Inland Winds for a Category 4 Hurricane Moving Forward at 25 mph[6]
Source: National Hurricane Center

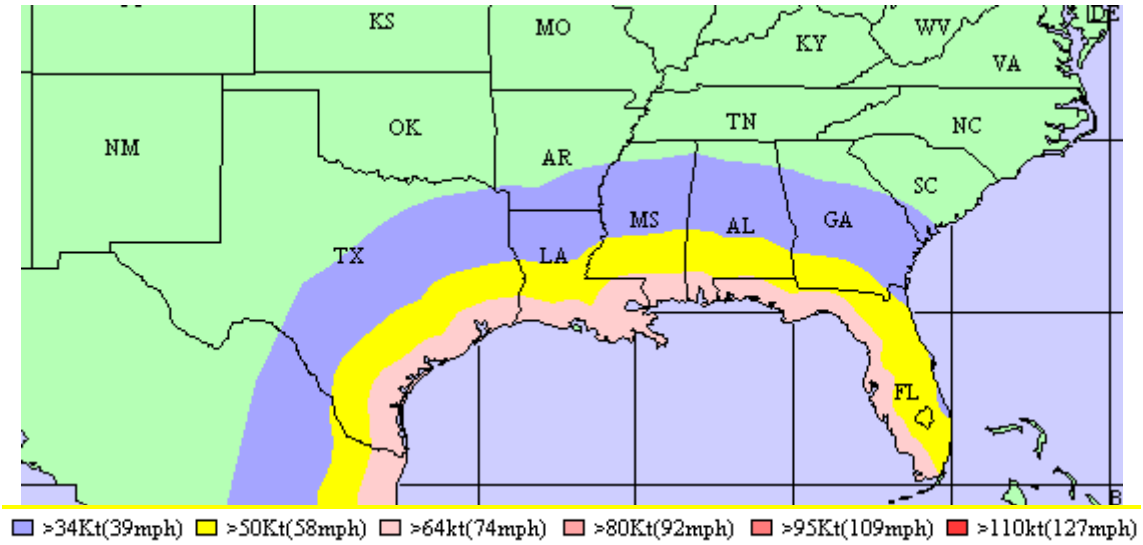


Figure 5.2-7
Extent of Inland Winds for a Category 2 Hurricane Moving Forward at 14 mph[8]
Source: National Hurricane Center

[6] No changes have been made to this NHC graphic since the 2007 plan update.
[8] No changes have been made to this NHC graphic since the 2007 plan update.

Essentially the inland extent of winds as well as wind strength increases with the strength of the hurricane at landfall and the actual forward motion of the storm.

The entire state is vulnerable to high winds caused by tornadoes, hurricanes, and windstorms. The most likely time for tornadoes is during the spring months from March through April and into May, with a secondary peak of activity in November and December; however tornadoes have occurred in every month of the year in Alabama.[9] According to NCDC records, Alabama, along with the state of Kansas, had more reported EF5 tornadoes on official record than any other state for the period of January 1, 1950 to October 31, 2006.

Hurricane season runs from June 1st through November 30th. Hurricanes outside of this range are possible but rare.

High winds from severe storms and/or straight-line winds resulting in a presidential disaster declaration have occurred in each month within the state of Alabama. April has the highest number with nine disaster declarations, followed by March with eight disaster declarations and May with six disaster declarations. This is an indication that severe events are most likely during the spring months.

A review of local hazard mitigation plans revealed that all 67 counties identified hurricane winds and tornadoes as hazards to which they are vulnerable.

[9] Based on NCDC records of historical tornado occurrences.

High Wind History in Alabama

Hurricane Related High Wind History in Alabama

One of Alabama's costliest hurricanes was Hurricane Frederic, a Category 3 event that resulted in widespread damage in south and southwest Alabama. Frederic came ashore on September 12, 1979, and caused enormous damage to parts of Alabama, Florida, and Mississippi. With winds reaching 145 miles per hour, Hurricane Frederic moved over Dauphin Island (near the mouth of Mobile Bay) and inland just west of Mobile, Alabama. The damage estimate of Frederic was $2.3 billion ($7.7 billion in 2012 dollars). Based on information from emergency preparedness officials, 250,000 people were safely evacuated in advance of Frederic. Eleven counties were included in the federal disaster declaration: Baldwin, Choctaw, Clarke, Conecuh, Covington, Escambia, Geneva, Marengo, Mobile, Monroe, and Washington. The hurricane impact area comprised 20.5 percent of the total land area of the State of Alabama.

Hurricane Elena, a Category 3 storm with sustained winds of 124 miles per hour, made landfall on September 2, 1985, causing extensive damage along the Florida, Mississippi, and Alabama coasts. The eye of the storm passed 30 miles south of Mobile, battering Gulf Shores in Baldwin County, and Dauphin Island in Mobile County. Wind gusts were estimated at up to 132 miles per hour on Dauphin Island. Two counties were declared federal disaster areas on September 7, 1985, due to Elena. Most of the damage from Elena was caused by wind, with additional damage from storm surge and wave action. Shoreline properties in Baldwin and Mobile counties were affected with the most extensive damage concentrated on the western end of Dauphin Island.

In October 1995, Hurricane Opal moved quickly across the panhandle of Florida and into Alabama, resulting in a presidential disaster declaration for 38 counties on October 4, 1995. Damages extended beyond the Alabama borders into Georgia, North Carolina, South Carolina, and further north all the way to the Great Lakes area. Wind speeds at landfall were 125 miles per hour. In the coastal Alabama communities of Baldwin and Mobile, a storm surge of 4 to 7 feet was estimated. Downed trees blocked roads and downed power lines. The storm's passage left six people dead in Alabama and thousands without power in Alabama. More than half of Alabama's counties were included in the disaster declaration. The affected counties were concentrated in the eastern half of Alabama and along the southern border westward to the Mississippi line. The area contained a total population of 2,982,088, and included the three largest cities in the state: Birmingham, Mobile, and Montgomery (NOAA, 1997).

Hurricane Danny came ashore through Mobile Bay beginning during the evening of July 18 and continuing through the morning of July 19, 1997. Danny had sustained winds of approximately 85 miles per hour. The most severe wind damage was concentrated in the Fort Morgan and West Beach areas of Gulf Shores and Dauphin Island. Most of the damage to residential and commercial buildings was roof and water damage and broken windows. Most of the businesses were able to reopen within a day or two after the storm with the exception of some condominiums and hotels. As a result of the storm, three counties were declared disaster areas and received federal assistance to help aid in repairs.

Hurricane Ivan made landfall on September 16, 2004, near Gulf Shores in Baldwin County as a strong Category 3 hurricane. The city of Demopolis, over 100 miles inland in west-central Alabama, endured wind gusts estimated at 90 mph (150 km/h), while Montgomery saw wind gusts in the 60 to 70 mph (95 to 115 km/h) range at the height of the storm. In Baldwin County, the coastal areas from Fort Morgan to Gulf Shores to Orange Beach saw the worst damage from a hurricane in over a hundred years. As Ivan moved ashore during the morning hours of

September 16, the winds caused major damage to trees along and east of the track of the storm. Hurricane force winds were felt across the entire area, including many inland counties. Most of the area probably had hurricane force winds for 2 to 4 hours causing 100-year old trees to break and damage houses and vehicles. While some structural wind damage would have been expected, most of the major structural damage that occurred over inland areas would not have been as substantial if it had not been for fallen trees. It was estimated that in Alabama more than $500 million (close to $636 million in 2012 dollars) in damage was done to timber. Power was out for over a week across inland areas and several weeks along the immediate coast as the infrastructure was rebuilt. Agriculture interests suffered a major loss with significant damages to the cotton, soybean, and pecan crops. In fact, the soybean and pecan crops were nearly destroyed. Seven deaths in Alabama were attributed to Hurricane Ivan in Alabama, with six due to high surge levels and one death resulted when a tree fell on a mobile home. While the entire state was declared a federal disaster area, it will be remembered as one of the most damaging hurricanes to affect the Baldwin, Escambia, Clarke, Monroe, Conecuh, and Butler counties in southwest Alabama.

Hurricane Dennis made landfall as a Category 3 hurricane on the western Florida panhandle before rapidly deteriorating in organization and strength while moving across southwest Alabama. Most of the damage was a result of strong winds associated with Dennis' passing rain bands. Trees were knocked down, debris was scattered on roads, and power outages were common throughout the state. All but the 20 northernmost counties were declared a disaster.

Hurricane Katrina made landfall along the Louisiana and Mississippi Gulf Coasts on August 29, 2005, as a strong Category 3 hurricane before moving inland along the Mississippi-Alabama border. Katrina's winds had impacts that were widespread across western and central Alabama. Thousands of trees and power lines were brought down, minor to major structural damage occurred, and power outages were lengthy and widespread. Several locations remained without power for over a week. Six tornadoes occurred across central Alabama in association with Katrina (four F0s and two F1s). Alabama Power reported that this was the worst event in their history for damage and power outages statewide. Sustained winds of 67 mph were recorded in Mobile while gusts of up to 80 mph may have been possible in locations west of a line from Selma to Hamilton. Tropical storm force winds (greater than 34 mph) were felt throughout northern Alabama. Twenty-two counties in the western half of the state were declared a federal disaster area.

As Tropical Storm Fay moved across the Florida Panhandle on August 23, 2008, it weakened to a tropical depression and entered southern Alabama. The winds from Fay blew down numerous trees in several counties, and more than 80,000 customers lost electric service during the peak of the event. The Causeway across Mobile Bay was closed due to high water and moderate beach erosion was reported. The remnants of Fay also produced 11 tornadoes in central Alabama. In total, Fay produced $1.1 million ($1.3 million in 2012 dollars) in property damage.

Both Hurricane Gustav and Hurricane Ike made landfall in September of 2008 with winds of tropical storm strength. However, no damages due to winds were reported for either hurricane event.

Hurricane Ida impacted the state in November 2009 as a tropical depression. Sustained winds around Central Alabama reached between 20 and 30 mph, with peak wind gusts generally between 30 and 40 mph. These winds blew down a few trees around the area, especially shallow rooted trees where the saturated soil likely played a significant role.

Tropical Storm Lee impacted the state in early September 2011 but did result in damaging winds. Maximum sustained winds for the event were reported in Vermillion Bay, Louisiana at 45 miles per hours. The storm dissipated further before reaching Alabama where it brought beneficial rain and some flooding to many areas of the state.

Tornado Related High Wind History in Alabama

A tornado assessment for the State of Alabama was prepared by Frank Tatom (Engineering Analysis) in July 2012.[10] The assessment provides a Site Assessment of Tornado Threat (SATT 3.0) for the state which includes all tornadoes reported by the National Weather Service between 1950 and 2011. Records indicate that a total of 1,963 tornado (1,120 identified tracks) and 843 touchdowns have been reported between1950 and 2011. This resulted in an average of 31.66 tornadoes in the State per year. Further, the findings suggest that the state experiences strong tornadoes with 21 percent reported as F3 or higher, an unusually high figure. However, EF-1 is the most frequent occurrence of intensity. Lastly, the month of April has the highest frequency in a given year with an annual frequency of 7.32 tornadoes. This is followed by November with 4.27 tornadoes occurring each year. The National Climatic Data Center reports a slightly higher number of tornadoes and also includes fatalities and injuries. The NCDC records indicate Alabama tornadoes have killed more than 600 people and caused thousands of injuries since 1950.[11] It is not uncommon for multiple tornadoes to strike at about the same time and tornadoes often cross geographical and political boundaries which may account for the higher number of events reported by NCDC.

Several devastating tornado events have occurred throughout the state. The deadliest occurred recently in April 2011 (described below). Prior to this event, the most tragic tornado event in Alabama occurred on March 21, 1932, when seven tornadoes ripped through a dozen central and northeastern Alabama counties, leaving 268 people dead and 1,834 injured. Tornadoes were cited as responsible or partially responsible for the damages in six of the declared major disasters between April 1974 and February 1990.

The “Super Outbreak” occurred on April 3, 1974, between 3 and 9 p.m. At least seven tornadoes killed 86 people and injured 938. The following day, April 4, 1974, 20 counties were declared federal disaster areas. Other tragically destructive tornadoes were the Demopolis-Greensboro- Brent- Woodsonville- Mt. Cheaha tornado of May 27, 1973, the Northwest Birmingham tornado of April 4, 1977, and the Huntsville tornado of November 15, 1989.

On March 30, 1994, the President declared seven counties in north Alabama major disaster areas resulting from tornadoes, flooding, and severe storms that struck the region on March 27, 1994. The storms moved across northeast Alabama to the Georgia state line, spawning tornadoes, flooding, and straight-line winds. These events were responsible for 22 deaths, over 150 injuries, and caused extensive property damage. Based on a search of existing records, it appears that the 50-mile long tornado path of the Cherokee County storm places it among the longest tornado tracks experienced in Alabama since 1950.

Severe storms that began on February 15 and continued through February 20, 1995, produced high winds, rain, and tornadoes across north Alabama. The National Weather Service confirmed

[10] Tatom, Frank B. “Assessment of Tornado Threat For Alabama For the Years 1950 - 2011.” July 2012. Engineering Analysis Inc. Huntsville, Alabama, <***http://eai.home.mindspring.com***> **.**

[11] According to NCDC records from January 1, 1950 to August 31, 2012, there have been 2,346 confirmed reports of tornado occurrences in the state with a total of 623 confirmed deaths and 8,207 confirmed injuries.

three tornadoes, one of which was an F3 event that passed through the northern part of the state. On April 21, 1995, President Clinton issued a major disaster declaration for the five Alabama counties of Cullman, DeKalb, Marion, Marshall, and Winston. In the community of Arab, five people died as a result of the storms. Across the five counties, more than 30 people were injured and close to 300 homes and farm buildings were damaged. Because of the heavy rains accompanying the storms, some flooding occurred in DeKalb County that impacted several roads and bridges.

From 2004 to 2006, there were no tornadoes in Alabama greater than an F2 on the Fujita Scale. One of the larger tornadoes occurred on November 15, 2006, when an F2 tornado touched down in Montgomery approximately 1.4 miles southwest of the Shakespeare Festival and tracked northeastward across the Woodmere and Beauvoir Lakes subdivisions. Numerous trees were snapped off or downed along the path with minor roof damage to numerous homes. Near the Atlanta Highway, the tornado crossed an athletic field complex and struck the Montgomery Postal Processing and Distribution Center and Post Office. The main doors of the post office were blown in and portions of the roof were lifted off to the north. Numerous trees were snapped off at ground level on the south and west sides of the building. A tractor trailer was completely turned around, moved 30 yards, and flipped. Other postal vehicles and cars in the parking lot were moved or received significant damage. Just to the north, the tornado produced major damage to the Fun Zone Skating Rink. This was a large metal structure that was almost completely destroyed. Several vehicles were tossed around and significantly damaged or crushed by debris from the building. As the tornado crossed the Atlanta Highway, several metal power poles were either significantly bent or downed. At the Saddleback Ridge Apartment Complex, at least two apartment buildings lost their roofs and portions of the second floor. The tornado continued another 2.25 miles northeastward, ending in a field just south of Wares Ferry Road.

On March 1, 2007, 12 tornadoes touched down throughout the State of Alabama, two of which were EF4s on the new Enhanced Fujita Scale (this scale is discussed under the general description of tornadoes contained in **Appendix H**). The first occurred in Wilcox County causing one death and significant damage to about 70 residential properties. The other developed near the Enterprise Municipal Airport in Coffee County. The tornado left severe damage throughout a large section of the City of Enterprise. The most severe damage took place at Enterprise High School, where a section of the school was destroyed during the middle of the school day. Eight fatalities were reported at the school and 121 others were taken to local hospitals. At the school, all of the fatalities were a result of a collapsed concrete wall. One hallway completely collapsed, trapping many students in the rubble just outside the music room. The tornado at the school was so strong that it flipped cars over in the parking lot, flattened parts of the stadium, and tore trees out of the ground. Nearby Hillcrest Elementary School also sustained severe damage from the tornado. The tornado initially formed in a neighborhood just south of the downtown area; after demolishing a section of the downtown area it moved on to the schools. The tornado then continued northeast crossing the Holly Hill and Dixie Drive areas. A quarter mile wide swath was devastated, with enormous damage reported to many houses and businesses, some of which were flattened. Several other schools and the local YMCA were among the damaged buildings. According to Mayor Kenneth Boswell, at least 370 houses were damaged or destroyed. The tornado itself was estimated to have been 300 yards wide and had a path length of 7 miles. It dissipated shortly after leaving Enterprise.

On April 11, 2007, supercell thunderstorms developed during the day producing severe weather that included tornadoes and very large hail. An EF1 was the largest tornado recorded for this storm. Despite the small magnitude, the tornado still caused $71,000 ($82,300 in 2012 dollars)

in property damage as it passed through Bibb, Chilton, Elmore, Jefferson, Macon, Russell, and Tallapoosa counties.

A few days later on April 14, 2007, another EF1 tornado damaged parts of Bullock, Conecuh, Crenshaw, Dale and Monroe counties. The tornado damaged residences, churches, and a poultry farm and left numerous trees damaged and uprooted along its path. Property damage from this event totaled $1.26 million ($1.46 million in 2012 dollars).

On February 6, 2008, the WFO Huntsville County Warning Area experienced the worst tornado outbreak in 19 years. While the tornadoes were minor, EF0 and EF1 tornadoes, damages ranged from downed trees and power outages to roof damage and road closures. A few EF2 tornadoes were reported as well as two EF4 tornadoes. In Lawrence County, the EF4 tornado touched down in two neighborhoods heavily destroying residences, killing four people and injuring 23. An additional four people were injured in Walker County when the tornado passed through a mobile home community. An additional fatality occurred in Jackson County, as well as 12 more injuries, when the EF4 tornado passed through removing residences from their foundations and snapping trees. This was the first time the area had witnessed more than one devastating tornado (EF4) on the same day since 1974. Property damage was estimated at $525,000 ($590,000 in 2012 dollars).

A long lived supercell moved through Florida and into Alabama on February 17, 2008, producing a tornado along with hail and wind damage. This tornado outbreak caused damage to numerous trees and damaged several residences in its path, as well as barns, businesses, and vehicles. In Lowndes County, 10 injuries were reported and in Russell County, four injuries were reported. The most significant damage was reported in Autauga County. An estimated 200 residences and 40 businesses were damaged or destroyed, as well as hundreds of trees were either snapped off or uprooted. Fifty people reported injuries. Property damages were estimated at $12,311,000 ($13,856,139 in 2012 dollars), with $10 million ($11.2 million in 2012 dollars) attributed to Autauga County alone.

In the early afternoon hours of April 11, 2008, a strong cold front pushed into northwest Alabama and moved east into Georgia. Unstable air and strong wind fields lead to numerous severe thunderstorms which produced large hail, damaging winds, and a few tornadoes. Property damage totaled $82,000 ($92,000 in 2012 dollars).

A slow moving cold front brought an extended period of severe weather and heavy rain that lasted about 24 hours from February 27 to February 28, 2009. The storms produced damaging winds, large hail, flooding rains, and at least four tornadoes. The tornadoes, ranging from EF0 to EF2, caused damage in Hale, Lee, Shelby, and Tallapoosa counties and left property damage totaling $1.181 million ($1.29 million in 2012 dollars).

On April 10, 2009 a strong upper level storm moving across the Mississippi Valley brought a dry line and cold front into north Alabama during the afternoon and early evening hours. Several classic supercell thunderstorms developed and many produced very large hail, up to baseball and softball sized, producing significant damage, especially from Decatur through Madison and northwest Huntsville. One of the supercells produced an EF3 tornado, which struck northeastern Marshall County, crossed Lake Guntersville, and moved into southern DeKalb County. In total eight tornadoes were reported across the area and a total of $1.024 million ($1.119 million in 2012 dollars) in damage was reported.

On April 19, 2009, a strong low pressure system tracking northeast brought a cold front into the Central Tennessee Valley during the late afternoon and evening hours. Supercells erupted across northwest Alabama. Initially, these storms were large hail producers, with up to baseball-sized hail reported in Franklin County. As the early evening progressed, this supercell tracked into Lawrence and Morgan counties producing wind damage and at least six tornadoes as it moved east. A man was killed in the town of Priceville in Morgan County when a tree was knocked onto his mobile home. Another tornado developed rapidly in the community of Asbury in Marshall County, killing one and critically injuring another when their mobile home was destroyed. The EF2 tornadoes produced property damage in the amount of $1.162 million ($1.27 million in 2012 dollars).

At least eight tornadoes hit north-central and northeast Alabama on the evening of April 24, 2010. Marshall County and DeKalb County were hardest hit. Some of the tracks were several miles long and reached EF-4 strength. No fatalities were reported but damage was severe including $14.8 million (2012 dollars) and over ninety-three homes destroyed in Marshall County alone.

A quasi-linear convective system (QLCS) produced three tornadoes in northeast Alabama, including one EF-2 (winds up to 115 mph) which tracked through portions of Jackson and DeKalb Counties on October 25, 2010. Severe weather began as early as late evening on the 24th and lasted through the pre-dawn hours on the 25th. The track in DeKalb County destroyed the bleachers and scoreboard at the Ider High School football field. The bleachers were solid concrete and were reinforced with 1/2 inch thick rebar. Additional damage was observed along Highway 75 as the tornado tracked into Dade County, Georgia. No dollar figures of damage were reported.

A strong line of thunderstorms produced several tornadoes in Central and Southwest Alabama on April 15, 2011. A total of forty tornadoes were recorded in the state, thirty of which touched down in Central Alabama. This set a record of tornadoes within the state from one event. (This record would be short-lived following the tornadoes of April 27, 2011.) Several injuries were reported including three fatalities in Washington County. These tornadoes largely spared populated areas but did damage numerous rural homes and timber holdings. Tornadoes ranged in size from 200-600 yard-wide paths, resulting in nearly $7.3 million (2011 dollars) in timber loss according to the Alabama Forestry Commission.

Conversely, the tornado events of April 27, 2011 impacted the most populous areas in the state and are the worst recorded in Alabama history. In fact, this event is one of the worst tornado events in the nation's history.

Forecasters from the National Weather Service first mentioned the possibility of tornadoes impacting the areas in coming days on April 23. As the system progressed it produced tornadoes in Texas, Oklahoma, Missouri, Arkansas, and Tennessee. Lauderdale County, in northwest Alabama, was the first to be impacted with an EF-1 tornado. The onslaught of tornadoes continued throughout the state, lasting 18 hours and leaving 248 dead and 2,219 injured.[12] A total of 62 confirmed tornadoes were reported across the state ranging from EF-0 to EF-5 as shown in **Figure 5.2-8**. The breakdown of number and strength follows: EF-1 (6), EF-1(29), EF-2 (9), EF-3 (8), EF-4 (8), EF-5 (2). Fifteen of the tornadoes were at least 1,000 yards wide (ten football fields or half a mile). As noted, these events were particularly devastating not

[12] "What Happened." *Recovery Action Council of Alabama* (n.d.) Web. Retrieved October 2012. <http://tracalabama.org/what-happened/>.

just due to the number and strength but also the location of the strikes. One of the EF-4 events struck Tuscaloosa (home of University of Alabama) and suburban Birmingham (the state's largest city). This particular tornado was up to a mile and half wide and remained on the ground for over 90 minutes. Its winds peaked at 190 miles per hour. This tornado was responsible for 64 fatalities and 1,500 injuries. The City of Tuscaloosa reported 12 percent of its city was destroyed.

In all, thirty-five of Alabama's sixty-seven counties had damage, though the overall events (which also included straight-lines winds, severe storms, and flooding) led to disaster declarations in forty-three of the counties. AEMA estimates damage at $1.1 billion (2011 dollars) though other results are much higher. The president of the Insurance Information Institute reported an expected payout of $2 billion in the areas of Birmingham and Tuscaloosa alone. The April 25-28th, 2011 tornado outbreak was the largest single-system tornado outbreak ever recorded and the second deadliest tornado outbreak in U.S. history (looking across all impacted states).

As a result of the outbreak, Alabama Governor Robert Bentley appointed 19 community, corporate, and non-profit leaders from across the state to the Tornado Recovery Action Council of Alabama. ADECA is leading additional recovery efforts through its Long-Term Community Recovery program. Millions in federal disaster money received to help prevent future losses is being used to build thousands of safe-rooms throughout the state. (See **Section 6** for additional information.)

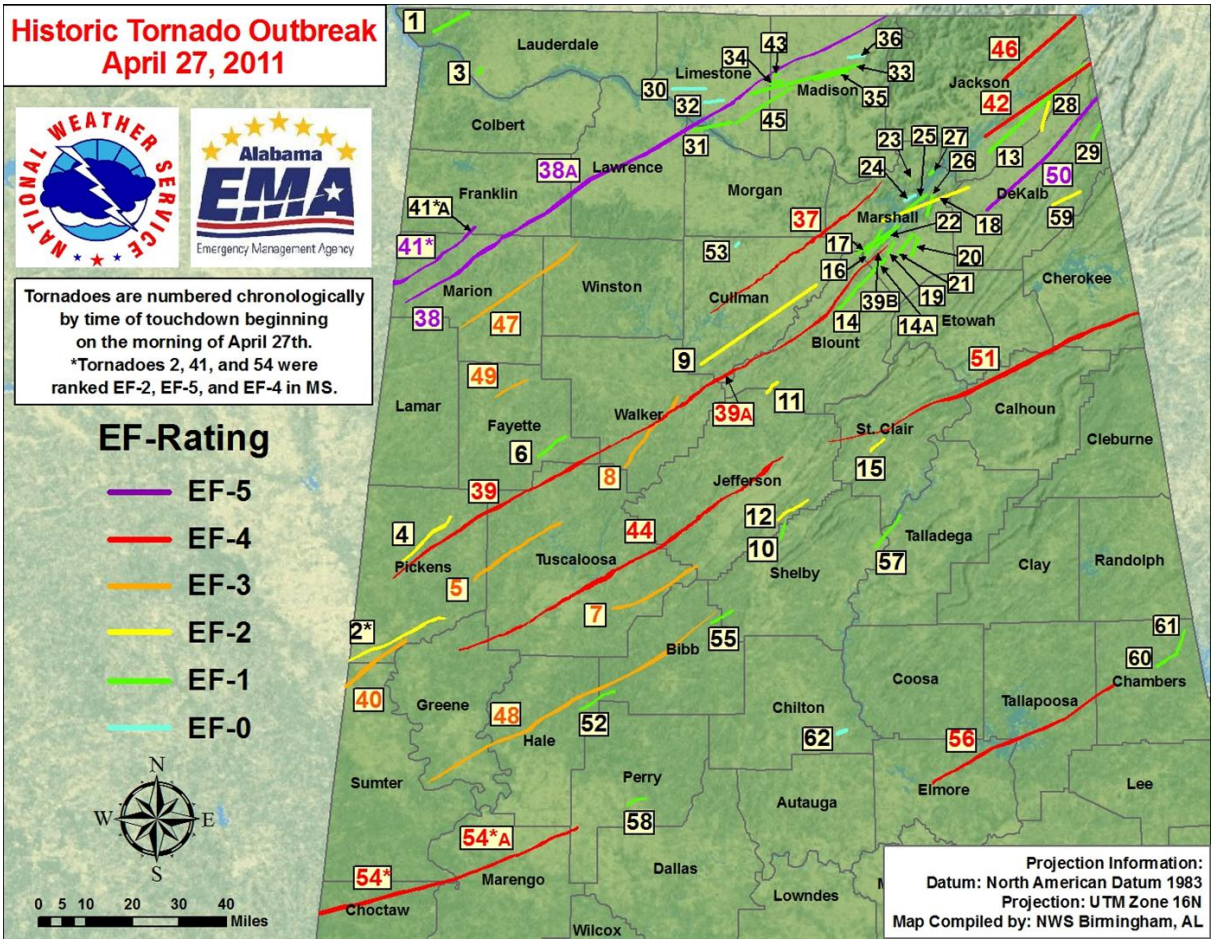


Figure 5.2-8
April 27, 2011 Tornado Tracks and Magnitude
Source: NWS, EMA[13]

Table 5.2-5 shows a summary of statewide annual tornadic activity, including deaths, injuries, and property and crop damages from 1950 through 2012.

Table 5.2-5
Annual Tornado Summary (Through May 31, 2012)

Year	Tornadoes	Deaths	Injuries	Total Damages	Damages in 2012 Dollars
1950	2	0	15	$28,000	$284,044
1951	5	0	13	$37,000	$348,211
1952	13	6	116	$5,453,000	$50,407,752
1953	22	16	248	$3,074,000	$28,249,026
1954	10	0	36	$609,000	$5,563,777
1955	8	5	27	$7,581,000	$69,259,432
1956	7	25	203	$2,553,000	$23,054,370

[13]NOAA. Web. < http://www.srh.noaa.gov/bmx/?n=event_04272011>.

Table 5.2-5
Annual Tornado Summary (Through May 31, 2012)

Year	Tornadoes	Deaths	Injuries	Total Damages	Damages in 2012 Dollars
1957	51	10	192	$7,227,000	$63,074,463
1958	23	1	3	$2,062,000	$17,507,308
1959	9	0	8	$331,000	$2,795,148
1960	11	0	2	$559,000	$4,620,602
1961	24	0	28	$2,537,000	$20,860,053
1962	11	0	10	$928,000	$7,550,840
1963	22	3	76	$9,228,000	$73,930,137
1964	26	12	31	$2,159,000	$17,121,230
1965	11	0	44	$1,353,000	$10,515,993
1966	11	1	17	$1,128,000	$8,554,417
1967	26	5	97	$12,753,000	$93,536,539
1968	14	1	46	$7,278,000	$51,216,231
1969	15	2	16	$1,631,000	$10,888,966
1970	14	2	16	$1,175,000	$7,431,722
1971	23	4	16	$1,653,000	$10,009,253
1972	16	4	95	$1,909,000	$11,211,735
1973	54	10	408	$227,062,000	$1,253,448,693
1974	55	79	959	$139,521,000	$694,158,220
1975	35	2	142	$34,906,000	$158,984,397
1976	30	0	204	$45,390,000	$195,884,535
1977	22	23	144	$28,137,000	$113,877,788
1978	22	0	49	$6,453,000	$24,291,935
1979	26	0	44	$6,712,000	$22,696,480
1980	29	0	26	$4,637,000	$13,798,324
1981	14	2	90	$30,356,000	$81,905,774
1982	28	0	18	$3,915,000	$9,945,009
1983	49	3	101	$16,096,000	$39,662,241
1984	46	5	60	$39,259,000	$92,646,663
1985	48	1	31	$23,215,000	$52,945,208
1986	20	2	14	$16,828,000	$37,663,929
1987	7	1	0	$50,000	$107,890
1988	20	0	59	$31,100,000	$64,437,337
1989	25	21	478	$521,106,000	$1,030,498,873
1990	19	0	74	$17,800,000	$33,422,984
1991	10	5	33	$3,250,000	$5,849,411
1992	28	2	65	$21,900,000	$38,269,707
1993	10	0	8	$500,000	$849,045
1994	34	22	264	$76,260,000	$126,204,065
1995	60	7	215	$13,260,000	$21,334,027
1996	68	7	87	$17,751,000	$27,731,372
1997	40	1	47	$15,806,000	$24,138,953
1998	64	34	275	$211,124,000	$317,483,737
1999	49	0	1	$808,000	$1,186,575
2000	74	13	179	$37,295,000	$53,173,752
2001	77	6	107	$14,841,000	$20,543,415
2002	55	13	131	$17,346,000	$23,311,574
2003	60	0	80	$3,079,000	$4,017,397
2004	65	1	23	$8,637,000	$10,941,093

Table 5.2-5
Annual Tornado Summary (Through May 31, 2012)

Year	Tornadoes	Deaths	Injuries	Total Damages	Damages in 2012 Dollars
2005	86	0	8	$4,741,000	$5,830,832
2006	75	1	13	$8,976,000	$10,717,813
2007	50	10	66	$269,706,000	$312,663,173
2008	109	6	105	$25,397,000	$25,584,547
2009	86	2	25	$9,630,000	$9,918,900
2010	48	0	51	$25,172,000	$28,096,880
2011	235	247	2,164	$3,763,096,900	$4,313,499,072
2012	40	0	4	$97,000	$97,000
Total	2346	623	8,207	$5,814,461,900	$9,889,809,867
Avg/year	38	10	132	$93,781,644	$159,513,062

Source: National Climatic Data Center

Probability of High Winds in Alabama

The wind zone figures above (FEMA 320 and FEMA P-499) are developed with wind speed probabilities for design purposes and can therefore be used as wind probability resources. In addition, presidential disaster declarations can be used as probability of high damage occurrences.

Presidential disaster declarations from high winds due to severe storm and/or straight-line winds have occurred 36 times in the last 49 years. This results in approximate probability of 73 percent annually.

Alabama has been significantly affected by high winds caused by tropical storms and hurricanes 14 times (i.e., where presidential disaster declarations have been issued) in the last 51 years. This historical average indicates that high winds from tropical storm or hurricane wind have an approximate annual probability of 27 percent each year.

The study from Engineering Analysis, Inc. which uses from NCDC and NWS data noted that an average of 31.66 tornadoes occurs in the State per year. The month of April has the highest frequency in a given year with an annual frequency of 7.32 tornadoes. A total of 26 presidential disaster declarations have occurred due to tornadoes. This results in an approximate annual probability of 50 percent. In addition, **Figure 5.2-9** (below) shows the number of tornadoes per square mile for each county from 1950-2012. Although exact tornado probability is impossible to determine, given the relatively long reporting period it is reasonable to assume that the average annual statewide figure cited in **Table 5.2-5** (38 per year) will remain relatively constant in the future. Note however, the numbers of deaths, injuries, and dollar amount of damages can fluctuate drastically depending on the severity of the tornadoes and the locations that they impact.

Because the impacts of these high winds are severe and events can occur throughout the state and can be widespread, the qualitative ranking for probability for high winds is high.

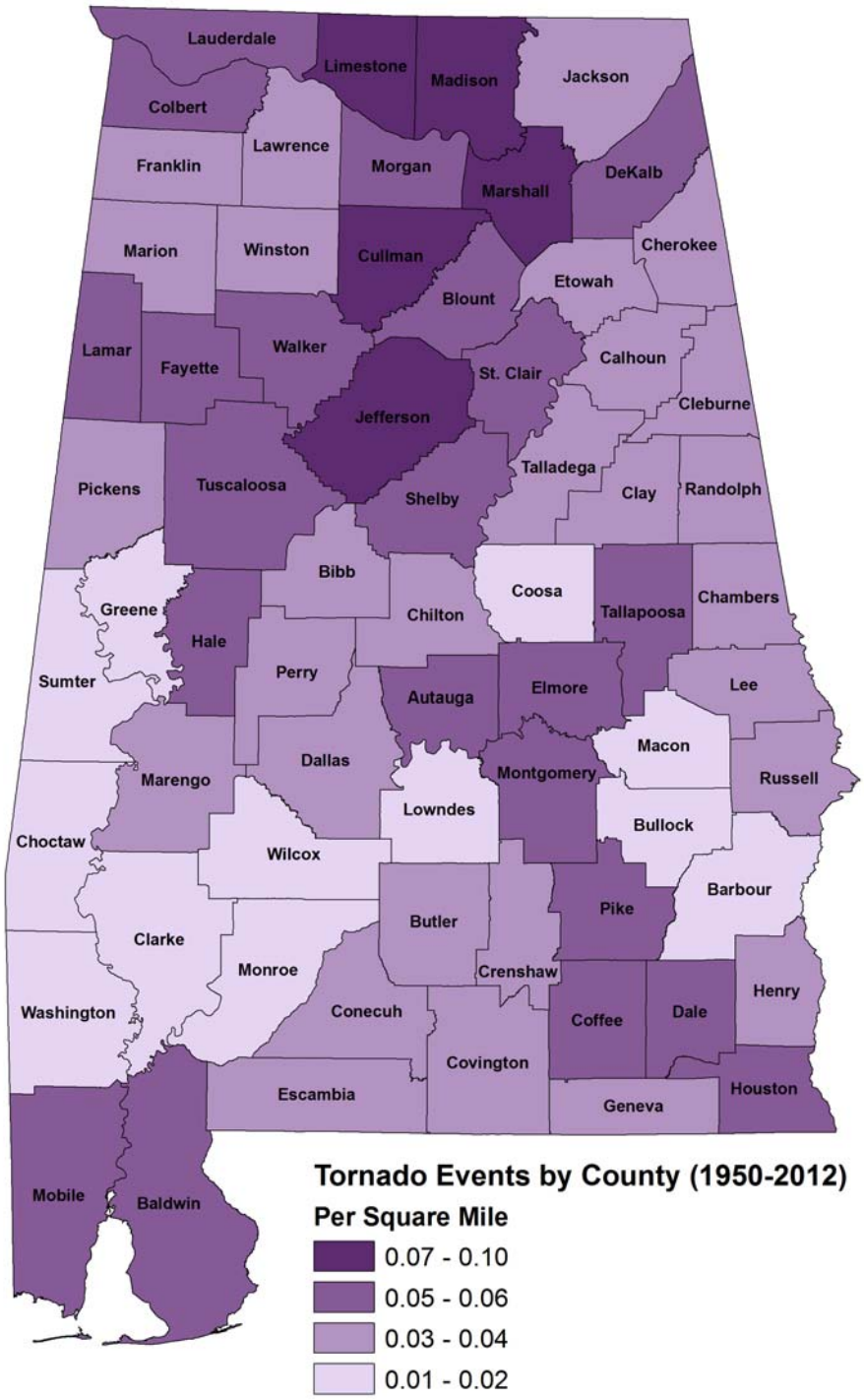


Figure 5.2-9
Tornadoes per Square Mile per County, 1950-2012
Source: National Climatic Data Center

Figure 5.2-10 shows the Annual Coverage Fraction (ACF) by year. As noted in the "Assessment of Tornado Threat For Alabama For the Years 1950 – 2011" document, the ACF corresponds to the fraction of land annually disturbed by tornadoes, and represents the most accurate measure of tornado probability.

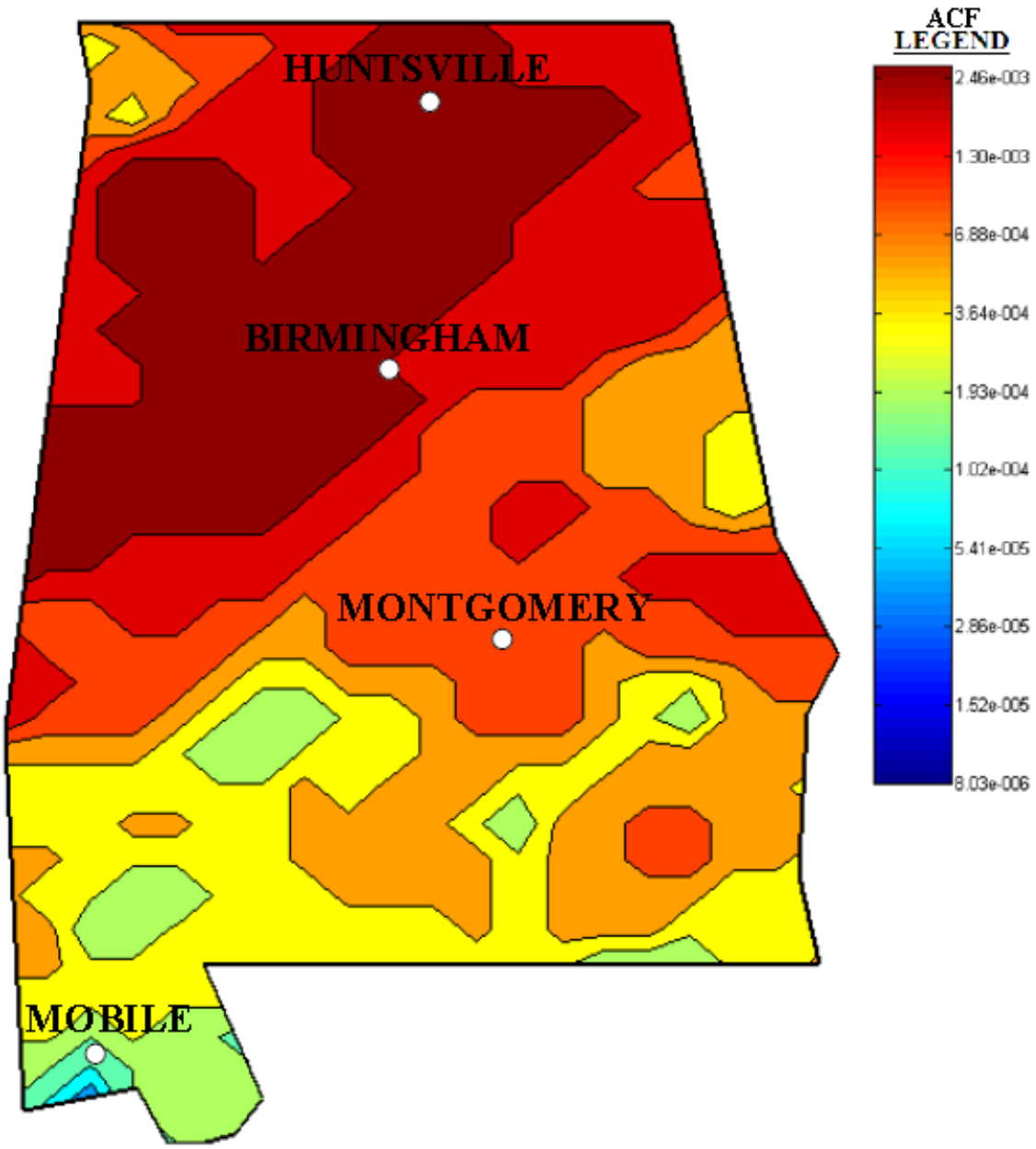


Figure 5.2-10
Alabama Tornado Threat Contour Map, Annual Coverage Fraction (ACF), 1950-2011
Source: Engineering Analysis, Inc., 2012

5.2.3 Winter Storms

Nature of the Hazard in Alabama

This section describes winter storms as they occur throughout the state of Alabama. Winter storms in Alabama are not as severe or common as winter storms in the northern states. Typically, a winter storm in Alabama consists of freezing rain or a few inches of snow that may or may not be accompanied by frozen roadways. However, because the state and its citizens are unaccustomed to them, they tend to be very disruptive to transportation and commerce. Trees, cars, roads, and other surfaces develop a coating or glaze of ice, making even small accumulations of ice extremely hazardous to motorists and pedestrians. The most prevalent impacts of heavy accumulations of ice are slippery roads and walkways that lead to vehicle and pedestrian accidents; collapsed roofs from fallen trees and limbs and heavy ice and snow loads; and felled trees, telephone poles and lines, electrical wires, and communication towers. As a result of severe ice storms, telecommunications and power can be disrupted for days. Such storms can also cause exceptionally high rainfall that persists for days, resulting in heavy flooding. A review of local hazard mitigation plans revealed that 66 out of 67 counties identified winter storms as a hazard to which they are vulnerable.

Winter Storm History in Alabama

Significant ice storms that affected locations in Alabama occurred across the northern two-thirds of Alabama on January 6 and 7, 1988. Ice accumulation was nearly an inch along a line from Tuscaloosa to Birmingham to Anniston. Much of the Tennessee Valley experienced snow, with as much as 10 inches of snow in Huntsville on March 1 to 3, 1980. Additional icing events include the following: January 20, 1983, statewide with the worst conditions across north and central Alabama; January 12, 1982, statewide with the worst conditions across north and central Alabama; January 2, 1977, statewide with worst conditions across north and central Alabama; January 2, 1977, central Alabama; and January 7, 1973, across the Tennessee Valley of north Alabama.

A winter storm described as the worst in Alabama history struck on Friday, March 12, 1993, and lasted through mid-day Saturday, March 13, 1993. Snow began falling over north Alabama Friday afternoon, then spread southward overnight, reaching all the way to the Gulf Coast. By mid-day Saturday snow had accumulated to 6 to 12 inches over North Alabama and 2 to 4 inches at the Gulf Coast. A 40-mile-wide band of 12 to 20 inches fell from the Birmingham area northeastward to DeKalb and Cherokee counties, generally following the Appalachian Mountains. It was estimated that 400,000 residences were without electricity, and many remained so for several days. Compounding the snow and power problems, temperatures fell well into the single digits and teens across much of the state Saturday night. There were at least 14 deaths associated with exposure or stress due to the storm. Damage estimates ranged from $50 to $100 million ($85 to $170 million in 2012 dollars). The entire state was declared a federal disaster area.

The 1994 declaration for severe winter storms resulted from incidents occurring from January 16 to 18 and February 9, 1994. Cold, dry Arctic air over Alabama from January 16 to 18 was replaced by a warm, moist front. As the low pressure center moved out of the state, cold, dry Arctic air once again moved in with freezing temperatures, causing the wet mud to freeze. Then, on February 9, a stationary cold front retreated northward, bringing moist warmer air behind it. Weak low pressure cells moving along the boundary between cold and warm air masses

pushed the warm, moist air up and over the cold surface air creating a shallow layer of near-freezing air at the ground surface. Precipitation, falling from the warm air layer froze on contact with cold surface objects creating a thick coating of ice. Flooding also occurred when debris-blocked channels could not drain off the water from melting ice and thawing soil. Ten counties were declared federal disaster areas.

A winter storm started on the evening of January 28, 2005 and finished the following afternoon in the northwest portion of the state. One man was slightly injured when the vehicle he was driving slid off the road near Mt. Cheaha in Cleburne County. At least 15 additional vehicles slid off the roadways under the icy conditions. Exposed surfaces had ice accumulation to at least one half of an inch with a few locations reporting ice accumulations of around one inch. Numerous trees, tree limbs, and power lines were knocked down and many of the fallen trees temporarily blocked roadways. Several residential properties and vehicles were damaged by the fallen trees. Several area bridges became totally iced over and were very hazardous for travel. Power outages were widespread during the early morning hours with up to 30,000 residences and businesses without power. The rain became freezing rain just after sunset on January 28. Icing conditions started in the early evening hours and tapered off to no additional significant accumulations early on January 29. Estimated damages from this storm were approximately $500,000 ($615,000 in 2012 dollars).

On March 1, 2009, a late winter storm system, which had caused some severe thunderstorms the previous day, ended with a heavy snow event for portions of central Alabama. The snow began during the early morning hours on March 1 and lasted until the afternoon on the same day, with the most significant accumulations occurring from around 3 a.m. to 3 p.m. The heaviest snow, generally from 3 to 5 inches, was in a swath across the middle of the state, from near Tuscaloosa to Auburn. Thundersnow[14] was reported in several counties near the Georgia state line. The vast majority of the snow melted before the sun set that evening, which minimized the total impact of the event. Accumulations of between half an inch and 1 inch occurred across much of northern Alabama. In addition, portions of Colbert, Cullman, Franklin, Lauderdale, and Limestone counties received heavy snowfall over 2 inches. The heaviest snowfall occurred in northwest portions of Lauderdale County, where over 4 inches of snow fell.

A notable winter storm also occurred in late January 2010. A narrow band of heavy snow developed during the late afternoon and early evening hours of the 3rd across portions of north central into northeast Alabama, generally south of the Tennessee River. The event resulted in a mix of sleet and freezing rain which produced a light ice accumulation of a tenth of an inch or less on top of the snow. The snow reduced visibility to 2 miles or less, in some cases to 1/2 mile. Two lives were lost in vehicle accident due to winter weather conditions. Snow amounts of 2 to 5 inches fell in Marshall County, and 1 to 2 inches in portions of Cullman and DeKalb Counties. Lighter amounts of an inch or less fell in southern portions of Franklin, Lawrence, Morgan, Madison and Jackson Counties. By late evening into the overnight hours, temperatures slowly warmed to 32 to 34 degrees in valley areas, helping to improve road conditions.

An ice storm was also reported in early January 2011 according the National Climatic Data Center reports. A combination of moisture and cold air brought a wintry mix of precipitation to most of Central Alabama. Snowfall totals ranged from 4 to 7 inches across far north Central Alabama to 2 to 4 inches across locations from Vernon to Birmingham to Anniston. South of

[14] Thundersnow, also known as a winter thunderstorm or a thunder snowstorm, is a rare thunderstorm with snow falling as the primary precipitation instead of rain. It commonly falls in regions of strong upward motion within the cold sector of extratropical cyclones between autumn and spring when surface temperatures are most likely to be near or below freezing. Wikipedia, the free encyclopedia, February 6, 2010.

these locations, ice and sleet were the predominant precipitation type with around .50 inch of ice and between 1 to 3 inches of sleet reported across southern portions of the area. Precipitation was quite heavy at times with estimated precipitations rates over 1 inch an hour. As snow and ice began to accumulate, travel conditions quickly became hazardous. Several reports of thundersnow were also noted.

Probability of Winter Storms in Alabama

In general, according to recent history winter storms are more likely to affect northern counties more often than southern counties. **Figure 5.2-11** below shows the average number of winter storms per year for each county from 1993-2012. While it is difficult to accurately determine the future probability of this hazard, the history of winter storms in the state suggests that the northern part of Alabama can expect to experience such an event about once a year on average, while southern areas (particularly those along the Gulf Coast) will likely experience a severe winter event about once every 10 years. As **Figure 5.2-8** shows, mid-state areas have winter storm probabilities between the probabilities of the northern and southern counties.

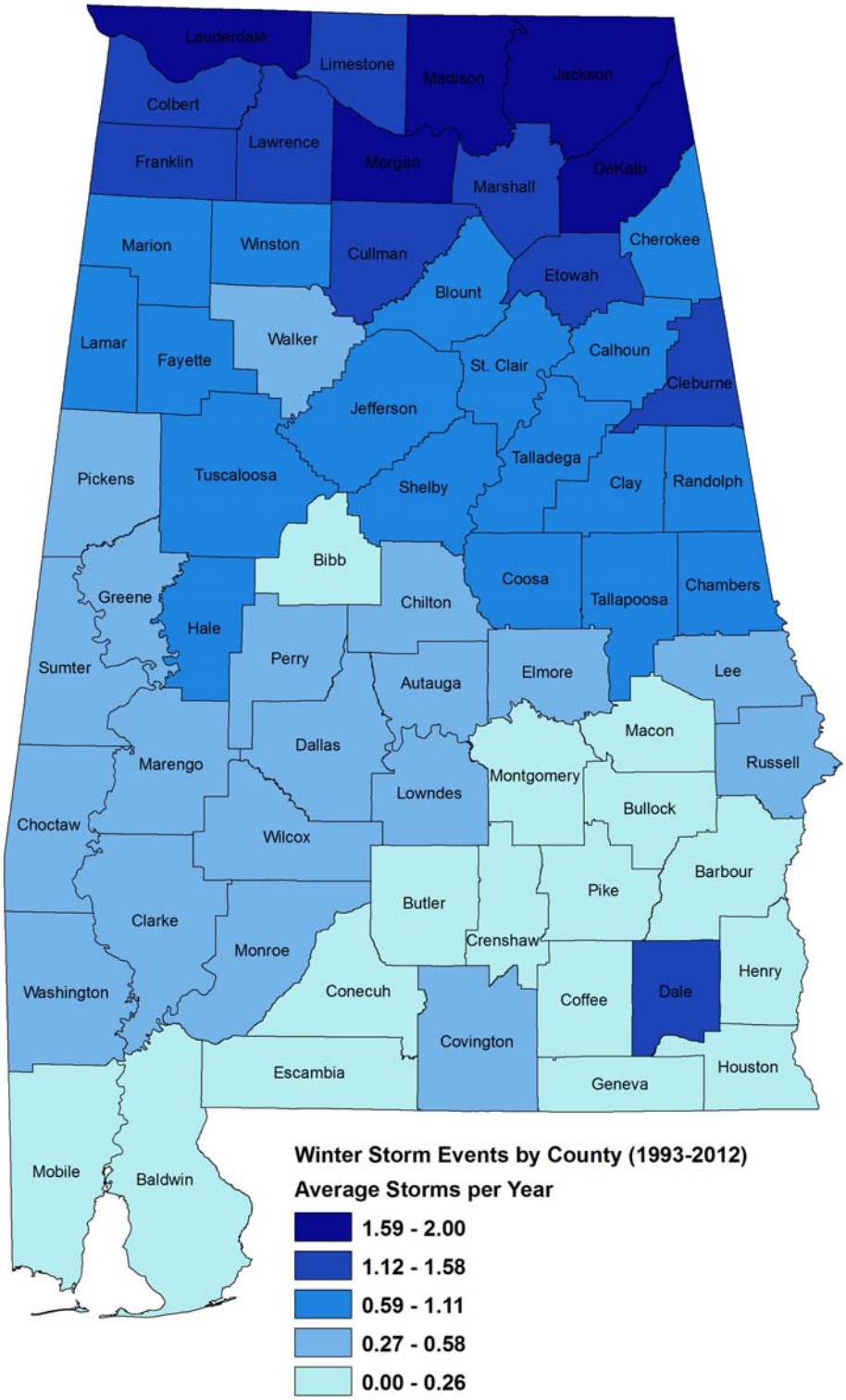


Figure 5.2-11
Alabama Winter Storm Return Interval by County
Source: National Climatic Data Center

5.2.4 Landslides

Nature of the Hazard in Alabama

Throughout the state, almost any steep or rugged terrain is susceptible to landslides under the right conditions. The most hazardous areas are steep slopes on ridges, hills, and mountains; incised stream channels; and slopes excavated for buildings and roads. In Alabama, most landslides generally are confined to specific geologic formations in areas of moderate topographic relief in the northern part of the state. Areas underlain by swelling clays or by interbedded sands and clays of the Cretaceous Tuscaloosa Group are also particularly susceptible to landslides in excavated areas, especially along highways. Undercutting of steep slopes by wave action in Mobile Bay is also a significant problem in south Alabama.

A review of local hazard mitigation plans revealed that 50 out of 67 counties identified landslides as a hazard to which they are vulnerable.

Landslide History in Alabama

In 1996, geologists discovered the remnant of an ancient landslide at Hokes Bluff, Etowah County, Alabama, which formed a 140-foot hill. This massive landslide once ripped apart Colvin Mountain and sent millions of tons of rock sliding down into the valley floor.

Landslides are common near Huntsville on Monte Sano and Green Mountains in Madison County. In 1993, four areas of recent landslides on Green Mountain were identified as being near some type of development activity on the mountain. In 1997, 400,000 pounds of rock broke away from Monte Sano Mountain and crashed into Governors Drive. In 1998, extensive rainfall associated with a hurricane resulted in a major landslide with large fissures on Monte Sano Mountain (**Photo 5.2-1**). The slide, about 750 feet long and 200 feet wide, began near the top of the mountain in a relatively new neighborhood and threatened to wipe out an older residential area at the base of the mountain. Extensive dewatering and eventual removal of the affected rock prevented a major disaster.

Photo 5.2-1
Fissures near top of incipient landslide on Monte Sano Mountain in Huntsville, Madison County 1998

Landslides are particularly a problem on the steep slopes of the Alabama Valley and Ridge of northeast Alabama. North of Gadsden in Etowah County, the southbound lane of Interstate 59 slid from its perch on a mountainside down into the valley below in 1972, resulting in $1.3 million ($7.6 million in 2012 dollars) in repairs and prolonged disruption of traffic. In 1998, another landslide in DeKalb County wiped out County Highway 81 on Lookout Mountain. This latter slide moved 117,527 cubic yards of rock (**Photo 5.2-2**) and cost $1.7 million ($2.5 million in 2012 dollars) to repair. Other slides on

Highway 35 between Rainsville and Fort Payne and on Highways 146 and 71 in Jackson County have cost between $1 and $2 million each to repair.

Photo 5.2-2
Landslide on DeKalb County Road 81 on the west side of Lookout Mountain in March 1998

In Birmingham in 1988, a landslide destroyed apartment buildings during the construction of an adjacent Festival Center. Estimated damages were over $10 million ($20.7 million in 2012 dollars).

Near Prattville in Autauga County, County Road 47 was closed by a landslide in 2005. The problem stemmed from unconsolidated sediments that move underneath the road when it rains. A temporary repair was implemented which cost between $150,000 and $200,000 ($184,000 and $246,000 in 2012 dollars), and a more permanent repair is estimated to cost several million dollars, if even feasible. **Photo 5.2-3** shows an example of a landslide in Conecuh County in 1997.

Photo 5.2-3
Landslide in Conecuh County in 1997

Landslides are not uncommon in interbedded unconsolidated sands and clays of the Tuscaloosa Group of the Gulf Coastal Plain. One example is a landslide near Coker that recently became active again during heavy rains. This slide is still threatening an adjacent house built on top of a hill (**Photo 5.2-4**).

Photo 5.2-4
Landslide threatening house on a hill near Coker in the Coker Formation in 2004

Currently, in the City of Spanish Fort in Baldwin County, the bluffs located along the eastern shore of the Mobile Bay are slowly receding due to wave erosion causing a substantial threat to a number of homes along the bluff. The City of Spanish Fort and the State of Alabama applied for funds to stabilize the bluff to reduce future property and infrastructure damage that could be caused by a landslide in this area.

GSA reported no notable landslide occurrences for the 2013 plan update though three minor events occurred in Jefferson and Jackson Counties due to heavy rainfall in 2011.

Probability of Landslides in Alabama

Figure 5.2-12 is a landslide incidence/susceptibility map obtained from the Geological Survey of Alabama in April 2007. This map was prepared by classifying geographic areas as having very high, high, moderate, low, and very low susceptibility and/or incidence to landsliding. Landslide incidence is defined as the number of landslides that have occurred in a given geographic area; whereas susceptibility to landsliding is defined as the probable degree of response of geologic formations to natural or artificial cutting, to loading of slopes, or to unusually high precipitation. Generally, it can be assumed that unusually high precipitation or changes in existing conditions can initiate landslide movement in areas where rocks and soils have experienced numerous landslides in the past.

Landslide susceptibility shown in **Figure 5.2-12** is based on estimates of rock strength and terrain slope. In general, landslide susceptibility increases with slope and in weaker rocks. Very high landslide susceptibility, classes VIII, IX, and X, includes very steep slopes in hard rocks and moderate to very steep slopes in weak rocks. Categories I - X are based on Wilson and Keefer (1985) where I is the least susceptible and X is the most susceptible.[15]

[15] Reference: Wilson, R. C., and Keefer, D. K., 1985, Predicting area limits of earthquake-induced landsliding, in Ziony, J. I., ed., Earthquake hazards in the Los Angeles region – an earth-science perspective: U.S. Geological Survey Professional Paper, 1360, p. 317-345.

Landslide probability is highly site-specific, and cannot be accurately characterized on a statewide basis, except in the most general sense. As described above, landslides are also influenced by the weather and other physical phenomena such as seismic activity. Given that landslides are a fairly widespread and common occurrence in the state, it is reasonable to assume that there will be numerous landslides in the state every year. The qualitative probability for this hazard is rated low in **Section 5.3** because the overall area of the state that is likely to be affected by landslides is relatively small (not the area that is considered "high incidence" in **Figure 5.2-12**). The rating is intended only for general comparison to other hazards that are being considered in this stage of the planning process.

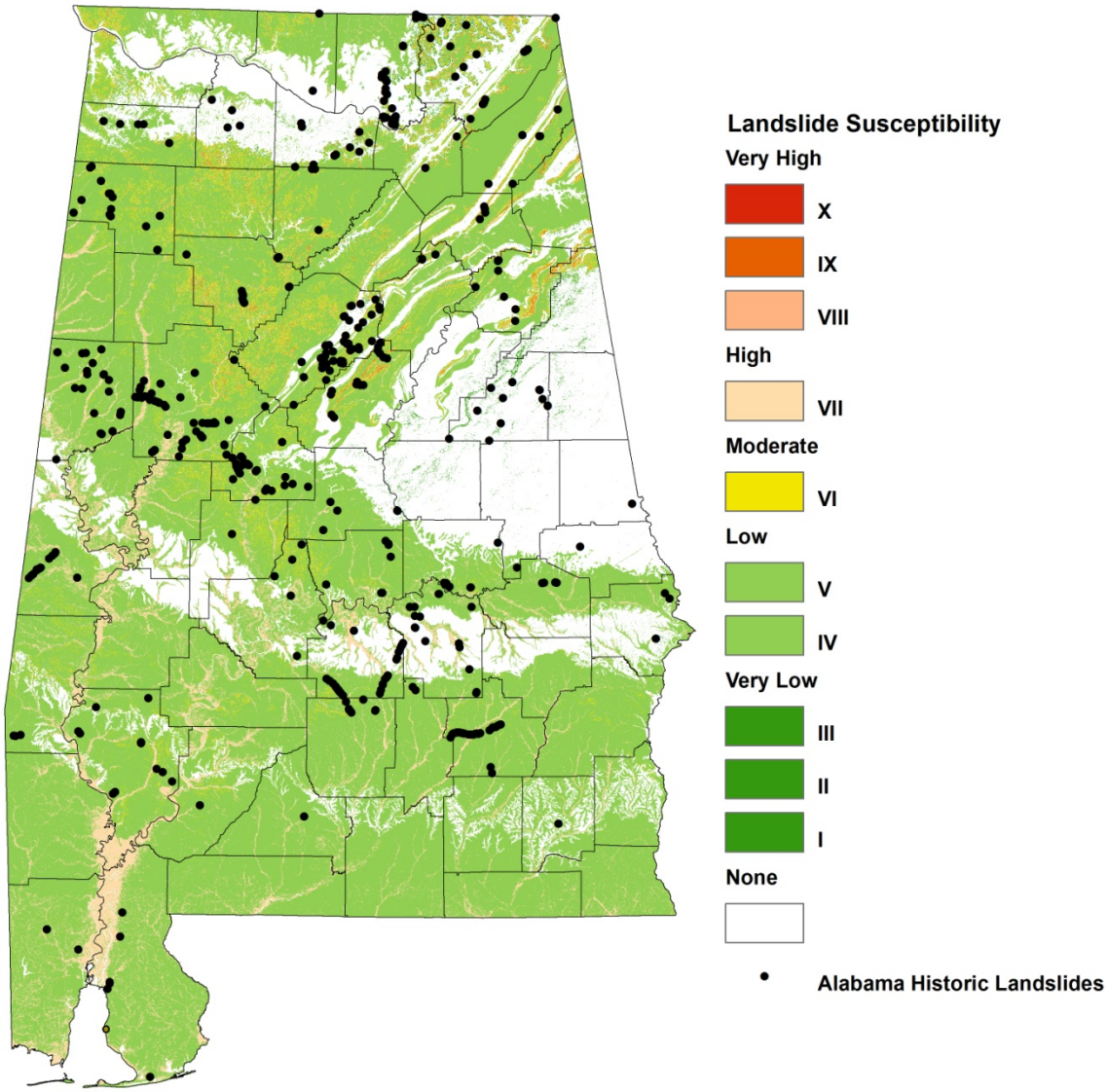


Figure 5.2-12
Statewide Landslide Incidence and Susceptibility[16]
Sources: Geological Survey of Alabama

[16] Points show historic landslides digitized from K.F. Rheams as visible on topographic maps (Inventory of Landslides, Slope Failure, Unstable Soil Condition. Open File Report November, 1982, Geological Survey of Alabama, p 8-35.); Landslide susceptibility is updated for the 2013 plan (GSA).

5.2.5 Sinkholes and Land Subsidence

Nature of the Hazard in Alabama

In Alabama, sinkholes are common where the rock below the land surface is limestone, dolomite, or salt that can naturally be dissolved by ground water. As the rock dissolves, cavities and caverns develop underground. Over time, cavities grow large enough within the bedrock to cause a sudden and dramatic collapse of the land surface.

Sinkholes and subsidence are also common in those areas of the state underlain by old abandoned coal and iron mines. Pillars left for roof support in the mines generally deteriorate over time and eventually collapse, removing roof support. This is particularly a problem where mines underlie more recently developed residential areas and roads.

Major parts of the state are underlain by carbonate rocks, such as limestone and dolomite, which are vulnerable to solution in the humid southern climate. Areas in Alabama characterized by the presence of subsurface cavities, sinkholes, and underground drainage are called “karst terrains.” It is these karst areas that are most susceptible to sinkhole development and subsidence. Periods of drought, excessive rainfall, well pumpage, and construction activities increase the potential for sinkhole formation in these areas. **Figure 5.2-13**, at the end of this section, illustrates the areas with outcrops of carbonate rocks susceptible to subsidence and the areas of active sinkholes and subsidence.

In general, sinkholes are more common in Northern Alabama where multiple occurrences are reported annually, according to a GSA official. However, a majority of these would not be considered significant and have never resulted in a presidential or state disaster declaration.

A review of local hazard mitigation plans revealed that 44 out of 67 counties identified sinkholes and land subsidence as hazards to which they are vulnerable.

Sinkhole and Land Subsidence History in Alabama

Sinkholes are becoming an increasing problem in Alabama as the population encroaches on scenic rural valleys underlain by limestone in the Alabama Valley and Ridge province, and as large metropolitan areas in the Appalachian Plateaus of north Alabama continue to expand. Within recent years, there have been many sinkholes reported throughout the state. Recent periods of drought have aggravated the problem. Some of the more recent sinkholes affecting buildings and infrastructure have occurred in or near Sylacauga, Opelika, Valley Head, Huntsville, Auburn, Phenix City, Montevallo, Alabaster, Gadsden (**Photo 5.2-5**), Birmingham (**Photo 5.2-6**), Tuskegee, and Trussville.

Photo 5.2-5
Sinkhole that developed overnight in Gadsden, Alabama, in 2002.

Photo 5.2-6
Filling one of several sinkholes that have developed in the Burlington Railroad yard in Birmingham, Alabama, in 2000.

A large sinkhole developed near Calera in Shelby County in a matter of seconds in December 1972. The sink is about 425 feet long, 350 feet wide and 150 feet deep. The sinkhole, called the "December Giant" or the "Golly Hole," is the largest on record for the United States. This sinkhole occurred during a drought when the water table was much lower than normal. It was found by hunters two days after someone reported hearing a roaring noise, trees breaking, and his house shaking.

In 1990, a sinkhole was formed by raveling in Hale County. An oil and gas drill rig had reached a depth of 755 feet when the drilling fluid was lost in the hole. In a period of two hours, unconsolidated sediments overlying karst Knox Group carbonates had moved downward into subsurface cavities in the Knox, carrying the drill rig downward with them (**Photo 5.2-7**). The weight of the fluids in the adjacent mud pit facilitated the rapid downward movement of the sediments. Another well was drilled successfully across the road to a total depth of 12,000 feet.

Photo 5.2-7
Sinkhole that swallowed a drilling rig in Hale County, Alabama in 1990

Trussville provides a prime example of the impact sinkholes can have on a growing community where land and ground water are both in great demand. Sinkholes first formed beneath and around the Trussville Middle School, forcing closure and rebuilding of the school at another site. Sinkholes continued to develop in a nearby park and neighborhood (**Photo 5.2-8**) and emptied a pond. Damage has been estimated to be millions of dollars.

Photo 5.2-8
One of many sinkholes that developed near a house in Trussville, Alabama, in 2001.
This sink formed under the corner of a house.

No new major sinkhole events were reported by the GSA or the National Climatic Data Center for the 2013 plan update.

Probability of Sinkholes and Land Subsidence in Alabama

While sinkholes are not uncommon in the State of Alabama, the probability of future occurrences cannot be characterized on a statewide basis, except in the most general sense. It is likely that sinkhole occurrences will remain relatively constant, although as noted above, weather and other physical phenomena influence probability. Also, sinkholes are more prevalent and common in northern Alabama. The qualitative probability for this hazard is rated low in **Section 5.3** because the overall area of the state that is affected every year is low and impacts are highly site specific and localized. This rating is intended only for general comparison to other hazards that are being considered in this state of the planning process. **Figure 5.2-13**, data provided by GSA for the 2013 plan update, shows karst areas of the state that are more likely to experience sinkholes and subsidence in addition to recorded sinkhole incidents.

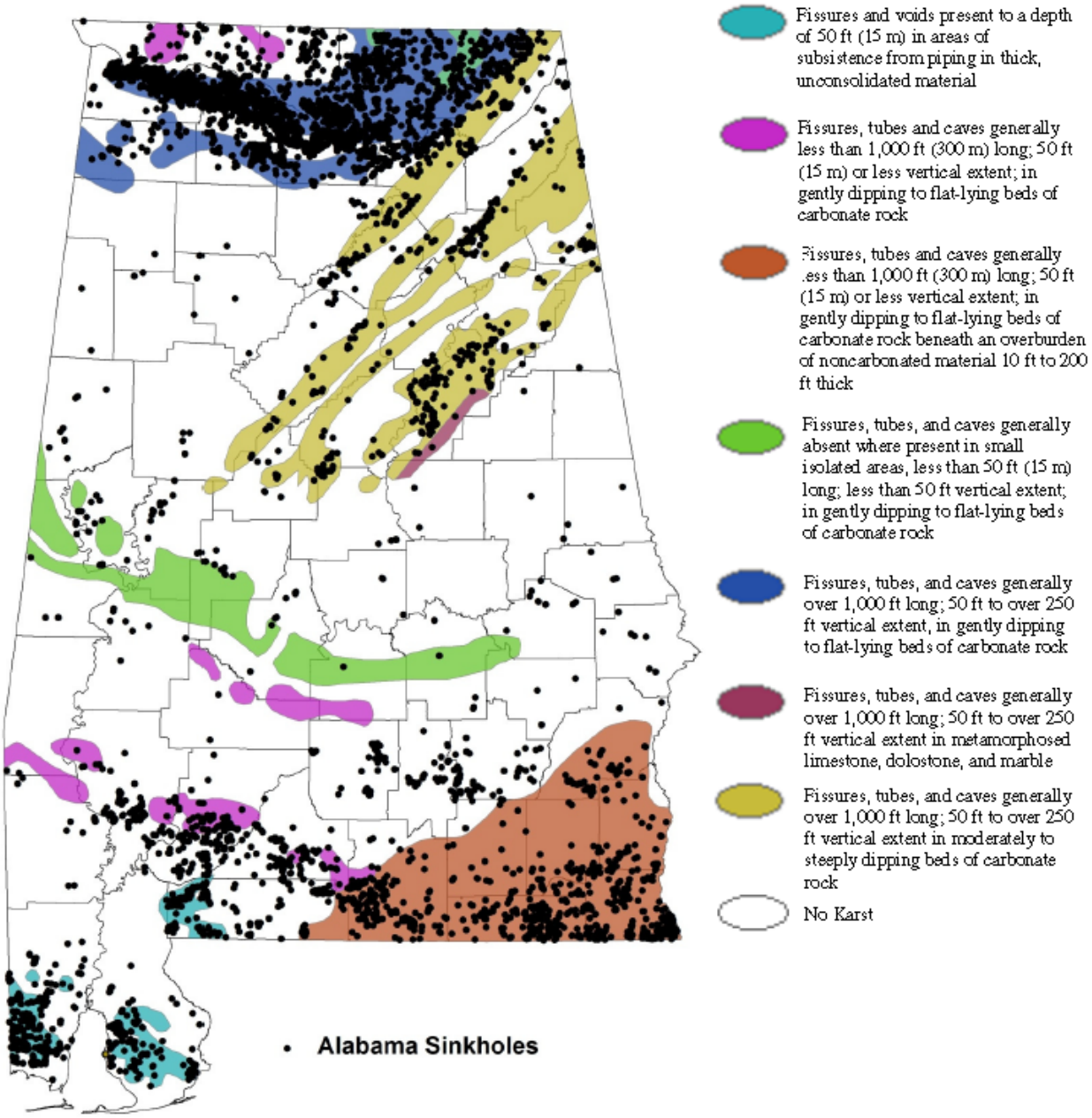


Figure 5.2-13
Karst Areas in State Most Likely to Experience Sinkholes and Subsidence; Sinkhole Incidence[17]
Source: Geological Survey of Alabama, USGS

[17] Landslide incidence is new for the 2013 plan update and provided by the GSA. USGS provided karst area data (2005).

5.2.6 Earthquakes

Nature of the Hazard in Alabama

Earthquakes are fairly common in the eastern half of the United States and are not uncommon in Alabama. Three zones of frequent earthquake activity affecting Alabama are the New Madrid Seismic Zone (NMSZ), the Southern Appalachian Seismic Zone (SASZ) (also called the Eastern Tennessee Seismic Zone), and the South Carolina Seismic Zone (SCSZ). The NMSZ lies within the central Mississippi Valley, extending from northeast Arkansas through southeast Missouri, western Tennessee, and western Kentucky, to southern Illinois. The SASZ extends from near Roanoke in southwestern Virginia southwestward to central Alabama. Considered a zone of moderate risk, the SASZ includes the Appalachian Mountains. Most of the earthquakes felt in Alabama are centered in the SASZ. The hypocenters of earthquakes in this zone are on deeply buried faults. The SCSZ is centered near Charleston, South Carolina, and encompasses nearly the entire state. These three zones can be easily seen in **Figure 5.2-14**.

To help understand the hazard and risk associated with earthquakes in Alabama, GSA, in conjunction with AEMA, has developed basement fault and liquefaction susceptibility maps for the state. The basement fault mapping project was an effort to approximate locations of buried faults, some of which are interpreted as active based on earthquake epicenters in the vicinity of these faults (**Figure 5.2-15**). The liquefaction mapping project was conducted to help identify areas that are most at risk to liquefaction during a moderate to strong magnitude earthquake. Liquefaction is a phenomenon that can occur during an earthquake when seismic waves pass through saturated unconsolidated material causing sediment particles to move in relation to each other. This can be particularly damaging to structures built on thick sediments, especially in areas where the sediments are saturated with water such as in floodplains (**Figure 5.2-16**).[18]

[18] In addition, GSA has developed an Earthquake Response Plan for the state.

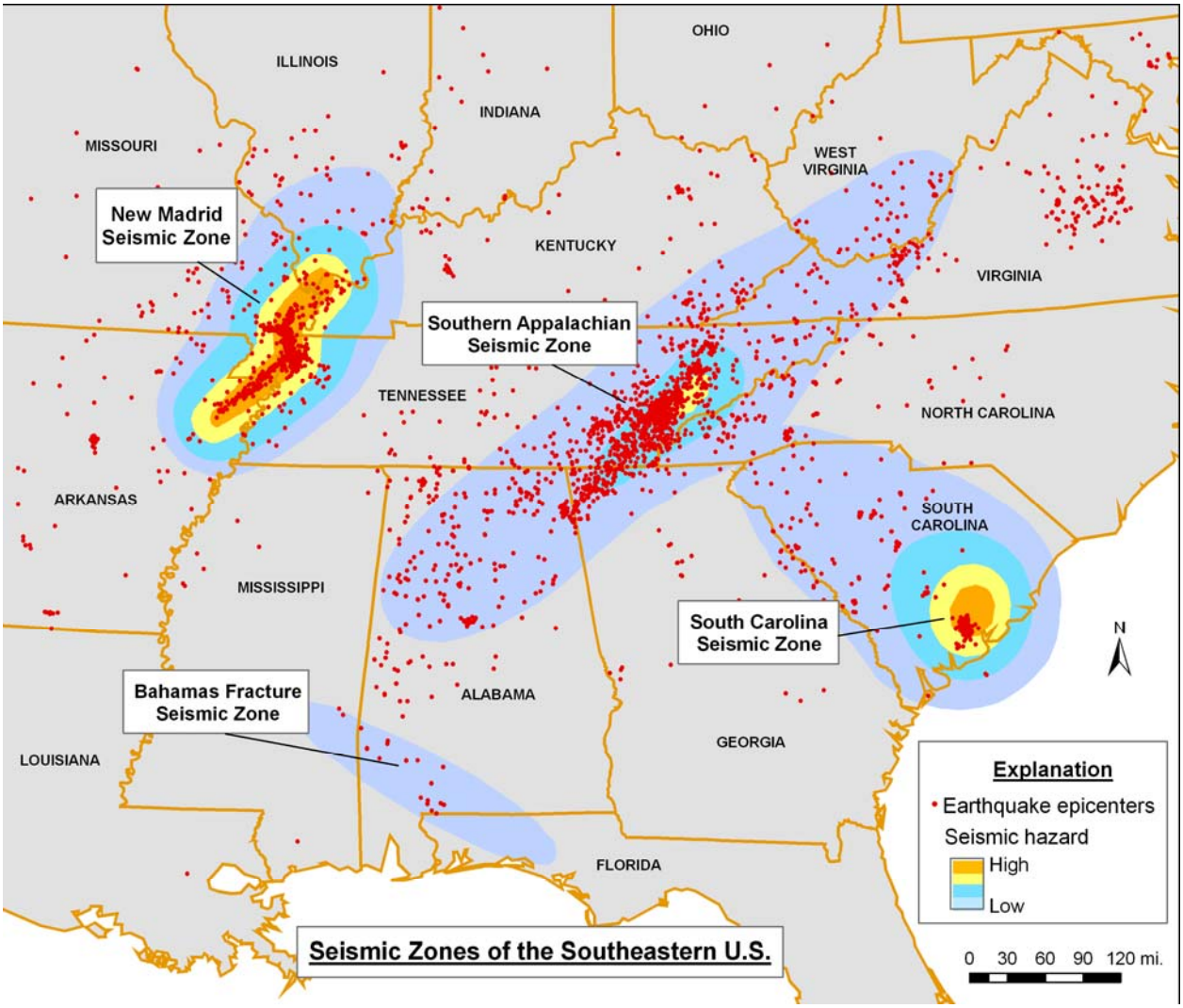


Figure 5.2-14
Seismic Zones of the Southeastern United States
Source: Geological Survey of Alabama, 2010

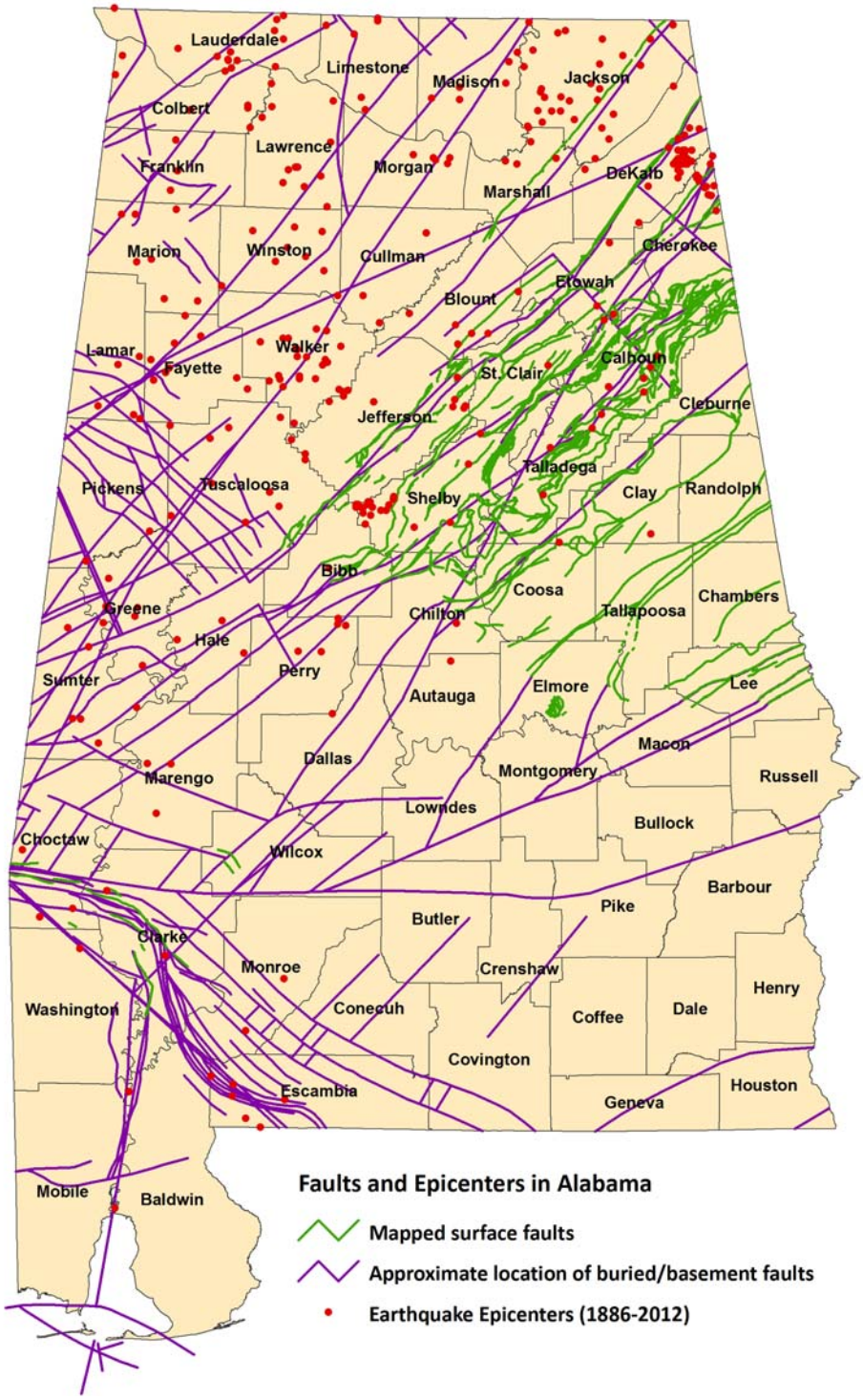


Figure 5.2-15
Historical Earthquake Epicenters, Mapped Surface Faults, and Approximate Locations of Buried Faults in the State

Surface maps are based on the 1:250,000-scale digital geologic map of Alabama (GSA , 2006). Buried faults are based on the faults approximated in the basement fault mapping project (GSA , 2008). Epicenters are based on historical data from seismic records (2012).

Source: Geological Survey of Alabama, 2010

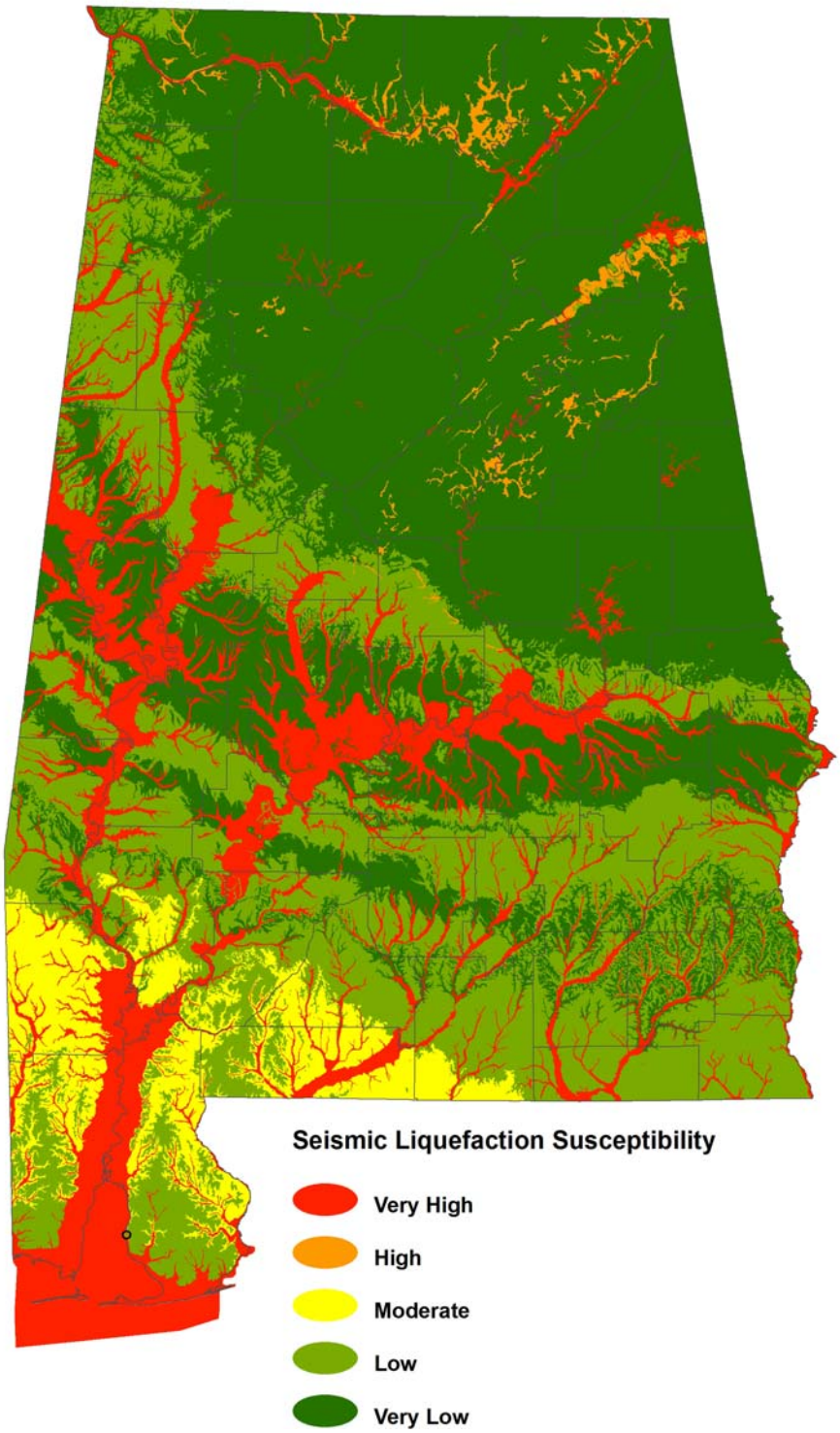


Figure 5.2-16
Susceptibility to Liquefaction During a Moderate to Strong Magnitude Earthquake
Source: Geological Survey of Alabama, 2006

A major earthquake in Alabama could result in great loss of life and property damage in the billions of dollars. (However, such an event would be very rare.) Adding to the danger is the fact that structures in the area were not built to withstand earthquake shaking. Construction of many buildings on steep slopes susceptible to landslides and in karst terrains susceptible to sinkholes will be a major contributing factor to damage from future earthquakes in the northern part of the state.

According to a GSA earthquake expert, many small earthquakes which often go unfelt, occur each year in Alabama. There is also historic record of large earthquakes in the state which is discussed below. A large earthquake, likely originating in the Appalachian Mountains, could result in a large (7.0+ magnitude), strong shaking event. This would cause significant damage in Northern Alabama and likely some statewide damage. Such events are expected every 200-400 years. However, less severe earthquakes impacting Southern Alabama could result significant damage due to the soft soil composition of the area.

Another previously unrecognized seismic zone (herein referred to as the Bahamas Seismic Zone or the BSZ) occurs in southwest Alabama and is related to the Bahamas fault zone. Several earthquakes have occurred along this zone in recent years, including a 4.9 magnitude earthquake in 1997. The largest event on record associated with this seismic zone occurred in 1781 in the Pensacola, Florida, area and is estimated to have been between a 6 and 7 magnitude event. The earthquake was reported to have caused damage to a military installation and leveled a house in the area (Lane, 1976).

Earthquakes occurring in these seismic zones all have the potential to affect different areas in the State of Alabama.

A review of local hazard mitigation plans revealed that 52 out of 67 counties identified earthquakes as a hazard to which they are vulnerable.

Earthquake History in Alabama

Figure 5.2-17 shows the location and magnitudes of all known earthquakes occurring in Alabama from 1886 through March 2012. Data for epicenters was collected by the GSA from GSA records and the USGS.

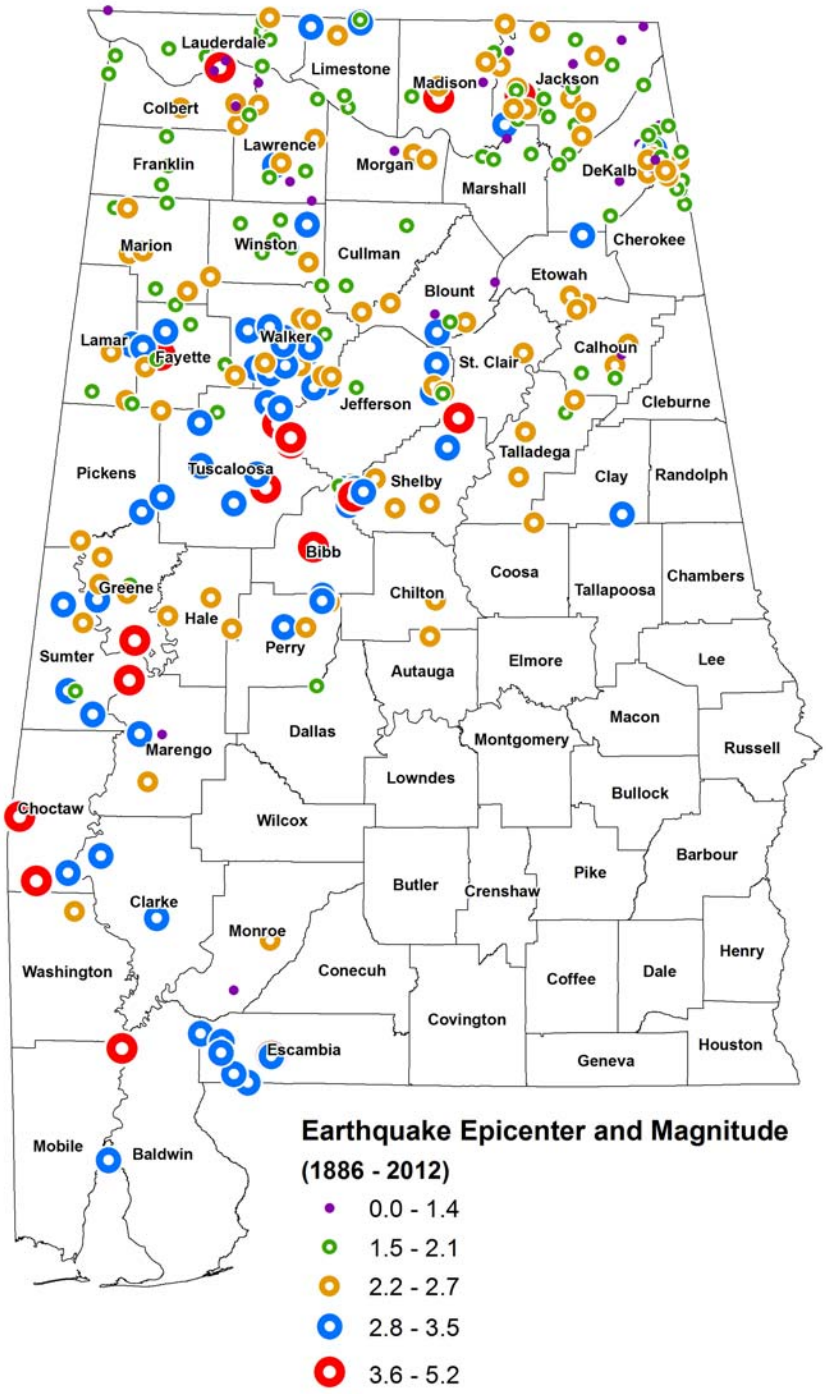


Figure 5.2-17
Historical Earthquakes of Alabama (1886-2012)
Source: Geological Survey of Alabama, 2012

Some the largest and first recorded earthquakes to impact Alabama occurred around 1811-1812 and were centered in Missouri. A total of three events likely had an intensity rating of VII in the northern and central portions of Alabama.

Historical records indicate the first earthquake reported in Alabama shook residents of Sumter and Marengo counties in the western part of the state on February 4, 1886. A similar shock occurred nine days later, on February 13. Both were reportedly felt in communities along the Tombigee River, but caused no damage.

On August 31, 1886, the southeastern United States was strongly shaken by a large magnitude 7.3 earthquake centered at Charleston, South Carolina, in the SCSZ. The earthquake leveled almost every building in the Charleston area and caused 60 deaths. The earthquake was felt for 750 miles from the epicenter, and several areas in Alabama recorded damage.

On October 18, 1916, a strong earthquake occurred on an unnamed fault east of Birmingham in Shelby County (**Figure 5.2-18**). This is the strongest earthquake on record in Alabama. Near the epicenter, chimneys were knocked down, windows broken, and frame buildings "badly shaken." It was noted by residents in seven states and affected 100,000 square miles. The epicenter is in an area that was rural at the time of the earthquake. Today this area is highly populated and many structures are situated on steep hillsides susceptible to landslides. Another earthquake of the same magnitude in this area would cause considerable damage today.

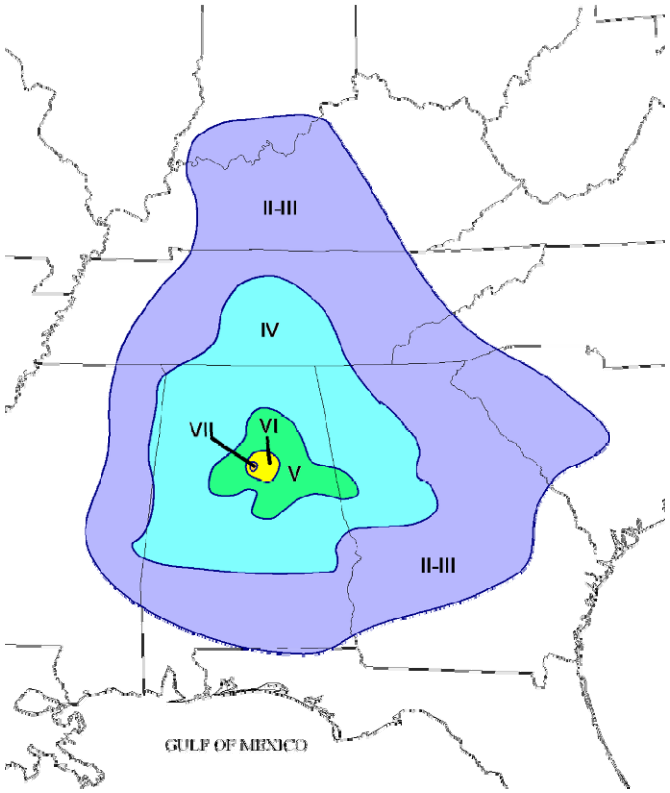


Figure 5.2-18
Intensity Map for the 1916 Earthquake Of October 18, 1916
Source: Geological Survey of Alabama, 2010

Another tremor that damaged the Birmingham area occurred on April 23, 1957. The earthquake shook residents in most of northern and central Alabama, southern Tennessee, and western Georgia. Earthquake records for that year state: “Felt by, awakened, and alarmed many. Minor damage to several chimneys; one report of cement steps cracked in two; and several small cracks in walls. Table-top items tumbled to the floor.”

On August 12, 1959, a shock was felt in the Huntsville area. Though felt over a small area of northern Alabama and southern Tennessee, it shook bricks from chimneys at Hazel Green; damaged one chimney and a newly constructed concrete block building at Meridianville; violently shook the buildings at New Sharon, knocking canned goods from shelves and sending frightened residents fleeing from their homes; and cracked plaster and knocked groceries from shelves at Huntsville.

August 29, 1975, a 4.4 magnitude (Intensity VI) earthquake occurred at Palmerdale, Alabama. The earthquake cracked a sheetrock ceiling and shifted lamps on tables at Palmerdale, north of Birmingham. It caused slight damage at Watson, where furniture was displaced slightly. The quake was also felt in southern Tennessee.

On August 20, 1989, a 3.9 magnitude (Intensity VI) earthquake occurred near Littleville, Alabama. A Colbert County official reported that south of Florence, between Littleville and Russellville, a basement wall collapsed beneath a house. Only slight damage was reported north of the epicenter at Florence, where windows were cracked and hairline cracks formed in plaster. The earthquake was also felt in Lauderdale, Lawrence, and Morgan counties in northwest Alabama.

On Friday morning October 24, 1997, at 3:35 AM, a significant earthquake awoke a large number of people in Escambia County, Alabama, and adjacent areas. Soon it became apparent there had been an earthquake that affected all of southwest Alabama and parts of Mississippi and Florida (**Figure 5.2-19**). The epicenter of the earthquake was east of the town of Atmore. The moment magnitude, approximately equivalent to the Richter scale magnitude, was reported to be 4.9, the largest earthquake to be recorded by seismograph in Alabama at that time and the largest in the southeast in the last 30 years. Aftershocks were felt on October 26 and on October 28, 1997, and on January 26, 1998. A foreshock on May 4, 1997, had a magnitude of 3.1. This earthquake was in the BSZ. Fortunately, the epicenter was in a rural area, limiting the damage. Intensities of VII were reported at the epicenter. Other measured intensities included: VI near Brewton, Alabama; VI at Brewton, Canoe and Lambeth; V at Atmore, Flomaton, Frisco City and Huxford; IV at Perdido and Robinsonville; III at Butler, Demopolis, Goodway, Mobile and Uriah; V at Century, Florida; IV at McDavid, Pensacola and Walnut Hill; III at Milton, Florida; and IV at Leakesville, Mississippi. The earthquake was also felt at Megargel; Elgin AFB, Florida; Biloxi and Gulfport, Mississippi.

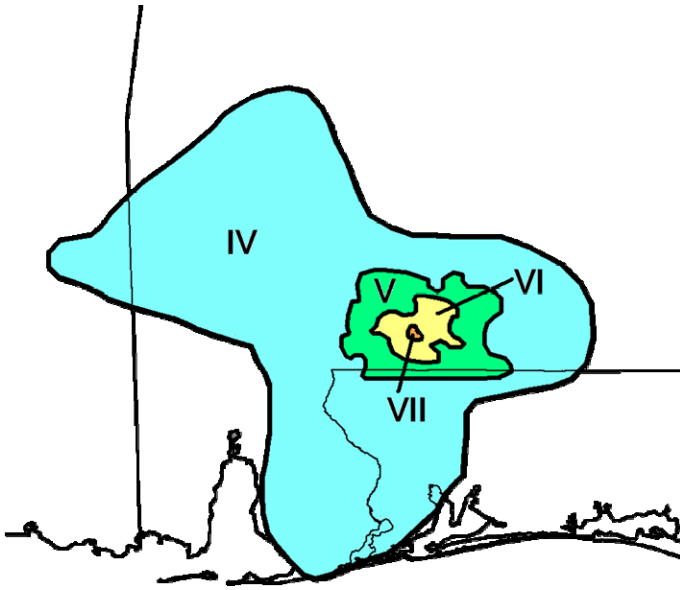


Figure 5.2-19
Intensity Map for the Escambia County Earthquake Of October 24, 1997[19]
Source: Geological Survey of Alabama, 2010

On April 29, 2003, at 3:59 AM, a strong earthquake with a magnitude of 4.9 (Richter) occurred in DeKalb County, Alabama, just east of DeSoto State Park and 10 miles east/northeast of Fort Payne, Alabama. The earthquake was felt in 11 states (**Figure 5.2-20**). Pictures moved on walls, items fell off shelves; a trailer was shaken off its foundation. Many people were shaken out of their beds following the thunderous rumble and subsequent strong shaking of the ground. Some reported the trembling lasted less than 10 seconds, while some areas reported shaking up to 45 seconds. At least 40 homes in DeKalb County were damaged. The area hardest hit was around Hammondville, Mentone, and Valley Head. The damage included broken windows and bricks, and cracked walls and foundations. Several bricks on a chimney at Moonlake Elementary School at Mentone came loose and fell on the building's roof. The school, built in the 1930s, is located atop Lookout Mountain near the earthquake's epicenter. A few miles away at the foot of the mountain, the Mentone town of Valley Head had to switch to its reserve water supply and use water from neighboring towns after its water pumps automatically shut down. Vibration from the earthquake disturbed the sediment in a natural spring, the town's main water supply, and muddied the water. The quake apparently broke a berm on a 4.5-acre pond in Lawrence County, Alabama, near Courtland, dumping water and fish in a field and across a highway. As a result of the earthquake, a 29 foot wide sinkhole developed in Ordovician dolomites northwest of Fort Payne.

[19] According to the Geological Survey of Alabama, this graphic is current as of the 2010 update.

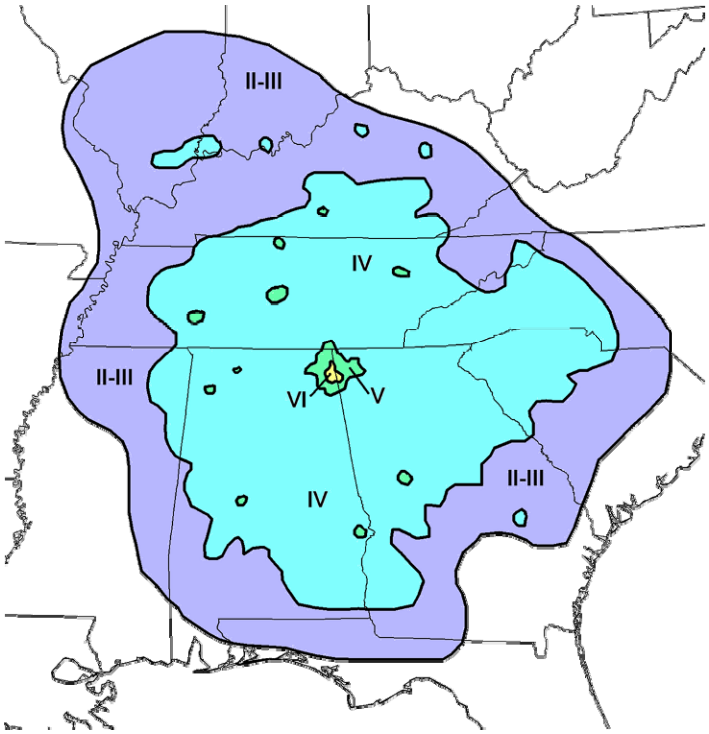


Figure 5.2-20
Intensity Map for the April 29, 2003 Earthquake
Near Fort Payne, Alabama[20]
Source: Geological Survey of Alabama, 2010

On the morning of March 22, 2005, a weak earthquake with a magnitude of 3.3 (Richter) occurred in Clarke County, Alabama near Coffeeville. Many people were awakened by the noise and shaking, but no damage was reported. This area of the state sits on the BSZ discussed earlier in this section.

No major seismic events were reported by GSA, the National Climatic Data Center, or the United States Geological Survey for the 2013 plan update.

Probability of Earthquakes in Alabama

According to the USGS calculated probabilities, there is a 7-10% chance of a 7.5-8.0 magnitude (a repeat of the 1811-1812 events) within the next 50 years. The probability of a 6.0 or larger magnitude event is calculated to be 25-40%. Portions of north Alabama are susceptible to damage from a New Madrid earthquake. Most of the risk in this area would be to non-structural items (light fixtures and bookshelves falling, etc.), but structural damages to weaker buildings and utilities (pipelines) could also occur. Further, most buildings are not designed with seismic mitigation measures installed, meaning that any seismic activity could have an impact on those buildings. Damage in northern Alabama also could result from a large earthquake in the SASZ. Most of the earthquakes in the SASZ have had magnitudes ranging between 2 and 3, but one of magnitude 5.8 has been recorded in Virginia. The potential exists for widespread damage and disruption in north Alabama from another earthquake in the SCSZ, particularly where utilities and public works are concerned.

[20] According to the Geological Survey of Alabama, this graphic is current as of the 2010 update.

Probabilistic ground motion maps are typically used to assess the magnitude and frequency of seismic events. These maps measure the probability of exceeding a certain ground motion, expressed as peak ground acceleration (PGA), over a specified period of years. In general, earthquakes are described in two ways - magnitude (usually a measurement of energy released, based on scales similar to the Richter scale) and intensity (based on the Modified Mercalli Intensity scale, as discussed in **Appendix H**. The severity of earthquakes is site specific, and is influenced by proximity to the earthquake epicenter and soil type, among other factors. Although earthquakes are relatively common in Alabama, they are predominantly low magnitude events so the qualitative probability in **Section 5.3** is moderate. However, there is growing concern that a high magnitude event is inevitable and earthquakes are becoming a much larger concern to the State of Alabama. GSA is currently working to better define seismic hazards and impacts throughout the state. A GSA expert noted that three strong shaking events have occurred in the last 100 years (1916, 1997 and 2003). **Figure 5.2-21** shows the peak ground acceleration (PGA) with a two percent probability of exceedance in 50 years according to the USGS National Seismic Hazard Mapping Project (2008). This map is an indication of probability of moderate-high strength, strong shaking events.

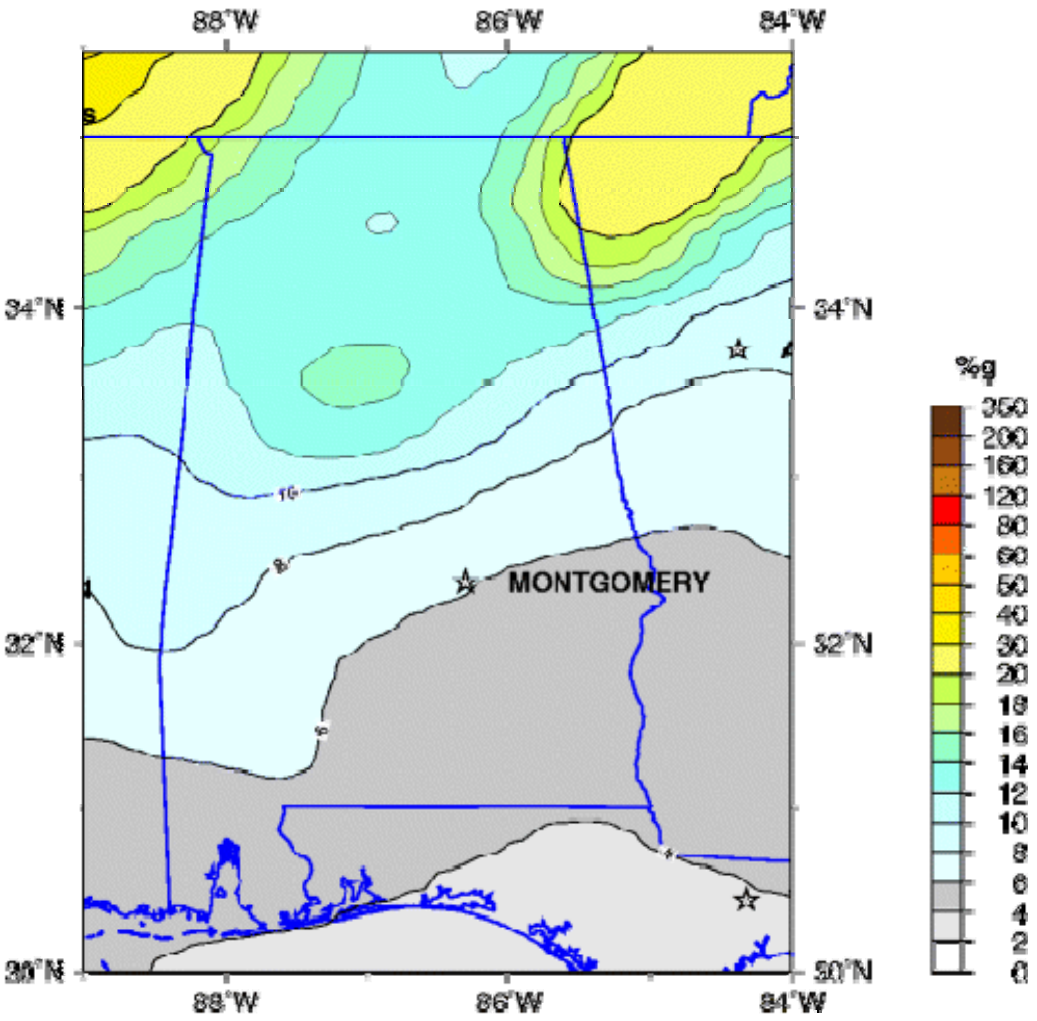


Figure 5.2-21
Peak Acceleration (%g)
With 2% Probability of Exceedance in 50 Years

Source: United States Geological Survey, 2008

5.2.7 Drought

Nature of the Hazard in Alabama

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 Draft Alabama Drought Management Plan (DMP), developed by the Alabama Department of Economic and Community Affairs – Office of Water Resources (ADECA-OWR), defines drought in terms of several indices that describe the relative amounts of surface water flow, groundwater levels, and recent precipitation as compared to localized norms. Because drought is defined in relative terms, it can be stated that all areas of the state are susceptible to drought. Further discussion of the DMP is included in **Section 4.3**. In addition, actions from the DMP have been incorporated into **Section 6.7**.

When drought occurs in Alabama, the social, economic, and environmental impacts have the potential to be severe and widespread. A few of these impacts are listed below:

- Damage to livestock and crops;
- Increased local vulnerabilities to sinkholes and wildfire;
- Water usage conflicts;
- Accelerated coastal erosion;
- Damaged fisheries; and
- Inflated energy prices due to loss of hydro-power.

A review of local hazard mitigation plans revealed that 66 out of 67 counties identified drought as a hazard to which they are vulnerable.

Drought History in Alabama

According to FEMA, Alabama has had one federal drought disaster declared, which occurred in 1977. According to the NCDC, there were 15 drought events from 1998 through 2005. However, further investigation reveals that most of these were simply dry periods without substantial rainfall. No damages, deaths, or injuries were reported.

More recently, according to NOAA, much of Alabama experienced significant drought conditions during the summer of 2006. An extended period of low rainfall led to the development of severe drought conditions throughout central Alabama during the month of July. The southernmost areas in this region (along and south of U.S. Route 80) were experiencing extreme drought conditions by the end of the month. Conditions continued through August and the first half of September when several bouts of significant precipitation failed to improve conditions throughout the state by the morning of September 19, 2006. Agricultural and hydrologic impacts were felt. Summer crops were adversely impacted and water restriction regulations were put into effect in many cities. In total, 39 counties experienced at least severe drought conditions, while 11 of those experienced extreme drought conditions.

The following counties experienced severe drought conditions: Autauga, Bibb, Blount, Calhoun, Chambers, Cherokee, Chilton, Clay, Cleburne, Coosa, Elmore, Etowah, Fayette, Greene, Hale,

Jefferson, Lamar, Lee, Marion, Pickens, Randolph, Shelby, St. Clair, Talladega, Tallapoosa, Tuscaloosa, Walker, and Winston.

The following counties experienced extreme conditions: Barbour, Bullock, Dallas, Lowndes, Macon, Marengo, Montgomery, Perry, Pike, Russell, and Sumter.

From the Spring of 2006 through December 2008, the entire State of Alabama experienced between moderate and extreme drought conditions. March, traditionally the wettest month of the year, was instead one of the driest on record in 2007. Rainfall totals were less than 2 inches across the entire Central Tennessee Valley, with some areas seeing less than an inch. Normal rainfall for March is 6 to 7 inches. By the end of the month, a significant portion of the area was listed as D3 (Extreme Drought) status on the U.S. Drought Monitor (this is described further in **Appendix H**). The dry weather continued throughout the year and in July of 2007, more than three quarters of the corn crop was still considered to be in poor or very poor condition, as well as about half of the cotton and soybean crop, along with livestock and hay production. Major rivers and reservoirs continued to run much below normal, with serious negative impacts. Area water utility companies continued to enforce fines and surcharges for excessive water usage, and water restriction plans remained in effect.

Continued dry and very hot conditions across central Alabama in the month of August 2007 led to worsening drought conditions. By the end of the month, more than 90 percent of central Alabama had been placed in the D4 (Exceptional Drought) designation, with the remainder in D3 (Extreme Drought). Agricultural, hydrologic, and sociological impacts continued to be widely felt. Around 80 percent of the corn and soybean crop, 70 percent of the cotton crop, and 40 percent of the peanut crop, was considered to be in poor or very poor condition by month's end. In addition, about 60 percent of the livestock, and 75 percent of pasture lands, were also considered to be poor or very poor, and hay yields for the summer were less than half of normal. Major rivers and reservoirs continued to run much below normal. Navigation on major rivers became significantly impacted, and many boat landings on major lakes became unusable due to extremely low lake levels. Area water utility companies continued to enforce fines and surcharges for excessive water usage, and water restriction plans remained in effect.

Drought conditions continued into January 2008 across most of central Alabama, with monthly rainfall deficits ranging from a half inch to 2.5 inches. By the end of the month, roughly three quarters of central Alabama remained in D4 (Exceptional Drought), with the remainder in D1 (Moderate Drought) to D3 (Extreme Drought). Agricultural impacts were relatively low due to being in between growing seasons. However, hydrologic and sociologic impacts continued to be felt. Most stream and river levels across central Alabama continued to be much below normal, with flow levels generally 25 percent or less of normal. Reservoir levels showed limited improvement due to rainfall that occurred during the month. The threat of water shortages for municipal water systems persisted, and most water restriction plans already in place continued.

August finally marked the first substantial rainfall for the Central Tennessee Valley since it entered into the heart of the drought in early 2006. The big rainmaker was Tropical Storm Fay, which brought between 2 and 8 inches of rain to the area. For most of the Tennessee Valley, this was the first substantially above normal rainfall month of 2008, and in Huntsville, the first since October 2006 that was above normal at all. The calendar day total of 2.19 inches from August 25 was also the most rainfall to occur in a calendar day since November 15, 2006. River base-flow actually increased as a result of Fay in north central and northeast Alabama, the first sign of improvement in stream-flows from the drought. Deep groundwater also recovered to near average, and soil moisture reached near average levels for the first time in about two

years. As a result of Fay, only Jackson and DeKalb counties remained in D2 (Severe Drought) conditions.

The Drought Monitor issued on December 16, 2008, reported an end to the drought conditions. Very heavy rainfall put an end to the drought conditions in Jackson and DeKalb counties, and rainfall from several storm systems was enough to finally bring an end to the D2 (Severe Drought) that had begun in the Spring of 2006.

Drought was also present September 2010 through April 2012 in many parts of the state. According to NOAA, a persistent dry weather pattern across Central Alabama and the Southeast U.S. brought a return of moderate to severe drought conditions to East Central Alabama. The U.S. Drought Monitor indicated severe drought conditions existed to the right of a line from Wedowee to Roanoke to Lafayette to Wetumpka to Lake Mitchell to Ashland to Wedowee. Moderate drought conditions were found over remaining areas to the east of a line from Ft. Deposit to Clanton to Childersburg to Heflin. Most remaining areas in Central Alabama were abnormally dry.

Figure 5.2-22 was obtained from NOAA's National Climatic Data Center and shows drought conditions for the state in the month of May (1885-2012), in terms of the Palmer Drought Index which is described in **Appendix H**. Levels in 2010 were positive, indicating moist, non-drought conditions. However, levels in 2011 and 2012 were negative (around -2.5), indicating moderate drought conditions. However, as the graphic shows, drought is typically cyclical in nature and rainfall can quickly alleviate drought conditions. Drought conditions are updated on a weekly basis and can be found on the website of the Office of the State Climatologist.

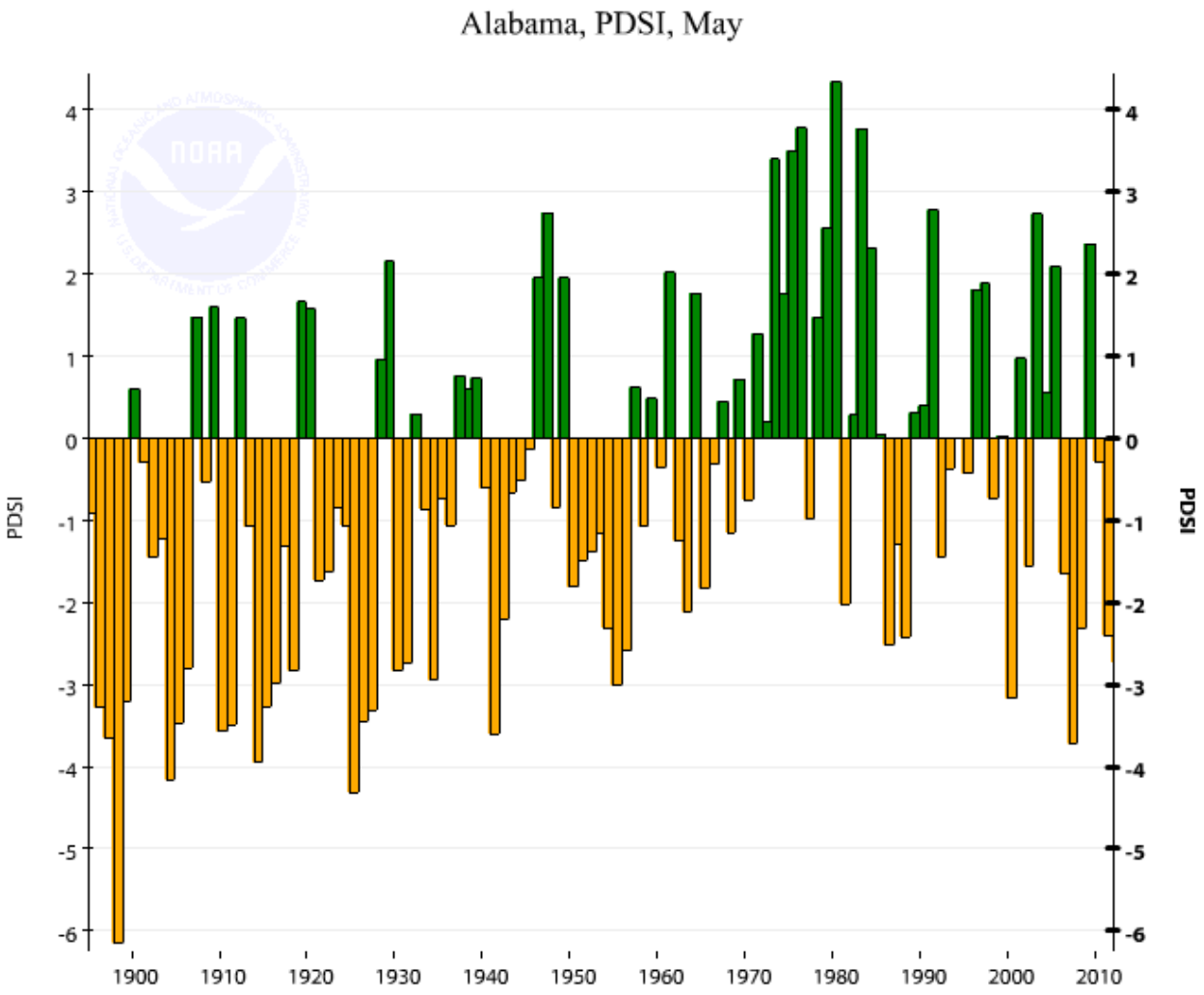


Figure 5.2-22
Palmer Drought Severity Index Map for State of Alabama
Month of May (1885 – 2012)
Source: NCDC[21]

Probability of Drought in Alabama

The future incidence of drought is highly unpredictable, conditions may be localized or widespread, and not much historical data is available making it difficult to determine the future probability of drought conditions with any accuracy. The qualitative probability rating for drought in **Section 5.3** is medium.

[21] National Climatic Data Center <http://www.ncdc.noaa.gov/temp-and-precip/time-series/index.php?parameter=pdsi&month=5&year=2012&filter=1&state=1&div=0>.

5.2.8 Hail

Nature of the Hazard in Alabama

Hailstorms occur throughout the state of Alabama and most frequently during the late spring and early summer, when the jet stream moves northward across the Great Plains. During this period, extreme temperature changes occur from the surface up to the jet stream, resulting in the strong updrafts required for hail formation. As explained below, it is rare that a hailstorm in Alabama causes significant damages.

A review of local hazard mitigation plans revealed that 64 out of 67 counties identified hail as a hazard to which they are vulnerable.

Hail History in Alabama

From 1990 to 2009 hail storm events caused approximately $20.275 million ($28.085 million in 2012 dollars) in property and crop damages in Alabama. This damage was caused by severe hail storm events that had hail with a diameter of 1.5 inches or greater. No deaths or injuries were reported due to these recorded hail storms.

On May 15, 1995, hail up to 4.5 inches was reported in the area from southern Cullman to Hanceville. Numerous cars sustained damage in the hail storm, including one Chevrolet dealership where every car sustained damage. Approximately $700,000 ($1,126,000 in 2012 dollars) in property damage was caused by the hail storm event.

In May 2003, hail (between 1.75 and 2.5 inches) fell between Chatom and Wagarville. Numerous automobiles and roofs were damaged by the large hail. Two automobile dealerships in Chatom sustained major damage to their automobile inventory. This hail storm event caused approximately $1.4 million ($1,827,000in 2012 dollars) in property damage.

On April 25, 2003, a large swath of golf ball size hail affected locations including Jones, Autaugaville, Booth, Independence, and Prattville. The largest hail observed was softball size. Numerous automobiles and homes were damaged by the hail. The storm started off by producing a weak tornado that moved through Greene County and crossed the Black Warrior River ending just inside Hale County. The storm continued strengthening and produced a swath of wind and hail damage along its path. Significant wind and hail damage occurred from Autaugaville to Prattville to Montgomery. This storm caused $2.5 million ($3.3 million in 2012 dollars) in property damage.

From 2004 to 2006, the state of Alabama experienced hail in at least one location in the state on 111 separate days. Of the 111 events, 76 caused no reported damages. The remaining 35 events caused $2.1 million ($2.5 million in 2012 dollars) worth of damage throughout the state. No deaths or injuries were reported due to these particular events.

On March 26 and 27, 2005, a thunderstorm system moving across the state produced hailstones between 1.5 and 2.5 inches in diameter in the southwest part of the state. Damages to residential properties and vehicles amounted to approximately $414,000 ($509,000 in 2012 dollars).

On April 7, 2006, a thunderstorm system moved across the state producing hailstones up to 2.5 inches in diameter in the northwest part of the state. Damages to residential properties and vehicles amounted to approximately $557,000 ($665,000 in 2012 dollars).

On April 11, 2007, thunderstorms developed in the afternoon and evening hours, producing severe weather that included tornadoes and very large hail. Hailstones ranged in size from 0.75 inches to 4 inches. A porch was damaged and a bay window was blown out of a residence due to hail resulting in $5,000 ($5,800 in 2012 dollars) worth of property damage. In Russell County, hail the size of grapefruit was reported. This 4-inch hail was responsible for damaging at least four residences and 15 vehicles, causing $100,000 ($116,000 in 2012 dollars) in property damage.

Two years later on April 10, 2009, a powerful spring storm system brought widespread severe weather to central Alabama. Damaging wind gusts, large hail, and eight tornadoes were reported across the area. Many of the storms produced very large hail, up to baseball and softball sized, producing significant damage. Baseball sized hail was reported in Lawrence County and this broke vehicle windows and damaged an addition to the fire station. In Marshall County, it was reported that a woman was hit by a hailstone big enough to cause her head to bleed from a puncture wound. Golf ball size hail damaged 95 percent of the cars on a car lot in Shelby County. Damage reports totaled $100,000 ($109,000 in 2012 dollars). In Coosa County, hail the size of golf balls fell, significantly damaging a few vehicles, and a few roofs suffered damage. The total property damage reported was $20,000 ($21,900 in 2012 dollars). And in Tallapoosa, baseball sized hail caused property damage totaling $30,000 ($32,800 in 2012 dollars) from breaking several windows and damaging vehicles.

On June 15, 2009, a warm unstable air mass, and several upper level disturbances, helped spark a multi-day period of strong to severe thunderstorms. Several clusters of thunderstorms caused widespread wind damage and isolated reports of large hail across central Alabama. Baseball sized hail shattered windows and large tree limbs were also blown down in Morgan County. Property damage was estimated at $10,000 ($11,000 in 2012 dollars). In Shelby County, golf ball sized hail damaged the windshields of some vehicles.

Hail ranging from golf ball to tennis ball-sized pellets impacted Central and Northeastern Alabama on March 12, 2010. Areas in DeKalb and Marshall Counties reported hail up to 8 inches deep and 2 inches in diameter.

A quasi-line convection system (QLCS) produced hail and tornadoes on October 24, 2010 in Northern Alabama. Golf ball-sized hail was reported.

The public reported three-inch diameter hail from a thunderstorm on March 29, 2011. It struck Northern Alabama in the evening hours and lasted through the night.

Large hail, reported as baseball-sized caused significant damage to cars and properties on April 15, 2011. The lines of storms produced many tornadoes throughout the state.

Severe thunderstorms moved across Northeast Alabama on June 15, 2011 producing tennis ball-sized hail.

Hailstorm Probability in Alabama

As discussed above, hailstorms occur in some form on a highly regular basis in Alabama. Between 1950 and 2012[22], Alabama experienced 1,256 days in which a hailstorm was reported in at least one location in the state. Therefore, it can be reasonably stated that, over the long-term, hail will affect at least some part of the state on an average of 18 days per year.

The annual probability of hail occurring somewhere in the state is clearly high. However, the site-specific incidence of hail is considered low because of the localized nature of the hazard. The qualitative probability rating for this hazard in **Section 5.3** is medium. **Figure 5.2-23** shows the average number of hailstorms by county from 1950 through 2012.

[22] Ending date of August 13, 2012.

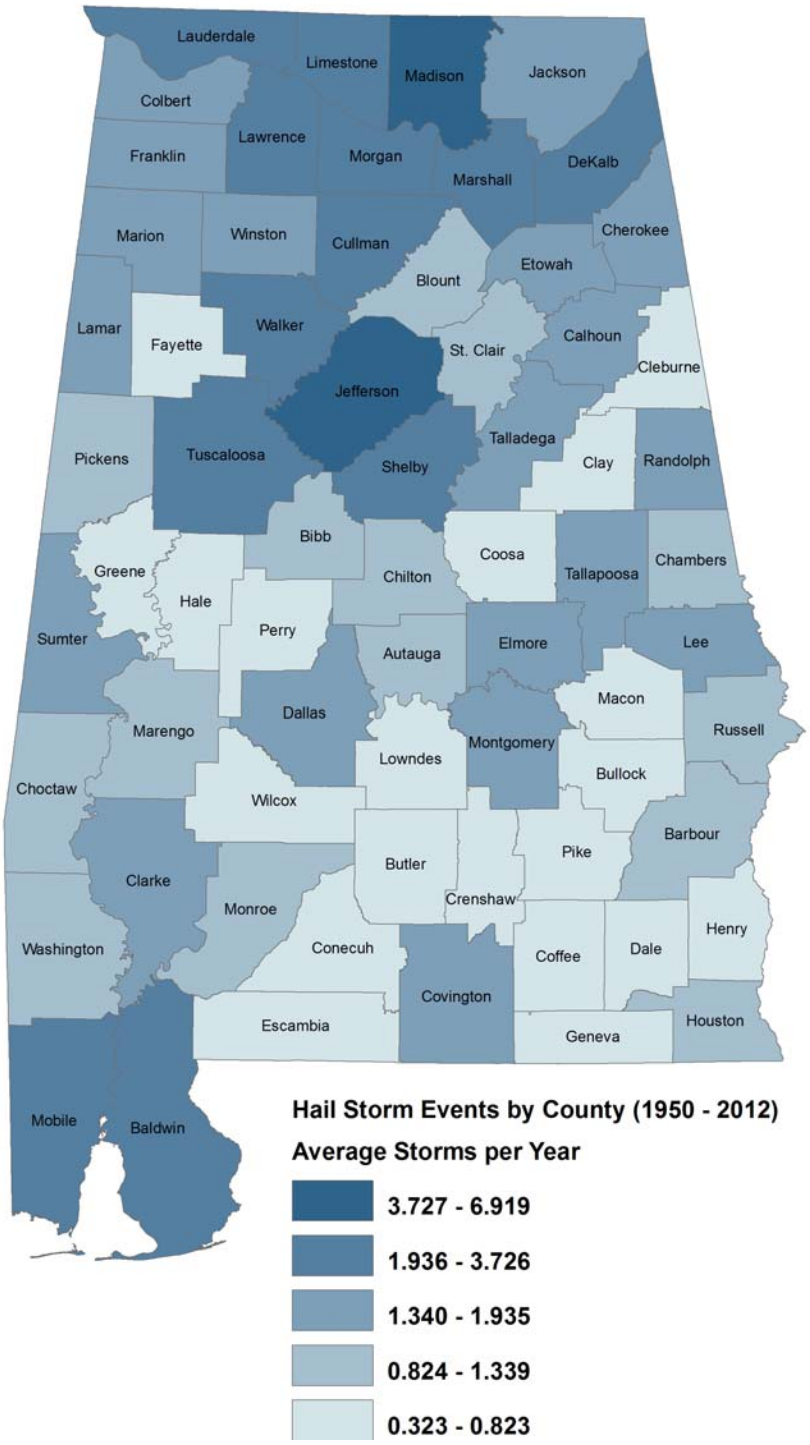


Figure 5.2-23
Alabama Hailstorm Return Interval by County
Source: National Climatic Data Center

5.2.9 Wildfire

Nature of the Hazard in Alabama

Approximately 94 percent of Alabama's forestlands are privately owned; therefore the vast majority of wildland fires occur on privately owned lands. Additionally, the majority of the fires occur in areas where residential properties or other structures are endangered. These areas are known as the wildland urban interface and are defined as areas where development meets wildland vegetation, both of which provide fuel for fires. The wildland urban interface areas have increased significantly throughout the United States and Alabama, and now face the risk of major losses from wildfires. In Alabama, most wildland urban interface areas are considered "intermixed." Instead of having large forest areas surrounding an isolated town, Alabama contains many scattered residences and farms spread across the forest areas. Based on an initial analysis by the Alabama Forestry Commission, there are 1,350 potential wildland urban interface communities at risk of wildfire damage within Alabama.

The following two factors contribute significantly to wildfire behavior in Alabama:

1. **Fuel:** The type of fuel and the fuel loading (measured in tons of vegetative matter per acre) have a direct impact on fire behavior. Fuel types vary from light fuels (grass) to moderate fuels (Southern Rough) to heavy fuels (slash). The type of fuel and the fuel load determines the potential intensity of the wildfire and how much effort must be expended to contain and control it.

2. **Weather:** The most variable factor affecting wildfire behavior is weather. Important weather variables are precipitation, humidity, and wind. Weather events ranging in scale from localized thunderstorms to large cold fronts can have major effects on wildfire occurrence and behavior. Extreme weather, such as extended drought and low humidity can lead to extreme wildfire activity.

In addition to affecting people, wildfires may severely impact livestock. Wildfires often destroy food crops and supplies which inflicts severe economic impact of farmers. From 2000 to 2004, wildfires destroyed approximately 6,564 large hay bales, for example. The forest resources of Alabama feed one of the main industries of the state. Timber loss to fire creates an economic loss to both the private landowner and the state's economy. Wildfires in Alabama generally are moderate in intensity, resulting in destruction of undergrowth and some timber. With Alabama's long growing season, the soil surface layer of the forest recovers quickly, minimizing erosion and water quality impacts. The entire state is vulnerable to wildfires as can be seen in **Figure 5.2-21**.

A review of local hazard mitigation plans revealed that 58 out of 67 counties identified wildfires as a hazard to which they are vulnerable.

Wildfire History in Alabama

The frequency and severity of wildfires is dependent on weather and on human activity. Nearly all wildfires in Alabama are human-caused (only 3 percent are caused by lightning), with arson and careless debris burning being the major causes of wildfires. If not promptly controlled, wildfires may grow into an emergency or disaster. During a severe fire situation in 1999-2000,

eight wildfires in Alabama were declared fire disaster emergencies by FEMA. Even small fires can threaten lives, damage forest resources, and destroy structures.

The Alabama Forestry Commission's Annual Reports provide a wide variety of statistics related to wildfire occurrence and prevention. Looking at the Annual Reports for FY2007 through FY2011, wildfires have destroyed or damaged 292 homes, 1,041 other structures, and 1,197 vehicles. However, about 10,720 homes were saved as a direct result of Forestry Commission. The Forestry Commission is also heavily involved in mitigation activities.

Between 2007 and 2011, The Forestry Commission completed 164,800 acres in prescribed burns. In addition, nearly 600 new burners were certified through prescribed burn manager courses. Instructional guides on homeowner wildfire mitigation have been completed. The Forestry Commission has had two dedicated wildland/urban interface associates on staff since 2008 that are funded through by a U.S. Forest Service grant. These associates work to provide education including Fire Wise Communities USA participation, homeowner hazard assessments, and community wildfire protection plans. The FY2011 Annual Report noted 166 Homeowner Hazard Assessments and Wildfire Mitigation Plans were completed through the program.

Table 5.2-6 shows the number of fires and acres burned during the period 1997 to 2012 as recorded by the Alabama Forestry Commission. Alabama had a total of 47,537 fires during this 15-year period, affecting a total of 579,037 acres.[23]

Table 5.2-6
Wildfires in Alabama 1997-2012

County	Total # of Fires	Average # of Fires	Total Acres Burned	Average Acres Burned	Average Fire Size
Autauga	880	59	4,697	313	5.3
Baldwin	2,817	188	49,257	3,284	17.5
Barbour	416	28	4,762	317	11.4
Bibb	623	42	5,687	379	9.1
Blount	599	40	4,807	320	8.0
Bullock	490	33	7,522	501	15.4
Butler	768	51	5,035	336	6.6
Calhoun	673	45	8,486	566	12.6
Chambers	554	37	3,929	262	7.1
Cherokee	1,656	110	34,290	2,286	20.7
Chilton	1,066	71	5,891	393	5.5
Choctaw	560	37	5,038	336	9.0
Clarke	511	34	2,606	174	5.1
Clay	693	46	9,712	647	14.0
Cleburne	1,243	83	27,282	1,819	21.9
Coffee	250	17	1,601	107	6.4
Colbert	634	42	4,130	275	6.5
Conecuh	1,033	69	10,946	730	10.6
Coosa	532	35	7,642	509	14.4
Covington	570	38	5,020	335	8.8

[23] Data collected and included between January 2010 and August 5, 2012 includes reported acres burned over zero.

Table 5.2-6
Wildfires in Alabama 1997-2012

County	Total # of Fires	Average # of Fires	Total Acres Burned	Average Acres Burned	Average Fire Size
Crenshaw	368	25	2,051	137	5.6
Cullman	399	27	3,593	240	9.0
Dale	165	11	929	62	5.6
Dallas	579	39	4,843	323	8.4
DeKalb	645	43	11,150	743	17.3
Elmore	1,009	67	5,405	360	5.4
Escambia	1,300	87	14,693	980	11.3
Etowah	576	38	7,593	506	13.2
Fayette	369	25	4,001	267	10.8
Franklin	554	37	8,005	534	14.4
Geneva	233	16	1,578	105	6.8
Greene	394	26	2,043	136	5.2
Hale	395	26	1,354	90	3.4
Henry	227	15	1,455	97	6.4
Houston	203	14	1,590	106	7.8
Jackson	480	32	12,850	857	26.8
Jefferson	1,183	79	11,644	776	9.8
Lamar	335	22	2,812	187	8.4
Lauderdale	1,036	69	6,789	453	6.6
Lawrence	531	35	6,104	407	11.5
Lee	298	20	2,072	138	7.0
Limestone	192	13	1,425	95	7.4
Lowndes	525	35	4,165	278	7.9
Macon	1,014	68	15,796	1,053	15.6
Madison	297	20	1,534	102	5.2
Marengo	378	25	3,869	258	10.2
Marion	824	55	7,079	472	8.6
Marshall	224	15	3,332	222	14.9
Mobile	3,451	230	64,855	4,324	18.8
Monroe	806	54	6,054	404	7.5
Montgomery	244	16	1,724	115	7.1
Morgan	257	17	2,269	151	8.8
Perry	638	43	5,383	359	8.4
Pickens	419	28	3,227	215	7.7
Pike	280	19	1,895	126	6.8
Randolph	568	38	3,642	243	6.4
Russell	784	52	9,676	645	12.3
Shelby	906	60	11,101	740	12.3
St. Clair	803	54	10,444	696	13.0
Sumter	191	13	2,934	196	15.4
Talladega	1,710	114	31,093	2,073	18.2
Tallapoosa	680	45	5,121	341	7.5
Tuscaloosa	641	43	10,076	672	15.7
Walker	1,351	90	14,862	991	11.0

Table 5.2-6
Wildfires in Alabama 1997-2012

County	Total # of Fires	Average # of Fires	Total Acres Burned	Average Acres Burned	Average Fire Size
Washington	1,415	94	28,691	1,913	20.3
Wilcox	574	38	3,660	244	6.4
Winston	518	35	4,240	283	8.2
Totals	**47,537**	**3,169**	**579,038**	**38,603**	**698.2**

Sources: Alabama Forestry Commission

Probability of Wildfires in Alabama

Wildfires are an ongoing threat to both rural Alabama and wildland urban interface communities that are known to be at risk. Based on the 15 years of data shown in **Table 5.2-6**, it can be deduced that the state experiences an average of 3,169 fires annually that can affect up to 38,603 acres every year. As with most natural hazards, wildfires are strongly influenced by weather phenomena, although their risk and impacts are also related to other factors such as the number of structures that are near forested areas, etc. Wildfire probability can be expected to remain relatively constant over the long run, assuming that weather patterns do not change significantly. The qualitative probability rating for this hazard in **Section 5.3** is medium. In addition, **Figures 5.2-24** and **5.2-25** show the total number of acres burned by wildfire in the 15-year period by county and the annual number of fires per square mile by county, respectively.

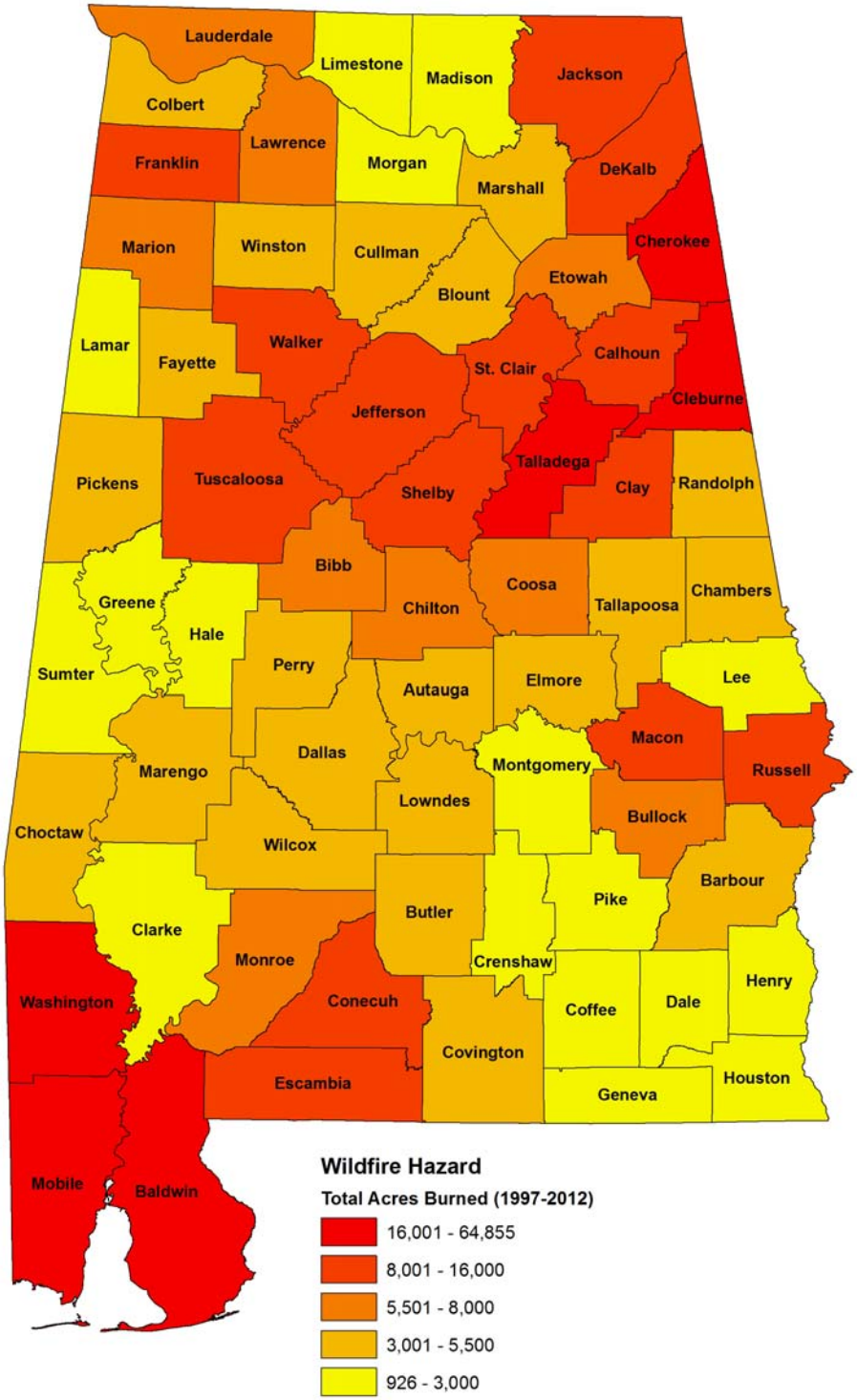


Figure 5.2-24
Total Acres Burned by Wildfire 1997-2012
Source: Alabama Forestry Commission

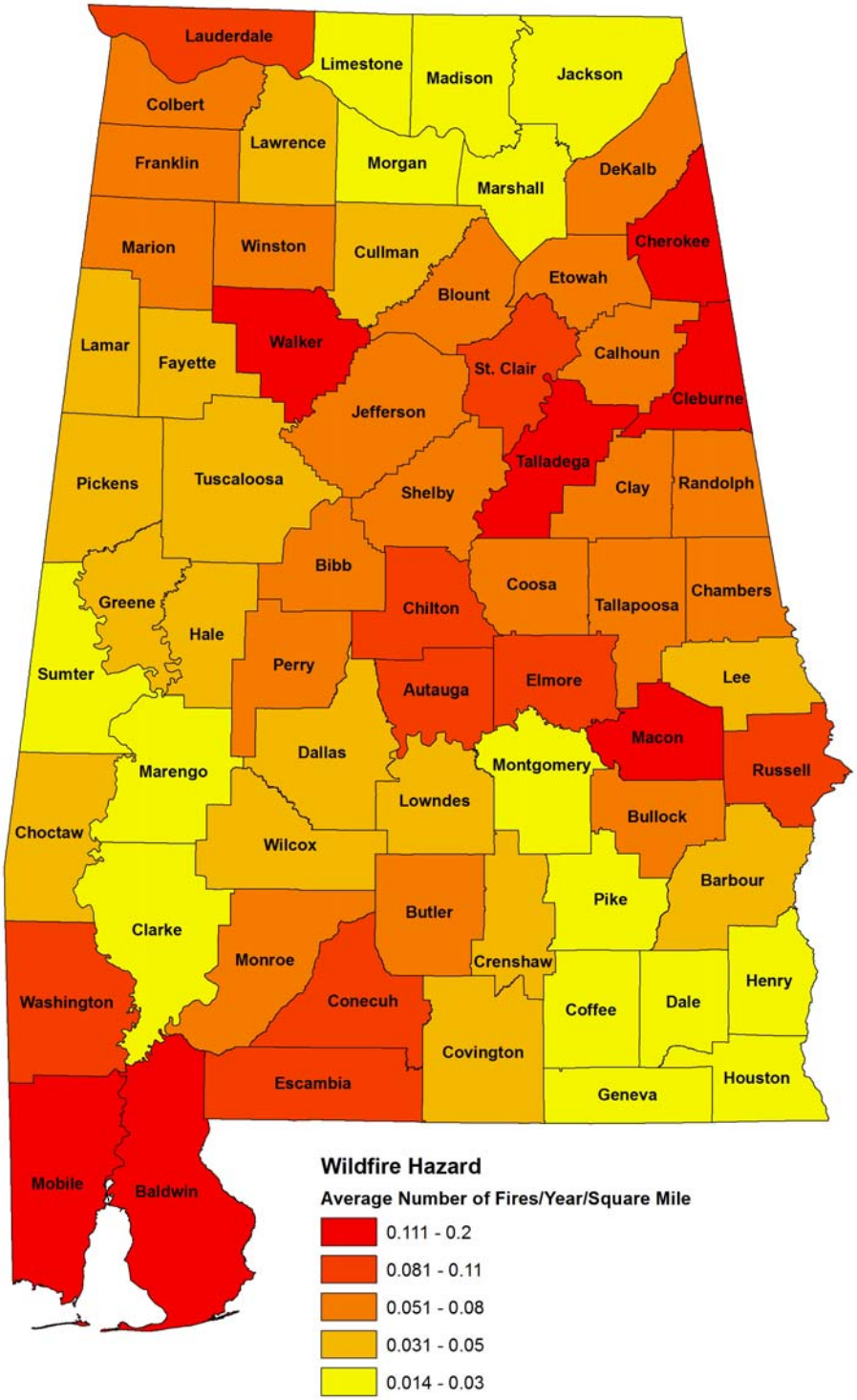


Figure 5.2-25
Number of Fires per Year per Square Mile 1997-2012
Source: Alabama Forestry Commission

5.2.10 Extreme Temperatures

Nature of the Hazard in Alabama

The climate of Alabama is best described as being a humid subtropical climate. This is especially true in the southern part of the state because of its close proximity to the Gulf of Mexico, while the northern parts of the state, especially in the Appalachian Mountains in the northeast, tend to be much closer to a continental climate. Generally, Alabama has very hot summers and mild winters.

Summers in Alabama are among the hottest in the United States, with high temperatures averaging over 90 °F throughout the summer in the entire state making extreme heat fairly common during the summer months. Because extreme heat is so prevalent in the state, residents are accustomed to it and are not significantly impacted; however, extreme heat has been known to induce heat stroke among the elderly; some cases have resulted in death. Additionally, there have been extreme heat events that have had significant impacts on crops and been known to cause deaths among the young and the elderly. **Table 5.2-7** shows the statewide annual high temperatures from 1980 to 2011.

Winters are generally mild in Alabama, as they are throughout most of the southeastern United States, with average low temperatures around 40 °F in Mobile and around 32 °F in Birmingham. The mild winter climate makes extreme cold temperatures fairly uncommon throughout the state. However, because citizens are unaccustomed to the severe cold weather, there have been cases where the cold temperatures have caused death. **Table 5.2-8** shows the statewide annual low temperatures from 1980 to 2010.

A review of local hazard mitigation plans revealed that 66 out of 67 counties identified extreme temperature as a hazard to which they are vulnerable.

History of Extreme Temperatures in Alabama

From 1995 through 2009, extreme heat events have caused 30 deaths and $400 million ($625 million in 2012 dollars) in crop damages in Alabama. A severe heat wave during the summer of 1995 was responsible for six of the 30 deaths and the $400 million in reported crop damages.

In August 2007 there were numerous daily temperature records set. The core of the heat wave started around August 4, when the temperatures first topped the 100 degree mark in several cities. The heat reached its peak August 10 through 15, as the mercury climbed above 105 degrees to as high as 109 degrees. Daily record maximum temperatures were broken or tied on 11 days in Anniston, 10 days in Birmingham, 12 days in Montgomery, and 14 days in Tuscaloosa, and all cities broke or tied their August maximum temperature records. At least 408 people required medical treatment due to the heat, and 11 people died due to heat-related illness.

According to the National Climatic Data Center, in August 2010, heat index values reached 110 to 115 degrees in Northwest and North-central Alabama, including the following counties: Madison, Morgan, Cullman, Limestone, Lawrence, Franklin and Lauderdale.

Extreme heat plagued Northwest and North-central Alabama on mid-July 2011. Hot and very humid conditions produced dangerous heat with high temperatures in the upper 90s to 100 and heat index values of 105 to 113. Overnight lows were in the mid to upper 70s at most locations, including a low of 80 at the University of Alabama in Huntsville on the morning of the 12th.

No new reports of extreme cold were reported for the 2013 plan update.

Table 5.2-7
Annual Observed Maximum Temperatures (1980-2011)
Statewide

Year	Maximum Temp	Date	Station
1980	108	17 July	Bessemer 3 WSW
1980	108	17 July	Aliceville
1980	108	17 July	Jasper 4 N
1981	105	25 July	Fayette
1982	104	9 June	Aliceville
1983	106	21 August	Anniston FAA AP
1984	101	21 June	Opelika
1984	101	21 June	Pittsview
1985	105	6 June	Eufaula Wildlife Refuge
1985	105	7 June	Evergreen
1985	105	6 June	Greenville
1986	106	31 July	Milstead
1987	107	31 July	Bessemer 3 WSW
1988	103	27 June	Falkville 1 E
1988	103	26 June	Bessemer 3 WSW
1988	103	18 August	Hamilton 3 S
1988	103	30 June	Demopolis Lock and Dam
1988	103	28 June	Brewton 3 ENE
1989	100	25 July	St. Bernard
1989	100	26 August	Greensboro
1989	100	28 August	Atmore State Nursery
1989	100	26 August	Greenville
1989	100	27 August	Jackson
1990	105	19 August	Bessemer 3 WSW
1991	101	5 August	Bessemer 3 WSW
1991	101	7 August	Hamilton 3 S
1991	101	7 August	Rock Mills
1992	101	10 July	Brewton 3 ENE
1992	101	8 July	Jackson
1993	104	27 July	Huntsville WSO AP
1994	98	8 June	Bessemer 3 WSW
1995	105	18 August	Bessemer 3 WSW
1995	105	18 August	Bankhead Lock and Dam
1996	105	4 July	Chatom
1997	101	18 August	Bessemer 3 WSW
1998	105	7 July	Headland
1999	106	20 August	Hamilton 3 S
2000	109	30 August	Vernon 2 N
2001	98	28 July	St. Bernard
2001	98	21 July	Fayette
2001	98	20 July	Tuscaloosa

Table 5.2-7
Annual Observed Maximum Temperatures (1980-2011) Statewide

Year	Maximum Temp	Date	Station
2001	98	20 July	Greensboro
2001	98	21 July*	Selma
2001	98	24 August	Bessemer 3 WSW
2001	98	3 August	Oneonta
2002	102	5 June	Anniston Metro AP
2002	102	6 September	Centerville 6 SW
2003	98	8 August	Rock Mills
2003	98	30 June	Aliceville
2004	100	4 August	Montgomery
2005	101	21 August	Belle Mina 2 N
2005	101	21 August	Childersburg Water Pit
2005	101	22 August	Brewton 3 SSE
2006	106	20 July	Hamilton 3 S
2007	109	16 August	Hamilton 3 S
2008	104	22 July	Hamilton 3 S
2009	101	2 July/3 July	Mobile AP
2009	101	3 July	Bay Minette
2010	105	3 August	Vernon
2011	106	11 June	Heflin
2011	106	4 August	Hamilton 3 S

Source: Alabama Office of State Climatologist

From 1995 through 2012, extreme cold events have caused nine deaths and $52 million ($81.7 million in 2012 dollars) in crop damages in Alabama. The crop damages occurred during a cold snap on March 7, 1996 after a cold front moved through the state and set record low temperatures in nearly all of the northern two thirds of the state.

Table 5.2-8
Annual Observed Minimum Temperatures Statewide (1980-2010)

Year	Minimum Temp	Date	Station
1980	2	3 March	Valley Head
1981	2	21 December	Russellville 2
1981	2	12 February*	Valley Head
1982	-8	17 January	Sand Mountain Substation AU
1982	-8	18 January	Valley Head
1983	-10	24 December	Heflin
1984	11	22 January	Bridgeport
1985	-16	21 January	Athens 2
1986	-3	28 January	Valley Head
1987	8	27 January	St. Bernard
1987	8	28 January*	Sand Mountain Substation AU
1987	8	28 January*	Hamilton 3 S
1988	5	11 January	Muscle Shoals FAA Airport
1988	5	6 February	Bessemer 3 WSW
1988	5	12 January	Valley Head
1988	5	8 February	Hamilton 3 S
1988	5	7 February	Vernon 2 N

Table 5.2-8
Annual Observed Minimum Temperatures Statewide (1980-2010)

Year	Minimum Temp	Date	Station
1989	-7	23 December	Russellville 2
1989	-7	23 December	Haleyville 2 ENE
1990	11	25 December	Valley Head
1991	7	16 February	Winfield 2 SW
1992	8	21 January	Sylacauga 4 NE
1993	2	14 March	Birmingham FAA Airport
1993	2	14 March	Pinson
1994	0	19 January	Athens
1994	0	20 January	Valley Head
1995	6	11 December	Sumiton
1995	6	11 December	Hamilton 3 S
1996	-4	5 February	Bridgeport 5 NW
1997	4	11 January	Athens
1997	4	14 January	Russellville No. 2
1998	11	12 March	St. Bernard
1999	1	6 January	Winfield 2 SW
2000	5	20 December	Haleyville
2000	5	21 December*	Hamilton 3 S
2001	4	4 January*	Hamilton 3 S
2002	9	1 March*	Hamilton 3 S
2003	1	18 January	Bridgeport 5 NW
2003	1	24 January	St. Bernard
2004	11	28 December	Valley Head
2004	11	29 January	St. Bernard
2005	10	24 January	Valley Head
2006	3	8 December	Haleyville
2007	8	29 January	Saint Bernard
2008	6	4 January	Hamilton 3 S
2009	5	16 January	St. Bernard
2009	5	17 January	Anderson
2010	2	11 January	St. Bernard

Source: Alabama Office of State Climatologist

Probability of Extreme Temperatures in Alabama

The annual probability of extreme temperatures occurring is relatively high. However, because the impacts are so localized and relatively moderate when compared to other hazards, the site-specific incidence of extreme temperatures is considered to be low. The qualitative probability rating for extreme temperatures in **Section 5.3** is medium.

5.2.11 Lightning

Nature of the Hazard in Alabama

Lightning typically occurs as a by-product of a thunderstorm. Alabama ranks seventh in the number of deaths from lightning and ninth in the number of deaths from lightning strikes per

capita.[24] The Gulf Coast averages between 70 and 80 days per year when thunder is reported. This activity decreases somewhat further north in the state, but the northernmost portions of the state report thunder approximately 60 days per year. The central and northern parts of the state are most vulnerable to thunderstorms that are severe with frequent lightning.

A review of local hazard mitigation plans revealed that 63 out of 67 counties identified lightning as a hazard to which they are vulnerable.

Lightning History in Alabama

According to the latest available information from NOAA, from 1990 to 2012, there were 685 lightning strikes reported in Alabama with 29 fatalities. Lightning caused nearly $29 million in damages. Over 85 percent of these lightning strikes occurred during the six month stretch between March and August with over 60 percent occurring between June and August.

In March 2001, lightning struck a tree near Beatrice Elementary School just before school opened. The lightning ran through the roots of a tree causing the gymnasium to catch on fire. The gym was completely destroyed. The remainder of the school suffered only minor damage from the fire. Damages were estimated to be $500,000 ($692,100 in 2012 dollars).

Lightning was believed to be responsible for a fire in a mobile home in the Shiloh community in June 2002. Three children were killed and two adults and two other children were injured in the fire. The State Fire Marshall said the preliminary investigation indicated the fire started in the general area of the living room around the television. A burn at the base of the utility box outside the residence indicated that lightning could have been involved in starting the fire.

In July 2005, an auto body shop in Attalla in Etowah County was struck by lightning. The ensuing fire destroyed the entire business. Another lightning strike hit a clothes dryer in a residence in Gadsden. The residents were able to extinguish the fire after it caused minor damages estimated to be $110,000 ($135,300 in 2012 dollars).

In August 2006, lightning struck an elementary school just north of Semmes in Mobile County. The lightning struck the roof starting a fire in the ceiling. It took several hours to put the fire out. Most of the damage was confined to the roof and ceiling area. Damages were estimated to be $800,000 ($955,240 in 2012 dollars).

In August 2006, lightning struck a church in the Mount Vernon area in Mobile County. The strike started a fire and the church was completely destroyed by the blaze. Damages were estimated to be $500,000 ($597,000 in 2012 dollars).

On June 27, 2007, lightning struck a drilling rig at the Shoal Creek Mine in western Jefferson County. The lightning ignited methane gas in the mine and six miners were injured by the subsequent fire.

On February 17, 2008, a lightning strike knocked out the main switching facility of Farmer Telecommunications Cooperative, resulting in loss of phone service over much of DeKalb, Jackson, and Marshall counties. The general manager was quoted as saying this was the worst severe weather related damage to the main switch in 30 years.

[24] Lightning Fatalities, Injuries and Damages in the United States, 1990–2003

On July 6, 2009 a woman from Atmore, Alabama was struck and seriously injured while taking out the garbage at her residence on the morning of July 6th. She later died on July 8th.

On July 25, 2010, five people, including a 15-year old, were struck by lightning from a thunderstorm at a campground along Lake Guntersville in Marshall County. A fifteen year old from this group was killed and four were injured. They were swimming near the water's edge. The storm also knocked down some trees and produced intense lightning.

Several events in 2011 resulted in structure fires and power outages. No deaths or injuries were reported.

Probability of Lightning in Alabama

The probability of a lightning strike causing damage somewhere in the State of Alabama is quite high. In fact, NCDC history suggests that a lightning strike occurs somewhere in the State of Alabama approximately 57 times per year, or once every 6 days. However, because the impacts are so localized, the site-specific incidence of a lightning strike occurring is considered very low. The qualitative rating for lightning in **Section 5.3** is medium.

5.2.12 Dam Failure

The team has been coordinating with the ADECA to obtain more information on dam failure. Proposed dam safety legislation (see below) did not make it out of committee in 2008.

Nature of the Hazard in Alabama

Dam safety has been an ongoing hazard mitigation issue in the state of Alabama for the past 10 years, especially with regard to small dams that are privately owned and poorly maintained. Over 2,000 privately-owned dams exist in the state. No state law currently exists to regulate any private dams or the construction of new private dams, nor do private dams require federal licenses or inspections. There have been numerous attempts in the state to pass legislation that would require inspection of dams on bodies of water over 50 acre-feet or dams higher than 25 feet. Enactment has been hampered by the opposition of agricultural interest groups and insurance companies. Approximately 1,700 privately owned dams would fit into the category proposed by the law.

There are an estimated 2,228 dams in the state of Alabama listed in the National Inventory of Dams (NID) maintained by the USACE (as of March 2010, 2009 Inventory of Dams).[25] Of these, approximately 32 hydroelectric, navigation, and flood control project dams are federally regulated and fall under the jurisdiction of the Tennessee Valley Authority, USACE, Alabama Power Company, and Alabama Electric Cooperative, Inc. A number of existing dams have inadequate spillways and embankments and many are poorly maintained. As of March 2010, 201 dams were classified by the USACE as high-hazard dams in the state of Alabama, posing a significant safety hazard.[26] Of these, only 63 have an Emergency Action Plan (EAP) in place or claim that an EAP is not required. **Figure 5.2-26** shows the number of high-hazard dams by county. (It should be noted that these dams are inspected and monitored by the USACE as opposed to some of the privately held dams that are the focus of concern for dam safety legislation.)

[25] This information is the best available data for the 2013 plan update and assumed to be current information.
[26] NID classifies high hazard as the following: Loss of at least one human life is likely if dam fails.

A review of local hazard mitigation plans revealed that 54 out of 67 counties identified dam failure as a hazard to which they are vulnerable.

Dam Failure History in Alabama

Three earthen dams in Alabama sustained damages during the flood of February 3 to 17, 1990. The Holly Brooke Lake Dam in Shelby County was saturated to the point that the face of the dam slumped. If the water pressure had not been reduced, total failure of the dam might have occurred. As a result of the dam's condition, six families were evacuated while the water level on the 55-acre pond impounded by the dam was lowered.

During the March 23, 1990, flooding disaster, a dam was overtopped at Magnolia Shores Lake in Crenshaw County, causing damage to the downstream slope. To prevent a break in the dam, a channel was dug around the dam to lower the water and the lake was then drained by a controlled breach of the dam.

The C. D. Clark Dam in Dozier, Crenshaw County, failed and washed out 50 yards of northbound U.S. Highway 29. Lake Tholocco, a 600-acre lake on the Fort Rucker reservation near Ozark, was also drained because of excessive flow through its emergency spillway.

There were reports of 160 dam breakages during the July 1994 floods; however, because there is no state law or regulation concerning dam safety that requires reporting of breaks or other problems, not all breaks are reported. Information on dam breakages is submitted by local officials.

In Etowah County on January 6, 2009, floodwaters washed away a culvert and a private dam near the Gallant Community broke, producing up to 12 feet of flooding in the area causing residences to be evacuated. A dozen roads were also closed due to the floodwaters and property damage was reported to be $100,000 ($109,000 in 2012 dollars).

ADECA-OWR did not report any new major dam break occurrences for the 2013 plan update. However, several minor breaks have occurred and the State maintains its position on the need for statewide dam safety legislation for private dams. In January 2009, the Widows Creek Power Plant experienced a dam break on gypsum slurry pond. This spilled up to 10,000 gallons of waste.[27] This dam is maintained and operated by the Tennessee Valley Authority. In addition, a dam break occurred on June 2009 which held the man-made Dawes Lake in Mobile County. The break was instigated by flash flooding. The water flooded several houses in its path and many residents needed to be rescued.[28] Further, in March 2011 WAFF News 48 (Worldnews/Raycom Media Station) did a special report on dam hazard throughout the state. The story highlighted that the Alabama is the only state in the country without a dam safety program for private dams and the need for such a law was direr.[29] Several other private dam

[27] "Widows Creek Power Plant" Wikipedia. Accessed October 9, 2012. < http://en.wikipedia.org/wiki/Widows_Creek_Power_Plant>.
[28] Dzenitis, John. "Flash Flooding Causes Dam to Break in Mobile County." June 2009. NBC Local 15 < http://www.local15tv.com/news/local/story/Flash-Flooding-Causes-Dam-to-Break-in-Mobile/f7HlUwYsOkuvcPjQK9JThA.cspx>.
[29] Lough, Nick. "Dams in distress: A WAFF 48 News special report." 48 News WAFF Florence, AL< http://www.waff.com/story/14359673/dams-in-distress >.

leaks and breaches likely go unreported and the true risk, understanding who may be in the inundation area of privately held dams, is unknown.

Probability of Dam Failure in Alabama

The generally accepted safety standard for the design of dams is the Inflow Design Flood (IDF) which is "… the flood flow above which the incremental increase in water surface elevation downstream due to failure of a dam or other water retaining structure is no longer considered to present an unacceptable additional downstream threat" (Interagency Committee on Dam Safety, October 1998). The inflow design flood is the upper limit of the Probable Maximum Flood (PMF), which is the estimated flood flow from the Probable Maximum Precipitation (PMP). The PMP is "… the greatest depth of precipitation for a given duration that is physically possible over a given size storm area at a particular geographical location at a certain time of the year" (U.S. Department of Commerce and USACE, June 1988). However, it must be noted that there are numerous dams in existence whose discharge capabilities were designed and built using methods that are now considered potentially unsafe.

The areas impacted by a dam failure are analyzed on the basis of "sunny day" failures and failures under flood condition. Typically, the dam-break floodplain is more extensive than the floodplain used for land use development purposes, and few communities consider upstream dams when permitting development. The potential severity of a full or partial dam failure is influenced by two factors: the amount of water impounded, and the density, type, and value of development and infrastructure downstream.

Alabama has no dam safety program and legislation. Individuals from Natural Resources, the Catfish Farmers Federation, Alabama Power Company, and several other agencies have formed a committee to promote state dam safety legislation. A draft legislative instrument was written, and the Dam Safety initiative has been transferred to the Alabama Department of Economic and Community Affairs Office of Water Resources (ADECA-OWR). The Alabama Office of Water Resources is supporting the establishment of an Alabama Dam Security and Safety Program. The legislation to establish this program has been under development for several years, but was reemphasized in 2002 when OWR assumed overall management of dam safety and National Flood Insurance Program initiatives from the AEMA. Unfortunately, this legislation has still not passed. The issue was even picked up by media in 2011 but has not gained traction. This legislation and ADECA's efforts are further discussed in **Section 4.3**.

ADECA is currently in the process of completing an inventory of dams, in order to provide a better idea of dam locations and risks associated with the dams. The expected completion date for the inventory was late 2010 or 2011 but has been delayed due to funding. There is also an ongoing effort by the ADECA to map inundation efforts for several NRCS dams in the state. This full inventory of dams will help to benefit public safety and emergency response operations in the event of a natural or other disaster. It will also provide for the inspection and permitting (certification) of certain dams in order to protect the citizens of Alabama by reducing the risk of failure of such dams.

The probability of future occurrences cannot be characterized on a statewide basis because of the lack of information available. The qualitative probability is rated low in **Section 5.3** because the overall area affected is low and impacts are localized. This rating is intended only for general comparison to other hazards that are being considered.

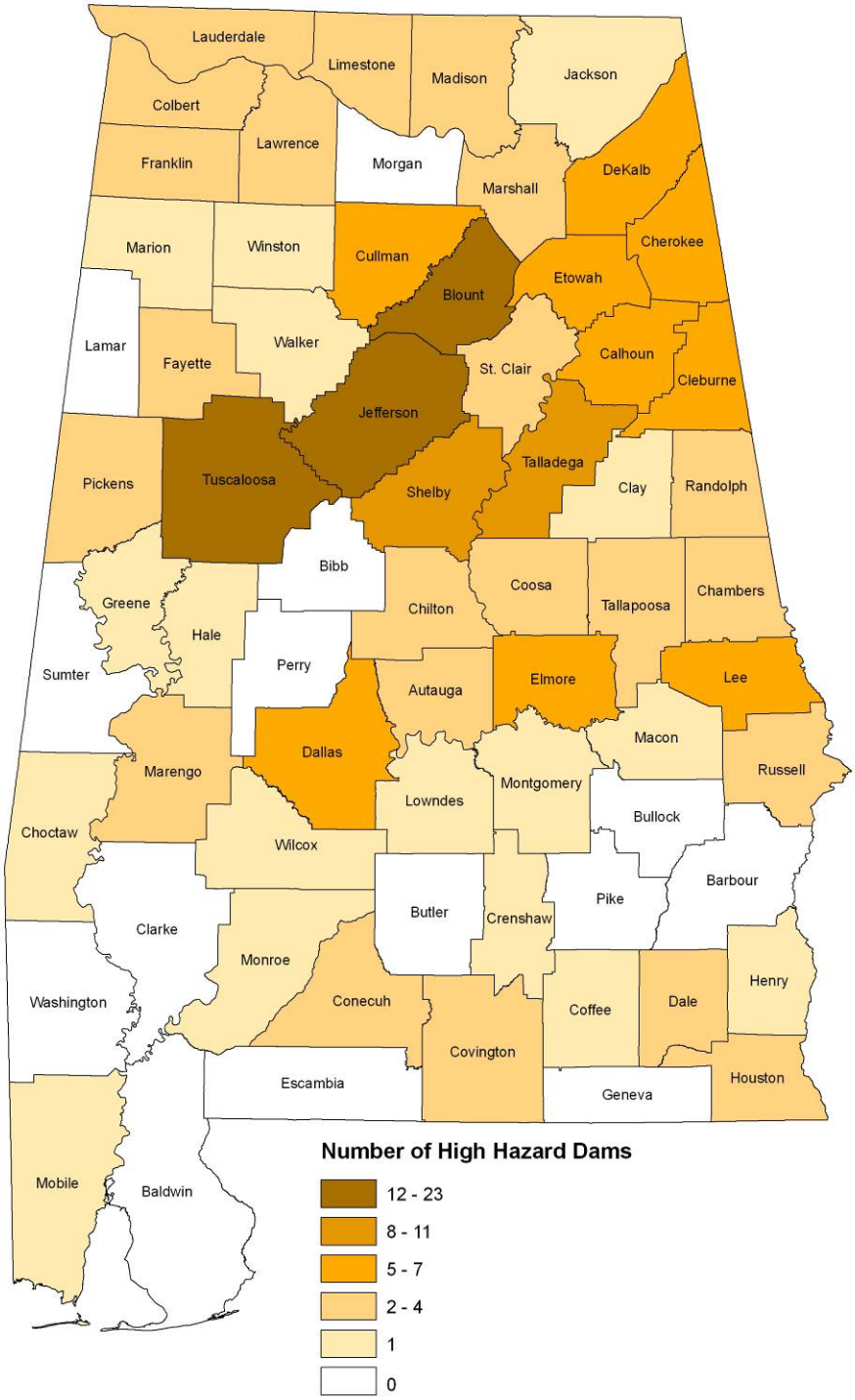


Figure 5.2-26
Alabama High Hazard Dams by County
Source: U.S. Army Corps of Engineers, 2010

5.2.13 Tsunamis

Nature of the Hazard in Alabama

According to the U.S. States and Territories National Tsunami Hazard Assessment published in August 2008 by NOAA and USGS, tsunami risk on the U.S. Gulf Coast is considered to be "very low" based on runups, frequency of the hazard, and local earthquakes. A 2009 USGS study came to similar conclusions but noted that vulnerability was high along the Gulf Coast due to major population centers and a shallow shoreline relief (when compared to the Pacific coast).[30] In addition, there have been no reported deaths due to tsunami activity on the Gulf Coast. The value of addressing the tsunami hazard in this risk assessment is that, whereas tsunamis are infrequent in their occurrence, they are possible in the state of Alabama and they could potentially be high impact events if and when they do occur. They are capable of causing a large number of fatalities in a small amount of time, inflicting major damage, and causing significant economic loss to large sections of the coast.

There are several scenarios that could generate a tsunami in Alabama. The 2009 USGS study identifies three geological regions in the Gulf of Mexico where tsunami-triggering landslides could occur. The Alabama coastline could be impacted by each of them. Earthquakes could also trigger a tsunami. Earthquakes have been known to occur in both the Gulf of Mexico and the Caribbean Sea. If an earthquake with significant enough vertical displacement along a fault or high enough magnitude to trigger an underwater landslide occurred in one of these areas, it could generate a tsunami that could impact the Gulf Coast. The area is also at risk from a tsunami that could be generated elsewhere in the Atlantic Basin. The potentially catastrophic collapse of the Canary Island volcanoes could generate a tsunami with impacts across the Atlantic and Gulf Coasts.

The nature of tsunamis, including the history and impact, continues to be evaluated by scientists throughout the world. In fact, the National Tsunami Hazard Mitigation Program was developed to further study this hazard. Alabama had representation on the development of the 2009-2013 Strategic Plan. Several initiatives are being developed as result of the Program, including the 2009 USGS study. It is likely the hazard profile will continue to evolve as more information becomes available in future plan updates.

A review of local hazard mitigation plans revealed that 4 out of 67 counties identified tsunamis as a hazard to which they are vulnerable.

Tsunami History in Alabama

A database search conducted as part of the National Tsunami Hazard Assessment reinforces the common understanding that Atlantic and Gulf coast states have experienced very few tsunami runups in the last 200 years. In fact, Louisiana, Mississippi, Alabama, the Florida Gulf Coast, Georgia, Virginia, North Carolina, Pennsylvania, and Delaware have no known historic tsunami runup records in the National Geophysical Data Center (NGDC) database. Furthermore, only a total of six tsunamis have been recorded anywhere in the other Gulf and East Coast states. Three of these tsunamis were generated in the Caribbean, two were related to magnitude 7+ earthquakes along the Atlantic coastline, and one reported tsunami in the Mid-

[30] Brink, Uri ten, *et al*. Regional Assessment of Tsunami Potential in the Gulf of Mexico: U.S. Geological Survey Administrative Report. September 2009. USGS

Atlantic States may have been related to an underwater explosion or landslide. The USGS makes reference to historic tsunamis in the Gulf Coast, though none are thought to have produced waves greater than 1 meter.

The closest Alabama has come to experiencing a tsunami in recent history occurred on September 10, 2006. An earthquake of magnitude 5.8 occurred centered in the Gulf of Mexico approximately 500 miles south of Mobile. Mild shaking was felt in Florida, Alabama, and Georgia, but no damage was recorded.

The Geological Survey of Alabama notes that is not magnitude that is necessarily important, it is the amount of vertical displacement that causes a tsunami. You can have a 7.0 magnitude earthquake from a strike-slip fault with no vertical movement along the fault, or a 7.0 magnitude earthquake with a reverse fault that causes 10 meters of vertical displacement. The first event (strike-slip fault) likely will give you no tsunami; the second event (reverse fault) likely will produce a tsunami, even though the magnitudes are the same. Also, the magnitude required to shake an underwater slope enough to trigger an underwater landslide which will cause a tsunami is not known - it depends on many factors related to the sediment perched on the slope. Landslides can occur with or without an earthquake, so magnitude to produce a landslide underwater at any location in the Gulf is unknown.

Tsunami Probability in Alabama

Probability of a large earthquake was used to evaluate tsunami probability (though it should be noted that not all earthquakes would result in a tsunami). According to the USGS probability of earthquake occurrence for non-subduction zones presented in the National Tsunami Hazard Assessment, there is a less than 1 percent chance that an earthquake with a magnitude greater than 6.5 will occur in the next 500 years within 50 kilometers of the Alabama coast. There is a less than 4 percent chance that an earthquake with a magnitude greater than 6.5 will occur in the next 5,000 years within 50 kilometers off the Alabama coast. Therefore, the overall probability of occurrence for Alabama is considered to be very low. Lastly, it should be noted that there is no known history of tsunamis with waves greater than 1 meter impacting the Alabama Coast and the probability is low, but they are possible and do occur.

5.2.14 Sea Level Rise

Nature of the Hazard in Alabama

The SHMT voted to add sea level rise as a hazard in the 2013 plan update. Sea level rise is a slow-onset hazard, meaning that it occurs gradually and its impacts may not be felt immediately. Research is not currently conclusive on exactly where the hazard is occurring and to what extent it will impact areas. After a thorough literature review, three studies pertaining to sea level rise along Alabama's Gulf Coast were revealed. The existing studies indicate that there is substantial variation relating to the rate and extent to which sea level rise is occurring. The findings from these studies are presented below.

- NOAA[31]: Observations were taken from a marker at Dauphin Island from a period of 1966-2006. The mean sea level trend was an increase of 2.98 millimeter/year with a 95

[31] NOAA Tides and Currents: http://tidesandcurrents.noaa.gov/sltrends/sltrends.shtml

percent confidence interval of +/- 0.87 mm/year based on monthly mean sea level data during this time. This is equivalent to a chance of a .98 feet rise in 100 years (or 11.76 inches in 100 years or **1.18 inches every 10 years)**.

- Climate Central "Surging Seas" Report[32]: This report projects historic local sea level rise rate of **.08 inches every 10 years**.

- Union of Concerned Scientists[33]: This group reports an 9 inch increase over the past 100 years due to a combination of globally rising seas and substantial local sinking of the land (subsidence). Their website notes, "By 2100, ocean levels around Alabama could be 15 inches higher than today, based on a continued average subsidence rate of 2 inches per century and a mid-range sea-level rise scenario. Even a relatively small vertical rise in sea level (a few inches to 1 foot) can move the shoreline inland by substantial distance (several tens of feet) along low-lying, flat coastal areas." This is an approximate increase of 0.167 inches per year (**1.67 inches every 10 years**), assuming a 90 year period to 2100).

It is notable that the NOAA study has a long observation period. Therefore, these results may be the most credible as far as what has happened to date and what may be expected for the state's coastal areas. Further, all predictions are in general alignment of a 1 inch rise every 10 years.

Sea Level Rise History in Alabama

As noted above, there is limited history with this hazard but NOAA observed a trend of 2.98 millimeter rise per year over a 40 year period. While sea levels are continuously changing, the levels were not documented consistently and widespread until recently. Therefore, very limited historical information exists. As more information becomes available, it will be integrated into this plan.

Sea Level Rise Probability in Alabama

The information available indicates an approximate rise of 1 inch per every 10 years (10 inches per every 100 years) can be expected along Alabama's coastline. This is general guidance based on the best information available at this time. As more information becomes available, it will be integrated into this plan. As previously noted, this is a slow-onset hazard that may impact some areas of coastal Alabama greater than others.

[32] "Surging Seas." March 14, 2012. Climate Central http://slr.s3.amazonaws.com/factsheets/Alabama.pdf
[33] Union of Concerned Scientists, 2009. Web. http://www.ucsusa.org/gulf/gcstateala_cli.html

5.3 Methodology for Identifying Natural Hazards for Additional Analysis

Although the Final Rule (see **Appendix B**) requires that all natural hazards affecting the state must be included in a detailed overview, it is not practical or desirable to perform detailed statewide risk assessments on all these hazards. This is because many of the hazards have little probability of affecting the state, limited data is available for analysis, and/or it is difficult to mitigate their effects. Because of this, the SHMT and FEMA determined that it would be desirable to reduce the initial list of hazards to those that have the most potential for damaging the state or its citizens in the future.

To reduce the overall number of hazards that will be given detailed risk assessments, AEMA developed a rating system that uses the following five criteria to rate each hazard in two categories: relative probability of occurrence, and capacity for mitigation. The term "relative" probability of occurrence is used here because the determination is less rigorous than the one used in the full risk assessment. The purpose of this ranking methodology is to rate Alabama risks relative to each other, in order to identify the most significant ones, and concentrate the risk assessment on these. The hazards are given low, medium, or high ratings in the two categories. This method was initially suggested by FEMA Region IV at the SHMT meeting on February 26, 2004. Minor changes were made during the 2013 plan update to the probability of occurrence ranking. The SHMT clarified that hazard occurrences are addressed in terms of significant occurrences.
The criteria used were:

1. History - High rating indicates that the hazard has affected the state often in the past, and that the hazard has occurred often and/or with widespread or severe consequences.

2. Presence of susceptible areas - High rating indicates that the state has numerous facilities, operations, or populations that may be subjected to damage from the hazard.

3. Data availability - High rating indicates that sufficient quality data is available to permit an accurate and comprehensive risk assessment.

4. Federal disaster declarations - High rating indicates that the state has received numerous disaster declarations for the particular hazard.

5. Potential for mitigation - High rating indicates that there are ways to address the hazard, and that the methods are technically feasible and have the potential to be cost-effective (i.e., mitigation measures are available at a reasonable cost, and damages to property, lives, and/or community functions would be reduced or eliminated).

The SHMT determined that hazards with "high" ratings in both the probability and ease of mitigation categories are provided detailed and comprehensive risk assessments in later subsections. Those that received medium or low ratings in either category are not provided detailed risk assessments, but are in some cases included as risks to state-owned facilities, and are also included in mitigation goals, objectives, strategies, and actions. Further, as data and future plans permit, these hazards may be assessed. The hazards that received high ratings in each category were floods (which includes storm surge, riverine and flash flooding) and high wind (which includes hurricanes and tornadoes). In future updates to the plan it may be

desirable to undertake detailed risk assessments of some of the other hazards (those that did not receive high/high ratings in this analysis).

Table 5.3-1 shows all of the hazards considered in this methodology, and the rankings assigned by the SHMT.

Table 5.3-1
Qualitative Rankings of 16 Initial Hazards, based on Probability of Occurrence and Mitigation Potential

Hazard	Data Sources	Probability Rating	Mitigation Potential Rating	Disposition in Plan
Flooding (includes storm surge[34], riverine, and flash flooding)	• NOAA Storm Events Database • NOAA Alabama Coastal Hazards Assessment • National Weather Service • Flood Insurance Rate Maps (FIRMs)	**H**	**H**	Profile and risk assessment
High Winds (includes hurricanes, tornadoes and windstorms)	• NOAA Storm Events Database and Alabama Coastal Hazards Assessment • National Weather Service • Alabama Disaster Center	**H**	**H**	Profile and risk assessment
Winter storms	• NOAA Storm Events Database and Alabama Coastal Hazards Assessment • Alabama Disaster Center	**H**	**M**	Profiled, but not part of detailed risk assessment
Landslides	• Geological Survey of Alabama • USGS	**L**	**L**	Profiled, but not part of detailed risk assessment
Sinkholes and Land Subsidence	• Geological Survey of Alabama • USGS	**L**	**L**	Profiled, but not part of detailed risk assessment
Earthquakes	• NOAA Alabama Coastal Hazards Assessment • National Seismic Hazard Mapping Project map, USGS • Geological Survey of Alabama	**M**	**M**	Profile and risk assessment
Drought	• NOAA	**M**	**L**	Profiled, but not part of detailed risk assessment

[34] Note that coastal storm surge only occurs within two counties in the state. Therefore, the SHMT recognizes this hazard as a low ranking hazard.

Table 5.3-1
Qualitative Rankings of 16 Initial Hazards, based on Probability of Occurrence and Mitigation Potential

Hazard	Data Sources	Probability Rating	Mitigation Potential Rating	Disposition in Plan
Hail	• NOAA	**M**	**L**	Profiled, but not part of detailed risk assessment
Wildfire	• Alabama Forestry Commission	**M**	**L**	Profiled, but not part of detailed risk assessment
Extreme Temperatures	• NOAA	**M**	**L**	Profiled, but not part of detailed risk assessment
Lightning	• NOAA • National Weather Service	**M**	**L**	Profiled, but not part of detailed risk assessment
Dam Failures	• Alabama Department of Economic and Community Affairs (ADECA) • NOAA	**L**	**L**	Profiled, but not part of detailed risk assessment
Tsunamis	• NOAA • USGS	**L**	**L**	Profiled, but not part of detailed risk assessment
Sea Level Rise	• NOAA • Climate Central • Union of Concerned Scientists	**L**	**L**	Profiled, but not part of detailed risk assessment

As expected, the classification process provided a clear stratification of the hazards based on these criteria. Floods and high winds present the highest risk to the state based on this limited assessment, as in previous version. Therefore, floods and high winds are afforded more detailed risk assessments in **Section 5.5.**

5.4 Vulnerability Assessment and Loss Estimation

Background

Because it forms the basis of the state hazard mitigation plan, the state-level risk assessment should be as comprehensive as possible. However, it is typically more a high level view compared to the detailed local jurisdiction planning. As discussed in **Section 5.3**, the SHMT developed an initial list of hazards that were identified and profiled in **Section 5.2**. The SHMT then used a ranking methodology to determine which of these would be further analyzed to determine statewide potential losses. The ranking methodology used five criteria to determine if each hazard should be included in the plan. These criteria are briefly reviewed below. Hazards with the highest rankings are included in the risk assessments in the present section.

- History - High rating indicates that the hazard has affected the state often in the past, and that the hazard has occurred often and/or with widespread or severe consequences.

- Presence of susceptible areas - High rating indicates that the state has numerous facilities, operations, or populations that may be subjected to damage from the hazard.

- Data availability - High rating indicates that sufficient quality data is available to permit an accurate and comprehensive risk assessment.

- Federal disaster declarations - High rating indicates that the state has received a relatively high number of disaster declarations for the particular hazard.

- Potential for mitigation - High rating indicates that there are ways to address the hazard, and that the methods are technically feasible and have the potential to be cost-effective (i.e., mitigation measures are available at a reasonable cost, and damages to property, lives and/or community functions would be reduced or eliminated).

The SHMT used this system to identify floods and high winds as the most significant hazards in Alabama in the 2013 plan. The methods used for vulnerability assessment vary by hazard. The methodologies are discussed in detail in the subsections below.

5.4.1 State-owned Facilities and Analysis Methodology

Beginning with the 2013 plan, a complete list of state-owned facilities was provided by the Alabama Finance Department, Division of Risk Management which maintains a database of state-owned facilities. It is the 2013 State Owned Property Schedule. It includes information on which agency owns the building, name, and value. There are a total of 10,406 facilities provided in the categories of state agencies, boards, state-owned colleges and universities. The breakdown is as follows:

- 5,539 - state agencies
- 128 - boards
- 1,305 - colleges
- 3,434 - universities

These facilities have a combined value of $55 billion including $49 billion in building assets and $6 billion in contents. It should be noted that all facilities are included in this analysis, not just critical facilities. So the analysis includes an array of structures from small state-owned boat docks to large state-owned hospitals. Due to the large volume of structures, only the numbers of structures found to be located in a hazard area are included. However, a complete list of at-risk structures is in AEMA's possession.

To conduct the analysis, each of the facilities included in the categories above were then mapped and evaluated in GIS via a spatial query. This analysis was used to determine which of the facilities are located in the identified hazard areas. It should be noted that the information provided does not include information related to building elevation or year built which could impact vulnerability.

5.4.2 General Risk

Methodology 1 - Risk Estimates from Local Mitigation Plans

Requirement §201.4(c) (2) (ii) of the FR states that "the State risk assessment shall include an overview and analysis of the State's vulnerability to the hazards…based on estimates provided in local risk assessments." In reviewing this requirement, AEMA and the SHMT determined that the primary source for local vulnerability and risk assessments should be the county hazard mitigation plans.

As part of the state plan update process, the SHMT reviewed all of the local plans in detail. **Table 5.4-1** below summarizes the risk determinations from local plans. AEMA reviewed the 67 available local mitigation plans for incorporation into the risk assessment of this plan update. As expected, there is substantial variation in the quality and level of detail in the plans, specifically the risk assessment sections. Nevertheless, the local plans offered enough additional information that they could be assessed in detail for this update. The following is a discussion of the local plans with regard to risk assessment and a summary table (**Table 5.5-1**) of risk projections by county. This review process is explained in greater detail in **Section 7.3.**

Table 5.4-1
Summary of Potential Loss Estimates Extracted from Local Hazard Mitigation Plans for Specific Hazards

County	Flood		Hurricane		Tornado		Winds	
	Annual Loss	Per Event Loss	Annual Loss	Per Event Loss	Annual Loss	Per Event Loss	Annual Loss	Per Event Loss
Autauga*	$846,000	$84,600,000	n/a		$88,023	$352,090	$1,209,353	$704,180
Baldwin*	$165,714	$41,429	$100,703,000	$143,861,429	$162,448	$107,068	$54,463†	$7,801†
Barbour*	$13,909	$38,250	$673,000	$2,355,500	$65,091	$179,000	$2,701,341	$1,401,962
Bibb	$100,000	$9,200	$50,000	$127,668	$50,000	$28,750	$750,000	$13,147
Blount*	$41,333	$22,545	$7,121,520	$17,803,800	$155,914	$291,710	$21,037	$6,762
Bullock	$1,607	$22,500	n/a		$6,353	$24,000	$5,196	$291,000
Butler*	$14,134	$117,785	n/a		$21,261	$40,115	$14,546†	$12,649†
Calhoun*	$72,990	$115,857	$254,743	$821,750	$48,649	$115,830	$67,649†	$23,702†
Chambers*	$198,000	$19,800,000	$170,000	$850,000	$88,000	$293,333	$24,067†	$7,848†
Cherokee*	$26,625	$31,466	n/a		$57,625	$183,352	$36,861†	$18,431†
Chilton*	$6,154	$10,000	$670,000	$3,126,667	$81,946	$218,524	$2,067,537	$1,043,430
Choctaw	$96,000		n/a		$9,000		$101,250	
Clarke	$65,833	$37,832		$625,000	$112,052	$296,227	$11,382	$273,164
Clay*	$119,173	$145,333	$351,812	$1,641,791	$720,000	$1,500,000	$4,215,857†	$1,873,714†
Cleburne*	$30,060	$66,800	$144,429	$674,000	$31,172	$94,462	$47,167	$32,272
Coffee*	$10,752,500	$17,920,833	$416,154	$901,667	$4,556,407	$8,400,875	$52,306	$25,127
Colbert	$64,600	$109,250	n/a		$68,485	$91,320		$64,279
Conecuh*	$31,700	$35,222	n/a		$35,294	$81,818	$34,783	$21,918
Coosa*	$625	$6,250	$29,370	$94,741	$68,182	$272,727	$369,778	$336,909
Covington*	$641,700	$1,283,400	n/a		n/a		$2,972,475	$337,781
Crenshaw	$81,000		n/a		$73,000		$60,785	
Cullman*	$42,143	$20,345	$732,000	$2,562,000	$1,216,310	$1,137,839	$2,220,481	$452,804
Dale*	$356,800	$35,680,000	$1,926,000	$4,815,000	$779,661	$1,284,147	$31,385†	$9,772†
Dallas*	$17,455	$21,333	$965,000	$3,377,500	$310,750	$580,067	$2,244,611	$767,146
DeKalb*	$298,350	$523,421	n/a		$1,619,250	$4,762,500	$169,900	$44,759
Elmore*	$62,878	$133,783	$481,303	$6,016,288	$872,866	$3,009,881	$57,746	$160,405
Escambia*	$140,273	$77,150	$5,238,000	$10,476,000	$33,549	$77,773	$50,104	$23,350

Table 5.4-1
Summary of Potential Loss Estimates Extracted from Local Hazard Mitigation Plans for Specific Hazards

County	Flood		Hurricane		Tornado		Winds	
	Annual Loss	Per Event Loss	Annual Loss	Per Event Loss	Annual Loss	Per Event Loss	Annual Loss	Per Event Loss
Etowah*	$31,574	$47,125	$175,556	$819,260	$111,345	$258,941	$202,159	$50,810
Fayette	$200,000	$5,060	n/a	$5,903		$674,409		$36,721
Franklin	$8,462		$164,179		$12,509		$306,417	
Geneva*	$21,046,364	$46,302,000	$2,534,000	$5,912,667	$66,660	$252,357	$26,204	$15,106
Greene	$2,000		$1,000	$32,248	$1,000,000		$25,000	$9,009
Hale	$12,880	$12,880	$102,538	$256,346	$36,109	$40,122	100,280	$50,140
Henry*	$27,500	$91,667	n/a		n/a		$1,655,900	$551,967
Houston*	$1,062,500	$8,500,000	$24,000,000	$240,000,000	$330,000	$660,000	$1,040,000	$130,000†
Jackson*	$165,875	$331,750	n/a		$1,105,250	$2,908,553	$228,625	$26,897
Jefferson*	$9,771,100	$977,110,000	n/a^		$4,819,190	$3,583,500	$2,328,109†	$140,865†
Lamar	$28,000	$1,623	$50,000	$10,667	$400,000	$572,317	$25,000	$11,076
Lauderdale*	$231,400	$89,000	$150,000	$714,286	$11,689	$34,379	$393,420†	$79,000†
Lawrence*	$8,520	$4,484	$523,810	$3,666,667	$40,346	$80,692	$2,590,385†	$390,332†
Lee*	$488,000	$610,000	n/a^		$173,286	$485,200	$2,598,698	$859,569
Limestone*	$23,533	$8,609	$736,000	$2,760,000	$352,686	$545,061	$163,909	$34,507
Lowndes	$2,855		n/a		$11,231		$4,782	
Macon*	$2,160	$12,000	n/a		$15,563	$81,909	$7,567	$8,408
Madison*	$265,833	$212,666	n/a		$10,000,000	$5,000,000	$98,260	$25,093
Marengo*	$14,429	$10,100	n/a		$9,314	$51,583	$14,972	$5,500
Marion	$19,250	$13,667	n/a	$12,200,597	$898,920	$124,130	$216,576	$853,280
Marshall	$47,000	$24,619	$147,000		$472,307	$68,222	$180,138	$17,298
Mobile*	$4,451,700	$445,170,000	$190,435,000	$166,630,625	$94,052	$73,716	$297,173†	$27,995†
Monroe*	$4,300	$4,914	n/a		$74,000	$254,375	$108,000	$27,000
Montgomery*	$194,833	$83,500	$8,022,000	$28,077,000	$292,283	$407,658	$2,308,792	$579,934
Morgan*	$118,067	$39,356	$1,210,000	$4,537,500	$245,702	$437,656	$32,642	$7,178
Perry*	$10,750	$25,000	n/a		$253,290	$2,110,750	$2,788†	$3,282†
Pickens	$100,000	$144,900	$2,000	$618,058	$500,000	$39,189	$52,000	$19,686
Pike*	$16,818	$23,125	$1,090,000	$4,087,500	$87,759	$157,967	$5,519	$3,986
Randolph*	$89,531	$126,100	$286,991	$1,339,290	$222,145	$541,818	$55,689	$24,364
Russell*	$447,091	$702,571	n/a^		n/a		$2,912,763	$1,419,038
St. Clair*	$158,000	$96,555	$669,000	$2,341,500	$790,467	$1,226,586	$2,429,130	$702,767
Shelby*	$22,825,372	$66,193,579	n/a		n/a		$12,382,773	$3,779,158
Sumter*	$27,444	$18,868	n/a		$46,836	$224,813	$62,650†	$24,744†
Talladega*	$389,229	$457,916	$392,357	$1,373,250	$65,550	$95,000	$62,256	$18,148
Tallapoosa*	$6,675	$10,430	$113,429	$397,000	$12,220	$26,000	$30,553	$11,827
Tuscaloosa	$25,000	$14,183	$2,235	$970,525	$1,320,000	$783,189	$17,880	$36,287
Walker*	$78,273	$50,647	n/a^		$706,690	$976,190	$1,757,310	$582,857
Washington*	$11,330	$8,715	n/a^		$12,242	$24,484	$105,456†	$65,910†
Wilcox	$2,700	$3857	n/a			$256,167		$22,644
Winston	$36,667	$16,375	n/a		$336,308	$234,304	$22,824	$1,058,981

*This Plan has been updated since the completion of the 2010 State Hazard Mitigation Plan includes county level plan updates through August 31, 2012.
†These values represent severe storm events (including wind, hail, and lightning).
^Data provided in the local plan includes statewide and/or regional hurricane loss estimates; county-level data was not available.
Note: n/a indicates that information was not available in the local plans and should not be taken to mean that that the jurisdiction is not vulnerable to the hazard.

Although there is some expected variation in the methods used in these local risk assessments, most of them were based on a standard methodology of using past damages to project future losses. The SHMT did not perform a detailed assessment of each county's methodology to

validate them; however, it can be assumed that they all have at least a basic level of technical validity. After initial review of loss estimates for all hazards in all local plans, it was determined that ample usable information was only available for floods, hurricanes, tornadoes, and wind. Although the local plans did include information on loss estimates for other hazards, it was widely inconsistent to the point of being unusable. **Table 5.4-2** shows the cumulative risk of these hazards by county.

Table 5.4-2
Total Potential Loss Estimates from Local Hazard Mitigation Plans

County	Total Estimated Risk
Mobile	$195,277,925
Baldwin	$101,085,625
Shelby	$35,208,145
Houston	$26,432,500
Geneva	$23,673,228
Jefferson	$16,918,399
Coffee	$15,777,367
Montgomery	$10,817,908
Madison	$10,364,093
Blount	$7,339,804
Escambia	$5,461,926
Clay	$5,406,842
Cullman	$4,210,934
St. Clair	$4,046,597
Covington	$3,614,175
Dallas	$3,537,816
Barbour	$3,453,341
Russell	$3,359,854
Lee	$3,259,984
Lawrence	$3,163,061
Dale	$3,093,846
Chilton	$2,825,637
Walker	$2,542,273
Autauga	$2,143,376
DeKalb	$2,087,500
Henry	$1,683,400
Morgan	$1,606,411
Jackson	$1,499,750
Elmore	$1,474,793
Tuscaloosa	$1,365,115
Limestone	$1,276,128
Pike	$1,200,096
Marion	$1,134,746
Greene	$1,028,000
Bibb	$950,000
Talladega	$909,392
Marshall	$846,445
Randolph	$654,356
Pickens	$654,000
Etowah	$520,634
Lamar	$503,000
Franklin	$491,567
Chambers	$480,067
Coosa	$467,955
Calhoun	$444,031
Winston	$395,799
Lauderdale	$393,089

Table 5.4-2
Total Potential Loss Estimates from Local Hazard Mitigation Plans

County	Total Estimated Risk
Perry	$266,828
Cleburne	$252,828
Hale	$251,807
Crenshaw	$214,785
Choctaw	$206,250
Fayette	$200,000
Clarke	$189,267
Monroe	$186,300
Tallapoosa	$162,877
Sumter	$136,930
Colbert	$133,085
Washington	$129,028
Cherokee	$121,111
Conecuh	$101,777
Butler	$49,941
Marengo	$38,715
Macon	$25,290
Lowndes	$18,868
Bullock	$13,156
Wilcox	$2,700

The reliability of these risk projections cannot be determined without additional study, but the pattern in the data is consistent with results in other parts of this section, with the counties closest to the coast and those with the highest populations projecting the most risk. **Figure 5.4-1** through **5.4-5** show the county-by-county potential loss estimates for flooding, hurricanes, tornadoes, winds, and cumulative risks for the 67 counties with available hazard mitigation plans as of the 2013 state plan update.

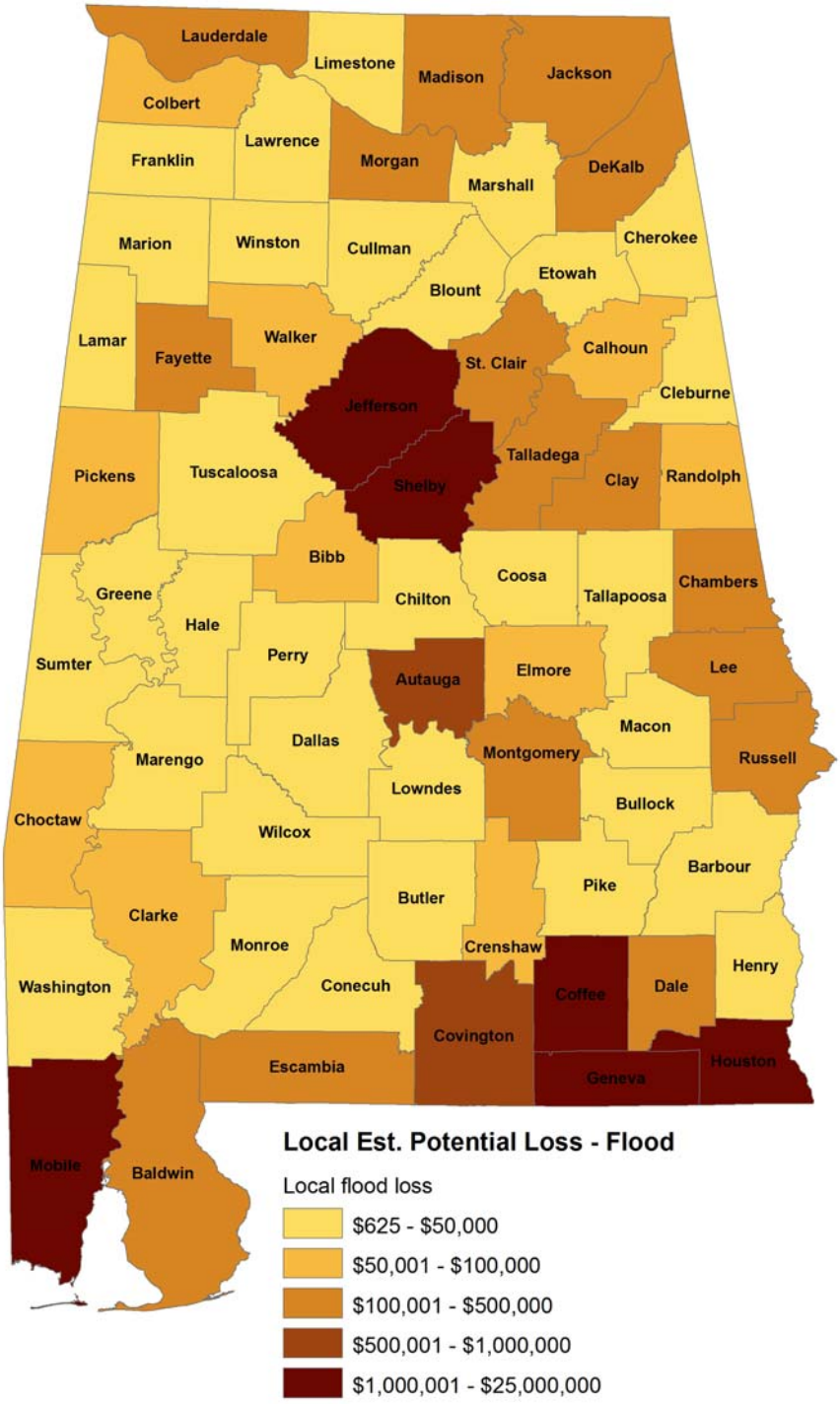


Figure 5.4-1
Annual Loss Estimates from Flooding Extracted from Local Hazard Mitigation Plans
Source: Alabama Local Hazard Mitigation Plans

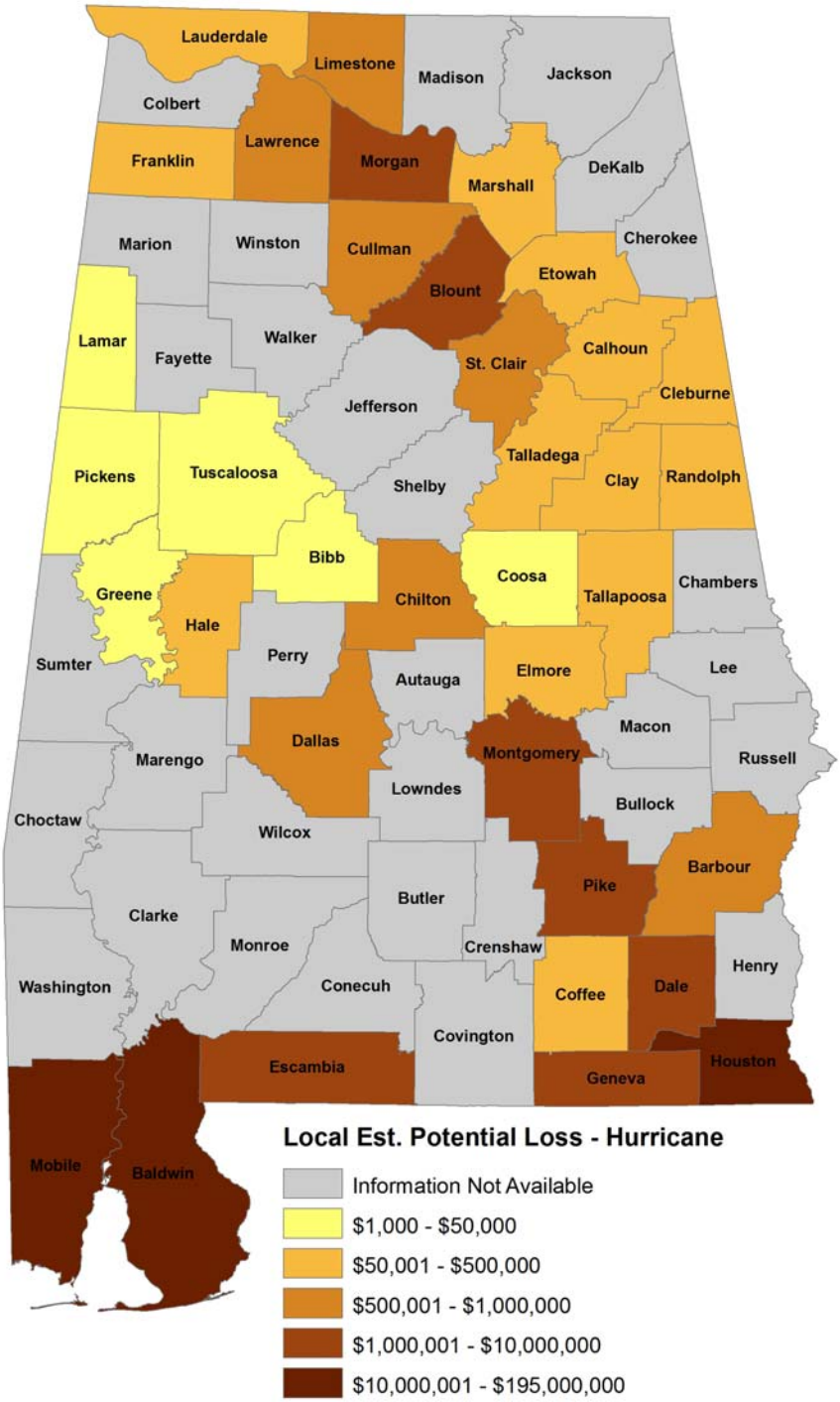


Figure 5.4-2
Annual Loss Estimates from Hurricanes Extracted from Local Hazard Mitigation Plans
Source: Alabama Local Hazard Mitigation Plans

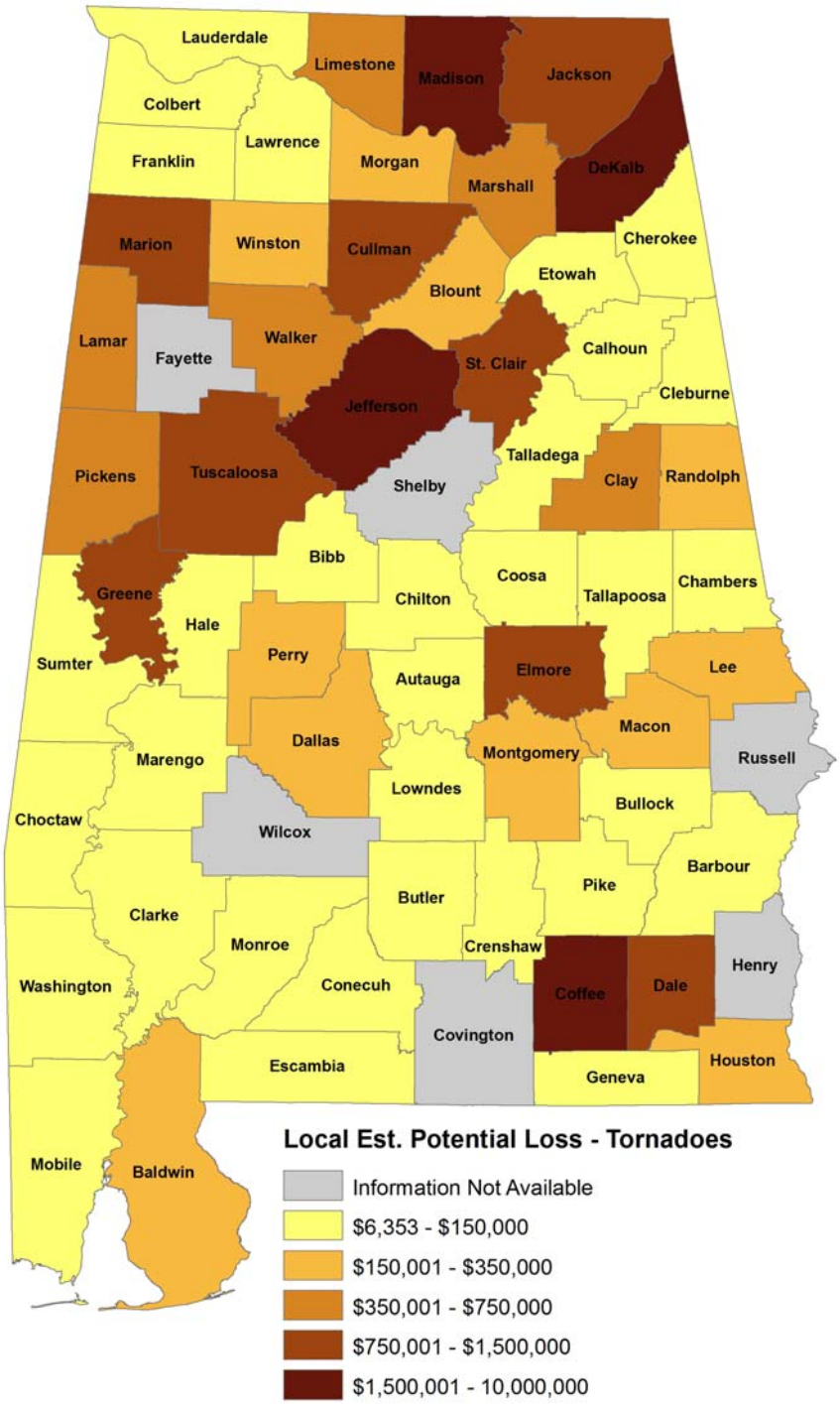


Figure 5.4-3
Annual Loss Estimates from Tornadoes Extracted from Local Hazard Mitigation Plans
Source: Alabama Local Hazard Mitigation Plans

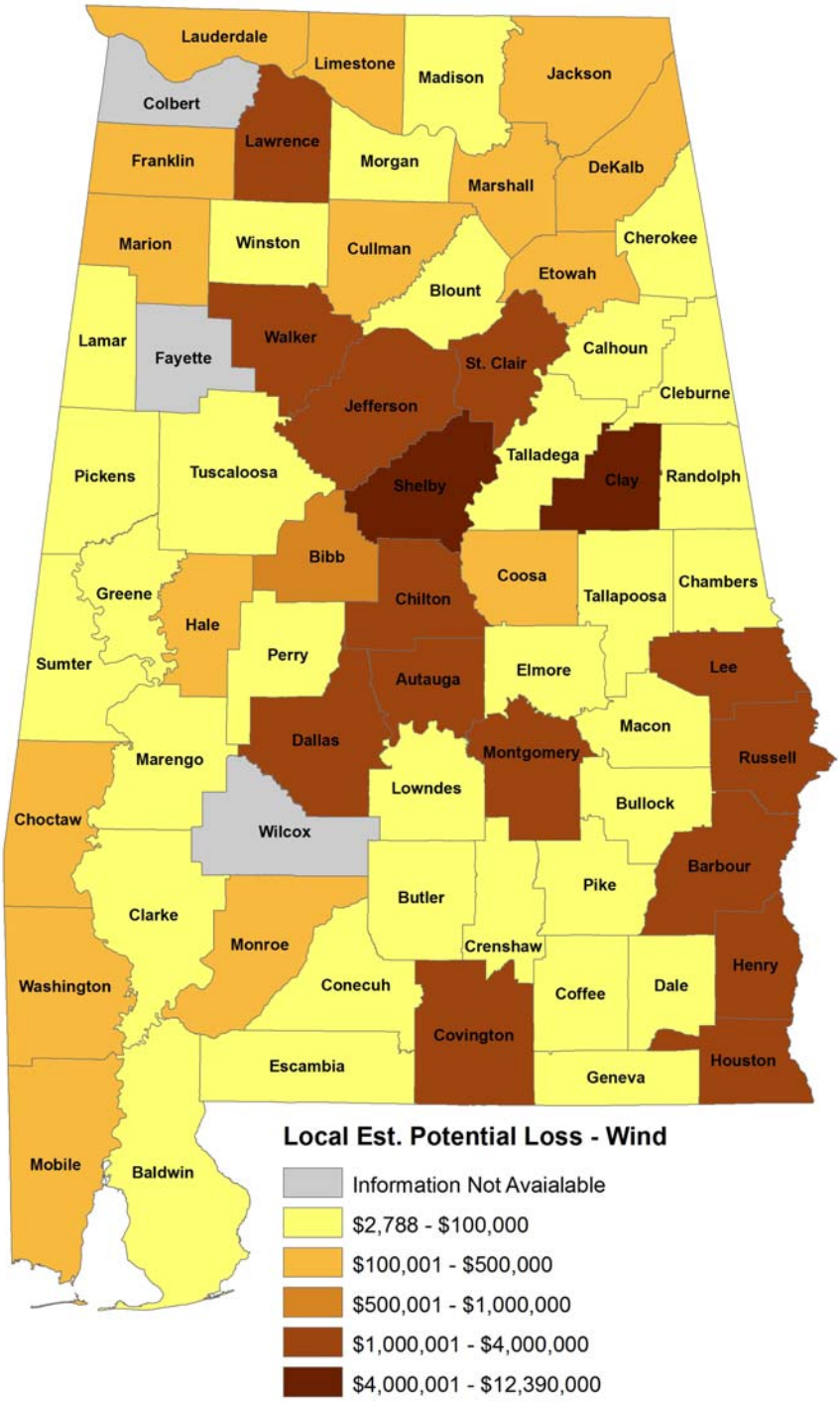


Figure 5.4-4
Annual Loss Estimates from Windstorms Extracted from Local Hazard Mitigation Plans
Source: Alabama Local Hazard Mitigation Plans

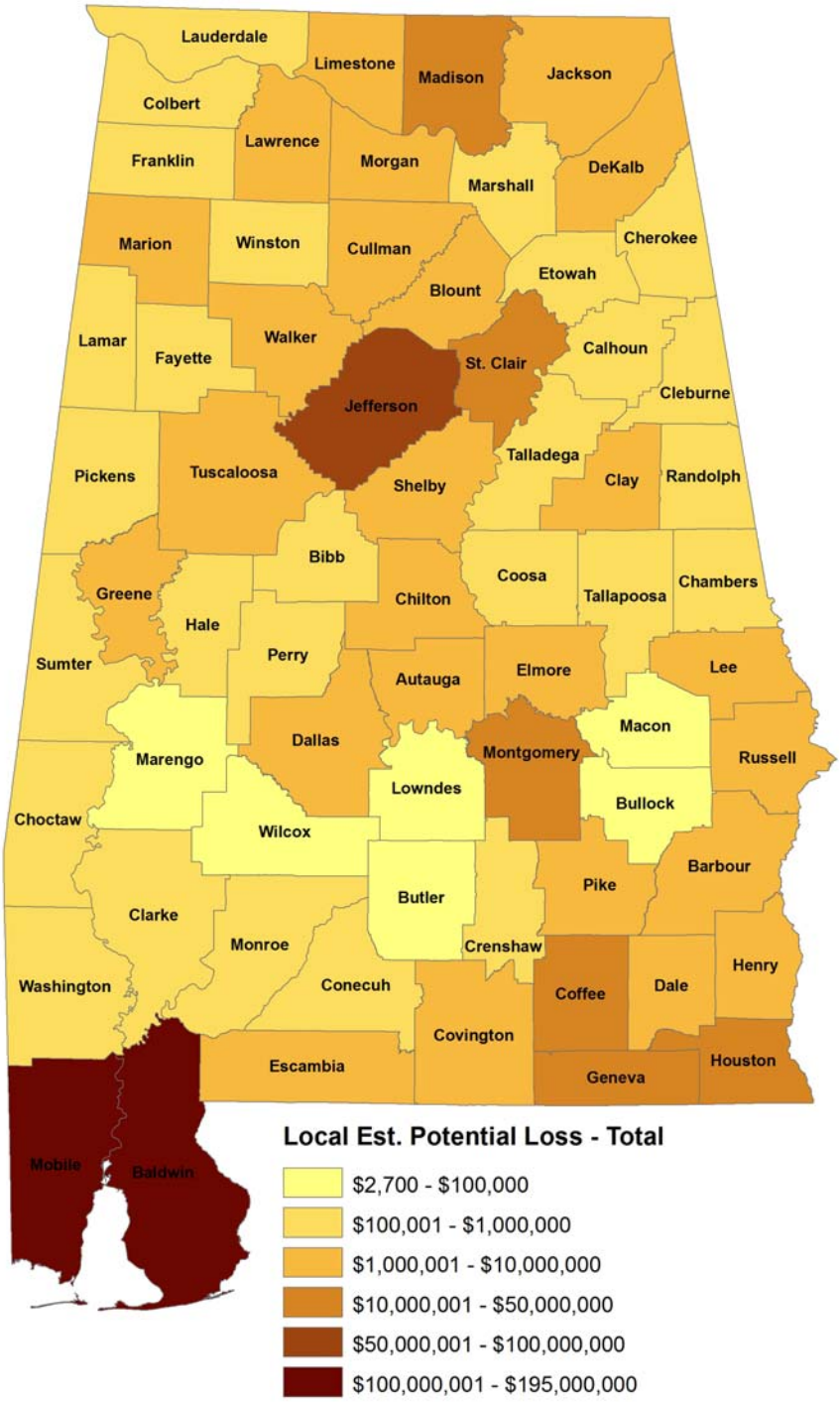


Figure 5.4-5
Total Annual Loss Estimates from Selected Hazards Extracted from Local Hazard Mitigation Plans
Source: Alabama Local Hazard Mitigation Plans

Strengths, Biases, and Limitations of Methodology 1

This summary of local risk assessment findings indicates strong agreement between local hazard mitigation plans and the summaries and conclusions presented in this state-level plan (e.g., that coastal counties and those with the highest populations appear to have the most projected future damages). One limitation is that the accuracy of the individual county studies has not been independently verified, except insofar as the plans have been reviewed and approved by AEMA and FEMA. As hazard mitigation planning matures as a practice and the local plans are updated and enhanced over time, the risk assessment methodologies and results are expected to continually improve.

5.4.3 Flood Risk

Floods are the most extensively studied natural hazard in most parts of the United States. Many areas in the state have, at a minimum, a nationally completed flood map (Flood Insurance Rate Maps). Some areas, typically with a high at-risk population, have detailed flood studies in place. Flood maps help to show where floodwaters are likely to go and the frequency with which they are likely to occur. There is also an array of empirical data about the damages floods have caused in many areas. Data regarding how many people and structures are located in various areas is also available through the U.S. Census, making it possible to determine the approximate number of people at risk to flood. These sources of information were all used in determining statewide risk from floods. The techniques used and the results are discussed in the paragraphs below.

5.4.3.1 Summary of Local Risk Assessments

Potential loss estimates from local hazard mitigation plans can be found in **Section 5.4.1**.

5.4.3.2 Statewide Risk Assessment

Because of the availability of data, five separate methods were used to estimate flood risk statewide. These are discussed in turn below. Although statistical corroboration was not possible because of the nature of the data, the use of multiple methodologies was to provide a broader range of information to better characterize the flood risk.

Methodology 1 – Analysis of NFIP Claims Data[35]

This method is based on a straightforward analysis of historic National Flood Insurance Program (NFIP) claims data across Alabama (**Figure 5.4-7**). **Table 5.4-3** shows the history of flood insurance claims in the state, from 1978 to 2012. Most of the columns are self-explanatory.

Key to Table Columns:

A. Number of flood insurance properties;
B. Number of flood insurance losses;
C. Number of losses per property (average);
D. Total dollar value amount of all losses;
E. Number of losses per year;
F. Average dollar value amount per loss; and
G. Average annual dollar value of losses county-wide.

[35] The Biggert-Waters Flood Insurance Reform Act of 2012 extends the National Flood Insurance Program (NFIP) through 2017 and included several reforms included eliminating subsidized insurance rate of repetitive loss properties.

Table 5.4-3
Summary of Flood Insurance Claims Statistics for Alabama Counties

County	A	B	C	D	E	F	G
Baldwin County	27,128	16,548	0.61	$505,361,632	486.71	$30,539	$14,863,577
Mobile County	9,385	14,137	1.51	$349,639,796	415.79	$24,732	$10,283,523
Jefferson County	2,905	2,143	0.74	$27,670,088	63.03	$12,912	$813,826
Coffee County	461	507	1.10	$15,159,376	14.91	$29,900	$445,864
Escambia County	221	307	1.39	$10,439,072	9.03	$34,003	$307,032
Madison County	4,311	573	0.13	$7,144,813	16.85	$12,469	$210,142
Shelby County	459	467	1.02	$5,659,039	13.74	$12,118	$166,442
Dale County	472	216	0.46	$5,322,310	6.35	$24,640	$156,539
Autauga County	2,309	321	0.14	$4,993,252	9.44	$15,555	$146,860
Geneva County	152	135	0.89	$2,519,385	3.97	$18,662	$74,100
Dallas County	465	172	0.37	$1,418,105	5.06	$8,245	$41,709
Morgan County	823	112	0.14	$1,392,342	3.29	$12,432	$40,951
Houston County	139	59	0.42	$1,334,969	1.74	$22,627	$39,264
Chambers County	413	53	0.13	$1,151,971	1.56	$21,735	$33,882
Tuscaloosa County	1,093	154	0.14	$1,065,575	4.53	$6,919	$31,340
Colbert County	179	102	0.57	$960,071	3.00	$9,412	$28,237
Lauderdale County	202	116	0.57	$954,821	3.41	$8,231	$28,083
Greene County	114	135	1.18	$691,438	3.97	$5,122	$20,336
Talladega County	527	59	0.11	$656,704	1.74	$11,131	$19,315
Blount County	49	20	0.41	$557,562	0.59	$27,878	$16,399
Etowah County	663	89	0.13	$532,252	2.62	$5,980	$15,654
Montgomery County	367	31	0.08	$509,038	0.91	$16,421	$14,972
Pickens County	110	83	0.75	$506,267	2.44	$6,100	$14,890
Hale County	173	133	0.77	$497,233	3.91	$3,739	$14,625
Jackson County	234	56	0.24	$475,957	1.65	$8,499	$13,999
DeKalb County	102	27	0.26	$441,755	0.79	$16,361	$12,993
Elmore County	563	29	0.05	$432,493	0.85	$14,914	$12,720
Covington County	122	36	0.30	$416,536	1.06	$11,570	$12,251
Calhoun County	572	98	0.17	$390,404	2.88	$3,984	$11,482
St. Clair County	497	59	0.12	$384,887	1.74	$6,524	$11,320
Marshall County	167	13	0.08	$372,309	0.38	$28,639	$10,950
Lawrence County	89	27	0.30	$356,150	0.79	$13,191	$10,475
Walker County	170	30	0.18	$291,702	0.88	$9,723	$8,579
Choctaw County	66	43	0.65	$273,280	1.26	$6,355	$8,038
Limestone County	275	49	0.18	$219,298	1.44	$4,475	$6,450
Marion County	35	18	0.51	$190,290	0.53	$10,572	$5,597
Lowndes County	91	9	0.10	$180,670	0.26	$20,074	$5,314
Lee County	545	49	0.09	$131,521	1.44	$2,684	$3,868

Table 5.4-3
Summary of Flood Insurance Claims Statistics for Alabama Counties

County	A	B	C	D	E	F	G
Coosa County	32	8	0.25	$113,900	0.24	$14,238	$3,350
Monroe County	31	30	0.97	$111,282	0.88	$3,709	$3,273
Sumter County	58	11	0.19	$111,222	0.32	$10,111	$3,271
Washington County	19	15	0.79	$103,893	0.44	$6,926	$3,056
Lamar County	18	13	0.72	$74,653	0.38	$5,743	$2,196
Crenshaw County	12	1	0.08	$63,306	0.03	$63,306	$1,862
Bullock County	13	3	0.23	$62,115	0.09	$20,705	$1,827
Chilton County	68	9	0.13	$58,258	0.26	$6,473	$1,713
Wilcox County	71	16	0.23	$53,421	0.47	$3,339	$1,571
Barbour County	39	23	0.59	$49,106	0.68	$2,135	$1,444
Cherokee County	213	7	0.03	$35,064	0.21	$5,009	$1,031
Henry County	48	5	0.10	$33,975	0.15	$6,795	$999
Cullman County	108	8	0.07	$33,419	0.24	$4,177	$983
Marengo County	110	20	0.18	$32,675	0.59	$1,634	$961
Russell County	75	7	0.09	$21,229	0.21	$3,033	$624
Tallapoosa County	128	3	0.02	$17,959	0.09	$5,986	$528
Macon County	37	1	0.03	$10,830	0.03	$10,830	$319
Conecuh County	3	2	0.67	$6,624	0.06	$3,312	$195
Bibb County	44	3	0.07	$2,651	0.09	$884	$78
Clarke County	27	2	0.07	$1,941	0.06	$971	$57
Butler County	11	0	0.00	$0	0.00	n/a	$0
Cleburne County	7	0	0.00	$0	0.00	n/a	$0
Fayette County	22	0	0.00	$0	0.00	n/a	$0
Franklin County	20	0	0.00	$0	0.00	n/a	$0
Perry County	1	0	0.00	$0	0.00	n/a	$0
Pike County	25	0	0.00	$0	0.00	n/a	$0
Randolph County	14	0	0.00	$0	0.00	n/a	$0
Winston County	120	2	0.02	$0	0.06	$0	$0
Clay County	0	0	n/a	$0	n/a	n/a	n/a
Statewide	**58,022**	**37,404**		**$951,691,886**	**1,100.12**	**$25,444**	**$27,990,938**

Source: NFIP Community Information System (CIS) Database Query

The pattern that emerges in this analysis of claims is similar to that in the other assessment methodologies, i.e., that coastal counties and those with relatively high populations are the most at risk in the state. Certain other results may be interesting as points of analysis (aside from the total number and amount of claims), such as the number of claims per policy and the average amount of claims in particular counties. **Table 5.4-4** and **5.4-5** show summary information based on the preceding table.

Table 5.4-4
NFIP Statewide Claims Data Summary

Data	Value
Number of claims in database	37,404
Sum of claims (2012 query)	$951,691,886
Average annual damages Statewide	$27,990,938

Table 5.4-5
NFIP Claims Data Analysis: Selected Parameters

Parameter	Past Damages
Highest risk (Baldwin)	$505,361,632
Average risk	$14,419,574
Median risk (Walker/Choctaw)	$282,491

Tables 5.4-5 through **5.4-7** demonstrate a significant skew created by Mobile, Baldwin, and Jefferson counties, a pattern that is evident in most of the other analyses in this section. This is likely a result of relatively high populations in these areas, in the case of the coastal counties combined with exposure to the effects of hurricanes and tropical storms from the Gulf of Mexico.

Strengths, Biases, and Limitations of Methodology 1

This analysis uses FEMA/NFIP flood insurance claim data obtained in August 2012 (**Figure 5.4-6**). The data include a large enough sample over a sufficient period of time to be statistically reliable for the purpose of assessing relative flood risk statewide. This data cannot be considered a pure indication of risk because the repetitive loss properties are identified via insurance claims, so risk to uninsured property is not represented in the data. The raw numbers of properties in the tables above also do not address the issue of flood risk at individual insured sites because data is aggregated to the county level.

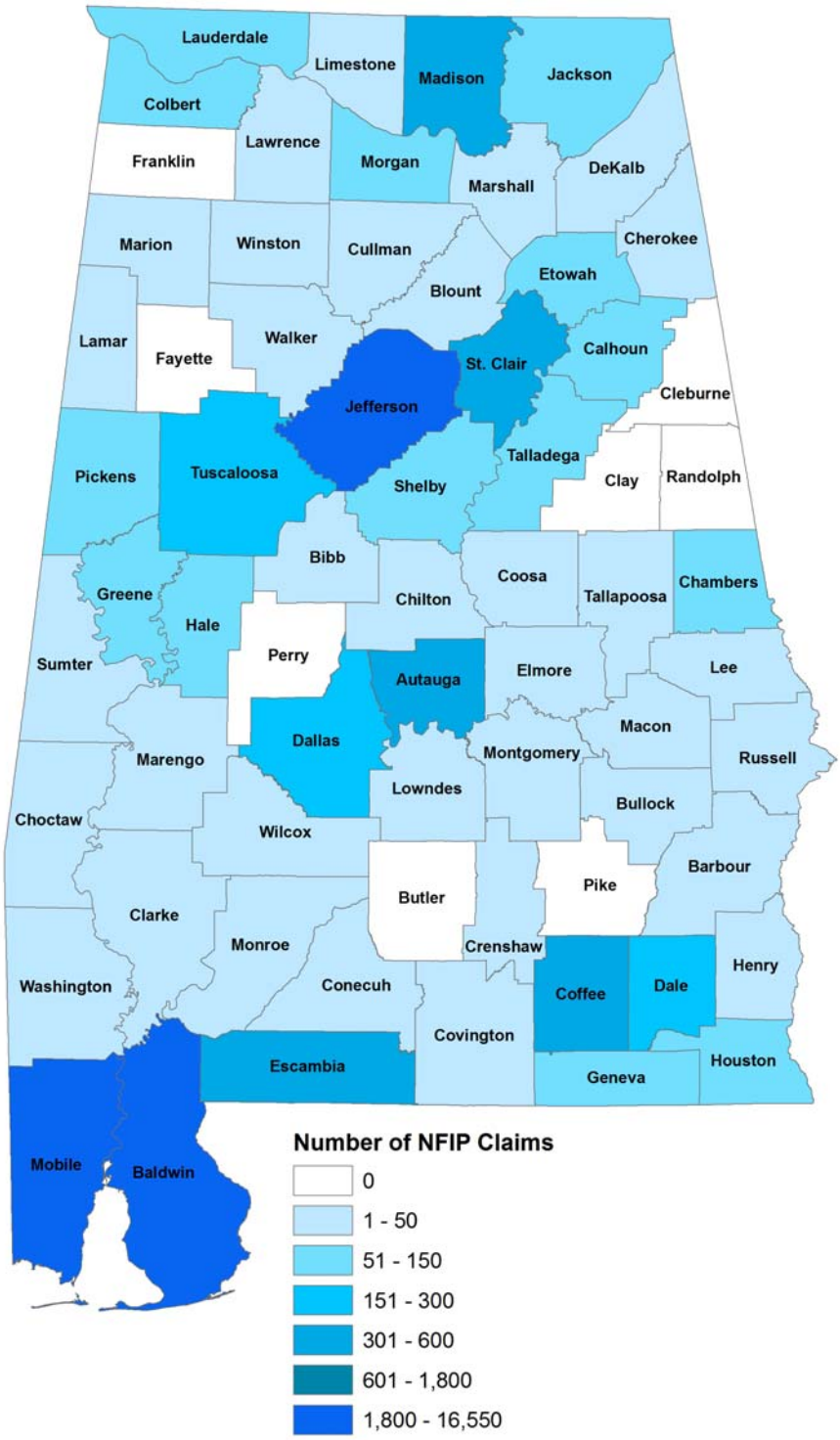


Figure 5.4-6
Number of NFIP Claims in Alabama, 1978-2012
Source: FEMA/National Flood Insurance Program

Methodology 2 – Analysis of NFIP Repetitive Loss Claims Data

The second flood risk assessment method is based on NFIP repetitive loss insurance claims over a period of about 34 years (the data begins in 1978). The claims information was obtained in September 2012. The data were sorted into counties, and then sorted again to count both the numbers of losses (or claims) over the period and the amount of losses in dollars. These figures were then each divided by the reporting period to determine an annual number of losses (**Table 5.4-6**). This is the annualized figure discussed in the previous section on risk definitions. The annualized dollar loss figure was then projected out 30 years using the FEMA present-value coefficient from the benefit-cost analysis software. Use of the present value coefficient performs the discounting required by OMB Circular No. A-94 guidance. The 7 percent figure was current at the time this plan was produced and had been in effect for more than 10 years prior.

Table 5.4-6
Summary of Key Repetitive Loss Claims Statistics for Alabama Counties

County Name	Totals by County 1978-2012				Averages by County			County Annual $
	Properties	Change since 2010 Plan	Losses	$ Amount	Loss	$/ property	Ann #	
Baldwin	1,865	-48	5,259	$196,218,744	$37,311	$105,124	154.68	$5,771,140
Mobile	1,393	-15	3,812	$115,363,291	$30,263	$82,816	112.12	$3,393,038
Jefferson	181	21	509	$10,036,360	$19,718	$55,450	14.97	$295,187
Shelby	93	6	330	$5,082,403	$15,401	$54,649	9.71	$149,482
Coffee	42	1	97	$2,177,067	$22,444	$51,835	2.85	$64,031
Escambia	40	5	120	$6,500,317	$54,169	$162,508	3.53	$191,186
Lauderdale	19	0	59	$609,395	$10,329	$32,073	1.74	$17,923
Madison	19	2	53	$677,348	$12,780	$35,650	1.56	$19,922
Autauga	16	0	50	$1,378,341	$27,567	$86,146	1.47	$40,539
Hale	16	-1	37	$123,723	$3,344	$7,733	1.09	$3,639
Dale	15	0	40	$2,009,645	$50,241	$133,976	1.18	$59,1079
Greene	14	-1	39	$322,066	$8,258	$23,005	1.15	$9,473
Pickens	13	0	39	$318,283	$8,161	$24,483	1.15	$9,361
Colbert	12	0	43	$624,237	$14,517	$52,020	1.26	$18,360
Etowah	10	0	22	$236,488	$10,749	$23,649	0.65	$6,956
Tuscaloosa	8	0	20	$477,738	$23,887	$59,717	0.59	$14,051
Morgan	8	3	28	$580,133	$20,719	$72,517	0.82	$17,063
Geneva	7	0	16	$537,998	$33,625	$76,857	0.47	$15,823
Limestone	7	2	16	$106,064	$6,629	$15,152	0.47	$3,120
Covington	6	0	12	$214,163	$17,847	$35,694	0.35	$6,299
Dallas	6	0	15	$139,324	$9,288	$23,221	0.44	$4,098
Houston	5	1	10	$411,538	$41,154	$82,308	0.29	$12,104
Lawrence	5	1	13	$220,430	$16,956	$44,086	0.38	$6,483
DeKalb	4	0	11	$164,089	$14,917	$41,022	0.32	$4,826
Jackson	4	2	11	$134,623	$12,238	$33,656	0.32	$3,959
Lee	4	0	10	$27,081	$2,708	$6,770	0.29	$797
Marion	3	0	8	$108,436	$13,555	$36,145	0.24	$3,18
Choctaw	3	0	9	$92,193	$10,244	$30,731	0.26	$2,712
Walker	3	1	6	$30,728	$5,121	$10,243	0.18	$904
Blount	2	0	8	$185,621	$23,203	$92,810	0.24	$5,459

Table 5.4-6
Summary of Key Repetitive Loss Claims Statistics for Alabama Counties

County Name	Totals by County 1978-2012				Averages by County			County Annual $
	Properties	Change since 2010 Plan	Losses	$ Amount	Loss	$/ property	Ann #	
St. Clair	2	0	4	$102,511	$25,628	$51,256	0.12	$3,015
Calhoun	2	0	5	$21,639	$4,328	$10,820	0.15	$636
Talladega	2	0	4	$13,672	$3,418	$6,836	0.12	$402
Chambers	1	0	2	$24,151	$12,075	$24,151	0.06	$710
Lamar	1	0	2	$17,395	$8,697	$17,395	0.06	$512
Wilcox	1	0	2	$12,473	$6,236	$12,473	0.06	$367
Washington	1	0	2	$8,891	$4,446	$8,891	0.06	$262
Sumter	1	0	2	$4,057	$2,028	$4,057	0.06	$119
Marshall	1	1	3	$131,678	$43,893	$131,678	0.09	$3,873
Elmore	1	0	2	$29,789	$14,895	$29,789	0.06	$876
Coosa	1	1	3	86031	$28,677	$86,031	0.09	$2,530
Montgomery	0	0	0	$0	$0	$0	0	0
Russell	0	0	0	$0	$0	$0	0	0
Monroe	0	0	0	$0	$0	$0	0	0
Winston	0	0	0	$0	$0	$0	0	0
Tallapoosa	0	0	0	$0	$0	$0	0	0
Randolph	0	0	0	$0	$0	$0	0	0
Pike	0	0	0	$0	$0	$0	0	0
Perry	0	0	0	$0	$0	$0	0	0
Marengo	0	0	0	$0	$0	$0	0	0
Macon	0	0	0	$0	$0	$0	0	0
Lowndes	0	0	0	$0	$0	$0	0	0
Henry	0	0	0	$0	$0	$0	0	0
Franklin	0	0	0	$0	$0	$0	0	0
Fayette	0	0	0	$0	$0	$0	0	0
Cullman	0	0	0	$0	$0	$0	0	0
Crenshaw	0	0	0	$0	$0	$0	0	0
Conecuh	0	0	0	$0	$0	$0	0	0
Cleburne	0	0	0	$0	$0	$0	0	0
Clay	0	0	0	$0	$0	$0	0	0
Clarke	0	0	0	$0	$0	$0	0	0
Chilton	0	0	0	$0	$0	$0	0	0
Cherokee	0	0	0	$0	$0	$0	0	0
Butler	0	0	0	$0	$0	$0	0	0
Bullock	0	0	0	$0	$0	$0	0	0
Bibb	0	0	0	$0	$0	$0	0	0
Barbour	0	0	0	$0	$0	$0	0	0
Totals:	**3,837**	**-18**	**10,733**	**$345,560,153**	**$731,665**	**$1,975,422**	**315.68**	**$10,163,534**

Source: FEMA Region IV NFIP Query

The analysis produced the predicted result: coastal counties and counties with the highest populations (e.g., Jefferson) have the most risk. Although the cumulative risk column (far right) indicates the counties that appear to have the most potential for future flood losses, other data can also be useful indicators of more localized risks (although the data used in the analysis do

not include specific addresses). For example, areas with the highest per-claim average may suggest that either flood depths or structure/contents values are above the statewide average. This information can be used to identify the most appropriate mitigation methods. The tables and figures below show the data in various configurations. **Table 5.4-7** and **5.4-8** show summary information based on the preceding table.

Table 5.4-7
NFIP Repetitive Loss Data Analysis Statewide Summary

Data	Value
Number of losses in database	10,733
Sum of losses (2010 query)	$345,560,153
Average annual damages Statewide	$10,163,534

Table 5.4-8
NFIP Repetitive Loss Data Analysis: Selected Parameters

Parameter	Past Damages
Highest risk (Baldwin)	$196,218,744
Average risk	$5,157,614
Median risk (Lee)	$27,081

The results of this methodology mirror the pattern in the other analyses, i.e., that Baldwin and Mobile counties have the greatest flood risk. The repetitive loss data are a subset of the general NFIP claims data, so it is expected that this pattern would hold between the two analyses.

Strengths, Biases, and Limitations of Methodology 2

This analysis uses FEMA/NFIP repetitive loss flood claim data obtained in September 2012 (**Figure 5.4-6**). The data includes a large enough sample over a sufficient period of time to be statistically reliable for the purpose of assessing relative flood risk statewide. The criteria for determining which properties qualify as repetitive loss status naturally introduces certain biases into the resulting data. This data cannot be considered a pure indication of risk because the repetitive loss properties are identified via insurance claims, so risk to uninsured property is not represented in the data. The raw numbers of properties in the table above also do not address the issue of flood risk at individual insured sites because data is aggregated to the county level.

The data can, however, provide insight into the relative flood risk in the state, accepting the bias noted previously. The concentrations of repetitive loss properties in certain counties suggests that further study should be undertaken in these areas to determine if mitigation actions are warranted. This risk index is particularly important in the context of FEMA grant programs because FEMA has established explicit goals related to mitigation actions at such properties.

Figure 5.4-7
Number of NFIP Repetitive Loss Claims in Alabama, 1974-2012
Source: FEMA/National Flood Insurance Program

Methodology 3 – GIS Analysis of Census Data and Digital Flood Maps

The third method consists of a process in which 2010 population data at the U.S. Census 2010 block level was overlaid onto base maps that show the boundaries of the 1-percent-annual-chance flood from effective Digital Flood Insurance Rate Maps (DFIRMs) for all 67 counties in the state. This method shows the estimated population at-risk based on the intersection of the census block with the mapped flood hazard area (**Table 5.4-9** and **Figure 5.4-8**). (Note that the top seven with the highest population in the floodplain remain from the 2010 plan that used 2000 U.S. Census population data. However, all have an increased amount of population found to be located in the floodplains.)

Table 5.4-9
Estimated Population in the 1-Percent-Annual-Chance Flood Hazard Area by County

County	Population in 1-Percent-Annual-Chance Flood Hazard Area
Jefferson	173,666
Mobile	155,616
Madison	98,817
Tuscaloosa	86,531
Shelby	79,849
Montgomery	76,117
Baldwin	69,969
Lee	61,423
Saint Clair	53,649
Morgan	43,821
Cullman	41,942
Calhoun	41,922
Elmore	39,836
Etowah	36,387
Limestone	35,897
Marshall	34,928
Houston	34,871
Lauderdale	31,129
DeKalb	28,801
Walker	28,659
Blount	27,824
Coffee	26,887
Chilton	23,537
Jackson	23,087
Tallapoosa	22,694
Dallas	22,433
Russell	21,870
Cherokee	19,876
Dale	19,821
Colbert	19,797
Pike	19,223
Chambers	16,229
Escambia	15,876
Franklin	15,682
Marion	15,334

County	Population in 1-Percent-Annual-Chance Flood Hazard Area
Pickens	15,126
Covington	14,719
Lawrence	14,598
Barbour	14,359
Bibb	14,301
Randolph	14,093
Geneva	12,199
Winston	11,997
Macon	11,862
Washington	11,619
Choctaw	11,437
Hale	11,302
Autauga	11,101
Cleburne	10,564
Marengo	10,544
Fayette	10,256
Sumter	10,225
Clarke	9,965
Lamar	9,694
Henry	9,465
Butler	9,389
Clay	8,204
Wilcox	8,057
Coosa	7,791
Bullock	7,692
Crenshaw	7,476
Lowndes	7,127
Monroe	6,917
Greene	6,763
Conecuh	5,915
Perry	5,495
Talladega	936
TOTAL	**1,874,806**

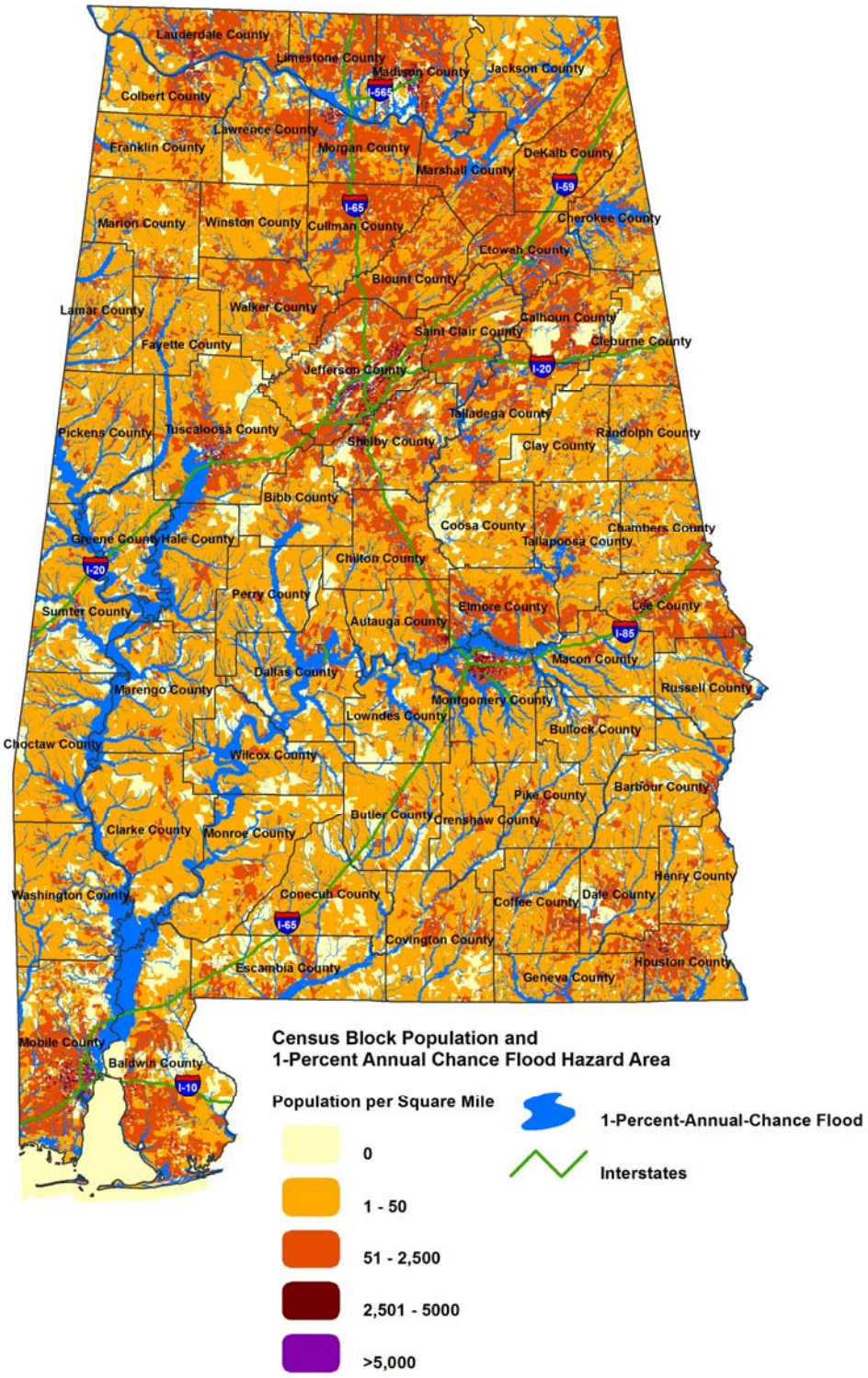


Figure 5.4-8
Alabama Population in the 1-Percent-Annual-Chance Flood Hazard Area, Graphical Depiction
Source: U.S. Census 2010, FEMA.

Strengths, Biases, and Limitations of Methodology 3

This method is based on data considered reliable because it comes from official sources such as the U.S. Census Bureau and FEMA-issued Digital Flood Insurance Rate Maps (DFIRMs). The method provides a reasonable way to correlate the other hazard and risk data obtained in Methods 1 and 2, but should not be considered reliable as an independent method to calculate risk. Although the data underlying the census block figures can be considered reliable, the exact distribution of people and structures within the individual census blocks is not known. This method assumes that the entire population of a census block would be at risk regardless of the percentage of the census block actually intersecting the flood zone or the actual distribution of persons within that exposed intersecting portion. The accuracy of this assumption cannot be tested within the scope of this plan, but presumably some census blocks and counties will have higher than expected densities of people in the floodplain, and some will have lower densities.

Methodology 4 – Analysis of FEMA Hazus-MH Data

Hazus-MH is a nationally applicable standardized GIS-based methodology that consists of models for estimating potential losses from earthquakes, floods, hurricane winds and coastal storm surge. A tsunami model is also underdevelopment and anticipated to be released in late 2014. Hazus-MH was developed by FEMA under contract with the National Institute of Building Sciences (NIBS). NIBS maintains committees of earthquake, flood, wind, and software experts to provide technical oversight and guidance to Hazus-MH development. Loss estimates produced by Hazus-MH are based on current scientific and engineering knowledge of the effects of earthquakes, floods, and hurricane winds. Estimating losses is essential to decision-making at all levels of government, providing a basis for developing mitigation plans and policies, emergency preparedness, and response and recovery planning.

Hazus-MH provides estimates of hazard-related damage before a disaster occurs and takes into account various impacts of a hazard event. The impacts include the following:

- Physical damage – damage to residential and commercial buildings, schools, essential facilities, and infrastructure.
- Economic loss – lost jobs, business interruptions, and repair and reconstruction costs.
- Social impacts – impacts to people, including requirements for shelters and medical aid.

Hazus-MH uses state-of-the-art GIS software to map and display hazard data and the results of damage and economic loss estimates for buildings and infrastructure. It also allows users to estimate the impacts of earthquakes, floods, and hurricane winds on populations. Hazus-MH is capable of use in real-time to support response and recovery following a natural disaster.

Hazus-MH provides for three levels of analysis:

- A Level 1 analysis yields a rough estimate based on the nationwide database and is a solid way to begin the risk assessment process and prioritize high-risk communities.

- A Level 2 analysis requires the input of additional or refined data and hazard maps that will produce more accurate risk and loss estimates. Assistance from local emergency management personnel, city planners, GIS professionals, and others may be necessary for this level of analysis.

- A Level 3 analysis yields the most accurate estimate of loss and typically requires the involvement of technical experts such as structural and geotechnical engineers who can modify loss parameters based on the specific conditions of a community. This level of analysis will allow users to supply their own techniques to study special conditions such as dam breaks and tsunamis. Engineering and other expertise are needed at this level.

CDMS, Comprehensive Data Management System, is a complementary tool to Hazus-MH to integrate local data. Several types of data can be filtered through CDMS to replace the default inventory in Hazus. Examples include replacement value by census tract and block, number of structures per census tract and block, and number of people per census tract and block. Point level data can also be integrated through CDMS included critical facilities and bridges. Within Hazus, several options are available to add user-defined structures and hazard data.

In order to update Methodology 4, Hazus-MH files (HPRs) for the flood hazard were obtained. The HPRs were created by FEMA using Hazus-MH MR4 Patch 1 to serve as a nationwide baseline for flood loss estimation for the 1-percent-annual-chance flood and annualized loss at the county level.

Table 5.4-10
Estimated Average Annualized Loss for the 1-Percent-Annual-Chance Flood Hazard Area by County

County	Average Annualized Loss for 1-Percent-Annual-Chance Flood Hazard Area
Dallas	$236,000
Clay	$524,000
Conecuh	$605,000
Monroe	$645,000
Pike	$706,000
Henry	$821,000
Butler	$904,000
Crenshaw	$993,000
Coosa	$1,021,000
Bullock	$1,025,000
Marengo	$1,048,000
Franklin	$1,123,000
Cleburne	$1,230,000
Macon	$1,336,000
Lamar	$1,413,000
Greene	$1,488,000
Barbour	$1,541,000
Pickens	$1,560,000
Wilcox	$1,568,000
Sumter	$1,725,000
Randolph	$1,737,000
Washington	$1,762,000
Perry	$1,874,000
Lowndes	$1,920,000
Winston	$1,992,000
Tallapoosa	$2,022,000

County	Average Annualized Loss for 1-Percent-Annual-Chance Flood Hazard Area
Covington	$2,125,000
Geneva	$2,204,000
Chilton	$2,233,000
Hale	$2,271,000
Lawrence	$2,281,000
Bibb	$2,307,000
Clarke	$2,407,000
Choctaw	$2,586,000
Fayette	$2,592,000
Coffee	$2,688,000
Dale	$2,903,000
Houston	$3,084,000
Colbert	$3,317,000
Marshall	$3,333,000
Chambers	$3,454,000
Blount	$3,621,000
Cullman	$3,669,000
Lee	$3,835,000
Marion	$3,983,000
Autauga	$4,582,000
Elmore	$4,851,000
Escambia	$5,345,000
Cherokee	$5,782,000
Lauderdale	$5,782,000
Russell	$6,301,000
DeKalb	$6,349,000
Limestone	$6,460,000
Talladega	$8,096,000
Jackson	$8,782,000
Calhoun	$10,060,000
Walker	$10,076,000
St Clair	$11,357,000
Tuscaloosa	$14,889,000
Morgan	$16,805,000
Montgomery	$19,070,000
Shelby	$20,851,000
Baldwin	$27,926,000
Mobile	$32,848,000
Etowah	$42,880,000
Madison	$47,071,000
Jefferson	$76,670,000
TOTAL	**$480,545,000**

In future plan updates, the State of Alabama intends to incorporate FEMA Risk MAP studies for this portion of the flood hazard analysis. Risk MAP relies heavily on Hazus-MH to complete flood studies at the watershed level. It was initially thought that several watershed level studies would be ready for release to local governments and incorporation into this plan. However, such studies are still undergoing review. The projects (led by ADECA-OWR at the state level) will employ a level 2 Hazus-MH analysis (described above) integrating local tax assessor data via CDMS and flood data. As these studies become available, they will be incorporated into the plan to show flood losses.

Methodology 5 – NOAA Storm Surge Inundation Limits

Because storm surge primarily affects coastal areas, this methodology focuses solely on Mobile and Baldwin counties. A considerable number of studies of inundation limits and potential surge elevations have been conducted since hurricanes Ivan (2004) and Katrina (2005). The following analysis utilized storm surge inundation limits obtained from NOAA. The inundation limits from different categories of hurricanes are shown in **Section 5.2**, **Figure 5.2-2**.

Figure 5.2-2 (**Section 5.2**) in the flood profile section shows the surge inundation levels along the coast. There are approximately 645 square miles of surge inundation area along the coast of the state. Additional information on the number and value of state-owned facilities at risk can be found below.

5.4.3.3 State-owned Facilities in Flood Hazard Areas

State-owned Facilities FEMA Flood Zones (potential number and dollar exposure)

As noted in **Section 5.4.1**, state facilities were analyzed for the 2013 Alabama State Hazard Mitigation Plan. Given that over 10,000 facilities were provided, each structure is not listed by name. Rather, a total number and value of facilities exposed to the flood hazard is provided here. (A complete list is in AEMA's possession.) **Table 5.4-11** shows the number of facilities exposed to the flood hazard. It should be noted that this analysis did not include the elevation of structures. Therefore, vulnerability may be overestimated in this scenario.

The analysis found that approximately 962 structures are potentially exposed to the flood hazard (9 percent of the total number of state-owned facilities). These facilities had a combined building and contents inspection value of $2.7 billion (5 percent of the combined value of all state-owned facilities).

Table 5.4-11
State-owned Facilities within FEMA Flood Zones

Flood Zone	1.0-percent ACF		0.2-percent ACF		V Zone	
	Number At Risk / (Percent of State-owned Total)	Building and Contents Exposure ($) / (Percent of State-owned Total)	Number At Risk / (Percent of State-owned Total)	Building and Contents Exposure ($) / (Percent of State-owned Total)	Number At Risk / (Percent of State-owned Total)	Building and Contents Exposure ($) / (Percent of State-owned Total)
Agencies	564 / (5%)	814,833,503 / (1%)	157 / (2%)	$124,472,467 / (0%)	94 / (1%)	$56,759,400 / (0%)
Universities	92 / (1%)	599,025,905 / (1%)	21 / (0 %)	$33,744,157 / (0%)	-	-
Colleges	3 / (0%)	16,605,049 / (0%)	30 / (0%)	$244,541,368 / (0%)	-	-
Boards	1 / (0%)	185,000 / (0%)	-	-	-	-
Total	660 / (6%)	2,245,482,960 / (4%)	208 / (1%)	$402,757,992 / (2%)	94 / (1%)	$56,759,400 / (0%)

State-owned Facilities in Storm Surge Areas (potential number and dollar exposure)

Table 5.4-11 shows the total numbers of state-owned facilities in each of the five storm surge inundation zones. Note that facilities in the Category 1 storm surge inundation zone are at highest risk because they will also be inundated by the storm surge of Category 2 through Category 5 storms as well. A complete list of state-owned facilities is in AEMA's possession.

Table 5.4-12
State-owned Facilities within NOAA Surge Inundation Limits for Different Levels of Hurricanes in Mobile and Baldwin Counties

	Cat 1		Cat 2		Cat 3	
	Number At Risk / (Percent of State-owned Total)	Building and Contents Exposure ($) / (Percent of State-owned Total)	Number At Risk / (Percent of State-owned Total)	Building and Contents Exposure ($) / (Percent of State-owned Total)	Number At Risk / (Percent of State-owned Total)	Building and Contents Exposure ($) / (Percent of State-owned Total)
Agencies	123 / (1%)	$358,079,122 / (1%)	373 / (0%)	$67,422,3385 / (1%)	442 / (4%)	$732,813,972 / (1%)
Universities	0	0	4 / (0%)	$2,075,993 / (0%)	9 / (0%)	$11,629,544 / (0%)
Colleges	0	0	2 / (0%)	$281,215 / (0%)	4 / (0%)	$8,352,534 / (0%)
Boards	0	0	0	0	0	0
Total	123 / (1%)	0	379 / (4%)	$689,174,757 / (1%)	455 / (4%)	$752,796,050 / (1%)

Source: Alabama Division of Finance

Table 5.4-12
(Continued)

	Cat 4		Cat 5	
	Number At Risk / (Percent of State-owned Total)	Building and Contents Exposure ($) / (Percent of State-owned Total)	Number At Risk / (Percent of State-owned Total)	Building and Contents Exposure ($) / (Percent of State-owned Total)
Agencies	468 / (4%)	$802,797,316 / (1%)	484 / (5%)	$821,941,022 / (1%)
Universities	12 / (0%)	$24,640,702 / (0%)	63 / (1%)	$234,506,988 / (0%)
Colleges	38 / (0%)	$260,976,056 / (0%)	66 / (1%)	$290,740,317 / (1%)
Boards	1 / (0%)	$315,500 / (0%)	2 / (0%)	$537,216 / (0%)
Total	519 / (5%)	$1,088,729,574 / (2%)	615 / (6%)	$1,056,985,226 / (2%)

5.4.4 Wind Risk

As discussed throughout this document, the SHMT includes hurricane, tornado and windstorm in this category.

5.4.4.1 Summary of Local Risk Assessments

Potential loss estimates for wind events from local hazard mitigation plans can be found in **Section 5.5.1**.

5.4.4.2 Statewide Risk Assessment for Wind

Tornado Methodology - Analysis of Historic Data Obtained from NOAA

As described in **Section 5.2**, tornadoes are prevalent over the entire state of Alabama. NOAA maintains a database of tornadoes that extends back approximately 60 years. The database includes tornado strength (see **Appendix H** for background information), reported dollar damages, and reported numbers of deaths and injuries. The NOAA database subdivides the information by county, so it is possible to report the numbers of tornadoes and the deaths and injuries at that level.

The data are provided by date of occurrence. To determine statewide tornado risk, the NOAA data was first sorted by county and then by year. The figures for deaths and injuries were reported as raw numbers, so the data were converted to dollar figures using the values shown in **Table 5.4-13** below.

Table 5.4-13
Values Used for Monetary Conversion of Tornado Deaths and Injuries

Damage Category	Value for Monetary Conversion
Death	$2,200,000
Injury (blended major and minor)	$12,500

The figures used for valuation of deaths and injuries are approximations based on FEMA guidance used in benefit-cost analysis of hazard mitigation measures. Major and minor injuries are combined in the NOAA data, so it was necessary to use a blended number in the valuation.

Table 5.4-14 shows a summary of tornado risk by county. It is notable that Jefferson and Limestone Counties have surpassed the $1 billion mark in damages following the April 27, 2011 tornadoes.

Table 5.4-14
Summary of Tornado Risk by County[37]

County Name	# Of Tornadoes	Tornadoes (Damage Only)		Tornadoes (Damage + Deaths and Injuries)	
		Total	Annual Average	Total	Annual Average
Jefferson County	87	$1,003,075,000	$16,178,629	$1,204,587,500	$19,428,831
Limestone County	49	$1,017,992,000	$16,419,226	$1,060,017,000	$17,097,048
Sumter County	19	$699,045,000	$11,274,919	$699,070,000	$11,275,323
Madison County	68	$524,982,000	$8,467,452	$620,744,500	$10,012,008
Tuscaloosa County	69	$248,889,000	$4,014,339	$305,526,500	$4,927,847
Coffee County	32	$268,942,000	$4,337,774	$289,842,000	$4,674,871
St. Clair County	40	$236,436,000	$3,813,484	$246,361,000	$3,973,565
Marion County	30	$179,855,000	$2,900,887	$246,142,500	$3,970,040
Tallapoosa County	33	$118,550,800	$1,912,110	$225,438,300	$3,636,102
Walker County	49	$171,256,000	$2,762,194	$218,006,000	$3,516,226
Bibb County	22	$166,256,750	$2,681,560	$177,894,250	$2,869,262
Calhoun County	28	$126,507,200	$2,040,439	$136,469,700	$2,201,124
Shelby County	36	$36,909,750	$595,319	$95,309,750	$1,537,254
Fayette County	37	$27,694,000	$446,677	$91,931,500	$1,482,766
Winston County	25	$5,421,000	$87,435	$90,101,000	$1,453,242
Marengo County	26	$26,737,000	$431,242	$84,299,500	$1,359,669
Cullman County	72	$70,546,000	$1,137,839	$83,296,000	$1,343,484
Lawrence County	30	$42,116,000	$679,290	$82,891,000	$1,336,952
Elmore County	38	$61,889,900	$998,224	$75,552,400	$1,218,587
Jackson County	34	$9,826,000	$158,484	$70,838,500	$1,142,556
Hale County	33	$47,533,000	$766,661	$55,208,000	$890,452
Dale County	33	$43,660,000	$704,194	$54,472,500	$878,589
Franklin County	16	$51,263,000	$826,823	$53,613,000	$864,726
Clay County	22	$36,617,000	$590,597	$52,304,500	$843,621
Pickens County	37	$42,364,000	$683,290	$47,414,000	$764,742
Talladega County	33	$31,513,000	$508,274	$45,700,500	$737,105
DeKalb County	46	$25,249,000	$407,242	$44,586,500	$719,137
Morgan County	36	$14,455,000	$233,145	$43,467,500	$701,089
Blount County	41	$33,508,500	$540,460	$43,283,500	$698,121
Lauderdale County	32	$2,893,000	$46,661	$38,305,500	$617,831
Marshall County	59	$34,195,000	$551,532	$37,445,000	$603,952
Lee County	22	$9,704,000	$156,516	$34,966,500	$563,976
Russell County	21	$28,739,000	$463,532	$33,901,500	$546,798
Montgomery County	39	$15,991,000	$257,919	$32,566,000	$525,258
Perry County	23	$30,635,000	$494,113	$30,747,500	$495,927
Chambers County	17	$5,580,000	$90,000	$30,280,000	$488,387

[37] Calculations shown in this table represent data ranging from January 1, 1950 to May 31, 2012. Note that dollar values are not inflated to current dollar values.

Table 5.4-14
Summary of Tornado Risk by County[37]

County Name	# Of Tornadoes	Tornadoes (Damage Only)		Tornadoes (Damage + Deaths and Injuries)	
		Total	Annual Average	Total	Annual Average
Dallas County	36	$17,402,190	$280,680	$29,214,690	$471,205
Cherokee County	14	$21,989,000	$354,661	$28,926,500	$466,556
Henry County	19	$24,960,500	$402,589	$27,598,000	$445,129
Houston County	33	$8,073,000	$130,210	$25,960,500	$418,718
Etowah County	29	$16,030,000	$258,548	$25,355,000	$408,952
Greene County	12	$9,107,800	$146,900	$22,820,300	$368,069
Macon County	15	$1,614,000	$26,032	$21,551,500	$347,605
Autauga County	31	$17,598,800	$283,852	$19,861,300	$320,344
Choctaw County	16	$14,632,000	$236,000	$19,107,000	$308,177
Baldwin County	91	$9,663,000	$155,855	$17,375,500	$280,250
Covington County	41	$9,095,000	$146,694	$13,745,000	$221,694
Colbert County	28	$7,196,000	$116,065	$12,333,500	$198,927
Lamar County	30	$5,597,000	$90,274	$10,134,500	$163,460
Barbour County	20	$8,575,000	$138,306	$8,675,000	$139,919
Mobile County	80	$5,794,000	$93,452	$8,556,500	$138,008
Randolph County	22	$6,178,000	$99,645	$8,553,000	$137,952
Chilton County	26	$4,726,000	$76,226	$7,738,500	$124,815
Monroe County	23	$5,701,000	$91,952	$6,226,000	$100,419
Washington County	23	$6,049,000	$97,565	$6,049,000	$97,565
Geneva County	18	$3,613,000	$58,274	$5,988,000	$96,581
Butler County	22	$1,271,000	$20,500	$5,846,000	$94,290
Conecuh County	24	$2,663,000	$42,952	$4,913,000	$79,242
Pike County	31	$4,739,000	$76,435	$4,814,000	$77,645
Wilcox County	6	$2,313,000	$37,306	$4,563,000	$73,597
Crenshaw County	18	$3,655,000	$58,952	$4,030,000	$65,000
Coosa County	15	$3,885,100	$62,663	$3,935,100	$63,469
Escambia County	24	$3,411,000	$55,016	$3,473,500	$56,024
Cleburne County	17	$3,090,000	$49,839	$3,202,500	$51,653
Clarke County	28	$2,611,000	$42,113	$2,848,500	$45,944
Lowndes County	17	$1,790,000	$28,871	$2,277,500	$36,734
Bullock County	16	$783,000	$12,629	$983,000	$15,855
Statewide	**2,159**	**$5,730,631,290**	**$92,429,537**	**$7,149,236,290**	**$115,310,263**

Source: National Climatic Data Center

The distribution of tornado occurrences statewide as shown in the NOAA database indicates that the coastal counties (Baldwin County with 91 tornadoes and Mobile County with 80 tornadoes) tend to have a higher tornado probability than do other counties. This is presumably because of the addition of waterspouts and the influence of hurricanes in producing additional tornadoes. However, with the 2013 plan update, Jefferson County now ranks first in number of occurrences with 87 recorded tornadoes. It should also be noted that tornado probability is not perfectly analogous to risk, because risk is created only when assets or operations will be negatively impacted by the hazard. In the case of the coastal counties noted above, the relatively high populations and development do produce considerable risk. This is also true for Jefferson County which includes the City of Birmingham and its surrounding suburbs. **Table 5.4-14** above includes separate calculations of physical damages and casualties based on past tornado occurrences. Note that including casualties adds significantly to the risk, as is the case with all hazards that can result in deaths or injuries. Although the potential dollar losses appear very large, it is important to consider that tornadoes are almost impossible to predict in a particular place more than a very short period in advance of the occurrence and there is a relatively small range of cost-effective mitigation options available to protect against more severe events.

Table 5.4-15 shows past tornado damages and future risk by category. **Figure 5.4-9** shows average annual tornado loss from 1950 to 2012.

Table 5.4-15
Past Tornado Damages and Future Risk by Category

Damage Category	Past Damage	Annual Damage
Building/Structure/Infrastructure	$5,730,631,290	$92,429,537
Deaths and Injuries	$1,418,605,000	$22,880,726
All categories	$7,149,236,290	$115,310,263

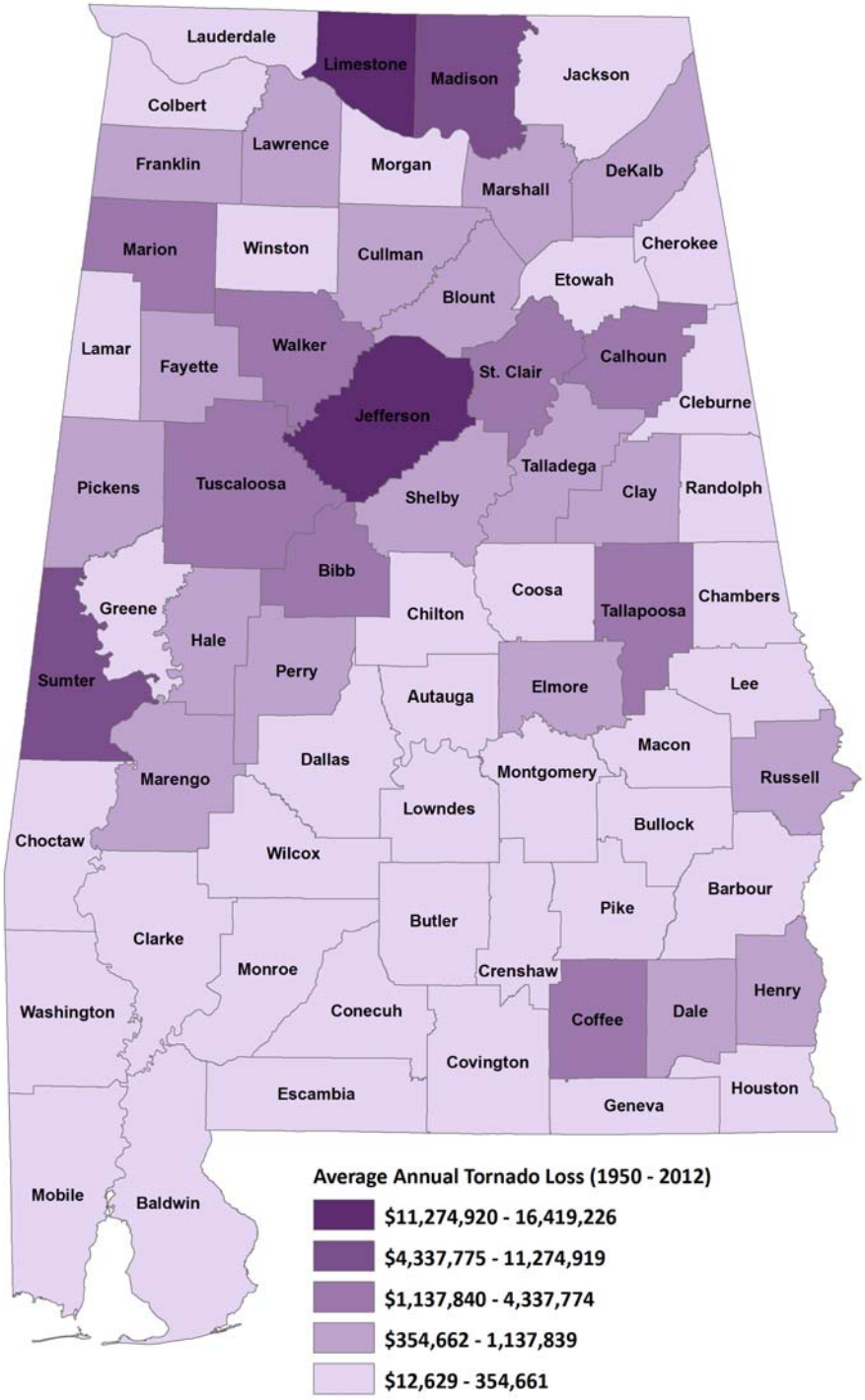


Figure 5.4-9
Average Annual Tornado Loss
1950-2012
Source: National Climatic Data Center

Strengths, Biases, and Limitations of the Methodology

Alabama has a well-established history of tornadoes, and the NOAA database is large enough that it is reasonable to use past occurrences as a general indicator of future risk, at least on a statewide basis. Clearly, as with all risks, the presence of vulnerable assets (including people) in particular areas increases risk because of the potential for damage, death, and injury. Because tornadoes occur relatively quickly (as opposed to floods and hurricanes, both of which are usually preceded by long lead-time warnings and predictions about their severity) several additional factors must be considered in assessing risk, including: the presence and effectiveness of warning systems, public knowledge about what to do if a tornado does occur, the willingness of the population to take appropriate action, and the availability of adequate shelter (both in terms of its proximity to potential users, structural characteristics, and potential occupancy level).

Using past occurrence data to estimate future vulnerability can be particularly problematic for tornadoes, except in the most general sense. It is important to understand that tornadoes are a widespread phenomenon in most central U.S. states. Much of the record of tornado events is based on *observations* of tornadoes forming or touching the ground, or on after-the-fact empirical observations of the damage they caused. Because of this, it is appropriate to assume that the probabilities are somewhat higher than what is suggested by the data – in many cases tornadoes occur in unpopulated places where they are neither observed nor cause any damage, death, or injuries.

Tornado probabilities are primarily influenced by weather and topography, and can be expected to remain relatively static over a long period of time, although actual year-to-year occurrences may vary. The NOAA database indicates that Alabama experienced 2,346 tornadoes from 1950 to 2012, an average of 38 per year statewide (and increase from an average of 31 in the previous plan). Of these, the majority were Fujita class F0 to F2, though stronger tornadoes occur frequently.[38] As noted previously, the database shows a prevalence of tornadoes in the coastal areas. This likely includes a number of hurricane-generated tornadoes and waterspouts. In addition, northern and central Alabama have experienced a large number of events that resulted in the greatest damages and fatalities.

As with the other hazards, it is important to note that tornado probability and tornado risk are not the same, although probability is a key determinant of risk. The entire state is at risk to tornado an occurrence and probability is relatively equal throughout. Historically, coastal, northern, and central areas of the state have the greatest number though they are possible elsewhere. Although tornadoes clearly have great potential to damage physical assets, the most significant damage they cause is in the form of deaths and injuries. This indicates that the most vulnerable areas are highly correlated with population density, the presence and efficacy of warning systems, and the availability and proximity of appropriate shelter.

Hurricane Methodology – Hazus Calculation of Losses

Hurricanes mainly affect the coastal areas of Alabama, although their effects may be felt a considerable distance inland as well, in the form of rain and wind. Typically, hurricane wind speeds decay markedly as storms move away from the open waters of the Gulf of Mexico.

[38] As noted in Section 5.5.2, Frank Tatom's study, "Assessment of Tornado Threat For Alabama For the Years 1950 – 2011," indicates that tornadoes reported as F3 or higher make up 21 occurrences in the state.

As noted in previous sections, hurricane damages usually result from a combination of wind and flooding. This can result in difficulties disaggregating data about flood damages because flood and hurricane damage databases often overlap. There is a NOAA database of hurricanes, but a review of the data seems to indicate that it may be somewhat unreliable in terms of the reported dollar damages. It is clear that hurricanes present a serious risk because of their potential severity and large scale.

FEMA's Hazus-MH 2.1 Service Pack 1 (September 2012) software was used for the analysis in this section. A probabilistic hurricane scenario was run which can be defined as the average of expected dollar losses in any one year. Annualized loss is the estimated loss to buildings on an annual basis; it considers different magnitudes that could impact the area and averages losses on a per year basis. It should be noted that actual annual loss may be substantially higher or lower than annualized loss reported here, but the value provides a way to estimate vulnerability across the state in a relative manner. The figures in **Table 5.4-16** are annual expected losses in the *Direct, Business,* and *Total Loss* columns. Annual Direct Loss is a sum of building and contents losses. Annual Business Loss is a sum of income, rental, wage, inventory and relocation losses. Annual Total Loss is a sum of the Annual Direct Loss and Annual Business Loss fields. The county results are ranked by Annual Total Loss below.

Table 5.4-16
Hazus Calculation of Dollar Losses

County	Annual Direct Loss	Annual Business Loss	Annual Total Loss
Mobile	$149,644,000	$28,269,000	$177,913,000
Baldwin	$79,022,000	$14,771,000	$93,793,000
Escambia	$5,866,000	$1,174,000	$7,040,000
Houston	$5,470,000	$975,000	$6,445,000
Montgomery	$4,143,000	$524,000	$4,667,000
Jefferson	$3,660,000	$340,000	$4,001,000
Covington	$3,003,000	$581,000	$3,584,000
Coffee	$2,517,000	$412,000	$2,929,000
Dale	$2,262,000	$311,000	$2,574,000
Geneva	$2,164,000	$398,000	$2,562,000
Monroe	$1,176,000	$285,000	$1,461,000
Shelby	$1,235,000	$95,000	$1,330,000
Clarke	$1,089,000	$155,000	$1,244,000
Washington	$990,000	$140,000	$1,130,000
Lee	$1,022,000	$105,000	$1,126,000
Tuscaloosa	$1,029,000	$86,000	$1,114,000
Elmore	$852,000	$74,000	$926,000
Pike	$719,000	$119,000	$838,000
Conecuh	$689,000	$110,000	$799,000
Dallas	$574,000	$85,000	$659,000
Henry	$563,000	$90,000	$652,000
Crenshaw	$591,000	$57,000	$647,000
Butler	$550,000	$93,000	$643,000
Autauga	$558,000	$63,000	$621,000
Madison	$505,000	$35,000	$541,000
Barbour	$468,000	$71,000	$539,000
Russell	$437,000	$54,000	$492,000
Calhoun	$441,000	$42,000	$483,000

Table 5.4-16
Hazus Calculation of Dollar Losses

County	Annual Direct Loss	Annual Business Loss	Annual Total Loss
Talladega	$428,000	$44,000	$472,000
Tallapoosa	$355,000	$28,000	$384,000
Chilton	$348,000	$36,000	$383,000
Marengo	$330,000	$40,000	$370,000
Etowah	$329,000	$27,000	$356,000
Choctaw	$291,000	$37,000	$328,000
St Clair	$280,000	$20,000	$300,000
Chambers	$259,000	$24,000	$282,000
Morgan	$231,000	$15,000	$246,000
Macon	$210,000	$26,000	$236,000
Wilcox	$205,000	$28,000	$233,000
Lowndes	$200,000	$25,000	$225,000
Cullman	$209,000	$16,000	$225,000
Walker	$202,000	$13,000	$215,000
Marshall	$192,000	$15,000	$206,000
Blount	$159,000	$9,000	$169,000
Bullock	$137,000	$18,000	$155,000
Hale	$139,000	$15,000	$154,000
DeKalb	$132,000	$13,000	$144,000
Sumter	$125,000	$18,000	$143,000
Bibb	$132,000	$8,000	$141,000
Randolph	$110,000	$9,000	$119,000
Limestone	$109,000	$8,000	$117,000
Perry	$98,000	$11,000	$108,000
Jackson	$95,000	$6,000	$102,000
Lauderdale	$94,000	$7,000	$101,000
Coosa	$89,000	$6,000	$95,000
Pickens	$80,000	$7,000	$86,000
Clay	$71,000	$6,000	$77,000
Cherokee	$67,000	$6,000	$73,000
Cleburne	$70,000	$3,000	$73,000
Colbert	$64,000	$5,000	$69,000
Greene	$62,000	$6,000	$68,000
Lawrence	$59,000	$3,000	$62,000
Fayette	$55,000	$3,000	$59,000
Winston	$53,000	$3,000	$56,000
Marion	$50,000	$4,000	$54,000
Lamar	$40,000	$3,000	$43,000
Franklin	$35,000	$2,000	$37,000
Statewide	**$277,433,000**	**$50,087,000**	**$327,519,000**

The statewide risk pattern for hurricane wind is similar to the estimated risk for the flood hazard. As noted earlier, this result is related to the populations and locations of the highest-risk areas in the state. **Table 5.4-17** shows summary data for the hurricane wind risk.

Table 5.4-17
Hazus Hurricane Analysis: Selected Parameters

Parameter	Annual Losses
Highest risk (Mobile)	$177,913,000
Average risk	$4,888,000
Median risk (Marengo)	$370,000

Strengths, Biases, and Limitations of the Methodology

These results are based on a default-data risk assessment from FEMA's Hazus-MH software. The patterns in the result are as predicted, and the most current version of Hazus (Hazus-MH 2.1 Patch 1, September 2012) was used in the assessment, so the results are presumed to be reasonably reliable. However, as with any software, Hazus is only as good as the information in its database.

5.4.4.3 Potential Dollar Losses to State Facilities in High Wind Hazard Areas

As noted in **Section 5.4.1**, state facilities were provided for the 2013 Alabama State Hazard Mitigation Plan. However, only basic information on location and value was provided. This limits the assessment that can be done in general and especially for the wind hazard. Without facility construction-, population- and operation-specific information, it is not presently possible to estimate losses to State facilities with sufficient accuracy to make the estimates that would be useful in prioritizing mitigation activities. However, if more building specific information becomes available in the future, analysis is possible through Hazus-MH. The State should continue the data-gathering process based on its most important facilities; prioritize these by potential risk, then gather the data that would be required to perform a formal risk assessment.

It can be said with some certainly, however, that all 10,406 state-owned facilities are vulnerable to the high wind hazard. These facilities have a combined value of $55 billion including $49 billion in building assets and $6 billion in contents.

The figures in the general risk section also help to identify where state-owned facilities may be at greater risk. Tornado wind losses are concentrated in the northern portion of the state (**Figure 5.5-3**) and wind storm losses are concentrated in the central area of the state (**Figure 5.5-4**). **Figure 5.5-2**, annual hurricane wind losses from Hazus-MH, indicates that coastal and southern counties have the greatest risk in terms of annualized dollar loss. This indicates that facilities in these are may be a greater risk to wind events based on previous occurrences and damage estimates.

5.4.5 Seismic Risk

Although the earthquake hazard was reduced to moderate risk, the full vulnerability assessment remained since the methodology and data was in place. Calculating seismic risk requires detailed information about the potential for earthquakes, soil characteristics and the likely behavior of buildings and infrastructure when they are subjected to shaking. One step in the process of understanding seismic risk in the state continues to be the use of FEMA's Hazus-MH methodology to determine seismic risk on a statewide level.

5.4.5.1 Summary of Local Risk Assessments

A review of local hazard mitigation plans revealed that only three plans (Dale, Jefferson, and Mobile County) contained potential loss estimates for earthquakes due to a lack of data and historical damages.

5.4.5.2 Statewide Risk Assessment for Earthquakes

Earthquake Methodology – Hazus Calculation of Losses

FEMA's Hazus-MH software was used to estimate seismic risk for all 67 counties in Alabama. The methodology uses Hazus-MH default data about seismic hazards across the state in conjunction with statewide building stock data (including essential facilities information), and the software's standard algorithms. The calculation algorithms estimate annual seismic risk (expected losses) using information about "shake" probabilities and soil characteristics, among other parameters. A probabilistic earthquake scenario was run which can be defined as the average of expected dollar losses in any one year. Annualized loss, reported below, is the estimated loss to buildings on an annual basis; it considers different magnitudes that could impact the area and averages losses on a per year basis. In other words, no specific magnitude was chosen as several magnitudes are run to determine impact and annualized loss. It should be noted that actual annual loss may be substantially higher or lower, but the value provides a way to estimate vulnerability across the state in a relative manner. **Table 5.4-18** shows the Hazus direct physical losses to structures, contents, and inventory in the study area.

Table 5.4-18
Estimated Seismic Risk to Alabama Counties: Annualized Direct Physical Losses to Buildings and Building Contents

County	Buildings	Contents	Total
Jefferson	$1,798,691	$1,428,572	$3,227,263
Madison	$1,000,981	$762,061	$1,763,042
Lauderdale	$397,195	$306,135	$703,329
Morgan	$369,612	$278,808	$648,420
Tuscaloosa	$354,346	$270,009	$624,354
Shelby	$345,196	$266,147	$611,343
Colbert	$246,612	$188,478	$435,089
Etowah	$216,407	$167,391	$383,799
Marshall	$216,775	$163,588	$380,363
Calhoun	$202,998	$152,053	$355,051
DeKalb	$195,070	$154,758	$349,829
Limestone	$190,334	$139,404	$329,737
Walker	$175,466	$129,861	$305,327
Jackson	$158,108	$121,539	$279,647
Talladega	$126,905	$93,827	$220,732
Montgomery	$127,225	$88,323	$215,547
St Clair	$120,613	$88,413	$209,026
Blount	$103,174	$75,939	$179,113
Franklin	$99,321	$74,360	$173,680
Mobile	$88,252	$59,276	$147,528
Winston	$76,033	$55,217	$131,250
Cherokee	$68,246	$50,145	$118,390
Lee	$61,883	$41,460	$103,342
Cullman	$198,439	$147,225	$345,664
Chilton	$41,869	$28,650	$70,519
Elmore	$40,101	$27,234	$67,335
Fayette	$39,037	$29,052	$68,089
Tallapoosa	$34,637	$23,918	$58,556
Lamar	$33,788	$24,408	$58,196
Baldwin	$30,858	$20,600	$51,458
Pickens	$29,304	$20,572	$49,876
Dallas	$28,697	$20,159	$48,855
Marion	$90,571	$65,857	$156,428
Lawrence	$88,640	$62,737	$151,377
Bibb	$24,480	$17,153	$41,633
Autauga	$24,568	$16,602	$41,170
Chambers	$21,281	$14,575	$35,856
Randolph	$21,114	$14,428	$35,542
Russell	$18,410	$12,386	$30,796
Houston	$18,043	$11,715	$29,758
Cleburne	$17,611	$12,490	$30,101
Hale	$17,553	$12,011	$29,564
Marengo	$17,347	$11,901	$29,248
Clay	$17,190	$12,383	$29,573
Macon	$15,062	$6,145	$21,206
Sumter	$14,683	$10,021	$24,704
Clarke	$11,356	$7,775	$19,131
Coosa	$11,284	$7,635	$18,919
Choctaw	$11,196	$7,544	$18,740
Escambia	$10,976	$7,602	$18,578

County	Buildings	Contents	Total
Greene	$10,058	$6,890	$16,948
Perry	$10,107	$6,746	$16,853
Dale	$9,464	$6,052	$15,516
Coffee	$8,550	$5,554	$14,104
Pike	$7,893	$5,129	$13,022
Monroe	$7,753	$5,266	$13,020
Covington	$7,595	$4,975	$12,569
Barbour	$7,439	$4,785	$12,224
Butler	$5,800	$3,834	$9,634
Washington	$5,233	$3,512	$8,745
Wilcox	$4,666	$3,029	$7,695
Lowndes	$4,451	$2,873	$7,324
Geneva	$3,528	$2,124	$5,652
Crenshaw	$3,366	$2,132	$5,498
Conecuh	$3,325	$2,174	$5,498
Henry	$3,155	$1,975	$5,129
Bullock	$2,853	$1,832	$4,685
Total	**$7,773,000**	**$5,877,000**	**$13,650,000**

Table 5.4-19 shows the Hazus income losses related to relocation, capital, wages, and rental income in the study area.

Table 5.4-19
Estimated Seismic Risk to Alabama Counties: Annualized Business Losses to Relocation, Inventory, Wages, and Rental Income

County	Relocation	Inventory	Wages	Rental Income	Total
Jefferson	$306,338	$14,045	$196,797	$157,300	$674,480
Madison	$166,725	$8,038	$105,959	$87,187	$367,909
Lauderdale	$74,544	$3,753	$46,082	$33,792	$158,171
Morgan	$63,987	$4,230	$41,968	$30,216	$140,401
Tuscaloosa	$61,618	$3,168	$38,703	$29,908	$133,397
Colbert	$46,771	$3,257	$28,393	$21,126	$99,548
Marshall	$38,670	$2,631	$21,887	$16,889	$80,077
Cullman	$37,337	$2,744	$20,936	$14,535	$75,550
Calhoun	$37,200	$2,018	$20,557	$16,095	$75,871
DeKalb	$36,706	$4,452	$18,872	$14,510	$74,541
Limestone	$33,815	$1,518	$14,733	$15,097	$65,163
Walker	$33,034	$1,420	$15,690	$12,438	$62,582
Jackson	$28,118	$2,012	$12,569	$10,483	$53,180
Montgomery	$23,445	$891	$13,847	$12,933	$51,116
St Clair	$21,625	$1,166	$8,839	$7,519	$39,148
Franklin	$19,779	$1,333	$11,979	$8,194	$41,285
Blount	$18,328	$746	$7,178	$6,542	$32,795
Marion	$18,099	$1,555	$11,233	$7,856	$38,743
Lawrence	$17,856	$515	$7,389	$5,999	$31,759
Mobile	$15,845	$655	$7,916	$7,874	$32,290
Winston	$14,133	$1,587	$5,768	$4,926	$26,414
Lee	$11,751	$432	$5,266	$5,663	$23,113
Chilton	$7,983	$307	$4,059	$2,825	$15,174
Fayette	$7,745	$608	$3,983	$2,898	$15,233
Lamar	$7,163	$452	$2,921	$2,730	$13,267
Tallapoosa	$6,839	$223	$3,476	$2,918	$13,456
Dallas	$6,817	$213	$3,255	$2,633	$12,918
Baldwin	$5,634	$164	$2,736	$2,691	$11,226
Bibb	$4,809	$121	$1,715	$1,562	$8,207
Autauga	$4,748	$167	$1,858	$1,698	$8,470
Randolph	$4,245	$137	$1,724	$1,453	$7,559
Chambers	$4,242	$266	$2,069	$1,620	$8,196
Marengo	$3,918	$92	$1,769	$1,435	$7,213
Hale	$3,736	$128	$1,217	$1,109	$6,190
Houston	$3,732	$96	$2,313	$1,834	$7,975
Russell	$3,698	$108	$1,646	$1,634	$7,085
Sumter	$3,416	$100	$1,572	$1,235	$6,323
Cleburne	$3,406	$142	$1,193	$1,046	$5,786
Clay	$3,262	$371	$1,327	$1,110	$6,070
Shelby	$2,934	$52,014	$30,036	$24,573	$109,558
Choctaw	$2,497	$136	$1,086	$789	$4,509
Clarke	$2,453	$70	$1,038	$951	$4,512
Escambia	$2,168	$113	$1,029	$907	$4,217
Perry	$2,146	$43	$619	$782	$3,590
Coosa	$2,127	$69	$448	$531	$3,176
Etowah	$2,058	$40,506	$25,954	$17,654	$86,172
Talladega	$1,791	$23,567	$11,615	$8,607	$45,581
Dale	$1,706	$36	$882	$860	$3,484
Pike	$1,698	$46	$775	$734	$3,253

County	Relocation	Inventory	Wages	Rental Income	Total
Coffee	$1,670	$33	$742	$733	$3,178
Monroe	$1,664	$46	$702	$583	$2,994
Barbour	$1,552	$69	$672	$665	$2,959
Butler	$1,255	$38	$581	$509	$2,383
Washington	$1,116	$22	$282	$329	$1,750
Wilcox	$1,104	$33	$396	$338	$1,872
Lowndes	$971	$30	$206	$289	$1,495
Cherokee	$885	$12,942	$5,289	$4,471	$23,587
Geneva	$754	$8	$194	$277	$1,232
Conecuh	$718	$23	$195	$225	$1,161
Crenshaw	$691	$18	$179	$239	$1,127
Henry	$623	$14	$131	$215	$983
Bullock	$18	$234	$221	$1,081	$1,555
Elmore	$187	$6,839	$2,551	$2,813	$12,390
Pickens	$166	$6,369	$2,504	$2,184	$11,222
Greene	$72	$2,252	$749	$621	$3,694
Macon	$47	$1,837	$726	$891	$3,501
Covington	$45	$1,635	$741	$649	$3,070
Total	**$1,246,000**	**$215,000**	**$792,000**	**$633,000**	**$2,886,000**

Strengths, Biases, and Limitations of the Methodology

This analysis uses FEMA's Hazus-MH software to calculate estimated seismic losses for all counties across the state (**Figure 5.4-10**). The utility of these results is limited by at least one significant factor. Facility-specific Hazus data is limited to the defaults in the software providing a fairly reliable initial estimate. However, more detailed information about buildings (geospatial location, structure type, use, size, occupancy, etc.), would facilitate a much more detailed and accurate calculation. As a part of its long-term plan update and maintenance processes, the State will continue undertaking detailed risk assessments for critical State facilities; this work will include data collection for seismic risk calculations. The calculations will be introduced into a future plan update.

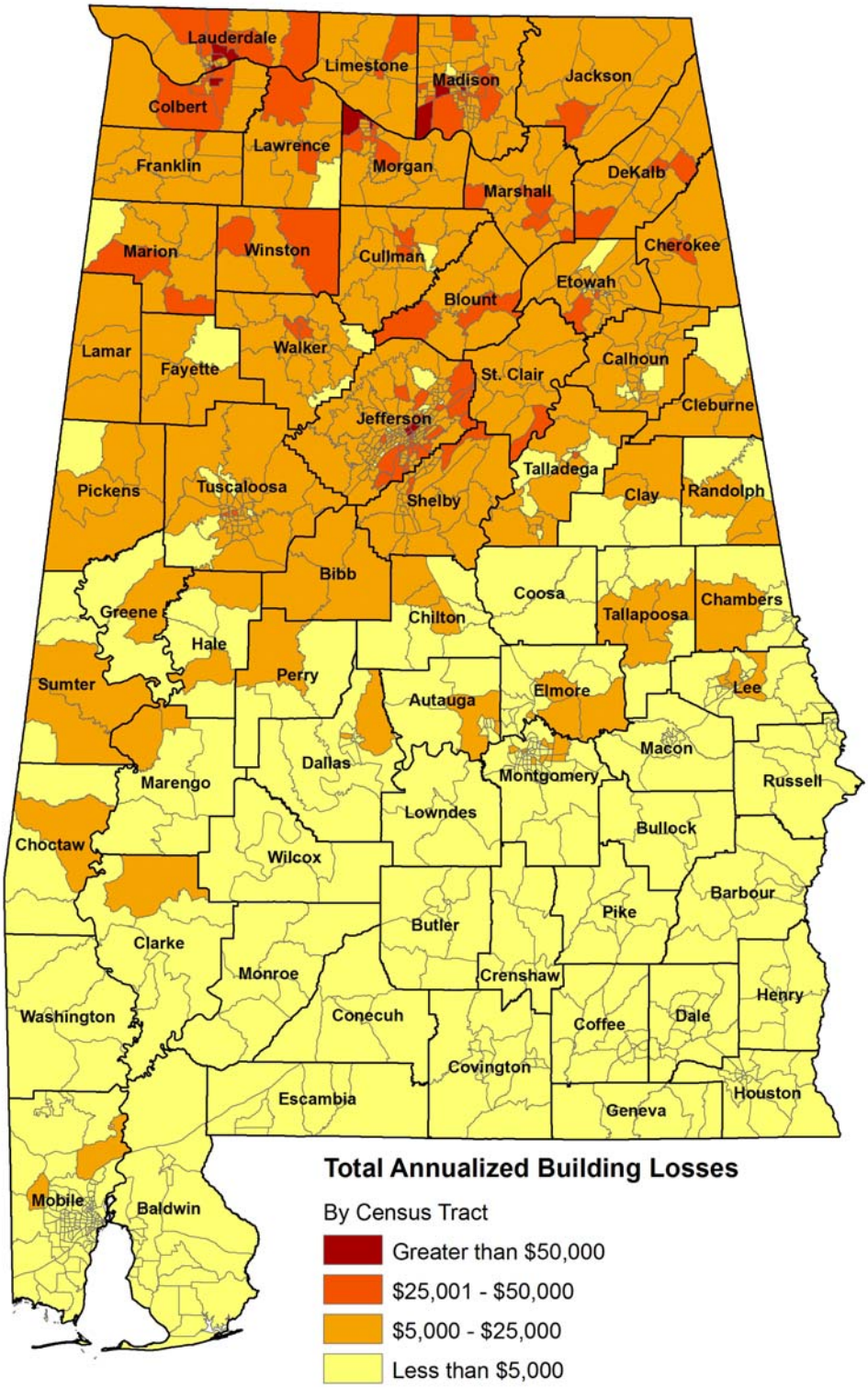


Figure 5.4-10
Total Annualized Building Losses
Source: Federal Emergency Management Agency/Hazus-MH 2.1 Patch 1

5.4.5.3 Potential Dollar Losses to State Facilities in Seismic Hazard Areas

Of note is that the northern portions of the state clearly have more risk than the southern portions to earthquake risk. This is due to these areas being located in closer proximity to the NMSZ, SASZ, and SCSZ (seismic zones described in **Section 5.2.6**). However, the southern areas of the state have a much greater liquefaction risk than the northern areas.

As noted in **Section 5.4.1**, state facilities were analyzed for the 2013 Alabama State Hazard Mitigation Plan. Given that over 10,000 facilities were provided, each structure is not listed by name. Rather, a total number and value of facilities located in the very high liquefaction hazard zone is provided below. (A complete list is in AEMA's possession.) **Table 5.4-20** shows the number of facilities located in the "very high" category of the liquefaction hazard area. It should be noted that this analysis did not include information on any retrofitting or building design that would reduce vulnerability. Therefore, vulnerability may be overestimated in this scenario.

The analysis resulted in a total of 2,310 state-owned facilities structures being potentially located in the "very high" category of the liquefaction hazard (22 percent of the total number of state-owned facilities). These facilities had a combined building and contents inspection value of $12.9 billion (23 percent of the combined value of all state-owned facilities).

Table 5.4-20
State-owned Facilities within GSA "Very High" Liquefaction Zone

	Very High Liquefaction Potential	
	Number At Risk / (Percent of State-owned Total)	Building and Contents Exposure ($) / (Percent of State-owned Total)
Agencies	1307 / (13%)	$2,925,811,645 / (5%)
Universities	824 / (8%)	$9,123,214,432 / (17%)
Colleges	168 / (2%)	$805,562,112 / (1%)
Boards	11 / (0%)	$15,592,883 / (0%)
Total	2,310 / (22%)	$12,870,181,072 / (23%)

5.4.6 General Summary and Recommendations

The information presented in this plan should be used as the basis for the State to prioritize its mitigation actions in the immediate future, and to determine additional measures it should undertake to improve its ability to identify and address risks. The three sub-sections below describe data strengths and limitations for the most significant hazards in the state, and outline some potential steps that the State can initiate to address them.

In general, the flood risk assessment provides the expected results. As described in **Section 2**, risk is a function of probability, vulnerability, and the value of community elements (including people) that may be impacted by floods. Notably, almost all flood risk is related to the built environment, and the expected result of defining risk in this way is that places with the most structures, infrastructure, and people tend to have the most risk, particularly if the probability of flooding is high. Logically, in places where there are high probabilities of events occurring combined with relatively large populations and infrastructure, risk is the greatest.

As noted in the body of this section, because of their very high monetary value, casualties can dominate tornado and hurricane risk assessments. Although it is usually appropriate to include casualties in such an assessment, it is very important to recognize that risk is only one of many factors that must be considered in developing and prioritizing mitigation efforts. For example, although heavily populated areas have high risk from tornadoes (because there are many people), any assessment of a mitigation project would have to consider this information as well as contemplate the presence and effect of warning systems, the availability of shelter, and the ability of people to get to shelter in time to avoid a tornado. Similar considerations apply to all hazards and potential mitigation activities.

For the 2013 plan update, state-owned facilities and their location was available for analysis. They were intersected with FEMA DFIRM maps, NOAA SLOSH map and GSA liquefaction areas using GIS. There are still improvements to be made with this data including identifying critical structures and collecting building construction information to provide a more meaning assessment of those at risk to hazards.

The state has also considered building a GIS database with the facilities though lack of funding has stalled these efforts. Beyond the database, additional long-term effort will be required to populate the GIS database with sufficient information to support risk assessments. Notably, the State does maintain a portal system, by which state and federal agencies can share critical information from their respective GIS databases. AEMA, ALDOT, ADECA, and the Office of Revenue have signed Memoranda of Understanding to facilitate access to other databases. The State is also presently working with the 9-1-1 system to share information in its databases. Although the success of the data population effort will be directly related to the funds available, AEMA projects that data on 10 percent of the initial list of State-owned facilities will be entered into the GIS annually. This figure may be greater than that initially, assuming that the portal system described above proves effective – this may allow a significant amount of information into the system immediately. It is not anticipated that the information will provide a complete dataset to allow comprehensive and detailed risk assessments of all State-owned assets until later.

It should also be noted that the 2007 Alabama State Hazard Mitigation Plan completed studies called *Critical Facility Evaluation Reports.* The reports are generally about 20 pages in length and contain introductory and summary information along with an assessment of risk to the storm surge, riverine flood, HAZMAT (not covered in this plan), and high wind hazards and a recommendations section at the end. Each of these sections contains detailed narratives, maps, tables, and photos. The original critical facility evaluation form used for the study is also included as an appendix. These documents are in AEMA's possession.

5.5 Jurisdictions Most Threatened and Vulnerable to Damage and Loss

FR Subsection 201.4 (c) (2) (ii) requires that the State Hazard Mitigation Plan include description of hazard vulnerabilities "in terms of the jurisdictions most threatened by the identified hazards…" This part of the Plan addresses that requirement. **Section 5.4** of this plan is a risk assessment for the three most significant hazards in Alabama, as identified by the SHMT. The present section summarizes the results of the risk assessment and describes the jurisdictions that are most at risk from floods, high winds (hurricanes and tornadoes), and earthquakes. As noted elsewhere, throughout the plan the primary unit of consideration is the county, and this convention continues through this section.

5.5.1 Jurisdictions Most Vulnerable to Damage and Loss from Floods

The following four tables summarize the results from the state risk assessment for the flood hazard and describe the jurisdictions most at risk.

Table 5.5-1
Expected Future Flood Losses for the Seven Most At-Risk Counties in Alabama, Based on National Flood Insurance Program Records

Rank	County	Risk
1	Baldwin	$505,361,632
2	Mobile	$349,639,796
3	Jefferson	$27,670,088
4	Coffee	$15,159,376
5	Escambia	$10,439,072
6	Madison	$7,144,813
7	Shelby	$5,659,039

Table 5.5-2
Number of Repetitive Loss Properties, Based on National Flood Insurance Program Records for the Seven Most At-Risk Counties in Alabama

Rank	County	# Repetitive Loss Properties
1	Baldwin	1,865
2	Mobile	1,393
3	Jefferson	181
4	Shelby	93
5	Coffee	42
6	Escambia	40
7	Lauderdale	19

Table 5.5-3
Population in 1.0-percent Annual Chance Floodplain for the Seven Most At-Risk Counties in Alabama

Rank	County	Population in Floodplain
1	Jefferson	173,666
2	Mobile	155,616
3	Madison	98,817
4	Tuscaloosa	86,531
5	Shelby	79,849
6	Montgomery	76,117
7	Baldwin	69,969

Table 5.5-4
Averaged Annualized Loss Estimate for the 1.0-percent Annual Chance Floodplain (Hazus-MH MR 4 modeling) for the Seven Most At-Risk Counties in Alabama

Rank	County	Risk
1	Jefferson	$76,670,000
2	Madison	$47,071,000
3	Etowah	$42,880,000
4	Mobile	$32,848,000
5	Baldwin	$27,926,000
6	Shelby	$20,851,000
7	Montgomery	$19,070,000

As noted in **Section 5.4** there are important differences in the source data and calculation methods that have a large influence on risk, i.e., the dollar amount of future damages. The most significant outcome of these calculations and tables is the repeated high rankings of certain counties in the calculations, not the specific dollar amounts of future risk.

5.5.2 Jurisdictions Most Vulnerable to Damage and Loss from High Winds

In order to determine the most at-risk jurisdictions, historical damages were assessed. This method does not specifically address population though high damages may be associated with more populated areas. Including the top seven most at-risk counties should provide a nice cross section of the state. The probability and severity of high winds is fairly well established and likely to remain constant. **Table 5.5-5** summarizes the results from the state risk assessment for tornadoes and describes the jurisdictions most at risk.

Table 5.5-5
Potential Tornado Damage for the Seven Most At-Risk Counties in Alabama (Based on Historic Annual Average)

Rank	County	Risk
1	Jefferson	$19,428,831
2	Limestone	$17,097,048
3	Sumter	$11,275,323
4	Madison	$10,012,008
5	Tuscaloosa	$4,927,847
6	Coffee	$4,674,871
7	St. Clair	$3,973,565

As with the other hazards in this section, it is important to note that hurricane wind risk is not the same as probability. The probability and severity of hurricanes in Alabama is fairly well established and likely to remain constant, notwithstanding the potential effects of global warming on weather patterns. However, a significant part of Alabama's population is located in the coastal areas of Mobile and Baldwin counties, thus exposing many people and structures to the damaging effects of wind and water.

Table 5.5-6
Potential Hurricane Wind Damage for the Seven Most At-Risk Counties in Alabama Based on Annual Total Loss

Rank	County	Risk
1	Mobile	$177,913,000
2	Baldwin	$93,793,000
3	Escambia	$7,040,000
4	Houston	$6,445,000
5	Montgomery	$4,667,000
6	Jefferson	$4,001,000
7	Covington	$3,584,000

Table 5.5-7
Potential Tornado Damage[39] for the Seven Most At-Risk Counties in Alabama Based on Annual Total Loss

Rank	County	Risk
1	Jefferson	$16,178,629
2	Limestone	$16,419,226
3	Sumter	$11,274,919
4	Madison	$8,467,452
5	Tuscaloosa	$4,014,339
6	Coffee	$4,337,774
7	St. Clair	$3,813,484

[39] These estimates include physical damages but not estimated casualty losses.

Table 5.5-8
Potential Wind Storm Damage for the Seven Most At-Risk Counties in Alabama Based on Annual Total Loss

Rank	County	Risk
1	Mobile	$16,178,629
2	Baldwin	$16,419,226
3	Jefferson	$11,274,919
4	St. Clair	$8,467,452
5	Houston	$4,014,339
6	Geneva	$4,337,774
7	Coffee	$3,813,484

5.5.3 Jurisdictions Most Vulnerable to Damage and Loss from Earthquakes

Although earthquakes are fairly common in Alabama, strong shaking earthquakes are relatively unlikely, which explains the relatively small risk figures shown in **Table 5.5-9** below.

Table 5.5-9
Seismic Risk for the Seven Most At-Risk Counties in Alabama

Rank	County	Property	Wages	Total
1	Jefferson	$3,901,000	$3,227,000	$3,901,000
2	Madison	$2,131,000	$1,763,000	$2,131,000
3	Lauderdale	$861,000	$703,000	$861,000
4	Morgan	$824,000	$648,000	$824,000
5	Tuscaloosa	$757,000	$624,000	$757,000
6	Shelby	$611,000	$110,000	$721,000
7	Colbert	$435,000	$100,000	$535,000

5.5.4 Jurisdictions Most Vulnerable to Damage and Loss from Three Most Significant Hazards Statewide

There are two methods by which the vulnerability to damage and loss can be compared statewide. The first of these is to add the calculated risks from the three hazards discussed above for each of the counties and then rank them from most potential risk to least. However, for the reasons discussed in **Section 5.5**, these figures can be misleading, particularly because of the disproportionate influence that deaths (primarily for the tornado hazard) have on the numerical outcome. For this reason, **Table 5.5-10** provides a simple count of the number of appearances of each county in the other tables above.

Table 5.5-10
Number of Appearances in Top Seven Rankings for All Hazards
(List Shows Only Counties with Three or More Appearances)

County	# of Occurrences in Rankings
Jefferson	9
Mobile	7
Madison	6
Baldwin	5
Shelby	5
Coffee	5
Tuscaloosa	4
Escambia	3
St Clair	3
Montgomery	3

This ranking should be considered only a general indication of risk statewide. As noted elsewhere in this plan, accurate risk assessments and information about the performance and costs of mitigation measures (including policy changes), are the primary basis of mitigation planning. In order to be truly accurate, risk assessments must be highly localized, often addressing a single asset or operation. Because of this, the state-level risk assessment should be considered only a guide that identifies where the most risk is at a county level. In many cases, local and regional mitigation plans will include risk assessments and potential mitigation projects that are not found in one of the counties shown in **Table 5.5-10** immediately above. In all cases, the State will determine mitigation priorities based on the best available data, regardless of its source.

5.6 Impacts of Population Growth and Development Trends on Vulnerability

Development trends, particularly population shifts and land use changes created by major economic development expansions and infrastructure improvements of statewide significance, are important considerations to effective mitigation planning. These trends must be continually monitored and analyzed to keep abreast of changing vulnerabilities of jurisdictions and the increasing exposure of growing populations, new buildings, and enlarged infrastructure to natural hazards. As growth and development patterns change over time, the risks to property damage and lives also change. This section examines the projected growth trends and other impacts of statewide significance that are expected to affect the location and extent of natural hazards vulnerability over time.

This plan fully recognizes that changes in development for jurisdictions in hazard prone areas are ongoing issues that must be constantly monitored and addressed in the state and local planning processes. Changing development trends and the ongoing growth and shift of population can increase levels of vulnerability. The potential impacts of these changes can have adverse impacts, such as those noted here:

- Increasing demands for developable land area to accommodate new growth can push new development to previously undeveloped floodplains;
- New population growth is often concentrated along economically desirable coastal areas that are at high risk of coastal flooding, hurricane surge, and wind damages.
- New development and associated parking, roads, and other impervious surfaces can increase urban runoff, exacerbating flooding hazards.
- New construction in previously rural areas can push the wildland urban interface, increasing exposure to wildfires.
- New housing may be constructed inadequately to withstand the damaging wind threats of hurricanes and tornadoes.
- Increased population can stretch the demand for limited water resources in times of drought.
- Ongoing beach development and construction can increase risk of beach erosion.
- More development in widespread areas subject to sinkholes can increase the probability of property and infrastructure damages.

5.6.1 Population Growth Trends and the Impact on Vulnerability

Alabama growth changes have been modest over recent years. Census 2000 recorded a population of over 4 million residents in the state of Alabama. Census 2010 captured 4.8 million persons. Overall, the state has experienced steady growth from 2000 to present. The total population grew just over two percent for the 2006 to 2009 time period, and just over one percent since the last plan update in 2009 as presented in **Table 5.6-1**.

Table 5.6-1
Alabama's Population Growth from 2000-2011

Population		Population Gain	% Change
2000	4,447,100		
2006	4,599,030	151,930	3.4164
2009	4,708,708	109,678	2.3848
2011	4,802,740	94,032	1.0958

According to the 2010 Census, Jefferson County is the most populous county in Alabama with over 658,000 residents (a slight decrease since the 2000 U.S. Census) and the most vulnerable to natural hazards occurrences (see **Table 5.6-10**). Mobile County is the second largest county with over 400,000 residents (a slight increase since the 2000 U.S. Census) and is the second most vulnerable county. The third most vulnerable county, Madison, was the state's fastest growing county between 2000 and 2010. Shelby County, Baldwin County ,Tuscaloosa County, St. Clair County and Mobile County also had some of the highest population gains between 2000 and 2010. .

Every county in the state is exposed to some risk of property damage or loss of life during a natural hazard. However, metropolitan areas such as Birmingham, Mobile, Huntsville, and Montgomery run a higher vulnerability, because of population density and higher property values in metropolitan areas. Jefferson County (including City of Birmingham) contains Alabama's densest population center as well as relatively high incidences of flooding, tornadoes, and severe thunderstorms. Mobile County (including City of Mobile) is similarly populated, but its coastal location means a higher incidence of tropical storms and hurricanes. It is important to monitor the plan regularly in order to track the types and properties at risk. Mitigation goals and strategies of this plan update have been reviewed and reprioritized based on the rate and amount of development that has occurred in high risk and highly vulnerable areas. **Figure 5.6-1** depicts the population density distributions counties across the state. The three most vulnerable counties on list (Jefferson, Mobile, and Madison Counties) (see **Table 5.5-10**) also have the highest population density (greater than 320 persons per square mile). Montgomery County and St Clair County also have high population densities. Coffee County is the only county on the list that is indicated as low population density.

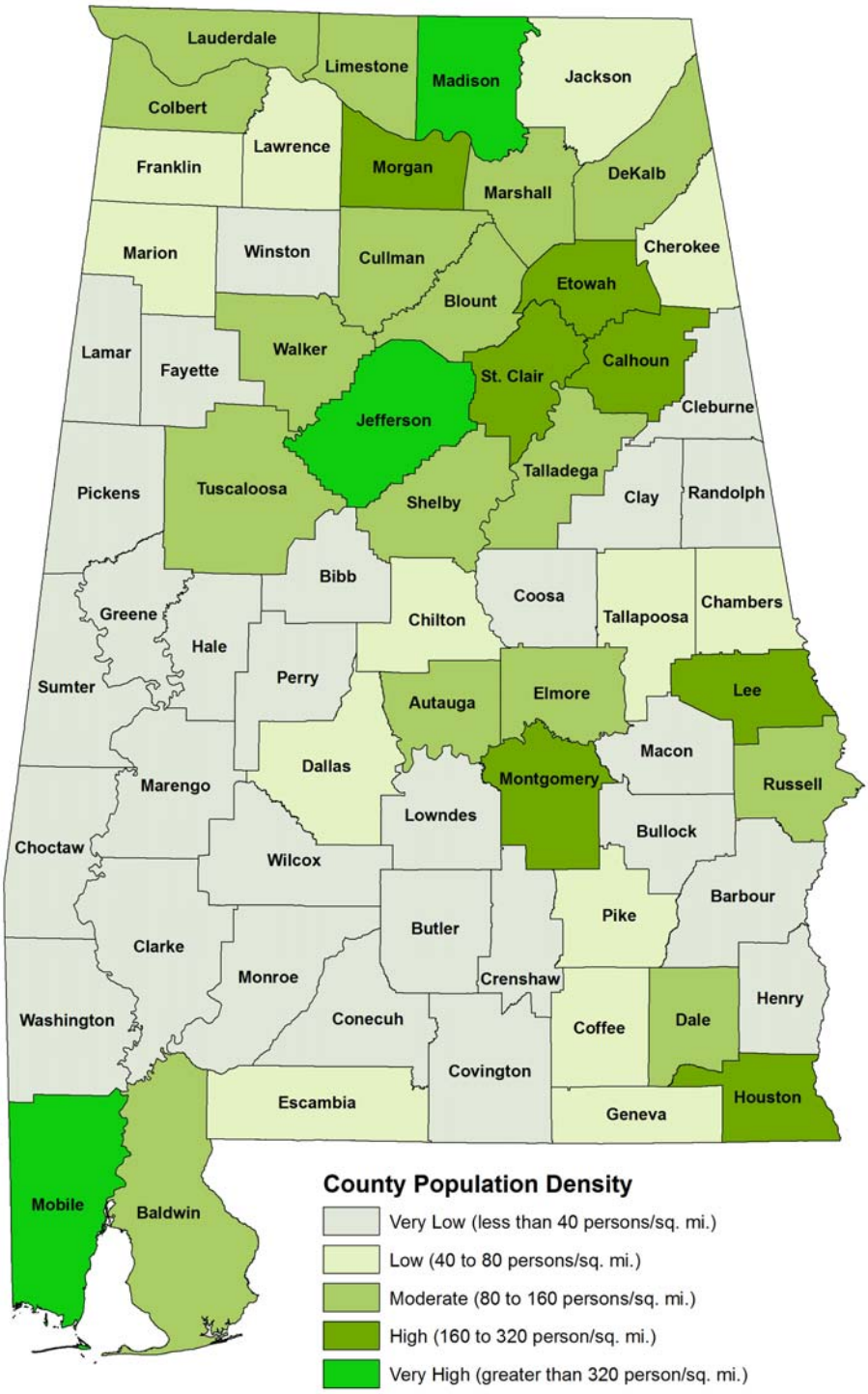


Figure 5.6-1
Population Density by County in Alabama in 2010
Source: U.S. Census Bureau

Given the importance of population shifts over time, successful mitigation planning requires a look at future trends to assess future vulnerability. The state population increased by over 330,000 between 2000 and 2010. Population projections show that Alabama is expected to increase by approximately 16.5 percent by the year 2040. The population projections for the state and counties are presented in **Table 5.6-2**. Much of this growth can be attributed to major manufacturers, such as Honda, Hyundai, and ThyssenKrupp Steel and Stainless USA, LLC. Each of these manufacturers has or should have significant growth impacts on the state as a whole.

It is important to reassess statewide vulnerability on a regular basis as growth in high hazard areas increases the overall types, numbers, and value of properties at risk. Much of the state's growth is projected to take place in the counties classified as the most vulnerable (see **Table 5.5-10**): Jefferson, Mobile, Madison, Baldwin, Shelby, Coffee, Tuscaloosa, Escambia, St. Clair, and Montgomery. The counties with the greatest percentage change increase projected between 2010 and 2040 are: Baldwin, Shelby, St. Clair, Limestone, Autauga, Lee and Madison. Baldwin County's population is expected to experience the highest percent change in the state at nearly 64 percent by 2040 (adding an anticipated 116,000 persons). Mobile County is also expected to grow but to a lesser degree at 6.2 percent increase by 2040. Coastal hazards present a risk for Baldwin and Mobile counties. Madison County population projections indicate the largest actual change at nearly 145,000 new residents in the County by 2040, thus increasing vulnerability. This is followed by Shelby County which shows a projected population increase of 122,000, a 63 percent increase. Jefferson and Escambia show relatively unchanged population projections by 2040.

Table 5.6-2
Alabama County 2010 Population and Future Population Projections Through 2040

	Actual		Projections						Number	Percent
County	2000	2010	2015	2020	2025	2030	2035	2040		
Autauga	43,671	54,571	59,577	64,341	68,800	72,999	77,071	80,914	26,343	48.3
Baldwin	140,415	182,265	203,167	224,040	244,188	263,210	281,218	298,447	116,182	63.7
Barbour	29,038	27,457	26,845	26,359	25,893	25,450	25,048	24,744	-2,713	-9.9
Bibb	20,826	22,915	23,367	23,737	23,971	24,095	24,134	24,091	1,176	5.1
Blount	51,024	57,322	60,301	63,080	65,607	67,889	70,033	72,124	14,802	25.8
Bullock	11,714	10,914	10,623	10,435	10,250	10,058	9,853	9,672	-1,242	-11.4
Butler	21,399	20,947	20,862	20,770	20,610	20,354	20,037	19,741	-1,206	-5.8
Calhoun	112,249	118,572	120,651	122,520	124,044	125,166	125,920	126,478	7,906	6.7
Chambers	36,583	34,215	33,345	32,457	31,491	30,456	29,387	28,317	-5,898	-17.2
Cherokee	23,988	25,989	26,756	27,356	27,725	27,883	27,875	27,771	1,782	6.9
Chilton	39,593	43,643	45,718	47,706	49,531	51,248	52,959	54,720	11,077	25.4
Choctaw	15,922	13,859	12,994	12,186	11,404	10,666	9,986	9,369	-4,490	-32.4
Clarke	27,867	25,833	24,958	24,160	23,397	22,666	21,970	21,322	-4,511	-17.5
Clay	14,254	13,932	13,817	13,661	13,453	13,206	12,923	12,631	-1,301	-9.3
Cleburne	14,123	14,972	15,354	15,634	15,817	15,907	15,945	15,950	978	6.5
Coffee	43,615	49,948	53,269	56,540	59,713	62,722	65,639	68,568	18,620	37.3
Colbert	54,984	54,428	54,234	53,917	53,423	52,768	52,038	51,300	-3,128	-5.7
Conecuh	14,089	13,228	12,886	12,543	12,163	11,728	11,259	10,797	-2,431	-18.4
Coosa	12,202	11,539	11,232	10,900	10,511	10,044	9,512	8,933	-2,606	-22.6
Covington	37,631	37,765	37,927	38,030	37,993	37,818	37,545	37,293	-472	-1.2
Crenshaw	13,665	13,906	14,059	14,198	14,268	14,294	14,305	14,314	408	2.9
Cullman	77,483	80,406	81,996	83,348	84,347	85,014	85,460	85,828	5,422	6.7
Dale	49,129	50,251	50,899	51,385	51,703	51,890	52,070	52,360	2,109	4.2
Dallas	46,365	43,820	43,097	42,514	41,919	41,288	40,613	39,974	-3,846	-8.8
DeKalb	64,452	71,109	74,695	78,252	81,643	84,853	88,050	91,271	20,162	28.4
Elmore	65,874	79,303	84,950	90,211	94,857	98,810	102,032	104,541	25,238	31.8
Escambia	38,440	38,319	38,281	38,173	37,956	37,677	37,435	37,286	-1,033	-2.7
Etowah	103,459	104,430	105,019	105,363	105,257	104,785	104,055	103,203	-1,227	-1.2

Fayette	18,495	17,241	16,771	16,274	15,747	15,195	14,652	14,148	-3,093	-17.9
Franklin	31,223	31,704	32,157	32,569	32,915	33,238	33,601	34,037	2,333	7.4
Geneva	25,764	26,790	27,284	27,722	28,038	28,235	28,363	28,469	1,679	6.3
Greene	9,974	9,045	8,722	8,431	8,156	7,880	7,606	7,337	-1,708	-18.9
Hale	17,185	15,760	15,214	14,719	14,242	13,761	13,245	12,744	-3,016	-19.1
Henry	16,310	17,302	17,760	18,161	18,455	18,626	18,750	18,839	1,537	8.9
Houston	88,787	101,547	107,711	113,561	118,840	123,492	127,573	131,211	29,664	29.2
Jackson	53,926	53,227	52,902	52,389	51,634	50,696	49,680	48,685	-4,542	-8.5
Jefferson	662,047	658,466	660,042	662,040	663,326	663,525	662,830	661,881	3,415	0.5
Lamar	15,904	14,564	14,068	13,562	13,010	12,446	11,910	11,393	-3,171	-21.8
Lauderdale	87,966	92,709	94,572	96,095	97,177	97,835	98,107	98,102	5,393	5.8
Lawrence	34,803	34,339	34,008	33,547	32,934	32,190	31,361	30,492	-3,847	-11.2
Lee	115,092	140,247	152,419	164,387	175,727	186,221	195,700	204,204	63,957	45.6
Limestone	65,676	82,782	91,317	99,663	107,593	114,967	121,790	128,071	45,289	54.7
Lowndes	13,473	11,299	10,559	9,982	9,491	9,060	8,680	8,354	-2,945	-26.1
Macon	24,105	21,452	20,641	19,967	19,347	18,771	18,223	17,696	-3,756	-17.5
Madison	276,700	334,811	362,180	388,628	413,858	437,614	459,519	479,568	144,757	43.2
Marengo	22,539	21,027	20,334	19,727	19,165	18,632	18,124	17,655	-3,372	-16.0
Marion	31,214	30,776	30,549	30,197	29,693	29,082	28,403	27,696	-3,080	-10.0
Marshall	82,231	93,019	98,755	104,365	109,712	114,839	119,888	124,991	31,972	34.4
Mobile	399,843	412,992	420,180	426,597	431,537	434,968	437,228	438,667	25,675	6.2
Monroe	24,324	23,068	22,487	21,851	21,192	20,512	19,801	19,105	-3,963	-17.2
Lee	115,092	140,247	152,419	164,387	175,727	186,221	195,700	204,204	63,957	45.6
Montgomery	223,510	229,363	233,033	237,348	241,629	245,423	248,408	250,716	21,353	9.3
Morgan	111,064	119,490	123,102	126,219	128,702	130,577	131,989	133,087	13,597	11.4
Perry	11,861	10,591	10,031	9,579	9,184	8,842	8,539	8,298	-2,293	-21.7
Pickens	20,949	19,746	19,292	18,871	18,431	17,974	17,503	17,038	-2,708	-13.7
Pike	29,605	32,899	34,108	35,097	35,925	36,687	37,390	38,035	5,136	15.6
Randolph	22,380	22,913	23,185	23,405	23,555	23,611	23,592	23,524	611	2.7
Russell	49,756	52,947	55,201	57,321	59,269	61,114	62,970	64,913	11,966	22.6
Shelby	143,293	195,085	220,041	244,047	266,228	286,029	303,026	317,209	122,124	62.6
St. Clair	64,742	83,593	92,992	102,072	110,552	118,195	125,148	131,566	47,973	57.4
Sumter	14,798	13,763	13,323	12,944	12,584	12,217	11,838	11,435	-2,328	-16.9
Talladega	80,321	82,291	83,262	84,011	84,410	84,508	84,423	84,257	1,966	2.4
Tallapoosa	41,475	41,616	41,881	42,058	42,058	41,899	41,592	41,219	-397	-1.0
Tuscaloosa	164,875	194,656	204,654	214,336	223,476	231,846	239,582	246,924	52,268	26.9
Walker	70,713	67,023	65,623	64,161	62,521	60,809	59,142	57,614	-9,409	-14.0
Washington	18,097	17,581	17,240	16,878	16,490	16,071	15,634	15,194	-2,387	-13.6
Wilcox	13,183	11,670	11,095	10,602	10,166	9,765	9,406	9,083	-2,587	-22.2
Winston	24,843	24,484	24,292	23,973	23,520	22,949	22,292	21,608	-2,876	-11.7
Talladega	80,321	82,291	83,262	84,011	84,410	84,508	84,423	84,257	1,966	2.4
Tallapoosa	41,475	41,616	41,881	42,058	42,058	41,899	41,592	41,219	-397	-1.0
Tuscaloosa	164,875	194,656	204,654	214,336	223,476	231,846	239,582	246,924	52,268	26.9
Walker	70,713	67,023	65,623	64,161	62,521	60,809	59,142	57,614	-9,409	-14.0
Washington	18,097	17,581	17,240	16,878	16,490	16,071	15,634	15,194	-2,387	-13.6
Wilcox	13,183	11,670	11,095	10,602	10,166	9,765	9,406	9,083	-2,587	-22.2
Winston	24,843	24,484	24,292	23,973	23,520	22,949	22,292	21,608	-2,876	-11.7
Alabama	4,447,100	4,779,736	4,943,866	5,101,172	5,242,423	5,365,245	5,471,880	5,567,024	787,288	16.5

Note: These projections are driven by population change between Census 2000 and Census 2010. Recent data on births and deaths from the Alabama Department of Public Health are used to derive birth and death rates for the state and each county.

Source: U.S. Census Bureau and Center for Business and Economic Research, The University of Alabama, Fall 2012.

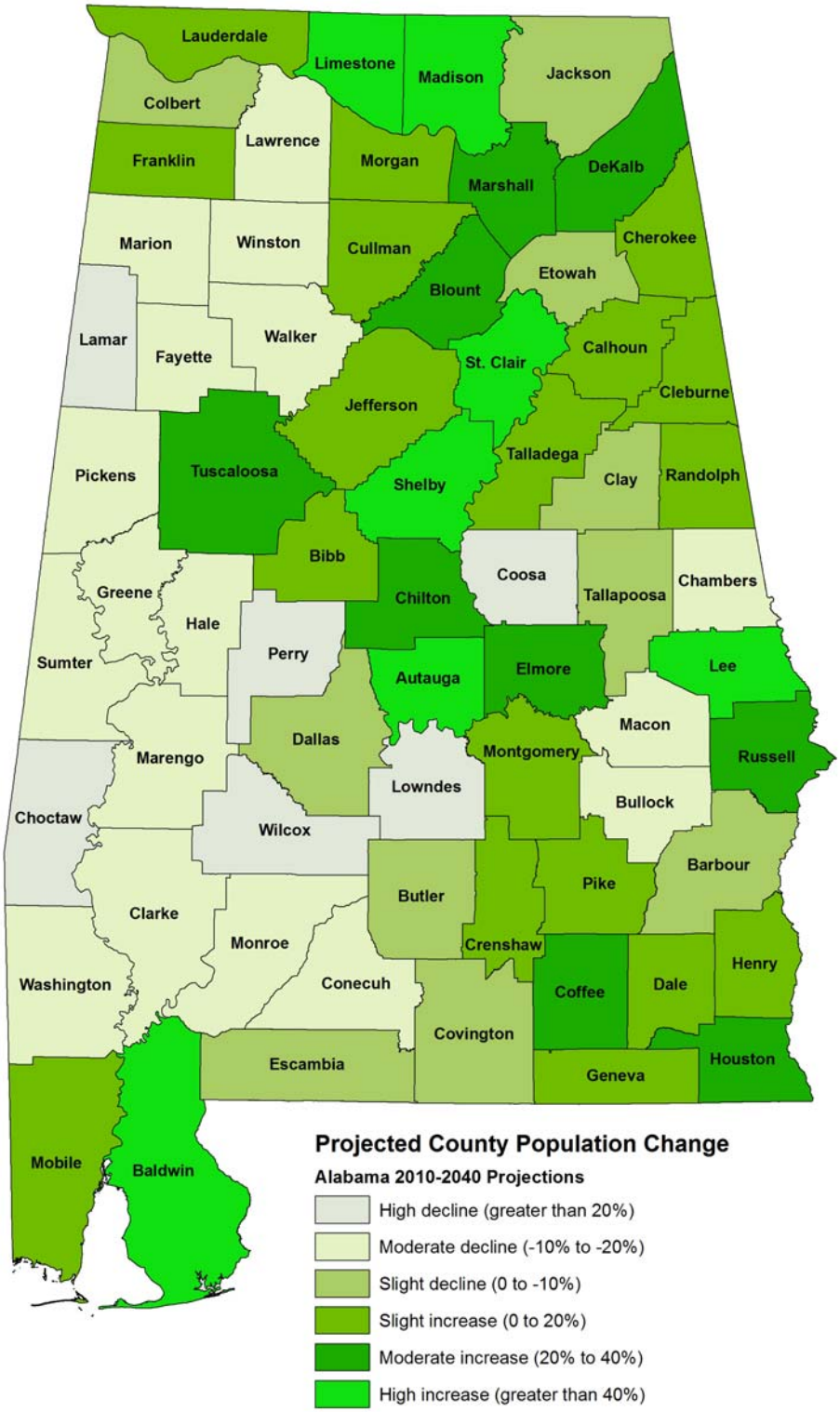


Figure 5.6-2
Projected County Population Growth for 2010-2040
Alabama State Data Center

5.6.2 Economic Development and Transportation Improvement Impacts on Vulnerability

Since 2000, Alabama has experienced surges in economic development activity. The state has established itself as a leader in advanced manufactured, biotechnology, and aerospace.

Honda Manufacturing of Alabama, LLC located in Talladega County (in Lincoln, Alabama) has contributed billions of dollars to Alabama's economy in recent years and employs approximately 4,500 Alabamians at the plant. Eighty six percent of these employees are from Calhoun, Etowah, Jefferson, St. Clair, and Talladega counties. Honda's 24 suppliers employ more than 4,000 additional Alabama citizens. Employment with Honda is predicted to continue to increase.

In April 2002, Hyundai Motor Manufacturing of Alabama, LLC announced plans to build an automobile assembly plant in Montgomery that began operating at full capacity in 2007.The plant is located on 1,600 acres providing plenty of acreage for future expansion. Hyundai is responsible for bringing 30 parts suppliers to the area, which has helped lower the typically high unemployment rate in this part of Alabama known as the "Black Belt" (for its rich black soils). Each of the 30 suppliers is within a 90-mile radius of the plant. The Korean-based company is a $1 billion investment in Alabama's economy. It employs nearly 3,000 people and announced a plan to add a third shift in 2012 that will support another 900 jobs.

On May 11, 2007, ThyssenKrupp Steel and Stainless USA, LLC announced that Calvert had been selected as the site for a new steel plant, a $3.7 billion investment. Construction began in 2007 with operations beginning in March 2010. The plant is expected to encompass over 3,500 acres of land in north Mobile and south Washington counties. ThyssenKrupp will provide nearly 3,000 Alabama citizens with permanent jobs. The Alabama Port Authority is in the development stages of the Pinto Island Terminal, which will serve as an import/export terminal for ThyssenKrupp.

2011 and 2012 brought continued growth to the state and manufacturing continued to be a top industry. 2011 was reported as the best year for manufacturing jobs since 2007 by the Alabama Secretary of Commerce. Some 313 existing manufacturers announced expansion plans in the state which will result in thousands of jobs throughout the state. The Alabama Robotics Technology Park (RTP), in North Alabama west of Huntsville, completed phase II of III, which includes a training center and a 43,000 square foot testing facility used by NASA and the U.S. Army Missile Command.

In early 2012, the state announced a new strategy for economic development called Accelerate Alabama. It will focus on bringing additional advanced manufacturing companies from specific economic sectors already deep rooted in Alabama's economy. The strategy also focuses on improving infrastructure and workforce training.

In 2012, Carpenter Technology Corporation (truck manufacturer) also announced the construction of a 400,000 square foot, $518 million plant in Limestone County. which is expected to create nearly 5,000 jobs in the state.[40] It is expected to be in operation by 2014.

[40]Kavilanz, Parija. "Alabama's Sweet Manufacturing Boom." CNN Money. 11 Apr 2012 http://www.edpa.org/docs/news/CNN041112.pdf

South and central Alabama will likely experience the greatest amount of development and land use change in the state due to the ThyssenKrupp plant in Mobile, the Hyundai Plant in Montgomery, and the Kia plant located in nearby West Point, Georgia. Lee, Lowndes, Tallapoosa, and Macon counties' geographic location makes them prime sites for Kia and Hyundai suppliers. Autauga and Elmore counties have plans for substantial residential developments. An increase in housing is anticipated in southwest Montgomery for employees of Hyundai and its suppliers.

The City of Auburn, in Lee County, is expected to continue growing in years to come, especially in northwest, west, and south parts of the city. This area is also expected to receive residents from the Fort Benning BRAC Realignment in nearby Columbus, Georgia. Tallapoosa County is experiencing rapid growth along Lake Logan Martin. Growth along the Lake is expected to continue into the future. However, northern Alabama is also seeing growth with a growing aerospace industry sector.

Madison County (City of Huntsville) saw a 60,000 person increase between 2000 and 2010, the third highest in the state behind Jefferson County (City of Birmingham) and Mobile County (coastal areas). (See **Table 5.6-2** for population estimates.) BRAC realignments in Huntsville at Redstone Arsenal, and Fort Rucker in Dothan will likely have a significant impact on development trends in Madison and Houston counties respectively. In addition, Huntsville is a Forbes leading cities for business and the University of Alabama at Huntsville continues to have a strong influence on the area By 2011, approximately 4,700 new people will have moved to Huntsville due to job transfers. These increases in growth and development potentially increase risk and vulnerability to hazards and loss of life and property.

Accompanied by economic development and population growth are transportation projects. Several projects are being considered throughout the state. Significant transportation improvements will affect development trends throughout the state. The most significant projects include the I-85 extension from Montgomery to the Mississippi Line, Highway 83 expansion to link Foley Beach Expressway to I-10, Corridor X / I-22 link between Birmingham and Memphis, US 280 improvements east of Birmingham Foley Beach Expressway expansion to five lanes for hurricane evacuation, the expansion of I-10, the widening of US 80, and improvements to I-20, I-59, and I-65.

The Federal Highway Administration approved the I-85 extension in 2011 and the Montgomery Outer Loop Project, which will connect I-85 to Vaughn Road, is the first of many projects to extend I-85 west to I-65. The even longer-range plan is to extend I-85 through West Alabama connecting to I-59 near the Mississippi state line; however, it will be years before the extension it is fully completed.

Additional transportation projects include the construction of a Northern Beltline in Jefferson County extending from Interstate 59 / 20 in Bessemer to Interstate 59 north of Trussville, the Tuscaloosa East Bypass connecting US-82 on the North Side of Warrior River to I-20 / I-59, safety improvements to US-98 in Mobile County, improvements to US-231 and Ross Clark Circle in the Dothan area, and intersection improvements and access management on US-280 between Hollywood Boulevard and Doug Baker Road in Jefferson and Shelby Counties. All of these major infrastructure improvements affect land use and development demands, which in turn change vulnerability.

Continued industry growth in Alabama reinforces the need to continually assess vulnerability throughout the state. As more companies relocate and expand in Alabama, the population will

continue to rise, increasing vulnerability. The State will continue to monitor these development trends and adjust its mitigation responses accordingly. This plan update reflects the changes in population and growth patterns since the 2010 plan, and future updates will address continuing changes over time.

Section 6 – Mitigation Strategy

This section of the Plan addresses requirements of Final Rule (FR) Section 201.4 (c) (3). A copy of the FR is provided for reference in **Appendix B** of this document.

Contents of this Section

6.1 Final Rule Requirements for Mitigation Strategy
6.2 State Mitigation Strategy
6.3 State Hazard Mitigation Goals
6.4 Discussion of State Pre- and Post-Disaster Hazard Management Policies, Programs and Capabilities
6.5 Evaluation of State Laws, Regulations, Policies and Programs related to Hazard Mitigation and Development in Hazard Prone Areas
6.6 State Funding Capabilities for Hazard Mitigation Projects
6.7 General Description and Analysis of the Effectiveness of Local Mitigation Policies, Programs and Capabilities
6.8 Identification, Evaluation and Prioritization of Mitigation Actions
6.9 Identification of Funding Sources

Section	What has been updated?
6.1	• References to Interim Final Rule changed to Final Rule.
6.2	• The Mitigation Strategy Statement was revised by the SHMT. • Goals 2 and 4 were revised by the SHMT resulting in Goal 4 being deleted. • Objectives 4.1 and 4.2 were added to Goal 2 as Objectives 2.5 and 2.6.
6.3	• Minor revisions made to wording of State's Goals and Objectives.
6.4	• This section was re-evaluated and new information was added based on the events of the last three years.
6.5	• This section was re-evaluated and new information was added based on the events of the last three years.
6.6	• This section was re-evaluated and new information was added based on the events of the last three years.
6.7	• This section was revised to incorporate the results of an ongoing analysis of all local capabilities.
6.8	• Mitigation Actions from 2010 plan update were reviewed and completed, deleted, and deferred actions documented. • Mitigation actions were refined based on additional input from the 2013 update process. • New actions were added as a result of the 2013 update process. • Actions were prioritized and implementation timeframes were re-evaluated. • Actions tied to Objective 4.1 and 4.2 were adjusted to meet Objective 2.5 and 2.5, respectively.
6.9	• The funding sources identified in the 2010 plan were re-evaluated.

6.1 Final Rule Requirements for Mitigation Strategy

The Final Rule (FR) Subsection 201.4 (c) (3) requires the State Hazard Mitigation Plan to include a Mitigation Strategy.

"(The Mitigation Strategy shall provide) the State's blueprint for reducing the losses identified in the risk assessment. This section shall include:

(i) A description of State goals to guide the selection of activities to mitigate and reduce potential losses.

(ii) A discussion of the State's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area including: an evaluation of State laws, regulations, policies and programs related to hazard mitigation as well as to development in hazard-prone areas; a discussion of State funding capabilities for hazard mitigation projects; and a general description and analysis of the effectiveness of local mitigation policies, programs and capabilities.

(ii) An identification, evaluation and prioritization of cost-effective, environmentally sound and technically feasible mitigation actions and activities the State is considering and an explanation of how each activity contributes to the overall mitigation strategy. This section should be linked to local plans, where specific local actions and projects are identified.

(iv) Identification of current and potential sources of Federal, State, local or private funding to implement mitigation activities.

Additionally, the Final Rule (FR) Subsection 201.4 (d) requires that the plan be updated on a regular basis. Specifically, "(The) plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts and changes in priorities."

6.2 State Mitigation Strategy

The State Hazard Mitigation Team reaffirmed Alabama's overall hazard mitigation strategy at the third State Hazard Mitigation Team meeting in January 2013. Minor changes were made to the wording of the strategy.[1] The state's mitigation strategy is as follows:

> *Reduce vulnerability through collaborative actions and policies that limit the effects of natural hazards on the citizens of Alabama and physical assets.*

Subsequent subsections of **Section 6** provide detailed descriptions of the State's hazard mitigation goals, objectives, and implementation strategies.

[1] References to "risk" were changed to "vulnerability."

6.3 State Hazard Mitigation Goals

When the first plan was drafted in 2004, the SHMT identified six goals supporting the State of Alabama's overall mitigation strategy. These goals are accompanied by objectives and actions that are designed to support the implementation of the goals. A multi-stage process was used to identify, evaluate and prioritize the goals, objectives and actions. The process is described in **Section 6.8**.

With each plan update, the State Plan Goals are revisited (as required) by the State Hazard Mitigation Team Meeting. Minor changes were made in the 2007, 2010 and 2013 updates. [2] The purpose of the review is to determine if the goals are still valid. Several minor changes were made to the wording of the goals and objectives to best reflect the state's intent and continuing update process. The changes were suggested and agreed upon through a process of discussion and voting led by the project consultant.[3]Similar to the mitigation strategy statement, the word "risk" was replaced with the word "vulnerability." This change resulted in Goal 2 being identical to (former) Goal 4. Therefore, the former Goal 4 was deleted and the objectives were added to Goal 2 as Objective 2.5 and Objective 2.6. Lastly, the goal numbering was updated. Former Goal 5 became Goal 4 and former Goal 6 become Goal 5. This changes are also reflected in the mitigation action plan. The refined goals and objectives and added objectives are as follows:

Goal 1: Enhance the comprehensive statewide hazard mitigation system.

- Objective 1.1: Improve local and state capability to study natural hazards
- Objective 1.2: Improve the statewide availability of risk information, particularly in GIS format
- Objective 1.3: Reduce the impact of hazard events (i.e., loss of service) for state departmental functions
- Objective 1.4: Enhance flood mitigation efforts
- Objective 1.5: Enhance hurricane mitigation efforts
- Objective 1.6: Enhance earthquake mitigation efforts
- Objective 1.7: Enhance landslide mitigation efforts
- Objective 1.8: Enhance sinkhole mitigation efforts
- Objective1.9: Ensure that State, county and local officials have most current data regarding RL and SRL properties

Goal 2: Reduce the State of Alabama's vulnerability to natural hazards.

- Objective 2.1: Reduce the threat of injury and loss of life from natural hazards
- Objective 2.2: Reduce natural hazard impact on individual properties, businesses and public facilities
- Objective 2.3: Reduce natural hazard impact on natural resources
- Objective 2.4: Reduce vulnerability to RL and SRL properties Statewide
- Objective 2.5: Improve the state's ability to prepare for a natural or man-made disaster
- Objective 2.6: Improve the state's ability to respond to a natural or man-made

[2] Specific changes made during previous plan updates can be found in the previous versions of the State Hazard Mitigation Plan (2004, 2007, and 2010).
[3] A detailed description of the process can be found in the Planning Process Section.

disaster

Goal 3: Reduce vulnerability of new and future development.

Objective 3.1: Improve the State's ability to protect new and future residential and commercial structural Assets

Objective 3.2: Reduce the probability that new or future residential and commercial structural assets will be affected by hazards

Goal 4: Foster public support and acceptance of hazard mitigation.

Objective 4.1: Increase stakeholder awareness about the hazards identified in the State Plan

Objective 4.2: Increase stakeholder awareness about the hazard identified in the State Plan

Goal 5: Expand and Promote interagency hazard mitigation cooperation.

Objective 5.1: Integrate hazard mitigation into all state and local response / recovery activities

Objective 56.2: Long-term recovery following a disaster

6.4 Discussion and Evaluation of State Pre- and Post-Disaster Hazard Management Policies, Programs and Capabilities

The State's Emergency Operations Plan (EOP) is a vital document in guiding the state's pre- and post- disaster capabilities.[4] In November of 2002, the Alabama Emergency Management Agency (AEMA) initiated the Emergency Management Accreditation Program (EMAP) assessment process of its policies, programs, and capabilities. This process was repeated in 2004 and most recently in 2008. The 2008 EMAP evaluation found that the state was compliant in all areas and is therefore EMAP certified. EMAP provides AEMA with a baseline for continuing assessments that will be considered in future Plan reviews and updates. AEMA is an active participant in EMAP, and AEMA Director serves on the EMAP Commission. Findings from the EMAP assessment are highlighted throughout this section.

As of the 2013 update, the State was not planning to seek EMAP re-accreditation (according to Alabama Emergency Management). FEMA requires assessment of the state's Emergency Operations Plan (EOP) using the Plan Analysis Tool (PAST) for states to receive Emergency Management Performance Grant money in Fiscal Year 2012. (AEMA completed this assessment in 2012.) A total of $339,500,000 was available in FY 2012 through EMPG Program across the nation.

As part of this new initiative, AEMA intends to conduct annual updates to the EOP (beginning in 2012). The next revision of the State's EOP (2013) is anticipated to incorporate

[4] The current EOP is based upon guidelines contained in the National Response Plan (NRP) and the Comprehensive Preparedness Guide (CPG) 101 version 2. More information regarding the EOP can be found on page 6-6.

concepts/elements of the National Frameworks and associated Response Support Functions. This includes the National Disaster Recovery Framework, National Response Framework, and the other three Frameworks (Prevention, Protection, and Mitigation) as they become available.

In addition to the EOP, a Legislative Committee was established. In 2004, AEMA had started a comprehensive examination of legislative efforts involving AEMA. Prior to Hurricane Ivan, the AEMA's Director formed the AEMA Legislation Committee. The purpose for this committee was to review current Alabama Emergency Management statutes (31-9-01 et seq, Code of Alabama, 1975, as amended) and compare them to emergency management statutes of other states to determine if new legislation (or amendments to existing legislation) were needed to better support the mission and goals of AEMA in its service to the citizens of Alabama.

As a result of the State's continuing legislative review process, Act 522 was signed into law by Governor Bob Riley on April 20, 2006. The Act amended the Alabama Emergency Management Act of 1955 (Sections 31-9 et seq, Code of Alabama), which first established the Alabama Emergency Management Agency and defined the roles, powers, and duties for emergency management within the State. Sections 31-9-3, 4, 8, and 10, related to State emergencies and AEMA were strengthened to provide for emergency proclamations, expand the authority of State and local responders, establish degrees of emergency classifications, and provide for the powers of political subdivisions for emergency management.

The legislative committee noted above, is now a single individual. However, the same review process continues as needed. Between the 2007 and 2010 update, only one piece of AEMA-related legislation was reviewed – The Alabama Disaster Recovery Program (Act 342). This legislation is discussed in detail in **Section 6.4.2**. No additional legislation was reviewed between 2010 and this update. However, the position is still valid.

6.4.1 Discussion and Evaluation of State Pre- and Post-Disaster Hazard Management Policies

Pre-Disaster Hazard Management Policies

Alabama has instituted Hazard Management Policies through various State agencies and authorities. Each agency is responsible for drawing up guidelines to mitigate and manage hazards associated with operations normally handled through the agency's daily functions and operations. Agencies with pre-disaster hazard management/mitigation policies include the AEMA, Alabama Department of Conservation and Natural Resources (ADCNR), Alabama Department of Environmental Management (ADEM), and the Department of Economic and Community Affairs (ADECA). The relevant policies of each Agency are discussed below.

The Alabama Department of Conservation and Natural Resources-State Lands Division-Coastal Section (SLD-Coastal Section), is the lead agency for the Alabama Coastal Area Management Program (ACAMP). As such, the SLD-Coastal Section is responsible for developing policies and programs, fiscal management, conducting education and outreach, managing State submerged lands and the overall administration of the ACAMP. The policies of the ACAMP recommend pre-disaster mitigation planning, and are intended to discourage development in higher risk coastal zones, which are more vulnerable to natural threats such as flooding and hurricanes.

ADEM, through its Administrative Code, Division 8 Coastal Program Regulations, permits, regulates and monitors uses and activities having a direct or significant impact on coastal Alabama and its resources. These regulations specifically regulate development in higher risk coastal zones, which are more vulnerable to natural threats such as flooding and hurricanes. Activities regulated under these regulations include construction and other activities on Gulf of Mexico beaches and dunes in the Alabama Coastal Zone. The Division 8 regulations address construction along beaches and dunes and any developments greater than five acres to provide protection for the primary dunes, beach sands, and covering vegetation by regulating construction or alteration of the beach from the mean high tide line to the Construction Control Line (CCL). The CCL is a defined, surveyed line essentially paralleling, and setback from, the Gulf shoreline. Structures located seaward of this line are not permitted by the program. The CCL was designed to provide long-term protection of the beaches and dunes by prohibiting construction seaward of this established setback line. The CCL helps protect property values and minimize damage from storm surge and other natural hazards. Developers are not allowed to remove primary dune or beach sands and/or vegetation between the CCL and the mean high tide.

The regulations relevant to the CCL require an environmental impact and natural hazards study for any condominium, motel, hotel or similar development located on a property intersected by the CCL. This requirement includes a wave height study addressing the flood and erosion potential at the project site using eroded beach profiles for pre- and post-development. Additional components of the Division 8 regulations include:

- A beach and dune enhancement plan which calls for dune fencing, dune walkovers and planting of vegetation to control shoreline erosion and minimize impacts to beaches and dunes;

- Control of the use of bulkheads, retaining walls and similar structures which could impact beaches, dunes and structures during storm surge; and

- Permitting and certification requirements for dredging and fill in the coastal area.

For the most part, coastal communities follow ADEM guidelines and restrictions for coastal construction, and most coastal communities have adopted the International Building Code Series to replace the previous Standard Building Codes of the Southern Building Code Congress. Enforcement of local building codes is included in all local mitigation plans, and in addition, all coastal municipalities have zoning and subdivision regulations in effect. Mobile and Baldwin, the coastal counties, both have flood hazard ordinances in effect for unincorporated areas, but, of these two, only Baldwin County is authorized by State law to administer comprehensive zoning regulations within its unincorporated jurisdiction.

Post-Disaster Hazard Management Policies

On February 1, 2012, Governor Robert Bentley issued the 2012 State of Alabama Emergency Operations Plan (EOP) to replace the previous plan approved in 2009. According to the EOP:

> "The EOP, using the National Response Plan (NRP) and the National Incident Management System (NIMS), establishes the mechanisms to:
>
> o Maximize the integration of incident-related prevention, preparedness, response, and recovery activities;

- Improve coordination and integration of State, County, local, Tribal, private-sector, and nongovernmental organization partners;
- Maximize efficient utilization of resources needed for effective incident management;
- Improve communications and increase situational awareness;
- Facilitate mutual aid and State support to County, local, and Tribal governments;
- Facilitate State-to-State support;
- Provide proactive and integrated State response to catastrophic events; and
- Determine priorities and coordinate protection, response, and recovery of critical infrastructure.

This EOP is based upon guidelines contained in the National Response Plan (NRP) and the Comprehensive Preparedness Guide (CPG) 101 version 2. The NRP, as a core plan for national incident management, is linked to an array of incident or hazard-specific Federal contingency plans that are designed to implement the specific statutory authorities and responsibilities of various departments and agencies. Therefore, State agencies that partner with Federal agencies should be operating under the same guidelines to ensure complete and comprehensive coordination.

Emergency Support Functions (ESFs) to the EOP are functional and expand upon the concept of operations contained in the Basic plan. Annexes provide specific responses for agencies of government and define their responsibilities.

The Standard Operating Guidelines (SOGs) required for the implementation of the State EOP are not included because of their voluminous nature. SOGs are the general operating guidelines for departments and agencies and are maintained by those departments and agencies.

An annual review of the EOP will be undertaken by the AEMA Director and those agencies and departments of State government having emergency assignments. The Director will insure that a list of all plan holders is maintained at the AEMA Office and that updates are sent to each one of these individuals. As previously noted, annual assessments of the EOP are now required to receive Emergency Management Performance Grant money. AEMA intends to continuously update and revise the EOP to reflect current emergency management requirements and conditions.

This plan requires fair and equal treatment to all regardless of race, creed, color, national origin, sex, age, or handicap.

The priorities will be life safety, incident stabilization, and the protection of property and the environment.

6.4.2 Discussion and Evaluation of State Pre- and Post-Disaster Hazard Management Programs

Pre-Disaster Hazard Management Programs

Pre-disaster management programs in Alabama are established primarily at the local, rather than State level. The State of Alabama manages two programs aimed at pre-disaster mitigation planning, the Alabama Shoreline Erosion and Hazard Mitigation Plan and the Alabama Coastal Area Management Plan. These programs are discussed below.

Alabama Coastal Area Management Plan (ACAMP) – ADCNR, State Lands Coastal Section is the lead agency for the ACAMP and is responsible for developing policies and programs, fiscal management, conducting education and outreach, managing State submerged lands and the overall administration of the ACAMP. The permitting, monitoring and enforcement portion of the ACAMP is implemented by ADEM. ACAMP represents Alabama's participation in the federally funded Coastal Zone Management (CZM) Program. The CZM Program is administered by the National Oceanic and Atmospheric Administration (NOAA) of the Department of Commerce.

The ACAMP outlines the policies of the CZM program while the ADEM Division 8 regulations provide the regulatory framework and standards for conducting certain activities in the coastal area. The major functions of the program are to protect coastal resources and to provide adequate public access for recreation and commerce. Resource protection includes addressing such issues as shoreline erosion, water and air quality, wildlife habitat protection, wetland protection, dune protection, urban development, and hazard management. This program also helps protect coastal resources by providing technical assistance on zoning regulations and hazard mitigation to local governments.

In addition to the programs noted above, Alabama actively pursues natural hazard mitigation opportunities, primarily through FEMA grant programs (**Appendix I**) and technical assistance. The State, primarily through AEMA, encourages communities and potential sub-grantees to participate in the FEMA programs, and offers technical assistance and support in developing project applications.

The Community Rating System (CRS) Program implemented by the Federal Emergency Management Agency (FEMA) through the National Flood Insurance Program (NFIP) allows policy holders within participating communities to receive a discount on NFIP policies. Any NFIP community may apply for inclusion in the CRS Program and be credited for a range of flood hazard mitigation activities that exceed NFIP minimum standards.

Through the Insurance Services Office (ISO), a community applicant is graded based on criteria set forth in CRS guidelines for flood hazard mitigation. The grade assigned to each community results in a CRS classification. The CRS class determines the applicable insurance discount for the policy holders within the community.

The CRS class rating is a scale of one through ten, with Class 1 communities receiving a 45 percent discount and Class 10 communities receiving no discount. **Table 6.4-1** summarizes each CRS class and the applicable discount.

Table 6.4-1
CRS Class and Discount

CRS Class	Discount (percent)	CRS Class	Discount (percent)
1	45	6	20
2	40	7	15
3	35	8	10
4	30	9	5
5	25	10	0

According to data compiled by FEMA through October 1, 2012 , Alabama has 12 communities participating and three communities whose eligibility was rescinded for non-compliance with continuing program eligibility requirements. No new communities have joined the CRS program since the 2010 State Hazard Mitigation Plan Update. **Table 6.4-2** lists the participating communities in Alabama and the current CRS class and status of each community.

Table 6.4-2
Alabama Participating CRS Communities and CRS Class

FEMA Community Number	Community Name	CRS Entry Date	Current Effective Date	Current CRS Class	Status
010146	Athens, City of	10/1/91	10/1/98	10	Rescinded
010071	Atmore, City of	05/1/02	05/1/02	8	Current
015000	Baldwin County	10/1/95	05/1/12	6	Current
010116	Birmingham, City of	10/1/94	5/1/12	6	Current
010418	Dauphin Island, Town of	04/1/01	04/1/01	8	Current
010176	Decatur, City of	10/1/91	10/1/05	10	Rescinded
015005	Gulf Shores, Town of	10/1/93	10/1/93	9	Current
015006	Homewood, City of	10/1/01	10/1/01	9	Current
010123	Hoover, City of	10/1/91	10/1/91	9	Current
010153	Huntsville, City of	10/1/91	10/1/12	8	Current
015007	Mobile, City of	10/1/92	10/1/93	10	Rescinded
015011	Orange Beach, City of	10/1/91	10/1/07	7	Current
010189	Pell City, City of	10/1/92	5/1/12	8	Current
010002	Prattville, City of	10/1/91	5/1/08	8	Current
010070	Wetumpka, City of	10/1/91	10/1/91	9	Current

According to FEMA, each community must submit a recertification document by October 1 each year to maintain eligibility for the program. The recertification requirement includes documentation that mitigation program activities initially credited to the community have continued, in addition to documenting any new strategies implemented since the previous October 1. Any community that has received a Class 9 or better classification will revert to Class 10 on the following May 1 unless it submits the signed recertification worksheet by October 1 of each year. If the recertification does not include all the needed documentation, the community may lose enough points to cause a retrograde in its CRS classification. A repetitive loss community that fails to submit a copy of its annual outreach project or a community that fails to submit its annual progress report will revert to a Class 10.

Post-Disaster Hazard Management Programs

Post-disaster management programs in Alabama are established primarily at the State level. The State of Alabama manages the Alabama Emergency Operations Plan program aimed at post-disaster response and mitigation. In addition, the Disaster Recovery Program was created in April 2009.

Alabama Emergency Operations Plan (EOP) – The EOP is designed for State level response to local emergencies. The State plan recognizes the role of the Federal government in major natural disasters, and contains procedures to request and utilize Federal help. The plan ties the Federal, State and local roles in regard to preparedness, response and recovery. The plan also delineates the chain of command for each section of disaster management. Some mitigation initiatives also appear in the plan.

The last performed EMAP evaluation in 2008 indicated that the State has “(a)n emergency operations/response plan for carrying out specific actions at project times and places in an emergency or disasters”, and that the (state) has “identified and assigned areas of responsibility to organizations and individuals” for doing so. It also notes that "plans and procedures are in place for maintaining continuous critical government services and/or programmatic operations under disaster conditions.” The 2008 EMAP evaluation found that the state was compliant is all of these areas. As of 2012, the EOP is evaluatedusing the CPG 101, version 2.0 Plan Analysis Tool which does not specifically address post-disaster response or recovery.

The Alabama Disaster Recovery Program was created in April of 2009 through Act 342. This Act also established the Disaster Recovery Fund to fund the program and assist counties and municipalities in satisfying local needs during and “immediately following certain disasters when an emergency or major disaster declaration is not requested by the Governor or has been denied by the President. The act also creates the Alabama Disaster Recovery Program Committee and provides for the disbursement of funds upon a proclamation of the Governor or Legislature and a proclamation by the affected local governing body.” In order to receive funds, local governments have a hazard mitigation plan in place. Currently, there is no money in the fund.

6.4.3 Discussion and Evaluation of State Pre- and Post-Disaster Hazard Management Capabilities

Pre-Disaster Hazard Management Capabilities

The State of Alabama has, through a variety of programs and funding sources, established a record of accomplishment on behalf of the citizens of the State. The capability of the State to manage hazards is demonstrated by its success in formulating projects and securing local matching funding for pre- and post- disaster mitigation projects. Financing of hazard mitigation has been accomplished through several primary, mostly FEMA-based funding mechanisms over many years.

The State relies exclusively on a local matching approach to secure appropriate levels of funding. Pre- and post disaster mitigation activities are promoted and facilitated by the State. The State functions largely in an administrative and coordinating role only through its EMA. The State’s EOP coordinates the response effort.

Most of the State's EMA capability has evolved in the development and stewardship of hazard management and mitigation projects initiated in conjunction with several key programs. The Hazard Mitigation Grant Program (HMGP) continues to be the focal point of most AEMA capability. To a lesser extent, State capability is based on its ability to administer programs and projects through Unmet Needs funding requests, Flood Mitigation Assistance (FMA), and more recently, through the Pre-Disaster Mitigation funding programs.

The last EMAP evaluation in 2008 found the State's emergency management program strategy is based on the results of an all-hazards identification, risk assessment, and impact analysis (as required by the EMAP standard). The State was also found to be in compliance with all the other qualifying "sub-elements", including (a) use of appropriate building construction standards; (b) hazard avoidance through appropriate land use practices; (c) relocation, retrofitting, or removal of structures at risk; (d) removal or elimination of the hazard; (e) reduction or limitation of the amount or size of the hazard; (f) segregation of the hazard from that which is to be protected; (g) modification of the basic characteristics of the hazard; (h) control of the rate of release of the hazard (met for natural hazards), and; (i) provision of protective systems or equipment; j) establishment of hazard warning and communication procedures, and; (k) redundancy or duplication of critical systems, equipment, information, operations or materials.

Post-Disaster Hazard Management Capabilities

The ESFs in the State Emergency Operations Plan have a Recovery Actions section that establish and maintain the continuity of response activities throughout the state. (This is affirmed through the 2008 EMAP assessment as well.) Further, this section addresses a plan for maintaining critical government services in the state under disaster conditions.

In addition, the ADECA manages the Long Term Community Recovery Program that helps develop recovery plans for communities impacted by a major disaster. This program was initiated and used after Katrina and now is being utilized in the April 2011 tornado recovery. Additional information can be found in **Section 4.3.2** in **Section 4**: *Planning Process*.

6.5 Evaluation of State Laws, Regulations, Policies and Programs Related to Hazard Mitigation and Development in Hazard Prone Areas

6.5.1 Evaluation of State Laws Related to Hazard Mitigation and Development in Hazard Prone Areas

The following is a review of the State laws of pre-disaster and post-disaster hazard management. AEMA was established through Section 4 of the Alabama Emergency Management Act of 1955 (Public Law 31-9), Act 47, June 1955. No changes have been made as of the 2013 State Hazard Mitigation Plan update.

Section 10, Alabama Law, 1955 Act No. 47, authorizes and directs local governments to establish organizations for emergency management. Under this legislation, each county is required to have an emergency management organization, either individually or jointly. Appropriate ordinances and/or resolutions are required to establish each local organization and

must provide for the organization, powers, duties, divisions, services and staff of the agency. The EMA office must maintain and display current functional statements and organizational charts. Initial submittals of annual budgets must be accompanied by a functional statement and an organizational chart. Subsequent submissions of the organizational chart and functional statement are required only when a change/revision is published. FEMA Form 85-17, Staffing Pattern for each participating political jurisdiction, is a required part of the State's annual Comprehensive Cooperative Agreement. Thus, the current annual State submission reflects local agencies meeting eligibility criteria to receive EMA funds.

One of the most significant State enabling statutes related to hazard mitigation can be found in Title 11, Chapter 52, *Planning, Zoning, and Subdivisions* of the Code of Alabama. Section 11-52 et seq is the State planning enabling legislation for municipalities only. First enacted in 1935, the statute provides municipalities' broad powers for comprehensive planning, capital improvements programming and the regulation of land use, development, and conservation of land areas through zoning ordinances and subdivision regulations. It permits municipalities to create planning commissions to oversee planning and land use controls, and Boards of Adjustments to hear appeals. It is the basis for floodplain management regulations within all municipalities and provides additional powers to control the location and types of development activities that might be affected by other natural hazards, including landslides and land subsidence.

Unincorporated areas of counties in Alabama are severely restricted by the lack of a State planning enabling statute. Only three counties statewide – Baldwin, Jefferson, and parts of Shelby County – are permitted to establish zoning ordinances by special acts adopted by the State. County regulation of subdivisions within unincorporated areas, however, is granted by Title 11, Chapter 24 of the Code of Alabama. County commissions are permitted to regulate the subdivision of land and the construction of streets and utilities with the advice of an advisory board. Municipalities may enforce subdivision regulations within its police jurisdictions, which extend two miles beyond the municipal boundaries within unincorporated areas of a county.

Code of Alabama, Title 11, Chapter 19, Sections 11-19-1 through 11-19-24, entitled *The Comprehensive Land Use Management Act* was enacted to prevent economic and human loss in flood-prone areas and permit counties to manage floodplain development within unincorporated areas. This act provides the established county commission the authority to create a comprehensive land-use management program for floodplain management, in accordance with the NFIP criteria. As a result, unincorporated communities are eligible for flood insurance through the NFIP. The program helps mitigate damages caused by floods by controlling land use and development and improving the long-range management of flood prone areas. The statute authorizes each county commission to adopt floodplain management ordinances for unincorporated areas. County Planning Commissions are granted broad authority to control development in flood-prone zones by adopting ordinances and Flood Insurance Rate Maps that delineate the various flood zones controlled by the adopted ordinances. Each county must appoint an administrator of the program and provide for a Board of Adjustment to hear appeals to the ordinance requirements.

Title 41, Article 6, Code of Alabama, establishes a State Building Commission and adopts the Standard Building Code of the Southern Building Code Congress. The Standard Building Code has since been superseded by the International Code Series of the International Code Council. The Building Commission oversees the planning, acquisition, and construction of all State buildings. Section 41-9-166 of Article 6 authorizes municipalities and counties to adopt and enforce building and technical codes.

Title 24, Chapters 4, 4A, and 5, Code of Alabama, establishes the Alabama Manufactured Housing Commission to regulate manufactured and modular homes and buildings, including anchoring requirements. Manufactured Homes must meet Federal specifications of the U.S. Department of Housing and Urban Development.

Executive Order No. 14 June 14, 1971 provides for "Assignment of Emergency Preparedness Functions to State Departments and Agencies," as of June 14, 1971, and was adopted by reference by AEMA.

Executive Order No. 27 March 3, 1966 provides for the "Creation of the State Office of Emergency Planning," as of March 3, 1966, and was adopted by reference by the Alabama Emergency Management Agency. Executive Orders 27 and 14 authorize the Governor to use the services, equipment, supplies and facilities of existing State departments, offices and agencies for emergency management purposes. In the event of an impending or actual attack or manmade, technological or natural disaster, Section 4 of Executive Order 14 authorizes the transfer of direction, personnel or functions of state agencies, boards, and commissions for the purpose of performing or facilitating disaster or emergency services.

Executive Order No. 40, July 23, 1985 states that AEMA shall act as the coordinating agency for the state in the event of an incident/accident involving a leak, spill, release of hazardous material, or threat of same. AEMA shall develop, in cooperation with other departments and agencies of State government, the necessary plans, rules and procedures for responding to these incidents/accidents. AEMA will be responsible for ensuring that these plans, rules and procedures are implemented and carried out in the State of Alabama. This executive order further requests that departments and agencies of state government who have response capability cooperate with the AEMA, the Department of Public Safety and the Department of Environmental Management in the establishment of a coordinated and unified system that will assure the citizens of Alabama have the best protection available from hazardous materials, spills, leaks, and releases. This executive order was adopted by AEMA.

Executive Order 19, February 24, 2004 established Alabama's State Hazard Mitigation Team directing all State agencies to participate in development of the State Hazard Mitigation Plan. The SHMT is directed to develop the Plan, and to assist in prioritizing and selecting of hazard and pre-disaster mitigation grant program project applications. The SHMT is intended to function for the duration of Plan development, and remain in place until the three year plan to update the hazard mitigation plan has been approved by FEMA. The SHMT is active in development of local plans statewide, with a focus on information sharing, issues resolution, and commonality of approach and objectives.

6.5.2 Evaluation of State Regulations Related to Hazard Mitigation and Development in Hazard Prone Areas

Much of the authority to perform pre-disaster planning and mitigation through development regulations is allocated to the local level counties and municipalities. A key state regulation addressing pre-disaster mitigation planning at the state level is the ACAMP, overseen by ADCNR and implemented by ADEM. As defined by the program, the ACAMP consists of comprehensive management policies and guidance for the protection and enhancement of the quality, quantity, and viability of coastal resources and the management of the uses of these resources. While the plan is fairly comprehensive, the enforcement component should be

further considered relevant to development regulations such as land-use plans and no-build zones.

Alabama has granted localities very limited authority to regulate development through its planning enabling legislation. Based on the New York City Zoning Ordinance of 1925, Alabama's 1935 enabling legislation has remained virtually unchanged to this day. It restricts enabling authority to cities and towns only, requiring counties to seek special acts to extend zoning controls to unincorporated communities. "Smart Growth" efforts have recently begun to examine and modernize the State legislation to better promote improved land development practices.

While Smart Growth efforts have not amended the State planning legislation, it is improving land development practices. One example of this is the 2003 Alabama Land Recycling and Economic Redevelopment Act. This legislation established a revolving loan program (funded by a $1 million EPA grant) to be administered through the Alabama Department of Environmental Management (ADEM). The purpose of legislations is to encourage voluntary cleanup and reuse of Brownfield sites in Alabama.

Alabama enacted the Comprehensive Land Use Management Act to give individual counties the right to establish commissions to control development in flood-prone and hazard areas through land use planning and zoning. Each commission has the right to establish and enforce zoning and construction limits in flood-prone areas. While this method is a reasonable approach for permitting floodplain management within unincorporated areas, a state-wide program to enable localities to plan for and manage the full range of land use and development in all areas, both incorporated and unincorporated areas, should be considered.

6.5.3 Evaluation of State Policies Related to Hazard Mitigation and Development in Hazard Prone Areas

To prevent the introduction of new risks from hazards throughout the State, current State hazard mitigation policies mandate an appropriate level of state and local organization and coordination for an effective and programmatic approach to identifying projects to reduce and manage hazards.

As noted above, Alabama enacted the Comprehensive Land Use Management Act to give individual counties the right to establish commissions to control development in flood-prone and hazard areas through land use planning and zoning.

While appropriate policies appear to be in place, funding mechanisms are substantially reliant on Federal funding with local match requirements. To achieve the desired result of what appears to be fundamentally sound policies some additional dedicated State funding source may be beneficial from a management, enforcement, and implementation standpoint. Current policies describe comprehensive organizational responsibilities and interactive capabilities between state and local authorities, coordinating agencies and local populations. Disaster response policies, it may be noted, are particularly established.

6.5.4 Evaluation of State Programs Related to Hazard Mitigation and Development in Hazard Prone Areas

In the past, primary responsibility for coordination and facilitation of hazard mitigation activities was assigned to AEMA, with the primary focus on responding to local requests from private citizens, citizen groups, planning agencies, and municipal and county governments for assistance with grant applications and coordination with FEMA for judgment on applicability and justification. Transition from a reactive to a more pre-emptive hazard mitigation protocol currently is underway, as local plans are developed and updated and more specific and detailed risk assessment models are developed in accordance with ongoing State Plan initiatives.

While FEMA Pre-Disaster Mitigation (PDM) grants are available and were used for the initial development and update of a number of local migration plans, state reliance is heaviest on the Hazard Mitigation Grant Program (HMGP), with some focus on Public Assistance and other facilitating programs. In most cases, specific hazard mitigation funding is requested through a local agency that seeks funding for a specific, and generally, post-disaster defined mitigation project through submittal to AEMA.

As of 2009, the most active areas of grant use are acquisitions, drainage, and safe rooms/sheltering capacity. In addition, a number of successful neighborhood relocations may be claimed, though a number of other candidates for mitigation still exist.

With respect to flooding, historically, there have been several cooperative ventures initiated by local interests over the past two decades involving the U.S. Army Corps of Engineers. With the specific intention of mitigating hazards in several notable flood-prone areas within metropolitan areas, a number of waterway improvement studies, notably in Shelby, Jefferson, Mobile, and Baldwin Counties (which together comprise the majority of flood damage claims in the State) have been prepared. Several studies have performed comprehensive cost/benefit analyses to mitigate prospective flood zones, and some limited structural improvements are on record, but many of the studies have typically culminated prior to execution of specific mitigation, due to local funding constraints.

One existing program that should have a positive impact on reducing risks from hazards is related to the historically more vulnerable coastal areas of the State. Administered by the State's Department of Conservation and Natural Resources and enforced by the Department of Environmental Management, the ADEM Division 8 Coastal Program Regulations contain explicit guidance on regulation of development in the Coastal Zone, mandating specific requirements and restrictions relevant to building in flood prone or storm surge vulnerable areas. Development throughout Alabama's coastline in Mobile and Baldwin Counties continues to accelerate, illustrating the conflicting objectives of community development and natural resource protection under hazard mitigation guidelines.

Other programs:

- Alabama Emergency Operations Plan; and
- State of Alabama Hazard Mitigation Administrative Plan.

While policies are in place to facilitate pre-disaster hazard mitigation, the predominating programs continue to evolve from reactive in practice to proactive in stance. In addition, this Plan will evolve the State's method of administering its hazard mitigation program from one of

coordinating requests to FEMA into a program that prioritizes and challenges the effectiveness and worthiness of grant applications against the objectives of the Disaster Mitigation Act of 2000 (DMA2K).

6.6 State Funding Capabilities for Hazard Mitigation Projects

This section describes the State of Alabama's designated authority and enabling mechanisms for funding of hazard mitigation projects. In Alabama, the Governor has designated the Director of the AEMA as the officer of the State authorized to accept Federal funding for emergency management purposes. Funds received are deposited by the State Treasurer and disbursed by the State Comptroller, subject to requisition by the AEMA Director. Section 18, Alabama Law, 1955, Act No. 47, authorizes the Governor, or the governing body of a political subdivision acting with the consent of the Governor, to accept Federal funds in the form of gifts, loans, or grants. AEMA operates its funding mechanisms in accordance with the following enabling State and Federal legislation, regulations and program criteria.

Funds for the operation of AEMA are authorized in an appropriation made by the legislature based on a budget submitted in accordance with Code of Ala. 1975, §§ 41-4-80 through 41-4-96.

Funding for local emergency management organizations is authorized by Code of Ala. 1975, §§ 31-9-10, 31-9-24. Budgets are submitted as required by the political subdivision, and as specified in paragraph V.C.2c (2) of the *Alabama Emergency Management Agency Administrative Manual*, dated October 1, 1985, and revised December 15, 1988.

Accounts to manage local funding should be established within the local government's existing accounting system.

Under the Emergency Management Performance Grant (EMPG) Program, funds are provided by FEMA as authorized in Public Law 81-920 for the purpose of increasing operational capability at the State and local level. These funds can be expended for necessary and essential personnel and administrative expenses, including but not limited to salaries, benefits, travel, office supplies, equipment and administrative communications. The State and/or local governments must match on a one-for-one basis financial assistance provided for EMGP Program purposes. To be eligible to receive EMGP Program funds to support a local emergency management program, a political subdivision must meet the criteria as referenced in the *Alabama Emergency Management Agency Administrative Manual*, dated October 1, 1985, and revised December 15, 1988.

Local jurisdictions desiring project application funds and maintenance and services funds must follow the criteria as outlined in the *Alabama Emergency Management Agency Administrative Manual*, dated October 1, 1985, and revised December 15, 1988.

State and local agencies will maintain such accounts, records, papers and other pertinent supporting materials, which will permit an accurate determination of the status of Federal and other contributions as outlined in the *Alabama Emergency Management Agency Administrative Manual*, dated October 1, 1985, and revised December 15, 1988.

AEMA negotiates with the Alabama Power Company and the Tennessee Valley Authority for utility funds that are required to support off-site emergency planning at their nuclear power plants. These negotiations are based on Federal mandates for emergency preparedness.

The State of Alabama Hazard Mitigation Administrative Plan documents the State's process for administering HMGP funds. While specifically intended as the primary guidance for State management of HMGP activities only, it represents the current administrative model for the state's acquisition and stewardship of funding mechanisms generally; and, as such, it is the best current framework describing Alabama's financial management capabilities. The plan defines applicant eligibility criteria, the application process, and management procedures for distribution of funding under the program. These plans are used by the State Staff Emergency Coordinators, Emergency Management Coordinators (EMC), the State Hazard Mitigation Team, and the individual county Emergency Coordinators. On January 9, 2004, the *State of Alabama Hazard Mitigation Administrative Plan* was approved by FEMA. The plan provides procedures at the State level for the management of HMGP funds. The plan is designed to interlock the *Public Assistance Plan* and the *Individual and Family Grant Administrative Plan*. These last two mentioned plans are part of the comprehensive approach that AEMA has fostered toward hazard mitigation.

The State's current strategy is to access federal funds for qualifying initiatives and facilitate development of local funding sources through municipal and county entities to fund local match requirements. To date, the State of Alabama has continually met the local match requirements associated with funding of Federal sponsored programs, due in part to the continual financial support of the hazard mitigation programs and initiatives by local city and county governments.

The State mitigation plan is also an umbrella for the local plans required for future mitigation grant programs. Mitigation planning begins at the local level, in communities, towns, and cities where impacts of damaging events are first felt, and the current State plan addresses this. Local mitigation planning focuses community attention on development issues prior to a disaster, ensuring participation in a more proactive sense. Active hazard mitigation in a community also contributes to public safety and welfare, economic development, and environmental protection
Following adoption of the initial State Hazard Mitigation Plan, Alabama began pre- and post-disaster mitigation activities by accessing (or continuing to access) some of the following vehicles using local matching monies:

Hazard Mitigation Grant Program (HMGP) - Some of the most significant mitigation in Alabama has been accomplished with the HMGP. FEMA uses a sliding scale to determine the amount of HMGP funds that it provides after a disaster (and presidential disaster declaration). FEMA provides 15 percent of the first $2 billion spent in overall assistance. FEMA then provides 10 percent of each dollar between $2 billion and $10 billion and 7.5 percent for each dollar between $10 billion and $35.3 billion. If a state has an approved "enhanced" state hazard mitigation plan, it is eligible to receive up to 20 percent of the overall assistance. Alabama is presently working toward an approved Enhanced Plan. One of the primary uses of HMGP funds has been for acquisition of vulnerable properties or "buyouts" that move people out of damage-prone areas. HMGP funding, while not sufficient to accomplish all of the desired projects, continues to be the centerpiece of the Alabama Hazard Mitigation Strategy. Following the April 2011 tornadoes, HMGP funds were used primarily for safe rooms throughout the state. In the State of Alabama, local governments are currently the prime source of funding for the local match associated with this program. At this time, the SHMT believes that local municipalities will continue at their current level of participation with regard to funding local match requirements.

Flood Mitigation Assistance (FMA) – FMA provides funding to States and communities so that measures are taken to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes and other structures insurable under the NFIP. FEMA distributes FMA funds to States that, in turn, provide funds to communities. The State serves as the grantee and program administrator for the FMA.

Severe Repetitive Loss (SRL) and Repetitive Flood Claims (RFC) – These programs were established by the Flood Insurance Reform Act of 2004. The intent of these programs is to reduce or eliminate the long-term risk of flood damage to residential properties with repetitive loss claims under the NFIP. The SLR can fund flood-proofing of historical properties and relocation, elevation, acquisition, or reconstruction of eligible residential properties. The RFC is a companion program to the FMA and can provide up to 100 percent funding for acquisition or relocation of residential properties that meet the repetitive loss criteria of the FMA but cannot meet the required 25 percent match.

The Alabama Public Assistance Plan provides procedures to manage Public Assistance funds, while *The Individual and Family Grant Plan* provides criteria and procedures for Individual Assistance, and the State has performed a number of projects utilizing PA funding. The Public Assistance Program provides supplemental Federal disaster grant assistance for the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain Private Non-Profit (PNP) organizations. The Federal share of assistance is at least 75 percent of the eligible cost for emergency measures and permanent restoration. The State determines how the non-Federal share (up to 25 percent) is split with the applicants (typically half). Eligible applicants include the States, local governments, Indian tribes and certain PNP organizations. The State is the grant administrator for all funds provided under the Public Assistance Program. Part 13 of the Code of Federal Regulations gives the states more discretion to administer federal programs in accordance with their own procedures and thereby simplify the program and reduce delays. As grantee, the State is responsible for administering the programmatic and grants management requirements of the Public Assistance Program. Key among the programmatic requirements is informing the applicants of the assistance available to them: what is eligible and how to apply for it. Grant management includes applying for federal assistance, monitoring and closing out the grant. The State and FEMA work in partnership to provide prompt and consistent service to all applicants.

Under the revised Public Assistance Program, the State has many of the same roles and responsibilities as the initial system. FEMA recognizes that states have different capabilities to perform their assigned duties. FEMA continues to work in partnership with those states requiring technical assistance to serve the needs of their applicants.

Once insurance requirements are established, FEMA will reduce otherwise eligible costs by the actual or anticipated insurance recoveries the applicant receives. The State must notify FEMA of any entitlement to insurance settlement or recoveries for a facility and its contents. For insurable buildings located in a special flood hazard area and damaged by flood, the reduction is the maximum amount of insurance proceeds the applicant would have received had the building and its contents been fully covered by a standard flood insurance policy under the National Insurance Program. The applicant is required to buy insurance in the amount of the eligible damages for flood and general hazards.

For small projects, a grant is based on an estimate of the cost of the work. For large projects, a final grant is based on actual eligible costs. In large projects, the State disburses progress

payments, as required. The dollar amount of a small or large project changes each fiscal year and is based on the Consumer Price Index.

The Economic Adjustment (Title IX) Program is administered through the Economic Development Administration and provides grants to help State and local areas design and implement strategies for adjustments due to changes in their economic situation that are causing, or are threatening to cause, serious structural damage to the underlying economic base. Such changes may occur suddenly or over time, and result from, for example, industrial or corporate restructuring, new Federal laws or requirements, reductions in defense expenditures, depletion of natural resources and natural disasters.

Community Assistance Program State Support Services Element (CAP-SSSE) - This program provides funding to states to meet negotiated objectives for reducing flood hazards in NFIP communities. Emphasis is placed on adherence to the NFIP and to floodplain management practices voluntarily adopted by participating NFIP communities. Objectives are to identify, prevent, and resolve floodplain management issues in participating communities before they result in a compliance action by FEMA. Special emphasis to be placed on establishing and training a State Interagency Hazard Mitigation Committee to coordinate the development and implementation of a strategic mitigation plan, and coordinate pre- and post-disaster mitigation activities/ opportunities. CAP-SSSSE funds cannot be used for floodplain studies or developing floodplain maps.

Pre-Disaster Mitigation (PDM) – The Pre-Disaster Mitigation (PDM) Program was authorized by §203 of the Robert T. Stafford Disaster Assistance and Emergency Relief Act (Stafford Act), 42 USC, as amended by §102 of the Disaster Mitigation Act of 2000. Funding for the program is provided through the National Pre-Disaster Mitigation Fund to assist States and local governments (to include Indian Tribal governments) in implementing cost-effective hazard mitigation activities that complement a comprehensive mitigation program. Funds are used for the implementation of pre-disaster hazard mitigation measures that are cost-effective and designed to reduce injuries, loss of life, and damage and destruction of property, including damage to critical services and facilities under the jurisdiction of the states or local governments. The DMA2K emphasizes the importance of strong state and local planning and comprehensive program management at the state level.

Alabama has facilitated a number of initiatives consistent with PDM objectives, enabling the State and it's served communities to implement more preventive, pre-disaster activities. Funds are applied for and used to implement a sustained pre-disaster natural hazard mitigation program to reduce overall risk to the population and structures, while also reducing reliance on funding from actual disaster declarations. Alabama recognizes that the PDM program provides a significant opportunity to raise risk awareness and to reduce the State's disaster losses through pre-disaster mitigation planning and the implementation of planned, pre-identified, cost-effective mitigation measures, with a focus on funding mitigation projects that address NFIP repetitive flood loss properties.

FEMA made $250,000 in planning grants available to the State to facilitate development of the initial State Plan in 2004, and additional funding for the subsequent plan updates. The State of Alabama has utilized PDM funds to assist in the development of both local mitigation plans and the State Plan (This is further described in **Section 7**: *Coordination of Local Planning*.) AEMA has been working with local EMA offices and the Regional Planning Councils to provide both funding and technical support of local mitigation planning activities since early 2003.

By law, PDM project grants are dependent upon the state and local governments' demonstration that a comprehensive management process is in place after designated calendar dates. After November 1, 2003, FEMA approved local mitigation plans have been required as a condition of receiving PDM grants for state and local mitigation project grants. A local government that does not have a plan in place is not eligible to receive project grants funded under the annual PDM appropriations. After November 1, 2004, the FEMA-approved Standard State Mitigation Plan was required as a condition of receiving PDM project grants for State and local mitigation activities. The Standard State Mitigation Plan is also required for non-emergency assistance provided under the Stafford Act following a presidentially declared disaster, including Public Assistance restoration of damaged facilities (Categories C through G) and HMGP funding. Therefore, the development, maintenance, and updating of state and local multi-hazard mitigation plans is critical to maintaining eligibility for future FEMA funding.

AEMA has utilized the Flood Mitigation Assistance (FMA) program grants in association with numerous projects consistent with its purpose of providing funding to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP.

NFIP participating communities with approved Flood Mitigation Plans can apply for FMA Project Grants. Flood mitigation plan requirements are now aligned with hazard mitigation plan requirements. FMA Project Grants are available to States and NFIP participating communities to implement measures to reduce flood losses. Ten percent of the Project Grant is made available to states as a Technical Assistance Grant. These funds may be used by a state to help administer the program. As stated earlier, communities receiving FMA Planning and Project Grants must be participating in the NFIP. Typical examples of eligible FMA projects funded in Alabama under this program in recent years include: elevation, acquisition, and relocation projects involving NFIP-insured structures.

The program encourages states to prioritize FMA project grant applications that include repetitive loss properties. The FMA grant program encourages states and communities to address target repetitive loss properties identified in the Agency's Repetitive Loss Strategy. These include structures with four or more losses and structures with two or more losses where cumulative payments have exceeded the property value.

Alabama has also sought HUD Community Development Block Grant (CDBG) monies as cost share funding for property acquisition projects that have been eligible under the CDBG program. The Disaster Relief Initiative for Hurricane Katrina Recovery added approximately $95 million for recovery and mitigation project funding. This funding has gone towards developing long term community recovery plans for the communities of Mobile County as well as towards providing the required local matching funds for HMGP projects. CDBG monies were also allocated following the April 2011 tornadoes.

The US Army Corps of Engineers (USACE) maintains an active involvement in Alabama activities, particularly waterways and flood control management under its continuing watershed management mission. The State of Alabama can make a unique claim to have more miles of navigable waterways and shoreline than any other state in the continental US. Accordingly, among other natural hazards, it has numerous locations where population development and floodplain locations overlap and evolve into vulnerabilities. The USACE is active throughout the State supervising Federal waterways management components to prevent and reduce hazards as an ongoing part of maintaining navigation channels and drainage in major watersheds.

AEMA works in concert with the USACE in some of these activities, and promotes funding of Hazard Mitigation projects through USACE funding sources when it is possible.

Historically, local matching funds for federally funded hazard mitigation projects are appropriated by counties and municipalities, and in concert with some quasi-public agencies and planning organizations. The State itself funds the operation and administration of AEMA, which coordinates all hazard mitigation activity in the State. Funding is provided by the State for the administration and operations of agencies and departments that manage, plan and implement hazard mitigation, including, but not limited to: AEMA, ADEM, and ADCNR. While the State does not fund projects directly out of the State's General Funds, it and AEMA have a demonstrated record of successful federal grant management with FEMA, HUD, and the USACE using locally obtained matching funding.

6.7 General Description and Analysis of the Effectiveness of Local Mitigation Policies, Programs and Capabilities

The State began the process of local mitigation plan development in early 2003 through planning grants ranging from $10,800 to $15,000 awarded to 22 county EMAs within the most populated and highest risk counties. As a result of this effort, the county EMAs have become the central coordinating agencies for local hazard mitigation planning. The following year, the State entered into an agreement with the Alabama Association of Regional Councils to provide funding, training, and technical support for the regional councils to develop the capabilities to support local mitigation planning. Grants were awarded to complete plans for the remaining 47 counties. Since then, many counties are working with contractors and other mechanism to complete local plan updates though the Regional Councils remain active in hazard mitigation assistance. Details on the status of local planning are contained in **Section 7.2**.

The results of the mitigation plan development program in the State have tremendously increased the capabilities for local mitigation and community awareness. EMA staffs across the State have become proficient in administering local planning programs and overseeing the activities of local hazard mitigation planning committees, the Regional Planning Counties continue to provide technical assistance. These improvements in technical and administrative capability are continued throughout the local plan update process.

The framers of Alabama's 1901 Constitution designed a system of State government that concentrates power at the State level. Alabama is not a "home rule" state, meaning that local authority must be granted by State acts, special legislation, or constitutional amendments. Due to the restraints placed in the Alabama Constitution, all but seven counties (Jefferson, Lee, Mobile, Madison, Montgomery, Shelby, and Tuscaloosa) in the state have little to no home rule. Instead, most counties in the state must lobby the Local Legislation Committee of the state legislature to get simple local policies such as waste disposal to land use zoning.

Despite the constitutional limitations on home rule, local governments have been able to function adequately. As further described in **Section 6.5**, legislation has been enacted over the years to allow localities with the capabilities to implement planning and regulatory tools for hazard mitigation. In 1935, the State passed legislation that empowered any municipality to establish planning commissions, pursue comprehensive planning, and enforce zoning ordinances and subdivision regulations, among other planning activities. This planning enabling legislation, however, did not include unincorporated areas of counties. Only Jefferson, Shelby, and Baldwin Counties, have authority by special legislation to extend planning and zoning

regulations into unincorporated areas of these counties only. By State Act, all local governments have authority to enact floodplain management ordinances, building codes, and subdivision regulations. (See **Section 6.5** for more detailed explanation of those authorities).

The capabilities of the localities to perform local mitigation measures and implement mitigation projects vary significantly among local governments. Beginning with the 2007 State Plan Update, a table summarizing local capabilities was developed and included in **Appendix J**. Subsequent plan version review and update local capabilities. The summary table lists all counties and municipalities of Alabama and notes various criteria for evaluating the capabilities of each of these localities, as follows:

- **Adopted Hazard Mitigation Plan –** Has the jurisdiction adopted a hazard mitigation plan that has been approved by FEMA?
- **National Flood Insurance Program –** Is the jurisdiction a regular member of the National Flood Insurance Program?
- **Community Rating System –** Does the jurisdiction participate in the Community Rating System Program, and if so, what is its class?
- **Comprehensive Plan –** Does the jurisdiction have a comprehensive plan that has been adopted in the last five years or is an update in progress?
- **Zoning –** Does the jurisdiction administer a zoning ordinance?
- **Subdivision Regulations –** Does the jurisdiction administer subdivision regulations?
- **Building Codes –** Does the jurisdiction administer building codes?
- **Capital Improvements Plan –** Does the jurisdiction program its annual capital expenditures on a multi-year capital improvements plan?
- **Building Code Effectiveness Grade Schedule –** What is the ISO classification of the jurisdiction under the Building Code Effectiveness Grade Schedule?
- **Property Protection Classification –** What is the ISO classification of the jurisdiction under the Property Protection Classification for fire protection?
- **Planner on Staff** – Does the jurisdiction have a full-time professional planner on staff?
- **Engineer on Staff –** Does the jurisdiction have a full-time professional engineer on staff?
- **Building Inspector on Staff –** Does the jurisdiction have a full-time building inspector on staff?
- **Certified Floodplain Manager –** Does the jurisdiction have a Certified Floodplain Manager on staff to administer its floodplain management ordinance?
- **Mitigation Project Experience**. What is the jurisdiction's level of experience with mitigation projects funded through a FEMA grant program?

While complete data has not been collected from every jurisdiction, sufficient data has been collected to allow an assessment of local capabilities to be conducted. The results of this assessment show a wide disparity in capabilities. Generally, jurisdictions with the largest populations and revenues have the most capabilities. For instance, on the highest end of the capabilities scale is the City of Birmingham, the largest urban jurisdiction in the State with a 2010 census population of over 212,000. Birmingham has participated in the NFIP since 1978 and has two full-time Certified Floodplain Managers dedicated to flood hazard mitigation, including ordinance administration, outreach, property acquisitions, FEMA grant administration, and a host of other mitigation activities. The City participated in the development of and adopted the Jefferson County hazard mitigation plan and supplemented that plan with its own Floodplain and Storm Water Management Plan that was funded through an FMA planning grant.

Birmingham is the highest rated CRS community in the State with a Class 6 rating, and it is at the highest end of ISO BCEGS and PPC ratings. It maintains a comprehensive plan and a CIP, administers a zoning ordinance, building codes, and subdivision regulations, and has a staff of professional planners, engineers, architects, and certified building inspectors. It has the most experience with FEMA grant programs, having implemented over $15 million in flood hazard mitigation buyouts over the last 15 years. Previously, the USACE completed a $30 million flood buyout. The City of Huntsville closely follows Birmingham's lead in demonstrating local hazard mitigation capabilities.

In contrast to the larger cities, most county and municipal jurisdictions in Alabama have rural populations and very limited revenue resources. Consequently, capabilities in rural counties are typically very low. A typical rural Alabama town has little or declining growth and might have a staff of two or three housed in a small town hall, with no plans, building codes, zoning, or other regulatory means to implement mitigation measures. These small communities depend on support from their county governments, which, even in rural locations, have greater means to lend some local support to hazard mitigation.

Another nationwide community preparedness program that Alabama communities participate in is the National Weather Service's (NWS) StormReady Program (SRP). SRP helps communities develop plans to handle all types of severe weather, including, but not limited to tornadoes and tsunamis. By providing emergency managers with clear guidelines on how to improve their hazardous weather operations, SRP encourages communities to take a proactive approach toward improving their weather operations. These guidelines help communities implement procedures that reduce the potential for disastrous, weather related consequences.

To become a StormReady community, several guidelines must be met. The guidelines include the following:

- Establish a 24-hour warning point and emergency operations center
- Have more than one way to receive severe weather warnings and forecasts and to alert the public
- Create a system that monitors weather local weather conditions
- Promote the importance of public readiness through community seminars and other outreach methods
- Develop a formal hazardous weather plan to include training severe weather spotters and conducing emergency exercises.

Some benefits of being a StormReady community include increased scores on the Community Rating System (CRS) which in turn can lower NFIP insurance rates, along with maintaining local plans and increased public awareness and preparedness. Counties, communities, and supporters that are StormReady are identified below in **Table 6.7-1**. Since the 2010 plan update, there are 3 new counties (1 county no longer of SRP status), 1 new community (1 community no longer of SRP status), 2 new universities, 2 new government/military sites, 1 new supporter (1 supporter no longer of SRP status), and 1 new corporation now participating in the program. The new additions are bolded. (The specific date of recognition will be updated as the information becomes available.) All StormReady participants must be recertified every three years.

Table 6.7-1
StormReady Counties, Communities and Supporters Since October 2012

Date of Recognition	County
New to the 2013 Plan Update	**Autauga**
New to the 2010 Plan Update	Baldwin
January 31, 2006	Blount
July 17, 2006	Calhoun
October 8, 2004	Cherokee
May 13, 2005	Cleburne
New to the 2010 Plan Update	Coffee
New to the 2010 Plan Update	Colbert
New to the 2010 Plan Update	Covington
New to the 2010 Plan Update	Cullman
New to the 2010 Plan Update	Dale
November 16, 2004	Dallas
New to the 2010 Plan Update	DeKalb
New to the 2010 Plan Update	Elmore
August 9, 2007	Etowah
December 4, 2006	Fayette
New to the 2010 Plan Update	Franklin
New to the 2013 Plan Update	**Geneva**
New to the 2013 Plan Update	**Henry**
New to the 2010 Plan Update	Houston
New to the 2010 Plan Update	Jackson
November 16, 2004	Jefferson
New to the 2010 Plan Update	Lauderdale
New to the 2010 Plan Update	Lawrence
September 19, 2006	Lee
New to the 2010 Plan Update	Limestone
New to the 2010 Plan Update	Madison
December 21, 2005	Marion
New to the 2010 Plan Update	Marshall
New to the 2010 Plan Update	Mobile
New to the 2010 Plan Update	Monroe
November 16, 2004	Montgomery
New to the 2013 Plan Update	**Morgan**
New to the 2013 Plan Update	**Randolph**
April 8, 2005	Russell
April 8, 2005	Shelby
New to the 2010 Plan Update	St. Clair
September 19, 2006	Talladega
May 12, 2006	Tallapoosa
April 14, 2006	Tuscaloosa
January 31, 2006	Walker
January 31, 2006	Winston
	Communities
October 28, 2005	City of Livingston, Sumter County
New to the 2013 Plan Update	**City of Oneonta, Blount County**

	Universities
New to the 2010 Plan Update	Auburn University
New to the 2010 Plan Update	Jacksonville State University
New to the 2010 Plan Update	University of Alabama
New to the 2013 Plan Update	**University of Alabama, Huntsville**
New to the 2013 Plan Update	University of North Alabama
New to the 2010 Plan Update	University of Southern Alabama
	Commercial Sites
New to the 2013 Plan Update	**Rheem Corp (Montgomery)**
	Government/Military Sites
New to the 2013 Plan Update	**Fort Rucker**
New to the 2013 Plan Update	**Marshall Space Flight Center**
	Supporters
August 9, 2007	Eastdale Mall, Montgomery
August 25, 2005	Quintard Mall, Oxford
December 19, 2004	Summit Lifestyle Center, Birmingham
September 19, 2006	Talladega Super Speedway, Talladega
New to the 2010 Plan Update	General Electric, Decator
New to the 2010 Plan Update	Huntsville Utilities, Huntsville
New to the 2010 Plan Update	Oakwood College, Huntsville
New to the 2010 Plan Update	Marshall Space Flight Center, Huntsville
New to the 2010 Plan Update	Sci-Quest Hands on Science Museum, Huntsville
New to the 2010 Plan Update	U.S. Space and Rocket Center, Huntsville
New to the 2013 Plan Update	**Northeast Alabama Community College, Rainsville**

This overall state of capabilities in Alabama points to the need for a strong State program of support to increase the capabilities of these rural communities and sustain and strengthen the capabilities of larger jurisdictions. The State EMA fully recognizes these needs for continuing mitigation planning support and has been actively taking steps to expand its technical support and work with locals to identify funding opportunities. The State intends to increase support for localities to receive professional planning and engineering services for hazard mitigation. This can be accomplished through continuing coordination with county EMAs, increasing participation in NWS's StormReady Program, and working to obtain planning funds (PDM, CDBG, HMGP, etc) available to improve and expand local mitigation activities. As part of the State's Enhanced Plan initiatives, technical and funding support programs will be examined and new programs will be developed to improve local capabilities among all levels and types of jurisdictions throughout the State.

6.8 Identification, Evaluation and Prioritization of Mitigation Actions

This section describes the State of Alabama's process for identifying, evaluating and prioritizing the State's mitigation actions, based on the hazard mitigation goals presented in **Section 6.3**. Several State agencies provided recommendations for goals, objectives and actions to be included in the plan.

With each plan update, the SHMT is tasked with evaluating mitigation actions from the previous plan version. As described in **Section 4**: Planning Process, the SHMT team members were presented with the mitigation actions from the 2010 plan that were associated with their particular state agency at the September 2012 meeting. Team members provided feedback on completed, in progress, deferred, and/or deleted actions. Further, the planning team reviewed local plans to verify that goals and objectives identified within these plans were compatible with the goals and objectives identified at the State level. In turn, State goals and objectives were determined to be reflective of local goals, objectives, and actions. This local plan review is discussed in greater detail in **Section 7.3**.

6.8.1 Identification and Evaluation of Mitigation Actions

To accomplish the evaluation of mitigation actions by agency, a worksheet was developed for each agency listed as a responsible agency in the 2010 Plan. The worksheet contained the specific actions identified in the Plan and requested information from the agency on 1) 2010 Implementation Status to indicate whether the action has been completed, deleted, deferred, or otherwise. In addition, agencies were asked to develop new actions where necessary and include the Identification of a potential funding source for the action and a high, moderate, or low priority rating based on criteria described below. The results of this input were compiled and included in the Plan Update.

The identification of mitigation actions has been shaped by the events that occurred over the past three years. The prioritization criteria are further described in **Section 6.8.3**.

6.8.2 Mitigation Actions

How Recent Events have Influenced Mitigation Actions

Since the 2004 Plan was adopted, the State of Alabama was faced with a series of potential natural hazard threats. To the misfortune of countless persons in the State many of these threats transformed into actual disasters. However, the State of Alabama pursued, and continues to pursue, a variety of natural hazard mitigation measures that reduced the potential impact of these disasters and the impact of future disasters.

Since adoption of the 2004 Plan, there have been numerous large scale disasters across the state and several local events. Disaster Declarations occurring between 2004 and 2012 are shown in **Table 6.8-1**. A complete list of the 62 Disaster Declaration in Alabama since 1965 can be found in **Section 5: Risk Assessment**.

Table 6.8-1
Recent Disasters (2004 – 2012)

Date	Type of Incident	Declaration #
September 15, 2004	Hurricane Ivan	1549
July 10, 2005	Hurricane Dennis	1593
August 29, 2005	Hurricane Katrina	1605
March 1, 2007	Severe Storms and Tornadoes (Enterprise Tornadoes)	1687
September 10, 2008	Hurricane Gustav	1789
September 26, 2008	Severe Storms and Flooding – Hurricane Ike	1797

Table 6.8-1
Recent Disasters (2004 – 2012)

Date	Type of Incident	Declaration #
April 28, 2009	Severe Storms, Flooding, Tornado, and Straight-line Winds	1835
May 8, 2009	Severe Storms, Flooding, Tornado, and Straight-line Winds	1836
June 3, 2009	Severe Storms, Flooding, Tornado, and Straight-line Winds	1842
December 22, 2009	Tropical Storm Ida	1866
December 31, 2009	Severe Storms and Flooding	1870
May 3, 2010	Severe Storms, Tornadoes, Straight-line Winds, Flooding	1908
April 28, 2011	Severe Storms, Tornadoes, Straight-line Winds, Flooding	1971
February 1, 2012	Severe Storms, Tornadoes, Straight-line Winds, Flooding	4052
September 21, 2012	Hurricane Isaac	4082

These large scale disasters played a significant role in shaping the hazard mitigation priorities within Alabama throughout the planning process. Each disaster revealed strengths and weaknesses within the hazard mitigation program, and the State of Alabama adjusted its subsequent mitigation actions to address these weaknesses accordingly.

Hurricane Ivan revealed a lack of sheltering capacity within the coastal counties of Baldwin and Mobile. In support of the overarching strategy identified in the 2004 Plan to “reduce risks through actions and policies that limit the effects of natural hazards on the physical assets and citizens of Alabama,” the State of Alabama began the process of increasing shelter capacity across the State. Following Hurricane Ivan, 39 shelter projects were pursued using HMGP funds totaling more than $13.5 million. The impact of Hurricane Ivan also allowed the State an opportunity to pursue additional hazard mitigation projects supporting the goals and objectives identified in the previous version of the plan utilizing HMGP funds.

In August of 2005, the Gulf States experienced one of the worst disasters in American history when Hurricane Katrina hit. Hurricane Katrina caused catastrophic damage to counties and parishes bordering the Gulf Coast. A State of Emergency was declared in Alabama approximately two days before the hurricane made landfall, and evacuations were ordered in coastal areas. In Alabama, the coastline received the most damage as it was impacted by near record storm surges and high winds. Damage spread inland as the eye of the hurricane traversed the Mississippi-Alabama state boundary causing inland flooding and spreading high winds throughout the State.

On March 1, 2007 a series of severe thunderstorms moved through the State spawning several tornadoes. One of these, an EF-4 on the new "Enhanced Fujita Scale," struck the town of Enterprise, Alabama. The resulting devastation drew the focus of Alabama mitigation community to tornadoes. At the time of the previous plan update, the State was reviewing ways to mitigate the types of damages experienced in Enterprise. Since the 2007 Update, several

actions have been taken. Two community safe rooms have been built and two are over 60 percent complete. In addition, one building has undergone a wind retrofit and another is schedule to start construction on January 25, 2010.

The April 2011 tornadoes also had a profound effect on the state. It was a devastating disaster that left opportunity in its wake. At the direction of the Governor, safe rooms were the main focus of the disaster grant money received. Over $74 million (2011 dollars) was allocated by FEMA for Hazard Mitigation Grant Program (HMGP) funding. Of this, nearly $62 million was obligated for community and individual safe rooms. (**See Table 6.8-2** below for grant allocation details.) Once all projects are completed, a total of 291 community safe rooms and over 4,000 individual safe rooms will be constructed in the state. All safe rooms constructed under a FEMA grant must be built to withstand an EF-5 tornado event (250 mile per hour winds). Additional funds were primarily used for generators (5 percent), alert notification (5 percent), and planning (7 percent).

Being proactive, the State of Alabama does not wish to "chase" the last disaster in terms of identifying and implementing mitigation actions. As such, when funding has allowed, the state has pursued a core group of mitigation actions that are directed at achieving the goals identified in the Plan. These types of projects include:

- Elevation;
- Acquisition;
- Drainage improvements;
- Individual and community shelters;
- Siren program; and
- Improved identification of threat through floodplain mapping.

Mitigation Implementation (2007-2010)

With each plan update, a status on previously identified mitigation actions is provided. For the 2013 update, actions that have been completed or that are currently undergoing implementation are noted in the 2013 Status column of the Mitigation Action Plan (**Table 6.8-3**). **Table 6.8-2** highlights the core group of mitigation actions pursued by the State of Alabama using HMGP funds after each disaster.

Table 6.8-2
Additional Completed / Ongoing Actions Supporting the State Hazard Mitigation Plan

Disaster	Mitigation Action Type	Number of Projects Completed / Ongoing	Total Amount of Funding Allocated for Actions
Hurricane Ivan (DR-1549)			**$41,485,128**
	Generators	62 (approved)	$4,148,513[2] $2,152,780[1]

Table 6.8-2
Additional Completed / Ongoing Actions Supporting the State Hazard Mitigation Plan

Disaster	Mitigation Action Type	Number of Projects Completed / Ongoing	Total Amount of Funding Allocated for Actions
	Alert Notification System	47 (approved)	$4,148,513[2] $2,723,604[1]
	Acquisition	11	$6,153,358
	Community Shelters	22	$7,045,167
	Drainage	11	$7,251,421
	Elevation	4	$185,438
	Engineering	4	$3,256,079
	Individual Shelters	9	$734,862
	Wind Retrofits	4	$1,005,240
	Planning Efforts	4	$2,903,959
Hurricane Dennis (DR-1593)*			**$1,646,946**
	Generators	n/a	$82,347
	Alert Notification System	1 (pending)	$82,347
	Acquisition	--	--
	Community Shelters	1	$533,651
	Drainage	1	$888,750
	Elevation	1	$58,526
	Engineering	--	--
	Individual Shelters	--	--
	Wind Retrofits	--	--
	Planning Efforts	n/a	$115,286
Hurricane Katrina (DR-1605)			**$71,736,951**
	Generators	3 (approved) 51 (pending)	$3,586,848[2] $182,250[1]
	Alert Notification System	12 (approved) 57 (pending)	$3,586,848[2] $396,013[1]
	Acquisition	1 (approved) 41 (pending)	$7,534,073[1]
	Community Shelters	6 (approved) 10 (pending)	$5,867,892[1]
	Drainage	22 (pending)	n/a
	Elevation	6 (pending)	n/a
	Engineering	--	--
	Individual Shelters	1 (approved) 16 (pending)	$430,531[1]
	Wind Retrofits	27 (pending)	n/a
	Planning Efforts	1 (approved) 20 (pending)	$5,021,587[2]
Enterprise Tornado (DR-1687)			$1,988,719
	Generators/ Alert Notification (5%)	0	
	Planning (7%)	0	
	Regular Projects	5	$1,988,719

Table 6.8-2
Additional Completed / Ongoing Actions Supporting the State Hazard Mitigation Plan

Disaster	Mitigation Action Type	Number of Projects Completed / Ongoing	Total Amount of Funding Allocated for Actions
	Management	0	0
Hurricane Gustav - 09/10/2008 - (DR-1789)			**$2,467,003**
	Generators/ Alert Notificaton (5%)	0	0
	Planning (7%)	Unknown	$172,690
	Regular Projects	Unknown	$2,294,313
	Management (4.89%)	1	$ 120,636
Hurricane Ike – 10/26/2008 - (DR-1797)			**$2,087,015**
	Generators/ Alert Notificaton (5%)	0	0
	Planning (7%)	Unknown	$146,091
	Regular Projects	Unknown	$1,940,924
	Management (4.89%)	1	$102,055
Severe Storms, Flooding, Tornado, and Straight-line Winds - 4/28/09 - (DR-1835)			**$3,345,613**
	Generators/ Alert Notification (5%)	Unknown	$167,281
	Planning (7%)	Unknown	$234,193
	Regular Projects	Unknown	$2,944,139
	Management (4.89%)	1	$163,600
Severe Storms, Flooding, Tornado, and Straight-line Winds - 5/8/2009 - (DR-1836)			**$1,165,641**
	Generators/ Alert Notification (5%)	Unknown	$58,282
	Planning (7%)	Unknown	$81,595
	Regular Projects	Unknown	$1,025,764
	Management (4.89%)	1	$57,000
Tropical Storm Ida - 12/22/09 - (DR-1866)	Project funding sub-total		$1,416,356
	Generators/Alert Notification (10%)	4 sirens grants approved (7 Sirens)	$135,884 $141,636
	Planning (7%)	2 approved	$50,761 $99,145
	Regular Projects:		$1,175,575
	Drainage	1 approved	$68,156

Table 6.8-2
Additional Completed / Ongoing Actions Supporting the State Hazard Mitigation Plan

Disaster	Mitigation Action Type	Number of Projects Completed / Ongoing	Total Amount of Funding Allocated for Actions
	Community Safe Rooms	5 grant approved (6 CSRs)	$1,065160
	Individual Safe Rooms	2 approved (15 units)	$73,249
	Management (4.89%)		$69,260
Severe Storms and Flooding -12/31/09 – (DR 1870)	**Project funding sub-total**		**$3,097,396**
	Alert Notification/Generators (5%)	1 generator approved 1 siren pending (5 sirens)	$58,500 $93,300 $154,870
	Planning (7%)		$216,818
	Regular Projects:		$2,725,708
	Community Safe Room	1 approved	$837,755
	Acquisition	1 approved (15 properties)	$543,366
	Valve Exerciser	1 pending	$44,420
	Management (4.89%)		$151,463
Severe Storms, Tornadoes, Straight-line Winds, Flooding - (4/28/2011) - (DR-1971)	**Project funding sub-total**		**$74,009,510**
	Generators (5%)	25 approved (33 generators) 15 pending (24 generators)	$2,288,614 $1,403,059 **$3,700,476 (sub-total obligated)**

Table 6.8-2
Additional Completed / Ongoing Actions Supporting the State Hazard Mitigation Plan

Disaster	Mitigation Action Type	Number of Projects Completed / Ongoing	Total Amount of Funding Allocated for Actions
	Alert Notification (5%)	14 approved siren grants (46 sirens) 45 pending siren applications (171 sirens) 1 approved weather radio (4000 radios) 1 approved siren upgrade (26 sirens) 1 pending siren upgrade (42 sirens) 1 approved early warning system 1 pending early warning system	$869,326 $2,318,904 $90,000 $100,357 $68,498 $93,015 $67,046 **$3,700,476 (sub-total obligated)**
	Planning (7%)	4 approved (State Planning Grant included $128,699) 1 pending	$327,897 $22,500 **$5,180,666 (sub-total obligated)**
	Regular Projects:		**$61,427,893**
	Community Safe Rooms	156 approved (181 CSRs) 106 pending (110 CSRs)	$24,758,586 $20,251,610

Table 6.8-2
Additional Completed / Ongoing Actions Supporting the State Hazard Mitigation Plan

Disaster	Mitigation Action Type	Number of Projects Completed / Ongoing	Total Amount of Funding Allocated for Actions
	Individual Safe Rooms	344 grants approved (4057 units) 7 pending (247 units)	$16,156,370 $949,213
	Elevation	1 pending	$216,318
	Management (4.89%)		**$3,619,065**
Severe Storms, Tornadoes, Straight-line Winds, Flooding - 2/1/2012 – (DR-4052)	**Project funding sub-total (6 month FEMA estimate)**		Estimated **$146,617**
	Generators/Alert Notification (5%)		Estimated **$7,331**
	Planning (7%)		Estimated **$10,263**
	Regular Projects		Estimated **$129,023**
	Management (4.89%)		Estimated **$153,787**
Alabama Hurricane Isaac - 9/21/2012- (DR-4082)	Amounts have not been provided by FEMA		

[1] Dollar amount is for approved project(s) only [2] Dollar amount available for entire mitigation category
*This Disaster is now closed.
Note: Number of Projects and Funding Amounts are as of 11/10/2012

Mitigation Successes in Alabama

While all mitigation projects, big and small, have contributed to the effectiveness of Alabama's recovery and mitigation, several projects have been highlighted as Alabama "Success Stories."

City of Tarrant Acquisitions

In April 2000, the City of Tarrant was devastated by the flooding of Five Mile Creek. Due to a flash flood event, the creek rose above its banks and caused five feet of moving water through a mobile home park that was adjacent to the creek. Over 120 homes were destroyed and many people were left homeless. An estimated $2 million in damages occurred.

In the aftermath, community leaders met to discuss the issue of repeated flooding along the shores of the creek and the human and economic losses incurred with each flooding incident. The City of Tarrant applied for HMGP funds to acquire the mobile homes and the vulnerable property. Upon approval from FEMA, the grant money was released to the City of Tarrant through AEMA. The City then acquired the damaged mobile homes and the vulnerable property,

which was developed into a community park. The Chief William C. "Billy" Hewitt Park is now enjoyed by the citizens of Tarrant.

Bay Minette Community Shelter
Bay Minette, AL is located in Baldwin County on the north side of the Interstate 10 hurricane evacuation zone. The Baldwin County Emergency Operations Center will coordinate with the Baldwin County Department of Human Resources, and the Gulf Coast Chapter of the American Red Cross to operate a special needs shelter. Plans call for this facility to be fully equipped and operational for evacuees meeting special needs criteria. The shelter will provide medication and record security, transportation and transfer needs, and report to the state Emergency Operations Center for public notification of availability.

The shelter will have uninterrupted power supply, refrigeration, food preparation area, ample shelter space, and storage for emergency supplies. This shelter will be constructed with 12 inch reinforced masonry walls and an 8 inch concrete deck. The structure will be capable of withstanding sustained winds of 210 miles per hour. The emergency generator, in addition to meeting the requirements in FEMA 361, will also provide operational support for special needs occupants that have critical power needs. The facility will comply with the guidelines of FEMA 361 and all requirements of the American with Disabilities Act (ADA).

Baldwin County has over of 28,000 disabled residents, and the county has a significant number of citizens aged 65 years or older. In addition to hurricanes, Baldwin County is one of the most at risk counties for tornado (see **Section 5.5**). These natural hazards increase the importance of providing a safe refuge for residents with special needs in Bay Minette.

Baldwin County Cattle and Fair Association (BCCFA) Community Shelter Complex
Baldwin County, Alabama is located between the shores of Gulf Mexico and Mobile Bay in an area identified with severe risk and threat from hurricanes, thunderstorms, and tornadoes. The Baldwin County Cattle and Fair Community Shelter will be part of the Baldwin County Fairgrounds, centrally located within the county, and sited away from storm surge and associated flooding. The BCCFA, working in conjunction with the Baldwin County EMA, and the Baldwin County Commission, plan to use a new fairgrounds complex to provide citizens with both short and long term sheltering in the area. Alabama EMA submitted a HMGP project application to FEMA. The project consists of constructing a community shelter capable of providing short term emergency shelter for 5,000 people, and long term shelter for 1,900 people. The facility will contain a climate controlled area for sheltering in excess of 19,000 square feet. The BCCFA is donating the property for the shelter to Baldwin County, which will be used by the Baldwin County EMA. The facility will adhere to the guidelines specified in FEMA 361, *Design and Construction Guidance for Community Shelters.*

Flood Map Modernization Program (Map Mod)
In September 2002, the State of Alabama became a Cooperating Technical Partner (CTP) with FEMA under the Flood Map Modernization Program. The goal of the program is to update maps so that the flood insurance program is more closely aligned with actual risk, wise floodplain management is encouraged, and the public's awareness of flood hazards is increased. The Alabama Department of Economic and Community Affairs – Office of Water Resources (OWR) is responsible for implementing the Map Modernization program within the State. The national program has been identified as a cornerstone for helping communities become better prepared for flood disasters. All counties had updated DFIRMs by the end of 2010. The Flood Map Modernization Program was then closed out and replaced by FEMA's Risk MAP.

Risk Mapping, Assessment, and Planning (Risk MAP)
Risk MAP is a FEMA program that builds on the flood maps and flood hazard data produced by the Flood Map Modernization Program. Risk MAP continues to provide flood data to communities but focuses on risk communication. Similar to Map Mod, the Alabama Department of Economic and Community Affairs – Office of Water Resources (OWR) is responsible for implementing the Risk MAP program within the State. There are five goals of the program including addressing flood hazard gaps, public awareness and outreach, hazard mitigation planning, enhanced digital platform, and alignment and synergies of risk analysis programs. Watershed studies are scheduled to occur throughout Alabama and some are underway. However, none are complete at this time. Watershed planning transcends political boundaries to study risk and vulnerability in the entire hazard area. Ultimately, Risk MAP will help local officials make better decisions through enhanced products and risk communication.

Alabama Safe Rooms
Following the April 2011 tornadoes that struck the Southeast and Alabama, safe rooms were a focus of the recovery efforts at the direction of Governor Robert Bentley. Over $74 million (2011 dollars) was allocated by FEMA for Hazard Mitigation Grant Program (HMGP) funding. Of this, nearly $62 million was obligated for community and individual safe rooms. (See **Table 6.8-2** above for grant allocation details.) Once all projects are completed, a total of 291 community safe rooms and over 4,000 individual safe rooms will be constructed in the state. All safe rooms constructed under a FEMA grant must be built to withstand an EF-5 tornado event (250 mile per hour winds). Such efforts will certainly help to reduce lives lost in future tornado events.

New Mitigation Actions for the State

New mitigation actions and objectives were obtained by providing members of the State Hazard Mitigation Team with a Mitigation Action worksheet. This worksheet is designed to collect all of the information needed for newly identified actions to be included in the plan. The updated mitigation action plan shows all actions deferred from the previous plans as well as new actions identified for the 2013 plan. The mitigation action plan can be found below in **Table 6.8-3**.

6.8.3 Prioritization of Mitigation Actions

For the 2010 plan update, SHMT members were asked to assign a priority to each of the actions contained in the Mitigation Action Plan. This process continued for any mitigation actions added after the 2010 plan update. The identified mitigation actions and objectives in this section are categorized as being of high, moderate or low priority, as indicated in the Priority column of **Table 6.8-3**. The prioritization criteria are as follows:

High Priority:	An action that should be implemented in the near future or immediately because it reduces overall risk to life and property.
Moderate Priority:	An action that should be implemented in the near future due to political or community support or ease of implementation.
Low Priority:	An action that should be implemented over time, but does not have the same sense of urgency or impact on hazard

vulnerability as other higher priority actions.

In addition to this prioritization, AEMA requires any mitigation project proposed for funding through the federal hazard mitigation grant programs to:

1. Support the goals and objectives of the State Hazard Mitigation Plan.
2. Reduce identified risk.
3. Prevent repetitive losses.
4. Protect critical areas, including frequently flooded areas and geologically hazardous areas.

Applicants develop a list of planning and construction projects for federal hazard mitigation grants. When funds become available, AEMA funds eligible projects. Available resources are used to address a variety of hazards Statewide. Pouring most or all available resources into small areas (three to five flood prone counties, for example) or for limited mitigation tasks (for elevating or purchasing of repetitive loss properties, for example) is politically untenable and it discourages non-funded jurisdictions from developing hazard mitigation programs.

Implementing every potential action identified in **Section 6.8.3** over a three year period is not realistic. Therefore, the State of Alabama has decided to put together a state hazard mitigation strategy that designates a proposed timeframe for action/project implementation. Projects are assigned to one of three temporal phases; near-, mid-, or long-term, with projects assigned to each phase according to the potential timeframe for execution. Near-term is for projects that have the potential to be put into action within zero to two years. Mid-term actions could be implemented within three to six years. Long-term actions are those actions on the horizon for the state, looking forward a minimum of seven years for potential execution.

Criteria similar to that employed in the STAPLE+E method were used to determine the likely timeframe for each action's initiation in this plan. These criteria included social, technological, administrative, political, legal and economic constraints, with political and economic, i.e. funding, often being the largest limiting factor. Actions with minimal constraints were mapped to the near-term phase, and those with the largest obstacles were placed under the long-term. The remaining projects were placed into the mid-term action plan.

The process of assigning actions to one of the three timeframes should not be considered a final determination of the project's initiation or completion date. This process is a fluid process; and constraints used in the initial determination change, such as availability of funding and priorities of the current political climate. Actions can and should be re-evaluated and adjusted. Placement of an action in a mid- or long-term time frame does not preclude the State or local entities from implementing that action at an earlier time if conditions warrant. Projects can also be deferred from near- and mid-term time frames if the State so decides.

The structure of the action plan is meant to serve as a guide to assist State and local officials and administrators in the determination of which mitigation actions could be implemented within the State of Alabama. Additionally, during the time following a natural disaster, this action plan can be a tool for the State in determining which projects should be pursued.

6.8.4 Addressing Cost-Effectiveness, Environmental Soundness, Technical Feasibility

Any State government construction project – regardless of potential funding source – has to be cost-effective, technically feasible and meet all appropriate Federal, State, and local environmental laws and regulations before it is started. State government projects funded by Federal hazard mitigation grant programs administered by AEMA have to meet specific criteria related to cost-effectiveness, environmental soundness and technical feasibility.

The cost of many of the actions outlined in this plan is staff time to review measures, provide technical assistance to local communities, or develop internal guidelines and plans. Actions documented in this plan try to encompass a variety of specific projects that could be pursued at the State and local levels. In the Cost column of **Table 6.8-3**, some actions include estimated dollar amounts while others include a general description of costs involved, especially where specific project costs cannot be determined until such time as a project scope has been developed.

6.8.5 Mitigation Action Plan

The State of Alabama's Mitigation Action Plan is presented below in **Table 6.8-3**. Information that has changed or has been added to the Mitigation Action Plan since the 2010 plan update is noted in red font. Some of the 2010 implementation status updates had to be truncated to fit into this format, but the entire status update can be read in the database of mitigation actions that is maintained by AEMA.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	
1.1.2	Inventory and catalog natural hazards studies, maps, digital data and other information available from city, county, state, federal, university, private, and other sources.	All	1.1	Moderate	Near-Term	AEMA	Unknown	Staff Time	Deferred until such time as funding and situation permits	Maintaining a comprehensive invoice/catalog will improve the use of the data by agencies.
1.1.3	Establish a schedule to provide state and local offices with current information on past events (including damages).	All	1.1	Low	Near-Term	AEMA	Unknown at this time	Staff Time	Deferred until such time as funding and situation permits	Updating state and local officials with current information will improve future decisions regarding mitigation.
1.1.4	Develop a comprehensive record of ADEM's assets and operations.	All	1.1	High	Near-Term	ADEM	State Funds	Staff Time	ADEM maintains an inventory of all assets available	Maintaining a comprehensive record of assets and operations will improve accessibility and expand their use.
									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
1.1.6	Routinely collect, monitor, and evaluate selected climatic, water- supply and water-use data to identify at an early stage the onset of a drought or potential for drought, geographic extent of the affected area and changes in the drought levels.*	Drought	1.1	Moderate	Mid-Term	ADECA (OWR)	Various	Staff Time	Action ongoing. Drought legislation being proposed in State Legislature in 2013 Session.	Obtaining comprehensive data pertaining to drought will improve local and state capabilities response to and mitigation measures against droughts.
1.1.7	Encourage local governments to inventory their urban forests.	Wind	1.1	Moderate	Near-Term	AFC	US Forest Service	Staff Time	Ongoing	Better asset information will improve understanding for decisions to protect lives and property.
1.2.1	Adopt a common Geographical Information System (GIS) data system throughout State, county and local government.	All	1.2	Moderate	Near-Term	AEMA	Unknown	TBD	Ongoing	Better risk information will improve understanding for decisions to protect lives and property.
1.2.2									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	
1.2.3	Utilize GIS to evaluate the vulnerability of critical facilities, large employers / public assembly areas and lifelines by comparing them with hazard-prone areas.	All	1.2	Low	Mid-Term	AEMA AGIC	Unknown	Staff Time	Deferred until such time as funding and situation permits	Better risk information will improve understanding for decisions to protect lives and property.
1.2.4	Provide a prioritized list of the natural risks to all Departmental facilities and remote monitoring sites.	All	1.2	High	Mid-Term	AEMA	Multiple funding sources	Staff Time	Ongoing	Better risk information will improve understanding for decisions to protect lives and property.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
1.2.5	Review local and county mitigation plans following disasters or serious hazard occurrences in order to evaluate risk assessments and mitigation priorities.	All	1.2	High	Mid-Term	AEMA Local Government	Multiple funding sources	Staff Time	Deferred until such time as funding and situation permits	Reviewing local and county mitigation plans will increase the community's resistance to hazards.
1.3.1	Update contact information in the Departmental Emergency Operation SOP on a regular basis and review and update biannually.	All	1.3	High, Moderate by ADCNR	Near-Term	AEMA All State Agencies	EMPG, Operating Revenue, State funds	Staff Time	Ongoing; Completed annually (AEMA, ADCNR, GSA, AFC, ADECA)	Improved and up-to-date information in the SOP will improve mitigation and other planning designed to reduce the impact of hazard events.
1.3.2 (Actions 4.2.3 and 1.3.6 were combined with this action in 2010)	Develop and maintain a Continuity of Operations plan for all State agencies including periodic review and updates.	All	1.3	High, Moderate by ADCNR	Near-Term, Mid-Term (per ALDOT)	All State Agencies	Multiple funding sources, Operating Revenue, State funds, ALDOT O&M	Staff Time	Ongoing; Completed annually (ADCNR, AEMA, GSA, AFC, ADECA)	Keeping state departmental functions operational during and following hazard events is important to serving clients.
1.3.3	Develop a plan to protect public records.	All	1.3	High, Moderate by ADCNR	Mid-Term	All State Agencies	Operating Revenue; State funds	Staff Time	Action Completed as noted in 2010 plan (AEMA, ADEM, ADHS, OWR, AACC, ALDOT, AFC, ADECA); Ongoing (ADCNR, AL Ins. Dept, GSA, Bldg Code Comm)	Protecting public records will ensure that this information is available for future uses.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
1.3.4	Develop a plan to protect data.	All	1.3	High, Moderate by ADCNR	Mid-Term	All State Agencies	Operating Revenue; State funds	Staff Time	Action completed as noted in 2010 plan (AEMA, ADEM, ADHS, OWR, AACC, ALDOT, AFC, ADECA); Ongoing (ADCNR, AL Ins. Dept, GSA, Bldg Code Comm)	Protecting data will ensure that this information is available for future uses.
1.3.5	Develop and maintain COG.	All	1.3	High, Moderate by ADCNR	Mid-Term	All State Agencies	Multiple funding sources; State funds	Staff Time	Completed (ADHS, AFC); Ongoing (ADCNR, AACC, AEMA, ADHR, ADEM, AL Ins. Dept.)	The planning process involved with the maintenance of continuity of government often reveals mitigation opportunities.
1.3.6 (Action combined with 1.3.2)									Action combined with action 1.3.2	
1.3.7	Construct five safe houses for district offices and purchase one 5KW generator for each safe house	Tornadoes		High	Near-Term	ADCNR	FEMA	Pending bids by contractors	New action. No current source of funding available at this time.	Provides safe sheltering place
1.4.1	Identify channel and ditches that must be improved to provide maximum drainage capacity.	Flood	1.4	Moderate	Mid-Term	AEMA ADECA ADCNR	FEMA CTP Grant; ACAMP-CZMA funds	Staff Time	Areas of interest are identified during Risk Map projects and entered into a data tracker.	Supporting existing efforts to mitigate flood risk will reduce the impact of hazard events.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
1.4.2	Increase community awareness about the need and process for requesting floodplain mapping.	Flood	1.4	High	Near-Term	ADECA (OWR)	FEMA CTP Grant	Staff Time and Outreach Materials	Training sessions are held statewide and OWR website allows open access to the latest flood data.	Lack of information on flood vulnerability can inhibit effective flood protection measures.
1.4.3	Request funding from FEMA to update state floodplain maps.	Flood	1.4	High	Near-Term	ADCNR OWR	N/A	Staff Time	Ongoing	Lack of information on flood vulnerability can inhibit effective flood protection measures.
1.4.4	Evaluate community flood studies and FIRMS for accuracy.	Flood	1.4	High	Near-Term	OWR	FEMA CTP Grant	Staff Time	Entire state has digital flood maps with plan and funding source for new studies/maps based on unmet needs and risk.	Understanding vulnerability will help to frame discussions by decision makers on how to preserve and protect assets from hazard events.
1.4.5									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
1.4.6	Increase state and local agencies' ability to issue flood warnings. (Construct automated stream gauging stations with rainfall measurement devices equipped with telemetry systems) - Choctawhatchee Pea Yellow River Watershed Authority's Flood Warning system in place. Consider expanding the program.	Flood	1.4	Low	Long-Term	OWR	No info provided	TBD based on individual project costs and other specific information.	Ongoing (dependent on funding); OWR has agreements with USGS for some gauging stations; Weather Bureau has done some work with Flood Ready program, Choctawhatchee Pea Yellow River Watershed Authority's Flood Warning system	Better information on rainfall data will provide the NWS and state and local agencies with the necessary data to issue flood warnings and protect lives and property.
1.4.7	Encourage each community to include critical facilities such as hospitals, nursing homes, schools, police stations, fire stations and emergency operations centers indicated on each floodplain map.	Flood	1.4	Low	Near-Term	OWR	No info provided	Staff Time	FEMA does not allow this info on flood maps, but can create shapefiles to be viewed with flood maps in GIS; RiskMAP coordination should help	Lack of maps that include critical facilities can inhibit effective flood protection of these structures.
1.4.8	Coordinate activities between the state and local or regional water management authorities.	Flood	1.4	No info provided	Near-Term	OWR	No info provided	Staff Time	Coordination through Risk Map meeting invitations and AL Flood Roundtable meetings when funding available.	Effective coordination between water management agencies will reduce the risk from future flooding.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
1.4.9									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	
1.4.10	Ensure local communities utilize flood control measures including the use of retention / detention basis and other storm water management practices to retard the flow of water and reduce downstream damage.	Flood	1.4	Low	Long-Term	OWR USACE ADCNR Local Government	ACAMP-CZMA funds	Staff Time	Ongoing	The use of flood control measures will provide protection to properties from floods.
1.4.11	Implement the use of erosion control measures to protect infrastructure from floods. (Reshape fields, reestablish terrace systems, stabilize active gullies and watercourses, removed sediment bars and debris in channels and stabilize channel banks.)	Flood	1.4	Moderate	Long-Term	OWR ADCNR Local Government	None	Construction costs TBD by project specifics.	Risk Map projects may identify some measures that can be taken; however, no current source of funding available.	The use of erosion control measures will protect farmland and watershed infrastructure from floods.
1.4.12	Modernize and improve access to flood gates for levee systems.	Flood	1.4	No info provided	Long-Term	OWR USACE	No info provided	Construction costs TBD by project specifics.	All levees shown to provide protection from 100-yr flood must be certified per FEMA requirements; certification completed on most levees in AL	The modernization of flood control systems, such as flood gates for levee systems, will reduce the flooding hazard to lives and property.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
1.4.13									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	
1.4.14	Reduce the number of unsafe State dams.	Flood Dam	1.4	Low/ Moderate	Long-Term	ADECA	No info provided	Staff Time and Construction costs TBD by project specifics.	Deferred. State will need to establish Safe Dams Program; OWR is working to inventory dams in GIS	Reducing the number of unsafe State dams will protect lives and property in the downstream floodplain.
1.4.15	Reduce the flooding risk to communities by acquiring property located in the 100-year floodplain and return it to open space.	Flood	1.4	High	Near-Term	AEMA OWR Local Government	HMA, HMGP grants	Construction costs TBD by project specifics. (historically >$1 million)	Ongoing; tied to SRL and repetitive loss structures (AEMA)	Open space will significantly reduce the flooding risk to communities.
1.5.1	Review coastal NFIP maps for potential updates.	Flood	1.5	High	Near-Term	OWR Local Government	FEMA CTP Grant	Staff Time	Coastal Flood Studies funded and began in 2009; maps anticipated in 2015	Understanding vulnerability will help to frame discussions by decision makers on how to preserve and protect assets from hazard events.
1.5.2									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
1.6.1	Maintain membership and participation in the Central United States Earthquake Consortium.	Earthquake	1.6	High/ Moderate	Near-Term	AEMA GSA	Federal, USGS	Approx. $500	Ongoing	Keeping state departmental functions operational during and following hazard events is important to protecting lives and property.
1.6.2	Upgrade the State's monitoring capabilities for earthquakes.	Earthquake	1.6	Low	Long-Term	AEMA GSA	USGS, NEHRP/ FEMA	Individual Project costs associated with Map Production and Seismic monitoring equipment	Deferred until such time as funding and situation permits.	Resulting maps indicate areas of greatest risk. Such maps can lead to wiser use of land and substantial savings to the State and its citizens.
1.6.3	Perform hazard mapping to delineate areas susceptible to liquefaction during earthquakes.	Earthquake	1.6	Low	Mid-Term	AEMA GSA	USGS, NEHRP/ FEMA	Staff Time	Complete (as of 2007 update)	Resulting maps indicate areas of greatest risk. Such maps can lead to wiser use of land and substantial savings to the State and its citizens.
1.6.4	Perform research to understand that geologic conditions that cause earthquakes in Alabama.	Earthquake	1.6	Moderate	Mid-Term	GSA	USGS, NEHRP/ FEMA, NSF	Staff Time	In progress	Will enable prediction of areas where earthquakes might originate.
1.6.5	Identify areas within Alabama that are most susceptible to earthquakes.	Earthquake	1.6	Moderate	Mid-Term	GSA	USGS, NEHRP/ FEMA	Staff Time	In progress	Close monitoring of smaller earthquakes may indicate areas likely to have larger earthquakes.
1.6.6	Establish a system of 6 short-band seismic stations within the state.	Earthquake	1.6	Low	Long-Term	AEMA GSA	USGS, NSF		Deferred until such time as funding and situation permits	Provides a system of 6 short-band seismic stations to monitor seismic activity within the State that may indicate areas at risk for larger quakes.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
1.7.1	Perform hazard mapping to delineate areas susceptible to landslides and earthquakes.	Landslides	1.7	Moderate	Mid-Term	AEMA GSA	USGS	Staff Time for mapping	Complete as of 2012 update	Resulting maps indicate areas of greatest risk. Such maps can lead to wiser use of land and substantial savings to the State and its citizens.
1.7.2	Establish and maintain a database on landslides in the state.	Landslides	1.7	High (per ALDOT), Low (per GSA)	Mid-Term	AEMA GSA ALDOT	Federal & State Research Grant; NEHRP/ FEMA, USGS	Staff Time, Personnel funding	Complete as of 2012 update	Delineates areas and geologic formations susceptible to landslides and sinkholes and identifies areas of recent activity in populated areas. Information may be used to determine future land uses.
1.8.1	Establish and maintain a database on sinkholes in the state.	Sinkholes	1.8	High	Mid-Term	AEMA GSA ALDOT	Federal & State Research Grant; NEHRP/ FEMA, USGS	Staff Time, Personnel funding	Complete as of 2012 update	Delineates areas and geologic formations susceptible to landslides and sinkholes and identifies areas of recent activity in populated areas. Information may be used to determine future land uses.
1.9.1	Obtain periodic updates of RL and SRL lists from FEMA/NFIP and ensure that appropriate officials have access to the data.	Flood	1.9	High	Ongoing	AEMA, ADECA, FEMA	N/A	Staff Time	Ongoing – OWR can obtain via NFIP	Flooding (particularly repetitive losses) is the single most significant natural hazard in the State, in terms of monetary losses and disruptions. The overall State mitigation strategy is focused on reducing these damages by various means, including FEMA grant programs. These programs rely on sound information as the basis for prioritizing actions.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
1.9.2	Ensure that site-specific risk assessments are available to local officials, as the basis for identifying and prioritizing mitigation actions on a site-specific basis. This action may be accomplished in a number of ways, including AEMA performing risk assessments (either itself or using consultants/ contractors), or continuing to provide training and technical support.	Flood	1.9	Moderate	Ongoing	AEMA	Existing State staff; potential outside resources to be determined	Staff time	Ongoing	Flooding is the most significant natural hazard in the State. This information is the basis for implementing numerous FEMA grant programs.
2.1.1	Implement Legislation Title 11-19-1 through 24.	All	2.1	Low/ Moderate	Mid-Term	ADECA AARC, ACCA	FEMA, local	Staff Time	Deferred until such time as funding and situation permits.	Land use management practices that address mitigation increase the probability that lives and property will be protected.
2.1.2	Ensure all states codes and standards ensure the protection of life.	All	2.1	High	Near-Term	BLDG. CODE COMMISSI ON	Operating Budget	Staff Time	Ongoing	Expanding hazard mitigation initiatives will improve the State's resistance to hazards for the future.
2.1.3	Ensure all structures in the state meet minimum standards for life safety.	All	2.1	High	Mid-Term	AACC ALM	Bonding Funds	Staff Time	Ongoing	Improving building inspections will increase the integrity of structures and protect occupants during hazard events.
2.1.4	Establish regulations that address disclosure of natural hazard risk during real estate transactions.	All	2.1	N/A (per AACC)	Mid-Term	ALM AACC	N/A (per AACC)	Staff Time	N/A (per AACC)	Regulations that address disclosure of natural hazard risk increase the probability that lives and property will be protected by increasing the awareness of property buyers.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
2.1.5	Maintain tornado safe room initiatives statewide.	Wind	2.1	High	Near-Term	AEMA NOAA Local Government	HMA	Staff Time	Ongoing	Continues efforts to reduce tornado risk to citizens Statewide. Tornadoes are identified as one of three most significant hazards in the State.
2.1.6	Expand the number of local governments that include hazard reduction planning into their land-use plans and development regulations.	All	2.1	Moderate	Long-Term	AEMA Local Government	Multiple funding sources	Staff Time	Ongoing	Coordinating plans ensures that mitigation efforts are addressed.
2.1.7	Assist K-12 schools and state colleges and universities develop vulnerability assessments, mitigation plans and mitigation projects to improve safety in their most vulnerable buildings.	All	2.1	High	Long-Term	AEMA AARC Local Government	FEMA, local	Staff Time and Project specific costs based on individual regulations.	Deferred until such time as funding and situation permits.	Providing technical assistance to educational facilities encourages the use of mitigation and strengthens critical facilities.
2.1.8									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	
2.1.9	Promote, strengthen and coordinate emergency response plans.	All	2.1	High	Mid-Term	AEMA ADEM	Multiple funding sources; State funds	Staff Time	Ongoing	Coordinating plans ensures that mitigation efforts are addressed.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
2.1.10									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	
2.1.11									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	
2.1.12 (Combine with 2.1.5 in 2010)									This action was with 2.1.5	.
2.1.13	Encourage the integration of Tree Emergency Plans into the risk assessment portion of all local mitigation plans.*	Wind	2.1	Moderate	Mid-Term	AFC	US Forest Service, FEMA	Staff Time	Ongoing	Increasing accessibility to new information/data such as Tree Emergency Plans strengthens mitigation planning as trees are a major source of damage during wind events.
2.2.1	Increase state agency accessibility to critical power lines.	All	2.2	Low	Mid-Term	ALDOT	No info provided	Construction costs TBD by project specifics.	Deferred until such time as funding and situation permits	Increasing accessibility to critical power lines will increase the opportunity of repair crews to restore power following a hazard event.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
2.2.2	Identify and prioritize utility ROWs for tree and brush removal.	All	2.2	Low	Near-Term	ALDOT	No info provided	Staff Time	Deferred until such time as funding and situation permits	Increasing accessibility to critical power lines will increase the opportunity of repair crews to restore power following a hazard event.
2.2.3	Develop program to remove trees most likely to fall into utility ROWs and replace them with species that do not pose as great a threat to power lines.	All	2.2	Low	Long-Term	ALDOT	N/A	Staff Time and costs for tree replacement (TBD based on plan)	Completed. Policy in place with utility companies for bush/tree control on State highway ROW	Increasing accessibility to critical power lines will increase the opportunity of repair crews to restore power following a hazard event.
2.2.4	Encourage applicable local governments (insert county names) to retrofit critical facilities so that they will sustain natural disasters.	Wind	2.2	High	Near-Term	AL Insurance Department	State funds	Staff Time and Production costs	Ongoing	Improving the structural integrity of vulnerable homes and securing contents will improve the safety of households that might not be able to afford repairs.
2.2.5	Advance provision for electrical generators through FEMA grant programs.	All	2.2	Moderate	Near-Term	AEMA	HMA	Staff Time	Ongoing	Reduces loss of function to critical facilities and operations following natural hazards.
2.2.6	Advance provision for electrical generators for state colleges and universities, including two year colleges through FEMA grant programs, as part of an initiative to develop and maintain all-hazard shelter capacity.	All	2.2		Near-Term	AEMA	Unknown	Staff Time	Complete	Reduces loss of function to critical facilities and operations following natural hazards.
2.2.7	Strengthen all state building codes and enforcement.	All	2.2	High	Mid-Term	BC, AACC ALM Local Government	Operating budget	Staff Time	Ongoing	Reduces vulnerability of buildings to hazards.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
2.2.8	Encourage homeowners to retrofit their homes for category F-0 to F-2 tornadoes by providing information materials (handouts, booklets and videos).	Wind	2.2	Moderate	Mid-Term	AEMA FEMA	Multiple funding sources	Staff Time and Material Production costs	Ongoing	A well informed general public will result in a safer and less hazard prone community.
2.2.9	Encourage homeowners to retrofit their homes for category 1-3 hurricane winds.	Wind	2.2	Moderate	Mid-Term	AEMA FEMA	Multiple funding sources	Staff Time and Material Production costs	Ongoing	Retrofitting homes will protect lives and property from hurricane hazards.
2.2.10	Develop and inventory of the number of radio repeater sites and dispatch centers currently without backup electricity	All	2.2	High	Near-Term	AFC	No info provided	Staff Time	Ongoing; Deferred until such time as funding and situation permits	Backup communication will keep the AL Forestry Commission operational during a hazard event
2.2.11	Ensure all radio repeater sites and dispatch centers have contingency plans in place for backup electricity in case of a natural hazard.	All	2.2	Moderate	Mid-Term	AFC	No info provided	Staff Time	Completed	An inventory of the resources at the AL without back-up electricity will increase access to and use of this information by decision-makers to reduce wildfire risk.
2.2.12	Develop model ordinance for Gulf-fronting communities requiring additional setbacks for Gulf-fronting properties.	Floods	2.2	Moderate	Mid-Term	AEMA ADCNR SARPC Local Government	ACAMP-CZMA funds	Staff Time	Ongoing - Funds provided to local communities as requested and as available	Increased setbacks will reduce property damage from storm surge.
2.3.1	Develop hazard mitigation policies to protect the environment.	All	2.3	High	Mid-Term	ADCNR	ACAMP-CZMA funds	Staff Time	Deferred until such time as funding and situation permits	Promoting mitigation measures that have an environmental benefit increase the overall benefits of the mitigation action.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
2.3.2	Preserve and rehabilitate natural systems to serve natural hazard mitigation functions (i.e., floodplains, wetlands, watersheds and urban interface areas).	Floods	2.3	High	Mid-Term	USDA ADCNR USACE AEMA	ADCNR-EDRP, NOAA-CRP	TBD by project scope	Ongoing	Preserving and rehabilitating natural systems will result in the production of natural hazard mitigation.
2.3.3									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	
2.3.4	Encourage local floodplain managers to evaluate the increased hazard posed by the encroachment of non-native plant species into floodways.	Floods	2.3	Low	Long-Term	OWR AEMA	Unknown	Staff Time	Deferred until such time as funding and situation permits	Informing local officials on invasive plant species will contribute to the effective management of wetlands.
2.3.5	Encourage local floodplain managers to continue to account for and incorporate wetlands protection and mitigation sites into the planning process when preparing new studies for watercourses.	Floods	2.3	Low	Mid-Term	OWR AEMA	Unknown	Staff Time	Deferred until such time as funding and situation permits	Incorporating wetlands into the planning process will result in effective wetland management.
2.3.6	Encourage the use of software such as ITREE to both manage and predict tree damage.*	Wind	2.3	Moderate	Near-Term	Department of Forestry	US Forest Service	Staff Time and Software costs	Ongoing	Promoting use of software will assist in risk identification.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
2.4.1	Develop and implement a detailed severe repetitive loss mitigation strategy that will qualify the State for 90-10 cost share under the FEMA SRL program	Flood	2.4	High	Near-Term	AEMA	N/A	Existing Federal and State Resources	Ongoing	Part of the process to initiate SRL program; establishes priorities for State and local jurisdictions to begin
2.4.2	Conduct community outreach, workshops, and training to increase NFIP participation	Flood	2.4	High	Near-Term	AEMA, ADECA	N/A	Existing State Resources	Ongoing	Allows residents the ability to receive flood insurance claims and maintains eligibility in the FMA program of which flood insurance is a requirement
2.4.3	Provide updated SRL and RL lists to communities in advance of grant application windows. Included FEMA calculated avoided damages for SRL properties and any State calculated avoided damages for RL properties	Flood	2.4	High	Near-Term	AEMA	N/A	Existing State Resources	Ongoing	Retrofitting, elevating, or removing repetitive loss properties from known hazard areas protects property and lives as well as preserve personal, state, and federal financial resources
3.1.1									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	
3.1.2	Require the incorporation of natural hazard mitigation measures in all new public construction.	All	3.1	High	Long-Term	Bldg. Code Commission, Local Government	Operating Budget	TBD by project scope	Ongoing	Incorporating natural hazard mitigation into new public construction reduces vulnerabilities and protects live and property.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
3.1.3	Promote enforcement of applicable building codes in hazardous areas.	All	3.1	N/A	Mid-Term	AACC Local Government	N/A	Staff Time	N/A	Improving building inspections will improve the integrity of structures and protect occupants during hazard events.
3.1.4	Ensure local building codes require the latest construction techniques and materials designed to reduce the effects of natural hazards on residential and commercial structures.	All	3.1	N/A	Mid-Term	AACC ALM	N/A	Staff Time	N/A	Improving building inspections will increase the integrity of structures and protect occupants during hazard events.
3.1.5									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	
3.1.6	Develop design criteria for marinas, piers and other coastal structures with respect to storm resistance.	Wind Floods	3.1	Low	Mid-Term	Building Code Commission, OWR Local Government	Operating Budget	Staff Time	No current legislation proposed. Deferred until such time as funding and situation permits.	Developing design criteria will reduce the probability that these structures will be affected by hazards.
3.1.7	Review new development proposal prior to issuance of floodplain development permits.	Floods	3.1	No info provided	Mid-Term	NOAA Local Government, AFC	No info provided	Staff Time	N/A	Reviewing development proposals will improve the integrity of structures and protect occupants during flooding events.
3.1.8	Develop coastal community resiliency plans to react to stressors on the jurisdiction (i.e. natural hazards).*	All	3.1	No info provided	Mid-Term	NOAA Local Government, AFC	No info provided	Staff Time and Project costs TBD by project scope.	N/A	The use of erosion control measures will protect farmland and watershed infrastructure from floods.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
3.1.9	Establish capacity to purchase and utilize remotely sensed imagery as a tool to develop localized risk models to mitigate storm damaged forest hazards	Wind, Storm Surge, Wildfire	3.1	Moderate	Near-Term	AFC	US Forest Service, FEMA	$19,386 (ERDAS IMAGINE Pro 10 software license; 3-yr maintenance contract)	Ongoing; Deferred until such time as funding and situation permits	By implementing collaborative AFC and local agency strategies to mitigate potential damage, injuries, and costs related to storm damaged urban and interface trees and forests.
3.1.10	Identify communities at risk to wildfire in urban interface; complete a minimum of (1) Community Wildfire Plan in each county	Wildfire	3.1	Moderate	Near-Term	AFC	US Forest Service, FEMA	$167,500 ($2,500 per plan x 67 counties)	Ongoing	Engage new development residents and developers in designing wildfire resistant neighborhoods.
3.2.1									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	
3.2.2									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	
3.2.3	Inform land and resource managers, including those engaged in planning and zoning, about potential hazards in their jurisdictions.	All	3.2	Moderate/ Low	Near-Term	AEMA ADEM	Multiple funding sources; State funds	Staff Time	Ongoing	Ensuring the continued involvement of stakeholders will increase the awareness of the impact of hazard events.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
3.2.4	Develop and incorporate a new standard in all state-wide building codes that require a standard system be incorporated into window design and protection for all new construction.	Wind	3.2	N/A	Long-Term	AACC ALM	N/A	Staff Time	N/A	Improving building inspections will increase the integrity of structures and protect occupants during hazard events.
3.2.5									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	
3.2.6	Ensure that building inspectors are trained in the enforcement of the adopted codes.	All	3.2	Moderate	Long-Term	AACC ALM ADCNR Local Government	ACAMP-CZMA funds	Staff Time	Implemented as Funds are Available	Better-trained inspectors result in safer, better-protected neighborhoods.
3.2.7	Disseminate information about Section 106 of the NHP Act and its ramifications in a disaster.	All	3.2	High	Mid-Term	AHC	N/A	Staff Time and production cost	AHC will be conducting a workshop for homeowners, consultants, and agency staff in August 1020 in Mobile, AL.	Information will improve decisions to protect cultural resources.
3.2.8	Encourage Retrofit.	Wind	3.2	Moderate	Long-Term	AEMA Local Government	Multiple funding sources	Staff Time	Ongoing	Retrofitting structures can mitigate future damage from wind events.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
3.2.9	Look at critical facilities to determine which can be brought to FEMA 361 retrofit which can support.	Wind	3.2	Moderate	Mid-Term	AEMA All Agencies	Multiple funding sources; Bond funds; FEMA	Staff Time and Project costs TBD by project scope.	Ongoing; Deferred until such time as funding and situation permit; Potential Critical facilities for retrofit can be identified during Community Assistance Visits; however, projects will be deferred until such time as funding and situation permit	Retrofitting critical facilities mitigates/reduces future damages and helps ensure continuity of operations.
4.1.1	Provide funding and technical assistance to state agencies and local and tribal governments to prepare hazard mitigation plans.	All	2.5	High	Mid-Term	AEMA FEMA	HMA	Staff Time and Project costs TBD by Local/Tribal project scope.	Ongoing	Expanding the number of hazard mitigation initiatives will improve the State's resistance to hazards.
4.1.2	Improve the state's capability to administer pre- and post-disaster mitigation programs.	All	42.5	High	Mid-Term	AEMA	HMA	Staff Time	Ongoing	Expanding the number of hazard mitigation initiatives will improve the State's resistance to hazards.
4.1.3	Establish security system within the Gordon Persons Building to ensure that critical functions are not interrupted due to terrorist activities.	All	2.5	High	Long-Term	ADHR	Existing operating budget	Project costs TBD by project scope.	Ongoing – the 2nd floor was partially locked in March 2010	Keeping state departmental functions operational during and following hazard events is important to serving the public.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
4.1.4	Improve safety of rural roads by developing a rural road paving and a road side ditching plan so that they remain accessible during post event.	All	2.5	Low	Long-Term	ALDOT	Federal and State Highway Aid	Project costs TBD by project scope.	Action deleted in 2013 – ALDOT currently provides funding to local governments	
4.1.5	Implement proper use of trees to reduce amount of damage and protect structures.	Wind	2.5	Moderate	Long-Term	AFC	US Forest Service	TBD - Cost of trees in critical areas	Ongoing	Proper use of indigenous trees can serve to mitigate damage to structures by shielding from wind. Additionally they are less likely to result in debris.
4.1.6	Encourage the use of storm resistant trees to reduce both the wind hazards as well as the amount of debris.*	Wind	2.5	Moderate	Long-Term	AFC	US Forest Service	TBD - Cost of trees in critical areas	Ongoing	Proper use of indigenous trees can serve to mitigate damage to structures by shielding from wind. Additionally they are less likely to result in debris.
4.2.1	Initiate a system to test the ability of local emergency manager to activate the Emergency Alert System.	All	2.6	High	Mid-Term	AEMA Local Government	EMPG	Staff Time	Ongoing	Expanding the number of hazard mitigation initiatives, to include reverse 911 systems, will increase the community's resistance to hazards.
4.2.2	Establish provisions to ensure that Family Assistance program designed for moving families from dependency to self-sufficiency continue after a natural or man-made disaster.	All	2.6	High	Long-Term	ADHR	Existing operating budget	Staff Time	Ongoing	Keeping state departmental functions operational during and following hazard events is important to serving the public.
4.2.3 (Action Combined with 1.3.2 in 2010)									Action deleted – very similar to Action 1.3.2.	

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
4.2.4	Provide training for local officials in mitigation activities.	All	2.6	Moderate	Mid-Term	Local Government AEMA	HMA	Staff Time	Ongoing	Better trained local officials will result in safer, better protected communities.
5.1.1	Develop a public outreach and awareness campaign to educate stakeholders on the hazards identified in the state's hazard mitigation plan.	All	5.1	Moderate/ High	Near-Term	AEMA AARC AFC	Multiple funding sources, AFC	Staff Time and production costs	Ongoing	Informing the public on hazards within Alabama prepares citizens to understand and undertake their own mitigation actions.
5.1.2	As part of the public outreach plan, ensure the public and forest managers are informed about the importance of implementing Best Management Practices on forest land.	All	5.1	Moderate	Mid-Term	AFC, OWR, Local Government ADCNR	ACAMP-CZMA funds, US Forest Service	Staff Time	Ongoing	Informing the public on the warning system will increase understanding of what to do when the warning system is used.
5.1.3	Develop an earthquake, landslide and sinkhole education program for the state's Boards of Education to use in each school system.	Earthquake Landslides Sinkholes	5.1	Low/ Moderate	Mid-Term	AEMA GSA	USGS, FEMA	Staff Time and production costs	Deferred until such time as funding and situation permits	Prepares citizens for an emergency. Avoids panic and saves lives.
5.2.1									Action deleted in 2010 because it was not being implemented. Action number kept to maintain action numbering scheme.	
5.2.2	Develop an emergency preparedness and response plan about earthquakes, landslides and sinkholes for the state's Boards of Education to use in each school system.	Earthquake Landslides Sinkholes	5.2	Moderate	Long-Term	AEMA GSA	USGS, FEMA	Staff Time and production costs TBD by scope for each school system	Deferred until such time as funding and situation permits	Prepares citizens for an emergency. Avoids panic and saves lives.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
5.2.3	Increase the number of homeowners and renters living in flood prone areas that have flood insurance through NFIP.	Floods	5.2	High	Mid-Term	OWR	No info provided	Staff Time and production costs for outreach	Outreach meetings with community officials and public accomplish this action.	Purchase of flood insurance will increase the awareness of flood mitigation among homeowners.
5.2.4	Increase the number of communities who participate in the Community Rating System program.	Floods	5.2	Moderate	Near-Term	OWR	No info provided	Staff Time	Economic restraints have reduced ability of local governments to initiate the program.	Increased CRS scores will result in lower insurance premiums for homeowners and will decrease the flood risk to the community.
5.2.5	Educate local communities about how to improve the CRS classification of other cities and Indian communities within their jurisdictions.	Floods	5.2	Low	Mid-Term	OWR	No info provided	Staff Time and production costs	Numerous training opportunities each year through FEMA programs and AL Assoc. of Floodplain Managers	Increased CRS scores will result in lower insurance premiums for homeowners and will decrease the flood risk to the community.
5.2.6	Conduct hazard mitigation education and awareness workshops for local government officials and the private sector.	All	5.2	Moderate	Mid-Term	AEMA Local Government	HMA	Staff Time	Ongoing	Better trained local officials will result in safer, more hazard resistant communities.
5.2.7	Provide technical assistance (community assistance visits, contacts, workshops and/or publications) to local officials on proper implementation of the NFIP.	Floods	5.2	High	Near-Term	OWR	FEMA CAP and CTP Grants	Staff Time	Numerous training opportunities each year through FEMA programs and AL Assoc. of Floodplain Managers	Well trained local officials in the NFIP will result in safer communities.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
6.1. 1	Facilitate the coordination of all state and federal emergency management activities.	All	6.1	Moderate	Near-Term	AEMA FEMA	Multiple funding sources	Staff Time	Ongoing	Coordination between emergency management activities will reduce the risk from hazards.
6.1.2	Facilitate the coordination of state and local emergency management activities.	All	6.1	High	Near-Term	AEMA Local EMAs	Multiple funding sources	Staff Time	Ongoing	Coordinating agencies will increase the community's resistance to hazards.
6.1.3	Ensure hazard mitigation programs are included in all state and local economic development and community planning.	All	6.1	Moderate/ High	Mid-Term	AARC ALM ADECA AACC	EDA, local planning contracts	Staff Time	Ongoing (AL CEDS, North Courland Comp Plan); RiskMAP Coordination should help address this	Incorporate hazard mitigation initiatives will increase the community's resistance to hazards
6.1.4	Expand the use of the State Hazard Mitigation team by adding representatives from other state, regional and federal organizations.	All	6.1	Moderate	Near-Term	AEMA	Multiple funding sources	Staff Time	Ongoing	Promoting hazard mitigation will reduce the impact of hazard events on the state.
6.1.5	Establish a schedule to update the SHMT on existing and upcoming hazard mitigation activities throughout the state.	All	6.1	Moderate	Near-Term	AEMA	Multiple funding sources	Staff Time	Ongoing	Promoting hazard mitigation will reduce the impact of hazard events on the state.
6.2.1	Integrate mitigation projects into recovery process through Public Assistance, Individual Assistance and SBA programs.	All	6.2	Moderate	Mid-Term	AEMA	Multiple funding sources	Staff Time	Ongoing	Promote hazard mitigation inclusion and funding through other programs, including Public Assistance and SBA, so that more mitigation measures are implemented.

Table 6.8-3
Mitigation Action Plan

Action #	Action	Hazard(s) Addressed	Objective Addressed	Priority	Timeline	Responsible Agency	Funding Source	Cost	2013 Status	How Action Contributes to Mitigation Strategy
6.2.2	Integrate mitigation projects through education of local community and Public Assistance applicants.	All	6.2	Moderate	Mid-Term	AEMA Local Government	Multiple funding sources	Staff Time	Ongoing	Promote hazard mitigation inclusion and funding through other programs, including Public Assistance and SBA, so that more mitigation measures are implemented.
6.2.3	Encourage/ create teams of Arborists to assist in performing damage assessments and recommend mitigation projects.*	Wind	6.2	Moderate	Mid-Term	Department of Forestry	US Forest Service	Staff Time	Ongoing; Deferred until such time as funding and situation permits	Coordinating with specialists prior to a disaster will aid in the implementation of mitigation actions following a disaster.

6.9 Identification of Funding Sources

Because the State plan addresses a broad spectrum of mitigation issues there is a need for a variety of funding sources. Funding often comes from an assortment of sources, including the Federal, State and local governments in addition to private funding opportunities.

As previously discussed, the large majority of funding used to implement activities in the mitigation strategy since approval of the initial plan has been obtained from FEMA's HMGP program. This funding has gone towards an array of planning and non-planning projects (see **Section 6.8**). The State has also been able to obtain limited amounts of PDM grant funding. Typically, either local locally appropriated funds or CDBG money has been used as the required local matching funds for mitigation projects.

6.9.1 Federal

Federal funding sources include funding programs available through FEMA, the USACE, HUD, the United States Department of Agriculture Natural Resources and Conservation (NRCS), and the National Oceanographic and Atmospheric Administration (NOAA). The following is a list of applicable Federal assistance programs.

Federal Emergency Management Agency (FEMA)

Several grant programs now fall under FEMA's Hazard Mitigation Assistance (HMA) grant program. These are the Hazard Mitigation Grant Program (HMGP), the Pre-Disaster Mitigation (PDM) grant program, the Flood Mitigation Assistance (FMA) grant program, the Repetitive Flood Claims (RFC) grant program, and the Severe Repetitive Loss (SRL) grant program. The nature of these grants has not changed but they were unified under the HMA grant program for efficiency. Now each program falls under the same application period and has similar application procedures.

- *Hazard Mitigation Grant Program (HMGP)*

  Program authorized under Section 404 of the Robert T. Stafford Act, providing grants to State and local governments involved in long term hazard mitigation planning and measures following a presidentially declared disaster. The Federal share of any project shall not exceed 75 percent of the total eligible program costs.

  - 5 percent HMGP Initiative (existing source of funding) – Initiated by FEMA in 1996. This program/policy established that up to 5 percent of the total HMGP funds for open and future disaster declarations are made available for the state to use on hazard mitigation measures that are difficult to evaluate against traditional program cost-effectiveness criteria. Currently, all available 5 percent HMPG funds for the State of Alabama are being utilized to fund a statewide warning and communication project, resulting in enhanced warning, communication and response capabilities statewide.

  - 7.5 percent Public Assistance Funding (existing source of funding) – Section 404 of the Robert T. Stafford Act was amended by the Hazard Mitigation and Relocation Assistance Act of 1993. Later, in 2003, as a result of the Consolidated

Appropriations Resolution, the amount of available funding for mitigation projects became 7.5 percent of the public and individual assistance programs.

- 7 percent Planning Grants (existing source of funding) – For all Federal Disaster Declarations with open application periods on or after November 13, 1999, the Disaster Mitigation Act of 2000 authorizes Grantees to use up to 7 percent of HMGP funds available to develop State, local or Tribal government mitigation plans.

- *Pre-Disaster Mitigation Grants (PDM)* (existing source of funding)

  Pre-Disaster Mitigation Grants focus primarily on planning and mitigation activities implemented prior to a disaster. All PDM applicants, if they have been identified through the NFIP as having a Special Flood Hazard Area, must participate in the NFIP, to be eligible for funding. Grants are available for two types of actions; mitigation planning and mitigation projects.

  - *Disaster Resistant University Grants (existing source of funding)*

    The Federal Register states "FEMA will provide PDM funds to assist universities, through State and local governments, to implement a sustained pre-disaster natural hazard mitigation program to reduce overall risk to facilities, research assets, students and faculty."

- *Flood Mitigation Assistance Program (FMA) (existing source of funding)*

  The National Flood Mitigation Fund provides grants to local and state jurisdictions on a 75/25 cost share basis, for planning and implementation of mitigation projects. Examples of mitigation projects include acquisition, elevation, relocation, flood-proofing, and technical assistance. The enabling legislation specifically excludes large scale structural flood control projects from receiving this type of funding.

- *Severe Repetitive Loss (SRL) Grants (existing source of funding)*

  This relatively new grant program, established by the Flood Insurance Reform Act (FIRA) of 2004, provides funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the NFIP. Flood mitigation can include flood-proofing of historical properties and relocation, elevation, acquisition, or reconstruction of eligible residential properties. In order for a property to be eligible, a certain minimum number of claims must be filed over a prescribed period or the amount of claims must exceed the value of the property. Funding for FY 2005 through 2009 has been set at $40 million nationwide.

- *Repetitive Flood Claims (RFC) Grants (existing source of funding)*

  Also established by FIRA, the RFC grant program provides funds for acquisition or relocation of repetitive flood loss residential properties that cannot meet the 25 percent match required under the Flood Mitigation Assistance program. Up to 100 percent funding is available for each property. Current funding levels are $10 million nationally.

United States Army Corps of Engineers (USACE)

The USACE provides several Federal assistance programs applicable to hazard mitigation including:

- *General Investigation Studies (potential source of funding)*[5]

  These studies require local cost sharing of 50 percent. It is a three step process: 1) Reconnaissance Study (100% federal funds), 2) Feasibility Study (50-50 funded), 3) Planning, Engineering and Design (PED) (75% federal funds).

- *Continuing Authorities (potential source of funding*[6]*)*

  This program allows the USACE to take action on water resource projects under a specific dollar amount. For these projects, a feasibility study would be performed. Local cost shares for these studies vary from 0 to 50 percent. Projects deemed cost-effective in which a federal interest is established could qualify for up to 75 percent federal funding. Specific Continuing Authorities programs applicable to hazard mitigation include:

  - Section 204 of the Water Resources Development Act of 1992 – For dredging associated with authorized navigation projects, protects, restores and creates aquatic and/or wetland habitats.

    Study costs include:

    - Initial appraisal – 100 percent Federal Share
    - Feasibility Study – 75 Federal Share / 25 Non-Federal Share

    Project costs include:

    - If less than 35 percent, all necessary lands and relocations required for construction provided by Non-Federal source and cash contribution.
    - Non-Federal entity operates and maintains the project.

  - Section 205 of the 1948 Flood Control Act – General small flood drainage/control projects.

    Study costs include:

    - First $100,000 – 100 percent Federal Share
    - Any amount over $100,000 – 50/50 Federal/Non-Federal Share

    Project costs include:

    - 35-50 percent of total project costs paid by Non-Federal – 5 percent in cash
    - $7,000,000 maximum Federal costs.

[5] http://www.lrn.usace.army.mil/pao/outreach/gi.htm
[6] http://www.nab.usace.army.mil/whatwedo/civwks/cap.htm

- Non-Federal entity operates and maintains the project.

o Section 206 of the Water Resources Development Act of 1996 – Aquatic Ecosystem restoration and protection projects, including design, planning and construction.

Study costs include:

- 65/35 Federal/Non-Federal Share

Project costs include:

- 35 percent of total project costs paid by Non-Federal
- $5,000,000 maximum Federal share costs.
- Non-Federal entity operates and maintains the project.

o Section 208 of the 1954 Flood Control Act – Waterway clearing and snagging projects

Study costs include:

- First $40,000 – 100 percent Federal Share
- Any amount over $40,000 – 65 Federal Share / 35 Non-Federal Share

Project costs include:

- 35 percent - 50 percent of total project costs paid by Non-Federal – 5 percent in cash
- $500,000 maximum Federal share costs.
- Non-Federal entity operates and maintains the project.

o Section 107 of the 1960 River and Harbor Act – Small river and harbor improvement projects

Study costs include:

- First $100,000 – 100 percent Federal Share
- Any amount over $100,000 – 50/50 Federal/Non-Federal Share

Project costs include:

- 20-60 percent Non-Federal share depending on project
- At least 10 percent of general navigation costs during construction paid by Non-Federal
- At least 10 percent of general navigation costs over a 30 year period paid by Non-Federal
- $4,000,000 maximum Federal costs.

o Section 14 of the 1946 Flood Control Act – Emergency stream bank and shoreline protection

Study costs include:

- First $40,000 – 100 percent Federal Share
- Any amount over $40,000 – 65/35 Federal/Non-Federal Share

Project costs include:

- 35 percent of total project costs paid by Non-Federal – 5 percent in cash
- 65 percent of total project costs paid by Federal
- $1,000,000 maximum Federal costs.
- Non-Federal entity operates and maintains the project.

o Section 1135 of the Water Resource Development Act of 1986 – Environment restoration projects where a USACE project contributed to the deprivation of the environment.

Study costs include:

- 75/25 Federal/Non-Federal Share

Project costs include:

- 25 percent of total project costs paid by Non-Federal
- $5,000,000 maximum Federal costs.
- Non-Federal entity operates and maintains the project.

o Floodplain Management Services[7] – (Section 206 of the 1960 Flood Control Act) Education and planning services for flood hazards and floodplain management

Study costs include:

- 100 percent Cost Recovery from non-water resource agencies and private sector.
- 0 percent cost to State, regional, local governments and non-Federal public agencies.

Project costs include:

- Studies generally cost $10,000 - $25,000.

o Planning Assistance to State[8] – (Section 22 of the Water Resources Development Act of 1974) Comprehensive Plan development relating to the development , utilization, and conservation of water and related land resources

Study costs include:

- 50/50 Federal/Non-Federal Share

[7] http://www.lre.usace.army.mil/planning/fpman.html
[8] http://www.lre.usace.army.mil/planning/assist.html

Project costs include:

- Federal Share generally $25,000-$75,000.
- $500,000 maximum annual Federal allotment per state/tribe.

- *Congressional Authorization (Major Civil Works Projects)* (potential source of funding)

  Feasibility studies for major civil works projects undertaken by the USACE that indicate Federal interests (benefit/cost ratio greater than 1:1) may be funded through Congressional Authorization of the proposed program.

United States Department of Housing and Urban Development

HUD maintains several funding sources that can be used towards furthering mitigation including:

- *Community Development Block Grants (CDBG) (existing source of funding)*

  This program allows for the distribution of grant money for the development of viable communities, principally for low and moderate income communities and neighborhoods. Community development can be accomplished through housing, suitable living environments and the expansion of economic opportunities. Activities that are eligible for funding under State administered CDBG include, but are not limited to: acquisition of property for public purposes; construction of public facilities; and planning activities.

  The Disaster Relief Initiative for Hurricane Katrina was a special Congressional appropriation through the CDBG to aid recovery efforts. An initial allocation of $74 million was distributed to affected communities through the ADECA, and an additional $21 million was added as a supplemental fund. This appropriation provided funds to aid disaster relief, long-term recovery efforts, and restoration of infrastructure in distressed areas of Alabama most affected by Hurricane Katrina.

  Following the April 2011 tornadoes, the State of Alabama received $24,697,966 in CDBG funds ($13,584,750 specifically for Tuscaloosa, Marion, Jefferson, and/or DeKalb Counties). In addition, several jurisdictions received separate allocations: City of Tuscaloosa ($16.6 million), Jefferson County ($7.8 million), and City of Birmingham ($6.4 million).

- *Section 312 Loan Program (potential source of funding)*

  This program provides funds for the rehabilitation of residential and non-residential properties in low income neighborhoods, including flood repair and flood proofing.

- *HOME Rental Rehabilitation Program (potential source of funding)*

  Through this program, funds are made available for rehabilitation of low-income rental properties including flood proofing and repair of flood damage.

United States Department of Agriculture – Natural Resource Conservation Service

- *Emergency Watershed Protection (potential source of funding)*

  In watersheds damaged by severe natural events, this program provides assistance to reduce hazards to life and property. Funds can be used for activities such as debris removal from streams and culverts, reshape and protect eroded banks, correct damaged drainage facilities, prevent erosion through planting, repair levees and structures, and to repair conservation practices.[9] If funds are available, NRCS can provide 100 percent of the cost of exigency situations and 80 percent of the cost of non-exigency situations. It has been utilized by Alabama in the past, most recently in FY 2012 for $9.6 million ($1.6 awarded).

Office of Ocean and Coastal Resource Management (OCRM) under the National Oceanic and Atmospheric Administration (NOAA)

- *The Coastal Zone Management Program (CZMP) (existing and potential sources of funding)*

  This program is a partnership with states in which the federal government provides funding, technical assistance and oversight to ensure compliance with the Coastal Zone Management Act. Federal grants are provided on an equal cost-share basis with the State. The program accounts for the largest sources of funding through NOAA's OCRM and can be used for administration and coastal resource improvement.

- *Section 303 (potential source of funding)*

  This program focuses on the protection of natural resources that mitigate wind and flooding impacts including beaches, dunes, and barrier islands. Federal funding is available.

- *Section 305 (potential source of funding)*

  States developing coastal programs are eligible to receive funding under this section of the Coastal Zone Management Program.

- *Section 306*

  Funding is primarily provided through implementation grants to administer State programs, including staff salaries, equipment purchases, public education and outreach, enhancement of public access and the undertaking of projects that monitor and/or enhance elements of the regulatory program.

[9] http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/ewpp/

- *Section 309*

  This section provides detailed objectives calling for states to prevent or significantly reduce threats in high hazard areas or manage development in other hazard areas. A portion of this section is the Coastal Zone Enhancement Program (CZEP).

- Coastal Zone Enhancement Program – This program allows states to compete for additional funding by creating enhancements to the existing State Coastal Zone Management Program in eight priority areas including coastal hazard mitigation, wetlands protection, and the control of cumulative and secondary impacts of development.

United States Economic Development Administration (EDA)

- *Public Work Grants (potential source of funding*)

  These grants are given to public and private non-profit organizations as well as to Indian Tribes for the building or expansion of public facilities that are essential to industrial and commercial growth.

- *Technical Assistance Grants (potential source of funding)*

  Funding is made available through these grants to communities and firms for economic feasibility studies of resource development in the establishment of jobs. The funding also provides on-sight support for innovative economic development techniques.

- *Planning Grants (potential source of funding)*

  Funding available through planning grants help to pay for the expertise needed to plan, coordinate and implement comprehensive economic development programs.

- *University Center Program Grants (potential source of funding)*

  These grants are awarded to colleges and universities to utilize available resources to provide technical assistance to clients and address the economic development problems and opportunities of their service area.

- *Revolving Loan Fund (RLF) Grants (potential source of funding)*

  This funding is aimed at helping depressed areas overcome specific capital market gaps and to encourage greater private sector participation in economic development activities. In concert with private leaders, RLF grantees make fixed asset and/or working capital loans to area businesses.

- *Economic Adjustment Program Grants (potential source of funding)*

  Assist state and local governments in solving recent and anticipated severe adjustment problems, resulting in abrupt and serious job losses and to help areas implement

strategies to reverse and halt long-term economic deterioration, i.e. natural disasters and military installation closures.

6.9.2 State and Local Funding

The State of Alabama currently funds three State agencies that are involved in hazard mitigation activities.

- *Alabama Emergency Management Agency (AEMA) (existing source of funding)*

  AEMA receives state funds for efforts related to the administration and operations of the federal disaster funding programs at a state level, in addition to disaster response.

- *Alabama Department of Economic and Community Affairs (ADECA) (existing source of funding)*

  The Office of Water Resources (OWR) currently administers the NFIP program and related CRS program for the State of Alabama. OWR receives funding from the State for the NFIP. Currently, the federal/local share split is 75 percent Federal / 25 percent State. The State of Alabama provides the 25 percent match through cash or in-kind contributions. ADECA also administers the CDBG program. Funds from this program have been used as a local match for HMGP funds.

- *Alabama Department of Conservation and Natural Resources (ADCNR), Coastal Zone Management Program (CZMP) (existing source of funding)*

  ADCNR receives funding under the Coastal Zone Management Act of 1972, as amended from the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management which is match on a one to one basis by the State of Alabama, State Lands Division for the administration and daily operations of the Coastal Area Management Program.

In addition, as mentioned under Post Disaster Programs, the Alabama Disaster Recovery Fund was created in 2009 by Act 342. This Fund is has not yet been funded, but may be funded by the legislature through state general fund revenues, federal monies, any other source with the exception of insurance policy surcharges. It is to be utilized when a disaster is declared at the state level bu the federal level. AEMA will manage and administer the funds. Local governments are required to have several plans in plans in place to be eligible for funds including a hazard mitigation plan.

Local municipalities (counties and incorporated cities) actively participate in funding hazard mitigation projects. Local counties and cities provide local match funding for Federal programs to fund hazard mitigation activities. For example, local municipalities provide the local match share for FEMA HMGP and PDM grants as well as for USACE Section 205 and 206 grants. In addition, Jefferson County has established a local mitigation funding program for flood mitigation annually allocating monies to fund projects such as mitigation buyouts. The actual annual appropriation is established from year-to-year depending on budgetary demands and available resources.

This page left intentionally blank

Section 7 – Coordination of Local Planning

Contents of this Section

7.1 Final Rule Requirement for Coordination of Local Mitigation Planning
7.2 State process for developing local mitigation plans
7.3 Process by which local plans are reviewed, coordinated, linked to the State Plan
7.4 Criteria for prioritizing jurisdictions to receive funds under existing programs

Section	What has been updated?
7.1	• References to Interim Final Rule revised to Final Rule.
7.2	• This section was revised to reflect county plan status as of August 31, 2012 for the 2013 State Plan Update.
7.3	• This section was revised to include information from local plans updated between the 2010 and 2013 State Plan Update as of August 31, 2012.
7.4	• No substantial changes were made to this section.

7.1 Final Rule Requirements for Coordination of Local Mitigation Planning

The Final Rule (FR) Subsection 201.4 (c) (4) requires the State Hazard Mitigation Plan to include section on the coordination of local mitigation planning.

"(The State Hazard Mitigation Plan shall include a) section on the *Coordination of Local Mitigation Planning* that includes the following:

(i) A description of the State process to support, through funding and technical assistance, the development of local mitigation plans.

(ii) A description of the State process and timeframe by which local plans will be reviewed, coordinated and linked to the State Mitigation Plan.

(iii) Criteria for prioritizing communities and local jurisdictions that would receive planning and project grants under available funding programs, which should include consideration for communities with the highest risk, repetitive loss properties, and most intense development pressures. Further, that for non-planning grants, a principal criterion for prioritizing grants shall be the extent to which benefits are maximized according to a cost benefit review of proposed projects and their associated costs."

The FR Subsection (201.4 (d)) states:

> "*Review and Updates. Plan must be reviewed and revised to reflect changes in development…"*

Regarding Coordination of Local Mitigation Planning, the updated plan must describe:

- "The funding and technical assistance the State has provided in the past three years to assist local jurisdiction in completing approvable mitigation plan."

- "How the State will continue to provide this funding and technical assistance for new plans as well as local plan updates."

Further, the state must evaluate its approach for prioritizing local assistance.

7.2 Development and Update of Local Mitigation Plans

This section describes the ongoing state efforts to assist in the completion and update of local mitigation plans.

7.2.1 Development of Local Hazard Mitigation Plans

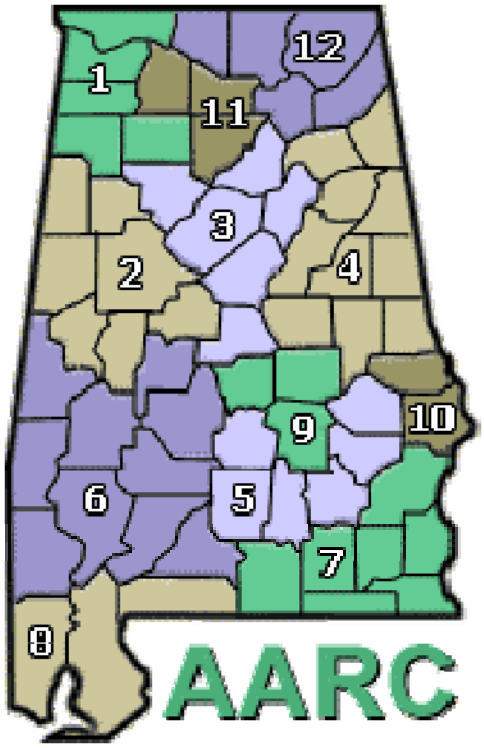
AEMA and the 12 Regional Planning Councils (RPCs) were heavily involved in the initial local plan develop and continue to be involved in the local plan updates. AEMA's involvement to assist counties with local plan development includes:

- Distributing federal funds to aid counties in the development of plans;

- Providing technical assistance;
- Coordinating with FEMA;
- Reviewing plans for state compliance;
- Partnering with local EMAs if the RPC was not involved in the plan development.

The 12 Regional Planning Councils were chosen by the counties to assist in this process because of their established planning expertise, knowledge of local and regional issues within their jurisdictions, and their rapport with local county and city representatives and stakeholders. In addition, each RPC has a hazard mitigation planner on staff. The jurisdictions of the 12 RPCs cover all 67 counties within the State. The 12 regions covered by the RPCs are depicted in **Figure 7.2-1**.

Figure 7.2-1
Alabama Association of Regional Councils:
Areas Covered by Regional Planning Councils



Local Plan Status

At the time that the initial State Plan was approved and adopted in 2004, no local hazard mitigation plans had been completed. For the 2013 plan update, not only has every county completed an approved plan, but all counties except one have completed their first plan update. The RPCs continue to be the dominant developers of local plans for the updates; however there has been an increase in the use of consultants in the update process. Only in a few Counties was the plan update conducted in-house by EM or planning staff.

Table 7.2-1 includes the status of each plan and indicates which counties are associated with each RPC.

Table 7.2-1
Summary of Development of Local Hazard Mitigation Plans

Alabama Association of Regional Councils				
Region	**Council Name/Counties**	**Plan Status as of August 31, 2012**	**Updated Plan**	**Responsible Entity for Local Plan Development**
1	**Northwest Alabama Council of Local Governments**			
	Colbert	Approved Update – November 16, 2009	X	Regional Planning Council
	Franklin	Approved Update– December 17, 2009	X	Regional Planning Council
	Lauderdale	Approved Update – August 12, 2010	X	Regional Planning Council
	Marion	Approved Update – December 9, 2009	X	Regional Planning Council
	Winston	Approved Update – December 9, 2009	X	Regional Planning Council
2	**West Alabama Planning and Development Council**			
	Bibb	Approved Update – November 16, 2009	X	Regional Planning Council
	Fayette	Approved Update– October 7, 2009	X	Regional Planning Council
	Greene	Approved Update– November 25, 2009	X	Regional Planning Council
	Hale	Approved Update – November 27, 2009	X	Regional Planning Council
	Lamar	Approved Update - November 20, 2009	X	Regional Planning Council
	Pickens	Approved Update – December 17,2009	X	Regional Planning Council
	Tuscaloosa	Approved Update – November 16, 2009	X	Regional Planning Council

Table 7.2-1
Summary of Development of Local Hazard Mitigation Plans

Alabama Association of Regional Councils				
Region	**Council Name/Counties**	**Plan Status as of August 31, 2012**	**Updated Plan**	**Responsible Entity for Local Plan Development**
3	**Birmingham Regional Planning Commission**			
	Blount	Approved Update – June 16, 2012	X	Local EMA; Lee Helms Associates
	Chilton	Approved Update – May 20, 2010	X	Local EMA, Lee Helms Associates
	Jefferson	Approved Update – December 3, 2009	X	Local EMA, Lehe Planning (Update)
	Shelby	Approved Update – August 11, 2010	X	Local EMA, EM Associates (Update)
	St. Clair	Approved Update – March 31, 2010	X	Local EMA, Lee Helms Associates (Update)
	Walker	Approved Update – November 2, 2010	X	Local EMA, Independent contractor
4	**East Alabama Regional Planning and Development Commission**			
	Calhoun	Approved Update – March 25, 2010	X	Local EMA, Regional Planning Council
	Chambers	Approved Update – April 25, 2012	X	Regional Planning Council, Lehe Planning (Update)
	Cherokee	Approved Update – May 20, 2010	X	Regional Planning Council; Local EMA
	Clay	Approved Update – March 22, 2011	X	Regional Planning Council
	Cleburne	Approved Update – November 24, 2010	X	Regional Planning Council
	Coosa	Approved Update – April 19, 2010	X	Regional Planning Council
	Etowah	Approved Update – October 18, 2010	X	Regional Planning Council
	Randolph	Approved Update – March 19, 2010	X	Regional Planning Council
	Talladega	Approved Update – October 18, 2010	X	Regional Planning Council
	Tallapoosa	Approved Update – March 15, 2011	X	Regional Planning Council

Table 7.2-1
Summary of Development of Local Hazard Mitigation Plans

Alabama Association of Regional Councils				
Region	**Council Name/Counties**	**Plan Status as of August 31, 2012**	**Updated Plan**	**Responsible Entity for Local Plan Development**
5	**South Central Alabama Development Commission**			
	Bullock	Approved – October 15, 2008		Regional Planning Council
	Butler	Approved Update – May 14, 2010	X	Regional Planning Council
	Crenshaw	Approved Update– October 28, 2008	X	Lee Helms Associates; Local EMA
	Lowndes	Approved – October 15, 2008		Regional Planning Council
	Macon	Approved Update – November 5, 2010	X	Regional Planning Council
	Pike	Approved Update – June 21, 2011	X	Regional Planning Council, Lee Helms Associates (Update)
6	**Alabama-Tombigbee Regional Commission**			
	Choctaw	Approved Update – August 20, 2009	X	Vissering Pardue Associates; Local EMA
	Clarke	Approved Update – November 25, 2009	X	Regional Planning Council
	Conecuh	Approved Update – March 31.2010	X	Local EMA, Regional Planning Council
	Dallas	Approved Update – September 30, 2010	X	Local EMA, Lee Helms Associates (Update)
	Marengo	Approved Update – September 30, 2010	X	Regional Planning Council
	Monroe	Approved Update – June 25, 2012	X	Local EMA, Lehe Planning (Update)
	Perry	Approved Update – March 5, 2010	X	Local EMA, Regional Planning Council
	Sumter	Approved Update – June 29, 2010	X	Regional Planning Council
	Washington	Approved Update – June 2, 2010	X	Local EMA, Lehe Planning
	Wilcox	Approved Update– January 27, 2010	X	Regional Planning Council
7	**Southeast Alabama Regional Planning and Development Council**			
	Barbour	Approved Update – June 23, 2010	X	Regional Planning Council; Lee Helms Associates
	Coffee	Approved Update – May 5, 2010	X	Local EMA, Lee Helms Associates
	Covington	Approved Update – February 1, 2010	X	Regional Planning Council
	Dale	Approved Update – April 3, 2012	X	Local EMA, Lehe Planning (Update)
	Geneva	Approved Update – May 16, 2010	X	Lee Helms Associates

Table 7.2-1
Summary of Development of Local Hazard Mitigation Plans

Alabama Association of Regional Councils				
Region	**Council Name/Counties**	**Plan Status as of August 31, 2012**	**Updated Plan**	**Responsible Entity for Local Plan Development**
	Henry	Approved Update– January 14, 2010	X	Regional Planning Council
	Houston	Approved Update – February 9, 2010	X	Regional Planning Council
8	**South Alabama Regional Planning Commission**			
	Baldwin	Approved Update – March 8, 2011	X	Local EMA, Lehe Planning (Update)
	Escambia	Approved Update – September 29, 2010	X	Local EMA, Lee Helms Associates
	Mobile	Approved Update – March 22, 2011	X	Local EMA; Lehe Planning
9	**Central Alabama Regional Planning Development Commission**			
	Autauga	Approved Update – February 9, 2010	X	Local EMA, Regional Planning Council
	Elmore	Approved Update – May 20, 2010	X	Local EMA, Regional Planning Council
	Montgomery	Approved Update – August 3, 2010	X	Local EMA; Lee Helms Associates
10	**Lee-Russell Council of Governments**			
	Lee	Approved Update – May 4, 2010	X	Regional Planning Council
	Russell	Approved Update – May 11, 2010	X	Local EMA, Regional Planning Council
11	**North-Central Alabama Regional Council of Governments**			
	Cullman	Approved Update – April 14, 2010	X	Local EMA; Lee Helms Associates
	Lawrence	Approved Update – May 4, 2010	X	Regional Planning Council
	Morgan	Approved Update – February 7, 2011	X	Local EMA, Lee Helms Associates
12	**Top of Alabama Regional Council of Governments**			
	DeKalb	Approved Update – December 16, 2010	X	Local EMA, Regional Planning Council
	Jackson	Approved Update – January 25, 2011	X	Local EMA, Regional Planning Council
	Limestone	Approved Update – January 5, 2011	X	Local EMA, Lee Helms Associates
	Madison	Approved Update – May 20, 2010	X	Lehe Planning (Original) Local EMA (Update),
	Marshall	Approved Update – December 3, 2009	X	Local EMA, Lehe Planning

Source: Alabama Local Hazard Mitigation Plans Inventory 8/31/2012; FEMA

Technical Assistance for Local Hazard Mitigation Plans

As noted above, AEMA involvement included providing significant technical assistance to local plan preparers. During the initial development of the local plans and the plan update process, the State conducted Hazard Mitigation Planning Workshops throughout the State of Alabama. The last workshop was conducted in August 2008. These workshops are expected to continue in the future as needed for plan updates. AEMA representatives provided technical assistance via telephone to RPC/ local EMA staff to answer questions and provide assistance on the Disaster Mitigation Act of 2000 guidelines and the hazard mitigation planning process. In addition, AEMA visited each of the RPCs to conduct face to face meetings, provide technical assistance, and answer questions regarding the hazard mitigation plan development process.

AEMA also has a State review process and timeframe in place for local plan development. The State reviews each of the county plans for applicability to the FR requirements prior to FEMA's formal review. The process and timeframe employed by the State for review is:

Step 1: The initial draft of a local county plan is sent to the AEMA for review within a 30 day timeframe. If required, revisions are sent back to the county for corrections. If no revisions are required, the draft is submitted to FEMA for review and approval.

Step 2: The county has a 30-day period to address AEMA review comments and submit a corrected draft to AEMA.

Step 3: AEMA has 30 days to review the revisions. If required, revisions are sent back to the county. If all revisions are corrected, AEMA submits the plan to FEMA for review and approval.

Step 4: FEMA completes its review within 45 days and forwards their comments to AEMA. AEMA immediately forwards AEMA and FEMA review comments to the county.

Step 5: The county has a 30-day period to address any FEMA comments. The county submits the corrected final draft to the AEMA.

Step 6: Within 30 days, the AEMA checks the corrected final draft and forwards it to FEMA for review of corrections.

Step 7: FEMA completes its second review within 45 days and if all comments were satisfactorily addressed in the corrected final draft of the plan, a letter stating that the plan is adoptable is mailed to AEMA and the county. In the cases where comments have not been addressed satisfactorily, the county again addresses the comments and repeats the process, thereby delaying the timeframe for approval and adoption.

Step 8: The Plan is then formally adopted by all participating jurisdictions within the county within a reasonable period that allows for local review, public participation, legal notices, public hearings, and governing body adoptions. The local adoption process should be completed within a 30 to 60-day timeframe.

Step 9: The Plan is officially approved. The timeframe from the county's submission of the initial draft plan to adoption of the final approved plan can take over 210 days to complete.

Throughout the development, review, and update process, AEMA serves as a liaison between FEMA and the local jurisdictions.

To further bolster planning collaboration between the state and local level, AARC is a member of the State Hazard Mitigation Team (SHMT). This provides coordinated planning efforts between AEMA, the SHMT, and the RPCs. The AARC and its Director serve as a conduit for the distribution of information in both directions (state to local and local to state), thus facilitating

an open dialog and the sharing of data and resources. This relationship has ultimately led to the smooth integration of local and state planning efforts.

The All-Hazards Task Force (AHTF) provided substantial technical assistance for completion of the initial local plans but dissolved in January 2010 following completion of the initial local planning efforts.[2]

As part of continued technical assistance provided to local governments developing hazard mitigation plan updates, on July 23rd and 24th, FEMA and AEMA conducted a Mitigation Planning Workshop held in Andalusia, AL. 22 people attended this training. On July 25th and 26th, FEMA and AEMA conducted a Mitigation Planning Workshop in Hanceville, AL. 38 people attended this training.

Funding for Local Hazard Mitigation Plans

As previously noted, AEMA distributed grant money to the RPCs, and local EMAs received funding to produce the initial county level hazard mitigation plans. The State provided funding assistance for development most county plans through three funding programs: Pre-Disaster Mitigation (PDM) Grants, Hazard Mitigation Grant Program 7 percent (HMGP) and Community Development Block Grants (CDBG). The funding breakdown follows as of August 31, 2012:

- 1 Plan funded through PDM Grants;
- 61 Plans funded through the HMGP; and
- 0 Plans funded through a combination of HMGP and CDBG funds.

These funding sources are also being used for local plan updates. AEMA continues to administer federal funding when available and works with counties to identify potential funding sources. Some counties have chosen to update their plan without a grant. HMGP funding was used for a majority of the plan updates. **Table 7.2-2** summarizes local funding status as counties update their plans.

Table 7.2-2
Summary of Status of Local Hazard Mitigation Plan Updates as of August 31, 2012

Alabama Association of Regional Councils		
Region	**Council Name/Counties**	**Status of Funding as of August 31, 2012**
1	**Northwest Alabama Council of Local Governments**	
	Colbert	DR-1971 HMGP planning grant approved (Regional Plan)
	Franklin	DR-1971 HMGP planning grant approved (Regional Plan)
	Lauderdale	1605-HMGP Funds Approved
	Marion	DR-1971 HMGP planning grant approved (Regional Plan)
	Winston	DR-1971 HMGP planning grant approved (Regional Plan)

[2] Previous version of this Plan document the specific technical assistance provided by the All-Hazards Task Force.

Table 7.2-2
Summary of Status of Local Hazard Mitigation Plan Updates as of August 31, 2012

Alabama Association of Regional Councils		
Region	**Council Name/Counties**	**Status of Funding as of August 31, 2012**
2	**West Alabama Planning and Development Council**	
	Bibb	1605-HMGP Funds Approved
	Fayette	1605-HMGP Funds Approved
	Greene	1605-HMGP Funds Approved
	Hale	1605-HMGP Funds Approved
	Lamar	1605-HMGP Funds Approved
	Pickens	1605-HMGP Funds Approved
	Tuscaloosa	1605-HMGP Funds Approved
3	**Birmingham Regional Planning Commission**	
	Blount	1789-HMGP Funding Approved
	Chilton	1605-HMGP Funds Approved
	Jefferson	1605-HMGP Funds Approved
	Shelby	PDM Funding Approved
	St. Clair	1605-HMGP Funds Approved
	Walker	1605-HMGP Funds Approved
4	**East Alabama Regional Planning and Development Commission**	
	Calhoun	1605-HMGP Funds Approved
	Chambers	DR1835/1836/1842 HMGP grant
	Cherokee	1605-HMGP Funds Approved
	Clay	1605-HMGP Funds Approved
	Cleburne	1605-HMGP Funds Approved
	Coosa	1605-HMGP Funds Approved
	Etowah	1605-HMGP Funds Approved
	Randolph	1605-HMGP Funds Approved
	Talladega	1605-HMGP Funds Approved
	Tallapoosa	1605-HMGP Funds Approved
5	**South Central Alabama Development Commission**	
	Bullock	Applied for DR-1866 HMGP Planning Grant (update due in 2013)
	Butler	1605-HMGP Funds Approved
	Crenshaw	1549-HMGP Funds Approved
	Lowndes	*No funding received for initial plan*
	Macon	1605-HMGP Funds Approved
	Pike	1797-HMGP Funding Approved
6	**Alabama-Tombigbee Regional Commission**	
	Choctaw	Applied for DR-1971 HMGP planning grant
	Clarke	1605-HMGP Funds Approved
	Conecuh	1605-HMGP Funds Approved
	Dallas	1605-HMGP Funds Approved
	Marengo	Applied for DR-1971 HMGP planning grant (update due in 2015)
	Monroe	Applied for DR-1866 HMGP planning grant
	Perry	1605-HMGP Funds Approved
	Sumter	1605-HMGP Funds Approved
	Washington	No Funding
	Wilcox	1605-HMGP Funds Approved

Table 7.2-2
Summary of Status of Local Hazard Mitigation Plan Updates as of August 31, 2012

Alabama Association of Regional Councils		
Region	**Council Name/Counties**	**Status of Funding as of August 31, 2012**
7	**Southeast Alabama Regional Planning and Development Council**	
	Barbour	1605-HMGP Funds Approved
	Coffee	Have not applied for plan update funds
	Covington	1605-HMGP Funds Approved
	Dale	Applied for DR-1835 HMGP planning grant
	Geneva	1605-HMGP Funds Approved
	Henry	1605-HMGP Funds Approved
	Houston	1605-HMGP Funds Approved
8	**South Alabama Regional Planning Commission**	
	Baldwin	1797-HMGP Funds Approved
	Escambia	1605-HMGP Funds Approved
	Mobile	1605-HMGP Funds Approved
9	**Central Alabama Regional Planning Development Commission**	
	Autauga	1549-HMGP Funds Approved
	Elmore	1605-HMGP Funds Approved
	Montgomery	1605-HMGP Funds Approved
10	**Lee-Russell Council of Governments**	
	Lee	1605-HMGP Funds Approved
	Russell	1605-HMGP Funds Approved
11	**North-Central Alabama Regional Council of Governments**	
	Cullman	1605-HMGP Funds Approved
	Lawrence	1605-HMGP Funds Approved
	Morgan	1789-HMGP Funds Approved
12	**Top of Alabama Regional Council of Governments**	
	DeKalb	1789-HMGP Funds Approved
	Jackson	1605-HMGP Funds Approved
	Limestone	1605-HMGP Funds Approved
	Madison	No Funding
	Marshall	1605-HMPG Funds Approved

7.3 Process for Reviewing, Coordinating and Linking the State and Local Plans

This section provides a description of the state's process and timeframe for reviewing, coordinating, and linking local plans to the state plan.

7.3.1 Review and Incorporation of Local Plan Information into the State Plan Update

This section explains the process used to link local plans to the state plan. In order to meet the local plan integration requirement, the risk assessment and mitigation strategies of local plans were reviewed to ensure consistency with the state plan.

When the initial State Plan was being composed, no local plans were finalized. As a result, an appropriate methodology was used to incorporate the few plans that were near completion. (A detailed description of that methodology can be found in the 2004 or 2007 version of this plan.)

For the 2007 update, 66 of the counties had reviewable plans, resulting in the development of a new review process to incorporate local plan information. This review process continues to be used for the 2013 update and is expected to be used for subsequent updates.

The review of local plans focuses on three main areas:

1. Hazard identification and profiles
2. Potential loss estimates
3. Mitigation strategies, goals, and actions

The purpose of this review is to cross-check the state hazard data with that of the local risk assessments. Further, the review ensures that the state's mitigation strategy is reflective of the local mitigation strategies. AEMA utilizes this opportunity to identify areas where local plans can be improved during the local plan updates.

Sixty-seven (67) plans were reviewed in 2010, all of which were updated plans except for one new plan. For the 2013 Update, only plans with changes (49 updated local plans) were reviewed. In future versions of this plan, the newly updated local plans will be incorporated into the state plan, focusing on the aforementioned areas of hazard identification, potential loss estimates, and mitigation strategy. The following describes the methodology used to review the local plans and a summary of the results.

Hazard Identification and Profiles

AEMA reviews the hazards identified in both the state and local plans to ensure that there is consistency between the documents. In 2007, AEMA refined the list of hazards to reflect those hazards commonly found in local plans and those hazards which affect the state.[3] For example, hazards that do not affect the state, such as volcanoes, were removed from the hazard identification list. This hazard list was also used to review local plans for the 2013 update. The hazard list is as follows[4]:

[3] A complete description of how these hazards were identified can be found in the 2007 version of this Plan.
[4] Sea level rise and coastal erosion were not addressed in any of the county plans so they are omitted from this list.

- Flood
- Tornado
- Windstorm / High Wind
- Hurricane / Coastal Storm
- Winter Storm
- Landslide
- Sinkhole and Land Subsidence
- Earthquake
- Drought
- Hail
- Wildfire
- Extreme Temperatures
- Lightning
- Dam Failure
- Tsunami

The 49 updated plans were reviewed for the 2013 plan update. All remaining plans are unchanged. The review of hazard identification and profiles is summarized below.

Table 7.3-1
Summary of Review of Local Hazard Identification and Profiles

COUNTY	FL	TOR	HW	HU	WS	LS	S&S	EQ	DR	HAIL	WF	ET	LT	DF	TS
Autauga*	●	●	●	●	●				●	●	●	●	●	●	
Baldwin*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Barbour*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Bibb	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Blount*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Bullock	●	●	●	●	●	●	●		●	●	●	●	●	●	
Butler*	●	●	●	●	●					●	●	●	●		
Calhoun*	●	●	●	●	●				●	●		●	●		
Chambers*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Cherokee*	●	●	●	●	●	●		●	●	●	●	●	●	●	
Chilton*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Choctaw	●	●	●	●	●	●		●	●	●	●	●	●	●	
Clarke	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Clay*	●	●	●	●	●				●	●		●	●		
Cleburne*	●	●	●	●	●				●			●			
Coffee*	●	●	●	●	●	●		●	●		●	●		●	
Colbert	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Conecuh*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Coosa*	●	●	●	●	●				●	●		●	●		
Covington*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Crenshaw	●	●	●	●	●	●		●	●	●	●	●	●	●	
Cullman*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Dale*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Dallas*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
DeKalb*	●	●	●	●	●	●	●	●	●	●		●	●		
Elmore*	●	●	●	●	●				●	●	●	●	●		
Escambia*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Etowah*	●	●	●	●	●				●	●		●	●		
Fayette	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Franklin	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Geneva*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Greene	●	●	●	●	●			●	●	●	●	●	●	●	
Hale	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Henry*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Houston*	●	●	●	●	●	●		●	●	●	●	●		●	

Table 7.3-1
Summary of Review of Local Hazard Identification and Profiles

COUNTY	FL	TOR	HW	HU	WS	LS	S&S	EQ	DR	HAIL	WF	ET	LT	DF	TS
Jackson*	●	●	●	●	●	●	●	●	●	●	●	●	●		
Jefferson*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Lamar	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Lauderdale*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Lawrence*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Lee*	●	●	●	●	●		●	●	●	●	●	●	●	●	
Limestone*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Lowndes	●	●	●	●			●		●	●	●		●		
Macon*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Madison*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Marengo*	●	●	●	●	●				●	●	●	●	●	●	
Marion	●	●	●	●	●	●		●	●	●	●	●	●	●	
Marshall	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Mobile*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Monroe*	●	●	●	●	●	●		●	●	●	●	●	●	●	
Montgomery*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Morgan*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Perry*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Pickens	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Pike*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Randolph*	●	●	●	●	●				●			●			
Russell*	●	●	●	●	●		●	●	●	●	●	●	●	●	
St. Clair*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Shelby*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Sumter*	●	●	●	●	●	●		●	●	●	●	●	●	●	
Talladega*	●	●	●	●	●				●	●		●	●		
Tallapoosa*	●	●	●	●	●				●	●		●	●		
Tuscaloosa	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Walker*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Washington*	●	●	●	●	●	●		●	●	●	●	●	●	●	
Wilcox	●	●	●	●	●		●		●	●	●	●	●	●	
Winston	●	●	●	●	●	●		●	●	●	●	●	●	●	
TOTALS	**67**	**67**	**67**	**67**	**66**	**50**	**44**	**52**	**66**	**64**	**58**	**66**	**63**	**54**	**4**

*This plan has been updated since the completion of the 2010 State Hazard Mitigation Plan and prior to August 31, 2012.
Notes: FL=Flood; TOR=Tornados, HW = High Wind and Windstorms; HU=Hurricane; WS=Winter Storms; LS=Landslides; S&S=Subsidence and Sinkholes; EQ=Earthquake; DR=Drought; HAIL=Hail; WF=Wildfire; ET=Extreme Temperatures; LT=Lighting; DF=Dam Failure; TS=Tsunamis

These results were also incorporated into **Section 5.2** (Overview of Type and Location of All Natural Hazards That Can Affect the State) of the Risk Assessment. Additional information on the jurisdiction risk can also be found in **Section 5**.

Potential Loss Estimates

AEMA conducted an initial review of the loss estimates contained in each local plan to identify common elements that could be extracted and incorporated into this plan update. The initial review, in 2007, indicated that the local plan developers used a wide range of methodologies to determine these potential loss estimates and were only able to include loss estimates for hazards for which there was ample historical data. Typically, these hazards were tornadoes,

flooding, high winds / windstorms, and hurricanes. Therefore, each plan was reviewed again to extract the potential annual loss estimates, or projected annual losses, for each of these hazards. For the 2010 Plan Update, a second review item, "Per Event Loss" was included to address the different methodologies found in local plans. The plans were reviewed again during the 2013 update, and, as additional plans are updated, this information will be completed, thus presenting a complete comparison across the state. The results of this review are summarized in **Table 7.3-2**. All figures were converted to dollar losses per year by the plan reviewers.

Table 7.3-2
Projected Loss Estimates from Available Local Plan Risk Assessments

County	Flood		Hurricane		Tornado		Winds	
	Annual Loss	Per Event Loss	Annual Loss	Per Event Loss	Annual Loss	Per Event Loss	Annual Loss	Per Event Loss
Autauga*	$846,000	$84,600,000	n/a		$88,023	$352,090	$1,209,353	$704,180
Baldwin*	$165,714	$41,429	$100,703,000	$143,861,429	$162,448	$107,068	$54,463†	$7,801†
Barbour*	$13,909	$38,250	673,000	$2,355,500	$65,091	$179,000	$2,701,341	$1,401,962
Bibb	$100,000	$9,200	$50,000	$127,668	$50,000	$28,750	$750,000	$13,147
Blount*	$41,333	$22,545	$7,121,520	$17,803,800	$155,914	$291,710	$21,037	$6,762
Bullock	$1,607	$22,500	n/a		$6,353	$24,000	$5,196	$291,000
Butler*	$14,134	$117,785	n/a		$21,261	$40,115	$14,546†	$12,649†
Calhoun*	$72,990	$115,857	$254,743	$821,750	$48,649	$115,830	$67,649†	$23,702†
Chambers*	$198,000	$19,800,000	$170,000	$850,000	$88,000	$293,333	$24,067†	$7,848†
Cherokee*	$26,625	$31,466	n/a		$57,625	$183,352	$36,861†	$18,431†
Chilton*	$6,154	$10,000	$670,000	$3,126,667	$81,946	$218,524	$2,067,537	$1,043,430
Choctaw	$96,000		n/a		$9,000		$101,250	
Clarke	$65,833	$37,832		$625,000	$112,052	$296,227	$11,382	$273,164
Clay*	$119,173	$145,333	$351,812	$1,641,791	$720,000	$1,500,000	$4,215,857†	$1,873,714†
Cleburne*	$30,060	$66,800	$144,429	$674,000	$31,172	$94,462	$47,167	$32,272
Coffee*	$10,752,500	$17,920,833	$416,154	$901,667	$4,556,407	$8,400,875	$52,306	$25,127
Colbert	$64,600	$109,250	n/a		$68,485	$91,320		$64,279
Conecuh*	$31,700	$35,222	n/a		$35,294	$81,818	$34,783	$21,918
Coosa*	$625	$6,250	$29,370	$94,741	$68,182	$272,727	$369,778	$336,909
Covington*	$641,700	$1,283,400	n/a		n/a		$2,972,475	$337,781
Crenshaw	$81,000		n/a		$73,000		$60,785	
Cullman*	$42,143	$20,345	$732,000	$2,562,000	$1,216,310	$1,137,839	$2,220,481	$452,804
Dale*	$356,800	$35,680,000	$1,926,000	$4,815,000	$779,661	$1,284,147	$31,385†	$9,772†
Dallas*	$17,455	$21,333	$965,000	$3,377,500	$310,750	$580,067	$2,244,611	$767,146
DeKalb*	$298,350	$523,421	n/a		$1,619,250	$4,762,500	$169,900	$44,759
Elmore*	$62,878	$133,783	$481,303	$6,016,288	$872,866	$3,009,881	$57,746	$160,405
Escambia*	$140,273	$77,150	$5,238,000	$10,476,000	$33,549	$77,773	$50,104	$23,350
Etowah*	$31,574	$47,125	$175,556	$819,260	$111,345	$258,941	$202,159	$50,810
Fayette	$200,000	$5,060	n/a	$5,903		$674,409		$36,721
Franklin	$8,462		$164,179		$12,509		$306,417	
Geneva*	$21,046,364	$46,302,000	$2,534,000	$5,912,667	$66,660	$252,357	$26,204	$15,106
Greene	$2,000		$1,000	$32,248	$1,000,000		$25,000	$9,009
Hale	$12,880	$12,880	$102,538	$256,346	$36,109	$40,122	100,280	$50,140
Henry*	$27,500	$91,667	n/a		n/a		$1,655,900	$551,967
Houston*	$1,062,500	$8,500,000	$24,000,000	$240,000,000	$330,000	$660,000	$1,040,000	$130,000†
Jackson*	$165,875	$331,750	n/a		$1,105,250	$2,908,553	$228,625	$26,897
Jefferson*	$9,771,100	$977,110,000	n/a^		$4,819,190	$3,583,500	$2,328,109†	$140,865†
Lamar	$28,000	$1,623	$50,000	$10,667	$400,000	$572,317	$25,000	$11,076
Lauderdale*	$231,400	$89,000	$150,000	$714,286	$11,689	$34,379	$$393,420†	$79,000†

County	Flood		Hurricane		Tornado		Winds	
	Annual Loss	Per Event Loss	Annual Loss	Per Event Loss	Annual Loss	Per Event Loss	Annual Loss	Per Event Loss
Lawrence*	$8,520	$4,484	$523,810	$3,666,667	$40,346	$80,692	$2,590,385†	$390,332†
Lee*	$488,000	$610,000	n/a^		$173,286	$485,200	$2,598,698	$859,569
Limestone*	$23,533	$8,609	$736,000	$2,760,000	$352,686	$545,061	$163,909	$34,507
Lowndes	$2,855		n/a		$11,231		$4,782	
Macon*	$2,160	$12,000	n/a		$15,563	$81,909	$7,567	$8,408
Madison*	$265,833	$212,666	n/a		$10,000,000	$5,000,000	$98,260	$25,093
Marengo*	$14,429	$10,100	n/a		$9,314	$51,583	$14,972	$5,500
Marion	$19,250	$13,667	n/a	$12,200,597	$898,920	$124,130	$216,576	$853,280
Marshall	$47,000	$24,619	$147,000		$472,307	$68,222	$180,138	$17,298
Mobile*	$4,451,700	$445,170,000	$190,435,000	$166,630,625	$94,052	$73,716	$297,173†	$27,995†
Monroe*	$4,300	$4,914	n/a		$74,000	$254,375	$108,000	$27,000
Montgomery*	$194,833	$83,500	$8,022,000	$28,077,000	$292,283	$407,658	$2,308,792	$579,934
Morgan*	$118,067	$39,356	$1,210,000	$4,537,500	$245,702	$437,656	$32,642	$7,178
Perry*	$10,750	$25,000	n/a		$253,290	$2,110,750	$2,788†	$3,282†
Pickens	$100,000	$144,900	$2,000	$618,058	$500,000	$39,189	$52,000	$19,686
Pike*	$16,818	$23,125	$1,090,000	$4,087,500	$87,759	$157,967	$5,519	$3,986
Randolph*	$89,531	$126,100	$286,991	$1,339,290	$222,145	$541,818	$55,689	$24,364
Russell*	$447,091	$702,571	n/a^		n/a		$2,912,763	$1,419,038
St. Clair*	$158,000	$96,555	$669,000	$2,341,500	$790,467	$1,226,586	$2,429,130	$702,767
Shelby*	$22,825,372	$66,193,579	n/a		n/a		$12,382,773	$3,779,158
Sumter*	$27,444	$18,868	n/a		$46,836	$224,813	$62,650†	$24,744†
Talladega*	$389,229	$457,916	$392,357	$1,373,250	$65,550	$95,000	$62,256	$18,148
Tallapoosa*	$6,675	$10,430	$113,429	$397,000	$12,220	$26,000	$30,553	$11,827
Tuscaloosa	$25,000	$14,183	$2,235	$970,525	$1,320,000	$783,189	$17,880	$36,287
Walker*	$78,273	$50,647	n/a^		$706,690	$976,190	$1,757,310	$582,857
Washington*	$11,330	$8,715	n/a^		$12,242	$24,484	$105,456†	$65,910†
Wilcox	$2,700	$3857	n/a			$256,167		$22,644
Winston	$36,667	$16,375	n/a		$336,308	$234,304	$22,824	$1,058,981

*This Plan has been updated since the completion of the 2010 State Hazard Mitigation Plan and prior to August 31, 2012.
†These values represent severe storm events (including wind, hail, and lightning).
^Data provided in the local plan includes statewide and/or regional hurricane loss estimates; county-level data was not available.
Note: n/a indicates that information was not available in the local plans and should not be taken to mean that that the jurisdiction is not vulnerable to the hazard.

These results were also incorporated into **Section 5.5** (Vulnerability Assessment and Loss Estimation) of this plan update.

Mitigation Goals and Actions

The final part of the local plan review involved reviewing the local mitigation strategy including goals and actions. Each of the local plans were reviewed to determine if the actions in the local plan met the goals as defined in the State Plan and, conversely, to determine if the State hazard mitigation goals were reflective of local goals, objectives, and actions. The State hazard mitigation goals (see **Section 6.3**) are as follows:

Goal 1 – Enhance the comprehensive statewide hazard mitigation system.
Goal 2 – Reduce the State of Alabama's vulnerability to natural hazards.
Goal 3 – Reduce vulnerability of new and future development.
Goal 4 – Foster public support and acceptance of hazard mitigation.
Goal 5 – Expand and promote interagency hazard mitigation cooperation.

Table 7.3-3 below summarizes the results of this review.

COUNTY	GOAL 1	GOAL 2	GOAL 3	GOAL 4	GOAL 5
Autauga*	●	●	●	●	●
Baldwin*	●	●	●	●	●
Barbour*	●	●	●	●	
Bibb	●	●			
Blount*	●	●	●	●	
Bullock	●	●	●	●	●
Butler*	●	●	●	●	●
Calhoun*	●	●		●	
Chambers*	●	●	●	●	●
Cherokee*	●	●	●	●	
Chilton*	●	●	●	●	
Choctaw	●	●	●	●	
Clarke	●	●		●	
Clay*	●	●	●		●
Cleburne*	●	●		●	
Coffee*	●	●	●	●	
Colbert	●	●	●	●	●
Conecuh*	●	●	●	●	
Coosa*	●	●		●	
Covington*	●	●		●	●
Crenshaw	●	●	●	●	
Cullman*	●	●	●	●	
Dale*	●	●	●	●	●
Dallas*	●	●	●	●	
DeKalb*	●	●	●	●	●
Elmore*	●	●	●	●	●
Escambia*	●	●	●	●	
Etowah*	●	●		●	
Fayette	●	●		●	
Franklin	●	●	●	●	●
Geneva*	●	●	●	●	
Greene	●	●		●	
Hale	●	●		●	
Henry*	●	●	●		●
Houston*	●	●	●		
Jackson*	●	●	●	●	●
Jefferson*	●	●	●	●	●
Lamar	●	●		●	
Lauderdale*	●	●	●	●	●
Lawrence*	●	●	●	●	●
Lee*	●	●	●	●	●
Limestone*	●	●	●	●	
Lowndes	●	●	●	●	●
Macon*	●	●	●	●	●
Madison*	●	●	●	●	
Marengo*	●	●	●	●	
Marion	●	●	●	●	●
Marshall	●	●	●	●	●
Mobile*	●	●	●	●	●
Monroe*	●	●	●	●	

COUNTY	GOAL 1	GOAL 2	GOAL 3	GOAL 4	GOAL 5
Montgomery*	●	●	●	●	
Morgan*	●	●	●	●	
Perry*	●	●	●	●	●
Pickens	●	●		●	
Pike*	●	●	●	●	
Randolph*	●	●		●	
Russell*	●	●	●	●	●
St. Clair*	●	●	●	●	
Shelby*	●	●	●	●	●
Sumter*	●	●	●	●	●
Talladega*	●	●		●	
Tallapoosa*	●	●		●	
Tuscaloosa	●	●		●	
Walker*	●	●	●	●	●
Washington*	●	●	●	●	
Wilcox	●	●		●	
Winston	●	●	●	●	●

*This Plan was updated since the completion of the 2010 State Hazard Mitigation Plan and prior to August 31, 2012.

This review demonstrated the local mitigation goals, objectives, and actions are consistent with the State mitigation goals; and, conversely, that the State hazard mitigation goals are reflective of the local goal, objectives, and actions.

7.3.2 Future Local Plan Review and Incorporation

The review and incorporation of local plan information has resulted in this plan being reflective of local hazards risks, loss estimates, and goals. However, these elements evolve over time, given that the Disaster Mitigation Act of 2000 and the FR require local plans to be updated every five years.

As a result, future state plan updates, which will be performed on a three-year cycle, will continue to incorporate the latest information regarding local risk assessment and mitigation strategy. At this time, it is assumed that the aforementioned review process will be for subsequent versions of this plan unless it is deemed insufficient.

7.4 Criteria for Prioritizing Jurisdictions to Receive Funds under Existing Programs

Background

> FR subsection 201.4(c) (4) (iii) states that the State Hazard Mitigation Plan must include "criteria for prioritizing communities and local jurisdictions that would receive planning and project grants under available funding programs, which should include consideration for communities with the highest risk, repetitive loss properties, and most intense development pressures. Further, that for non-planning grants, a principal criterion for prioritizing grants shall be the extent to which benefits are maximized according to a cost benefit review of proposed projects and their associated costs."

As part of the plan update requirements, this approach was evaluated and found to be valid. The sub-sections below discuss these four criteria. Note that **Section 6.8.3** of the plan includes additional discussion of how the State intends to prioritize potential mitigation projects.

Applicants must demonstrate that their risk is sufficient to merit grant funds, particularly when compared to the project cost, but there is often considerable uncertainty in risk determinations. For this and other reasons, the State considers a variety of factors in addition to risk and benefit-cost (BC) analysis in determining its priorities for mitigation grants.

There was no official grant evaluation process in Alabama prior to 2005. In 2005, following the State's HMGP allocation under Hurricane Katrina (Federal Disaster Declaration 1605), AEMA developed a process. Relevant criteria such as jurisdictions with highest risk and benefit cost analysis were considered and the specific process can be found in previous versions of the plan. However, until the DR-1971 April Tornadoes event, the state had not been faced with a situation where the amount of money requested exceeded that received. As a result, the process was revised and is referred to as the Hazard Mitigation Grant Program Implementation Process. This process is a three phase process, detailed below. However, the distribution of funds of still very fluid and is still being revised.

Essentially, AEMA reviews projects and considered items, including 7.4.1 – 7.4.5 below, in order to make recommendations to the Governor. The Governor has the ultimate discretion on which counties receive funding and how much they receive. For DR-1971, dollars were allocated based on a percentage of Individual Assistance claims filed in each county. The following disaster, Hurricane Isaac (DR-4080), did not result in any Individual Awareness so the process for fund distribution is still to be determined. For hazard mitigation plan development grants specifically, AEMA is requesting a grant from DR-1971 and will divide the funds among the counties who request it. Those counties whose plans expire first are given the highest priority.

Specific details of the three phase Hazard Mitigation Grant Program Implementation Process and items considered in the review are presented below.

<u>Phase I – HMGP Funds Allocation/Application Submittal</u>

- Disaster Declaration
- Perform HMGP briefings in conjunction with PA applicant briefings to announce availability of HMGP - general program overview

- 30 day:
    - Initial Estimate for HMGP received
    - State establishes initial procedure for funds allocation
- 90 day:
    - FEMA issues 90 day lock-in for HMGP funding amount (can increase/decrease)
    - State finalizes the funding projections and issues NOFA to County EMA Office, with instructions to convene Local Hazard Mitigation Planning Committee to complete LOI by established deadline
    - LOI deadline set for 30 days from NOFA receipt
        - **Must be coordinated and prioritized through local mitigation planning committee and signed by County EMA Director and all affected applicants**
    - State schedules application workshops
- 180 day:
    - Full application deadline

Phase II – Project Reviews and Submittals

- Applications completed by the requesting jurisdiction (city, county, agency) are sent to the county EMA
- County EMA keeps a copy and sends original to AEMA by deadline
- AEMA planners will review and address any correspondence to the listed POC (and copy the county EMA director and AEMA field coordinator)
- In the event of lack of communication with the applicant, planner will speak with the county EMA director

Phase III – Project Approval/Implementation Procedures

- Upon FEMA approval, an approval package will be mailed to sub-grantee
- State-Subgrantee Agreement executed and returned to State
- Kick-off meeting held with AEMA, Sub-grantee, and County to discuss implementation and close-out procedures

During Phase II, the state reviews projects for a variety of factors. This includes jurisdictions with highest risk, repetitive loss properties and development pressures.

7.4.1 Jurisdictions with Highest Risk

One of the primary purposes of this Plan is to identify the areas within Alabama with the highest risk of damage from natural hazards. As described in detail in the Risk Assessment (**Section 5**), a well-defined group of counties, mostly those with the greatest populations and numbers of structures (especially critical facilities), and those close to the Gulf coastline, are at the greatest risk.

Although the State does not have a formal system established to evaluate and prioritize potential mitigation projects on the basis of risk, this plan update is partly intended to identify those jurisdictions with the greatest risk. In general, the State will continue to direct mitigation grant funds to the areas with the highest risk. However, in many cases, more localized risk assessments (often produced in the local mitigation planning process), as well as risk

assessments and BC analyses done in support of applications, could demonstrate many cases of high vulnerability outside the higher-risk counties identified in this plan.

Most successful mitigation projects are products of both risk and the effectiveness of a project in mitigating that risk. Although risk is clearly a good initial indicator of mitigation potential, the State will also carefully consider the cost effectiveness and the potential beneficial impacts of projects in determining funding priorities.

7.4.2 Repetitive Loss Properties

Although the Flood Mitigation Assistance (FMA), Severe Repetitive Loss (SLR), and Repetitive Flood Claims (RFC) programs emphasize repetitive loss properties, FEMA currently has no formal requirement that grants funded through the HMGP or PDM address repetitive losses. However, in response to the Federal emphasis on reducing the burden of repetitive losses on the NFIP, the State presently considers the repetitive loss status of properties in determining the grants it will support (i.e. forward to FEMA for consideration and funding). As discussed earlier in this section, Alabama intends to seek Enhanced Plan status and, in so doing, develop a more rigorous process for evaluating grant proposals. As part of that effort, the State will incorporate repetitive loss status into its grant evaluation criteria. The FMA program and the new SLR and RFC programs mandate that grant funds be directed to NFIP repetitive loss properties, and the State will continue to comply with this requirement, as it has since the inception of the FMA program.

The National Flood Insurance Reform Act (NFIRA) of 2004 was signed into law by the President on June 30, 2004. NFIRA reforms the NFIP to create a disincentive to property owners to live in repetitively flooded areas. Rather than continue to rebuild, the program would provide repeatedly flooded homeowners assistance in either elevating or moving their homes away from flood waters. The Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12) requires the NFIP to reduce subsidies provided to pre-Flood Insurance Rate Maps structures over time, further incentivizing the need to mitigation structures. Those who refuse mitigation assistance would incur the long term losses associated with living in high risk areas.

7.4.3 Most Intense Development Pressure

Development pressure is clearly a potential factor in any risk determination, however, development undertaken in accordance with effective comprehensive planning and plan implementation tools, such as building codes, zoning ordinances, subdivision regulations, floodplain management ordinances, and capital improvements programming should in many cases be less risky than existing developed areas. The State recognizes that increased development does cause new population settlements, construction of new buildings, and expansion of infrastructure. These development pressures could increase exposure of population, buildings, and infrastructure to the risks of natural hazards. Although development and growth are in themselves not risks, local mitigation planning fully integrated into a community's comprehensive planning and regulatory program can reduce exposure of new development to natural hazards risks. A community's planning responses to manage growth and development is essential to effective local mitigation, and these factors are carefully considered by the State in its project review process.

7.4.4 Maximizing Benefits According to Benefit-Cost Review of Local Projects

The regulations that apply to all FEMA mitigation grant programs require all mitigation projects to be cost effective. Under some pre-established conditions, certain projects may be exempt from this regulation, but in most cases projects are provided a benefit-cost analysis either prior to submission to AEMA and FEMA for funding consideration, or during the grant evaluation process. The PDM program, instituted in 2003/04, further emphasizes the role of cost effectiveness by making the benefit-cost ratio the single most important criterion in project rating and evaluation.

For the Hazard Mitigation Assistance grant programs (HMGP, PDM, FMA, SRL, and RFC), the regulations require only that proposed mitigation projects are cost-effective, not that they are the most cost-effective of projects that the State or FEMA is considering. In most cases, grant applications are either accompanied by a BC analysis, or AEMA or FEMA perform one in accordance with FEMA and OMB regulations. Projects that do not achieve the required 1.0 BC ratio and are not exempt from BC analysis are rejected from funding consideration. This is the case for all FEMA mitigation grant programs.

7.4.5 Prioritization of Communities to Receive Planning Grants

For hazard mitigation plan development grants specifically, the current process is for AEMA to request and divide the funds among the counties who request it, thus serving as the grantee and sub-grantee. Those counties whose plan expires first are given the highest priority for funds.

For project grant funding, the process is fluid following DR-1971. The Governor has the ultimate discretion on which counties receive funding and how much they receive. For DR-1971, the Governor considered recommendations made by AEMA based on the criteria above, as well as the amount of Individual Assistance claims filed in each county. Funding was allocated as a percentage of Individual Assistance claims by county. The following disaster, Hurricane Isaac (DR-4080), did not result in any Individual Awareness so the process for fund distribution is still to be determined.
These criteria consider the most important factors for determining the expenditure of limited funds to most effectively help communities improve their mitigation planning activities.

Section 8 – Plan Maintenance

This section of the Plan addresses requirements of Final Rule (FR) Section 201.4 (c) (5) and (d). A copy of the FR is provided for reference in **Appendix B** of this document.

Contents of this Section

8.1 Final Rule Requirements for Plan Maintenance Process
8.2 Method for Monitoring, Evaluating and Updating the Plan
8.3 System for Monitoring Mitigation Measures and Project Closeouts
8.4 System for Reviewing Progress on Achieving Goals
8.5 System for Reviewing Progress on Activities and Projects in the State Mitigation Strategy

Section	What has been updated?
8.1	• References to Interim Final Rule revised to reflect Final Rule.
8.2	• This section was revised to reflect lessons learned regarding the plan maintenance and update process in the last three years. In addition, the method for tracking mitigation actions was revised.
8.3	• This section was not changed as part of the plan update process.
8.4	• This section was not changed as part of the plan update process.
8.5	• This section has been revised to reflect the changes in the process to track mitigation actions as described in **Section 8.2**.

8.1 Final Rule Requirements for Plan Maintenance Process

The Final Rule (FR) Subsection 201.4 [c] [5] requires the State Hazard Mitigation Plan to include a section that describes the Plan Maintenance Process.

> "(The State Hazard Mitigation Plan shall include a) section on the A *Plan Maintenance Process* that includes:
>
> (i) An established method and schedule for monitoring, evaluating and updating the plan.
>
> (ii) A system for monitoring implementation of mitigation measures and project closeouts.
>
> (iii) A system for reviewing progress on achieving goals as well as activities and projects identified in the mitigation strategy."

The FR Subsection 201.4[d] requires the State Hazard Mitigation Plan to be revised and updated every three years.

> "The Plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities and resubmitted for approval to the appropriate Regional Director every three years. The Regional review will be completed within 45 days after receipt from the State, whenever possible. We also encourage a State to review its plan in the post-disaster timeframe to reflect changing priorities, but it is not required."

8.2 Method for Monitoring, Evaluating and Updating the Plan

8.2.1 Background

As directed by Executive Order No. 19, the Alabama Emergency Management Agency (AEMA) is responsible for maintaining the State Hazard Mitigation Plan, including all monitoring, evaluation, and update activities.

As part of the 2013 plan update process, AEMA reviewed the strategy detailed in the previous plan versions for monitoring, evaluating, and updating the plan and compared it to the plan maintenance activities that actually occurred since plan adoption. It has been modified over the years to best meet the State and SHMT needs. Beginning in 2007, the plan update called for AEMA to conduct an annual review of the plan and provide a summary of this review to the SHMT indicating whether or not an update was warranted. For 2010 plan update, this process remained but was adjusted to only
provide a summary of the review to the SHMT if a change is warranted. In addition, the SHMT will only be reconvened if an update to the state plan is warranted or after a major disaster. If an update is warranted, it will be AEMA's discretion to determine if it is necessary to reconvene the entire team. Further, AEMA is committed to tracking mitigation action progress for the next plan update.

During the 2013 plan update process, these procedures were reviewed. It was found that the process was working and the SHMT met following the April 2011 tornadoes.

This section of the plan describes how plan maintenance activities will be accomplished.

8.2.2 Method for Monitoring the Plan

Regular plan monitoring will be achieved through AEMA's efforts to track mitigation activities. These activities are described in **Sections 8.3** through **8.5** below.

8.2.3 System for Evaluating the Plan

AEMA will conduct an annual evaluation of the plan, generally in the month of April. The evaluation will consider several basic factors including:

1. Changes in the level of risk to the State and its citizens.
2. Changes in laws, policies, or regulations at the State or local levels.
3. Changes in State agencies or their procedures that will affect how mitigation programs or funds are administered.
4. Significant changes in funding sources or capabilities.
5. Changes in the composition of the State Hazard Mitigation Team.
6. Progress on mitigation actions (including project closeouts) and new mitigation actions that the State is considering.
7. Major changes to local or multi-jurisdictional hazard mitigation plans.

In regards to tracking mitigation actions, AEMA will email SHMT members each year, at a minimum, to determine if there are any changes in status for the mitigation actions. The SHMT will also be encouraged to submit new mitigation actions. If an agency reports changes or submits a new action, AEMA will be responsible for incorporating those changes into the state plan.

Additionally, as described separately in **Section 7.2**, AEMA will contact the Regional Planning Councils and local Emergency Management Agency (EMA) Directors (or other individuals and organizations as appropriate) to determine if updates have been made to certain elements of the local plans as part of the annual review process. The purpose of this effort is to ensure that local information about risk, goals, projects, and mitigation strategies included in the State Plan remains current.

If any party indicates that an update is warranted, then AEMA, in conjunction with the SHMT, will initiate the plan update process.

To further involve the SMHT in the ongoing mitigation planning process, the SHMT will be invited to attend AEMA's applicant briefing following a disaster. The SHMT will also be informed about disaster events via email. AEMA continues to advise agencies on how to incorporate mitigation into their planning efforts. Further, AEMA maintains weekly contact with several member of the SHMT including ADECA-OWR, ADEM, and the state's NFIP administrators. This ongoing communication and relationship will facilitate information sharing between agencies regarding mitigation activities.

8.2.4 System for Updating the Plan

The plan will be updated and re-submitted to FEMA for re-approval every three years, as required by law. The plan may also be subject to interim updates if any of the following conditions apply:

1. At the request of the Governor;
2. When significant new risks or vulnerabilities are identified; or
3. If the findings of the annual / post-disaster review and evaluation warrant.

The two sub-paragraphs below describe the procedures for interim and three-year updates, respectively.

Updates Resulting from Interim Evaluations

The nature of plan updates will be determined by the evaluation process described above. In general, AEMA will notify the SHMT that the Agency is initiating an interim plan update, and describe the circumstances that created the need for the update. AEMA will determine if the full SHMT should be consulted regarding the potential changes. If it is determined that the SHMT should be involved, the nature of the involvement will be at the discretion of AEMA.

When interim updates are completed, AEMA will advise all SHMT members that the plan has been updated, and describe the nature of the update.

Updates Related to the Required Three-year Plan Review (by FEMA)

As required by law, every three years the plan will be updated for re-submission and re-approval by FEMA. In those years, the evaluation process will be substantially more rigorous, and will examine all aspects of the plan in detail. It is anticipated that several meetings of the SHMT will be required, and that the plan will be formally readopted by the State. Between 6 and 12 months prior to the update deadline, AEMA will initiate the plan update process by contacting SHMT members and other appropriate agencies and organizations to determine a schedule and process for updating the plan.

The update process will entail a detailed and structured re-examination of all aspects of the original plan, followed by recommended updates. The recommendations will be presented to the SHMT for consideration and approval. It is expected that the Director of AEMA will re-approval the plan and adopt it on behalf of the Governor.

8.3 System for Monitoring Mitigation Measures and Project Closeouts

As described in the HMGP Administrative Plan, AEMA uses the following system for monitoring mitigation measures and project closeouts. AEMA reviewed this system as part of the 2010 plan update and determined that it is still effective and was still the proffered method for monitoring mitigation measures and project closeouts. Therefore, no changes have been made to the system.

8.3.1 Monitoring Mitigation Measures

Mitigation projects are generally monitored as follows.

- Each mitigation project or activity (such as planning) has an established period of performance that AEMA and FEMA monitor throughout the development and execution of the activity.
- AEMA conducts kick-off meetings for newly approved grants in cases where the sub-grantee does not have much grant administration experience, or upon request, to discuss grant administration procedures and process to request reimbursement
- AEMA regularly meets with representatives from FEMA Region IV to coordinate project monitoring activities.
- Every calendar quarter, AEMA sends letters to all subgrantees with open projects (i.e. ones that have been funded but are not completed), requesting a project progress update.
- Each of the subgrantees responds to AEMA request by preparing a standard report that details progress on individual mitigation projects, and indicates percent complete.
- AEMA performs quarterly site visits on all open mitigation projects.
- AEMA compiles the subgrantee progress reports, and produces a consolidated quarterly report that is sent to FEMA Region IV for review.

8.3.2 Monitoring Project Closeouts

Mitigation project closeouts occur in the following sequence. These procedures were established in accordance with FEMA HMGP guidelines as set out in the HMGP Desk Reference and the State of Alabama HMGP Administrative Plan.

- Subgrantee indicates in a quarterly project progress report that a mitigation project is 100 percent complete.
- AEMA reconciles FEMA SmartLink account for the project (by disaster).
- AEMA initiates an internal financial audit of the project.
- AEMA resolves any issues discovered in the audit.
- AEMA sends FEMA Region IV a closeout letter that delineates the final eligible cost of the project, and delineates any de-obligations that are required, as well as any monies that will be recovered from the subgrantee.

8.4 System for Reviewing Progress on Achieving Goals

In order to track progress on achieving the goals identified in this plan, AEMA will ensure that both the annual and three-year plan evaluations include a review and analysis of the goals, and the various actions that are intended to achieve them. This process will be substantially more rigorous and detailed during the formal plan update process. **Section 6** of the plan describes six hazard mitigation goals, and includes a detailed table that lists various strategies and actions that the State is undertaking or considering to address the goals. As part of this plan update, this table has been modified to include a column indicating the status of the various actions and a general indication of progress.

The system for reviewing progress on achieving goals will remain the same as it has proved successful over the last three years.

8.5 System for Reviewing Progress on Activities and Projects in the State Mitigation Strategy

As part of the annual evaluation, AEMA will email the SHMT to determine if there are any changes to the mitigation actions listed in the mitigation strategy section. In addition, members of the SHMT will be encouraged submit new actions at this time.

As part of the three-year update to the plan, AEMA will initiate a more detailed review and evaluation of all activities and projects noted in the mitigation strategy. AEMA will report its findings to the SHMT at meetings held as part of the plan update process. The results of these findings will be included in the table of mitigation goals and actions included in **Section 6**. If requested by FEMA, AEMA will prepare a summary report describing the results of the review.

Section 9 - Enhanced Plan Elements

AEMA is in the process of developing the Enhanced Plan Section for submission in January 2014.

This section of the Plan will be developed following FEMA approval of the basic plan.

Contents of this Section

9.1 Alabama Enhanced State Hazard Mitigation Plan Compliance with Standard State Plan Requirements
9.2 Alabama Enhanced State Hazard Mitigation Plan Integration with Other Planning Initiatives
9.3 Alabama Enhanced State Hazard Mitigation Plan Project Implementation Capability
9.4 Alabama Enhanced State Hazard Mitigation Plan Program Management Capability
9.5. Alabama Enhanced State Hazard Mitigation Plan Assessment of Mitigation Actions
9.6 Alabama Enhanced State Hazard Mitigation Plan Effective Use of Available Mitigation Funding
9.7 Alabama Enhanced State Hazard Mitigation Plan Commitment to a Comprehensive Mitigation Program

After adoption of the initial Plan in 2004, AEMA began taking steps to achieve enhanced plan status. However, due to a series of catastrophic natural disasters that occurred, AEMA and the State of Alabama shifted their priorities towards response and recovery. After the 2007 plan update was completed, AEMA resumed this effort and is submitting the enhanced plan elements as part of the 2010 update.

9.1 Alabama Enhanced State Hazard Mitigation Plan Compliance with Standard State Plan Requirements

Requirement §201.5(b): *Enhanced State Mitigation Plans must include all elements of the Standard State Mitigation Plan identified in 44 CFR 201.4.*

9.1.1 Introduction

On October 19, 2007, the Federal Emergency Management Agency approved Alabama's State Hazard Mitigation Plan update. The current State Hazard Mitigation Plan received "satisfactory" scores for all the required elements. The State is submitting the Enhanced Plan section as part of the 2010 plan update.

9.2 Alabama Enhanced State Hazard Mitigation Plan Integration with Other Planning Initiatives

Requirement §201(5)(b)(1): *Demonstrate that the plan is integrated to the extent practicable with other State and/or regional planning initiatives (comprehensive, growth management, economic development, capital improvement, and/or emergency management plans) and FEMA mitigation programs and initiatives that provide guidance to state and regional agencies.*

9.2.1 Introduction

Alabama has integrated its mitigation activities into other state, regional, and FEMA initiatives, as described in detail in **Sections 4**, **6**, and **7** of the State Hazard Mitigation Plan Update (HMP). This section of the Enhanced Plan demonstrates hazard mitigation planning efforts are integrated across a wide spectrum of regional and State authorities. From partnerships with smart growth and economic development initiatives to programs arising from the agencies represented on the State Hazard Mitigation Team (SHMT), mitigation planning strategies are an inherent aspect of Alabama's continuing efforts to reduce risk to its population and infrastructure.

9.2.2 Strategy to Promote Hazard Mitigation Integration to Other Planning Initiatives

In order to continue integrating hazard mitigation into various planning initiatives, the Director of AEMA, who is also a member of the SHMT, will promote hazard mitigation at state level meetings. The Director of AEMA attends various state level meetings including weekly cabinet meetings held by the governor. Attendees at these meetings include leaders from a variety of state agencies, thus promoting coordination and integration across the State of Alabama. At future meetings, the AEMA Director will stress the importance of integrating mitigation into state planning initiatives as part of the state's enhanced plan requirements. These meetings will assist AEMA in staying informed about state level plan development and updates, presenting an opportunity for hazard mitigation integration.

The Director will pass any knowledge of state level planning efforts on to AEMA's Hazard Mitigation Branch, which will contact these agencies. AEMA will meet with these agencies to discuss opportunities where hazard mitigation could be integrated.

In addition, AEMA will contact the SHMT annually, at a minimum, to determine if members of the SHMT are aware of any planning initiatives where hazard mitigation could be integrated. This request will be part of the annual monitoring process detailed in **Section 8**. Again, if there are any new planning initiatives, AEMA will contact these agencies to begin the integration process.

To date, AEMA has integrated hazard mitigation into several state planning initiatives across various agencies including the Alabama Department of Economic and Community Affairs (ADECA), the Alabama Department of Conservation and Natural Resources (ADCNR), and the Regional Planning Councils (RPCs). These efforts and several others are described below.

9.2.3 Mitigation Planning Initiatives

This section describes the mitigation planning initiatives that were in place and under development in Alabama at the time the initial version of the State Enhanced Hazard Mitigation Plan was developed for the 2013 plan update.

9.2.3.1 State Hazard Mitigation Plan

Alabama developed its initial State Hazard Mitigation Plan (State HMP) in 2004, and subsequently updated the document in 2007, 2010, and 2013. The HMP document describes the functions and integration of various mitigation-related programs in the State.

9.2.3.2 Alabama Drought Management Plan

The Alabama Department of Economic and Community Affairs, Office of Water Resources (ADECA-OWR) developed an Alabama Drought Management Plan in April 2004. The purpose of the Drought Management Plan is four-fold: (1) minimize the impact of drought; (2) develop identifying methodology; (3) develop action plans to be used during a drought, and; (4) reduce the risk of drought disasters. The plan outlines both long-term and short-term measures to be used to mitigate the effects of drought and to respond to drought conditions. In order to accomplish these goals, the plan:

- Defines a process to address drought and drought-related activities, such as monitoring, vulnerability assessment, mitigation, impact assessment, and response;
- Identifies short-term and long-term activities that can be implemented to reduce and prevent drought impacts;
- Identifies local, state, federal, and private sector entities that are involved with state drought management and defines their responsibilities; and
- Acts as a catalyst for creation and implementation of local drought and response efforts.

The results and strategies of the Drought Management Plan are incorporated into the existing State Hazard Mitigation Plan Update Risk Assessment in **Section 6**.

In addition, on June 24, 2011, Governor Bentley issued Executive Order 19 on Drought Planning and Management. This order streamlines the organizational structure of drought planning at the state level. It also formally tasks ADECA's Office of Water Resources, in several areas, to support Alabama's drought planning and response efforts. The state maintains a Drought Assessment and Planning Team (ADAPT), comprised of representatives from state and federal agencies including the AEMA Director, ADECA-OWR, USDA, Alabama Forestry Commission, and Governor appointees.

9.2.3.3 Alabama Coastal Area Management Plan

The Alabama Coastal Area Management Program (ACAMP) is designed to promote a sustainable economy in coastal areas, while balancing preservation, conservation, enhancement and development of coastal resources. The Alabama Department of Conservation and Natural Resources (ADCNR), State Land Division, Coastal Section administers the ACAMP. ADCNR currently participates in the SHMT due to the importance of natural hazard mitigation within the program. Planning efforts are coordinated with ADCNR through discussions of planning activities and plans with key staff, review of the ACAMP, and review of the Alabama Coastal Impact Assistance Program (CIAP.)

9.2.3.4 Alabama Coastal Impact Assistance Program

The Alabama Coastal Impact Assistance Program (CIAP) was completed in June 2001. Congress authorized the Program in October 2000, pursuant to the H.R. 5548-2001 Amendment to the Outer Continental Shelf Lands Act. The CIAP was passed to assist coastal states with mitigating environmental impacts, related directly or indirectly, to Outer Continental Shelf oil and gas production. The Alabama Department of Conservation and Natural Resources (ADCNR), Coastal Section entered into a contract with the South Alabama Regional Planning Commission (SARPC) to assist with the development of the plan and to work with the two county governments in the development of their plans. AEMA is currently working with the ADCNR, Coastal Section and the SARPC to identify mitigation opportunities.

9.2.3.5 Homeowners Handbook to Prepare for Natural Hazards

The *Alabama Homeowners Handbook to Prepare for Natural Hazards* was created by the Gulf of Mexico Alliance Coastal Community Resilience Team (including ADCNR Coastal Section as well as other federal, state, and local agencies). It was completed in 2011. The handbook was funded through a Sea Grant and is being modeled off of the University of Hawaii's version of a similar document. The purpose of the handbook is to reduce the risk of natural hazards on people and property. It will provide homeowners with basic guidance on how to prepare for hazards including tornadoes, hurricanes, and floods. The Coastal Section worked directly with AEMA to include mitigation measures and guidance from the Alabama Hazard Mitigation Plan into their handbook. A copy of the Handbook can be found at: http://al.stormsmart.org/handbook/.

9.2.3.6 Alabama Emergency Operations Plan Assessment

Alabama achieved accreditation for its Emergency Operations Plan (EOP) under the Emergency Management Accreditation Program (EMAP) in 2004 and 2008. EMAP is a voluntary accreditation process for state and local government programs that coordinate preparedness and response activities for disasters. It recognizes the ability of state and local

governments to bring together personnel, resources and communications from a variety of agencies in preparation for and in response to an emergency. Further, it requires that the state's emergency management program strategy is based on the results of an all-hazard identification, risk assessment, and impact analysis as found in the Alabama State Hazard Mitigation plan.

Beginning in 2012, the State transitioned from EMAP to an EOP assessment through FEMA's Plan Analysis Tool (PAST). FEMA requires assessment of the State's Emergency Operations Plan using the PAST for states to receive Emergency Management Performance Grant money. (AEMA completed this assessment in 2012.)

As part of this new initiative, AEMA intends to conduct annual updates to the EOP. The next revision of the State's EOP is anticipated to incorporate concepts/elements of the National Frameworks and associated Response Support Functions. This includes the National Disaster Recovery Framework, National Response Framework, and the other three Frameworks (Prevention, Protection, and Mitigation) as they become available.

9.2.3.7 Forestry Resources Handbook

The Alabama Forestry Commission (AFC) is incorporating mitigation elements into its Forestry Resources Handbook. The AFC partnered with several agencies, including AEMA, to complete the handbook. AEMA provided hazard mitigation expertise throughout the development including information from the State Hazard Mitigation Risk Assessment to incorporate into the handbook. AEMA was present during the AFC's strategy development process when the AFC and partnering agencies identified 9 threats, one of which was storms (catastrophic events, floods, hurricanes, etc). AEMA provided mitigation guidance on this section. Mitigation was made a priority for both urban and rural settings. In urban setting mitigation priorities were to remove debris and incorporate lessons learned from previous plans. In rural settings, mitigation priorities included developing community wildfire mitigation plans and incorporating scalability.

9.2.3.8 Disaster Recovery Program and Fund

The Alabama Disaster Recovery Program and Fund was authorized in 2009. This Fund has not yet been funded, but may be funded by the legislature through state general fund revenues, federal monies, or any other source with the exception of insurance policy surcharges. Mitigation is a large part of this legislation given that an approved mitigation plan is required for a community to receive post-disaster money. All local mitigation plans are consistent with the state plan. AEMA will be responsible for administering the program and funds.

9.2.3.9 AEMA Risk Assessment Mapping Tool

The Risk Assessment Mapping Tool was completed by AEMA's IT Development Team and unveiled for public use on AEMA's website in Spring 2009. Prior to this tool, there were few mechanisms available to the public to determine their risk to hazards. This tool was developed so that the public will realize their risk and take proactive mitigation measures. Users are able to see a visual display of historical hazards data at their location (via an address or coordinates). The tool also highlights critical facilities where people may take shelter and evacuation routes, should a disaster occur.

9.2.3.9 State Threat and Hazard Identification and Risk Assessment (THIRA)

Led by Alabama Emergency Management Agency (AEMA) and Alabama Department of Homeland Security (ADHS), the State assembled a Stakeholder Work Group to develop the THIRA. It served to identify any potential gaps in resources, policies or procedures needed to help the State of Alabama meet the National Preparedness Goal. All phases of emergency management, including mitigation, were assessed using a variety of fictional, worst case scenarios and core capability measurements. Many of the agencies on the SHMT were involved in the development of the THIRA.

9.2.4 Lead Agencies for Hazard Mitigation Integration

Three agencies share responsibilities for hazard mitigation planning in Alabama. Agencies are:

- Alabama Emergency Management Agency (AEMA)
- Alabama Department of Economic and Community Affairs (ADECA)
- Alabama Department of Conservation and Natural Resources (ADCNR)

Statewide, AEMA has the primary responsibility for mitigation planning. The agency provides support and a range of resources to regional and local organizations, as well as planners. AEMA is responsible for ensuring that the State HMP remains current, and that the various ongoing planning requirements (periodic reviews, updates, meetings, reports, etc.) are carried out by the State. AEMA is also the agency responsible for the initial review and State approval of local and multi-jurisdictional mitigation plans.

In addition to AEMA's primary responsibility for the administration of the statewide, regional, and local hazard mitigation programs, its mitigation staff works directly with mitigation-related state programs. AEMA coordinates mitigation initiatives through several agencies including the two agencies listed above, ADECA and the ADCNR.

AEMA maintains weekly contact with these agencies, ensuring that opportunities for integration of existing programs and new initiatives are utilized by the three agencies. This will also allow the agencies to ensure coordination of plan updates.

9.2.4.1 ADECA

The Alabama Department of Economic and Community Affairs (ADECA) is one of the lead State agencies for hazard mitigation planning. AEMA works closely with the ADECA Office of Water Resources (OWR) for coordination of its hazard mitigation programs, especially Risk MAP (detailed further in **Section 9.2.17.2)**. The OWR also administers the Drought Management Program, which was completed in 2004 and incorporated into the 2007 state hazard mitigation plan update. The assessment findings and mitigation polices of the two plans are closely integrated.

Following Hurricane Katrina, ADECA established a Long Term Recovery program with a full time State Coordinator. ADECA worked alongside the FEMA Long Term Recovery Team to prepare a Long Term Recovery Plan for the communities of Mobile County. The plan was adopted by all communities and incorporated by amendment into local mitigation plans.

AEMA supports pending legislation to establish the State's Dam Safety Program under ADECA. ADECA's Community and Economic Development Programs Office administers the CDBG program, which sometimes include special appropriations in response to Federal disaster recovery efforts. There are three ways CDBG funds can impact hazard mitigation planning. With the first, CDBG funds can be used as local planning grants for up to $50,000. This is another opportunity for assuring local comprehensive plans and regulations address State and regional hazard mitigation objectives. Second, annual CDBG appropriations are used for community development projects, which often include local mitigation projects. The third, ADECA's Disaster Recovery Initiative (DRI) responds to Hurricane Katrina and other Federal disasters, and coordinates long-term disaster recovery planning with local mitigation planning activities and mitigation project initiatives. These recovery initiatives often are funded through FEMA mitigation grant programs and the CDBG. ADECA administered a special Congressional appropriation through the CDBG program for supplemental funding to aid community recovery and mitigation for communities affected by Hurricane Katrina. The grant provides a funding mechanism for addressing hazard risks and incorporating hazard mitigation actions into local comprehensive plans.

Since ADECA and AEMA contain most of the Federal Mitigation programs, communication is essential. The agencies intend to maintain effective coordination of programs between the AEMA mitigation programs and the NFIP programs administered through ADECA Office of Water Resources. This is essential to maintain maximum effectiveness for hazard mitigation in the state.

9.2.4.2 ADCNR

Another lead mitigation agency at the State level is the Alabama Department of Conservation and Natural Resources (ADCNR). The Department's Coastal Section administers the Alabama Coastal Area Management Program (ACAMP), as discussed in **Section 9.2.3.3**. Natural hazards mitigation is an important component to this program. AEMA mitigation planning staff works closely with ADCNR by discussing and reviewing common planning and project activities. These activities include the ACAMP and the Alabama Coastal Impact Assistance Program (CIAP) (detailed in **Section 9.2.3.4**). Congress created the CIAP to address the mitigation of environmental impacts affected by oil and gas production. The ADCNR and the South Alabama Regional Planning Commission (SARPC) helped develop the plan, and its staff works with Mobile and Baldwin County officials with their planning responsibilities.

AEMA will continue to work with the ADCNR, Coastal Section to update the ACAMP program document, specifically those parts related to natural hazard mitigation. The resulting information will eventually be incorporated into the State Hazard Mitigation Plan. Updates to the ACAMP program document will also be coordinated with the scheduling of updates to the State Hazard Mitigation Plan to assure consistency.

9.2.5 The State Hazard Mitigation Team

The Alabama State Hazard Mitigation Team (SHMT or Team) was established by Governor's Executive Order #19 (EO 19) on June 18, 2004. The Team identifies and reviews State of Alabama laws, regulations, policies and programs pertaining to mitigation and FEMA sponsored programs and supporting regulations. Governor Riley delegated responsibility to AEMA to overseeing development and updating the State Hazard Mitigation Plan (HMP). With AEMA

serving in this leadership role, the SHMT is the core group responsible for all decisions regarding the planning process and content of the Plan.

Specific agency participation on the SHMT was also established by EO 19, and includes a wide range of organizations identified below. In addition to its responsibility as a reviewing body for the State HMP, the SHMT affords many opportunities to strengthen the integration of all mitigation initiatives among the three lead agencies and its membership.

Significant state-level planning efforts related to hazard mitigation are supported by the following State agencies, Federal agencies, and interested groups, all of which are represented on the SHMT:

- Governor of Alabama (Chair)
- Attorney General

State Agencies

- Alabama Department of Agriculture and Industries
- Alabama Department of Environmental Management (ADEM)
- Alabama Department of Transportation (ALDOT)
- Alabama Emergency Management Agency (AEMA)
- Alabama Forestry Commission (AFC)
- Alabama Historical Commission
- Alabama Military Department
- Alabama Public Service Commission
- Alabama Secretary of State
- Department of Economic and Community Affairs
- Department of Public Health
- Department of Public Safety
- Department of Transportation
- Commissioner of the Insurance Department
- Geological Survey of Alabama (GSA)

Federal Agencies

- American Red Cross
- U.S. Army Corps of Engineers, Mobile and Nashville Districts (USACE)
- U.S. Department of Agriculture, Forest Service (USFS)
- U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS)
- U.S. Department of Agriculture, Rural Development (RD)
- U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA)
- NOAA, National Weather Service, Birmingham, Huntsville, Mobile, and Tallahassee Offices (NWS)
- U.S. Geological Survey, Alabama District (USGS)

Other Groups

- Alabama Association of Regional Councils (AARC)

- Alabama Association of Floodplain Managers (AAFM)
- Alabama Planning Institute (API)
- American Planning Association, Alabama Chapter
- Association of State Floodplain Managers (ASFPM)
- Alabama League of Municipalities
- Association of County Commissioners
- Choctawhatchee, Pea and Yellow Rivers Watershed
- Indian Affairs
- U.S. Air Force, Maxwell Air Force base
- U.S. Army, Fort Rucker Army Post
- USDA Forest Service

During the planning process AEMA identified numerous opportunities to improve the current SHMT and future State HMP updates including the development of a clearinghouse for mitigation information and creation of a statewide public outreach program. Both of these potential improvements have been partially accomplished through the AEMA website, developed in 2009. AEMA's website serves as centralized location for many hazard mitigation documents including the State Hazard Mitigation Plan, all 67 county hazard mitigation plans, and several technical support documents. These documents, including the findings and recommendations of the State Hazard Mitigation Plan, are available for public view. In addition, there is a Risk Assessment Mapping Tool that allows people to zoom to a location and determine what hazards affect that area (see Section 9.2.3.9 for addition information on the Risk Assessment Mapping Tool). The public outreach program can be furthered through media, public events, schools, non-profits, and many other opportunities are readily available, especially given modern technology, to increase public awareness of hazard risks and mitigation alternatives. AEMA would also like to include private sector participation within the SHMT. AEMA, in conjunction with the SHMT and local planning committees, will advance these efforts.

9.2.6 Alabama Association of Regional Councils (AARC) and the Regional Planning Councils (RPCs)

The Alabama Association of Regional Councils (AARC) is a statewide association comprised of the 12 regional planning councils (RPCs). AARC has been an active participant in both state and local hazard mitigation planning initiatives. This presents a unique opportunity to bridge the gap between local and state planning and to strengthen regional integration.

The regional councils in Alabama that make up the AARC are typically called either Regional Planning Commissions (RPC) or Councils of Government (COG). They are public organizations encompassing a multi-jurisdictional regional community and are also comprised of every town, city, and county within the state. Through planning, policymaking, coordination, advocacy, and technical assistance, the regional commission serves the local governments and citizens in the region. The governing bodies of councils are primarily composed of local government elected officials and appointed representatives of local communities and state government.

The AARC and RPCs are directly tied to mitigation planning through the generous contributions of RPC members, who developed the vast majority of Alabama's initial local hazard mitigation plans. In 2003, AARC membership was activated to support the preparation and adoption of many of the countywide multi-jurisdictional plans for compliance with Disaster Mitigation Act of

2000 (DMA2K) and assistance with the 2004 State Hazard Mitigation Plan. In 2004, AEMA executed agreements with all 12 RPCs to support mitigation planning and integration with other planning processes at the regional and statewide levels. During the initial development of county hazard mitigation plans, each RPC had a hazard mitigation planner on staff. They provided expertise to assist applicants in application development and implementation. They also provided other grant writing and planning services. The RPCs also assisted several counties to complete their 5-year required update. In turn, AEMA has provided funding, training and technical support to the regional staffs.

9.2.7 County Emergency Management Agencies

County Emergency Management Agencies (county EMAs) are AEMA's primary points of contact for coordinating hazard mitigation planning and program activities at the local and regional levels. All 67 county EMAs are active in the Statewide Alabama Association of Emergency Managers (AAEM). AEMA has provided funding support both directly to the EMAs and through the Regional Planning Councils (RPCs) to support hazard mitigation planning activities. Moreover, AEMA funded the 2004 update of all 67 County Emergency Operations Plans (EOP), based upon AEMA standards and guidelines in the State EOP. The county EMAs continue to be the State's best opportunity to assure full integration of local mitigation activities among almost 500 town, city, and county governments with regional and State programs.

In order to ensure that local planning is integrated to the extent possible, a recommendation is to recognize the county EMAs as the central coordinating agencies for multi-jurisdictional mitigation planning. The AEMA has encouraged multi-jurisdictional mitigation planning among all 67 counties. All jurisdictions within any given county are actively involved with their respective EMA. The 67 counties represent nearly 500 towns, cities, and county governments within the State. All local hazard mitigation plans have been developed in conjunction with the EMAs, which often serve as county coordinators of all mitigation planning activities. Many county EMAs have assumed a lead responsibility for coordinating all local mitigation planning activities and serve as the principal staff in support of hazard mitigation planning committees. This lead role should be encouraged by the AEMA and supported, as necessary, through planning funds and technical assistance. Mitigation planning staff of the regional planning councils should continue to make professional services available to the county EMAs, as needed.

9.2.8 The Alabama Planning Institute (API)

The Alabama Planning Institute (API) offers continuing education courses for professional planners and local officials through the University of North Alabama Center for Continuing Education. The Alabama Chapter of the American Planning Association (APA), the State's leading network of professional and citizen planners, sponsors the API. The API has established a Certified Planning and Zoning Official designation for successful completion of a minimum number of API courses.

The RPCs work in conjunction with the Alabama Planning Institute (API) to provide regular training to local planning officials and planners throughout Alabama. The Institute has a long-standing and successful record of achievement, and its courses are always in high demand. Topics in hazard mitigation have been recently added to the API courses, and AEMA is working to expand these course offerings to emphasize the integration of hazard mitigation planning into local and regional comprehensive planning processes.

9.2.9 Institute for Emergency Preparedness (IEP, Jacksonville State University)

The Institute for Emergency Preparedness (IEP) at Jacksonville State University offers undergraduate and graduate programs in emergency management, including hazard mitigation subjects. Students can pursue a degree program (B.S., M.S. or Ph.D.) in Emergency Management with minors in Homeland Security, Public Safety Telecommunications, or Emergency Management. The IEP was recently approved by the State to offer a Ph.D. program in Emergency Management, one of the few programs of its kind in the nation.

9.2.10 The Association of State Floodplain Managers (ASFPM)

The Association of State Floodplain Managers (ASFPM) offers technical support materials for flood hazard mitigation planning and offers a certification program, the Certified Floodplain Manager (CFM), for State and local officials involved with floodplain management.

On January 24, 2008 an organizational meeting of the Alabama Association of Floodplain Managers (AAFM) took place in Montgomery, AL; 50 interested floodplain managers attended. The group voted to form a floodplain manager's organization and apply to ASFPM as a State chapter. They also voted to choose a name, review by-laws, and elected a board of directors. The board held its first meeting that day and set dues, initiated a membership drive, assigned duties and responsibilities, and selected a date for its first conference. Since the first meeting, membership has grown to approximately 100, and Alabama has designated ASFPM chapter.

The AEMA Mitigation Division supports the Alabama Chapter of the Association of State Floodplain Managers. The ASFPM assists with local training and improves the proficiency of state and local floodplain managers through its Certified Floodplain Manager (CFM) program. The chapter also helps to promote hazard mitigation planning integration among statewide and local agencies and offers a means to improve communications among interested agencies and individuals.

9.2.11 The Alabama Department of Environmental Management (ADEM)

The Alabama Department of Environmental Management (ADEM) enforces a permitting and regulatory program to manage coastal construction that ensures the mitigation of potential hazards on new construction.

ADEM's rules specifically regulate development in higher risk coastal zones, which are more vulnerable to natural threats such as flooding and hurricanes. For the most part, coastal communities follow ADEM guidelines and restrictions for coastal construction, and most coastal communities have adopted the International Building Code Series. Enforcement of local building codes is included in all local mitigation plans, and all coastal municipalities have zoning and subdivision regulations in effect.

The Alabama Coastal Area Management Program (ACAMP) is jointly administered through ADEM and ADCNR. ADEM is responsible for permitting, regulatory, and enforcement, and ADCNR oversees grant management, planning and policy development.

9.2.12 The Geologic Survey of Alabama (GSA)

The Geologic Survey of Alabama (GSA) supports mitigation planning by providing technical information on hazards and risks related to geological failures, including sinkholes, earthquakes, and landslides. The GSA improves the State's knowledge and database of geologic conditions and vulnerabilities, and offers technical guidance on mitigation responses. GSA maintains maps and technical reports that are available resources for the State and local mitigation risk assessments. GSA also conducts public outreach through the wide distribution of educational brochures on geological hazards. The GSA (in coordination with AEMA) recently developed a statewide basement fault map and soil amplification/liquefaction map; the maps are being incorporated into the State HMP.

9.2.13 Emergency Management Performance Grants (EMPG)

Under the Emergency Management Performance Grant (EMPG) Program, funds are provided by FEMA as authorized in Public Law 81-920 for the purpose of increasing operational capability at the State and local level. These funds can be expended for necessary and essential personnel and administrative expenses, including but not limited to salaries, benefits, travel, office supplies, equipment and administrative communications. State and/or local governments must match on a one-for-one basis financial assistance provided for EMGP program purposes.

The priority use for EMPG funding will be maintaining and expanding capability at the State level. In fiscal year 2008 (FY 2008), the State intends to pass local EMAs approximately 60 percent of the total EMPG award. AEMA will closely mirror the methodology used at the federal level to allocate dollars to each State. The Agency will use 75 percent of the total award to provide all counties in the state with equal grants, with the remaining 25 percent allocated to counties based on population. Since this is a change from procedure from previous years, it is possible that a local EMA could actually get a reduced amount. In such a case, AEMA would keep that entity at the FY 2007 funding level.

In his recent online message, the AEMA Director noted the creation of an EMPG task force to bring transparency and consistency to fund distribution methodology. The task force is currently developing a formula for EMPG allocation that provides both level funding and incentive based opportunities for proactive Emergency Management programs.

9.2.14 Alabama Comprehensive Planning and Smart Growth

Throughout the State, counties and cities have incorporated smart growth principles using mitigation planning strategies in preserving open space and critical environmental areas, including natural hazard areas. A few cities (most notably the City of Montgomery) have enacted Smart Code provisions to encourage conservation subdivisions, traditional neighborhood designs, and other forms of land development that adhere to the Smart Growth principles. Three Alabama counties have legislative authority to enact zoning controls. Two of these counties – Shelby and Baldwin (which had the greatest population percentage change between 2000 and 2008 in the State) – have instituted cutting-edge comprehensive planning programs to implement Smart Growth principles through innovative zoning and land

development controls, open space acquisitions, and capital improvement programming for public infrastructure.

The Smart Growth movement has just begun to progress in Alabama. Governed by municipal planning enabling legislation that remains virtually unchanged since enacted in 1935, cities and towns manage to progress toward enlarging the role and effectiveness of comprehensive planning for managing development, growth, and infrastructure improvements.

Smart Growth can result in "Safe Growth" through principles designed to promote compact infill development versus urban sprawl; preserve open space and protect the natural and beneficial functions of flood plains, coastal zones, wetlands, hillsides, and other vulnerable locations; and steer growth away from hazardous areas. Many tools are available to assist Alabama communities, including the Smart Growth Leadership Institute (www.sgli.org). Although Alabama cannot yet match the strides made in other States (such as the recent Wisconsin Comprehensive Planning and Smart Growth legislation and the creation of New Jersey's State Office of Smart Growth), its communities are making steady progress toward the same objectives. The Statewide promotion of Smart Growth/Safe Growth practices will ultimately reduce hazard exposures and make Alabama's communities more disaster-resistant and resilient. Integration of hazard mitigation into local comprehensive planning and implementation is essential to successfully applying these principles.

9.2.15 State and Regional Economic Development

Integration of hazard mitigation planning is important to the successful implementation of all the State's regional economic development programs. With business and industry come new jobs, which attract an influx of new people along with the challenge of managing growth. The State's economic development strategies are beginning to address the vulnerabilities and risks associated with uncontrolled growth, and to integrate those strategies in assuring safe communities for new residents.

The basic objective of any economic development program is jobs creation, and that is the mission of Alabama's leading statewide economic development agency, the Alabama Development Office (ADO). The ADO, like any other successful economic development agency, must collaborate among a multitude of economic development agencies at the global, national, State, regional, and local levels. Other Statewide agencies leading economic development efforts include the Economic Development Partnership of Alabama, the Economic Development Association of Alabama and many other partners help sustain economic development through jobs training and continuing education.

The leading regional players in economic development include the Regional Planning Councils (RPCs) and other regional agencies, such as the Metropolitan Development Board in Birmingham. Of the 12 RPCs, nine are designated Economic Development Districts by the U.S. Economic Development Administration and eight are Local Development Districts of the Appalachian Regional Council. Their activities include a range of support services to localities, including grants writing and administration, planning and implementing programs, and other activities that enhance regional economic growth. AEMA will seek opportunities with these groups to promote hazard mitigation as an important part of economic growth. The RPCs' involvement in local mitigation planning also allows for inclusion of mitigation strategies within local planning and zoning. As areas are developed, the RPCs can act as a mitigation advocate and provide mitigation expertise to local governments.

In order to improve the relationship between economic development and hazard mitigation, economic development agencies will be identified and asked to participate in the SHMT. There will also be a sub-committee organized to identify new integration opportunities and monitor progress of existing initiatives. The ADO will be assigned to the Integration Subcommittee.

9.2.16 Integration with FEMA Mitigation Programs and Initiatives

The State integrates FEMA programs into its mitigation strategy and actions whenever possible, and wherever practicable. AEMA and ADECA Office of Water Resources have joint responsibilities for administering FEMA mitigation programs and initiatives. though AEMA serves as the lead agency for the State in disaster mitigation efforts. Because of this dual role, AEMA has the opportunity to integrate the mitigation grant application process for the programs listed in this section.

The following programs and initiatives are also found in **Section 4.4** of the State Hazard Mitigation Plan. AEMA has primary responsibility for FEMA grant programs, including those listed here.

- Hazard Mitigation Grant Program (HMGP)
- Flood Mitigation Assistance Program (FMA)
- Pre-Disaster Mitigation Grant Program (PDM) (including L-PDM)
- Public Assistance (PA) Program
- Repetitive Flood Claims (RFC) Program
- Severe Repetitive Loss (SRL) Program
- Public Assistance (“406”) Mitigation Program

AEMA recently established a Recovery Division within its mitigation programs, so this function is now expanded beyond the FEMA Public Assistance and Individual Assistance programs, as a part of the State’s movement toward integrating mitigation efforts across programs. Following disasters, AEMA mitigation staff will be participating in Preliminary Damage Assessments (PDAs) as part of the ongoing effort to maximize mitigation efforts and coordinate the activities of the programs.

ADECA’s role encompasses the FEMA’s National Flood Insurance Program (NFIP) including statewide coordination of local NFIP participation, the Community Rating System (CRS) program, and the FEMA Risk MAP program. Although AEMA has the lead role in all-hazards mitigation efforts through mitigation planning and grants management, ADECA shares this responsibility in its role as the lead floodplain management agency. ADECA facilitates local mitigation planning strategies that support the NFIP, CRS, and Risk MAP. Information and support are readily shared between AEMA and ADECA. This information includes risk data, disaster assessment and flood data, mitigation policy guidance, technical support and aids, and training and technical assistance to communities, among other support services.

Additional FEMA programs beyond the mitigation grant programs and the NFIP that demonstrate the state’s integration with FEMA initiatives includes Risk MAP, Hazus-MH and the use of FEMA technical documents.

9.2.16.1 Hazard Mitigation Assistance Unified Guidance Programs (HMGP, PDM, FMA, RFC, SRL, LPDM)

The Hazard Mitigation Assistance Unified Guidance Program (HMA) was initiated in FY 2009 to unify all FEMA mitigation activity grant programs. The guidance and application periods for FMA, SRL, RFC and PDM were unified into the HMA. The Hazard Mitigation Grant Program (HMGP) also falls under HMA, but is a post-disaster program so its application period is dependent on disaster declarations. The purpose of the unification is to enhance efficiency and ease of use. All annually allocated programs now fall under the same application periods, and much of the regulatory and policy regime related to the hazard mitigation programs is now normalized. The annual HMA guidance (published in October 2008) also describes funds availability for the programs.

9.2.16.1.a *Hazard Mitigation Grant Program (HMGP)*

The Section 404-Hazard Mitigation Grant Program (HMGP) is a critical component of the state's mitigation efforts. The program was created in November 1988 as a result of the Robert T. Stafford Disaster Relief and Emergency Assistance Act that amended Public Law (PL) 93-288, the Federal Disaster Relief Act of 1974. The HMGP is administered by AEMA, which makes grants available to state and local governments and to eligible private, non-profit organizations and Indian tribes, with the purpose of implementing long-term mitigation measures following major disaster declarations. Eligible projects must be environmentally sound, cost-effective, and independently mitigate risks. HMGP grants are cost-shared with 75 percent provided in federal funds through FEMA with a 25 percent local match (which may be provided by the state or local government, or some share of each). In order to receive HMGP funds, a community must be participating and in good standing with the NFIP. Further, beginning November 1, 2004, communities must have a FEMA approved all hazards mitigation plan to be eligible for funds for project implementation.

President Clinton signed the Hazard Mitigation and Relocation Assistance Act that amended Section 404 of the Stafford Act on December 3, 1993. This amendment significantly increased the amount of funding available in the HMGP in two ways. First, it increased the federal share of grant funds from 50 percent to 75 percent. Second, the proportion of federal funds allotted to the HMGP was increased to 15 percent of the federal funds spent on the Individual and Public Assistance Programs for each disaster, whereas before it was based on 10 percent of the federal funds spent in Categories C through G of the Public Assistance Program only.

The Disaster Mitigation Act of 2000 (DMA2K) was signed into law in October 2000, and amended the Stafford Act. The purpose of the DMA2K was to establish a national program for pre-disaster mitigation, streamline administration of disaster relief and control federal costs of disaster assistance. Section 322 of the DMA2K stipulates that States are required to have a FEMA approved Standard Hazard Mitigation Plan to be eligible for certain disaster assistance programs, including the HMGP. The section also increases HMGP funding on a sliding scale (ranging from 7.5 percent to 15 percent) based on the overall disaster assistance funding for states with a standard plan, and up to 20 percent for those states with an approved State Enhanced Hazard Mitigation Plan. In addition, it established a requirement for local and tribal mitigation plans and authorized 7 percent of the HMGP funds to be available to states to be used in developing such plans. Federal regulations (44 CFR Parts 201 and 206) were published on February 26, 2002, and contained the rules for hazard mitigation planning and the HMGP. The rules addressed state and local mitigation planning requirements.

AEMA mitigation staff solicits, reviews, evaluates and ranks HMGP applications when they are submitted after a disaster event that has provided HMGP funding (see Sections 4.2 and 4.3). Based on these evaluations and funding recommendations, applications are forwarded to FEMA for approval. Projects typically consist of acquisition and demolition, flood proofing, wind retrofit, education and outreach, localized flood reduction measures such as stormwater management, utility protection, NOAA weather radios and planning. HMGP is a major funding component for implementing mitigation actions identified in State and local hazard mitigation plans.

9.2.16.1.b *Pre-Disaster Mitigation Grant Program (PDM)*

The Disaster Mitigation Act of 2000 (DMA2K), Public Law 106-390, was signed into law on October 30, 2000, and established a national program for pre-disaster hazard mitigation. The purpose of the law was to create a significant opportunity to reduce disaster losses through pre-disaster mitigation planning; streamline recovery process through planned, pre-identified, cost-effective mitigation; and link pre- and post-disaster mitigation planning and initiatives.

Section 203 of the Stafford Act, as amended by Section 102 of the DMA2K, created the PDM program. The PDM makes funding available to state, local and Indian Tribal governments to implement cost-effective hazard mitigation activities that complement a comprehensive mitigation program. Funding may be awarded for the development of an all-hazards mitigation plan or for a cost-effective hazard mitigation project. Like the HMGP and FMA programs, applicants must be participating in the NFIP (if they have been identified as having special flood hazard area) and be in good standing.

44 CFR Part 201, Hazard Mitigation Planning, published February 26, 2002, established criteria for State and local hazard mitigation planning authorized by Section 322 of the Stafford Act, as amended by Section 104 of the DMA2K. After November 1, 2003, local and tribal governments applying for PDM funds through the states have to have an approved local mitigation plan prior to the approval of local mitigation project grants. States are also required to have an approved Standard State mitigation plan in order to receive PDM funds for State or local mitigation projects after November 1, 2004.

Successful grants receive 75 percent federal funding to total project costs. The applicant is responsible for a 25 percent share. Small impoverished communities may receive federal funding of 90 percent. The local share may be in the form of in-kind services as well as cash. However, no other federal source of money may be used to fund the local share with the exception of CDBG funds, which lose their federal identity.

In 2002 FEMA provided a one-time grant in the amount of $50,000 to each State to assist in the preparation and development of the program. The 2003 PDM budget provided $248,375 in federal funds to each State. The remaining PDM appropriation of approximately $130 million was made available to initiate a national PDM competitive grant program for pre-disaster mitigation activities. The PDM-C applications determined to be eligible were evaluated by a National Evaluation Panel in accordance with PDM-C Grant Guidance and Notice of Funds Availability.

AEMA Mitigation staff work with local jurisdictions and Regional Planning Commissions to develop projects. Staff has served on the National Evaluation Team. AEMA will continue to work directly with FEMA Region IV to submit projects for future PDM funding.

Also included under PDM grants is a legislative component called Legislative PDM (LPDM). This pre-disaster funding source provides funding to states and communities for cost-effective mitigation activities and was authorized by the Stafford Act. This is non-competitive program and funding is received based on congressional appropriation from the National Legislative Pre-Disaster Mitigation Fund and applied to communities it is appropriated for. Projects are earmarked and a federal review is conducted to ensure each LPDM market is eligible, technically feasible, and environmentally sound. The cost share is 75 percent federal funds and 25 percent applicant soft match. Funding

9.2.16.1.c *Flood Mitigation Assistance Program (FMA)*

On September 23, 1994, the National Flood Insurance Reform Act (NFIRA) was signed into law. The purpose of the NFIRA is to improve the financial condition of the NFIP and reduce the federal expenditures for federal disaster assistance to flood damaged properties. Among other features of NFIRA, the law created the pre-disaster Flood Mitigation Assistance (FMA) program. AEMA administers the Alabama FMA program. FMA is a cost-share program (75 percent federal, 25 percent local match); states and communities can receive grants for flood mitigation planning, technical assistance and mitigation projects. Communities with an approved Flood Mitigation Plan are eligible to apply for mitigation project grant funds.

The overall goal of the FMA is to fund cost-effective measures that reduce or eliminate the long-term risk of flood damage to NFIP-insured buildings, manufactured homes and other structures. Other goals are: 1) reduce the number of repetitively or substantially damaged structures and the associated claims on the NFIP; 2) encourage long-term, comprehensive mitigation planning; 3) respond to the needs of communities participating in the NFIP; and 4) complement other federal and state mitigation programs with similar goals.

Each year $20 million are transferred into the FMA, which is then distributed to the states. Each state receives an allocation based on the number of flood insurance policies in force and the number of repetitive loss structures in the state. Repetitive loss structures are those structures that have had two or more flood insurance claims of at least $1,000 each in the last ten years. The minimum amount any state receives is $10,000 for mitigation planning grants and $100,000 for project grants to implement mitigation activities identified in approved mitigation plans. In addition, up to 10 percent of the project funds are allowed for the state to use for technical assistance.

9.2.16.1.d *Repetitive Flood Claims Program (RFC)*

This program (and the Severe Repetitive Loss program below) was established by the Flood Insurance Reform Act of 2004. The RFC is a companion program to the FMA and can provide up to 100 percent funding for acquisition or relocation of residential properties that meet the repetitive loss criteria of the FMA but cannot meet the required 25 percent match.

9.2.16.1.e *Severe Repetitive Loss Program (SRL)*

As noted above, intent of this program is to reduce or eliminate the long-term risk of flood damage to residential properties with repetitive loss claims under the NFIP. The SLR can fund flood-proofing of historical properties and relocation, elevation, acquisition, or reconstruction of

eligible residential properties. Flood mitigation can include flood-proofing of historical properties and relocation, elevation, acquisition, or reconstruction of eligible residential properties. In order for a property to be eligible, a certain minimum number of claims must be filed over a prescribed period or the amount of claims must exceed the value of the property.

9.2.16.2 National Flood Insurance Program

The Alabama Department of Economic and Community Affairs - Office of Water Resources (OWR) administers the NFIP within the State with responsibilities assigned to the State NFIP Coordinator and support staff. The primary responsibilities of the State NFIP Coordinator include facilitating participation in the NFIP among Alabama communities, providing technical support and training to local administrators, and encouraging participation in the Community Rating System (CRS) Program.

The three components of the NFIP are: flood insurance, floodplain management, and flood hazard mapping. By participating in the NFIP, communities agree to adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas (SFHA). In turn, federally backed flood insurance is made available within the community as financial protection against flood losses. Flood insurance and floodplain management are the front lines of flood mitigation. Flood insurance is an alternative to disaster assistance, which is not available in every flood event. Gaining participation in the NFIP and encouraging property owners to purchase flood insurance significantly reduces disaster costs. Together these programs reduce flood exposure to people and their property.

Flood insurance policies within communities participating in the regular NFIP program include benefits for Increased Cost of Compliance (ICC). For structures with a substantial damage determination, up to $30,000 is made available to bring the structure to current NFIP standards, which will mitigate the structure from future flood events. This can include elevation, relocation or demolition. Policy holders within communities that participate in the CRS are entitled to a discount on their policy. Under the CRS, flood insurance premium rates are adjusted to reflect the reduced flood risk resulting from community activities that meet the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance.

In addition to providing flood insurance and reducing flood damages through floodplain management regulations, the NFIP identifies and maps the nation's floodplains. Mapping flood hazards creates the broad-based awareness of the flood hazards and provides the data needed for floodplain management programs and to actuarial rate new construction for flood insurance.

Flood Insurance Rate Maps (FIRMs) and Flood Insurance Studies (FIS) provide critical flood hazard information needed to develop effective planning to focus on the State's areas with the greatest flood risk. In addition, AEMA utilizes this flood hazard information in evaluating proposed hazard mitigation projects and conducting benefit-cost analyses.

There are serious consequences when a community is not participating in the program. Flood insurance is not available to individuals and businesses. In turn, lending institutions cannot approve mortgages for properties located in an identified SFHA without the purchase of flood insurance. In addition, certain disaster assistance will not be available to individuals and businesses as well as local governments. For instance, the communities are not eligible for the HMGP or the FMA and PDM programs.

The Biggert-Waters Flood Insurance Reform Act of 2012 extends the National Flood Insurance Program (NFIP) through 2017 and included several reforms included eliminating subsidized insurance rate of repetitive loss properties. Some of the changes to be implemented include:

- Owners of **non-primary/secondary** residences in a Special Flood Hazard Area (SFHA) will see 25 percent increase annually until rates reflect true risk – began January 1, 2013.
- Owners of **property which has experienced severe or repeated flooding** will see 25 percent rate increase annually until rates reflect true risk – beginning October 1, 2013.
- Owners of **business properties in a Special Flood Hazard Area** will see 25 percent rate increase annually until rates reflect true risk -- beginning October 1, 2013.
- Owners of **primary residences** in SFHAs **will be able to keep their subsidized rates** unless or until:
  - You sell your property;
  - You allow your policy to lapse;
  - You suffer severe, repeated, flood losses; or
  - You purchase a new policy.
- Grandfathered rates will be phased over five years

9.2.16.3 Risk MAP

Risk MAP replaced the Flood Map Modernization program in 2010. Flood Map Modernization was established in 1997 to digitally update FEMA flood maps. FEMA's Risk MAP program takes a holistic, community-wide approach to floodplain planning activities.

According to FEMA, "Risk MAP combines flood hazard mapping, risk assessment tools and mitigation planning into one seamless program. The intent of this integrated program is to encourage beneficial partnerships and innovative uses of flood hazard and risk assessment data in order to maximize flood loss reduction." Further, Risk MAP is meant to address gaps in the maps produced under the Map Modernization program and enhance them with improved engineering data. The result will be more reliable maps that will better indicate risk within communities. ADECA-OWR oversees the Risk MAP program and has several watershed projects underway in throughout the state. However, AEMA is partnering with the agency and attends all meetings. During the community Outreach and Discovery meetings, AEMA brainstorms with the communities to determine applicable mitigation actions. Thus far, the state has engaged Risk MAP in the Upper Alabama Watershed which included meetings with four communities. The next anticipated project will be in South Alabama.

9.2.16.4 Hazus-MH

Hazus-MH is a geographic information system (GIS) –based loss estimation tool developed by FEMA under contract with the National Institute of Building Sciences (NIBS). NIBS maintains committees of wind, flood, earthquake and software experts to provide technical oversight and guidance to Hazus -MH development. Loss estimates produced by Hazus-MH are based on current scientific and engineering knowledge of the effects of hurricane winds, floods, and earthquakes. Estimating losses is essential to decision-making at all levels of government, providing a basis for developing mitigation plans and policies, emergency preparedness, and response and recovery

planning. Hazus -MH provides estimates of hazard-related damage before a disaster occurs and takes into account various impacts of a hazard event. The impacts include the following:

- Physical damage to residential and commercial buildings, schools, critical facilities and infrastructure.
- Economic loss, including lost jobs, business interruptions, repair and reconstruction costs.
- Social impacts, including impacts to people, including requirements for shelters and medical aid.

Hazus -MH uses state-of-the-art GIS software to map and display hazard data and the results of damage and economic loss estimates for buildings and infrastructure. It also allows users to estimate the impacts of hurricane winds, floods, and earthquakes on populations. Hazus -MH provides for three levels of analysis:

- **Level 1 Analysis**: yields a rough estimate based on the nationwide database and is a way to begin the risk assessment process and prioritize high-risk communities.

- **Level 2 Analysis**: requires the input of additional or refined data and hazard maps that will produce more accurate risk and loss estimates. Assistance from local emergency management personnel, city planners, GIS professionals, and others may be necessary for this level of analysis.

- **Level 3 Analysis**: yields the most accurate estimate of loss and typically requires the involvement of technical experts such as structural and geotechnical engineers who can modify loss parameters based on to the specific conditions of a community. This level analysis will allow users to supply their own techniques to study special conditions such as dam breaks and tsunamis. Engineering and other expertise is needed at this level.

The risk assessment and vulnerability analysis is one of the most difficult tasks for local governments to complete in developing a hazard mitigation plan. Hazus -MH is a tool that can greatly assist in this effort. In addition, the use of Hazus -MH may assist local governments in developing mitigation policies, developing and improving emergency operations plans, assist in generating scenarios for exercises and training purposes, and for quickly estimating losses after a disaster which helps determine what resources will be required for response and recovery. The GIS capability of local governments will determine how successful they are in utilizing Hazus -MH.

9.2.16.5 FEMA Technical Documents

FEMA technical documents are used and referenced when appropriate. For example, following DR- 1971, several hundred safe rooms were constructed in the state. FEMA technical manuals were utilized included FEMA P-361 – Design and Construction Guidance for Community Safe Rooms and FEMA P-320 – Taking Shelter From the Storm: Building a Safe Room for Your Home or Small Business.

9.3 Alabama Enhanced State Hazard Mitigation Plan Project Implementation Capability

Requirement §201(5)(b)(2)(i-ii): *Document the State's project implementation capability, identifying and demonstrating the ability to implement the plan, including:*

- *Requirement 201(5)(b)(2)(i): Establishing eligibility criteria for multi-hazard mitigation measures.*
- *Requirement 201(5)(b)(2)(ii): A system to determine the cost effectiveness of mitigation measures consistent with OMB Circular A-94, Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs, and*
- *A system to rank the measures according to the State's eligibility criteria, including a process to prioritize projects between jurisdictions and between proposals that address different or multiple hazards.*

9.3.1 Background

This section of the Enhanced Plan describes AEMA's capabilities for implementing the mitigation programs for which it is responsible. Alabama established its project eligibility requirements to comply with federal and State regulations and policies. These requirements are found in the State Administrative Plan, and are also reflected in various other program documents such as the State Hazard Mitigation Plan Update.

9.3.2 Mitigation Project Eligibility Criteria

To be eligible for the federal hazard mitigation programs, a proposed project must meet the federal minimum project criteria listed below.

1. Be in conformance with the State Hazard Mitigation Plan.
2. Have a beneficial impact upon the project area.
3. Be in conformance with 44 CFR Part 9, Floodplain Management and Protection of Wetlands and 44 CFR Part 10, Environmental Considerations.
4. Solve a problem independently or constitute a functional portion of a solution where there is assurance that the project as a whole will be completed.
5. Address a problem that has been repetitive, or a problem that poses a significant risk if left unsolved.
6. Be cost-effective, and demonstrate that the project will not cost more than the anticipated value of the reduction in both direct damages (property) and subsequent negative impacts (loss of function, deaths, injuries) to the area if future disasters were to occur.
7. Have been determined to be the most practical, effective, and environmentally sound alternative after consideration of a range of options, including the "no action" alternative.
8. Contribute, to the extent practicable, to a long-term solution to the problem it is intended to address.
9. Consider long-term changes to the areas and entities it protects, and have manageable future maintenance and modification requirements.
10. Be located in a community or region with an approved hazard mitigation plan.

AEMA mitigation staff evaluates each application to ensure these requirements are met. Using checklists and cross collaboration, planners review applications and supporting documentation to arrive at determinations of eligibility, including cost effectiveness.

It should be noted that the State does not currently have additional or alternative eligibility criteria for multi-hazard mitigation measures. Federal eligibility requirements in 44 CFR and elsewhere clearly establish eligibility criteria, and it is the State's interpretation that the intent of this enhanced plan criterion is to ensure that mitigation measures that reduce risk from multiple hazards are given high priority. Although AEMA recognizes the importance of this, the Agency believes that the risk assessment and benefit-cost analysis processes are the most technically accurate way to determine the relative benefits of proposed projects. The updated ranking methodology shown in **Table 9.3-1** below includes criteria for both multi-hazard mitigation measures, as well as benefit-cost ratio.

9.3.3 Alabama's System for Ranking Mitigation Measures According to the State's Eligibility Criteria (and Eligibility Criteria for Multi-Hazard Mitigation Measures)

The Alabama State Hazard Mitigation Plan includes an extensive discussion (in Section 6) dedicated to the State's mitigation strategy. As part of the original 2004 through 2005 development of the State HMP, AEMA and the State Hazard Mitigation Team (SHMT) carefully considered many factors – including federal and State eligibility requirements – in identifying and ranking the numerous mitigation actions and strategies that are included in the Plan. **Section 6.8.5** of the State HMP is comprised of a series of tables that identify the State's goals, strategies and mitigation actions.

Once mitigation project proposals are determined cost-effective and otherwise programmatically eligible, AEMA mitigation staff uses an informal system to prioritize the measures, taking into account all applicable federal and state laws, policies, and guidance, as well as the State's mitigation priorities. However, it is ultimately up to the local government to allocate funds based on the measured prioritized in their local hazard mitigation plan.

All mitigation grant programs (HMGP, FMA, PDM, SRL, and RFC) follow the same eligibility criteria and system for cost effectiveness determination. After AEMA mitigation staff evaluates and ranks mitigation proposals, the State Hazard Mitigation Officer applies the prioritized project applications against available funding in a prepared package. AEMA mitigation staff then makes recommendations to the Governor on how funds should be allocated and spent.

As noted above, the State has historically had a close balance between the amount of grant funds requested by local communities, and the funds that have been available through the various grant programs, most significantly the HMGP. This reflects the State's careful and thorough efforts to manage the grant process from the beginning of the cycle. However, AEMA recognizes that there is a need for a more rigorous system to rank the projects, in order to ensure that federal and State regulations are met, and that the process accurately reflects the State's mitigation priorities. Several criteria are considered in AEMA's project review, compiled in a table below. The checklist will be provided to locals, in addition to the federal requirements, to review their applications before submission to the State.

It should be noted that the Governor's decision, with recommendations from AEMA weighs heavily on financial allocations when monies are available in a post-disaster situation. For example, in recent disasters such as Hurricane Isaac, money was evenly distributed among declared counties based on the amount of Public Assistance awarded by FEMA and the population of the counties. Once the county amounts are determined, the local jurisdictions determine which eligible projects to actively pursue based on their local hazard mitigation plans. (Local hazard mitigation plans prioritize projects at the local level.) The following table will be given to local governments by AEMA which is in accordance with the state's eligibility criteria. Planning funds are prioritized by date for counties in need of a hazard mitigation plan update.

Table 9.3-1
AEMA Mitigation Project Scoring Methodology

Integration with Local and State Mitigation Plans and Strategies	Included in Project Application?
Sponsoring community has a current, FEMA-approved mitigation plan.	
Project is a high priority in local mitigation plan.	
Project is consistent with State mitigation goals/strategy.	
Mitigation and Project Effectiveness	
Project is in a County included in disaster declaration.	
Project is in a CRS community.	
Project protects a critical facility or infrastructure.	
Project has well-developed engineering specifications.	
Project mitigates life safety risks.	
Applicant has good record of implementing/administering projects.	
Project protects a historic or culturally significant site or structure.	
Mitigation site has a history of damages from natural hazard(s).	
Properties to be mitigated are on FEMA RL or SRL lists.	
Project has long effective life.	
Project mitigates risk from multiple hazards.	
Cost Effectiveness	
Project has technically accurate and well-documented BCA (if required).	
Project BC ratio greater 1.0	

9.3.4 Changes to Eligibility Requirements

This enhanced plan proposes no changes to eligibility requirements; the State presently observes all applicable federal requirements, and intends to continue this practice.

9.3.5 System to Determine the Cost-Effectiveness of Mitigation Measures

The requirement for proving cost effectiveness is nearly always satisfied using Benefit-Cost Analyses (BCA), as required by OMB Circular No. A-94 (Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs). AEMA currently uses standard processes,

methodologies and software to satisfy the OMB requirement and the range of FEMA guidelines and rules that apply to benefit-cost analysis.

In almost all cases, AEMA requires project sub-applicants (typically local governments) to submit benefit-cost analyses with project applications. The Agency requires the use of FEMA software and methods, and sub-applicants must submit appropriate documentation, in accordance with FEMA guidance (such as the Data Documentation Template). In addition to these procedures, AEMA uses established protocols and job aids for all aspects of the application review process, including review of benefit-cost analyses. Agency planners are responsible for reviewing all benefit-cost analyses submitted with grant applications to verify that the analyses are correct and properly documented. AEMA does not typically perform benefit-cost analysis for sub-applicants, but is very active in maintaining internal staff proficiency and in providing basic technical support to sub-applicants including:

- Periodic technical training for AEMA, regional and local staff
- Providing support materials such as software and guidance
- Encouraging use of the FEMA BCA Helpline
- Providing detailed comments to sub-applicants following technical review of BCAs
- Securing engineering support through FEMA for particularly complex analyses
- Providing technical support via telephone, email and meetings with sub-applicants

As noted above, the current AEMA system for determining the cost effectiveness of mitigation actions is fairly standard, and has been refined as the State has processed hundreds of applications. The process is supported by databases and job aids. The existing protocols have proven efficient as AEMA successfully processed a high volume of applications after the hurricanes of 2005 resulted in hundreds of millions of dollars in mitigation funding, mainly through the Hazard Mitigation Grant Program.

However, AEMA sometimes relies upon assistance from FEMA to conduct and/or review particularly complex BCAs, or those that require engineering expertise. Although this arrangement has worked efficiently over the past few years, AEMA recognizes that a key requirement to achieve Enhanced Plan status is to develop and maintain sufficient technical expertise in this area that the Agency can independently conduct and review even the most complex analyses. At the time this Enhanced Plan was developed, the State has identified alternatives that it believes will satisfy the federal requirement. These are described below.

9.3.5.1 Standby Technical Services Contract

AEMA does not expect that the State will fund additional technical staff positions in the near future. However, the State also recognizes that the large majority of mitigation grants funded by FEMA and administered by AEMA are through the Hazard Mitigation Grant Program, the funding for which is based on a formula that relates it to federal Public Assistance disaster expenditures. FEMA allows a percentage of the disaster funds to be used for administering the grant programs, and part of this funding could be allocated for technical support in the area of benefit-cost analysis (BCA) and risk assessment. Presumably there is a strong correlation among the funding that becomes available after disasters, the numbers of grant applications, and the need for technical support for BCAs.

As part of the long-term development of this enhanced plan, the State maintains a standby contract with a firm (Atkins) to complete BCAs following a disaster. This contract was activated

following the 1971 tornadoes events. The contracted engineer remains on staff to assist with applications as needed.

9.3.5.2 Access FEMA Technical Assistance to Gather Technical Data to Support BCAs

Although Hazard Mitigation Technical Assistance Program (HMTAP) contractors are generally prohibited from performing benefit-cost analysis due to conflict of interest considerations, this FEMA contract can be used to gather technical information, suggest BCA approaches, mentor the BCA preparers, and/or provide feedback to the State or sub-applicant on a specific BCA. The HMTAP has frequently been used in the past to augment the efforts of FEMA BCA reviewers to perform small-scale studies and compile information, essential steps in the analysis process. The State intends to contact FEMA Region IV about increased technical assistance support including an increased use of the contract. The State would pre-identify specific subject areas that can be addressed through this method. HMTAP is generally a strong option for BCA technical assistance because many contractor staff specialize almost exclusively on BCA and know the latest policy and software. In addition, HMTAP can provide a dedicated resource to the State whereas FEMA Regional staff with BCA capability may have multiple responsibilities in other states.

9.3.5.3 Developing and Maintaining Proficiency of Existing Staff

As of this version of the plan, the State does not expect that there will be any significant new funding to hire additional technical staff such as engineers, so AEMA's focus will be to ensure that existing staff maintain a high level of proficiency in the area of cost-effectiveness determinations, specifically benefit-cost analysis. AEMA and local planners are generally proficient in the area of benefit-cost analysis, but there is a need for additional and ongoing work to ensure that State staff maintains a high level of technical competence. The State will continue to engage with FEMA Region IV to ensure that it has the most up-to-date guidance, software and training. AEMA also intends to coordinate closely with Region IV to secure training and technical support as the new benefit-cost analysis re-engineering (BCAR) software is deployed and begins to become operational in 2009.

9.3.5.4 Identifying and Securing Technical Support from Other State Agencies

There are several State agencies, including the Alabama Department of Environmental Management (ADEM) and the Alabama Department of Transportation (ALDOT), which have extensive engineering expertise and staff resources that AEMA may be able to access for technical support, particularly in the area of benefit-cost analysis. As part of this Enhanced Planning process, the State (through AEMA) intends to begin the process of identifying these resources, and determining the most appropriate way to arrange for technical support. As noted above, AEMA has a good system and staff capabilities for performing (and reviewing) all but the most complex BCAs. However, it is in AEMA's interest to begin developing additional capabilities at the State level so the agency can eventually conduct all benefit-cost analyses independently. After other State resources are identified, AEMA expects to develop a Memoranda of Understanding (MOUs) with those agencies that have the appropriate expertise and are willing to collaborate. The MOUs will define procedures and responsibilities, and

establish how other agencies will be compensated for the work. Each agency should take careful note to ensure fair compensation and terms within the agreements.

9.3.5.5 Changes to the System of Determining the Cost Effectiveness of Mitigation Measures

The system for determining cost effectiveness of mitigation measures is discussed in the section immediately below.

9.4 Alabama Enhanced State Hazard Mitigation Plan Program Management Capability

Requirement §201.5(b)(2)(iii A-D): *Document that the State has the capability to effectively manage the HMGP as well as other mitigation grant programs [and provide] a record of the following:*

- ***Requirement 201.5*(b)(2)(iii *A):*** *Meeting HMGP and other mitigation grant application timeframes and submitting complete, technically feasible, and eligible project applications with appropriate supporting documentation.*
- ***Requirement 201.5*(b)(2)(iii *B):*** *Preparing and submitting accurate environmental reviews and benefit-cost analyses.*
- ***Requirement 201.5*(b)(2)(iii *C):*** *Submitting complete and accurate quarterly progress and financial reports on time.*
- ***Requirement 201.5*(b)(2)(iii *D):*** *Completing HMGP and other mitigation grant projects within established performance periods, including financial reconciliation.*

9.4.1 Background

This section of the Enhanced Plan describes AEMA's capabilities for managing the mitigation programs for which it is responsible. It should be noted that over the past decade, the amount of mitigation grant funds available to and spent by the State are among the highest in the nation. Since the inception of the original FEMA mitigation grant programs, AEMA has steadily worked towards a high level of management efficiency, with the result that the Agency has a nearly 100 percent success rate in meeting application time frames, in submitting BCA and environmental documentation on time, and in closing out grant projects within the required performance periods.

For DR-1971, the state will have all grant dollars obligated within 24 months of the event. This is unprecedented for a disaster of this size. This includes over 275 community safe rooms and over 4,000 individual safe rooms throughout the state.

9.4.2 AEMA's Performance in Meeting Mitigation Grant Program Timeframes for Application Submission

The State of Alabama (through AEMA) effectively manages the HMGP and other mitigation grant programs, including FMA, PDM, RFC, SRL, CAP, and EMPG. Following statutory timeframes, AEMA staff members submit eligible, technically feasible, and complete mitigation

grant applications to FEMA after an extensive review process. Even during periods of very heavy program activity, AEMA has consistently met all application timeframe requirements of the various mitigation grant programs. FEMA frequently assists AEMA to complete applications. Several tables in **Section 6** of this Enhanced Plan show the State's performance in processing grant applications.

9.4.2.1 Application Process

After a declared disaster, Region IV's Mitigation Division sends AEMA Lock-In letters that document submittal deadlines. These have always been met by AEMA in the past. Following notice from FEMA on the availability of mitigation funds, the State solicits applications statewide. Staff members send all grant notifications to county EMA offices and Regional Planning Councils, which funnel the information to municipalities. As applications arrive, AEMA administrative staff members enter application information into the Mitigation Database. Staff members also record application data into an internal mail tracking system and create a hardcopy file. A grant routing worksheet and tally sheet (the financial tracking log) are included with the newly created file and brought to the lead planner for eligibility and feasibility reviews. It should be noted that the state has very effective procedures for providing applicant briefings, training and other outreach to help potential sub-applicants learn about and prepare mitigation grant applications. These efforts are one reason that the state has typically had a good balance between the amounts of grant requests and the funding available.

The state has a defined HMGP administrative process which it follows for grant programs shown in the table below.

Table 9.4-1
Hazard Mitigation Grant Program Implementation Process

Phase I – HMGP Funds Allocation/Application Submittal

- Disaster Declaration
- Perform HMGP briefings in conjunction with PA applicant briefings to announce availability of HMGP - general program overview
- **30 day:**
  - Initial Estimate for HMGP received
  - State establishes initial procedure for funds allocation
- **90 day:**
  - FEMA issues 90 day lock-in for HMGP funding amount (can increase/decrease)
  - State finalizes the funding projections and issues NOFA to County EMA Office, with instructions to convene Local Hazard Mitigation Planning Committee to complete LOI by established deadline
  - LOI deadline set for 30 days from NOFA receipt
    - **Must be coordinated and prioritized through local mitigation planning committee and signed by County EMA Director and all affected applicants**
  - State schedules application workshops
- **180 day:**

- Full application deadline

Phase II – Project Reviews and Submittals

- Applications completed by the requesting jurisdiction (city, county, agency) are sent to the county EMA
- County EMA keeps a copy and sends original to AEMA by deadline
- AEMA planners will review and address any correspondence to the listed POC (and copy the county EMA director and AEMA field coordinator)
- In the event of lack of communication with the applicant, planner will speak with the county EMA director

Phase III – Project Approval/Implementation Procedures

- Upon FEMA approval, an approval package will be mailed to sub-grantee
- State-Subgrantee Agreement executed and returned to State
- Kick-off meeting held with AEMA, Sub-grantee, and County to discuss implementation and close-out procedures

Beginning with DR-4052 (Severe Storms, Tornadoes, Straight-Line Winds, and Flooding; January 2012), the state began using an online grant application submission system. This was a relatively small disaster that resulted in just one application in the system. However, the system will also be utilized for Hurricane Isaac (DR-4082; August 2012). This was a relatively small disaster but sizable enough to test the new system with less than $1 million in grant appropriation.

This online database system will have several benefits. First, it will help ensure all applications that are submitted are complete. Users will not be able to proceed in the application without filling out each section. Second, it will ensure all timelines are being met with each project. Lastly, it will keep a record of submitted projects and their associated data that can be utilized to determined status of projects and determine losses avoided.

9.4.2.2 Eligibility and Feasibility

AEMA planners verify basic eligibility before beginning a detailed technical review of proposed mitigation projects. AEMA uses the Planning Review Worksheet to verify that all required criteria are satisfied. After this step is completed, AEMA planners confirm the technical feasibility of proposed actions. AEMA requires that applications must contain valid, stamped drawings and documentation from a licensed engineer to prove project technical feasibility, including both effectiveness and budgetary elements. Applicants that submit drainage and community shelter projects must also provide schematics or more detailed drawings in the application, in addition to other FEMA requirements.

9.4.2.3 Complete Application Packages

As noted above, the online grant application system will help to ensure complete applications are submitted to the state and FEMA. Additional measures are in place to ensure submitted

applications are complete. Planners work closely with eligible applicants to ensure application packages contain full and accurate information. Once the basic eligibility and feasibility requirements have been met, AEMA planners review applications using four main tools:

- Grant Routing Sheet
- Planning Review Worksheet
- Completeness Checklist
- AEMA Mitigation Database

Using the Grant Routing Sheet, the planning team cross-check project requirements such as planning, completeness, BCA, engineering, NFIP, and environmental concurrence letters. The Completeness Checklist reflects that all essential application data has been recorded. Beginning with the DR-1971 event, FEMA would not accept an application unless the BCA was completed. Planners use one of ten worksheets for the various project types such as acquisitions, elevations, or drainage. The Checklist tracks specific data such as engineering calculations and more general project information including tax identification number and location of project in the local plan.

Following an initial review, the planning team conducts a quality control (QC) review in which one or more planners re-evaluates each application for accuracy and completeness. AEMA employs various quality control measures in the QC review such as checklists, worksheets, and collaborative cross-checking to ensure applications are ready for submittal to reviewers.

AEMA's evaluation process has worked very well over many years, including periods when there was a very high volume of applications (following Hurricanes Ivan and Katrina, for example). After applications are determined eligible, technically feasible, and fully developed, AEMA submits them to FEMA Region IV. Over the past few years, 100 percent of project applications have been submitted to FEMA by established deadlines, as set forth in 44 CFR, subsection 206.436. AEMA consistently meets all FEMA mitigation program application timeframes. It should be noted that FEMA Region IV performed a joint review with AEMA on the HMGP applications for Gustave/Ike events (1989/97), prior to the formal submission to FEMA. AEMA then prepared the RFIs (Request for Information) back to the applicant based on the reviews.

9.4.2.4 Extensions

Requests for application period extensions have always met the criteria of timeliness and extenuating circumstances with full documentation. AEMA submitted timely requests and appropriate documentation for several project extensions for projects from Hurricane Katrina (DR-1605-AL) HMGP. Based on the information submitted by AEMA, FEMA approved the extensions. One hundred percent of the applications that received extensions were submitted within the extended application period. Application extensions are consistently timely, and performance extensions are also submitted on time. To ensure all performance extensions are timely in the future, AEMA is considering an information technology (IT) solution that alerts staff weeks in advance of approaching period of performance (POP) deadlines.

9.4.3 AEMA's Performance in Meeting Environmental and Benefit-Cost Analysis Project Reviews

9.4.3.1 Environmental Reviews

AEMA's systematic environmental review process addresses compliance with environmental laws such as National Environmental Policy Act (NEPA) requirements, National Historic Preservation Act, Endangered Species Act, and the Clean Water Act. The Agency's process requires sub-applicants to provide appropriate documentation (including coordination letters and responses) to state and federal agencies with roles in NEPA processes. Sub-applicants can determine which agencies to contact for concurrence letters by viewing the Environmental Information Packet, along with other AEMA mitigation worksheets on AEMA's website. AEMA has established a productive working process with the environmental agencies for many years.

AEMA planners have worked well with sub-applicants over the years to assist them in gathering the appropriate environmental documentation. AEMA planners analyze concurrence letters from various agencies to ensure NEPA requirements. AEMA planners work with sub-applicants to verify accurate agency concurrence letters are included with each application. If letters are absent or incorrect, planners work with sub-applicants to contact the relevant government agency for the particular project.

AEMA has established memorandas of understanding (MOUs) with a number of agencies specifically for this technical assistance to complete the environmental concurrence letters. The Alabama Historic Commission, U.S. Department of the Interior's Fish and Wildlife Service (USFWS), Alabama Department of Environmental Management (ADEM), and Natural Resources Conservation Service (NRCS) all provide concurrence letters for sub-applicants. These federal and state agencies determine whether sub-applicants' projects are in compliance with agency mandates, and withhold concurrence letters when noncompliance issues arise. AEMA staff forward all compliant, appropriate concurrence letters with original applications to FEMA. These MOU's should be periodically reviewed for correctness and completeness.[1]

Drainage projects and construction on previously undisturbed land require letters from all agencies listed, including U.S. Fish and Wildlife, U.S. Army Corps of Engineers, and the U.S Department of Agriculture. Projects such as elevations require only stamped Engineering Plans and a letter from the State Historic Preservation Office (SHPO). With certain types of projects, additional documentation is required. For instance, if the work area is located along the coast, involves five or more acres of land, or if the project may impact low-income or minority groups, more information is necessary for environmental approval. Sub-applicants of shelters and acquisition/demolition projects must provide USGS maps, pictures, and latitude and longitude coordinates as part of the required Historic Review Form.

AEMA has coordinated and conducted outreach for many years to develop effective processes and agreements with state and federal partners to enhance the environmental review process. As a result of these actions, the Agency has an excellent record in the area of environmental reviews submitted to FEMA as part of grant applications. When necessary, FEMA conducts Environmental Assessments (EAs) and Environmental Impact Studies (EISs) to evaluate the impacts of proposed projects on the natural environment and inhabitants. This is typical of most

[1] Specifically, ADEM should review the Alabama Environmental Managements Commission's Environmental Information Packet to ensure that the appropriate ADEM contact information is included within.

State agencies at this point in time. AEMA has seldom, if ever, had applications returned from FEMA with questions or revisions related to NEPA compliance.

9.4.3.2 Benefit-Cost Analysis

AEMA currently requires sub-applicants to submit benefit-cost analyses (BCAs) and documentation as part of their grant application packages. Proposed projects with a benefit cost ratio of 1.0 or greater are accepted for AEMA processing. AEMA staff members review specific BCA data points and check that values are from credible sources with the FEMA BCA Checklist. This checklist also provides space for sub-applicants to list the range of information required for an analysis. To confirm the credibility of sources used in the BCA, planners check supporting documentation such as insurance records, engineering cost estimates, and any explanations as to why FEMA default values were not used. AEMA planners re-run nearly all BCA calculations using the most current FEMA software. In cases where AEMA determines that an analysis is incorrect or insufficiently documented, planners work with sub-applicants to explain and correct these issues. Once AEMA has verified that analyses and documentation are correct, the Agency sends the approved analyses with the grant application to FEMA Region IV for review.

After examining supporting documents and values for accuracy, and working closely with sub-applicants to obtain any missing data, Planners forward the relevant BCA information to FEMA Region IV. Only BCAs that conform to FEMA regulations and policies are sent to FEMA final approval. Although AEMA presently relies on FEMA for assistance with very complex BCAs, AEMA staff members maintain technical proficiency through BCA training from FEMA. As noted above, only applications with completed BCAs would be accepted.

9.4.4 AEMA's Performance in Meeting Quarterly Progress and Financial Reports Requirements

AEMA has very effective processes for tracking progress on mitigation projects, and for submitting quarterly reports and financial reports in a timely manner. Even during periods where the Agency has been administering the grants for hundreds of projects (i.e., after Hurricanes Ivan and Katrina), AEMA's reporting record has consistently been excellent, in part due to internal processes that have been tested and refined over time. AEMA has a nearly 100 percent on-time record for submitting reports to FEMA.

9.4.4.1 Quarterly Progress Reports

AEMA Planners monitor projects to ensure they remain on time and within budget. Quarterly reports are the master schedule of project performance, and AEMA uses them as a project management tool for tracking the scope, schedule, and cost for all projects. This is accomplished through tracking and analysis of sub-grantees milestones and deadlines, and by conducting quarterly site visits for all open projects. Planners use the Mitigation Database as the basic organizational tool. The database tracks major project milestones and other general information such as assigned Tax ID Number (TIN), funding source, project type, and environmental concurrence letters. Staff members generate database reports to provide further tracking documentation for reference in project files.

Sub-grantees are required to submit their reports to AEMA by the 15th of the month following the end of the quarter. If necessary, AEMA planners follow up with sub-applicants to ensure they submit their internal quarterly reports by the appropriate deadline. Staff members review the

reports by the 25th of the month and forward them on to the AEMA Division Director, who sends them to FEMA by the last day of the month following the end of the quarter. AEMA's consistent management of quarterly reports has enabled staff members to repeatedly submit accurate and timely reports.

In the rare cases when projects experience schedule slippage or cost overruns, planners work with sub-grantees to assist in meeting project plans. AEMA's project management process has worked well even during high volume periods. The quarterly report lists planners and corresponding sub-grantees, project types, periods of performance, approval and grant agreement dates, financial breakdowns, and project status.

The quarterly reports were reviewed during the 2013 planning process to ensure they included all required information.

9.4.4.2 Financial Reports

AEMA's Chief Financial Officer (CFO) is responsible for submitting signed quarterly Federal Cash Transaction Reports on time. The reports detail cash on hand at the beginning and end of the reporting period, total receipts, net disbursements, any interest income, and advances to sub-grantees or subcontractors. The CFO provides further technical assistance in supplying FEMA with a quarterly Financial Status Report, the SF269, for each disaster. This form provides cumulative figures for reported federal share, as well as liquidated, authorized, and de-obligated funds. In an annual audit, the State Board of Examiners found two minor issues with financial processes in 2006, which have been modified and remedied for subsequent audits.

9.4.5 AEMA's Performance in Completion Projects and Grant

9.4.5.1 Closeout Procedures

For each project, the AEMA closeout specialist conducts an internal audit to ensure sub-grantees have completed the scope of work within budget. Audits include a review of invoices, cancelled checks, documentation of in-kind expenses, and a physical site visit. Any items that have been modified but do not require FEMA approval (i.e. change in location or minor changes to the budget) are reconciled by AEMA at closeout. AEMA complies with the FEMA closeout process, and uses a checklist to verify the completeness of all required documentation, such as certificates, deeds, titles, operational plans, cancelled checks, and invoices. This process also includes verification of reconciliation activities like funds disbursement and calculation of administrative costs. Once the audit has been completed, the specialist summarizes the results into a project certification, which is distributed to both sub-grantee and FEMA staff, who also receive site photos and updated latitudes and longitudes.

AEMA completes nearly all post-award activities and financial reconciliation within 90 days from the period of performance end date. Upon project completion, the State will quickly request grant closeouts from Region IV via postal letter. AEMA's Mitigation Financial Specialist sends the closeout letter to the Region IV's Mitigation Division Director, advising that project work is complete and an audit has been performed. Final costs are itemized in this letter, including federal share project cost, State-identified federal closure amount, non-federal share project cost, State-identified non-federal share closure amount, and project closure amount. A copy of the certification and a photo are always included with the sub-grant closeout letter.

9.5 Alabama Enhanced State Hazard Mitigation Plan Assessment of Mitigation Actions

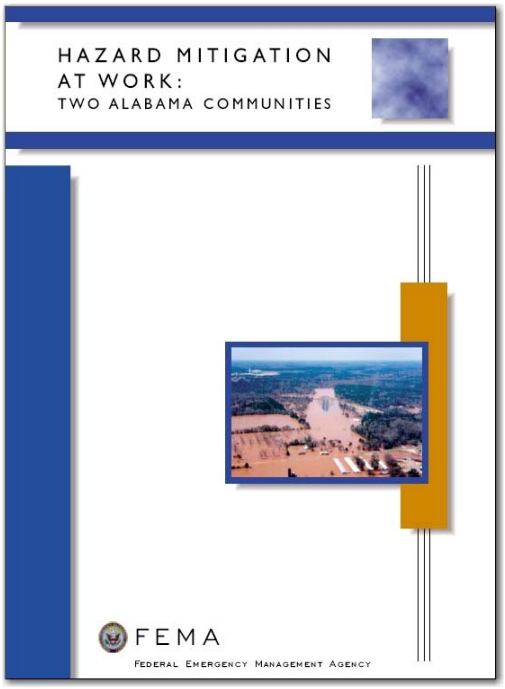
Requirement §201.5(b)(2)(iv): *Document the system and strategy by which the State will conduct an assessment of the completed mitigation actions and include a record of the effectiveness (actual cost avoidance) of each mitigation action, including how the assessment was completed.*

9.5.1 Background

For the purpose of the enhanced plan requirements, AEMA has developed a system and strategy for assessing mitigation actions for losses avoided. Prior to this, AEMA did not have a specific system in place but, over the past decade, the Agency has produced a number of detailed assessments of completed mitigation actions. These studies have focused on the performance of mitigation actions when project sites have again been exposed to natural hazards. Although the initial benefit-cost analyses are designed to capture the full range of avoided damages (benefits), FEMA and AEMA have also consistently advocated developing post-implementation studies (often called success stories) as a way to highlight the effectiveness of mitigation programs, and to test the validity of the benefit-cost analyses. The subsections below describe the studies that AEMA and FEMA have completed recently.

1. After Tropical Storm Alberto in 1994, AEMA and FEMA worked together to identify mitigation projects in the cities of Elba and Geneva, both of which had a history of flooding, and had experienced significant damages from Alberto. In 1997, a storm water pumping project was completed in Elba, to drain a large area inside the City's ring levee. About the same time, AEMA and FEMA were involved in an ongoing residential acquisition/demolition project in Geneva that eventually resulted in 30 structures being removed from a highly flood-prone area known as Baptist Bottoms.

   After a significant flood in 1998, FEMA Region IV and AEMA decided to produce a detailed report on the economic performance (losses avoided) by these two projects. The report, entitled *Hazard Mitigation at Work: Two Alabama Communities* included a detailed re-evaluation of the original benefit-cost analyses for these projects, and an examination of the losses avoided in the 1998 event.



   The re-evaluations of the original benefit-cost analyses showed that both projects were highly cost-effective (ratios of 1.32 and 1.98, respectively). The report also quantified avoided damages of $131,000 in Elba, and over $1.4M in Geneva, from the 1998 flood alone. The report is available from FEMA Region IV or AEMA.

2. In 2001 FEMA, AEMA and the City of Birmingham produced a detailed mitigation project assessment report entitled *Acquisition, Evaluation and Analysis: Acquisition Successes in Birmingham, Alabama.* The report describes a highly cooperative effort among the City, AEMA, FEMA and the U.S. Army Corps of Engineers (USACE) that ultimately resulted in the removal of about 900 flood prone structures from the floodplain. The report describes the specific activities that the agencies undertook. The economic aspect of the study identified more than $60 million in losses avoided in six floods since the property acquisitions began. The total investment by the various agencies was about $34 million. The report is available from the City of Birmingham, AEMA or FEMA Region IV.

3. In 1999, AEMA, the Baldwin County Emergency Management Agency and FEMA Region IV collaborated on a technical report that described losses avoided resulting from acquisitions in Baldwin County through FEMA's Project Impact Program. The report, entitled *Mitigation, an Investment in the Future: Quantifying the Post-Disaster Benefits of Three Elevated Homes in Baldwin County, Alabama* quantified the benefits of elevating three homes using HMGP grants. The elevations were funded following Hurricane Danny in 1997. In September 1998, Hurricane Georges impacted the three sites, but none of the three elevated structures was damaged. The basis of the report was a detailed economic analysis estimated the probable damages from Hurricane Georges if the homes had not been elevated.

9.5.2 System and Strategy for Assessing Completed Mitigation Projects

9.5.2.1 Background

Since 2005, AEMA has administered more than $150 million in mitigation project grants, many of which are still being completed at the time the initial draft of the Enhanced Plan was being developed. The large number of recent mitigation projects in the State offers an excellent opportunity for the State to develop and implement a system to assess completed mitigation projects. Although AEMA has a good record of studying and documenting the performance of projects, the Agency recognizes the value of having a more regularly-scheduled approach to these evaluations, and this is described in the sections below.

AEMA has produced detailed loss avoidance reports which have been effective in determining mitigation effectiveness. However, these technical studies have been *ad hoc*, i.e. there was no pre-established method for identifying projects and initiating studies. The relatively high volume of mitigation grants that the State has processed and administered over the last few years offers an opportunity to begin this process.

AEMA's mitigation project assessment system involves several parts. First, losses will be tracked. Current resources and procedures are conducive to tracking losses avoided via spreadsheet since this is how grant progress is currently tracked. However, the state intends to move towards a GIS or database system in the future. Second, losses avoided from completed projects will be accessed via grant application information, scenario modeling, and outside studies. (It should be noted that a majority of recent grant funds have been used towards the

development of community and individual safe rooms. These present unique challenges to assess losses avoided. A brief description of how losses may be assessed in described below.) The subsections below describe a proposed system for assessing completed mitigation projects.

9.5.2.2 Process for Determining Cost Avoidance

By definition, completed mitigation projects substantially reduce or eliminate damages when natural hazards affect a location again. Acquisition or relocation projects are the only mitigation that results in 100 percent risk reduction. Other mitigation measures such as elevation, strengthening building envelopes to withstand wind, constructing safe rooms, etc. all result in some residual risk because facilities and people are still exposed to damage from the hazard(s). Grant application information and loss avoidance studies will be used to determine loss avoidance for each mitigation project in the state.

The state intends to undertake more loss avoidance studies on projects with the assistance of AEMA BCA experts and external partners. As needed, the state will include the completion of a loss avoidance study in the enhanced plan update Request for Proposals. The specific projects to be assessed will be determined at that time based on technical need. AEMA also intends to work with its internal staff and external partners, such as FEMA, to complete additional loss avoidance studies. For each study, grant application data pertaining to building information, costs, and anticipated benefits will be utilized. Once an actual hazard event occurs in the area, actual losses can be better determined.

As noted above, substantial funds have been used for the development of individual and community safe rooms. For these projects, FEMA's value of a life ($5,800,000) is utilized to determine loss avoidance. A basic formula has been put into place:

Safe Room Cost Avoidance =
(Safe room capacity X FEMA value of life) - (Cost of Safe Room Construction)

Unfortunately, similar to other hazards, to truly reap these benefits, areas where safe rooms have been built must be struck by another disaster to determine the actual cost avoidance.

Other mitigation projects, such as flood elevations and wind retrofits, have been utilized less in the state. However, loss avoidance for these events can be determined by modeling. These studies may be completed internally or by external partners such as the plan update contractor or with assistance from FEMA. Studies will be designed to collect specific metrics to allow detailed analysis. These metrics differ by hazard, and include water depth and velocity for flood, and wind speed and direction for windstorms, among others. In some cases, there will be no structures, operations or people remaining at sites (as is the case with acquisitions and relocations), and in other situations there will be observable data (e.g., high water marks on an elevated foundation) or damage to remaining structures, or various other kinds of empirical information. The type of information gathered will depend on the type of project that was implemented and the hazard that impacted the site.

Given hundreds of mitigation projects underway and in progress in recent years, as well as inevitable new disasters and associated mitigation efforts, assessing each mitigation action will be an ongoing process for the state. The state will begin with more recent disasters such as the

DR-1971 April Tornadoes continue this process as needed throughout the planning process of the state's mitigation plan.

9.5.3 Agencies that will be Involved

To some degree, the agencies that will be involved will be determined by the nature of the project being assessed, how it was funded, and where it is located. Although AEMA will likely be the lead agency in many cases, in some others FEMA Region IV, the U.S. Army Corps of Engineers, the Regional Planning Commissions, local emergency management agencies, and other groups may either lead the effort, or be closely involved with the development of reports. AEMA intends that the assessment process will be highly collaborative in most cases. The following is a preliminary list of agencies that are likely to be involved with assessments and reports.

- Alabama Emergency Management Agency (including hazard mitigation planner and BCA experts)
- ADECA
- Local or regional emergency management organizations
- Regional Planning Commissions
- FEMA Region IV
- U.S. Army Corps of Engineers
- National Oceanic and Atmospheric Agency (NOAA)
- Other regional groups (including non-profits)
- County and local governments
- Academic organizations
- State Hazard Mitigation Team and Stakeholders groups

In addition to public agencies, there are consultants to the public agencies that could be engaged to carry out studies and produce assessment reports. One established option is to use the resources available through the FEMA Hazard Mitigation Technical Assistance Program (HMTAP). FEMA has used HMTAP to obtain the services of experienced consultants to prepare several losses avoided studies across the nation. As part of developing an enhanced plan, AEMA has developed a sample HMTAP task order template for losses avoided analysis support that can be initiated when funding is available, either through the State or through a FEMA grant program after a disaster. This ready-to-go task order template can expedite the technical assistance process and help Region IV find additional technical resources to help the State. In addition, it can provide FEMA and the State important resources to assist in the assessment process when the needed data is perishable and their staff is busy in the response and recovery phase.

The task order template is attached as an appendix to the State Hazard Mitigation Plan. AEMA will also be resourceful in working with FEMA on its Rapid Response HMTAP Task Orders, which involve collecting data such as high water marks post-disaster that may be useful in conducting assessments. The State is also considering establishing alternate State contracting mechanisms outside the HMTAP for this purpose as well. This effort will take some time to initiate because of State contracting procedures. AEMA intends to identify a group of consultants and contractors with appropriate skills in technical areas such as engineering and economics.

Similarly, FEMA Risk MAP projects and funds may aid in completing loss avoidance studies throughout the state.

9.5.4 Timeframe for Carrying Out Assessments

As noted above, the state has experienced several recent devastating disasters that have led to hundreds of mitigation projects through the state. Given the abundance of current projects and inevitable future disasters and mitigation projects, the state has an ongoing time frame for completing the loss avoidance assessments. The time frame for carrying out assessments depends on the following factors:

- Current open disasters and disaster occurrences (which limits the availability of AEMA staff).
- Availability of resources to conduct the process.
- Nature of the project that is being assessed.
- Technical complexity of the analysis.
- Involvement and cooperation of other organizations and consultants that may be involved.
- The ease or difficulty in obtaining data.

AEMA recognizes that (1) by definition, the project assessment process should begin soon after natural hazard events have occurred; and (2) that the post-event environment is generally not conducive to activities not directly related to response or recovery operations. However, as described earlier in this section, a potentially significant amount of the data needed for assessments is perishable, and must be gathered in the near-term. This dilemma can be resolved by establishing relatively simple processes and ensuring that senior AEMA officials are aware of the project assessment process, and concur that staff may be assigned to administer such work (such as measuring flood heights).

In general, AEMA intends to initiate the assessment process within a month of a hazard impacting an area where a selected mitigated project is located. The initial phase of most assessments will be to collect data. As noted above and elsewhere in this enhanced plan, AEMA intends to develop job aids to facilitate the data collection process. The primary job aid will be a template to gather and organize perishable data, so non-expert staff can effectively conduct data collection efforts. The job aid will describe data that is required, collection methods, and potential sources of information, including State and local and agency points of contact.

Technical data to be gathered in post-event field visits or research includes:

- Frequency (from sources like gauge data, meteorology websites, etc.)
- Location and extent of hazard (including severity and various measures by hazard)
- Observed damages/results
- Locations of structures, people and/or operations that were or would have been affected
- How many properties, operations, people were or would have been impacted
- Water depth and velocity at site (if flood)
- Flood duration at site (if flood)
- Wind speed at site (if wind storm)
- Ground shaking at site (if seismic)

9.5.5 Tracking Potential Losses Avoided by Project

The State intends to develop and maintain a GIS-based methodology and database for tracking losses avoided by project. Beginning with Hurricane Isaac, the state is moving towards an online grant submission process. AEMA is exploring opportunities to integrate loss avoidance tracking into this system. However, it is currently not in database or GIS based, limiting how losses avoidances could be integrated. AEMA recognizes that a GIS or database system offers a useful method of archiving data, and for comparative analysis in some cases. Initial development of this method will involve close coordination between AEMA planning and technical staff, to ensure that data gathered for any losses avoided studies includes information that will allow spatial analysis.

In the meantime, AEMA will begin tracking losses avoided via a spreadsheet platform and gradually transition to the GIS or database format. The state has a process currently in place that tracks grants status via spreadsheet so losses avoided will be integrated into this process.

9.5.6 Verification that Assessments will be Completed by Next Plan Update

AEMA asserts that at least three project assessments will be undertaken and completed by the time the State plan must be updated again in the year 2013. At the time of the drafting of this enhanced plan, the State had not identified specific projects that will be assessed. As noted above, numerous mitigation projects are in process or have been completed across the State, increasing opportunities to identify sites that have been impacted by hazards after projects were implemented. AEMA will seek opportunities to assess different kinds of mitigation projects, although clearly possibilities may be limited by the numbers, severities and locations of natural hazards that occur between the draft enhanced plan and the time of the plan update. It is not possible to definitively state the size or complexity of projects that will be assessed. As part of the dual processes to update the State plan and assess projects, AEMA will ensure that the assessments relate to the plan to the extent possible.

9.6 Alabama Enhanced State Hazard Mitigation Plan Effective Use of Available Mitigation Funding

Requirement §201(5)(b)(3): *Demonstrate that the State effectively uses existing mitigation programs to achieve its mitigation goals.*

9.6.1 Background

This subsection discusses the State's effectiveness with regard to (1) maximizing the use of the funds that have been available through various FEMA programs, and (2) using mitigation funds to carry out the goals described in the State Hazard Mitigation Plan (State HMP). AEMA presently administers six FEMA hazard mitigation programs. These include three established programs: the Hazard Mitigation Grant Program (HMGP), the Pre-Disaster Mitigation Program (PDM), and the Flood Mitigation Assistance Program (FMA); and two newly created ones: the Severe Repetitive Loss (SRL) Mitigation Program and the Repetitive Flood Claims (RFC) Mitigation Program. The State also administers the State Sirens Grant (SSG) Program. It should be noted that at the time this Plan was being developed, FEMA was in the process of consolidating a number of these under the HMA program.

This subsection of the Enhanced Plan is divided into two general subject areas. These are: (1) the State's effectiveness in using mitigation programs to achieve the goals established in the State HMP, and (2) the State's objective performance in spending available mitigation funds.

9.6.2 Alabama's Effectiveness in Using Mitigation Programs to Achieve the Goals in the State Hazard Mitigation Plan

AEMA has managed various FEMA mitigation programs very efficiently over nearly a decade, through numerous federally declared disasters. Through this experience, the State has developed and streamlined its administrative processes to the point that there usually has been a close balance between the amount of funds available through the programs and the funds requested by the various grant sub-applicants. This is a strong, positive indicator that the State is efficiently administering the grant programs and using funds effectively to meet its goals. All six programs (including the SSG) address the State's mitigation goals in one way or another. The goals are listed and described in detail in **Section 6.3** of the newly updated State Hazard Mitigation Plan. They are:

1. Enhance the comprehensive statewide hazard mitigation system
2. Reduce Alabama's vulnerability from natural hazards
3. Reduce vulnerability of new and future development
4. Foster public support and acceptance of hazard mitigation
5. Expand and promote interagency hazard mitigation cooperation

Three of the goals (1, 4 and 5) are specifically related to developing and integrating hazard mitigation statewide, and the others are focused on reducing vulnerabilities due to natural hazard occurrences. The following two subsections briefly describe how the State's use of grant program funding has moved the State toward meeting these goals. The first subsection is related to Goals 1, 4 and 5, in the general category of developing and integrating hazard mitigation in the State. The second subsection addresses goals 2 and3, in the category of natural hazard vulnerability reduction. This section of the Enhanced Plan is intended only as a

general discussion of the subject – other parts of the Enhanced Plan include much more detail about the State's activities in specific subject areas.

9.6.2.1 Developing and Integrating Hazard Mitigation Statewide

State and County Mitigation Plans

Since 2003, AEMA has secured and administered grants that have allowed each of Alabama's 67 counties to complete hazard mitigation plans in accordance with the requirements in the DMA2K legislation and the Interim Final Rule related to mitigation planning. In addition, the State received planning grants from FEMA to develop the initial State hazard mitigation plan (approved in 2004), to complete a comprehensive update in 2007 through 2008, to draft the present Enhanced State Hazard Mitigation Plan, and to write the Severe Repetitive Loss Mitigation Plan (as **Appendix O** to the Standard State Mitigation Plan).

The development of the local plans and the State plan has been a significant step in extending mitigation into various communities and programs across Alabama. During the process of developing the local and multi-jurisdictional plans, AEMA worked with counties, regional councils, and various other local and regional groups to distribute guidance and provide technical support. AEMA was also responsible for the detailed review and State-level approval of all 67 local plans.

Mitigation Success Stories

As noted in **Section 5**, in the past the State has also used mitigation program funds to complete several detailed post-project assessments (success stories), and as part of the Enhanced Plan process intends to develop procedures to complete several additional studies in the next year, also using grant program funds.

9.6.2.2 Risk Reduction

Return on Federal, State and Local Investments in Mitigation

There are several ways to measure the State's progress in reducing risks from natural hazards. First is the use of comparative risk assessments (the basis of benefit-cost analysis), which compares risk in before- and after-mitigation scenarios. The output of a benefit-cost analysis is a benefit-cost ratio, which compares the risk reduction (the benefits of an action) to its costs. All of FEMA's mitigation grant programs require that projects achieve positive benefit-cost ratios as a condition of funding. As discussed elsewhere in this plan, AEMA is fully compliant with this requirement in all cases. This means that every project the State funds return more in the long run than they cost.

The second method to illustrate risk reduction is by studying cases where natural hazards have impacted locations where mitigation projects have been completed. As discussed in **Section 9.5** of this Enhanced Plan, Alabama has completed several studies of such cases, and showed that the projects were highly cost-effective.

9.6.3 Grant Program Funding and Numbers of Mitigation Projects Administered by AEMA

Another way to illustrate the State's success in meeting its risk reduction goal is by documenting the numbers of projects it has administered through various FEMA grant programs. As shown in the table below, since 2001, AEMA has administered hundreds of HMGP, FMA, and PDM projects. These projects are generally required to be cost effective (with the noted exception of planning grants and 5 percent Initiative projects under HMGP, the latter requiring only a cost-effectiveness narrative), so by definition the State has funded and administered projects that generated at least $94 million in benefits (risk reduction) for communities across Alabama. **Table 9.6-1** shows various metrics related to FEMA's HMGP in Alabama, since 2001.

Table 9.6-1
Hazard Mitigation Grant Program Expenditures Since 2001

Disaster No./Name/Year	Approved Federal Share	No. Projects Funded	No. Projects Completed	% Disaster Completed	% Used Funds
1399/Tornadoes/2001	$539,308	4	3	100	85
1438/H. Isidore/2002	$817,923	10	8	100	82
1442/Tornadoes/2002	$3,149,374	6	5	83	70
1466/Tornadoes/2003	$3,675,292	13	9	92	77
1549/H. Ivan/2004	$35,626,403	161	149	93	76
1593/H. Dennis/2005	$1,480,927	3	1	33	44
1605/H. Katrina/2005	$27,866,399	213	95	45	33
1687/Storm-Tornado/2007	$1,330,179	6	0	0	0
Total	**$74,485,805**	**146**	**270**	**---**	**---**

Table 9.6-1 above, the Percent Disaster Completed column indicates the percentage of mitigation projects that are closed, among all funded projects. **Table 9.6-2** shows FMA expenditures in Alabama since 2001.

Table 9.6-2
Flood Mitigation Assistance Program Expenditures Since 2001

Use	Funding Year	Location	Award Amount
Acquisition	2001	City of Birmingham	$377,448
Elevation	2003	Baldwin County	$56,500
Elevation	2003	Baldwin County	$135,143
Flood Mitigation	2003	Town of Brookside	$28,100
Flood mitigation	2003	Town of Brookside	$20,290
Acquisition	2004	City of Mobile	$143,340
Acquisition	2004	Town of Dauphin Island	$135,140
Technical Assistance	2005	Statewide	$32,850
Elevation	2005	Baldwin County	$53,945

Table 9.6-2
Flood Mitigation Assistance Program Expenditures Since 2001

Use	Funding Year	Location	Award Amount
Mitigation planning	2006	Town of Dauphin Island	$22,162
Total	**---**	**---**	**$1,004,918**

Table 9.6-3 shows the type and number of PDM grants secured and administered by AEMA in the period 2003 to 2008. The State has been very successful in developing and managing the grants since the inception of the program in 2003, with at least three projects being funded in each of the years.

Table 9.6-3
Pre-Disaster Mitigation Program Expenditures 2003 to 2008

Use	Funding Year	Location	Federal Share	Non-federal Share	Total
Planning	2003	State Mitigation Plan	$266,401	$88,800	$355,201
Planning	2003	State Mitigation Plan	$186,281	$62,094	$248,375
One time funding	2003	Statewide AEMA	$37,500	$12,500	$50,000
Acquisition	2004	Jefferson County	$226,642	$75,546	$302,188
Acquisition	2004	City of Birmingham	$2,946,570	$982,190	$3,928,760
Acquisition	2004	City of Birmingham	$2,490,315	$830,105	$3,320,420
Management	2004	Statewide AEMA	$867,450	$289,150	$793,535
Bluff Stabilization	2006	City of Spanish Fort	$2,073,900	$691,300	$2,765,200
Acquisition	2006	City of Birmingham	$1,047,338	$349,112	$1,396,450
Acquisition	2006	City of Birmingham	$2,960,963	$986,687	$3,946,750
Acquisition	2007	City of Birmingham	$963,240	$321,080	$1,284,320
Planning	2007	Shelby County	$38,062	$12,148	$50,750
Management	2007	Statewide AEMA	$41,728	$13,909	$55,637
Total			**$14,146,390**	**$4,714,621**	**$18,497,586**

As noted earlier, most of the projects in the tables above required detailed benefit-cost analysis in order to be eligible for funding. It can be concluded that the natural hazard risks have been reduced by at least the same amount as the project costs, and in many cases much more.

9.6.4 Severe Repetitive Loss (SRL) and Repetitive Flood Claims (RFC) Programs

In addition to the mitigation grant programs noted above, FEMA has recently initiated the SRL and the RFC Programs, both of which are designed to reduce risk to the most flood-prone properties in the state. Although these programs are too new to have a significant history, AEMA has been proactive in preparing to initiate and administer these new programs. Alabama developed a Severe Repetitive Flood Loss Mitigation Plan (SRL Plan) **Appendix O** to the Standard State Mitigation Plan. The SRL plan, which exceeded basic FEMA requirements

by including detailed risk assessments of repetitive loss properties at the county level, means that projects are eligible for the 90/10 federal/local cost share. AEMA also provided all 67 counties and the regional councils with FEMA guidance on the SRL and RFC programs, and has worked with several communities as the program is initiated. The State intends to provide ongoing technical and program support to counties and local jurisdictions as part of its role in administering the FEMA grant programs. These efforts tie in with the State risk reduction goals through the process of identifying and mitigating properties with the most significant flood insurance claims histories. The program is another illustration of the State's commitment to developing and integrating mitigation throughout Alabama.

9.6.5 Risk and Vulnerability Assessments of Critical State Facilities

As part of the 2007 through 2008 State Plan update process, AEMA and its contractor completed vulnerability and risk assessments for 22 critical State facilities in Mobile and Baldwin Counties (a complete list of these facilities can be found in **Section 9.7.8**). Working with the State Division of Risk Management, AEMA identified the facilities in the study based on two criteria: (1) critical function following natural hazard events, and (2) proximity to the Gulf and FEMA-designated V-zone. Field teams comprised of engineers and subject-matter experts visited each of the facilities and completed a highly detailed vulnerability checklist that captured numerous details about the facilities, including many structural characteristics related to their performance under wind and flood loads. In addition to the completed checklists, the work product includes detailed written reports on each site, and wind/flood risk assessments that quantify potential future losses to the facilities. The State will distribute these reports to individual facility operators, and will also use the results to develop and prioritize mitigation activities. The reports are available through AEMA, and the results have been incorporated into the Risk Assessment (**Section 5**).

9.7 Alabama Enhanced State Hazard Mitigation Plan Commitment to a Comprehensive Mitigation Program

Requirement §201(5)(b)(4)(i-vi): *Demonstrate that the State is committed to a comprehensive state mitigation program.*

9.7.1 Introduction

The State of Alabama has significantly increased its commitment to a statewide mitigation program since 2003, when AEMA organized efforts to expand state and local mitigation planning processes to comply with Disaster Mitigation Act of 2000 (DMA2K) requirements. This section describes and evaluates the State's current commitment level to a comprehensive mitigation program. The most important components of the State's mitigation program include:

- Establishment of the State Hazard Mitigation Planning Council
- The completion and adoption of a comprehensive update to the State's Hazard Mitigation Plan
- Creation of an All-Hazards Task Force
- Training of hazard mitigation planning staff in all twelve Regional Planning Councils
- Passing of modernized legislation of State emergency management operations
- Preparation of an updated State emergency operations plan with matching County plans

- Establishing a State long term recovery program and full-time coordinator
- Continuing education for government officials and mitigation professionals

It should be noted that **Section 6** of the newly updated State Hazard Mitigation Plan includes extensive discussions of many of Alabama's efforts in the area of hazard mitigation (see **Section 6.4** in particular).

9.7.2 Local Hazard Mitigation Planning Support

AEMA has a longstanding record of assisting local jurisdictions with hazard mitigation planning needs, even prior to the adoption of Federal planning mandates in the DMA2K, to encourage and support hazard mitigation planning prior to and since publication of the federal planning regulations. AEMA was an early leader in Region IV by conducting local mitigation planning workshops starting in 1996 and 1997 in Birmingham, Mobile and Huntsville. More recent activities supporting mitigation planning are summarized below.

- Even before the DMA2K planning requirements took effect, AEMA funded and supported a limited number of multi-jurisdictional mitigation plans. A Tri-County plan was prepared by the South Alabama Regional Planning Commission for Mobile, Escambia, and Baldwin counties. The Regional Planning Commission of Greater Birmingham prepared plans for St. Clair, Blount, and Shelby counties.

- AEMA has long promoted flood hazard mitigation planning, in accordance with the Community Rating System (CRS) Program guidelines. A limited number of flood hazard mitigation plans were developed prior to the DMA2K requirements and integrated into subsequent all-hazards plans that complied with DMA2K. Funding assistance for flood hazard mitigation planning continues to be supported through the FEMA Flood Mitigation Assistance (FMA) grant program and has been used recently in select cases (City of Birmingham, Town of Brookside, and City of Huntsville) to supplement DMA-compliant plans.

- In December 1999, AEMA (then the State coordinating office for the NFIP) published the *Floodplain Management in Alabama: Local Officials Reference Manual* as an aid to local floodplain program administrators. Along with the guidebook, the State NFIP Coordinator developed a standardized permit application form to be used across the State. The NFIP Coordinator (now housed in the ADECA Office of Water Resources) maintains a model floodplain prevention ordinance and assists localities with ordinance adoption and updates. The State also provides regular workshops for local floodplain management officials for administering the NFIP and coordinating the CRS Program. A full library of NFIP publications is available to workshop participants.

- Following adoption of DMA2K, AEMA conducted four workshops in early 2003 to introduce the newly mandated mitigation planning process to local officials and planning professionals throughout the State. That same year, the State awarded 22 planning grants to county emergency management agencies to fund the preparation of multi-jurisdictional plans. These small grants ranged from $10,800 to $15,000 per county, but were sufficient to kick off the local planning processes within the State's most populated and highest-risk counties. The following year, AEMA contracted with the twelve Regional Planning Councils to assist with the remaining 45 county plans. By early 2007, 65 of 67 County plans had been approved. As of December 31, 2009, every

county has an approved hazard mitigation plan and 18 counties have approved updates. An additional 44 counties have plans in the update process.

- By early 2008, the State initiated the five-year local planning update process including the award of funds to seven Regional Planning Councils to update 34 multi-jurisdictional County plans. Funds for the remaining county plan updates will be awarded directly to the county EMAs. Over $1.8 million in planning funds have been reserved for updating plans in the State's two highest-risk and most-populated counties: Jefferson and Mobile. These funds will also finance the development of advanced risk assessment tools and extensive public outreach measures to strengthen their local mitigation programs.

- The Alabama Planning Institute (API), the continuing education arm of the Alabama Chapter of the American Planning Association, has been offering planning courses throughout the State to local officials and planners over the past 20+ years. Administered through the University of North Alabama, Office of Continuing Education, the API has successfully implemented a Certified Planning and Zoning Official curriculum that has widespread popularity. The API is now investigating opportunities to begin formal training courses in hazard mitigation topics such as mitigation planning, BCA methods, mitigation grant programs, and integrating mitigation into disaster recovery.

- In October 2007, AEMA conducted its own hazard mitigation grant workshops for local officials, and expects to expand the outreach effort. This course was a new addition to the general hazard mitigation workshops offered around the State over the last 15 years.

- The Institute for Emergency Preparedness at Jacksonville (AL) State University offers undergraduate, graduate, and certificate programs in emergency management. The State recently approved a Ph.D. offering in emergency management. Degree requirements include coursework in hazard mitigation and emergency operations planning.

- AEMA's web site at ema.alabama.gov is a public website which provides hazard mitigation links to access the State plan and download forms, documents, and guidance materials for developing and funding hazard mitigation projects. In addition, the State Hazard Mitigation Plan and all 67 approved county hazard mitigation plans are online. The website also features a Risk Assessment Mapping Tool (completed in Spring 2009) that allows users to determine what hazard risks they are exposed to, recent hazard activity, and evacuation routes based on their location.

- AEMA maintains an e-mail listing for distribution of information, announcements, and guidance on mitigation planning to planners, EMA staff, and local officials.

- A list of NFIP community status, CRS program participation, repetitive loss properties, NFIP policy information, and mitigation grant records for documenting community involvement for local mitigation plans are also maintained by AEMA.

- Recently, AEMA completed a comprehensive assessment of local capabilities in hazard mitigation, including staffing capabilities to support hazard mitigation planning activities. This assessment includes every town, city, and county within Alabama.

- To assist FEMA and remain knowledgeable of local planning efforts, AEMA, in conjunction with FEMA, performs reviews and critiques of local draft plans for compliance with FEMA and AEMA requirements, using the FEMA Region IV Crosswalk form.

- FEMA held local hazard mitigation planning workshops in July and August 2012 to assist communities in the development of compliant local hazard mitigation plans.

Most notably, in a span of just a few years, the State and AEMA facilitated the development of 67 county hazard mitigation plans, all of which were approved by FEMA at the time this Enhanced Plan was prepared. The State assisted county governments in securing FEMA grants to develop the plans. AEMA then administered the grants and provided continuous technical assistance to counties during the planning process.

The cyclical plan update process has recently begun, and AEMA has already started to secure additional grant funds for this purpose. Most recently, FEMA approved a $600,000 grant for Mobile County to conduct a highly detailed plan update, including a comprehensive risk assessment. Mobile County is one of the two most at-risk counties in the State, and the results of the plan development and risk assessment will translate directly into identifying appropriate mitigation alternatives.

9.7.3 Statewide Program of Hazard Mitigation

Since the 2004 adoption of Alabama's first State Natural Hazard Mitigation Plan, new legislative initiatives have developed and a new statewide organization of mitigation councils has been formed to promote hazard mitigation. Foremost among the State's programs is the active support of the Governor's office, which includes the Governor's landmark legislation updating the Alabama Emergency Management Act of 1955. The Governor also provided approval and active support for the implementation of the 2004 State Hazard Mitigation Plan and the 2007 Plan update. Actions that promote statewide hazard mitigation are summarized below.

- In 2004, Governor Bob Riley signed Executive Order No. 19 (EO 19), which established the State Hazard Mitigation Council and directed its members to actively participate in the process. The order emphasized the relative importance of the hazard mitigation to the Governor. The Council was also reactivated in 2007.

- The Alabama Emergency Management Act of 1955, Title 31, Chapter 9, *Code of Alabama*, 1975, created AEMA and established a statewide program for emergency management. Act 2006 – 522 of the Alabama Legislature, which amended the 1955 Act noted above, was signed into law by Governor Bob Riley on April 20, 2006. This landmark legislation was the first major update to the State's emergency management powers in over 50 years.

- The All-Hazards Task Force is an outgrowth of the Regional Planning Council (RPC) involvement in local mitigation planning. First established in 2004 to support RPC planning assistance, this organizational effort has resulted in at least one qualified mitigation planner on the staff in each of the twelve RPCs. Over the past four years, the Alabama EMA has provided extensive training, technical assistance, and funding for RPC support of local mitigation planning. The makeup of the Task Force was expanded to involve all local planning agencies, including county EMAs and local planners. The

Task Force remained in place until all 67 had an approved hazard mitigation plan. In January 2010, the All-Hazards Task Force dissolved, but may be re-established with a charter.

In a new mitigation initiative, AEMA and ADECA collaborated on mitigation projects to assist two communities recovering from Hurricane Ivan. The City of Demopolis received a large drainage project totaling over one million dollars, with AEMA/FEMA HMGP covering a majority of the costs, ADECA/HUD providing about a third of the funding, and the City contributing a smaller percentile. The drainage project assisted mostly low to moderate income households (approximately 250 total beneficiaries). Crenshaw County was the recipient of a collaborative $1.5 million mitigation and post-disaster recovery project: the construction of a water tank and connecting pipelines to supply public drinking water to over 2,000 residents. Distribution percentages remained similar among AEMA/FEMA HMGP and ADECA/CDGB Disaster Recovery with local funding from the South Crenshaw Water Authority.

AEMA also recently developed a highly detailed plan for implementing the newly initiated FEMA SRL mitigation program. The plan, which was developed as an appendix to the main SHMP, includes mapping of all the RL and SRL properties in the five counties with the most of these properties. This Plan makes the state eligible to receive a 90 percent federal/10 percent non-federal cost-share for approved SRL projects. The State is also working toward a general risk assessment for RL properties using a process that is based on the FEMA LD software.

9.7.4 Flood Map Modernization Program

As noted in the State HMP, in September 2002, the State of Alabama became a Cooperating Technical Partner (CTP) with FEMA under the Flood Map Modernization Program. The goal of the program is to update maps so that the flood insurance program is more closely aligned with actual risk, which encourages wise floodplain management and increases the public's awareness of flood hazards. The ADECA – Office of Water Resources (OWR) is responsible for implementing the Map Modernization program within the State. The national program has been identified as a cornerstone for helping communities become better prepared for flood disasters.

To date, OWR has completed the Digital Flood Insurance Rates Maps (DFIRMs) and updating Flood Insurance Studies (FISs) in all of the Alabama counties. Each county's FIRM will be converted to a common the digital format, allowing for wider and easier access by individuals. This program will conclude in 2010 and be replaced by FEMA's Risk MAP program. OWR will also administer this program, which intends to enhance the updated DIRMs. This extensive effort is an example of the State's ongoing commitment to mitigation programs.

9.7.5 State Match Support of Local Mitigation Projects

The State of Alabama does not provide matching funds for local mitigation projects. Instead, AEMA provides guidance and direct technical support to local jurisdictions for developing feasible projects that meet FEMA and AEMA eligibility standards. This guidance includes assistance in identifying local match resources and potential in-kind services to reduce cash obligations. In some cases HUD Community Development Block Grant s (CDBG) are used as part of the required non-federal match for FEMA grants. AEMA sometimes facilitates contacts or information exchange among various organizations and/or jurisdictions in order to maximize the use of such funds for matching.

9.7.6 Building Codes and Standards

Alabama is a home rule State, and as such the State has no authority to implement building codes. After Hurricane Ivan, some local governments adopted model building codes (typically the International Building Code), but the State was not involved in this activity, and there is not any expectation that this will change in the near future. In some cases (tornado shelters for example), FEMA and other agencies mandate that specific construction standards must be applied to projects. In its role as administrator of the grant programs, AEMA ensures that these standards are observed.

9.7.7 Integration of Mitigation into Post-Disaster Recovery Operations

AEMA has been working steadily to integrate mitigation into post-disaster operations over the last decade. The State-Federal agreement designates the State Hazard Mitigation Officer (SHMO) as the Coordinator of all mitigation activities in the State following disasters. AEMA's mitigation division uses Transitional Recovery Offices (TROs) and/or Joint Field Offices (JFOs) as bases of operations for all post-disaster mitigation operations, including interaction with communities in the immediate aftermath of events. Mitigation planners are currently working with the FEMA and State Public Assistance (PA) Program to more fully integrate mitigation into these operations. This includes close coordination with State and Federal PA staff, and development of a process whereby AEMA Mitigation reviews FEMA Project Worksheets to identify activities that are potentially eligible for funding through one of the mitigation grant programs.

In addition, the Alabama Disaster Recovery Program and Fund was authorized in 2009. It is a requirement that local governments have an approved mitigation plan in place to receive any recovery money from the Fund. AEMA is responsible for administering the program and funds.

9.7.8 Identifying and Mitigating Risks to Buildings Identified as Necessary to Post-Disaster Response and Recovery Operations.

As part of the 2007-2008 State Hazard Mitigation Plan update process, AEMA began the process of identifying and mitigating risks to assets deemed necessary to post-disaster response and recovery operations. The Agency's focus is on critical facilities in Mobile and Baldwin Counties due to the higher potential of catastrophic loss from a hurricane. This process started by working with several State and local organizations including the Alabama Division of Risk Management and the Mobile County and Baldwin County Emergency Management Agencies. The Division of Risk Management provided a detailed list of more than 20,000 State-owned facilities, and assisted AEMA with the process of sorting and prioritizing the assets.

The goal of this effort was to identify facilities that clearly have essential disaster and post-disaster functions, and to the extent possible, identify those with known vulnerabilities. The process was successful in establishing an initial list of potential high-priority facilities, but AEMA

determined that the list only partly satisfied the requirement to identify facilities that are necessary to response and recovery. To address this issue, AEMA then contacted the Directors of Emergency Management in Mobile and Baldwin Counties to get their input on facilities of particular importance in their respective areas. The finalized list of those includes the following 22 facilities:

- Alabama Department of Corrections; Loxley Work Release and Community Work Center
- Alabama Department of Corrections; Mobile Work Release and Community Work Center
- Alabama Forestry Commission; Bay Minette
- Alabama Forestry Commission; Loxley
- Baldwin County; Fort Riel Armory
- Mobile County; Fort W.L. Smith Armory
- Alabama Department of Wildlife and Freshwater Fisheries; District 5 Office
- Alabama State Port Authority; Administration Facility
- Alabama State Port Authority; Police Facility
- Alabama State Port Authority; Telecommunications Facility
- University of South Alabama; Medical Center
- University of South Alabama; Mitchell Cancer Institute
- University of South Alabama; Childrens' Hospital
- University of South Alabama; Springhill Campus
- University of South Alabama; Baldwin County Campus
- James Faulkner State Community College; Main Campus, Bay Minette
- James Faulkner State Community College; Fairhope Campus
- James Faulkner State Community College; Wade Ward Campus
- Mobile County Department of Human Resources; Tunstall Administration Building
- Bishop State Community College
- Baldwin County Department of Human Services
- Baldwin County Department of Human Resources; Rockwell Health Center

Although not all of these buildings were determined to be essential to response and recovery, many of them have specific post-disaster functions, including medical treatment (and other health-related functions), human resources and shelters. An experienced team of engineers visited each of these facilities and completed highly detailed vulnerability checklists. In addition to this, field teams gathered the data required to perform wind and flood risk assessments with the eventual goal of developing and implementing mitigation projects to address significant vulnerabilities. The State intends to integrate all of this information onto a GIS platform so that it can be compared and analyzed in geospatial terms. AEMA is also looking into the possibility of using the data with the FEMA HAZUS software to perform more detailed and comparative assessments in the future.

AEMA prepared detailed vulnerability reports for each of the facilities on the list. The reports were provided to each facility, and AEMA will consider the recommendations when funding becomes available through the various mitigation grant programs. Further, the completed results of the assessment for these buildings were incorporated into **Section 5 (Risk Assessment).**

This page intentionally blank

Appendix A
Disaster Mitigation Act of 2000
(106-390-October 30, 2000)

PUBLIC LAW 106–390—OCT. 30, 2000

DISASTER MITIGATION ACT OF 2000

Public Law 106–390
106th Congress

An Act

Oct. 30, 2000
[H.R. 707]

To amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act to authorize a program for predisaster mitigation, to streamline the administration of disaster relief, to control the Federal costs of disaster assistance, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Disaster Mitigation Act of 2000.

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

42 USC 5121 note.

(a) SHORT TITLE.—This Act may be cited as the "Disaster Mitigation Act of 2000".

(b) TABLE OF CONTENTS.—The table of contents of this Act is as follows:

Sec. 1. Short title; table of contents.

TITLE I—PREDISASTER HAZARD MITIGATION

Sec. 101. Findings and purpose.
Sec. 102. Predisaster hazard mitigation.
Sec. 103. Interagency task force.
Sec. 104. Mitigation planning; minimum standards for public and private structures.

TITLE II—STREAMLINING AND COST REDUCTION

Sec. 201. Technical amendments.
Sec. 202. Management costs.
Sec. 203. Public notice, comment, and consultation requirements.
Sec. 204. State administration of hazard mitigation grant program.
Sec. 205. Assistance to repair, restore, reconstruct, or replace damaged facilities.
Sec. 206. Federal assistance to individuals and households.
Sec. 207. Community disaster loans.
Sec. 208. Report on State management of small disasters initiative.
Sec. 209. Study regarding cost reduction.

TITLE III—MISCELLANEOUS

Sec. 301. Technical correction of short title.
Sec. 302. Definitions.
Sec. 303. Fire management assistance.
Sec. 304. Disaster grant closeout procedures.
Sec. 305. Public safety officer benefits for certain Federal and State employees.
Sec. 306. Buy American.
Sec. 307. Treatment of certain real property.
Sec. 308. Study of participation by Indian tribes in emergency management.

TITLE I—PREDISASTER HAZARD MITIGATION

42 USC 5133 note.

SEC. 101. FINDINGS AND PURPOSE.

(a) FINDINGS.—Congress finds that—

(1) natural disasters, including earthquakes, tsunamis, tornadoes, hurricanes, flooding, and wildfires, pose great danger to human life and to property throughout the United States;

(2) greater emphasis needs to be placed on—

(A) identifying and assessing the risks to States and local governments (including Indian tribes) from natural disasters;

(B) implementing adequate measures to reduce losses from natural disasters; and

(C) ensuring that the critical services and facilities of communities will continue to function after a natural disaster;

(3) expenditures for postdisaster assistance are increasing without commensurate reductions in the likelihood of future losses from natural disasters;

(4) in the expenditure of Federal funds under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.), high priority should be given to mitigation of hazards at the local level; and

(5) with a unified effort of economic incentives, awareness and education, technical assistance, and demonstrated Federal support, States and local governments (including Indian tribes) will be able to—

(A) form effective community-based partnerships for hazard mitigation purposes;

(B) implement effective hazard mitigation measures that reduce the potential damage from natural disasters;

(C) ensure continued functionality of critical services;

(D) leverage additional non-Federal resources in meeting natural disaster resistance goals; and

(E) make commitments to long-term hazard mitigation efforts to be applied to new and existing structures.

(b) PURPOSE.—The purpose of this title is to establish a national disaster hazard mitigation program—

(1) to reduce the loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from natural disasters; and

(2) to provide a source of predisaster hazard mitigation funding that will assist States and local governments (including Indian tribes) in implementing effective hazard mitigation measures that are designed to ensure the continued functionality of critical services and facilities after a natural disaster.

SEC. 102. PREDISASTER HAZARD MITIGATION.

(a) IN GENERAL.—Title II of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5131 et seq.) is amended by adding at the end the following:

"SEC. 203. PREDISASTER HAZARD MITIGATION.

President.
42 USC 5133.

"(a) DEFINITION OF SMALL IMPOVERISHED COMMUNITY.—In this section, the term 'small impoverished community' means a community of 3,000 or fewer individuals that is economically disadvantaged, as determined by the State in which the community is located and based on criteria established by the President.

"(b) ESTABLISHMENT OF PROGRAM.—The President may establish a program to provide technical and financial assistance to States and local governments to assist in the implementation of

predisaster hazard mitigation measures that are cost-effective and are designed to reduce injuries, loss of life, and damage and destruction of property, including damage to critical services and facilities under the jurisdiction of the States or local governments.

"(c) APPROVAL BY PRESIDENT.—If the President determines that a State or local government has identified natural disaster hazards in areas under its jurisdiction and has demonstrated the ability to form effective public-private natural disaster hazard mitigation partnerships, the President, using amounts in the National Predisaster Mitigation Fund established under subsection (i) (referred to in this section as the 'Fund'), may provide technical and financial assistance to the State or local government to be used in accordance with subsection (e).

"(d) STATE RECOMMENDATIONS.—

"(1) IN GENERAL.—

"(A) RECOMMENDATIONS.—The Governor of each State may recommend to the President not fewer than five local governments to receive assistance under this section.

"(B) DEADLINE FOR SUBMISSION.—The recommendations under subparagraph (A) shall be submitted to the President not later than October 1, 2001, and each October 1st thereafter or such later date in the year as the President may establish.

"(C) CRITERIA.—In making recommendations under subparagraph (A), a Governor shall consider the criteria specified in subsection (g).

"(2) USE.—

President.

"(A) IN GENERAL.—Except as provided in subparagraph (B), in providing assistance to local governments under this section, the President shall select from local governments recommended by the Governors under this subsection.

"(B) EXTRAORDINARY CIRCUMSTANCES.—In providing assistance to local governments under this section, the President may select a local government that has not been recommended by a Governor under this subsection if the President determines that extraordinary circumstances justify the selection and that making the selection will further the purpose of this section.

"(3) EFFECT OF FAILURE TO NOMINATE.—If a Governor of a State fails to submit recommendations under this subsection in a timely manner, the President may select, subject to the criteria specified in subsection (g), any local governments of the State to receive assistance under this section.

"(e) USES OF TECHNICAL AND FINANCIAL ASSISTANCE.—

"(1) IN GENERAL.—Technical and financial assistance provided under this section—

"(A) shall be used by States and local governments principally to implement predisaster hazard mitigation measures that are cost-effective and are described in proposals approved by the President under this section; and

"(B) may be used—

"(i) to support effective public-private natural disaster hazard mitigation partnerships;

"(ii) to improve the assessment of a community's vulnerability to natural hazards; or

"(iii) to establish hazard mitigation priorities, and an appropriate hazard mitigation plan, for a community.

"(2) DISSEMINATION.—A State or local government may use not more than 10 percent of the financial assistance received by the State or local government under this section for a fiscal year to fund activities to disseminate information regarding cost-effective mitigation technologies.

"(f) ALLOCATION OF FUNDS.—The amount of financial assistance made available to a State (including amounts made available to local governments of the State) under this section for a fiscal year—

"(1) shall be not less than the lesser of—

"(A) $500,000; or

"(B) the amount that is equal to 1.0 percent of the total funds appropriated to carry out this section for the fiscal year;

"(2) shall not exceed 15 percent of the total funds described in paragraph (1)(B); and

"(3) shall be subject to the criteria specified in subsection (g).

"(g) CRITERIA FOR ASSISTANCE AWARDS.—In determining whether to provide technical and financial assistance to a State or local government under this section, the President shall take into account—

"(1) the extent and nature of the hazards to be mitigated;

"(2) the degree of commitment of the State or local government to reduce damages from future natural disasters;

"(3) the degree of commitment by the State or local government to support ongoing non-Federal support for the hazard mitigation measures to be carried out using the technical and financial assistance;

"(4) the extent to which the hazard mitigation measures to be carried out using the technical and financial assistance contribute to the mitigation goals and priorities established by the State;

"(5) the extent to which the technical and financial assistance is consistent with other assistance provided under this Act;

"(6) the extent to which prioritized, cost-effective mitigation activities that produce meaningful and definable outcomes are clearly identified;

"(7) if the State or local government has submitted a mitigation plan under section 322, the extent to which the activities identified under paragraph (6) are consistent with the mitigation plan;

"(8) the opportunity to fund activities that maximize net benefits to society;

"(9) the extent to which assistance will fund mitigation activities in small impoverished communities; and

"(10) such other criteria as the President establishes in consultation with State and local governments. President.

"(h) FEDERAL SHARE.—

"(1) IN GENERAL.—Financial assistance provided under this section may contribute up to 75 percent of the total cost of mitigation activities approved by the President.

"(2) SMALL IMPOVERISHED COMMUNITIES.—Notwithstanding paragraph (1), the President may contribute up to 90 percent of the total cost of a mitigation activity carried out in a small impoverished community.

"(i) NATIONAL PREDISASTER MITIGATION FUND.—

"(1) ESTABLISHMENT.—The President may establish in the Treasury of the United States a fund to be known as the 'National Predisaster Mitigation Fund', to be used in carrying out this section.

"(2) TRANSFERS TO FUND.—There shall be deposited in the Fund—

"(A) amounts appropriated to carry out this section, which shall remain available until expended; and

"(B) sums available from gifts, bequests, or donations of services or property received by the President for the purpose of predisaster hazard mitigation.

"(3) EXPENDITURES FROM FUND.—Upon request by the President, the Secretary of the Treasury shall transfer from the Fund to the President such amounts as the President determines are necessary to provide technical and financial assistance under this section.

"(4) INVESTMENT OF AMOUNTS.—

"(A) IN GENERAL.—The Secretary of the Treasury shall invest such portion of the Fund as is not, in the judgment of the Secretary of the Treasury, required to meet current withdrawals. Investments may be made only in interest-bearing obligations of the United States.

"(B) ACQUISITION OF OBLIGATIONS.—For the purpose of investments under subparagraph (A), obligations may be acquired—

"(i) on original issue at the issue price; or

"(ii) by purchase of outstanding obligations at the market price.

"(C) SALE OF OBLIGATIONS.—Any obligation acquired by the Fund may be sold by the Secretary of the Treasury at the market price.

"(D) CREDITS TO FUND.—The interest on, and the proceeds from the sale or redemption of, any obligations held in the Fund shall be credited to and form a part of the Fund.

"(E) TRANSFERS OF AMOUNTS.—

"(i) IN GENERAL.—The amounts required to be transferred to the Fund under this subsection shall be transferred at least monthly from the general fund of the Treasury to the Fund on the basis of estimates made by the Secretary of the Treasury.

"(ii) ADJUSTMENTS.—Proper adjustment shall be made in amounts subsequently transferred to the extent prior estimates were in excess of or less than the amounts required to be transferred.

"(j) LIMITATION ON TOTAL AMOUNT OF FINANCIAL ASSISTANCE.—The President shall not provide financial assistance under this section in an amount greater than the amount available in the Fund.

"(k) MULTIHAZARD ADVISORY MAPS.—

"(1) DEFINITION OF MULTIHAZARD ADVISORY MAP.—In this subsection, the term 'multihazard advisory map' means a map

on which hazard data concerning each type of natural disaster is identified simultaneously for the purpose of showing areas of hazard overlap.

"(2) DEVELOPMENT OF MAPS.—In consultation with States, local governments, and appropriate Federal agencies, the President shall develop multihazard advisory maps for areas, in not fewer than five States, that are subject to commonly recurring natural hazards (including flooding, hurricanes and severe winds, and seismic events). President.

"(3) USE OF TECHNOLOGY.—In developing multihazard advisory maps under this subsection, the President shall use, to the maximum extent practicable, the most cost-effective and efficient technology available.

"(4) USE OF MAPS.—

"(A) ADVISORY NATURE.—The multihazard advisory maps shall be considered to be advisory and shall not require the development of any new policy by, or impose any new policy on, any government or private entity.

"(B) AVAILABILITY OF MAPS.—The multihazard advisory maps shall be made available to the appropriate State and local governments for the purposes of—

"(i) informing the general public about the risks of natural hazards in the areas described in paragraph (2);

"(ii) supporting the activities described in subsection (e); and

"(iii) other public uses.

"(l) REPORT ON FEDERAL AND STATE ADMINISTRATION.—Not later than 18 months after the date of the enactment of this section, the President, in consultation with State and local governments, shall submit to Congress a report evaluating efforts to implement this section and recommending a process for transferring greater authority and responsibility for administering the assistance program established under this section to capable States. Deadline.

"(m) TERMINATION OF AUTHORITY.—The authority provided by this section terminates December 31, 2003.".

(b) CONFORMING AMENDMENT.—Title II of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5131 et seq.) is amended by striking the title heading and inserting the following:

"TITLE II—DISASTER PREPAREDNESS AND MITIGATION ASSISTANCE".

SEC. 103. INTERAGENCY TASK FORCE.

Title II of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5131 et seq.) (as amended by section 102(a)) is amended by adding at the end the following:

"SEC. 204. INTERAGENCY TASK FORCE. 42 USC 5134.

"(a) IN GENERAL.—The President shall establish a Federal interagency task force for the purpose of coordinating the implementation of predisaster hazard mitigation programs administered by the Federal Government.

"(b) CHAIRPERSON.—The Director of the Federal Emergency Management Agency shall serve as the chairperson of the task force.

"(c) MEMBERSHIP.—The membership of the task force shall include representatives of—

"(1) relevant Federal agencies;

"(2) State and local government organizations (including Indian tribes); and

"(3) the American Red Cross.".

SEC. 104. MITIGATION PLANNING; MINIMUM STANDARDS FOR PUBLIC AND PRIVATE STRUCTURES.

(a) IN GENERAL.—Title III of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5141 et seq.) is amended by adding at the end the following:

42 USC 5165.

"SEC. 322. MITIGATION PLANNING.

"(a) REQUIREMENT OF MITIGATION PLAN.—As a condition of receipt of an increased Federal share for hazard mitigation measures under subsection (e), a State, local, or tribal government shall develop and submit for approval to the President a mitigation plan that outlines processes for identifying the natural hazards, risks, and vulnerabilities of the area under the jurisdiction of the government.

"(b) LOCAL AND TRIBAL PLANS.—Each mitigation plan developed by a local or tribal government shall—

"(1) describe actions to mitigate hazards, risks, and vulnerabilities identified under the plan; and

"(2) establish a strategy to implement those actions.

"(c) STATE PLANS.—The State process of development of a mitigation plan under this section shall—

"(1) identify the natural hazards, risks, and vulnerabilities of areas in the State;

"(2) support development of local mitigation plans;

"(3) provide for technical assistance to local and tribal governments for mitigation planning; and

"(4) identify and prioritize mitigation actions that the State will support, as resources become available.

"(d) FUNDING.—

"(1) IN GENERAL.—Federal contributions under section 404 may be used to fund the development and updating of mitigation plans under this section.

"(2) MAXIMUM FEDERAL CONTRIBUTION.—With respect to any mitigation plan, a State, local, or tribal government may use an amount of Federal contributions under section 404 not to exceed 7 percent of the amount of such contributions available to the government as of a date determined by the government.

"(e) INCREASED FEDERAL SHARE FOR HAZARD MITIGATION MEASURES.—

"(1) IN GENERAL.—If, at the time of the declaration of a major disaster, a State has in effect an approved mitigation plan under this section, the President may increase to 20 percent, with respect to the major disaster, the maximum percentage specified in the last sentence of section 404(a).

President.

"(2) FACTORS FOR CONSIDERATION.—In determining whether to increase the maximum percentage under paragraph (1), the President shall consider whether the State has established—

"(A) eligibility criteria for property acquisition and other types of mitigation measures;

"(B) requirements for cost effectiveness that are related to the eligibility criteria;

"(C) a system of priorities that is related to the eligibility criteria; and

"(D) a process by which an assessment of the effectiveness of a mitigation action may be carried out after the mitigation action is complete.

"SEC. 323. MINIMUM STANDARDS FOR PUBLIC AND PRIVATE STRUCTURES. 42 USC 5165a.

"(a) IN GENERAL.—As a condition of receipt of a disaster loan or grant under this Act—

"(1) the recipient shall carry out any repair or construction to be financed with the loan or grant in accordance with applicable standards of safety, decency, and sanitation and in conformity with applicable codes, specifications, and standards; and

"(2) the President may require safe land use and construction practices, after adequate consultation with appropriate State and local government officials.

"(b) EVIDENCE OF COMPLIANCE.—A recipient of a disaster loan or grant under this Act shall provide such evidence of compliance with this section as the President may require by regulation.".

(b) LOSSES FROM STRAIGHT LINE WINDS.—The President shall increase the maximum percentage specified in the last sentence of section 404(a) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5170c(a)) from 15 percent to 20 percent with respect to any major disaster that is in the State of Minnesota and for which assistance is being provided as of the date of the enactment of this Act, except that additional assistance provided under this subsection shall not exceed $6,000,000. The mitigation measures assisted under this subsection shall be related to losses in the State of Minnesota from straight line winds. President.

(c) CONFORMING AMENDMENTS.—

(1) Section 404(a) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5170c(a)) is amended—

(A) in the second sentence, by striking "section 409" and inserting "section 322"; and

(B) in the third sentence, by striking "The total" and inserting "Subject to section 322, the total".

(2) Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5176) is repealed.

TITLE II—STREAMLINING AND COST REDUCTION

SEC. 201. TECHNICAL AMENDMENTS.

Section 311 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5154) is amended in subsections (a)(1), (b), and (c) by striking "section 803 of the Public Works and Economic Development Act of 1965" each place it appears

and inserting "section 209(c)(2) of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3149(c)(2))".

SEC. 202. MANAGEMENT COSTS.

(a) IN GENERAL.—Title III of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5141 et seq.) (as amended by section 104(a)) is amended by adding at the end the following:

42 USC 5165b.

"SEC. 324. MANAGEMENT COSTS.

"(a) DEFINITION OF MANAGEMENT COST.—In this section, the term 'management cost' includes any indirect cost, any administrative expense, and any other expense not directly chargeable to a specific project under a major disaster, emergency, or disaster preparedness or mitigation activity or measure.

Regulations.

"(b) ESTABLISHMENT OF MANAGEMENT COST RATES.—Notwithstanding any other provision of law (including any administrative rule or guidance), the President shall by regulation establish management cost rates, for grantees and subgrantees, that shall be used to determine contributions under this Act for management costs.

Deadline.

"(c) REVIEW.—The President shall review the management cost rates established under subsection (b) not later than 3 years after the date of establishment of the rates and periodically thereafter.".

42 USC 5165b note.

(b) APPLICABILITY.—

(1) IN GENERAL.—Subject to paragraph (2), subsections (a) and (b) of section 324 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (as added by subsection (a)) shall apply to major disasters declared under that Act on or after the date of the enactment of this Act.

(2) INTERIM AUTHORITY.—Until the date on which the President establishes the management cost rates under section 324 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (as added by subsection (a)), section 406(f) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172(f)) (as in effect on the day before the date of the enactment of this Act) shall be used to establish management cost rates.

SEC. 203. PUBLIC NOTICE, COMMENT, AND CONSULTATION REQUIREMENTS.

Title III of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5141 et seq.) (as amended by section 202(a)) is amended by adding at the end the following:

42 USC 5165c.

"SEC. 325. PUBLIC NOTICE, COMMENT, AND CONSULTATION REQUIREMENTS.

"(a) PUBLIC NOTICE AND COMMENT CONCERNING NEW OR MODIFIED POLICIES.—

President.

"(1) IN GENERAL.—The President shall provide for public notice and opportunity for comment before adopting any new or modified policy that—

"(A) governs implementation of the public assistance program administered by the Federal Emergency Management Agency under this Act; and

"(B) could result in a significant reduction of assistance under the program.

"(2) APPLICATION.—Any policy adopted under paragraph (1) shall apply only to a major disaster or emergency declared on or after the date on which the policy is adopted.

"(b) CONSULTATION CONCERNING INTERIM POLICIES.—

"(1) IN GENERAL.—Before adopting any interim policy under the public assistance program to address specific conditions that relate to a major disaster or emergency that has been declared under this Act, the President, to the maximum extent practicable, shall solicit the views and recommendations of grantees and subgrantees with respect to the major disaster or emergency concerning the potential interim policy, if the interim policy is likely—

"(A) to result in a significant reduction of assistance to applicants for the assistance with respect to the major disaster or emergency; or

"(B) to change the terms of a written agreement to which the Federal Government is a party concerning the declaration of the major disaster or emergency.

"(2) NO LEGAL RIGHT OF ACTION.—Nothing in this subsection confers a legal right of action on any party.

"(c) PUBLIC ACCESS.—The President shall promote public access to policies governing the implementation of the public assistance program.". President.

SEC. 204. STATE ADMINISTRATION OF HAZARD MITIGATION GRANT PROGRAM.

Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5170c) is amended by adding at the end the following:

"(c) PROGRAM ADMINISTRATION BY STATES.—

"(1) IN GENERAL.—A State desiring to administer the hazard mitigation grant program established by this section with respect to hazard mitigation assistance in the State may submit to the President an application for the delegation of the authority to administer the program.

"(2) CRITERIA.—The President, in consultation and coordination with States and local governments, shall establish criteria for the approval of applications submitted under paragraph (1). The criteria shall include, at a minimum—

"(A) the demonstrated ability of the State to manage the grant program under this section;

"(B) there being in effect an approved mitigation plan under section 322; and

"(C) a demonstrated commitment to mitigation activities.

"(3) APPROVAL.—The President shall approve an application submitted under paragraph (1) that meets the criteria established under paragraph (2). President.

"(4) WITHDRAWAL OF APPROVAL.—If, after approving an application of a State submitted under paragraph (1), the President determines that the State is not administering the hazard mitigation grant program established by this section in a manner satisfactory to the President, the President shall withdraw the approval.

"(5) AUDITS.—The President shall provide for periodic audits of the hazard mitigation grant programs administered by States under this subsection.". President.

SEC. 205. ASSISTANCE TO REPAIR, RESTORE, RECONSTRUCT, OR REPLACE DAMAGED FACILITIES.

(a) CONTRIBUTIONS.—Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172) is amended by striking subsection (a) and inserting the following:

"(a) CONTRIBUTIONS.—

"(1) IN GENERAL.—The President may make contributions—

"(A) to a State or local government for the repair, restoration, reconstruction, or replacement of a public facility damaged or destroyed by a major disaster and for associated expenses incurred by the government; and

"(B) subject to paragraph (3), to a person that owns or operates a private nonprofit facility damaged or destroyed by a major disaster for the repair, restoration, reconstruction, or replacement of the facility and for associated expenses incurred by the person.

"(2) ASSOCIATED EXPENSES.—For the purposes of this section, associated expenses shall include—

"(A) the costs of mobilizing and employing the National Guard for performance of eligible work;

"(B) the costs of using prison labor to perform eligible work, including wages actually paid, transportation to a worksite, and extraordinary costs of guards, food, and lodging; and

"(C) base and overtime wages for the employees and extra hires of a State, local government, or person described in paragraph (1) that perform eligible work, plus fringe benefits on such wages to the extent that such benefits were being paid before the major disaster.

"(3) CONDITIONS FOR ASSISTANCE TO PRIVATE NONPROFIT FACILITIES.—

"(A) IN GENERAL.—The President may make contributions to a private nonprofit facility under paragraph (1)(B) only if—

"(i) the facility provides critical services (as defined by the President) in the event of a major disaster; or

"(ii) the owner or operator of the facility—

"(I) has applied for a disaster loan under section 7(b) of the Small Business Act (15 U.S.C. 636(b)); and

"(II)(aa) has been determined to be ineligible for such a loan; or

"(bb) has obtained such a loan in the maximum amount for which the Small Business Administration determines the facility is eligible.

"(B) DEFINITION OF CRITICAL SERVICES.—In this paragraph, the term 'critical services' includes power, water (including water provided by an irrigation organization or facility), sewer, wastewater treatment, communications, and emergency medical care.

"(4) NOTIFICATION TO CONGRESS.—Before making any contribution under this section in an amount greater than $20,000,000, the President shall notify—

"(A) the Committee on Environment and Public Works of the Senate;

"(B) the Committee on Transportation and Infrastructure of the House of Representatives;

"(C) the Committee on Appropriations of the Senate; and

"(D) the Committee on Appropriations of the House of Representatives.".

(b) FEDERAL SHARE.—Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172) is amended by striking subsection (b) and inserting the following:

"(b) FEDERAL SHARE.—

"(1) MINIMUM FEDERAL SHARE.—Except as provided in paragraph (2), the Federal share of assistance under this section shall be not less than 75 percent of the eligible cost of repair, restoration, reconstruction, or replacement carried out under this section.

"(2) REDUCED FEDERAL SHARE.—The President shall promulgate regulations to reduce the Federal share of assistance under this section to not less than 25 percent in the case of the repair, restoration, reconstruction, or replacement of any eligible public facility or private nonprofit facility following an event associated with a major disaster— President. Regulations.

"(A) that has been damaged, on more than one occasion within the preceding 10-year period, by the same type of event; and

"(B) the owner of which has failed to implement appropriate mitigation measures to address the hazard that caused the damage to the facility.".

(c) LARGE IN-LIEU CONTRIBUTIONS.—Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172) is amended by striking subsection (c) and inserting the following:

"(c) LARGE IN-LIEU CONTRIBUTIONS.—

"(1) FOR PUBLIC FACILITIES.—

"(A) IN GENERAL.—In any case in which a State or local government determines that the public welfare would not best be served by repairing, restoring, reconstructing, or replacing any public facility owned or controlled by the State or local government, the State or local government may elect to receive, in lieu of a contribution under subsection (a)(1)(A), a contribution in an amount equal to 75 percent of the Federal share of the Federal estimate of the cost of repairing, restoring, reconstructing, or replacing the facility and of management expenses.

"(B) AREAS WITH UNSTABLE SOIL.—In any case in which a State or local government determines that the public welfare would not best be served by repairing, restoring, reconstructing, or replacing any public facility owned or controlled by the State or local government because soil instability in the disaster area makes repair, restoration, reconstruction, or replacement infeasible, the State or local government may elect to receive, in lieu of a contribution under subsection (a)(1)(A), a contribution in an amount equal to 90 percent of the Federal share of the Federal estimate of the cost of repairing, restoring, reconstructing, or replacing the facility and of management expenses.

"(C) USE OF FUNDS.—Funds contributed to a State or local government under this paragraph may be used—

"(i) to repair, restore, or expand other selected public facilities;

"(ii) to construct new facilities; or

"(iii) to fund hazard mitigation measures that the State or local government determines to be necessary to meet a need for governmental services and functions in the area affected by the major disaster.

"(D) LIMITATIONS.—Funds made available to a State or local government under this paragraph may not be used for—

"(i) any public facility located in a regulatory floodway (as defined in section 59.1 of title 44, Code of Federal Regulations (or a successor regulation)); or

"(ii) any uninsured public facility located in a special flood hazard area identified by the Director of the Federal Emergency Management Agency under the National Flood Insurance Act of 1968 (42 U.S.C. 4001 et seq.).

"(2) FOR PRIVATE NONPROFIT FACILITIES.—

"(A) IN GENERAL.—In any case in which a person that owns or operates a private nonprofit facility determines that the public welfare would not best be served by repairing, restoring, reconstructing, or replacing the facility, the person may elect to receive, in lieu of a contribution under subsection (a)(1)(B), a contribution in an amount equal to 75 percent of the Federal share of the Federal estimate of the cost of repairing, restoring, reconstructing, or replacing the facility and of management expenses.

"(B) USE OF FUNDS.—Funds contributed to a person under this paragraph may be used—

"(i) to repair, restore, or expand other selected private nonprofit facilities owned or operated by the person;

"(ii) to construct new private nonprofit facilities to be owned or operated by the person; or

"(iii) to fund hazard mitigation measures that the person determines to be necessary to meet a need for the person's services and functions in the area affected by the major disaster.

"(C) LIMITATIONS.—Funds made available to a person under this paragraph may not be used for—

"(i) any private nonprofit facility located in a regulatory floodway (as defined in section 59.1 of title 44, Code of Federal Regulations (or a successor regulation)); or

"(ii) any uninsured private nonprofit facility located in a special flood hazard area identified by the Director of the Federal Emergency Management Agency under the National Flood Insurance Act of 1968 (42 U.S.C. 4001 et seq.).".

(d) ELIGIBLE COST.—

(1) IN GENERAL.—Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172) is amended by striking subsection (e) and inserting the following:

"(e) ELIGIBLE COST.—

"(1) DETERMINATION.—

"(A) IN GENERAL.—For the purposes of this section, the President shall estimate the eligible cost of repairing, restoring, reconstructing, or replacing a public facility or private nonprofit facility—

"(i) on the basis of the design of the facility as the facility existed immediately before the major disaster; and

"(ii) in conformity with codes, specifications, and standards (including floodplain management and hazard mitigation criteria required by the President or under the Coastal Barrier Resources Act (16 U.S.C. 3501 et seq.)) applicable at the time at which the disaster occurred.

"(B) COST ESTIMATION PROCEDURES.—

"(i) IN GENERAL.—Subject to paragraph (2), the President shall use the cost estimation procedures established under paragraph (3) to determine the eligible cost under this subsection.

"(ii) APPLICABILITY.—The procedures specified in this paragraph and paragraph (2) shall apply only to projects the eligible cost of which is equal to or greater than the amount specified in section 422.

"(2) MODIFICATION OF ELIGIBLE COST.—

"(A) ACTUAL COST GREATER THAN CEILING PERCENTAGE OF ESTIMATED COST.—In any case in which the actual cost of repairing, restoring, reconstructing, or replacing a facility under this section is greater than the ceiling percentage established under paragraph (3) of the cost estimated under paragraph (1), the President may determine that the eligible cost includes a portion of the actual cost of the repair, restoration, reconstruction, or replacement that exceeds the cost estimated under paragraph (1).

"(B) ACTUAL COST LESS THAN ESTIMATED COST.—

"(i) GREATER THAN OR EQUAL TO FLOOR PERCENTAGE OF ESTIMATED COST.—In any case in which the actual cost of repairing, restoring, reconstructing, or replacing a facility under this section is less than 100 percent of the cost estimated under paragraph (1), but is greater than or equal to the floor percentage established under paragraph (3) of the cost estimated under paragraph (1), the State or local government or person receiving funds under this section shall use the excess funds to carry out cost-effective activities that reduce the risk of future damage, hardship, or suffering from a major disaster.

"(ii) LESS THAN FLOOR PERCENTAGE OF ESTIMATED COST.—In any case in which the actual cost of repairing, restoring, reconstructing, or replacing a facility under this section is less than the floor percentage established under paragraph (3) of the cost estimated under paragraph (1), the State or local government or person receiving assistance under this section shall reimburse the President in the amount of the difference.

"(C) NO EFFECT ON APPEALS PROCESS.—Nothing in this paragraph affects any right of appeal under section 423.

"(3) EXPERT PANEL.—

"(A) ESTABLISHMENT.—Not later than 18 months after the date of the enactment of this paragraph, the President, acting through the Director of the Federal Emergency Management Agency, shall establish an expert panel, which shall include representatives from the construction industry and State and local government.

"(B) DUTIES.—The expert panel shall develop recommendations concerning—

"(i) procedures for estimating the cost of repairing, restoring, reconstructing, or replacing a facility consistent with industry practices; and

"(ii) the ceiling and floor percentages referred to in paragraph (2).

President.

"(C) REGULATIONS.—Taking into account the recommendations of the expert panel under subparagraph (B), the President shall promulgate regulations that establish—

"(i) cost estimation procedures described in subparagraph (B)(i); and

"(ii) the ceiling and floor percentages referred to in paragraph (2).

Deadline.

"(D) REVIEW BY PRESIDENT.—Not later than 2 years after the date of promulgation of regulations under subparagraph (C) and periodically thereafter, the President shall review the cost estimation procedures and the ceiling and floor percentages established under this paragraph.

Deadline.

"(E) REPORT TO CONGRESS.—Not later than 1 year after the date of promulgation of regulations under subparagraph (C), 3 years after that date, and at the end of each 2-year period thereafter, the expert panel shall submit to Congress a report on the appropriateness of the cost estimation procedures.

"(4) SPECIAL RULE.—In any case in which the facility being repaired, restored, reconstructed, or replaced under this section was under construction on the date of the major disaster, the cost of repairing, restoring, reconstructing, or replacing the facility shall include, for the purposes of this section, only those costs that, under the contract for the construction, are the owner's responsibility and not the contractor's responsibility.".

42 USC 5172 note.

(2) EFFECTIVE DATE.—The amendment made by paragraph (1) takes effect on the date of the enactment of this Act and applies to funds appropriated after the date of the enactment of this Act, except that paragraph (1) of section 406(e) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (as amended by paragraph (1)) takes effect on the date on which the cost estimation procedures established under paragraph (3) of that section take effect.

(e) CONFORMING AMENDMENT.—Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172) is amended by striking subsection (f).

SEC. 206. FEDERAL ASSISTANCE TO INDIVIDUALS AND HOUSEHOLDS.

(a) IN GENERAL.—Section 408 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5174) is amended to read as follows:

"SEC. 408. FEDERAL ASSISTANCE TO INDIVIDUALS AND HOUSEHOLDS.

"(a) IN GENERAL.—

"(1) PROVISION OF ASSISTANCE.—In accordance with this section, the President, in consultation with the Governor of a State, may provide financial assistance, and, if necessary, direct services, to individuals and households in the State who, as a direct result of a major disaster, have necessary expenses and serious needs in cases in which the individuals and households are unable to meet such expenses or needs through other means.

"(2) RELATIONSHIP TO OTHER ASSISTANCE.—Under paragraph (1), an individual or household shall not be denied assistance under paragraph (1), (3), or (4) of subsection (c) solely on the basis that the individual or household has not applied for or received any loan or other financial assistance from the Small Business Administration or any other Federal agency.

"(b) HOUSING ASSISTANCE.—

"(1) ELIGIBILITY.—The President may provide financial or other assistance under this section to individuals and households to respond to the disaster-related housing needs of individuals and households who are displaced from their predisaster primary residences or whose predisaster primary residences are rendered uninhabitable as a result of damage caused by a major disaster.

"(2) DETERMINATION OF APPROPRIATE TYPES OF ASSISTANCE.—

"(A) IN GENERAL.—The President shall determine appropriate types of housing assistance to be provided under this section to individuals and households described in subsection (a)(1) based on considerations of cost effectiveness, convenience to the individuals and households, and such other factors as the President may consider appropriate. President.

"(B) MULTIPLE TYPES OF ASSISTANCE.—One or more types of housing assistance may be made available under this section, based on the suitability and availability of the types of assistance, to meet the needs of individuals and households in the particular disaster situation.

"(c) TYPES OF HOUSING ASSISTANCE.—

"(1) TEMPORARY HOUSING.—

"(A) FINANCIAL ASSISTANCE.—

"(i) IN GENERAL.—The President may provide financial assistance to individuals or households to rent alternate housing accommodations, existing rental units, manufactured housing, recreational vehicles, or other readily fabricated dwellings.

"(ii) AMOUNT.—The amount of assistance under clause (i) shall be based on the fair market rent for the accommodation provided plus the cost of any transportation, utility hookups, or unit installation not provided directly by the President.

"(B) DIRECT ASSISTANCE.—

"(i) IN GENERAL.—The President may provide temporary housing units, acquired by purchase or lease, directly to individuals or households who, because of a lack of available housing resources, would be unable

to make use of the assistance provided under subparagraph (A).

"(ii) PERIOD OF ASSISTANCE.—The President may not provide direct assistance under clause (i) with respect to a major disaster after the end of the 18-month period beginning on the date of the declaration of the major disaster by the President, except that the President may extend that period if the President determines that due to extraordinary circumstances an extension would be in the public interest.

"(iii) COLLECTION OF RENTAL CHARGES.—After the end of the 18-month period referred to in clause (ii), the President may charge fair market rent for each temporary housing unit provided.

"(2) REPAIRS.—

"(A) IN GENERAL.—The President may provide financial assistance for—

"(i) the repair of owner-occupied private residences, utilities, and residential infrastructure (such as a private access route) damaged by a major disaster to a safe and sanitary living or functioning condition; and

"(ii) eligible hazard mitigation measures that reduce the likelihood of future damage to such residences, utilities, or infrastructure.

"(B) RELATIONSHIP TO OTHER ASSISTANCE.—A recipient of assistance provided under this paragraph shall not be required to show that the assistance can be met through other means, except insurance proceeds.

"(C) MAXIMUM AMOUNT OF ASSISTANCE.—The amount of assistance provided to a household under this paragraph shall not exceed $5,000, as adjusted annually to reflect changes in the Consumer Price Index for All Urban Consumers published by the Department of Labor.

"(3) REPLACEMENT.—

"(A) IN GENERAL.—The President may provide financial assistance for the replacement of owner-occupied private residences damaged by a major disaster.

"(B) MAXIMUM AMOUNT OF ASSISTANCE.—The amount of assistance provided to a household under this paragraph shall not exceed $10,000, as adjusted annually to reflect changes in the Consumer Price Index for All Urban Consumers published by the Department of Labor.

"(C) APPLICABILITY OF FLOOD INSURANCE REQUIREMENT.—With respect to assistance provided under this paragraph, the President may not waive any provision of Federal law requiring the purchase of flood insurance as a condition of the receipt of Federal disaster assistance.

"(4) PERMANENT HOUSING CONSTRUCTION.—The President may provide financial assistance or direct assistance to individuals or households to construct permanent housing in insular areas outside the continental United States and in other remote locations in cases in which—

"(A) no alternative housing resources are available; and

"(B) the types of temporary housing assistance described in paragraph (1) are unavailable, infeasible, or not cost-effective.

"(d) TERMS AND CONDITIONS RELATING TO HOUSING ASSISTANCE.—

"(1) SITES.—

"(A) IN GENERAL.—Any readily fabricated dwelling provided under this section shall, whenever practicable, be located on a site that—

"(i) is complete with utilities; and

"(ii) is provided by the State or local government, by the owner of the site, or by the occupant who was displaced by the major disaster.

"(B) SITES PROVIDED BY THE PRESIDENT.—A readily fabricated dwelling may be located on a site provided by the President if the President determines that such a site would be more economical or accessible.

"(2) DISPOSAL OF UNITS.—

"(A) SALE TO OCCUPANTS.—

"(i) IN GENERAL.—Notwithstanding any other provision of law, a temporary housing unit purchased under this section by the President for the purpose of housing disaster victims may be sold directly to the individual or household who is occupying the unit if the individual or household lacks permanent housing.

"(ii) SALE PRICE.—A sale of a temporary housing unit under clause (i) shall be at a price that is fair and equitable.

"(iii) DEPOSIT OF PROCEEDS.—Notwithstanding any other provision of law, the proceeds of a sale under clause (i) shall be deposited in the appropriate Disaster Relief Fund account.

"(iv) HAZARD AND FLOOD INSURANCE.—A sale of a temporary housing unit under clause (i) shall be made on the condition that the individual or household purchasing the housing unit agrees to obtain and maintain hazard and flood insurance on the housing unit.

"(v) USE OF GSA SERVICES.—The President may use the services of the General Services Administration to accomplish a sale under clause (i).

"(B) OTHER METHODS OF DISPOSAL.—If not disposed of under subparagraph (A), a temporary housing unit purchased under this section by the President for the purpose of housing disaster victims—

"(i) may be sold to any person; or

"(ii) may be sold, transferred, donated, or otherwise made available directly to a State or other governmental entity or to a voluntary organization for the sole purpose of providing temporary housing to disaster victims in major disasters and emergencies if, as a condition of the sale, transfer, or donation, the State, other governmental agency, or voluntary organization agrees—

"(I) to comply with the nondiscrimination provisions of section 308; and

"(II) to obtain and maintain hazard and flood insurance on the housing unit.

"(e) FINANCIAL ASSISTANCE TO ADDRESS OTHER NEEDS.—

"(1) MEDICAL, DENTAL, AND FUNERAL EXPENSES.—The President, in consultation with the Governor of a State, may provide financial assistance under this section to an individual or household in the State who is adversely affected by a major disaster to meet disaster-related medical, dental, and funeral expenses.

"(2) PERSONAL PROPERTY, TRANSPORTATION, AND OTHER EXPENSES.—The President, in consultation with the Governor of a State, may provide financial assistance under this section to an individual or household described in paragraph (1) to address personal property, transportation, and other necessary expenses or serious needs resulting from the major disaster.

"(f) STATE ROLE.—

"(1) FINANCIAL ASSISTANCE TO ADDRESS OTHER NEEDS.—

"(A) GRANT TO STATE.—Subject to subsection (g), a Governor may request a grant from the President to provide financial assistance to individuals and households in the State under subsection (e).

"(B) ADMINISTRATIVE COSTS.—A State that receives a grant under subparagraph (A) may expend not more than 5 percent of the amount of the grant for the administrative costs of providing financial assistance to individuals and households in the State under subsection (e).

"(2) ACCESS TO RECORDS.—In providing assistance to individuals and households under this section, the President shall provide for the substantial and ongoing involvement of the States in which the individuals and households are located, including by providing to the States access to the electronic records of individuals and households receiving assistance under this section in order for the States to make available any additional State and local assistance to the individuals and households.

"(g) COST SHARING.—

"(1) FEDERAL SHARE.—Except as provided in paragraph (2), the Federal share of the costs eligible to be paid using assistance provided under this section shall be 100 percent.

"(2) FINANCIAL ASSISTANCE TO ADDRESS OTHER NEEDS.—In the case of financial assistance provided under subsection (e)—

"(A) the Federal share shall be 75 percent; and

"(B) the non-Federal share shall be paid from funds made available by the State.

"(h) MAXIMUM AMOUNT OF ASSISTANCE.—

"(1) IN GENERAL.—No individual or household shall receive financial assistance greater than $25,000 under this section with respect to a single major disaster.

"(2) ADJUSTMENT OF LIMIT.—The limit established under paragraph (1) shall be adjusted annually to reflect changes in the Consumer Price Index for All Urban Consumers published by the Department of Labor.

President.

"(i) RULES AND REGULATIONS.—The President shall prescribe rules and regulations to carry out this section, including criteria, standards, and procedures for determining eligibility for assistance.".

(b) CONFORMING AMENDMENT.—Section 502(a)(6) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5192(a)(6)) is amended by striking "temporary housing".

(c) ELIMINATION OF INDIVIDUAL AND FAMILY GRANT PROGRAMS.—Section 411 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5178) is repealed.

(d) EFFECTIVE DATE.—The amendments made by this section take effect 18 months after the date of the enactment of this Act.

42 USC 5174 note.

SEC. 207. COMMUNITY DISASTER LOANS.

Section 417 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5184) is amended—

(1) by striking "(a) The President" and inserting the following:

"(a) IN GENERAL.—The President";

(2) by striking "The amount" and inserting the following: "(b) AMOUNT.—The amount";

(3) by striking "Repayment" and inserting the following: "(c) REPAYMENT.—

"(1) CANCELLATION.—Repayment";

(4) by striking "(b) Any loans" and inserting the following: "(d) EFFECT ON OTHER ASSISTANCE.—Any loans";

(5) in subsection (b) (as designated by paragraph (2))—

(A) by striking "and shall" and inserting "shall"; and

(B) by inserting before the period at the end the following: ", and shall not exceed $5,000,000"; and

(6) in subsection (c) (as designated by paragraph (3)), by adding at the end the following:

"(2) CONDITION ON CONTINUING ELIGIBILITY.—A local government shall not be eligible for further assistance under this section during any period in which the local government is in arrears with respect to a required repayment of a loan under this section.".

SEC. 208. REPORT ON STATE MANAGEMENT OF SMALL DISASTERS INITIATIVE.

42 USC 5121 note.

Not later than 3 years after the date of the enactment of this Act, the President shall submit to Congress a report describing the results of the State Management of Small Disasters Initiative, including—

Deadline.

(1) identification of any administrative or financial benefits of the initiative; and

(2) recommendations concerning the conditions, if any, under which States should be allowed the option to administer parts of the assistance program under section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172).

SEC. 209. STUDY REGARDING COST REDUCTION.

42 USC 5121 note.

Not later than 3 years after the date of the enactment of this Act, the Director of the Congressional Budget Office shall complete a study estimating the reduction in Federal disaster assistance that has resulted and is likely to result from the enactment of this Act.

Deadline.

TITLE III—MISCELLANEOUS

SEC. 301. TECHNICAL CORRECTION OF SHORT TITLE.

The first section of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 note) is amended to read as follows:

"SECTION 1. SHORT TITLE.

"This Act may be cited as the 'Robert T. Stafford Disaster Relief and Emergency Assistance Act'.".

SEC. 302. DEFINITIONS.

Section 102 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5122) is amended—

(1) in each of paragraphs (3) and (4), by striking "the Northern" and all that follows through "Pacific Islands" and inserting "and the Commonwealth of the Northern Mariana Islands";

(2) by striking paragraph (6) and inserting the following:

"(6) LOCAL GOVERNMENT.—The term 'local government' means—

"(A) a county, municipality, city, town, township, local public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government;

"(B) an Indian tribe or authorized tribal organization, or Alaska Native village or organization; and

"(C) a rural community, unincorporated town or village, or other public entity, for which an application for assistance is made by a State or political subdivision of a State."; and

(3) in paragraph (9), by inserting "irrigation," after "utility,".

SEC. 303. FIRE MANAGEMENT ASSISTANCE.

(a) IN GENERAL.—Section 420 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5187) is amended to read as follows:

"SEC. 420. FIRE MANAGEMENT ASSISTANCE.

"(a) IN GENERAL.—The President is authorized to provide assistance, including grants, equipment, supplies, and personnel, to any State or local government for the mitigation, management, and control of any fire on public or private forest land or grassland that threatens such destruction as would constitute a major disaster.

President.

"(b) COORDINATION WITH STATE AND TRIBAL DEPARTMENTS OF FORESTRY.—In providing assistance under this section, the President shall coordinate with State and tribal departments of forestry.

"(c) ESSENTIAL ASSISTANCE.—In providing assistance under this section, the President may use the authority provided under section 403.

"(d) RULES AND REGULATIONS.—The President shall prescribe such rules and regulations as are necessary to carry out this section.". President.

(b) EFFECTIVE DATE.—The amendment made by subsection (a) takes effect 1 year after the date of the enactment of this Act. 42 USC 5187 note.

SEC. 304. DISASTER GRANT CLOSEOUT PROCEDURES. 42 USC 5205.

Title VII of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5101 et seq.) is amended by adding at the end the following:

"SEC. 705. DISASTER GRANT CLOSEOUT PROCEDURES.

"(a) STATUTE OF LIMITATIONS.—

"(1) IN GENERAL.—Except as provided in paragraph (2), no administrative action to recover any payment made to a State or local government for disaster or emergency assistance under this Act shall be initiated in any forum after the date that is 3 years after the date of transmission of the final expenditure report for the disaster or emergency.

"(2) FRAUD EXCEPTION.—The limitation under paragraph (1) shall apply unless there is evidence of civil or criminal fraud.

"(b) REBUTTAL OF PRESUMPTION OF RECORD MAINTENANCE.—

"(1) IN GENERAL.—In any dispute arising under this section after the date that is 3 years after the date of transmission of the final expenditure report for the disaster or emergency, there shall be a presumption that accounting records were maintained that adequately identify the source and application of funds provided for financially assisted activities.

"(2) AFFIRMATIVE EVIDENCE.—The presumption described in paragraph (1) may be rebutted only on production of affirmative evidence that the State or local government did not maintain documentation described in that paragraph.

"(3) INABILITY TO PRODUCE DOCUMENTATION.—The inability of the Federal, State, or local government to produce source documentation supporting expenditure reports later than 3 years after the date of transmission of the final expenditure report shall not constitute evidence to rebut the presumption described in paragraph (1).

"(4) RIGHT OF ACCESS.—The period during which the Federal, State, or local government has the right to access source documentation shall not be limited to the required 3-year retention period referred to in paragraph (3), but shall last as long as the records are maintained.

"(c) BINDING NATURE OF GRANT REQUIREMENTS.—A State or local government shall not be liable for reimbursement or any other penalty for any payment made under this Act if—

"(1) the payment was authorized by an approved agreement specifying the costs;

"(2) the costs were reasonable; and

"(3) the purpose of the grant was accomplished.".

SEC. 305. PUBLIC SAFETY OFFICER BENEFITS FOR CERTAIN FEDERAL AND STATE EMPLOYEES.

(a) IN GENERAL.—Section 1204 of the Omnibus Crime Control and Safe Streets Act of 1968 (42 U.S.C. 3796b) is amended by striking paragraph (7) and inserting the following:

"(7) 'public safety officer' means—

"(A) an individual serving a public agency in an official capacity, with or without compensation, as a law enforcement officer, as a firefighter, or as a member of a rescue squad or ambulance crew;

"(B) an employee of the Federal Emergency Management Agency who is performing official duties of the Agency in an area, if those official duties—

"(i) are related to a major disaster or emergency that has been, or is later, declared to exist with respect to the area under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.); and

"(ii) are determined by the Director of the Federal Emergency Management Agency to be hazardous duties; or

"(C) an employee of a State, local, or tribal emergency management or civil defense agency who is performing official duties in cooperation with the Federal Emergency Management Agency in an area, if those official duties—

"(i) are related to a major disaster or emergency that has been, or is later, declared to exist with respect to the area under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.); and

"(ii) are determined by the head of the agency to be hazardous duties.".

42 USC 3796b note.

(b) EFFECTIVE DATE.—The amendment made by subsection (a) applies only to employees described in subparagraphs (B) and (C) of section 1204(7) of the Omnibus Crime Control and Safe Streets Act of 1968 (as amended by subsection (a)) who are injured or who die in the line of duty on or after the date of the enactment of this Act.

42 USC 5206.

SEC. 306. BUY AMERICAN.

(a) COMPLIANCE WITH BUY AMERICAN ACT.—No funds authorized to be appropriated under this Act or any amendment made by this Act may be expended by an entity unless the entity, in expending the funds, complies with the Buy American Act (41 U.S.C. 10a et seq.).

(b) DEBARMENT OF PERSONS CONVICTED OF FRAUDULENT USE OF "MADE IN AMERICA" LABELS.—

Deadline.

(1) IN GENERAL.—If the Director of the Federal Emergency Management Agency determines that a person has been convicted of intentionally affixing a label bearing a "Made in America" inscription to any product sold in or shipped to the United States that is not made in America, the Director shall determine, not later than 90 days after determining that the person has been so convicted, whether the person should be debarred from contracting under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.).

(2) DEFINITION OF DEBAR.—In this subsection, the term "debar" has the meaning given the term in section 2393(c) of title 10, United States Code.

SEC. 307. TREATMENT OF CERTAIN REAL PROPERTY.

(a) IN GENERAL.—Notwithstanding the National Flood Insurance Act of 1968 (42 U.S.C. 4001 et seq.), the Flood Disaster

Protection Act of 1973 (42 U.S.C. 4002 et seq.), or any other provision of law, or any flood risk zone identified, delineated, or established under any such law (by flood insurance rate map or otherwise), the real property described in subsection (b) shall not be considered to be, or to have been, located in any area having special flood hazards (including any floodway or floodplain).

(b) REAL PROPERTY.—The real property described in this subsection is all land and improvements on the land located in the Maple Terrace Subdivisions in the City of Sycamore, DeKalb County, Illinois, including—

(1) Maple Terrace Phase I;
(2) Maple Terrace Phase II;
(3) Maple Terrace Phase III Unit 1;
(4) Maple Terrace Phase III Unit 2;
(5) Maple Terrace Phase III Unit 3;
(6) Maple Terrace Phase IV Unit 1;
(7) Maple Terrace Phase IV Unit 2; and
(8) Maple Terrace Phase IV Unit 3.

(c) REVISION OF FLOOD INSURANCE RATE LOT MAPS.—As soon as practicable after the date of the enactment of this Act, the Director of the Federal Emergency Management Agency shall revise the appropriate flood insurance rate lot maps of the agency to reflect the treatment under subsection (a) of the real property described in subsection (b).

SEC. 308. STUDY OF PARTICIPATION BY INDIAN TRIBES IN EMERGENCY MANAGEMENT.

42 USC 5121 note.

(a) DEFINITION OF INDIAN TRIBE.—In this section, the term "Indian tribe" has the meaning given the term in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450b).

(b) STUDY.—

(1) IN GENERAL.—The Director of the Federal Emergency Management Agency shall conduct a study of participation by Indian tribes in emergency management.

(2) REQUIRED ELEMENTS.—The study shall—

(A) survey participation by Indian tribes in training, predisaster and postdisaster mitigation, disaster preparedness, and disaster recovery programs at the Federal and State levels; and

(B) review and assess the capacity of Indian tribes to participate in cost-shared emergency management programs and to participate in the management of the programs.

(3) CONSULTATION.—In conducting the study, the Director shall consult with Indian tribes.

(c) REPORT.—Not later than 1 year after the date of the enactment of this Act, the Director shall submit a report on the study under subsection (b) to—

Deadline.

(1) the Committee on Environment and Public Works of the Senate;

(2) the Committee on Transportation and Infrastructure of the House of Representatives;

(3) the Committee on Appropriations of the Senate; and

(4) the Committee on Appropriations of the House of Representatives.

Approved October 30, 2000.

LEGISLATIVE HISTORY—H.R. 707 (S. 1691):

HOUSE REPORTS: No. 106–40 (Comm. on Transportation and Infrastructure).
SENATE REPORTS: No. 106–295 accompanying S. 1691 (Comm. on Environment and Public Works).
CONGRESSIONAL RECORD:
Vol. 145 (1999): Mar. 4, considered and passed House.
Vol. 146 (2000): July 19, considered and passed Senate, amended.
Oct. 3, House concurred in Senate amendment with an amendment.
Oct. 5, Senate concurred in House amendment with an amendment.
Oct. 10, House concurred in Senate amendment.

○

Appendix B
Final Rule
(44 CFR Parts 201 and 206
Hazard Mitigation Planning and
Hazard Mitigation Grant Program)

Plan,'' OMB approval number 1660–0075.

I. Executive Order 13175, Consultation and Coordination With Indian Tribal Governments

FEMA has reviewed this rule under Executive Order 13175, ''Consultation and Coordination with Indian Tribal Governments'' (65 FR 67249, published November 9, 2000). In reviewing the portion of the rule which streamlines the mitigation planning requirements affecting Indian tribal governments, FEMA finds that, while it does have ''tribal implications'' as defined in Executive Order 13175, it will not have a substantial direct effect on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes.

J. Executive Order 12630, Governmental Actions and Interference With Constitutionally Protected Property Rights

FEMA has reviewed this rule under Executive Order 12630, ''Governmental Actions and Interference with Constitutionally Protected Property Rights'' (53 FR 8859, published March 18, 1988) as supplemented by Executive Order 13406, ''Protecting the Property Rights of the American People'' (71 FR 36973, published June 28, 2006). This rule will not effect a taking of private property or otherwise have taking implications under Executive Order 12630.

K. Executive Order 12988, Civil Justice Reform

FEMA has reviewed this rule under Executive Order 12988, ''Civil Justice Reform'' (61 FR 4729, published February 7, 1996). This rule meets applicable standards to minimize litigation, eliminate ambiguity, and reduce burden.

List of Subjects in 44 CFR Part 78

Flood insurance, Grant programs.

■ Accordingly, for the reasons stated in the preamble, the interim rule amending 44 CFR part 78 which was published at 62 FR 13346 on March 20, 1997, is adopted as final, with the following changes:

PART 78—FLOOD MITIGATION ASSISTANCE

■ 1. The authority citation for part 78 is revised to read as follows:

Authority: 6 U.S.C. 101; 42 U.S.C. 4001 *et seq.*; 42 U.S.C. 4104c, 4104d; Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; E.O. 12127, 44 FR 19367, 3 CFR, 1979 Comp., p. 376; E.O. 12148, 44 FR 43239, 3 CFR, 1979 Comp., p. 412; E.O. 13286, 68 FR 10619, 3 CFR, 2003 Comp., p. 166.

§ 78.1 [Amended]

■ 2. In § 78.1, paragraph (b), remove the word ''insurable'' and add, in its place, the word ''insured''.

Dated: October 24, 2007.

Harvey E. Johnson, Jr.,

Deputy Administrator/Chief Operating Officer, Federal Emergency Management Agency.

[FR Doc. E7–21263 Filed 10–30–07; 8:45 am]

BILLING CODE 9110–41–P

DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

44 CFR Parts 201, 204, and 206

[Docket ID FEMA–2007–0004]

RIN 1660–AA17

Hazard Mitigation Planning and Hazard Mitigation Grant Program

AGENCY: Federal Emergency Management Agency, DHS.

ACTION: Final rule.

SUMMARY: The Federal Emergency Management Agency (FEMA) is adopting as final, without substantive changes, interim rules that establish requirements for hazard mitigation planning and the Hazard Mitigation Grant Program (HMGP) pursuant to sections 322 and 323 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

DATES: This final rule is effective November 30, 2007.

FOR FURTHER INFORMATION CONTACT: Karen Helbrecht, Risk Analysis Division, Mitigation Directorate, Federal Emergency Management Agency, 500 C Street, SW., Washington DC, 20472, (phone) 202–646–3358, (facsimile) 202–646–3104, or (e-mail) *Karen.helbrecht@dhs.gov.*

SUPPLEMENTARY INFORMATION:

I. Background

This rulemaking finalizes, without substantive changes, interim rules implementing sections 322 and 323 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) (42 U.S.C. 5165), enacted by section 104 of the Disaster Mitigation Act of 2000 (DMA 2000), (42 U.S.C. 5121 note). Section 322 requires, as a condition of receipt of federal hazard mitigation grant assistance, hazard mitigation planning and is implemented in the Emergency Management and Assistance regulations at 44 CFR part 201 (Mitigation Planning). Section 323 requires, as a condition of receipt of disaster loans or grants distributed under the Hazard Mitigation Grant Program (HMGP) that minimum repair and construction codes, specifications, and standards are followed. Section 323 is implemented at 44 CFR part 206 (Federal Disaster Assistance for Disasters Declared On Or After November 23, 1988), Subpart N (Hazard Mitigation Grant Program).

Parts 201 and 206 outline mitigation planning and hazard mitigation grant requirements, respectively, for State, Indian tribal, and local entities. To be eligible for FEMA mitigation and public assistance grant funds (except for emergency assistance), State, local, or Indian tribal governments must have a FEMA-approved hazard mitigation plan. All hazard mitigation plans must be submitted to FEMA for final review and approval. FEMA will review and comment on the plan within 45 days, whenever possible. Once approved, local plans are to be revised and resubmitted to FEMA every 5 years, State plans are to be revised and resubmitted to FEMA every 3 years, and Indian tribal governments may either apply directly to FEMA, thereby assuming the responsibilities of a State, or may apply through a State, thereby assuming the responsibilities of a local government.

Additionally, for States that complete FEMA requirements for enhanced mitigation planning, the amount of HMGP funds available increases from 15 percent of the Federal share of disaster assistance for that event to 20 percent of the Federal share of disaster assistance for that event. Up to 7 percent of hazard mitigation grants may be used to develop State, tribal, and/or local mitigation planning activities outlined in 44 CFR part 201.

There have been four interim rules (IRs) and one correction published in this rulemaking action. On February 26, 2002, FEMA published an IR at 67 FR 8844 implementing section 322 of the Stafford Act. This first IR addressed State mitigation planning, identified new local mitigation planning grant requirements, authorized HMGP funds for planning activities, and increased the amount of HMGP funds available to States that develop a comprehensive, enhanced mitigation plan.

On October 1, 2002, FEMA published a second IR at 67 FR 61512. This IR amended the February 26, 2002, IR to

extend the date by which State and local governments must develop mitigation plans as a condition of grant assistance in compliance with 44 CFR part 201 from November 1, 2003 to November 1, 2004.

On October 28, 2003, FEMA published a third IR at 68 FR 61368. This IR clarified that the November 1, 2003 effective date for the planning requirement applied only to Pre-Disaster Mitigation (PDM) grant funds awarded under any Notice of Availability of Funding Opportunity issued after that date. It also updated the mitigation planning requirements identified in 44 CFR part 204 (Fire Management Assistance Grant Program), as well as 44 CFR part 206, subpart H (Public Assistance Eligibility) to bring those sections into conformity with the existing planning requirements in 44 CFR part 201.

On November 10, 2003, FEMA published a correcting amendment to the third IR at 68 FR 63738, correcting a paragraph reference.

On September 13, 2004, FEMA published a fourth IR at 69 FR 55094. This IR provided a mechanism for Governors or Indian tribal leaders to request a 6 month extension of the plan approval deadline for State-level mitigation plans, up to May 1, 2005. The IR also allowed mitigation planning grants provided through the PDM program to continue to be available to State, Indian tribal, and local governments after November 1, 2004. The IR also made technical amendments and adjusted the general major disaster allocation for HMGP from 15 percent to 7.5 percent to be consistent with statutory mandates.

With respect to docket management, the Regulatory Identifier Number (RIN) listed in the first two IRs was 3067–AD22. Since FEMA became a component of the Department of Homeland Security (DHS), FEMA's RINs were renumbered and 3067–AD22 became 1660–AA17.

II. Discussion of Public Comments

FEMA received 17 public comments on the February 26, 2002 IR, and 3 comments on the October 1, 2002 IR. FEMA received no comments on the October 28, 2003 or September 13, 2004 IRs. Fourteen State emergency management agencies, three organizations, two local governments, and one independent group submitted comments. The comments received, together with FEMA's response, are set forth below. The ''Multi-Hazard Mitigation Planning Guidance under DMA2000'' (also known as the Mitigation Planning ''Blue Book'') and the FEMA ''How-To'' series for Mitigation Planning (FEMA 386) are posted on the FEMA Web site (*http://www.FEMA.gov/library*). Unless otherwise stated, these are the documents referred to in FEMA's response when references to program policy or guidance are made.

Comments on the First Interim Rule

Mitigation Planning Requirement Support; Timeline: Six commenters indicated support for the hazard mitigation planning process, agreeing that the process is necessary for effective, sustained mitigation programs. Thirteen commenters wrote that there was not enough time for State and local governments to comply with the planning requirements, and that the timeframe should either be extended or the requirements eased in over time.

FEMA's response: FEMA recognized that not enough time was originally allowed to prepare the plans and issued another interim rule on October 1, 2002 that extended the planning requirement for State Mitigation Plans from November 1, 2003 to November 1, 2004. FEMA also extended the local planning requirement under the HMGP to November 1, 2004. In addition, FEMA published an interim rule on September 13, 2004 which provided a mechanism for Governors or Indian tribal leaders to request a 6 month extension of the effective date for State level mitigation plans (to May 1, 2005). All 50 States, the District of Columbia, and 6 Territories had approved hazard mitigation plans by May 1, 2005. Currently, all 50 States, the District of Columbia, 7 territories, and 33 Indian tribal governments have approved State level mitigation plans. In addition, over 11,000 jurisdictions now have approved local level mitigation plans. FEMA believes the timeframes to implement hazard mitigation plans have been sufficient.

Technological Hazards: Five commenters wrote that plans should be required to address manmade or technological hazards.

FEMA's response: Section 322 of the Stafford Act specifically requires mitigation planning for natural hazards, and FEMA decided that it was not appropriate to require planning for manmade or technological hazards. However, FEMA does support plans that address both natural and technological or manmade hazards. A State, Indian tribal, or local mitigation plan can be approved under the Stafford Act without consideration of technological hazards. However, FEMA's planning guidance can be used to assist in developing and evaluating plans that include manmade and technological hazards as part of a comprehensive mitigation strategy. More specifically, FEMA has developed a guidebook titled: ''Integrating Manmade Hazards into Mitigation Planning'' as part of the Planning ''How-To'' guidance series. This document is number seven in that series (FEMA 386–7).

Number of hours necessary to prepare a plan: Two commenters wrote that FEMA underestimated the average number of hours necessary to prepare a local mitigation plan.

FEMA's response: When FEMA published the February 26, 2002, interim rule, FEMA's original estimate of the number of hours necessary to prepare a local mitigation plan was based on planning done under the Flood Mitigation Assistance (FMA) program. FEMA published an estimate of 300 hours per plan to develop State or local mitigation plans under part 201. After several years of implementing the planning regulations, this estimate was adjusted to 2,080 hours to develop new State, local, or Indian tribal plans and 320 hours for plan updates to more accurately reflect the amount of time States and local communities actually spent in developing new plans or updating plans to meet the 3- or 5-year update requirements.

Level of information required to develop plans: Six commenters wrote that the level of detail required to develop local mitigation plans may be unreasonable, that the costs necessary to develop the plans result in an unfunded mandate, and that communities will be reluctant to develop plans because of a fear of liability in the event that problems are identified and mitigation measures are not implemented.

FEMA's response: The February 26, 2002 interim rule established new requirements for hazard mitigation planning. FEMA worked to ensure that appropriate guidance was developed for those responsible for developing, evaluating, and reviewing the plans. FEMA believes that the level of detail is reasonable and necessary to ensure that the statutory purposes of the mitigation planning provision are met and result in meaningful and effective mitigation planning. FEMA hosted a series of workshops in both 2002 and 2003 at each FEMA Region at which every State was represented. These workshops provided an opportunity to clarify the planning requirements identified in the regulation and to answer questions regarding these requirements. During the workshops, FEMA clarified the level of information required by the regulations in developing risk assessments for local mitigation plans. FEMA also issued policy related to the

possible lack of hazard specific risk information, which allows planners to use the ''best available information'' that is currently available in doing the risk assessment, and document how that information would be improved over time.

FEMA recognized that many jurisdictions did not budget for the costs associated with the development of mitigation planning. FEMA made an effort to ensure that the existing mitigation grant programs (HMGP, PDM, and FMA) were available to assist as many jurisdictions as possible. Through these programs, FEMA has approved over 1,400 planning grants between February 2002 and March 2007 with an obligated Federal share of over $157,000,000. As stated above, all 50 States, the District of Columbia, 7 territories, and 33 Indian tribal governments have approved State level mitigation plans. In addition, over 11,000 jurisdictions have approved local level mitigation plans. In fact, over 50 percent of the population of the United States is covered by an approved local level mitigation plan. Since these regulations were originally published in 2002, over 1,400 planning grants have been awarded and over 14,000 jurisdictions are covered by an approved mitigation plan. Due to the volume of plans being developed and approved, it appears that the issue of liability has not been a significant reason for communities to not undertake development of a mitigation plan.

Significant regulatory action: Two commenters disagreed with FEMA's conclusion that the rule is not an economically significant regulatory action because the nationwide cost projection of less than $100 million annually to implement the rule is not realistic.

FEMA's response: FEMA disagrees. For the reasons cited in the Executive Order 12866 section below, FEMA asserts that this is not an economically significant regulatory action. The annual impact of this rule on the economy is approximately $46 million. This regulation's effect on the economy is below the $100 million threshold to qualify as an economically significant action. Furthermore, this final rule makes no significant change to the interim rules which have been in place, and the regulated industry has been following, since 2002.

Coordination among FEMA Regions: Two commenters wrote that coordination within the 10 FEMA Regions is needed to ensure consistency for plan review and other aspects relating to regulation implementation.

FEMA's response: FEMA has worked to ensure that the regulation has been implemented in a fair and consistent manner. The agency has held several workshops, meetings, and training sessions to bring together FEMA staff and State representatives to identify areas of concern and to develop policy and guidance to resolve these issues. For example, a FEMA course entitled ''Mitigation Plan Review'' has been delivered at FEMA's Emergency Management Institute (EMI) in Emmitsburg, Maryland, and in almost all FEMA Regions, as well as in many States. FEMA will continue to work towards a nationally consistent application of the planning requirements.

Flexibility in implementing the requirements: Four commenters wrote that it is necessary for hazard mitigation plans and the hazard mitigation planning process to be flexible to meet the needs of diverse communities, to address mitigation issues based on actual circumstances, and to meet post-disaster mitigation needs.

FEMA's response: FEMA understands the commenters' concerns. To emphasize the importance and flexibility of the planning process, FEMA has taken, to the extent possible, a ''performance standard'' approach rather than a ''prescriptive'' approach to the planning requirements. In other words, hazard mitigation planning requirements are designed to generally identify what should be done in the process and documented in the plan, rather than specify exactly how it should be done. This approach recognizes and appreciates the inherent differences that exist among State, Indian tribal, and local governments with respect to size, resources, capability, and vulnerability. In addition, FEMA recognizes that flexibility is necessary in the post-disaster environment, and that individually-tailored mitigation plans can be very useful tools in the recovery process.

Benefit-cost and planning: Eight commenters wrote and asked what level of effort is required to prioritize cost-effective projects in the State level plan and in the local level action plan where ''benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.''

FEMA's response: Local mitigation plans do not require a formal benefit-cost calculation to be included within the plan document. However, one consideration in deciding what type of mitigation action(s) to pursue is an economic assessment of the particular action. This (and other considerations) should be debated and discussed as part of the planning team's and/or larger community's decision-making process. A possible result of these local discussions could be the decision to complete a formal benefit-cost evaluation of the various mitigation approaches that are technically appropriate for the situation. However, this is not required to be included in the plan. It is sufficient if economic considerations are summarized in the plan document as part of the comprehensive range of specific mitigation actions of projects being considered. Once funding is sought for the particular mitigation action, a detailed benefit-cost calculation would be required as described under the various grant program regulations. A similar evaluation should be done as part of the State planning process. The plan is required to document the process by which projects and activities will be prioritized and ranked, and this process must include cost effectiveness. In addition, FEMA intends to release additional guidance to help clarify the requirements.

Definition of Critical facility: Two commenters requested a definition of the term ''critical facility.''

FEMA's response: The list of assets that are most important to protect, as well as the criticality of any given facility, can vary widely from community-to-community. Thus, there is no universal definition of a critical facility, nor is one associated with FEMA's planning requirements. For planning purposes, a jurisdiction should determine criticality based on the relative importance of its various assets for the delivery of vital services, the protection of special populations, and other important functions. FEMA's Mitigation Planning How-To Guide, ''Understanding Your Risks: Identifying Hazards and Estimating Losses'' (FEMA 386–2) provides guidance on how to identify critical facilities. Based on a hazard-by-hazard identification of facilities that may be at risk, the Guide's emphasis on determining priorities for inventory data collection will help planners identify assets that are most critical to the jurisdiction. The companion publication ''Integrating Manmade Hazards into Mitigation Planning'' (FEMA 386–7) details how asset inventory can be tailored to focus on high-risk facilities such as critical infrastructures and key resources. In addition, the inventory information available with FEMA's HAZUS–MH loss estimation software can assist in identifying critical facilities. HAZUS–MH databases include information on essential facilities such as hospitals,

police and fire stations, emergency operations centers, shelters, and schools; transportation systems; utility lifelines; high potential loss facilities such as potable water, wastewater, oil, natural gas, electric power, and communication systems; and hazardous material facilities.

Other sources provide additional guidance on identifying facilities that may be critical. FEMA's ''Public Assistance Guide'' (FEMA 322) states that ''[c]ritical facilities are those that serve as emergency shelters; contain occupants who are not sufficiently mobile to avoid death or injury, such as hospitals; house emergency operation or data storage that may become lost or inoperative; are generating plants and principal points of utility lines; or that produce, use, or store volatile, flammable, explosive, toxic, or water reactive materials.'' The related regulation at § 206.226, Restoration of damaged facilities, refers to facilities that provide critical services, ''which include power, water * * * sewer services, wastewater treatment, communications, emergency medical care, fire department services, emergency rescue, and nursing homes.'' Further, the National Infrastructure Protection Plan (NIPP), issued in 2006, provides a framework for a national strategy that includes State, local, Tribal and regional identification of risks and the protection of ''critical infrastructure'' and ''key resources.'' Critical Infrastructure is defined in the NIPP as ''[a]ssets, systems, and networks, whether physical or virtual, so vital to the United States that the incapacity or destruction of such assets, systems, or networks would have a debilitating impact on security, national economic security, public health or safety, or any combination of those matters,'' and Key Resources is defined as ''publicly or privately controlled resources essential to the minimal operations of the economy and government.'' Mitigation planning is identified in the NIPP as an activity that can help achieve protection of these assets.

The hazard mitigation plan should provide enough information regarding critical facilities to enable the jurisdiction to identify and prioritize appropriate mitigation actions. However, some information may be deemed highly sensitive and should not be made available to the public. Such information that the jurisdiction considers sensitive should be treated as an addendum to the mitigation plan so that it is still a part of the plan, but access can be controlled. For more information on protecting sensitive information *See,* ''Integrating Manmade Hazards into Mitigation Planning'' (FEMA 386–7).

FEMA notes that in § 201.4(c)(2)(ii), the regulation contains the phrase ''State owned critical or operated facilities,'' when in fact FEMA intended to use the phrase ''State owned or operated critical facilities.'' This typographical error is corrected in this final rule.

Coordination of FEMA's planning requirements: Four commenters requested that FEMA coordinate its planning requirements, especially between FMA and the new regulations at part 201.

FEMA's response: It was FEMA's intent to create a single local mitigation plan requirement in publishing the planning regulations at part 201. Since part 201 has been in effect, FEMA has realized that there are few areas of difference between the FMA plans and the part 201 plans. FEMA plans to revise part 201 to clarify that part 201 contains FEMA's mitigation plan requirements for all mitigation grant programs.

Plan adoption: Three commenters asked for clarification on how the State plan is ''formally adopted.'' One comment specifically requested that the plan be approved by the ''Governor's Authorized Representative.''

FEMA's response: An appropriate body in the State must adopt the plan. Depending on the State's established procedures, this could be the State Legislature or the Governor. States with hazard mitigation teams or councils may choose to use these bodies to adopt the plan. At a minimum, the plan must be endorsed by the director of the State agency responsible for preparing and implementing the plan, as well as the heads of other agencies with primary implementation responsibilities. The plan must include a copy of the resolution of adoption, indicating the State's formal adoption of the plan. It is recommended that the plan be formally adopted after FEMA has reviewed the plan and determined that it meets all the other requirements of part 201.

Consultation with Indian tribal governments: One commenter wrote that FEMA did not fulfill its requirement to consult with Indian tribal governments prior to issuing this rule.

FEMA's response: Before FEMA developed the interim rule, the agency met with representatives from State and local governments and the Bureau of Indian Affairs to discuss the new planning requirements of section 322 of the Stafford Act. The same opportunity for comment was offered to all parties. FEMA received valuable input from all attendees, which helped FEMA to develop the interim rule. Also, since FEMA published the interim rule, it has coordinated more directly with Indian tribal governments, and with the organizations that represent them. For example, in conjunction with the National Congress of American Indians, FEMA hosted a Tribal Mitigation Conference in October 2002 at the Ak-Chin Indian Community, Arizona. This conference provided FEMA with an opportunity to better understand its responsibilities relating to Indian tribal governments and to build a working relationship with many of the Indian tribal representatives. A follow-up conference was held at the Salish Kootenai Community, Montana in August 2003. As a direct result of these conferences, FEMA developed an EMI resident course titled ''Mitigation for Tribal Officials.'' This course provides a direct opportunity for coordination and information sharing between Indian tribal representatives and FEMA, resulting in refinements to FEMA's Indian tribal policy and guidance.

Indian tribal governments and mitigation planning: Three commenters wrote that the interim rule contributes to a loss of sovereignty of Indian tribal governments.

FEMA's response: FEMA sees no impact on the sovereignty of Indian tribal governments as a result of these regulations. FEMA recognizes that Native American Tribes are sovereign States. Although § 201.2 states that Indian tribal governments who chose to act as subgrantees are accountable to the State grantee, Indian tribal governments are not required to act as subgrantees. Furthermore, in § 201.3(e), Indian tribal governments may interact directly with the Federal government, or may choose to apply through a State as a subgrantee. This allows for an Indian tribal government to have the flexibility of either applying directly to FEMA for mitigation assistance, or, where the Indian tribal government has a working relationship with a State, apply through the State as a subgrantee. Some Indian tribal governments have participated on local level multi-jurisdictional plans, which have allowed them to participate in FEMA's mitigation programs while they gain expertise and management capability. It is entirely at the discretion of the Indian tribal government and the State whether funding should be sought by Indian tribal governments directly from FEMA or through the State.

Edits to § 206.434(d): One commenter requested that in § 206.434(d), FEMA make available 7 percent of any unspent HMGP funds currently available to the

States regardless of declaration date, and remove the word ''tribal.''

FEMA's response: Section 322 of the Stafford Act (42 U.S.C. 5165) limits 7 percent of the HMGP funds to be spent on mitigation planning, and since Indian tribal governments are eligible for mitigation funding, FEMA is unable to make them ineligible for HMGP planning grants.

Technical assistance: One commenter wrote that mitigation planning has great public value for Indian tribes; however, Indian tribes do not have the financial resources or the technical capacity to undertake such exercises, and that the rule seems to overlook the role of technical assistance.

FEMA's response: FEMA believes that technical assistance is critical to successful mitigation at all levels of government. FEMA has been working to technically assist all Federally-recognized Indian tribal governments regarding the availability of grant funding, training opportunities, as well as program requirements.

The definition of ''Indian tribe:'' One commenter wrote that the term ''Indian tribe'' should be clarified to identify if FEMA means all Indian tribes, just Federally-recognized Indian tribes, or those tribes with either Federal or State recognition.

FEMA's response: The term ''Indian tribe'' means all Federally recognized Indian tribes. Section 201.2 includes the definition for Indian tribal government: ''* * * any Federally recognized governing body of an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian tribe'' under the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a.

Enhanced State Mitigation Plans: Six commenters asked for additional clarification regarding Enhanced State Mitigation Plan requirements.

FEMA's response: In July 2002, FEMA provided guidance titled ''Multi-Hazard Mitigation Planning Guidance under the Disaster Mitigation Act of 2000'' on the development of Enhanced State Mitigation Plans, FEMA revised that guidance in March 2004. These documents are available through FEMA regional offices, and the 2004 guidance, which retains the 2002 guidance but includes more explanations and examples, is available on the FEMA Web site at *http://www.fema.gov/plan/mitplanning/index.shtm.* These documents provide guidance on implementing each section of the enhanced plan requirements. FEMA established the criteria for enhanced plans to provide a more qualitative and less quantitative basis for evaluating the plans. In addition, FEMA's policy for reviewing enhanced plans has been to establish a panel consisting of two State representatives, staff from two FEMA Regions, and two FEMA Headquarters staff to review and evaluate the plan. This practice makes the plan review process more transparent and fair and provides States with an opportunity to see how the process works. As of August 2007, there are 9 States with approved Enhanced Mitigation Plans.

Confusion regarding § 201.5(b)(4): Commenters wrote that there is confusion regarding § 201.5(b)(4), which states: ''Demonstration that the State is committed to a comprehensive state mitigation program, which might include any of the following.''

FEMA's response: The list of items in § 201.5(b)(4)(i) through (vi) are provided as examples of that commitment, and are not expected to be addressed in every plan.

State ability to satisfy NEPA requirements: One commenter wrote that States should not be required to ensure that all environmental reviews (categorical exclusions, environmental impact statements, etc.) are completed because they are incapable of performing an environmental assessment or environmental impact statement.

FEMA's response: Section 201.5(b)(2)(iii)(B) requires States to prepare and submit accurate environmental reviews and benefit-cost analyses. FEMA concurs that it is FEMA's responsibility to develop the environmental documentation, in compliance with the National Environmental Protection Act (NEPA). However, FEMA's position is that the State is responsible for and is capable of ensuring that all appropriate information necessary to prepare the NEPA documentation is provided with project applications.

Documentation of capability to manage HMGP: One commenter expressed concern regarding how the Enhanced State Mitigation Plan requirement in § 201.5(b)(2)(iii), ''[d]emonstration that the State has the capability to effectively manage the HMGP as well as other mitigation grant programs, including a record of the following,'' would be implemented.

FEMA's response: FEMA recognized that it would be difficult for States to provide documentation of their capability in this section, so FEMA developed a policy that allows the Region and State to work together to complete the documentation for this requirement. This policy appears in the ''Multi-Hazard Mitigation Planning Guidance under DMA2000, Part 2 Enhanced State Mitigation Plans, Program Management Capability,'' which can be found at: *http://www.fema.gov/library.* For the initial Enhanced Plan approval, a State would be evaluated on their capability to effectively manage the HMGP as well as other mitigation grant programs over the previous four quarters. For subsequent plan update approvals, the State would be evaluated based on demonstrated capability for the full 3 years the plan had been in effect.

Private Nonprofit entities: One commenter asked for more clarification regarding the planning requirements for private nonprofit entities (PNPs).

FEMA's response: Private nonprofit (PNP) organizations, especially those that may be eligible applicants for hazard mitigation projects under 44 CFR part 206, should participate in the development of the local mitigation plan. If a PNP has fully participated in the development and review of the local plan, it is not necessary for the PNP to approve/adopt the plan, as long as it is adopted by the local jurisdiction. PNP applicants for HMGP project grants do not need to have an approved multi-hazard mitigation plan in order to receive HMGP project funds. However, FEMA has developed a policy for PNP project applications; in order for the applications to be approved, the jurisdiction in which the project is located should have an approved plan, and the project must be consistent with the plan's goals and objectives. For FEMA's PDM program, PNPs are not eligible subapplicants, but an eligible local government could apply for a grant to mitigate a PNP facility.

Rural Electric Cooperatives: One commenter wrote that a discrepancy exists regarding rural electric cooperatives. The commenter wrote that public power States with electrical services provided by districts administered by elected officials cover multiple local jurisdictions. These types of cooperatives do not conform to the definition of local jurisdictions and potentially multiple districts would have to be included in every local plan to qualify for future funding. This problem must be addressed in the rule.

FEMA's response: Multi-jurisdictional utility PNPs, including Rural Electric Cooperatives (RECs), which sometimes span several counties, are eligible subapplicants for assistance under HMGP. Their infrastructure often sustains damage from severe snow and ice storms, and they frequently seek HMGP funding after disaster declarations from these storms to mitigate future similar losses. RECs are

treated as PNPs for the purposes of disaster assistance provided by FEMA under the Stafford Act. They are not considered local governments. This distinction is important, because current regulations provide only for local governments, not PNPs, to meet the planning requirement by submitting a local mitigation plan (LMP) to FEMA. For PNPs such as RECs or other multi-jurisdictional utilities, FEMA is identifying two ways in which RECs may meet the mitigation planning requirements to ensure that projects funded by HMGP are consistent with the mitigation strategies of the State, Tribal, and/or local jurisdiction in which the project is located: the local jurisdiction(s) within which the REC mitigation project is located must have FEMA approved LMPs, or the FEMA approved State Mitigation Plan must address RECs. Further guidance is available on this topic on FEMA's Web site at *http://www.fema.gov.*

Small and impoverished communities: One commenter wrote that FEMA should identify criteria it will use to determine if a State identified community qualifies as ''small and impoverished.''

FEMA's response: The term ''small and impoverished communities'' is defined in § 201.2. This definition combines the term in section 203 of the Stafford Act, as amended by the Disaster Mitigation Act of 2000, with criteria for ''economically disadvantaged'' communities as used by the U.S. Environmental Protection Agency under their National Watershed Initiative. Communities can compare their per capita income to the Bureau of Economic Analysis's per capita income for the U.S. as a whole, issued annually; local unemployment data can be compared with the national unemployment rate according to the U.S. Bureau of Labor Statistics, also issued annually. Further guidance on FEMA's criteria for determining small and impoverished communities can be found on pages 1–10 of the FY 2007 Pre-Disaster Mitigation Program Guidance, which can be found at *http://www.fema.gov/library/viewRecord.do?id=2095.*

State authority: Two commenters wrote that FEMA was taking away the State's authority to administer and manage mitigation programs. The commenters wrote that States should be able to approve local mitigation plans and prioritize mitigation funding decisions.

FEMA's response: FEMA believes it is important to establish a national standard for local mitigation plans and to ensure that local jurisdictions are being evaluated based on the same criteria across the Nation. States may introduce additional criteria for their localities, but FEMA may only enforce the requirements of this rule. FEMA has worked to establish a solid baseline for mitigation plans, especially at the local level, and FEMA continues to work to ensure that plans are being evaluated in a fair and consistent manner. FEMA believes that the planning process supports the State's authority to administer the grant programs. By engaging in State-established planning processes, funding decisions can be made based on State-developed mitigation strategies.

Listening session: One commenter wrote and questioned the value of listening sessions that were held to gather comments and suggestions on implementing the planning requirements.

FEMA's response: The intent of the listening sessions was to gain input at an early stage from State and local officials, as well as other Federal agencies, for FEMA to consider as it began to develop regulations to implement the planning requirements. Much of the information generated by the listening session was very useful to FEMA in developing these regulations.

Definition of local government: One commenter wrote to request the word ''community'' be used rather than ''jurisdiction'' regarding the terminology used to discuss the local entity developing the local level plan.

FEMA's response: FEMA uses the term ''jurisdiction'' rather than ''community'' since the term ''jurisdiction'' is broader than the term ''community.'' A jurisdiction could be a county, city, township, parish, or other local entity. Furthermore, within FEMA, the term ''community'' is closely linked to the local entity that implements the National Flood Insurance Program.

Local plan eligibility: One commenter wrote that local governments should be able to receive assistance if the local jurisdiction has an approved plan, even if the State does not have an approved plan.

FEMA's response: The State is responsible for administering FEMA's programs. The requirement for a State plan as a condition for local governments to receive non-emergency disaster assistance was originally established through section 409 of the Stafford Act (42 U.S.C. 5176). However, section 409 was repealed by the Disaster Mitigation Act of 2000. In addition, every State has met the planning deadline thus far, and FEMA is confident that States will continue to meet the planning deadlines, thus ensuring that local plans can be approved.

Availability of post-disaster assistance: Two commenters wrote to ask how post-disaster assistance would be affected by the lack of an approved State Mitigation Plan by the established deadline.

FEMA's response: The post-disaster assistance that would be withheld by the lack of an approved State Mitigation Plan includes Public Assistance, categories C–G, HMGP, and Fire Management Assistance. As stated above, however, every State has thus far met the planning deadlines, so no post-disaster assistance has been withheld due to a State's lack of an established State plan.

State planning: One commenter asked what the purpose of the State mitigation planning process is, how the term ''effectiveness'' will be measured, how the ''factual basis'' for proposed activities will be established, how State laws should be evaluated, and stated that the requirement that the plan contain an overview of ''all natural hazards'' that can affect the State is too comprehensive.

FEMA's response: FEMA's approach to the planning process is to establish a mechanism for State and local governments to make informed decisions regarding their risk reduction activities rather than creating a prescriptive list of requirements. Section 201.4(a) describes the purpose of the State Mitigation Plan: ''[t]he mitigation plan is the demonstration of the State's commitment to reduce risks from natural hazards and serves as a guide for State decision makers as they commit resources to reducing the effects of natural hazards.'' FEMA looks to the State to establish baselines by which the State will measure the effectiveness of the programs and activities that it has identified that reduce its risks. FEMA is evaluating the effectiveness of plans based on how well the States document the planning process. The requirement regarding the ''factual basis'' for activities means that the State should be developing its mitigation strategy based on the facts (risks and vulnerabilities) established in its risk assessment. State laws would be evaluated based on the criteria established by the State to do so. Regarding the requirement that the plan contain overviews of all natural hazards, FEMA requires the State to *identify* all natural hazards that can affect the State, but only to *evaluate* those that pose the greatest risk (as determined by the State). This distinction ensures that natural hazards are not overlooked and can assist in future evaluations of the

State's risk, by summarizing the process used to conduct the risk assessment.

Generic plans: One commenter wrote that the required elements of a mitigation plan, such as listing facilities located in hazard areas or estimating the potential dollar losses to vulnerable structures, may produce generic plans or lists that are simply trying to comply with specifications rather than truly reducing risk.

FEMA's response: The type of information indicated above is essential to developing a thorough risk assessment. It is not FEMA's intent to require plans that merely list information, but, rather, have States, Indian tribes, and local jurisdictions carefully analyze information to better establish their risks and vulnerabilities. FEMA will continue to provide guidance regarding the level of detail necessary in the planning process, and to ensure that the process remains relevant to those who develop plans.

Public Assistance: Two commenters wrote that there should be a link between the mitigation plan and mitigation activities that might be funded through FEMA's Public Assistance program.

FEMA's response: FEMA concurs with these comments, and continues to coordinate within the agency to ensure that our programs and requirements are implemented as consistently as possible.

Link between State and local plans: Four comments requested clarification of the requirement that State Mitigation Plans be linked to local mitigation plans.

FEMA's response: Section 201.4(c)(4) requires that State Mitigation Plans describe the processes for incorporating local planning efforts into the statewide plan and prioritizing assistance to local jurisdictions. The intent of this section is to ensure that the State mitigation strategies and priorities can be evaluated and incorporated into the local mitigation plans, as appropriate. In addition, risk assessment and other data used in the development of the State plan can be used by local jurisdictions developing their plans, and more site specific data developed in the local mitigation plans may be useful to the State as it progresses in the development of any updated State Mitigation Plans. When the State plans were originally prepared under this regulation, there were few local plans that met FEMA's planning requirement under part 201. Therefore, States had limited local information on which to base their plans. Since then, many local plans have been approved and adopted, providing States with the opportunity to better coordinate with local jurisdictions.

Types of resources for Local Mitigation Planning: Two commenters requested additional information regarding the types of resources that are to be used to obtain information and data for the risk assessment and mitigation strategy in local mitigation plans.

FEMA's response: The information used to develop the local mitigation plans will be driven by local needs, State priorities, and the availability of information and data. Our guidance has been for jurisdictions to do a reasonable search for risk assessment information, to use the ''best available data'' for the analysis, and to indicate how any lack of information or data will be addressed (if at all) in future plan updates. The mitigation strategy should be vetted through the process established by the local mitigation planning team, which should include a public involvement process.

Use of HMGP Planning Funds: One commenter asked whether the 7 percent HMGP planning funding can be used for plan amendments at the local level.

FEMA's response: HMGP planning funds can be used to update or amend mitigation plans.

Privacy concerns: One comment stated that while State and local mitigation plans should identify factors that will be considered when developing specific projects, the plan should not be required to identify specific projects or properties, because doing so could affect privacy concerns and the perceived impact on land values.

FEMA's response: FEMA agrees that specific property addresses should not be included in the plan; however, it may be appropriate to identify project areas for certain risk mitigation activities. For example, as part of a mitigation strategy, a list of properties or areas being considered for acquisition should be prepared, but the specifics regarding property addresses should remain within project applications and not in the plan document itself.

Definition of mitigation: Two commenters wrote that the term ''sustained'' must be clarified to avoid confusion as to what specifically is appropriately termed hazard mitigation and what will be allowed for funding under FEMA programs. The commenters also noted that the term is at odds with the definition found in § 206.2(14).

FEMA's response: As the commenters note, § 206.2(14)'s definition of ''Hazard Mitigation'' is any cost-effective measure which will reduce the potential for damage to a facility from a disaster event, while § 201.2's definition of ''Hazard Mitigation'' is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. The difference between the part 201 and part 206 definitions of hazard mitigation is that ''sustained'' is related to mitigation planning under part 201, and ''cost-effective measures'' is related to grant activities under part 206. The definition for hazard mitigation found in part 201 is meant to allow State, tribal, and local officials latitude to evaluate a wide range of options that might reduce risk; the term ''sustained'' was added to the definition in part 201 to make clear that mitigation activities should be a continuous undertaking, and is consistent with the long-term explanation of hazard mitigation projects in part 206.

Definition of local government: One commenter wrote that the definition of local government was too broad, covering subdivisions of political jurisdictions, and that it is important to look at the community as a whole.

FEMA's response: FEMA understands the commenter's concern. However, section 102 of the Stafford Act (42 U.S.C. 5122) contains a definition for ''local government,'' and this is the definition that FEMA closely follows. FEMA agrees that it is important to look at the whole community. FEMA developed guidance titled ''Multi-Jurisdictional Mitigation Planning,'' (FEMA 386–8), which assists jurisdictions in developing plans that can look at the whole community. A plan developed for a larger community can be adopted by sub-jurisdictions (as long as those sub-jurisdictions participated in the process), which ensures a sub-jurisdiction's eligibility for mitigation grant projects.

Assistance affected by lack of plan: One commenter wrote that §§ 201.4(a) and 201.6(a)(1) are inconsistent with each other, as the former eliminates eligibility for all assistance other than emergency measures for all local governments in a State, if the State fails to secure approval of a plan, while the latter only eliminates eligibility for funding if local entities fail to complete a plan. Since the State is dependent upon local mitigation planning efforts for data, the two sections should be consistent.

FEMA's response: The State Mitigation Plan is required in order for non-emergency disaster assistance, as well as mitigation grants, to be made available throughout the State. The local mitigation plan is required in order to receive mitigation project grants. Other

non-emergency assistance is not affected by the lack of a local mitigation plan. FEMA recognizes that the initial State planning efforts will be limited by the lack of local mitigation plans, but updated State plans will be able to incorporate local level data as it becomes available.

''Ongoing State planning efforts:'' One commenter asked what is meant by ''ongoing state planning efforts'' in § 201.4(b).

FEMA's response: Section 201.4(b) states that an effective planning process is essential in developing and maintaining a good standard State Mitigation Plan. ''Ongoing state planning efforts'' means that the process should include continued coordination to the extent possible with other State agencies, appropriate Federal agencies, and additional interested groups. It is up to the State to determine what other planning processes might be affected by the mitigation planning process.

Vulnerability Assessments: One comment stated § 201.4(c)(2)(ii) would require the States to conduct vulnerability assessments based on local assessments of hazards and risk, but that it is not clear if the States would have to abandon their existing Hazard and Vulnerability Analysis methodology. Also, these risk analyses would have to be based on local participation, which cannot be mandated in many States.

FEMA's response: FEMA does not intend for any State to abandon their existing Hazard and Vulnerability Analysis methodologies. The State Mitigation Plans should document the process used to gather and analyze the data, and explain the methodology in determining vulnerability assessments. This documentation of previous hazard events and potential future hazard events will ensure that current and future users of the mitigation plan will be able to understand the basis for the decisions made in the plan. FEMA agrees that local participation in the planning process cannot be mandated, but where there are local plans, the available data and information should be used.

State risk assessment: One commenter questioned the level of detail required in the State risk assessment. The commenter stated that requiring the State Hazard Mitigation Plan to contain the potential losses to each structure, facility, or infrastructure identified as a risk by local governments for being located in an identified hazard area is redundant of the local mandates.

FEMA's response: Section 201.4 requires the State plan to provide an overview and analysis of potential losses to identified vulnerable structures based on estimates provided in local risk assessments. The intent is to look more broadly on risk and vulnerability than can be done at a local level. The local mitigation plans provide the necessary detail, but the State Mitigation Plan is where the data can be evaluated and summarized to determine overall vulnerabilities and to identify areas that may need additional assistance.

State mitigation strategy: One commenter questioned the level of detail required in the mitigation strategy section of the State Mitigation Plan. The commenter wrote that States may not be able to properly represent local actions and projects with respect to the elements in § 201.4(c)(3)(iii) because it would be quite costly to fully incorporate data for every local plan.

FEMA's response: Section 201.4 (c)(3)(iii) is based on the risk assessment portion of the plan and includes actions that have been identified through the planning process. These actions may be statewide in nature (such as adopting statewide building codes or establishing a multi-agency grant evaluation panel). It is not intended that every activity or action identified in local mitigation plans would be specifically addressed in the State plan. The State plan, through the description of the planning process, the establishment of the mitigation strategy, and the plan maintenance process, will dictate how future plan updates will be evaluated. FEMA will look at what was completed, deleted, or deferred from the plan and the justification for the process.

Intense development pressure: One comment asked for clarification of the term ''intense development pressure.''

FEMA's response: FEMA believes that States can reasonably interpret and apply the term ''intense development pressure.''

Prioritizing HMGP funds: One commenter requested that FEMA should consider allowing each State to prioritize the use of HMGP funds generated by a disaster based on whether the community has a multi-hazard plan.

FEMA's response: FEMA agrees with this comment. Program regulations, policy, and guidance allow States to prioritize the use of HMGP funds.

Mandatory planning: One commenter wrote that mitigation planning is a mandatory requirement, yet there is no guaranteed funding.

FEMA's response: The mitigation planning requirement is not an independently enforced, mandatory requirement. Rather, mitigation planning is a condition of eligibility for receiving certain assistance under the Stafford Act. State mitigation planning can result in reduced disaster losses. While there is no guaranteed funding for mitigation planning, FEMA has provided over $157 million in mitigation planning grants to States, Indian tribal governments, and local jurisdictions from February 2002 through March 2007. Projects are funded based on a thorough understanding of the local risks and vulnerabilities and the mitigation strategy outlined in the local mitigation plan.

Executive Order 12898: One comment stated that the rule substantially affects human health or the environment under Executive Order 12898 by creating a planning requirement that will be difficult for large urban cities and rural poor areas to meet, thereby denying those jurisdictions the opportunity to apply for HMGP project grants.

FEMA's response: FEMA does not agree that the rule has a disproportionate, adverse impact on minority or low income populations or on large urban cities. After the first interim rule, FEMA recognized that insufficient time was originally allowed to prepare the plans, and issued another IR on October 1, 2002 that extended the planning requirement for local plans under the HMGP from November 1, 2003 to November 1, 2004. Currently, over 14,000 jurisdictions now have approved local level mitigation plans, covering over 50 percent of the United States population. Large urban cities generally have their own planning and emergency management departments with staff who can carry out the work related to preparing the plan and/or direct the efforts of contractors. FEMA also recognized the potential administrative burden on jurisdictions that did not budget for the costs associated with the development of mitigation planning, and FEMA has provided funding opportunities for jurisdictions (through planning grants) to allow projects to proceed in minority or low income populations. This eases the potential burden on these jurisdictions while maintaining the statutory intent. Through these programs, FEMA has approved over 1,400 planning grants between February 2002 and March 2007 with obligated Federal grants of over $157,000,000.

In addition, § 201.6(a)(3) allows for an exception, in extraordinary circumstances, for a jurisdiction to receive an HMGP project grant without an approved plan. In this circumstance, the jurisdiction must agree to develop a plan within 12 months of receiving the project grant. This exception allows small or impoverished communities or

jurisdictions with limited resources the opportunity to apply for project funds, while meeting the planning requirement. This exception is available after a disaster, which also allows FEMA to provide resources to jurisdictions that need to complete their mitigation plan. These resources can include training and workshops, new data leading to the risk assessment, assistance in holding and facilitating community meetings, as well as the grant funding for plan development. This allows such potentially disadvantaged communities to receive HMGP project grants concurrent with the development of their mitigation plan, and FEMA will work with those jurisdictions to assist them in meeting the planning requirement. Therefore, FEMA has implemented the planning requirement in a manner that addresses any potential disproportionate adverse effect on minority or low income populations by providing technical assistance and funding opportunities to meet the requirement, as well as exceptions allowing project grants to proceed even where the regular planning requirement is not yet met.

45-day FEMA review: One comment wrote to express concern with the regulatory language that FEMA will review mitigation plans within 45 days, ''whenever possible,'' yet State, tribal, and local governments are required to meet firm deadlines.

FEMA's response: While FEMA makes every effort to review all plans in a timely manner, it must have the flexibility to have an extended review period beyond 45 days, if necessary. FEMA cannot control for disaster activity, field deployments, or large numbers of plans being submitted within a short timeframe, but is not aware of any programs or project grants being denied due to the lack of a plan being approved. The FEMA Regional offices have established draft plan review procedures that expedite the review and approval of final plans.

Multi-jurisdictional plans: One comment requested additional information regarding criteria for multi-jurisdictional planning.

FEMA's response: FEMA has developed a guidance document titled ''Multi-Jurisdictional Mitigation Planning'' (FEMA 386–8). This document contains all of the guidance developed to date regarding multi-jurisdictional planning, and provides direction to those considering this type of planning process. This document can be obtained through any FEMA Regional office or on the FEMA Web site at *http://www.fema.gov/plan/mitplanning/index/shtm*.

Disaster funding restrictions and planning: One commenter wrote that the Disaster Mitigation Act of 2000 did not intend to restrict disaster assistance to individuals due to the lack of a mitigation plan, and that failure to complete a plan should result in the denial of the increased mitigation dollars, not the entire mitigation grant program.

FEMA's response: FEMA agrees that assistance to individuals and other emergency disaster assistance should not be impacted by the lack of a State Mitigation Plan, and have provided for this exception in the regulation in § 201.3(c)(1). However, regarding non-emergency disaster assistance, State Mitigation Plans are critical to the disaster recovery process. The State establishes the framework for the recovery regarding how to address specific issues arising from the disaster, how to address building codes in the recovery effort, and to set priorities for mitigation activities. The requirement for this plan is based on over 30 years of experience that State mitigation planning can result in reduced disaster losses. Since State-level mitigation plans have been required for over 30 years, and section 322 of the Stafford Act is intended to increase mitigation activities, FEMA allows for Enhanced Plans, which make States eligible for the increased share of HMGP funding.

Vulnerability information in State Plans: One commenter wrote that every structure, infrastructure, and critical facility is vulnerable to the risk of disasters and the estimated total loss is potentially the total assessed value of all properties in a jurisdiction, excluding land; therefore, the requirement to analyze these losses as indicated in § 201.4(c)(2)(iii) is a meaningless and burdensome task.

FEMA's response: Section 201.4 requires the State to provide an overview and analysis of potential losses in order to develop a strategy for reducing its risk and vulnerability. If an entire State is subject to losses from disasters, it would be important to assess that risk and determine the best approach to reducing vulnerabilities. FEMA has designed the planning criteria so that each State can develop its own approach to determining how to mitigate its risks.

Publish as a proposed regulation: One comment stated that the regulation should be published as a proposed regulation to allow adequate consideration of the comments from State and local governments.

FEMA's response: As FEMA noted in the interim rule, these regulations needed to be effective in order for State and local governments to be eligible for and to receive mitigation funds as soon as possible. The public benefit of an interim rule is to assist States and communities assess their risks and identify activities to strengthen the larger community in order to be less susceptible to disasters. For these reasons, delaying the effective date of this rule would not have furthered the public interest. Furthermore, prior to this rulemaking, FEMA hosted a meeting where interested parties provided comments and suggestions on how FEMA could implement planning requirements. FEMA has also considered comments provided by States and local governments during the rulemaking process in implementing the planning requirements. The agency will continue to assess the utility and practicality of the requirements based on the experiences of States, tribes, and local governments.

Mitigation under the Public Assistance Program: One comment requested that FEMA change § 206.226(c) so that the hazard mitigation measures identified in a FEMA approved local hazard mitigation plan and associated with facilities and sites which subsequently suffer disaster related damage in a declared disaster are automatically incorporated into the entity's public assistance hazard mitigation proposal on the Project Worksheet as an eligible item.

FEMA's response: Activities funded under § 206.226 must meet the basic eligibility requirements of the Public Assistance program. While mitigation measures identified in the approved mitigation plan may be worthwhile actions, they may not meet the requirements of the Public Assistance program, and would not be eligible.

New language for the regulation: A number of comments proposed specific language revisions. One commenter wrote that the following language should be added to the FEMA responsibilities set out in § 201.3(b)(2), ''* * * and assist the [S]tate in the identification of the appropriate mitigation actions that a [S]tate or locality must take in order to have a measurable impact on reducing or avoiding the adverse effects of a specific hazard or hazardous situation'' because requiring the State to coordinate all State and local activities exceeds the State's capability and authority with regard to local control. Another commenter wrote that § 201.3(c) be revised to read ''[t]he key responsibilities of the State are to coordinate all State and regional activities relating to hazard evaluation and mitigation, and to the extent

possible, local activities relating to hazard evaluation and mitigation.'' One commenter wrote that § 201.3(c)(4) should be removed as it is redundant to Subpart N, and that § 201.4(c)(4)(iii) should be stricken as it conflicts with § 201.4(c)(3)(iii). One comment suggested that FEMA should add the following to § 206.401: ''* * * except where the local or [S]tate entity has adopted, in the post disaster period, new codes, standards, and ordinances that decrease risk to facilities from natural and manmade hazards.'' One comment asked that the language in § 206.432(b)(1) and (2) replace ''not to exceed'' with ''equal to.''

FEMA's response: Regarding the request to add ''* * * and assist the [S]tate in the identification of the appropriate mitigation actions that a [S]tate or locality must take in order to have a measurable impact on reducing or avoiding the adverse effects of a specific hazard or hazardous situation'' to FEMA's responsibilities; FEMA believes that the existing description requiring FEMA to provide technical assistance covers this type of activity, if necessary, but does not require the provision of the assistance in every situation, where it might not be required. In addition, FEMA believes that State and local jurisdictions often have a better understanding than FEMA of what is an appropriate mitigation action given the local conditions.

Regarding the request to revise § 201.3(c) to read ''[t]he key responsibilities of the State are to coordinate all State and regional activities relating to hazard evaluation and mitigation, and to the extent possible, local activities relating to hazard evaluation and mitigation;'' FEMA understands that some States lack the authority to mandate local actions, but FEMA believes that this section can be (and is) interpreted broadly enough to accommodate this situation. The proposed language change emphasizes regional over local activities, and FEMA believes that if the State coordinates regional activities, it has met the requirements of this section, given the broad interpretation of local activities.

Regarding the comment that § 201.3(c)(4) should be removed as it is redundant to Subpart N; FEMA believes that it is important to identify a potential source of funding for planning within the planning regulation, even if it addressed in Subpart N.

Regarding the comment that § 201.4(c)(4)(iii) should be stricken as it conflicts with § 201.4(c)(3)(iii); FEMA believes that while the two sections are similar, they are not identical and both need to be retained. Under the Mitigation Strategy (§ 201.4(c)(3)(iii)), the intent is to identify a range of mitigation actions and activities that are prioritized based on a variety of criteria and under the Coordination of Local Mitigation Planning (§ 201.4(c)(4)(iii)), the requirement is to prioritize communities who might most benefit from either planning or project grants (*i.e.* communities with high risk or multiple repetitive loss properties).

Regarding the comment that FEMA add the following to § 206.401: ''* * * except where the local or [S]tate entity has adopted, in the post disaster period, new codes, standards, and ordinances that decrease risk to facilities from natural and manmade hazards;'' FEMA disagrees with this change since it would conflict with regulations guiding the restoration of damaged facilities under § 206.226(d), and would substitute a very broad qualitative criterion of codes in general, as opposed to the five very specific criteria in the current regulation, which specifically requires that codes must be written, adopted, universally applied, and have demonstrated evidence of prior enforcement.

Regarding the comment that that the language in § 206.432(b)(1) and (2) replace ''not to exceed'' with ''equal to;'' it would not be appropriate to lock in the HMGP funding level by replacing ''not to exceed'' with ''equal to'' since Congress has already demonstrated a willingness to modify the HMGP funding formula.

In the future, FEMA intends to engage in additional discussions with interested groups on how to improve the planning process, which may include changes to the regulatory language.

Hazard Mitigation Surveys: One comment requested that FEMA restore the Hazard Mitigation Early Implementation Strategy, the Hazard Mitigation Surveys, and the Interagency Hazard Mitigation Survey requirements.

FEMA's response: FEMA will consider restoring these post-disaster surveys as part of the ongoing implementation of the Hazard Mitigation Grant Program.

Comments on the Second IR

Support for the extension of the date: One comment encouraged the interim rule to become final, and supported the extension of the date by which State and local governments must develop mitigation plans as a condition of grant assistance to November 1, 2004.

FEMA's response: FEMA agrees and had already extended the date by which State and local governments must develop mitigation plans.

Plan updates: One commenter asked about the process to bring existing mitigation plans into compliance with the regulations at part 201, and how plans are to be updated when they expire.

FEMA's response: Plans approved prior to the implementation of part 201 must be reevaluated and re-approved by FEMA to ensure that they meet the planning requirements identified in part 201. FEMA has also provided guidance through FEMA's ''Multi-Hazard Mitigation Planning Guidance under DMA2000'' on how plans developed under the FMA program can be upgraded to meet the regulations at part 201. This document may be obtained through any Regional office or from the FEMA Web site at *http://www.fema.gov/plan/mitplanning/index.shtm*. In addition, FEMA is in the process of issuing specific guidance on how to update the State, tribal, and local plans when they expire.

Disaster costs and mitigation planning: One commenter asked that FEMA provide each State and community with a detailed analysis of prior disaster assistance outlays by all Federal agencies, an integrated review of all structural projects in the community both as built and proposed, and a legal review regarding the authority of the planning process.

FEMA's response: FEMA will work with State, tribal and local jurisdictions to ensure that they have information generated by FEMA regarding disaster outlays, and has developed guidance through its ''Multi-Hazard Mitigation Planning Guidance under DMA2000'' on how to obtain additional data. This document may be obtained through any Regional office or from the FEMA Web site at *http://www.fema.gov/plan/mitplanning/index.shtm*. Most State, tribal, and local jurisdictions have the authority to develop and implement plans. FEMA encourages the mitigation planning process to be integrated across jurisdictions to ensure that existing data and information is shared and that there is no duplication of effort in gathering and analyzing data.

III. Regulatory Requirements

A. Executive Order 12866, Regulatory Planning and Review

FEMA has prepared and reviewed this rule under the provisions of Executive Order 12866, Regulatory Planning and Review. Under Executive Order 12866, a significant regulatory action is subject to the Office of Management and Budget (OMB) review and the requirements of the Executive Order. OMB has determined that this rule is not a

significant regulatory action. OMB has not reviewed this rule. The Executive Order defines ''significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

The purpose of this rule is to implement section 322 of the Stafford Act, which addresses mitigation planning at the State, local and tribal levels, identifies new local planning requirements, allows HMGP funds to be used for planning activities, and increases the amount of HMGP funds available to States that develop a comprehensive, Enhanced Mitigation Plan. The rule clarifies the requirements for State Mitigation Plans, identifies local mitigation planning requirements before approval of project grants, and requires our approval of an Enhanced State Mitigation Plan as a condition for increased mitigation funding. The rule also implements section 323 of the Stafford Act, which requires that repairs or construction funded by disaster loans or grants must comply with applicable standards and safe land use and construction practices.

FEMA calculates the annual economic impact of the interim rules that this final rule finalizes to be approximately $46,000,000. As this final rule makes no significant change to these interim rules, FEMA is adopting the economic impact estimate of these interim rules as the economic impact of this final rule. The following paragraphs provide a more detailed explanation of the economic impact of this rulemaking.

This rule modifies the State Mitigation planning requirement. Currently, all 50 States, the District of Columbia, 7 territories, and 33 Indian tribal governments have approved State level mitigation plans. FEMA estimates that it takes an average of 2,080 hours for States to prepare State Mitigation Plans to comply with this regulation. Using wage rates from the May 2004, U.S. Department of Labor, Bureau of Labor Statistics (BLS), Standard Occupation Classification (SOC) System, the median hourly wage for urban and regional planners (SOC Code Number 19–3051) is $26.31 per hour. Adding 30 percent to the BLS figure to account for benefits, FEMA has calculated the burden using a wage rate of $34.20 per hour. Since there are a total of 91 State level plans, it is estimated that the one time cost of compliance to submit the State Mitigation plans is $6,473,376. This figure is calculated as follows: $((91 \times 2{,}080) \times \$34.20)$.

These State Mitigation Plans must be updated every 3 years. Since there are a total of 91 State level plans, the cost estimate will assume that, on average, there will be 31 updated plans each year. All States now have existing State Mitigation Plans, and the only continuing requirement is for plan updates. FEMA estimates that it would take an average of 320 hours for States to prepare plan updates. Using wage rates from the May 2004, U.S. Department of Labor, BLS, SOC System, the median hourly wage for urban and regional planners (SOC Code Number 19–3051) is $26.31 per hour. Adding 30 percent to the BLS figure to account for benefits, FEMA has calculated the burden using a wage rate of $34.20 per hour. Therefore, it is estimated that the annual cost of compliance to submit the updates to State Mitigation Plans is $339,264. This figure is calculated as follows: $((31 \times 320) \times \$34.20)$.

This rule also allows States to submit an Enhanced State Mitigation Plan, should they wish to increase the amount of HMGP funds they receive from 15 percent to 20 percent. States may now opt to create an Enhanced Mitigation Plan to receive additional funding. As of March 2007, there were 11 States with Enhanced Mitigation Plans. Two were approved in 2004, four in 2005, three in 2006, and two in 2007. These plans must be renewed every 3 years. As of July 2, 2007, there were only nine approved plans as two States opted not to renew their Enhanced Mitigation Plan.

Once a State has a FEMA-approved Enhanced Mitigation Plan, its only remaining requirement is to review and update it once every 3 years. Using the data from the 5 years since the first interim rule was published the average number of plans submitted in a year is three. The cost estimates will assume three new and three renewal plans submitted to calculate the annual burden.

Again, all States already have existing State Mitigation Plans. FEMA estimates that it would take an average of 320 hours for States to update their Enhanced Mitigation Plan, and an additional 160 hours for States to upgrade an existing Standard State Mitigation Plan to an Enhanced Plan. Since FEMA is encouraging States to update their plans when preparing an Enhanced Plan, the total hours for developing ''new Enhanced Mitigation plans'' is 480 hours (160 hours to upgrade from Standard to Enhanced plus 320 hours to update the plan). Using wage rates from the May 2004, U.S. Department of Labor, BLS, SOC System, the median hourly wage for urban and regional planners (SOC Code Number 19–3051) is $26.31 per hour. Adding 30 percent to the BLS figure to account for benefits, FEMA has calculated the burden using a wage rate of $34.20 per hour. Therefore, it is estimated that the annual cost of compliance to voluntarily submit an Enhanced Mitigation Plan is $82,080. This figure is calculated as follows: $((3 \times 480) \times \$34.20) + ((3 \times 320) \times \$34.20)$.

After its Enhanced Mitigation Plan is approved, pursuant to § 206.432(b), a State is then able to receive an amount equal to 20 percent of the total estimated Federal assistance (excluding administrative costs) provided for a major disaster declaration, instead of 15 percent. The table below reflects all States with Enhanced Plans, each disaster that has been declared in that State since its Enhanced plan was approved, and reflects the amount of HMGP funds it was eligible for. Each State was given funds at the 20 percent rate, however, the 15 percent rate is provided to determine the economic benefit (transfer) received from having the approved Enhanced Plan. In some cases, these are not final lock-in figures, but it is the most accurate data that FEMA has as of August 2007.

TABLE: HMGP FUND ELIGIBILITY FOR STATES WITH ENHANCED PLANS 2004—AUGUST 2007

State	Enhanced plan approved date	Disaster dates declared after enhanced plan	Declaration No.	20% Amount	15% Amount	Difference
WA	July 1, 2004	May 17, 2006	1641	$989,290.00	$741,967.50	$247,322.50.
		December 12, 2006	1671	6,106,627.00	4,579,970.25	1,526,656.75.
		February 14, 2007	1682	7,209,865.00	5,407,398.75	1,802,466.25.
MO	July 2, 2004	March 16, 2006	1631	1,290,726.00	968,044.50	322,681.50.
		April 5, 2006	1635	4,210,525.00	3,157,893.75	1,052,631.25.
		November 2, 2006	1667	128,676.00	96,507.00	32,169.00.
		December 29, 2006	1673	825,000.00	618,750.00	206,250.00.
		January 15, 2007	1676	16,549,000.00	12,411,750.00	4,137,250.00.
		June 11, 2007	1708	Data Unavailable	Data Unavailable	Data Unavailable.
OK	March 18, 2005	January 10, 2006	1623	2,138,136.00	1,603,602.00	534,534.00.
		April 13, 2006	1637	244,990.00	183,742.50	61,247.50.
		February 1, 2007	1677	746,250.00	559,687.50	186,562.50.
		February 1, 2007	1678	7,592,175.00	5,694,131.25	1,898,043.75.
		June 7, 2007	1707	Data Unavailable	Data Unavailable	Data Unavailable.
OH	May 17, 2005	July 2, 2006	1651	1,798,019.00	1,348,514.25	449,504.75.
		August 1, 2006	1656	3,411,736.00	2,558,802.00	852,934.00.
MD	August 26, 2005	July 2, 2006	1652	1,274,514.00	955,885.50	318,628.50.
WI	December 14, 2005	None	NA	NA	NA	NA.
OR	March 7, 2006	March 20, 2006	1632	1,511,700.00	1,133,775.00	377,925.00.
		December 29, 2006	1672	921,824.00	691,368.00	230,456.00.
		February 22, 2007	1683	687,362.00	515,521.50	171,840.50.
FL	August 22, 2006	February 3, 2007	1679	4,044,445.00	3,033,333.75	1,011,111.25.
		February 8, 2007	1680	263,916.00	197,937.00	65,979.00.
PA	August 23, 2006	February 23, 2007	1684	1,822,812.00	1,367,109.00	455,703.00.
IA	January 3, 2007	March 14, 2007	1688	Data Unavailable	Data Unavailable	Data Unavailable.
		May 25, 2007	1705	Data Unavailable	Data Unavailable	Data Unavailable.
VA	March 14, 2007	None	NA	NA	NA	NA.
Totals				63,767,588.00	47,825,691.00	15,941,897.00.

These disasters range in date from March 16, 2006 to Feb. 23, 2007, which is roughly one year. A total of $63,767,588 in HMGP funds were granted at the 20 percent rate due to the fact that these States had approved Enhanced Mitigation Plans. This 5 percent increase translates to an additional $15,941,897 in funds distributed as a result of this regulation.

This rule also requires that after November 1, 2004, a local mitigation plan must be approved in order to receive HMGP project grants. As of June 2007, over 2,500 local mitigation plans covering over 13,000 jurisdictions have been approved. FEMA receives and approves approximately 280 local plans per year. The requirement of a local plan does not affect the amount of HMGP funds that were available to the jurisdiction before this regulation. The economic impact results from the cost to create the plan. If a local jurisdiction is covered by a plan, it will receive the same amount of HMGP project funds it would have received before this requirement was created.

From experience over the past 5 years, FEMA expects approximately 280 new local plans to be developed annually. Once a local jurisdiction has a FEMA-approved Mitigation plan, they are required to review and update it once every 5 years. FEMA averages 280 plan updates per year. FEMA estimates that it would take an average of 2,080 hours to develop new plans, and 320 hours for plan updates, plus 8 hours for the State to review the local plan. Using wage rates from the May 2004, U.S. Department of Labor, BLS, SOC System, the median hourly wage for urban and regional planners (SOC Code Number 19–3051) is $26.31 per hour. Adding 30 percent to the BLS figure to account for benefits, FEMA has calculated the burden using a wage rate of $34.20 per hour. Therefore, it is estimated that the annual cost of compliance is $(((280 \times 2{,}080) + (280 \times (320 + 8)) \times 34.20) =$ $23,059,008.

Under § 206.434(d), up to 7 percent of the State's HMGP grant may be used to develop State, tribal and/or local mitigation plans. This change does not have any effect on the actual amount of HMGP funds that a State is eligible for, but allows the cost to develop plans described above to be offset by HMGP planning grants. This regulation simply expands the eligible use of HMGP funds to include the development of mitigation plans. States are not required to use the funds for this purpose. Any HMPG funding spent on mitigation planning is accounted for in the analysis above, under each category of planning (Standard State Mitigation Plans, Enhanced State Mitigation Plans, and local mitigation plans). For the reasons stated above, the annual impact of this rule on the economy is approximately $46,000,000. This figure is calculated as follows: ($6,473,376+$339,264+ $82,080+$15,941,897+$23,059,008).

B. Regulatory Flexibility Act

Under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (Pub. L. 104–121, 110 Stat. 857), FEMA is not required to prepare a final regulatory flexibility analysis for this final rule because the agency has not issued a notice of proposed rulemaking prior to this action.

C. National Environmental Policy Act

The National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) (NEPA) implementing regulations governing FEMA activities at § 10.8(d)(2)(ii) categorically exclude the preparation, revision and adoption of regulations from the preparation of an environmental assessment or environmental impact statement, where the rule relates to actions that qualify for categorical exclusions. Mitigation plans to be developed under regulations revised or adopted by this rulemaking

include hazard mitigation measures categorically excluded under § 10.8(d)(2)(iii).

D. Executive Order 12898, Environmental Justice

Under Executive Order 12898, ''Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations'' (59 FR 7629, published February 16, 1994), FEMA incorporates environmental justice into its policies and programs. The Executive Order requires each Federal agency to conduct its programs, policies, and activities that substantially affect human health or the environment in a manner that ensures that those programs, policies, and activities do not have the effect of excluding persons from participation in programs, denying persons the benefits of programs, or subjecting persons to discrimination because of race, color, or national origin.

FEMA believes that no action under the rule will have a disproportionately high or adverse effect on human health or the environment. This rulemaking implements sections 322 and 323 of the Stafford Act. Section 322 focuses specifically on mitigation planning to identify the natural hazards, risks, and vulnerabilities of areas in States, localities, and tribal areas; development of local mitigation plans; technical assistance to local and tribal governments for mitigation planning; and identifying and prioritizing mitigation actions that the State will support as resources become available. Section 323 requires compliance with applicable codes and standards in repair and construction, and use of safe land use and construction standards. This rulemaking is intended to result in the creation of hazard mitigation plans that will assist communities in planning for hazards, so as to protect human lives and the environment. The Hazard Mitigation Grant Program is available to all States, tribes and local communities regardless of race, color, or national origin. Accordingly, the requirements of Executive Order 12898 do not apply to this rule.

E. Congressional Review of Agency Rulemaking

FEMA has sent this final rule to the Congress and to the Government Accountability Office under the Congressional Review of Agency Rulemaking Act, (''Congressional Review Act''), Public Law 104–121. This rule is not a ''major rule'' within the meaning of the Congressional Review Act. The rule will not result in a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. It will not have ''significant adverse effects'' on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises.

F. Unfunded Mandates

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), enacted as Public Law 104–4 on March 22, 1995, requires each Federal agency, to the extent permitted by law, to prepare a written assessment of the effects of any Federal mandate in a proposed or final agency rule that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of $100 million or more (adjusted annually for inflation) in any one year.

This final rule is not an unfunded Federal mandate within the meaning of the UMRA. This final rule would not impose a significant cost or uniquely affect small governments. The final does not have an effect on the private sector of $100 million or more in any 1 year. Any enforceable duties that FEMA imposes are a condition of Federal assistance or a duty arising from participation in a voluntary Federal program.

G. Executive Order 13132, Federalism

Executive Order 13132, entitled ''Federalism,'' (64 FR 43255, published August 10, 1999), sets forth principles and criteria that agencies must adhere to in formulating and implementing policies that have federalism implications; that is, regulations that have substantial direct effects on the States, or on the distribution of power and responsibilities among the various levels of government. Federal agencies must closely examine the statutory authority supporting any action that would limit the policymaking discretion of the States, and to the extent practicable, must consult with State and local officials before implementing any such action.

FEMA has determined that this rule involves no policies that have federalism implications under Executive Order 13132. However, FEMA consulted with State, local and tribal officials in the promulgation of this rulemaking. Furthermore, in order to assist in the development of this rule, FEMA hosted a meeting to allow interested parties an opportunity to provide their perspectives on the legislation and options for implementation of the Stafford Act requirements. Stakeholders who attended the meeting included representatives from the National Emergency Management Association, the Association of State Floodplain Managers, the National Governors' Association, the International Association of Emergency Managers, the National Association of Development Organizations, the American Public Works Association, the National League of Cities, the National Association of Counties, the National Conference of State Legislatures, the International City/County Management Association, and the Bureau of Indian Affairs. FEMA received valuable input from all parties at the meeting which was taken into account in the development of the initial interim rule. In addition, FEMA received comments on the interim rules from 14 State emergency management agencies, 3 organizations, 2 local governments; and 1 independent group.

H. Paperwork Reduction Act

As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*), an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the collection of information displays a valid control number. OMB has approved a collection of information entitled ''State/Local/Tribal Hazard Mitigation Plans—Section 322 of the Disaster Mitigation Act of 2000'' (OMB No. 1660–0062) for the use of information gathered pursuant to this rulemaking. The OMB collection number for this collection is 1660–0062. An emergency extension was filed with OMB on June 18, 2007, and approved on June 25, 2007. The collection is currently set to expire on October 31, 2007. Before the collection expires, FEMA will submit a request for revision to this collection and begin the OMB clearance process for long-term approval by publishing a 60 day request for comments on the revision.

I. Executive Order 13175, Consultation and Coordination With Indian Tribal Governments

FEMA has reviewed this rule under Executive Order 13175, ''Consultation and Coordination with Indian Tribal Governments'' (65 FR 67249, published November 9, 2000). FEMA finds that, while it does have ''tribal implications'' as defined in Executive Order 13175, it will not have a substantial direct effect on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes.

Despite this determination, FEMA has, and continues to, consult with Indian tribal governments with respect to hazard mitigation. Before FEMA developed the interim rule, the agency met with representatives from State and local governments and the Bureau of Indian Affairs to discuss the new planning requirements of section 322 of the Stafford Act. The same opportunity for comment was offered to all parties. FEMA received valuable input from all attendees, which helped FEMA to develop the interim rule. Also, since FEMA published the interim rule, it has coordinated more directly with Indian tribal governments, and with organizations that represent them. For example, in conjunction with the National Congress of American Indians, FEMA hosted a Tribal Mitigation Conference in October 2002 at the Ak-Chin Indian Community, Arizona. This conference provided FEMA with an opportunity to better understand its responsibilities related to Indian tribal governments and to build a working relationship with many of the Indian tribal representatives. A follow-up conference was held at the Salish Kootenai Community, Montana in August 2003. As a direct result of these conferences, FEMA developed an EMI resident course titled ''Mitigation for Tribal Officials.'' This course provides a direct opportunity for coordination and information sharing between Indian tribal representatives and FEMA, resulting in refinements to FEMA's Indian tribal policy and guidance.

Finally, FEMA believes that planning is critical to successful mitigation at all levels of government. The agency has been working to technically assist all federally-recognized Indian tribal governments regarding the availability of grant funding, training opportunities, as well as program requirements.

List of Subjects

44 CFR Part 201

Administration practice and procedure, Disaster assistance, Grant programs, Reporting and recordkeeping requirements.

44 CFR Part 204

Administration practice and procedure, Fire prevention, Grant programs, Reporting and recordkeeping requirements.

44 CFR Part 206

Administrative practice and procedure, Coastal zone, Community facilities, Disaster assistance, Fire prevention, Grant programs—housing and community development, Housing, Insurance, Intergovernmental relations, Loan programs—housing and community development, Natural resources, Penalties, Reporting and recordkeeping requirements.

■ Accordingly, for the reasons stated in the preamble, the interim rules amending 44 CFR parts 201, 204, and 206 that were published at 67 FR 8844 on February 26, 2002, 67 FR 61512 on October 1, 2002, 68 FR 61368 on October 28, 2003, 69 FR 55094 on September 13, 2004, and the correcting amendment published at 68 FR 63738 on November 10, 2003, are adopted as final with the following changes:

PART 201—MITIGATION PLANNING

■ 1. The authority citation for part 201 is revised to read as follows:

Authority: 42 U.S.C. 5121–5206; 6 U.S.C. 101; Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; E.O. 12127, 44 FR 19367, 3 CFR, 1979 Comp., p. 376; E.O. 12148, 44 FR 43239; 3 CFR, 1979 Comp., p. 412; E.O. 13286, 68 FR 10619, 3 CFR, 2003 Comp., p. 166.

■ 2. Revise § 201.4 (c)(2)(ii) to read as follows:

§ 201.4 Standard State Mitigation Plans.

* * * * *

(c) * * *

(2) * * *

(ii) An overview and analysis of the State's vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in local risk assessments as well as the State risk assessment. The State shall describe vulnerability in terms of the jurisdictions most threatened by the identified hazards, and most vulnerable to damage and loss associated with hazard events. State owned or operated critical facilities located in the identified hazard areas shall also be addressed;

* * * * *

Dated: October 24, 2007.

Harvey E. Johnson, Jr.,

Deputy Administrator/Chief Operating Officer, Federal Emergency Management Agency.

[FR Doc. E7–21264 Filed 10–30–07; 8:45 am]

BILLING CODE 9110–41–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 635

RIN 0648–XD44

Atlantic Highly Migratory Species; Atlantic Bluefin Tuna Fisheries

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Temporary rule; inseason retention limit adjustment.

SUMMARY: NMFS has determined that the Atlantic tunas General category daily Atlantic bluefin tuna (BFT) retention limit should be adjusted for the November and December time periods of the 2007 fishing year and the January period of the 2008 fishing year. NMFS increases the daily BFT retention limits, including on previously scheduled Restricted Fishing Days (RFDs), to provide enhanced commercial fishing opportunities to harvest the established General category quota.

DATES: The effective dates for the adjusted BFT daily retention limits are November 1, 2007, through January 31, 2008.

FOR FURTHER INFORMATION CONTACT: Brad McHale or Sarah McLaughlin, 978–281–9260.

SUPPLEMENTARY INFORMATION: Regulations implemented under the authority of the Atlantic Tunas Convention Act (16 U.S.C. 971 *et seq.*) and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act; 16 U.S.C. 1801 *et seq.*) governing the harvest of BFT by persons and vessels subject to U.S. jurisdiction are found at 50 CFR part 635. Section 635.27 subdivides the U.S. BFT quota recommended by the International Commission for the Conservation of Atlantic Tunas (ICCAT) among the various domestic fishing categories, per the allocations established in the Consolidated Highly Migratory Species Fishery Management Plan (Consolidated HMS FMP). The latest (2006) ICCAT recommendation for western Atlantic BFT included a U.S. quota of 1,190.12 mt, effective beginning in 2007, through 2008, and thereafter until changed (i.e., via a new ICCAT recommendation).

The 2007 fishing year began on June 1, 2007, and ends December 31, 2007. NMFS published final specifications on June 18, 2007 (72 FR 33401) and

DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

44 CFR Parts 59, 61, 78, 79, 80, 201, and 206

[Docket ID FEMA–2006–0010]

RIN 1660–AA36

Flood Mitigation Grants and Hazard Mitigation Planning

AGENCY: Federal Emergency Management Agency, DHS.

ACTION: Final rule.

SUMMARY: The Federal Emergency Management Agency finalizes the interim regulations that implemented the Severe Repetitive Loss program and clarified provisions of the existing Flood Mitigation Assistance program. In addition, this rule finalizes interim requirements for the acquisition of property for open space with mitigation funds and clarifies mitigation planning requirements for Indian Tribal governments. This rule is intended to encourage hazard mitigation, reduce the number of repetitive loss properties, and improve FEMA's mitigation programs.

DATES: This rule is effective October 16, 2009.

FOR FURTHER INFORMATION CONTACT: Cecelia Rosenberg, Mitigation Directorate, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20598–3030, (phone) 202–646–3321, (facsimile) 202–646–2719, or (e-mail) *cecelia.rosenberg@dhs.gov.*

SUPPLEMENTARY INFORMATION:

I. Background

On October 31, 2007 (72 FR 61720), the Federal Emergency Management Agency (FEMA) published an Interim Rule (IR). The IR implemented provisions of the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, Public Law 108–264, 118 Stat. 714, found at 42 U.S.C. 4102a, which amended the National Flood Insurance Act of 1968 (NFIA) to provide new programs and incentives for States and communities to mitigate flood damage to severe repetitive loss properties. Using this new authority, the IR added a new 44 CFR part 79 that established the new Severe Repetitive Loss (SRL) program. The SRL program is intended to eliminate or reduce the risk of additional flood damage to the subset of properties that have the largest claims paid from the National Flood Insurance Program (NFIP). It is also intended to reduce losses to the National Flood Insurance Fund (NFIF). The SRL program provides mitigation offers for NFIP insured properties that have experienced four or more separate flood claims payments each exceeding $5,000 and cumulative payments exceeding $20,000; or at least two separate claims payments cumulatively exceeding the market value of the building. Claims made within 10 days of each other are counted as one claim, and at least two of the claims must be within 10 years of each other. If the offer of mitigation assistance is refused the property owners' insurance rates may be increased.

In addition, the IR amended the existing Flood Mitigation Assistance (FMA) program by updating the FMA regulations to reflect changes to the non-Federal cost share as a result of the amendments to the NFIA, changes to FEMA policy, and adding a new 44 CFR part 79. The IR also codified, at new 44 CFR part 80, procedures and requirements for the acquisition of property for open space. Although FEMA previously had procedures in place for open space acquisition, the new part expanded the scope of FEMA's prior regulations to address the use of all types of mitigation funds, including SRL and FMA, and consolidated them in one location. FEMA also modified the mitigation planning regulations at 44 CFR part 201 to reduce the non-Federal cost share for mitigation projects under the FMA and SRL programs for grantees with State mitigation plans that address repetitive loss strategies. This change is intended to minimize the burden on State, local, and Indian Tribal governments; to streamline the flood mitigation planning process; and to ensure consistency in the local planning requirements that apply to FEMA's mitigation grant programs. Recognizing the unique needs of Indian Tribal governments, who may act as grantees or subgrantees and may have different organizational structures than State or local governments, the IR also established the Tribal Mitigation Plan in 44 CFR 201.7.

The rule also implemented amendments to section 1308 of the NFIA to charge the full actuarial insurance premium rates for property leased from the Federal Government ''located on the river-facing side of any dike, levee, or other riverine flood control structure, or seaward of any seawall or other coastal flood control structure.'' (42 U.S.C. 4015(c)(2)) Finally, effective October 4, 2006, section 684 of the Post-Katrina Emergency Management Reform Act of 2006, Public Law 109–295, amended the amount of Hazard Mitigation Grant Program (HMGP) assistance available to States with an approved Standard State Mitigation Plan from 7.5 percent to 15 percent and established a sliding scale for HMGP assistance. The IR revised FEMA's regulations to align with this change. (44 CFR 206.432(b)(1).)

II. Discussion of Final Rule

This final rule adopts the regulations established by the October 31, 2007 IR. It addresses the comments received from the public in response to the IR, makes changes to correct errors identified in public comments, makes technical corrections, and finalizes the interim regulations contained in 44 CFR parts 59, 61, 78, 79, 80, 201, and 206. The following is a summary of these regulatory changes:

A. 44 CFR Part 79

FEMA revised ''Alaskan native village'' in paragraph 79.2(c)(1) to ''Alaska Native village'' so that the term is consistent with its use under the definition of ''local government'' in the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended (42 U.S.C. 5122). FEMA also inserted a definition of ''Indian Tribal Government'' at new paragraph 79.2(e) so that 44 CFR part 79 is consistent with 44 CFR parts 201 and 206 where ''Indian Tribal government'' is currently defined. Throughout paragraph 79.4(c), FEMA removed the word ''State'' and revised the text to recognize that per 44 CFR 206.202(f)(1), Indian Tribal governments may also apply directly to FEMA for grant assistance. These changes are intended to correct an unintentional omission in the language of the IR. A technical correction has also been made to paragraph 79.6(b)(1) to add a more specific reference to Tribal mitigation planning requirements. Finally, paragraph 79.6(c)(2)(ii) of the IR inadvertently listed demolition or relocation of structures to areas outside of the floodplain as an eligible activity, rather than as a component of paragraph 79.6(c)(2)(i). To correct this error, paragraph 79.6(c)(2)(ii) has been removed and its substance has been incorporated into the language of paragraph 79.6(c)(2)(i).

Finally, on April 3, 2009, FEMA published a technical amendment that updated the agency's titles to reflect its current organization (74 FR 15328). Among other things, the technical amendment changed the terms ''Director'' to ''Administrator'' and ''Regional Director'' to ''Regional Administrator'' throughout Title 44 of the Code of Federal Regulations, and

removed the agency organization and delegations of authority from 44 CFR part 2. The IR had inserted definitions for ''Administrator'' and ''Regional Administrator'' at 44 CFR parts 79, 80, and 201 to reflect the agency organization; however, it did so in a way that referenced the old terms ''Director'' and ''Regional Director'' as defined in 44 CFR part 2. To ensure this final rule conforms to the changes made in the technical amendment, the definitions for ''Administrator'' and ''Regional Administrator'' are revised in newly designated paragraphs 79.2(l) and (m), paragraphs 80.3(l) and (m), and also revised in § 201.2.

B. 44 CFR Part 80

FEMA revised paragraph 80.11(d) to clarify that the subapplicant must acquire or retain fee title (full property interest), except for encumbrances FEMA determines are compatible with open space uses, consistent with paragraph 80.17(b). In response to a comment, FEMA reviewed the provisions for verifying that a property owner is a National of the United States or qualified alien and therefore eligible to be offered pre-event market value for the property in an acquisition instead of current market value. To correct an inconsistency confirmed in that review, FEMA revised paragraphs 80.13(a)(6) and 80.17(c)(4) to require the subapplicant to certify that the property owner is a U.S. National or qualified alien before the grant award.

C. 44 CFR Part 201

The final rule makes technical corrections throughout this part. In the definition of the term ''Indian Tribal government'' in § 201.2, the word ''Indian'' was inadvertently omitted in the reference to the Federally Recognized Indian Tribe List Act of 1994, but has been added in this final rule. The final rule removes paragraph 201.3(c)(7) to eliminate reference to a paragraph of the regulation that no longer exists, as it was transitional in nature. In paragraphs 201.3(e)(1), 201.7(a)(2) and 201.7(c)(3)(vi), FEMA inadvertently failed to reference that Indian Tribal governments, like States, must apply to FEMA as a grantee to receive the reduced cost share for the FMA and SRL programs when addressing severe repetitive loss properties in their plans. This requirement appeared in paragraph 201.3(e) before 44 CFR part 201 was changed by the IR; therefore, these changes are nonsubstantive.

FEMA has revised paragraph 201.7(a)(3) by replacing local with Tribal to reflect the appropriate mitigation plan required for Tribal governments. Additionally, FEMA added a sentence to the end of paragraph 201.7(a)(3) to reference the extraordinary circumstances in which a Regional Administrator may grant Tribal governments an exception to the plan requirement. This exception appeared in FEMA's regulations before the IR at paragraph 201.6(a)(3) and was unintentionally omitted from the new language specifically addressing Tribal governments in the IR.

Finally, in paragraph 201.6(c)(2)(ii)(B), an incorrect cross-reference has been revised from (c)(2)(i)(A) to (c)(2)(ii)(A). In paragraph 201.6(c)(3)(iii), an incorrect cross-reference has been revised from (c)(2)(ii) to (c)(3)(ii). In paragraph 201.7(c)(2)(ii)(B), an incorrect cross-reference has been revised from (c)(2)(i)(A) to (c)(2)(ii)(A) and in paragraph 201.7(c)(3)(iii), an incorrect cross-reference has been revised from (c)(2)(ii) to (c)(3)(ii).

D. 44 CFR Part 206

This final rule makes two technical corrections to § 206.432. The first technical correction is to paragraph 206.432(b) and removes the reference to 42 U.S.C. 5178 since 42 U.S.C. 5178, section 411 of the Stafford Act was repealed. The second technical correction is to paragraph 206.432(b)(2) to clarify that for States with an Enhanced State Mitigation Plan, the total amount of Federal contribution under the HMGP for a major disaster may not exceed 20 percent of $35.333 billion. This technical correction is non-discretionary and makes the paragraph consistent with the statute (sections 322 and 404 of the Stafford Act, as amended, 42 U.S.C. 5165 and 5170c).

This final rule also corrects inadvertent errors and omissions to reflect the Tribal Mitigation Plan established by the IR. The rule adds the word ''Indian'' to the definition of ''Indian Tribal government'' in § 206.431 and ''or Tribal'' to paragraphs 206.434(b)(1) and 206.434(c)(1), deletes the words ''or Indian Tribal'' from the definition of Local Mitigation Plan in § 206.431, and adds a definition of the term ''Tribal Mitigation Plan'' to § 206.431.

In paragraph 206.434(b)(1), the final rule expands the reference to 44 CFR 201.6 and revises it to include the entirety of 44 CFR part 201 so that it includes both Local and Tribal Mitigation Plans. In that paragraph, the final rule also removes the reference to disasters declared on or after November 1, 2004, and the requirements for plans approved before that date. This change is a conforming amendment because the provisions are no longer applicable. Additionally, the final rule revises the cross-reference in § 206.401 to correctly direct readers to paragraph 206.226(d). Paragraph 206.226(b) is revised to include the Tribal Mitigation Plan established by the IR. As FEMA treats Tribal Mitigation Plans in the same manner that it treats State Mitigation Plans, this section should have been amended in the IR to reflect the new form of planning document. These changes are intended to correct that omission and conform this section to the requirements and authorities contained in other sections.

Finally, the introductory text to paragraph 206.434(e) has been restated in this rule. As previously noted, on April 3, 2009, FEMA published a technical amendment that updated the agency's titles and organization (74 FR 15328). That rule changed ''Regional Director'' to ''Regional Administrator'' in this paragraph. To ensure this final rule does not undo that change, the language of the IR is repeated to incorporate the change from the technical amendment.

III. Discussion of Public Comments

FEMA received five public comments regarding the IR published on October 31, 2007. The comments on the IR were submitted by three State emergency management agencies, the Association of State Floodplain Managers, and an individual citizen. The comments received, together with FEMA's response, are set forth below. Many of the public comments contained general supportive statements or positive responses to specific regulatory changes. Although FEMA appreciates the public support for this rulemaking, and took those statements into consideration when drafting this final rule, FEMA has no specific response to those comments and they are not represented in this discussion. Additionally, the comments regarding river flow and impervious surfaces in New Jersey were outside the scope of this rulemaking. Therefore, FEMA has no specific response to those comments. All previously published rulemaking documents, as well as all comments received are available in the public docket for this rulemaking. The public docket for this rulemaking is available online at the Federal e-Rulemaking Portal at *http://www.regulations.gov* under Docket ID FEMA–2006–0010.

44 CFR Part 78

44 CFR part 78 provides information on the actions, procedures, and requirements for the administration of

the FMA program. The FMA program is designed to assist States and local governments in funding cost effective actions that result in the greatest cost savings to the NFIF. One commenter noted that paragraph 78.12(f), which allows for other activities that bring an insured structure into compliance with NFIP minimum standards, and paragraph 78.12(h), that allows for beach nourishment activities, are now excluded in the new rule at 44 CFR part 79. The commenter had no concerns with these changes. This change was incorporated into the IR to implement a policy change, and has not been modified in this final rule. Eligible projects that now can be funded under FMA are limited to acquisition/demolition, relocation, elevation, floodproofing, and minor localized flood reduction projects.

44 CFR Part 79

General

44 CFR part 79 implements certain amendments to the NFIA that provide incentives for States and communities to mitigate the effects of flood damage to severe repetitive loss properties by creating the SRL program and by reducing the cost share requirements in the existing FMA program for SRL properties. One commenter noted that §§ 79.8 and 79.9 replace § 78.13 and add language that is consistent with how the FMA program is currently being implemented. Another commenter indicated that this rulemaking illustrates how cumbersome the SRL program is as a result of complexity in the statute, and as a result the SRL program when implemented will be difficult.

FEMA acknowledges that the rule is consistent with the statutory language as required by the amendments to the NFIA and that many details of the SRL program reflect the statute. FEMA acknowledges that implementation of the program poses some challenges. As a result of carrying out the Fiscal Year 08 and 09 programs, FEMA is working to identify and address critical implementation issues in order to streamline, where possible, the delivery of assistance to mitigate SRL properties.

Section 79.3 (Responsibilities/Reallocation)

Section 79.3 outlines FEMA's, States', Tribes', and communities' roles and responsibilities in implementing the FMA and SRL programs. These responsibilities include administering and providing oversight to FEMA-related hazard mitigation programs and grants by issuing program guidance and procedures, allocating funds to States for the FMA and SRL programs, awarding all grants to the grantee, and providing technical assistance and training to State, local, and Indian Tribal governments.

One commenter noted that changes to the Federal responsibilities section of the IR eliminated FEMA regional office authority to award grants, and transferred that authority to FEMA headquarters. The commenter also acknowledged FEMA's recent procedural change that no longer allows for a regional reallocation of FMA funds; rather, all unallocated funds now must return to FEMA headquarters and be reallocated through a national competition. The commenter prefers FEMA's previous procedure that allows for a regional reallocation followed by a national reallocation.

Although the Region is no longer specified in the new § 79.3 (which replaces paragraph 78.3(a)) regarding responsibility for the administration of funds awarded under the FMA program, FEMA disagrees that this has the effect of transferring authority to award grants from the Region to FEMA Headquarters. Rather, the provision allows FEMA increased flexibility in determining how to implement allocation, award, and reallocation to more efficiently make grant assistance available to eligible applicants and to more equitably distribute the FMA funds nationally in the event that eligible applications exceed available dollars.

Section 79.4 (Availability of Funding)

Section 79.4 provides information regarding the availability of funding and provides guidelines regarding the allocation process. Two commenters noted that the allocation formula for the SRL program is reasonable, but one indicated that the IR eliminates the base amount of per State funding for FMA which had been $10,000 for planning and $100,000 for projects. The rule does remove the base amounts of funding. The FMA allocation formula as described at § 79.4 is based on the number of NFIP policies and repetitive loss structures in each State, in addition to criteria described at § 79.6, eligibility. This provides FEMA with increased flexibility, which ensures that as many eligible projects as possible are funded.

Management Costs

One commenter was opposed to the elimination of paragraph 78.8(c) which specifies that a maximum of 10 percent of FMA funds will be available for Technical Assistance grants because there is no equivalent language in the IR to provide for costs incurred by the State in administering this program. The commenter suggested that this change indicates that FEMA intends to reduce management costs by policy instead of a rule change.

FEMA does not intend for this rule to reduce the amount of assistance provided to administer the FMA and SRL programs. In the IR, paragraph 79.8(a)(1) contains language that allows for eligible management costs. For the purposes of clarity, the term management costs in the IR replaces the term Technical Assistance grants as used in 44 CFR part 78. Management costs as described in the IR provide for costs incurred by the State in administering the FMA and SRL programs with the same 10 percent cap. Thus, there is equivalent language in the IR to provide for such costs.

FMA Cap

One commenter noted that the community and State cap on FMA funding will pose an obstacle in some areas. Although this cap may limit the funding of potential FMA projects for some communities, it is a requirement imposed by the statute that authorized the FMA program (42 U.S.C. 4104c). Although FEMA has no discretionary authority to remove the cap, the statute gives FEMA the discretion to waive the caps for any 5-year period when a major disaster or emergency for flooding is declared under the Stafford Act in that community or State, respectively. This provision is implemented at § 79.4 of the rule.

In-Kind Match Limit

One comment notes that up to half of the local match to a FMA project can be an in-kind match and that FMA is the only FEMA mitigation program with the in-kind restriction. FEMA agrees that there is a restriction on the use of in-kind matching of FMA projects to meet the required non-Federal contribution. This is a requirement from the legislation that authorized the FMA program (42 U.S.C. 4104c(g)(1)) which requires that in-kind contributions by any State or community shall not exceed one-half of the amount of non-Federal funds contributed by the State or community.

Requirement of an SRL Non-Federal Match

One commenter noted that the SRL program requires a non-Federal match unlike the Repetitive Flood Claims (RFC) program. The commenter adds that many communities find it difficult to promote mitigation buyouts when the property will be deed restricted and there is a loss of tax base. With respect

to the SRL non-Federal match, the regulation mirrors the language of the authorizing statute. (42 U.S.C. 4102a(d)) The authorizing language for the RFC program does not contain a similar match requirement and FEMA has not implemented one. FEMA has interpreted that the intent of the RFC is to provide mitigation assistance for States and communities that cannot meet the requirements of the FMA program, including the ability to provide a non-Federal match.

Section 79.6 (Eligibility)

Section 79.6 provides information on eligible applicants, subapplicants, State mitigation plan requirements, eligible activities, and minimum project criteria. One commenter noted that elevation, flood-proofing, demolition, and rebuilding will occur at least to the Base Flood Elevation (BFE) level or higher, if required by FEMA or State or local ordinance. Another commenter added that its particular jurisdiction requires the lowest enclosed level to be the BFE plus 2 feet for both FMA and HMGP flood mitigation projects. The commenter noted that this requirement is pursuant to its grant administrative discretion and its responsibility to prepare and adopt its State Standard Mitigation Plan, not because of local ordinance or State statute. The commenter requested that FEMA change the IR by adding statements which recognize that State administrative provisions and mitigation plans may also require an elevation higher than the BFE.

FEMA has worked closely with its State and local partners to robustly implement mitigation planning as part of their decision-making. FEMA encourages, as part of an overall mitigation strategy, that States and local communities identify the particular hazard or hazards in their areas. Upon identification and prioritization of those hazards, State and local decision-makers are encouraged to develop prudent mitigation measures to address those risks and vulnerabilities. FEMA encourages States to establish more stringent requirements as part of their State administrative provisions or State mitigation plan. FEMA's guidelines for floodplain management under the NFIP are a minimum standard; however, States are afforded the flexibility to adopt and implement more restrictive requirements, which may include provisions specific to mitigation. The IR was not intended to limit States from implementing their own administrative requirements that can serve as a basis for State-level ordinance or local regulatory changes to go above and beyond FEMA's minimum standards.

SRL Benefit Cost Analysis Requirements

Two commenters noted that a benefit cost analysis for SRL projects is required, although mitigation of some structures may not be cost effective because they are not located in special flood hazard areas. One of those commenters requested that the SRL and repetitive loss properties automatically be considered cost effective.

FEMA determined that the intent of the legislation that authorized the SRL program is to fund projects that reduce flood damages to SRL properties and that reduce losses to the NFIF. The statutory text does not specify that the projects must be cost effective; however, FEMA recognizes that determining cost-effectiveness ensures compliance with these statutory program purposes, as well as provides a means of implementing the SRL program's legislative requirement of providing assistance that will result in the greatest amount of savings to the NFIF. FEMA continues to evaluate the various approaches to determining cost-effectiveness in terms of creating savings to the NFIF.

SRL Property Relocation

One commenter indicated that paragraph 79.6(c)(2)(ii) lists the demolition or relocation of structures to areas outside of the floodplain as an eligible project without placing limitations on the future use of the flood prone property. The commenter indicates that this change in the IR creates a potential for misuse as it would be possible to use mitigation funding to purchase a property under the SRL program, have it demolished or relocated, and then build a new structure on the same flood prone site. FEMA notes that paragraph 79.6(c)(2)(ii) is a component of the eligible activity identified in paragraph 79.6(c)(2)(i). To correct the error, paragraph 79.6(c)(2)(ii) has been removed and its substance has been incorporated into the language of paragraph 79.6(c)(2)(i), which contains a requirement that the property be converted to open space.

Section 79.7 (Offers and Appeals Under the SRL Program)

Section 79.7 provides information on mitigation offers and appeals under the SRL program. The section provides guidance on the consultation process, the voluntary mitigation offer, likely insurance increases due to refusal of a mitigation offer, and the appeals process for insurance rate increases. One commenter noted that there is no appeals process for the market value determination on an SRL property. The commenter indicated that the lack of an appeals process will likely cause problems in the implementation of the program.

Contrary to the commenter's claim, FEMA asserts that throughout the SRL process there are several opportunities for property owners to formally or informally consult with the State and local community regarding the purchase offer for their property. Under the SRL program, the purchase offer must be at least equal to the greatest amount offered through one of the three alternatives, specified in § 80.17. The local community is required, through a formal SRL consultation process, to take all necessary steps to ensure that the property owner is fully informed of the SRL program requirements, and that proper consultation and offer procedures were followed. In the event that the property owner does not accept a mitigation offer, the property owner may submit an appeal of the likely insurance premium rate increase (under certain circumstances). Specifically, with respect to an issue of property value, paragraph 79.7(d)(1)(ii)(A) allows the property owner to appeal an increase in insurance rate premium resulting from declining the offer of assistance (mitigation offer) if the purchase offer amount can be documented and verified as an inaccurate estimate of the property's market value. Also, pursuant to paragraph 79.7(d)(1)(i), the property owner may appeal if he or she cannot find a replacement property of comparable value that is functionally equivalent to the property being replaced. Finally, paragraph 80.5(c)(5) describes the responsibility of the subapplicant/subgrantee to include resolving property owner disputes regarding mitigation offers for the purchase of property.

Request for Statutory Amendments for SRL

A commenter posed several comments that focus on the authorizing statute with the intent to propose legislative changes to the SRL program. The commenter raised the following six issues: (1) There is no requirement for a State/community to participate in the SRL; (2) The offer process is unique and will be difficult to administer; (3) The entire appeals process is cumbersome and unnecessary; (4) SRL is the only mitigation program with consequences for refusal to mitigate; (5) SRL has a cost share that, compared to RFC for example, puts the program at a competitive disadvantage; and (6)

Benefit cost analysis is used to determine whether a project will be funded or not. These comments pertain directly to the authorizing statute and do not directly address FEMA's interpretation of that statute in this regulation. Although FEMA notes the commenter's concerns, FEMA must adhere to the statutory requirements.

44 CFR Part 80

44 CFR part 80 provides, in a single source, the requirements for the administration of FEMA mitigation assistance to acquire property for open space under all FEMA Hazard Mitigation Assistance (HMA) programs. 44 CFR part 80 also provides information on the eligibility and procedures for acquisition and relocation of vulnerable structures away from hazardous areas. Subsequently, the cleared property is to be maintained as open space in perpetuity.

Paragraph 80.5(b)(7)—Enforcement

Section 80.5 provides information on the roles and responsibilities of FEMA, the State, the subapplicant, and the participating property owners in the context of creating open space. Paragraph 80.5(b)(7) outlines the State's roles and responsibilities to enforce the open space deed restrictions to ensure that a property purchased with mitigation funds remains as open space in perpetuity.

One commenter noted that the term ''enforcing'' implies an assumption that States have a statutory and regulatory authority to force jurisdictions to uphold open space deed restrictions. The commenter added that various States may or may not have this authority to enforce the open space deed restrictions, depending upon which agency implements the various mitigation grant programs.

By virtue of receiving the HMA funds for open space projects, States and local communities are accountable for compliance with the terms of the grant agreement and its requirements for the use of those funds. Upon receiving FEMA funds for an open space acquisition project, the grantee and subgrantee assume stewardship, including ensuring that the deed restrictions are recorded, that there is a clear title to the property, that all incompatible easements or encumbrances are extinguished, that the vacant land is clean of hazardous materials, that the intended and future use of the property complies with the legally imposed use restrictions, and that the State and the local community jointly monitor and inspect the deed-restricted properties at regular intervals to ensure that the property continues to be used for open space purposes. All parties to the grant/subgrant award assume these responsibilities by receiving HMA funds. The authority to enforce these restrictions lies with the State in its role as grantee. Therefore, just as the grant condition continues in perpetuity pursuant to Federal law, the responsibility to ensure compliance with that condition continues in perpetuity. FEMA notes that these responsibilities have always applied to grantees and subgrantees for open space acquisition and relocation projects under all of FEMA hazard mitigation grant programs as necessary to ensure the long-term purpose of the Federal funds for this particular project type is met.

Section 80.9 (Eligible and Ineligible Costs)

One commenter indicated that the language in paragraph 80.9(c) allows for reducing a grant award for Duplication of Benefits (DOB) which could mean that a full DOB analysis would have to be completed before a project is approved by FEMA. The commenter indicated that the DOB should not be deducted until the local project manager has met with each owner during the offer presentation process and credited back temporary living expenses and/or receipted repairs using insurance or grant funds. Also, the commenter noted that the language appears to be confusing the concept of DOB and Duplication of Programs (DOP).

HMA funding must be reduced by the amounts reasonably available to a property owner (even if not sought or received) designated for the same purpose or loss. In this case, the purchase offer will be reduced by the duplicative amount. It is the subgrantee's responsibility to coordinate with the property owner and to disclose all potential deductions as a result of funds that were reasonably made available to the property owner. It is also the subgrantee's responsibility to make the appropriate deductions from the purchase offer before making a final mitigation offer to the property owner. Consequently, it is the property owner's responsibility to take all reasonable steps to recover funding he or she is eligible to receive. In developing a project budget, the subapplicant should take all reasonable steps to accurately identify all project costs. The information needed to determine a DOB is generally readily available and can impact the mitigation grant offer at any time. Therefore, it is preferable to identify all DOBs as early as possible in order to reduce the risk of having a cost overrun. However, amounts made available for the same purpose at any time, even after award or acquisition, constitute a DOB and will be treated as such. It should be noted that funds received by the property owner that were designated for the same purpose or loss will not be deducted from the final mitigation offer if the owner can document with receipts that those funds were expended on repairs or cleanup.

Finally, FEMA disagrees with the commenter's assertion that the language confuses the concept of DOB and DOP. DOP would occur when an activity is funded under one program, despite there being more specific authority to fund it under a different program. DOB occurs when HMA funds are used to fund a mitigation activity, but other funds for the same purpose, such as from insurance, are received by or available to the project participant.

Section 80.11 (Project Eligibility)

Section 80.11 provides information on project eligibility. This section includes a discussion of voluntary participation, acquisition of improved properties, subdivision restrictions, and open space restrictions. Paragraph 80.11(a) notes that a property owner who agrees to an acquisition must do so on a voluntary basis and that the grantee/subgrantee can not use their powers of eminent domain to acquire the property should negotiations fail.

One commenter notes that the term ''negotiations'' may be construed to mean that negotiations of offers are possible. The commenter suggests that the use of the term ''negotiations'' may be problematic in implementing an acquisition/demolition project regardless of the mitigation grant involved.

FEMA is required to implement the provisions of 49 CFR part 24, Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs (URA). The term ''initiation of negotiations'' is defined as the delivery of the initial written offer of just compensation by the Agency to the owner or the owner's representative to purchase the real property for the project. (49 CFR 24.2(a)(15).) As such, the word ''negotiation'' is a term of art.

If the property owner can verify that the final mitigation offer is significantly below market value, or presents other convincing facts such that the offer should be adjusted, then there may be an increase of the purchase offer. Regardless, in all cases, FEMA, the State, and the local community will work to ensure that all property owners are treated fairly and are offered an equitable mitigation offer based on the

acceptable methods for determining purchase offers for acquisitions under FEMA HMA programs.

FEMA revised paragraph 80.11(d) to clarify that the subapplicant must acquire or retain fee title (full property interest), except for encumbrances FEMA determines are compatible with open space uses, consistent with paragraph 80.17(b). In response to a comment, FEMA reviewed the provisions for obtaining verification that a property owner is a National of the United States or qualified alien and therefore eligible to be offered pre-event market value for the property in an acquisition instead of current market value. To address any perceived inconsistency, FEMA revised paragraph 80.17(c)(4) to clarify that the subapplicant must certify that the property owner is a National of the United States or qualified alien during the application process.

Section 80.13 (Application Information)

Section 80.13 provides information on application requirements. Some of this required information includes: property information, deed restriction language consistent with FEMA's model deed restriction, a signed notice of voluntary interest, an assurance that there is no intention to use the acquired property for any public or private facility for a future use that is inconsistent with 44 CFR part 80, and certification that the property owner is a National of the United States or a qualified alien (if the owner is being offered pre-event market value).

One commenter indicated that the general requirements outlined in this section will significantly increase the paperwork burden on the subapplicants in the application process. In particular, the commenter indicates that prior to appraisal it is difficult to obtain signatures from property owners regarding the inclusion of their properties in the project, and notes that, as an applicant, the Voluntary Transaction Agreements signature is obtained after the grant is awarded to the local jurisdiction.

FEMA analyzed the anticipated paperwork burden associated with implementing these mitigation programs with respect to the Paperwork Reduction Act of 1995 (PRA) (5 CFR part 1320). As part of its PRA analysis in Section IV.E. of this rule, FEMA determined that the collection of information needed to develop a mitigation application package does not impose an additional undue burden on the States and local communities. Applicants and subapplicants have been submitting this information before FEMA published the IR. Regardless, FEMA reviewed 44 CFR 80.13 to ensure that the HMA application information requirements do not impose any additional undue burden in the development of HMA applications. Generally, 44 CFR part 80 reflects the information that has always been requested in program guidance as a condition for applying for assistance to enable FEMA to determine the project's eligibility and compliance with program requirements.

With respect to the comment about obtaining project participants' signatures, FEMA wants to clarify that the timing for obtaining from the property owner the Statement of Voluntary Participation (formerly called Voluntary Transaction Agreement), which indicates the market value of the property and the owner's acknowledgment that they are voluntarily participating in the project, continues to occur post award. This is distinct from the Notice of Voluntary Interest, which simply documents during project development that potentially interested owners have received general notice from the subapplicant of the voluntary nature of the potential acquisition project, including that the subapplicant will not use its eminent domain authority for the purpose of open space. The Notice of Voluntary Interest may be as simple as having a group sign-in sheet at a neighborhood meeting about the possible project that includes a statement to this effect. For FEMA to ensure compliance with basic program requirements, this less formal documentation is provided to FEMA during the application process.

Another commenter noted that it is unclear how States will be required to indicate that there is no intention to use the property for any public or private facility in the future. Paragraph 80.13(a)(5) requires that the State provide assurances that the subject property to be acquired, deed restricted, and converted to open space has no future, intended, or planned use that is inconsistent with the requirements delineated in § 80.19 (land use and oversight). Compliance with this regulation is accomplished through a written statement submitted as part of the application.

Two commenters indicated that it is unclear why offering the pre-event value to a property owner requires that the subapplicant provide certification that the property owner is a National of the United States or a qualified alien. One commenter also notes that § 80.13, which indicates that this certification must be done as part of the application process, conflicts with § 80.17 which indicates that this certification must be done before offering pre-event market value for a property.

As established by the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) (42 U.S.C. 1305 note), an alien who is not a qualified alien (as defined in 8 U.S.C. 1641) is not eligible for any Federal public benefit. In this instance, such a Federal public benefit results from an offer of pre-event market value, which has the effect of compensating for the disaster loss beyond the current market value of the property. This benefit is reserved for property owners who owned the property during the event and who are Nationals of the United States or qualified aliens. The property value for other individuals must be based on current market value. To ensure compliance with the PRWORA, local communities offering pre-event market value must verify that the property owners are either Nationals of the United States or qualified aliens.

The term ''National of the United States'' is defined at 8 U.S.C. 1101 and means a citizen of the United States or a person who is not a citizen but who owes permanent allegiance to the United States. The term ''qualified alien'', as delineated in the Immigration and Nationality Act (the Act) at 8 U.S.C. 1641, is an individual who meets certain criteria contained in the Act at the time they apply for, receive, or attempt to receive a Federal public benefit.

In response to the commenter's view that there is an inconsistency between §§ 80.13 and 80.17, FEMA notes that it intended the language in paragraph 80.17(c)(4) to describe a pre-condition of offering pre-event value, not to address the timing of obtaining the information. Such information is relevant to the eligible costs of the project and is provided to FEMA during the application process. FEMA revised § 80.17 to clarify that the pre-event value is only available to a property owner that has certified during the application process as to being a National of the United States or a qualified alien.

Section 80.17 (Project Implementation)

Paragraph 80.17(c)(1) provides that the amount of a purchase offer is either the current market value of the property or the market value of the property immediately before the relevant event affecting the property. One commenter requested clarification of the term ''relevant event'' for Pre-Disaster Mitigation (PDM). The commenter indicated that this clarification will

make implementation of the program easier. As it relates to PDM, the regulation states that the relevant event is the most recent major disaster that affected the subject property. In the case where multiple disasters have affected the same property, this section indicates that the ''grantee and subgrantee shall determine which is the relevant event.'' Alternatively, if the project is not occurring in association with or will be more than 12 months after a disaster event, for example, the grantee and subgrantee may want to consider whether current market value may be more appropriate, per paragraph 80.17(c)(3).

One commenter indicated that the flexibility built into the SRL program affords market value determination of the greatest amount (*i.e.* current market value, pre-event market value, original purchase price paid, or outstanding amount of the loan on the property). The commenter indicated that in some instances the offer of the greatest amount would render the property not cost effective.

Paragraph 80.17(c)(2) notes that for acquisition of properties under SRL, the purchase offer is to be not less than the greatest of the following amounts: the current market value of the property or the pre-event market value of the property; the original purchase amount paid by the property owner holding the flood insurance policy as demonstrated by property closing documents; or the outstanding amount of any loan to the property owner, secured by a recorded interest in the property at the time of the purchase offer. It is legislatively mandated at 42 U.S.C. 4102a(g)(3) that FEMA use these values to determine the greatest amount on which to base a purchase offer. The statute also requires that the purchase price be the greatest of those amounts. FEMA acknowledges that as a result of this method, there may be instances where the project costs outweigh the project benefits; however, FEMA must follow the legislatively mandated direction.

Section 80.19 (Land Use and Oversight)

Section 80.19 provides guidance on open space requirements and land uses compatible with open space. One commenter noted the correlation between the requirement in paragraph 80.17(b) that any incompatible easements or other encumbrances to the property be extinguished before acquisition, and the requirement in paragraph 80.19(a)(1)(i) identifying ''below ground pumping and switching stations'' as not being compatible with open space uses. The commenter added that this requirement restricts the ability of the local jurisdiction to purchase a property because a utility company may be unwilling to nullify an easement.

Above or below ground pumping stations or other uses that obstruct the natural and beneficial use of the floodplain are deemed as land uses that are incompatible with FEMA's open space requirements because they are detrimental to maintaining the beneficial functions of the floodplain. If, at the time of acquisition, a property is used for an incompatible open space use, then that property is no longer eligible for acquisition if the use cannot be discontinued. Similarly, if easements for the property allow for any incompatible use, such provisions must be nullified in order for the property to be acquired (provisions allowing for compatible uses may remain in effect). FEMA acknowledges that where incompatible uses will continue to be permitted on a property, the property is not eligible for FEMA HMA funds for an acquisition for open space purposes.

One commenter expressed concern with the monitoring and reporting requirements and the enforcement provisions of § 80.19. The commenter suggested a monitoring timeframe consistent with mitigation plans.

In an effort to ease the workload for monitoring, 44 CFR part 80 reduces the frequency of HMGP grant monitoring from once every 2 years to once every 3 years. This change makes all HMA programs consistent in their property acquisition land-use monitoring requirement. FEMA believes that further extending this timeframe would not provide sufficient monitoring to ensure ongoing compliance with the land use requirements. In addition, FEMA does not think it is appropriate to synchronize the open space monitoring timeframe with the completely unrelated timeframe for local mitigation plan updates, and notes that to do so could place additional distractions on local jurisdictions at a time when they need to focus instead on the mitigation planning process.

The same commenter also raised concerns about State responsibilities, including funds and authority to meet enforcement responsibilities, including taking legal action. Finally, the commenter identified concerns about improper consequences for State and subgrantee failure to enforce open space requirements, noting that it would be unfair for the State to lose HMA assistance if the subgrantee were non-compliant.

In response, it should be noted that 44 CFR part 80 does not substantially differ from previous open space project grant requirements, where the State has always played a vital role in the monitoring and enforcement of the open space restrictions. These provisions have been a requirement of FEMA property acquisition and relocation for open space projects almost since program inception. They have been reflected in the HMGP Desk Reference and the annual program guidance for the other HMA programs (*e.g.*, the PDM program), which also incorporated FEMA's model deed restriction language. The States, as grantees, and subgrantees agree to this language as a condition of receiving HMA funding, both by signing a statement of assurances acknowledging these conditions, and by accepting grant funds subject to the grant agreement. Unlike most NFIP-related programs and activities where the primary entity is the community, for HMA grant purposes the State is the grantee and is accountable for the use of funds and for assuring compliance with the terms of the grant award and the program. (*See, e.g.*, 44 CFR 206.433 and 13.3.) It also should be noted that FEMA is also accountable for ensuring that Federal awards are used for the intended purpose. The IR restated and codified previous HMA program requirements to ensure that States and FEMA carry out their fiscal responsibilities by taking appropriate actions to maintain consistency with Federal open space requirements. This action may or may not involve court action. The option of seeking specific performance in a court of law or equity is not ''a requirement,'' but is an available option when deemed appropriate.

Further, the options available to FEMA for enforcing the open space requirements are not new. FEMA has always retained the right to bring legal action against a State or local jurisdiction that fails to comply with the open space terms of the grant and deed restriction. In addition, as explained in the rule, the option of withholding HMA assistance is a reasonable response in the event that the State and subgrantee fail to make a good faith effort to enforce the deed restrictions they voluntarily agreed to enforce. These remedies for non-compliance are consistent with government-wide Federal grants management procedures. (*See, e.g.*, 44 CFR 13.43(a).) In the case of a State and/or local jurisdiction failing to comply with the grant terms and deed restrictions, taking such an action may be the most effective means of encouraging a continued commitment to the open space responsibilities. FEMA may withhold funds from a subgrantee for failure to demonstrate a

good faith effort to come into compliance with the terms of the grant. Because the grant relationship is between FEMA and the State as grantee, funds withheld from a subgrantee are also withheld from the grantee. This does not necessarily mean that FEMA will withhold all HMA funding from that State.

General Comment

One commenter expressed concern that FEMA's Flood Insurance Rate Map (FIRM) is antiquated and therefore does not provide the public with the most accurate and up-to-date risk mapping data. The commenter suggested that FEMA be proactive in stopping development in flood-prone areas.

While this comment is outside the scope of this rulemaking, FEMA notes that efforts have been made to update and digitize flood maps. Local communities and States work closely with FEMA to provide the most up-to-date data on flood risk. Any interested party may ask community officials to submit a map revision request to FEMA in accordance with 44 CFR part 65 of the NFIP regulations. Factors that influence when the maps are updated are: (1) When climatological or physical changes in watersheds occur, or (2) when mapping methodologies are improved.

IV. Regulatory Requirements

A. National Environmental Policy Act

FEMA has considered this rule in accordance with its implementing regulations for complying with the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321–4365), which are found at 44 CFR part 10. The rulemaking addresses applicant planning requirements, as well as eligibility, funding increases, and cost sharing/funding incentives relating to certain disaster mitigation programs and does not change the type or nature of mitigation actions that may be funded. This rulemaking would neither individually nor cumulatively have a significant effect on the human environment and, therefore, neither an environmental assessment nor an environmental impact statement is required. This rulemaking is among the category of actions included in the Categorical Exclusions listed at paragraph 10.8(d)(2)(ii), which excludes the preparation, revision and adoption of regulations from the preparation of an environmental assessment or environmental impact statement, where the rule relates to actions that qualify for categorical exclusions. The related actions of the development of plans and administrative activities that are included in this rule are also categorically excluded under § 10.8 paragraphs (d)(2)(i) and (d)(2)(iii). FEMA received no public comments on the IR regarding its NEPA determination.

B. Executive Order 11988, Floodplain Management

FEMA has prepared and reviewed this rule under the provisions of Executive Order 11988, Floodplain Management. FEMA's policy, procedures, and responsibilities in implementing this Executive Order are set forth in 44 CFR part 9. FEMA's floodplain management regulations are intended to avoid long and short term adverse impacts associated with the occupancy and modification of floodplains; to avoid direct and indirect support of floodplain development whenever there is a practical alternative; to reduce the risk of flood loss; to promote the use of nonstructural flood protection methods to reduce the risk of flood loss; to minimize the impacts of floods on human health, safety and welfare; to restore and preserve the natural and beneficial values served by floodplains; and to adhere to the objectives of the Unified National Program for Floodplain Management. As stated in the rulemaking, the purpose of the SRL and FMA programs is to mitigate insured property losses from floods, thereby minimizing impacts to the NFIF, which is consistent with the intent of the Executive Order. In addition, for project activities funded through the SRL and FMA programs, each project will go through the environmental review process, which will include compliance with Executive Order 11988. FEMA received no public comments on the IR regarding its Executive Order 11988 determination.

C. Executive Order 12866, Regulatory Planning and Review

Under Executive Order 12866, a significant regulatory action is subject to the Office of Management and Budget (OMB) review and the requirements of the Executive Order. The Executive Order defines ''significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or Tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact or entitlements, grants, user fees, or loan programs or the right and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

This final rule adopts the regulations established in the IR with a few nonsignificant changes that are a logical outgrowth from the IR. This final rule does not meet the criteria under paragraphs 2, 3, or 4 of the provision of the Executive Order. In addition, FEMA determined that it is not likely to have a significant economic impact of $100 million or more per year (under paragraph 1 of this provision). This rule has not been reviewed by OMB.

This final rule is intended to have a positive impact on State, local, and Indian Tribal governments. The new SRL program and the modified FMA program assist State, local, and Indian Tribal governments in reducing the loss of life and property from flooding events by providing additional grant resources and the ability to increase the Federal cost share for projects mitigating SRL properties. The FMA is an annual grant program created with the goal of reducing or eliminating claims under the NFIP. The SRL pilot program provides funding to assist States and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to severe repetitive loss structures insured under the NFIP, therefore reducing payments from the NFIF. The SRL program differs from FEMA's other mitigation grant programs, as those property owners who decline offers of mitigation assistance will be subject to increases to their flood insurance premium rates. This final rule also implements changes to the FMA program by allowing for up to a 90 percent Federal cost share for the mitigation of severe repetitive loss properties (the standard Federal cost share is 75 percent). While the SRL and FMA programs will be implemented as separate programs with different funding accounts, they are similar in their goals and purpose. Therefore, FEMA has included both of these programs into one implementing regulation to ensure consistency between the programs.

The primary economic impact of the final rule is defined as the additional transfer of funding from FEMA to State, local, and Indian Tribal governments to implement measures to reduce or eliminate the long-term risk of flood

damage to severe repetitive loss structures. FEMA made conservative assumptions in order not to under estimate the economic impact of the final rule. Historically, the FMA program has provided $20 million in grants on an annual basis. The NFIA, as amended, authorizes the appropriations for the existing FMA program to be increased from $20 million to $40 million per year. Congressional appropriators have gradually increased the funding for this program, and the FMA program may eventually reach its total authorized $40 million cap per year.

In fiscal year 2008, FEMA awarded $38 million for the mitigation of 173 properties at an average of $220,000 per property under the SRL pilot program. In fiscal year 2009, FEMA expects to award $50 million for the mitigation of 227 properties also at an average of $220,000 per property. To date, no one has refused the offer of mitigation or appealed, therefore no premiums have increased.

The purpose of the SRL grant program is to reduce or eliminate claims through flood mitigation projects that would result in the greatest savings to the NFIF. The two most common types of flood mitigation projects are elevation of a flood prone structure, and acquisition and demolition or relocation of a flood prone structure. In 2006, the NFIP paid a total of $617.28 million for claims with an average claim payment of $25,545. Severe Repetitive Loss properties account for far less than 1 percent of the current NFIP policies, yet these properties account for over 7 percent of the total amount paid in claims. Approximately, 8,544 properties were identified as meeting the definition of severe repetitive loss, among which 1,067 SRL properties were damaged by flood and paid $46.21 million in 2006 (or $49.35 million in 2008, if adjusted to reflect inflation). Assuming that all 400 SRL properties (173 in FY08 + 227 in FY09) have accepted mitigation offers, 4.7 percent of the 8,544 SRL properties will lower or eliminate the risk of future flood damages by the end of fiscal year 2009. Therefore, the reduction in claims paid for SRL properties is estimated at up to $2.31 million per year (4.7 percent × $49.35 million).

Assuming that the FMA program reaches its $40 million cap per year, the net economic impact of the final rule is estimated to be up to $61.69 million per year. Table 1 details the annual impact of the final rule. The NFIA, as amended, authorizes the SRL program through the end of fiscal year 2009; therefore, the impact of this rule will be reduced by $44 million in fiscal year 2010 and beyond.

TABLE 1—NET ANNUAL IMPACT OF THE FINAL RULE

[in 2008 $]

FMA Program	$20,000,000
SRL Program	*44,000,000
National Flood Insurance Fund	(2,310,000)
Total	61,690,000

* Average of $38 million in FY 2008 and $50 million in FY 2009.

D. Executive Order 12898, Environmental Justice

In accordance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629, Feb. 16, 1994, FEMA incorporates environmental justice into our policies and programs. The Executive Order requires each Federal agency to conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that those programs, policies, and activities do not have the effect of excluding persons from participation in our programs, denying persons the benefits of our programs, or subjecting persons to discrimination because of their race, color, or national origin.

This rule implements the SRL program, providing mitigation grants to severe repetitive loss properties, and improves the FMA program and the mitigation planning requirements. This rule also clarifies and simplifies the planning requirements for Indian Tribal governments. No action in this rule will have a disproportionately high or adverse human health and environmental effect on any segment of the population. FEMA received no comments during the IR comment period that disagreed with this determination.

E. Paperwork Reduction Act of 1995

In accordance with the Paperwork Reduction Act of 1995, 44 U.S.C. 3501–3520, OMB has approved use of OMB Numbers 1660–0025, FEMA Emergency Preparedness and Response Directorate Grants Administration Forms under 44 CFR parts 78, 79, and 206 in this rule; 1660–0062, State/Local/Tribal Hazard Mitigation Plans—Section 322 of the Disaster Mitigation Act of 2000 under 44 CFR part 201; 1660–0103, Property Acquisition and Relocation for Open Space under 44 CFR part 80; and 1660–0104, Severe Repetitive Loss (SRL) Appeals process under 44 CFR part 79. The approved collections have gone through the OMB's normal clearance procedures in accordance with the provisions of OMB regulation at 5 CFR 1320.10. Use of these collections, under this final rule, does not impose addition burden and are approved for use until August 31, 2011.

The information collection activity under the approved OMB information collection 1660–0072, Mitigation Grant Programs/e-Grants (previously named Flood Mitigation Assistance (e-Grants) and Grant Supplemental Information) have been combined with OMB No. 1660–0071, Pre-Disaster Mitigation (PDM) Grant Program/eGrants to streamline and simplify documentation of the same information collected for all mitigation e-Grants program under section 203 (Predisaster Hazard Mitigation) of the Stafford Act (42 U.S.C. 5133) and has been approved for use until February 28, 2011.

F. Executive Order 13132, Federalism

Executive Order 13132, Federalism, signed August 4, 1999, sets forth principles and criteria that agencies must adhere to in formulating and implementing policies that have federalism implications, that is, regulations that have substantial direct effects on the States, or on the distribution of power and responsibilities among the various levels of government. Federal agencies must closely examine the statutory authority supporting any action that would limit the policymaking discretion of the States, and to the extent practicable, must consult with State and local officials before implementing any such action.

FEMA reviewed the IR under Executive Order 13132 and concluded that the IR, which implemented the statutory requirements for a new SRL program as well as a potential increase in the Federal share for the FMA program, simplified the planning requirements, and reflected a statutorily-mandated change to the HMGP allocation, does not have federalism implications as defined by the Executive Order. FEMA received no comments during the IR comment period that disagreed with this determination. FEMA also determined that this final rule does not significantly affect the rights, roles, and responsibilities of States, and involves no preemption of State law nor does it limit State policymaking discretion.

G. Executive Order 13175, Consultation and Coordination With Indian Tribal Governments

While this rule does have ''Tribal implications'' as defined in Executive Order 13175, it does not have a substantial direct effect on one or more Indian Tribes, on the relationship between the Federal Government and Indian Tribes, or on the distribution of power and responsibilities between the Federal Government and Indian Tribes. FEMA coordinates with Indian Tribal governments while implementing its programs, and has modified its procedures to accommodate some of the issues relating to the Tribal governments. This rule clarifies those procedures and streamlines the roles and responsibilities of Indian Tribal governments in mitigation planning.

Indian Tribal governments may apply for assistance directly to FEMA as a grantee, or through the State as a subgrantee. (*See* 44 CFR 201.3(e) and 206.202(f)(1).) Before the IR went into effect, Indian Tribes were permitted to prepare either a State-level Mitigation Plan, or a Local-level Mitigation Plan depending on whether they intend to apply as a grantee, or as a subgrantee. Before publishing the IR, FEMA discussed the existing planning requirements with many of the Indian Tribal governments as they were developing their plans, or while attending Tribal training courses, and were informed that neither of these options sufficiently met the needs of the Indian Tribal governments. To address this problem, the IR established a specific planning requirement for Indian Tribal governments in 44 CFR 201.7 that recognized some of the unique aspects of these governments and combined the appropriate aspects of State and local planning requirements into one section for Indian Tribal governments.

The substance of this rule is intended to have a positive impact on Indian Tribal governments and their relationship with the Federal Government. The rule does not impose substantial direct compliance costs on Indian Tribal governments, nor does it preempt Tribal law, impair treaty rights nor limit the self-governing powers of Indian Tribal governments. FEMA received no comments during the IR comment period that disagreed with this determination.

H. Congressional Review of Agency Rulemaking

FEMA has sent this final rule to the Congress and to the General Accountability Office under the Congressional Review of Agency Rulemaking Act, (Congressional Review Act), 5 U.S.C. 801–808. The final rule will not result in a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. It will not have significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises.

I. Regulatory Flexibility Act

The Regulatory Flexibility Act of 1980 (RFA), 5 U.S.C. 601–612, as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (Pub. L. 104–121), requires Federal agencies to consider the potential impact of regulations on small businesses, small governmental jurisdictions, and small organizations during the development of their rules. When an agency invokes the good cause exception under the Administrative Procedure Act to make changes effective through an interim final or final rule, the RFA does not require an agency to prepare a regulatory flexibility analysis. FEMA determined in the IR that good cause exists under 5 U.S.C. 553(b)(B) to exempt this rule from the notice and comment requirements of 5 U.S.C. 553(b) (72 FR 61720, Oct. 31, 2007). Therefore, a regulatory flexibility analysis is not required for this rule.

J. Executive Order 12630, Taking of Private Property

This rule will not affect a taking of private property or otherwise have taking implications under Executive Order 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights. In 44 CFR 80.11(a), this final rule explicitly states that a grantee/subgrantee cannot use its eminent domain authority to acquire the property for open space purposes; only such projects where the property owner participates voluntarily are eligible to receive a grant.

K. Executive Order 12988, Civil Justice Reform

This rule meets applicable standards in sections 3(a) and 3(b)(2) of Executive Order 12988, Civil Justice Reform, to minimize litigation, eliminate ambiguity, and reduce burden.

L. Unfunded Mandates

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), enacted as Public Law 104–4 on March 22, 1995 (2 U.S.C. 1531–1538), requires each Federal agency, to the extent permitted by law, to prepare a written assessment of the effects of any Federal mandate in a proposed or final agency rule that may result in the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector, of $100 million or more (adjusted annually for inflation) in any one year. UMRA exempts from its definition of ''Federal intergovernmental mandate'' regulations that establish conditions of Federal assistance or provide for emergency assistance or relief at the request of any State, local, or Tribal government. Therefore, this rule is not an unfunded Federal mandate under that Act.

List of Subjects

44 CFR Part 59

Flood insurance, Reporting and recordkeeping requirements.

44 CFR Part 61

Flood insurance, Reporting and recordkeeping requirements.

44 CFR Parts 78 and 79

Flood insurance, Grant programs.

44 CFR Part 80

Acquisition and Relocation for open space.

44 CFR Part 201

Administrative practice and procedure, Disaster assistance, Grant programs, Reporting and recordkeeping requirements.

44 CFR Part 206

Administrative practice and procedure, Coastal zone, Community facilities, Disaster assistance, Fire prevention, Grant programs—housing and community development, Housing, Insurance, Intergovernmental relations, Loan programs—housing and community development, Natural resources, Penalties, Reporting and recordkeeping requirements.

■ Accordingly, the Interim Rule amending 44 CFR Parts 59, 61, 78, 79, 80, 201, and 206 published on October 31, 2007 (72 FR 61720), is adopted as a final rule with the following changes:

PART 79—FLOOD MITIGATION GRANTS

■ 1. The authority citation for part 79 continues to read as follows:

Authority: 6 U.S.C. 101; 42 U.S.C. 4001 *et seq.*; 42 U.S.C. 4104c, 4104d; Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; E.O. 12127, 44 FR 19367, 3 CFR, 1979 Comp., p. 376; E.O. 12148, 44 FR 43239, 3 CFR, 1979 Comp., p. 412; E.O. 13286, 68 FR 10619, 3 CFR, 2003 Comp., p. 166.

■ 2. Amend § 79.2 by redesignating paragraphs (e) through (l) as (f) through (m); by adding a new paragraph (e); and by revising paragraphs (c)(1), newly designated paragraph (l), and newly designated paragraph (m) to read as follows:

§ 79.2 Definitions.

* * * * *

(c) * * *

(1) A political subdivision, including any Indian Tribe, authorized Tribal organization, Alaska Native village or authorized native organization, that has zoning and building code jurisdiction over a particular area having special flood hazards, and is participating in the NFIP; or

* * * * *

(e) *Indian Tribal government* means any Federally recognized governing body of an Indian or Alaska Native Tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian Tribe under the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a. This does not include Alaska Native corporations, the ownership of which is vested in private individuals.

* * * * *

(l) *Administrator* means the head of the Federal Emergency Management Agency, or his/her designated representative.

(m) *Regional Administrator* means the head of a Federal Emergency Management Agency regional office, or his/her designated representative.

■ 3. In § 79.4, revise paragraph (c) introductory text and paragraph (c)(2) to read as follows:

§ 79.4 Availability of funding.

* * * * *

(c) *Cost Share.* All mitigation activities approved under the grant will be subject to the following cost-share provisions:

* * * * *

(2) FEMA may contribute up to 90 percent of the cost of the eligible activities for each severe repetitive loss property for which grant amounts are provided if the applicant has an approved Mitigation Plan meeting the repetitive loss requirements identified in § 201.4(c)(3)(v) or § 201.7(c)(3)(vi) of this chapter, as applicable, at the time the project application is submitted;

* * * * *

■ 4. Amend § 79.6 by removing paragraph (c)(2)(ii), redesignating paragraphs (c)(2)(iii) through (c)(2)(vii) as (c)(2)(ii) through (c)(2)(vi), and revising paragraphs (b)(1) and (c)(2)(i) to read as follows:

§ 79.6 Eligibility.

* * * * *

(b) * * *

(1) States must have an approved State Mitigation Plan meeting the requirements of §§ 201.4 or 201.5 of this chapter in order to apply for grants through the FMA or SRL programs. Indian Tribal governments must have an approved plan meeting the requirements of § 201.7 of this chapter at the time of application.

* * * * *

(c) * * *

(2) * * *

(i) Acquisition of real property from property owners, and demolition or relocation of buildings and/or structures to areas outside of the floodplain to convert the property to open space use in perpetuity, in accordance with part 80 of this subchapter;

* * * * *

PART 80—PROPERTY ACQUISITION AND RELOCATION FOR OPEN SPACE

■ 5. The authority citation for part 80 is revised to read as follows:

Authority: Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 through 5207; the National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4001 *et seq.*; Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; Homeland Security Act of 2002, 6 U.S.C. 101; E.O. 12127, 44 FR 19367, 3 CFR, 1979 Comp., p. 376; E.O. 12148, 44 FR 43239, 3 CFR, 1979 Comp., p. 412; E.O. 13286, 68 FR 10619, 3 CFR, 2003 Comp., p. 166.

■ 6. In § 80.3, revise paragraphs (l) and (m) to read as follows:

§ 80.3 Definitions.

* * * * *

(l) *Administrator* means the head of the Federal Emergency Management Agency, or his/her designated representative.

(m) *Regional Administrator* means the head of a Federal Emergency Management Agency regional office, or his/her designated representative.

■ 7. Revise § 80.11(d) to read as follows:

§ 80.11 Project eligibility.

* * * * *

(d) *Subapplicant property interest.* To be eligible, the subapplicant must acquire or retain fee title (full property interest), except for encumbrances FEMA determines are compatible with open space uses, as part of the project implementation. A pass through of funds from an eligible entity to an ineligible entity must not occur.

* * * * *

■ 8. Revise § 80.13(a)(6) to read as follows:

§ 80.13 Application information.

(a) * * *

(6) If the subapplicant is offering pre-event value: the property owner's certification that the property owner is a National of the United States or qualified alien; and

* * * * *

■ 9. Revise § 80.17(c)(4) to read as follows:

§ 80.17 Project implementation.

* * * * *

(c) * * *

(4) A property owner who did not own the property at the time of the relevant event, or who is not a National of the United States or qualified alien, is not eligible for a purchase offer based on pre-event market value of the property. Subgrantees who offer pre-event market value to the property owner must have already obtained certification during the application process that the property owner is either a National of the United States or a qualified alien.

* * * * *

PART 201—MITIGATION PLANNING

■ 10. The authority citation for part 201 is revised to read as follows:

Authority: Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 through 5207; Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; Homeland Security Act of 2002, 6 U.S.C. 101; E.O. 12127, 44 FR 19367, 3 CFR, 1979 Comp., p. 376; E.O. 12148, 44 FR 43239, 3 CFR, 1979 Comp., p. 412; E.O. 13286, 68 FR 10619, 3 CFR, 2003 Comp., p. 166.

■ 11. In § 201.2, revise the definition of ''Administrator'', the first sentence of the definition of ''Indian Tribal government'', and the definition of ''Regional Administrator'' to read as follows:

§ 201.2 Definitions.

Administrator means the head of the Federal Emergency Management Agency, or his/her designated representative.

* * * * *

Indian Tribal government means any Federally recognized governing body of an Indian or Alaska Native Tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian Tribe under the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a.

* * *

* * * * *

Regional Administrator means the head of a Federal Emergency

Management Agency regional office, or his/her designated representative.

* * * * *

■ 12. Amend § 201.3 by removing paragraph (c)(7) and by revising the last sentence of paragraph (e)(1) to read as follows:

§ 201.3 Responsibilities.

* * * * *

(e) * * *

(1) * * * In addition, an Indian Tribal government applying to FEMA as a grantee may choose to address severe repetitive loss properties as identified in § 201.4(c)(3)(v) as a condition of receiving the reduced cost share for the FMA and SRL programs, pursuant to § 79.4(c)(2) of this chapter.

* * * * *

■ 13. In § 201.6 revise paragraphs (c)(2)(ii)(B) and (c)(3)(iii) to read as follows:

§ 201.6 Local Mitigation Plans.

* * * * *

(c) * * *

(2) * * *

(ii) * * *

(B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate;

* * * * *

(3) * * *

(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.

* * * * *

■ 14. In § 201.7 revise paragraphs (a)(2), (a)(3), (c)(2)(ii)(B), (c)(3)(iii), and (c)(3)(vi) to read as follows:

§ 201.7 Tribal Mitigation Plans.

* * * * *

(a) * * *

(2) An Indian Tribal government applying to FEMA as a grantee may choose to address severe repetitive loss properties in their plan, as identified in § 201.4(c)(3)(v), to receive the reduced cost share for the FMA and SRL programs.

(3) Indian Tribal governments applying through the State as a subgrantee must have an approved Tribal Mitigation Plan meeting the requirements of this section in order to receive HMGP project grants and, the Administrator, at his discretion may require a Tribal Mitigation Plan for the Repetitive Flood Claims Program. A Tribe must have an approved Tribal Mitigation Plan in order to apply for and receive FEMA mitigation project grants, under all other mitigation grant programs. The provisions in § 201.6(a)(3) are available to Tribes applying as subgrantees.

* * * * *

(c) * * *

(2) * * *

(ii) * * *

(B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate;

* * * * *

(3) * * *

(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 Indian Tribal government.

* * * * *

(vi) An Indian Tribal government applying to FEMA as a grantee may request the reduced cost share authorized under § 79.4(c)(2) of this chapter of the FMA and SRL programs if they have an approved Tribal Mitigation Plan meeting the requirements of this section that also identifies actions the Indian Tribal government has taken to reduce the number of repetitive loss properties (which must include severe repetitive loss properties), and specifies how the Indian Tribal government intends to reduce the number of such repetitive loss properties.

* * * * *

PART 206—FEDERAL DISASTER ASSISTANCE

■ 15. The authority citation for part 206 continues to read as follows:

Authority: Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 through 5207; Reorganization Plan No. 3 of 1978, 43 FR 41943, 3 CFR, 1978 Comp., p. 329; Homeland Security Act of 2002, 6 U.S.C. 101; E.O. 12127, 44 FR 19367, 3 CFR, 1979 Comp., p. 376; E.O. 12148, 44 FR 43239, 3 CFR, 1979 Comp., p. 412; and E.O. 13286, 68 FR 10619, 3 CFR, 2003 Comp., p. 166.

■ 16. In § 206.226 revise paragraph (b) to read as follows:

§ 206.226 Restoration of damaged facilities.

* * * * *

(b) *Mitigation planning.* In order to receive assistance under this section, the State or Indian Tribal government applying to FEMA as a grantee must have in place a FEMA approved State or Tribal Mitigation Plan, as applicable, in accordance with 44 CFR part 201.

* * * * *

■ 17. Revise § 206.401 to read as follows:

§ 206.401 Local standards.

The cost of repairing or constructing a facility in conformity with minimum codes, specifications and standards may be eligible for reimbursement under section 406 of the Stafford Act, as long as such codes, specifications, and standards meet the criteria that are listed at 44 CFR 206.226(d).

■ 18. Amend § 206.431 by revising the definitions of ''Indian Tribal government'' and ''Local Mitigation Plan'' and by adding, in alphabetical order, the definition of ''Tribal Mitigation Plan'' to read as follows:

§ 206.431 Definitions.

* * * * *

Indian Tribal government means any Federally recognized governing body of an Indian or Alaska Native Tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian Tribe under the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a. This does not include Alaska Native corporations, the ownership of which is vested in private individuals.

Local Mitigation Plan is the hazard mitigation plan required of a local government acting as a subgrantee as a condition of receiving a project subgrant under the HMGP as outlined in 44 CFR 201.6.

* * * * *

Tribal Mitigation Plan is the hazard mitigation plan required of an Indian Tribal government acting as a grantee or subgrantee as a condition of receiving a project grant or subgrant under the HMGP as outlined in 44 CFR 201.7.

■ 19. In § 206.432 revise paragraphs (b) introductory text and (b)(2) to read as follows:

§ 206.432 Federal grant assistance.

* * * * *

(b) *Amounts of Assistance.* The total Federal contribution of funds is based on the estimated aggregate grant amount to be made under 42 U.S.C. 5170b, 5172, 5173, 5174, 5177, and 5183 of the Stafford Act for the major disaster (less associated administrative costs), and shall be as follows:

* * * * *

(2) *Twenty (20) percent.* A State with an approved Enhanced State Mitigation Plan, in effect before the disaster

declaration, which meets the requirements outlined in § 201.5 of this subchapter shall be eligible for assistance under the HMGP not to exceed 20 percent of such amounts, for amounts not more than $35.333 billion.

* * * * *

■ 20. In § 206.434 revise paragraphs (b)(1), (c)(1), and (e) introductory text to read as follows:

§ 206.434 Eligibility.

* * * * *

(b) * * *

(1) Local and Indian Tribal government applicants for project subgrants must have an approved local or Tribal Mitigation Plan in accordance with 44 CFR part 201 before receipt of HMGP subgrant funding for projects.

* * * * *

(c) * * *

(1) Be in conformance with the State Mitigation Plan and Local or Tribal Mitigation Plan approved under 44 CFR part 201; or for Indian Tribal governments acting as grantees, be in conformance with the Tribal Mitigation Plan approved under 44 CFR 201.7;

* * * * *

(e) *Property acquisitions and relocation requirements.* Property acquisitions and relocation projects for open space proposed for funding pursuant to a major disaster declared on or after December 3, 2007 must be implemented in accordance with part 80 of this chapter. For major disasters declared before December 3, 2007, a project involving property acquisition or the relocation of structures and individuals is eligible for assistance only if the applicant enters into an agreement with the FEMA Regional Administrator that provides assurances that:

* * * * *

Dated: September 8, 2009.

David Garratt,

Acting Deputy Administrator, Federal Emergency Management Agency.

[FR Doc. E9–22278 Filed 9–15–09; 8:45 am]

BILLING CODE 9110–12–P

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Part 73

[DA 09–2016; MB Docket No. 09–125; RM–11548]

Television Broadcasting Services; Biloxi, MS

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: The Commission grants a petition for rulemaking filed by WLOX License Subsidiary, LLC, the permittee of station WLOX(TV), channel 13, Biloxi, Mississippi, requesting the substitution of its pre-transition digital channel 39 for its allotted post-transition channel 13 at Biloxi.

DATES: This rule is effective September 16, 2009.

FOR FURTHER INFORMATION CONTACT: Joyce L. Bernstein, Media Bureau, (202) 418–1600.

SUPPLEMENTARY INFORMATION: This is a synopsis of the Commission's *Report and Order,* MB Docket No. 09–125, adopted September 3, 2009, and released September 4, 2009. The full text of this document is available for public inspection and copying during normal business hours in the FCC's Reference Information Center at Portals II, CY–A257, 445 12th Street, SW., Washington, DC, 20554. This document will also be available via ECFS (*http://www.fcc.gov/cgb/ecfs/*). (Documents will be available electronically in ASCII, Word 97, and/or Adobe Acrobat.) This document may be purchased from the Commission's duplicating contractor, Best Copy and Printing, Inc., 445 12th Street, SW., Room CY–B402, Washington, DC 20554, telephone 1–800–478–3160 or via e-mail *http://www.BCPIWEB.com.* To request this document in accessible formats (computer diskettes, large print, audio recording, and Braille), send an e-mail to *fcc504@fcc.gov* or call the Commission's Consumer and Governmental Affairs Bureau at (202) 418–0530 (voice), (202) 418–0432 (TTY). This document does not contain information collection requirements subject to the Paperwork Reduction Act of 1995, Public Law 104–13. In addition, therefore, it does not contain any information collection burden ''for small business concerns with fewer than 25 employees,'' pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107–198, *see* 44 U.S.C. 3506(c)(4). Provisions of the Regulatory Flexibility Act of 1980 do not apply to this proceeding.

The Commission will send a copy of this *Report and Order* in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional review Act, *see* 5 U.S.C. 801(a)(1)(A).

List of Subjects in 47 CFR Part 73

Television, Television broadcasting.

■ For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR Part 73 as follows:

PART 73—RADIO BROADCAST SERVICES

■ 1. The authority citation for part 73 continues to read as follows:

Authority: 47 U.S.C. 154, 303, 334, 336.

§ 73.622 [Amended]

■ 2. Section 73.622(i), the Post-Transition Table of DTV Allotments under Mississippi, is amended by adding DTV channel 39 and removing DTV channel 13 at Biloxi.

Federal Communications Commission.

James J. Brown,

Deputy Chief, Video Division, Media Bureau.

[FR Doc. E9–22315 Filed 9–15–09; 8:45 am]

BILLING CODE 6712–01–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R3–ES–2009–0063; 92220–1113–0000; C6]

RIN 1018–AW80

Endangered and Threatened Wildlife and Plants; Reinstatement of Protections for the Gray Wolf in the Western Great Lakes in Compliance With Settlement Agreement and Court Order

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), are issuing this final rule to comply with a court order that has the effect of reinstating the regulatory protections under the Endangered Species Act of 1973, as amended (ESA), for the gray wolf (*Canis lupus*) in the western Great Lakes. This rule corrects the gray wolf listing in our regulations which will reinstate the listing of gray wolves in all of Wisconsin and Michigan, the eastern half of North Dakota and South Dakota, the northern half of Iowa, the northern portions of Illinois and Indiana, and the northwestern portion of Ohio as endangered, and reinstate the listing of wolves in Minnesota as threatened. This rule also reinstates the former designated critical habitat for gray wolves in Minnesota and Michigan and special regulations for gray wolves in Minnesota.

DATES: This action is effective September 16, 2009.

Appendix C
Executive Order 19

(To Print this page, press the "Print" button on your browser. To return to the previous page, press the "Back" button on your browser.)

Office of the Governor

BOB RILEY
Governor

STATE OF
ALABAMA

Press Office

February 24, 2004

EXECUTIVE ORDER NUMBER 19

WHEREAS, various natural and technological hazards have caused devastating societal, physical and economic losses across the State and will inevitably continue to do so; and

WHEREAS, the implementation of hazard mitigation policies and strategies will significantly reduce human suffering, property damages, and economic losses from natural and technological disasters; and

WHEREAS, the Disaster Mitigation Act of 2000 (DMA 2000), signed by the President (Public Law 106-390) requires all States to adopt State Hazard Mitigation Plans in order to receive federal assistance under the Stafford Act for disasters declared after November 1, 2004; and

WHEREAS, federal disaster mitigation legislation places additional responsibilities upon the State Hazard Mitigation Council for the development of the State Hazard Mitigation Plan; and

WHEREAS, the Hazard Mitigation Council has expanded its original membership, and additional tasks have been imposed upon Alabama state agencies since its creation in 2001.

NOW THEREFORE, I, Bob Riley, Governor of the State of Alabama, by virtue of the authority vested in me by the Constitution and laws of Alabama, and for other good and valid reasons, which relate thereto, do hereby rescind Executive Order No. 46, dated March 16, 2001, and by this Executive Order, re-establish the State Hazard Mitigation Council.

BE IT ORDERED that the Alabama Hazard Mitigation Council (hereinafter

ƒ±the Councilƒ°) shall be comprised of the following members:

The Governor or his designee who shall serve as Chair;

The Commissioner of the Department of Agriculture and Industries;

The Attorney General;

The Commissioner of the Alabama Department of Conservation & Natural Resources; The Director of the Department of Economic and Community Affairs;

The Director of the Emergency Management Agency;

The Commissioner of the Alabama Department of Environmental Management;

The State Forester of the Alabama Forestry Commission; The Office of the State Geologist; The State Historical Preservation Officer;

The Commissioner of the Insurance Department;

The Director of the Governorƒs Legal Council Office;

The Director of the Alabama Department of Public Health;

The Director of the Governorƒs Public Information Office;

The Director of the Alabama Department of Public Safety;

The Commissioner of the Alabama Public Service Commission;

The Secretary of State; and

The Director of the Department of Transportation.

BE IT FURTHER ORDERED that the following serve as Council members:

The Director of the Alabama Association of Regional Councils;

The Director of the Alabama League of Municipalities;

The Director of the Association of County Commissioners;

The Director of Indian Affairs;

The Chief of the U.S. Corps of Engineers; and

The Director of the Choctawhatchee, Pea and Yellow Rivers Watershed

Management Authority.

BE IT FURTHER ORDERED that Council members may appoint a designee to serve on the committee whereas the designee has the full power and authority of the Council member.

BE IT FURTHER ORDERED that the Governor or Chair may appoint additional Council members at a later date.

BE IT FURTHER ORDERED that the following non-state agencies designate a point of contact to provide information as requested by the Council:

American Red Cross;

Military Department;

National Weather Service, Birmingham;

National Weather Service, Huntsville;

National Weather Service, Mobile;

National Weather Service, Tallahassee;

U. S. Air Force, Maxwell Air Force base;

U. S. Army, Fort Rucker Army Post; and

USDA Forest Service.

BE IT FURTHER ORDERED that representative(s) from all state agencies are encouraged to attend Council meetings.

BE IT FURTHER ORDERED that all state agencies will participate in the development of the Alabama Hazard Mitigation Plan by providing services as directed by the Council.

BE IT FURTHER ORDERED that agencies, businesses, citizens, profit, non-profit and other interested parties are encouraged to participate in the development of the Alabama Hazard Mitigation Plan by providing comments and information via meetings, surveys, questionnaires, or other means.

BE IT FURTHER ORDERED that the Council shall assist in the prioritization and selection of hazard and pre-disaster mitigation grant program project applications.

BE IT FURTHER ORDERED that the Council shall meet upon the call of the Chair and shall remain in place until the 5-year plan update to the

Alabama Hazard Mitigation Plan has been approved by FEMA.

BE IT FURTHER ORDERED that the Council shall prepare a Federal Emergency Management Agency (FEMA) approved standard Alabama Hazard Mitigation Plan that meets the requirements of Disaster Mitigation Act of 2000 (DMA 2000), signed by the President (Public Law 106-390).

BE IT FURTHER ORDERED that this Executive Order shall become effective immediately upon the Governor*ƒ*s signature and shall remain in effect until amended or modified by the Governor.

DONE AND ORDER this 24th day of February, 2004

_____

Bob Riley

Governor

Attested:

_____

Nancy L. Worley

Secretary of State

Governor's Press Office - State Capitol - Suite NB-06 - Montgomery, Alabama 36130 - (334) 242-7150
For more contact information, visit Governor Bob Riley's Web Site: http://www.governor.state.al.us/

Alabama State Agency Directory | Alabama State Employee Directory

Appendix D
Composition of State Hazard Mitigation Planning Council [Team]

EO 19 directed the following individuals and agencies to serve as members of the SHMT:

- The Governor or his designee who shall serve as chair
- The Commissioner of the Department of Agriculture and Industries
- The Attorney General
- The Commissioner of the Alabama Department of Conservation and Natural Resources
- The Director of the Department of Economic and Community Affairs
- The Director of the Alabama Emergency Management Agency
- The Commissioner of the Alabama Department of Environmental Management
- The State Forester of the Alabama Forestry Commission
- The Office of the State Geologist
- The State Historic Preservation Officer
- The Commissioner of the Insurance Department
- The Director of the Governor's Legal Council Office
- The Director of the Alabama Department of Public Health
- The Director of the Governor's Public Information Office
- The Director of the Alabama Department of Public Safety
- The Commissioner of the Alabama Public Service Commission
- The Secretary of State
- The Director of the Department of Transportation
- The Director of the Alabama Association of Regional Councils
- The Director of the Alabama League of Municipalities
- The Director of the Association of County Commissioners
- The Director of Indian Affairs
- The Chief of the U.S. Army Corps of Engineers
- The Director of the Choctoawhatchee, Pea and Yellow Rivers Watershed Management Authority
- Co-Leader Extension Communications, Alabama Cooperative Extension System

Other Agencies with Designated Points of Contact in the Executive Order

In addition to those individuals and agencies directly assigned to the SHMT, the EO requested that the following agencies establish points of contact for the Hazard Mitigation Team:

- The American Red Cross
- The Military Department
- The National Weather Service, Birmingham
- The National Weather Service, Huntsville
- The National Weather Service, Mobile
- The National Weather Service, Tallahassee
- U.S. Air Force, Maxwell AFB
- U.S. Army, Fort Rucker Army Post
- USDA Forest Service

This page intentionally blank

Appendix E
Alabama State Hazard Mitigation Council Technical Advisory Committee Membership

This organization was involved in the 2004 and 2007 plans, to serve in an administrative role. However, it was not re-established for the 2010 or 2013 update.

Initial Plan Development

Ms. Barbara Gibson
Choctawhatchee, Pea and Yellow Rivers Watershed Management Authority

Ms. Ellen Austin
Alabama Association of Regional Councils

Mr. Trey Glenn
Alabama Department of Economic and Community Affairs

Mr. Jason Wright
National Weather Service Birmingham

Mr. Charles Williams
Alabama Emergency Management Agency

Plan Update

Debbie Peery
Alabama Emergency Management Agency

Alice Maples
Office of the Attorney General

Adam Thompson
Office of the Secretary of State

Ellen Austin
Alabama Association of Regional Councils

Robin Caler
Alabama Association of Regional Councils

Dorothy Raymond
Geological Survey of Alabama

Tim Troutman
National Weather Service

This page intentionally blank

APPROVAL & IMPLEMENTATION

The purpose of hazard mitigation is to implement actions that eliminate the risk from hazards, or reduce the severity of the effects of hazards on people and property. Mitigation actions are both short-term and long-term activities that reduce the cause or occurrence of hazards; reduce exposure to hazards; or reduce effects of hazards through various means to include preparedness, response and recovery measures.

This plan applies to all State agencies, boards, commissions, and departments assigned mitigation responsibilities, and to others as designated by the Governor or Director of the Alabama Emergency Management Agency.

The State of Alabama Hazard Mitigation Plan was prepared in compliance with Public Law 106-390, *Disaster Mitigation Act of 2000,* as amended. This plan implements hazard mitigation measures intended to eliminate or reduce the effects of future disasters throughout Alabama, and was developed in a joint and cooperative venture by members of the State Hazard Mitigation Team and the agencies identified in Executive Order No. 19.

The State of Alabama will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 Code of Federal Regulations (CFR) 13.11c. The State of Alabama will amend its plan whenever necessary to reflect changes in State and/or Federal laws and statutes as required in 44 CFR, 13.11d. At a minimum, the State will review and if necessary, update the Plan every three years from the date of approval in accordance with 44 CFR, 201.3(c)(2) and (3) in order to continue program eligibility.

In accordance with the *Alabama Emergency Management Act of 1955*, dated March 1, 2002, as amended, and as the Director of the Alabama Emergency Management Agency, in order to protect the lives and property of the citizens of Alabama, I hereby adopt this plan in accordance to the powers delegated to me and accept this plan for implementation.

_____ _____

Date

Art Faulkner
Director
Alabama Emergency Management Agency

Appendix G
Glossary of Acronyms and Terms

Glossary of Acronyms and Terms	
AACC	Alabama Association of County Commissioners
AARC	Alabama Association of Regional Councils
ACAMP	Alabama Coastal Area Management Plan
ADCNR	Alabama Department of Conservation and Natural Resources
ADECA	Alabama Department of Economic and Community Affairs
ADEM	Alabama Department of Environmental Management
ADHR	Alabama Department of Human Resources
ADPS	Alabama Department of Public Safety
AEMA	Alabama Emergency Management Agency
AFC	Alabama Forestry Commission
AGIC	Alabama Geographic Information Council
AHC	Alabama Historical Commission
ALDOT	Alabama Department of Transportation
ALM	Alabama League of Municipalities
ARC	American Red Cross
CIAP	Coastal Impact Assistance Program
CPYRWMA	Choctawhatchee, Pea and Yellow Rivers Watershed Management Authority
CRS	Community Rating System
CZMP	Coastal Zone Management Plan
EO 19	Executive Order 19
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance Program
GSA	Geological Survey of Alabama
HMGP	Hazard Mitigation Grant Program
IFR	Interim Final Rule
MMP	Map Modernization Program
NFIP	National Flood Insurance Program
NRCS	Natural Resources Conservation Service
NWS	National Weather Service
OWR	Office of Water Resources
PA	Public Assistance
PDM	Pre-Disaster Mitigation Program
RPC	Regional Planning Commission
SHMO	State Hazard Mitigation Officer
SHMT	State Hazard Mitigation Team
TAC	Technical Advisory Committee
USACE	United States Army Corps of Engineers

Term	Definition
Acquisition of Hazard-Prone Structures	Local governments can acquire lands in high hazards areas through conservation easements, purchase of development rights, or outright purchase of property.
Base Flood Elevation (BFE)	The elevation of the Base Flood in relation to a specified datum, such as the National Geodetic Vertical Datum of 1929. The Base Flood Elevation is used as a standard for the National Flood Insurance Program (NFIP). The Base Flood is the flood that has a 1% chance of being equaled or exceeded in any given year. The Base Flood is also referred to as the 100-Year Flood.
Benefit-cost Analysis (BCA)	Benefit-cost analysis is a systematic, quantitative method of comparing the projected benefits to projected costs of a project or policy. It is used as a measure of cost effectiveness.
Capability Assessment	An assessment that provides a description and analysis of a community or state's current capacity to address the threats associated with hazards. The capability assessment attempts to identify and evaluate existing policies, regulations, programs, and practices that positively or negatively affect the community or state's ability to address specific hazards or threats.
Coastal Zone	The area along the shore where the ocean meets the land as the surface of the land rises above the ocean. This land / water interface includes barrier islands, estuaries, beaches, coastal wetlands, and land areas with direct drainage to the ocean.
CoBRA	Coastal Barrier Resources Act in 1982. The CoBRA, while not prohibiting privately financed development prohibits most new Federal financial assistance, including flood insurance, within an area designated as part of the Coastal Barrier Resources System (CBRS).
Community Rating System (CRS)	An incentive-based program for NFIP participating communities that implement flood mitigation programming above the NFIP minimum measures that reduce flood hazard risk. In return for enhanced flood mitigation programming, policy holders in participating communities enjoy discounted flood insurance premiums.
Cost-Effectiveness	One evaluation criteria for federal grant programs. FEMA defines a cost-effective project as one whose long-term benefits exceed its costs. That is, a project should prevent more expected financial loss that it costs initially to fund the effort. Benefit-cost analysis is one way to illustrate that a project is cost-effective.
Critical Facilities	Facilities vital to the health, safety, and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fire stations, utility facilities, and hospitals.
Disaster Mitigation Act of 2000 (DMA 2000)	DMA 2000 (Public Law 106-390) is the latest legislation to improve the planning process. Signed into law on October 30, 2000, this legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur.
Earthquake	A sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of earth's tectonic plates.
Elevation of Structures	Term used in conjunction with floodplain management. Raising structures above the base flood elevation to protect structures located in areas prone to flooding.
Erosion	Wearing away of the land surface by detachment and movement of soil and rock fragments, during a flood or storm or over a period of years, through the action of wind, water, or other geologic processes.
Federal Emergency Management Agency (FEMA)	Agency created in 1979 to provide a single point of accountability for all federal activities related to disaster mitigation and emergency preparedness, response, and recovery. FEMA is now part of the Department of Homeland Security.

Term	Definition
Flood	A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land.
Flood Elevation	Elevation of the water surface above an established datum, e.g. National Geodetic Vertical Datum of 1929, North American Vertical Datum of 1988 or Mean Sea Level.
Flood Insurance Rate Map (FIRM)	Map prepared by the Federal Emergency Management Agency showing both the Special Flood Hazard Area (SFHA) and the risk premium zones applicable in a given community.
Flood Mitigation Assistance (FMA) Program	A program created as part of the National Flood Insurance Reform Act of 1994. FMA provides funding to assist communities and states in implementing actions that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other NFIP insurable structures, with a focus on repetitive loss properties.
Floodplain	Any land area, including watercourse, susceptible to partial or complete inundation by water from any source.
Floodproofing	Actions that prevent or minimize future flood damage. Making the areas below the anticipated flood level watertight (dry flood proofing) or intentionally allowing floodwater to enter the interior to equalize flood pressures are examples of flood proofing (wet flood proofing).
Flood Zone	A geographical area shown on a Flood Insurance Rate Map (FIRM) that reflects the severity or type of flooding in the area.
Frequency	A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a 1% chance of happening in any given year.
Geographic Information System (GIS)	A computer software application that relates physical features on the earth to a database to be used for mapping and analysis.
Goals	General guidelines that express desired results. They are usually broad policy-type statements, long term in nature and represent global visions.
Hazard	A source of potential danger or adverse condition. Hazards include naturally occurring events such as floods, earthquakes, tornadoes, tsunamis, coastal storms, landslides, and wildfires that strike populated areas and have the potential to harm people and property.
Hazard Mitigation	Sustained actions taken to reduce or eliminate long-term risk from hazards and their effects.
Hazard Mitigation Grant Program (HMGP)	Authorized under Section 404 of the Roger T. Stafford Disaster Relief and Emergency Assistance Act, HMGP is administered by implementing hazard mitigation actions after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to disasters and to enable mitigation activities to be implemented as a community recovers from a disaster.
Hazard Profile	A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability, and extent.
HAZUS, HAZUS-MH	A GIS-based, nationally standardized, loss estimation tool developed by FEMA. HAZUS-MH is the new multi-hazard version that includes earthquake, wind, hurricane, and flood loss estimate components.

Term	Definition
Hurricane	An intense tropical cyclone, formed in the atmosphere over warm ocean seas, in which wind speeds reach 74 miles-per-hour or more and blow in a large spiral around a relatively calm center or "eye". Hurricane circulation is counter-clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.
Hydrology	The study of water's overland flow characteristics. A flood discharge is developed by a hydrologic study.
Infrastructure	Infrastructure includes communication technology such as phone lines or internet access, vital services such as public water supplies and sewer treatment facilities, and transportation systems such as airports, highways, bridges, tunnels, roadbeds, overpasses, railways, bridges, rail yards, depots, waterways, and canals.
Lowest Floor	Under the NFIP, the lowest floor of the lowest enclosed area (including basement) of a structure.
Magnitude	Measures the strength of a hazard event. The magnitude (also referred to as severity) of a given hazard event is usually determined using technical measures specific to the hazard.
Mitigation Plan	The document that articulates results from the systematic process of identifying hazards and evaluating vulnerability, identifying goals, objectives, and actions to reduce or eliminate the effects of identified hazards, and an implementation plan for carrying out the actions.
National Flood Insurance Program (NFIP)	A Federal program created by Congress in 1968 that provides federally backed flood insurance in communities that enact minimum floodplain management regulations in 44 CFR 60.3.
National Weather Service (NWS)	Prepares and issues flood, severe weather, and coastal storm warnings and can provide technical assistance to Federal and state entities in preparing weather and flood warning plans.
Nor'easter	An extra-tropical cyclone producing gale-force winds and precipitation in the form of heavy snow and rain.
Objectives	Objectives define strategies or implementation steps to attain identified goals. Unlike goals, objectives are specific and measurable.
Open Space Preservation	Preserving undeveloped areas from development through any number of methods, including low-density zoning, open space zoning, easements, or public or private acquisition. Open space preservation is a technique that can be used to prevent flood damage in flood-prone soils, and can enhance the natural and beneficial functions of floodplains.
Post-Disaster Recovery Planning	The process of planning those steps the jurisdiction will take to implement long-term reconstruction with a primary goal of mitigating its exposure to future hazards. The post-disaster recovery planning process can also involve coordination with other types of plans and agencies, but it is distinct from planning for emergency operations.
Probability	In terms of natural hazards, the likelihood a hazard event will occur in a given time period.
Repetitive Loss Property	A property that is currently insured that has two or more NFIP losses (occurring more than ten days apart) of at least $1,000 each and has been paid within any 10-year period since 1978.
Replacement Value	The cost of rebuilding a structure. This is usually expressed in terms of cost per square foot, and reflects the present-day cost of labor and materials to construct a building of a particular size, type and quality. This is not the same as market value.

Term	Definition
Risk	The estimated impact that a hazard would have on people, services, facilities and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as high, moderate or low likelihood of sustaining damage above a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.
Special Flood Hazard Area (SFHA)	An area within a floodplain having 1% or greater chance of flood occurrence in any given year (100-year floodplain); represented on Flood Insurance Rate Maps by darkly shaded areas with zone designations that include the letter A or V.
Stakeholders	Individuals or groups, including businesses, private organizations, and citizens, that will be affected in any way by an action or policy.
State Hazard Mitigation Officer (SHMO)	The representative of state government who is the primary point of contact with FEMA, other state and Federal agencies, and local units of government in the planning and implementation of pre- and post disaster mitigation activities.
Storm Surge	Rise in the water surface above normal water levels on the open coast.
Sub-Tropical Depression	A weather system that has some characteristics of a tropical cyclone and some characteristics of an extra tropical cyclone.
Subdivisions and Development Regulations	Regulations and stands governing the division of land for development for sale. Subdivision regulations can control the configuration of parcels, set standards for developer-built infrastructure, and set standards for minimizing runoff, impervious surfaces, and sedimentation during development. They can be used to minimize exposure of buildings and infrastructure to hazards.
Tornado	A violently rotating column of air extending form a thunderstorm to the ground.
Tropical Cyclone	A generic term or a cyclonic, low-pressure system over tropical or subtropical waters.
Tropical Depression	A tropical cyclone with maximum sustained winds of less than 39 mph.
Tropical Storm	A tropical cyclone with maximum sustained winds greater than 39 mph and less than 74 mph.
Vulnerability Assessment	The study of the extent of injury and damage that may result from a hazard event of a given magnitude in a given areas. Vulnerability assessments typically address impacts of hazard events on the existing and future built environment.
Zoning Ordinances	Designation of allowable land use and intensities for local jurisdiction. Zoning ordinances consist of two components: a zoning text and a zoning map.

This page intentionally blank

Appendix H - General Descriptions of Hazards that Affect Alabama

Section	What was updated in the 2013 version?
H	• All hazard descriptions were updated to reflect scientific hazards descriptions as of December 2012. • Sea Level Rise added to hazard list in Section H.15

H.1 Flooding

Flooding is the accumulation of water within a water body (e.g., stream, river, lake, or reservoir) and the overflow of excess water onto adjacent floodplains. As illustrated in **Figure H-1**, floodplains are usually lowlands adjacent to water bodies that are subject to recurring floods. Floods are natural events that are considered hazards only when people and property are affected. Nationwide, hundreds of floods occur each year, making them one of the most common hazards in the United States. (FEMA, 1997). There are a number of categories of floods in the United States, including the following:

- Riverine flooding, including overflow from a river channel, flash floods, alluvial fan floods, ice-jam floods, and dam-break floods;
- Local drainage or high groundwater levels;
- Fluctuating lake levels;
- Coastal flooding, including storm surges;
- Debris flows; and
- Subsidence.

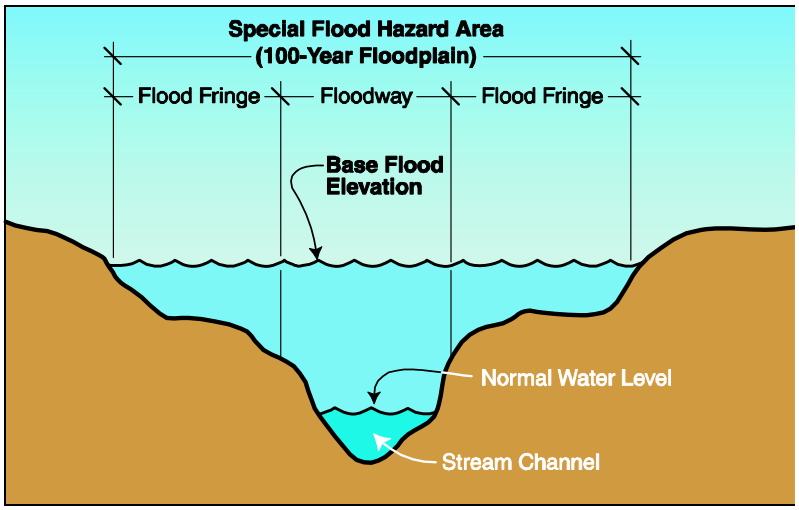


Figure H-1
Floodplain Definition Sketch
Source: FEMA, August 2001.

While there is no sharp distinction between riverine floods, flash floods, alluvial fan floods, ice-jam floods, and dam-break floods, these types of floods are widely recognized and may be helpful in considering the range of flood risk and appropriate responses:

- The most common kind of flooding event is riverine flooding, also known as overbank flooding. Riverine floodplains range from narrow, confined channels in the steep valleys of mountainous and hilly regions, to wide, flat areas in plains and coastal regions. The amount of water in the floodplain is a function of the size and topography of the contributing watershed, the regional and local climate, and land use characteristics. In steep valleys, flooding is usually rapid and deep, but of short duration, while flooding in flat areas is typically slow, relatively shallow, and may last for long periods of time.
- Flash floods involve a rapid rise in water level, high velocity, and large amounts of debris, which can lead to significant damage that includes the tearing out of trees, undermining of buildings and bridges, and scouring new channels. The intensity of flash flooding is a function of the intensity and duration of rainfall, steepness of the watershed, stream gradients, watershed vegetation, natural and artificial flood storage areas, and configuration of the streambed and floodplain. Dam failure and ice jams may also lead to flash flooding.
- Alluvial fan floods occur in the deposits of rock and soil that have eroded from mountainsides and accumulated on valley floors in the pattern of a fan. Alluvial fan floods often cause greater damage than riverine flooding due to the high velocity of the flow, amount of debris, and broad area affected. Human activities may exacerbate flooding and erosion on alluvial fans via increased velocity along roadways acting as temporary drainage channels or changes to natural drainage channels from fill, grading, and structures.
- Ice jam floods are primarily a function of the weather and are most likely to occur where the channel slope naturally decreases, culverts freeze solid, reservoir headwaters, natural channel constructions (e.g., bends and bridges), and along shallows.
- Dam-break floods may occur due to structural failures (e.g., progressive erosion), overtopping or breach from flooding, or earthquakes.

Local drainage floods may occur outside of recognized drainage channels or delineated floodplains (such as the 1.0-pecent and 0.2-percent annual floodplain identified in the FEMA Digital Flood Insurance Rate Maps) for a variety of reasons, including concentrated local precipitation, a lack of infiltration, inadequate facilities for drainage and stormwater conveyance, and/or increased surface runoff. Such events often occur in flat areas, particularly during winter and spring in areas with frozen ground, and also in urbanized areas with large impermeable surfaces. High groundwater flooding is a seasonal occurrence in some areas, but may occur in other areas after prolonged periods of above-average precipitation. Floods are possible throughout the state of Alabama.

H.2 Tornadoes and Windstorms

A tornado is a rapidly rotating funnel (or vortex) of air that extends toward the ground from a cumulonimbus cloud. Most tornadoes do not touch the ground, but when the lower tip of a tornado touches the earth, it can cause extensive damage. Tornadoes often form in convective cells such as thunderstorms or at the front of hurricanes. Tornadoes may also result from earthquake induced fires, wildfires, or atomic bombs (FEMA, 1997). The formation of tornadoes from thunderstorms is explained in **Figure H-2**.

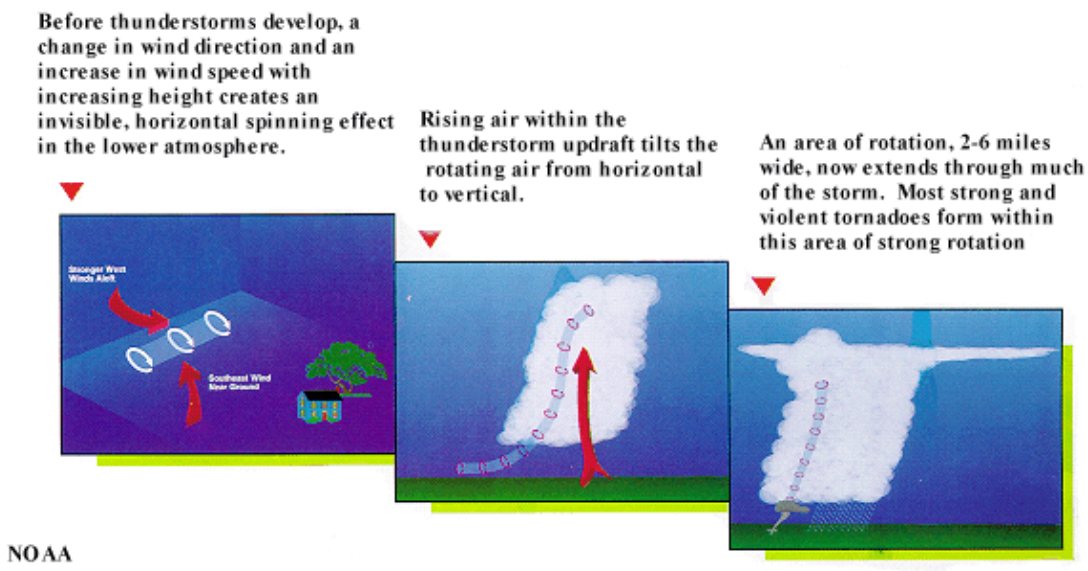


Figure H-2
How Do Tornadoes Form?
Source: NWS Phoenix.

Tornadoes are more likely to occur during the months of March through May and are most likely to form in the late afternoon and early evening. Tornado events typically last less than 30 minutes, but can exist for more than an hour. Most tornadoes are a few dozen yards wide and touchdown briefly, but even small short-lived tornadoes can inflict tremendous damage. Highly destructive tornadoes may carve out a path over a mile wide and several miles long. They are possible throughout the state of Alabama.

Until February 1, 2007 Tornado damage severity was measured by the Fujita Tornado Scale, which assigns a numerical value of 0 to 5 based on wind speeds, as shown in **Table H-1**. The letter F may precede the number (e.g., FO, F1, F2).

Table H-1
Fujita Tornado Scale

Category	Wind Speed	Description of Damage
F0	40-72 mph	Light damage. Some damage to chimneys; break branches off trees; push over shallow-rooted trees; damage to sign boards.
F1	73-112 mph	Moderate damage. The lower limit is the beginning of hurricane speed. Roof surfaces peeled off; mobile homes pushed off foundations or overturned; moving autos pushed off roads.
F2	113-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
F3	158-206 mph	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; cars lifted off ground and thrown.
F4	207-260 mph	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	261-318 mph	Incredible damage. Strong frame houses lifted off foundations and

		carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 100-yards; trees debarked.

Source: FEMA, 1997.

As of February 1, 2007, the Fujita Tornado Scale has since been revised and is now called the Enhanced Fujita (EF) Tornado Scale, as shown in **Table H-2**. It is a revision of the Fujita Scale to reflect better examinations of tornado damage surveys, so as to align wind speeds more closely with associated storm damage. The new scale takes into account quality of construction and standardizes different kinds of structures. The only differences between the Fujita Scale and the Enhanced Fujita Scale are adjusted wind speeds, measurements of which weren't used in previous ratings, and refined damage descriptors; to standardize ratings and to make it easier to rate tornadoes which strike few structures.

Table H-2
Enhanced Fujita Tornado Scale

Category	Wind Speed	Description of Damage
EF0	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.
EF1	86-110 mph	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	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.
EF3	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.
EF4	166-200 mph	Devastating damage. Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	>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. So far only one EF5 tornado has been recorded since the Enhanced Fujita Scale was introduced on February 1, 2007.

Source: NOAA, NWS, Storm Prediction Center, 2007.

Figure H-3 shows tornado activity in the United States based on the number of recorded tornadoes per 1,000 square miles.

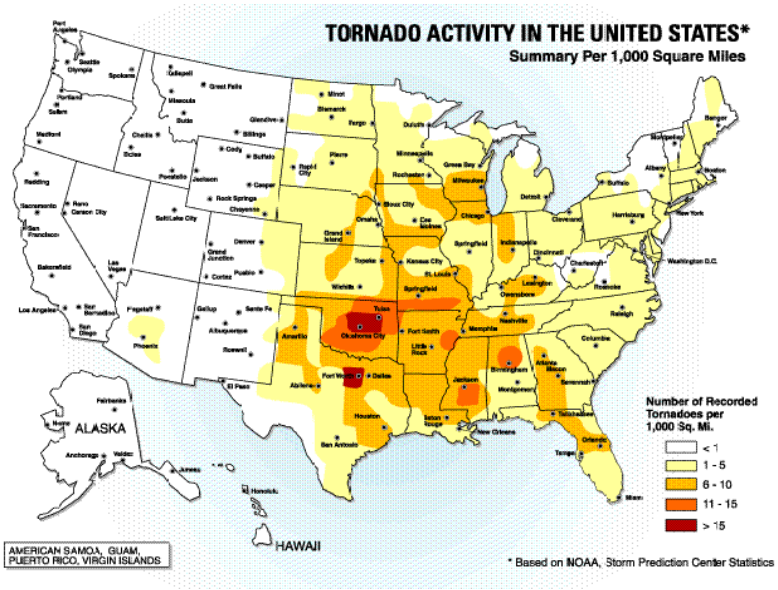


Figure H-3
Tornado Activity in the United States
Source: NOAA Storm Prediction Center

High wind events are possible in Alabama. Such events are typically associated with thunderstorms but may occur as a results of dissipating hurricanes or changing weather patterns, for examples. This may include macrobursts or microburst or be an isolated high wind event.

There are two types of downbursts: microbursts and macrobursts. Downbursts less than 2.5 miles wide, duration less than 5 minutes, and winds up to 168 miles per hour are called "microbursts." Larger events greater than 2.5 miles at the surface and longer than 5 minutes with winds up to 130 miles per hour are referred to as "macrobursts."

Downbursts are often confused with tornadoes and may be associated with thunderstorm events. Conversely to tornadoes, where wind flow inward, downburst wind flows outward, often resulting in straight-line winds. They are caused by down drafts from the base of a convective thunderstorm cloud. It occurs when rain-cooled air within the cloud becomes heavier than its surroundings. Thus, air rushes towards the ground in a destructive yet isolated manner. There are two types of downbursts. **Figure H-4** shows the FEMA defined wind zones throughout the United States.

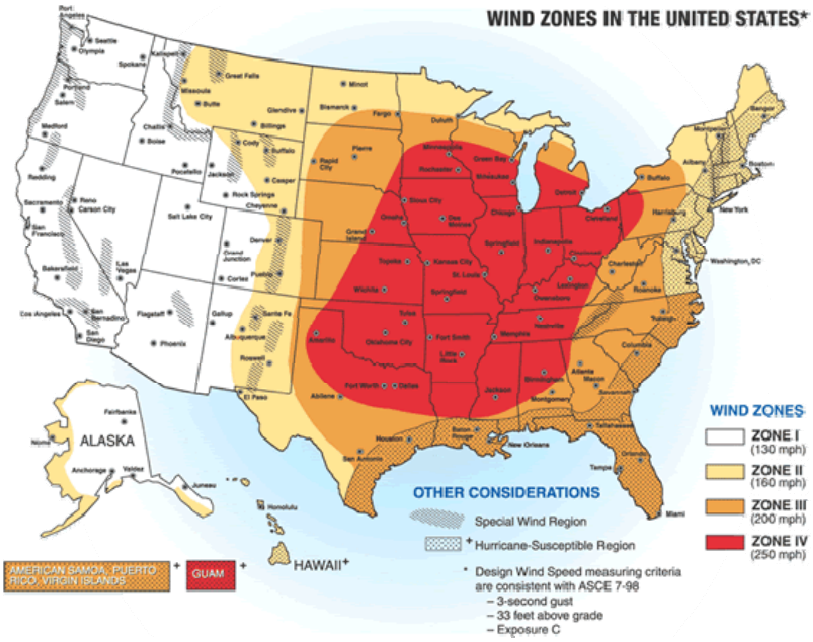


Figure H-4
Wind Zones in the United States
Source: FEMA

H.3 Hurricanes

Hurricanes and tropical storms are classified as cyclones and defined as any closed circulation developing around a low-pressure center in which the winds rotate counter-clockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and whose diameter averages 10 to 30 miles across. A tropical cyclone refers to any such circulation that develops over tropical waters. Tropical cyclones act as a “safety-valve,” limiting the continued build-up of heat and energy in tropical regions by maintaining the atmospheric heat and moisture balance between the tropics and the pole-ward latitudes. The primary damaging forces associated with these storms are high-level sustained winds, heavy precipitation and tornadoes.

The key energy source for a tropical cyclone is the release of latent heat from the condensation of warm water. Their formation requires a low-pressure disturbance, warm sea surface temperature, rotational force from the spinning of the earth and the absence of wind shear in the lowest 50,000 feet of the atmosphere. The majority of hurricanes and tropical storms form in the Atlantic Ocean, Caribbean Sea and Gulf of Mexico during the official Atlantic hurricane season, which encompasses the months of June through November. The peak of the Atlantic hurricane season is in early to mid-September and the average number of storms that reach hurricane intensity per year in the Atlantic basin is about six (6).

As an incipient hurricane develops, barometric pressure (measured in millibars or inches) at its center falls and winds increase. If the atmospheric and oceanic conditions are favorable, it can intensify into a tropical depression. When maximum sustained winds reach or exceed 39 miles per hour, the system is designated a tropical storm, given a name, and is closely monitored by the National Hurricane Center in Miami, Florida. When sustained winds reach or exceed 74 miles per hour the storm is deemed a hurricane. Hurricane intensity is further classified by the

Saffir-Simpson Hurricane Wind Scale (**Table H-3**), which rates hurricane wind intensity on a scale of 1 to 5, with 5 being the most intense.

Table H-3
Saffir-Simpson Scale

Category	Maximum Sustained Wind Speed (MPH)
1	74–95
2	96–110
3	111–129
4	130–156
5	157 +

Source: National Hurricane Center, 2012

The Saffir-Simpson Scale categorizes hurricane intensity linearly based upon maximum sustained winds, which is used to estimate potential damage. Hurricanes of category 3, 4, and 5 are classified as "major" hurricanes, and while hurricanes within this range comprise only 20 percent of total tropical cyclone landfalls, they account for over 70 percent of the damage in the United States.

As noted in Section 5, many wind design maps demonstrate the design wind speeds used to for buildings and storm shelters but they cannot be directly compared with the 1-minute sustained wind speeds over water, which are utilized by the Saffir Simpson Hurricane Wind Scale above. These must be converted using **Table H-4** to compare the wind speed data.

Table H-4
Saffir-Simpson Conversion Scale

Saffir-Simpson Hurricane Category	Sustained Wind Speed over Water (mph)	3-Second Gust Wind Speed over Water (mph)	3-Second Gust Wind Speed over Land (mph)
Category 1	74-95	91-116	82-108
Category 2	96-110	117-140	109-130
Category 3	111-130	141-165	131-156
Category 4	131-155	166-195	157-191
Category 5	>155	>195	>191

Coastal Alabama borders a part of the northern Gulf of Mexico that has a high incidence of hurricanes. High winds, wave action, and flooding cause damage at Alabama's shoreline, while wind and water damage can extend far inland. Alabama has identified 17 counties (within 100 miles of the coast) as its primary Hurricane Risk Areas. Studies of Hurricanes Hugo, Andrew, and Opal offer evidence that inland counties can receive significant hurricane damage. Hurricanes often spawn tornadoes and cause flooding from intense rain. In this respect, hurricanes pose a threat to the entire state.

Storm surge (storm tide) is perhaps the most dangerous aspect of a hurricane. It is a phenomenon that occurs when the winds and forward motion associated with a hurricane pile water up in front as it moves toward the shore. Storm surge heights and associated waves are dependent upon the configuration of the continental shelf (narrow or wide) and the depth of the ocean bottom.

H.4 Winter Storms

Winter storms vary in size and strength and include heavy snowstorms, blizzards, freezing rain, sleet, ice storms and blowing and drifting snow conditions. Extremely cold temperatures accompanied by strong winds can result in wind chills that cause bodily injury such as frostbite and death. Severe winter and ice storms can cause unusually heavy rain or snowfall, high winds, extreme cold, and ice storms throughout the continental United States.

Winter storm occurrences tend to be very disruptive to transportation and commerce. Trees, cars, roads, and other surfaces develop a coating or glaze of ice, making even small accumulations of ice extremely hazardous to motorists and pedestrians. The most prevalent impacts of heavy accumulations of ice are slippery roads and walkways that lead to vehicle and pedestrian accidents; collapsed roofs from fallen trees and limbs and heavy ice and snow loads; and felled trees, telephone poles and lines, electrical wires, and communication towers. As a result of severe ice storms, telecommunications and power can be disrupted for days. Such storms can also cause exceptionally high rainfall that persists for days, resulting in heavy flooding.

Large snow accumulations are rare in Alabama exacerbating the dangerous conditions. When severe snow events do occur, they have the potential to cripple the economy until snow can be removed from roadways.

Ice storms are more common but still result in very dangerous driving conditions. They are defined as storms with significant amounts of freezing rain and are a result of cold air damming (CAD). CAD is a shallow, surface-based layer of relatively cold; stably-stratified air entrenched against the eastern slopes of the Appalachian Mountains. With warmer air above, falling precipitation in the form of snow melts, then becomes either super-cooled (liquid below the melting point of water) or re-freezes. In the former case, super-cooled droplets can freeze on impact (freezing rain), while in the latter case; the re-frozen water particles are ice pellets (or sleet). Sleet is defined as partially frozen raindrops or refrozen snowflakes that form into small ice pellets before reaching the ground. They typically bounce when they hit the ground and do not stick to the surface. However, it does accumulate like snow, posing similar problems and has the potential to accumulate into a layer of ice on surfaces. Freezing rain, conversely, usually sticks to the ground, creating a sheet of ice on the roadways and other surfaces. All of the winter storm elements – snow, low temperatures, sleet, ice, etcetera - have the potential to cause significant hazard to a community. Even small accumulations can down power lines and trees limbs and create hazardous driving conditions. Further, communication and power may be disrupted for days.

H.5 Landslides

Landslides are the downward and outward movement of slopes. The term refers to various kinds of events, including mudflows, mudslides, debris flows, rock falls, rockslides, debris avalanches, debris slides, and earth flows. Landslides may include any combination of natural rock, soil, or artificial fill, and are classified by the type of movement and the type of material. The types of movement are slides, flows, lateral spreads, and falls and topples (FEMA, 1997).

Below is a brief discussion of the various types of landslide movements. A combination of two or more landslide movements is referred to as a complex movement.

- Slides are downward displacements along one or more failure surfaces of soil or rock. The material may be a single intact mass or a number of pieces. The sliding may be rotational (turning about a point) or translational (movement roughly parallel to the failure surface).
- Flows are a form of rapid mass movement by loose soils, rocks, and organic matter, together with air and water that form a slurry flowing rapidly downhill. Flows are distinguished from slides by high water content and velocities that resemble those of viscous liquids.
- Lateral spreads are large movements of rock, fine-grained soils (i.e., quick clays), or granular soils, distributed laterally. Liquefaction may occur in loose, granular soils, and can occur spontaneously due to changes in pore-water pressure or due to earthquake vibrations.
- Falls and topples are masses of rocks or material that detach from a steep slope or cliff that free-fall, roll, or bounce. Movements typically are rapid to extremely rapid. Earthquakes commonly trigger rock falls.

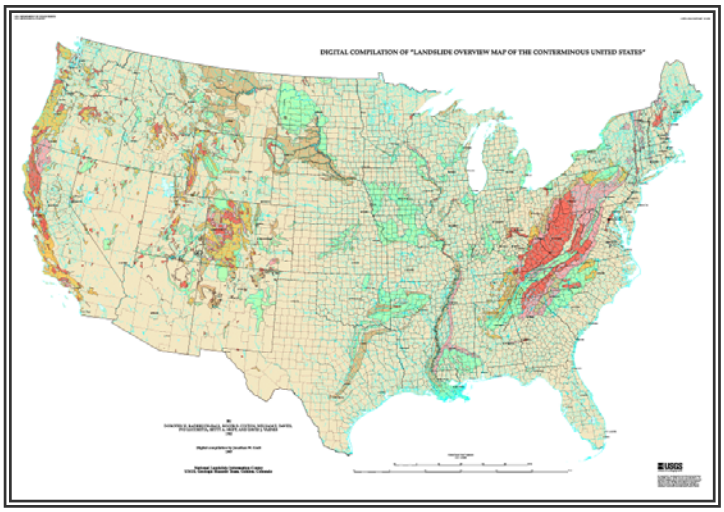
Almost any steep or rugged terrain is susceptible to landslides under the right conditions. The most hazardous areas are steep slopes on ridges, hill, and mountains; incised stream channels; and slopes excavated for buildings and roads. Slide potentials are enhanced where slopes are destabilized by construction or river erosion. Road cuts and other altered or excavated areas are particularly susceptible to landslides and debris flows. Rainfall and seismic shaking by earthquakes or blasting can trigger landslides.

Debris flows (also referred to as mudslides) generally occur during intense rainfall on water saturated soil. They usually start on steep hillsides as soil slumps or slides that liquefy and accelerate to speeds as great as 35 miles per hour. Multiple debris flows may merge, gain volume, and travel long distances from their source, making areas downslope particularly hazardous. Surface runoff channels along roadways and below culverts are common sites of debris flows and other landslides (USGS, 2000).

Landslides often occur together with other major natural disasters, such as the following, thereby exacerbating relief and reconstruction efforts:

- Floods and landslides are closely related and both involve precipitation, runoff, and ground saturation that may be the result of severe thunderstorms or tropical storms.
- Earthquakes may cause landslides ranging from rock falls and topples, to massive slides and flows.
- Landslides into a reservoir may indirectly compromise dam safety or a landslide may even affect the dam itself.
- Wildfires may remove vegetation from hillsides, significantly increasing runoff and landslide potential.

Figure H-5 shows the landslide susceptibility throughout the United States.



Low Incident (less than 1.5% area involved)
Moderate Incident (1.5% - 15% area involved)
High Incident (greater than 15% area involved)

Moderate Susceptibility/Low Incident
High Susceptibility/Low Incident
High Susceptibility/Low Incident

Figure H-5
Landslide Overview Map in the United States
Source: USGS

H.6 Sinkholes and Land Subsidence

There are three types of potential problems associated with the existence or formation of sinkholes: subsidence, flooding, and pollution. The term subsidence commonly involves a gradual sinking, but it also refers to an instantaneous or catastrophic collapse. In Alabama, sinkholes are common where the rock below the land surface is limestone, dolomite, or salt that can naturally be dissolved by ground water. As the rock dissolves, cavities and caverns develop underground. Sinkholes may be dramatic if the land stays intact for some time until the underground spaces just get too big and a sudden collapse of the land surface occurs.

The change in the local environment affecting the soil mass causing subsidence and sinkholes collapse is called “triggering mechanism”. Water, is the main factor affecting the local environment that causes subsidence. The main triggering mechanisms for subsidence are:

- Water level decline,
- Changes in groundwater flow,
- Increased loading, and
- Deterioration (abandoned coalmines).

Water level decline can happen naturally or be human induced. Main factors in water decline are:

- Pumping of water from wells,
- Localized drainage from construction,
- Dewatering, and
- Drought

Figure H-6 shows declining and resulting ground collapse.

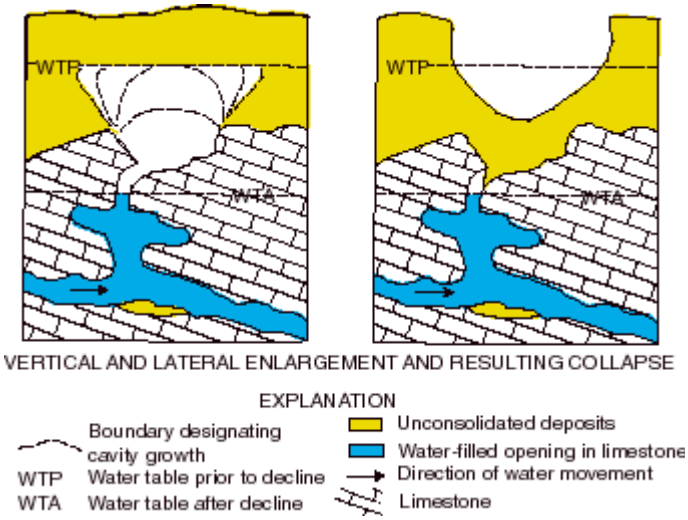


Figure H-6
Water Level Decline
Source: Alabama Highway Department

Changes in the groundwater flow include an increase in the velocity of groundwater movement, increase in the frequency of water table fluctuations, and increased or reduced recharge.

Increased loading causes pressure in the soil leading to failure of underground cavities and spaces. Vibrations caused by an earthquake, vibrating machinery and blasting, can cause structural collapse followed by surface settlement.

H.7 Earthquakes

An earthquake is "…a sudden motion or trembling caused by an abrupt release of accumulated strain in the tectonic plates that comprise the earth's crust." These rigid plates, known as tectonic plates, are some 50 to 60 miles in thickness and move slowly and continuously over the earth's interior. The plates meet along their edges, where they move away, past or under each

other at rates varying from less than a fraction of an inch up to five inches per year. While this sounds small, at a rate of two inches per year, a distance of 30 miles would be covered in approximately one million years (FEMA, 1997).

The tectonic plates continually bump, slide, catch, and hold as they move past each other which causes stress to accumulate along faults. When this stress exceeds the elastic limit of the rock, an earthquake occurs, immediately causing sudden ground motion and seismic activity. Secondary hazards may also occur, such as surface faulting, sinkholes, and landslides. While the majority of earthquakes occur near the edges of the tectonic plates, earthquakes may also occur at the interior of plates.

The vibration or shaking of the ground during an earthquake is described by ground motion. The severity of ground motion generally increases with the amount of energy released and decreases with distance from the fault or epicenter of the earthquake. Ground motion causes waves in the earth's interior, also known as seismic waves, and along the earth's surface, known as surface waves. The following are the two kinds of seismic waves:

- P (primary) waves are longitudinal or compressional waves similar in character to sound waves that cause back-and-forth oscillation along the direction of travel (vertical motion), with particle motion in the same direction as wave travel. They move through the earth at approximately 15,000 mph.
- S (secondary) waves, also known as shear waves, are slower than P waves and cause structures to vibrate from side-to-side (horizontal motion) due to particle motion at right-angles to the direction of wave travel. Unreinforced buildings are more easily damaged by S waves.

There are also two kinds of surface waves, Raleigh waves and Love waves. These waves travel more slowly and typically are significantly less damaging than seismic waves.

Seismic activity is commonly described in terms of magnitude and intensity. Magnitude (M) describes the total energy released and intensity (I) subjectively describes the effects at a particular location. Although an earthquake has only one magnitude, its intensity varies by location. Magnitude is 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 measured amplitude of the earthquake. Intensity is a measure of the strength of the shock at a particular location and is expressed by the Modified Mercalli Intensity (MMI) scale.

Another way of expressing an earthquake's severity is to compare its acceleration to the normal acceleration due to gravity. If an object is dropped while standing on the surface of the earth (ignoring wind resistance), it will fall towards earth and accelerate faster and faster until reaching terminal velocity. The acceleration due to gravity is often called "g" and is equal to 9.8 meters per second squared (980 cm/sec/sec). This means that every second something falls towards earth, its velocity increases by 9.8 meters per second. Peak ground acceleration (PGA) measures the rate of change of motion relative to the rate of acceleration due to gravity. For example, acceleration of the ground surface of 244 cm/sec/sec equals a PGA of 25.0 percent.

It is possible to approximate the relationship between PGA, the Richter scale, and the MMI, as shown in **Table H-5**. The relationships are, at best, approximate, and also depend upon such specifics as the distance from the epicenter and depth of the epicenter. An earthquake with 10.0

percent PGA would roughly correspond to an MMI intensity of V or VI, described as being felt by everyone, overturning unstable objects, or moving heavy furniture.

Table H-5
Earthquake PGA, Magnitude and Intensity Comparison

PGA (%g)	Magnitude (Richter)	Intensity (MMI)	Description (MMI)
<0.17	1.0 - 3.0	I	I. Not felt except by a very few under especially favorable conditions.
0.17 - 1.4	3.0 - 3.9	II - III	II. Felt only by a few persons at rest, especially on upper floors of buildings. III. Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
1.4 - 9.2	4.0 - 4.9	IV - V	IV. Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rock noticeably. V. Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
9.2 - 34	5.0 - 5.9	VI - VII	VI. Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. VII. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
34 - 124	6.0 - 6.9	VII - IX	VIII. Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. IX. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
>124	7.0 and higher	VIII or higher	X. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. XI. Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly. XII. Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Source: Wald, Quitoriano, Heaton, and Kanamori, 1999.

Earthquake-related ground failure, due to liquefaction, is a common potential hazard from strong earthquakes in the central and eastern United States. Liquefaction occurs when seismic waves pass through saturated granular soil, distorting its granular structure, and causing some of the empty spaces between granules to collapse. Pore-water pressure may also increase sufficiently to cause the soil to behave like a fluid (rather than a soil) for a brief period and causing deformations. Liquefaction causes lateral spreads (horizontal movement commonly 10-15 feet,

but up to 100 feet), flow failures (massive flows of soil, typically hundreds of feet, but up to 12 miles), and loss of bearing strength (soil deformations causing structures to settle or tip). Sands blows were common following major New Madrid earthquakes in the central United States.

H.8 Drought

Drought is a normal part of virtually every climate on the planet, including areas of both high and low normal rainfall. Drought is the result of a natural decline in the expected precipitation over an extended period of time, typically one or more seasons in length. The severity of drought can be aggravated by other climatic factors, such as prolonged high winds and low relative humidity (FEMA, 1997). Drought is a complex natural hazard which is reflected in the following four definitions commonly used to describe it:

- Meteorological drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- Hydrological drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
- Agricultural drought is defined principally in terms of soil moisture deficiencies relative to water demands of plant life, usually crops.
- Socioeconomic drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall. They may also be called a water management drought.

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

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

Droughts may cause a shortage of water for human and industrial consumption, hydroelectric power, recreation, and navigation. Water quality may also decline and the number and severity of wildfires may increase. Severe droughts may result in the loss of agricultural crops and forest products, undernourished wildlife and livestock, lower land values, and higher unemployment.

The Palmer Drought Severity Index (PDSI) is often used to describe drought conditions over time as was done in Section 5.2. **Table H-6** below shows the PDSI drought classifications used. Negative numbers indicate drought conditions.

Table H-6
Palmer Drought Severity Index (PDSI) Classifications

Palmer Classifications	
4.0 or more	extremely wet
3.0 to 3.99	very wet
2.0 to 2.99	moderately wet
1.0 to 1.99	slightly wet
0.5 to 0.99	incipient wet spell
0.49 to -0.49	near normal
-0.5 to -0.99	incipient dry spell
-1.0 to -1.99	mild drought
-2.0 to -2.99	moderate drought
-3.0 to -3.99	severe drought
-4.0 or less	extreme drought

The U.S. Drought Monitor also records information on historical drought occurrence. The U.S. Drought Monitor categorizes drought on a D0-D4 scale as shown below in **Table H-7**:

Table H-7
U.S. Drought Monitor Classifications

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

H.9 Hail

Hail is an outgrowth of severe thunderstorms and develops within a low-pressure front as warm air rises rapidly in to the upper atmosphere and is subsequently cooled, as shown in **Figure H-7**, leading to the formation of ice crystals. These are bounced about by high-velocity

updraft winds and accumulate into frozen droplets, falling as precipitation after developing enough weight (FEMA, 1997).

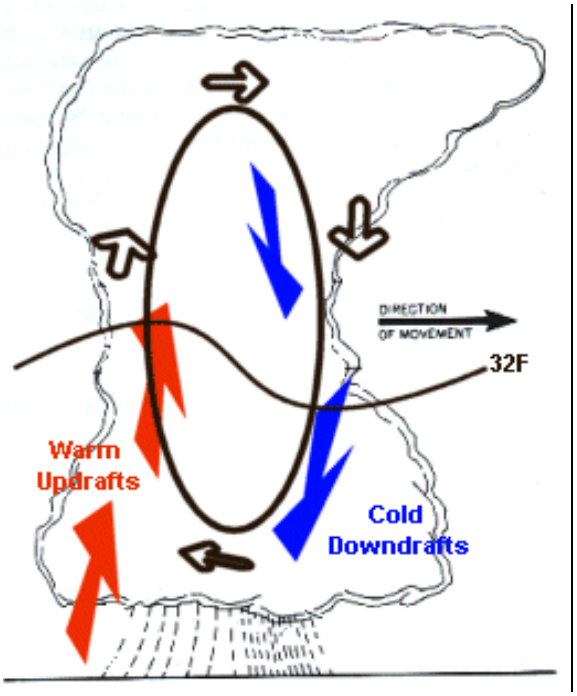


Figure H-7
How Hail Is Formed
Source: NWS, January 10, 2003

The National Weather Service (NWS) defines severe thunderstorms as those with downdraft winds in excess of 58 miles an hour and/or hail at least 3/4 inches in diameter. While only about 10 percent of thunderstorms are classified as severe, all thunderstorms are dangerous because they produce numerous dangerous conditions, including one or more of the following: hail, strong winds, lightning, tornadoes, and flash flooding (National Weather Service – Flagstaff).

Hailstorms occur most frequently during the late spring and early summer, when the jet stream moves northward across the Great Plains. During this period, extreme temperature changes occur from the surface up to the jet stream, resulting in the strong updrafts required for hail formation.

The size of hailstones varies and is related to the severity and size of the thunderstorm that produced it. The higher the temperatures at the Earth's surface, the greater the strength of the updrafts, and the greater the amount of time the hailstones are suspended, giving the hailstones more time to increase in size. Hailstones vary widely in size, as shown in **Table H-8**. Note that penny size (3/4 inches in diameter) or larger hail is considered severe.

Table H-8
Estimating Hail Size

Size	Inches in Diameter
Pea	1/4 inch
Marble/mothball	1/2 inch
Dime/Penny	3/4 inch
Nickel	7/8 inch
Quarter	1 inch
Ping-Pong Ball	1 1/2 inch
Golf Ball	1 3/4 inches
Tennis Ball	2 1/2 inches
Baseball	2 3/4 inches
Tea cup	3 inches
Grapefruit	4 inches
Softball	4 1/2 inches

Source: NWS, January 10, 2003.

Hail is sometimes measured with the Torro Hailstorm Intensity Scale are shown in **Table H-9**.

Table H-9
TORRO Hailstorm Intensity Scale

	Type	Intensity Category	Typical Hail Diameter (mm)*	Probable Kinetic Energy, J-m^2
H0	Hard Hail	5	0-20	No damage
H1	Potentially Damaging	5-**15**	>20	Slight general damage to plants, crops
H2	Significant	10-**20**	>100	Significant damage to fruit, crops, vegetation
H3	Severe	20-**30**	>300	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25-**40**	>500	Widespread glass damage, vehicle bodywork damage
H5	Destructive	30-**50**	>800	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-**60**		Bodywork of grounded aircraft dented, brick walls pitted
H7	Destructive	50-**75**		Severe roof damage, risk of serious injuries
H8	Destructive	60-**90**		(Severest recorded in the British Isles) Severe damage to aircraft bodywork
H9	Super Hailstorms	75-**100**		Extensive structural damage. Risk of severe or even fatal injuries to

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

Source: http://www.torro.org.uk/site/hscale.php

H.10 Wildfire

A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. They often begin unnoticed, spread quickly, and are usually signaled by dense smoke that may fill the area for miles around. Wildfires can be human-caused through acts such as arson or campfires, or can be caused by natural events such as lightning. Wildfires can be categorized into 3 types:

1. **Wildland fires** occur in very rural areas and are fueled primarily by natural vegetation. In Alabama, the vast majority of these fires occur on privately owned land. (94 percent of Alabama's forestlands are privately owned.) Wildland fire suppression is the responsibility of the State of Alabama, through the Alabama Forestry Commission.
2. **Interface fires** occur in areas where homes or other structures are endangered by the wildfires. The fires are fueled by both natural vegetation and man-made structures. These are often referred to as Wildland Urban Interface fires and form the majority of wildfires in Alabama. Interface fire suppression is the responsibility of the Alabama forestry Commission, working closely with local volunteer fire departments.
3. **Firestorms** occur during extreme weather (e.g., high temperatures, low humidity, and high winds) with such intensity that fire suppression is virtually impossible. These events typically burn until the conditions change or the fuel is exhausted.

The following two factors contribute significantly to wildfire behavior in Alabama:

1. **Fuel:** The type of fuel and the fuel loading (measured in tons of vegetative matter per acre) have a direct impact on fire behavior. Fuel types vary from light fuels (grass) to moderate fuels (Southern Rough) to heavy fuels (slash). The type of fuel and the fuel load determines the potential intensity of the wildfire and how much effort must be expended to contain and control it.
2. **Weather:** The most variable factor affecting wildfire behavior is weather. Important weather variables are precipitation, humidity, and wind. Weather events ranging in scale from localized thunderstorms to large cold fronts can have major effects on wildfire occurrence and behavior. Extreme weather, such as extended drought and low humidity can lead to extreme wildfire activity.

The frequency and severity of wildfires is dependent on weather and on human activity. Nearly all wildfires in Alabama are human caused (only 3 percent are caused by lightning), with arson and careless debris burning being the major causes of wildfires. If not promptly controlled, wildfires may grow into an emergency or disaster. During a severe fire situation in 1999-2000, 8 wildfires in Alabama were declared Fire Disaster Emergencies by FEMA. Even small fires can threaten lives, damage forest resources and destroy structures. Each year, wildfires threaten an average of 1,600 homes and structures, destroying around 115 and damaging about 44.

In addition to affecting people, wildfires may severely impact livestock. Wildfire also destroys livestock feed, such as hay bales and crops, inflicting a severe economic impact on farmers. The forest resources of Alabama feed one of the main industries of the state. Timber loss to fire creates an economic loss to both the private landowner and the state's economy. Wildfires in Alabama generally are moderate in intensity, resulting in destruction of undergrowth and some timber. With Alabama's long growing season, the soil surface layer of the forest recovers quickly, minimizing erosion and water quality impacts.

H.11 Extreme Temperatures

Extreme summer heat is the combination of very high temperatures and exceptionally humid conditions. If such conditions persist for an extended period of time, it is called a heat wave (FEMA, 1997). Temperatures above 100 are generally considered dangerous. Heat stress can be indexed by combining the effects of temperature and humidity, as shown in **Table H-10**. The index estimates the relationship between dry bulb temperatures (at different humidity) and the skin's resistance to heat and moisture transfer. The higher the temperature or humidity, the higher the apparent temperature. The major human risks associated with extreme heat are as follows:

- **Heatstroke:** Considered a medical emergency, heatstroke is often fatal. It occurs when the body's responses to heat stress are insufficient to prevent a substantial rise in the body's core temperature. While no standard diagnosis exists, a medical heatstroke condition is usually diagnosed when the body's temperature exceeds 105°F due to environmental temperatures. Rapid cooling is necessary to prevent death, with an average fatality rate of 15 percent even with treatment.
- **Heat Exhaustion:** While much less serious than heatstroke, heat exhaustion victims may complain of dizziness, weakness, or fatigue. Body temperatures may be normal or slightly to moderately elevated. The prognosis is usually good with fluid treatment.
- **Heat Syncope:** This refers to sudden loss of consciousness and is typically associated with people exercising who are not acclimated to warm temperatures. Causes little or no harm to the individual.
- **Heat Cramps:** May occur in people unaccustomed to exercising in the heat and generally ceases to be a problem after acclimatization.

Table H-10
Heat Index and Disorders

Danger Category		Heat Disorders	Apparent Temperatures (°F)
IV	Extreme Danger	Heatstroke or sunstroke imminent.	>130
III	Danger	Sunstroke, heat cramps, or heat exhaustion likely; heat stroke possible with prolonged exposure and physical activity.	105-130
II	Extreme Caution	Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and physical activity.	90-105
I	Caution	Fatigue possible with prolonged exposure and physical activity.	89-90

Source: FEMA, 1997; NWS, 1997.

In addition to affecting people, severe heat places significant stress on plants and animals. The effects of severe heat on agricultural products, such as cotton, may include reduced yields and even loss of crops (Brown and Zeiher, 1997). Similarly, cows may become overheated, leading to reduced milk production and other problems. (Garcia, September 2002).

Extreme cold consisting of long periods of below freezing temperatures sometimes accompany a winter storm. Prolonged exposure to the cold can cause frostbite or hypothermia and become life threatening. Frostbite occurs when the extremities become excessively cold, and hypothermia is a serious health condition where a person's body temperature falls below 90 degrees. Both conditions are influenced by wind conditions. Various wind chill indices have been developed to predict cold temperature's effect on humans. For instance, a temperature of 5 degrees will have a wind chill of -19 degrees if the wind is blowing 30 mph.

H.12 Lightning

Lightning typically occurs as a by-product of a thunderstorm. The action of rising and descending air in a thunderstorm separates positive and negative charges, with lightning the result of the buildup and discharge of energy between positive and negative charge areas (**Figure H-8**). Water and ice particles may also affect the distribution of the electrical charge. In only a few millionths of a second, the air near a lightning strike is heated to 50,000°F, a temperature hotter than the surface of the sun. Thunder is the result of the very rapid heating and cooling of air near the lightning that causes a shock wave.

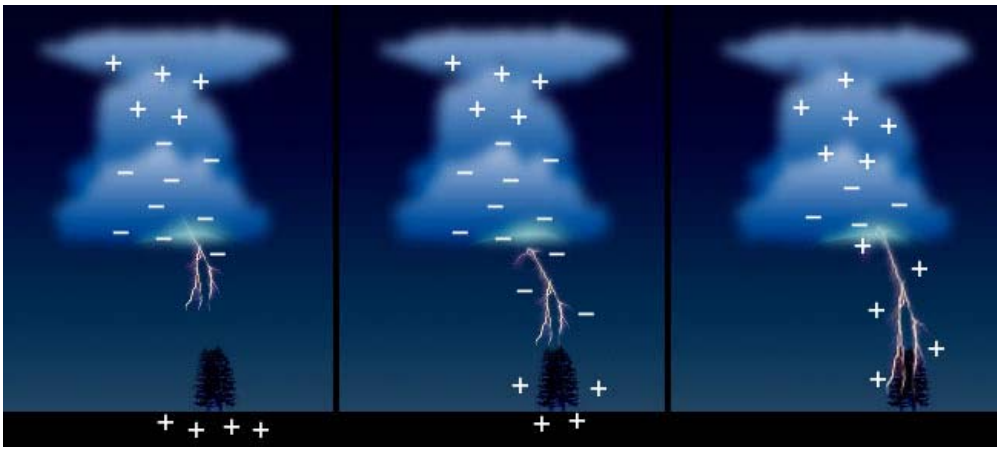


Figure H-8
Formation of Lightning
Source: University Corporation for Atmospheric Research (UCAR).

The hazard posed by lightning is significantly underrated. High winds, rainfall, and a darkening cloud cover are the warning signs for possible cloud-to-ground lightning strikes. While many lightning casualties happen at the beginning of an approaching storm, more than half of lightning deaths occur after a thunderstorm has passed. The lightning threat diminishes after the last sound of thunder, but may persist for more than 30 minutes. When thunderstorms are in the area, but not overhead, the lightning threat can exist when skies are clear. Lightning has been known to strike more than 10 miles from the storm in an area with clear sky above.

According to the National Oceanic and Atmospheric Administration (NOAA), an average of 20 million cloud-to-ground flashes has been detected every year in the continental United States. About half of all flashes have more than one ground strike point, so at least 30 million points on the ground are struck on the average each year. In addition, there are roughly 5 to 10 times as many cloud-to-cloud flashes as there are to cloud-to-ground flashes (NOAA, July 7, 2003).

Lightning is the most dangerous and frequently encountered weather hazard that most people in the United States experience annually. Lightning is the second most frequent killer in the U.S., behind floods and flash floods, with nearly 100 deaths and 500 injuries annually. These numbers are likely to underestimate of the actual number of casualties because of the under reporting of suspected lightning deaths and injuries. Cloud-to-ground lightning can kill or injure people by either direct or indirect means. The lightning current can branch off to strike a person from a tree, fence, pole, or other tall object. It is not known if all people are killed who are directly struck by the flash itself. In addition, electrical current may be conducted through the ground to a person after lightning strikes a nearby tree, antenna, or other tall object. The current also may travel through power lines, telephone lines, or plumbing pipes to a person who is in contact with an electric appliance, telephone, or plumbing fixture. Lightning may use similar processes to damage property or cause fires.

H.13 Dam Failure

Nature of the Hazard

A dam is a barrier constructed across a watercourse in order to store, control, or divert water. Dams are usually constructed of earth, rock, concrete, or mine tailings. The water impounded

behind a dam is referred to as the reservoir and is measured in acre-feet, with one acre-foot being the volume of water that covers one acre of land to a depth of one foot. Due to topography, even a small dam may have a reservoir containing many acre-feet of water. A dam failure is the collapse, breach, or other failure of a dam that causes downstream flooding. Dam failures may result from natural events, human-caused events, or a combination thereof. Due to the lack of advance warning, failures resulting from natural events, such as hurricanes, earthquakes, or landslides, may be particularly severe. Prolonged rainfall that produces flooding is the most common cause of dam failure (FEMA, 1997).

Dam failures usually occur when the spillway capacity is inadequate and water overtops the dam or when internal erosion through the dam foundation occurs (also known as piping). If internal erosion or overtopping cause a full structural breach, a high-velocity, debris-laden wall of water is released and rushes downstream, damaging or destroying whatever is in its path. Dam failures may result from one or more the following:

- Prolonged periods of rainfall and flooding (the cause of most failures);
- Inadequate spillway capacity which causes excess overtopping flows;
- Internal erosion erosions due to embankment or foundation leakage or piping;
- Improper maintenance;
- Improper design;
- Negligent operation;
- Failure of upstream dams;
- Landslides into reservoirs;
- High winds; and
- Earthquakes.

Dam safety, especially for small dams that are privately owned and poorly maintained, has been an ongoing hazard mitigation issue in the State of Alabama for the past decade. No state law currently exists to regulate any private dams or the construction of new private dams, nor do private dams require federal licenses or inspections. To date, there have been four attempts in the State of Alabama to pass legislation that would require inspection of dams on bodies of water over 50 acre-feet or dams higher than 25 feet. Enactment has been hampered by the opposition of agricultural interest groups and insurance companies. Approximately 1,700 privately owned dams would fit into the category proposed by the law.

H.14 Tsunamis

A tsunami is a series of long waves generated in the ocean by a sudden displacement of a large volume of water. Underwater earthquakes, landslides, volcanic eruptions, meteor impacts, or onshore slope failures can cause this displacement. Most tsunamis originate in the Pacific "Ring of Fire," the area of the Pacific bounded by the eastern coasts of Asia and Australia and the western coasts of North America and South America that is the most active seismic feature on earth. Tsunami waves can travel at speeds averaging 450 to 600 miles per hour. As a tsunami nears the coastline, its speed diminishes, its wavelength decreases, and its height increases greatly. Unusual heights have been known to be over 100 feet high. However, waves that are 10 to 20 feet high can be very destructive and cause many deaths and injuries.

After a major earthquake or other tsunami-inducing activity occurs, a tsunami could reach the shore within a few minutes. From the source of the tsunami-generating event, waves travel

outward in all directions in ripples. As these waves approach coastal areas, the time between successive wave crests varies from 5 to 90 minutes. The first wave is usually not the largest in the series of waves, nor is it the most significant. One coastal community may experience no damaging waves while another may experience destructive deadly waves. Some low-lying areas could experience severe inland inundation of water and deposition of debris of more than 1,000 feet inland.

Along the West Coast, the Cascadia Subduction Zone threatens California, Oregon, and Washington with devastating local tsunamis. Earthquakes of Richter scale magnitude of 8 or more have happened in the zone, and there is a 35 percent chance that an earthquake of this magnitude could occur before 2045 (estimated between the years 1995 and 2045).

Characteristics of Tsunamis

- **Debris**: As the tsunami wave comes ashore, it brings with it debris from the ocean, including man-made debris like boats, and as it strikes the shore, creates more on-shore debris. Debris can damage or destroy structures on land.
- **Distance from shore**: Tsunamis can be both local and distant. Local tsunamis give residents only a few minutes to seek safety and cause more devastation. Distant tsunamis originating in places like Chile, Japan, Russia, or Alaska can also cause damage.
- **High tide**: If a tsunami occurs during high tide, the water height will be greater and cause greater inland inundation, especially along flood control and other channels.
- **Outflow**: Outflow following inundation creates strong currents, which rip at structures and pound them with debris, and erode beaches and coastal structures.
- **Water displacement**: When a large mass of earth on the ocean bottom impulsively sinks or uplifts, the column of water directly above it is displaced, forming the tsunami wave. The rate of displacement, motion of the ocean floor at the earthquake epicenter, the amount of displacement of the rupture zone, and the depth of water above the rupture zone all contribute to the intensity of the tsunami.
- **Wave runup**: Runup is the height that the wave extends up to on steep shorelines, measured above a reference level (the normal height of the sea, corrected to the state of the tide at the time of wave arrival).
- **Wave strength**: Even small wave heights can cause strong, deadly surges. Waist-high surges can cause strong currents that float cars, small structures, and other debris.

Conditions That May Exacerbate or Mitigate the Effects of Tsunamis

The following factors will affect the severity of a tsunami:

- **Coastline configuration**: Tsunamis impact long, low-lying stretches of linear coastlines, usually extending inland for relatively short distances. Concave shorelines, bays, sounds, inlets, rivers, streams, offshore canyons, and flood control channels may create effects that result in greater damage. Offshore canyons can focus tsunami wave energy, and islands can filter the energy. The orientation of the coastline determines whether the waves strike head-on or are refracted from other parts of the coastline. Tsunami waves entering flood control channels could reach a mile or more inland, especially if it enters at high tide.
- **Coral reefs**: Reefs surrounding islands in the western North Pacific and the South Pacific generally cause waves to break, providing some protection to the islands.
- **Earthquake characteristics**: Several characteristics of the earthquake that generates the tsunami contribute to the intensity of the tsunami, including the area and shape of the rupture zone, and:
    - **Fault movement**: Strike-slip movements that occur under the ocean create little or no tsunami hazard. However, vertical movements along a fault on the seafloor displace water and create a tsunami hazard.
    - **Magnitude and depth**: Earthquakes with greater magnitude cause more intense tsunamis. Shallow-focus earthquakes also have greater capacity to cause tsunamis.
- **Human activity**: With increased development, property damage increases, multiplying the amount of debris available to damage or destroy other structures.

H.15 Sea Level Rise

Sea level rise is defined as the mean rise in sea level. It is thought to be caused by two factors: 1) rising ocean temperature - as the ocean warms, sea water expands in volume; 2) continental ice shelf melt - thus increasing the amount of water in the oceans. This leads to a greater area of land being inundated by sea water. In both of these cases, sea level rise is considered to be a slow onset hazard. However, rising waters may exacerbate the affects of a hazard event such as coastal flooding or a hurricane.

Rising sea levels contribute to the loss of coastal wetlands (which provide protective buffers from flood and hurricane events), beach erosion, population and property in low areas, coastal habitats and species. It may also impact property and tourism dollars. Further, with sea level rise, flooding and hurricane events have the potential to be more severe and impact a greater area; however, measuring the specific affects can be difficult.

Sea level rise is occurring at a global scale. However, it does not affect areas uniformly and will be more severe in some places. For example, low lying coastal areas are particularly vulnerable. Also, some areas are seeing a faster rise in water levels than other areas.

Given that 600 million people live in an area that is less that 10 meters or 33 feet above sea level and the coastal population has doubled in the last 50 years, there is a great vulnerability to sea level rise.

Appendix I
Overview of FEMA Mitigation Grant Programs

GRANT PROGRAM COMPARISON

Mitigation Division Grant Programs

During FY 2007, FEMA will offer five hazard mitigation assistance programs – the Hazard Mitigation Grant Program, the Pre-Disaster Mitigation program, the Flood Mitigation Assistance program, the Severe Repetitive Loss pilot program and the Repetitive Flood Claims program. Although all five programs have unique statutory authorities, program requirements and triggers for funding, all of the programs also have the common goal of providing funds to States and local communities to reduce the loss of life and property from future natural hazard events.

This chart will help illustrate the similarities and differences among the grant programs.

PROGRAM ELEMENT	HAZARD MITIGATION GRANT PROGRAM (HMGP)	FLOOD MITIGATION ASSISTANCE (FMA)	PRE-DISASTER MITIGATION (PDM)	REPETITIVE FLOOD CLAIMS (RFC)	SEVERE REPETITIVE LOSS (SRL) PILOT PROGRAM
Authorities	Authorized by §404 of the Robert T. Stafford Disaster Assistance and Emergency Relief Act (Stafford Act), 42 U.S.C. 5170c	Section 1366 of the National Flood Insurance Act of 1968 (NFIA, or "the Act"); 42 USC 4104c, as amended by the National Flood Insurance Reform Act of 1994 (NFIRA), Public Law 103-325; and the FIRA 2004, Public Law 108-264.	Authorized by §203 of the Robert T. Stafford Disaster Assistance and Emergency Relief Act (Stafford Act), 42 U.S.C. 5133	Section 1323 of the Act, 42 U.S.C. 4030, as amended by the FIRA 2004, Public Law 108-264.	Section 1361A of the Act, 42 U.S.C. 4102a, as amended by the FIRA 2004, Public Law 108-264.
Purpose	To provide funds to States, territories, Indian Tribal governments, and communities to significantly reduce or permanently eliminate future risk to lives and property from natural hazards. HMGP funds projects in accordance with priorities identified in State, Tribal or local hazard mitigation plans, and enables mitigation measures to be implemented during the recovery from a disaster.	To implement cost-effective measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the National Flood Insurance Program (NFIP).	To provide funds to states, territories, Indian Tribal governments, and communities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations.	To reduce or eliminate the long-term risk of flood damage to structures insured under the National Flood Insurance Program (NFIP) that have had one or more claim payment(s) for flood damages.	To reduce or eliminate the long-term risk of flood damage to severe repetitive loss residential properties and the associated drain on the National Flood Insurance Fund (NFIF) from such properties.
FY 2007 Priorities	HMGP priorities are set by the State under each disaster declaration that includes authorized HMGP assistance.	Mitigation activities that reduce or eliminate the long-term risk of flood damage to insured properties.	Provide funds to states, territories, Indian Tribal governments, and communities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event.	Acquisition of insured properties that have had one or more NFIP claims.	Mitigation activities that reduce or eliminate the long-term risk of flood damage to severe repetitive loss properties.

PROGRAM ELEMENT	HAZARD MITIGATION GRANT PROGRAM (HMGP)	FLOOD MITIGATION ASSISTANCE (FMA)	PRE-DISASTER MITIGATION (PDM)	REPETITIVE FLOOD CLAIMS (RFC)	SEVERE REPETITIVE LOSS (SRL) PILOT PROGRAM
Applicant Eligibility	(Grantee) State emergency management agencies or a similar State office (i.e., the office that has primary emergency management or floodplain management responsibility), the District of Columbia, the U.S. Virgin Islands, American Samoa, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, and Federally recognized Indian Tribal governments. Each State, Territory, or Tribal government shall designate one agency to serve as the Grantee for the program.	State emergency management agencies or a similar State office (i.e., the office that has primary emergency management or floodplain management responsibility), the District of Columbia, the U.S. Virgin Islands, American Samoa, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, and Federally-recognized Indian Tribal governments. Each State, Territory, or Tribal government shall designate one agency to serve as the Applicant for the program.	State emergency management agencies or a similar office (i.e., the office that has emergency management responsibility) of the state, the District of Columbia, the U.S. Virgin Islands, the Commonwealth of Puerto Rico, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands, as well as Federally recognized Indian Tribal governments	Same as FMA, but only those States or communities that cannot meet the requirements of the FMA program for either cost share or capacity to manage the activities.	Same as FMA.
Sub-Applicant Eligibility	(Applicant/Subgrantee) State and local governments, certain private non-profit organizations or institutions, Indian tribes or authorized Tribal organizations, and Alaska native villages or organizations. Individuals or businesses may not apply directly to the State or FEMA, but eligible local governments or private non-profit organizations may apply on their behalf.	State-level agencies, Federally recognized Indian Tribal governments, and local communities (to include State-recognized Indian Tribes, authorized Indian Tribal organizations, and Alaska Native villages) are eligible to apply to the Applicant for assistance. Private individuals and private non-profit (PNP) organizations are not eligible sub-applicants. However, a relevant State agency or local government may apply to the Applicant for assistance to mitigate private or private non-profit (PNP) structures.	State-level agencies including state institutions (e.g., state hospital or university); Federally recognized Indian Tribal governments; local governments, including state-recognized Indian tribes, authorized Indian Tribal organizations, and Alaska Native villages; public colleges and universities; and Indian Tribal colleges and universities. Private non-profit (PNP) organizations and private colleges and universities are not eligible Sub-applicants; however, an eligible, relevant State agency or local government may apply to the Applicant as the Sub-applicant for assistance to benefit the private entity.	Same as FMA, but only those States or communities that cannot meet the requirements of the Flood Mitigation Assistance (FMA) program for either cost share or capacity to manage the activities.	Same as FMA.

PROGRAM ELEMENT	HAZARD MITIGATION GRANT PROGRAM (HMGP)	FLOOD MITIGATION ASSISTANCE (FMA)	PRE-DISASTER MITIGATION (PDM)	REPETITIVE FLOOD CLAIMS (RFC)	SEVERE REPETITIVE LOSS (SRL) PILOT PROGRAM
Eligible Project Grants	**The HMGP can be used to fund projects to protect either public or private property, as long as the project fits within State and local government mitigation strategies to address areas of risk, and complies with program guidelines. Examples of projects include:** • Acquiring and relocating structures from hazard-prone areas • Retrofitting structures to protect them from floods, high winds, earthquakes, or other natural hazards • Constructing certain types of minor and localized flood control projects • Constructing safe rooms inside schools or other buildings in tornado-prone areas	**Project grants are available for:** • Acquisition, structure demolition, or structure relocation with the property deed restricted for open space uses in perpetuity; • Elevation of structures; • Dry floodproofing of non-residential structures; and, • Minor structural flood control activities. *All properties must be insured at the time of application.*	**Project grants are available for:** • Voluntary acquisition of real property (i.e. structures and land, where necessary) for open space conversion; • Relocation of public or private structures; • Elevation of existing public or private structures to avoid flooding; • Structural and non-structural retrofitting (e.g., storm shutters, hurricane clips, bracing systems) of existing public or private structures to meet/exceed applicable building codes; • Construction of safe rooms (tornado and severe wind shelters) for public and private structures that meet requirements in FEMA 320 and FEMA 361; • Hydrologic and Hydraulic studies/analyses, engineering studies and drainage studies for the purpose of project design and feasibility determination directly related to the proposed project; • Vegetation management for natural dune restoration, wildfire, or snow avalanche;	**Project grants are available for:** • Acquisition, structure demolition, or structure relocation with the property deed restricted for open space uses in perpetuity. *All properties must be insured at the time of application.*	**Project grants for flood mitigation activities such as:** • Acquisition, structure demolition, or structure relocation with the property deed restricted for open space uses in perpetuity; • Elevation of structures; • Dry floodproofing of historic structures; • Minor physical localized flood control projects; and, • Mitigation Reconstruction (Demolition and rebuilding of structures). *All properties must be insured at the time of application.*

PROGRAM ELEMENT	HAZARD MITIGATION GRANT PROGRAM (HMGP)	FLOOD MITIGATION ASSISTANCE (FMA)	PRE-DISASTER MITIGATION (PDM)	REPETITIVE FLOOD CLAIMS (RFC)	SEVERE REPETITIVE LOSS (SRL) PILOT PROGRAM
Eligible Project Grants (cont.)			• Protective measures for utilities (e.g. electricity, gas); water and sanitary sewer systems and/or infrastructure (e.g. roads and bridges); • Storm water management projects (e.g., culverts, retention basins) to reduce or eliminate long-term risk from flood hazards; and, • Localized flood control projects (certain ring levees, bank stabilization, floodwall systems) that are designed specifically to protect critical facilities and that do not constitute a section of a larger flood control system.		
Eligible Planning Grants	**Planning grants are available for:** Developing State, local, or Tribal mitigation plans Funding is available for up to 7% of total State grant	**Planning grants are available for:** Flood mitigation planning activities.	**Planning grants are available for:** • New Plan development • Plan upgrades • Comprehensive Plan Revisions	**Planning grants are <u>not</u> available**.	**Planning grants are <u>not</u> available.**
Eligible Management Costs	The HMGP provides three categories of "direct administrative costs": State management, Grantee administrative and Sub-grantee administrative.	Management Costs (also known as Technical Assistance Grants) allowed to support planning and project activities. See FY 2007 Program Guidance.	Management costs are available to support the planning and project sub-applications; Grantees up to 10%, Sub-grantees up to 5%.	Same as FMA, except only available for project activities. Grantees up to 10%, Sub-grantees up to 5%.	Management costs available to support project sub-applications. Grantees up to 10%, Sub-grantees up to 5%.

PROGRAM ELEMENT	HAZARD MITIGATION GRANT PROGRAM (HMGP)	FLOOD MITIGATION ASSISTANCE (FMA)	PRE-DISASTER MITIGATION (PDM)	REPETITIVE FLOOD CLAIMS (RFC)	SEVERE REPETITIVE LOSS (SRL) PILOT PROGRAM
Planning Requirements	Applicants must have a FEMA-approved local mitigation plan in accordance with 44 C.F.R. Parts 201.6 and 206.434(b) to be eligible to receive project grant funding under the HMGP. All activities submitted for consideration must be consistent with the Grantee's State/Tribal standard or enhanced hazard mitigation plan and the Applicant's Tribal/local/university hazard mitigation plan for the local jurisdiction in which the activity is located.	Local Flood Mitigation Plan meeting 44 CFR Part 78.5 required prior to award as condition of receiving project grants. **No State plan requirement.**	In order to receive project grants, all Applicants MUST have a FEMA-approved State/Tribal Standard or Enhanced hazard mitigation plan in accordance with 44 CFR Part 201 by the application deadline. In addition, all Sub-applicants MUST have a FEMA-approved hazard mitigation plan in accordance with 44 CFR Part 201 to be eligible to receive project grant funding under the PDM program. PDM planning grants will continue to be available to Applicants and Sub-applicants that do not have a FEMA-approved hazard mitigation plan to enable them to meet the planning requirements.	State/Tribal Standard or Enhanced hazard mitigation plan approved by FEMA in accordance with 44 C.F.R. Part 201 required by application deadline. **No local plan requirement.**	State/Tribal Standard or Enhanced hazard mitigation plan approved by FEMA in accordance with 44 C.F.R. Part 201 required by application deadline. **Local plan requirements will be addressed in Regulations**.
Application Process	The primary responsibility for selecting and administering mitigation activities resides with the State. The State sets mitigation priorities and selects project applications that are developed and submitted by local jurisdictions. Although individuals may not apply directly to the State for assistance, local governments may sponsor an application on their behalf. After its eligibility review, the State forwards applications consistent with State mitigation planning objectives to FEMA for review and approval.	Applicants must apply electronically via FEMA's *e*Grants application, available at https://portal.fema.gov. Sub-applicants apply directly to the State, Tribal, or Territory Applicant, who reviews and prioritizes sub-applications. The Applicant submits the Grant application with sub-applications to FEMA for review and approval.	Applicants must apply electronically via FEMA's eGrants application, available at https//:portal.fema.gov Sub-applicants apply directly to the State, Tribal, or Territory Applicant, who reviews and prioritizes sub-applications. The Applicant submits the Grant application with sub-applications to FEMA for review and approval.	Applicants must apply using paper OMB and FEMA forms, including the *e*Grants project sub-application, available at www.fema.gov/government/grant/rfc or www.grants.gov Sub-applicants apply directly to the State, Tribal, or Territory Applicant, who reviews and prioritizes sub-applications. The Applicant submits the Grant application with sub-applications to FEMA for review and approval.	To be described in Regulations.

PROGRAM ELEMENT	HAZARD MITIGATION GRANT PROGRAM (HMGP)	FLOOD MITIGATION ASSISTANCE (FMA)	PRE-DISASTER MITIGATION (PDM)	REPETITIVE FLOOD CLAIMS (RFC)	SEVERE REPETITIVE LOSS (SRL) PILOT PROGRAM
FY 2007 Available Funds	Federal funding under the HMGP is available following a major disaster declaration, if requested by the Governor. As of October 4, 2006, if a State has a FEMA-approved *Standard* State Mitigation plan, HMGP funds are available based on up to 15% for amounts not more than $2 Billion of the total of Public and Individual Assistance funds authorized for the disaster; up to 10% for amounts of $2 Billion to not more than $10 Billion; 7.5% for amounts of $10 Billion to not more than $35.333 Billion. If a State has a FEMA-approved *Enhanced* Mitigation plan, HMGP funds are available based on up to 20% of the total of Public and Individual Assistance funds authorized for the disaster.	$31 million	$100 Million	$10 million	FEMA is combining the $40 million FY 2006 and $40 million FY 2007 funds for a total of $80 million available.
Cost-Share Requirements	HMGP grant funds may be used to pay up to 75 % of the eligible project costs. The non-Federal match does not need to be cash; in-kind services or materials may be used.	Up to 75% Federal, minimum 25% non-Federal match required. Of the total non-Federal share, not more than one-half may be provided from in-kind contributions. Reduced match (10% non-Federal) allowed for States with approved State mitigation plans meeting the hazard mitigation planning requirements under section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5165) that specifies how the State reduces the number of repetitive loss properties.	Up to 75% Federal, minimum 25% non-Federal match required. Small, impoverished communities may be eligible for up to a 90% Federal cost-share.	Up to 100% Federal (no non-Federal match requirement).	Up to 75% Federal, minimum 25% non-Federal match required. Reduced match (10% non-Federal) allowed for States with approved State mitigation plans meeting the hazard mitigation planning requirements under section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5165) that specifies how the State reduces the number of repetitive loss properties.

PROGRAM ELEMENT	HAZARD MITIGATION GRANT PROGRAM (HMGP)	FLOOD MITIGATION ASSISTANCE (FMA)	PRE-DISASTER MITIGATION (PDM)	REPETITIVE FLOOD CLAIMS (RFC)	SEVERE REPETITIVE LOSS (SRL) PILOT PROGRAM
Distribution of Funds	The HMGP is administered by the State. The mitigation planning and application development process begins at the local level. States prioritize local applications and select projects for funding.	Allocations to eligible Applicants (State or territory) based on the number of NFIP-insured properties and the number of repetitive loss properties in each State or Territory. Set-aside amount reserved for Indian Tribal governments or communities that cannot apply through the State or Territory.	PDM grants are awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation(s) of funds.	Awarded nationally without reference to State allocations, quotas, or other formula-based allocation(s) of funds. Grants will be awarded in the order of the greatest savings to the NFIF. In 2007 this will be demonstrated by the verified benefit-cost analysis of submitted projects.	Allocations to eligible Applicants (State or territory) based on the number of severe repetitive loss properties in each State or Territory. Set-aside amount (10%) reserved for communities that receive little or no assistance under the allocation formula.
Application Deadline	Generally, applications must be submitted to the State for consideration within 12 months following a disaster declaration.	February 28, 2007, 11:59 p.m., Eastern Standard Time.	February 5, 2007, 11:59 p.m., Eastern Standard Time.	February 28, 2007, 5:00 p.m., Regional Office local time.	To be determined.
Application Review	• Eligibility and Completeness Review, including Benefit Cost Analysis (BCA), Engineering Feasibility and Mitigation Planning requirements • Environmental and Historic Preservation Reviews	• Eligibility and Completeness Review, including Benefit Cost Analysis (BCA), Engineering Feasibility and Mitigation Planning requirements • Environmental and Historic Preservation Reviews	• Eligibility and Completeness Review, including Applicant/Sub-Applicant eligibility, Benefit Cost Analysis (BCA), and Mitigation Planning requirements • National Ranking, FEMA will score all eligible planning and project sub-applications on the basis of predetermined, objective, quantitative factors to calculate a National Ranking Score.	• Eligibility and Completeness Review, Mitigation Planning requirement • Technical Review: including Benefit Cost Analysis (BCA), for Project and Property Ranking • Environmental and Historic Preservation Reviews	• Eligibility and Completeness Review, Mitigation Planning requirement • Technical Review: including Benefit Cost Analysis (BCA), Engineering Feasibility, for Project Ranking • Environmental and Historic Preservation Reviews

PROGRAM ELEMENT	HAZARD MITIGATION GRANT PROGRAM (HMGP)	FLOOD MITIGATION ASSISTANCE (FMA)	PRE-DISASTER MITIGATION (PDM)	REPETITIVE FLOOD CLAIMS (RFC)	SEVERE REPETITIVE LOSS (SRL) PILOT PROGRAM
Application Review (cont.)			• National Evaluation--National panels chaired by FEMA and composed of representatives from FEMA Headquarters and Regions, other Federal agencies, States, Federally-recognized Indian Tribal governments, Territories, and local governments convene to evaluate planning and project sub-applications on the basis of additional pre-determined qualitative factors. • Technical Review--FEMA conducts technical reviews for Benefit Cost and Engineering Feasibility on the highest scoring project sub-applications representing approximately 150% of available funding.		
Deadline to Award Funding	Generally, HMGP funding must be obligated to the State within 24 months of a disaster declaration. Obligated grant funds must be utilized within the period of performance for the grant award.	See FY 2007 Program Guidance.	Available until expended.	See FY 2007 Program Guidance.	To be determined.

APPENDIX J – Table of Local Capabilities

(NOTE: Data collection in progress)

Key:

Jurisdiction:	Name of jurisdiction (community)
Type:	Town, city or county
County:	County location
REG:	Regional Planning Council location
HMP:	Hazard mitigation plan approved by FEMA and adopted by jurisdiction
NFIP:	Member of the National Flood Insurance Program
CRS:	Community Rating System (CRS) Program class
ZON:	Zoning ordinance adopted
SUB REG:	Subdivision regulations adopted
BLDG CODE:	Building and technical codes adopted
BCEGS:	Building Code Effectiveness Grade Schedule rating assigned by ISO
PPC:	Property Protection Classification rating assigned by ISO
COMP PLAN:	A comprehensive plan to guide the community's long-term (10- to 25-year) growth and development has been adopted within the last five years or its preparation or update is in progress
CIP:	A mid-range (5- to 6-year) capital improvement plan or program guides the jurisdiction's annual capital improvements budget
MIT PROJ EXP:	The level of experience the community has in successfully implementing mitigation projects funded through one of FEMA's mitigation grant programs (0 = no experience, 1 = limited experience, 2 = moderate experience, 3 = significant experience)
PLNR:	The jurisdiction employs one or more, full-time professional planners on staff
ENGR:	The jurisdiction employs one or more, full-time professional engineers on staff
CFM:	The jurisdiction employs one or more, full-time Certified Floodplain Managers on staff
BLDG INSP:	The jurisdiction employs one or more, full-time building inspectors on staff
CAPAB RATING:	The community's overall capabilities to carry out mitigation activities, based on the above criteria (1 = very limited capabilities, 2 = limited capabilities, 3 = moderate capabilities, 4 = substantial capabilities, 5 = very substantial capabilities)

Alabama-Tombigee Regional Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Choctaw County Unincorporated	County	Choctaw	6	Y	Y														
Butler	City	Choctaw	6	Y	Y		N		N			N					N		
Gilbertown	Town	Choctaw	6	Y	Y		N		N			N					N		
Lisman	Town	Choctaw	6	Y	N		N		N			N					N		
Needham	Town	Choctaw	6	Y	N		N		N			N					N		
Pennington	Town	Choctaw	6	Y	Y		N		N			N					N		
Silas	Town	Choctaw	6	Y	Y		N		N			N					N		
Toxey	Town	Choctaw	6	Y	N		N		N			N					N		
Clarke County Unincorporated	County	Clarke	6	Y	Y		N	N	N			N			N	Y	N	N	
Coffeeville	Town	Clarke	6	Y	Y		N	N	N			N			N	N	N	N	
Fulton	Town	Clarke	6	Y	Y		N	N	N			N			N	N	N	N	
Grove Hill	Town	Clarke	6	Y	Y		Y	Y	Y			Y			N	N	N	Y	
Jackson	City	Clarke	6	Y	Y		Y	Y	Y			Y			N	N	N	Y	
Thomasville	Town	Clarke	6	Y	Y		Y	Y	Y			Y			N	N	N	Y	
Conecuh County Unincorporated	County	Conecuh	6	Y	Y		N	N	N			N			N	Y	N	N	
Castlebery	Town	Conecuh	6	Y	Y		N	N	N			N			N	N	N	N	
Evergreen	City	Conecuh	6	Y	Y		Y	Y	Y			Y			N	N	N	Y	
Repton	Town	Conecuh	6	Y	Y		Y	N	Y			N			N	N	N	N	
Dallas County Unincorporated	County	Dallas	6	Y	Y														
Orrville	Town	Dallas	6	Y	Y		Y		Y			N					N		
Selma	City	Dallas	6	Y	Y		Y		Y			N					N		

Alabama-Tombigee Regional Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Marengo County Unincorporated	County	Marengo	6	Y	Y		N	N	N			N			N	Y	N	N	
Dayton	Town	Marengo	6	Y	N		N	N	N			N			N	N	N	N	
Demopolis	City	Marengo	6	Y	Y		Y	Y	Y			Y			N	N	N	Y	
Faunsdale	Town	Marengo	6	Y	N		N	N	N			N			N	N	N	N	
Linden	City	Marengo	6	Y	Y		Y	Y	Y			Y			N	N	N	Y	
Myrtlewood	Town	Marengo	6	Y	N		N	N	N			N			N	N	N	N	
Providence	Town	Marengo	6	N	Y		N	N	N			N			N	N	N	N	
Sweet Water	Town	Marengo	6	Y	N		N	N	N			N			N	N	N	N	
Thomaston	Town	Marengo	6	Y	Y		N	N	N			N			N	N	N	N	
Monroe County Unincorporated	County	Monroe	6	Y	Y														
Beatrice	Town	Monroe	6	Y	N												N		
Excel	Town	Monroe	6	Y	N												N		
Frisco City	Town	Monroe	6	Y	N												N		
Monroeville	City	Monroe	6	Y	Y												N		
Vredenburgh	Town	Monroe	6	N	N												N		
Perry County Unincorporated	County	Perry	6	Y	N		N	N	N			N			N	Y	N	N	
Marion	City	Perry	6	Y	Y		Y	Y	Y			N			N	N	N	Y	
Uniontown	City	Perry	6	Y	N		Y	Y	Y			Y			N	N	N	Y	
Sumter County Unincorporated	County	Sumter	6	Y	Y		N	N	N			N			N	Y	N	N	
Cuba	Town	Sumter	6	Y	Y		Y	Y	Y			Y			N	N	N	Y	
Emelle	Town	Sumter	6	Y	N		N	N	N			N			N	N	N	N	
Epes	Town	Sumter	6	Y	N		N	N	N			N			N	N	N	N	

Alabama-Tombigee Regional Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Gainsville	Town	Sumter	6	Y	N		N	N	N			N			N	N	N	N	
Geiger	Town	Sumter	6	Y	Y		N	N	N			N			N	N	N	N	
Livingston	City	Sumter	6	Y	Y		Y	Y	Y			N			N	N	N	Y	
York	City	Sumter	6	Y	Y		Y	Y	Y			Y			N	N	N	Y	
Washington Co. Unincorporated	County	Washington	6	Y	Y														
Chatom	Town	Washington	6	Y	Y												N		
McIntosh	Town	Washington	6	Y	N												N		
Millry	Town	Washington	6	Y	Y												N		
Wilcox County Unincorporated	County	Wilcox	6	Y	Y		N	N	N			N			N	Y	N	N	
Camden	City	Wilcox	6	N	Y		Y	Y	Y			N			N	N	N	Y	
Oak Hill	Town	Wilcox	6	N	N		N	N	N			N			N	N	N	N	
Pine Apple	Town	Wilcox	6	Y	N		N	N	N			N			N	N	N	N	
Pine Hill	City	Wilcox	6	N	Y		Y	Y	Y			N			N	N	N	Y	
Yellow Bluff	Town	Wilcox	6	Y	N		N	N	N			N			N	N	N	N	

Birmingham Regional Planning Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Blount County Unincorporated	County	Blount	3	Y	Y		N		N			N					N		
Allgood	Town	Blount	3	Y	N		N		N								N		
Blountsville	Town	Blount	3	Y	Y		Y		Y			Y					N		
Cleveland	Town	Blount	3	Y	Y		N		N			N					N		
Hayden	Town	Blount	3	Y	N		N		N			N					N		

Birmingham Regional Planning Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Highland Lake	Town	Blount	3	Y	Y		Y		Y			N					N		
Locust Fork	Town	Blount	3	Y	N		N		N			Y					N		
Nectar	City	Blount	3	N	N		N		N			N					N		
Oneonta	City	Blount	3	Y	Y		Y		Y			Y					N		
Rosa	Town	Blount	3	Y	N		N		N			Y					N		
Snead	Town	Blount	3	Y	Y		N		N			Y					N		
Susan Moore	Town	Blount	3	Y	Y		N		N			N					N		
Chilton County Unincorporated	County	Chilton	3	Y	Y														
Clanton	City	Chilton	3	Y	Y												N		
Jemison	Town	Chilton	3	Y	Y												N		
Maplesville	Town	Chilton	3	Y	Y												N		
Thorsby	Town	Chilton	3	Y	Y												N		
Jefferson County Unincorporation	County	Jefferson	3	Y	Y		Y	Y	Y			Y					Y		
Adamsville	City	Jefferson	3	Y	Y		Y		Y			N					N		
Bessemer	City	Jefferson	3	N	Y		Y		Y			N					N		
Birmingham	City	Jefferson	3	Y	Y	6	Y		Y			Y					Y		
Brighton	Town	Jefferson	3	N	Y		N		N			N					N		
Brookside	Town	Jefferson	3	N	Y		N		N			N					N		
Cardiff	Town	Jefferson	3	N	Y		N		N			N					N		
Center Point	City	Jefferson	3	Y	Y		Y		Y			Y					N		
Clay	City	Jefferson	3	N	Y		Y		Y			Y					N		
Fairfield	City	Jefferson	3	Y	Y		Y		Y			N					N		
Fultondale	City	Jefferson	3	Y	Y		Y		Y			N					N		
Gardendale	City	Jefferson	3	N	Y		Y		Y			N					N		

Birmingham Regional Planning Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Graysville	City	Jefferson	3	Y	Y		Y		Y			N					N		
Homewood	City	Jefferson	3	Y	Y	9	Y		Y			Y					N		
Hoover	City	Jefferson	3	Y	Y	9	Y		Y			Y					N		
Hueytown	City	Jefferson	3	Y	Y		Y		Y			N					N		
Irondale	City	Jefferson	3	Y	Y		Y		Y			N					N		
Kimberly	City	Jefferson	3	N	Y		Y		Y			Y					N		
Leeds	City	Jefferson	3	N	Y		Y		Y			N					N		
Lipscomb	City	Jefferson	3	N	Y		N		N			N					N		
Maytown	Town	Jefferson	3	N	N		Y		Y			Y					N		
Midfield	City	Jefferson	3	Y	Y		N		Y			N					N		
Morris	City	Jefferson	3		Y		Y		Y			Y					N		
Mountain Brook	City	Jefferson	3	Y	Y		Y		Y			Y					N		
Mulga	City	Jefferson	3	N	Y		N		N			N					N		
North Johns	Town	Jefferson	3	N	N		N		N			N					N		
Pleasant Grove	City	Jefferson	3	Y	Y		Y		Y			N					N		
Sylvan Springs	City	Jefferson	3	Y	N		Y		Y			Y					N		
Tarrant	City	Jefferson	3	Y	Y		Y		Y			N					N		
Trafford	City	Jefferson	3	N	N		N		N			N					N		
Trussville	City	Jefferson	3	Y	Y		Y		Y			Y					Y		
Vestavia Hills	City	Jefferson	3	N	Y		Y		Y			Y					N		
Warrior	City	Jefferson	3	Y	Y		N		N			N					N		
West Jefferson	Town	Jefferson	3	N	N		N		N			N					N		
Shelby County Unincorporated	County	Shelby	3	Y	Y														
Calera	Town	Shelby	3	Y	Y		Y		Y			Y					N		
Chelsea	Town	Shelby	3	Y	Y		Y		Y			Y					N		

Birmingham Regional Planning Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Columbiana	Town	Shelby	3	Y	Y		Y		Y			Y					N		
Harpersville	Town	Shelby	3	Y	Y		Y		Y			Y					N		
Helena	City	Shelby	3	Y	Y		Y		Y			Y					N		
Indian Springs	Town	Shelby	3	N	Y		Y		Y			Y					N		
Montevallo	City	Shelby	3	Y	Y		Y		Y			Y					N		
Pelham	City	Shelby	3	Y	Y		Y		Y			Y					N		
Vincent	Town	Shelby	3	Y	Y		Y		Y			N					N		
Westover	Town	Shelby	3	Y	Y		N		Y			N					N		
Wilsonville	Town	Shelby	3	Y	Y		Y		Y			N					N		
Wilton	Town	Shelby	3	Y	N		N		Y			N					N		
St. Clair County Unincorporated	County	St. Clair	3	Y	Y														
Argo	Town	St. Clair	3	Y	N		N	Y	N			N					N		
Ashville	Town	St. Clair	3	Y	Y		Y	Y	Y			N					N		
Branchville	Town	St. Clair	3	N	Y		N	N	Y			Y					N		
Margaret	Town	St. Clair	3	Y	Y		N	N	N			N					N		
Moody	City	St. Clair	3	Y	Y		Y	Y	Y			Y					N		
Odenville	Town	St. Clair	3	Y	Y		N	N	N			N					N		
Pell City	City	St. Clair	3	Y	Y	8	Y	Y	Y			Y					N		
Ragland	Town	St. Clair	3	Y	Y		N	N	Y			N					N		
Riverside	Town	St. Clair	3	Y	Y		Y	N	Y			N					N		
Springville	Town	St. Clair	3	Y	Y		Y	Y	Y			Y					N		
Steele	Town	St. Clair	3	Y	Y		N	N	N			N					N		
Walker County Unincorporated	County	Walker	3	Y	Y														
Carbon Hill	City	Walker	3	Y	Y												N		

Birmingham Regional Planning Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Cordova	City	Walker	3	Y	Y												N		
Dora	City	Walker	3	Y	Y												N		
Eldridge	Town	Walker	3	Y	Y												N		
Jasper	City	Walker	3	Y	Y												N		
Kansas	Town	Walker	3	Y	Y												N		
Oakman	Town	Walker	3	Y	Y												N		
Parrish	Town	Walker	3	N	Y												N		
Sipsey	Town	Walker	3	Y	N												N		
Sumiton	City	Walker	3	N	N												N		

Central Alabama Regional Planning and Development Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Autauga County Unincorporated	County	Autauga	9	Y	Y		N										N		
Autaugaville	Town	Autauga	9	Y	Y												N		
Billingsley	Town	Autauga	9	Y	N												N		
Prattville	City	Autauga	9	Y	Y	8											N		
Elmore County Unincorporated	County	Elmore	9	Y	Y												N		
Coosada	Town	Elmore	9	Y	Y												N		
Deatsville	Town	Elmore	9	Y	N												N		
Eclectic	Town	Elmore	9	Y	N												N		
Millbrook	City	Elmore	9	Y	Y												N		
Tallassee	City	Elmore	9	Y	Y												N		

Central Alabama Regional Planning and Development Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Wetumpka	City	Elmore	9	Y	Y	9											N		
Montgomery Co. Unincorporated	County	Montgomery	9	Y	Y														
Montgomery	City	Montgomery	9	Y	Y		Y		Y			Y					N		
Pike Road	City	Montgomery	9	Y	Y		Y		Y			Y					N		

East Alabama Regional Planning and Development Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Calhoun County Unincorporated	County	Calhoun	4	Y	Y		N	N	N			N			N	Y	N	N	
Anniston	City	Calhoun	4	N	Y		Y	Y	Y			Y			Y	Y	Y	Y	
Blue Mountain	Town	Calhoun	4	Y	N												N		
Hobson City	Town	Calhoun	4	Y	Y		Y	Y	Y			N			N	N	N	N	
Jacksonville	City	Calhoun	4	Y	Y		Y	Y	Y			Y			Y	N	N	Y	
Ohatchee	Town	Calhoun	4	Y	Y		Y	Y	Y			Y			N	N	N	N	
Oxford	City	Calhoun	4	Y	Y		Y	Y	Y			N			N	N	N	Y	
Piedmont	City	Calhoun	4	Y	Y		Y	Y	Y			Y			N	N	N	Y	
Weaver	City	Calhoun	4	Y	Y		Y	Y	Y			Y			N	N	N	N	
Chambers County Unincorporated	County	Chambers	4	Y	Y														
Five Points	Town	Chambers	4	Y	N												N		
Lafayette	City	Chambers	4	N	Y												N		
Lanett	City	Chambers	4	Y	Y												N		

East Alabama Regional Planning and Development Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Valley	City	Chambers	4	N	Y												N		
Waverly	Town	Chambers	4	Y	N												N		
Cherokee County Unincorporated	County	Cherokee	4	Y	Y		N	N	N			N			N	Y	N	N	
Cedar Bluff	Town	Cherokee	4	Y	Y		Y	Y	N			Y			N	N	N	N	
Centre	City	Cherokee	4	Y	Y		Y	Y	Y			Y			N	N	N	N	
Gaylesville	Town	Cherokee	4	Y	Y		N	N	N			N			N	N	N	N	
Leesburg	Town	Cherokee	4	Y	Y							N			N	N	N	N	
Sand Rock	Town	Cherokee	4	Y	Y		N	N	N			N			N	N	N	N	
Clay County Unincorporated	County	Clay	4	Y			N	N	N			N			N	Y	N	N	
Ashland	City	Clay	4	Y	Y		Y	Y							N	N	N	N	
Lineville	Town	Clay	4	N	N		Y	Y							N	N	N	N	
Cleburne County Unincorporated	County	Cleburne	4	Y	N		N	N	N			N			N	Y	N	N	
Edwardsville	Town	Cleburne	4	N	N		N	N	N			N			N	N	N	N	
Fruithurst	Town	Cleburne	4	N	N		N	N	N			N			N	N	N	N	
Heflin	City	Cleburne	4	N	Y		Y	Y	N			Y			N	N	N	N	
Ranburne	Town	Cleburne	4	N	N		N	N	N			N			N	N	N	N	
Coosa County Unincorporated	County	Coosa	4	N	Y		N	N	N			N			N	Y	N	N	
Goodwater	Town	Coosa	4	Y	Y		Y	Y				N			N	N	N	N	
Kellyton	Town	Coosa	4	Y	N		N	N	N			N			N	N	N	N	
Rockford	Town	Coosa	4	Y	N		Y	Y	N			N			N	N	N	N	
Etowah County Unincorporated	County	Etowah	4	Y	Y		N	N	N			N			Y	Y	N	N	

East Alabama Regional Planning and Development Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Altoona	Town	Etowah	4	Y	Y		Y	Y	N			N			N	N	N	N	
Attalla	City	Etowah	4	Y	Y		Y	Y	Y			Y			N	N	N	Y	
Gadsden	City	Etowah	4	Y	Y		Y	Y	Y			Y			Y	Y	Y	Y	
Glencoe	City	Etowah	4	Y	Y		Y	Y	N			Y			N	N	N	N	
Hokes Bluff	Town	Etowah	4	Y	Y		Y	Y	N			Y			N	N	N	N	
Mountainboro	Town	Etowah	4	N	N		N	N	N			N			N	N	N	N	
Rainbow City	City	Etowah	4	Y	Y		Y	Y	Y			Y			N	N	N	Y	
Reece City	Town	Etowah	4	Y	Y		Y	Y	N			Y			N	N	N	N	
Ridgeville	Town	Etowah	4	N	N		N	N	N			N			N	N	N	N	
Sardis City	Town	Etowah	4	Y	Y		N	N	N			N			N	N	N	N	
Southside	City	Etowah	4	Y	Y		Y	Y	Y			Y			N	N	N		
Walnut Grove	Town	Etowah	4	N	Y		Y	Y	N			N			N	N	N	N	
Randolph County Unincorporated	County	Randolph	4	Y	Y		N	N	N			N			N	Y	N	N	
Roanoke	City	Randolph	4	Y	Y		Y	Y	Y			Y			N	N	N	Y	
Wadley	Town	Randolph	4	Y	Y		Y	Y				N			N	N	N	N	
Wedowee	Town	Randolph	4	Y	Y		Y	Y				N			N	N	N	N	
Woodland	Town	Randolph	4	N	N		N	N	N			N			N	N	N	N	
Talladega County Unincorporated	County	Talladega	4	Y	Y		N	N	N			N			N	Y	N	N	
Bon Air	Town	Talladega	4	N	Y		N	N	N			N			N	N	N	N	
Childersburg	City	Talladega	4	Y	Y		Y	Y	Y			Y			N	N	N	Y	
Gantts Quarry	Town	Talladega	4	Y	Y												N		
Lincoln	Town	Talladega	4	Y	Y		Y	Y	Y			Y			N	N	N	N	
Munford	Town	Talladega	4	Y	N		N	N	N			N			N	N	N	N	

East Alabama Regional Planning and Development Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Oak Grove	Town	Talladega	4	Y	N		Y	Y	N			Y			N	N	N	N	
Sylacauga	City	Talladega	4	Y	Y		Y	Y	Y			Y			Y	N	Y	Y	
Talladega	City	Talladega	4	Y	Y		Y	Y	Y			Y			N	N	N	Y	
Talladega Springs	Town	Talladega	4	N	N		N	N	N			N			N	N	N	N	
Waldo	Town	Talladega	4	N	N		N	N	N			N			N	N	N	N	
Tallapoosa County Unincorporated	County	Tallapoosa	4	Y	Y		N	N	Y			N			N	Y	N	Y	
Alexander City	City	Tallapoosa	4	N	Y		Y	Y	Y			Y			Y		N	Y	
Camp Hill	Town	Tallapoosa	4	N	Y		N	N	N			N			N	N	N	N	
Dadeville	City	Tallapoosa	4	Y	Y		Y	Y				Y			N	N	N	Y	
Daviston	Town	Tallapoosa	4	N	Y		N	N	N			N			N	N	N	N	
Goldville	Town	Tallapoosa	4	N	Y		N	N	N			N			N	N	N	N	
Jacksons' Gap	Town	Tallapoosa	4	N	Y		N	N	N			N			N	N	N	N	
New Site	Town	Tallapoosa	4	N	Y		N	N	N			N			N	N	N	N	

Lee-Russell Council of Governments

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Lee County Unincorporated	County	Lee	10	Y	Y														
Auburn	City	Lee	10	Y	Y												N		
Loachapoka	Town	Lee	10	N	N												N		
Opelika	City	Lee	10	Y	Y												N		
Russell County Unincorporated	County	Russell	10	Y	Y														
Hurtsboro	Town	Russell	10	Y	Y												N		
Phenix City	City	Russell	10	Y	Y												N		

North-Central Alabama Regional Council of Governments

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Cullman County Unincorporated	County	Cullman	11	Y	Y		N	Y	Y			N		3	N	Y	Y	Y	5
Baileyton	Town	Cullman	11	Y	N		N	N	N	6		N		0	N	N	N	N	1
Colony	Town	Cullman	11	Y	Y		N	N	N	5		N		0	N	N	N	N	1
Cullman	City	Cullman	11	Y	Y		Y	Y	Y	3		Y	Y	3	N	Y	Y	Y	5
Dodge City	Town	Cullman	11	Y	Y		N	N	N	5		N	N	2	N	N	N	N	3
Fairview	Town	Cullman	11	Y	N				N	3		N	N	2	N	N	N	N	4
Garden City	Town	Cullman	11	Y	Y		Y	Y	N	7		Y	N	1	N	N	N	N	3
Good Hope	Town	Cullman	11	Y	Y		Y	Y	Y	5		Y	Y	2	N	Y	N	Y	4
Hanceville	City	Cullman	11	Y	Y		Y	Y	Y	3		Y	N	3	N	Y	N	N	5
Holly Pond	Town	Cullman	11	Y	Y		N	Y	N	6		Y	N	2	N	N	N	N	4

North-Central Alabama Regional Council of Governments

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
South Vinemont	Town	Cullman	11	Y	Y		Y	N	Y	3		N	N	2	N	N	N		4
West Point	Town	Cullman	11	Y	Y					6				1	N	N	N	N	2
Lawrence County Unincorporated	County	Lawrence	11	Y	Y		N	Y	N			N	N	3	N	Y		N	5
Courtland	Town	Lawrence	11	Y	Y		N	N	N	6		N	N	0	N	Y	N	N	3
Hillsboro	Town	Lawrence	11	Y	Y		Y	N	Y	6		Y	N	3	N	N	N	Y	3
Moulton	City	Lawrence	11	Y	Y		Y	Y	Y	4		Y	N	3	N	Y	N	Y	4
North Courtland	Town	Lawrence	11	Y	Y		Y	N	N	9		Y	N	2	N	N	N	N	3
Town Creek	Town	Lawrence	11	Y	Y		N	N	N	7		N	N	3	N	N	N	N	4
Morgan County Unincorporated	County	Morgan	11	Y	Y		N							3	N				5
Decatur	City	Morgan	11	Y	Y	10	Y	Y	Y	3		Y	Y	3	Y	Y	Y	Y	5
Eva	Town	Morgan	11	N	N		N	N	N	5		N	N	1	N	N	N	N	3
Falkville	Town	Morgan	11	Y	Y		Y	Y	Y	6		Y	N	2	N	Y	N	Y	4
Hartselle	City	Morgan	11	Y	Y		Y	Y	Y	5		Y	N	3	Y	Y	N	Y	5
Priceville	Town	Morgan	11	N	Y		Y	Y	Y	4		Y	N	1	N	Y	N	Y	4
Somerville	Town	Morgan	11	N	Y		N	N	N	5		N	N	2	N	N	N	N	4
Trinity	Town	Morgan	11	Y	Y		Y	Y	Y	5		Y	N	3	N	Y	N	Y	5

Northwest Alabama Council of Local Governments

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Colbert County Unincorporated	County	Colbert	1	Y	Y		N	N	N			N			N	Y	N	N	
Cherokee	City	Colbert	1	Y	Y		N	N	N			N			N	N	N	N	
Leighton	Town	Colbert	1	Y	Y		N	N	N			N			N	N	N	N	
Littleville	Town	Colbert	1	Y	Y		N	N	N			N			N	N	N	N	
Muscle Shoals	City	Colbert	1	Y	Y		Y	Y	Y			N			N	N	N	Y	
Sheffield	Town	Colbert	1	Y	Y		Y	Y	Y			N			N	N	N	Y	
Tuscumbia	City	Colbert	1	Y	Y		Y	Y	Y			Y			N	N	N	Y	
Franklin County Unincorporated	County	Franklin	1	Y	Y		N	N	N			N			N	Y	N	N	
Hodges	Town	Franklin	1	NY	Y		N	N	N			N			N	N	N	N	
Phil Campbell	Town	Franklin	1	N	Y		N	N	N			N			N	N	N	N	
Red Bay	City	Franklin	1	N	Y		N	N	N			N			N	N	N	N	
Russellville	City	Franklin	1	N	Y		Y	Y	Y			N			N	N	N	Y	
Vina	Town	Franklin	1	N	N		N	N	N			N			N	N	N	N	
Lauderdale County Unincorporated	County	Lauderdale	1	L	Y														
Anderson	Town	Lauderdale	1	Y	Y												N		
Florence	City	Lauderdale	1	Y	Y												N		
Killen	Town	Lauderdale	1	Y	Y												N		
Lexington	Town	Lauderdale	1	Y	Y												N		
Rogersville	Town	Lauderdale	1	Y	Y												N		
St. Florian	Town	Lauderdale	1	Y	Y												N		
Waterloo	Town	Lauderdale	1	Y	Y												N		

Northwest Alabama Council of Local Governments

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Marion County Unincorporated	County	Marion	1	Y	Y		N	N	N			N			N	Y	N	N	
Bear Creek	Town	Marion	1	N	N		N	N	N			N			N	N	N	N	
Brilliant	Town	Marion	1	Y	N		N	N	N			N			N	N	N	N	
Guin	Town	Marion	1	Y	Y		N	N	N			N			N	N	N	N	
Gu-Win	Town	Marion	1	N	N		N	N	N			N			N	N	N	N	
Hackleburg	Town	Marion	1	Y	N		N	N	N			N			N	N	N	N	
Hamilton	City	Marion	1	Y	Y		N	N	Y			N			N	N	N	Y	
Winfield	City	Marion	1	Y	Y		Y	Y	N			N			N	N	N	N	
Winston County Unincorporated	County	Winston	1	Y	Y		N	N	N			N			N	Y	N	N	
Addison	Town	Winston	1	Y	N		N	N	N			N			N	N	N	N	
Arley	Town	Winston	1	Y	N		N	N	N			N			N	N	N	N	
Double Springs	Town	Winston	1	Y	Y		N	N	N			N			N	N	N	N	
Haleyville	City	Winston	1	Y	Y		Y	Y	Y			N			N	N	N	N	
Lynn	Town	Winston	1	Y	N		N	N	N			N			N	N	N	N	
Natural Bridge	Town	Winston	1	Y	N		N	N	N			N			N	N	N	N	
Nauvoo	Town	Winston	1	N	N		N	N	N			N			N	N	N	N	

South Alabama Regional Planning Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Baldwin County Unincorporated	County	Baldwin	8	Y	Y	6	Y										Y		
Bay Minette	City	Baldwin	8	Y	Y												N		
Daphne	City	Baldwin	8	Y	Y												N		
Elberta	Town	Baldwin	8	Y	N												N		
Fairhope	City	Baldwin	8	Y	Y												N		
Foley	City	Baldwin	8	Y	Y												Y		
Gulf Shores	Town	Baldwin	8	Y	Y	9											Y		
Loxley	Town	Baldwin	8	Y	Y												N		
Orange Beach	City	Baldwin	8	Y	Y	7											Y		
Robertsdale	City	Baldwin	8	Y	Y												N		
Silverhill	Town	Baldwin	8	Y	Y												N		
Spanish Fort	City	Baldwin	8	Y	Y												Y		
Summerdale	Town	Baldwin	8	Y	Y												N		
Escambia County Unincorporated	County	Escambia	8	Y	Y												N		
Atmore	City	Escambia	8	Y	Y	8	Y		Y			Y					N		
Brewton	City	Escambia	8	Y	Y		Y		Y			Y					N		
East Brewton	City	Escambia	8	Y	Y		Y		Y			N					N		
Flomaton	Town	Escambia	8	Y	Y		N		N			N					N		
Pollard	Town	Escambia	8	N	Y		N		N			N					N		
Riverview	Town	Escambia	8	N	Y		N		N			N					N		
Mobile County Unincorporated	County	Mobile	8	Y	Y	10	N										Y		
Bayou La Batre	City	Mobile	8	Y	Y		Y		Y			N					N		
Chickasaw	City	Mobile	8	Y	Y		Y		Y			Y					N		

South Alabama Regional Planning Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Citronelle	City	Mobile	8	Y	Y		Y		Y			Y					N		
Creola	City	Mobile	8	N	Y		Y		Y			Y					N		
Dauphin Island	Town	Mobile	8	Y	Y	8	Y		Y			Y					N		
Mobile	City	Mobile	8	Y	Y		Y		Y			Y					N		
Mount Vernon	Town	Mobile	8	Y	Y		Y		Y			N					N		
Prichard	City	Mobile	8	N	Y		Y		Y			Y					N		
Saraland	City	Mobile	8	Y	Y		Y		Y			N					N		
Satsuma	City	Mobile	8	Y	Y		Y		Y			N					N		

South Central Alabama Development Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Bullock County Unincorporated	County	Bullock	5	Y	Y									3	N	Y	N	N	
Midway	Town	Bullock	5	Y	N										N	N	N	N	
Union Springs	City	Bullock	5	Y	Y									3	N	N	N	N	
Butler County Unincorporated	County	Butler	5	Y	Y									3	N	Y	N	Y	
Georgiana	City	Butler	5	Y	Y										N	N	N	N	
Greenville	City	Butler	5	Y	Y									3	Y	Y	N	Y	
McKenzie	Town	Butler	5	Y	Y										N	N	N	N	
Crenshaw County Unincorporated	County	Crenshaw	5	Y	Y									3	N	Y	N	Y	
Brantley	Town	Crenshaw	5	Y	Y		Y		N			N			N	N	N	N	

South Central Alabama Development Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Dozier	Town	Crenshaw	5	Y	Y		N		N			N			N	N	N	N	
Glenwood	Town	Crenshaw	5	Y	Y		N		N			N			N	N	N	N	
Luverne	City	Crenshaw	5	Y	Y		Y		Y			Y		3	N	N	N	N	
Petrey	Town	Crenshaw	5	N	N		N		N			N			N	N	N	N	
Rutledge	Town	Crenshaw	5	Y	N		Y		N			N			N	N	N	N	
Lowndes County Unincorporated	County	Lowndes	5	Y	Y									3	N	Y	N	N	
Benton	Town	Lowndes	5	N	Y										N	N	N	N	
Fort Deposit	Town	Lowndes	5	Y	Y										N	N	N	N	
Gordonville	Town	Lowndes	5	Y	N										N	N	N	N	
Hayneville	Town	Lowndes	5	Y	N										N	N	N	N	
Lowndesboro	Town	Lowndes	5	Y	N										N	N	N	N	
Mosses	Town	Lowndes	5	Y	N										N	N	N	N	
White Hall	Town	Lowndes	5	Y	Y										N	N	N	N	
Macon County Unincorporated	County	Macon	5	Y	Y									3	N	Y	N	Y	
Franklin	Town	Macon	5	Y	N										N	N	N	N	
Notasulga	Town	Macon	5	Y	Y										N	N	N	N	
Shorter	Town	Macon	5	Y	Y										N	N	N	N	
Tuskegee	City	Macon	5	Y	Y									3	N	Y	N	N	
Pike County Unincorporated	County	Pike	5	Y	Y									3	N	Y	N	Y	
Banks	Town	Pike	5	N	N										N	N	N	N	
Brundidge	City	Pike	5	Y	Y									3	N	N	N	N	
Goshen	Town	Pike	5	Y	Y										N	N	N	N	

South Central Alabama Development Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Troy	City	Pike	5	Y	Y									3	Y	Y	N	Y	

Southeast Alabama Regional Planning and Development Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Barbour County Unincorporated	County	Barbour	77	Y	Y														
Baker Hill	Town	Barbour	7	Y	N												N		
Blue Springs	Town	Barbour	7	Y	Y												N		
Clayton	Town	Barbour	7	Y	Y												N		
Clio	Town	Barbour	7	Y	Y												N		
Eufaula	City	Barbour	7	Y	Y												N		
Louisville	Town	Barbour	7	Y	Y												N		
Coffee County Unincorporated	County	Coffee	7	Y	Y												N		
Elba	City	Coffee	7	Y	Y												N		
Enterprise	City	Coffee	7	N	Y												N		
Kinston	City	Coffee	7	N	Y												N		
New Brockton	City	Coffee	7	N	Y												N		
Covington County Unincorporated	County	Covington	7	Y	Y														
Andalusia	City	Covington	7	N	Y												N		
Babbie	Town	Covington	7	N	N												N		
Carolina	Town	Covington	7	Y	N												N		
Florala	City	Covington	7	N	Y												N		

Southeast Alabama Regional Planning and Development Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Gantt	Town	Covington	7	Y	Y												N		
Heath	Town	Covington	7	N	N												N		
Horn Hill	Town	Covington	7	N	N												N		
Libertyville	Town	Covington	7	N	N												N		
Lockhart	Town	Covington	7	Y	N												N		
Onycha	Town	Covington	7	N	N												N		
Opp	City	Covington	7	N	Y												N		
Red Level	Town	Covington	7	N	Y												N		
River Falls	Town	Covington	7	N	Y												N		
Sanford	Town	Covington	7	N	N												N		
Dale County Unincorporated	County	Dale	7	Y	Y														
Ariton	Town	Dale	7	N	Y		N		N			N					N		
Clayhatchee	Town	Dale	7	N	Y		N		N			N					N		
Daleville	City	Dale	7	N	Y		Y		Y			N					N		
Grimes	Town	Dale	7	N	N		N		N			N					N		
Level Plains	Town	Dale	7	N	Y		N		N			N					N		
Midland City	City	Dale	7	N	Y		N		N			N					N		
Napier Field	Town	Dale	7	N	N		N		N			N					N		
Newton	Town	Dale	7	N	Y		N		N			N					N		
Ozark	City	Dale	7	N	Y		Y		Y			Y					N		
Pinckard	Town	Dale	7	N	Y		N		N			N					N		
Geneva County Unincorporated	County	Geneva	7	Y	Y												N		
Black	Town	Geneva	7	N	N												N		
Coffee Springs	City	Geneva	7	Y	Y												N		

Southeast Alabama Regional Planning and Development Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Geneva	City	Geneva	7	Y	Y												N		
Hartford	City	Geneva	7	Y	Y												N		
Malvern	Town	Geneva	7	Y	Y												N		
Samson	City	Geneva	7	Y	Y												N		
Slocomb	City	Geneva	7	Y	Y												N		
Henry County Unincorporated	County	Henry	7	Y	Y														
Abbeville	City	Henry	7	Y	Y		Y										N		
Haleburg	Town	Henry	7	Y	N												N		
Headland	City	Henry	7	Y	Y												N		
Newville	Town	Henry	7	Y	Y												N		
Houston County Unincorporated	County	Houston	7	Y	Y														
Ashford	Town	Houston	7	Y	Y												N		
Avon	Town	Houston	7	Y	Y												N		
Columbia	Town	Houston	7	Y	Y												N		
Cottonwood	Town	Houston	7	Y	Y												N		
Cowarts	Town	Houston	7	Y	Y												N		
Dothan	City	Houston	7	Y	Y												Y		
Gordon	Town	Houston	7	Y	Y												N		
Kinsey	Town	Houston	7	Y	Y												N		
Madrid	Town	Houston	7	Y	Y												N		
Rehobeth	Town	Houston	7	Y	Y												N		
Taylor	City	Houston	7	Y	Y												N		
Webb	Town	Houston	7	Y	Y												N		

Top of Alabama Regional Council of Governments

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Dekalb County Unincorporated	County	Dekalb	12	Y	Y														
Collinsville	Town	Dekalb	12	Y	Y												N		
Crossville	City	DeKalb	12	Y	Y												N		
Fort Payne	City	DeKalb	12	Y	Y												N		
Fyffe	Town	DeKalb	12	Y	Y												N		
Geraldine	Town	DeKalb	12	Y	Y												N		
Hammondville	Town	DeKalb	12	Y	Y												N		
Henagar	City	DeKalb	12	Y	Y												N		
Ider	Town	DeKalb	12	Y	Y												N		
Lakeview	Town	DeKalb	12	Y	N												N		
Mentone	Town	DeKalb	12	Y	Y												N		
Pine Ridge	Town	DeKalb	12	Y	N												N		
Powell	Town	DeKalb	12	Y	Y												N		
Rainsville	City	DeKalb	12	Y	Y												N		
Shiloh	Town	DeKalb	12	Y	N												N		
Sylvania	Town	DeKalb	12	Y	Y												N		
Valley Head	Town	DeKalb	12	Y	Y												N		
Jackson County Unincorporated	County	Jackson	12	Y	Y														
Dutton	Town	Jackson	12	Y	Y												N		

Top of Alabama Regional Council of Governments

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Hollywood	Town	Jackson	12	Y	Y												N		
Hytop	Town	Jackson	12	N	N												N		
Langston	Town	Jackson	12	Y	Y												N		
Paint Rock	Town	Jackson	12	Y	Y												N		
Pisgah	Town	Jackson	12	Y	N												N		
Pleasant Groves	Town	Jackson	12	N	N												N		
Scottsboro	City	Jackson	12	Y	Y												N		
Section	Town	Jackson	12	Y	N												N		
Skyline	Town	Jackson	12	Y	N												N		
Stevenson	Town	Jackson	12	Y	Y												N		
Woodville	Town	Jackson	12	Y	Y												N		
Limestone County Unincorporated	County	Limestone	12	Y	Y														
Ardmore	Town	Limestone	12	Y	Y												N		
Athens	City	Limestone	12	Y	Y	10											N		
Elkmont	Town	Limestone	12	Y	N												N		
Lester	Town	Limestone	12	N	N												N		
Mooresville	Town	Limestone	12	N	Y												N		
Madison County Unincorporated	County	Madison	12	Y	Y														
Gurley	Town	Madison	12	Y	Y		N		N			N					N		
Huntsville	City	Madison	12	Y	Y	7	Y		Y			Y					Y		
Madison	City	Madison	12	Y	Y		Y		Y			Y					Y		
New Hope	Town	Madison	12	Y	Y		Y		Y			Y					N		
Owens Cross Roads	Town	Madison	12	Y	Y		N		N			N					N		

Top of Alabama Regional Council of Governments

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Triana	Town	Madison	12	Y	Y		N		N			N					N		
Marshall County Unincorporated	County	Marshall	12	Y	Y														
Alabaster	City	Marshall	12	Y	Y		Y		Y			Y					N		
Albertville	City	Marshall	12	Y	Y		Y	Y	Y			N					N		
Arab	City	Marshall	12	Y	Y		Y	Y	Y			Y					N		
Boaz	City	Marshall	12	Y	Y		Y	Y	Y			N					N		
Douglas	Town	Marshall	12	Y	N		N	Y	N			N					N		
Grant	Town	Marshall	12	Y	Y		N	Y	N			N					N		
Gunterville	City	Marshall	12	Y	Y												N		
Union Grove	Town	Marshall	12	N	N		N	Y	N			N					N		

West Alabama Regional Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Bibb County Unincorporated	County	Bibb	2	Y	Y		N	N	Y			N	N	Y	N	Y	N	N	
Brent	Town	Bibb	2	Y	Y		N	N	N		6	N	N	N	N	N	N	N	
Centreville	City	Bibb	2	Y	Y		Y	N	Y		7/9	N	N	N	N	N	N	Y	
West Blockton	Town	Bibb	2	Y	Y		Y	N	N		6/10	N	N	N	N	N	N	N	
Woodstock	Town	Bibb	2	Y	Y		Y	Y	Y		5/6	N	Y	N	N	N	N	Y	
Fayette County Unincorporated	County	Fayette	2	Y	Y		N	N	N			N	N	Y	N	Y	N	N	
Belk	Town	Fayette	2	Y	Y		N	N	N		6/9	N	N	N	N	N	N	N	

West Alabama Regional Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Berry	Town	Fayette	2	Y	Y		N	N	N		6/9	N	N	N	N	N	N	N	
Fayette	City	Fayette	2	Y	Y		Y	Y	Y		4	N	Y	Y	N	N	N	Y	
Glen Allen	Town	Fayette	2	Y	Y		N	N	N		6/9	N	N	N	N	N	N	N	
Greene County Unincorporated	County	Greene	2	Y	Y		N	Y	N			Y	Y	N	N	Y	Y	N	
Boligee	Town	Greene	2	Y	Y		N	N	N		7	N	N	N	N	N	N	N	
Eutaw	City	Greene	2	N	Y		Y	Y	Y		6/9	N	N	N	N	N	N	Y	
Forkland	Town	Greene	2	Y	N		N	N	N		8	N	N	N	N	N	N	N	
Union	Town	Greene	2	Y	N		N	N	N		7/9	N	N	N	N	N	N	N	
Hale County Unincorporated	County	Hale	2	N	Y		N	N	N			N	N	Y	N	Y	Y	N	
Akron	Town	Hale	2	N	N		N	N	Y		5	N	Y	N	N	N	N	N	
Greensboro	City	Hale	2	Y	Y		Y	N	Y		6	N	N	N	N	N	N	Y	
Moundville	Town	Hale	2	Y	Y		Y	Y	Y		6/9	Y	N	N	N	N	N	Y	
Newbern	Town	Hale	2	Y	N		Y	N	N		9	N	N	N	N	N	N	N	
Lamar County Unincorporated	County	Lamar	2	Y	Y		N	N	N			Y	N	Y	N	Y	N	N	
Beaverton	Town	Lamar	2	Y	Y		N	N	N		9/10	N	N	N	N	N	N	N	
Detroit	Town	Lamar	2	Y	Y		N	N	N		5/9	Y	N	N	N	N	N	N	
Kennedy	Town	Lamar	2	Y	Y		N	N	Y		6/9	Y	N	N	N	N	N	N	
Millport	Town	Lamar	2	Y	Y		Y	Y	N		5/9	Y	Y	Y	N	N	N	N	
Sulligent	Town	Lamar	2	Y	Y		N	N	N		6	N	N	N	N	N	N	N	
Vernon	City	Lamar	2	Y	Y		Y	Y	Y		5/9	N	N	N	N	N	N	Y	
Pickens County Unincorporated	County	Pickens	2	Y	Y		N	Y	N			N	N	Y	N	Y	Y	N	
Aliceville	City	Pickens	2	Y	Y		Y	Y	Y		5	Y	N	N	N	N	N	Y	

West Alabama Regional Commission

Jurisdiction	Type	County	REG	HMP	NFIP	CRS	ZON	SUB REG	BLDG CODE	BCEGS	PPC	COMP PLAN	CIP	MIT PROJ EXP	PLNR	ENGR	CFM	BLDG INSP	CAPAB RATING
Carrollton	Town	Pickens	2	Y	Y		Y	Y	Y		5/7	N	N	N	N	N	N	N	
Ethelsville	Town	Pickens	2	Y	Y		N	N	N		7/9	N	N	NN	N	N	N	N	
Gordo	Town	Pickens	2	Y	Y		Y	Y	Y		6	N	Y	N	N	N	N	Y	
McMullen	Town	Pickens	2	Y	N		N	N	N		5	N	N	N	N	N	N	N	
Memphis	Town	Pickens	2	Y	N		N	N	N		9/9	N	N	N	N	N	N	N	
Pickensville	Town	Pickens	2	Y	Y		N	N	N		7/9	N	N	N	N	N	N	N	
Reform	Town	Pickens	2	Y	Y		Y	Y	Y		5	N	N	N	N	N	N	Y	
Tuscaloosa County Unincorporated	County	Tuscaloosa	2	Y	Y		N	Y	N			N	N	Y	Y	Y	Y	N	
Brookwood	Town	Tuscaloosa	2	Y	Y		Y	Y	Y		6	N	Y	N	N	N	Y	Y	
Coaling	Town	Tuscaloosa	2	Y	Y		Y	N	N		5	N	N	N	N	N	N	N	
Coker	Town	Tuscaloosa	2	Y	Y		N	N	N		6/9	N	N	N	N	N	N	N	
Lake View	Town	Tuscaloosa	2	Y	Y		Y	Y	Y		5	N	Y	N	N	N	N	Y	
Northport	City	Tuscaloosa	2	Y	Y		Y	Y	Y		4/9	Y	N	N	Y	Y	N	Y	
Tuscaloosa	City	Tuscaloosa	2	Y	Y		Y	Y	Y		3	Y	Y	Y	Y	Y	N	Y	
Vance	Town	Tuscaloosa	2	Y	Y		Y	Y	Y		7/9	N	N	N	N	N	N	Y	

Appendix K
Comments Received From SHMT and FEMA

Appendix L
Meeting Minutes

RECORD OF MEETING

SUBJECT:	**First State Hazard Mitigation Team (SHMT) Meeting**
	Alabama Statewide Hazard Mitigation Plan Update/THIRA
	Alabama Emergency Management Agency
DATE:	July 10, 2012
PLACE:	Alabama State Emergency Operations Center, Clanton, AL
ATTENDEES:	See Sign-In Sheet

Jeff Byard (AEMA) began the meeting by thanking attendees for coming and recognizing Debbie Peery, State Hazard Mitigation Officer from the Alabama Emergency Management Agency (AEMA) for her service and pending retirement. Ms. Peery then greeted the State Hazard Mitigation Team (SHMT) and facilitated introductions. The meeting was then turned over to Nathan Slaughter, Project Manager from the project consultant, Atkins[1].

Mr. Slaughter began by ensuring each of the attendees had presentation handouts and then reviewed the general agenda of the presentation. He stated that the meeting would begin by reviewing hazard mitigation plan update items and then would transition to the Threat and Hazard Identification and Risk Assessment (THIRA) portion of the meeting. Mr. Slaughter then gave a brief overview of hazard mitigation, including a definition and discussion about the major types of mitigation techniques. He discussed the legislative requirements for hazard mitigation plans which include the Disaster Mitigation Act of 2000 and the Flood Insurance Reform Act of 2004. After the overview, Mr. Slaughter discussed the major steps involved in the plan update.

The steps include updating the risk assessment, state capability assessment, coordination of local planning efforts, and mitigation strategy. He then provided more details about each of the specific steps and indicated how the objectives would be accomplished.

For each update requirement, Mr. Slaughter reminded the SHMT of the associated responsibilities and potential new developments in each. For example, Mr. Slaughter reminded the group about the State's mitigation strategy and associated goals, objectives, and strategies. He reiterated that each strategy would need to be updated by the appropriate agency (to be completed later in the planning process). A copy of the existing goals, objectives, and mitigation strategies were provided. Mr. Slaughter also took time to discuss to Risk Assessment and asked agencies to comment on potential new developments. Some highlights from that discussion are as follows:

[1] Joretta Simmons and Caroline Cunningham were also in attendance from the Atkins team.

- Floodplain Management (ADECA)
    - Risk MAP (ADECA)
    - New flood maps
    - Mapping non-regulatory products by watershed
    - Still no dam safety program in place
- Forestry Commission/Wildfire
    - Model for timber damage
    - Southern Wildfire Risk Assessment data (not included in previous plan)
    - Working to encourage wind resistant tree species (all they use, what they encourage) (based on a University of Florida study for hurricane wind)
    - Encouraging community plans for hazardous tree management
    - Alabama Forest service has free software
        - A recent hire was made to help promote that
    - Jacksonville (has a hazardous tree management plan in place)
- Geological Survey/Earthquakes, Landslides, Sinkholes, Subsidence
    - New landslide susceptibility map
    - New GIS data
    - Available for download on the website

Following the project overview, Mr. Slaughter discussed the roles and responsibilities for the project consultant team, AEMA and the SHMT. The roles and responsibilities were defined as follows:

Atkins:

- Provide technical assistance
    - Planning guidance
    - Federal compliance
- Data collection and analysis
    - Risk assessment
    - Capability assessment
    - Summarize results/report findings
- Facilitate State Hazard Mitigation Team meetings, workshops and open public meetings
- Document the plan update process
- Plan preparation
- THIRA assistance

AEMA:

- Project management
    - Central point of contact (Debbie Peery)
    - Communication and coordination with the SHMT and FEMA
- Active participation in the planning process
    - Data collection and exchange

    - Public awareness and stakeholder involvement
    - Attend SHMT meetings
    - Mitigation strategy development and update
    - Plan review and feedback
- THIRA development

SHMT:

- Active participation in the planning process for State HMP Update
    - Data collection and exchange
    - Public awareness and stakeholder involvement
    - Attend SHMT meetings
    - Mitigation strategy development and update
    - Plan review and feedback
- Active participation in THIRA process
    - Complete assignments
    - Attend SHMT and THIRA-related meetings
    - Provide data as needed

Mr. Slaughter then presented the project schedule. He indicated that the draft of the updated plan was due to FEMA in April 2013, but the THIRA needed to complete by December 31, 2012. It was determined that the next meeting of the SHMT would be in September 2012 (date to be determined). Atkins stated that they would be working on the Risk Assessment and Capability Assessment updates until the next meeting. The results from those two updated assessments would be presented at the next SHMT meeting in September.

Lastly, Mr. Slaughter and Ms. Peery explained that the state would be pursing Enhanced Plan status. The State attempted this in the last update but was unsuccessful. However, given the tornado events and increased capabilities, the state feels well-poised for Enhanced Plan approval. Ms. Peery emphasized that although it is extra work, it would results in an extra five percent of post-disaster monies to use towards mitigation.

Mr. Slaughter then asked the team if there were any questions or concerns regarding the update process. No questions were raised, but Ms. Peery asked that information from the Track Report from the tornado incidents be included in the State Hazard Mitigation Plan Update.

This concluded the majority of the State Hazard Mitigation Plan Update presentation. A brief intermission ensued prior to beginning the THIRA portion of the meeting.

Patrick Tritz (AEMA Planning Manager/THIRA lead) led the THIRA portion of the meeting assisted by Nathan Slaughter (Atkins Project Manager). The two began by explaining that THIRA is a new requirement application to all states, tribes, and urban centers. It is being conducted to meet the National Preparedness Goal. Next, Mr. Tritz provided an overview of the five step THIRA process. Mr. Tritz then elaborated on the THIRA components, explaining the 31 core capabilities, scenarios, and stakeholders to be included. Mr. Tritz then took a moment to

ask the SHMT to review the stakeholder list and determine if anyone else should be included. Two suggestions were given: U.S. National Guard and military organizations.

Mr. Tritz also explained that consulting members would be utilized to ensure that the report was robust and valid. The consulting members will be brought in after the initial process for input on the hazards, scenarios, and impacts.

Mr. Tritz then provided some simplified examples for clarification:

- Example: Hurricane
    - Worst case scenario: cat 4 or cat 5 hypothetically
    - Under each core capability, define something (if applicable)
    - Infrastructure – causeway washed out; even worse during tourist season (memorial through labor day)

- Example: Mass fatalities
    - IND (dirty bomb) goes off in downtown Birmingham
    - Current recovery team can only process 20 fatalities per team
    - Worst case is 500 fatalities (all of these numbers are fictitious)
    - Gap identified

Mr. Tritz explained that the final product would be given to Homeland Security Department in order to complete the State Preparedness Report (SPR). The SPR goes towards the National Preparedness Goal and will be analyzed by federal officials. The federal officials can then begin to identify gaps and weakness (at a national level) which will help to efficiently fund emergency preparedness project.

Following the explanation, Mr. Tritz explained the timeline and next steps. It was again noted that the THIRA must be complete by the end of November in order to allow for review. In order to meet this deadline, additional meetings (beyond the SHMT meetings) will be necessary. Two additional meetings are proposed, resulting in monthly communication amongst the participants.

Lastly, Mr. Tritz reviewed the assignment with the Team. This included:

- Reviewing the list of hazards (natural, technological, human-caused) to ensure completeness

- Identifying the top three to five hazards for each stakeholder

- Determining the worst case scenario for each of the capabilities

- Provide any completed documentation to date (completed THIRAs, other risk assessments, exercises, etc)

These tasks are to be completed by the August THIRA conference call/webinar.

Several questions and comments were raised regarding the THIRA process:

Question: Is THIRA part of State Hazard Mitigation Plan?

- Not officially, but a decision was made to combine the effort since the team was essentially the same

Question: Is THIRA tied to funding

- THIRA results (at a national level) will help guide funding.
- THIRA is not tied specifically tied to mitigation monies (unlike the hazard mitigation plan)

Question: Does the federal government provides feedback on report/any recommendations from THIRA

- Not as this time, but some recommendations may be uncovered during the state's planning process

Question: Are they looking for worst case scenario or most likely scenarios?

- Alabama is looking for the worst case scenario for hazards likely to impact us Note from audience

Question: Does the Threat Assessment include Military Installations

- They have an opportunity to participate in the state's processn
- They also have to do their own because much of theirs would include classified information that cannot be addressed publically from a security standpoint

Question: Clarify the homework to identify hazards

- Each agency will identify their top three to five hazards
- Each list will then be compared to come up with a master list of top hazards for the State

Comment: After you decide on core capabilities, you look at exercising them

- Required to do a 3-year training plan
- Used for gap analysis

Comment: Solar Flares should be considered as a hazard

- Noted that the hazard list was up for discussion and that would be determined at the next meeting.

Comment: Health and Agricultural Departments are conducting a similar THIRA process

RECORD OF MEETING

SUBJECT:	**Second State Hazard Mitigation Team (SHMT) Meeting**
	Alabama Statewide Hazard Mitigation Plan Update
	Alabama Emergency Management Agency
DATE:	September 25, 2012; 10AM - Noon
PLACE:	Alabama Power Company, Clanton, AL
ATTENDEES:	See Sign-In Sheet

The presenters at this meeting included Mrs. Kelli Alexander (AEMA), Mr. Nathan Slaughter (Atkins), and Ms. Caroline Cunningham (Atkins). The purpose was to inform the State Hazard Mitigation Team (SHMT; also known as "the Team") of the plan update progress, reaffirm the Alabama Mitigation Strategy, and instruct the Team on how to update existing actions and complete new ones.

Kelli Alexander, Alabama State Hazard Mitigation Officer, began the meeting by thanking attendees for their attendance. She then provided a summary of the 1971 Alabama Tornadoes Disaster report including dollars spent and application status. In addition, she informed the Team that Hurricane Isaac had recently been given a disaster declaration. The meeting was then turned over to Nathan Slaughter, Project Manager from Atkins.[1]

Mr. Slaughter reviewed the handouts with the team including the 1) agenda, 2) presentation slides, 3) existing mitigation strategy and goals, 4) existing mitigation action plan, 5) mitigation action worksheet. Introductions from each of the attendees followed. Next, Mr. Slaughter reviewed the presentation agenda, and discussed the project schedule. He also provided a brief mitigation refresher for any audience members. Next, Caroline Cunningham, Atkins consultant, provided an update on the Risk Assessment.

Ms. Cunningham reviewed updates to the risk assessment document including minor edits. Next she reviewed the currently included hazards and led a discussion to include additional hazards suggested by FEMA. The suggested hazards to include were sea level rise, coastal erosion, and rogue waves. The Team voted whether to include, exclude, or defer each hazard. The Team voted to exclude rogue waves due to the very low frequency, isolated risk, and limited mitigation opportunities. They voted to include coastal erosion and defer sea level rise until the next meeting when more information could be provided. It should be noted that coastal

[1] Joretta Simmons was also in attendance from the Atkins team.

erosion was an existing hazard but was reviewed for FEMA/official purposes and profiled in detail for the 2013 plan update.

Next, Ms. Cunningham reviewed the new maps and newly reported events since the last plan update. She also reviewed the most current NFIP repetitive loss and severe repetitive loss claim data. Qualitative hazard ranking conclusions were also addressed. The Team had a lively discussion about this topic and made some changes. Drought was moved to high from moderate under probability of occurrence. Earthquake was discussed and it was decided that it should be tabled until someone from the GSA was present at the next meeting (it is currently ranked high under probability of occurrence and mitigation potential). As a final portion of the risk assessment update, Ms. Cunningham reviewed population statistics and changes using 2010 Census data.

Mr. Slaughter then resumed speaking. He reviewed the capability assessment update process, noting the areas where input from the Team would be necessary. He also provided an update on NFIP and CRS community participation. Additionally, he provided an update of the update status of local level plans. The meeting then transitioned to the mitigation strategy section.

Mr. Slaughter asked the Team to review and reaffirm the 2010 state mitigation strategy statement. After reviewing the statement, the team had several comments regarding the syntax of it and decided to revise it and vote at the upcoming meeting. The same conclusion was made regarding the state goals and objectives.

Finally, Mr. Slaughter discussed how to the update the existing mitigation actions and how to create new mitigation actions. For existing actions, an excel spreadsheet would be sent to each SHMT member containing actions relevant to that member's agency. Members were to provide an update on the 2013 implementation status and any other relevant updates.

This concluded the majority of the State Hazard Mitigation Plan Update presentation. A brief intermission ensued prior to beginning the THIRA portion of the meeting.

RECORD OF MEETING

SUBJECT:	**Third State Hazard Mitigation Team (SHMT) Meeting**
	Alabama Statewide Hazard Mitigation Plan Update
	Alabama Emergency Management Agency
DATE:	January 15, 2013; 10AM - Noon
PLACE:	Alabama State EOC, Clanton, AL
ATTENDEES:	See Sign-In Sheet

The presenters at this meeting included Mr. Art Faulkner (AEMA), Mrs. Kelli Alexander (AEMA), and Mr. Nathan Slaughter (Atkins). The purpose was to inform the State Hazard Mitigation Team (SHMT; also known as "the Team") of the plan update progress, reaffirm the Alabama Mitigation Strategy, and address hazard rankings.

Art Faulkner, AEMA Director, began the meeting by stressing the importance of creating a robust mitigation plan for the state. He thanks attendees for the contributions on the plan and asked them to continue their participation in the process. Next, Kelli Alexander, Alabama State Hazard Mitigation Officer, provided a summary of the 1971 Alabama Tornadoes Disaster report including dollars spent and application status. The meeting was then turned over to Nathan Slaughter, Project Manager from Atkins.[1]

Mr. Slaughter reviewed the handouts with the team including the 1) agenda, 2) presentation slides, and 3) existing mitigation strategy and goals. Introductions from each of the attendees followed. Next, Mr. Slaughter reviewed the presentation agenda and discussed the project schedule.

Next, items regarding the hazard rankings were addressed. At the previous SHMT meeting, there was some disagreement arose regarding the ranking of earthquake. However, no expert representative for the Geological Survey of Alabama (GSA) was in attendance, so the item was tabled until this meeting. Hazard rankings were discussed from two angles in accordance with the plan: 1) probability of occurrence and 2) mitigation potential. Mr. Slaughter reviewed the definition of each ranking as it exists in the current plan before turning the floor over to the GSA expert.

The existing rankings for earthquake were reported as high for both ranking factors. The GSA expert, Sandy Ebersole, then relayed earthquake hazard information to the SHMT including

[1] Caroline Cunningham and Joretta Simmons were also in attendance from the Atkins team.

historical occurrence, probability, and magnitude. A discussion ensued which led to some adjustment of the ranking.

For the probability of occurrence ranking, the SHMT voted to adjust one of the ranking criteria, hazard history, to refer to *significant* hazard events, not just all occurrences. The SHMT felt this adjustment was necessary in order to proceed with proper rankings. Without this adjustment, several hazards, including lightning and drought, would be moved to the high ranking. While these hazards do occur frequently, many of these events do not inflict significant damage or disruption which may mislead readers.

Following this adjustment, a vote was taken on the earthquake, drought and sinkhole hazards. A majority of the SHMT voted to move the earthquake ranking for probably of occurrence to moderate (down from high). Next, a motion was also made to consider moving drought to a high ranking due to frequency of occurrence. Input from the Office of Water Resources (OWR), which handles the drought hazard, was provided to the SHMT. Following the adjustment of the hazard ranking scheme, the SHMT voted to leave drought as a moderate ranked hazard for probability of occurrence. Sinkhole was also addressed. Again, the GSA expert provided information, noting that Northern Alabama is particularly susceptible and occurrences are frequent but other parts of the state do not experience this. The SHMT voted to keep sinkhole as a low ranked hazard for probably of occurrence since most occurrences are not significant, inflicting widespread damage. Lastly, coastal surge (which is addressed as part of flood) was recognized as a low ranking.

The second ranking item is mitigation potential. In the past this item (mitigation specifically) has been looked at in general terms. This was adjusted to look at mitigation activities being conducted at the state level. With this in mind, the SHMT considered the earthquake and wildfire hazards. The SHMT voted to move earthquake from a high to moderate ranking due to the fact that very little mitigation has occurred and most measures would not be cost effective in the state. The SHMT also considered moving wildfire from low to moderate. After hearing expert opinion from the state forestry commission, the SHMT voted to leave wildfire as a hazard with low mitigation potential.

Next, Mr. Slaughter led the team in the sea level rise hazard discussion. FEMA recommended adding this hazard, and the team requested that more information be presented at this meeting. The consultant team did a thorough literature review to determine research on sea level rise in Alabama. Mr. Slaughter presented these findings as well as video simulations of inundation areas due to sea level rise. Following this information, a lively discussion ensued. The SHMT ultimately voted to include it, noting that it is a low probability hazard with a low mitigation potential. The group also noted that it is a low risk hazard that only impacts two counties in the state. Further, very limited data and information exists, preventing the ability to fully address the hazard.

Next, Mr. Slaughter led the group through the mitigation strategy discussion. The SHMT addressed the wording of the mitigation strategy statement and voted to change “risk” to “vulnerability”. It now reads:

> *“Reduce **vulnerability** through collaborative actions and policies that limit the effects of natural hazards on the citizens of Alabama and physical assets.”*

This was also done for Goal 2 and Goal 4.

As a result of this, Goal 2 and Goal 4 were nearly identical as shown below:

- Goal 2: Reduce the State of Alabama’s **vulnerability** from natural hazards.
    - Objective 2.1: Reduce the threat of injury and loss of life from natural hazards
    - Objective 2.2: Reduce natural hazard impact on individual properties, businesses and public facilities
    - Objective 2.3: Reduce natural hazard impact on natural resources
    - Objective 2.4: Reduce vulnerability to RL and SRL properties Statewide

- Goal 4: Reduce the State of Alabama’s **vulnerability** to natural hazards.
    - Objective 4.1: Improve the state’s ability to prepare for a natural or man-made disaster
    - Objective 4.2: Improve the state’s ability to respond to a natural or man-made disaster

This is made it necessary to delete Goal 4. The objectives were absorbed into Goal 2, meaning that former Objective 4.1 became Objective 2.5, and former Objective 4.2 became Objective 2.6.

Mr. Slaughter also reviewed the need to submit any outstanding state mitigation action status updates. He also encouraged attendees to submit any new mitigation actions if they had not done so already.

Lastly, Mr. Slaughter let attendees know that a full draft would be available for their review by the end of January and also reviewed the remainder of the plan tasks.

This concluded the third State Hazard Mitigation Plan Update presentation.

Appendix M
Alabama State Hazard Mitigation Team Meeting Sign-In Sheets

2012/2013 Alabama State Hazard Mitigation Plan Update
State Hazard Mitigation Team (SHMT) Meeting

July 10, 2012
1:00 - 3:00 PM

ATKINS

Name	Agency	Title	Phone Number	E-mail Address
(Todd) Robert Till	Dept. of Public Safety	H.P. Operations Officer	334-833-2231 334-353-1963	robert.till@dps.alabama.gov
REGINA DINGER	AL BRD OF LIC PEOPLS	EXEC DIRECTOR	334-242-5021	regina.dinger@bels.alabama.gov
Sandy Ebersole	Geological Survey of AL	Geologist	205-247-3613	sebersole@gsa.alabama.gov
Kelli Alexander	AEMA	EM Planner, Sr	(205) 280-2269	kelli.alexander@ema.alabama.gov
Julie Schoening	American Red Cross	State EM Program Manager	205-907-9452	julie.schoening@redcross.org
Robert Baylis	Alabama EMA	Mitigation Planner	205-280-2453	robert.baylis@ema.alabama.gov
Les Morrissette	AL DOT	Asst State Maintenance Engineer	334-242-6883	morrissettel@dot.state.al.us
Sam Guerrera	AEMA	EXERCISE OFFICER	205-280-2474	Samg@ema.alabama.gov

Name	Agency	Title	Phone Number	E-mail Address
MARIEKE PENDLEY	AEMA	PLANNER SR.	205-280-2283	MARIEKE.PENDLEY@EMA.ALABAMA.GOV
Patrick Tritz	AEMA	Plng. Chief	205-280-2270	patrick.tritz@ema.alabama.gov.
Paul Smelley	DHR	EWS/ES	334-353-3387	paul.smelley@dhr.alabama.gov
Donald Brooks	ADCNR		334-242-3261	Donald.Brooks@dcnr.alabama.gov
Josie Jones	ADCNR		334-353-5120	Josie.Jones@dcnr.alabama.gov
Pam Cook	AEMA	ES Branch Dir	205 280-2418	pamc@ema.alabama.gov
William Smith	NRCS	ASCE	334 887-4525	bill.smith@al.usda.gov
Janice Doucet	AEMA	HMA Planner II	205-280-2458	janiced@ema.alabama.gov
GRADY SPRINGER	ADEM	ER COORDINATOR	(334)260-2717	gspringer@adem.state.al.us
LESLIE DURHAM	ADECA	Floodplain Management	(334)242-5506	leslie.durham@adeca.alabama.gov.

Name	Agency	Title	Phone Number	E-mail Address
Matthew MC Collough	Alabama Forestry Commission	Urban Forestry Coordinator	334-240-9360	Matthew.mccollough@forestry.alabama.gov
Cherie Cornelius	AEMA	Planner	205-280-2406	cheriec@ema.alabama.gov
Shirrell Roberts	ALDHS	Deputy Director	334-353-3055	Shirrell.roberts@dhs.alabama.gov
Elizabeth Fralish	Risk Mgmt	Loss Control Super.	334-223-6141	elizabeth.fralish@finance.alabama.gov.
Stanley Batchelor	AEMA	Human Services Branch Director	205-280-2238	STANLEYB@EMA.ALABAMA.GOV
Balsie Butler	Alabama Forestry Comm	Fire Operations Chief	334-240-9329	Balsie.Butler@forestry.alabama.gov
Nathan Slaughter	Atkins	Project Mgr		
Loretta Simmons	"	Deputy PM		
Caroline Cunningham	"	Planning/Stakeholder Involvement		

2012/2013 Alabama State Hazard Mitigation Plan Update
State Hazard Mitigation Team (SHMT) Meeting

September 25, 2012

10:00 - 12:00 PM

ATKINS

Name	Agency	Title	Phone Number	E-mail Address
Benny Harris	AEMA	Sr. Planner	205-280-2256	benny.harris@ema.alabama.gov
Dale WATKINS	42nd ABW / XP MAXWELL AFB	Chief, Wing Plans	334-953-7000	Dale.WATKINS.6@us.af.mil
Todd Till	DPS	Operations Officer	334-353-1963	robert.till@dps.alabama.gov
Paul Smelley	DHR	Director - EWS/ES	334-353-3387	paul.smelley@dhr.alabama.gov
Zakiya Darby	AEMA	Planning & Economic Development Specialist	205-280-2459	zakiyad@ema.alabama.gov
DENNIS BUTTERS	ALNG	VICE COS / MAO	334-271-7207	dennis.butters@us.army.mil
Curt Faul / Kmar	AEMA	Director		
Benjie Abbott	AEMA	Recovery Director	205-280-2223	benjie.abbott@ema.alabama.gov

2012/2013 Alabama State Hazard Mitigation Plan Update
State Hazard Mitigation Team (SHMT) Meeting

September 25, 2012

10:00 - 12:00 PM

ATKINS

Name	Agency	Title	Phone Number	E-mail Address
Rocky Millinian	ADECA / LTCR	State Disaster Recovery Coord.	334-353-4903	Rocky.millinian@adeca.alabama.gov
Randy Branson	AEMA	MITIGATION	~~334~~ 205-280-2479	randelb@ema.alabama.GOV
ROBERT Baylis	AEMA	Mitigation Planner	205-280-2453	robert.baylis@ema.alabama.gov
Janice Doucet	AEMA	Mitigation Planner	205-280-2458	janiced@ema.alabama.gov
Valerie Walker	AEMA	Mitigation	205 280-2274	valeriew@ema.alabama.gov
Ashley Kelley	AEMA	Mitigation	205 280 2477	ashleyk@ema.alabama.gov
GRADY SPRINGER	ADEM	ER COORDINATOR	(334) 850-8466	
Bob Smith	Risk Managmnt.	LOSS CONTROL MANAGER	334-223-6125	robertb.smith@finance.alabama.gov

2012/2013 Alabama State Hazard Mitigation Plan Update
State Hazard Mitigation Team (SHMT) Meeting

September 25, 2012

10:00 - 12:00 PM

ATKINS

Name	Agency	Title	Phone Number	E-mail Address
TIM HATCH	ADPH	Environmental Program Dir.	(334) 206 7935	Tim.Hatch@adph.state.al.us
Josie Jones for Donald Brooks	ADCNR		334-242-3261 334-353-5120	donald.brooks@dcnr.alabama.gov
STEVE BAKER	FEMA		256-234-3106	KENNETH.S.BAKER@DHS.GOV
Joretta Simmons	Atkins	PM-Support	919-357-3779	Joretta.Simmons@atkinsglobal.com
Leslie Durham	ADECA		334 242 5506	leslie.durham@adeca.alabama.g
Kelli B Alexander	AEMA	SHMO	205-280-2269	kelli.alexander@ema-alabama.gov

Alabama EMA
Emergency Management Agency

ATKINS

2012/2013 Alabama State Hazard Mitigation Plan Update
State Hazard Mitigation Team (SHMT) Meeting

January 15, 2013

10:00 AM - 12:00 PM

Name	Agency	Title	Phone Number	E-mail Address
Rocky Milliman	ADECA	State Disaster Recovery Coordinator	334-353-9409	Rocky.milliman@adeca.alabama.gov
Paul Smelley	DHR	EWS/ES Director	334-353-3387	Paul.Smelley@dhr.alabama.gov
Valerie Wallace	AEMA	Mitigation Specialist	205-280-2274	valerie.wallace@ema.alabama.gov
Anthony Tavis	GSA	GIS Specialist	205-901-3671	atavis@gsa.state.al.us
Sandy Ebersole	Geological Survey of AL	Geologist	205 247 3613	sebersole@gsa.alabama.gov
Monique Smith	AEMA	Earthquake Program Mgr	205-280-2471	monique.smith@ema.alabama.gov
Barbara Gibson	CPYRUMA	EXE. DIR	334-670-3780	choctaw@troy.edu
Grady Springer	ADEM	ER COORDINATOR	334-850-8466	gspringer@adem.state.al.us

Alabama EMA
Emergency Management Agency

2012/2013 Alabama State Hazard Mitigation Plan Update
State Hazard Mitigation Team (SHMT) Meeting

ATKINS

January 15, 2013

10:00 AM - 12:00 PM

Name	Agency	Title	Phone Number	E-mail Address
Donald Brooks	Conservation		334-242-3261	donald.brooks@dcnr.alabama.gov
Josie Jones	Conservation		334-353-5120	josie.jones@dcnr.alabama.gov
Matt McCullough	Alabama Forestry Commission		334-240-9360	matthew.mccullough@forestry.alabama.gov
Leslie Durham	ADECA OWR		334 242 5506	leslie.durham@adeca.alabama.gov
Joretta Simmons	Atkins		919-357-3779	joretta.simmons@atkinsglobal.com
Julie Schoening	American Red Cross / FAND TF	State EM Program Manager	205-907-9452	julie.schoening@redcross.org
Robert Ratliff	ALDHS	Asst Dir Accounting + Contracts	334-353-3060	robert.ratliff@dhs.alabama.gov

Alabama EMA
Emergency Management Agency

2012/2013 Alabama State Hazard Mitigation Plan Update
State Hazard Mitigation Team (SHMT) Meeting

ATKINS

January 15, 2013

10:00 AM - 12:00 PM

Name	Agency	Title	Phone Number	E-mail Address
Charlotte Enos	AEMA	ASA II	205-280-2297	charlotte.enos@ema.
Judy Woods	"	"	280-2468	Judy.w@ema.alabama.gov
Kelli B Alexander	AEMA	EHMO	280-2269	Kelli.alexander@ema.alabama.gov
Zakiya Darby	"	Financial Specialist	205-280-2459	zakiya.darby@ema.alabama.gov

Alabama EMA
Emergency Management Agency

2012/2013 Alabama State Hazard Mitigation Plan Update
State Hazard Mitigation Team (SHMT) Meeting

ATKINS

January 15, 2013

10:00 AM - 12:00 PM

Name	Agency	Title	Phone Number	E-mail Address

RECORD OF CHANGES

CHANGE NUMBER	DATE OF CHANGE	INITIALS AND DATE ENTERED

This page intentionally blank

Appendix O - State of Alabama Draft Repetitive and Severe Repetitive Flood Loss Mitigation Strategy

O.1 Background

Alabama has among the highest repetitive loss (RL) and severe repetitive loss (SRL) claims histories in the United States. As shown in **Table O-1**, the National Flood Insurance Program (NFIP) has paid nearly 11,000 flood insurance claims to RL properties in the state, and this data set represents only properties/policy holders that are currently in RL status, so this is an under-representation of losses since the program was instituted in 1979. Note that policies classified as SRL are a subset of this list. As shown in the tables throughout this Appendix, Baldwin and Mobile counties predominate the lists because of their coastal location, relatively high population density and extensive built environment.

A RL property is any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period, since 1978. According to the National Flood Insurance Act, a SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

(a) That has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or

(b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any 10-year period, and must be greater than 10 days apart.

Although Alabama has among the highest counts of RL and SRL properties in the country, the State (and in particular the Alabama Emergency Management Agency) has a long record of effective actions to reduce flood losses over the long term. The purpose of this State Hazard Mitigation Plan Appendix is to formally establish a comprehensive State strategy to continue Alabama's ongoing efforts to mitigate flood losses, with an added emphasis on reducing losses to SRL properties. The appendix is organized in the following sections.

- O.1 Background
- O.2 Federal Requirements for a State Severe Repetitive Flood Loss Strategy
- O.3 NFIP Claims Statistics and Supplemental Risk Assessment for Repetitive Loss and Severe Repetitive Loss Properties
- O.4 Specific Actions the State has taken to Mitigate Risk to Repetitive Loss and Severe Repetitive Loss Properties
- O.5 State Strategy for Mitigating Risk to Repetitive Loss and Severe Repetitive Loss Properties
- O.6 Strategy to Encourage Local Communities to Mitigate Repetitive Loss and Severe Repetitive Loss Properties
- O.7 Actions in the State Mitigation Strategy that specifically address Repetitive Loss Properties

O.8 State Process for Providing Funding and Technical Assistance to Prepare Mitigation Plans
O.9 State and Local Capabilities for Funding and Implementing Mitigation Actions for Severe Repetitive Loss and Repetitive Loss Properties
O.10 Current and Potential Sources of Federal, State, local, or Private Funding to implement Mitigation Activities for Severe Repetitive Loss and Repetitive Loss Properties

O.2 Federal Requirements for a State Severe Repetitive Flood Loss Strategy

To be eligible to receive an increased Federal cost share of up to 90 percent for project grants related to reducing losses to SRL properties, mitigation plans must specifically address such. States may address the repetitive loss strategy through an amendment to their existing Federal Emergency Management Agency (FEMA)-approved State Mitigation Plans, or they may accomplish this as part of a cyclical update, as Alabama is doing. In order to be eligible for an increased Federal cost share of up to 90 percent under the SRL program, the FEMA-approved State or Tribal Standard Mitigation Plan must also meet all of the requirements described below:

a) Repetitive Loss Strategy - 44 CFR § 201.4(c)(3)(v): A State may request the reduced cost share authorized under Sec. 79.4(c)(2) of this chapter for the Flood Mitigation Assistance (FMA) and SRL programs, if it has an approved State Mitigation Plan meeting the requirements of this section that also identifies specific actions the State has taken to reduce the number of repetitive loss properties (which must include severe repetitive loss properties), and specifies how the State intends to reduce the number of such repetitive loss properties. This requirement supplements the risk assessment and mitigation strategy portions of the plan required under §§ 201.4(c)(2) and (3) by specifically identifying goals, capabilities, and actions that will reduce the number of repetitive loss properties, including severe repetitive loss properties.

The mitigation strategy is based on the State's Risk Assessment as required under § 201.4(c)(3)(ii). Therefore, the State must address repetitive loss structures in its risk assessment, where applicable. For example, in its overview of Estimating Potential Losses by Jurisdiction under §201.4(c)(2)(iii), the State may analyze potential losses to identified repetitive loss properties based on estimates provided in local risk assessments. The Plan should refer generally to geographic areas where concentrations of repetitive loss properties are located for the purpose of identifying and prioritizing areas for mitigation projects, or the plan may list the number of repetitive loss properties with aggregate repetitive loss data.

The State Hazard Mitigation Goals under § 201.4(c)(3)(i) must support the selection of activities to mitigate and reduce potential losses to structures susceptible to flood damage, including repetitive loss properties. In addition, the State and Local Capability Assessments required under § 201.4(c)(3)(ii) must include an evaluation of policies, programs, and capabilities that allow the mitigation of repetitive losses from flood damage.

The State must describe specific actions that it has implemented to mitigate repetitive loss properties, and specifically actions taken to reduce the number of severe repetitive loss properties as a subset of all repetitive loss properties in the State. If the State cannot show that any action has ever been taken to reduce the number of such properties, this criteria cannot be met.

Based on the findings of the risk assessment, the State must identify actions in the Statewide mitigation strategy that specifically address repetitive loss properties, including those that are severe repetitive loss properties. This supplements the mitigation actions requirement under § 201.4(c)(3)(iii). Mitigation actions should be tied to goals and objectives and provide the means to achieve them. Actions should have been identified in the planning process, and local plans should be consistent with State-wide actions. As part of the mitigation strategy, the plan must also describe the current funding sources as well as potential sources that will be pursued to fund proposed mitigation actions for repetitive loss properties. This supplements the identification of funding requirement under § 201.4(c)(3)(iv)

b) Coordination With Repetitive Loss Jurisdictions - 44 CFR § 201.4(c)(3)(v): …In addition, the plan must describe the strategy the State has to ensure that local jurisdictions with severe repetitive loss properties take actions to reduce the number of these properties, including the development of local mitigation plans.

The State is required to identify strategies that encourage local communities to mitigate severe repetitive loss properties, including the development of local mitigation plans. This supplements the Coordination of Local Mitigation Planning portion of the plan under § 201.4(c)(4). At a minimum, the State must include severe repetitive loss in the description of its process for providing funding and technical assistance to prepare mitigation plans (§201.4(c)(4)(i)), and in its criteria for prioritizing communities that have such properties for planning and project grant assistance (§201.4(c)(4)(iii)). Other strategies for encouraging local communities to mitigate severe repetitive loss properties should be demonstrated through specific actions identified in the Mitigation Strategy.

This appendix to the Alabama State Hazard Mitigation Plan (State HMP) represents the State's strategy for addressing both repetitive and severe repetitive loss properties. Following review and approval by Alabama Emergency Management Agency (AEMA) and the State Hazard Mitigation Team (SHMT), the strategies and actions described here are incorporated into the State HMP by reference.

O.3 NFIP Claims Statistics and Supplemental Risk Assessment for Repetitive Loss and Severe Repetitive Loss Properties

a. Repetitive Loss Properties

This section of the appendix describes the general locations of RL properties in Alabama and the long-term risks associated with them. The following table shows RL properties at the county level. Due to the relatively large number of properties and federal confidentiality requirements, individual property addresses are not provided. The State or FEMA Region IV can provide current RL and SRL lists that include addresses, claims histories and estimates of potential flood losses for 30- and 100-year planning horizons by county or local jurisdiction. In some cases, county or local hazard mitigation plans may also provide more specific descriptions of RL and/or SRL properties and loss histories.

b. County-Level Claims Statistics for Repetitive Loss Properties

Table O-1 shows the most recent (August 2012) statewide repetitive flood loss statistics for Alabama, including average claim lost. Repetitive flood loss claims for counties in Alabama have been summarized from 1979, when the program was instituted. Claims data for individual properties/policies is available from the NFIP and FEMA, but cannot be included in this plan appendix for reasons of confidentiality. The table is ordered alphabetically by county.

Table O-1
Repetitive Flood Loss Claims Statistics for Alabama, ordered Alphabetically by County

County	RL Properties	RL Claims	Building $ Claims	Contents $ Claims	Total $ Claims	Average Claim	Versus State Average
Autauga	16	50	$892,705	$485,636	$1,378,341	$27,567	85.62%
Baldwin	1,865	5,259	$175,844,449	$20,374,295	$196,218,744	$37,311	115.89%
Blount	2	8	$8,819	$176,802	$185,621	$23,203	72.07%
Calhoun	2	5	$21,639	$0	$21,639	$4,328	13.44%
Chambers	1	2	$24,151	$0	$24,151	$12,075	37.51%
Choctaw	3	9	$89,678	$2,515	$92,193	$10,244	31.82%
Coffee	42	97	$1,642,059	$535,008	$2,177,067	$22,444	69.71%
Colbert	12	43	$359,817	$264,420	$624,237	$14,517	45.09%
Coosa	1	3	$56,474	$29,557	$86,031	$28,677	89.07%
Covington	6	12	$163,680	$50,483	$214,163	$17,847	55.43%
Dale	15	40	$1,556,223	$453,421	$2,009,645	$50,241	156.05%
Dallas	6	15	$126,536	$12,788	$139,324	$9,288	28.85%
De Kalb	4	11	$89,124	$74,965	$164,089	$14,917	46.33%
Elmore	1	2	$29,789	$0	$29,789	$14,895	46.26%
Escambia	40	120	$1,970,040	$4,530,277	$6,500,317	$54,169	168.25%
Etowah	10	22	$173,858	$62,630	$236,488	$10,749	33.39%
Geneva	7	16	$452,488	$85,510	$537,998	$33,625	104.44%
Greene	14	39	$260,809	$61,256	$322,066	$8,258	25.65%
Hale	16	37	$87,893	$35,830	$123,723	$3,344	10.39%

Table O-1
Repetitive Flood Loss Claims Statistics for Alabama, ordered Alphabetically by County

County	RL Properties	RL Claims	Building $ Claims	Contents $ Claims	Total $ Claims	Average Claim	Versus State Average
Houston	5	10	$99,400	$312,137	$411,538	$41,154	127.82%
Jackson	4	11	$117,913	$16,709	$134,623	$12,238	38.01%
Jefferson	181	509	$6,225,703	$3,810,657	$10,036,360	$19,718	61.24%
Lamar	1	2	$0	$17,395	$17,395	$8,697	27.01%
Lauderdale	19	59	$447,836	$161,559	$609,395	$10,329	32.08%
Lawrence	5	13	$152,113	$68,317	$220,430	$16,956	52.67%
Lee	4	10	$20,227	$6,854	$27,081	$2,708	8.41%
Limestone	7	16	$74,853	$31,210	$106,064	$6,629	20.59%
Madison	19	53	$546,521	$130,827	$677,348	$12,780	39.69%
Marion	3	8	$56,018	$52,418	$108,436	$13,555	42.10%
Marshall	1	3	$82,213	$49,465	$131,678	$43,893	136.33%
Mobile	1,393	3,812	$90,393,571	$24,969,719	$115,363,291	$30,263	94.00%
Morgan	8	28	$186,363	$393,770	$580,133	$20,719	64.35%
Pickens	13	39	$262,040	$56,242	$318,283	$8,161	25.35%
Shelby	93	330	$3,745,996	$1,336,406	$5,082,403	$15,401	47.84%
St. Clair	2	4	$91,502	$11,009	$102,511	$25,628	79.60%
Sumter	1	2	$3,975	$82	$4,057	$2,028	6.30%
Talladega	2	4	$11,400	$2,272	$13,672	$3,418	10.62%
Tuscaloosa	8	20	$333,923	$143,815	$477,738	$23,887	74.19%
Walker	3	6	$30,728	$0	$30,728	$5,121	15.91%
Washington	1	2	$8,891	$0	$8,891	$4,446	13.81%
Wilcox	1	2	$12,473	$0	$12,473	$6,236	19.37%
Total	**3,837**	**10,733**	**$286,753,894**	**$58,806,259**	**$345,560,153**	**$32,196**	

Source: FEMA Region IV NFIP Query

c. County-Level Risk Estimates for Repetitive Loss Properties

Table O-2 provides county-level information for repetitive loss claims including total dollar amounts of claims and average annual claims. In order to accurately estimate risk on a property-specific basis, it is necessary to use claims histories for individual properties or an engineering-based methodology. It should also be noted that this approach may not express all possible losses to the properties because past flood coverage may not have completely compensated for losses and because certain categories of loss are not typically covered by NFIP insurance. This county-level data should be used for planning purposes only. The complete individual property-level data is available from AEMA. The counties in **Table O-2** are in descending order, by number of claims.

Table O-2
NFIP Repetitive Loss Claims in Alabama

County	RL Claims	Total $ Claims	Average Annual Claims
Baldwin	5,259	$196,218,744	$5,771,140
Mobile	3,812	$115,363,291	$3,393,038
Jefferson	509	$10,036,360	$295,187
Shelby	330	$5,082,403	$149,482
Escambia	120	$6,500,317	$191,186
Coffee	97	$2,177,067	$64,031
Lauderdale	59	$609,395	$17,923
Madison	53	$677,348	$19,922
Autauga	50	$1,378,341	$40,539
Colbert	43	$624,237	$18,360
Dale	40	$2,009,645	$59,107
Greene	39	$322,066	$9,473
Pickens	39	$318,283	$9,361
Hale	37	$123,723	$3,639
Morgan	28	$580,133	$17,063
Etowah	22	$236,488	$6,956
Tuscaloosa	20	$477,738	$14,051
Geneva	16	$537,998	$15,823
Limestone	16	$106,064	$3,120
Dallas	15	$139,324	$4,098
Lawrence	13	$220,430	$6,483
Covington	12	$214,163	$6,299
De Kalb	11	$164,089	$4,826
Jackson	11	$134,623	$3,960
Houston	10	$411,538	$12,104
Lee	10	$27,081	$797
Choctaw	9	$92,193	$2,712
Blount	8	$185,621	$5,459
Marion	8	$108,436	$3,189

Table O-2
NFIP Repetitive Loss Claims in Alabama

County	RL Claims	Total $ Claims	Average Annual Claims
Walker	6	$30,728	$904
Calhoun	5	$21,639	$636
St. Clair	4	$102,511	$3,015
Talladega	4	$13,672	$402
Marshall	3	$131,678	$3,873
Coosa	3	$86,031	$2,530
Elmore	2	$29,789	$876
Chambers	2	$24,151	$710
Lamar	2	$17,395	$512
Wilcox	2	$12,473	$367
Washington	2	$8,891	$262
Sumter	2	$4,057	$119
Total	**10,733**	**$345,560,153**	**---**

Source: FEMA/NFIP Query

d. Severe Repetitive Loss Properties

This section describes the locations of severe repetitive loss properties in Alabama, and the long-term risks associated with them. The following table shows SRL properties at the county level. Due to the relatively large number of properties and federal confidentiality requirements, individual property addresses are not provided. The State or FEMA Region IV can provide current RL and SRL lists that include addresses, claims histories and estimates of potential flood losses for 30- and 100-year planning horizons by county or local jurisdiction. In some cases, county or local hazard mitigation plans may also provide more specific descriptions of SRL properties and loss histories.

e. County-Level Claims Statistics for Severe Repetitive Loss Properties

Table O-3 shows the most recent (August 2012) statewide severe repetitive flood loss statistics for Alabama. Only counties with SRL properties are presented in the table. Counties are listed by total number of SRL properties. Claims data for individual properties/policies is available from the NFIP and FEMA, but cannot be included in this plan appendix for reasons of confidentiality.

Table O-3
Summary of Severe Repetitive Flood Loss Properties in Alabama

County	SRL Properties	SRL Claims
Baldwin	159	769
Mobile	143	732
Shelby	23	131
Jefferson	10	62
Escambia	4	21
Dale	3	9
Madison	3	18
Autauga	2	9
Colbert	2	20
Greene	2	8
Morgan	2	14
Blount	1	5
Coffee	1	4
Geneva	1	3
Lauderdale	1	4
Pickens	1	4
Total	**358**	**1,813**

Source: FEMA/NFIP Query

Baldwin and Mobile counties comprise 84 percent of SRL properties statewide. The following figure shows the statewide distribution of SRL properties.

f. County-Level Severe Repetitive Loss Information

Table O-4 provides SRL information by county, as calculated by FEMA/NFIP. These figures are available at the level of individual policy/address, but cannot be included in this plan due to federal confidentiality restrictions. This county-level data should be used for planning purposes only. The complete individual property-level data is available from AEMA.

Table O-4
Alabama SRL Information

County	SRL Properties	SRL Claims	Cumulative SRL Claims	Average SRL Claim
Bladwin	159	769	$43,505,414	$56,574
Mobile	143	732	$25,776,189	$35,213
Shelby	23	131	$2,130,766	$16,265
Jefferson	10	62	$971,329	$15,667
Escambia	4	21	$569,327	$27,111
Dale	3	9	$454,443	$50,494
Madison	3	18	$162,588	$9,033
Autauga	2	9	$233,346	$25,927
Colbert	2	20	$466,715	$23,336
Greene	2	8	$144,419	$18,052
Morgan	2	14	$487,496	$34,821
Blount	1	5	$159,774	$31,955
Coffee	1	4	$110,068	$27,517
Geneva	1	3	$85,837	$28,612
Lauderdale	1	4	$84,481	$21,120
Pickens	1	4	$38,472	$9,618
Total	**358**	**1,813**	**$75,380,666**	**$41,578**

O.4 Specific Actions the State has taken to Mitigate Risk to Repetitive Loss and Severe Repetitive Loss Properties

As noted earlier in this appendix, Alabama has a successful record of implementing projects that mitigate damages to repetitive and severe repetitive loss properties. According to data provided by FEMA/NFIP, the State and federal governments have funded site-specific mitigation projects for 466 properties in 8 Alabama counties. These figures include only mitigation actions for individual sites, including elevations, acquisitions, demolitions and relocations. According to the database, the NFIP had paid 3,133 flood insurance claims for damage to these properties; the claims totaled $140.5 million (historic value of claims, not inflated to present value). Project funds were provided through various FEMA mitigation grant programs (except the PDM and SRL, which had not funded any single-site mitigation projects, according to the database). Over the past 10 years, the State of Alabama and FEMA have also funded numerous flood control projects statewide, and these presumably mitigate risk to repetitive and severe repetitive loss properties. However, neither FEMA nor the State maintain readily accessible or detailed records of specific RL or SRL properties being protected. As described elsewhere, the State has consistently met FEMA requirements for proving the cost effectiveness of mitigation actions it

funds, so presumably, many of the properties within the areas protected by these projects are in fact RL/SRL properties. **Table O-5** lists Alabama RL properties that have been mitigated (elevated, acquired, floodproofed and/or relocated). The figures refer only to mitigation actions funded by FEMA or the State.

Table O-5
Mitigated Repetitive Loss and Severe Repetitive Loss Properties in Alabama

County	# Mitigated RL/SRL Properties	NFIP Paid Claims	Value of NFIP Paid Claims
Autauga	2	8	$115,339
Baldwin	313	912	$55,736,068
Calhoun	3	9	$33,664
Coffee	7	17	$332,775
Dale	4	9	$391,366
Dallas	1	4	$67,608
Etowah	2	4	$29,535
Geneva	5	11	$365,109
Greene	9	20	$115,376
Hale	1	2	$12,559
Jefferson	49	125	$1,355,033
Lee	1	2	$6,786
Madison	11	5	$96,995
Marion	1	2	$40,804
Mobile	609	1,985	$81,771,115
Monroe	2	4	$6,250
Morgan	1	3	$11,100
Shelby	1	3	$16,407
Tuscaloosa	1	2	$3,880
Total	**1,017**	**3,133**	**$140,507,766**

Source: FEMA/NFIP Query

O.5 State Strategy for Mitigating Risk to Repetitive Loss and Severe Repetitive Loss Properties

Mitigating risk to RL and SRL properties is a high priority for the State of Alabama. In conjunction with FEMA initiating the SRL program, the State is presently re-emphasizing its commitment to mitigating losses to floodprone properties through a range of actions, including:

1. Develop, adopt and implement Repetitive Loss/Severe Repetitive Loss Mitigation appendix to the State Hazard Mitigation Plan.
2. Promulgate most current guidance and requirements to local municipalities. The guidance includes plan review criteria so that jurisdictions with RL and SRL properties clearly understand the importance of having an approved plan, with regard to qualifying for FEMA mitigation grant program funding.

3. Perform detailed study of risks and costs of mitigating properties, and identify the most at risk and most cost-effective properties to mitigate.
4. Re-emphasize the need for counties and local communities to include RL and SRL properties in their mitigation plans, and provide guidance and technical assistance in methods to accomplish this.
5. Develop criteria related to RL and SRL properties in county and local mitigation plans.
6. Implement a mitigation project ranking methodology that gives higher priority to projects that mitigate risk to RL and SRL properties (by assigning higher scores to projects that do so).
7. In the State HMP, assign a high priority to mitigating SRL and RL properties.
8. Provide training and technical assistance to the jurisdictions with the greatest numbers of RL and SRL properties. This effort includes providing the same level of training to the top SRL/RL counties in the State that FEMA provided to Alabama when the Agency initiated the SRL program. The State will incorporate most current FEMA guidance and training when it delivers training and assistance.
9. Provide local and regional jurisdictions with annual updates to SRL and RL lists, FEMA actuarial calculations of the potential benefits of mitigation actions for SRL and RL properties, and to the extent possible, risk estimates for RL properties.

As part of implementing this RL/SRL appendix, the State is establishing Mobile and Baldwin counties as priorities in its ongoing efforts to mitigate flood risks to such properties. However, there is a wide distribution of these properties across the state, so although these counties may be the State's priority areas, in many cases there may be highly cost-effective projects in other areas. The State will always consider mitigation projects on a case-by-case basis.

O.6 Strategy to Encourage Local Communities to Mitigate RL and SRL Properties

The State of Alabama has a well-established and effective system for supporting local communities in developing mitigation projects. AEMA intends to increase emphasis on mitigating SRL and RL properties at the local level through the following actions, many of which are already part of existing procedures.

1. Continue to support local communities with technical training related to mitigation, including risk assessment, benefit-cost analysis, and environmental compliance.
2. Provide communities with the most current lists of SRL and RL properties, including (when possible) preliminary risk calculations to allow communities to prioritize their actions.
3. Increase the emphasis on mitigating SRL and RL properties during applicant briefings.
4. Issue planning guidance to counties reiterating FEMA/State emphasis on RL/SRL.
5. Make communities aware that the State is implementing a project ranking procedure that emphasizes mitigating SRL and RL properties by assigning higher scores to projects that mitigate such risks.

O.7 Actions in the State Mitigation Strategy that specifically address Repetitive Loss and Severe Repetitive Loss Properties

The following actions specific to reducing the number of SRL and RL properties statewide were developed by AEMA, reviewed by the Mitigation Core Team and the SHMT, and incorporated into the State Plan in fall, 2008. The goals addressed in this Appendix align with the 2013 State Hazard Mitigation Plan and the actions and objectives that have been created to reflect the focus on RL and SRL properties have been incorporated into the Mitigation Action Plan found in Section 6.

Goal 1: Enhance the comprehensive statewide mitigation system.

Objective 1.9: Ensure that State, county and local officials have most current data regarding RL and SRL properties.

Action 1.9.01	Obtain periodic updates of RL and SRL lists from FEMA/NFIP and ensure that appropriate officials have access to the data.
Priority	High
Responsible Agency	AEMA, Alabama Department of Economic and Community Affairs (ADECA), FEMA
Projected Timeline	Ongoing
Projected Resources	Existing State staff
Rationale for Action and Priority	Identifying repetitive loss areas and properties helps communities develop a strategy to reduce future hazard losses; accurate and current data is essential to ensuring that the various FEMA grant programs can be used as the basis for reducing risk.
How Action Contributes to Mitigation Strategy	Flooding (particularly repetitive losses) is the single most significant natural hazard in the State, in terms of monetary losses and disruptions. The overall State mitigation strategy is focused on reducing these damages by various means, including FEMA grant programs. These programs rely on sound information as the basis for prioritizing actions.

Action 1.9.02	Ensure that site-specific risk assessments are available to local officials, as the basis for identifying and prioritizing mitigation actions on a site-specific basis. This action may be accomplished in a number of ways, including AEMA performing risk assessments (either itself or using consultants/contractors), or continuing to provide training and technical support.

Priority	Moderate
Responsible Agency	AEMA
Projected Timeline	Ongoing
Projected Resources	Existing State staff, potential outside resources to be determined.
Rationale for Action and Priority	Risk estimates are one of the most important bases for determining how potential mitigation actions should be prioritized.
How Action Contributes to Mitigation Strategy	Flooding is the most significant natural hazard in the State. This information is the basis for implementing numerous FEMA grant programs

Goal 2: Reduce Alabama's vulnerability to natural hazards.

Objective 2.4: Reduce vulnerability to RL and SRL properties Statewide.

Action 2.4.01	Develop and implement a detailed severe repetitive loss mitigation strategy that will qualify the State for 90-10 cost share under the FEMA SRL program
Priority	High
Responsible Agency	AEMA
Projected Timeline	Ongoing (1st phase complete with this submittal)
Projected Resources	Existing Federal and/or State resources
Rationale for Action and Priority	One of the initial steps in the State implementing a clear, long-term program of mitigating properties that constitutes the most significant losses to the NFIP.
How Action Contributes to Mitigation Strategy	Part of the process to initiate SRL program; establishes priorities for State and local jurisdictions to begin

Action 2.4.02	Conduct community outreach, workshops, and training to increase NFIP participation
Priority	High
Responsible Agency	AEMA, ADECA
Projected Timeline	Ongoing
Projected Resources	Existing State Resources
Rationale for Action and Priority	Encourages participation in the program so that losses will be covered and allows eligibility in the FMA program
How Action Contributes to Mitigation Strategy	Allows residents the ability to receive flood insurance claims and maintains eligibility in the FMA program of which flood insurance is a requirement

Action 2.4.03	Provide updated SRL and RL lists to communities in advance of grant application windows. Included FEMA calculated avoided damages for SRL properties and any State calculated avoided damages for RL properties
Priority	High
Responsible Agency	AEMA
Projected Timeline	Ongoing
Projected Resources	Existing State assets
Rationale for Action and Priority	Identifying candidates with the strongest potential to meet benefit cost requirements allows communities to focus mitigation alternatives and applications on SRL and RL properties
How Action Contributes to Mitigation Strategy	Retrofitting, elevating, or removing repetitive loss properties from known hazard areas protects property and lives as well as preserve personal, state, and federal financial resources

O.8 State process for Providing Funding and Technical Assistance to Prepare Mitigation Plans

The State of Alabama and AEMA will continue to provide technical and administrative support to ensure that single- and multi-jurisdiction hazard mitigation plans remain current. Technical support will include promulgating any new FEMA or State guidance, regulations, or policies on planning, periodic training in subject areas related to planning, and review and provide detailed comments on plans that are submitted to the State. When assigning staff resources and funding to provide technical support, the State will prioritize its efforts and toward those ongoing planning efforts in areas with the highest concentrations of RL and SRL properties.

The State will also continue to provide technical assistance and other support in seeking FEMA grants for mitigation planning and risk assessment at the county and local levels. As reflected in the State HMP, AEMA will also increase its emphasis on SRL and RL mitigation in county plans as five-year update processes are implemented.

O.9 State and Local Capabilities for Funding and Implementing Mitigation Actions for Severe Repetitive Loss and Repetitive Loss Properties

Table O-6 overviews the state and local capabilities, programs, policies, practices, funding, or regulations that are integral to the mitigation of RL and SRL properties.

Table O-6
State and Local Capabilities, Programs, and Policies for Initiating Flood Mitigation Activities

Topics	Comment
Program	**Public Assistance** (**PA**) This program, available after a Presidential disaster declaration, allows mitigation measures to be designed into projects to repair or restore public facilities damaged by the disaster event.
Effect on Loss Reduction	Funds a range of mitigation actions to reduce risk.
Program	**Pre-Disaster Mitigation Program (PDM**) This annual, nationally competitive program funds hazard mitigation plans and cost-effective projects that reduce or eliminate the effects of hazards and/or vulnerability to future disaster damage.
Effect on Loss Reduction	Funds cost-effective mitigation projects to reduce natural hazard risks.
Program	**Flood Mitigation Assistance Program (FMA)** This program funds flood mitigation plans, provides technical assistance, and funds construction projects that reduce flood risk to insured, repetitive loss properties.
Effect on Loss Reduction	Funds cost-effective mitigation projects to reduce natural hazard risks.
Program	**Hazard Mitigation Grant Program (HMGP)** This program, available after a Presidential disaster declaration, funds hazard mitigation plans and cost-effective projects that reduce or eliminate the effects of hazards and/or vulnerability to future disaster damage. Typically, the state provides a portion of the required non-federal match.
Effect on Loss Reduction	Funds cost-effective mitigation projects to reduce natural hazard risks.
Program	**Severe Repetitive Loss Program (SRL**) Program provides funds to assist States, Indian Tribal governments, and local governments participating in the NFIP in reducing or eliminating the long-term flood risks to severe repetitive loss properties, thus reducing outlays from the National Flood Insurance Fund (NFIF).
Effect on Loss Reduction	Funds cost-effective mitigation projects to reduce natural hazard risks.
Program	**Repetitive Flood Claims (RFC)** The RFC grant program provides mitigation funding for structures insured under the NFIP located in a State or community that cannot meet the requirements of the FMA program. The long-term goal of the RFC program is to reduce or eliminate claims under the NFIP through mitigation activities that are in the best interest of the NFIF.
Effect on Loss Reduction	Funds cost-effective mitigation projects to reduce natural hazard risks.

O.10 Current and Potential Sources of Federal, State, local, or Private Funding to implement Mitigation Activities for Severe Repetitive Loss and Repetitive Loss Properties

Table O-7 presents the FEMA mitigation programs available for the mitigation of RL and SRL programs. The State priority for mitigating RL and SRL properties and the scoring methodology for evaluating competing sub-grant applications, ensures that mitigation funds in Alabama are targeted toward RL and SRL properties.

Table O-7
Current and Potential Sources of Funding to Implement Mitigation Activities for Repetitive Loss and Severe Repetitive Loss Properties

Grant Program	Program Overview
FMA	Availability: Pre-Disaster Description: To implement cost-effective measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the NFIP. Funding: In fiscal year (FY) 2007, there was $31 million available in a nationwide competition.
HMGP	Availability: Post-Disaster Description: To provide funds to States, territories, Indian Tribal governments, and communities to significantly reduce or permanently eliminate future risk to lives and property from natural hazards. HMGP funds projects in accordance with priorities identified in State, Tribal or local hazard mitigation plans, and enables mitigation measures to be implemented during the recovery from a disaster. Funding: A state has a FEMA-approved *Standard* State Mitigation plan, HMGP funds are available based on up to 15% for amounts not more than $2 billion.
PDM	Availability: Pre-Disaster Description: To provide funds to states, territories, Indian Tribal governments, and communities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. Funding: In FY 2007, there was $100 million available in a nationwide competition.
SRL	Availability: Pre-Disaster Description: To reduce or eliminate the long-term risk of flood damage to severe repetitive loss residential properties and the associated drain on the NFIF from such properties. Funding: FEMA is combining the $40 million FY 2006, $40 million FY 2007, and $80 million FY 08 funds for a total of $160 million.
RFC	Availability: Pre-Disaster Description: To reduce or eliminate the long-term risk of flood damage to structures insured under the NFIP that have had one or more claim payment(s) for flood damages. Funding: Nationwide competition for a total of $10 million