BALDWIN COUNTY, ALABAMA

NATURAL HAZARDS MITIGATION PLAN

June 30, 2004

Prepared under the direction of the

Baldwin County Hazard Mitigation Planning Committee by:

LEHE Planning, LLC
URBAN AND ENVIRONMENTAL PLANNING

Baldwin County, Alabama
Natural Hazards Mitigation Plan

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Chapter 1
Background and Purposes of the Plan

1.1 About the Plan

The Baldwin County, Alabama, Natural Hazards Mitigation Plan is a multi-jurisdictional guide for all communities that have participated in the preparation of this plan through the Hazard Mitigation Planning Committee (HMPC). The jurisdictions that participated in the development of this plan include: Baldwin County, the Cities of Daphne, Fairhope, Bay Minette, Foley, Spanish Fort, Gulf Shores, Orange Beach and Robertsdale; and the Towns of Loxley, Summerdale, Silverhill and Elberta. It fulfills the requirements of the Federal Disaster Mitigation Act of 2000 (DMA 2000) as administered by the Alabama Emergency Management Agency (AEMA) and the Federal Emergency Management Agency (FEMA) Region IV.

This plan complies with all of the eligibility requirements for FEMA grant assistance to participating localities, including the Hazard Mitigation Grant Program (HMGP), the National Flood Insurance Program's Community Rating System (CRS), the Flood Mitigation Assistance Program (FMA), and other Federal funding programs.

The planning process began in March 2003 with the appointment of the Hazard Mitigation Planning Committee by the Local Emergency Planning Committee of the Baldwin County Emergency Management Agency (EMA).

1.2 Scope

The scope of the Baldwin County, Alabama, Natural Hazards Mitigation Plan is the unincorporated and incorporated areas within the county. The plan addresses all natural hazards deemed to threaten property and persons within Baldwin County. Both short- and long-term hazard mitigation strategies are addressed, implementation tasks assigned, and funding alternatives identified.

In addition to this chapter, the plan contains the following elements:

1. A profile of the county's geography, history, physical features, and socioeconomic characteristics (Chapter 2. County Profile).

2. A description of the planning process that opens participation to all local governments, the public, academia, businesses, non-profit agencies, and regional, state and federal governments (Chapter 3. Planning Process).

3. A general assessment of the county's past and predicted future exposure to natural hazards and the risks that it faces, including impacts on buildings, critical facilities and infrastructure, and loss estimates (Chapter 4. Risk Assessment).

4. An assessment of local governments' capabilities to implement hazard mitigation measures, and the goals, objectives, policies and action items intended to effectively mitigate the county's natural hazard risks (Chapter 5. Mitigation Strategies).

5. The short-range (5-year) mitigation action programs for each participating jurisdiction (Chapter 6. Community Mitigation Action Programs).

6. Procedures for maintaining an active and effective long-range hazard mitigation planning and implementation program (Chapter 7. Plan Maintenance).

1.3 Authority

Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288, as amended), Title 44 CFR, as amended by Section 102 of the Disaster Mitigation Act of 2000, provides the framework for state and local governments to evaluate and mitigate all natural hazards as a condition for receiving Federal disaster assistance. A major requirement of the law is the development of a local hazard mitigation plan.

1.4 Funding

The AEMA awarded a Pre-Disaster Mitigation Planning Grant to the Baldwin County EMA for the preparation of this plan in December 2002. The grant provided 75 percent funding from FEMA through the AEMA. The local share, 25 percent, consisted of in-kind services provided by the Baldwin County EMA and the HMPC.

1.5 Purposes

Hazard mitigation is any action taken to permanently reduce or eliminate long-term risk to people and their property from the effects of natural hazards. These natural hazards can be of any type - tornadoes, floods, hurricanes, severe storms, winter freezes, droughts, landslides, or dam failures – resulting from natural disaster crises. Communities within the county can take steps to prepare and implement mitigation measures for almost any type of natural hazard that may threaten its citizens, businesses and institutions.

Hazard mitigation plans can identify a range of structural approaches to lower the costs of future disasters by meeting the unique needs of the community. For example, structural mitigation projects for flooding could involve modifying a stream channel to increase the conveyance of floodwaters or retarding the flow rate by the construction of detention facilities.

Mitigation strategies can also involve non-structural initiatives, such as educational programs to inform the community about the risks the public and its property face in order to encourage them to purchase insurance or retrofit their homes. Non-structural programs can also include developing and enforcing regulations to prevent construction in natural hazard

areas, or to ensure that development that does occur will be resistant to the natural hazards threatening the area.

Mitigation programs and projects serve to lessen a community's vulnerability to the hardships and costs of disasters. The implementation of mitigation programs is a key component to achieving a sustainable community, one in which the economic and social needs of people, businesses, and institutions coexist with natural environmental constraints and are protected from the disruptions and impacts of emergencies and disasters. Hazard mitigation planning must be closely coordinated with a community's overall planning and development efforts. The most effective way for a community to initiate this objective is through a comprehensive local mitigation planning program. Comprehensive planning can provide Baldwin County citizens a safe, healthy and prosperous place to live and work.

The purpose of the Baldwin County, Alabama, Natural Hazards Mitigation Plan is to develop a unified approach among its local governments for dealing with identified natural hazards and natural hazard management problems. This plan serves as a guide for local governments in their ongoing efforts to reduce vulnerability to the impacts produced by natural hazards.

Further, the plan seeks to accomplish the following additional purposes:

- Establish an ongoing natural hazard mitigation planning program;
- Identify and assess the natural hazards that pose a threat to life and property;
- Evaluate additional mitigation measures that should be undertaken; and,
- Outline procedures for monitoring the implementation of mitigation strategies.

This plan provides guidance for local mitigation activities over the next five-year planning cycle. It encourages activities that are most effective and appropriate for mitigating the effects of all known natural hazards.

Chapter 2
County Profile

2.1 Geographic Setting and History

Baldwin County, a county older than the state in which it resides, was created by the Mississippi Territorial legislature on December 21, 1809 from portions of Washington County. Its size was altered several times before 1868, when it received its present dimensions. Baldwin County lies in the extreme southwestern part of the state as depicted on Map 2-1. It is bounded on the north by Clarke and Monroe Counties, on the east by Escambia County, Alabama and Escambia County, Florida, and on the west by Mobile County and Mobile Bay. The Gulf of Mexico is located to the south. Encompassing approximately 1,590 square miles, it ranks as the state's largest in total area.

The county is named for Abraham Baldwin, a distinguished citizen of Georgia. Prior to 1901, the communities of MacIntosh Bluff and Blakeley and the City of Daphne each served as county seat before it was permanently moved to Bay Minette.

Baldwin County is driven by the travel and tourism industry and is home to Gulf State Park and Fort Morgan. Table 2-1 shows approximate distances from Baldwin County to major metropolitan areas.

Source: Owen, Thomas McAdory. History of Alabama and Dictionary of Alabama Biography. *Chicago: S.J. Clarke Publishing Co., 1921.*

Map 2-1. Location, Baldwin County

Table 2-1. Miles to Selected Metropolitan Areas

Area	Miles
Pensacola, Florida	34
Mobile, Alabama	38
New Orleans, Louisiana	179
Birmingham, Alabama	264
Atlanta, Georgia	343
Nashville, Tennessee	449
Dallas, Texas	650

2.2 Government

A seven-member county commission governs Baldwin County. Each commissioner serves a four-year term and must reside in the district he or she represents. Bay Minette is the county seat. The 12 municipalities located in the county utilize mayor/council or city manager/council forms of government.

2.3 Population and Demographics

According to Census 2000, Baldwin County contains a total population of 140,145 persons. The largest cities are Daphne, Fairhope and Bay Minette, with populations of 16,581, 12,480 and 7,820 respectively. Chart 2-1 graphically depicts the populations of each municipality, and Map 2-2 shows their location within the county. Map 2-3 contains a population density map of the county.

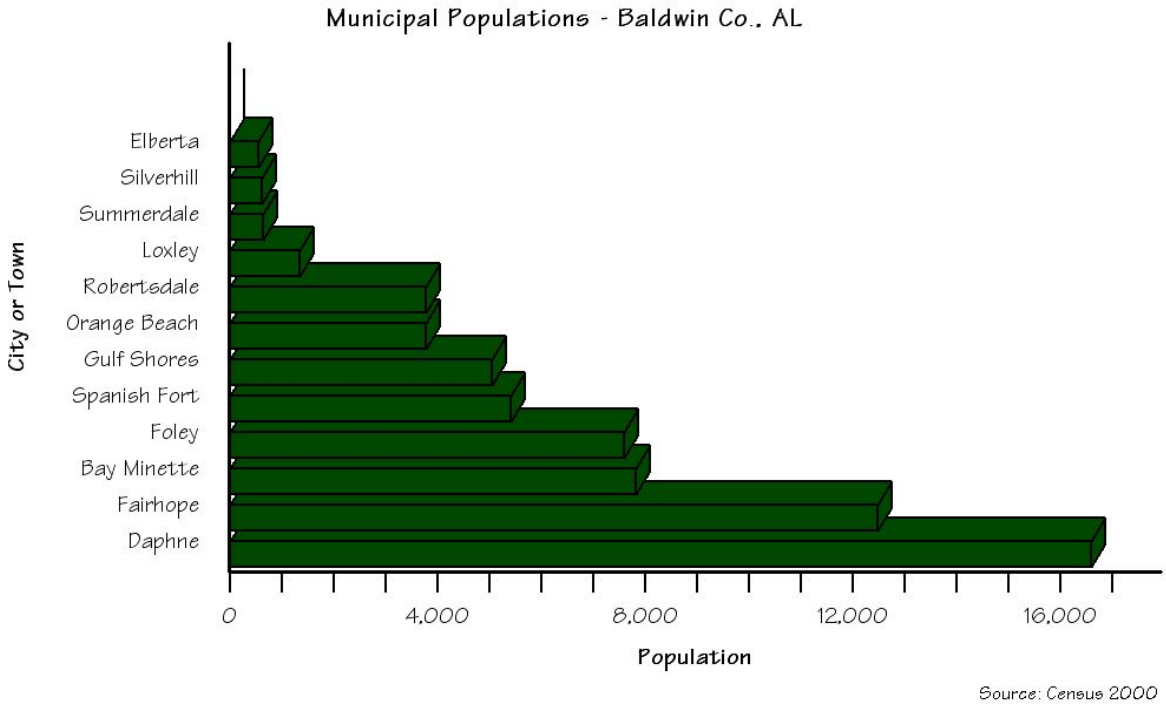
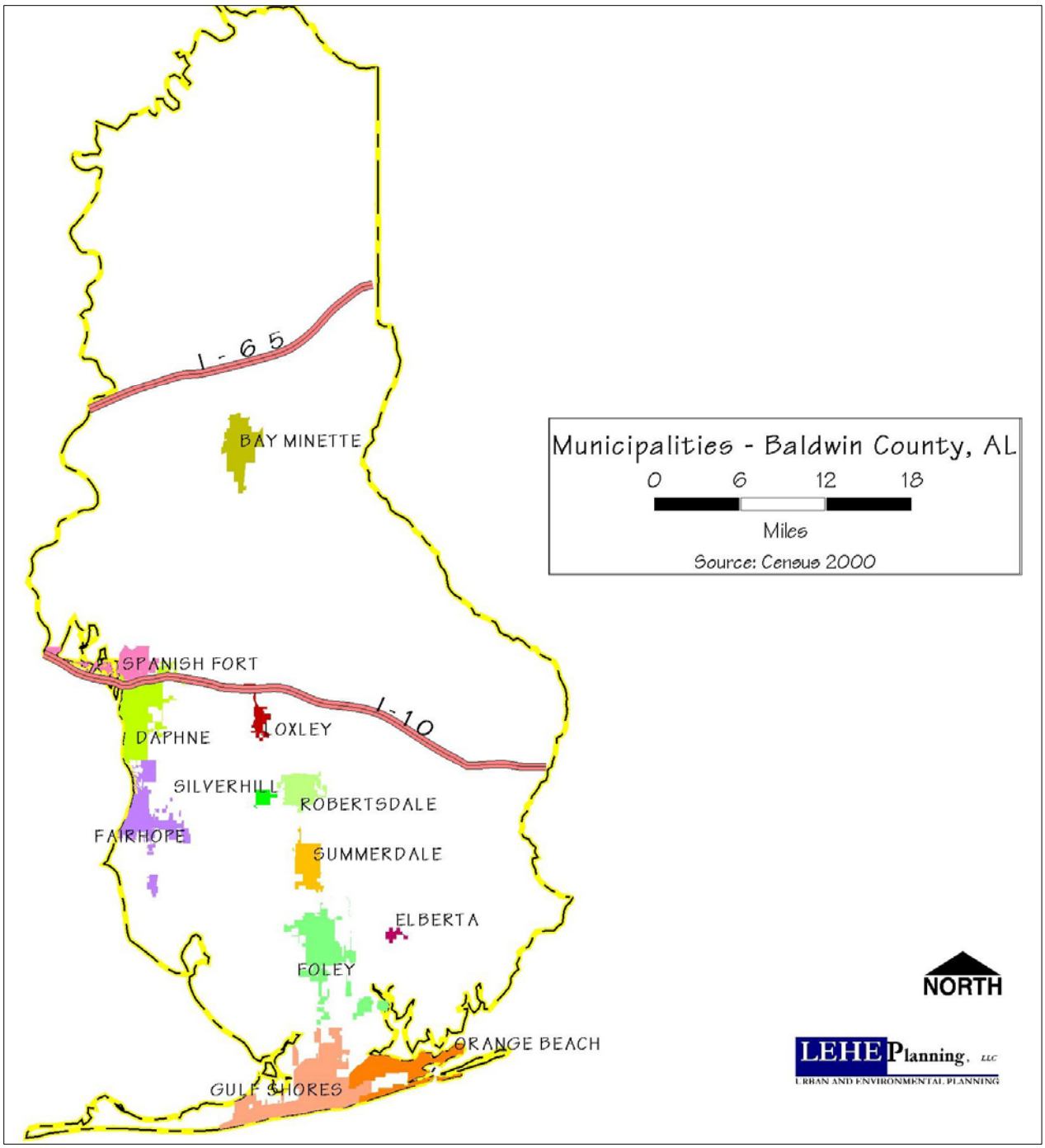
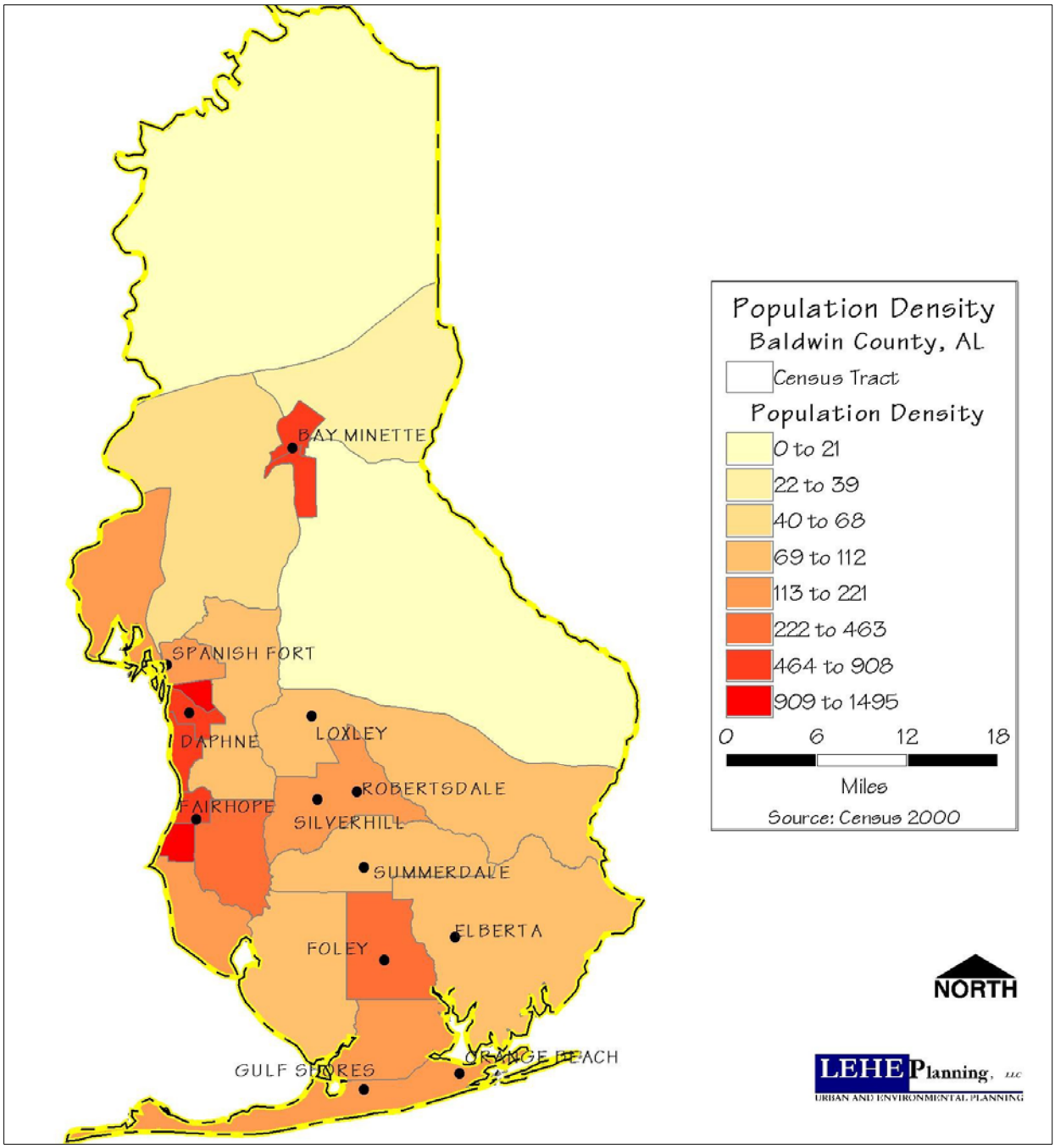


Chart 2-1. Municipal Populations, Baldwin County



Map 2-2. Municipality Locations, Baldwin County



Map 2-3. Population Density, Baldwin County

General demographic information for Baldwin County is shown in Table 2-2. According to Census 2000, the county's population is divided between males and females 49% and 51%, respectively. The single largest age group is the 35 to 44 year olds, comprising 15.6% of the population. The median age is 39 years. The major race in the county is white, making up 87.1% of the population. There are 55,336 households with an average size of 2.5. Approximately 74.5% of the total housing units are occupied, and of these, 79.5% are owner occupied.

Table 2-2. General Demographic Characteristics, Baldwin County

Subject	Number	Percent
Total population	140,415	100.0
SEX AND AGE		
Male	68,848	49.0
Female	71,567	51.0
Under 5 years	8,621	6.1
5 to 9 years	9,486	6.8
10 to 14 years	10,144	7.2
15 to 19 years	9,463	6.7
20 to 24 years	7,092	5.1
25 to 34 years	17,020	12.1
35 to 44 years	21,908	15.6
45 to 54 years	19,609	14.0
55 to 59 years	8,276	5.9
60 to 64 years	7,093	5.1
65 to 74 years	12,355	8.8
75 to 84 years	7,184	5.1
85 years and over	2,164	1.5
Median age (years)	39.0	N/A
RACE		
One race	138,949	99.0
White	122,366	87.1
Black or African American	14,444	10.3
American Indian and Alaska Native	809	0.6
Asian	537	0.4
Some other race	755	0.6
Two or more races	1,466	1.0
HOUSEHOLDS		
Total households	55,336	100.0
Average household size	2.50	N/A
HOUSING OCCUPANCY		
Total housing units	74,285	100.0
Occupied housing units	55,336	74.5
Vacant housing units	18,949	25.5
HOUSING TENURE		
Occupied housing units	55,336	100.0
Owner-occupied housing units	44,016	79.5
Renter-occupied housing units	11,320	20.5

2.4 Economy

General economic information for Baldwin County is shown in Table 2-3. According to Census 2000, more than half of the labor force is employed in the management/professional and sales/office occupations, at 29.5% and 27.5%, respectively. Educational, health and social services followed by retail trade and manufacturing are the major industries. Approximately 7.6% of Baldwin County families are classified as below the poverty level.

Table 2-3. General Economic Characteristics, Baldwin County

Subject	Number	Percent
EMPLOYMENT STATUS		
Population 16 years and over	110,255	100.0
In labor force	65,960	59.8
Civilian labor force	65,751	59.6
Employed	62,938	57.1
Unemployed	2,813	2.6
Percent of civilian labor force	N/A	4.3
Armed Forces	209	0.2
Not in labor force	44,295	40.2
OCCUPATION		
Management, professional, and related occupations	18,562	29.5
Service occupations	9,152	14.5
Sales and office occupations	17,304	27.5
Farming, fishing, and forestry occupations	622	1.0
Construction, extraction, and maintenance occupations	8,701	13.8
Production, transportation, and material moving occupations	8,597	13.7
INDUSTRY		
Agriculture, forestry, fishing and hunting, and mining	1,166	1.9
Construction	6,742	10.7
Manufacturing	7,895	12.5
Wholesale trade	2,407	3.8
Retail trade	8,939	14.2
Transportation and warehousing, and utilities	3,276	5.2
Information	1,472	2.3
Finance, insurance, real estate, and rental and leasing	3,838	6.1
Professional, scientific, management, administrative, waste management	4,679	7.4
Educational, health and social services	10,802	17.2
Arts, entertainment, recreation, accommodation and food services	5,723	9.1
Other services (except public administration)	3,374	5.4
Public administration	2,625	4.2
POVERTY STATUS IN 1999 (below poverty level)		
Families	3,082	N/A
Percent below poverty level	N/A	7.6

Table 2-4 lists the largest employers in the county. The Board of Education is the largest employer with 2,858 workers. The Riviera Center Outlet Mall, which markets to the

Gulf Coast tourism industry, and Wal-Mart are the second and third largest employers, respectively.

Table 2-4. Largest Employers, Baldwin County

Company	Product/Service	Number of Employees
Baldwin County Board of Education	Education	2,858
Riviera Center Outlet Mall	Retail	1,800
Wal-Mart Super Centers	Retail	1,200
Standard Furniture	Bedroom and Dining Room Tables	1,000
Thomas Hospital	Medical Care	1,000
Mercy Medical	Medical Care	725
Baldwin County Government	Government	700
Southern Aluminum	Aluminum Castings	550
South Baldwin Regional Med. Center	Medical Care	470
Marriott Grand Hotel	Hotel Resort	400
Goodrich Aerospace	Thrust Reservers and Nacelle Components	463
Delphi Mechtronic	Electronics	340
Solutia Manufacturing	Nylon Staple	230

2.5 Climate

Baldwin County has a very wet, sub-tropical maritime climate strongly affected by Gulf weather systems. Hot and humid summer months are tempered by cooling southerly breezes. High winds and heavy rainfalls from hurricanes or tropical systems pose a threat during summer and fall. Winters are mild and snowfall is very rare. Additional climate information is presented in Table 2-5.

Table 2-5. Climate Information, Baldwin County

Category	Average
Annual Average Temperature	67.4° F
Avg. January Temperature	51.4° F
Average July Temperature	81.8° F
Average Annual Precipitation (inches)	64.0
Average Annual Snowfall	0 .0
Growing Season Range	230 to 270 Days
Prevailing Wind Direction	South/ Southeast

2.6 Physical Features

Baldwin County is located in the Lower Coastal Plain of the Gulf Coastal Plain physiographic province. It consists of five different geologic formations, as depicted on Map 2-4.

Area 1 primarily consists of silt and clay sediments washed by the Alabama and Tombigbee Rivers from areas to the north. Elevations in this area range from sea level up to 200 feet. Area 2 has a nearly level to sloping topography and ranges in elevation from 10 to 100 feet above sea level. The soil in this area consists of marine materials. Area 3 encompasses the sandy, coastal beaches along the Gulf of Mexico. Elevation rises from sea level to a height of 20 feet in inland areas. Area 4 has a hilly topography and ranges in elevation from 50 to 300 feet above sea level. Most of Area 5 has a level to gently sloping topography that varies from 100 to 300 feet in elevation. The major drainage basins in the county are shown on Map 2-5.

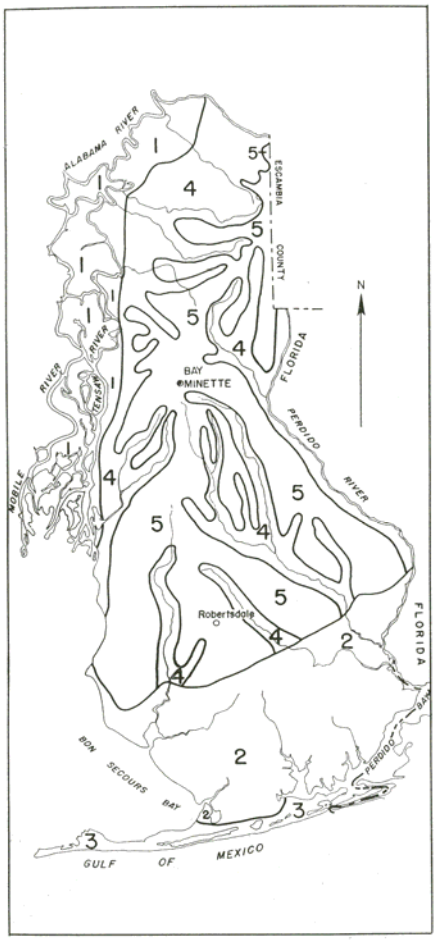
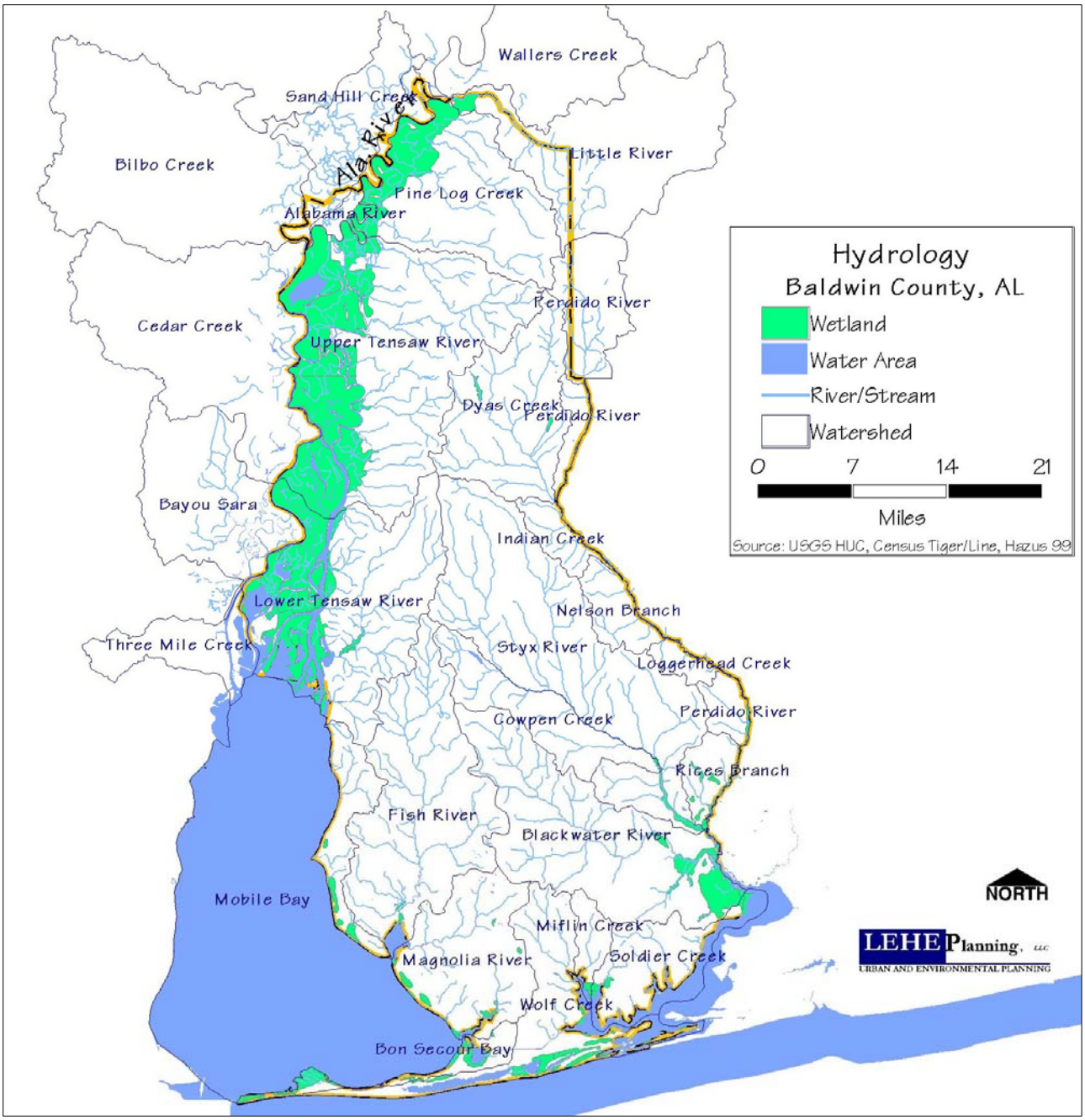


Figure 2.—Physiographic areas of Baldwin County.
1. River flood plains and terraces.
2. Marine terraces.
3. Areas of Coastal beaches.
4. Areas underlain by Hattiesburg clay.
5. Plateaus and ridgetops underlain by the Citronelle formation.

Source: Baldwin County Soil Survey

Map 2-4. Physiographic Areas, Baldwin County



Map 2-5. Major Drainage Basins, Baldwin County

2.7 Transportation

Map 2-6 depicts the county's transportation system discussed below.

Highway, Truck and Parcel

Two interstate highways bisect Baldwin County to providing north/south and east/west routes. Interstate 65, which runs north to Nashville and Chicago, originates in Mobile. Interstate 10 begins in Jacksonville, Florida and terminates in Los Angeles, California. Connecting interstates include I-85 and I-95 north to New York and Boston, I-55 north to Memphis, St. Louis and Chicago, and I-20 west to Dallas. Three federal highways and ten state highways traverse the county. Seven truck terminals are located in Baldwin County with an additional 50 located in the surrounding metro area. All major parcel carriers provide service in Baldwin County. United Parcel Service (UPS) operates a terminal in Robertsdale.

Public Transportation

Baldwin County has received numerous awards for its county transportation system. The Baldwin County Rural Area Transportation System (BRATS) has 48 buses that transport employees to and from work. Each year, it transports over 700,000 passengers over its 68 regular routes.

Rail

One major Class I railroad, CSX, serves Baldwin County. CSX joins with three other Class I railroads in Mobile. Piggyback service, containerized service, and reciprocal switching are available in Mobile. There is also Amtrak passenger service in the Mobile metro area to New Orleans, Miami and Mobile.

Water

Baldwin County is strategically located adjacent to the 1,000 mile Gulf Intracoastal Waterway, which is used for barge transportation from Brownsville, Texas to Saint Marks, Florida. The waterway has a depth of 12 feet. Minimum width of the channel in Baldwin County is 125 feet. The waterway links to the Mobile Ship Channel, which has an average depth of 45 feet. This channel links to the Mobile River, providing access to the Tenn-Tom Waterway.

Ports

Baldwin County is located between the Port of Mobile and the Port of Pensacola. The Port of Mobile acts as the hub of the Alabama State Docks, which operates several major cargo-handling facilities. Container cranes, bulk handling facilities, and a main docks complex with 26 general cargo piers are available to service most cargo needs. Special roll-

on/roll-off berths are available with millions of square feet of storage space and other value-added port services.

Air Service

Municipal airports located in Bay Minette, Fairhope, Foley and Gulf Shores provide general aviation service. Regional commercial service is provided in Mobile and Pensacola with 51 flights daily. Mobile Carriers include: Continental Express, Delta, Northwest Airlink, Skywest, United Express, and US Airways Express. Pensacola Carriers include: Airtran, Comair, Continental, Delta, Northwest Airlink, US Airways and US Airways Express.

Several companies including Federal Express and UPS provide airfreight service. Carrier services with daily flights to South America are also available. Airfreight facilities are interconnected to rail, the Port of Mobile, interstates, and a foreign trade zone. As shown in Table 2-6, all four municipal airports, located in Bay Minette, Fairhope, Foley and Gulf Shores, offer lighted approaches.

Table 2-6. Airport Specifications, Baldwin County

Airport	Runway Length	Paved	Lighted	Tie Downs	Hangers	Repairs
Fairhope	6,600 Feet	X	X	X	X	X
Gulf Shores	5,400 Feet	X	X	X	X	X
Bay Minette	4,600 Feet	X	X	X	X	X
Foley	4,275 Feet	X	X	X	X	X

Map 2-6. Transportation System, Baldwin County

2.8 Utilities

Electrical Power

Baldwin EMC, Riviera Utilities (City of Foley) and the cities of Fairhope and Robertsdale distribute electric power to customers in their service territories. Power suppliers to other regions of Baldwin County are Alabama Power, Alabama Electric Cooperative and Alabama Municipal Electric Authority.

Natural Gas

Natural Gas is supplied by the United Gas Pipeline and distributed by the cities of Bay Minette, Daphne, Fairhope and Riviera Utilities (City of Foley).

Water

Baldwin County's municipalities and public and private water systems provide treated water to residential customers as well as businesses and industry. Excess capacity per system ranges from 70,000 to 3,000,000 gallons per day. Most cities have elevated water tanks for storage.

Wastewater

Ten municipal systems and three private systems provide wastewater services to residents, businesses, and industries. Excess capacity per system ranges from 50,000 to 1,000,000 gallons per day. The predominant treatment types are activated sludge, aeration, lagoon and bio-chemical treatments.

Solid Waste

Baldwin County operates its own federally permitted, subtitled landfill. Several transfer lift stations also serve as a point to transport waste to the landfill. The county and several private companies provide transportation to the landfill.

Telecommunications

Gulf Telephone and BellSouth provide state-of-the-art telecommunications including central offices, fiber optics, ISDN, POPS, high-speed internet, and other services. Cellular service is available through several well-known providers. Six regional and local television stations, five cable providers, and 17 regional and local radio stations serve the area.
Source: Baldwin County Economic Development Alliance

Chapter 3
The Planning Process

3.1 A Multi-Jurisdictional Planning Process

The Hazard Mitigation Planning Committee (HMPC) represents all incorporated cities and towns – Bay Minette, Daphne, Elberta, Foley, Fairhope, Gulf Shores, Loxley, Orange Beach, Robertsdale, Silverhill, Spanish Fort, Summerdale - and all unincorporated communities and areas of Baldwin County. The Committee seeks a coordinated and active mitigation planning process among all jurisdictions with their full participation in plan development and implementation. This integrated planning process combines the risks, issues, goals, and mitigation measures of each community into a consolidated plan whereby all jurisdictions have equal opportunity for participation and full representation in the planning process. This process, therefore, satisfies the requirements of CFR Section 201.6(a)(3) of the DMA 2000 in which "multi-jurisdictional plans may be accepted, as appropriate, as long as each jurisdiction has participated in the process."

Representatives from all jurisdictions have participated in the planning process by attending Committee meetings, completing Committee assignments and exercises, attending the public meeting, and/or completing other planning activities during the drafting phase of this Plan. In addition to Committee representation, each jurisdiction conducted an independent public hearing to receive public comments prior to final action by each governing body to adopt the plan. The minimum level of Committee participation for each jurisdiction was achieved by one or more representatives that were actively involved in one or more planning activities conducted in the drafting phase of the plan. Authorized representatives for any given jurisdiction are shown in Table 3-1.

3.2 Hazard Mitigation Planning Committee

A special planning committee – the Baldwin County Hazard Mitigation Planning Committee – comprised of representatives from all the jurisdictions and other organizations in Baldwin County concerned with natural disasters guided the development of this natural hazards mitigation plan. The members of the Planning Committee and the organizations or jurisdictions they represent are shown in Table 3-1.

Table 3-1. Hazard Mitigation Planning Committee

Name	Agency	Representing
Mark Berson	Alabama Gulf Coast Chamber of Commerce	Business and Industry
Colette Boehm	Alabama Gulf Coast Convention and Visitors Bureau	Tourism Industry
Deborah Jordan	American Red Cross	American Red Cross
Mike Howell	Baldwin County-Building Dept.	Baldwin Co.
Chuck Browdy	Baldwin County-Commission	Baldwin Co. and Municipalities

Table 3-1. Hazard Mitigation Planning Committee

Name	Agency	Representing
Leigh Anne Ryals	Baldwin County-Emergency Management Agency	Baldwin Co and Municipalities
Thomas E. Granger	Baldwin County-Engineer	Baldwin Co. and Municipalities
Teddy King	Baldwin County-Health Dept	Baldwin Co. and Municipalities
Wayne Dyess	Baldwin County- Planning and Zoning	Baldwin Co.
Ken Wilks	Orange Beach Fire and Rescue	City of Orange Beach
Sonny Dobbins	City of Bay Minette - Mayor's Office	City of Bay Minette
Ken Eslava	City of Daphne – Public Works	City of Daphne
Charles Gruber	Town of Elberta - Mayor's Office	Town of Elberta
Wayne Smith	City of Fairhope-Fire & Rescue	City of Fairhope
Erik Cortinas	City of Fairhope-Building	City of Fairhope
Joe Bouzan	City of Foley-Fire & Rescue	City of Foley
Arthur Bourne	City of Gulf Shores-Police	City of Gulf Shores
Billy Middleton	Town of Loxley - Mayor's Office	Town of Loxley
Michael M. Dugger	Riviera Utilities	City of Foley
Charles Murphy	City of Robertsdale- Mayor's Office	City of Robertsdale
Allen W. Green, Jr.	City of Silverhill- Mayor's Office	City of Silverhill
Greg Kuhlman	City of Spanish Fort- Mayor's Office	City of Spanish Fort
David Wilson	City of Summerdale - Mayor's Office	City of Summerdale

* Note: Baldwin County has jurisdiction within all incorporated and unincorporated areas of the County and, through normal business practices, performs services to support municipal operations. The Baldwin County Committee members represent all municipalities within Baldwin County as well as unincorporated communities within the County. All mayors of the cities and towns serve as ex officio members of the Committee, and the Baldwin County Mayors' Association also represents all cities and towns.

Members were recommended by Leigh Anne Ryals, Director of the Baldwin County EMA, and then appointed by the Local Emergency Planning Committee for the entire five-year cycle of this mitigation plan. Any citizen could contact the EMA for possible appointment to the Committee. The staff of the Baldwin County EMA serves the Committee in a support role as facilitator with the participating municipalities and the County Commission.

The Committee adopted the following mission statement at its first meeting:

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

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

- *Results in programmed actions with specific results.*

The Committee held four meetings between March through July 2003 during the plan drafting process. Documentation of these meetings in the form of sign-in sheets and meeting agendas are located at the EMA office. Those Committee members unable to attend a meeting received agendas and completed Committee assignments presented via fax, email, post, or telephone, or personal meetings with the EMA. The Committee's tasks were facilitated by a website, mitigationplan.org, specifically designed to assist in the planning process. The website listed the dates and times of all Committee meetings and public meetings and displayed sections of the draft plan as they were completed. Comments could be submitted to the Committee through the website. Sample pages from the website are available at the EMA office.

Over the course of the Committee meetings, each Committee member was asked to participate in five different exercises designed by the Committee's consultant to solicit input into the planning process by each member. (Section 5.2 in Chapter 5 presents complete descriptions of the exercises and their application in the planning process). Representatives from all jurisdictions completed all of the exercises. In *Committee Exercise #1 - Mission/Vision Statements* the members created a mission statement for the Committee and a vision statement for a disaster-resistant community. *Committee Exercise #2 - Hazard Identification* was used to identify the natural hazards members believe were possible risks/threats to their jurisdiction and rank those natural hazards according to those risks/threats. *Committee Exercise #3 - Hazard Profiles* required members to provide information on natural hazards that occurred in their jurisdiction. *Committee Exercise #4 - Capabilities Assessment for Hazard Mitigation* surveyed members to identify regulatory tools, i.e. codes, ordinances; what their personnel resources are, i.e. city engineer; and what financial resources are available, i.e. CDBG, taxes, within their jurisdictions. *Committee Exercise #5 - Alternative Mitigation Measures* asked the participants to describe the most critical natural hazard issues and opportunities and make recommendations for mitigation measures and projects. The information provided from the members' participation in Committee meetings and in Committee exercises form the basis for this Plan. Results of all exercises are maintained in the EMA offices.

3.3 Public Involvement

The Planning Committee solicited public input into the mitigation plan through public meetings, the local news media, and an internet website. Residents were encouraged to provide input through their representative on the Committee from each jurisdiction. They were also invited to attend meetings and provide their comments and concerns. Documentation of these events is on file in the EMA office.

The first event was held on June 4-5, 2003 at the annual Baldwin County Hurricane Expo. At the event, attendees were informed that the hazard mitigation planning process was underway and told about the website. Brochures about the natural hazards affecting the county were available. A form was available for public comments. Questionnaires were available for the public to record comments, but no comments were received.

A public hearing to receive comments was held by each jurisdiction prior to adopting this Plan by resolution, as required by State law. All jurisdictions approved the adopting resolutions by vote of the governing bodies. The original resolutions and public hearing minutes are kept on file at the EMA offices.

3.4 Interagency and Intergovernmental Coordination

The Committee members recommended which organizations and agencies in the area were to be contacted in regard to the plan. Agencies were chosen based on their relation to natural hazard mitigation; their interest in those areas affected by natural hazards, i.e. businesses; and the impact natural hazards in Baldwin County could have on surrounding counties. The following agencies received a letter requesting their input and cooperation. A copy of that letter follows this list of agencies. Representatives of the American Red Cross, the Alabama Gulf Coast Chamber of Commerce, and the Alabama Gulf Coast Convention and Visitors Bureau were part of the HMPC. The National Weather Service, USGS, and the Baldwin County Economic Development Alliance provided data for this plan. There was no input from the other agencies listed.

Federal Agencies

- National Weather Service – Mobile Office
- Natural Resources Conservation Service – Alabama District
- United States Army Corps of Engineers – Mobile District

State Agencies

- Alabama Emergency Management Agency
- ADECA
- ADEM
- Geological Survey of Alabama
- Alabama Forestry Commission

Regional Agencies

- South Alabama Regional Planning Commission

Businesses, Academia, Non-Profit Agencies

- North Baldwin Chamber of Commerce
- South Baldwin Chamber of Commerce
- Eastern Shore Chamber of Commerce
- University of South Alabama
- American Red Cross – Alabama Gulf Coast Chapter

Adjacent Counties

- Clarke County EMA
- Monroe County EMA
- Escambia County, AL EMA
- Escambia County, Florida EMA
- Washington County EMA
- Mobile County EMA

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June 10, 2003

NOTICE OF DRAFT PLAN AND REQUEST FOR COMMENTS

Baldwin County, Alabama, 2003 Natural Hazard Mitigation Plan

Baldwin County is currently developing a natural hazards mitigation plan for its municipalities and unincorporated areas. The plan will serve as a strategic planning guide in fulfillment of requirements of the federal Disaster Mitigation Act of 2000 (DMA 2000), as administered by the Federal Emergency Management Agency (FEMA). DMA 2000 provides the framework for state and local governments to evaluate and mitigate all hazards as a condition to receiving Federal disaster assistance. Lehe Planning, LLC, has been retained by the County's Emergency Management Agency to prepare the plan under the direction of its Hazard Mitigation Planning Committee.

A major requirement of the federal law is the development of a local hazard mitigation plan. Among other DMA 2000 planning criteria, an "*open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:*

> ***An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process."***

To meet the coordination requirements, the County's Hazard Mitigation Planning Committee requests your organization's involvement in the planning process. You may view the draft plan on the Web at http://mitigationplan.org by clicking on the County's link to its page on the Website. Links on the bottom of the County's page will allow you to view the draft plan. A second link allows comments to be e-mailed directly to the County's planning consultants. You will also find contact information on the site if you would like to discuss the plan with the EMA Director or any of the consultants. This site is maintained to inform the general public and interested parties of the planning process and to allow a convenient means to comment on the plan as it is drafted. You may forward this message to any other agency or individual that might have an interest in the mitigation plan.

On behalf of the Hazard Mitigation Planning Committee, your participation is appreciated.

Sincerely,

James E. Lehe, AICP
Manager

3.5 Participating Jurisdictions

All municipalities within Baldwin County have participated in the planning process by direct representation and/or representation through an EMA staff member on the Planning Committee and have committed to adopting the final plan by formal resolution. All members were required to participate. Individuals whose schedule did not permit their presence at the meetings received the questionnaires through the mail or via fax. They replied by fax, email, postal mail or phone if they were unable to attend the meeting. All twelve municipalities within Baldwin County have participated in the planning process and adopted the final plan by formal resolution. These municipalities are:

- Bay Minette
- Elberta
- Fairhope
- Loxley
- Robertsdale
- Spanish Fort
- Daphne
- Foley
- Gulf Shores
- Orange Beach
- Silverhill
- Summerdale

All jurisdictions participated through representation on the Planning Committee. Participation was achieved through one or more of the following means:

- Responding to questionnaires and committee exercises,
- Attending one or more committee meetings,
- Attending public meetings,
- Reviewing draft plan sections,
- Offering comments on the draft plan, and
- Adopting the plan through formal resolution (Prior to adoption, the municipalities reviewed the resolution and conducted a public hearing on it).

Furthermore, in the State of Alabama the county government, by law, represents all municipalities within the county. This obligation provides a measure of additional representation to the municipalities.

3.6 Integration with Existing Plans

The information in this plan was derived from input from the Committee members, National Flood Insurance Program office, and various public and private websites as noted throughout the study. The websites included NOAA, University of Alabama, USGS, US Census, FEMA and the Department of Natural Resources.

Integrated into this Plan is information from the following plans, studies, and reports, among other resources:

- Alabama Data Center demographic and economic reports
- NOAA and NWS records
- FEMA and local disasters reports
- Flood Insurance Studies and Flood Insurance Rate Maps
- Dam Inundation Studies
- US Census
- Department of Natural Resources
- Tri-County Hazard Mitigation Plan

This document will be incorporated into the Baldwin County Emergency Operations Plan administered through the EMA office. The requirements of this mitigation plan should also be integrated into any revisions of existing comprehensive plans and/or future planning documents at the appropriate time. Specific measures for plan integration are included in the Community Mitigation Action Programs for each jurisdiction (see Chapter 6). Capital budgeting requirements will be incorporated into local capital improvements plans.

3.7 Professional Planning Guidance

This plan was prepared under the direction of the Hazard Mitigation Planning Committee with the guidance and support of a professional planner - James E. Lehe, AICP, Manager Lehe Planning, LLC., Urban and Environmental Planning, of Homewood, Alabama. A professional planner will continue guidance and support to the Committee with any revisions, amendments, or updates to this plan.

Chapter 4
Risk Assessment

4.1 The Risk Assessment Process

This risk assessment identifies all known natural hazards affecting Baldwin County. It provides information on the history and extents of natural hazards, evaluates the possible effects, identifies vulnerable populations and assets (buildings, critical facilities, and essential infrastructure), and estimates potential losses that might occur. The risk assessment process identifies the most critical problems and issues that require mitigation actions.

4.2 Identification of Natural Hazards

The Planning Committee completed *Committee Exercise #2 - Hazard Identification* in which they reviewed a list of all potential natural hazards and identified those that might occur in the county. Next, members ranked the risk or probability of the natural hazard occurring and the threat of damage that might be incurred should the event take place. The results are presented in Table 4-1. Risks and threats are fairly uniform among all localities. However, the relative risks associated within each jurisdiction may vary somewhat, as described in Table 4-23, at the end of this chapter.

Table 4-1. Natural Hazard Identification/Risk Assessment Exercise

Hazard	Exp*	Risk**	Threat**	Comments
Hurricanes	Yes	Very Severe	Very Severe	Major hurricanes in recent history: Frederic '79, Elena '79, Erin '95, Opal '95, Danny '97, Georges '98, Isidore '02
Severe Thunderstorms	Yes	Very Severe	Severe	Due to proximity to Gulf, storms tend to be severe, producing hail, downbursts and severe lightning.
Tornadoes	Yes	Very Severe	Severe	
Flooding	Yes	Severe	Moderate	Localized flooding with hurricanes and severe storms, especially along Fish River and Styx River.
Wildfires	Yes	Moderate	Slight	Severe wildfire occurred in 2002
Droughts/heat waves	Yes	Moderate	Slight	Greatest impact is on agriculture.
Dam/levee failures	Yes	Minimal	Minimal	
Landslides	Yes	Minimal	Minimal	Hurricane Danny caused a landslide in Spanish Fort in 1997.

Table 4-1. Natural Hazard Identification/Risk Assessment Exercise

Hazard	Exp*	Risk**	Threat**	Comments
Winter storms/ freezes	Yes	Minimal	Minimal	
Earthquakes	Yes	Minimal	Minimal	
Volcanoes	No	N/A	N/A	
Tsunami	No	N/A	N/A	

***Exp* –** exposure.
****Risk*** is the probability of the natural hazard event occurring within the County.
*****Threat*** is the impact of the natural hazard on property damage, injury and loss of life should the event occur.
N/A - not applicable to the area

4.3 Significant Natural Hazard Events

In *Committee Exercise #3 - Hazard Profiles*, the Committee profiled past natural hazards. All jurisdictions responded to the exercise. The natural hazard profiles provided were then broken down into each of their respective sections in the remainder of the document. Numerous sources have been utilized to profile significant natural hazards, including: the Storm Events Database of the National Climatic Data Center (NCDC); FEMA Region IV –Federal Declarations; the National Weather Service; the Baldwin County EMA; the Alabama Geologic Survey and the HMPC Members. The Committee identified hurricanes and floods as the most significant damage-causing events in Baldwin County history. The Storm Events Database may be queried at the following link: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

Baldwin County has been included in a total of 13 federal disaster declarations from 1973 through 2003. These declarations from FEMA, Region IV are listed in Table 4-2. All of these events did not necessarily occur within the boundaries of Baldwin County. When major damage from a natural disaster occurs, FEMA, as a matter of practice, includes a "buffer" area of adjoining counties in the event it later determines the damage was more widespread. Specific instances of this practice are discussed as they are encountered in the following hazard profiles.

Table 4-2. Federally Declared Disasters 1973-2002, Baldwin County

Disaster Number	Disaster Type	Date	Declaration Type / Description*
369	Tornado	5/03/1973	IA, PA-ABCDEFG, DH, DUA, IFG
3045	Drought	8/16/1977	PA-AB
598	Hurricane	9/13/1979	IA, PA-ABCDEFG, DH, DUA, IFG
619	Severe Storms	4/20/1980	IA, PA-ABCDEFG, DH, DUA, IFG
639	Flood	5/14/1981	IA, PA-ABCDEFG, DH, DUA, IFG
742	Hurricane	9/07/1985	IA, PA-ABCDEFG, DH, DUA, IFG

Table 4-2. Federally Declared Disasters 1973-2002, Baldwin County

Disaster Number	Disaster Type	Date	Declaration Type / Description*
861	Severe Storms	3/23/1990	IA, PA-ABCDEFG, DH, DUA, IFG
3096	Snow	3/23/1990	PA-AB
1070	Hurricane	10/10/1995	IA, PA-ABCDEFG, DH, DUA, IFG
1185	Severe Storms	7/25/1997	IA, PA-ABCDEFG, DH, DUA, IFG
3133	Hurricane	9/28/1998	PA-AB
1250	Hurricane	10/06/1998	IA, PA-ABCDEFG, DH, DUA, IFG
1438	Hurricane	10/09/2002	PA-ABCDEFG

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

Source: FEMA Region IV report, 3/03

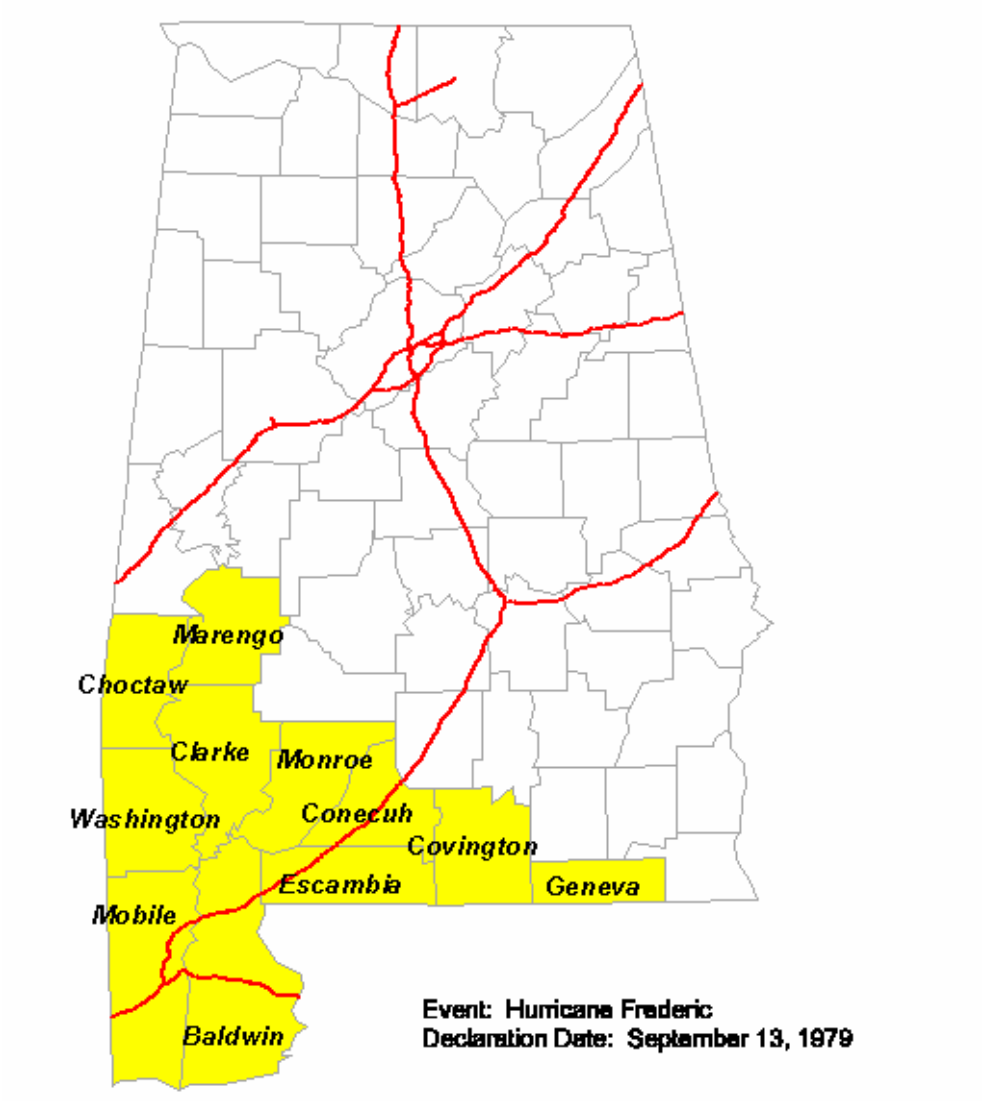
4.4 Hurricanes

Hazard Description. A "tropical cyclone" is a generic term for a cyclonic, low-pressure system over tropical or sub-tropical waters. Tropical cyclones with maximum sustained winds of less than 39 mph are called tropical depressions. A tropical storm is a cyclone with maximum sustained winds greater than 39 mph but less than 74 mph and a tropical storm with winds that have reached a constant speed of 74 miles per hour or more becomes a hurricane.

Hazard Profile. Baldwin County has been impacted by several hurricanes over the years. Maps 4-1 and 4-2 show the counties affected by the described hurricanes. Map 4-3 indicates where hurricanes from 1950 to 1996 made landfall in the southeastern United States. The following history was provided by the Baldwin County EMA:

> Since 1900, Alabama has been significantly affected by 10 hurricanes. One of the costliest hurricanes was Hurricane Frederic, a Category 3 hurricane which resulted in millions of dollars in damages to south and southwest Alabama. Hurricane Frederic caused enormous damage to parts of Alabama, Florida, and Mississippi as it came ashore on September 12, 1979. With winds reaching 145 miles per hour, Hurricane Frederic moved over Dauphin Island (near the mouth of

Baldwin Bay) and inland just west of Baldwin, Alabama. Storm tides of 8 to 12 feet above normal were reported from Pascagoula, Mississippi to western Santa Rosa Island, Florida. The damage estimate of Frederic was $2.3 billion. Based on information from preparedness officials, 250,000 persons were safely evacuated in advance of Frederic. Eleven counties were included in the disaster declaration: Baldwin, Choctaw, Clarke, Conecuh, Covington, Escambia, Geneva, Marengo, Baldwin, Monroe, and Washington. The hurricane impact area comprised 20.5 percent of the total land area of the State of Alabama.



Map 4-1. Hurricane Frederic

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

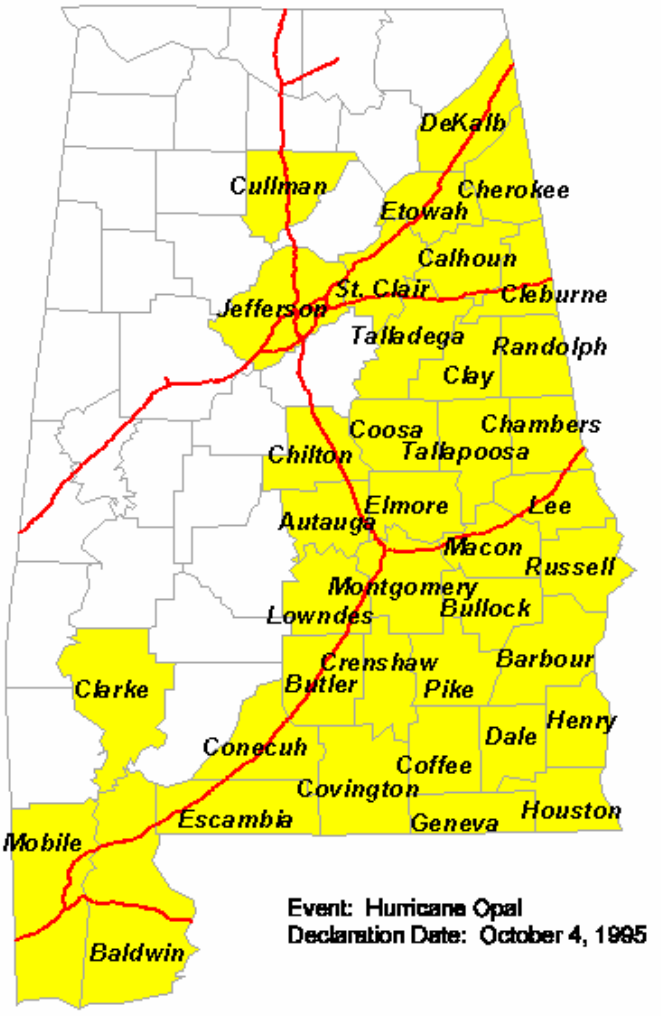
the storm passed 30 miles south of Baldwin, Alabama, battering Gulf Shores in Baldwin County, and Dauphin Island in Baldwin County. Wind gusts were estimated at up to 132 miles per hour on Dauphin Island. Hurricane tides reached 6 to 8 feet, primarily in an area from Dauphin Island west to Gulfport. The rainfall amounts were relatively light, with 2.35 inches reported in Baldwin. The Dauphin Island Sea Lab reported 3.00 inches of rain from Hurricane Elena. Two counties were declared disaster areas on September 7, 1985 due to Elena. Damage from Hurricane Elena was caused, for the most part, by wind, with additional damage from storm surge and wave action. Shoreline properties in Baldwin and Baldwin Counties were affected with the most extensive damage concentrated on the western end of Dauphin Island.

In the ten years between 1985 and 1995, Alabama suffered no major hurricane damages but in 1994, Tropical Storm Alberto caused extensive flooding in 10 southwest Alabama counties.

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 effected 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. Hurricane Opal was the most devastating hurricane of the 1995 season to impact the State of Alabama.

October 1995 saw Hurricane Opal rush 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. Opal, ninth Atlantic hurricane of an active 1995 season, made landfall near Hurtlbut Field, just east of Fort Walton Beach, Florida, on Wednesday, October 4, 1995. Wind speeds at landfall were 125 miles per hour. In the coastal Alabama communities of Baldwin and Baldwin, storm surge severely eroded beaches; damaged piers, docks, boats and roads; and flooded low-lying areas. Heavy rains, high winds, and tornadoes accompanying Opal caused flooding, blocked roads, and downed power lines. The storm's passage left six people dead in Alabama and thousands without power in Alabama. 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,

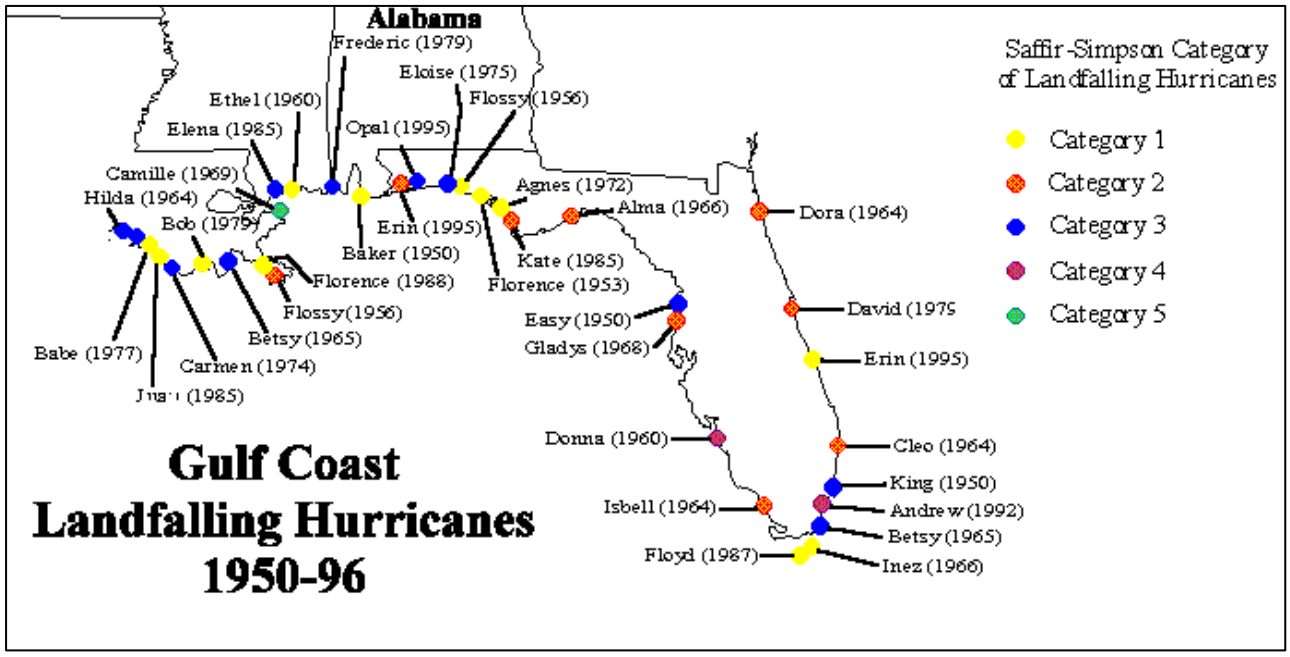
destruction of the primary dune system, and overall narrowing of the beach in many areas. More than one half of the state's counties were included in the disaster declaration areas. The affected counties were concentrated in the eastern half of the state and along the southern border westward to the Mississippi line. The area contains a total population of 2,982,088, and includes the three largest cities in the state, Birmingham, Baldwin, and Montgomery.



Map 4-2. Hurricane Opal

Beginning in the evening of July 18 and continuing through the morning of July 19th, 1997, Hurricane Danny came ashore through Baldwin Bay. Danny had sustained winds of around 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 homes and businesses 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. Parts of central Baldwin County around the Fish River area suffered very heavy flood damage. There was also substantial crop damage due to the storm. As a result of the storm, three counties were declared disaster areas and received federal assistance to help aid in repairs.



Map 4-3. Landfalling Hurricanes on the Gulf Coast

Table 4-3 identifies recent hurricanes that have had an impact on Baldwin County as recorded by NOAA.

Table 4-3. Recent Hurricanes/Tropical Storms Since 1995

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
1 Southwest Alabama	08/03/1995	9:00 am	Hurricane Erin	N/A	0	0	$25.0M	$1.0M
2 Southwest And South Alabama	10/03/1995	12:00 pm	Hurricane Opal	N/A	0	0	$48.0M	$4.0M
3 Southwest Alabama	07/18/1997	12:00 pm	Hurricane Danny	N/A	1	0	$60.5M	$2.5M
4 Southwest Alabama	09/01/1998	3:00 pm	Hurricane Earl	N/A	0	0	$10K	0

Table 4-3. Recent Hurricanes/Tropical Storms Since 1995

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
5 South and Southwest Alabama	09/25/1998	9:00 am	Hurricane Georges	N/A	1	0	$174.2M	$5.0M
6 Southwest Alabama	09/21/2000	9:00 am	Tropical Storm	N/A	0	0	$10K	0
7 Southwest Alabama	08/04/2001	9:00 am	Tropical Storm	N/A	0	0	$40K	0
8 Southwest Alabama	09/12/2002	9:00 am	Tropical Storm	N/A	0	0	$90K	0
9 Southwest Alabama	09/24/2002	9:00 am	Tropical Storm	N/A	0	0	$6.5M	0
10 Southwest Alabama	10/02/2002	9:00 am	Hurricane Lili	N/A	0	0	$175K	0

Community Impacts. Because of its location on the Gulf of Mexico, Baldwin County is susceptible to the effects of hurricanes and tropical storms. Risks associated with coastal storms include storm tide, inland flooding, water force, wind velocity and coastal erosion. A tropical storm can also produce numerous thunderstorms and tornadoes.

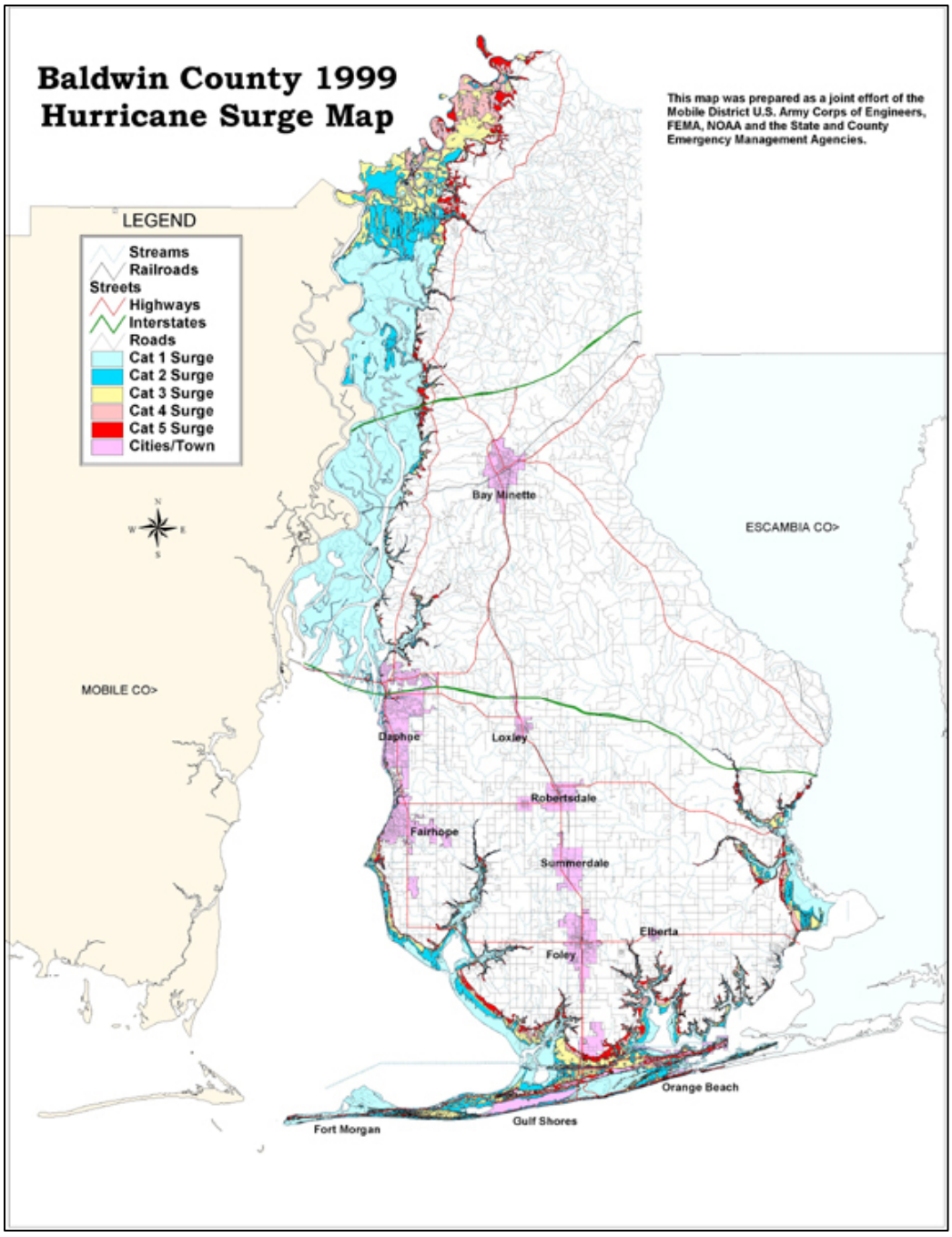
Location and Extents. The entire county is at risk of hurricane damage. Coastal Alabama borders a part of the northern Gulf of Mexico that has a high incidence of hurricane destruction. High winds, wave action, and flooding cause damage to Alabama's shoreline, while wind and water damage can extend far inland. Alabama has identified 16 counties in addition to Baldwin (within 100 miles of the coast) as primary Hurricane Risk Areas.

Storm surge (storm tide) is perhaps the most dangerous aspect of a hurricane. Map 4-4 delineates areas subject to severe storm surge. It is a phenomenon that occurs when the winds and forward motion of a hurricane "pile up" water 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 depth of the ocean bottom.

Probability of Future Occurrences. Baldwin County is susceptible to the effects of coastal storms. Since Baldwin County is located on Coastal Alabama bordering the Gulf of Mexico it is at high risk for hurricane incidences. Ten percent of deaths in the United States that are associated with hurricanes are due to tornadoes.

Based on historical information, the county can expect an average of one hurricane/tropical storm per year. Average annual damages are estimated at $26.2

million. Although one can extract data and probability of occurrence from historical information, the risk of a hurricane or tropical storm and the location of damage are random.



Map 4-4. 1999 Hurricane Surge Map, Baldwin County

4.5 Tornadoes

Hazard Description. A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. It is spawned by a thunderstorm or hurricane and produced when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. Tornado season is generally March through August, although tornadoes can occur at any time of year. They tend to occur in the afternoons and evenings. Over 80 percent of all tornadoes strike between noon and midnight.

Hazard Profile. Table 4-4 lists the damage-causing tornado events for Baldwin County occurring during the period 1950-2003 that are contained in the Storm Events Database. Their magnitudes are measured on the Fujita Scale, shown in Table 4-5. Other tornadoes with a magnitude of F0 are listed in the database but were not damage-causing. Table 4-5 identifies these tornadoes and their corresponding Fujita damage rating. According to Table 4-4, a total of 108 tornado events have caused 81 injuries and approximately $8.596 million in property damage in the County since 1950. According to NCDC data, the worst tornado to strike the County was a F2 in February 1981 that caused 62 injuries and $2.5 million in damages cutting a path 150 yards wide for 2 miles.

Table 4-4. Tornado Events Since 1950

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
1 Baldwin	04/18/1950	1:45 am	Tornado	F2	0	0	$3K	0
2 Baldwin	03/31/1962	8:00 am	Tornado	F2	0	0	$250K	0
3 Baldwin	12/24/1964	9:15 pm	Tornado	F2	0	3	$25K	0
4 Baldwin	11/10/1966	12:10 pm	Tornado	F2	0	0	$25K	0
5 Baldwin	10/30/1967	9:30 am	Tornado	F2	0	1	$25K	0
6 Baldwin	12/10/1967	4:10 am	Tornado	F2	0	0	$250K	0
7 Baldwin	11/03/1968	6:15 pm	Tornado	F3	0	4	$250K	0
8 Baldwin	11/03/1968	7:14 pm	Tornado	F3	0	0	$250K	0
9 Baldwin	07/08/1969	5:30 pm	Tornado	F0	0	0	0K	0
10 Baldwin	08/22/1969	4:15 pm	Tornado	F1	0	0	$0K	0
11 Baldwin	06/02/1970	7:30 am	Tornado	F2	0	0	$25K	0
12 Baldwin	09/16/1971	3:25 pm	Tornado	F1	0	0	$250K	0
13 Baldwin	09/16/1971	4:22 pm	Tornado	F2	0	0	$250K	0
14 Baldwin	11/13/1972	2:40 pm	Tornado	F2	0	0	$25K	0
15 Baldwin	12/31/1973	10:50 am	Tornado	F1	0	0	$3K	0
16 Baldwin	02/06/1974	3:30 pm	Tornado	F0	0	0	0K	0

Table 4-4. Tornado Events Since 1950

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
17 Baldwin	03/19/1974	4:30 pm	Tornado	F0	0	0	0K	0
18 Baldwin	09/07/1974	6:05 pm	Tornado	F0	0	0	0K	0
19 Baldwin	01/10/1975	4:15 pm	Tornado	F1	0	0	$3K	0
20 Baldwin	02/16/1975	10:15 am	Tornado	F1	0	0	$25K	0
21 Baldwin	02/16/1975	10:30 am	Tornado	F2	0	0	$250K	0
22 Baldwin	03/13/1975	5:55 pm	Tornado	F1	0	0	$25K	0
23 Baldwin	11/06/1975	3:50 pm	Tornado	F0	0	0	$25K	0
24 Baldwin	10/25/1977	7:00 am	Tornado	F1	0	0	$25K	0
25 Baldwin	06/29/1978	8:10 pm	Tornado	F0	0	0	0K	0
26 Baldwin	06/30/1979	6:55 pm	Tornado	F1	0	0	$3K	0
27 Baldwin	04/13/1980	12:00 pm	Tornado	F2	0	0	$25K	0
28 Baldwin	05/17/1980	2:45 am	Tornado	F1	0	0	$25K	0
29 Baldwin	05/17/1980	7:45 am	Tornado	F1	0	0	$25K	0
30 Baldwin	11/23/1980	2:30 pm	Tornado	F0	0	0	$25K	0
31 Baldwin	02/10/1981	8:40 am	Tornado	F2	0	62	$2.5M	0
32 Baldwin	03/22/1981	5:30 pm	Tornado	F1	0	0	0K	0
33 Baldwin	08/18/1981	2:20 pm	Tornado	F0	0	0	$0K	0
34 Baldwin	04/25/1982	5:30 am	Tornado	F1	0	0	$25K	0
35 Baldwin	05/07/1982	12:38 pm	Tornado	F1	0	0	$3K	0
36 Baldwin	04/14/1983	6:12 am	Tornado	F1	0	0	$3K	0
37 Baldwin	07/20/1983	3:45 pm	Tornado	F1	0	0	$3K	0
38 Baldwin	11/15/1983	7:05 am	Tornado	F1	0	0	$25K	0
39 Baldwin	02/11/1985	4:50 am	Tornado	F1	0	0	$25K	0
40 Baldwin	05/01/1985	5:55 pm	Tornado	F0	0	0	$3K	0
41 Baldwin	07/06/1985	3:00 am	Tornado	F0	0	0	$25K	0
42 Baldwin	09/23/1985	6:30 am	Tornado	F0	0	0	$25K	0
43 Baldwin	10/29/1985	9:50 am	Tornado	F1	0	0	$25K	0
44 Baldwin	05/19/1989	1:40 pm	Tornado	F0	0	0	0K	0
45 Baldwin	06/08/1989	8:51 am	Tornado	F1	0	10	$2.5M	0
46 Baldwin	06/08/1989	8:55 am	Tornado	F0	0	0	0K	0
47 Baldwin	11/07/1989	1:00 am	Tornado	F0	0	0	$3K	0

Table 4-4. Tornado Events Since 1950

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
48 Baldwin	03/15/1990	3:45 am	Tornado	F0	0	0	0K	0
49 Baldwin	03/15/1990	4:12 pm	Tornado	F0	0	0	0K	0
50 Baldwin	03/15/1990	4:28 pm	Tornado	F0	0	0	0K	0
51 Baldwin	05/17/1990	4:10 pm	Tornado	F0	0	0	0K	0
52 Baldwin	03/01/1991	1:20 pm	Tornado	F0	0	0	0K	0
53 Baldwin	04/29/1991	2:02 pm	Tornado	F0	0	0	0K	0
54 Baldwin	04/29/1991	2:06 pm	Tornado	F0	0	0	$250K	0
55 Baldwin	11/24/1992	5:00 am	Tornado	F1	0	1	$25K	0
56 Bay Minette	12/03/1994	9:30 pm	Tornado	F0	0	0	$50K	0
57 Loxley	04/22/1995	5:05 pm	Tornado	F0	0	0	0	0
58 Orange Beach	06/15/1996	11:20 am	Water-spout	N/A	0	0	0	0
59 Alabama Point	09/04/1996	6:15 am	Water-spout	N/A	0	0	0	0
60 Orange Beach	09/08/1996	6:00 am	Water-spout	N/A	0	0	0	0
61 Orange Beach	09/10/1996	5:00 pm	Water-spout	N/A	0	0	0	0
62 Orange Beach	04/22/1997	11:05 pm	Water-spout	N/A	0	0	0	0
63 Ft Morgan	06/07/1997	8:30 am	Water-spout	N/A	0	0	0	0
64 Orange Beach	07/18/1997	5:02 pm	Tornado	F0	0	0	$20K	0
65 Gulf Shrs	09/19/1998	1:00 pm	Tornado	F0	0	0	0	0
66 Loxley	09/27/1998	4:55 pm	Tornado	F0	0	0	$3K	0
67 Summerdale	02/23/1999	5:45 pm	Tornado	F0	0	0	$10K	0
68 Weeks Bay	05/26/1999	7:45 am	Water-spout	N/A	0	0	0	0
69 Gulf Shrs	05/29/1999	6:40 pm	Water-spout	N/A	0	0	0	0
70 Ft Morgan	05/29/1999	7:00 pm	Tornado	F0	0	0	$10K	0
71 Ft Morgan	05/31/1999	1:50 pm	Water-spout	N/A	0	0	0	0

Table 4-4. Tornado Events Since 1950

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
72 Gulf Shrs	05/31/1999	2:42 pm	Tornado	F0	0	0	0	0
73 Orange Beach	07/02/1999	9:55 am	Water-spout	N/A	0	0	0	0
74 Point Clear	07/12/1999	9:10 am	Water-spout	N/A	0	0	0	0
75 Point Clear	07/12/1999	9:15 am	Tornado	F0	0	0	0	0
76 Ft Morgan	07/12/1999	10:10 am	Water-spout	N/A	0	0	0	0
77 Fairhope	07/17/1999	12:20 pm	Water-spout	N/A	0	0	0	0
78 Bon Secour	07/23/1999	6:15 pm	Water-spout	N/A	0	0	0	0
79 Ft Morgan	08/04/1999	4:55 pm	Water-spout	N/A	0	0	0	0
80 Bay Minette	04/13/2000	5:40 pm	Funnel Cloud	N/A	0	0	0	0
81 Orange Beach	06/01/2000	11:10 am	Water-spout	N/A	0	0	0	0
82 Perdido Beach	06/25/2000	8:10 pm	Water-spout	N/A	0	0	0	0
83 Point Clear	06/25/2000	8:35 pm	Water-spout	N/A	0	0	0	0
84 Orange Beach	08/22/2000	5:25 am	Water-spout	N/A	0	0	0	0
85 Gulf Shrs	08/27/2000	8:45 am	Water-spout	N/A	0	0	0	0
86 Foley	11/08/2000	11:05 am	Tornado	F1	0	0	$150K	0
87 Fairhope	11/08/2000	11:25 am	Tornado	F0	0	0	$10K	0
88 Fairhope	11/08/2000	11:50 am	Tornado	F1	0	0	$200K	0
89 Elsanor	11/08/2000	12:45 pm	Tornado	F0	0	0	0	0
90 Orange Beach	04/24/2001	5:55 pm	Water-spout	N/A	0	0	0	0
91 Elsanor	05/29/2001	3:00 pm	Funnel Cloud	N/A	0	0	0	0

Table 4-4. Tornado Events Since 1950

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
92 Fairhope	07/02/2001	11:05 am	Water-spout	N/A	0	0	0	0
93 Perdido Beach	07/26/2001	3:10 pm	Water-spout	N/A	0	0	0	0
94 Orange Beach	07/26/2001	8:15 am	Water-spout	N/A	0	0	0	0
95 Ft Morgan	07/26/2001	11:10 am	Water-spout	N/A	0	0	0	0
96 Point Clear	08/18/2001	1:30 pm	Water-spout	N/A	0	0	0	0
97 Spanish Ft	10/13/2001	1:45 pm	Tornado	F0	0	0	$25K	0
98 Fairhope	10/13/2001	6:30 am	Tornado	F1	0	0	$50K	0
99 Montrose	10/13/2001	6:35 am	Tornado	F0	0	0	$10K	0
100 Gulf Shrs	10/13/2001	12:00 pm	Tornado	F0	0	0	$20K	0
101 Foley	10/13/2001	12:25 pm	Tornado	F3	0	0	$250K	0
102 Foley	10/13/2001	12:40 pm	Tornado	F0	0	0	$15K	0
103 Robertsdale	10/13/2001	12:44 pm	Tornado	F2	0	0	$200K	0
104 Foley	08/19/2002	10:30 am	Funnel Cloud	N/A	0	0	0	0
105 Gulf Shrs	09/25/2002	6:25 pm	Tornado	F0	0	0	$25K	0
106 Gulf Shrs	09/25/2002	7:06 pm	Tornado	F0	0	0	$15K	0
107 Barnwell	11/05/2002	1:40 pm	Tornado	F0	0	0	$10K	0
108 Fairhope	06/21/2003	1:52 pm	Funnel Cloud	N/A	0	0	0	0

Community Impacts. The damage from a tornado is a result of the high wind velocity and wind-blown debris. Tornado winds can approach speeds as high as 300 miles per hour, travel distances over 100 miles and reach heights over 60,000 feet above ground. The potential damage resulting from a tornado is directly correlated to the strength of the particular tornado and is quantified utilizing the Fujita Tornado Scale. The Fujita Scale assigns numerical values based on wind speeds and categorizes tornadoes from 0-5. The letter “F” often precedes the numerical value.

Table 4-5. Fujita Tornado Damage Scale

Scale	Wind Estimate (mph)	Typical Damage
F0	< 73	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113-157	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	158-206	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4	207-260	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5	261-318	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.

Charts 4-1, 4-2, 4-3, and 4-4 depict the characteristics of tornadoes since 1950 within a 20-mile radius of the center of Baldwin County. (Source: VorTek, LLC. SATT 3.0 Site Assessment of Tornado Threat software)

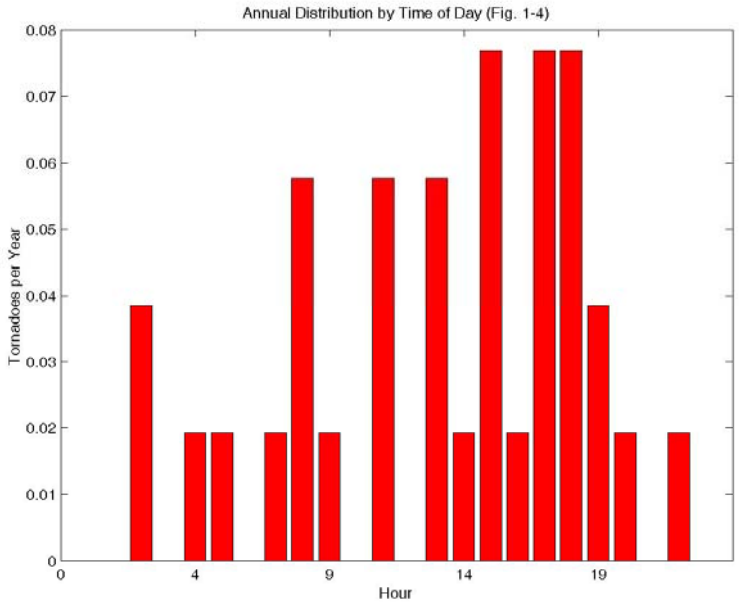


Chart 4-1. Annual Distribution of Tornadoes by Time of Day

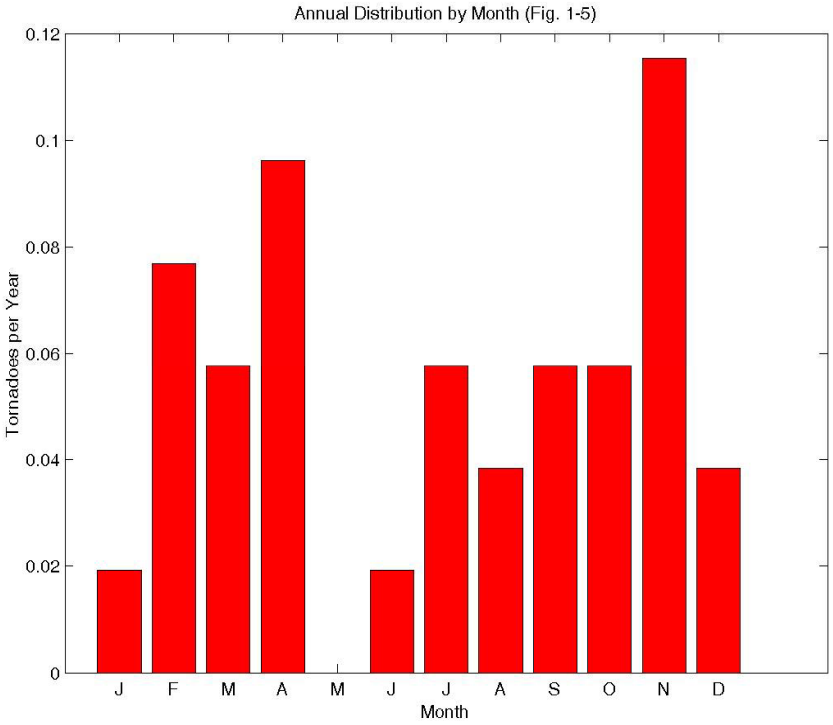


Chart 4-2. Annual Distribution of Tornadoes by Month

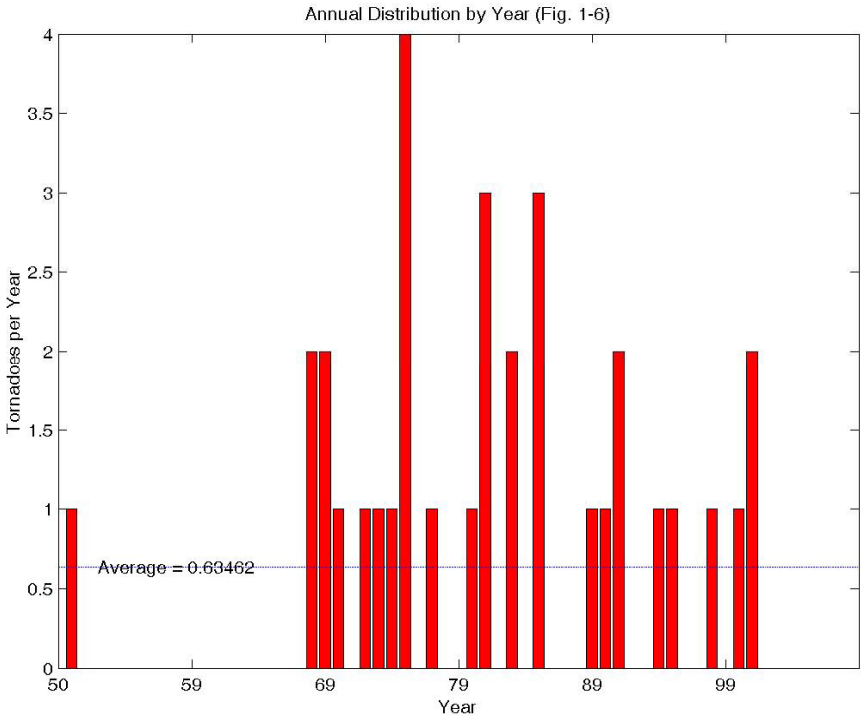


Chart 4-3. Annual Distribution of Tornadoes by Year

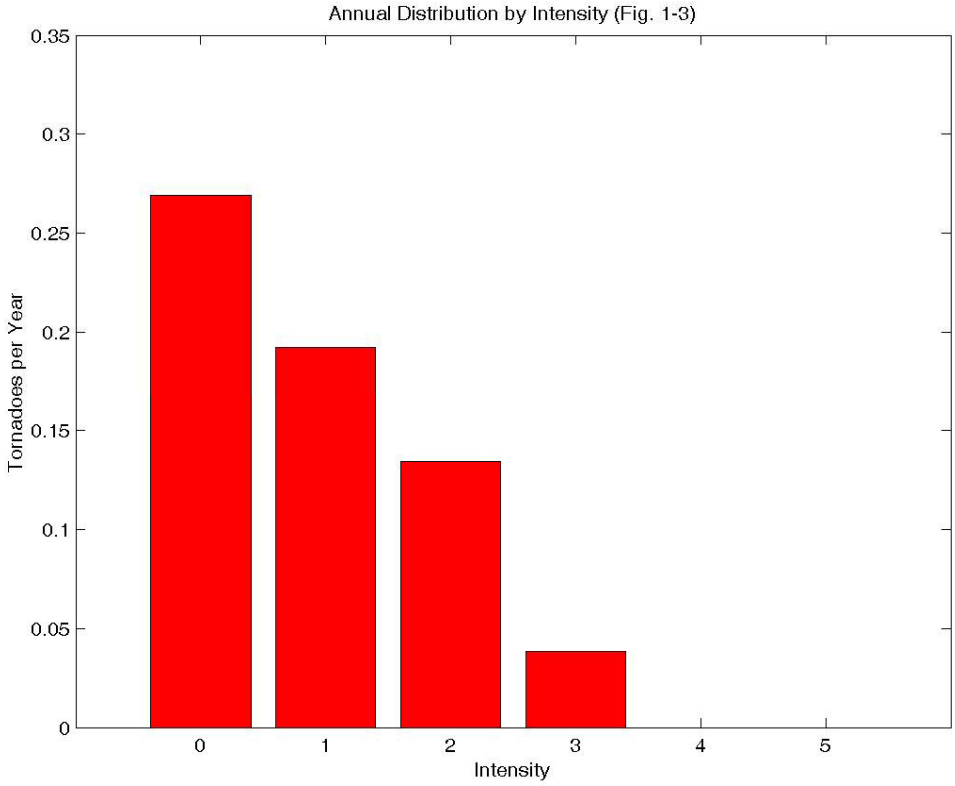
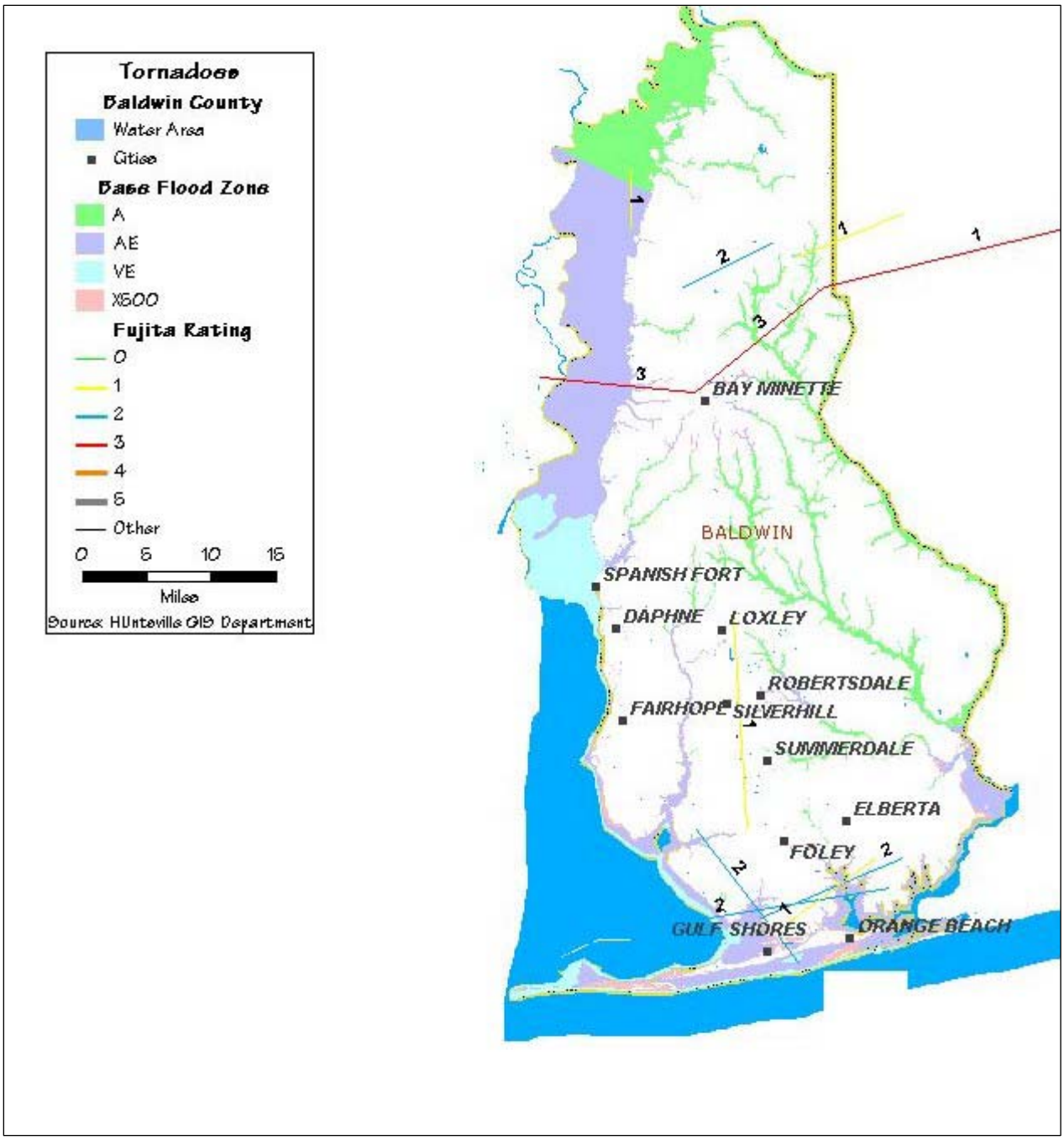


Chart 4-4. Annual Distribution of Tornadoes by Intensity

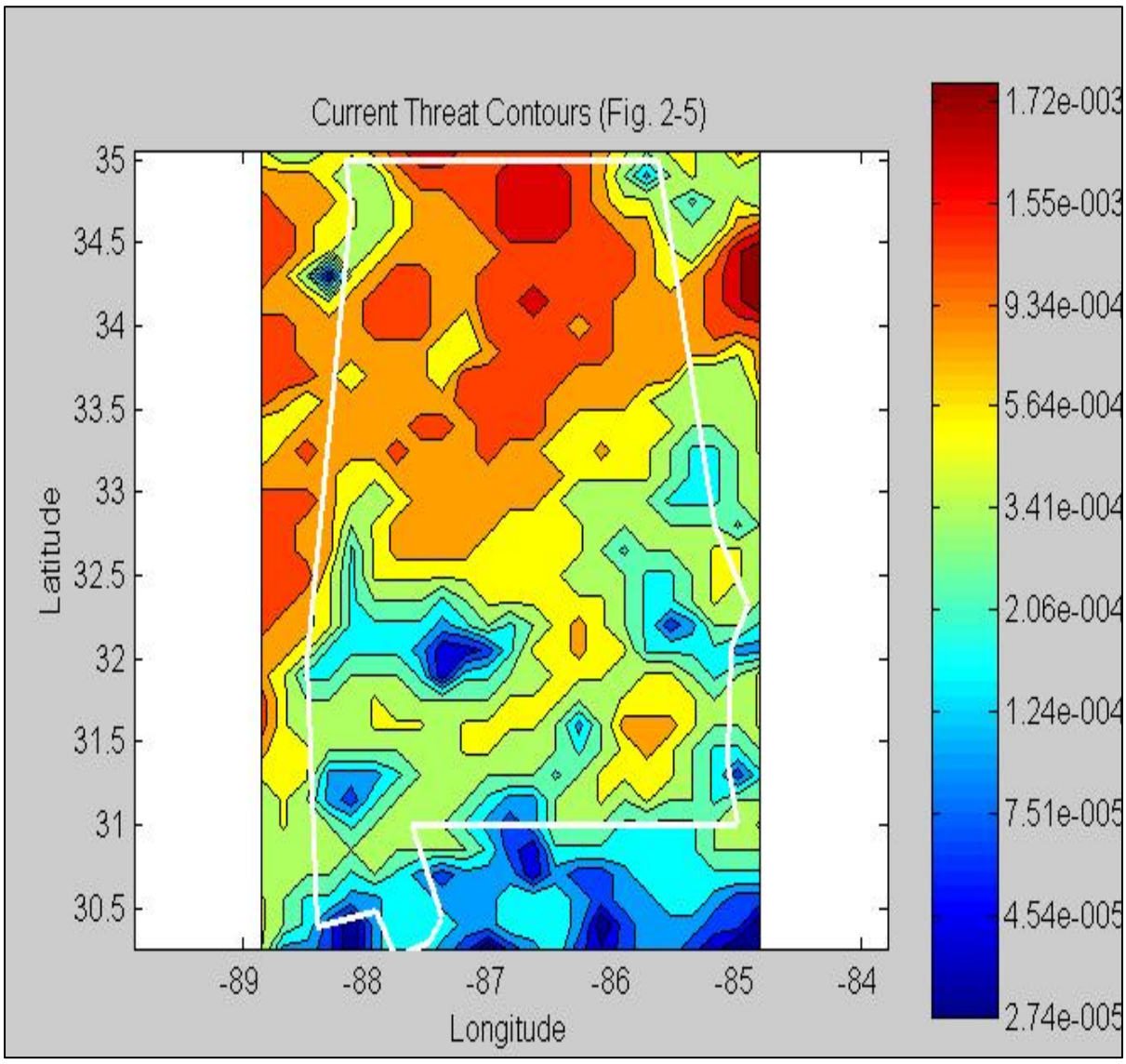
Location and Extents. The entire county is at risk for tornadoes. Map 4-5 shows tornado tracts that occurred in the county since 1950.

Probability of Future Occurrences. Map 4-6 depicts the relative probability of tornado occurrences, based on historical data since 1950. Baldwin County has a relatively high probability of risk. The likelihood of tornadoes occurring is dependent upon the potential for hurricanes and the number of thunderstorms Baldwin County experiences per year.

Based on the information available from the Storm Events Database, it appears the County can expect a damage-causing tornado twice annually. Average annual damages are estimated at $162,188. An injury-causing tornado has occurred, on average, once every 5.6 years. Although one can extract data and probability of occurrence from historical information, the risk of a tornado and the location of damage are random.



Map 4-5. Tornado Tracts Since 1950, Baldwin County



Map 4-6. Tornado Threat Probabilities

4.6 Severe Thunderstorms

Hazard Description. A severe thunderstorm is a storm containing damaging winds of 58 miles per hour or more, or hail that measures three-fourths of an inch in diameter or greater. All severe thunderstorms contain lightning. Another bi-product of severe thunderstorms is straight-line or downburst winds. These winds can be strong and concentrated. Falling rain and sinking air create the strong winds. They can reach speeds of 125 mph.

Hazard Profile. The Storm Events Database contains 180 reports of damage from thunderstorms, 22 from lightning, and 107 from hail in Baldwin County since 1959. These storms have caused a total of $1.957 million in damages. A listing of these

events is presented in Tables 4-6, 4-7 and 4-8. Some thunderstorms occurred on the same day as they traveled across the county.

Table 4-6. Significant Thunderstorm/High Wind Events Since 1959, Baldwin County

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
1 Baldwin	04/20/1959	10:00 am	Tstm Wind	80 kts.	0	0	0	0
2 Baldwin	07/09/1962	4:30 pm	Tstm Wind	70 kts.	0	0	0	0
3 Baldwin	01/20/1963	1:15 pm	Tstm Wind	0 kts.	0	0	0	0
4 Baldwin	02/20/1971	10:30 am	Tstm Wind	0 kts.	0	0	0	0
5 Baldwin	05/08/1971	1:10 pm	Tstm Wind	0 kts.	0	0	0	0
6 Baldwin	02/07/1974	3:15 am	Tstm Wind	0 kts.	0	0	0	0
7 Baldwin	01/10/1975	3:45 pm	Tstm Wind	0 kts.	0	0	0	0
8 Baldwin	07/05/1975	4:00 pm	Tstm Wind	0 kts.	0	0	0	0
9 Baldwin	12/25/1975	10:50 am	Tstm Wind	0 kts.	0	0	0	0
10 Baldwin	05/27/1977	1:00 pm	Tstm Wind	0 kts.	0	0	0	0
11 Baldwin	06/16/1977	12:45 pm	Tstm Wind	0 kts.	0	0	0	0
12 Baldwin	12/05/1977	12:01 am	Tstm Wind	0 kts.	0	0	0	0
13 Baldwin	03/20/1980	11:00 pm	Tstm Wind	68 kts.	0	0	0	0
14 Baldwin	06/19/1980	5:00 pm	Tstm Wind	0 kts.	0	0	0	0
15 Baldwin	09/03/1980	12:05 pm	Tstm Wind	0 kts.	0	0	0	0
16 Baldwin	06/27/1982	12:45 pm	Tstm Wind	0 kts.	0	0	0	0
17 Baldwin	06/28/1982	3:20 pm	Tstm Wind	0 kts.	0	0	0	0
18 Baldwin	07/05/1982	2:05 pm	Tstm Wind	0 kts.	0	0	0	0
19 Baldwin	07/28/1982	9:30 pm	Tstm Wind	0 kts.	0	0	0	0
20 Baldwin	02/05/1983	8:45 pm	Tstm Wind	0 kts.	0	0	0	0
21 Baldwin	03/26/1983	5:45 pm	Tstm Wind	0 kts.	0	0	0	0
22 Baldwin	03/26/1983	6:35 pm	Tstm Wind	0 kts.	0	0	0	0
23 Baldwin	04/01/1983	10:00 pm	Tstm Wind	0 kts.	0	0	0	0
24 Baldwin	07/18/1983	6:45 pm	Tstm Wind	0 kts.	0	0	0	0
25 Baldwin	08/05/1983	4:00 pm	Tstm Wind	0 kts.	0	0	0	0
26 Baldwin	08/06/1983	1:40 pm	Tstm Wind	60 kts.	0	0	0	0
27 Baldwin	02/26/1984	11:45 pm	Tstm Wind	52 kts.	0	0	0	0
28 Baldwin	02/27/1984	12:35 am	Tstm Wind	0 kts.	0	0	0	0
29 Baldwin	07/18/1984	3:35 pm	Tstm Wind	0 kts.	0	0	0	0
30 Baldwin	10/15/1984	10:30 am	Tstm Wind	0 kts.	0	0	0	0
31 Baldwin	04/05/1985	8:20 pm	Tstm Wind	0 kts.	0	0	0	0

Table 4-6. Significant Thunderstorm/High Wind Events Since 1959, Baldwin County

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
32 Baldwin	04/28/1985	7:55 pm	Tstm Wind	0 kts.	0	0	0	0
33 Baldwin	05/01/1985	5:55 pm	Tstm Wind	0 kts.	0	0	0	0
34 Baldwin	05/21/1985	3:30 pm	Tstm Wind	52 kts.	0	0	0	0
35 Baldwin	05/21/1985	3:30 pm	Tstm Wind	52 kts.	0	0	0	0
36 Baldwin	06/26/1985	6:02 pm	Tstm Wind	70 kts.	0	0	0	0
37 Baldwin	09/23/1985	6:59 am	Tstm Wind	0 kts.	0	0	0	0
38 Baldwin	10/28/1985	2:05 am	Tstm Wind	0 kts.	0	0	0	0
39 Baldwin	06/21/1986	4:20 pm	Tstm Wind	0 kts.	0	0	0	0
40 Baldwin	07/20/1986	5:10 pm	Tstm Wind	0 kts.	0	0	0	0
41 Baldwin	07/24/1986	2:45 pm	Tstm Wind	0 kts.	0	0	0	0
42 Baldwin	07/30/1986	5:45 pm	Tstm Wind	0 kts.	0	0	0	0
43 Baldwin	07/30/1986	5:45 pm	Tstm Wind	0 kts.	0	0	0	0
44 Baldwin	08/02/1986	1:55 pm	Tstm Wind	0 kts.	0	0	0	0
45 Baldwin	08/26/1986	2:45 pm	Tstm Wind	0 kts.	0	0	0	0
46 Baldwin	02/28/1987	10:35 am	Tstm Wind	0 kts.	0	0	0	0
47 Baldwin	07/26/1987	1:00 am	Tstm Wind	0 kts.	0	1	0	0
48 Baldwin	09/08/1987	6:00 pm	Tstm Wind	70 kts.	0	0	0	0
49 Baldwin	09/08/1987	7:00 pm	Tstm Wind	0 kts.	0	0	0	0
50 Baldwin	06/09/1988	5:15 pm	Tstm Wind	0 kts.	0	0	0	0
51 Baldwin	06/09/1988	7:40 pm	Tstm Wind	0 kts.	0	0	0	0
52 Baldwin	06/09/1988	7:40 pm	Tstm Wind	0 kts.	0	0	0	0
53 Baldwin	04/04/1989	9:15 pm	Tstm Wind	0 kts.	0	0	0	0
54 Baldwin	05/07/1989	2:30 pm	Tstm Wind	0 kts.	0	0	0	0
55 Baldwin	06/07/1989	2:30 pm	Tstm Wind	0 kts.	0	0	0	0
56 Baldwin	06/08/1989	1:00 pm	Tstm Wind	0 kts.	0	0	0	0
57 Baldwin	06/08/1989	3:45 pm	Tstm Wind	0 kts.	0	0	0	0
58 Baldwin	06/08/1989	5:44 pm	Tstm Wind	0 kts.	0	0	0	0
59 Baldwin	06/15/1989	3:50 am	Tstm Wind	0 kts.	0	0	0	0
60 Baldwin	06/15/1989	3:50 am	Tstm Wind	55 kts.	0	0	0	0
61 Baldwin	02/10/1990	7:30 am	Tstm Wind	0 kts.	0	0	0	0
62 Baldwin	02/22/1990	2:45 am	Tstm Wind	0 kts.	0	0	0	0
63 Baldwin	06/28/1990	2:52 pm	Tstm Wind	0 kts.	0	0	0	0
64 Baldwin	07/18/1990	1:05 pm	Tstm Wind	0 kts.	0	0	0	0

Table 4-6. Significant Thunderstorm/High Wind Events Since 1959, Baldwin County

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
65 Baldwin	08/05/1990	1:50 pm	Tstm Wind	0 kts.	0	0	0	0
66 Baldwin	08/19/1990	4:42 pm	Tstm Wind	0 kts.	0	0	0	0
67 Baldwin	08/19/1990	5:10 pm	Tstm Wind	0 kts.	0	0	0	0
68 Baldwin	08/20/1990	7:10 pm	Tstm Wind	0 kts.	0	0	0	0
69 Baldwin	08/30/1990	1:58 pm	Tstm Wind	0 kts.	0	0	0	0
70 Baldwin	09/04/1990	4:00 pm	Tstm Wind	0 kts.	0	0	0	0
71 Baldwin	12/03/1990	8:42 am	Tstm Wind	0 kts.	0	0	0	0
72 Baldwin	12/03/1990	8:42 am	Tstm Wind	0 kts.	0	0	0	0
73 Baldwin	04/29/1991	2:22 pm	Tstm Wind	0 kts.	0	0	0	0
74 Baldwin	07/14/1991	5:55 pm	Tstm Wind	0 kts.	0	0	0	0
75 Baldwin	07/15/1991	12:55 pm	Tstm Wind	0 kts.	0	0	0	0
76 Baldwin	09/05/1991	12:10 pm	Tstm Wind	0 kts.	0	0	0	0
77 Baldwin	09/17/1991	3:55 pm	Tstm Wind	0 kts.	0	0	0	0
78 Baldwin	04/20/1992	12:40 pm	Tstm Wind	0 kts.	0	0	0	0
79 Baldwin	04/20/1992	12:50 pm	Tstm Wind	0 kts.	0	0	0	0
80 Baldwin	04/20/1992	1:05 pm	Tstm Wind	0 kts.	0	0	0	0
81 Baldwin	06/15/1992	4:45 am	Tstm Wind	0 kts.	0	0	0	0
82 Baldwin	06/15/1992	5:05 am	Tstm Wind	0 kts.	0	0	0	0
83 Baldwin	07/16/1992	3:12 pm	Tstm Wind	0 kts.	0	0	0	0
84 Baldwin	11/04/1992	7:40 am	Tstm Wind	0 kts.	0	0	0	0
85 Baldwin	11/04/1992	8:45 am	Tstm Wind	0 kts.	0	0	0	0
86 Baldwin	08/02/1993	3:15 pm	Tstm Wind	N/A	0	0	0	0
87 Baldwin	08/02/1993	4:00 pm	Tstm Wind	N/A	0	0	0	0
88 Bay Minette	05/15/1994	7:20 pm	Tstm Wind	N/A	0	0	$0	0
89 Foley	06/16/1994	3:00 pm	Tstm Wind	N/A	0	0	$500K	0
90 Loxley	08/05/1994	1:00 pm	Tstm Wind	N/A	0	0	$1K	0
91 Robertsdale	09/10/1994	11:35 am	Tstm Wind	N/A	0	0	$5K	0
92 Stockton	11/06/1994	4:15 am	Tstm Wind	N/A	0	0	0	0
93 Fairhope	01/06/1995	12:00 pm	Tstm Wind	N/A	0	0	$5K	0
94 Robertsdale	01/06/1995	12:10 pm	Tstm Wind	N/A	0	0	$1K	0
95 Central	01/06/1995	5:50 pm	Tstm Wind	N/A	0	0	$50K	0
96 Barnwell	02/03/1995	7:30 pm	Tstm Wind	N/A	0	0	$5K	0
97 Stockton	04/21/1995	3:00 am	Tstm Wind	N/A	0	0	$1K	0

Table 4-6. Significant Thunderstorm/High Wind Events Since 1959, Baldwin County

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
98 Hurricane	04/23/1995	6:15 pm	Tstm Wind	N/A	0	0	$1K	0
99 Stockton And Vaughn	05/09/1995	10:15 pm	Tstm Wind	N/A	0	0	$1K	0
100 Fairhope	05/10/1995	4:00 am	Tstm Wind	N/A	0	0	$1K	0
101 Foley	05/11/1995	5:57 pm	Tstm Wind	N/A	0	0	$1K	0
102 Seminole	05/11/1995	6:20 pm	Thunderstorm Winds	N/A	0	0	$1K	0
103 Silverhill	07/08/1995	4:45 pm	Tstm Wind	N/A	0	0	$1K	0
104 Stockton	07/09/1995	2:45 pm	Tstm Wind	N/A	0	0	$1K	0
105 Orange Beach	07/09/1995	4:25 pm	Tstm Wind	N/A	0	0	$1K	0
106 Fairhope/ Silverhill	07/10/1995	4:10 am	Tstm Wind	N/A	0	0	$4K	0
107 Mobile Bay	07/12/1995	1:45 pm	Tstm Wind	N/A	0	0	$2K	0
108 Foley	07/12/1995	2:20 pm	Tstm Wind	N/A	0	0	$1K	0
109 Daphne	08/16/1995	6:30 pm	Tstm Wind	N/A	0	0	$2K	0
110 Robertsdale	12/18/1995	11:00 am	Tstm Wind	N/A	0	0	$2K	0
111 Gulf Shores	12/18/1995	5:10 pm	Tstm Wind	N/A	0	0	$20K	0
112 Latham	01/26/1996	4:15 pm	Tstm Wind	50 kts.	0	0	$2K	0
113 Tensaw	01/26/1996	6:10 pm	Tstm Wind	50 kts.	0	0	$2K	0
114 Bay Minette	03/07/1996	4:15 am	Tstm Wind	45 kts.	0	1	$2K	0
115 Stockton	05/24/1996	1:29 pm	Tstm Wind	55 kts.	0	0	$1K	0
116 Loxley	08/12/1996	1:00 pm	Tstm Wind	40 kts.	0	0	$1K	0
117 Summerdale	08/24/1996	2:55 pm	Tstm Wind	45 kts.	0	0	$90K	0
118 Bay Minette	08/25/1996	1:50 pm	Tstm Wind	50 kts.	0	0	$3K	0
119 Summerdale	09/21/1996	9:30 am	Tstm Wind	50 kts.	0	0	$3K	0
120 Orange Beach	11/05/1996	6:00 pm	Tstm Wind/hail	40 kts.	0	0	$1K	0
121 Magnolia Spgs	01/15/1997	8:55 pm	Tstm Wind	52 kts.	0	0	$1K	0
122 Blacksher	01/24/1997	6:40 am	Tstm Wind	50 kts.	0	0	$2K	0
123 Malbis	01/24/1997	9:00 am	Tstm Wind	55 kts.	0	1	$15K	0
124 Ft Morgan	04/11/1997	2:50 pm	Tstm Wind	50 kts.	0	0	$0	0
125 Stockton	06/20/1997	2:15 pm	Tstm Wind	50 kts.	0	0	$2K	0

Table 4-6. Significant Thunderstorm/High Wind Events Since 1959, Baldwin County

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
126 Seminole	06/27/1997	3:25 pm	Tstm Wind/hail	45 kts.	0	0	$1K	0
127 Fairhope	07/11/1997	5:30 pm	Tstm Wind	50 kts.	0	0	$3K	0
128 Loxley	08/20/1997	4:45 pm	Tstm Wind	50 kts.	0	0	$5K	0
129 Gulf Shrs	01/07/1998	7:30 am	Tstm Wind	50 kts.	0	0	$25K	0
130 Whitehouse Forks	01/07/1998	7:30 am	Tstm Wind	70 kts.	0	0	$25K	0
131 Seminole	01/07/1998	8:20 am	Tstm Wind	50 kts.	0	0	$3K	0
132 Elsanor	01/22/1998	7:57 am	Tstm Wind	50 kts.	0	0	$3K	0
133 Magnolia Spgs	01/22/1998	10:45 am	Tstm Wind	50 kts.	0	0	$3K	0
134 Spanish Ft	02/11/1998	1:55 am	Tstm Wind	55 kts.	0	0	$12K	0
135 Countywide	06/05/1998	11:25 pm	Tstm Wind	60 kts.	0	0	$100K	0
136 Seminole	07/05/1998	4:00 pm	Tstm Wind	50 kts.	0	0	$3K	0
137 Perdido	07/26/1998	7:12 pm	Tstm Wind	50 kts.	0	0	$5K	0
138 Orange Beach	09/28/1998	9:50 am	Tstm Wind	50 kts.	0	0	$20K	0
139 Bay Minette	01/02/1999	10:35 am	Tstm Wind	55 kts.	0	0	$3K	0
140 Lillian	01/02/1999	12:00 pm	Tstm Wind	55 kts.	0	0	$5K	0
141 Fairhope	03/03/1999	12:40 am	Tstm Wind	58 kts.	0	0	$30K	0
142 Elsanor	03/09/1999	5:10 am	Tstm Wind	70 kts.	0	1	$70K	0
143 Gulf Shrs	03/09/1999	5:55 am	Tstm Wind	60 kts.	0	0	$50K	0
144 Stockton	03/13/1999	7:20 pm	Tstm Wind	58 kts.	0	0	$10K	0
145 Seminole	03/13/1999	9:10 pm	Tstm Wind	50 kts.	0	0	$3K	0
146 Little River	07/30/1999	2:55 pm	Tstm Wind	50 kts.	0	0	$4K	0
147 Foley	08/14/1999	2:20 pm	Tstm Wind	50 kts.	0	0	$3K	0
148 Tensaw	01/10/2000	1:00 am	Tstm Wind	50 kts.	0	0	$5K	0
149 Tensaw	03/03/2000	7:40 pm	Tstm Wind	50 kts.	0	0	$3K	0
150 Stapleton	03/11/2000	10:40 am	Tstm Wind	50 kts.	0	0	$3K	0
151 Tensaw	06/24/2000	2:20 pm	Tstm Wind	55 kts.	0	0	$5K	0
152 Bay Minette	07/21/2000	1:45 pm	Tstm Wind	70 kts.	0	0	$8K	0
153 Silverhill	07/21/2000	2:55 pm	Tstm Wind	70 kts.	0	0	$10K	0
154 Rosinton	07/21/2000	12:20 pm	Tstm Wind	60 kts.	0	0	$7K	0
155 Elsanor	08/10/2000	2:25 pm	Tstm Wind	55 kts.	0	0	$5K	0

Table 4-6. Significant Thunderstorm/High Wind Events Since 1959, Baldwin County

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
156 Stockton	08/27/2000	3:30 pm	Tstm Wind	70 kts.	0	0	$50K	0
157 Daphne	09/02/2000	5:25 pm	Tstm Wind	55 kts.	0	0	$5K	0
158 Loxley	09/05/2000	3:05 pm	Tstm Wind	50 kts.	0	0	$5K	0
159 Stockton	03/12/2001	11:55 am	Tstm Wind	65 kts.	0	0	$10K	0
160 ALZ063>064 *	06/11/2001	9:30 am	High Wind	45 kts.	0	0	$10K	0
161 Stockton	08/19/2001	12:45 pm	Tstm Wind	50 kts.	0	0	$8K	0
162 Fairhope	10/13/2001	7:00 pm	Tstm Wind	50 kts.	0	0	$10K	0
163 Summerdale	10/13/2001	7:10 pm	Tstm Wind	60 kts.	0	0	$40K	0
164 Gulf Shrs	10/13/2001	7:22 pm	Tstm Wind	60 kts.	0	0	$50K	0
165 ALZ062 *	10/13/2001	9:00 am	High Wind	0 kts.	1	0	$1K	0
166 Fairhope	04/08/2002	7:25 pm	Tstm Wind	55 kts.	0	0	$15K	0
167 Summerdale	07/01/2002	4:30 pm	Tstm Wind	55 kts.	0	0	$5K	0
168 Josephine	08/25/2002	2:50 pm	Tstm Wind	60 kts.	0	0	$35K	0
169 Daphne	11/05/2002	1:30 pm	Tstm Wind	60 kts.	0	0	$15K	0
170 Stockton	12/19/2002	4:30 pm	Tstm Wind	50 kts.	0	0	$8K	0
171 Daphne	12/19/2002	6:00 pm	Tstm Wind	50 kts.	0	0	$8K	0
172 Summerdale	12/24/2002	4:30 am	Tstm Wind	50 kts.	0	0	$10K	0
173 Gulf Shrs	12/31/2002	8:40 am	Tstm Wind	55 kts.	0	0	$10K	0
174 Fairhope	02/21/2003	2:48 pm	Tstm Wind	53 kts.	0	0	$5K	0
175 Robertsdale	03/12/2003	4:00 pm	Tstm Wind	55 kts.	0	0	$5K	0
176 Summerdale	03/13/2003	2:40 am	Tstm Wind	50 kts.	0	0	$3K	0
177 Magnolia Spgs	03/13/2003	5:29 pm	Tstm Wind	50 kts.	0	0	$5K	0
178 Latham	05/02/2003	4:00 pm	Tstm Wind	50 kts.	0	0	$5K	0
179 Stockton	07/01/2003	1:35 am	Tstm Wind	50 kts.	0	0	$5K	0
180 Summerdale	08/16/2003	2:05 pm	Tstm Wind	50 kts.	0	0	$7K	0

* These numbers refer to NWS forecast zones. Baldwin County is in forecast zone 62 and 64. The storm event listed included the county in zone 62 and/or 64 (Baldwin). Information on the forecast zones can be found at http://www4.ncdc.noaa.gov/.

Table 4-7. Significant Lightning Events Since 1994, Baldwin County

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
1 Bay Minette	09/08/1994	6:58 am	Lightning	N/A	0	0	$5K	0

2 Spanish Fort	09/08/1994	7:15 am	Lightning	N/A	0	0	$50K	0
3 Fairhope	07/10/1995	5:14 am	Lightning	N/A	0	0	$10K	0
4 Loxley	04/14/1996	9:00 pm	Lightning	N/A	0	0	$25K	0
5 Bay Minette	08/25/1996	2:00 pm	Lightning	N/A	0	0	0	0
6 Loxley	01/24/1997	11:30 pm	Lightning	N/A	0	0	$90K	0
7 Robertsdale	08/09/1997	3:00 pm	Lightning	N/A	0	0	$3K	0
8 Daphne	01/22/1998	7:45 am	Lightning	N/A	0	0	$100K	0
9 Bay Minette	03/08/1998	5:30 am	Lightning	N/A	0	0	$20K	0
10 Bay Minette	07/24/1998	1:05 pm	Lightning	N/A	0	0	$60K	0
11 Loxley	03/09/1999	3:00 am	Lightning	N/A	0	0	0	0
12 Loxley	03/13/1999	9:00 pm	Lightning	N/A	0	0	0	0
13 Loxley	07/30/1999	2:32 pm	Lightning	N/A	0	0	$5K	0
14 Belforest	07/30/1999	3:17 pm	Lightning	N/A	0	0	$5K	0
15 Rosinton	07/30/1999	3:17 pm	Lightning	N/A	0	0	$3K	0
16 Silverhill	07/30/1999	3:17 pm	Lightning	N/A	0	0	$5K	0
17 Daphne	07/30/1999	5:40 pm	Lightning	N/A	0	0	$3K	0
18 Daphne	09/02/2000	4:00 pm	Lightning	N/A	0	0	$5K	0
19 Bay Minette	05/28/2001	2:00 pm	Lightning	N/A	0	0	$25K	0
20 Daphne	08/19/2001	1:30 pm	Lightning	N/A	0	0	$3K	0
21 Ft Morgan	09/08/2001	6:30 am	Lightning	N/A	0	0	$20K	0
22 Bay Minette	08/29/2002	2:00 pm	Lightning	N/A	0	0	$30K	0

Table 4-8. Hail Storms Since 1955, Baldwin County

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
1 Baldwin	07/19/1955	1:30 pm	Hail	0.75 In.	0	0	0	0
2 Baldwin	03/18/1972	3:27 pm	Hail	0.75 In.	0	0	0	0
3 Baldwin	03/31/1973	7:45 pm	Hail	1.75 In.	0	0	0	0
4 Baldwin	06/19/1973	1:20 pm	Hail	1.75 In.	0	0	0	0
5 Baldwin	01/20/1974	8:20 am	Hail	1.00 In.	0	0	0	0
6 Baldwin	04/04/1974	1:40 pm	Hail	0.75 In.	0	0	0	0
7 Baldwin	12/05/1977	12:01 am	Hail	1.75 In.	0	0	0	0
8 Baldwin	04/15/1985	8:26 pm	Hail	0.75 In.	0	0	0	0
9 Baldwin	05/01/1985	6:12 pm	Hail	1.75 In.	0	0	0	0

Table 4-8. Hail Storms Since 1955, Baldwin County

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
10 Baldwin	07/26/1987	12:35 am	Hail	1.00 In.	0	0	0	0
11 Baldwin	07/28/1987	2:35 pm	Hail	0.75 In.	0	0	0	0
12 Baldwin	03/26/1988	8:25 am	Hail	0.75 In.	0	0	0	0
13 Baldwin	04/18/1988	5:17 pm	Hail	1.75 In.	0	0	0	0
14 Baldwin	06/09/1988	5:45 pm	Hail	0.75 In.	0	0	0	0
15 Baldwin	11/04/1988	1:45 pm	Hail	1.50 In.	0	0	0	0
16 Baldwin	06/07/1989	2:07 pm	Hail	0.75 In.	0	0	0	0
17 Baldwin	02/10/1990	8:15 am	Hail	0.75 In.	0	0	0	0
18 Baldwin	05/06/1991	4:25 am	Hail	1.00 In.	0	0	0	0
19 Baldwin	05/26/1992	2:20 pm	Hail	1.00 In.	0	0	0	0
20 Baldwin	05/26/1992	2:20 pm	Hail	1.00 In.	0	0	0	0
21 Baldwin	08/10/1992	3:15 pm	Hail	1.75 In.	0	0	0	0
22 Baldwin	08/10/1992	3:15 pm	Hail	1.75 In.	0	0	0	0
23 Baldwin	03/30/1993	1:40 pm	Hail	1.00 In.	0	0	0	0
24 Baldwin	03/30/1993	2:05 pm	Hail	1.75 In.	0	0	0	0
25 Daphne	03/25/1994	2:50 am	Hail	0.88 In.	0	0	0	0
26 Tensaw	02/03/1995	6:15 pm	Hail	0.75 In.	0	0	0	0
27 Lottie	02/17/1995	8:00 am	Hail	0.75 In.	0	0	0	0
28 Daphne	03/15/1995	12:50 pm	Hail	1.75 In.	0	0	0	0
29 Spanish Fort	03/15/1995	1:20 pm	Hail	1.75 In.	0	0	0	0
30 Stapleton	03/15/1995	2:00 pm	Hail	0.88 In.	0	0	0	0
31 Bay Minette	03/15/1995	2:45 pm	Hail	0.75 In.	0	0	0	0
32 Bay Minette	03/15/1995	2:55 pm	Hail	0.75 In.	0	0	0	0
33 Bay Minette	03/15/1995	3:00 pm	Hail	0.75 In.	0	0	0	0
34 Bay Minette	03/15/1995	5:00 pm	Hail	0.88 In.	0	0	0	0
35 Gulf Shores	04/11/1995	7:24 pm	Hail	0.75 In.	0	0	0	0
36 Gulf Shores	04/11/1995	7:45 pm	Hail	0.88 in.	0	0	$1K	0
37 Gulf Shores	05/11/1995	5:50 pm	Hail	0.75 in.	0	0	0	0
38 Bay Minette	02/19/1996	5:15 pm	Hail	1.75 in.	0	0	0	0

Table 4-8. Hail Storms Since 1955, Baldwin County

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
39 Robertsdale	03/18/1996	4:30 am	Hail	1.75 in.	0	0	0	0
40 Elberta	04/14/1996	6:20 pm	Hail	1.75 in.	0	0	0	0
41 Robertsdale	04/14/1996	8:00 pm	Hail	0.75 in.	0	0	0	0
42 Bay Minette	05/23/1996	4:15 pm	Hail	1.75 in.	0	0	0	0
43 Bay Minette	08/25/1996	3:00 pm	Hail	0.75 in.	0	0	0	0
44 Orange Beach	11/05/1996	6:00 pm	Tstm Wind/hail	40 kts.	0	0	$1K	0
45 Tensaw	12/12/1996	8:10 pm	Hail	0.75 in.	0	0	0	0
46 Fairhope	01/24/1997	6:00 pm	Hail	1.75 in.	0	0	0	0
47 Silverhill	01/24/1997	6:15 pm	Hail	1.75 in.	0	0	0	0
48 Robertsdale	01/24/1997	6:50 pm	Hail	1.75 in.	0	0	0	0
49 Orange Beach	01/24/1997	8:00 pm	Hail	0.75 in.	0	0	0	0
50 Fairhope	01/24/1997	8:03 pm	Hail	0.75 in.	0	0	0	0
51 Fairhope	01/24/1997	8:45 pm	Hail	0.75 in.	0	0	0	0
52 Orange Beach	01/24/1997	10:00 pm	Hail	0.75 in.	0	0	0	0
53 Stockton	04/21/1997	5:20 pm	Hail	1.00 in.	0	0	0	0
54 Bay Minette	04/21/1997	5:57 pm	Hail	1.75 in.	0	0	0	0
55 Stapleton	04/22/1997	8:30 pm	Hail	1.00 in.	0	0	0	0
56 Bay Minette	04/22/1997	8:50 pm	Hail	0.75 in.	0	0	0	0
57 Stockton	04/22/1997	9:40 pm	Hail	0.75 in.	0	0	0	0
58 Robertsdale	04/22/1997	10:55 pm	Hail	0.75 in.	0	0	0	0
59 Chrysler	05/27/1997	10:00 pm	Hail	0.75 in.	0	0	0	0
60 Seminole	06/27/1997	03:25 pm	Tstm Wind/hail	45 kts.	0	0	$1K	0
61 Seminole	11/06/1997	11:20 am	Hail	1.75 in.	0	0	$2K	0
62 Stockton	03/05/1998	1:30 pm	Hail	0.88 in.	0	0	0	0
63 Perdido	03/05/1998	2:30 pm	Hail	0.75 in.	0	0	0	0
64 Latham	04/08/1998	8:35 am	Hail	0.75 in.	0	0	0	0
65 Little River	04/08/1998	9:00 am	Hail	0.75 in.	0	0	0	0

Table 4-8. Hail Storms Since 1955, Baldwin County

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
66 Little River	04/17/1998	5:45 pm	Hail	1.00 in.	0	0	0	0
67 Little River	04/17/1998	6:25 pm	Hail	1.00 in.	0	0	0	0
68 Bay Minette	05/03/1998	7:08 pm	Hail	0.75 in.	0	0	0	0
69 Bay Minette	05/03/1998	7:38 pm	Hail	1.75 in.	0	0	0	0
70 Bay Minette	05/03/1998	8:11 pm	Hail	0.75 in.	0	0	0	0
71 Little River	08/30/1998	3:15 pm	Hail	0.75 in.	0	0	0	0
72 Stapleton	01/09/1999	4:50 am	Hail	0.75 in.	0	0	0	0
73 Perdido	03/09/1999	2:40 am	Hail	1.00 in.	0	0	0	0
74 Robertsdale	03/09/1999	4:15 am	Hail	0.75 in.	0	0	0	0
75 Ft Morgan	05/04/1999	1:00 pm	Hail	0.75 in.	0	0	0	0
76 Stapleton	05/04/1999	3:15 pm	Hail	0.75 in.	0	0	0	0
77 Daphne	06/08/1999	2:32 pm	Hail	0.88 in.	0	0	0	0
78 Loxley	07/30/1999	1:30 pm	Hail	0.75 in.	0	0	0	0
79 Ft Morgan	01/24/2000	1:15 am	Hail	0.75 in.	0	0	0	0
80 Perdido	03/29/2000	2:15 pm	Hail	0.88 in.	0	0	0	0
81 Rosinton	07/21/2000	12:20 pm	Hail	1.00 in.	0	0	0	0
82 Loxley	08/09/2000	5:00 pm	Hail	0.75 in.	0	0	0	0
83 Loxley	09/05/2000	3:05 pm	Hail	0.88 in.	0	0	0	0
84 Daphne	03/12/2001	2:45 am	Hail	0.75 in.	0	0	0	0
85 Daphne	04/03/2002	3:40 pm	Hail	1.00 in.	0	0	0	0
86 Daphne	04/03/2002	3:40 pm	Hail	1.00 in.	0	0	0	0
87 Loxley	05/29/2002	1:35 pm	Hail	1.00 in.	0	0	0	0
88 Robertsdale	05/29/2002	2:10 pm	Hail	0.88 in.	0	0	0	0
89 Robertsdale	05/29/2002	2:20 pm	Hail	0.88 in.	0	0	0	0
90 Foley	03/12/2003	3:40 pm	Hail	0.75 in.	0	0	0	0
91 Elberta	03/12/2003	4:00 pm	Hail	1.00 in.	0	0	0	0
92 Seminole	03/13/2003	2:40 am	Hail	0.75 in.	0	0	0	0
93 Bay Minette	03/13/2003	4:50 pm	Hail	1.00 in.	0	0	0	0
94 Bay Minette	04/25/2003	7:10 pm	Hail	1.75 in.	0	0	$5K	0
95 Stapleton	04/25/2003	7:35 pm	Hail	0.75 in.	0	0	0	0

Table 4-8. Hail Storms Since 1955, Baldwin County

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
96 Loxley	04/25/2003	8:15 pm	Hail	0.75 in.	0	0	0	0
97 Latham	05/02/2003	3:40 pm	Hail	1.75 in.	0	0	0	0
98 Stockton	05/02/2003	4:55 pm	Hail	1.75 in.	0	0	0	0
99 Dyas	05/02/2003	5:35 pm	Hail	0.75 in.	0	0	0	0
100 Little River	05/02/2003	9:05 pm	Hail	0.75 in.	0	0	0	0
101 Little River	05/03/2003	1:35 am	Hail	1.00 in.	0	0	0	0
102 Little River	05/03/2003	10:05 am	Hail	0.75 in.	0	0	0	0
103 Seminole	05/03/2003	11:35 am	Hail	0.75 in.	0	0	0	0
104 Daphne	07/12/2003	4:30 pm	Hail	0.75 in.	0	0	0	0
105 Foley	07/17/2003	2:30 pm	Hail	0.88 in.	0	0	0	0
106 Gulf Shrs	07/17/2003	2:52 pm	Hail	1.00 in.	0	0	0	0
107 Bay Minette	08/06/2003	5:20 pm	Hail	1.75 in.	0	0	0	0

Community Impacts. Since 1959**,** Baldwin County has experienced over 100 severe thunderstorms. Large hail, though very rare, can cause injury or loss of life. Normally it only causes damage to automobiles, trees and crops. Both lightning and high winds can cause loss of life and considerable property damage. The power of lightning's electrical charge and intense heat can electrocute on contact, split trees, ignite fires, and cause electrical failures.

Location and Extents. The entire county is equally susceptible to damage from severe thunderstorms.

Probability of Future Occurrences. The probability of a severe thunderstorm occurring depends on certain atmospheric and climatic conditions. Based on the number of damage-causing severe thunderstorms since 1960 contained in the Storm Events Database, Baldwin County can expect approximately of five severe thunderstorm, lighting or hail events per year. Average annual damages are estimated at $40,770. Although one can extract data and probability of occurrence from historical information, the risk of a severe thunderstorm and the location of damage are random.

4.7 Flooding

Hazard Description. Flooding is defined as the accumulation of water within a water body and the overflow of excess water onto adjacent floodplain lands. The floodplain is the land adjoining the channel or a river, stream, ocean, lake, or other watercourse or water body that is susceptible to flooding. The risks associated with flash flooding are the same as riverine flooding. One clear distinction is the element of surprise. Flash flooding as the name implies occurs quickly without much warning, compared to riverine flooding where warnings of crest could be available hours before it occurs.

Hazard Profile. The list of federally-declared disasters, input from the Planning Committee, and the Storm Events Database were utilized to profile the history of flood events in Baldwin County. Most flooding occurs along the Fish River located in the southwestern portion of the county and Styx River in the central eastern portion of the county. Other rivers and creeks in the county include the Mobile River, Perdido River, Bay Minette Creek, Hollinger Creek and their tributaries.

The Storm Events Database contains damage-causing flood events since 1995. Since that time, twenty-seven different flood events have resulted in $1.913 million in property damage. The county has experienced significant flood damage over the past 25 years. Flooding in Baldwin County may be flash, coastal or riverine. Baldwin County has experienced significant flood damage over the past 25 years. A summary of flood events is shown in Table 4-9.

Table 4-9. Recent Floods Since 1995, Baldwin County

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
1 Gateswood	08/16/1995	8:00 pm	Flash Flood	N/A	0	0	0	0
2 Foley And Gulf Shores	11/01/1995	7:30 pm	Flash Flooding	N/A	0	0	$3K	0
3 Elberta	12/18/1995	2:00 pm	Flash Flood	N/A	0	0	$10K	0
4 Daphne	04/14/1996	9:00 pm	Flash Flood	N/A	0	0	$200K	0
5 Stapleton	08/30/1996	6:30 pm	Flash Flood	N/A	0	0	$2K	0
6 Fairhope	07/19/1997	9:00 pm	Flood	N/A	0	0	0	0
7 South Portion	01/07/1998	5:00 pm	Flash Flood	N/A	0	0	$10K	0
8 Central Portion	01/07/1998	10:00 am	Flash Flood	N/A	0	0	$20K	0
9 ALZ063>064*	02/15/1998	3:00 pm	Flood	N/A	0	0	$55K	0
10 ALZ064*	02/22/1998	6:30 am	Flood	N/A	0	0	$20K	0
11 ALZ063>064*	03/08/1998	2:00 am	Flood	N/A	0	0	$40K	0
12 Countywide	03/08/1998	12:30 am	Flood	N/A	0	0	$1.0M	0

Table 4-9. Recent Floods Since 1995, Baldwin County

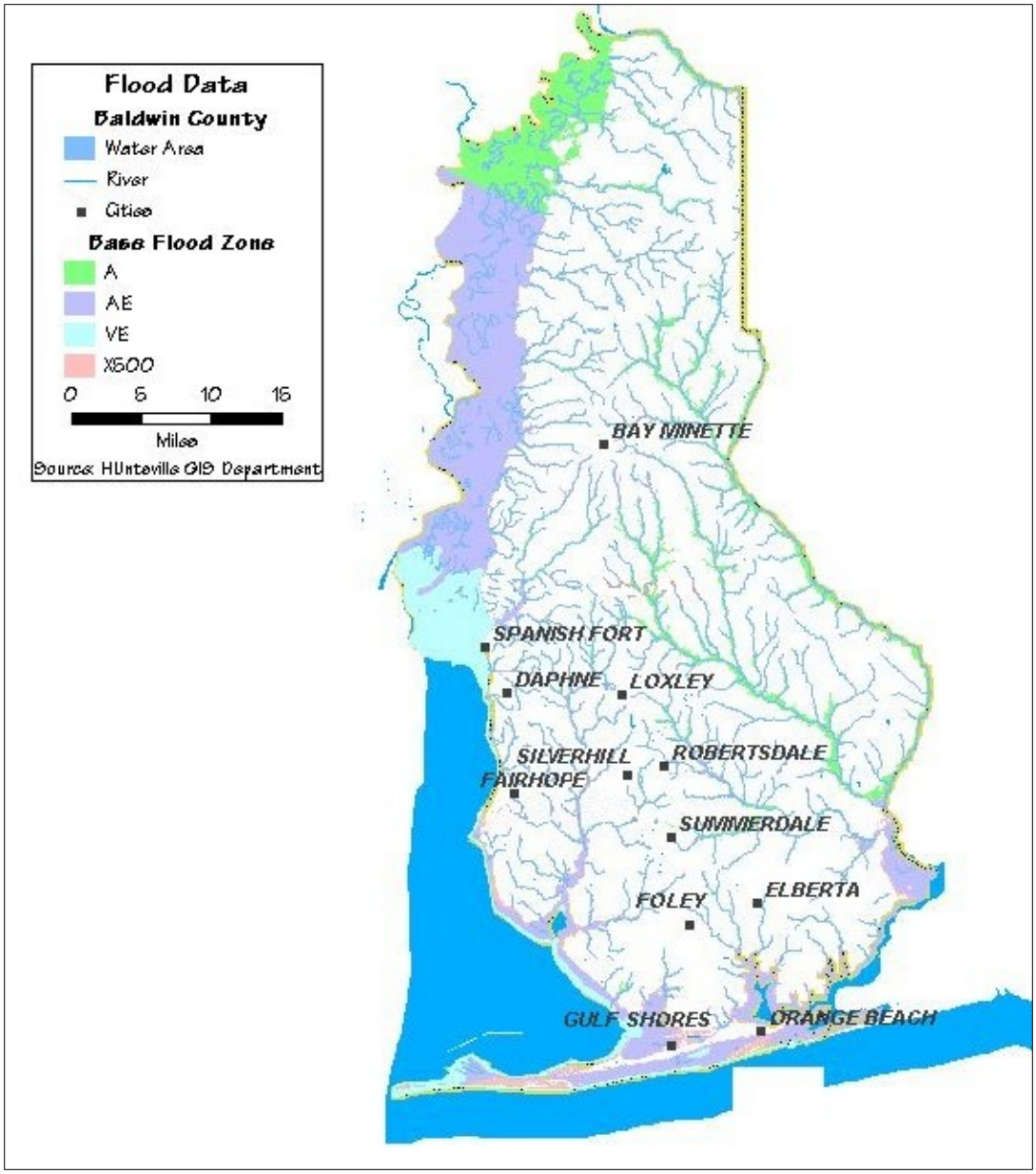
Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
13 ALZ063>064*	03/17/1998	10:00 am	Flood	N/A	0	0	$30K	0
14 Countywide	09/28/1998	5:15 am	Flood	N/A	0	0	0	0
15 Ft Morgan	03/13/1999	12:00 pm	Coastal Flooding	N/A	0	0	$5K	0
16 Countywide	03/03/2001	12:00 pm	Flash Flood	N/A	0	0	$15K	0
17 ALZ063>064*	06/11/2001	10:15 am	Coastal Flooding	N/A	0	0	$3K	0
18 Point Clear	09/14/2002	7:20 am	Flash Flood	N/A	0	0	0	0
19 Foley	09/25/2002	4:45 am	Flood	N/A	0	0	0	0
20 South Portion	09/25/2002	9:40 pm	Flood	N/A	0	0	0	0
21 Central Portion	04/07/2003	4:30 pm	Flash Flood	N/A	0	0	0	0
22 Central Portion	05/18/2003	5:50 am	Flash Flood	N/A	0	0	$500K	0
23 Central Portion	05/19/2003	5:00 am	Flash Flood	N/A	0	0	0	0
24 Central Portion	06/06/2003	1:40 pm	Flash Flood	N/A	0	0	0	0
25 Countywide	06/30/2003	9:00 pm	Flash Flood	N/A	0	0	0	0
26 Countywide	07/01/2003	12:00 am	Flash Flood	N/A	0	0	0	0
27 Foley	07/22/2003	6:30 pm	Flash Flood	N/A	0	0	0	0

* These numbers refer to NWS forecast zones. Baldwin County is in forecast zone 62 and 64. The storm event listed included the county in zone 62 and/or 64 (Baldwin). Information on the forecast zones can be found at http://www4.ncdc.noaa.gov/

Community Impacts. Floods are capable of undermining buildings and bridges, eroding shorelines and riverbanks, tearing out trees, washing out access routes, and causing loss of life and injuries. Floods occur in all 50 states and FEMA estimates that 9 million households and $390 billion in property are at risk from flooding.

The measurement used to determine the limits of the floodplain was developed with the enactment of the National Flood Insurance Act of 1968 (NFIP). Under the NFIP it was determined that the base standard was the 100-year or "base flood". This means that the limits of the flood plain are set by the limits of a rain event that has a 1% annual chance of occurrence. There are established techniques for determining the base flood limits. These techniques have been used to develop Flood Insurance Rate Maps or FIRM. FIRM's illustrate elevation of the base flood and the 500-year event (0.2% annual chance of occurrence), in areas where a model has been developed.

Location and Extents. Baldwin County is often at risk from riverine, coastal and flash flooding. Map 4-7 shows the flood zones for Baldwin County. The Town of Gulf Shores and City of Fairhope are at the greatest risk for coastal flooding. Each municipality is located along the coastline of the Gulf of Mexico where is extremely vulnerable to weather in the Gulf. The City of Fairhope and unincorporated Point Clear are also vulnerable to flooding along Fish River and its tributaries. Other areas that are vulnerable to flooding include the Styx River Basin.



Map 4-7. Flood Zones

Repetitive Flood Insurance Losses. A repetitive loss property is a property that has two or more flood insurance claims with the NFIP. Baldwin County has had multiple

repetitive loss properties. Nearly 75,000 of the county population live in unincorporated areas of the county. Of the many repetitive losses the county has suffered, approximately 60% have been in incorporated areas of the county, while the remaining losses have occurred in unincorporated areas. Table 4-10 shows the repetitive losses in Baldwin County (incorporated and unincorporated areas) through September 2001.

Table 4-10. Repetitive Losses, Baldwin County

Community	Zip Code	Zone	Number of Losses
Baldwin County	36555	AE	6
Town of Gulf Shores	36542	VE	5
Town of Gulf Shores	36542	V09	5
Baldwin County	36574	A	4
Baldwin County	36116	V10	4
Baldwin County	36532	A10	4
Baldwin County	36580	A08	4
Baldwin County	36555	A08	4
Town of Gulf Shores	36547	V14	4
Town of Gulf Shores	36542	VE	4
Town of Gulf Shores	36542	V09	4
Town of Gulf Shores	36542	A15	4
Town of Gulf Shores	36542	V14	4
Town of Gulf Shores	36542	V09	4
Town of Gulf Shores	36542	A15	4
Town of Gulf Shores	36542	V09	4
Town of Gulf Shores	36542	V09	4
Town of Gulf Shores	36542	VE	4
City of Orange Beach	36561	AE	4
Baldwin County	36574	X	3
Baldwin County	36532	A	3
Baldwin County	36532	AE	3
Baldwin County	36542	V09	3
Baldwin County	36507	AE	3
City of Fairhope	36532	X	3
Town of Gulf Shores	36512	V09	3
City of Orange Beach	36561	A05	3
Baldwin County	36580	A09	2
Baldwin County	36532	AE	2
Baldwin County	36532	A	2
Baldwin County	36555	A	2
Baldwin County	36580	A	2
Baldwin County	36574	X	2
Town of Gulf Shores	36542	AE	2
Town of Gulf Shores	36542	V09	2

Table 4-10. Repetitive Losses, Baldwin County

Community	Zip Code	Zone	Number of Losses
Town of Gulf Shores	36542	VE	2
Town of Gulf Shores	36542	A08	2
Town of Gulf Shores	36542	AE	2
Town of Gulf Shores	36542	A15	2
Town of Gulf Shores	36542	A08	2
City of Orange Beach	36561	A05	2
City of Orange Beach	36561	A06	2
City of Orange Beach	36561	B	2

Probability of Future Occurrences. Based on historical information, the county can expect an average of 2.5 flood events per year. Average annual damages are estimated at $180,000. Although one can extract data and probability of occurrence from historical information, the risk of severe flooding and the location of damage are random.

4.8 Wildfires

Hazard Description. There are four categories of wildfires that are experienced throughout the United States, as follows:

- wild land fires, including brush fires,
- interface or intermix fires,
- firestorms, prescribed fires, and
- prescribed fires and prescribed natural fires.

The two primary categories experienced in Baldwin County are wild land fires and interface or intermix. Wild land fires are fueled exclusively by natural vegetation. Interface or intermix fires are fueled by both vegetation and the built up environment.

Three factors have a direct impact on wildfire formation: topography, fuel, and weather. Topography can have a powerful influence on wildfire behavior. Slope, canyons, gulches, and valleys can greatly increase the rate of spread.

Hazard Profile. Baldwin County has a high occurrence of wildfires annually. Table 4-11 shows the number of fires responded to and suppressed by the Baldwin County forester's office and volunteer fire departments from 1995 to 2003. Since 1995 the county has experienced 2,232 forest fires resulting in damage of 40,541 acres. The fires listed are the number that required assistance by the Forestry Commission to control the blaze. The average number of fires over the five year period is 252, with an average of 18.5 acres burned per fire.

Table 4-11. Annual Wildfires in Baldwin County

Year	Number of Fires	Acres Burned
1995	220	2,855
1996	368	6,455
1997	172	3,605
1998	208	4,243
1999	340	3,890
2000	438	7,879
2001	172	5,772
2002	195	3,644
2003	119	2,198

Source: Alabama Forestry Commission, Baldwin County Office

Community Impacts. Wildfires can cause considerable damage and loss of life especially in areas where there is an interface between wild land and urban development. Baldwin County has multiple fuel sources and is prone to drought and thunderstorms; therefore, wildfires are a significant risk. This is especially the case as commuters move into more rural areas. Furthermore, rural fire departments are almost exclusively made up of volunteers and usually have limited resources, which are stretched during periods when numerous fires occur.

Location and Extents. Rural areas of the county are susceptible.

Probability of Future Occurrences. Based on historical information, the county can expect an average of 248 significant wildfires which damage or destroy a total of 4,505 acres per year . The average area burned is approximately 19 acres per wildfire. Although one can extract data and probability of occurrence from historical information, the risk of a wild fire occurring and the location of damage appear to be random.

4.9 Droughts / Heat Wave

Hazard Description. Temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks are defined as extreme heat. Humid or muggy conditions occur when a “dome” of high atmospheric pressure traps hazy, damp air near the ground. The combination of high temperatures and humid conditions increase the level of discomfort and the potential for danger to humans. Droughts occur when a long period passes without any substantial rainfall. A heat wave combined with a drought is a very dangerous situation.

Hazard Profile. Baldwin County occasionally experiences short droughts and extreme summer heat. According to NOAA, there are no recorded droughts between 1950 and 2002. A federal disaster resulting from drought was declared on July 20,

1977. Table 4-12 indicates that two periods of excessive heat occurred in 2000. One death occurred due to heat exposure during the June heat wave.

Table 4-12. Drought/Heat Waves in Baldwin County

Location	Date	Time	Type	Mag	Deaths	Injuries	Prop Dam	Crop Dam
1 ALZ062 – 064*	06/25/2000	10:00 am	Excessive Heat	N/A	1	0	0	0
2 ALZ039 - 051>064*	07/01/2000	12:01 am	Excessive Heat	N/A	0	0	0	0

* These numbers refer to NWS forecast zones. Baldwin County is in forecast zone 62 and 64. The storm event listed included the county in zone 62 and/or 64 (Baldwin). Information on the forecast zones can be found at http://www4.ncdc.noaa.gov/

Community Impacts. The human risks associated with extreme heat include heatstroke, heat exhaustion, heat syncope, heat cramps. A description of each of these conditions follows:

- Heatstroke is considered a medical emergency and is often fatal. It exists when rectal temperature rises above 105°F as a result of environmental temperatures. Patients may be delirious, stuporous, or comatose. The death-to care ratio in reported cases averages about 15%.
- Heat Exhaustion is much less severe than heatstroke. The body temperature may be normal or slightly elevated. A person suffering from heat exhaustion may complain of dizziness, weakness or fatigue. The primary cause of heat exhaustion is fluid and electrolyte imbalance. The normalization of fluids will typically alleviate the situation.
- Heat Syncope is typically associated with exercise by people who are not acclimated to exercise. The symptom is a sudden loss of consciousness. Consciousness returns promptly when the person lies down. The cause is primarily associated with circulatory instability as a result of heat. The condition typically causes little or no harm to the individual.
- Heat Cramps are typically a problem for individuals who exercise outdoors but are unaccustomed to heat. Similar to heat exhaustion it is thought to be a result of a mild imbalance of fluids and electrolytes.

In 1979 R. G. Steadman, a meteorologist, developed the heat index, which is a relationship between dry bulb temperatures (at different humidity) and the skin's resistance to heat and moisture transfer. Utilizing Steadman's heat index, Table 4-13 was developed to show the risk associated with ranges in apparent temperature or heat index.

Table 4-13. Heat Index / Heat Disorders

Danger Category	Heat Disorders	Apparent Temperature (°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.	80-90

Source: National Weather Service, 1997

Extreme heat often brings about drought. Risks associated with drought include, effects to the water supply, impact on agriculture, increase in wildfires, negative impact on hydroelectric power and other activities dependent upon water such as recreation and navigation.

Location and Extents. Droughts and heat waves have a countywide impact.

Probability of Future Occurrences. Due to a lack of data, average annual occurrences and damage estimates cannot be made. Baldwin County falls in an area that may experience humid, short droughts and extreme summer heat. Though historically not a major problem, the region is susceptible to extreme drought conditions.

4.10 Winter Storms/Freezes

Hazard Description. Winter storms and blizzards originate as mid-latitude depressions or cyclonic weather systems, sometimes following the meandering path of the jet stream. A blizzard combines heavy snowfall, high winds, extreme cold, and ice storms. The origins of the weather patterns that cause severe winter storms are primarily from four sources in the continental United States. Winter storms in the southeast region are usually a result of Canadian and Arctic cold fronts from the north and mid-western states combining with tropical cyclonic weather systems in the Gulf of Mexico.

Hazard Profile. Baldwin County occasionally experiences winter storms and extreme colds. Since 1993 there have been five recorded events. On average the County receives less than a half an inch of snow annually. The largest snowfall event recorded for the County was 4.5 inches in 1973. Table 4-14 lists events dating from 1996 according to the Storm Events Database. A snowstorm in 1993 affected the

entire state of Alabama but was not listed for Baldwin County. The National Weather Service recorded 3 inches of snow in Bay Minette for the 1993 snowstorm.

Table 4-14. Winter Storms Since1993, Baldwin County

Location	Date	Time	Type	Mag	Deaths	Injuries	Property Damage	Crop Damage
1 ALZ062*	02/03/1996	1:00 am	Freezing Rain	N/A	0	0	$10K	0
2 ALZ051>062*	01/02/2002	12:00 am	Winter Storm	N/A	0	0	0	0

* These numbers refer to NWS forecast zones. Baldwin County is in forecast zone 62 and 64. The storm event listed included the county in zone 62 and/or64 (Baldwin). Information on the forecast zones can be found at http://www4.ncdc.noaa.gov/

Community Impacts. Risks associated with winter storms are a direct correlation to the strength of the storm and the region's ability to handle a storm. The risks include loss of life due to cold and disruption of transportation routes, loss of electricity for extended periods, and impact on agriculture.

Location and Extents. The entire county is equally at risk for winter storms and freezes.

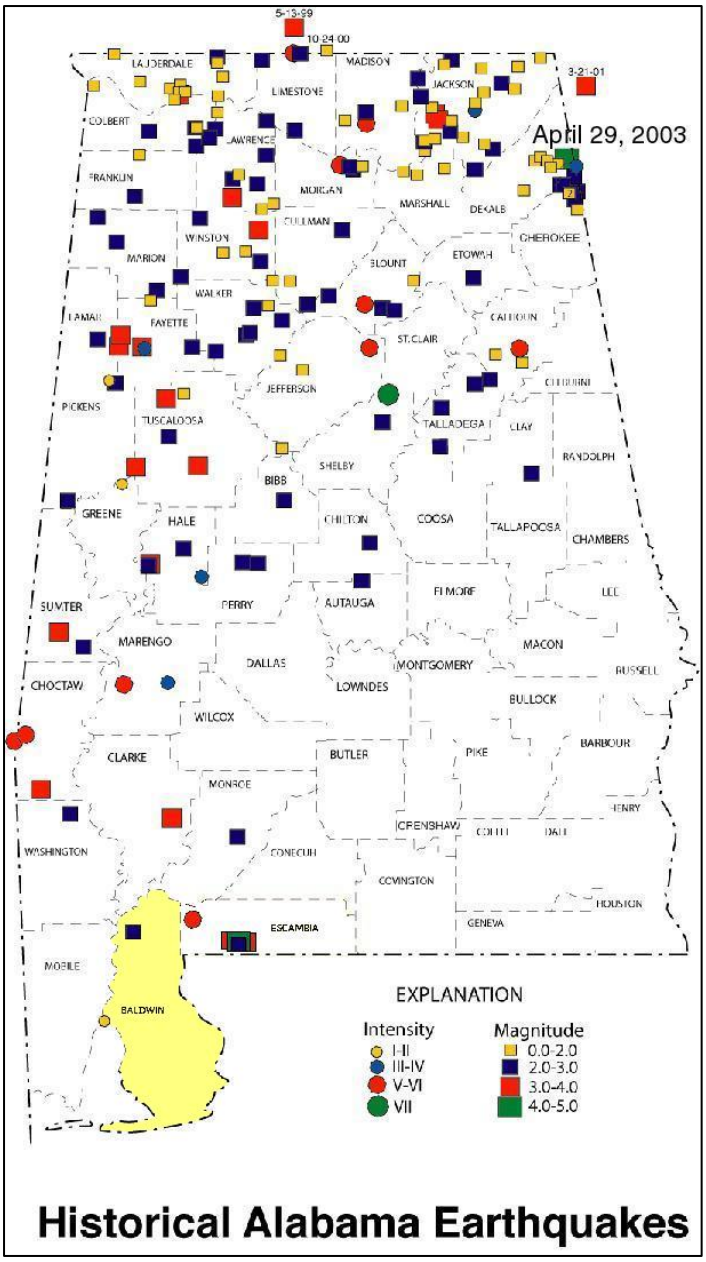
Probability of Future Occurrences. As indicated in the committee's hazard identification exercise, Baldwin County does not have a considerable risk of a winter storm occurring but has a high threat of a winter storm affecting the area. This is a direct result to the area's ability to handle a severe winter storm as well as the terrain of the county.

4.11 Earthquakes

Hazard Description. An earthquake is a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface.

Hazard Profile. According to Map 4-8, there was a small seismic event recorded at the mouth of the Alabama River on June 13, 1929. The earthquake was not felt. A second quake occurred in the northwest part of the county but only reached a magnitude of around 2 and was subsequently not felt.

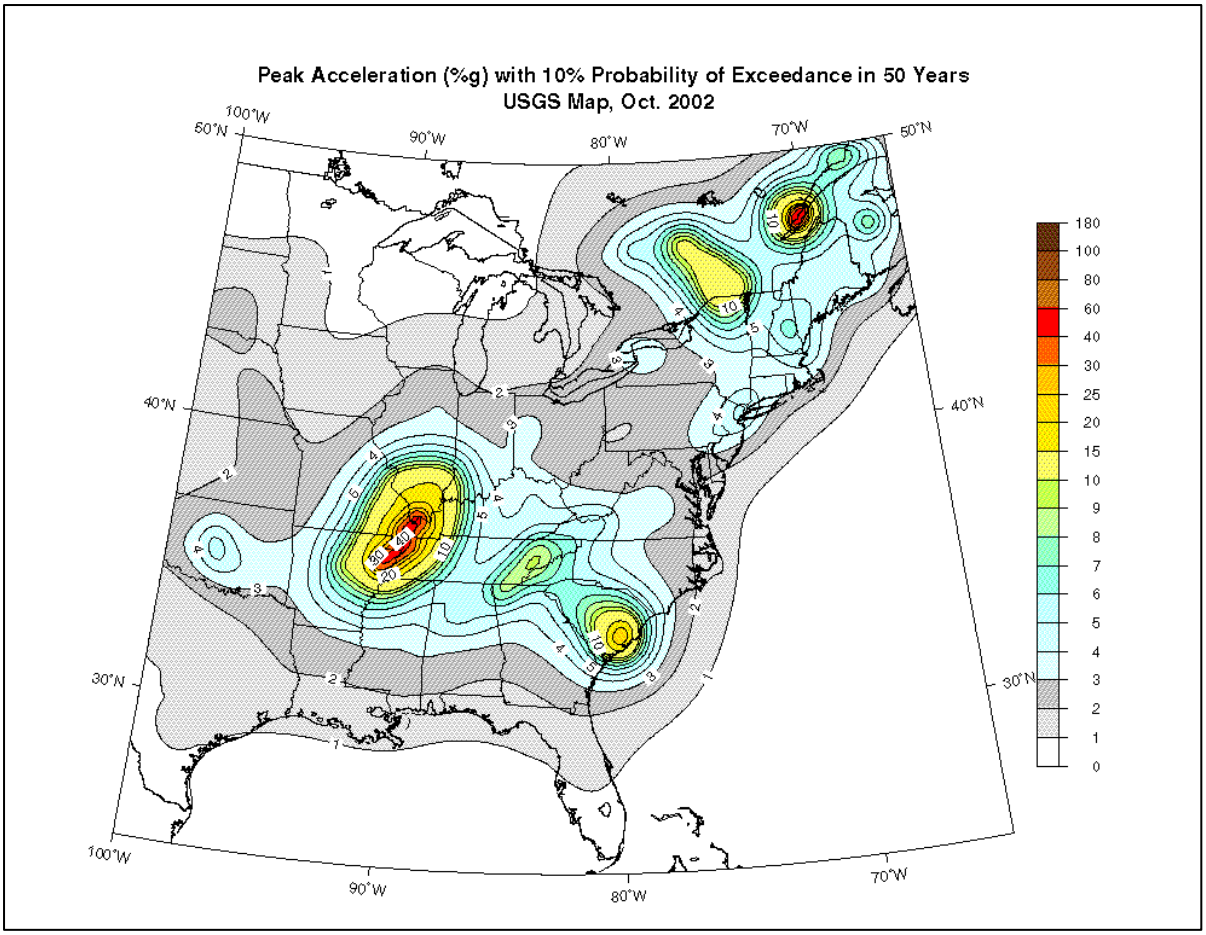
Information provided by the USGS indicates a significant earthquake occurred on October 18, 1916, and was felt in five states. Although it was a large regional earthquake, there are no records of damage in Baldwin County. Based on available information, other quakes felt in the county since 1916 have not caused any damages



(Source: Alabama Geological Survey)

Map 4-8. Earthquakes in Alabama Since 1916

Community Impacts. The USGS has developed a methodology for identifying an area's vulnerability to the occurrence of an earthquake. Areas are identified by their relative seismic risk. Baldwin County is located in an area with a peak acceleration between 2% and 3% with a 10% probability of exceedence in 50 years. This is an area of slight risk as illustrated on Map 4-9.



Map 4-9. Earthquake Risk Zones

In accordance with FEMA guidelines an area with 3% or greater probability of exceedance in 50 years is not considered to be vulnerability. In the case of Baldwin County the risk is slight and falls short of the 3% threshold.

Location and Extents. Although the risk of a significant earthquake occurring in Baldwin County is small, the impact of a large regional earthquake could be significant. The entire county is equally at risk for earthquakes.

Probability of Future Occurrences. Although insufficient data exists to predict the future probability of an earthquake occurring in Baldwin County, the risk of a significant, damage-causing earthquake in the county is minimal.

4.12 Landslides

Hazard Description. A "landslide" is the downward and outward movement of slope-forming materials acting under the force of gravity. The term covers a broad category of events, including mudflows, mudslides, debris flows, and rock falls, rockslides, debris avalanches, debris slides and earth flows. Landslides may consist of natural rock, soil, artificial fill, or combinations of these materials.

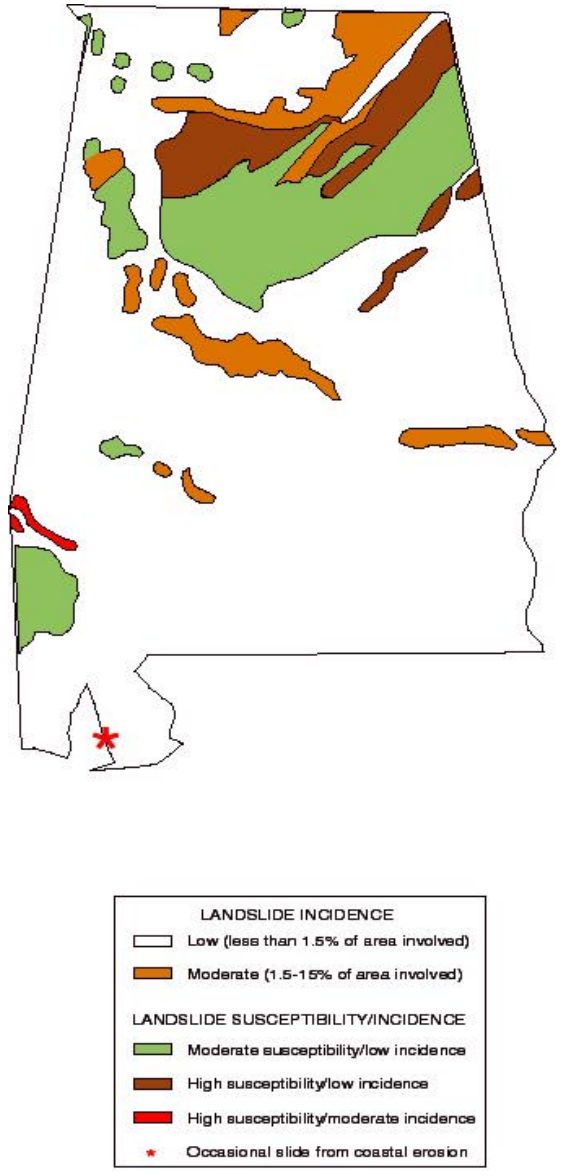
Landslides are classified by type of movement, including: slides, flows, lateral spreads, falls and topples.

Hazard Profile. Baldwin County is generally not susceptible to landslides as shown by the low threat and risk level assigned to this hazard in Table 4-1. However, heavy rains from Hurricane Danny caused a landslide in Spanish Fort in 1997. As shown in Map 4-10, the county is outside of any major landslide hazard areas. A total of five landslides have occurred in Baldwin County. Four of the five slides were human induced according the USGS.

Community Impacts. The effects of landslides are often misrepresented as being the result of the landslide's trigger event, such as a flood, earthquake, volcanic eruption, hurricane, or coastal storm. The impact from a landslide can include loss of life, damage to buildings, lost productivity, disruption in utilities and transportation systems, and reduced property values. According to FEMA 25 to 50 people die annually from landslides in the United States.

Location and Extents. The hilly regions located primarily in the northern and eastern portions of the county are more susceptible to landslides. In addition to the slide caused by overly saturated soil from Hurricane Danny near Spanish Fort in 1997, four human induced slides have occurred along the highways in the county. Two slides occurred along State Route 225 between Carpenter and Stockton, one occurred at the junction of US 31 and State Route 42 and one slide occurred just north of Spanish Fort along State Route 225.

Probability of Future Occurrences. Map 4-10 show the landslide risk for the State of Alabama. The map shows the possibility of coastal slides due to erosion but the county remains at little risk for landslides. Insufficient data exists to predict the future probability of a landslide occurring in Baldwin County. However, the risk of a significant, damage-causing landslide in the county is very small.



Source: U.S. Geological Survey

Map 4-10. Landslide Hazard Areas

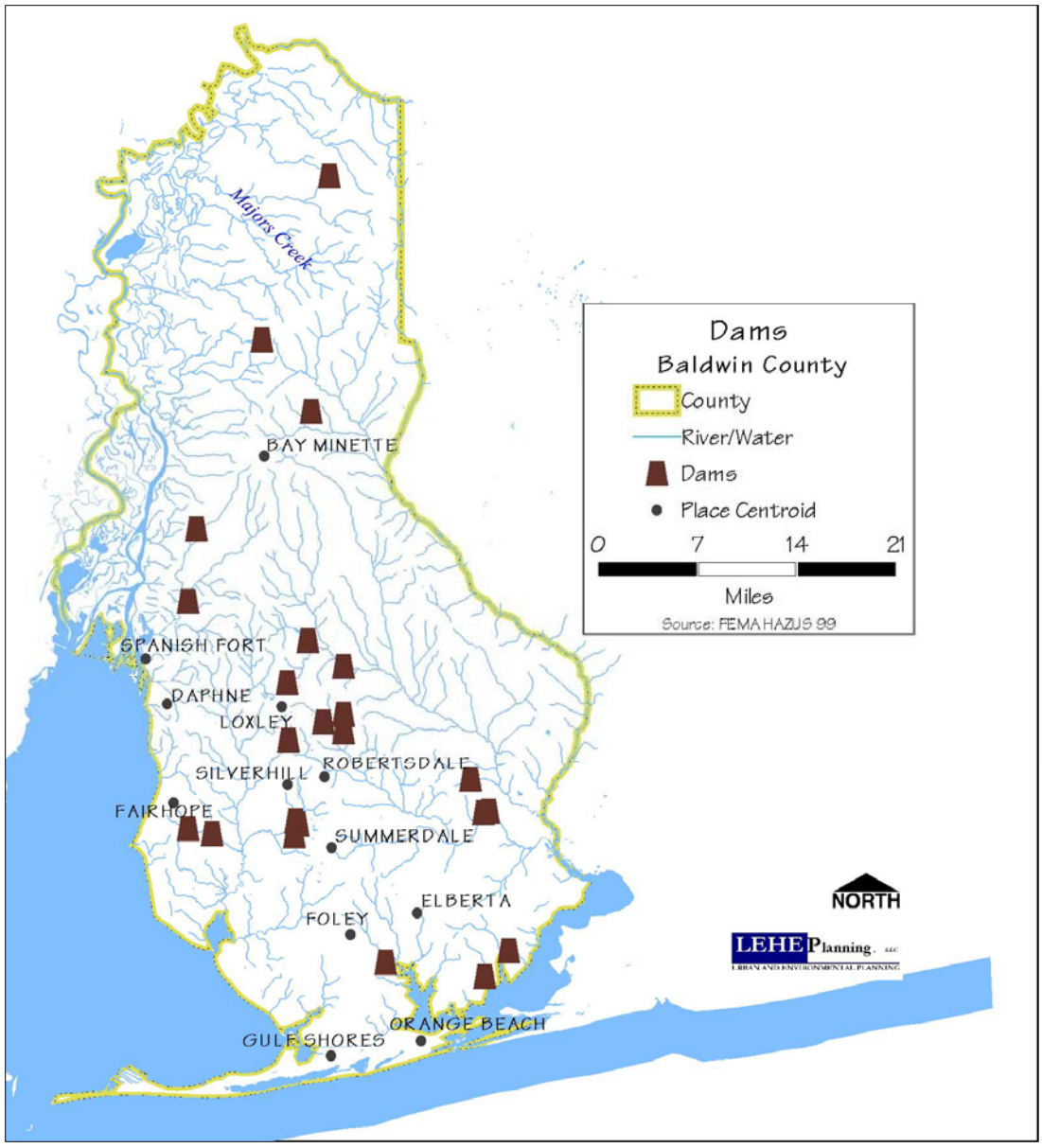
4.13 Dam/Levee Failures

Hazard Description. Dam failures are potentially the worst flood events. A dam failure is usually the result of neglect, poor design, or structural damage caused by a major event such as an earthquake.

Hazard Profile. No dam/levee failure events have been reported in Baldwin County.

Community impacts. When a dam fails, a large quantity of water is suddenly let loose downstream, destroying anything in its path.

Location and Extents. Map 4-11 depicts the locations of dams in Baldwin County. None of the dams are categorized as having a "high" hazard classification. This classification is assigned to a dam depending upon the urban development directly downstream of the dam and whether or not failure would result in serious economic loss. The classification is not an indication of the quality of the dam's construction.



Map 4-11. Locations of Dams

Probability of Future Occurrences. The future probability of a catastrophic dam failure event in Baldwin County is very slight.

4.14 Vulnerability Assessment: Identification of Assets

This section assesses vulnerability of types and numbers of existing buildings and critical facilities (including infrastructure) located within each identified natural hazard area. The only identified natural hazards, which are area specific within the county, are flooding, landslides, and dam failures. Consequently, all buildings and critical facilities are exposed to all remaining natural hazards.

The building counts and values are taken from the HAZUS 99 databases shown in Tables 4-15 and 4-16. These are not current counts, but data availability is limited. Dollar values are not adjusted to current values.

Designation of a facility as critical is based on the HAZUS definitions, as follows:

- Essential Facilities. These facilities are critical to the health and welfare of the entire county population and are essential following natural hazard events, including emergency response facilities (police, fire, and emergency management), medical care facilities (hospitals and other care facilities), schools, and shelters for evacuation.
- Lifeline Utility Systems. These facilities are essential lifelines that include potable water, wastewater, natural gas, electric, and communications systems. HAZUS data is not available for this county.
- Transportation Systems. These facilities include highways, bridges, railways, and waterways.
- High Potential Loss Facilities. These facilities include military installations and high potential loss dams.
- Hazardous Materials Facilities. These facilities may pose a threat if disrupted by natural hazards and include hazardous industrial chemicals, explosives, flammables, toxins, and radioactive materials.

Building Assets.

The county has over 42,509 buildings valued at over $4.5 billion. All of the buildings are at risk for natural hazards damages, excluding flooding, dam failure, and landslides. Approximately 20% of the area is at risk of flooding and an undetermined area is at risk of landslides and/or dam failure.

Table 4-15. Total County Building Inventory

Type of Building							
Residential	Commercial	Industrial	Agriculture	Religious	Government	Education	Total
41,576	609	167	55	67	4	31	42,509

Source:HAZUS99

Table 4-16. Value of Buildings in County
($ Building Value in $1,000's)

Value by Type of Building							
Residential	Commercial	Industrial	Agriculture	Religious	Government	Education	Total
$3,635,822	$583,138	$179,974	$8,484	$69,229	$11,017	$42,188	$4,529,848

Source:HAZUS99

Critical Facilities

The maps on the following pages show the distribution of critical facilities throughout the County including communication, medical care, police and fire, hazardous material, hazard warning sirens, and school facilities. Shelter data is not available through HAZUS99

Map 4-12 depicts the transportation bridges located throughout the county. These bridges are important for maintaining the hurricane evacuation routes. The majority of the bridges are constructed of concrete.

Maps 4-13 show the locations of the medical care facilities located in the county from the HAZUS99 data from 1999. The county has four hospital facilities. Mercy Medical is classified as a large hospital with 157 beds. The remaining three hospitals are classified as medium hospitals. Thomas Hospital has 108 beds, South Baldwin Hospital has 76 beds and North Baldwin Hospital has 55 beds.

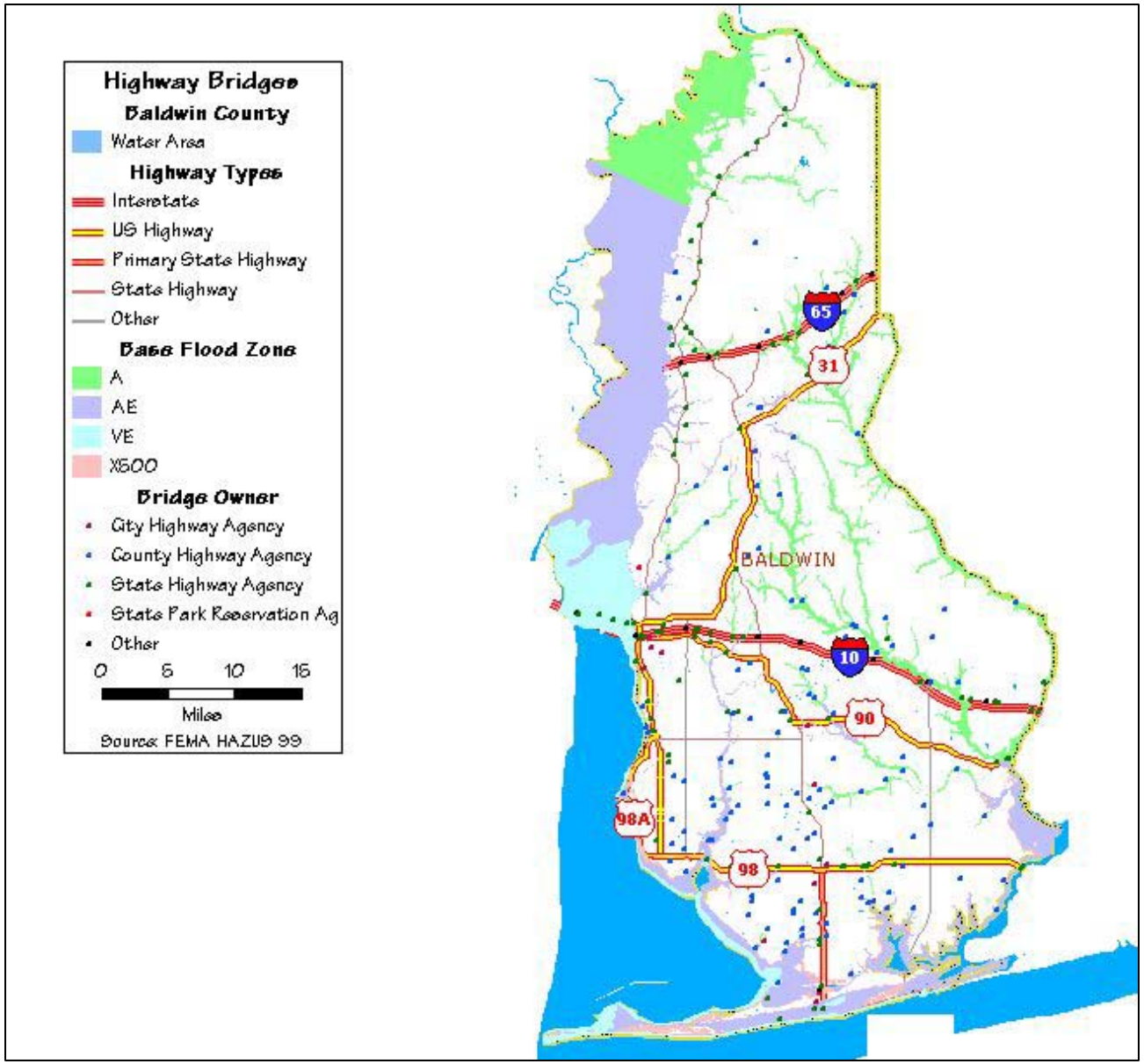
The County has an emergency response system of fire, police and the EMA located in the City of Fairhope. The facilities shown are those provided from the HAZUS99 database and may not be representative of all stations in the county. These stations are shown with the medical facilities on map 4-13.

Baldwin County has a large concentration of schools in the Bay Minette. Some schools are also located in more rural areas of the county. The school locations are shown on Map 4-14. HAZUS indicates that their approximately 37 schools located in Baldwin County. The locations of the schools are an important resource for the public as they are often used as shelters during times of disasters.

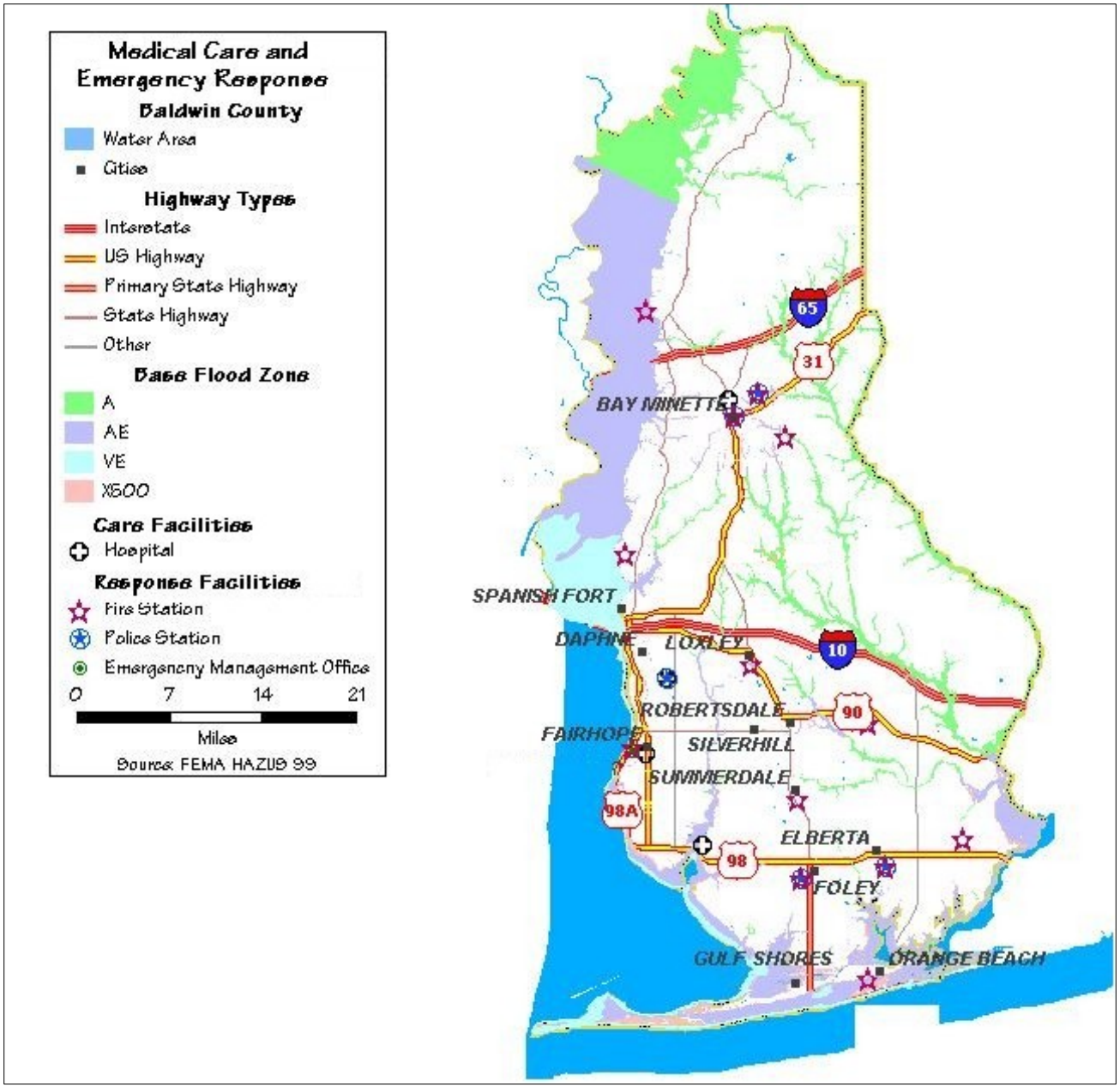
Hazardous material facilities contain substances that can pose significant hazards because of their toxicity, radioactivity, flammability, explosiveness and/or reactivity. Significant casualties and/or property damage could occur from a single hazardous materials release induced by a flood, earthquake or other unforeseen hazard. Map 4-15 depicts that location of hazardous sites in 1999. A current listing of hazardous materials and their locations are available at the EMA.

Communication facilities are important resources for a community to have available. It allows administrators direct access to the public for announcements, education and alerts regarding hazards. Baldwin County has radio and television broadcasting towers, as shown on Map 4-16. The county has three AM, two FM, three television and approximately 11 other towers located in and around the county.

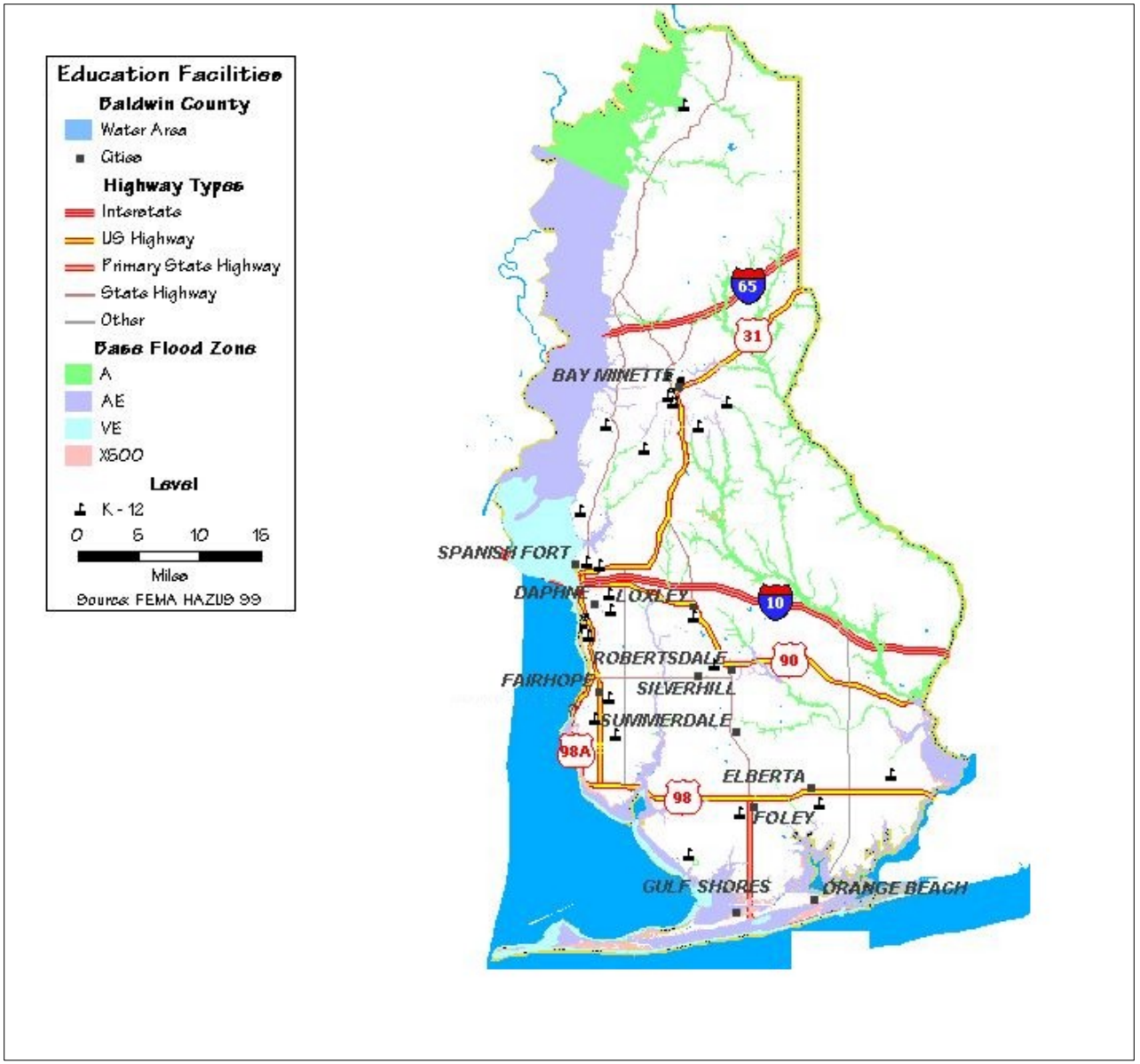
Map 4-17 shows two pipelines that cross the county including a crude oil pipeline and a natural gas line.



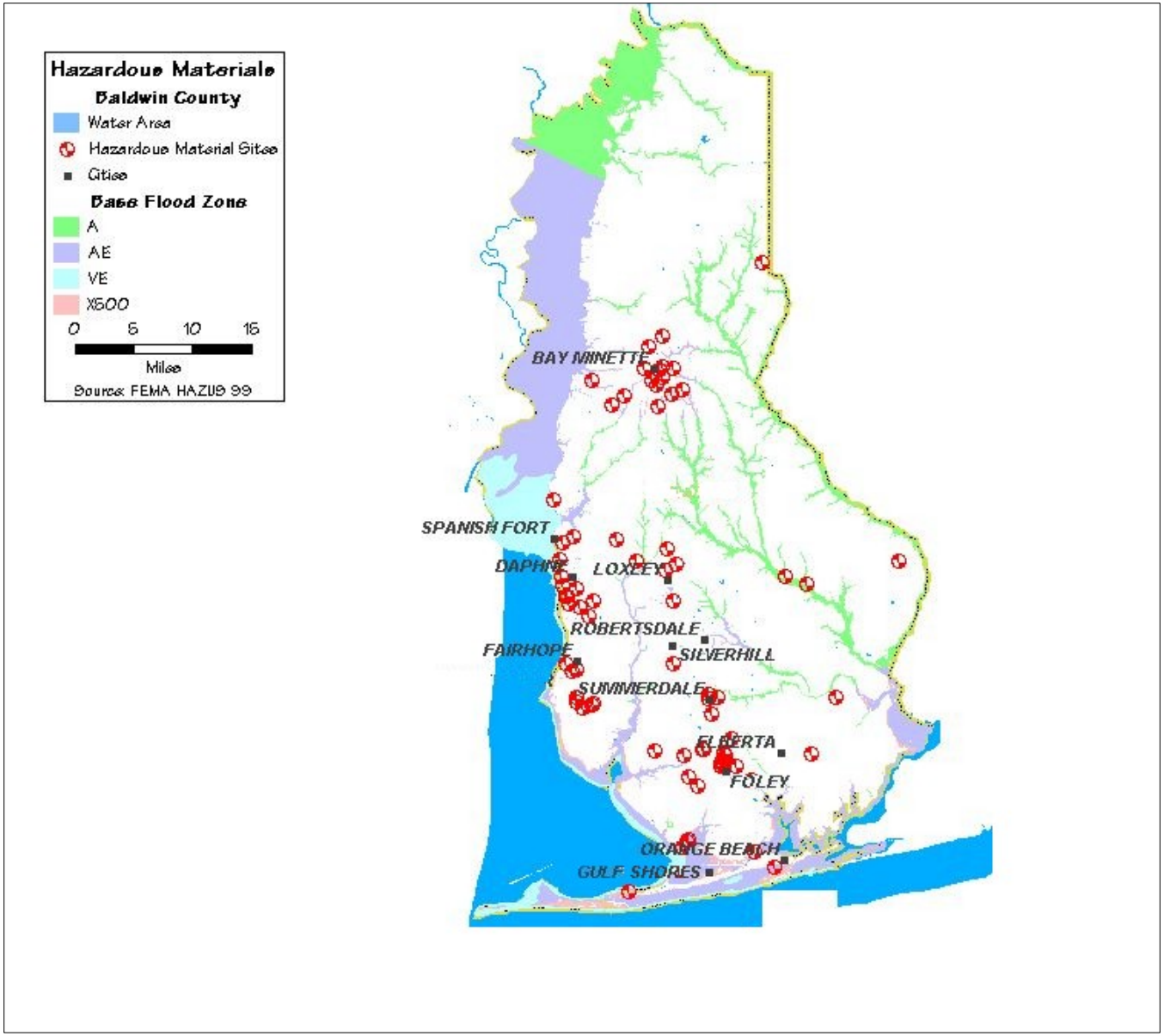
Map 4-12. Locations of Bridges



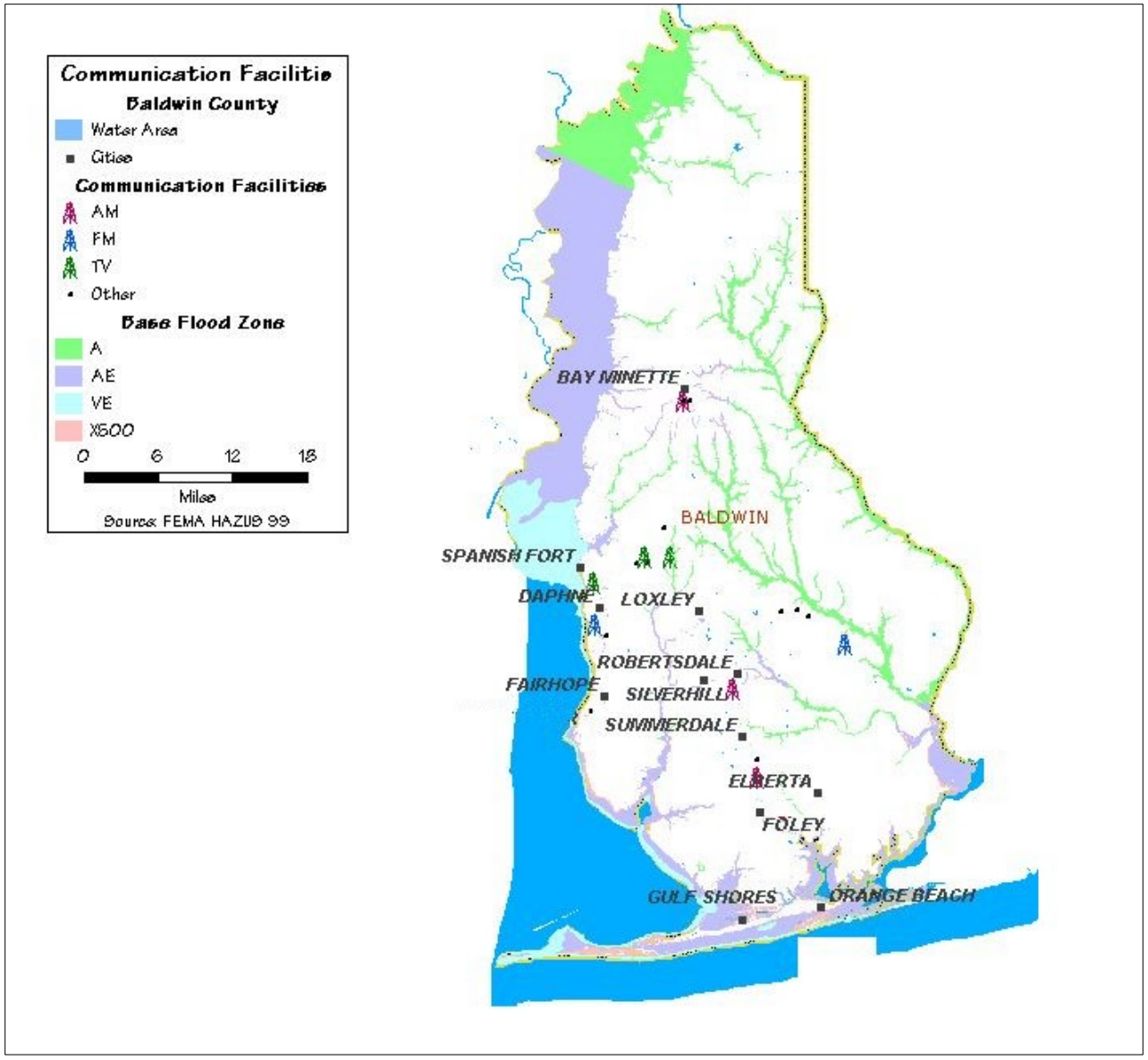
Map 4-13. Medical Care and Emergency Response Facilities



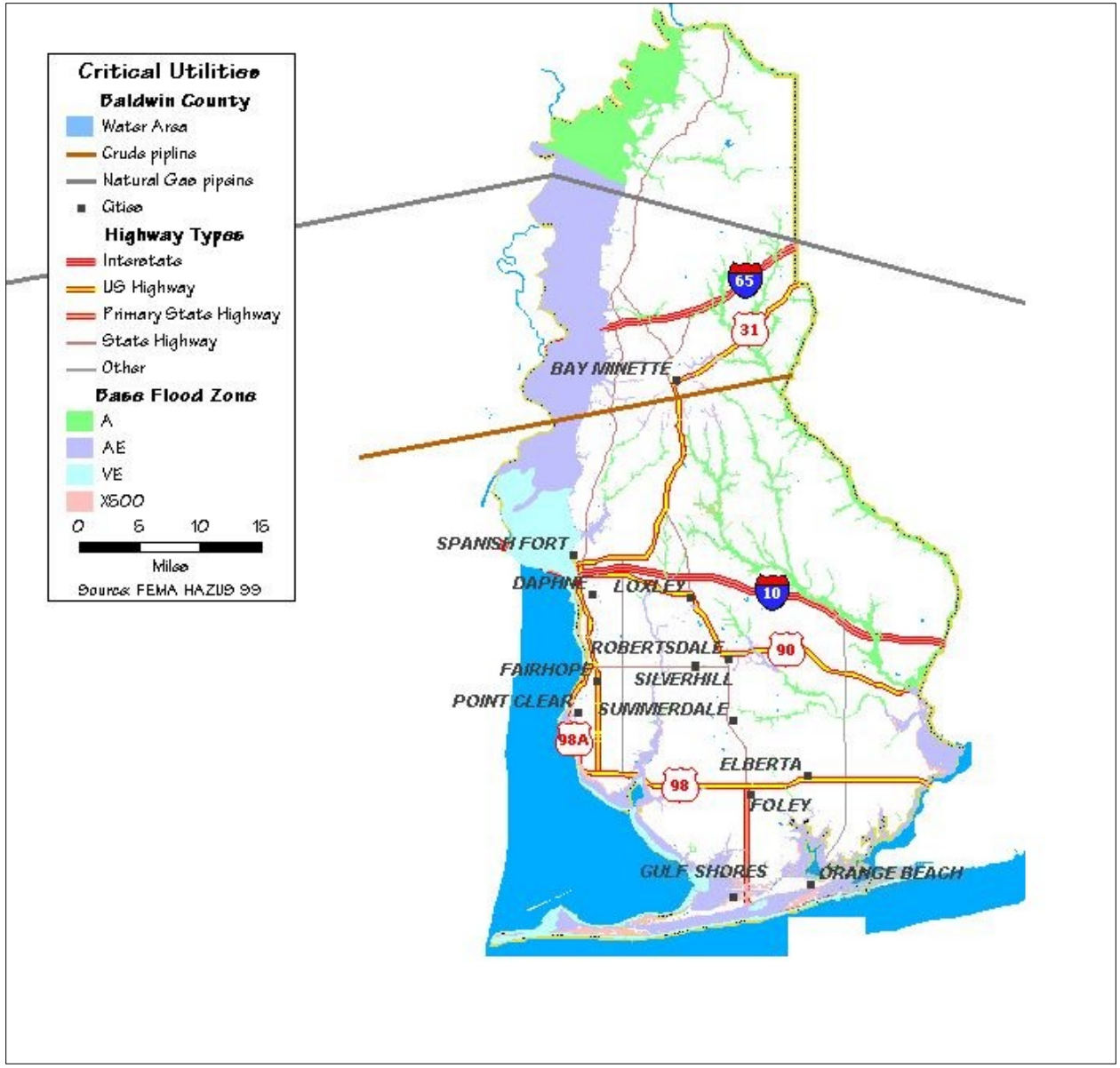
Map 4-14. Education Facilities



Map 4-15. Hazardous Material Sites



Map 4-16. Communication Facilities



Map 4-17. Critical Utilities

4.15 Vulnerability Assessment: Impacts on Population, Buildings, Critical Facilities; Estimated Losses

Tables 4-17, 4-18 and 4-19 depict populations and buildings in Baldwin County that are vulnerable to each natural hazard. It is estimated that less than 20% of the population and buildings are vulnerable to flooding and an undetermined amount are susceptible to dam failure and landslides. There are properties insured against flooding that are located outside the floodplain.

Impact on Population

Table 4-17. Population Vulnerable to Natural Hazards

Hazard	Population	Households
Flood	27,519	11,200
Tornado	140,415	55,336
Drought	140,415	55,336
Hail	140,415	55,336
Wildfire	140,415	55,336
Lightning	140,415	55,336
Hurricane	140,415	55,336
Thunderstorm	140,415	55,336
Winter storm	140,415	55,336

Source: Census 2000

Impact on Buildings

Table 4-18. Number of Buildings Exposed to Natural Hazards

Hazard	Type of Building							
	Residential	Commercial	Industrial	Agriculture	Religious	Government	Education	Total
Flood	5,118	51	15	4	10	0	3	5,204
Tornado	41,576	609	167	55	67	4	31	42,509
Drought	41,576	609	167	55	67	4	31	42,509
Hail	41,576	609	167	55	67	4	31	42,509
Wildfire	41,576	609	167	55	67	4	31	42,509
Lightning	41,576	609	167	55	67	4	31	42,509
Hurricane	41,576	609	167	55	67	4	31	42,509
Thunderstorm	41,576	609	167	55	67	4	31	42,509
Winter storm	41,576	609	167	55	67	4	31	42,509

Source: HAZUS 99

Table 4-19. Value of Buildings Exposed to Natural Hazards ($ Building Value in $1,000's)

Hazard	Type of Building							
	Residential	Commercial	Industrial	Agriculture	Religious	Government	Education	Total
Flood	$394,477	$55,129	$15,661	$700	$10,315	$1,407	$3,811	$481,501
Tornado	$3,635,816	$583,139	$179,974	$8,484	$69,229	$11,017	$42,188	$4,529,848
Drought	$3,635,816	$583,139	$179,974	$8,484	$69,229	$11,017	$42,188	$4,529,848
Hail	$3,635,816	$583,139	$179,974	$8,484	$69,229	$11,017	$42,188	$4,529,848
Wildfire	$3,635,816	$583,139	$179,974	$8,484	$69,229	$11,017	$42,188	$4,529,848
Lightning	$3,635,816	$583,139	$179,974	$8,484	$69,229	$11,017	$42,188	$4,529,848
Hurricane	$3,635,816	$583,139	$179,974	$8,484	$69,229	$11,017	$42,188	$4,529,848
Thunderstorm	$3,635,816	$583,139	$179,974	$8,484	$69,229	$11,017	$42,188	$4,529,848
Winter storm	$3,635,816	$583,139	$179,974	$8,484	$69,229	$11,017	$42,188	$4,529,848

Source: HAZUS 99

Impact on Critical Facilities. Critical facilities subject to flooding are shown on the maps in the previous section. Critical facilities subject to dam failure have yet to be identified. A dam inundation study should identify those facilities at risk. Risk associated with landslides is unknown at this time. All critical facilities are subject to all other natural hazard disasters.

Estimated Losses. Table 4-20 provides general estimates of property damage that might result from each of the identified natural hazards. These are very gross estimates of property damages and should only be interpreted as indicators of the degree of damage possible. The figures are based solely on past occurrences, as described in the hazard identification section of this chapter. More accurate methods are available to assess damages, particularly the Corps of Engineers Flood Damage Assessment (HEC-FDA) model, FEMA's Benefit-Cost Modules, and the HAZUS loss estimation software. As a follow up to this plan, the county intends to conduct more detailed loss estimates, applying the latest version of HAZUS-MH for multi-hazard assessments.

Table 4-20. Annual Property Damage Estimates

Hazard	Low	Expected	High
Hurricane	$0	$26.2 M	$174.2 M
Tornado	$0	$162,188	$2.5M
Severe Thunderstorm	$0	$40,770	$500,000
Flood	$0	$180,000	$1,000,000
Wildfires	$0	N/A	N/A
Drought/Heat Wave	$0	N/A	N/A
Winter Storm/Freeze	$0	N/A	N/A
Earthquake	$0	N/A	N/A
Landslides	$0	N/A	N/A
Dam/Levee Failures	$0	N/A	N/A

Source: NOAA Property Damage Estimates at http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

4.16 Vulnerability Assessment: Analysis of Development Trends

As shown in Table 4-21, Baldwin County's population has increased at rates of 25.1% from 1980-1990 and 42.9% from 1990-2000. An average annual increase of over 3.9% and a total increase of 86.8% for this 20-year period has occurred. Table 4-22 shows the changes in population from 1990-2000 for each jurisdiction.

Baldwin County is second to only Shelby County in the rate of growth since 1980. This explosive growth rate is projected to continue through the next two decades. Of particular concern is the increased population and building exposure to the threats of hurricanes. Impacts of new developments due to flooding have been mitigated, in large part, due to local flood plain ordinances and management practices. Map 4-18 show the land use in the county from 1999.

Table 4-21. Historical and Projected Population Growth Trends, 1980-2025

	Baldwin County	State of Alabama
	Historical	
1980 Population	78,556	3,893,888
1990 Population	98,280	4,047,587
Percent Change 1980-1990	25.1	3.8
Number Change 1980-1990	19,724	146,699
2000 Population	140,415	4,447,100
Percent Change 1990-2000	42.9	10.1
Number Change 1990-2000	42,135	406,513
	Projected	
2005 Population	162,315	4,644,503
2015 Population	205,251	5,028,045
2025 Population	248,436	5,385,997
Percent Change 2000-2025	76.9	21.1
Number Change 2000-2025	108,021	938,897

Source: Alabama State Data Center, The University of Alabama

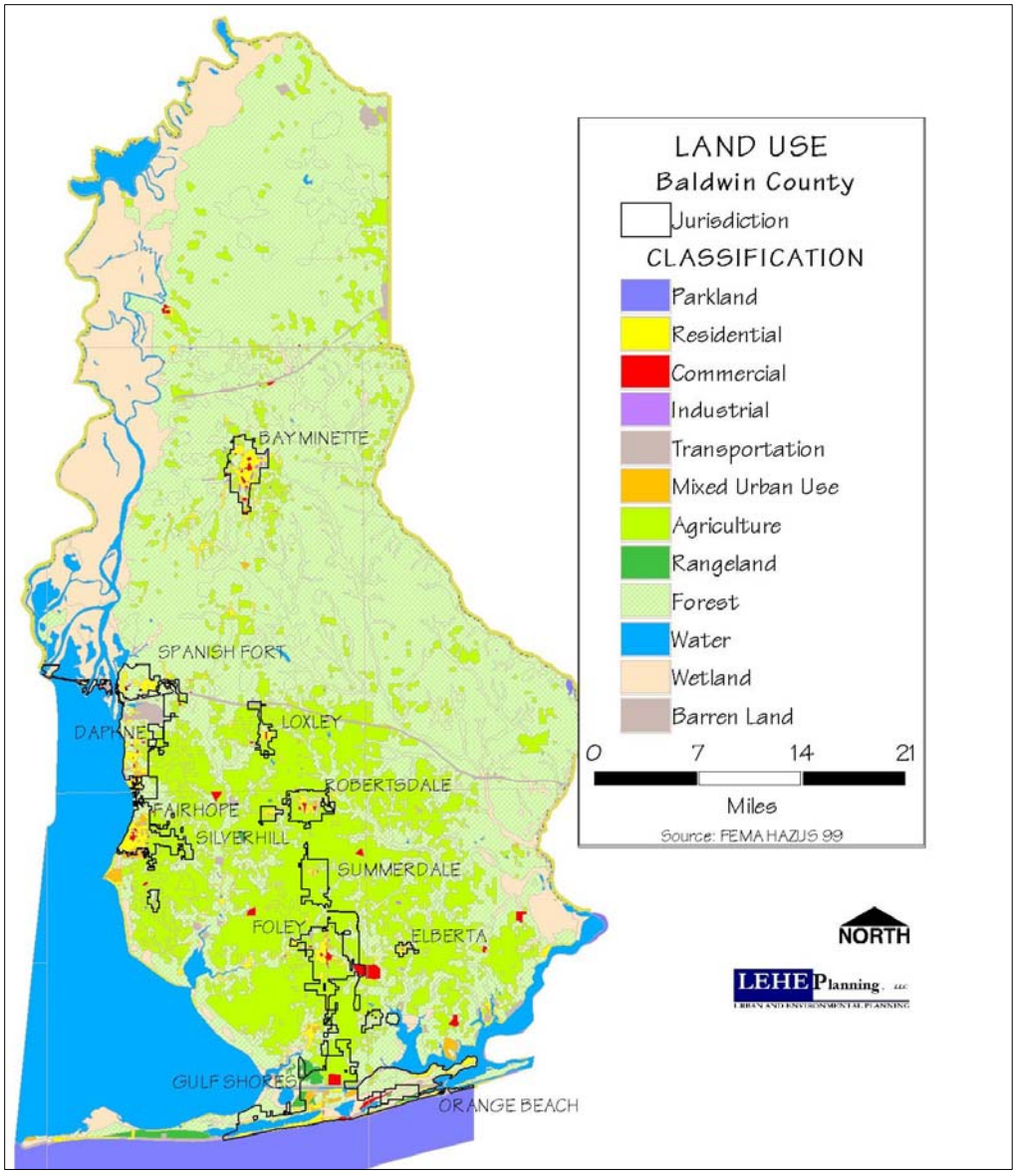
Table 4-22. Historical Population Growth, Jurisdictions in Baldwin County

Jurisdiction	1990 Population	2000 Population	Number Change 1990-2000	Percent Change 1990-2000
Baldwin County	98,280	140,415	42,135	42.9%
Bay Minette	7,216	7,820	604	8.4%
Daphne	11,725	16,581	4,856	41.4%
Elberta	458	552	94	20.5%
Fairhope	9,248	12,480	3,232	34.9%
Foley	5,778	7,590	1,812	31.4%
Gulf Shores	3,272	5,044	1,772	54.2%
Loxley	1,161	1,348	187	16.1%
Orange Beach	2,244	3,784	1,540	68.6%

Table 4-22. Historical Population Growth, Jurisdictions in Baldwin County

Jurisdiction	1990 Population	2000 Population	Number Change 1990-2000	Percent Change 1990-2000
Robertsdale	2,485	3,782	1,297	52.2%
Silverhill	565	616	51	9.0%
Spanish Fort	2,696	5,423	2,727	101.1%
Summerdale	552	655	103	18.7%

Source: Census 2000, March 2001



Map 4-18. Land Use, Baldwin County

4.17 Multi-Jurisdictional Risk Assessment

In Table 4-23 the jurisdictions are ranked in terms of risk of natural hazards. All jurisdictions are equally at risk for hurricanes, tornadoes, severe thunderstorms, earthquakes, wildfires, extreme cold, winter storms, drought and extreme heat. The jurisdictions have varying degrees of risk pertaining to flooding, landslides and dam failures. The risk associated with each of these hazards depends upon topography, geology and density of development.

Table 4-23 depicts the relative risk assessment for each jurisdiction according to the responses received by the Hazard Mitigation Planning Committee (1=highest ranked risk).

Table 4-23. Multi-Jurisdictional Risk Assessment

Hazard	Baldwin County	Daphne	Fairhope	Bay Minette	Foley	Spanish Fort	Gulf Shores	Orange Beach	Robertsdale	Loxley	Summerdale	Silverhill	Elberta
Hurricane	1	1	1	1	1	1	1	1	1	1	1	1	1
Severe Thunderstorm	2	2	2	2	2	2	2	2	2	2	2	2	2
Flood	4	3	3	4	4	4	3	3	4	4	4	4	4
Tornado	3	4	4	3	3	3	4	4	3	3	3	3	3
Wildfire	5	5	5	5	5	6	5	5	5	5	5	5	5
Drought/Heat Wave	6	6	6	6	6	7	6	6	6	6	6	6	6
Winter Storm/Freeze	7	7	7	8	7	8	7	7	7	7	7	7	7
Landslide	8	8	8	7	8	5	8	8	8	8	8	8	8
Earthquake	9	9	9	9	9	9	9	9	9	9	9	9	9
Dam/Levee Failure	10	10	10	10	10	10	10	10	10	10	10	10	10

Chapter 5
Mitigation Strategies

5.1 Purpose of the Mitigation Strategies

The mitigation strategies presented in this chapter provide a long-range blueprint for all participating communities within Baldwin County to consolidate their resources and efforts to cooperatively reduce the potential losses identified in the risk assessment. This chapter presents a shared vision and comprehensive, long-range plan of goals, objectives, and available mitigation measures for all participants in the planning process. Those short-range mitigation measures supported by each community over the next five-year planning cycle are presented in Chapter 6 - Community Action Programs.

5.2 Steps in Developing the Strategies

At its organizational meeting, the Hazard Mitigation Planning Committee (HMPC) adopted a mission statement and a shared vision for disaster resistance among all communities within the county. These statements were prepared with *Committee Exercise #1 - Mission/Vision Statements*. Refer to Section 3.2, Hazard Mitigation Planning Committee, for the Mission Statement. Section 5.6 presents the Vision Statement for the committee.

At subsequent committee meetings, each jurisdiction completed risk and capabilities assessments. *Committee Exercise #2 - Hazard Identification* was used to generally identify the natural hazard threats to each community and the probability or risks of future occurrences. More detailed research and analyses of the risks supplemented the committee exercise, and the committee reviewed the results. The next exercise, *Committee Exercise #3 - Hazard Profiles,* compiled the records of past natural hazard events. This exercise was completed through evaluation of available data, such as local damage reports, news accounts, and FEMA disaster declaration records, as well as committee members' recollections of past events. *Committee Exercise #4 - Capabilities Assessment for Hazard Mitigation* was completed by each jurisdiction to determine existing capabilities to implement mitigation measures. The committee representatives examined the regulatory tools, staff resources, possible funding, and other capabilities of each jurisdiction.

The "Issues and Opportunities" – major problems and opportunities facing each community's mitigation efforts – were derived from the risk and capability assessments, committee discussions, public participation, and interagency coordination activities. The statements of issues and opportunities form the basis for determining appropriate mitigation measures for each community, given their particular risks and capabilities.

Committee Exercise #5 - Alternative Mitigation Measures, was used by the committee to select among the broad range of alternatives that might be available to each community. Through this exercise, goals were established for high-risk natural hazards and each of the six categories of mitigation activities. Mitigation program objectives define achievable targets that are consistent with goals. The committee evaluated the alternative mitigation

measures that would advance the goal and selected the preferred measures that would best address each issue. The committee also identified the most critical natural hazard issues in each jurisdiction and recommended mitigation projects for potential FEMA funding.

Finally, the committee completed the Mitigation Action Program that schedules the implementation of mitigation measures. The action program for each participating community assigns implementation responsibility, sets a timeline, identifies funding needs, and establishes the priority for implementation (See chapter 6). Figure 5.1 illustrates the process and components that led to the Mitigation Strategies and Mitigation Action Program.

The HMPC sought participation from the public and coordinated its efforts with other agencies. This was accomplished through open committee meetings, access to the project website (http://mitigationplan.org/), surveys, public meetings, media announcements and public hearings prior to the plan's adoption. Results of the exercises and sign-in sheets and minutes from meetings are available in the EMA office.

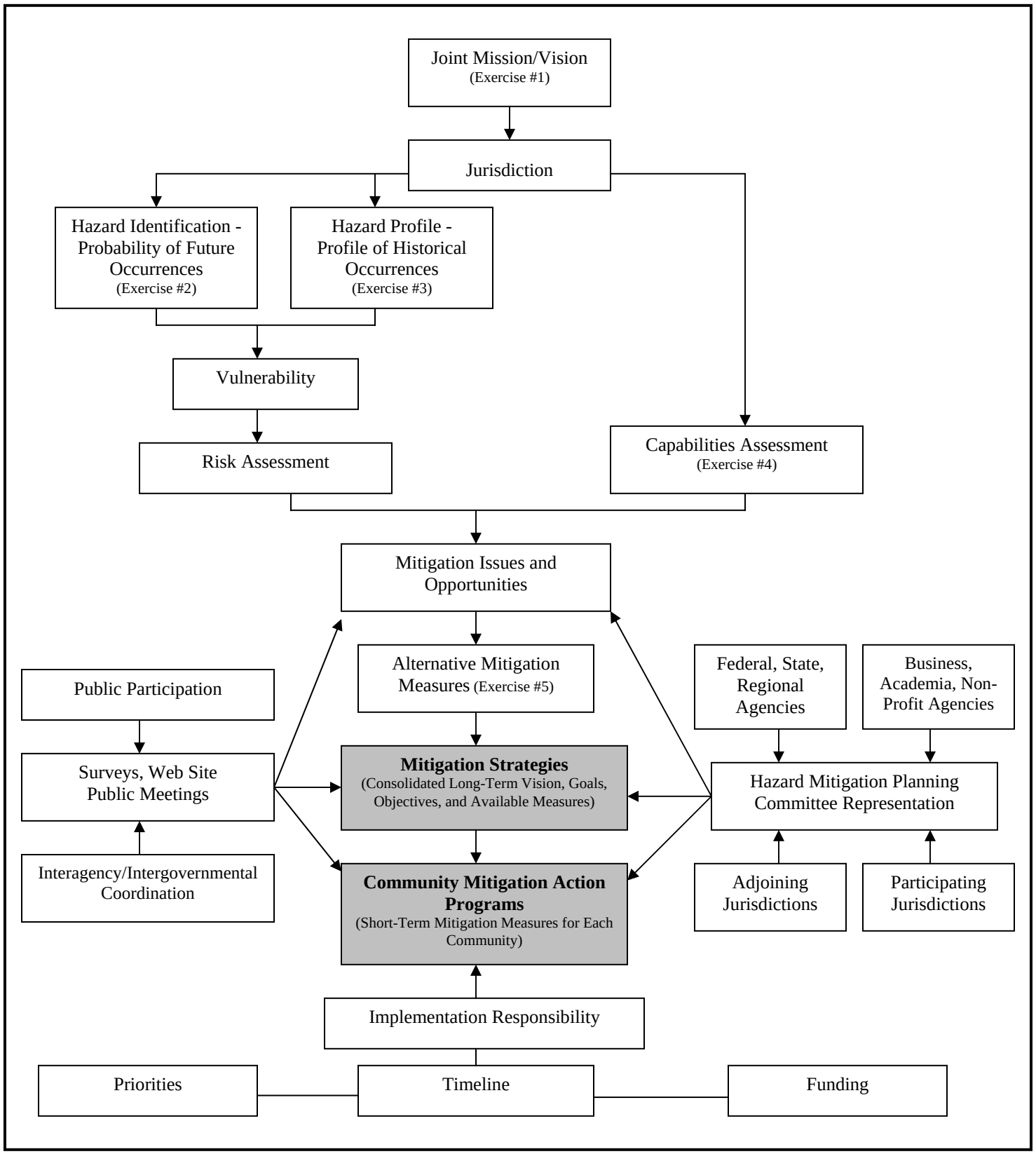


Figure 5-1. Steps in the Development of the Mitigation Strategies and Action Programs

5.3 The Planning Approach

The planning approach presented here follows the six categories of a comprehensive hazard mitigation program. These program categories have been developed by FEMA for managing a successful mitigation program and are used as guidelines for identifying and selecting among alternative mitigation measures.

1. **Prevention.** Adopting and administering ordinances, regulations, and programs that manage the development of land and buildings to minimize risks of loss due to natural hazards.
2. **Property Protection.** Protecting structures and their occupants and contents from the damaging effects of natural hazard occurrences, including retrofitting existing structures to increase their resistance to damage and exposure of occupants to harm; relocating vulnerable structures and occupants from natural hazard locations; and conversion of developed land to permanent open space through acquisition and demolition of existing structures.
3. **Public Education and Outreach.** Educating and informing the public about the risks of natural hazards and the techniques available to reduce threats to life and property.
4. **Natural Resources Protection.** Preserving and restoring the beneficial functions of the natural environment to promote sustainable community development that balances the constraints of nature with the social and economic demands of the community.
5. **Emergency Services.** Responding to and recovering from a natural hazard disaster.
6. **Structural Projects.** Engineering structural modifications to natural systems and public infrastructure to reduce the potentially damaging impacts of a natural hazard on a community.

5.4 Mitigation Issues and Opportunities

The mitigation measures of this plan respond to the issues and opportunities listed in this section. These statements summarize the principal natural hazard issues and mitigation opportunities and are based upon the findings of the risk assessment and capability assessment, participation by members of the HMPC at committee meetings and through planning exercises, the results of the public survey, public participation at community meetings, and coordination among interested agencies.

Prevention

- Hurricanes, severe storms, and tornadoes post the most threatening hazards to Baldwin County communities. The area has been exposed to ten hurricanes since 1995.

- Baldwin County municipalities commonly practice comprehensive planning.
- The South Alabama Regional Planning Commission provides professional planning support to small municipalities.
- The county has experienced explosive growth since 1980. Growth between 1990 and 2000 increased by almost 43%. Projections show the growth rate continuing with an expected rate of 77% through the years 2000-2025.
- Baldwin County maintains a comprehensive GIS with much of the data countywide.
- Summerdale has areas identified as special flood hazard areas but is not in the NFIP. Elberta does not have identified flood hazard areas and is not in the NFIP.
- A large number of areas depicted on the Flood Insurance Rate Maps are designated "Approximate" zones where no detailed studies and flood elevation data exist.
- Good construction practices and proper code enforcement are critical.
- Alabama is one of a few states without a dam safety program.

Property Protection

- In the most recent decade, flood damages have increased dramatically. Considerable funds and resources have been expended by the localities to mitigate this priority issue. Property acquisition and elevation have been the preferred methods of permanent protection.
- Standard homeowner and business insurance policies do not cover flood damages.

Public Education and Outreach

- Real estate agents and property owners have a continuing need for flood map information.
- The public is generally unaware of risks associated with hazards and the mitigation measures available for property protection.
- Real estate agents often neglect to disclose flood plain location of a property before it is listed.
- Local libraries are available to serve as repositories for information on hazards and methods of protection.
- Technical assistance materials are available through FEMA to assist property owners on alternative property protection measures.
- School environmental education programs provide excellent opportunities for public education on hazard mitigation alternatives.
- Local cable offers public service access.
- A multitude of public outreach opportunities and resources are available.

- Public information activities are among the least expensive mitigation measures but often the most effective.

Natural Resources Protection

- Baldwin County has valuable natural and scenic resources that could be disturbed by growth and development.
- The Coastal Land Trust has been established to preserve natural resources.
- Stream and riverbanks and riparian zones help manage floods and filter runoff.
- Accidental or intentional dumping of household and commercial, items, such as household garbage, tires, shopping carts, and landscape debris, can obstruct flows.
- Storm-damaged trees - resulting from hurricanes, tornadoes, severe thunderstorms, wind storms, winter freezes, and snow storms - can clog streets and access routes during periods of disaster response, obstruct the natural discharge of flood waters, disrupt utility services, increase debris removal, damage property, and increase disaster recovery costs.

Emergency Services

- Modern technology has created new opportunities for monitoring hazard events as they happen or, in some cases, forecast events in advance. A flood gage network is maintained by the USGS.
- Weather radios in homes and businesses provide inexpensive means for advance warning.

Structural Projects

- Regular maintenance of streams and drainage ways is critical to their effective operation for storm water discharge.

5.5 Existing Natural Hazard Mitigation Activities

This plan expands upon and improves existing local mitigation activities as described in this section.

National Flood Insurance Program Participation

Table 5-1 lists the Baldwin County jurisdictions participating in the National Flood Insurance Program (NFIP). Summerdale has areas identified as special flood hazard areas but is not in the NFIP. Elberta does not have identified flood hazard areas and is not in the NFIP.

Table 5-1. NFIP Participation, Baldwin County

Community Name	Date of Entry
Baldwin County	1/12/73
Bay Minette	12/1/81
Daphne	3/2/81
Fairhope	1/5/78
Foley	7/3/86
Gulf Shores	7/9/71
Loxley	12/1/81
Orange Beach	1/12/73
Robertsdale	12/1/81
Silverhill	12/14/79
Spanish Fort	6/17/02

Community Rating System (CRS) Program of the NFIP

- Baldwin County entered the CRS Program on 10/1/95 and is a class 9 community.
- Gulf Shores entered the CRS Program on 10/1/93 and is a class 9 community.
- Orange Beach entered the CRS Program on 10/1/91 as a class 9 community and improved to a class 8 on 10/1/93.

Storm Shelter Program

The Baldwin County EMA participated in the 2001-2002 Alabama EMA Storm Shelter Program and completed a safe room retrofit at the Swift Church School and two shelters.

Project Impact

Baldwin County is a Project Impact Community.

FEMA Hazard Mitigation Grant Program

A number of Baldwin County communities have implemented flood mitigation projects funded through the Hazard Mitigation Grant Program.

Existing Capabilities

In response to *Committee Exercise #4, Capability Assessment for Mitigation Plan Implementation*, jurisdictions noted regulatory tools, staff/personnel resources, and available funding sources. The results are maintained in the EMA office, and a summary of regulatory tools is presented in Table 5-2.

Table 5-2. Plans and Regulatory Tools by Jurisdiction, Baldwin County

Jurisdiction	Comprehensive Plan[1]	Capital Improvement Plan[2]	Zoning Ordinance	Building Codes	Flood Plain Regulations
Baldwin County	X	-	X	X	X
City of Daphne	X	-	X	X	X
City of Fairhope	X	X	X	X	X
City of Bay Minette	X	X	X	X	X
City of Foley	X	-	X	X	X
City of Spanish Fort	X	-	X	X	X
City of Gulf Shores	X	X	X	X	X
City of Orange Beach	X	X	X	X	X
City of Robertsdale	-	-	X	X	X
Town of Loxley	X	-	X	X	X
Town of Summerdale	X	-	X	X	-
Town of Silverhill	-	-	X	X	X
Town of Elberta	-	-	X	X	-

Notes:

1. A *Comprehensive Plan* is a current and active plan for managing existing and future growth and development throughout the jurisdiction.
2. A *Capital Improvement Plan* is a five- to six-year plan for capital facilities improvements tied directly to the comprehensive plan.

5.6 Vision Statement

A Vision for Disaster Resistance

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

5.7 Comprehensive Mitigation Strategies

This section presents the long-term strategies for mitigation of natural hazards. Each locality within Baldwin County derives its five-year mitigation action program (see Chapter 6 - Community Mitigation Action Programs) from the program goals, objectives and available long-term mitigation measures presented here.

1 Goal for Prevention. Manage the development of land and buildings to minimize risks of loss due to natural hazards.

1.1 Comprehensive Plans. Establish an active comprehensive planning program that seeks to mitigate the damaging effects of natural hazards, guide future development according to environmental and natural hazards constraints, and duly consider the vulnerability of areas exposed to natural hazards and the conservation of their natural and beneficial functions.

Mitigation Measures:

1.1.1 Maintain up-to-date comprehensive plans for all jurisdictions.

1.1.2 Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.

1.1.3 Review and amend existing planning documents to be certain the vulnerability and environmental suitability of lands for future development are clearly addressed; local plans should address the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.

1.2 Geographic Information Systems (GIS). Maintain a comprehensive database of hazards locations, socioeconomic data, infrastructure, and critical facilities inventories.

Mitigation Measures:

1.2.1 Maintain risk assessment data in GIS, including flood zones, hurricane surge areas, tornado tracks, disaster events, and a comprehensive inventory of critical facilities within all jurisdictions.

1.2.2 Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.

1.2.3 Document the extents of each flooding event using GIS.

1.2.4 Combine the GIS resources of Baldwin County and the Regional Planning Commission to create a natural hazards GIS that is accessible to mitigation planners and emergency management personnel.

1.3 Detailed Plans and Targeted Studies. Conduct special studies, as needed, to identify hazard risks and mitigation measures.

Mitigation Measures:

1.3.1 Seek a countywide update of all FIRMs in digital format, with an emphasis on detailed studies of developed and developing areas with elevations provided and floodways delineated.

1.3.2 Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.

1.4 Zoning. Establish effective zoning controls, where applicable, to vulnerable land areas to discourage environmentally incompatible land use and development.

Mitigation Measures:

1.4.1 Consider large lot size restrictions on flood-prone areas designated on Flood Insurance Rate Maps.

1.4.2 Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.

1.5 Flood Plain Management Regulations. Effectively administer and enforce local floodplain management regulations.

Mitigation Measures:

1.5.1 Train local flood plain managers through programs offered through the State Flood Plain Manager and FEMA's training center in Emmitsburg, Maryland.

1.5.2 Maintain a library of technical assistance and guidance materials to support the local flood plain manager.

1.5.3 Obtain membership for local flood plain managers in the Association of State Flood Plain Managers.

1.5.4 Promote the adoption of a uniform flood hazard prevention ordinance with higher regulatory standards that discourage flood plain development and seek to maintain the natural and beneficial functions of flood plains.

1.5.5 Enact flood hazard prevention ordinances and establish Elberta and Summerdale as regular members of the NFIP.

1.6 Building and Technical Codes. Review local codes for effectiveness of standards to protect buildings and infrastructure from hazard damages.

Mitigation Measures:

1.6.1 Promote good construction practices and proper code enforcement to eliminate most structural problems during natural hazard events.

1.6.2 Establish requirements for anchoring of LP tanks.

1.7 Community Shelter and Safe Rooms. Ensure the protection of communities from tornadoes, hurricanes, and windstorms.

Mitigation Measures:

1.7.1 Evaluate the feasibility of ordinances to require community storm shelters within sizeable mobile home parks and subdivisions.

1.7.2 Require the construction of safe rooms within new public buildings, such as schools, libraries, community centers, and other public buildings where feasible.

1.7.3 Construct free-standing public safe rooms in vulnerable locations.

1.7.4 Encourage the construction of safe rooms in new and existing construction.

1.7.5 Distribute FEMA Publication 320 - Taking Shelter From the Storm: Building a Safe Room in Your House - through building permit and inspection offices.

1.8 Landscape Ordinances. Establish minimum standards for planting areas for trees and vegetation to reduce storm water runoff and improve urban aesthetics.

Mitigation Measure:

1.8.1 Evaluate parking lot landscaping standards in zoning ordinances to encourage infiltration of rainwater where there are large expanses of impervious surfaces.

1.9 Storm Water Management. Manage the impacts of land development on storm water runoff rates and to natural drainage systems.

Mitigation Measure:

1.9.1 Continue to enforce storm water management ordinance that maintains pre-development runoff rates.

1.10 Community Rating System Program (CRS). Increase participation of NFIP member communities in the CRS Program.

Mitigation Measures:

1.10.1 Apply for and maintain membership in the CRS Program.

1.10.2 Improve ratings of existing CRS communities.

1.10.3 Encourage CRS communities to conduct joint public outreach programs.

2 Goal for Property Protection. Protect structures and their occupants and contents from the damaging effects of natural hazards.

2.1 Building Relocation. Relocate buildings out of hazardous flood areas to safeguard against damages and establish permanent open space.

Mitigation Measure:

2.1.1 Provide financial assistance to relocate buildings out of hazardous flood areas; emphasis is on pre-FIRM residential buildings.

2.2 Acquisition. Acquire flood prone buildings and properties and establish permanent open space.

Mitigation Measure:

2.2.1 Provide financial assistance to acquire flood prone buildings and properties; emphasis is on pre-FIRM residential buildings and critical facilities. Where large sections of neighborhoods are affected by flooding and selective acquisitions would render the neighborhood non-viable, all contiguous properties in that neighborhood.

2.3 Building Elevation. Elevate buildings in hazardous flood areas to safeguard against damages.

Mitigation Measure:

2.3.1 Provide financial assistance to elevate buildings for protection against flood damage; emphasis is on certain buildings, where acquisition or relocation is not feasible, constructed before the enactment of flood plain regulations (pre-FIRM buildings); elevation is preferred over flood proofing, where feasible.

2.4 Flood Proofing. Encourage flood proofing of buildings in hazardous flood areas to safeguard against damages.

Mitigation Measure:

2.4.1 Provide financial assistance to flood proof buildings; emphasis is on non-residential buildings constructed before the enactment of flood plain regulations (pre-FIRM buildings).

2.5 Building Retrofits.

Mitigation Measure:

2.5.1 Provide technical assistance to owners of vulnerable buildings to advise on available building retrofits to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.

2.6 Insurance. Maintain insurance riders for flood damages.

Mitigation Measure:

2.6.1 Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.

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

3.1 Map Information. Increase public access to Flood Insurance Rate Map (FIRM) information.

Mitigation Measure:

3.1.1 Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through local trade publications and newspaper announcements.

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

Mitigation Measure:

3.2.1 Identify environmental awareness events to integrate public information on hazard exposure and protection measures.

3.3 Real Estate Disclosure. Encourage real estate agents to disclose flood plain location for property listings.

Mitigation Measure:

3.3.1 Arrange with the Multiple Listing Service (MLS) to require flood plain location disclosure as a condition for each real estate listing.

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

Mitigation Measures:

3.4.1 Obtain free publications from FEMA, NWS, USGS, and other federal and state agencies and deposit these materials with local libraries.

3.4.2 Maintain local library repositories with the latest available publications.

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

Mitigation Measure:

3.5.1 Distribute hazard mitigation brochures to area schools for distribution to students.

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

4.1 Open Space Easements and Acquisitions. Preserve significant natural resources and highly vulnerable areas in permanent open space.

Mitigation Measure:

4.1.1 Acquire open space, purchase easements, and accept donations of lands within environmentally significant and vulnerable locations through the Land Trust.

4.2 River/Stream Corridor Restoration and Protection. Restore and protect river and stream corridors within urban areas.

Mitigation Measures:

4.2.1 Enforce dumping regulations.

4.2.2 Enforce erosion and sedimentation control regulations.

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

Mitigation Measure:

4.3.1 Seek technical assistance through the Alabama Cooperative Extension System with Best Management Practices (BMP) for channel and drainage system maintenance.

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

5.1 Disaster Warning. Improve public warning systems.

Mitigation Measures:

5.1.1 Enhance the ALERT flood warning system at strategic locations in the county to cover vulnerable flood locations. Sensors should provide real-time access to stream flow, stream stage, and precipitation data, at the minimum. The system should link data into GIS with the ability to use measured and forecasted rainfall to predict potential flood levels and create real-time maps of flooded areas. Evaluate the feasibility of a shared tri-county system covering Baldwin, Escambia, and Mobile counties.

5.1.2 Establish a reverse 911 call system.

5.2 Weather Radios. Improve public access to weather alerts.

Mitigation Measures:

5.2.1 Support the Alabama Skywarn Foundation efforts to distribute weather radios to low-income households, especially in rural areas outside of siren coverage areas.

5.2.2 Promote the use of weather radios in households and businesses.

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

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

Mitigation Measure:

6.1.1 Enforce standard operating procedures for drainage system maintenance.

Chapter 6
Community Mitigation Action Programs

6.1 Purpose of the Community Mitigation Action Programs.

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

6.2 Prioritization of Mitigation Actions

The Hazard Mitigation Planning Committee established the process described in this section to guide its selection and prioritization of available mitigation measures to be included within each community's mitigation action program.

Plan consistency

In selecting among available mitigation measures, the Planning Committee evaluated the consistency of each available mitigation measure with the long-term mitigation strategy - the vision, goals, and objectives presented in this plan. Each of the prioritized measures are intended to advance the shared vision, goals, and objectives and respond to the issues and opportunities set forth in this plan by all of the participating localities. Further, the Committee has determined that all of the mitigation measures selected for each jurisdiction's community action program are fully consistent with established community goals and plans currently in force and with comments and concerns presented through public participation and interagency coordination efforts of this planning process.

Prioritization criteria

The Planning Committee prioritized the available mitigation measures and projects according to the following principal criteria:

1. Economic Considerations.

    a. *Availability of funds.* Will the measure require Federal or other outside funding sources? Are local funds available? Can in-kind services reduce local obligations? What is the projected availability of required funds during the timeframe for implementation? Where

funding is not apparently available, should the project still be considered but at a lower priority?

b. *Benefits to be derived from the proposed measure.* Will the measure likely reduce dollar losses from property damages in the event of a hazard? To what degree?

c. *Costs.* Are the costs reasonable in relation to the likely benefits? Do economic benefits to the community outweigh estimated project costs? What cost reduction alternatives might be available?

d. *Economic feasibility.* Have the costs and benefits of the preferred measure been compared against other alternatives? What is the economic impact of the no-action alternative? Is this the most economically effective solution?

e. *Impact on local economy.* Will the proposed measure improve local economic activities? What impact might the measure have on the tax base?

f. *Economic development goals.* Will the proposal advance the overall economic goals and objectives of the community?

2. Social Considerations.

a. *Environmental justice.* Will the proposed measure be socially equitable to minority, disadvantaged, and special needs populations, such as the elderly and handicapped?

b. *Neighborhood impact.* Will the measure disrupt established neighborhoods or improve quality of life for affected neighborhoods?

c. *Community support.* Is the measure consistent with community values? Will the affected community support the measure?

d. *Impact on social and cultural resources.* Does the measure adversely affect valued local resources or enhance those resources?

3. Environmental Considerations.

a. *National Environmental Policy Act (NEPA).* Will the measure be consistent with Federal NEPA criteria? How will the measure affect environmental resources, such as land, water, air, wildlife, vegetation, historic properties, archaeological sites, etc.? Can potentially adverse impacts be sufficiently mitigated through reasonable methods?

b. *State and local environmental regulations.* Will the measure be in compliance with State and local environmental laws, such as flood plain management regulations, water quality standards, and wetlands protection criteria?

c. *Environmental conservation goals.* Will the proposal advance the overall environmental goals and objectives of the community?

4. Administrative, Legal, and Political Considerations.

a. *Staffing.* Does the jurisdiction have adequate staff resources and expertise to implement the measure? Will additional staff, training, or consultants be necessary? Can local funds support staffing demands? Will the measure overburden existing staff loads?
b. *Maintenance.* Does the jurisdiction have the capabilities to maintain the proposed project once it is completed? Are staff, funds, and facilities available for long-term project maintenance?
c. *Timing.* Can the measure be implemented in a timely manner? Are the timeframes for implementation reasonable?
d. *Legal authority.* Does the jurisdiction have the legal authority to implement the measure? What are the legal consequences of taking action to implement the measure as opposed to an alternative action or taking no action? Will new legislation be required?
e. *Political support.* Does the local governing body support the proposed measure? Does the public support the measure? Do stakeholders support the measure? What advocates might facilitate implementation of the proposal?

5. Technical Considerations.

Technical feasibility. Is the proposal technically possible? Are there technical issues that remain? Does the measure effectively solve the problem or create new problems? Are there secondary impacts that might be considered? Have professional experts been consulted?

Cost-Benefit Review

Priority mitigation projects will only be implemented if the benefits are maximized and outweigh the associated costs of the proposed projects. The Planning Committee performed a general evaluation of each mitigation measure, which might require FEMA funds. The Committee weighed the estimated costs for each mitigation measure against the projected benefits to be derived. For example, a project to acquire properties within the flood plain would provide the following benefits: (1) the project eliminates flood damages to of acquired properties, (2) the project reduces flood response costs, (3) the project reduces flood insurance claims, and (4) the project could increase the Community Rating System (CRS) rating. A more detailed benefit-cost analysis will be required for each priority project to determine economic feasibility during the project planning phase.. Projects will also require a more detailed evaluation for eligibility and feasibility including social impact, environmental impact, technical feasibility and other criteria that measure project effectiveness. This detailed evaluation of projects will be performed in the pre-application phase of a grant request. Further, project implementation will be subject to the availability of FEMA grants and other sources of funds from year-to-year.

6.3 Available Mitigation Measures.

The Mitigation Action Program tables for each community reference "Mitigation Measures" by number to the comprehensive mitigation strategies contained in section 5.9 of chapter 5. All of the available mitigation measures presented in chapter 5 are again listed in this section for ease of reference. Each Community Mitigation Action Program lists only those mitigation measures endorsed by that particular jurisdiction.

Table 6-1: Mitigation Measures

MITIGATION MEASURES			
Mitigation Measure #	**Goal**	**Program Objective**	**Mitigation Measure**
1.1.1	Prevention	Comprehensive Plans	*Maintain up-to-date comprehensive plans for all jurisdictions.*
1.1.2	Prevention	Comprehensive Plans	*Integrate the findings and recommendations of this plan into comprehensive plan amendments for jurisdictions with active comprehensive planning programs.*
1.1.3	Prevention	Comprehensive Plans	*Review and amend existing planning documents to be certain the vulnerability and environmental suitability of lands for future development are clearly addressed; local plans should address the vulnerability of designated hazard areas and encourage open space planning to create amenities for recreation and conservation of fragile resources.*
1.2.1	Prevention	Geographic Information Systems (GIS)	*Maintain risk assessment data in GIS, including flood zones, hurricane surge areas, tornado tracks, disaster events, and a comprehensive inventory of critical facilities within all jurisdictions.*
1.2.2	Prevention	Geographic Information Systems (GIS)	*Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.*
1.2.3	Prevention	Geographic Information Systems (GIS)	*Document the extents of each flooding event using GIS.*

MITIGATION MEASURES			
Mitigation Measure #	**Goal**	**Program Objective**	**Mitigation Measure**
1.2.4	Prevention	Geographic Information Systems (GIS)	*Combine the GIS resources of Baldwin County and the Regional Planning Commission to create a natural hazards GIS that is accessible to mitigation planners and emergency management personnel.*
1.3.1	Prevention	Detailed Plans and Targeted Studies	*Seek a countywide update of all FIRMs in digital format, with an emphasis on detailed studies of developed and developing areas with elevations provided and floodways delineated.*
1.3.2	Prevention	Detailed Plans and Targeted Studies	*Carry out detailed planning and engineering studies for sub-basins in critical flood hazard areas to determine watershed-wide solutions to flooding.*
1.4.1	Prevention	Zoning	*Consider large lot size restrictions on flood-prone areas designated on Flood Insurance Rate Maps.*
1.4.2	Prevention	Zoning	*Evaluate additional land use restrictions within designated flood zones, such as prohibition of storage of buoyant materials, storage of hazardous materials, restrictive development of flood ways, among others.*
1.5.1	Prevention	Flood Plain Management Regulations	*Train local flood plain managers through programs offered through the State Flood Plain Manager and FEMA's training center in Emmitsburg, Maryland.*
1.5.2	Prevention	Flood Plain Management Regulations	*Maintain a library of technical assistance and guidance materials to support the local flood plain manager.*
1.5.3	Prevention	Flood Plain Management Regulations	*Obtain membership for local flood plain managers in the Association of State Flood Plain Managers.*

MITIGATION MEASURES			
Mitigation Measure #	**Goal**	**Program Objective**	**Mitigation Measure**
1.5.4	Prevention	Flood Plain Management Regulations	*Promote the adoption of a uniform flood hazard prevention ordinance with higher regulatory standards that discourage flood plain development and seek to maintain the natural and beneficial functions of flood plains.*
1.5.5	Prevention	Flood Plain Management Regulations	*Enact flood hazard prevention ordinances and establish Elberta and Summerdale as regular members of the NFIP.*
1.6.1	Prevention	Building and Technical Codes	*Promote good construction practices and proper code enforcement to eliminate most structural problems during natural hazard events.*
1.6.2	Prevention	Building and Technical Codes	*Establish requirements for anchoring of LP tanks.*
1.7.1	Prevention	Community Shelter and Safe Room Requirements	*Evaluate the feasibility of ordinances to require community storm shelters within sizeable mobile home parks and subdivisions.*
1.7.2	Prevention	Community Shelter and Safe Room Requirements	*Require the construction of safe rooms within new public buildings, such as new schools, libraries, community centers, and other public buildings where feasible.*
1.7.3	Prevention	Community Shelter and Safe Room Requirements	*Construct free-standing public safe rooms in vulnerable locations.*
1.7.4	Prevention	Community Shelter and Safe Room Requirements	*Encourage the construction of safe rooms in new and existing construction.*
1.7.5	Prevention	Community Shelter and Safe Room Requirements	*Distribute FEMA Publication 320 - Taking Shelter From the Storm: Building a Safe Room in Your House - through building permit and inspection offices.*

MITIGATION MEASURES			
Mitigation Measure #	**Goal**	**Program Objective**	**Mitigation Measure**
1.8.1	Prevention	Landscape Ordinances	*Evaluate parking lot landscaping standards in zoning ordinances to encourage infiltration of rainwater where there are large expanses of impervious surfaces.*
1.9.1	Prevention	Storm Water Management	*Continue to enforce storm water management ordinance that maintains pre-development runoff rates.*
1.10.1	Prevention	Community Rating System Program (CRS)	*Apply for and maintain membership in the CRS Program.*
1.10.2	Prevention	Community Rating System Program (CRS)	*Improve ratings of existing CRS communities.*
1.10.3	Prevention	Community Rating System Program (CRS)	*Encourage CRS communities to conduct joint public outreach programs.*
2.1.1	Property Protection	Building Relocation	*Provide financial assistance to relocate buildings out of hazardous flood areas; emphasis is on pre-FIRM residential buildings.*
2.2.1	Property Protection	Acquisition	*Provide financial assistance to acquire flood prone buildings and properties; emphasis is on pre-FIRM residential buildings and critical facilities. Where large sections of neighborhoods are affected by flooding and selective acquisitions would render the neighborhood non-viable, all contiguous properties in that neighborhood.*
2.3.1	Property Protection	Building Elevation	*Provide financial assistance to elevate buildings for protection against flood damage; emphasis is on certain buildings, where acquisition or relocation is not feasible, constructed before the enactment of flood plain regulations (pre-FIRM buildings); elevation is preferred over flood proofing, where feasible.*

MITIGATION MEASURES			
Mitigation Measure #	**Goal**	**Program Objective**	**Mitigation Measure**
2.4.1	Property Protection	Flood Proofing	*Provide financial assistance to flood proof buildings; emphasis is on non-residential buildings constructed before the enactment of flood plain regulations (pre-FIRM buildings).*
2.5.1	Property Protection	Building Retrofits	*Provide technical assistance to owners of vulnerable buildings to advise on available building retrofits to protect against natural hazards damages, including flooding, high winds, tornadoes, hurricanes, severe storms, and earthquakes.*
2.6.1	Property Protection	Insurance	*Promote the purchase of insurance coverage by property owners and renters for flood damages in high-risk areas.*
3.1.1	Public Education and Outreach	Map Information	*Publicize the availability of FIRM information to real estate agents, builders, developers, and homeowners through local trade publications and newspaper announcements.*
3.2.1	Public Education and Outreach	Outreach Projects	*Identify environmental awareness events to integrate public information on hazard exposure and protection measures.*
3.3.1	Public Education and Outreach	Real Estate Disclosure	*Arrange with the Multiple Listing Service (MLS) to require flood plain location disclosure as a condition for each real estate listing.*
3.4.1	Public Education and Outreach	Library	*Obtain free publications from FEMA, NWS, USGS, and other federal and state agencies and deposit these materials with local libraries.*
3.4.2	Public Education and Outreach	Library	*Maintain local library repositories with the latest available publications.*

MITIGATION MEASURES			
Mitigation Measure #	**Goal**	**Program Objective**	**Mitigation Measure**
3.5.1	Public Education and Outreach	Environmental Education	*Distribute hazard mitigation brochures to area schools for distribution to students.*
4.1.1	Natural Resources Protection	Open Space Easements and Acquisitions	*Acquire open space, purchase easements, and accept donations of lands within environmentally significant and vulnerable locations through the Land Trust.*
4.2.1	Natural Resources Protection	River/Stream Coordidor Restoration and Protection	*Enforce dumping regulations.*
4.2.2	Natural Resources Protection	River/Stream Corridor Restoration and Protection	*Enforce erosion and sedimentation control regulations.*
4.3.1	Natural Resources Protection	Urban Forestry Programs	*Seek technical assistance through the Alabama Cooperative Extension System with Best Management Practices (BMP) for channel and drainage system maintenance.*
5.1.1	Emergency Services	Disaster Warning	*Enhance the ALERT flood warning system at strategic locations in the county to cover vulnerable flood locations. Sensors should provide real-time access to stream flow, stream stage, and precipitation data, at the minimum. The system should link data into GIS with the ability to use measured and forecasted rainfall to predict potential flood levels and create real-time maps of flooded areas. Evaluate the feasibility of a shared tri-county system covering Baldwin, Escambia, and Mobile counties.*
5.1.2	Emergency Services	Disaster Warning	*Establish a reverse 911 call system.*

MITIGATION MEASURES			
Mitigation Measure #	**Goal**	**Program Objective**	**Mitigation Measure**
5.2.1	Emergency Services	Weather Radios	*Support the Alabama Skywarn Foundation efforts to distribute weather radios to low-income households, especially in rural areas outside of siren coverage areas.*
5.2.2	Emergency Services	Weather Radios	*Promote the use of weather radios in households and businesses.*
6.1.1	Structural Projects	Drainage System Maintenance	*Enforce standard operating procedures for drainage system maintenance.*

6.4 Mitigation Action Programs.

Table 6-2. Baldwin County Mitigation Action Program

(See key to abbreviations at end of this chapter)

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

BALDWIN COUNTY MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.1.1	Prevention	Comprehensive Plans	High	PLNR	All	Ongoing	EXIST
1.1.2	Prevention	Comprehensive Plans	High	PLNR	All	2005	EXIST
1.1.3	Prevention	Comprehensive Plans	High	PLNR	All	2006	EXIST
1.2.1	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA, RPC*	*All*	*2007*	*$25K FEMA/AEMA planning grant*
1.2.2	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2008*	*$15K FEMA/AEMA planning grant*
1.2.3	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*Ongoing*	*EXIST*
1.2.4	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2006*	*EXIST*
1.3.1	*Prevention*	*Detailed Plans and Targeted Studies*	*High*	*ENGR, GIS, FP, EMA*	*FL*	*2009*	*FEMA Map Modernization*
1.3.2	*Prevention*	*Detailed Plans and Targeted Studies*	*Low*	*ENGR, GIS, FP*	*FL*	*After 2009*	*FEMA*
1.4.1	Prevention	Zoning	Low	GOV, FP	FL	After 2009	EXIST
1.4.2	Prevention	Zoning	High	GOV, FP	FL	2007	EXIST

BALDWIN COUNTY MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.5.1	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.2	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.3	Prevention	Flood Plain Management Regulations	Low	FP	FL	After 2009	EXIST
1.5.4	*Prevention*	*Flood Plain Management Regulations*	*Low*	*GOV*	*FL*	*After 2009*	*EXIST*
1.6.1	Prevention	Building and Technical Codes	High	BO	All	Ongoing	EXIST
1.6.2	Prevention	Building and Technical Codes	High	GOV, BO	FL, TO, SS, HU	2006	EXIST
1.7.1	Prevention	Community Shelters and Safe Rooms	Low	GOV	TO, SS, HU	After 2009	EXIST
1.7.2	Prevention	Community Shelters and Safe Rooms	High	GOV	TO, SS, HU	Ongoing	EXIST
1.7.3	*Prevention*	*Community Shelters and Safe Rooms*	*High*	*EMA*	*TO, SS, HU*	*2009*	*$1,50K FEMA/AEMA*
1.7.4	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.7.5	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.8.1	Prevention	Landscape Ordinances	Low	GOV, PLNR	FL	After 2009	EXIST
1.9.1	Prevention	Storm Water Management	High	ENGR, BO	FL	Ongoing	EXIST
1.10.2	Prevention	Community Rating System Program	Low	FP	FL	After 2009	EXIST

BALDWIN COUNTY MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.10.3	Prevention	Community Rating System Program	Low	FP	FL	After 2009	EXIST
2.1.1	Property Protection	Building Relocation	Low	GOV, FP	FL	After 2009	FEMA
2.2.1	Property Protection	Acquisition	Low	GOV, FP	FL	After 2009	FEMA
2.3.1	Property Protection	Building Elevation	Low	GOV, FP	FL	After 2009	FEMA
2.4.1	Property Protection	Flood Proofing	Low	GOV, FP	FL	After 2009	FEMA
2.5.1	Property Protection	Building Retrofits	Low	BO, FP	FL	After 2009	EXIST
2.6.1	Property Protection	Insurance	High	FP, EMA	FL	Ongoing	EXIST
3.1.1	Public Outreach and Educations	Map Information	Low	FP	FL	After 2009	EXIST
3.2.1	*Public Outreach and Educations*	*Outreach Projects*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.4.1	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*2005*	*EXIST*
3.4.2	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.5.1	*Public Outreach and Educations*	*Environmental Education*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
4.1.1	Natural Resource Protection	Open Space Acquisitions	High	Coast Land Trust	FL	Ongoing	EXIST

BALDWIN COUNTY MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
4.2.1	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.2.2	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.3.1	Natural Resource Protection	Urban Forestry Programs	High	ENGR, FP	FL	Ongoing	EXIST
5.1.1	*Emergency Services*	*Disaster Warning*	*High*	*EMA, NWS, USGS*	*All*	*2007*	*$1,500 K FEMA/AEMA*
5.1.2	*Emergency Services*	*Disaster Warning*	*High*	*EMA*	*All*	*2005*	*$250K FEMA/AEMA*
5.2.1	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*$20K FEMA/AEMA*
5.2.2	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
6.1.1	Structural Projects	Drainage System Maintenance	High	ENGR, FP	FL	Ongoing	EXIST

Table 6-3. Bay Minette Mitigation Action Program

(See key to abbreviations at end of this chapter)

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

BAY MINETTE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.1.1	Prevention	Comprehensive Plans	High	PLNR	All	Ongoing	EXIST
1.1.2	Prevention	Comprehensive Plans	High	PLNR	All	2005	EXIST
1.1.3	Prevention	Comprehensive Plans	High	PLNR	All	2006	EXIST
1.2.1	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA, RPC*	*All*	*2007*	*$25K FEMA/AEMA planning grant*
1.2.2	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2008*	*$15K FEMA/AEMA planning grant*
1.2.3	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*Ongoing*	*EXIST*
1.2.4	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2006*	*EXIST*
1.3.1	*Prevention*	*Detailed Plans and Targeted Studies*	*High*	*ENGR, GIS, FP, EMA*	*FL*	*2009*	*FEMA Map Modernization*
1.3.2	*Prevention*	*Detailed Plans and Targeted Studies*	*Low*	*ENGR, GIS, FP*	*FL*	*After 2009*	*FEMA*
1.4.1	Prevention	Zoning	Low	GOV, FP	FL	After 2009	EXIST
1.4.2	Prevention	Zoning	High	GOV, FP	FL	2007	EXIST
1.5.1	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.2	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST

BAY MINETTE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.5.3	Prevention	Flood Plain Management Regulations	Low	FP	FL	After 2009	EXIST
1.5.4	*Prevention*	*Flood Plain Management Regulations*	*Low*	*GOV*	*FL*	*After 2009*	*EXIST*
1.6.1	Prevention	Building and Technical Codes	High	BO	All	Ongoing	EXIST
1.6.2	Prevention	Building and Technical Codes	High	GOV, BO	FL, TO, SS, HU	2006	EXIST
1.7.1	Prevention	Community Shelters and Safe Rooms	Low	GOV	TO, SS, HU	After 2009	EXIST
1.7.2	Prevention	Community Shelters and Safe Rooms	High	GOV	TO, SS, HU	Ongoing	EXIST
1.7.3	*Prevention*	*Community Shelters and Safe Rooms*	*High*	*EMA*	*TO, SS, HU*	*2009*	*$1,50K FEMA/AEMA*
1.7.4	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.7.5	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.8.1	Prevention	Landscape Ordinances	Low	GOV, PLNR	FL	After 2009	EXIST
1.9.1	Prevention	Storm Water Management	High	ENGR, BO	FL	Ongoing	EXIST
1.10.1	Prevention	Community Rating System Program	Low	FP	FL	After 2009	EXIST
2.1.1	Property Protection	Building Relocation	Low	GOV, FP	FL	After 2009	FEMA

BAY MINETTE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
2.2.1	Property Protection	Acquisition	Low	GOV, FP	FL	After 2009	FEMA
2.3.1	Property Protection	Building Elevation	Low	GOV, FP	FL	After 2009	FEMA
2.4.1	Property Protection	Flood Proofing	Low	GOV, FP	FL	After 2009	FEMA
2.5.1	Property Protection	Building Retrofits	Low	BO, FP	FL	After 2009	EXIST
2.6.1	Property Protection	Insurance	High	FP, EMA	FL	Ongoing	EXIST
3.1.1	Public Outreach and Educations	Map Information	Low	FP	FL	After 2009	EXIST
3.2.1	*Public Outreach and Educations*	*Outreach Projects*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.4.1	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*2005*	*EXIST*
3.4.2	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.5.1	*Public Outreach and Educations*	*Environmental Education*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
4.1.1	Natural Resource Protection	Open Space Acquisitions	High	Coast Land Trust	FL	Ongoing	EXIST
4.2.1	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.2.2	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST

BAY MINETTE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
4.3.1	Natural Resource Protection	Urban Forestry Programs	High	ENGR, FP	FL	Ongoing	EXIST
5.1.1	*Emergency Services*	*Disaster Warning*	*High*	*EMA, NWS, USGS*	*All*	*2007*	*$1,500 K FEMA/AEMA*
5.1.2	*Emergency Services*	*Disaster Warning*	*High*	*EMA*	*All*	*2005*	*$250K FEMA/AEMA*
5.2.1	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*$20K FEMA/AEMA*
5.2.2	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
6.1.1	Structural Projects	Drainage System Maintenance	High	ENGR, FP	FL	Ongoing	EXIST

Table 6-4. Daphne Mitigation Action Program

(See key to abbreviations at end of this chapter)

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

DAPHNE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.1.1	Prevention	Comprehensive Plans	High	PLNR	All	Ongoing	EXIST
1.1.2	Prevention	Comprehensive Plans	High	PLNR	All	2005	EXIST
1.1.3	Prevention	Comprehensive Plans	High	PLNR	All	2006	EXIST
1.2.1	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA, RPC*	*All*	*2007*	*$25K FEMA/AEMA planning grant*
1.2.2	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2008*	*$15K FEMA/AEMA planning grant*
1.2.3	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*Ongoing*	*EXIST*
1.2.4	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2006*	*EXIST*
1.3.1	*Prevention*	*Detailed Plans and Targeted Studies*	*High*	*ENGR, GIS, FP, EMA*	*FL*	*2009*	*FEMA Map Modernization*
1.3.2	*Prevention*	*Detailed Plans and Targeted Studies*	*Low*	*ENGR, GIS, FP*	*FL*	*After 2009*	*FEMA*
1.4.1	Prevention	Zoning	Low	GOV, FP	FL	After 2009	EXIST
1.4.2	Prevention	Zoning	High	GOV, FP	FL	2007	EXIST
1.5.1	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.2	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST

DAPHNE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.5.3	Prevention	Flood Plain Management Regulations	Low	FP	FL	After 2009	EXIST
1.5.4	*Prevention*	*Flood Plain Management Regulations*	*Low*	*GOV*	*FL*	*After 2009*	*EXIST*
1.6.1	Prevention	Building and Technical Codes	High	BO	All	Ongoing	EXIST
1.6.2	Prevention	Building and Technical Codes	High	GOV, BO	FL, TO, SS, HU	2006	EXIST
1.7.1	Prevention	Community Shelters and Safe Rooms	Low	GOV	TO, SS, HU	After 2009	EXIST
1.7.2	Prevention	Community Shelters and Safe Rooms	High	GOV	TO, SS, HU	Ongoing	EXIST
1.7.3	*Prevention*	*Community Shelters and Safe Rooms*	*High*	*EMA*	*TO, SS, HU*	*2009*	*$1,50K FEMA/AEMA*
1.7.4	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.7.5	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.8.1	Prevention	Landscape Ordinances	Low	GOV, PLNR	FL	After 2009	EXIST
1.9.1	Prevention	Storm Water Management	High	ENGR, BO	FL	Ongoing	EXIST
1.10.1	Prevention	Community Rating System Program	Low	FP	FL	After 2009	EXIST
2.1.1	Property Protection	Building Relocation	Low	GOV, FP	FL	After 2009	FEMA

DAPHNE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
2.2.1	Property Protection	Acquisition	Low	GOV, FP	FL	After 2009	FEMA
2.3.1	Property Protection	Building Elevation	Low	GOV, FP	FL	After 2009	FEMA
2.4.1	Property Protection	Flood Proofing	Low	GOV, FP	FL	After 2009	FEMA
2.5.1	Property Protection	Building Retrofits	Low	BO, FP	FL	After 2009	EXIST
2.6.1	Property Protection	Insurance	High	FP, EMA	FL	Ongoing	EXIST
3.1.1	Public Outreach and Educations	Map Information	Low	FP	FL	After 2009	EXIST
3.2.1	*Public Outreach and Educations*	*Outreach Projects*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.4.1	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*2005*	*EXIST*
3.4.2	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.5.1	*Public Outreach and Educations*	*Environmental Education*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
4.1.1	Natural Resource Protection	Open Space Acquisitions	High	Coast Land Trust	FL	Ongoing	EXIST
4.2.1	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.2.2	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST

DAPHNE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
4.3.1	Natural Resource Protection	Urban Forestry Programs	High	ENGR, FP	FL	Ongoing	EXIST
5.1.1	*Emergency Services*	*Disaster Warning*	*High*	*EMA, NWS, USGS*	*All*	*2007*	*$1,500 K FEMA/AEMA*
5.1.2	*Emergency Services*	*Disaster Warning*	*High*	*EMA*	*All*	*2005*	*$250K FEMA/AEMA*
5.2.1	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*$20K FEMA/AEMA*
5.2.2	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
6.1.1	Structural Projects	Drainage System Maintenance	High	ENGR, FP	FL	Ongoing	EXIST

Table 6-5. Elberta Mitigation Action Program

(See key to abbreviations at end of this chapter)

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

ELBERTA MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.1.1	Prevention	Comprehensive Plans	High	PLNR	All	Ongoing	EXIST
1.2.1	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA, RPC*	*All*	*2007*	*$25K FEMA/AEMA planning grant*
1.2.2	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2008*	*$15K FEMA/AEMA planning grant*
1.2.3	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*Ongoing*	*EXIST*
1.2.4	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2006*	*EXIST*
1.3.1	*Prevention*	*Detailed Plans and Targeted Studies*	*High*	*ENGR, GIS, FP, EMA*	*FL*	*2009*	*FEMA Map Modernization*
1.3.2	*Prevention*	*Detailed Plans and Targeted Studies*	*Low*	*ENGR, GIS, FP*	*FL*	*After 2009*	*FEMA*
1.5.1	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.2	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.3	Prevention	Flood Plain Management Regulations	Low	FP	FL	After 2009	EXIST
1.5.4	*Prevention*	*Flood Plain Management Regulations*	*Low*	*GOV*	*FL*	*After 2009*	*EXIST*
1.5.5	Prevention	Flood Plain Management Regulations	High	GOV	FL	2005	EXIST

ELBERTA MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.6.1	Prevention	Building and Technical Codes	High	BO	All	Ongoing	EXIST
1.6.2	Prevention	Building and Technical Codes	High	GOV, BO	FL, TO, SS, HU	2006	EXIST
1.7.1	Prevention	Community Shelters and Safe Rooms	Low	GOV	TO, SS, HU	After 2009	EXIST
1.7.2	Prevention	Community Shelters and Safe Rooms	High	GOV	TO, SS, HU	Ongoing	EXIST
1.7.3	*Prevention*	*Community Shelters and Safe Rooms*	*High*	*EMA*	*TO, SS, HU*	*2009*	*$1,50K FEMA/AEMA*
1.7.4	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.7.5	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.8.1	Prevention	Landscape Ordinances	Low	GOV, PLNR	FL	After 2009	EXIST
1.9.1	Prevention	Storm Water Management	High	ENGR, BO	FL	Ongoing	EXIST
2.1.1	Property Protection	Building Relocation	Low	GOV, FP	FL	After 2009	FEMA
2.2.1	Property Protection	Acquisition	Low	GOV, FP	FL	After 2009	FEMA
2.3.1	Property Protection	Building Elevation	Low	GOV, FP	FL	After 2009	FEMA
2.4.1	Property Protection	Flood Proofing	Low	GOV, FP	FL	After 2009	FEMA

ELBERTA MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
2.5.1	Property Protection	Building Retrofits	Low	BO, FP	FL	After 2009	EXIST
2.6.1	Property Protection	Insurance	High	FP, EMA	FL	Ongoing	EXIST
3.1.1	Public Outreach and Educations	Map Information	Low	FP	FL	After 2009	EXIST
3.2.1	*Public Outreach and Educations*	*Outreach Projects*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.4.1	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*2005*	*EXIST*
3.4.2	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.5.1	*Public Outreach and Educations*	*Environmental Education*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
4.1.1	Natural Resource Protection	Open Space Acquisitions	High	Coast Land Trust	FL	Ongoing	EXIST
4.2.1	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.2.2	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.3.1	Natural Resource Protection	Urban Forestry Programs	High	ENGR, FP	FL	Ongoing	EXIST
5.1.1	*Emergency Services*	*Disaster Warning*	*High*	*EMA, NWS, USGS*	*All*	*2007*	*$1,500 K FEMA/AEMA*
5.1.2	*Emergency Services*	*Disaster Warning*	*High*	*EMA*	*All*	*2005*	*$250K FEMA/AEMA*

ELBERTA MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
5.2.1	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*$20K FEMA/AEMA*
5.2.2	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
6.1.1	Structural Projects	Drainage System Maintenance	High	ENGR, FP	FL	Ongoing	EXIST

Table 6-6. Fairhope Mitigation Action Program

(See key to abbreviations at end of this chapter)

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

FAIRHOPE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.1.1	Prevention	Comprehensive Plans	High	PLNR	All	Ongoing	EXIST
1.1.2	Prevention	Comprehensive Plans	High	PLNR	All	2005	EXIST
1.1.3	Prevention	Comprehensive Plans	High	PLNR	All	2006	EXIST
1.2.1	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA, RPC*	*All*	*2007*	*$25K FEMA/AEMA planning grant*
1.2.2	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2008*	*$15K FEMA/AEMA planning grant*
1.2.3	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*Ongoing*	*EXIST*
1.2.4	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2006*	*EXIST*
1.3.1	*Prevention*	*Detailed Plans and Targeted Studies*	*High*	*ENGR, GIS, FP, EMA*	*FL*	*2009*	*FEMA Map Modernization*
1.3.2	*Prevention*	*Detailed Plans and Targeted Studies*	*Low*	*ENGR, GIS, FP*	*FL*	*After 2009*	*FEMA*
1.4.1	Prevention	Zoning	Low	GOV, FP	FL	After 2009	EXIST
1.4.2	Prevention	Zoning	High	GOV, FP	FL	2007	EXIST
1.5.1	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.2	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST

FAIRHOPE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.5.3	Prevention	Flood Plain Management Regulations	Low	FP	FL	After 2009	EXIST
1.5.4	*Prevention*	*Flood Plain Management Regulations*	*Low*	*GOV*	*FL*	*After 2009*	*EXIST*
1.6.1	Prevention	Building and Technical Codes	High	BO	All	Ongoing	EXIST
1.6.2	Prevention	Building and Technical Codes	High	GOV, BO	FL, TO, SS, HU	2006	EXIST
1.7.1	Prevention	Community Shelters and Safe Rooms	Low	GOV	TO, SS, HU	After 2009	EXIST
1.7.2	Prevention	Community Shelters and Safe Rooms	High	GOV	TO, SS, HU	Ongoing	EXIST
1.7.3	*Prevention*	*Community Shelters and Safe Rooms*	*High*	*EMA*	*TO, SS, HU*	*2009*	*$1,50K FEMA/AEMA*
1.7.4	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.7.5	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.8.1	Prevention	Landscape Ordinances	Low	GOV, PLNR	FL	After 2009	EXIST
1.9.1	Prevention	Storm Water Management	High	ENGR, BO	FL	Ongoing	EXIST
1.10.1	Prevention	Community Rating System Program	Low	FP	FL	After 2009	EXIST
2.1.1	Property Protection	Building Relocation	Low	GOV, FP	FL	After 2009	FEMA

FAIRHOPE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
2.2.1	Property Protection	Acquisition	Low	GOV, FP	FL	After 2009	FEMA
2.3.1	Property Protection	Building Elevation	Low	GOV, FP	FL	After 2009	FEMA
2.4.1	Property Protection	Flood Proofing	Low	GOV, FP	FL	After 2009	FEMA
2.5.1	Property Protection	Building Retrofits	Low	BO, FP	FL	After 2009	EXIST
2.6.1	Property Protection	Insurance	High	FP, EMA	FL	Ongoing	EXIST
3.1.1	Public Outreach and Educations	Map Information	Low	FP	FL	After 2009	EXIST
3.2.1	*Public Outreach and Educations*	*Outreach Projects*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.4.1	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*2005*	*EXIST*
3.4.2	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.5.1	*Public Outreach and Educations*	*Environmental Education*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
4.1.1	Natural Resource Protection	Open Space Acquisitions	High	Coast Land Trust	FL	Ongoing	EXIST
4.2.1	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.2.2	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST

FAIRHOPE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
4.3.1	Natural Resource Protection	Urban Forestry Programs	High	ENGR, FP	FL	Ongoing	EXIST
5.1.1	*Emergency Services*	*Disaster Warning*	*High*	*EMA, NWS, USGS*	*All*	*2007*	*$1,500 K FEMA/AEMA*
5.1.2	*Emergency Services*	*Disaster Warning*	*High*	*EMA*	*All*	*2005*	*$250K FEMA/AEMA*
5.2.1	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*$20K FEMA/AEMA*
5.2.2	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
6.1.1	Structural Projects	Drainage System Maintenance	High	ENGR, FP	FL	Ongoing	EXIST

Table 6-7. Foley Mitigation Action Program

(See key to abbreviations at end of this chapter)

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

FOLEY MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.1.1	Prevention	Comprehensive Plans	High	PLNR	All	Ongoing	EXIST
1.1.2	Prevention	Comprehensive Plans	High	PLNR	All	2005	EXIST
1.1.3	Prevention	Comprehensive Plans	High	PLNR	All	2006	EXIST
1.2.1	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA, RPC*	*All*	*2007*	*$25K FEMA/AEMA planning grant*
1.2.2	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2008*	*$15K FEMA/AEMA planning grant*
1.2.3	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*Ongoing*	*EXIST*
1.2.4	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2006*	*EXIST*
1.3.1	*Prevention*	*Detailed Plans and Targeted Studies*	*High*	*ENGR, GIS, FP, EMA*	*FL*	*2009*	*FEMA Map Modernization*
1.3.2	*Prevention*	*Detailed Plans and Targeted Studies*	*Low*	*ENGR, GIS, FP*	*FL*	*After 2009*	*FEMA*
1.4.1	Prevention	Zoning	Low	GOV, FP	FL	After 2009	EXIST
1.4.2	Prevention	Zoning	High	GOV, FP	FL	2007	EXIST
1.5.1	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.2	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST

FOLEY MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.5.3	Prevention	Flood Plain Management Regulations	Low	FP	FL	After 2009	EXIST
1.5.4	*Prevention*	*Flood Plain Management Regulations*	*Low*	*GOV*	*FL*	*After 2009*	*EXIST*
1.6.1	Prevention	Building and Technical Codes	High	BO	All	Ongoing	EXIST
1.6.2	Prevention	Building and Technical Codes	High	GOV, BO	FL, TO, SS, HU	2006	EXIST
1.7.1	Prevention	Community Shelters and Safe Rooms	Low	GOV	TO, SS, HU	After 2009	EXIST
1.7.2	Prevention	Community Shelters and Safe Rooms	High	GOV	TO, SS, HU	Ongoing	EXIST
1.7.3	*Prevention*	*Community Shelters and Safe Rooms*	*High*	*EMA*	*TO, SS, HU*	*2009*	*$1,50K FEMA/AEMA*
1.7.4	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.7.5	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.8.1	Prevention	Landscape Ordinances	Low	GOV, PLNR	FL	After 2009	EXIST
1.9.1	Prevention	Storm Water Management	High	ENGR, BO	FL	Ongoing	EXIST
1.10.1	Prevention	Community Rating System Program	Low	FP	FL	After 2009	EXIST
2.1.1	Property Protection	Building Relocation	Low	GOV, FP	FL	After 2009	FEMA

FOLEY MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
2.2.1	Property Protection	Acquisition	Low	GOV, FP	FL	After 2009	FEMA
2.3.1	Property Protection	Building Elevation	Low	GOV, FP	FL	After 2009	FEMA
2.4.1	Property Protection	Flood Proofing	Low	GOV, FP	FL	After 2009	FEMA
2.5.1	Property Protection	Building Retrofits	Low	BO, FP	FL	After 2009	EXIST
2.6.1	Property Protection	Insurance	High	FP, EMA	FL	Ongoing	EXIST
3.1.1	Public Outreach and Educations	Map Information	Low	FP	FL	After 2009	EXIST
3.2.1	*Public Outreach and Educations*	*Outreach Projects*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.4.1	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*2005*	*EXIST*
3.4.2	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.5.1	*Public Outreach and Educations*	*Environmental Education*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
4.1.1	Natural Resource Protection	Open Space Acquisitions	High	Coast Land Trust	FL	Ongoing	EXIST
4.2.1	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.2.2	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST

FOLEY MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
4.3.1	Natural Resource Protection	Urban Forestry Programs	High	ENGR, FP	FL	Ongoing	EXIST
5.1.1	*Emergency Services*	*Disaster Warning*	*High*	*EMA, NWS, USGS*	*All*	*2007*	*$1,500 K FEMA/AEMA*
5.1.2	*Emergency Services*	*Disaster Warning*	*High*	*EMA*	*All*	*2005*	*$250K FEMA/AEMA*
5.2.1	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*$20K FEMA/AEMA*
5.2.2	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
6.1.1	Structural Projects	Drainage System Maintenance	High	ENGR, FP	FL	Ongoing	EXIST

Table 6-8. Gulf Shores Mitigation Action Program

(See key to abbreviations at end of this chapter)

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

GULF SHORES MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.1.1	Prevention	Comprehensive Plans	High	PLNR	All	Ongoing	EXIST
1.1.2	Prevention	Comprehensive Plans	High	PLNR	All	2005	EXIST
1.1.3	Prevention	Comprehensive Plans	High	PLNR	All	2006	EXIST
1.2.1	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA, RPC*	*All*	*2007*	*$25K FEMA/AEMA planning grant*
1.2.2	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2008*	*$15K FEMA/AEMA planning grant*
1.2.3	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*Ongoing*	*EXIST*
1.2.4	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2006*	*EXIST*
1.3.1	*Prevention*	*Detailed Plans and Targeted Studies*	*High*	*ENGR, GIS, FP, EMA*	*FL*	*2009*	*FEMA Map Modernization*
1.3.2	*Prevention*	*Detailed Plans and Targeted Studies*	*Low*	*ENGR, GIS, FP*	*FL*	*After 2009*	*FEMA*
1.4.1	Prevention	Zoning	Low	GOV, FP	FL	After 2009	EXIST
1.4.2	Prevention	Zoning	High	GOV, FP	FL	2007	EXIST
1.5.1	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.2	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST

GULF SHORES MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.5.3	Prevention	Flood Plain Management Regulations	Low	FP	FL	After 2009	EXIST
1.5.4	*Prevention*	*Flood Plain Management Regulations*	*Low*	*GOV*	*FL*	*After 2009*	*EXIST*
1.6.1	Prevention	Building and Technical Codes	High	BO	All	Ongoing	EXIST
1.6.2	Prevention	Building and Technical Codes	High	GOV, BO	FL, TO, SS, HU	2006	EXIST
1.7.1	Prevention	Community Shelters and Safe Rooms	Low	GOV	TO, SS, HU	After 2009	EXIST
1.7.2	Prevention	Community Shelters and Safe Rooms	High	GOV	TO, SS, HU	Ongoing	EXIST
1.7.3	*Prevention*	*Community Shelters and Safe Rooms*	*High*	*EMA*	*TO, SS, HU*	*2009*	*$1,50K FEMA/AEMA*
1.7.4	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.7.5	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.8.1	Prevention	Landscape Ordinances	Low	GOV, PLNR	FL	After 2009	EXIST
1.9.1	Prevention	Storm Water Management	High	ENGR, BO	FL	Ongoing	EXIST
1.10.2	Prevention	Community Rating System Program	Low	FP	FL	After 2009	EXIST
1.10.3	Prevention	Community Rating System Program	Low	FP	FL	After 2009	EXIST

GULF SHORES MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
2.1.1	Property Protection	Building Relocation	Low	GOV, FP	FL	After 2009	FEMA
2.2.1	Property Protection	Acquisition	Low	GOV, FP	FL	After 2009	FEMA
2.3.1	Property Protection	Building Elevation	Low	GOV, FP	FL	After 2009	FEMA
2.4.1	Property Protection	Flood Proofing	Low	GOV, FP	FL	After 2009	FEMA
2.5.1	Property Protection	Building Retrofits	Low	BO, FP	FL	After 2009	EXIST
2.6.1	Property Protection	Insurance	High	FP, EMA	FL	Ongoing	EXIST
3.1.1	Public Outreach and Educations	Map Information	Low	FP	FL	After 2009	EXIST
3.2.1	*Public Outreach and Educations*	*Outreach Projects*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.4.1	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*2005*	*EXIST*
3.4.2	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.5.1	*Public Outreach and Educations*	*Environmental Education*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
4.1.1	Natural Resource Protection	Open Space Acquisitions	High	Coast Land Trust	FL	Ongoing	EXIST
4.2.1	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST

GULF SHORES MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
4.2.2	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.3.1	Natural Resource Protection	Urban Forestry Programs	High	ENGR, FP	FL	Ongoing	EXIST
5.1.1	*Emergency Services*	*Disaster Warning*	*High*	*EMA, NWS, USGS*	*All*	*2007*	*$1,500 K FEMA/AEMA*
5.1.2	*Emergency Services*	*Disaster Warning*	*High*	*EMA*	*All*	*2005*	*$250K FEMA/AEMA*
5.2.1	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*$20K FEMA/AEMA*
5.2.2	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
6.1.1	Structural Projects	Drainage System Maintenance	High	ENGR, FP	FL	Ongoing	EXIST

Table 6-9. Loxley Mitigation Action Program

(See key to abbreviations at end of this chapter)

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

LOXLEY MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.1.1	Prevention	Comprehensive Plans	High	PLNR	All	Ongoing	EXIST
1.1.2	Prevention	Comprehensive Plans	High	PLNR	All	2005	EXIST
1.1.3	Prevention	Comprehensive Plans	High	PLNR	All	2006	EXIST
1.2.1	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA, RPC*	*All*	*2007*	*$25K FEMA/AEMA planning grant*
1.2.2	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2008*	*$15K FEMA/AEMA planning grant*
1.2.3	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*Ongoing*	*EXIST*
1.2.4	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2006*	*EXIST*
1.3.1	*Prevention*	*Detailed Plans and Targeted Studies*	*High*	*ENGR, GIS, FP, EMA*	*FL*	*2009*	*FEMA Map Modernization*
1.3.2	*Prevention*	*Detailed Plans and Targeted Studies*	*Low*	*ENGR, GIS, FP*	*FL*	*After 2009*	*FEMA*
1.4.1	Prevention	Zoning	Low	GOV, FP	FL	After 2009	EXIST
1.4.2	Prevention	Zoning	High	GOV, FP	FL	2007	EXIST
1.5.1	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.2	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST

LOXLEY MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.5.3	Prevention	Flood Plain Management Regulations	Low	FP	FL	After 2009	EXIST
1.5.4	*Prevention*	*Flood Plain Management Regulations*	*Low*	*GOV*	*FL*	*After 2009*	*EXIST*
1.6.1	Prevention	Building and Technical Codes	High	BO	All	Ongoing	EXIST
1.6.2	Prevention	Building and Technical Codes	High	GOV, BO	FL, TO, SS, HU	2006	EXIST
1.7.1	Prevention	Community Shelters and Safe Rooms	Low	GOV	TO, SS, HU	After 2009	EXIST
1.7.2	Prevention	Community Shelters and Safe Rooms	High	GOV	TO, SS, HU	Ongoing	EXIST
1.7.3	*Prevention*	*Community Shelters and Safe Rooms*	*High*	*EMA*	*TO, SS, HU*	*2009*	*$1,50K FEMA/AEMA*
1.7.4	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.7.5	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.8.1	Prevention	Landscape Ordinances	Low	GOV, PLNR	FL	After 2009	EXIST
1.9.1	Prevention	Storm Water Management	High	ENGR, BO	FL	Ongoing	EXIST
1.10.1	Prevention	Community Rating System Program	Low	FP	FL	After 2009	EXIST
2.1.1	Property Protection	Building Relocation	Low	GOV, FP	FL	After 2009	FEMA

LOXLEY MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
2.2.1	Property Protection	Acquisition	Low	GOV, FP	FL	After 2009	FEMA
2.3.1	Property Protection	Building Elevation	Low	GOV, FP	FL	After 2009	FEMA
2.4.1	Property Protection	Flood Proofing	Low	GOV, FP	FL	After 2009	FEMA
2.5.1	Property Protection	Building Retrofits	Low	BO, FP	FL	After 2009	EXIST
2.6.1	Property Protection	Insurance	High	FP, EMA	FL	Ongoing	EXIST
3.1.1	Public Outreach and Educations	Map Information	Low	FP	FL	After 2009	EXIST
3.2.1	*Public Outreach and Educations*	*Outreach Projects*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.4.1	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*2005*	*EXIST*
3.4.2	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.5.1	*Public Outreach and Educations*	*Environmental Education*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
4.1.1	Natural Resource Protection	Open Space Acquisitions	High	Coast Land Trust	FL	Ongoing	EXIST
4.2.1	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.2.2	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST

LOXLEY MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
4.3.1	Natural Resource Protection	Urban Forestry Programs	High	ENGR, FP	FL	Ongoing	EXIST
5.1.1	*Emergency Services*	*Disaster Warning*	*High*	*EMA, NWS, USGS*	*All*	*2007*	*$1,500 K FEMA/AEMA*
5.1.2	*Emergency Services*	*Disaster Warning*	*High*	*EMA*	*All*	*2005*	*$250K FEMA/AEMA*
5.2.1	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*$20K FEMA/AEMA*
5.2.2	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
6.1.1	Structural Projects	Drainage System Maintenance	High	ENGR, FP	FL	Ongoing	EXIST

Table 6-10. Orange Beach Mitigation Action Program

(See key to abbreviations at end of this chapter)

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

ORANGE BEACH MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.1.1	Prevention	Comprehensive Plans	High	PLNR	All	Ongoing	EXIST
1.1.2	Prevention	Comprehensive Plans	High	PLNR	All	2005	EXIST
1.1.3	Prevention	Comprehensive Plans	High	PLNR	All	2006	EXIST
1.2.1	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA, RPC*	*All*	*2007*	*$25K FEMA/AEMA planning grant*
1.2.2	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2008*	*$15K FEMA/AEMA planning grant*
1.2.3	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*Ongoing*	*EXIST*
1.2.4	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2006*	*EXIST*
1.3.1	*Prevention*	*Detailed Plans and Targeted Studies*	*High*	*ENGR, GIS, FP, EMA*	*FL*	*2009*	*FEMA Map Modernization*
1.3.2	*Prevention*	*Detailed Plans and Targeted Studies*	*Low*	*ENGR, GIS, FP*	*FL*	*After 2009*	*FEMA*
1.4.1	Prevention	Zoning	Low	GOV, FP	FL	After 2009	EXIST
1.4.2	Prevention	Zoning	High	GOV, FP	FL	2007	EXIST
1.5.1	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.2	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST

ORANGE BEACH MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.5.3	Prevention	Flood Plain Management Regulations	Low	FP	FL	After 2009	EXIST
1.5.4	*Prevention*	*Flood Plain Management Regulations*	*Low*	*GOV*	*FL*	*After 2009*	*EXIST*
1.6.1	Prevention	Building and Technical Codes	High	BO	All	Ongoing	EXIST
1.6.2	Prevention	Building and Technical Codes	High	GOV, BO	FL, TO, SS, HU	2006	EXIST
1.7.1	Prevention	Community Shelters and Safe Rooms	Low	GOV	TO, SS, HU	After 2009	EXIST
1.7.2	Prevention	Community Shelters and Safe Rooms	High	GOV	TO, SS, HU	Ongoing	EXIST
1.7.3	*Prevention*	*Community Shelters and Safe Rooms*	*High*	*EMA*	*TO, SS, HU*	*2009*	*$1,50K FEMA/AEMA*
1.7.4	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.7.5	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.8.1	Prevention	Landscape Ordinances	Low	GOV, PLNR	FL	After 2009	EXIST
1.9.1	Prevention	Storm Water Management	High	ENGR, BO	FL	Ongoing	EXIST
1.10.2	Prevention	Community Rating System Program	Low	FP	FL	After 2009	EXIST
1.10.3	Prevention	Community Rating System Program	Low	FP	FL	After 2009	EXIST

ORANGE BEACH MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
2.1.1	Property Protection	Building Relocation	Low	GOV, FP	FL	After 2009	FEMA
2.2.1	Property Protection	Acquisition	Low	GOV, FP	FL	After 2009	FEMA
2.3.1	Property Protection	Building Elevation	Low	GOV, FP	FL	After 2009	FEMA
2.4.1	Property Protection	Flood Proofing	Low	GOV, FP	FL	After 2009	FEMA
2.5.1	Property Protection	Building Retrofits	Low	BO, FP	FL	After 2009	EXIST
2.6.1	Property Protection	Insurance	High	FP, EMA	FL	Ongoing	EXIST
3.1.1	Public Outreach and Educations	Map Information	Low	FP	FL	After 2009	EXIST
3.2.1	*Public Outreach and Educations*	*Outreach Projects*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.4.1	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*2005*	*EXIST*
3.4.2	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.5.1	*Public Outreach and Educations*	*Environmental Education*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
4.1.1	Natural Resource Protection	Open Space Acquisitions	High	Coast Land Trust	FL	Ongoing	EXIST
4.2.1	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST

ORANGE BEACH MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
4.2.2	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.3.1	Natural Resource Protection	Urban Forestry Programs	High	ENGR, FP	FL	Ongoing	EXIST
5.1.1	*Emergency Services*	*Disaster Warning*	*High*	*EMA, NWS, USGS*	*All*	*2007*	*$1,500 K FEMA/AEMA*
5.1.2	*Emergency Services*	*Disaster Warning*	*High*	*EMA*	*All*	*2005*	*$250K FEMA/AEMA*
5.2.1	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*$20K FEMA/AEMA*
5.2.2	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
6.1.1	Structural Projects	Drainage System Maintenance	High	ENGR, FP	FL	Ongoing	EXIST

Table 6-11. Robertsdale Mitigation Action Program

(See key to abbreviations at end of this chapter)

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

ROBERTSDALE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.1.1	Prevention	Comprehensive Plans	High	PLNR	All	Ongoing	EXIST
1.2.1	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA, RPC*	*All*	*2007*	*$25K FEMA/AEMA planning grant*
1.2.2	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2008*	*$15K FEMA/AEMA planning grant*
1.2.3	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*Ongoing*	*EXIST*
1.2.4	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2006*	*EXIST*
1.3.1	*Prevention*	*Detailed Plans and Targeted Studies*	*High*	*ENGR, GIS, FP, EMA*	*FL*	*2009*	*FEMA Map Modernization*
1.3.2	*Prevention*	*Detailed Plans and Targeted Studies*	*Low*	*ENGR, GIS, FP*	*FL*	*After 2009*	*FEMA*
1.4.1	Prevention	Zoning	Low	GOV, FP	FL	After 2009	EXIST
1.4.2	Prevention	Zoning	High	GOV, FP	FL	2007	EXIST
1.5.1	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.2	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.3	Prevention	Flood Plain Management Regulations	Low	FP	FL	After 2009	EXIST

ROBERTSDALE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.5.4	*Prevention*	*Flood Plain Management Regulations*	*Low*	*GOV*	*FL*	*After 2009*	*EXIST*
1.6.1	Prevention	Building and Technical Codes	High	BO	All	Ongoing	EXIST
1.6.2	Prevention	Building and Technical Codes	High	GOV, BO	FL, TO, SS, HU	2006	EXIST
1.7.1	Prevention	Community Shelters and Safe Rooms	Low	GOV	TO, SS, HU	After 2009	EXIST
1.7.2	Prevention	Community Shelters and Safe Rooms	High	GOV	TO, SS, HU	Ongoing	EXIST
1.7.3	*Prevention*	*Community Shelters and Safe Rooms*	*High*	*EMA*	*TO, SS, HU*	*2009*	*$1,50K FEMA/AEMA*
1.7.4	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.7.5	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.8.1	Prevention	Landscape Ordinances	Low	GOV, PLNR	FL	After 2009	EXIST
1.9.1	Prevention	Storm Water Management	High	ENGR, BO	FL	Ongoing	EXIST
1.10.1	Prevention	Community Rating System Program	Low	FP	FL	After 2009	EXIST
2.1.1	Property Protection	Building Relocation	Low	GOV, FP	FL	After 2009	FEMA
2.2.1	Property Protection	Acquisition	Low	GOV, FP	FL	After 2009	FEMA

ROBERTSDALE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
2.3.1	Property Protection	Building Elevation	Low	GOV, FP	FL	After 2009	FEMA
2.4.1	Property Protection	Flood Proofing	Low	GOV, FP	FL	After 2009	FEMA
2.5.1	Property Protection	Building Retrofits	Low	BO, FP	FL	After 2009	EXIST
2.6.1	Property Protection	Insurance	High	FP, EMA	FL	Ongoing	EXIST
3.1.1	Public Outreach and Educations	Map Information	Low	FP	FL	After 2009	EXIST
3.2.1	*Public Outreach and Educations*	*Outreach Projects*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.4.1	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*2005*	*EXIST*
3.4.2	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.5.1	*Public Outreach and Educations*	*Environmental Education*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
4.1.1	Natural Resource Protection	Open Space Acquisitions	High	Coast Land Trust	FL	Ongoing	EXIST
4.2.1	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.2.2	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.3.1	Natural Resource Protection	Urban Forestry Programs	High	ENGR, FP	FL	Ongoing	EXIST

ROBERTSDALE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
5.1.1	*Emergency Services*	*Disaster Warning*	*High*	*EMA, NWS, USGS*	*All*	*2007*	*$1,500 K FEMA/AEMA*
5.1.2	*Emergency Services*	*Disaster Warning*	*High*	*EMA*	*All*	*2005*	*$250K FEMA/AEMA*
5.2.1	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*$20K FEMA/AEMA*
5.2.2	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
6.1.1	Structural Projects	Drainage System Maintenance	High	ENGR, FP	FL	Ongoing	EXIST

Table 6-12. Silverhill Mitigation Action Program

(See key to abbreviations at end of this chapter)

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

SILVERHILL MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.1.1	Prevention	Comprehensive Plans	High	PLNR	All	Ongoing	EXIST
1.2.1	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA, RPC*	*All*	*2007*	*$25K FEMA/AEMA planning grant*
1.2.2	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2008*	*$15K FEMA/AEMA planning grant*
1.2.3	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*Ongoing*	*EXIST*
1.2.4	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2006*	*EXIST*
1.3.1	*Prevention*	*Detailed Plans and Targeted Studies*	*High*	*ENGR, GIS, FP, EMA*	*FL*	*2009*	*FEMA Map Modernization*
1.3.2	*Prevention*	*Detailed Plans and Targeted Studies*	*Low*	*ENGR, GIS, FP*	*FL*	*After 2009*	*FEMA*
1.4.1	Prevention	Zoning	Low	GOV, FP	FL	After 2009	EXIST
1.4.2	Prevention	Zoning	High	GOV, FP	FL	2007	EXIST
1.5.1	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.2	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.3	Prevention	Flood Plain Management Regulations	Low	FP	FL	After 2009	EXIST

SILVERHILL MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.5.4	*Prevention*	*Flood Plain Management Regulations*	*Low*	*GOV*	*FL*	*After 2009*	*EXIST*
1.6.1	Prevention	Building and Technical Codes	High	BO	All	Ongoing	EXIST
1.6.2	Prevention	Building and Technical Codes	High	GOV, BO	FL, TO, SS, HU	2006	EXIST
1.7.1	Prevention	Community Shelters and Safe Rooms	Low	GOV	TO, SS, HU	After 2009	EXIST
1.7.2	Prevention	Community Shelters and Safe Rooms	High	GOV	TO, SS, HU	Ongoing	EXIST
1.7.3	*Prevention*	*Community Shelters and Safe Rooms*	*High*	*EMA*	*TO, SS, HU*	*2009*	*$1,50K FEMA/AEMA*
1.7.4	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.7.5	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.8.1	Prevention	Landscape Ordinances	Low	GOV, PLNR	FL	After 2009	EXIST
1.9.1	Prevention	Storm Water Management	High	ENGR, BO	FL	Ongoing	EXIST
1.10.1	Prevention	Community Rating System Program	Low	FP	FL	After 2009	EXIST
2.1.1	Property Protection	Building Relocation	Low	GOV, FP	FL	After 2009	FEMA
2.2.1	Property Protection	Acquisition	Low	GOV, FP	FL	After 2009	FEMA

SILVERHILL MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
2.3.1	Property Protection	Building Elevation	Low	GOV, FP	FL	After 2009	FEMA
2.4.1	Property Protection	Flood Proofing	Low	GOV, FP	FL	After 2009	FEMA
2.5.1	Property Protection	Building Retrofits	Low	BO, FP	FL	After 2009	EXIST
2.6.1	Property Protection	Insurance	High	FP, EMA	FL	Ongoing	EXIST
3.1.1	Public Outreach and Educations	Map Information	Low	FP	FL	After 2009	EXIST
3.2.1	*Public Outreach and Educations*	*Outreach Projects*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.4.1	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*2005*	*EXIST*
3.4.2	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.5.1	*Public Outreach and Educations*	*Environmental Education*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
4.1.1	Natural Resource Protection	Open Space Acquisitions	High	Coast Land Trust	FL	Ongoing	EXIST
4.2.1	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.2.2	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.3.1	Natural Resource Protection	Urban Forestry Programs	High	ENGR, FP	FL	Ongoing	EXIST

SILVERHILL MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
5.1.1	*Emergency Services*	*Disaster Warning*	*High*	*EMA, NWS, USGS*	*All*	*2007*	*$1,500 K FEMA/AEMA*
5.1.2	*Emergency Services*	*Disaster Warning*	*High*	*EMA*	*All*	*2005*	*$250K FEMA/AEMA*
5.2.1	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*$20K FEMA/AEMA*
5.2.2	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
6.1.1	Structural Projects	Drainage System Maintenance	High	ENGR, FP	FL	Ongoing	EXIST

Table 6-13. Spanish Fort Mitigation Action Program

(See key to abbreviations at end of this chapter)

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

SPANISH FORT MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.1.1	Prevention	Comprehensive Plans	High	PLNR	All	Ongoing	EXIST
1.1.2	Prevention	Comprehensive Plans	High	PLNR	All	2005	EXIST
1.1.3	Prevention	Comprehensive Plans	High	PLNR	All	2006	EXIST
1.2.1	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA, RPC*	*All*	*2007*	*$25K FEMA/AEMA planning grant*
1.2.2	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2008*	*$15K FEMA/AEMA planning grant*
1.2.3	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*Ongoing*	*EXIST*
1.2.4	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2006*	*EXIST*
1.3.1	*Prevention*	*Detailed Plans and Targeted Studies*	*High*	*ENGR, GIS, FP, EMA*	*FL*	*2009*	*FEMA Map Modernization*
1.3.2	*Prevention*	*Detailed Plans and Targeted Studies*	*Low*	*ENGR, GIS, FP*	*FL*	*After 2009*	*FEMA*
1.4.1	Prevention	Zoning	Low	GOV, FP	FL	After 2009	EXIST
1.4.2	Prevention	Zoning	High	GOV, FP	FL	2007	EXIST
1.5.1	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.2	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST

SPANISH FORT MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.5.3	Prevention	Flood Plain Management Regulations	Low	FP	FL	After 2009	EXIST
1.5.4	*Prevention*	*Flood Plain Management Regulations*	*Low*	*GOV*	*FL*	*After 2009*	*EXIST*
1.6.1	Prevention	Building and Technical Codes	High	BO	All	Ongoing	EXIST
1.6.2	Prevention	Building and Technical Codes	High	GOV, BO	FL, TO, SS, HU	2006	EXIST
1.7.1	Prevention	Community Shelters and Safe Rooms	Low	GOV	TO, SS, HU	After 2009	EXIST
1.7.2	Prevention	Community Shelters and Safe Rooms	High	GOV	TO, SS, HU	Ongoing	EXIST
1.7.3	*Prevention*	*Community Shelters and Safe Rooms*	*High*	*EMA*	*TO, SS, HU*	*2009*	*$1,50K FEMA/AEMA*
1.7.4	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.7.5	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.8.1	Prevention	Landscape Ordinances	Low	GOV, PLNR	FL	After 2009	EXIST
1.9.1	Prevention	Storm Water Management	High	ENGR, BO	FL	Ongoing	EXIST
1.10.1	Prevention	Community Rating System Program	Low	FP	FL	After 2009	EXIST
2.1.1	Property Protection	Building Relocation	Low	GOV, FP	FL	After 2009	FEMA

SPANISH FORT MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
2.2.1	Property Protection	Acquisition	Low	GOV, FP	FL	After 2009	FEMA
2.3.1	Property Protection	Building Elevation	Low	GOV, FP	FL	After 2009	FEMA
2.4.1	Property Protection	Flood Proofing	Low	GOV, FP	FL	After 2009	FEMA
2.5.1	Property Protection	Building Retrofits	Low	BO, FP	FL	After 2009	EXIST
2.6.1	Property Protection	Insurance	High	FP, EMA	FL	Ongoing	EXIST
3.1.1	Public Outreach and Educations	Map Information	Low	FP	FL	After 2009	EXIST
3.2.1	*Public Outreach and Educations*	*Outreach Projects*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.4.1	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*2005*	*EXIST*
3.4.2	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.5.1	*Public Outreach and Educations*	*Environmental Education*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
4.1.1	Natural Resource Protection	Open Space Acquisitions	High	Coast Land Trust	FL	Ongoing	EXIST
4.2.1	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.2.2	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST

SPANISH FORT MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
4.3.1	Natural Resource Protection	Urban Forestry Programs	High	ENGR, FP	FL	Ongoing	EXIST
5.1.1	*Emergency Services*	*Disaster Warning*	*High*	*EMA, NWS, USGS*	*All*	*2007*	*$1,500 K FEMA/AEMA*
5.1.2	*Emergency Services*	*Disaster Warning*	*High*	*EMA*	*All*	*2005*	*$250K FEMA/AEMA*
5.2.1	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*$20K FEMA/AEMA*
5.2.2	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
6.1.1	Structural Projects	Drainage System Maintenance	High	ENGR, FP	FL	Ongoing	EXIST

Table 6-14. Summerdale Mitigation Action Program

(See key to abbreviations at end of this chapter)

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

SUMMERDALE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.1.1	Prevention	Comprehensive Plans	High	PLNR	All	Ongoing	EXIST
1.2.1	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA, RPC*	*All*	*2007*	*$25K FEMA/AEMA planning grant*
1.2.2	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2008*	*$15K FEMA/AEMA planning grant*
1.2.3	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*Ongoing*	*EXIST*
1.2.4	*Prevention*	*GIS*	*High*	*GIS, ENGR, EMA*	*All*	*2006*	*EXIST*
1.3.1	*Prevention*	*Detailed Plans and Targeted Studies*	*High*	*ENGR, GIS, FP, EMA*	*FL*	*2009*	*FEMA Map Modernization*
1.3.2	*Prevention*	*Detailed Plans and Targeted Studies*	*Low*	*ENGR, GIS, FP*	*FL*	*After 2009*	*FEMA*
1.5.1	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.2	Prevention	Flood Plain Management Regulations	High	FP	FL	Ongoing	EXIST
1.5.3	Prevention	Flood Plain Management Regulations	Low	FP	FL	After 2009	EXIST
1.5.4	*Prevention*	*Flood Plain Management Regulations*	*Low*	*GOV*	*FL*	*After 2009*	*EXIST*
1.5.5	Prevention	Flood Plain Management Regulations	High	GOV	FL	2005	EXIST

SUMMERDALE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
1.6.1	Prevention	Building and Technical Codes	High	BO	All	Ongoing	EXIST
1.6.2	Prevention	Building and Technical Codes	High	GOV, BO	FL, TO, SS, HU	2006	EXIST
1.7.1	Prevention	Community Shelters and Safe Rooms	Low	GOV	TO, SS, HU	After 2009	EXIST
1.7.2	Prevention	Community Shelters and Safe Rooms	High	GOV	TO, SS, HU	Ongoing	EXIST
1.7.3	*Prevention*	*Community Shelters and Safe Rooms*	*High*	*EMA*	*TO, SS, HU*	*2009*	*$1,50K FEMA/AEMA*
1.7.4	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.7.5	Prevention	Community Shelters and Safe Rooms	High	BO	TO, SS, HU	Ongoing	EXIST
1.8.1	Prevention	Landscape Ordinances	Low	GOV, PLNR	FL	After 2009	EXIST
1.9.1	Prevention	Storm Water Management	High	ENGR, BO	FL	Ongoing	EXIST
2.1.1	Property Protection	Building Relocation	Low	GOV, FP	FL	After 2009	FEMA
2.2.1	Property Protection	Acquisition	Low	GOV, FP	FL	After 2009	FEMA
2.3.1	Property Protection	Building Elevation	Low	GOV, FP	FL	After 2009	FEMA
2.4.1	Property Protection	Flood Proofing	Low	GOV, FP	FL	After 2009	FEMA

SUMMERDALE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
2.5.1	Property Protection	Building Retrofits	Low	BO, FP	FL	After 2009	EXIST
2.6.1	Property Protection	Insurance	High	FP, EMA	FL	Ongoing	EXIST
3.1.1	Public Outreach and Educations	Map Information	Low	FP	FL	After 2009	EXIST
3.2.1	*Public Outreach and Educations*	*Outreach Projects*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.4.1	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*2005*	*EXIST*
3.4.2	*Public Outreach and Educations*	*Library*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
3.5.1	*Public Outreach and Educations*	*Environmental Education*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
4.1.1	Natural Resource Protection	Open Space Acquisitions	High	Coast Land Trust	FL	Ongoing	EXIST
4.2.1	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.2.2	Natural Resource Protection	River/Stream Corridor Restoration and Protection	High	ENGR, FP, BO	FL	Ongoing	EXIST
4.3.1	Natural Resource Protection	Urban Forestry Programs	High	ENGR, FP	FL	Ongoing	EXIST
5.1.1	*Emergency Services*	*Disaster Warning*	*High*	*EMA, NWS, USGS*	*All*	*2007*	*$1,500 K FEMA/AEMA*
5.1.2	*Emergency Services*	*Disaster Warning*	*High*	*EMA*	*All*	*2005*	*$250K FEMA/AEMA*

SUMMERDALE MITIGATION ACTION PROGRAM							
Mitigation Measure #	**Goal**	**Program Objective**	**Priority**	**Lead Responsibility**	**Hazard(s)**	**Timeline**	**Possible Funding Source**
5.2.1	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*$20K FEMA/AEMA*
5.2.2	*Emergency Services*	*Weather Radios*	*High*	*EMA*	*All*	*Ongoing*	*EXIST*
6.1.1	Structural Projects	Drainage System Maintenance	High	ENGR, FP	FL	Ongoing	EXIST

Table 6-15. Priority Projects for FEMA Funding

PRIORITY PROJECTS FOR FEMA FUNDING					
Mitigation Measure #	**Project Description**	**Hazard(s) Addressed**	**Jurisdiction(s)**	**Responsibility**	**Funding**
1.2.1	Maintain risk assessment data in GIS, including flood zones, hurricane surge areas, tornado tracks, disaster events, and a comprehensive inventory of critical facilities within all jurisdictions.	All	All	GIS, ENGR, EMA, RPC	$25K FEMA/AEMA planning grant
1.2.2	Integrate FEMA HAZUS-MH applications for hazard loss estimations within local GIS programs. Maintain up-to-date data within GIS to apply the full loss estimation capabilities of HAZUS.	All	All	GIS, ENGR, EMA	$15K FEMA/AEMA planning grant
1.3.1	Seek a countywide update of all FIRMs in digital format, with an emphasis on detailed studies of developed and developing areas with elevations provided and floodways delineated.	FL	All	ENGR, GIS, FP	FEMA Map Modernization Program
1.7.3	Construct free-standing public safe rooms in vulnerable locations.	TO, SS, HU	All	EMA	$1,50K FEMA/AEMA

PRIORITY PROJECTS FOR FEMA FUNDING					
Mitigation Measure #	**Project Description**	**Hazard(s) Addressed**	**Jurisdiction(s)**	**Responsibility**	**Funding**
5.1.1	Enhance the ALERT flood warning system at strategic locations in the county to cover vulnerable flood locations. Sensors should provide real-time access to stream flow, stream stage, and precipitation data, at the minimum. The system should link data into GIS with the ability to use measured and forecasted rainfall to predict potential flood levels and create real-time maps of flooded areas. Evaluate the feasibility of a shared tri-county system covering Baldwin, Escambia, and Mobile counties.	All	All	EMA, NWS, USGS	$1,500 K FEMA/AEMA
5.1.2	Establish a reverse 911-call system.	All	All	EMA	$250K FEMA/AEMA
5.2.1	Support the Alabama Skywarn Foundation efforts to distribute weather radios to low-income households, especially in rural areas outside of siren coverage areas.	All	All	EMA	$20K FEMA/AEMA

Key to Abbreviations Used in Tables 6-2 through 6-15

Hazards	
All	All hazards
DF	Dam Failure
DH	Drought/Heat Wave/Extreme Heat
EQ	Earthquake
FL	Flood
HU	Hurricane
L	Landslide
SH	Land Subsidence/Sinkholes
SS	Severe Storms
TO	Tornado
WC	Winter Storm/Extreme Cold
WF	Wildfire
Responsible Party	
BO	Local Building Official
EMA	Baldwin County EMA
ENGR	Baldwin County Engineer, City/Town Engineer
FP	Local Flood Plain Manager
GOV	Governing Body – County Commission, City/Town Council
NWS	National Weather Service
PLNR	Baldwin County Planning Dept., RPC, or Planning Consultant
RPC	South Alabama Regional Planning Commission
USGS	United States Geological Survey
TBD	Responsible Party To Be Determined
Timeline	
200x	Target Year for Implementation
TBD	Timeline To Be Determined
Funding	
AEMA	Alabama Emergency Management Agency
EXIST	Existing Local Funds
FEMA	FEMA Hazard Mitigation Grant/Pre-Disaster Mitigation Grant Programs
TBD	Funding To Be Determined

Chapter 7
Plan Maintenance

7.1 The Planning Cycle

This chapter presents a continuous cycle for monitoring, evaluating and updating the plan; the process for incorporating mitigation strategies into other, ongoing planning activities; and methods for continuing public involvement. Continual plan maintenance ensures an active and relevant hazard mitigation planning process.

7.2 Plan Maintenance Procedures

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

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

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

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

In the event modifications to the plan are warranted as a result of the annual review or other conditions, the Committee will oversee and approve all revisions to the plan. Conditions warranting revisions to this plan include, but are not limited to, special opportunities for funding and/or response to a natural disaster. Before any revisions are submitted to the jurisdictions for adoption, a notice will be placed in the local newspaper, allowing an opportunity for the public to review the proposed amendments at the EMA offices, submit written comments, and present comments at a public meeting. The Committee will then submit all revisions for adoption by jurisdictions affected by the changes. Those jurisdictions will hold a public hearing before adoption of the amendments. A copy of the plan's revisions will be submitted to all holders of the original plan in a timely manner.

At the end of the five-year cycle of the Action Program, the Committee will oversee a major update to the plan that follows the Federal planning criteria in effect at the time of the update. The updated plan will again be submitted to the AEMA and FEMA for approval.

7.3 Implementation Through Existing Programs

This plan is adopted as a part of the Baldwin County Emergency Operations Plan, which is administered through the EMA office. A number of the communities have comprehensive plans in place that should be amended to integrate the findings and recommendations of this plan. If any of the jurisdictions develop future plans that pertain to items that may have an affect on natural hazard planning, this findings of this plan would likewise need to be incorporated into that community's plan.

7.4 Continued Public Involvement

A critical part of maintaining an effective and relevant natural hazards mitigation plan is ongoing public review and comment. Consequently, the HMPC is dedicated to direct involvement of its citizens in providing feedback and comments on the plan throughout the five-year implementation cycle.

To this end, a hard copy of the plan will be available for viewing at all appropriate agencies throughout the County; including, at a minimum, the Baldwin County EMA Office, the office of the Baldwin County Commission, the offices of the mayors, and the main public library. After adoption, a public information notice in the local newspaper will inform the public that the plan may be viewed at these locations.

Public meetings will be held when significant modifications to the plan are required or when otherwise deemed necessary by the HMPC. The public will be able to express their concerns, ideas and opinions about the plan at the meetings. At a minimum, public hearings will be held during the drafting stage of the five-year plan update and to present the final plan to the public before adoption.

7.5 Ongoing Planning Needs

This Baldwin County, Alabama, Natural Hazards Mitigation Plan establishes a new planning program for the County and its participating municipalities. However, planning does not end with the adoption of this initial plan. This planning program is a continuous process of profiling new natural hazard events; assessing vulnerabilities as new information arises and conditions change; monitoring changing assets and affected populations; and keeping current on evolving mitigation measures.

Moreover, the hazard profiles, vulnerability assessments, population characteristics, and inventories of critical facilities of this current plan were based on "best available data." "Best available data" is data that is readily available within the very brief plan development time period. This plan recognizes the limitations of such an approach to risk assessment and

strategic planning. Improvements to the “best available data” can be made to better assess the risks and target mitigation strategies that best respond to the natural hazard issues within the County.

Therefore, it is the intent of the HMPC to establish an ongoing planning program, one that will strengthen the risk assessment process as better and more complete information is developed and revise the mitigation strategies as more effective measures might evolve.