APALACHEE REGIONAL PLANNING COUNCIL

HURRICANE MITIGATION PLANNING STUDY

American Red Cross photo

[illegible], Franklin, Gadsden, Gulf, Jackson, Jefferson, Leon, Liberty and Wakulla Counties

APALACHEE REGION
HURRICANE MITIGATION STUDY

December 1987

The Apalachee Regional Planning Council in conjunction with the nine counties in the region produced this document for the Division of Emergency Management, Department of Community Affairs.

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INTRODUCTION

Technological advancements in hurricane tracking and warning systems have enabled us to safely evacuate greater numbers of people in decreasing amounts of time. As evacuation procedures become more efficient, coastal populations can intensify without the worry of storm related fatalities. Unfortunately, sharp increases in coastal populations have been accompanied by intense shore-front development, which is vulnerable to hurricane induced damage. Coastal property recovery costs are far too burdensome for a community to ignore growth in high risk areas. Mitigation guidelines must be enacted and enforced by each municipality vulnerable to hurricane induced flooding.

This document is a continuation of The Apalachee Region Hurricane Loss Study, which estimated the monetary damage that would occur to property in the region based on 23 different hurricane scenarios. The vulnerability of private property and public facilities was exposed in the initial loss study. This report utilizes the damage estimates contained in the first study to determine the amount of assistance that may be required based on those scenarios, and suggests mitigation techniques to prevent damage in the future.

OBJECTIVE

The first section of this study analyzes various state and federal assistance programs available to local governments and individuals in the event of a hurricane. This section profiles the location of Disaster Application Centers,(DACS) and Disaster Field Offices, (DFOS) within the counties of the Apalachee Region as well as the need for temporary housing, public assistance and individual assistance is also analyzed in section one.

Part two of this report examines a methodology for future development review, sites for relocation, future development and public acquiry, ongoing hazard mitigation policies in each county and growth management tools that may be directed toward hazard mitigation. Finally hazard mitigation policies that each municipality in the region should consider, if they wish to avoid hurricane related losses are recommended.

STUDY PURPOSE

The purpose of this study is to formulate geographically specific and quantitatively based long range response and recovery strategies as well as hazard mitigation policies based on estimated property losses that would occur from probable hurricane scenarios. The response and recovery and mitigation

plan development involves the formulation of hurricane mitigation strategies for use by federal, state and local relief agencies and the formulation of hazard mitigation policies for both future development and post-hurricane redevelopment.

REGION OF STUDY

The Apalachee region consists of nine counties, which include Calhoun, Franklin, Gadsden, Gulf, Jackson, Jefferson, Leon, Liberty, and Wakulla County. County populations range from urbanized Leon County with over one hundred thousand people to Liberty County with approximately 5,000 people. Three of these counties, Franklin, Gulf, and Wakulla, have a high percentage of their population living in high risk regions. Coastal development in the Apalachee region should continue at a relatively slow pace, however, the occurrence of a major storm may be catastrophic due to limited financial resources of the coastal communities, and their non-diversified economic system that relies on delicate aquatic ecosystems that a hurricane can destroy.

SECTION 1.
RESPONSE/RECOVERY PLAN:
ALLOCATION OF POST-HURRICANE RESOURCE ASSISTANCE

Disaster Relief Programs

Disaster recovery funds may be provided by any combination of local, state and federal programs. The type of assistance available depends on the severity of the damage. Local governments are responsible for the immediate post- storm damage assessments. These assessments are channeled to designated state and federal agencies who furnish the bulk of the relief funds through various programs and grants. This section of the report examines the federal, state and local recovery programs available to hurricane damaged areas, who qualifies, and how to obtain the assistance.

A. Federal Programs

Most communities in the Apalachee region lack the financial resources to independently recover from a major hurricane. Disadvantaged localities rely on the extensive funding Federal assistance programs may provide. These finances aid in the emergency relief period immediately after the storm, the short range restoration period and the long range reconstruction period, which continues until the region has completely recovered. (See Appendix A)

In the past, Federal assistance funds were distributed in an unconditioned manner. Property owners could use the funds to rebuild without taking into account hazard mitigation, leaving their structures vulnerable to recurring damage. Federal

programs now condition their funding upon the meeting of minimum building requirements by communities and property owners.

Federal disaster relief begins once an area is under the President's disaster declaration. The following section details the various Federal Agencies and the functions they perform under post storm disaster conditions.

1. Federal Emergency Management Agency (FEMA)
(Federal Program Administration)

Created under the Disaster Relief Act of 1974, FEMA is designated as the coordinating agency of the various Federal assistance programs. If a storm damaged region is under disaster declaration by the President, FEMA is responsible for processing damage reports and assigning the appropriate federal agency to administer to the specific needs of each locality.

The following list categorizes the basic assistance needs that may be provided by one of FEMA's disaster relief programs.

I. Emergency Assistance:

A. Emergency mass care (medical care, shelter, food, water);

B. Clearance of debris;

C. Emergency protective measures (search and rescue, demolition of unsafe structures);

D. Emergency repairs to essential utilities and facilities;

E. Emergency communications;

F. Administrative support.

II. Major Disaster Assistance

A. Individual Assistance:

1. Temporary housing (accommodations for up to one year, minimal repairs, mortgage or rent payments for up to one year);
2. Unemployment insurance for up to one year (if individual is not covered by state insurance);
3. Individual family grants (up to $5,000 for essential needs);
4. Food coupons;
5. Legal services;
6. Crisis counseling;
7. Small Business Administration (SBA) loans;
8. Tax deductions;
9. Farm loans;
10. V.A. and F.H.A. loan refinancing.

B. Community Assistance:

1. Repair and restoration of public facilities;
2. Debris removal;
3. Community disaster loans to cover lost revenues;
4. Emergency communications;
5. Emergency public transportation;
6. Fire suppression grants, timber removal.

2. Small Business Administration
(Small Business Assistance)
(Economic Injury Disaster Loan & Home Disaster Loan)

Small businesses can apply for loans of up to $500,000 from the Small Businesses Administration(SBA) to return them to pre disaster conditions. The interest rate charged on these loans depends upon the applicant's ability to obtain credit elsewhere. Those businesses unable to obtain credit elsewhere are charged 4%, those able are charged 8% or the going market rate, whichever is less. If in a flood hazard area, the business must have flood insurance to qualify.

SBA also offers Home Disaster Loans and Economic Injury Loans. Home Disaster Loans are allocated to homeowners or renters to replace destroyed personal property. Economic Injury Disaster loans are working capital loans distributed to small businesses and agricultural cooperatives to assist them through the post disaster recovery period.

3. U.S. Army Corps of Engineers (COE)
(Structural Assistance)

The Corps of Engineers will generally perform structural modification tasks which include; flood fighting and rescue operations; emergency repair and restoration of flood control works threatened, damaged, or destroyed by flood waters; emergency work including repair and restoration of any completed federally authorized hurricane, flood or shore protection project threatened or damaged by storm activity;

construction projects to remove debris, and clear channels in the interest of flood control and emergency bank protection works to prevent flood damage to highways, bridges and public works.

4. U.S. Department of Agriculture (DOA)
(Agricultural Assistance Administration)

The Department of Agriculture provides several post-disaster assistance programs through its various branches. The following section matches the programs available through DOA with the appropriate branch.

a. Farmers Home Administration
(Agricultural Loans)

This branch of DOA provides insured loans to farmers, ranchers and aquaculture operators to return them to near pre-disaster conditions. Loans are allocated to: restore farm supplies; enable the farmer to return to their conventional credit by allocating up to three years worth of operating expenses;and refinance disaster debts and finance adjustments in the applicant's operation.

The Farmers Home Administration also provides Community Facility Loans to Indian tribes, rural residents and rural communities to improve services to victims cut off as a result of a major storm.

b. Agricultural Stabilization and Conservation Services
(Livestock and Farmland Rehabilitation)

This program, administered through DOA, assists in the maintenance of the applicant's livestock through purchases of livestock feed. Funds are limited to 50% of the purchased feed.

This program also assists farmers in performing emergency conservation measures to control wind erosion on crop areas, and to rehabilitate storm damaged farmlands.

c. Food and Nutrition Service
(Food and Food Stamps)

DOA will supply emergency food and food stamps for those applicants who have had their primary means by which to obtain food severed as a result of a storm.

5. Department of Education
(Repair and Operation of Public Schools)

DOE is responsible for allocating funds for the reconstruction, restoration and operation of public school facilities, in the event of an emergency.

6. Appropriate Bar Associations
(Legal Assistance)

Different federal and state agencies through the Young

Lawyers Division and the American Bar Association will provide low income disaster victims with free legal assistance. Provisions include the replacement of legal documents, title transfers, contract disputes, will probates and insurance problems.

7. Internal Revenue Service
(Tax Assistance)

The Internal Revenue Service will provide tax information and education to any tax paying disaster victim. Services include tax advice and guidance, rule notification and tax return assistance.

8. Federal Highway Administration
(Highway Repair)

The Federal Highway Administration allocates funds to repair highways on the federal system, forest highways, forest development roads and trails, parkways, public land highways, public land development roads and trails and indian reservation roads.

9. Department of Housing and Urban Development (HUD)
(Community Assistance & Mobile Home Loans)

Through this agency's office of Community Planning and Development, a region can apply for a Community Development Block Grant. A block grant can assist in certain

construction of public works facilities, clearance, housing rehabilitation, code enforcement, relocation payments and assistance, administrative expenses, economic development and completion of urban renewal projects.

Also, through this agency any prospective mobile home buyer may be allocated an insured loan. This loan makes it easier for those who are homeless as a result of a hurricane to finance a permanent manufactured residence.

10. Federal Insurance Administration
(Subsidized Flood Insurance)

The Federal Insurance Administration provides low cost flood insurance in return for community participation in the National Flood Insurance Program (NFIP). The goals of the NFIP are accomplished in two stages. First is the emergency phase, a temporary step toward the regular intents of the program. During this phase a flood hazard boundary map(FHBM) is drafted, delineating the basic flood hazard regions of a city or county. Local governments are required to enforce building restrictions based upon the flood risk of the proposed project as depicted by the FHBM's. During this phase subsidized insurance offers $35,000 for single family homes and $100,000 for all other types of structures.

When a community enters the final, or regular stage of the program, the requirements become specific. Engineers sketch

a Flood Insurance Rate Map (FIRM) which details the threat each area has of being inundated during the calculated 100-year flood. Minimum building requirements are now enacted based on the localities relation to the 100-year flood plain. If the region abides by the program's minimum requirements, total recompensation, or relocation may be available in the event of a hurricane related flood.

Unlike the flood hazard boundary map which details only special risk zones, the flood insurance rate map has several designations that a community's authorities must familiarize themselves with. The following list includes FIRM zone classifications with attached definitions.

ZONE	DEFINITION
A	Areas of 100-year flood; base flood elevation and flood hazard factors not yet determined
AO	Areas of 100-year shallow flooding where depths are between one and three feet, average depths are shown, but no flood hazard factors are determined
AH	Areas of 100-year shallow flooding between one and three feet; base flood elevations are shown but no flood hazard factors are determined
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined

A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevation and flood hazard factors not yet determined
B	Areas between limits of 100-year flood and 500-year flood, or certain areas subject to 100-year flooding with average depths less than one foot or where contributing drainage area is less than one square mile or areas protected by levees from the base flood
C	Areas of minimal flooding
D	Areas of undetermined, but possible flood hazards
V	Areas of 100-year coastal flooding with velocity (wave action), base flood elevations and flood hazard determining factors not determined
V1-V30	Areas of 100-year coastal flood with wave action; base flood elevations and flood hazard factors determined.

Community participation in the NFIP is not mandatory. Federal funds, however, are usually conditioned on an area's involvement in the program. Local leaders must develop strategies and techniques to encourage their region's residents to support the program. Participation not only assures community post-disaster assistance, but in abiding

by FIA's minimum standards a community can effectively reduce damage in the event of a storm related flood.

In order for communities in the Apalachee region who are in the program to continue to qualify for assistance, NFIP REGULATIONS section 60.3(b) must be met. This section lists requirements for participating municipalities based on their location in relation to flood hazards.

REQUIREMENTS FOR COMMUNITIES IN REGULAR PROGRAM BUT NO FLOODWAY OR COASTAL HIGH HAZARD IDENTIFIED

A. Require development permit:
   1. For all new construction, or substantial improvement including placement of prefabricated buildings and mobile homes in the floodplain;
   2. For fill, excavation, paving, dredging, grading, mining or drilling operations that could affect the flood plain or stream channel.

B. Review permit applications to determine whether proposed building sites will be reasonably safe from flooding. If in a flood plain require:
   1. All proposed construction/development (including placement of prefabricated buildings and mobile homes) be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement.

2. Use flood resistant materials and utility equipment.

3. Use construction methods which minimize flood damage.

C. Review subdivision proposals and other proposed new development to determine whether the proposals will be reasonably safe from flooding. If in a flood plain require:

1. All proposals minimize flood damage;

2. All public utilities and facilities are constructed to minimize or eliminate flood damage;

3. Adequate drainage is provided;

4. Base Flood elevation data for all proposals greater than 50 lots or five acres.

D. Review construction/development proposals to determine whether new and replacement water supply systems, sanitary sewage systems or on site disposal systems will be reasonably safe from flooding. If in a flood plain require:

1. All systems be designed to minimize or eliminate infiltration of floodwaters;

2. Sewage and disposal systems be designed to minimize or eliminate discharges or contamination from systems into flood waters;

3. Disposal systems are located to avoid impairment to them.

E. Review construction/development proposals to assure other State/Federal permits have been obtained.

F. Elevation requirements:

1. In A1-A30 Zones and AH Zones:

   a. Residential - New and substantial improvement- elevate lowest floor to or above BFE unless an exception on basements is granted to a community by FIA.

   b. Non-residential - New and substantial improvements - elevate to or above base flood elevation(BFE). Floodproofing is an alternative for these structures. However, for insurance purposes, the structure should be floodproofed a minimum of one foot above the BFE. The insurance agent is required to subtract one foot to determine the elevation to be used in computing premiums. Also, a registered professional engineer or architect must certify that floodproofing methods are adequate.

2. In AO zones:

   a. Residential - Elevate lowest floor to or above the highest adjacent grade plus the indicated depth of flooding or to or above the highest adjacent grade plus two feet if no depth is indicated.

   b. Non-Residential - elevate or floodproof to or above the highest adjacent grade plus the indicated depth of flooding or to the highest adjacent grade plus two feet if no depth is indicated. See above, re: one foot requirement, re: floodproofing and insurance purposes and engineering/architect

certification.

3. In A Zones:

   If Base flood elevation data is not provided by the NFIP, obtain, review and reasonably utilize any BFE data available from other sources as basis for elevating residential structures to or above BFE, and elevating or floodproofing non-residential structures to or above BFE.

G. Mobile Homes - Require:

   1. In A zones, apply mobile home anchoring specifications:

   2. In A1-A30 Zones, for new or substantially improved mobile home parks or subdivisions and for mobile homes not placed in existing mobile home parks or subdivisions:

      a. Stands or lots are elevated to or above BFE;

      b. Adequate access for hauler and drainage be provided.

      c. If pilings are used for elevation, construction standards for pilings are met.

H. Obtain and maintain records of elevation floodproofing levels for new construction and substantial improvements.

I. Notify adjacent communities, DCA, and FEMA prior to any alteration or relocation of watercourse.

J. Until regulatory floodway is designated, no use may increase the BFE more than one foot.

REQUIREMENTS FOR COMMUNITIES IN REGULAR PROGRAM, FLOODWAY HAS BEEN IDENTIFIED (FEMA REGULATIONS, SECTION 60.3(C)(D))

A. When data have been provided by NFIP:

1. Designate regulatory floodway capable of carrying base flood waters without increasing the BFE more than one foot;
2. Prohibit any encroachment in the regulatory floodway which would cause any increase in the base flood level;
3. Prohibit placement of mobile homes in the adopted regulatory floodway except in existing mobile home parks or subdivisions.

REQUIREMENTS FOR COMMUNITIES IN THE REGULAR PROGRAM WHERE COASTAL HIGH HAZARD AREAS (V ZONES) HAVE BEEN DESIGNATED. (FEMA REGULATIONS, SECTION 60.3(C)(E))
For Coastal High Hazard Areas: Zones V1-V30

A. Require that all new construction and substantial improvements:

1. Are elevated and secured to anchored pilings so that lowest portion of lowest structural member is at or above base flood elevation;
2. Are certified by engineer/architect that structure is secured to anchored pilings to withstand velocity waters and wave wash;
3. Have spaces below lowest floor constructed with breakaway walls or left open. Please note: Breakaway

walls are still allowed, but their use may mean additional premium cost.

4. Is landward of mean high tide.

B. Prohibit use of fill for structural support

C. Prohibit mobile homes, except in existing mobile home parks and existing mobile home subdivisions

D. Prohibit alteration of sand dunes and mangrove stands which would increase potential flood damage.

Base Flood Elevation and Floodway Map Sources

The BFE maps and floodway maps plot flood hazard risk for each county. In order to enforce NFIP's regulations, a community must be aware of the risks each section is subject to. The following list details the various sources from which BFE information may be available.

1. Corps of Engineers District Office
   Jacksonville(904)791-1100
   Mobile(205)694-3850
2. Soil Conservation Service State Office
   Gainesville (904)377-8732
3. U.S. Geological Survey District Office
   Tallahassee (904)386-7145

4. Water Management Districts(WMD)

   Northwest Florida WMD -Havana-(904) 487-1770

   Suwannee River WMD - Live Oak - (904)362-1001

5. Apalachee Regional Planning Council

   Tallahasse(904)575-5850

   Blountstown(904)674-4571

6. FEMA, Insurance and Mitigation Division

   Atlanta(404)881-2391

The Flood Insurance Program is the most extensive federal assistance program. The Federal Government, however, does not supply all of the repair and reconstruction funds under this act. The program's break down in the State of Florida is 75% Federal share, 10% State of Florida, and local municipalities pick up 15% of the repair costs.

11. Emergency Conservation Program
(Emergency Farmer's Assistance)

The Emergency Conservation Program is designed to assist farmers and agricultural endeavors. Funds can be obtained for clearing farmland of fallen trees and debris, fence repair and cropland rehabilitation.

12. Department of Labor
(Unemployment Compensation)

The Disaster Unemployment Assistance Program provides job placement and compensation for one year for those out of work as a result of storm damage. The program is usually

channeled from the Department of Labor through the State Employment Security Agency.

13. Individual Family Grants
(Family Expenses)

This program provides monetary contributions of up to $5,000 to those that have demonstrated an inability to repay a SBA loan. The funds under this program are generally utilized to pay for medical expenses, transportation costs, home repair and other vital necessities that the individual cannot provide.

14. Charitable Relief Programs
(Emergency Provisions)

In areas in desperate need of assistance, charitable relief programs such as the Red Cross,Salvation Army, and Goodwill Industries will set up local camps and aid centers where basic necessitiessuch as food, shelter and medical supplies are provided.

The Red Cross provides the most extensive charitable relief. The allocated assistance is broken down as follows;

A. Emergency mass care assistance including; Food for disaster victims and emergency workers, temporary shelters, medical and nursing aid, clothing and blood products;

B. Emergency assistance on individual family basis

including; welfare information services, information concerning government disaster assistance programs and other emergency assistance provisions such as food, clothing, rent, furniture, transportation, medicine and home repair.

C. Aid for families who do not qualify for government programs which include; casework services, food and clothing, home repair, furnishings, medical care and personal occupational equipment.

B. State Programs

In Florida the coordinating agency for disaster relief programs is the Division of Emergency Management, within the Department of Community Affairs. DEM, like FEMA at the Federal level, assigns the appropriate state agency to administer to any municipality or county under disaster declaration.

The Division of Emergency Management is required to design a State Comprehensive Emergency Management Plan directed at civil defense. This program must be consistent with Federal guidelines and policies. DEM must also review Local Comprehensive Emergency Management plans for continuity with State and Regional plans.

The following section details the various Florida agencies involved in recovery and services they provide in the event of a hurricane:

1. Florida National Guard
(Emergency Functions)

The Florida National Guard are ordered into an area by the Governor to perform emergency functions such as debris clearance, anti-looting patrols, security, escort, traffic control, water provision, aviation monitoring and medical service provision.

2. Department of Natural Resources
(Damage Assessment & Structural Repair)

The programs available through The Department of Natural Resources range from local damage assessments to structural mitigation measures. During the storm, the DNR can provide teams of sandbaggers to deter storm waters. After the storm, funds may be provided to restore coastal protection devices to their pre-storm condition in compliance with Florida Statutes.

After the storm of 1985, DNR worked alongside the National Marine Fisheries Service providing recovery assistance for the oyster beds of Franklin County. Seedling oysters were quickly reestablished in Apalachicola Bay, in hopes the oyster industry would not suffer substantial losses.

3. Department of Environmental Regulation
(Emergency Permitting)

The Department of Environmental Regulation will issue "on the spot" permits for emergency dredge and fill operations that involve potential loss of life and property.

4. Department of Transportation
(Road Repair)

The Florida Department of Transportation allocates extensive funding to roads washed out as a result of a hurricane.

5. Department of Health and Rehabilitative Services
(Individual Assistance)

The Florida Department of Health and Rehabilitative Services provides food stamps, funds for rent, utilities and mortgage payments. A section on individual assistance is contained in a later section.

6. Department of Labor and Employment Security
(Unemployment Assistance)

The Florida Department of Labor and Employment Security assists those out of work as a result of a storm. Depending on the situation, money or employment may be provided.

7. Department of Community Affairs
Disaster Relief Act
(Infrastructure Restoration)

Local governments within a disaster stricken area may be allocated funds for the restoration and replacement of infrastructure. The Department of Community Affairs is in charge of administering the program. Funds are shared between state and federal governments, the state allocates 25% of the assistance funds, and the federal government allocates 75%.

Citizens Assistance Centers

Provisions from the agencies listed in subsections 4 through 7 are available through Citizen Assistance Center's, set up in storm damaged localities. The Department of Emergency Management directs each state agency to provide the specifics a region needs to recover from storm damage.

C. Local Programs

In the event of damage from a hurricane, the local government is the first source the individual looks toward for assistance. Each municipality must be able to rapidly and efficiently allocate Federal and State funds to those in need. In order to ensure this, counties in Florida are required to design a Comprehensive Emergency Management Plan, which is a detailed description of what steps will be taken during a crisis. The Hazard Mitigation Annex of the plan contains guidelines set forth by the Department of Emergency Management that local governments are to follow. These guidelines require local governments to approach hazard mitigation at three levels; issue and policy development; ongoing hazard mitigation studies; and site specific hazard mitigation studies.

FIELD ASSISTANCE

A. Disaster Field Offices (DFO)

The Disaster Field Office is set up as a coordination station for all state and federal assistance programs within counties under the President's disaster declaration. The offices are run and staffed by both a FEMA and a state appointed official. The function of these offices is the collection and processing of damage survey reports, and requests for individual assistance and small business loans. Damage survey reports are monetary damage estimates to specific buildings and facilities compiled by assessment teams from FEMA, the State and the affected local government. These reports and applications are evaluated and a decision on the amount of funding to be obligated to each locality is made.

B. Disaster Application Centers (DAC)

Disaster application centers are set up in counties under the President's disaster declaration after the disaster field offices have been established. Staff in these centers will assist affected individuals in filling out the proper applications. The applications are than sent to the disaster field office for processing.

C. Civil Defense Directors Duties

Federal and State authorities who set up each county's disaster application center need to designate a site which contains adequate communication and administrative capabilities. The Civil Defense Director for each county has the responsibility of assuring that an appropriate site has been assigned as depicted in their Emergency Management Plan. Table 1 lists the Civil Defense Director of each county in the Apalachee region accompanied by the corresponding office address and telephone number.

D. Site Determination

Several criteria are utilized in determining the appropriate site for each county's application centers and field office. These sites must be pre-determined to be able to withstand hurricane induced damage, be in a flood free zone, have easy access and ample parking, be under public ownership and have adequate emergency facilities. More than one designation has to be assigned for the Disaster Application Center, unlike the single location for the DFO per county. The DAC must be accessible for both government officials and the general public in need, while the DFO has to be within close proximity of a centralized government facility. Table 2 lists the recommended county sites based on the previous criteria for disaster field offices and application centers in the Apalachee Region.

TABLE 1

CIVIL DEFENSE DIRECTORS IN THE APALACHEE REGION

COUNTY	NAME	LOCATION	TELEPHONE
CALHOUN	NATHAN GOODMAN	BASEMENT OF CALHOUN COUNTY COURTHOUSE	674-8075
FRANKLIN	EUGENE ELLER	FRANKLIN COUNTY COURTHOUSE APALACHICOLA	653-8977
GADSDEN	CHARLIE BETTS	GADSDEN COUNTY COURTHOUSE SOUTH MADISON ST. QUINCY	674-8075
GULF	LARRY WELLS	GULF COUNTY COURTHOUSE PORT ST. JOE	227-1735
JACKSON	JAMES MAYDER	JACKSON COUNTY COURTHOUSE PELT ST. MARIANNA	526-4500
JEFFERSON	BOB KNECHT	JEFFERSON COUNTY COURTHOUSE 140 WEST WASHINGTON MONTICELLO	997-5762
LEON	BUNKY ATKINSON	LEON COUNTY COURTHOUSE TALLAHASSEE	488-5921
LIBERTY	ART PREACHER	CIVIL DEFENSE AND PLANNING OFFICE RIVER STREET BRISTOL	643-2339
WAKULLA	ERIC HINDLE	WAKULLA COUNTY COURTHOUSE CRAWFORDVILLE	926-5424

TABLE 2

POTENTIAL LOCATIONS FOR

DISASTER FIELD OFFICES

FOR THE COUNTIES OF THE APALACHEE REGION

COUNTY	LOCATION	DESIGNATION	COUNTY	LOCATION	DESIGNATION
CALHOUN	1. CALHOUN COUNTY COURTHOUSE BLOUNTSTOWN	DFO/DAC	JACKSON	1. HRS CENTER 401 EAST CLINTON ST. MARIANNA	DFO/DAC
FRANKLIN	1. CARRABELLE CITY HALL CARRABELLE	DFO/DAC	JEFFERSON	1. JEFFERSON COUNTY COURTHOUSE 140 WEST WASHINGTON MONTICELLO	DFO/DAC
	2. EASTPOINT ARMORY EASTPOINT	DFO/DAC			
	3. FRANKLIN COUNTY COURTHOUSE APALACHICOLA	DAC	LEON	1. CAPITAL OUTLET CENTER WEST TENNESSEE STREET TALLAHASSEE	DAC/DFO
GADSDEN	1. GADSDEN COUNTY COURTHOUSE SOUTH MADISON ST. QUINCY	DFO/DAC		2. TALLAHASSEE RECREATIONAL CENTER JACKSON BLUFF ROAD TALLAHASSEE	DAC
GULF	1. PORT ST. JOE FIRE HOUSE 404 WILLIAMS AVE PT. ST. JOE	DFO/DAC	LIBERTY	1. LIBERTY COUNTY COURTHOUSE BRISTOL	DAC/DFO
	2. COMMUNITY CENTER WEWAHITCHKA	DAC	WAKULLA	1. LIVESTOCK PAVILLION DOWNTOWN CRAWFORDVILLE	DAC/DFO

ANALYSIS

It must be noted that the population of each county in the Apalachee region is relatively small compared to the rest of the State, thus many Counties use the same facility for both the DFO and DAC. Many of the proposed facilities have not been used in emergency situations, therefore performance standards have yet to be determined. The Franklin County Courthouse was sandbagged during hurricane Kate, therefore it would only be available during a low intensity storm. In the event of a hurricane, the location of centers will be reassessed by government officials, who may decide to change location.

Post DAC/DFO Assistance

When the disaster assistance centers are gone, mobile service centers are available for assistance two days a week. Hot lines are also open up to 60 days after the DAC'S close down. Operators will accept and process requests for aid.

TEMPORARY HOUSING

FEMA provides accommodations for those disaster victims left homeless as a result of a storm when no housing facilities are available from county agencies. Depending upon the situation, four types of temporary homes are available; transient accommodations, government owned housing, private rental housing, and mobile homes. The following section examines the various temporary housing programs available after a hurricane, how to get that assistance, and the potential demand placed on temporary housing programs based on selected storm scenarios from Phase 1 of the Apalachee Region Hurricane Loss Study.An analysis of individual county recommendations based on potential temporary housing needs is also contained in this section.

A. Applicant Assistance

Applications for temporary housing are taken at disaster application centers. Local governments and the Division of Emergency Management will provide staff assistance to aid in the application process. The victims first step toward receiving temporary housing involves a pre-screening process to determine the victims eligibility for an application. If deemed eligible, the victim is sent to an interviewer who explains available programs before processing the application. The application is reviewed and a determination

is made using the following criteria:

1. Is the damaged housing unit the primary residence of the applicant?;
2. Was the damage a result of the disaster?;
3. Does the applicant have any other available resources such as insurance or another home that will provide him with temporary housing.

B. Provisions to Eligible Applicants

Once an applicant has been approved for one of the temporary housing programs he is informed of the following information; his eligibility; a recommended dwelling unit based on size and price; the duration of assistance, and his responsibilities within that time frame which includes: an acceptance of the first reasonable offer; an expectance that he properly cares for the unit; and an expectance that the applicant will attempt to find permanent residence during his stay in the temporary unit. Once an applicant's period of assistance is over he may reapply for continued temporary housing.

FEMA allocates the bulk of federal housing units. However, housing site allocation, general service provisions and program coordination is up to local governments. Municipalities should interact with FEMA prior to the occurrence of the disaster to insure post-disaster housing operations are efficiently run.

Inadequately tied down housing units and poorly constructed manufactured homes are common in the Apalachee Region. These homes are not built to withstand hurricane winds and floodwaters thus; even though the region is not heavily populated there is a definite need for a temporary housing program in the event of a major storm, as the following section will discuss

C. Methodology

Temporary housing needs are determined by using data from the Apalachee Region Hurricane Loss Study (Phase 1). The loss study depicted 23 hurricane scenarios based on simulated hurricane tracks from the National Weather Service and based the quantity of structural damage on them. The scenarios varied in both landfall site and intensity. Five hurricanes were selected from the 23 scenarios simulated in the first loss study. The intention was to use simulations of all five categories on the Saffir Simpson scale coming closest to a direct hit on each individual county. Housing needs are than determined based on the severity of each storm simulation in relation to location of landfall. The selected scenarios and their landfall sites are contained in table 3 and map 1, appendix D examines the Saffir Simpson Scale, and tables 4 through 19 determine the demand for temporary housing in the Apalachee region based on these scenarios.

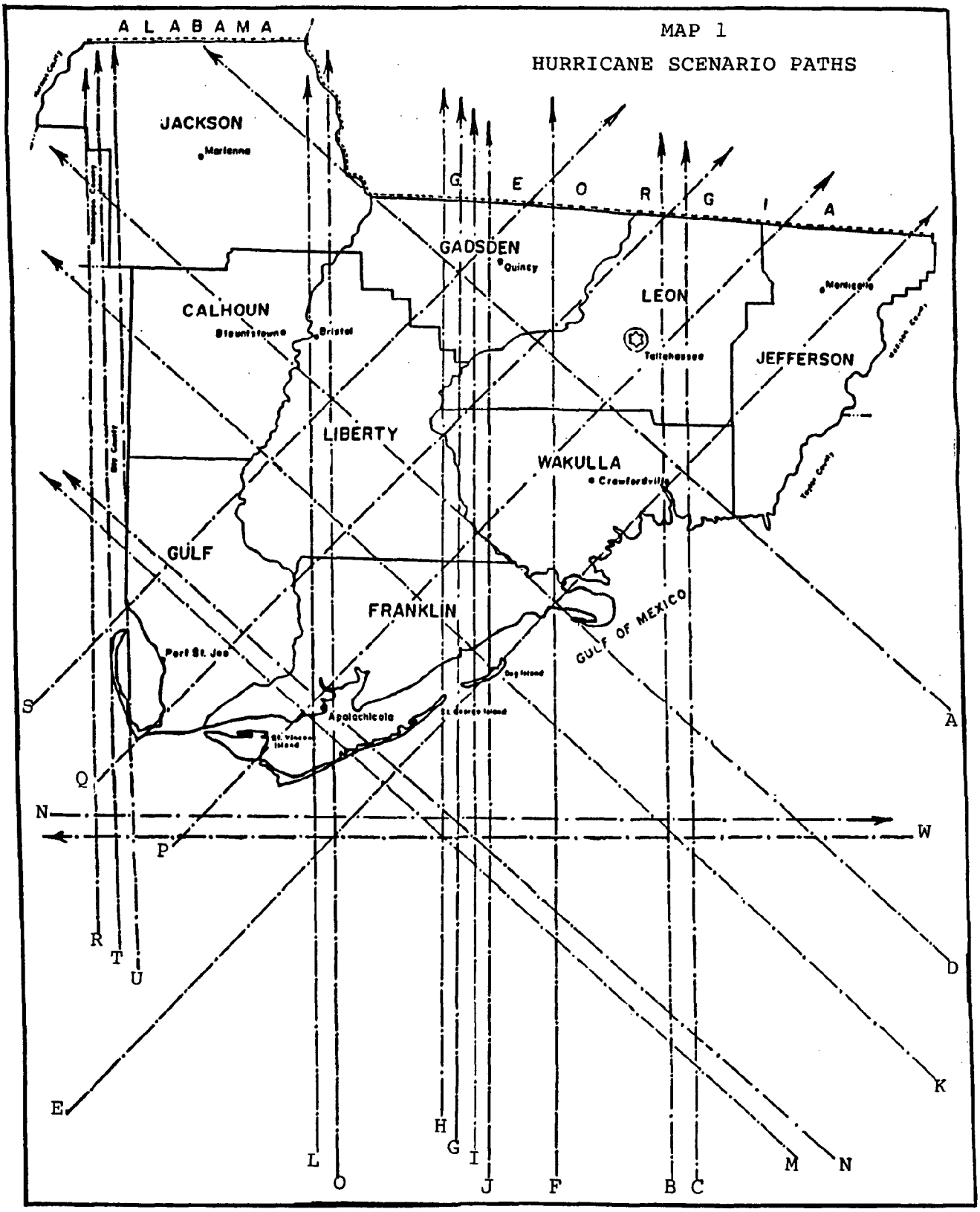
TABLE 3

STORM SCENARIO USED IN

INDIVIDUAL ASSISTANCE AND TEMPORARY HOUSING DETERMINATIONS

Storm Scenario	Category	Landfall Location*	Direction Hurricane Moving
A	1	St. Marks	NW
B	2	St. Marks	N
C	3	St. Marks	N
D	3	St. Teresa	(NW)
E	3	St. Teresa	(NE)
F	3	St. Teresa	(N)
G	2	St. George/Carrabelle	N
H	1	St. George/Carrabelle	N
I	3	St. George Carrabelle	(N)
J	5	St. George/Carrabelle	N
K	3	St. George/Carrabelle	(NW)
L	3	St. George/Apalachicola	(N)
M	2	St. George/Apalachicola	NW
N	3	St. George/Apalachicola	(NW)
O	4	St. George/Apalachicola	N
P	1	St. George/Apalachicola	NE
Q	4	Cape San Blas	NE
R	3	Mexico Beach	N
S	3	Mexico Beach	NE
T	4	Mexico Beach	N
U	5	Mexico Beach	N
V	1	Offshore	Paralleling
W	1	Offshore	Paralleling

* V & W do not make landfall but parallel the shoreline.



SPLASH II
SELECTED HURRICANE TRACKS

TABLE 4

CALHOUN COUNTY

PROJECTED TEMPORARY HOUSING NEEDS

BASED ON DAMAGE GREATER THAN 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOME	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS
H	0	0	0	658	264
M	0	0	0	658	264
R	0	0	0	658	264
T	0	0	0	658	264
V	0	0	293	633	234

TABLE 5

CALHOUN COUNTY

PROJECTED TEMPORARY HOUSING NEEDS

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS
H	0	0	0	658	264
M	0	0	0	658	264
R	0	0	0	658	264
T	0	0	0	658	264
V	0	0	293	633	234

TABLE 6

FRANKLIN COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
P	650	167	261	605	705	0
M	1345	167	420	585	670	682
N	1980	170	435	385	450	1750
O	2160	215	650	305	375	2345
J	2285	215	835	295	360	2680

TABLE 7

FRANKLIN COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
P	440	0	261	605	705	0
M	970	167	340	590	680	207
N	1980	167	435	385	450	912
O	2160	215	650	305	375	2345
J	2285	215	835	295	360	2680

TABLE 8

GULF COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
V	0	0	0	787	415	0
N	0	0	0	787	415	0
S	2347	24	535	345	190	2371
Q	200	6	237	615	370	0
U	2650	31	943	85	35	3794

TABLE 9

GULF COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
V	0	0	0	787	415	0
N	0	0	0	787	415	0
S	2347	14	535	350	192	2354
Q	200	0	107	690	385	0
U	2400	23	943	87	36	3533

TABLE 10:

GADSDEN COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
H	0	0	0	3088	1047	0
G	0	0	0	3088	1047	0
S	0	0	0	3088	1047	0
Q	0	0	0	3088	1047	0
J	0	0	1350	2675	980	0

TABLE 11

GADSDEN COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
H	0	0	0	3088	1047	0
G	0	0	0	3088	1047	0
S	0	0	0	3088	1047	0
Q	0	0	0	3088	1047	0
J	0	0	1350	2675	980	0

TABLE 12

JACKSON COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
A	0	0	0	3226	1096	0
G	0	0	0	3226	1096	0
D	0	0	0	3226	1096	0
T	0	0	0	3226	1096	0
U	0	0	1852	2559	898	0

TABLE 13

JACKSON COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
A	0	0	0	3226	1096	0
G	0	0	0	3226	1096	0
D	0	0	0	3226	1096	0
T	0	0	0	3226	1096	0
U	0	0	1852	2559	898	0

TABLE 14

LEON COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THNA 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
P	0	0	0	23,803	5117	0
B	0	0	0	23,803	5117	0
C	0	0	0	23,803	5117	0
Q	0	0	2172	23,704	4995	0
J	42,000	35	2172	5,650	925	37,632

TABLE 15

LEON COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
P	0	0	0	23,803	5117	0
B	0	0	0	23,803	5117	0
C	0	0	0	23,803	5117	0
Q	0	0	0	23,803	5117	0
J	0	0	2172	23,704	4995	0

TABLE 16

LIBERTY COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
H	0	0	0	311	281	0
G	0	0	0	311	281	0
L	0	0	0	311	281	0
O	0	0	0	311	281	0
J	0	0	447	243	127	77

TABLE 17

LIBERTY COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
H	0	0	0	311	281	0
G	0	0	0	311	281	0
L	0	0	0	311	281	0
O	0	0	0	311	281	0
J	0	0	385	268	165	0

TABLE 18

WAKULLA COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
A	850	0	115	215	440	310
B	850	350	820	80	105	1835
F	0	0	0	658	1131	0
Q	0	0	800	320	520	0
J	1477	420	966	32	45	2796

TABLE 19

WAKULLA COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
A	0	0	115	520	850	0
B	850	0	540	87	120	1195
F	0	0	0	658	1131	0
Q	0	0	425	340	560	0
J	0	0	960	130	234	706

D. Interpretation of Table's 4 Through 19

Determining when a house unit is uninhabitable is difficult because no set percentage of damage has been established that differentiates between a habitable and uninhabitable housing unit. On many occasions, 20% of damage resulting from a storm may be associated with critical areas of the house such as bedrooms, bathrooms and the kitchen rendering it uninhabitable, while a house damaged 50% by a storm may suffer damage only to the garage, swimming pool and other additional fixtures that do not affect the habitability of the unit. This is why two tables for each County are exhibited in the demand for temporary housing section. The first table for each county deems a structure uninhabitable if 25% of the unit is damaged and the second table does the same if 50% of it is damaged. The appropriate table depends on which set standard the reviewing agency chooses to use.

Many of the scenarios used in the study show that few if any housing units will be required. This is misleading because only if structural damage is above 25% does the study indicate that temporary homes will be required. This does not mean that substantial damage has not occurred. A County whose average losses are under 25% still may suffer millions of dollars in losses.

Tables 4 through 19 calculate potential housing demands within each county based on five different hurricane scenarios individually selected for each county. The first column contains a letter identifier that corresponds with a hurricane scenario already described in the methodology part of this section. Total damage does not necessarily correspond to the intensity of the storm, due to the failure of obtaining five scenarios of varying intensity with the same landfall site, so a category one hurricane hitting the center of a certain county can create a greater demand for temporary housing than a category five storm scenario, if there was no simulation of a category five hurricane making a direct strike on that county.

The numbers in columns two, three and four were added together to obtain the total number of housing structures damaged beyond habitability based on the corresponding hurricane scenario. These columns disaggregate housing units into single family dwelling units, multi family dwelling units and mobile homes accordingly.

The numbers in columns five and six are subtracted from the sum of columns two, three and four. These two columns consist of the amount of rental units and vacant seasonal dwelling units that may be available to accommodate that county's homeless in the event of the corresponding storm scenario.

The number in the column titled TOTAL AVAILABLE UNITS is

obtained from subtracting the sum of columns five and six from the sum of columns two, three and four. This is the total number of outside temporary housing units that will be needed in the event of the storm scenario depicted in column one of that row.

E. Limitations

The hurricane damage estimates were based on SPLASH models that only consider damage caused by wind and surge. Rainfall, which varies from storm to storm, causes much damage in a hurricane, yet was not accounted for in the SPLASH models, thus the damage figures for inland counties are substantially lower than can be expected in a real storm.

F. Sources

The figures in the temporary housing tables were derived from the U.S. 1980 Census of Housing and Phase One of the Apalachee Region Hurricane Loss Study. The number for available rental units and seasonal habitable units came from the U.S. 1980 Census of Housing, and the damage estimates came from Phase One of the Loss Study.

G. Individual County Analysis

CALHOUN COUNTY

Calhoun County, separated from the coast by Gulf County, is not susceptible to storm surge. Of the five scenarios selected for the County only scenario U, a category five hurricane that passes just to the west of the County, would cause wind damage greater than 25% to any residential units. This shows the inadequacy of the SPLASH model because a storm of this magnitude would still cause catastrophic damage even this far inward, due to the possible inundation of eastern Blountstown by the Apalachicola River. The assessment that no outside housing facilities are necessary in this event is misleading. The tables stating that scenarios R and T, 100-year storms whose dangerous right quadrant sweep the County, would not damage any housing facilities must also be analyzed with skeptism.

Recommendation

Although the tables show that Calhoun County has the available resources to meet the temporary housing needs of even the most catastrophic storm, a "just in case" program should be initiated. The most heavily populated center is in the less vulnerable southeastern section of the County, but the lack of individual resources of the County's residents must be

considered when ignoring a temporary housing program.

FRANKLIN COUNTY

Without doubt, Franklin County is the forerunner in the region in regards to post-hurricane assistance needs. The scenarios selected all approach landfall in either the Carrabelle or Apalachicola region. In the event that the simulated category five hurricane, depicted making landfall east of the county, was to strike, not only would the majority of housing units be severely damaged, but beach and coastal homes may be washed away

Recommendation

The temporary housing needs for Franklin County range from zero under the smallest hurricane scenario, to almost three thousand in a severe hurricane. The problem with allocating housing units to these residents is that a high intensity storm of between 3-5 on the Saffir Simpson Scale, would wash away roads necessary to transport the residential units to the victims, leaving them without access to them. Under these circumstances, the surplus of Franklin County's homeless might have to be accommodated by rental and vacant units in Jackson, Calhoun or other inland Counties.

GADSDEN COUNTY

Gadsden County lies just south of the Georgia border, buffered from the open ocean by Leon and Wakulla Counties to the east, and Liberty and Franklin counties to the west. As tables 7 and 8 indicate only the most catastrophic storm will cause damages of over 25%, and that would only be to mobile homes.

Gadsden County borders both the Ochlocknee and Apalachicola rivers. Under severe conditions there will be substantial flooding around these rivers, fortunately most of the population lies out of the one hundred-year flood plain.

Recommendation

It is likely that Gadsden County will never have to rely on FEMA's temporary housing program, but in the event that coastal counties in the region suffer tremendous damage, the County should devise a program that would accommodate those victims that come from the coastal counties counties.

GULF COUNTY

Geographically Gulf County lies in a similar storm probability track as Franklin County, but economically there are more resources to counter the post hardships of the storm. By no means is the County financially well off, and regardless of the

intensity of the hurricane substantial housing aid still must be rendered. Potential need for temporary housing units may approaches 3500 units under the most severe circumstances, which in this case is scenario U. Port St. Joe, the major populated area in Gulf County, is buffered from the full intensity of a storm by Cape San Blas to the southwest and the mainland to the south southeast.

Recommendation

Gulf County must develop a program that would assist FEMA in its effort to aid them with temporary housing if a major storm were to occur. It is doubtful that under the worse circumstances enough units would be available. In this event the County must look inland for assistance.

JACKSON COUNTY

As tables 12 and 13 show, Jackson County would suffer little if any structural damage under any storm scenario. The County lies further inland than any other within the Region, so even if a major hurricane were to hit the gulf coast the distance it would travel over land would be a factor in reducing its severity by the time it reached the County. Under the worse circumstances, mobile homes would suffer extensive wind damage, but the County should have the capacity to house those whose mobile homes were damaged or destroyed.

Recommendation

Jackson County, like Gadsden, probably will never have to rely on FEMA's temporary housing programs. As mentioned previously, the County should look for methods of accommodating homeless victims from coastal counties that have suffered extensive residential damage.

JEFFERSON COUNTY

Phase One of the Apalachee Region Hurricane Loss study did not include any surge damage estimates based on hurricane scenarios for Jefferson County. There is no private land ownership in the vulnerable southern portion of the county, which is federal land, and the population is sparse in the less vulnerable northern section of the county. The only agglomeration of people is in the Monticello area far inland. In the event of a catastrophic storm, small populations along the Aucilla and Wacissa rivers may suffer substantial flooding and be in need of housing assistance.

Recommendation

Limited wind and rain damage to residential structures may occur in Jefferson County. The County will likely need assistance if a hurricane with heavy winds were to strike, due

to the large number of mobile homes in the county.

LEON COUNTY

Leon County is the only urbanized County in the region, so even though it is located inland, there are a large quantity of dwelling units vulnerable to heavy winds and rainfall that would accompany a major storm. Tables 14 and 15 show that under the most severe circumstances damage to dwelling units will be between 25 and 50 percent. This means that under the worse scenario moderate, not extensive structural repair will be required.

Recommendation

In relation to the rest of the region, Leon County has better financial capabilities to effectively counter storm related damage. Because there is a low probability of a major storm reaching Leon County, there should be a program developed to assist in housing those in need of temporary shelter from the coastal counties.

LIBERTY COUNTY

Liberty is the least populated county in the region. Most of the population lies in Bristol, a town in the central portion of the County along the Apalachicola River. Tables 16 and 17

show that Liberty County will need only 77 temporary housing units from FEMA in the event of a major storm. Heavy rainfall and floodwaters may cause substantial damage in the Bristol area.

Recommendation

Although the charts show Liberty County will not need a great deal of Federal Housing Assistance, the limited resources of the residents have to be considered. The population probably lacks the resources to repair damage of less than 25% that does not show up on the tables. In Liberty County a fast home repair program would be more useful than a temporary housing program.

WAKULLA COUNTY

Unlike Gulf and Franklin Counties, Wakulla County has no barrier islands to buffer the initial devastation of a hurricane. Ocean-front housing units are extremely vulnerable in the county as shown under the weakest storm scenario in table 18. Because an appropriate storm simulation was unavailable from phase one of the Hurricane Loss Study the effects that a category 3,4 or 5 hurricane will have on the region is unknown, however in reviewing losses from level 1 and 2 storms, it can be surmised that nearly all coastal dwelling units will be devastated by very high storm surge and flooding.

Recommendation

Wakulla County will have to be allocated immediate temporary housing provisions in the event of any hurricane. In instances where all housing units in a region are destroyed, it is unlikely that FEMA could provide the necessary accommodations, however the population in Wakulla County is still relatively low, and can conceivably be covered through effective local government coordination.

INDIVIDUAL ASSISTANCE

Individual assistance includes provisions for families and small businesses who qualify. This assistance is allocated in the form of grants and loans used for agricultural assistance, replacement of personal property, reduction of economic losses and reestablishing places of employment. This section examines the need for individual assistance in the Apalachee Region, and briefly analyze two programs,(Individual and Family Grants and Low Interest Disaster Loans) that provide that assistance.

A. Individual and Family Grants

Several agencies are involved in the administration of Individual and Family Grants. Finances are divided into a 75% Federal share and a 25% State share. The assistance available for qualified applicants ranges from food stamp allocation to the administration of legal counsel, all of which were examined in the Federal Assistance Program section.

B. Low Interest Disaster Loans

Low interest disaster assistance loans are usually allocated to those who have experienced losses to their economic stability, rather than personal necessities. Qualifiers include those who have experienced crop damage, or damage to their employment source. Again, the assistance available was examined in the

TABLE 20

NFIP COVERAGE FOR THE COUNTIES OF THE APALACHEE REGION

	POLICIES		COVERAGE		
COUNTY	RESIDENTIAL	COMMERCIAL	RESIDENTIAL	COMMERCIAL	TOTAL
CALHOUN	7	1	$236,700	$10,000	$152,600
GULF	143	22	$14,701,011	$1,515,400	$16,216,400
GADSDEN	4	1	$116,100	$200,000	$316,100
JACKSON	8	4	$164,400	$325,700	$490,100
FRANKLIN	444	29	$27,540,700	$2,463,300	$30,004,000
LEON	135	16	$7,055,300	$1,132,800	$8,188,100
LIBERTY	0	1	0	$25,000	$25,000
WAKULLA	126	6	$6,209,800	$335,900	$6,545,700
JEFFERSON	0	1	0	$25,000	$25,000

GRAPH 1

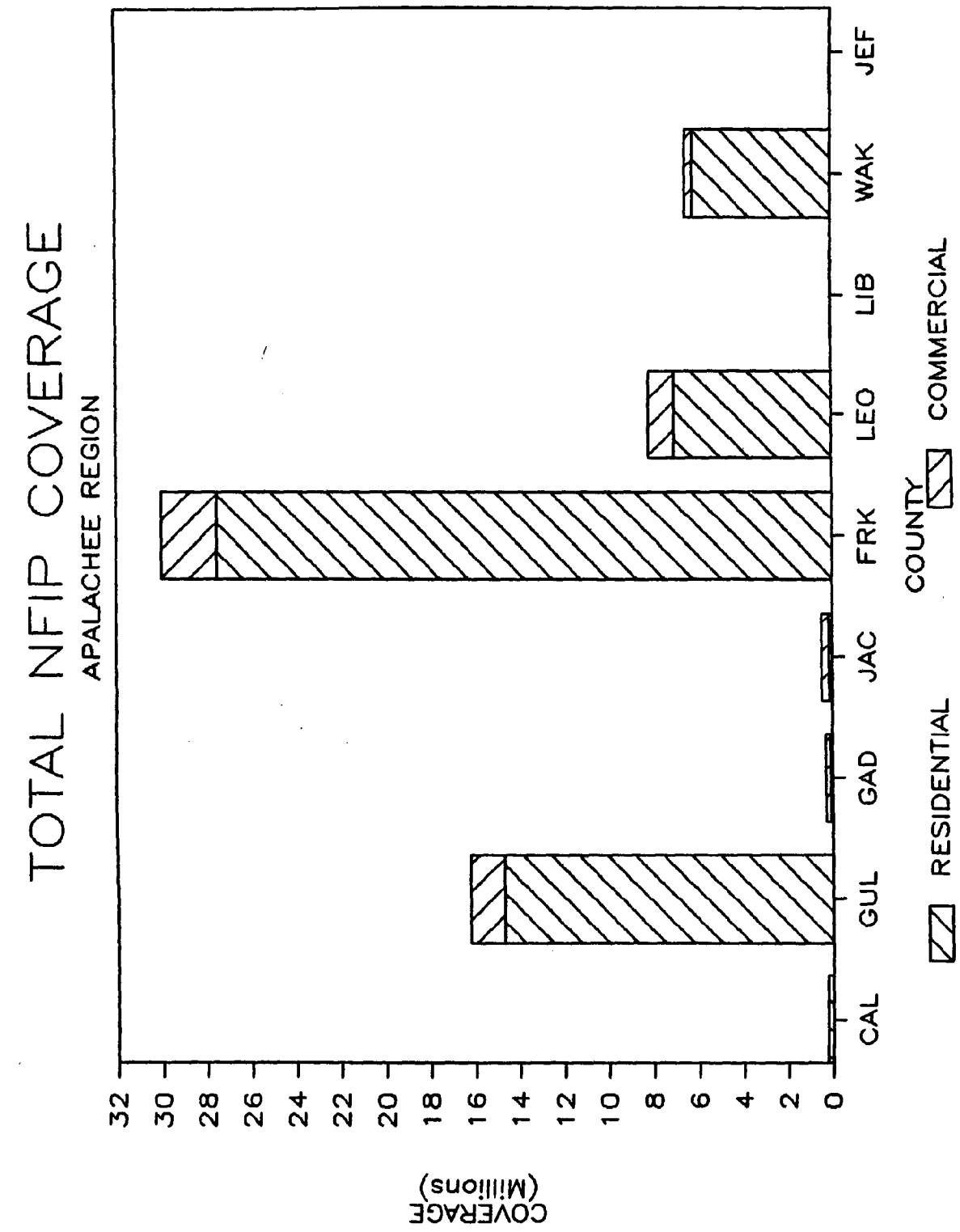

TOTAL NFIP COVERAGE
APALACHEE REGION
COVERAGE
(Millions)
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
CAL
GUL
GAD
JAC
FRK
LEO
LIB
WAK
JEF
COUNTY
RESIDENTIAL
COMMERCIAL

TABLE 21

ESTIMATED STRUCTURAL LOSSES BY HURRICANE SCENERIO

CALHOUN COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
H	$363,279	$40,982	$404,361
M	$118,475	$7,879	$126,354
R	$2,128,895	$209,681	$2,338,576
T	$2,964,512	$429,468	$3,393,980
U	$6,649,371	$2,036,347	$8,685,717

FRANKLIN COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
P	$9,398,160	$1,381,709	$10,779,869
M	$13,003,697	$2,069,684	$15,073,381
N	$24,770,821	$3,465,951	$28,236,772
O	$56,929,816	$5,101,752	$62,031,568
J	$33,971,417	$4,364,112	$38,335,529

GULF COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
V	$1,588,260	$105,126	$1,693,386
N	$3,260,800	$284,551	$3,545,351
S	$59,495,000	$3,070,235	$62,565,235
Q	$12,185,223	$510,228	$12,695,451
U	$70,223,202	$4,727,251	$74,950,453

GADSDEN COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
H	$2,020,332	$187,571	$2,207,903
G	$4,590,356	$379,289	$4,969,645
S	$5,893,852	$550,997	$6,444,849
Q	$6,352,386	$551,587	$6,903,975
J	$31,585,940	$2,732,533	$34,318,473

JACKSON COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
A	$2,473,490	$264,497	$2,737,985
G	$652,000	$33,631	$685,631
D	$8,224,648	$1,180,389	$9,404,037
T	$11,435,380	$1,663,242	$13,098,622
U	$25,440,550	$3,790,296	$29,230,846

LEON COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
P	$25,165,390	$4,345,390	$29,510,990
B	$46,215,350	$7,961,000	$54,176,350
C	$71,300,000	$12,205,000	$83,505,000
Q	$176,145,000	$31,495,250	$207,640,250
J	$537,350,000	$92,000,000	$537,350,000

LIBERTY COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
H	$151,000	$10,300	$161,300
G	$263,840	$21,350	$285,190
L	$55,380	$1,050	$56,430
O	$518,350	$44,050	$562,400
J	$4,450,000	$135,450	$4,585,450

WAKULLA COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
A	$3,105,000	$368,500	$3,473,500
B	$13,450,000	$1,627,355	$15,077,355
F	$2,056,395	$132,650	$2,189,045
Q	$7,345,605	$242,565	$7,588,170
J	$17,148,590	$1,269,427	$18,418,017

TABLE 22

PERCENT OF INSURED STRUCTURES

APALACHEE REGION

RESIDENTIAL

COUNTY	STRUCTURES	POLICIES*	PCT.*
CALHOUN	3190	1995	62.5
FRANKLIN	4477	888	19.8
GADSDEN	10,388	6493	62.5
GULF	4297	246	6.6
JACKSON	12,121	7575	62.5
JEFFERSON	3,500	0	0
LEON	52,183	32,614	62.5
LIBERTY	1,480	925	62.5
WAKULLA	3,996	252	62.5

*ADJUSTED FOR INLAND COUNTIES

COMMERCIAL

COUNTY	STRUCTURES	POLICIES*	PCT.*
CALHOUN	193	120	62.5
FRANKLIN	340	58	17
GADSDEN	464	290	62.5
GULF	298	44	14.7
JACKSON	904	565	62.5
JEFFERSON	28	2	7
LEON	3951	2469	62.5
LIBERTY	17	11	62.5
WAKULLA	98	12	12.2

*ADJUSTED FOR INLAND COUNTIES

TABLE 23

TOTAL INDIVIDUAL ASSISTANCE NEEDS

BY STORM SCENERIO IN THE APALACHEE REGION

		RESIDENTIAL			COMMERCIAL			
COUNTY	SCENARIO	STRUCTURAL LOSS	PCT. UNINSURED	UNINSURED LOSS	STRUCTURAL LOSS	PCT. UNINSURED	UNINSURED LOSS	TOTAL ASSISTANCE NEEDED
CALHOUN	H	$363,279	27.50%	$99,901	$40,982	27.50%	$11,270	$111,171
	M	$118,475	27.50%	$32,581	$7,879	27.50%	$2,167	$34,747
	R	$2,128,895	27.50%	$585,446	$209,681	27.50%	$57,662	$643,108
	T	$2,694,512	27.50%	$815,240	$429,468	27.50%	$118,104	$3,897,856
	U	$6,643,710	27.50%	$1,827,020	$2,036,347	27.50%	$559,995	$2,387,015
FRANKLIN	P	$9,398,160	80.00%	$7,518,528	$1,381,709	83.00%	$1,146,818	$8,665,346
	M	$13,003,697	80.00%	$10,402,958	$2,069,684	83.00%	$1,717,837	$12,120,796
	N	$24,770,821	80.00%	$19,816,657	$3,465,951	83.00%	$2,876,739	$22,693,396
	O	$56,929,816	80.00%	$45,543,853	$5,101,752	83.00%	$4,234,454	$49,728,307
	J	$33,971,417	80.00%	$27,177,134	$4,364,112	83.00%	$3,622,213	$30,799,347
GADSDEN	H	$2,020,332	27.50%	$555,591	$187,571	27.50%	$51,582	$607,173
	G	$4,590,356	27.50%	$1,262,348	$379,289	27.50%	$104,304	$1,366,652
	S	$5,893,852	27.50%	$1,620,809	$550,997	27.50%	$151,524	$1,772,333
	O	$6,352,386	27.50%	$1,746,906	$551,587	27.50%	$151,686	$1,898,592
	J	$31,585,940	27.50%	$8,686,134	$2,732,533	27.50%	$751,446	$9,437,580
GULF	U	$1,588,260	93.30%	$1,481,846	$105,126	85.30%	$89,672	$1,571,518
	M	$3,260,800	93.30%	$3,042,326	$284,551	85.30%	$242,770	$3,285,046
	S	$59,495,000	93.30%	$55,508,836	$3,070,235	85.30%	$2,618,910	$58,127,745
	O	$12,185,233	93.30%	$11,368,813	$510,228	85.30%	$435,224	$11,804,037
	U	$70,233,202	93.30%	$65,518,266	$4,727,251	85.30%	$4,041,799	$69,560,065
JACKSON	A	$2,473,490	27.50%	$680,210	$264,497	27.50%	$72,737	$752,947
	G	$652,000	27.50%	$179,300	$33,631	27.50%	$9,248	$188,549
	D	$8,224,648	27.50%	$2,586,385	$1,180,389	27.50%	$324,606	$2,586,385
	T	$11,435,380	27.50%	$3,144,740	$1,663,242	27.50%	$457,393	$3,602,122
	N	$25,440,550	27.50%	$6,996,151	$3,790,296	27.50%	$1,042,331	$8,038,482

TABLE 23

TOTAL INDIVIDUAL ASSISTANCE NEEDS

BY STORM SCENERIO IN THE APALACHEE REGION

		RESIDENTIAL			COMMERCIAL			
COUNTY	SCENARIO	STRUCTURAL LOSS	PCT. UNINSURED	UNINSURED LOSS	STRUCTURAL LOSS	PCT. UNINSURED	UNINSURED LOSS	TOTAL ASSISTANCE NEEDED
LEON	P	$25,165,390	27.50%	$4,345,600	$1,195,040	27.50%	$1,195,040	$8,115,522
	B	$46,215,350	27.50%	$7,961,000	$2,189,275	27.50%	$2,189,275	$14,987,496
	C	$77,300,000	27.50%	$12,205,000	$3,356,375	27.50%	$3,356,375	$24,613,875
	G	$183,356,654	27.50%	$31,495,250	$8,661,194	27.50%	$3,356,375	$57,101,069
	J	$445,350,000	27.50%	$92,000,000	$25,300,000	27.50%	$25,300,000	$147,721,250
LIBERTY	H	$151,000	27.50%	$41,525	$10,300	27.50%	$2,833	$444,358
	G	$263,840	27.50%	$19,082	$21,350	27.50%	$5,871	$24,953
	L	$55,380	27.50%	$15,229	$1,050	27.50%	$288	$15,518
	D	$518,350	27.50%	$152,546	$44,050	27.50%	$12,113	$154,659
	J	$4,450,000	27.50%	$1,223,550	$135,450	27.50%	$36,987	$1,267,935
WAKULLA	A	$3,105,000	93.70%	$2,909,385	$368,500	87.80%	$322,094	$3,231,479
	B	$13,450,000	93.70%	$12,602,650	$1,627,355	87.80%	$1,428,818	$14,031,468
	F	$2,056,395	93.70%	$1,962,842	$152,650	87.80%	$2,276,242	$2,276,242
	G	$7,345,605	93.70%	$6,882,832	$242,565	87.80%	$212,972	$7,095,804
	J	$17,148,590	93.70%	$16,068,229	$1,269,427	87.80%	$1,114,556	$17,182,786

Federal Assistance Program Section.

C. Interpretation of Tables 20 through 23

To calculate the amount of individual assistance needed under these programs, the scenarios used in the Temporary Housing Section are utilized to simulate damage estimates. Phase one of The Apalachee Region Hurricane Loss Study determined the monetary residential and commercial damage estimates based on different storm scenarios. This study selected five storm scenarios of varying intensity for each county, and summed up the amount of commercial and residential damage they would create. The amount of insurance to cover the damage was assessed and subtracted from the damage sum to obtain the amount of individual assistance that would be required based on each scenario for the counties in the region.

Table 20

Table 20 indicates the number of flood insurance policies and monetary coverage for residential and commercial structures in each county of the Apalachee region. The Counties in the Apalachee Region are relatively new to the regular phase of the National Flood Insurance Program, so the number of policies and amount of coverage in relation to the rest of the state is relatively low. The Flood Insurance Program covers only water induced damage, thus the number of policies for inland counties

are extremely low. Only structures located in the 100-year floodplain are required to have flood insurance.

Table 21

Table 21 indicates the amount of monetary damage that would occur to both residential and commercial structures based on the same hurricane scenarios used to determine temporary housing needs. As mentioned in the previous section, SPLASH models, which do not account for wind and rainfall induced damage, were used to obtain these figures, so the total structural damage for inland counties will be substantially higher in the event of a major storm.

Table 22

Table 21 indicates the adjusted ratio of insurance policies to actual residential and commercial structures in each county of the Apalachee Region. Inland counties are not extensively covered under the NFIP, so for purposes of this report an insurance rate of 62.5% was used. This figure is adjusted down 10% from the standard figure used by the General Reinsurance Co. Report. This adjustment is an inferential estimation based on income of the residents in the region and the likelihood that they cannot afford substantial amounts of homeowners insurance.

Table 23

Table 23 represents the total amount of individual assistance that will be required based on the selected storm simulations and the calculation of the previously explained formula. The figures for individual assistance needs range from only $15,000 under a small hurricane scenario in Liberty County, to $150,000,000 in Leon County in a catastrophic hurricane situation. If these figures are appropriately adjusted upward, the damage potential becomes astronomical. Upon relating these figures to the limited resources of the residents of the Apalachee Region, it becomes apparent that local governments must extensively promote the NFIP in there counties.

PUBLIC ASSISTANCE

Public assistance is available for communities who have suffered extensive public facility damage as a result of a major hurricane. Public assistance eligibility depends upon whether the damaged facilities create a negative impact on the public's health, safety and welfare, and the financial ability of that community to repair the damage. Funds for public assistance are usually available in the form of Community Facilities Loans. these loans are allocated on a cost sharing basis between state and federal government. The federal government will provide 75% of the assistance and the state 25%. This section quantifies the need for public assistance based on replacement costs for the following categories: water facilities; wastewater facilities; electric utilities; transportation facilities; nursing homes; hospitals and government owned facilities.

A. Replacement Costs

Most public facility replacement costs are provided by FEMA. Limitations are placed on grants so that facilities are restored only to pre-event condition. All public service facilities may be covered by the programs previously mentioned in the Federal Assistance Programs Section.

B. Methodology

The methodology for determining replacement costs of public facilities in each county differs from the methodology used in determining individual assistance needs. Phase One of the Hurricane Loss Study listed the sum value and location of various facilities, but did not estimate damage based on storm scenarios. In determining facility replacement costs, the value of each different facility was summed. That monetary figure was disaggregated into percentages from 10 to 100 in intervals of ten. This method may be of more use than basing damage estimates on storm scenarios, because an actual storm will never accurately simulate a model scenario. An assessor can determine the amount of damage (for example) to hospitals. If he estimates that all hospitals in Leon County are damaged by 30%, the corresponding dollar figure is available in the following table under Leon County in the category Hospitals. The amount of monetary assistance required can than be distributed by the various federal assistance programs.

C. Water Facilities

Immediate restoration of water supply facilities is critical to a community in its post event condition. People failing to store adequate quantities of potable water have to rely on treating water themselves. Insufficient treatment can lead to adverse health effects to much of the population, which can

further cripple a region after a storm. Table 24 estimates replacement costs to water facilities based on the percentage damaged.

Table 24

WATER FACILITY REPLACEMENT COSTS

WAKULLA COUNTY		LEON COUNTY	
DAMAGE	COST	DAMAGE	COST
10%	$201,800	10%	$958,663
20%	$403,600	20%	$1,917,326
30%	$605,400	30%	$2,875,989
40%	$807,200	40%	$3,834,652
50%	$1,009,000	50%	$4,793,315
60%	$1,210,800	60%	$5,751,978
70%	$1,412,600	70%	$6,710,641
80%	$1,614,400	80%	$7,669,304
90%	$1,816,200	90%	$8,627,967
100%	$2,018,000	100%	$9,586,630

GADSDEN COUNTY

DAMAGE	COST
10%	$662,910
20%	$1,325,820
30%	$1,988,730
40%	$2,651,640
50%	$3,314,550
60%	$3,977,460
70%	$4,640,370
80%	$5,303,280
90%	$5,966,190
100%	$6,629,100

JACKSON COUNTY

DAMAGE	COST
10%	$399,120
20%	$798,240
30%	$1,197,360
40%	$1,596,480
50%	$1,995,600
60%	$2,394,720
70%	$2,793,840
80%	$3,192,960
90%	$3,592,208
100%	$3,991,200

JEFFERSON COUNTY

DAMAGE	COST
10%	$93,620
20%	$187,240
30%	$280,060
40%	$374,480
50%	$468,100
60%	$561,200
70%	$655,340
80%	$748,960
90%	$842,580
100%	$936,200

LIBERTY COUNTY

DAMAGE	COST
10%	$63,400
20%	$126,800
30%	$190,200
40%	$253,600
50%	$317,000
60%	$380,400
70%	$443,800
80%	$507,200
90%	$570,600
100%	$634,000

GULF COUNTY

DAMAGE	COST
10%	$110,960
20%	$221,920
30%	$332,880
40%	$443,840
50%	$554,800
60%	$665,760
70%	$776,720
80%	$887,680
90%	$998,640
100%	$1,109,600

FRANKLIN COUNTY

DAMAGE	COST
10%	$227,082
20%	$454,164
30%	$681,246
40%	$908,328
50%	$1,135,410
60%	$1,362,492
70%	$1,589,574
80%	$1,816,656
90%	$2,043,738
100%	$2,270,820

CALHOUN COUNTY

DAMAGE	COST
10%	$89,610
20%	$179,220
30%	$268,830
40%	$358,440
50%	$448,050
60%	$537,660
70%	$627,270
80%	$716,880
90%	$806,490
100%	$896,100

D. Waste Water Facilities

Storm damage to waste water treatment plants can lead to widespread sanitation problems. Untreated wastes, loose as a result of flooding, can cause outbreaks of various negative health affects. The immediate restoration of waste water facilities is crucial to a county during its post event condition. Table 25 determines the cost of repairing each county's sewage treatment facility by percentage and monetary value.

Table 25

WASTE WATER FACILITY REPLACEMENT COSTS

WAKULLA COUNTY		LEON COUNTY	
DAMAGE	COST	DAMAGE	COST
10%	$163,000	10%	$4,708,000
20%	$326,000	20%	$9,416,000
30%	$489,000	30%	$14,124,000
40%	$652,000	40%	$18,832,000
50%	$815,000	50%	$23,540,000
60%	$978,000	60%	$28,248,000
70%	$1,141,000	70%	$32,956,000
80%	$1,300,400	80%	$37,664,000
90%	$1,467,000	90%	$42,372,000
100%	$1,630,000	100%	$47,080,000

GADSDEN COUNTY

DAMAGE	COST
10%	$952,000
20%	$1,904,000
30%	$2,856,000
40%	$3,808,000
50%	$4,760,000
60%	$5,712,000
70%	$6,664,000
80%	$7,616,000
90%	$8,568,000
100%	$9,520,000

JACKSON COUNTY

DAMAGE	COST
10%	$1,472,000
20%	$2,944,000
30%	$4,416,000
40%	$5,888,000
50%	$7,360,000
60%	$8,832,000
70%	$10,304,000
80%	$11,776,000
90%	$13,248,000
100%	$14,720,000

JEFFERSON COUNTY

DAMAGE	COST
10%	$175,000
20%	$350,000
30%	$525,000
40%	$700,000
50%	$875,000
60%	$1,050,000
70%	$1,225,000
80%	$1,400,000
90%	$1,575,000
100%	$1,750,000

LIBERTY COUNTY

DAMAGE	COST
10%	$13,000
20%	$26,000
30%	$39,000
40%	$52,000
50%	$65,000
60%	$78,000
70%	$91,000
80%	$104,000
90%	$117,000
100%	$130,000

GULF COUNTY

DAMAGE	COST
10%	$909,000
20%	$1,818,000
30%	$2,727,000
40%	$3,363,600
50%	$4,545,000
60%	$5,454,000
70%	$6,363,000
80%	$7,272,000
90%	$8,181,000
100%	$9,090,000

FRANKLIN COUNTY

DAMAGE	COST
10%	$340,600
20%	$681,200
30%	$1,021,800
40%	$1,362,400
50%	$1,703,000
60%	$2,043,600
70%	$2,384,200
80%	$2,724,800
90%	$3,065,400
100%	$3,406,000

CALHOUN COUNTY

DAMAGE	COST
10%	$166,000
20%	$332,000
30%	$498,000
40%	$664,000
50%	$830,000
60%	$996,000
70%	$1,162,000
80%	$1,328,000
90%	$1,494,000
100%	$1,660,000

FIELD ASSISTANCE

A. Disaster Field Offices (DFO)

The Disaster Field Office is set up as a coordination station for all state and federal assistance programs within counties under the President's disaster declaration. The offices are run and staffed by both a FEMA and a state appointed official. The function of these offices is the collection and processing of damage survey reports, and requests for individual assistance and small business loans. Damage survey reports are monetary damage estimates to specific buildings and facilities compiled by assessment teams from FEMA, the State and the affected local government. These reports and applications are evaluated and a decision on the amount of funding to be obligated to each locality is made.

B. Disaster Application Centers (DAC)

Disaster application centers are set up in counties under the President's disaster declaration after the disaster field offices have been established. Staff in these centers will assist affected individuals in filling out the proper applications. The applications are than sent to the disaster field office for processing.

C. Civil Defense Directors Duties

Federal and State authorities who set up each county's disaster application center need to designate a site which contains adequate communication and administrative capabilities. The Civil Defense Director for each county has the responsibility of assuring that an appropriate site has been assigned as depicted in their Emergency Management Plan. Table 1 lists the Civil Defense Director of each county in the Apalachee region accompanied by the corresponding office address and telephone number.

D. Site Determination

Several criteria are utilized in determining the appropriate site for each county's application centers and field office. These sites must be pre-determined to be able to withstand hurricane induced damage, be in a flood free zone, have easy access and ample parking, be under public ownership and have adequate emergency facilities. More than one designation has to be assigned for the Disaster Application Center, unlike the single location for the DFO per county. The DAC must be accessible for both government officials and the general public in need, while the DFO has to be within close proximity of a centralized government facility. Table 2 lists the recommended county sites based on the previous criteria for disaster field offices and application centers in the Apalachee Region.

TABLE 1

CIVIL DEFENSE DIRECTORS IN THE APALACHEE REGION

COUNTY	NAME	LOCATION	TELEPHONE
CALHOUN	NATHAN GOODMAN	BASEMENT OF CALHOUN COUNTY COURTHOUSE	674-8075
FRANKLIN	EUGENE ELLER	FRANKLIN COUNTY COURTHOUSE APALACHICOLA	653-8977
GADSDEN	CHARLIE BETTS	GADSDEN COUNTY COURTHOUSE SOUTH MADISON ST. QUINCY	674-8075
GULF	LARRY WELLS	GULF COUNTY COURTHOUSE PORT ST. JOE	227-1735
JACKSON	JAMES MAYDER	JACKSON COUNTY COURTHOUSE PELT ST. MARIANNA	526-4500
JEFFERSON	BOB KNECHT	JEFFERSON COUNTY COURTHOUSE 140 WEST WASHINGTON MONTICELLO	997-5762
LEON	BUNKY ATKINSON	LEON COUNTY COURTHOUSE TALLAHASSEE	488-5921
LIBERTY	ART PREACHER	CIVIL DEFENSE AND PLANNING OFFICE RIVER STREET BRISTOL	643-2339
WAKULLA	ERIC HINDLE	WAKULLA COUNTY COURTHOUSE CRAWFORDVILLE	926-5424

TABLE 2

POTENTIAL LOCATIONS FOR

DISASTER FIELD OFFICES

FOR THE COUNTIES OF THE APALACHEE REGION

COUNTY	LOCATION	DESIGNATION	COUNTY	LOCATION	DESIGNATION
CALHOUN	1. CALHOUN COUNTY COURTHOUSE BLOUNTSTOWN	DFO/DAC	JACKSON	1. HRS CENTER 401 EAST CLINTON ST. MARIANNA	DFO/DAC
FRANKLIN	1. CARRABELLE CITY HALL CARRABELLE	DFO/DAC	JEFFERSON	1. JEFFERSON COUNTY COURTHOUSE 140 WEST WASHINGTON MONTICELLO	DFO/DAC
	2. EASTPOINT ARMORY EASTPOINT	DFO/DAC			
	3. FRANKLIN COUNTY COURTHOUSE APALACHICOLA	DAC	LEON	1. CAPITAL OUTLET CENTER WEST TENNESSEE STREET TALLAHASSEE	DAC/DFO
GADSDEN	1. GADSDEN COUNTY COURTHOUSE SOUTH MADISON ST. QUINCY	DFO/DAC		2. TALLAHASSEE RECREATIONAL CENTER JACKSON BLUFF ROAD TALLAHASSEE	DAC
GULF	1. PORT ST. JOE FIRE HOUSE 404 WILLIAMS AVE PT. ST. JOE	DFO/DAC	LIBERTY	1. LIBERTY COUNTY COURTHOUSE BRISTOL	DAC/DFO
	2. COMMUNITY CENTER WEWAHITCHKA	DAC	WAKULLA	1. LIVESTOCK PAVILLION DOWNTOWN CRAWFORDVILLE	DAC/DFO

ANALYSIS

It must be noted that the population of each county in the Apalachee region is relatively small compared to the rest of the State, thus many Counties use the same facility for both the DFO and DAC. Many of the proposed facilities have not been used in emergency situations, therefore performance standards have yet to be determined. The Franklin County Courthouse was sandbagged during hurricane Kate, therefore it would only be available during a low intensity storm. In the event of a hurricane, the location of centers will be reassessed by government officials, who may decide to change location.

Post DAC/DFO Assistance

When the disaster assistance centers are gone, mobile service centers are available for assistance two days a week. Hot lines are also open up to 60 days after the DAC'S close down. Operators will accept and process requests for aid.

TEMPORARY HOUSING

FEMA provides accommodations for those disaster victims left homeless as a result of a storm when no housing facilities are available from county agencies. Depending upon the situation, four types of temporary homes are available; transient accommodations, government owned housing, private rental housing, and mobile homes. The following section examines the various temporary housing programs available after a hurricane, how to get that assistance, and the potential demand placed on temporary housing programs based on selected storm scenarios from Phase 1 of the Apalachee Region Hurricane Loss Study.An analysis of individual county recommendations based on potential temporary housing needs is also contained in this section.

A. Applicant Assistance

Applications for temporary housing are taken at disaster application centers. Local governments and the Division of Emergency Management will provide staff assistance to aid in the application process. The victims first step toward receiving temporary housing involves a pre-screening process to determine the victims eligibility for an application. If deemed eligible, the victim is sent to an interviewer who explains available programs before processing the application. The application is reviewed and a determination

is made using the following criteria:

1. Is the damaged housing unit the primary residence of the applicant?;
2. Was the damage a result of the disaster?;
3. Does the applicant have any other available resources such as insurance or another home that will provide him with temporary housing.

B. Provisions to Eligible Applicants

Once an applicant has been approved for one of the temporary housing programs he is informed of the following information; his eligibility; a recommended dwelling unit based on size and price; the duration of assistance, and his responsibilities within that time frame which includes: an acceptance of the first reasonable offer; an expectance that he properly cares for the unit; and an expectance that the applicant will attempt to find permanent residence during his stay in the temporary unit. Once an applicant's period of assistance is over he may reapply for continued temporary housing.

FEMA allocates the bulk of federal housing units. However, housing site allocation, general service provisions and program coordination is up to local governments. Municipalities should interact with FEMA prior to the occurrence of the disaster to insure post-disaster housing operations are efficiently run.

Inadequately tied down housing units and poorly constructed manufactured homes are common in the Apalachee Region. These homes are not built to withstand hurricane winds and floodwaters thus; even though the region is not heavily populated there is a definite need for a temporary housing program in the event of a major storm, as the following section will discuss

C. Methodology

Temporary housing needs are determined by using data from the Apalachee Region Hurricane Loss Study (Phase 1). The loss study depicted 23 hurricane scenarios based on simulated hurricane tracks from the National Weather Service and based the quantity of structural damage on them. The scenarios varied in both landfall site and intensity. Five hurricanes were selected from the 23 scenarios simulated in the first loss study. The intention was to use simulations of all five categories on the Saffir Simpson scale coming closest to a direct hit on each individual county. Housing needs are than determined based on the severity of each storm simulation in relation to location of landfall. The selected scenarios and their landfall sites are contained in table 3 and map 1, appendix D examines the Saffir Simpson Scale, and tables 4 through 19 determine the demand for temporary housing in the Apalachee region based on these scenarios.

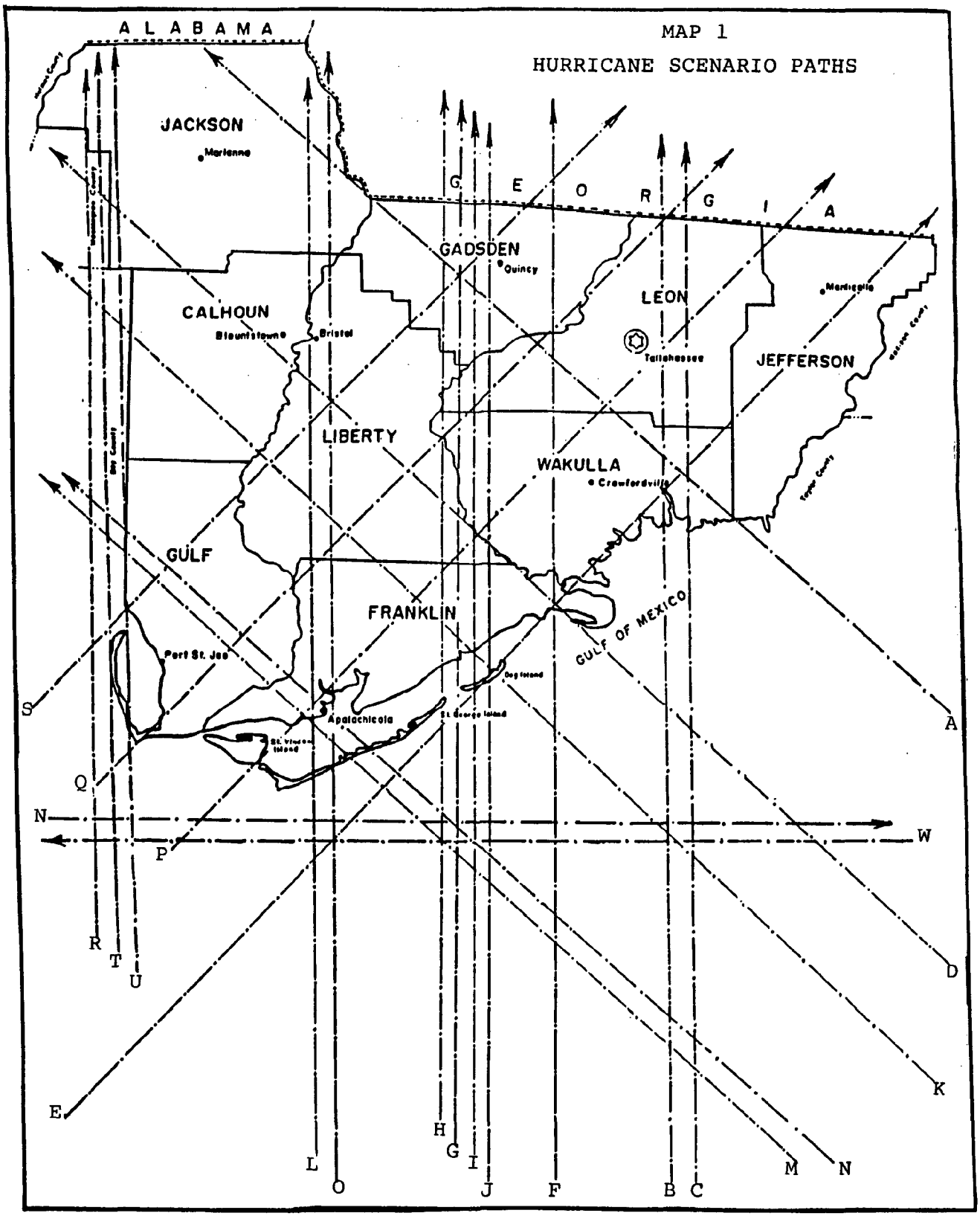
TABLE 3

STORM SCENARIO USED IN

INDIVIDUAL ASSISTANCE AND TEMPORARY HOUSING DETERMINATIONS

Storm Scenario	Category	Landfall Location*	Direction Hurricane Moving
A	1	St. Marks	NW
B	2	St. Marks	N
C	3	St. Marks	N
D	3	St. Teresa	(NW)
E	3	St. Teresa	(NE)
F	3	St. Teresa	(N)
G	2	St. George/Carrabelle	N
H	1	St. George/Carrabelle	N
I	3	St. George Carrabelle	(N)
J	5	St. George/Carrabelle	N
K	3	St. George/Carrabelle	(NW)
L	3	St. George/Apalachicola	(N)
M	2	St. George/Apalachicola	NW
N	3	St. George/Apalachicola	(NW)
O	4	St. George/Apalachicola	N
P	1	St. George/Apalachicola	NE
Q	4	Cape San Blas	NE
R	3	Mexico Beach	N
S	3	Mexico Beach	NE
T	4	Mexico Beach	N
U	5	Mexico Beach	N
V	1	Offshore	Paralleling
W	1	Offshore	Paralleling

* V & W do not make landfall but parallel the shoreline.



SPLASH II

SELECTED HURRICANE TRACKS

TABLE 4

CALHOUN COUNTY

PROJECTED TEMPORARY HOUSING NEEDS

BASED ON DAMAGE GREATER THAN 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOME	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS
H	0	0	0	658	264
M	0	0	0	658	264
R	0	0	0	658	264
T	0	0	0	658	264
U	0	0	293	633	234

TABLE 5

CALHOUN COUNTY

PROJECTED TEMPORARY HOUSING NEEDS

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS
H	0	0	0	658	264
M	0	0	0	658	264
R	0	0	0	658	264
T	0	0	0	658	264
U	0	0	293	633	234

TABLE 6

FRANKLIN COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
P	650	167	261	605	705	0
M	1345	167	420	585	670	682
N	1980	170	435	385	450	1750
O	2160	215	650	305	375	2345
J	2285	215	835	295	360	2680

TABLE 7

FRANKLIN COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
P	440	0	261	605	705	0
M	970	167	340	590	680	207
N	1980	167	435	385	450	912
O	2160	215	650	305	375	2345
J	2285	215	835	295	360	2680

TABLE 8

GULF COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
V	0	0	0	787	415	0
N	0	0	0	787	415	0
S	2347	24	535	345	190	2371
Q	200	6	237	615	370	0
U	2650	31	943	85	35	3794

TABLE 9

GULF COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
V	0	0	0	787	415	0
N	0	0	0	787	415	0
S	2347	14	535	350	192	2354
Q	200	0	107	690	385	0
U	2400	23	943	87	36	3533

TABLE 10:

GADSDEN COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
H	0	0	0	3088	1047	0
G	0	0	0	3088	1047	0
S	0	0	0	3088	1047	0
Q	0	0	0	3088	1047	0
J	0	0	1350	2675	980	0

TABLE 11

GADSDEN COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
H	0	0	0	3088	1047	0
G	0	0	0	3088	1047	0
S	0	0	0	3088	1047	0
Q	0	0	0	3088	1047	0
J	0	0	1350	2675	980	0

TABLE 12

JACKSON COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
A	0	0	0	3226	1096	0
G	0	0	0	3226	1096	0
D	0	0	0	3226	1096	0
T	0	0	0	3226	1096	0
U	0	0	1852	2559	898	0

TABLE 13

JACKSON COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
A	0	0	0	3226	1096	0
G	0	0	0	3226	1096	0
D	0	0	0	3226	1096	0
T	0	0	0	3226	1096	0
U	0	0	1852	2559	898	0

TABLE 14

LEON COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THNA 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
P	0	0	0	23,803	5117	0
B	0	0	0	23,803	5117	0
C	0	0	0	23,803	5117	0
Q	0	0	2172	23,704	4995	0
J	42,000	35	2172	5,650	925	37,632

TABLE 15

LEON COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
P	0	0	0	23,803	5117	0
B	0	0	0	23,803	5117	0
C	0	0	0	23,803	5117	0
Q	0	0	0	23,803	5117	0
J	0	0	2172	23,704	4995	0

TABLE 16

LIBERTY COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
H	0	0	0	311	281	0
G	0	0	0	311	281	0
L	0	0	0	311	281	0
0	0	0	0	311	281	0
J	0	0	447	243	127	77

TABLE 17

LIBERTY COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
H	0	0	0	311	281	0
G	0	0	0	311	281	0
L	0	0	0	311	281	0
0	0	0	0	311	281	0
J	0	0	385	268	165	0

TABLE 18

WAKULLA COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 25%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
A	850	0	115	215	440	310
B	850	350	820	80	105	1835
F	0	0	0	658	1131	0
Q	0	0	800	320	520	0
J	1477	420	966	32	45	2796

TABLE 19

WAKULLA COUNTY

PROJECTED TEMPORARY HOUSING NEED

BASED ON DAMAGE GREATER THAN 50%

STORM SCENARIO	SINGLE FAMILY	MULTI FAMILY	MOBILE HOMES	TOTAL NUMBER OF RENTAL UNITS	HABITABLE SEASONAL UNITS	TOTAL UNITS REQUIRED
A	0	0	115	520	850	0
B	850	0	540	87	120	1195
F	0	0	0	658	1131	0
Q	0	0	425	340	560	0
J	0	0	960	130	234	706

D. Interpretation of Table's 4 Through 19

Determining when a house unit is uninhabitable is difficult because no set percentage of damage has been established that differentiates between a habitable and uninhabitable housing unit. On many occasions, 20% of damage resulting from a storm may be associated with critical areas of the house such as bedrooms, bathrooms and the kitchen rendering it uninhabitable, while a house damaged 50% by a storm may suffer damage only to the garage, swimming pool and other additional fixtures that do not affect the habitability of the unit. This is why two tables for each County are exhibited in the demand for temporary housing section. The first table for each county deems a structure uninhabitable if 25% of the unit is damaged and the second table does the same if 50% of it is damaged. The appropriate table depends on which set standard the reviewing agency chooses to use.

Many of the scenarios used in the study show that few if any housing units will be required. This is misleading because only if structural damage is above 25% does the study indicate that temporary homes will be required. This does not mean that substantial damage has not occurred. A County whose average losses are under 25% still may suffer millions of dollars in losses.

Tables 4 through 19 calculate potential housing demands within each county based on five different hurricane scenarios individually selected for each county. The first column contains a letter identifier that corresponds with a hurricane scenario already described in the methodology part of this section. Total damage does not necessarily correspond to the intensity of the storm, due to the failure of obtaining five scenarios of varying intensity with the same landfall site, so a category one hurricane hitting the center of a certain county can create a greater demand for temporary housing than a category five storm scenario, if there was no simulation of a category five hurricane making a direct strike on that county.

The numbers in columns two, three and four were added together to obtain the total number of housing structures damaged beyond habitability based on the corresponding hurricane scenario. These columns disaggregate housing units into single family dwelling units, multi family dwelling units and mobile homes accordingly.

The numbers in columns five and six are subtracted from the sum of columns two, three and four. These two columns consist of the amount of rental units and vacant seasonal dwelling units that may be available to accommodate that county's homeless in the event of the corresponding storm scenario.

The number in the column titled TOTAL AVAILABLE UNITS is

obtained from subtracting the sum of columns five and six from the sum of columns two, three and four. This is the total number of outside temporary housing units that will be needed in the event of the storm scenario depicted in column one of that row.

E. Limitations

The hurricane damage estimates were based on SPLASH models that only consider damage caused by wind and surge. Rainfall, which varies from storm to storm, causes much damage in a hurricane, yet was not accounted for in the SPLASH models, thus the damage figures for inland counties are substantially lower than can be expected in a real storm.

F. Sources

The figures in the temporary housing tables were derived from the U.S. 1980 Census of Housing and Phase One of the Apalachee Region Hurricane Loss Study. The number for available rental units and seasonal habitable units came from the U.S. 1980 Census of Housing, and the damage estimates came from Phase One of the Loss Study.

G. Individual County Analysis

CALHOUN COUNTY

Calhoun County, separated from the coast by Gulf County, is not susceptible to storm surge. Of the five scenarios selected for the County only scenario U, a category five hurricane that passes just to the west of the County, would cause wind damage greater than 25% to any residential units. This shows the inadequacy of the SPLASH model because a storm of this magnitude would still cause catastrophic damage even this far inward, due to the possible inundation of eastern Blountstown by the Apalachicola River. The assessment that no outside housing facilities are necessary in this event is misleading. The tables stating that scenarios R and T, 100-year storms whose dangerous right quadrant sweep the County, would not damage any housing facilities must also be analyzed with skeptism.

Recommendation

Although the tables show that Calhoun County has the available resources to meet the temporary housing needs of even the most catastrophic storm, a "just in case" program should be initiated. The most heavily populated center is in the less vulnerable southeastern section of the County, but the lack of individual resources of the County's residents must be

considered when ignoring a temporary housing program.

FRANKLIN COUNTY

Without doubt, Franklin County is the forerunner in the region in regards to post-hurricane assistance needs. The scenarios selected all approach landfall in either the Carrabelle or Apalachicola region. In the event that the simulated category five hurricane, depicted making landfall east of the county, was to strike, not only would the majority of housing units be severely damaged, but beach and coastal homes may be washed away

Recommendation

The temporary housing needs for Franklin County range from zero under the smallest hurricane scenario, to almost three thousand in a severe hurricane. The problem with allocating housing units to these residents is that a high intensity storm of between 3-5 on the Saffir Simpson Scale, would wash away roads necessary to transport the residential units to the victims, leaving them without access to them. Under these circumstances, the surplus of Franklin County's homeless might have to be accommodated by rental and vacant units in Jackson, Calhoun or other inland Counties.

GADSDEN COUNTY

Gadsden County lies just south of the Georgia border, buffered from the open ocean by Leon and Wakulla Counties to the east, and Liberty and Franklin counties to the west. As tables 7 and 8 indicate only the most catastrophic storm will cause damages of over 25%, and that would only be to mobile homes.

Gadsden County borders both the Ochlocknee and Apalachicola rivers. Under severe conditions there will be substantial flooding around these rivers, fortunately most of the population lies out of the one hundred-year flood plain.

Recommendation

It is likely that Gadsden County will never have to rely on FEMA's temporary housing program, but in the event that coastal counties in the region suffer tremendous damage, the County should devise a program that would accommodate those victims that come from the coastal counties counties.

GULF COUNTY

Geographically Gulf County lies in a similar storm probability track as Franklin County, but economically there are more resources to counter the post hardships of the storm. By no means is the County financially well off, and regardless of the

intensity of the hurricane substantial housing aid still must be rendered. Potential need for temporary housing units may approaches 3500 units under the most severe circumstances, which in this case is scenario U. Port St. Joe, the major populated area in Gulf County, is buffered from the full intensity of a storm by Cape San Blas to the southwest and the mainland to the south southeast.

Recommendation

Gulf County must develop a program that would assist FEMA in its effort to aid them with temporary housing if a major storm were to occur. It is doubtful that under the worse circumstances enough units would be available. In this event the County must look inland for assistance.

JACKSON COUNTY

As tables 12 and 13 show, Jackson County would suffer little if any structural damage under any storm scenario. The County lies further inland than any other within the Region, so even if a major hurricane were to hit the gulf coast the distance it would travel over land would be a factor in reducing its severity by the time it reached the County. Under the worse circumstances, mobile homes would suffer extensive wind damage, but the County should have the capacity to house those whose mobile homes were damaged or destroyed.

Recommendation

Jackson County, like Gadsden, probably will never have to rely on FEMA's temporary housing programs. As mentioned previously, the County should look for methods of accommodating homeless victims from coastal counties that have suffered extensive residential damage.

JEFFERSON COUNTY

Phase One of the Apalachee Region Hurricane Loss study did not include any surge damage estimates based on hurricane scenarios for Jefferson County. There is no private land ownership in the vulnerable southern portion of the county, which is federal land, and the population is sparse in the less vulnerable northern section of the county. The only agglomeration of people is in the Monticello area far inland. In the event of a catastrophic storm, small populations along the Aucilla and Wacissa rivers may suffer substantial flooding and be in need of housing assistance.

Recommendation

Limited wind and rain damage to residential structures may occur in Jefferson County. The County will likely need assistance if a hurricane with heavy winds were to strike, due

to the large number of mobile homes in the county.

LEON COUNTY

Leon County is the only urbanized County in the region, so even though it is located inland, there are a large quantity of dwelling units vulnerable to heavy winds and rainfall that would accompany a major storm. Tables 14 and 15 show that under the most severe circumstances damage to dwelling units will be between 25 and 50 percent. This means that under the worse scenario moderate, not extensive structural repair will be required.

Recommendation

In relation to the rest of the region, Leon County has better financial capabilities to effectively counter storm related damage. Because there is a low probability of a major storm reaching Leon County, there should be a program developed to assist in housing those in need of temporary shelter from the coastal counties.

LIBERTY COUNTY

Liberty is the least populated county in the region. Most of the population lies in Bristol, a town in the central portion of the County along the Apalachicola River. Tables 16 and 17

show that Liberty County will need only 77 temporary housing units from FEMA in the event of a major storm. Heavy rainfall and floodwaters may cause substantial damage in the Bristol area.

Recommendation

Although the charts show Liberty County will not need a great deal of Federal Housing Assistance, the limited resources of the residents have to be considered. The population probably lacks the resources to repair damage of less than 25% that does not show up on the tables. In Liberty County a fast home repair program would be more useful than a temporary housing program.

WAKULLA COUNTY

Unlike Gulf and Franklin Counties, Wakulla County has no barrier islands to buffer the initial devastation of a hurricane. Ocean-front housing units are extremely vulnerable in the county as shown under the weakest storm scenario in table 18. Because an appropriate storm simulation was unavailable from phase one of the Hurricane Loss Study the effects that a category 3,4 or 5 hurricane will have on the region is unknown, however in reviewing losses from level 1 and 2 storms, it can be surmised that nearly all coastal dwelling units will be devastated by very high storm surge and flooding.

Recommendation

Wakulla County will have to be allocated immediate temporary housing provisions in the event of any hurricane. In instances where all housing units in a region are destroyed, it is unlikely that FEMA could provide the necessary accommodations, however the population in Wakulla County is still relatively low, and can conceivably be covered through effective local government coordination.

INDIVIDUAL ASSISTANCE

Individual assistance includes provisions for families and small businesses who qualify. This assistance is allocated in the form of grants and loans used for agricultural assistance, replacement of personal property, reduction of economic losses and reestablishing places of employment. This section examines the need for individual assistance in the Apalachee Region, and briefly analyze two programs,(Individual and Family Grants and Low Interest Disaster Loans) that provide that assistance.

A. Individual and Family Grants

Several agencies are involved in the administration of Individual and Family Grants. Finances are divided into a 75% Federal share and a 25% State share. The assistance available for qualified applicants ranges from food stamp allocation to the administration of legal counsel, all of which were examined in the Federal Assistance Program section.

B. Low Interest Disaster Loans

Low interest disaster assistance loans are usually allocated to those who have experienced losses to their economic stability, rather than personal necessities. Qualifiers include those who have experienced crop damage, or damage to their employment source. Again, the assistance available was examined in the

TABLE 20

NFIP COVERAGE FOR THE COUNTIES OF THE APALACHEE REGION

	POLICIES		COVERAGE		
COUNTY	RESIDENTIAL	COMMERCIAL	RESIDENTIAL	COMMERCIAL	TOTAL
CALHOUN	7	1	$236,700	$10,000	$152.600
GULF	143	22	$14,701,011	$1,515,400	$16,216,400
GADSDEN	4	1	$116,100	$200,000	$316,100
JACKSON	8	4	$164,400	$325,700	$490,100
FRANKLIN	444	29	$27,540,700	$2,463,300	$30,004.000
LEON	135	16	$7,055,300	$1,132,800	$8,188,100
LIBERTY	0	1	0	$25,000	$25,000
WAKULLA	126	6	$6,209,800	$335,900	$6,545.700
JEFFERSON	0	1	0	$25,000	$25,000

GRAPH 1

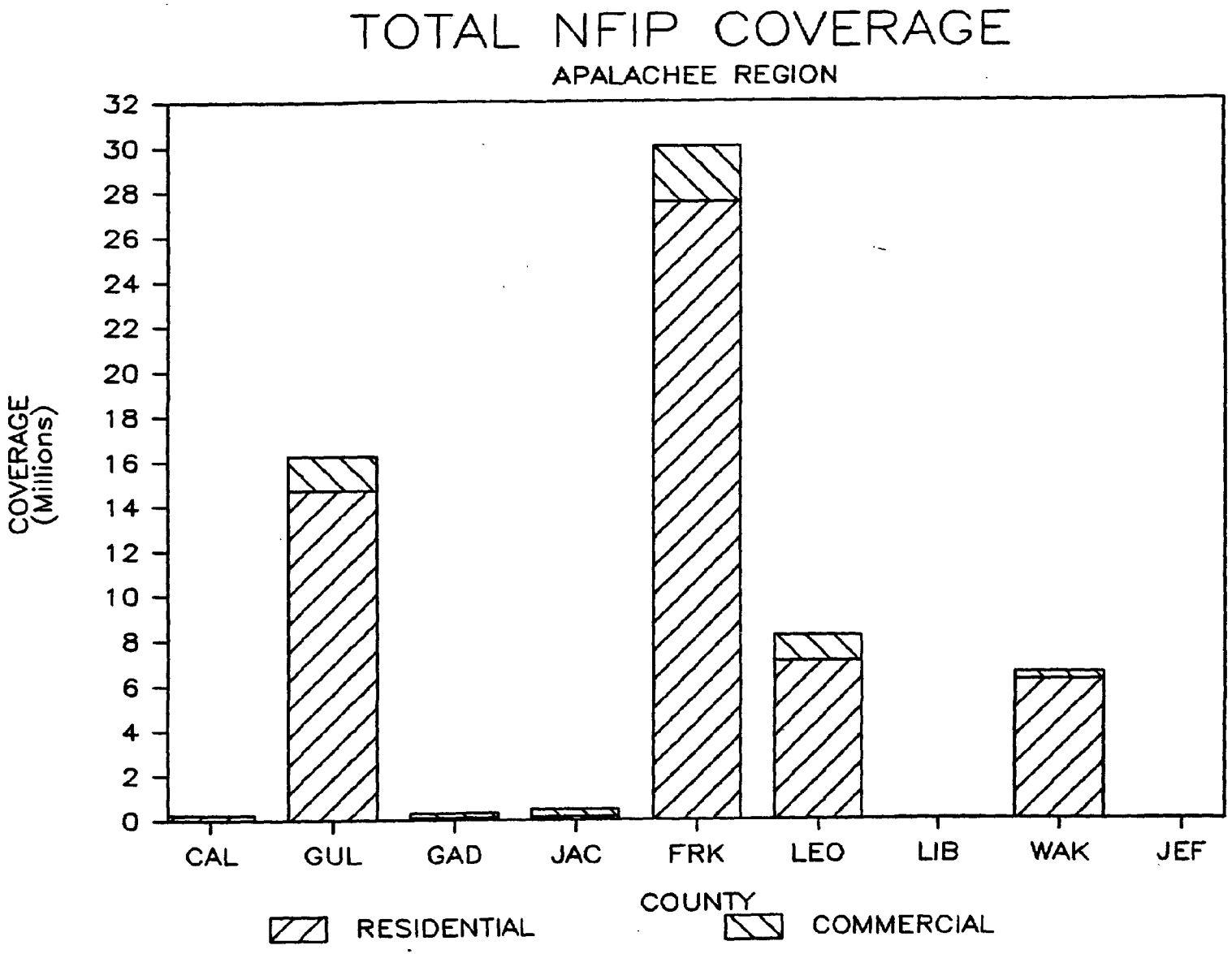

TOTAL NFIP COVERAGE
APALACHEE REGION
COVERAGE (Millions)
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
CAL
GUL
GAD
JAC
FRK
LEO
LIB
WAK
JEF
COUNTY
RESIDENTIAL
COMMERCIAL

TABLE 21

ESTIMATED STRUCTURAL LOSSES BY HURRICANE SCENERIO

CALHOUN COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
H	$363,279	$40,982	$404,361
M	$118,475	$7,879	$126,354
R	$2,128,895	$209,681	$2,338,576
T	$2,964,512	$429,468	$3,393,980
U	$6,649,371	$2,036,347	$8,685,717

JACKSON COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
A	$2,473,490	$264,497	$2,737,985
G	$652,000	$33,631	$685,631
D	$8,224,648	$1,180,389	$9,404,037
T	$11,435,380	$1,663,242	$13,098,622
U	$25,440,550	$3,790,296	$29,230,846

FRANKLIN COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
P	$9,398,160	$1,381,709	$10,779,869
M	$13,003,697	$2,069,684	$15,073,381
N	$24,770,821	$3,465,951	$28,236,772
O	$56,929,816	$5,101,752	$62,031,568
J	$33,971,417	$4,364,112	$38,335,529

LEON COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
P	$25,165,390	$4,345,390	$29,510,990
B	$46,215,350	$7,961,000	$54,176,350
C	$71,300,000	$12,205,000	$83,505,000
Q	$176,145,000	$31,495,250	$207,640,250
J	$537,350,000	$92,000,000	$537,350,000

GULF COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
V	$1,588,260	$105,126	$1,693,386
N	$3,260,800	$284,551	$3,545,351
S	$59,495,000	$3,070,235	$62,565,235
Q	$12,185,223	$510,228	$12,695,451
U	$70,223,202	$4,727,251	$74,950,453

LIBERTY COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
H	$151,000	$10,300	$161,300
G	$263,840	$21,350	$285,190
L	$55,380	$1,050	$56,430
O	$518,350	$44,050	$562,400
J	$4,450,000	$135,450	$4,585,450

GADSDEN COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
H	$2,020,332	$187,571	$2,207,903
G	$4,590,356	$379,289	$4,969,645
S	$5,893,852	$550,997	$6,444,849
Q	$6,352,386	$551,587	$6,903,975
J	$31,585,940	$2,732,533	$34,318,473

WAKULLA COUNTY

SCENARIO	RESIDENTIAL	COMMERCIAL	TOTAL
A	$3,105,000	$368,500	$3,473,500
B	$13,450,000	$1,627,355	$15,077,355
F	$2,056,395	$132,650	$2,189,045
Q	$7,345,605	$242,565	$7,588,170
J	$17,148,590	$1,269,427	$18,418,017

TABLE 22

PERCENT OF INSURED STRUCTURES

APALACHEE REGION

RESIDENTIAL

COUNTY	STRUCTURES	POLICIES*	PCT.*
CALHOUN	3190	1995	62.5
FRANKLIN	4477	888	19.8
GADSDEN	10,388	6493	62.5
GULF	4297	246	6.6
JACKSON	12,121	7575	62.5
JEFFERSON	3,500	0	0
LEON	52,183	32,614	62.5
LIBERTY	1,480	925	62.5
WAKULLA	3,996	252	62.5

*ADJUSTED FOR INLAND COUNTIES

COMMERCIAL

COUNTY	STRUCTURES	POLICIES*	PCT.*
CALHOUN	193	120	62.5
FRANKLIN	340	58	17
GADSDEN	464	290	62.5
GULF	298	44	14.7
JACKSON	904	565	62.5
JEFFERSON	28	2	7
LEON	3951	2469	62.5
LIBERTY	17	11	62.5
WAKULLA	98	12	12.2

*ADJUSTED FOR INLAND COUNTIES

TABLE 23

TOTAL INDIVIDUAL ASSISTANCE NEEDS

BY STORM SCENERIO IN THE APALACHEE REGION

		RESIDENTIAL			COMMERCIAL			
COUNTY	SCENARIO	STRUCTURAL LOSS	PCT. UNINSURED	UNINSURED LOSS	STRUCTURAL LOSS	PCT. UNINSURED	UNINSURED LOSS	TOTAL ASSISTANCE NEEDED
CALHOUN	H	$363,279	27.50%	$99,901	$40,982	27.50%	$11,270	$111,171
	M	$118,475	27.50%	$32,581	$7,879	27.50%	$2,167	$34,747
	R	$2,128,895	27.50%	$585,446	$209,681	27.50%	$57,662	$643,108
	T	$2,694,512	27.50%	$815,240	$429,468	27.50%	$118,104	$3,897,856
	U	$6,643,710	27.50%	$1,827,020	$2,036,347	27.50%	$559,995	$2,387,015
FRANKLIN	P	$9,398,160	80.00%	$7,518,528	$1,381,709	83.00%	$1,146,818	$8,665,346
	M	$13,003,697	80.00%	$10,402,958	$2,069,684	83.00%	$1,717,837	$12,120,796
	N	$24,770,821	80.00%	$19,816,657	$3,465,951	83.00%	$2,876,739	$22,693,396
	O	$56,929,816	80.00%	$45,543,853	$5,101,752	83.00%	$4,234,454	$49,728,307
	J	$33,971,417	80.00%	$27,177,134	$4,364,112	83.00%	$3,622,213	$30,799,347
GADSDEN	H	$2,020,332	27.50%	$555,591	$187,571	27.50%	$51,582	$607,173
	G	$4,590,356	27.50%	$1,262,348	$379,289	27.50%	$104,304	$1,366,652
	S	$5,893,852	27.50%	$1,620,809	$550,997	27.50%	$151,524	$1,772,333
	Q	$6,352,386	27.50%	$1,746,906	$551,587	27.50%	$151,686	$1,898,592
	J	$31,585,940	27.50%	$8,686,134	$2,732,533	27.50%	$751,446	$9,437,580
GULF	U	$1,588,260	93.30%	$1,481,846	$105,126	85.30%	$89,672	$1,571,518
	M	$3,260,800	93.30%	$3,042,326	$284,551	85.30%	$242,770	$3,285,046
	S	$59,495,000	93.30%	$55,508,836	$3,070,235	85.30%	$2,618,910	$58,127,745
	Q	$12,185,233	93.30%	$11,368,813	$510,228	85.30%	$435,224	$11,804,037
	U	$70,233,202	93.30%	$65,518,266	$4,727,251	85.30%	$4,041,799	$69,560,065
JACKSON	A	$2,473,490	27.50%	$680,210	$264,497	27.50%	$72,737	$752,947
	G	$652,000	27.50%	$179,300	$33,631	27.50%	$9,248	$188,549
	D	$8,224,648	27.50%	$2,586,385	$1,180,389	27.50%	$324,606	$2,586,385
	T	$11,435,380	27.50%	$3,144,740	$1,663,242	27.50%	$457,393	$3,602,122
	N	$25,440,550	27.50%	$6,996,151	$3,790,296	27.50%	$1,042,331	$8,038,482

TABLE 23

TOTAL INDIVIDUAL ASSISTANCE NEEDS

BY STORM SCENERIO IN THE APALACHEE REGION

		RESIDENTIAL			COMMERCIAL			
COUNTY	SCENARIO	STRUCTURAL LOSS	PCT. UNINSURED	UNINSURED LOSS	STRUCTURAL LOSS	PCT. UNINSURED	UNINSURED LOSS	TOTAL ASSISTANCE NEEDED
LEON	P	$25,165,390	27.50%	$4,345,600	$1,195,040	27.50%	$1,195,040	$8,115,522
	B	$46,215,350	27.50%	$7,961,000	$2,189,275	27.50%	$2,189,275	$14,987,496
	C	$77,300,000	27.50%	$12,205,000	$3,356,375	27.50%	$3,356,375	$24,613,875
	G	$183,356,654	27.50%	$31,495,250	$8,661,194	27.50%	$3,356,375	$57,101,069
	J	$445,350,000	27.50%	$92,000,000	$25,300,000	27.50%	$25,300,000	$147,721,250
LIBERTY	H	$151,000	27.50%	$41,525	$10,300	27.50%	$2,833	$444,358
	G	$263,840	27.50%	$19,082	$21,350	27.50%	$5,871	$24,953
	L	$55,380	27.50%	$15,229	$1,050	27.50%	$288	$15,518
	O	$518,350	27.50%	$152,546	$44,050	27.50%	$12,113	$154,659
	J	$4,450,000	27.50%	$1,223,550	$135,450	27.50%	$36,987	$1,267,935
WAKULLA	A	$3,105,000	93.70%	$2,909,385	$368,500	87.80%	$322,094	$3,231,479
	B	$13,450,000	93.70%	$12,602,650	$1,627,355	87.80%	$1,428,818	$14,031,468
	F	$2,056,395	93.70%	$1,962,842	$152,650	87.80%	$2,276,242	$2,276,242
	G	$7,345,605	93.70%	$6,882,832	$242,565	87.80%	$212,972	$7,095,804
	J	$17,148,590	93.70%	$16,068,229	$1,269,427	87.80%	$1,114,556	$17,182,786

Federal Assistance Program Section.

C. Interpretation of Tables 20 through 23

To calculate the amount of individual assistance needed under these programs, the scenarios used in the Temporary Housing Section are utilized to simulate damage estimates. Phase one of The Apalachee Region Hurricane Loss Study determined the monetary residential and commercial damage estimates based on different storm scenarios. This study selected five storm scenarios of varying intensity for each county, and summed up the amount of commercial and residential damage they would create. The amount of insurance to cover the damage was assessed and subtracted from the damage sum to obtain the amount of individual assistance that would be required based on each scenario for the counties in the region.

Table 20

Table 20 indicates the number of flood insurance policies and monetary coverage for residential and commercial structures in each county of the Apalachee region. The Counties in the Apalachee Region are relatively new to the regular phase of the National Flood Insurance Program, so the number of policies and amount of coverage in relation to the rest of the state is relatively low. The Flood Insurance Program covers only water induced damage, thus the number of policies for inland counties

are extremely low. Only structures located in the 100-year floodplain are required to have flood insurance.

Table 21

Table 21 indicates the amount of monetary damage that would occur to both residential and commercial structures based on the same hurricane scenarios used to determine temporary housing needs. As mentioned in the previous section, SPLASH models, which do not account for wind and rainfall induced damage, were used to obtain these figures, so the total structural damage for inland counties will be substantially higher in the event of a major storm.

Table 22

Table 21 indicates the adjusted ratio of insurance policies to actual residential and commercial structures in each county of the Apalachee Region. Inland counties are not extensively covered under the NFIP, so for purposes of this report an insurance rate of 62.5% was used. This figure is adjusted down 10% from the standard figure used by the General Reinsurance Co. Report. This adjustment is an inferential estimation based on income of the residents in the region and the likelihood that they cannot afford substantial amounts of homeowners insurance.

Table 23

Table 23 represents the total amount of individual assistance that will be required based on the selected storm simulations and the calculation of the previously explained formula. The figures for individual assistance needs range from only $15,000 under a small hurricane scenario in Liberty County, to $150,000,000 in Leon County in a catastrophic hurricane situation. If these figures are appropriately adjusted upward, the damage potential becomes astronomical. Upon relating these figures to the limited resources of the residents of the Apalachee Region, it becomes apparent that local governments must extensively promote the NFIP in there counties.

PUBLIC ASSISTANCE

Public assistance is available for communities who have suffered extensive public facility damage as a result of a major hurricane. Public assistance eligibility depends upon whether the damaged facilities create a negative impact on the public's health, safety and welfare, and the financial ability of that community to repair the damage. Funds for public assistance are usually available in the form of Community Facilities Loans. these loans are allocated on a cost sharing basis between state and federal government. The federal government will provide 75% of the assistance and the state 25%. This section quantifies the need for public assistance based on replacement costs for the following categories: water facilities; wastewater facilities; electric utilities; transportation facilities; nursing homes; hospitals and government owned facilities.

A. Replacement Costs

Most public facility replacement costs are provided by FEMA. Limitations are placed on grants so that facilities are restored only to pre-event condition. All public service facilities may be covered by the programs previously mentioned in the Federal Assistance Programs Section.

B. Methodology

The methodology for determining replacement costs of public facilities in each county differs from the methodology used in determining individual assistance needs. Phase One of the Hurricane Loss Study listed the sum value and location of various facilities, but did not estimate damage based on storm scenarios. In determining facility replacement costs, the value of each different facility was summed. That monetary figure was disaggregated into percentages from 10 to 100 in intervals of ten. This method may be of more use than basing damage estimates on storm scenarios, because an actual storm will never accurately simulate a model scenario. An assessor can determine the amount of damage (for example) to hospitals. If he estimates that all hospitals in Leon County are damaged by 30%, the corresponding dollar figure is available in the following table under Leon County in the category Hospitals. The amount of monetary assistance required can than be distributed by the various federal assistance programs.

C. Water Facilities

Immediate restoration of water supply facilities is critical to a community in its post event condition. People failing to store adequate quantities of potable water have to rely on treating water themselves. Insufficient treatment can lead to adverse health effects to much of the population, which can

further cripple a region after a storm. Table 24 estimates replacement costs to water facilities based on the percentage damaged.

Table 24

WATER FACILITY REPLACEMENT COSTS

WAKULLA COUNTY		LEON COUNTY	
DAMAGE	COST	DAMAGE	COST
10%	$201,800	10%	$958,663
20%	$403,600	20%	$1,917,326
30%	$605,400	30%	$2,875,989
40%	$807,200	40%	$3,834,652
50%	$1,009,000	50%	$4,793,315
60%	$1,210,800	60%	$5,751,978
70%	$1,412,600	70%	$6,710,641
80%	$1,614,400	80%	$7,669,304
90%	$1,816,200	90%	$8,627,967
100%	$2,018,000	100%	$9,586,630

GADSDEN COUNTY

DAMAGE	COST
10%	$662,910
20%	$1,325,820
30%	$1,988,730
40%	$2,651,640
50%	$3,314,550
60%	$3,977,460
70%	$4,640,370
80%	$5,303,280
90%	$5,966,190
100%	$6,629,100

JACKSON COUNTY

DAMAGE	COST
10%	$399,120
20%	$798,240
30%	$1,197,360
40%	$1,596,480
50%	$1,995,600
60%	$2,394,720
70%	$2,793,840
80%	$3,192,960
90%	$3,592,208
100%	$3,991,200

JEFFERSON COUNTY

DAMAGE	COST
10%	$93,620
20%	$187,240
30%	$280,060
40%	$374,480
50%	$468,100
60%	$561,200
70%	$655,340
80%	$748,960
90%	$842,580
100%	$936,200

LIBERTY COUNTY

DAMAGE	COST
10%	$63,400
20%	$126,800
30%	$190,200
40%	$253,600
50%	$317,000
60%	$380,400
70%	$443,800
80%	$507,200
90%	$570,600
100%	$634,000

GULF COUNTY

DAMAGE	COST
10%	$110,960
20%	$221,920
30%	$332,880
40%	$443,840
50%	$554,800
60%	$665,760
70%	$776,720
80%	$887,680
90%	$998,640
100%	$1,109,600

FRANKLIN COUNTY

DAMAGE	COST
10%	$227,082
20%	$454,164
30%	$681,246
40%	$908,328
50%	$1,135,410
60%	$1,362,492
70%	$1,589,574
80%	$1,816,656
90%	$2,043,738
100%	$2,270,820

CALHOUN COUNTY

DAMAGE	COST
10%	$89,610
20%	$179,220
30%	$268,830
40%	$358,440
50%	$448,050
60%	$537,660
70%	$627,270
80%	$716,880
90%	$806,490
100%	$896,100

D. Waste Water Facilities

Storm damage to waste water treatment plants can lead to widespread sanitation problems. Untreated wastes, loose as a result of flooding, can cause outbreaks of various negative health affects. The immediate restoration of waste water facilities is crucial to a county during its post event condition. Table 25 determines the cost of repairing each county's sewage treatment facility by percentage and monetary value.

Table 25

WASTE WATER FACILITY REPLACEMENT COSTS

WAKULLA COUNTY		LEON COUNTY	
DAMAGE	COST	DAMAGE	COST
10%	$163,000	10%	$4,708,000
20%	$326,000	20%	$9,416,000
30%	$489,000	30%	$14,124,000
40%	$652,000	40%	$18,832,000
50%	$815,000	50%	$23,540,000
60%	$978,000	60%	$28,248,000
70%	$1,141,000	70%	$32,956,000
80%	$1,300,400	80%	$37,664,000
90%	$1,467,000	90%	$42,372,000
100%	$1,630,000	100%	$47,080,000

GADSDEN COUNTY

DAMAGE	COST
10%	$952,000
20%	$1,904,000
30%	$2,856,000
40%	$3,808,000
50%	$4,760,000
60%	$5,712,000
70%	$6,664,000
80%	$7,616,000
90%	$8,568,000
100%	$9,520,000

JACKSON COUNTY

DAMAGE	COST
10%	$1,472,000
20%	$2,944,000
30%	$4,416,000
40%	$5,888,000
50%	$7,360,000
60%	$8,832,000
70%	$10,304,000
80%	$11,776,000
90%	$13,248,000
100%	$14,720,000

JEFFERSON COUNTY

DAMAGE	COST
10%	$175,000
20%	$350,000
30%	$525,000
40%	$700,000
50%	$875,000
60%	$1,050,000
70%	$1,225,000
80%	$1,400,000
90%	$1,575,000
100%	$1,750,000

LIBERTY COUNTY

DAMAGE	COST
10%	$13,000
20%	$26,000
30%	$39,000
40%	$52,000
50%	$65,000
60%	$78,000
70%	$91,000
80%	$104,000
90%	$117,000
100%	$130,000

GULF COUNTY

DAMAGE	COST
10%	$909,000
20%	$1,818,000
30%	$2,727,000
40%	$3,363,600
50%	$4,545,000
60%	$5,454,000
70%	$6,363,000
80%	$7,272,000
90%	$8,181,000
100%	$9,090,000

FRANKLIN COUNTY

DAMAGE	COST
10%	$340,600
20%	$681,200
30%	$1,021,800
40%	$1,362,400
50%	$1,703,000
60%	$2,043,600
70%	$2,384,200
80%	$2,724,800
90%	$3,065,400
100%	$3,406,000

CALHOUN COUNTY

DAMAGE	COST
10%	$166,000
20%	$332,000
30%	$498,000
40%	$664,000
50%	$830,000
60%	$996,000
70%	$1,162,000
80%	$1,328,000
90%	$1,494,000
100%	$1,660,000

E. Public Utilities

An effective post disaster electrical facility replacement plan can reduce a municipality's post storm recovery time. Table 26 examines the electric facility replacement costs for the counties in the Apalachee Region.

Table 26

ELECTRICAL FACILITY REPLACEMENT COST

WAKULLA COUNTY		LEON COUNTY	
DAMAGE	COST	DAMAGE	COST
10%	$803,923	10%	$26,480,482
20%	$1,607,846	20%	$52,960,934
30%	$2,411,769	30%	$79,441,445
40%	$3,215,692	40%	$105,921,868
50%	$4,019,615	50%	$132,402,409
60%	$4,823,538	60%	$158,882,890
70%	$5,627,461	70%	$185,363,372
80%	$6,431,384	80%	$211,843,736
90%	$7,235,307	90%	$238,324,336
100%	$8,039,230	100%	$264,804,818

GADSDEN COUNTY

DAMAGE	COST
10%	$886,850
20%	$1,773,700
30%	$2,660,551
40%	$3,547,400
50%	$4,434,251
60%	$5,321,102
70%	$6,207,951
80%	$7,094,800
90%	$7,981,652
100%	$8,868,502

JACKSON COUNTY

DAMAGE	COST
10%	$9,718,549
20%	$19,437,098
30%	$29,155,647
40%	$38,874,196
50%	$48,592,746
60%	$58,311,294
70%	$68,029,844
80%	$77,748,392
90%	$87,466,942
100%	$97,185,491

JEFFERSON COUNTY

DAMAGE	COST
10%	$574,776
20%	$1,149,553
30%	$1,724,329
40%	$2,299,106
50%	$2,873,882
60%	$3,448,658
70%	$4,023,345
80%	$4,598,212
90%	$5,172,988
100%	$5,747,764

LIBERTY COUNTY

DAMAGE	COST
10%	$56,826
20%	$113,652
30%	$170,477
40%	$227,304
50%	$284,127
60%	$340,954
70%	$397,779
80%	$454,608
90%	$511,430
100%	$568,255

GULF COUNTY

DAMAGE	COST
10%	$1,035,025
20%	$2,070,050
30%	$3,105,076
40%	$4,140,100
50%	$5,175,127
60%	$6,210,152
70%	$7,245,178
80%	$8,280,200
90%	$9,315,229
100%	$10,350,254

FRANKLIN COUNTY

DAMAGE	COST
10%	$369,069
20%	$738,138
30%	$1,107,207
40%	$1,476,276
50%	$1,845,345
60%	$2,214,414
70%	$2,583,482
80%	$2,952,552
90%	$3,321,620
100%	$3,690,689

CALHOUN COUNTY

DAMAGE	COST
10%	$85,250
20%	$175,000
30%	$255,750
40%	$350,000
50%	$426,250
60%	$511,500
70%	$596,750
80%	$700,000
90%	$767,250
100%	$852,500

F. Transportation Facilities

Although not as important in the Apalachee Region, the revitalization of transportation facilities is important to an area to move possible assistance supplies and people in and out the disaster area. Transportation facilities do not include road networks, only structures such as airports and bus stations. Table 27 examines the replacement costs for transportation facilities in the Apalachee Region.

Table 27

TRANSPORTATION FACILITY REPLACEMENT COST

WAKULLA COUNTY		LEON COUNTY	
DAMAGE	COST	DAMAGE	COST
10%	$9,000	10%	$200,000
20%	$18,000	20%	$400,000
30%	$27,000	30%	$600,000
40%	$36,000	40%	$800,000
50%	$45,000	50%	$1,000,000
60%	$54,000	60%	$1,200,000
70%	$63,000	70%	$1,400,000
80%	$72,000	80%	$1,600,000
90%	$81,000	90%	$1,800,000
100%	$90,000	100%	$2,000,000

GADSDEN COUNTY

DAMAGE	COST
10%	$24,000
20%	$48,000
30%	$72,000
40%	$96,000
50%	$120,000
60%	$144,000
70%	$168,000
80%	$192,000
90%	$216,000
100%	$240,000

JACKSON COUNTY

DAMAGE	COST
10%	$6,210
20%	$12,420
30%	$18,630
40%	$24,840
50%	$31,050
60%	$37,260
70%	$43,470
80%	$49,680
90%	$55,890
100%	$62,100

JEFFERSON COUNTY

JEFFERSON COUNTY HAS NO TRANSPORTATION FACILITIES

LIBERTY COUNTY

LIBERTY COUNTY HAS NO TRANSPORTATION FACILITIES

GULF COUNTY

DAMAGE	COST
10%	$10,162
20%	$20,324
30%	$30,486
40%	$40,648
50%	$50,810
60%	$60,972
70%	$71,134
80%	$81,296
90%	$91,458
100%	$101,620

FRANKLIN COUNTY

DAMAGE	COST
10%	$106
20%	$212
30%	$318
40%	$424
50%	$530
60%	$636
70%	$742
80%	$848
90%	$954
100%	$1,060

CALHOUN COUNTY

DAMAGE	COST
10%	$16,100
20%	$32,200
30%	$48,300
40%	$64,400
50%	$80,500
60%	$96,600
70%	$112,700
80%	$128,800
90%	$144,900
100%	$161,000

G. Nursing Homes

Nursing homes provide care for patients whose needs are unique. Nursing home residents are difficult to evacuate because they require special care and in some cases untransportable machinery. Table 28 exhibits the damage estimates by percentage of nursing homes in the counties of the Apalachee Region.

Table 28

NURSING HOME REPLACEMENT COST

WAKULLA COUNTY		LEON COUNTY	
DAMAGE	COST	DAMAGE	COST
10%	$370,000	10%	$1,290,000
20%	$740,000	20%	$2,580,000
30%	$1,110,000	30%	$3,870,000
40%	$1,480,000	40%	$5,160,000
50%	$1,850,000	50%	$6,450,000
60%	$2,220,000	60%	$7,740,000
70%	$2,590,000	70%	$9,030,000
80%	$2,960,000	80%	$1,032,000
90%	$3,330,000	90%	$1,160,000
100%	$3,700,000	100%	$1,290,000

GADSDEN COUNTY

DAMAGE	COST
10%	$180,000
20%	$360,000
30%	$540,000
40%	$720,000
50%	$900,000
60%	$1,080,000
70%	$1,260,000
80%	$1,440,000
90%	$1,620,000
100%	$1,800,000

JACKSON COUNTY

DAMAGE	COST
10%	$710,000
20%	$1,420,000
30%	$2,130,000
40%	$2,840,000
50%	$3,550,000
60%	$4,260,000
70%	$4,970,000
80%	$5,680,000
90%	$6,390,000
100%	$7,100,000

JEFFERSON COUNTY

DAMAGE	COST
10%	$180,000
20%	$360,000
30%	$540,000
40%	$720,000
50%	$900,000
60%	$1,080,000
70%	$1,260,000
80%	$1,440,000
90%	$1,620,000
100%	$1,800,000

LIBERTY COUNTY

Liberty County has no nursing home facilities.

GULF COUNTY

DAMAGE	COST
10%	$370,000
20%	$740,000
30%	$1,110,000
40%	$1,480,000
50%	$1,850,000
60%	$2,220,000
70%	$2,590,000
80%	$2,960,000
90%	$3,330,000
100%	$3,700,000

FRANKLIN COUNTY

DAMAGE	COST
10%	$180,000
20%	$360,000
30%	$540,000
40%	$720,000
50%	$900,000
60%	$1,080,000
70%	$1,260,000
80%	$1,440,000
90%	$1,620,000
100%	$1,800,000

CALHOUN COUNTY

DAMAGE	COST
10%	$380,000
20%	$760,000
30%	$1,140,000
40%	$1,520,000
50%	$1,900,000
60%	$2,280,000
70%	$2,600,000
80%	$3,040,000
90%	$3,420,000
100%	$3,800,000

H. Hospitals

In the event a major hurricane has caused any degree of personal injury or fatalities, a hospital must be at peak operating capacity. Table 29 gives a cost by percentage estimate of hospitals in the Apalachee Region.

Table 29

HOSPITAL REPLACEMENT COSTS

WAKULLA COUNTY	LEON COUNTY	
There are no hospitals	DAMAGE	COST
in Wakulla County	10%	$17,380,000
	20%	$34,760,000
	30%	$52,140,000
	40%	$69,520,000
	50%	$86,900,000
	60%	$104,280,000
	70%	$121,660,000
	80%	$139,040,000
	90%	$156,420,000
	100%	$173,800,000

GADSDEN COUNTY

DAMAGE	COST
10%	$41,000,000
20%	$82,000,000
30%	$123,000,000
40%	$164,000,000
50%	$205,000,000
60%	$246,000,000
70%	$287,000,000
80%	$328,000,000
90%	$369,000,000
100%	$410,000,000

JACKSON COUNTY

DAMAGE	COST
10%	$3,100,000
20%	$6,200,000
30%	$9,300,000
40%	$12,400,000
50%	$15,500,000
60%	$18,600,000
70%	$21,700,000
80%	$24,800,000
90%	$27,900,000
100%	$31,000,000

JEFFERSON COUNTY

HAS NO HOSPITALS

LIBERTY COUNTY

HAS NO HOSPITALS

FRANKLIN COUNTY

DAMAGE	COST
10%	$4,340,000
20%	$8,680,000
30%	$13,020,000
40%	$17,360,000
50%	$21,700,000
60%	$26,400,000
70%	$30,380,000
80%	$34,720,000
90%	$39,060,000
100%	$43,400,000

GULF COUNTY

DAMAGE	COST
10%	$880,000
20%	$1,760,000
30%	$2,640,000
40%	$3,520,000
50%	$4,400,000
60%	$5,280,000
70%	$6,160,000
80%	$7,040,000
90%	$7,920,000
100%	$8,880,000

CALHOUN COUNTY

DAMAGE	COST
10%	$700,000
20%	$1,400,000
30%	$2,100,000
40%	$2,800,000
50%	$3,500,000
60%	$4,200,000
70%	$4,900,000
80%	$5,600,000
90%	$6,300,000
100%	$7,000,000

I. Government Owned Facilities

Many of the post-disaster assistance programs are administered out of government owned facilities. Table 30 gives a damage estimate by percentage for these facilities in the nine counties of the Apalachee Region.

Table 30

GOVERNMENT OWNED FACILITY REPLACEMENT COSTS

WAKULLA COUNTY		LEON COUNTY	
DAMAGE	COST	DAMAGE	COST
10%	$9,000,000	10%	$55,000,000
20%	$18,000,000	20%	$110,000,000
30%	$27,000,000	30%	$165,000,000
40%	$36,000,000	40%	$220,000,000
50%	$45,000,000	50%	$275,000,000
60%	$54,000,000	60%	$330,000,000
70%	$63,000,000	70%	$385,000,000
80%	$72,000,000	80%	$440,000,000
90%	$81,000,000	90%	$495,000,000
100%	$90,000,000	100%	$550,000,000

GADSDEN COUNTY

DAMAGE	COST
10%	$230,000
20%	$460,000
30%	$690,000
40%	$920,000
50%	$1,150,000
60%	$1,380,000
70%	$1,610,000
80%	$1,840,000
90%	$2,070,000
100%	$2,300,000

JACKSON COUNTY

DAMAGE	COST
10%	$6,800,000
20%	$13,600,000
30%	$21,400,000
40%	$28,200,000
50%	$35,000,000
60%	$41,800,000
70%	$48,600,000
80%	$55,200,000
90%	$62,000,000
100%	$68,000,000

JEFFERSON COUNTY

DAMAGE	COST
10%	$300,000
20%	$600,000
30%	$900,000
40%	$1,200,000
50%	$1,500,000
60%	$1,800,000
70%	$2,100,000
80%	$2,400,000
90%	$2,700,000
100%	$3,000,000

LIBERTY COUNTY

DAMAGE	COST
10%	$1,800,000
20%	$3,600,000
30%	$5,400,000
40%	$7,200,000
50%	$9,000,000
60%	$10,800,000
70%	$12,600,000
80%	$14,400,000
90%	$17,200,000
100%	$18,000,000

GULF COUNTY

DAMAGE	COST
10%	$2,900,000
20%	$6,800,000
30%	$9,700,000
40%	$11,600,000
50%	$14,500,000
60%	$17,400,000
70%	$20,300,000
80%	$23,200,000
90%	$26,100,000
100%	$29,000,000

FRANKLIN COUNTY

DAMAGE	COST
10%	$1,270,000
20%	$2,540,000
30%	$3,810,000
40%	$5,080,000
50%	$6,350,000
60%	$7,620,000
70%	$8,890,000
80%	$10,160,000
90%	$11,430,000
100%	$12,700,000

CALHOUN COUNTY

DAMAGE	COST
10%	$2,250,000
20%	$4,500,000
30%	$6,750,000
40%	$9,000,000
50%	$11,250,000
60%	$13,500,000
70%	$15,750,000
80%	$18,000,000
90%	$20,250,000
100%	$22,500,000

CONCLUSION

Public Facility replacement costs in the Apalachee Region are modest in relation to the rest of the state because of the low density population figures. Regardless of the region's stature, immediate restoration of any public facility is of great importance as a community attempts to return to its pre-storm condition.

SECTION II. Hurricane Hazard Mitigation Policy Plan: Prevention of Future Loss

Introduction

This section formulates policies that can guide both development and post hurricane redevelopment. Compliance with these suggested policies should ensure that the counties in the Apalachee Region reduce and avoid property losses in the event of a hurricane. This section consists of seven parts. The first part contains a developed methodology for reviewing a development's impact on life and property based on its location and hurricane vulnerability. Next, potential sites for the relocation of facilities will be examined, followed by a subsection to guide the location of construction away from hurricane vulnerable areas. Public acquisition techniques and recommendations make up the fourth part. The fifth section contains growth management tools available to counties who may be developing sound mitigation practices. After the planning tools are examined, a county by county inventory of existing mitigation-aimed planning will be analyzed. The final section includes the formulation of hurricane hazard mitigation policies to guide development in hazardous areas.

FUTURE DEVELOPMENT

This section contains a methodology for reviewing future

development, based upon potential hurricane hazard vulnerability. Included is a means of assessing the development's potential impact on life and property, according to its location, as well as impact on hurricane evacuation routes, population density and shelter capacity.

A. Procedure

The recommendation for development in a high risk area may depend on the threat to both life and structures. A determination of this threat can be accomplished through an analysis based on a project's impacts upon the following: 1) evacuation time and routes; 2) population and shelters.

To accomplish this analysis developments have to be divided into different vulnerability zones, predetermined in the Apalachee Regional Hurricane Evacuation Plan. The plan depicts two levels of vulnerability, A and B. All land area in Level A is subject to flooding in hurricane intensity's of 1 or 2.(See appendix D for the Saffir Simpson Scale description). All area contained in region B is subject to flooding in a level 3-5 intensity hurricane.

B. Assessment of Evacuation Time and Routes

For coastal development, impact on population evacuation time is critical. The affected coastal counties in the Apalachee

region are Gulf, Franklin and Wakulla (Jefferson County has no coastal population). Although populations in the coastal counties are relatively low, transportation routes are limited and may flood well in advance of a hurricane's arrival. The impacts and recommended policies are dependent on the precise location of the project as related to hurricane vulnerability based on the previously described zones, level A and B.

Level A

Developments in level A zones, usually beaches and barrier islands, must be scrutinized to a greater degree than projects located inland. These regions are likely to be inundated during a category 1 or 2 storm, whose probability is greater than a higher intensity storm. Policies concerning development in A zones must be very stringent because there are few non structural mitigation techniques that would be of use in these regions. Development assessment must be based on the increase in evacuation time for the area. The following list contains a methodology for measuring impacts in this fashion:

1.) Assess existing evacuation time for the zone in which the project is located.

2.) Determine the evacuation time for the proposed project and the subsequent increase in the evacuation time for the zone with the project added.

3.) Assess the impact that transportation improvements provided by the applicant will have upon evacuation time.

4.) Assess the area's warning system, and time it takes for the population at risk to be notified to evacuate.

5). Assess potential improvements that the developer may have on warning systems; improved evacuation routes or suitable hurricane shelters.

Approval for development must be based on the evacuation network and further delays in clearance times. Table 31 shows clearance times in the Apalachee Region ranging from 4.5 to 11 hours depending on the intensity, location, and forward speed of the hurricane. If a development accessively impedes clearance time for a high risk area, modifications should be enacted to minimize clearance time impacts.

Level B

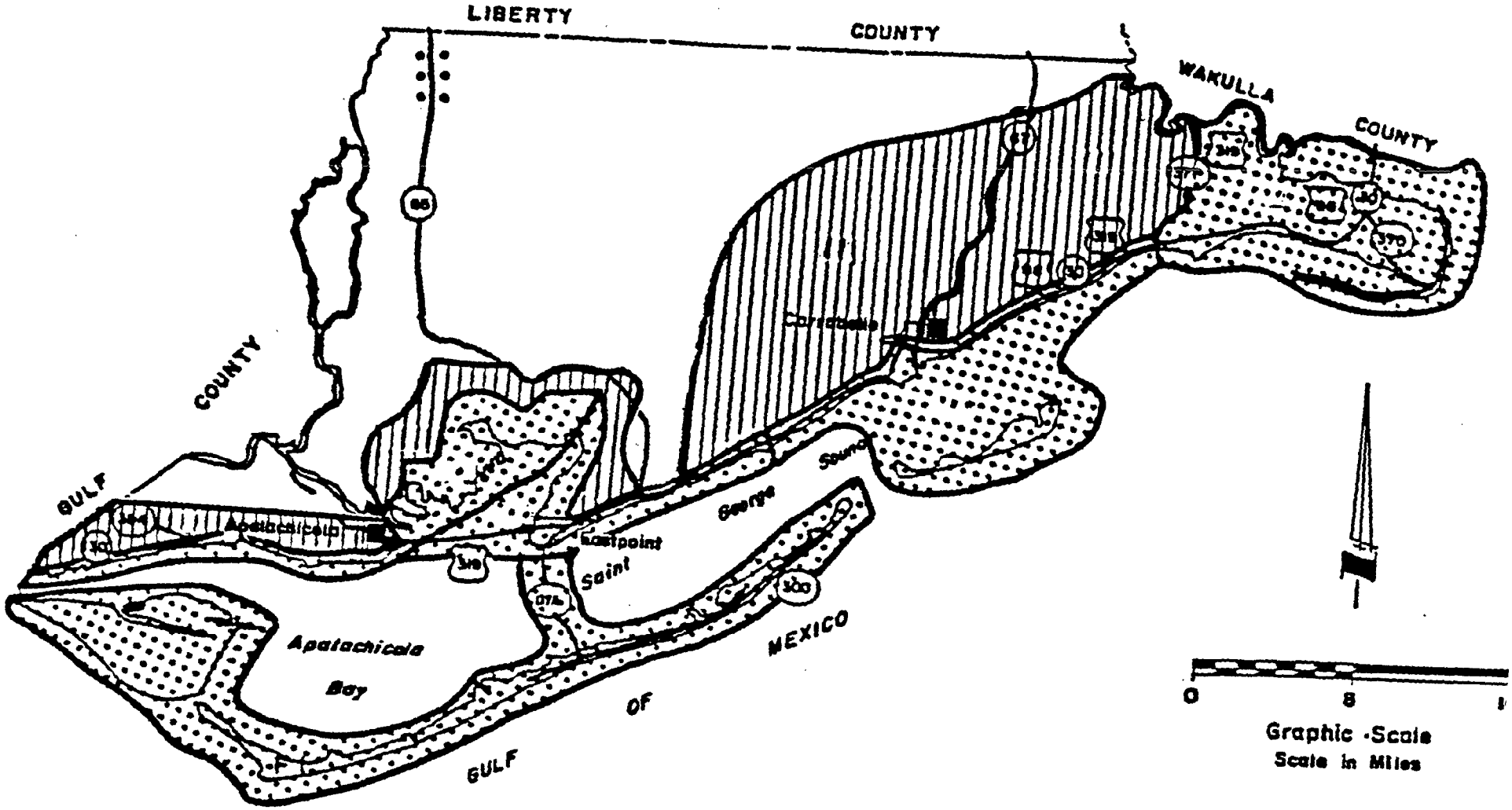
Most of area B in Apalachee is only moderately populated. Since the region is growing, it can be anticipated that future coastal development will intensify. Developments in this area will slow evacuation time by tying up roadways that residents located in the more hazardous A zone use to evacuate. This situation can cause further problems, because the surge in a

TABLE 31

CLEARANCE TIMES (IN HOURS)

		REGIONAL VULNERABILITY LEVEL	
	RESPONSE CURVE	A	B
GULF COUNTY	A-Quick Response	4 1/2	4 3/4
	B-Medium Response	7 1/2	7 1/2
	C-Slow Response	10 1/2	10 1/2
FRANKLIN COUNTY	A-Quick Response	5	5 1/2
	B-Quick Response	8	7 1/2
	C-Slow Response	11	10 1/2
WAKULLA COUNTY	A-Quick Response	4 1/2	5
	B-Quick Response	7 1/2	7 1/2
	C-Slow Response	10 1/2	10 1/2
JEFFERSON COUNTY	A-Quick Response	4 1/2	4 1/2
	B-Medium Response	7 1/2	7 1/2
	C-Slow Response	10 1/2	10 1/2
LEON COUNTY	A-Quick Response	5	6 1/4
	B-Medium Response	8	8
	C-Slow Response	11	11

		REGIONAL VULNERABILITY LEVEL	
	RESPONSE CURVE	A	B
GADSDEN COUNTY	A-Quick Response	4 1/2	4 1/2
	B-Medium Response	7 1/2	7 1/2
	C-Slow Response	10 1/2	10 1/2
LIBERTY COUNTY	A-Quick Response	4 1/2	5 1/2
	B-Medium Response	7 1/2	7 1/2
	C-Slow Response	10 1/2	10 1/2
CALHOUN COUNTY	A-Quick Response	4 1/2	6
	B-Medium Response	7 1/2	8 1/2
	C-Slow Response	10 1/2	10 1/2
JACKSON COUNTY	A-Quick Response	4 1/2	4 1/2
	B-Medium Response	7 1/2	7 1/2
	C-Slow Response	10 1/2	10 1/2

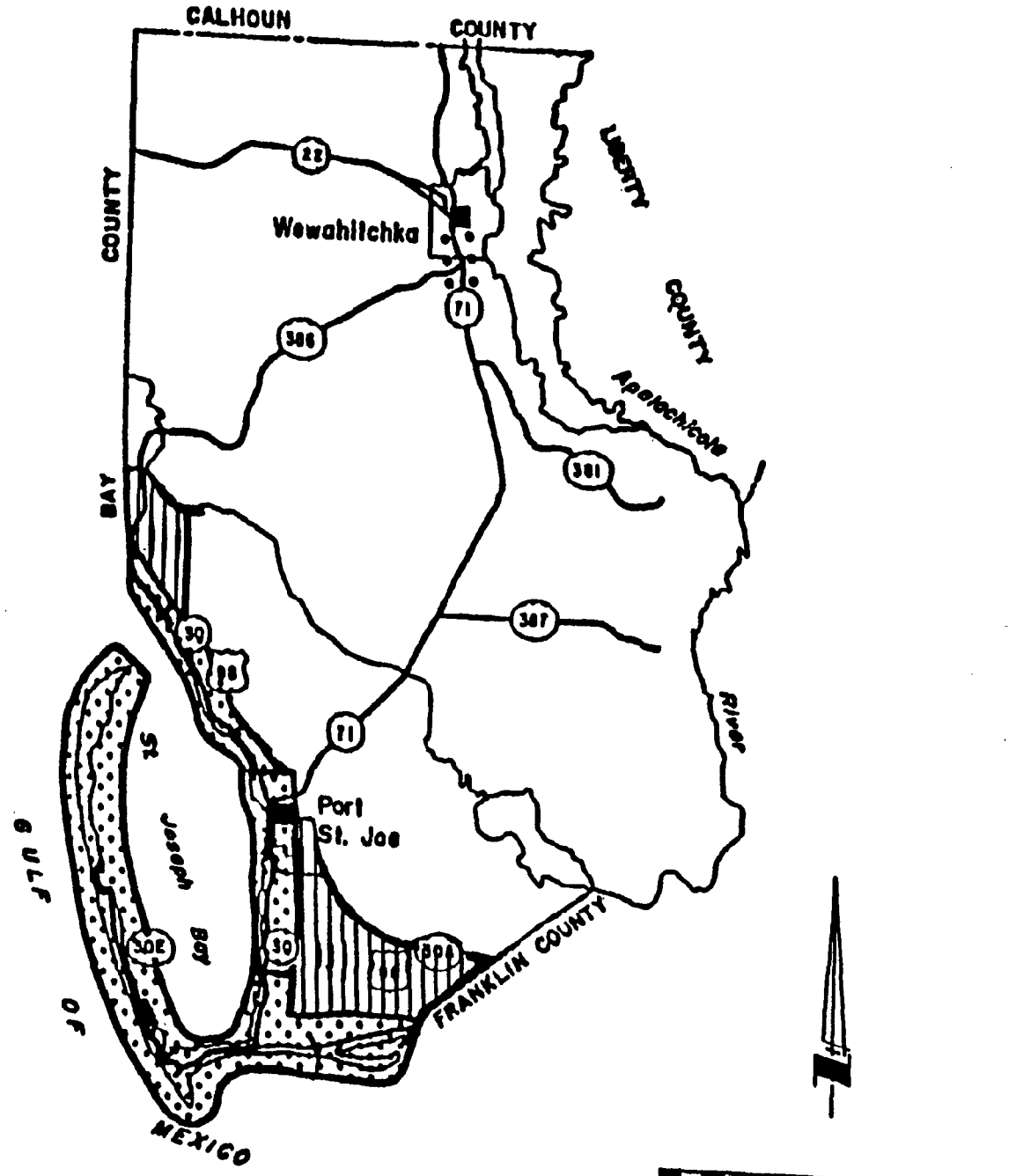


MAP 2: FLOOD VULNERABILITY ZONES FOR FRANKLIN COUNTY

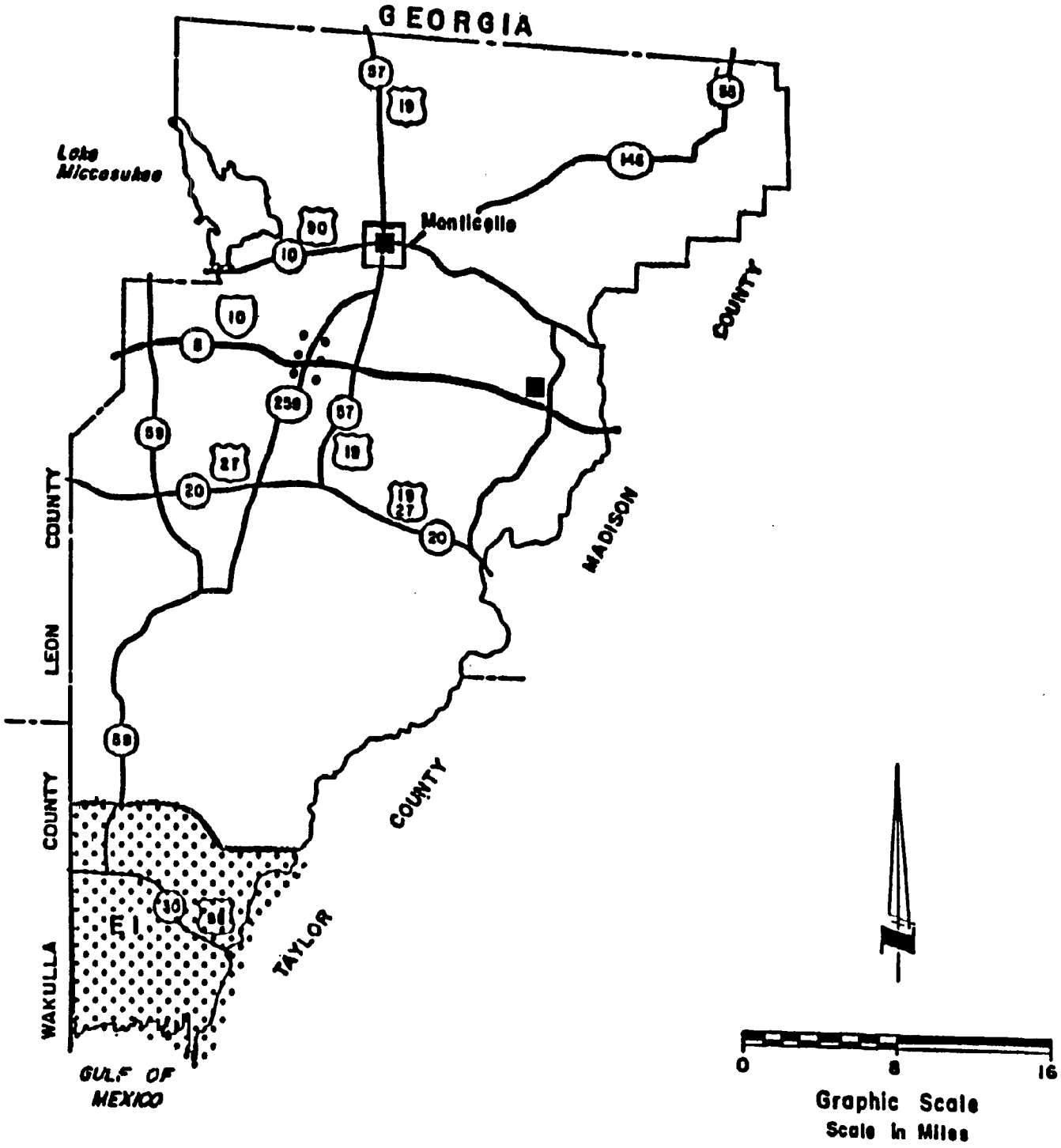
LEGEND

- LEVEL "A" FLOODING
- LEVEL "B" FLOODING
- Primary Shelters
- Roadway Critical Links

FRANKLIN COUNTY



MAP 3: FLOOD VULNERABILITY ZONES FOR GULF COUNTY



MAP 4: FLOOD VULNERABILITY ZONES FOR JEFFERSON COUNTY

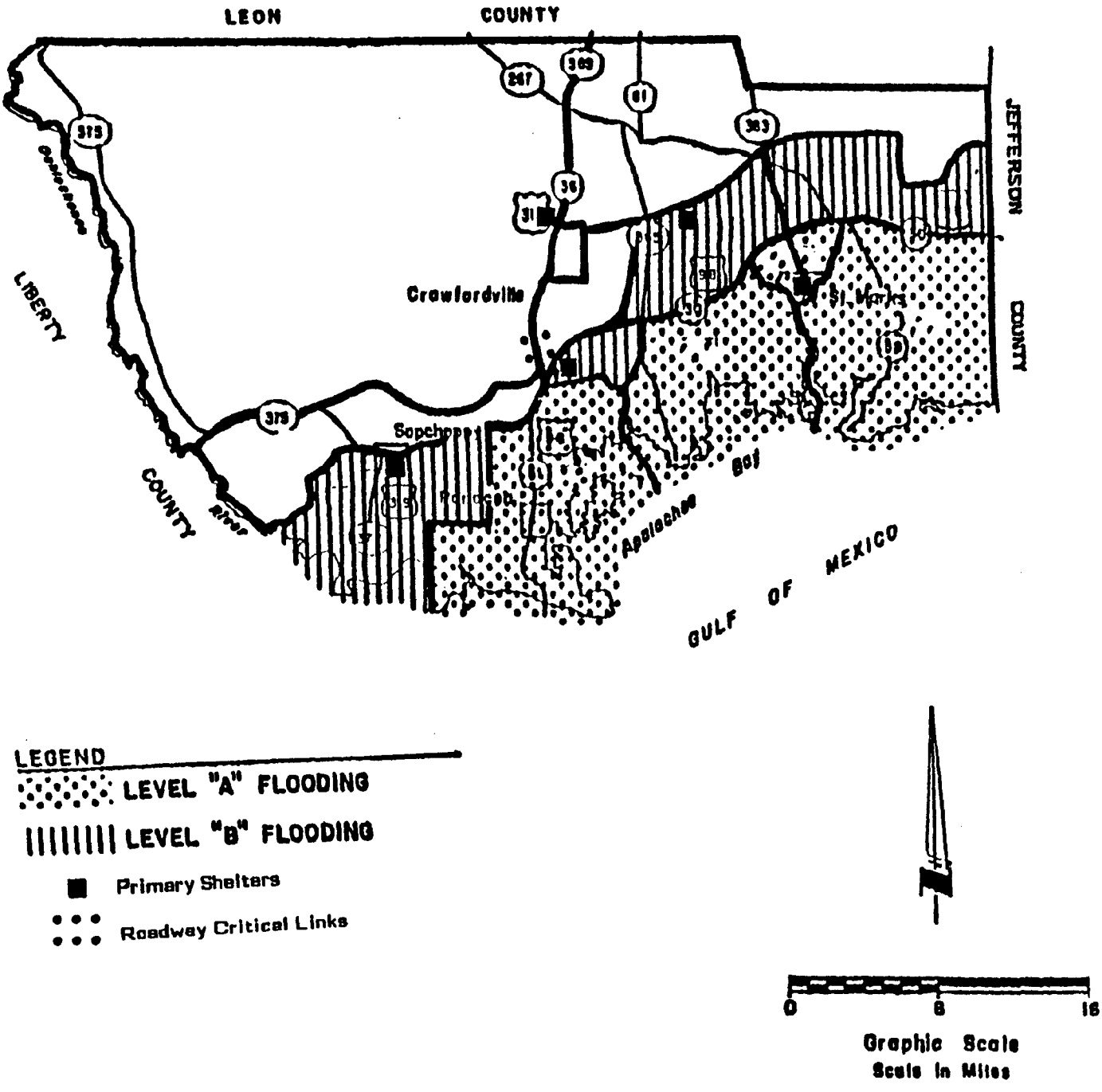
LEGEND

LEVEL "A & B" FLOODING

Primary Shelters

Roadway Critical Links

JEFFERSON COUNTY



MAP 5: FLOOD VULNERABILITY ZONES FOR WAKULLA COUNTY

level 3-5 storm is greater, and arrives earlier than with lower intensity storm, thus clearance time must begin earlier in order to avoid getting trapped due to flooding, tree fall and road washout. In order for developments in this zone to obtain approval there are three suggested options they should meet:

1. Construct on site shelters above the maximum surge levels, providing shelter for both area A and B residents;
2. Improve existing evacuation routes; and
3. Construct structures whose minimum floor elevation are above maximum flood base elevation for a 100-year storm.

C. Assessment of Population and Shelter Adequacy

The vulnerability a proposed development creates for future residents must include an analysis of existing shelters and their adequacy to handle residents in the event of a hurricane. Methodology for determining this impact includes the following:

1. An assessment of available shelter space in areas outside of the vulnerable area. If the development causes existing shelter space to be inadequate, additional shelter space should be provided by the developer;
2. Assuming that adequate shelter space is currently available, the proposed population impacts are then analyzed. This analysis includes the projects expected

population that will require and seek shelter and assumes that 45% of the population will be required to seek shelter if a storm is forecasted to strike (Apalachee Region Hurricane Evacuation Study); and

3. If the shelters in zone A or B which the project is located in exceeds capacity, then the developer will either have to participate in the creation of new shelters or be recommended for denial.

Of the over 300,000 people in the Apalachee Region over 60,000 will be required to seek shelter in a major hurricane. Currently there is adequate shelter space to accommodate those seeking refuge, but if the population at risk increases and shelter space does not, new facilities will have to be constructed. In the event of a catastrophic storm, however, it is doubtful that the region can handle victims from outside such as Perry, Ft. Walton or Panama City.

Recommendations

The DRI process incorporates some evacuation issues within its application for development approval process. Although very few exist in the Apalachee Region, coastal DRI's have the biggest impact on transportation and shelter facilities. The following issues are specifically addressed within this region's DRI process; 1) what impact will the development have on the evacuation of developed region in the event of a storm? 2) What

impacts will the development have upon the availability of shelter space? 3) What are the impacts on flood proofing needs caused by the statistical 100-year storm. These questions have to be adequately addressed before the Application for Development Approval can be declared sufficient by the RPC.

Other policy recommendations concerning evacuation time and shelter space that should be considered are:

Shelters:

1. Shelters shall be designed to withstand the winds of a catastrophic storm.

2. Shelters should be equipped with necessities such as water, food, communications and electrical generators.

Evacuation:

1. Developers shall include plans for evacuation and indicate the adverse effects their development will have on evacuation networks (as required in the DRI process).
2. Evacuation routes shall be put in an order of priority.

RELOCATION SITES

Failing to relocate hurricane damaged or structures vulnerable to hurricane damage, can amount to great costs for a locality. Generally, a municipality will allow post-storm reconstruction to take on characteristics, such as site and architecture, similar to those in its pre-storm condition, leaving development vulnerable to recurring structural damage. To prevent this a community must identify sites for structural relocation, and consider the economic feasibility of placing certain facilities in low risk regions.

Relocation can be cost ineffective if it involves either moving large structures, or encountering resistance by private owners to move. This section identifies sites in the Apalachee Region suitable for the relocation of the following structures: damaged housing; water facilities; waste water treatment; health care facilities; electric facilities; emergency facilities, educational facilities; custodial care facilities; and transportation facilities, based on factors such as costs, vulnerability and suitability of the recommended location.

Development located in zones that would be inundated during a category one or two storm should be considered for relocation. Probabilities are far greater for a modest hurricane to strike as opposed to a catastrophic one, thus only those facilities located in regions that would be inundated during either a

category one or two storm should relocate, as this section will discuss.

A. Damaged Housing

Housing units located in river flood plains, areas vulnerable to storm surge, and regions that can be flooded by standing water are candidates for relocation. Wind damage does not factor into relocation decisions because all of the Apalachee Region would be impacted by hurricane force winds. The most vulnerable regions in Apalachee to flooding and wind are the coasts of Franklin, Gulf and Wakulla Counties. Unfortunately most of the housing units within these counties are located along the coast or rivers, the most vulnerable areas to storm surge and flooding. Populations locate along the coast for aesthetic and economic reasons, and would be very unwilling to relocate. Local Government rules and regulations should require dwelling units to either be elevated, or relocated to safer areas. The most important issue is strict enforcement of Federal, State and County regulations for coastal development.

a. Wakulla County

In Wakulla County the land slopes up to the northwest. Coastal communities should encourage redevelopment to expand in this direction through zoning regulations and growth limitations. Coastal areas should also find ways to obtain tracts of land

suitable for the relocation of mobile home communities, who suffer the greatest damage in the event of a storm.

b. Franklin County

In Franklin County the land immediately to the north of the current residential areas should be considered for the relocation of housing units. Further inland, swampy conditions exist over large areas, so new development and relocation are only possible a short distance away from the coast where it is still vulnerable to storm damage.

Residents on barrier islands should either elevate their structures, or move them back behind dune lines. Those who live on the islands usually purchase their homes so they can live on the beach, and probably would not be willing to relocate, regardless of the storm probability. Here, elevation requirements and density restrictions should be enacted to eliminate further potential storm damage costs.

c. Gulf County

In Gulf County, protected to a small extent by St. Joe spit, not as many dwelling units are vulnerable to low intensity storms. Alternatives here include the elevation of structures and tax incentives that encourage residents to relocate inland. Strict enforcement of the Gulf County Coastal Control Line

program should be undertaken on St. Joe peninsula, no one should be allowed to degrade the primary dune system without first receiving a permit from DNR.

d. Inland Counties

Inland Counties, where riverine flooding is a possibility, should practice structural mitigation techniques rather than relocation. The probability of the occurrence of riverine flooding is substantially less then storm surge, thus relocation may not be cost effective.

Communities such as Blountstown, partially located in the floodplain, should not promote development within flood-prone areas, but instead encourage growth into low risk regions.

The feasibility of relocating manufactured residential units must also be considered. Mobile homes are obviously the easiest to move and relocate. Most of the land these communities are located on is rented, thus compensation may not be required. Another plus when considering mobile home relocation is the amount of available low risk land in the region suitable for mobile home parks.

Moderate sized homes cannot be moved as easily as mobile homes. Here compensation will have to occur, and a new lot purchased by the homeowner. The unit on the acquired lot can either be

demolished, or a new elevated unit may be constructed.

B. Water Facilities

There are two costs levied when relocating water facilities. First there is the cost of relocating the entire facility. Second, there is the cost of piping water from the new site out to the population. Failing to relocate results in repair costs to hurricane damaged facilities and the inability to supply water to the public.

Most of the water supply facilities in the Apalachee Region utilize groundwater extraction. The hazards to groundwater extraction depends on the depth of the well; deeper aquifers generally cannot be contaminated in the event of a hurricane. Table 32 identifies water facilities in the Apalachee Region located in areas vulnerable to either storm surge or riverine flooding, based on information contained in part one of the Apalachee Region Hurricane Loss Study.

It must be noted that many of the listed facilities are businesses, such as restaurants. It is recommended that these facilities either move the business along with the water facility, or switch to an alternate source of water supply.

TABLE 32

PUBLIC WATER FACILITIES LOCATED IN HIGH RISK ZONES

APALACHEE REGION

COUNTY	FACILITY NAME	LOCATION		COUNTY	FACILITY NAME	LOCATION
CALHOUN			*	JACKSON		
	AIRPORT MOTEL	BLOUNTSTOWN	*		APALACHEE CORRECTIONAL INST.	U.S. 90
	CAPT. TOM'S	BLOUNTSTOWN	*		PARAMORE LODGE	SR 271
			*		SCHOLZ ELECTRICAL	S.E. COUNTY
FRANKLIN			*		SNEADS WATER SYSTEM	SNEADS
	ALLIGATOR POINT	U.S. 98	*		THREE RIVERS PARK	SR 271
	ANNAWEEKE FOUNDATION	U.S. 98	*			
	CITY OF APALACHICOLA	S.R. 384	*	JEFFERSON		
	BAY NORTH	U.S. 98	*		NONE	
	BAYVIEW	U.S. 98	*			
	BREAKAWAY LODGE	APALACHICOLA	*	LEON		
	BUCCANEER INN	ST. GEORGE	*		BLOUNT'S LANDING	TALQUIN
	CARRABELLE SYSTEM	CARRABELLE	*		COE'S LANDING	TALQUIN
	CARRABELLE PARK	CARRABELLE	*		FORT BRADEN SCHOOL	SR 20
	EASTPOINT WATER DISTRICT	EASTPOINT	*		LEWIS HALL LANDING	TALQUIN
	GULFVIEW CAMPGROUND	EASTPOINT	*		RIVER BLUFF PICNIC AREA	SR 20
	LANARK VILLAGE	LANARK	*		WILLIAM'S LANDING	TALLAHASSEE
	SEABREEZE MOTEL	EASTPOINT	*			
	SPORTSMAN'S LODGE	EASTPOINT	*	LIBERTY		
	ST. GEORGE IS. PARK	ST. GEORGE	*		NONE	
	ST. GEORGE UTILITIES	ST. GEORGE	*			
			*	WAKULLA		
GADSDEN			*		OCHLOCKNEE STATE PARK	S.W. SECTION
	CHATTAHOOTCHEE REST AREA	CHATTAHOOTCHEE	*		PANACEA WATER SYSTEM	PANACEA
			*			
GULF			*			
	CAPE SAN BLAS CAMPING	PORT ST. JOE	*			
	CAPE SAN BLAS WATER	CR 30	*			
	HIGHLAND VIEW WATER DIST.	HIGHLAND VIEW	*			
	INDIAN PASS CAMPGROUND	PORT ST. JOE	*			
	LIGHTHOUSE UTILITIES	PORT ST. JOE	*			
	CITY OF PT. ST. JOE	PORT ST. JOE	*			
	ST. JOSEPH PARK	PORT ST. JOE	*			
	WILLIAM J. RISH PARK	PORT ST. JOE	*			

C. Waste Water Treatment Facilities

Relocation of wastewater facilities involves the movement of the transport system that carries wastes from structures to the main facility. Sub-regional plants probably cannot be relocated in the region due to a low usage rate, which makes moving costs prohibitive. Plants that use evaporation/percolation ponds should not be located in an area that may be subject to category one or two level storms. In the event of a storm the ponds will likely overflow contaminants into various water systems, Threatening human drinking supplies.

Waste water treatment plants that are nearing the end of there lifetime function should not be relocated. The replacement plant, however, should not be located on the same high risk area. Table 33 indicates the wastewater treatment facilities in the region that are located in high risk zones.

D. Health Care Facilities

Table 34 indicates the health care facilities and hospitals in the Apalachee Region located in high hazard zones. Hospitals and nursing home facilities are generally too large to relocate. The only effective mitigation technique is to wait until the facility has deteriorated beyond its use, and rebuild the new structure outside high hazard zones. Notice that some of the facilities listed in table 34 are publicly owned and

TABLE 33

WASTEWATER TREATMENT FACILITIES LOCATED IN HIGH RISK REGIONS

APALACHEE REGION

COUNTY	NAME	LOCATION	TREATMENT
FRANKLIN			
	ALLIGATOR POINT	PANACEA	AERATION
	APALACHICOLA, CITY OF	APALACHICOLA	TRICKLING FILTER
	BUCHANEER INN	ST. GEORGE ISLAND	AERATION
	CITY OF CARRABELLE	CARRABELLE	STP
	EASTPOINT WATER DIST.	EASTPOINT	CONTACT STABILIZATION
	LANARK VILLAGE	LANARK VILLAGE	AERATION
	ST GEORGE ISLAND RESTAURANT	ST. GEORGE ISLAND	SEPTIC TANK
	300 OCEAN MILE	ST. GEORGE ISLAND	AERATION
	VILLAS OF ST. GEORGE	ST. GEORGE ISLAND	AERATION
GADSDEN			
	I-10 REST FACILITY	CHATAHOOTCHEE	CONTACT STABILIZATION
GULF			
	BARRIER DUNES	CAPE SAN BLAS	AERATION
	GULF AIRE	BEACON HILL	CONTACT STABILIZATION
	CITY OF PT. ST. JOE	PORT ST. JOE	PRIMARY DIGESTION
LIBERTY			
	LIBERTY HEALTH CARE	BRISTOL	AERATION
WAKULLA			
	ANGELO'S RESTAURANT	PANACEA	SEPTIC SYSTEM
	BAYSIDE VILLAS	PANACEA	AERATION
	OYSTER BAY	SHELL POINT	CONTACT STABILIZATION
	PARADISE VILLAGE	SHELL POINT	AERATION
	SHELL POINT	SHELL POINT	AERATION

some are privately owned. Governments have greater control over publicly owned facilities, and can select suitable locations for redevelopment.

E. Electrical Facilities

It is uneconomical to relocate electrical substations and power generating facilities. Power stations have to be located within close proximity to population centers. If the facility were to be relocated, there would be added expenses in obtaining easements for power lines, and boosters for transport stations. Electrical facilities in the region are for the most part away from high risk areas. Table 35 indicates electrical facilities in the Apalachee Region located in moderate risk areas. For these facilities structural mitigation techniques, such as placing brick walls around the substations, are recommended. This should protect the facility from floating debris that can damage the facility in the event of a major storm.

For cooling purposes major power stations must be located near a water source. There are only two generating stations located in The Apalachee Region. Both of these sites are in Leon County next to the Ochlocknee River, where riverine and lake flooding are controlled by a dam.

TABLE 34

HOSPITALS AND NURSING HOMES LOCATED IN HIGH RISK AREAS
APALACHEE REGION

NAME	COUNTY	TYPE	MANAGEMENT
GEORGE E. WEEMS MEMORIAL HOSPITAL	FRANKLIN	HOSPITAL	PUBLIC
ANEEWAKEE, INC.	FRANKLIN	HOSPITAL	PUBLIC
APALACHICOLA HEALTH CARE CENTER	FRANKLIN	NURSING	N.A.
GULF PINES HOSPITAL	GULF	HOSPITAL	PRIVATE
BAY ST. JOSEPH CARE CENTER	GULF	NURSING	N.A.

TABLE 35

ELECTRICAL FACILITIES LOCATED IN HIGH RISK AREAS
APALACHEE REGION

NAME OF COMPANY	TYPE OF FACILITY	COUNTY
FLORIDA PUBLIC UTILITIES	BLOUNTSTOWN SUBSTATION	CALHOUN
CITY OF BLOUNTSTOWN	N.A.	CALHOUN
FLORIDA POWER CORP.	APALACHICOLA SUBSTATION	FRANKLIN
FLORIDA POWER CORP.	OCHLOCKNEE SUBSTATION	FRANKLIN
FLORIDA POWER CORP.	EASTPOINT SUBSTATION	FRANKLIN
FLORIDA POWER CORP.	BEACON HILL SUBSTATION	GULF
FLORIDA POWER CORP.	PORT ST. JOE SUBSTATION	GULF
FLORIDA POWER CORP.	PORT ST. JOE IND. SUBST.	GULF
GULF POWER CO.	SCHOLZ SUBSTATION	JACKSON
FLORIDA POWER CORP.	JACKSON BLUFF SUBSTATION	LEON
TALQUIN ELECTRIC	LAKE JACKSON SUBSTATION	LEON
FLORIDA POWER CORP.	SEMINOLE ASPHALT	WAKULLA

F. Educational Facilities

Because most educational facilities are owned by local governments, relocation encouragement through land use regulations does not apply. Rather than rebuilding in vulnerable areas, local governments financing the reconstruction of hurricane damaged schools must closely examine other options. Because of their size, schools generally cannot be relocated. When the old facility has outlived its usefulness, land can be obtained for construction of a new unit, while the old structure is rehabilitated and converted to other uses.

G. Custodial Care Facilities

In the Apalachee Region, relocation of custodial care facilities is not a major issue. It is up to various governmental agencies not to locate in regions where they risk hurricane damage.

H. Transportation Facilities

Relocation of transportation facilities is not a major issue in the Apalachee Region. Ports along the coast have to be located in high risk areas, however, there are mitigation techniques that can be enacted by localities to minimize damage to boats. Ports must develop boat tie down policies to immobilize them in

the event of a major storm.

Airports in the region are located inland away from high risk zones. One major bus facility is located in downtown Tallahassee, outside of any flood hazard area.

Conclusion

Governments must closely examine where major public and private facilities are located that provide service to the general public. Hurricane surge and flooding as well as erosion of the land must be closely examined pending development approval for any type structure. Where possible, major facilities should be relocated from barrier islands and the coastal fringe to secure location in the interior of counties. Where this is not possible due to size and cost, A suitable replacement location should be selected, so at the end of the structures life-cycle the new structure has been constructed and is functioning.

FUTURE DEVELOPMENT SITES

People locate along coastlines, rivers and lakes for aesthetic reasons. Local governments are encouraged to guide development toward sites that are both suitable for construction and away from the potential damages that can accompany a hurricane. This section identifies potential sites in the region suitable for the relocation of hurricane vulnerable development.

A. Inland Counties

The greatest threat to inland counties in the event of a hurricane are strong winds. The entire Apalachee region is at risk to hurricane force winds. All structures risk wind induced damage in the region. The enactment of stringent building codes would be more feasible than future development location guidelines in the inland counties.

B. Coastal Counties

Lands vulnerable to hurricane induced flooding need to limit, or halt growth. Storm surge can reprofile coastal lands to the extent of completely removing all structures located there. There are extensive areas in the Apalachee Region susceptible to this form of destruction.

St. George Island, Dog Island and other barrier islands in the region are the most dangerous places to be during a hurricane because they risk being entirely cutoff from assistance for an extended time. Coastal areas such as Wakulla County, that have no barrier islands to buffer some of the storm effects, have the greatest potential for storm surge damage. The surge heights around Panacea and St. Marks under certain storm scenarios may reach as high as 63 feet. All coastal areas in the Region, however, will experience great surge heights depending on the hurricane's intensity, direction of movement and the condition of the tides.

Guiding development away from regions vulnerable to even modest hurricane induced damage is a difficult task. In the coastal counties, especially Wakulla and Franklin, land away from the coast is either under public ownership, or wetlands unsuitable for development. Crawfordville and Wewahitchka are the only communities of modest size located away from the gulf in a coastal county.

Since the region's coastal counties do not have adequate tracts of land to locate future development on, they may have to enact various growth management tools such as density limitations and growth caps.

PUBLIC ACQUISITION OF HIGH HAZARD SITES

Public land acquisition is the only absolute method of preventing development in high hazard areas. This section first identifies the characteristics of high hazard areas. Next, various federal, state and local Government public acquisition programs are reviewed, followed by suggested methods for local governments to obtain private land for public use. Sources of land acquisition funding are than examined, followed by a county by county review of existing land purchasing programs. Finally, a status report of various tracts of coastal lands is analyzed.

A. High Hazard Regions

As previously described, high hazard areas, for purposes of this study, are those regions that risk being inundated by hurricane induced flooding. These lands include barrier islands, coastal areas, land adjacent to river floodplains, and low lying areas.

1. Barrier Islands

Barrier islands undergo the greatest amount of physical change during a hurricane. On many occasions, all structures located on barrier islands can be completely destroyed due to a shift shoreward. Construction on barrier islands is far more risky than developing anywhere on the mainland, because the island can both

receive the storm's initial surge and winds, and experience this physical shift. Due to these dangers, barrier islands should be high on all public acquisition priority lists.

2. Shoreline

Unprotected coastal regions receive the blunt of incoming hurricane intensified surge waters. Depending on the location, hurricanes can be accompanied by a 25-35 foot surge, and waves in some instances that may reach 50 feet. Beach resort areas that locate on the shoreline can be devastated by one hurricane. To prevent the occurrence of this destruction, various acquisition programs should be enacted to keep coastal lands free from development.

3. River Flood Plains

Lands adjacent to rivers are subject to periodic flooding, which may inundate property and displace homeowners. Traditionally in the Apalachee Region inland flooding has not been a major problem. The mouth of rivers such as the Ochlocknee, Apalachicola and Aucilla experience the greatest flooding due to surge, but this report classifies those regions as shoreline. Land adjacent to rivers should rank lower on priority lists for public acquisition than coastal areas. Where there is a chance of flooding, however, local governments should consider stringent land use regulations.

4. Low Lying Areas

There are many low lying areas, excluding coastal areas, in the Apalachee Region. These include areas such as Southern Franklin County, which has extensive wetlands. These regions will likely remain in their natural state because of the unsuitable nature of the land for development. Non coastal low lying areas should be ranked below other high hazard zones on various land acquisition priority lists.

B. Public Acquisition Programs

Acquiring private lands for public use will ensure the land will remain free of development. Land acquisition may be a direct or indirect form of hazard mitigation. Direct methods of hazard mitigation through land acquisition occur when government obtains land specifically to prevent development in a region that is vulnerable to hurricane induced flooding. Indirect hazard mitigation through land acquisition occurs when land is obtained for an alternative use. The alternative use does not allow development to occur, minimizing the worry of hurricane induces structural damage.

There are several methods through which land acquisition may occur. These methods include; eminent domain, purchase of easements, exclusive use regulatory measures, compensation

regulations, tax techniques etc. The source of funding for these acquisition programs depends upon the level of government involvement and the intentions behind the purchase. Under some programs cost may be shared among various combinations of local, state or federal government. Most programs, however, are financed through a specific unit of government. To follow is a profile of state, local and federal land acquisition programs and methods by which they are financed.

1. Federal Programs

Under the provisions of the National Flood Insurance Act of 1968, Section 1362, the Federal Government can acquire flood, or hurricane damaged lands. To be purchased by the Federal Government, land must be covered by the National Flood Insurance Program and meet one of the following criteria:

a. The structure must be damaged beyond repair by flood waters;

b. The structure must have had flood damage on not less than three occasions during a five year period while covered by NFIP. Each time the structure was flooded the cost of repair must have been at least 25% of the total value;

c. Local or State Government law must prevent repair of property from a single storm; and

d. Local or state ordinances permit repair only at a significantly increased cost to the owner.

2. State Acquisition Programs

The majority of Florida's land acquisition programs are indirect methods of hazard mitigation. These programs will purchase undeveloped flood hazard regions that are either environmentally sensitive, or have positive aesthetic value. They are then transformed into recreational areas, or left in their natural state. This form of land acquisition is not directed at hazard mitigation, but restricting development on public lands eliminates potential structural damage in the event of a storm.

In Florida the four major land acquisition programs include the Conservation and Recreational Lands(CARL), Land Acquisition Trust Fund(LATF), Save our Coast(SOC) and Save our Rivers(SOR) program.

a. Conservation and Recreational Lands

The CARL land acquisition program(under 253.023 F.S) is the most active in the State. Environmentally sensitive, ecologically delicate and recreationally desirable are the major categories of land purchased through the program. There are presently over 70 tracts of land on CARL's priority list for land acquisition. These lands may be acquired through outright purchase or eminent domain, some of the tracts in the Apalachee Region include: Wakulla Springs, Wakulla County; Aucilla and

Wacissa Rivers, Jefferson County; and after completion of a boundary design, parts of the Apalachicola Bay Waterfront, which may include Nick's Hole, Cat Point, East Hole, Small Point Bayfront, City of Apalachicola Bayfront, Sike's Cut, designated lower Apalachicola parcels and Gadsden County Glades. Funds for CARL come from an exise tax on the severance of oil, gas, phosphates and minerals.

b. Land Acquisition Trust Fund

Less active than the CARL program, The LATF generally purchases flood prone areas to transform them into recreational sites. The intentions of the trust fund are not aimed at direct hazard mitigation, but in exclusively purchasing shoreline properties, development is kept out of vulnerable areas. The program is administered through the Department of Natural Resources who obtain funds from selling and leasing state resources.

c. Save Our Coasts

Inducing positive coastal growth patterns in the interest of conservation and preservation are the intentions behind the Save our Coasts program. High risk coastal lands often fall into this category. As of the beginning of 1986, 278 acres of the St. Joseph peninsula in Gulf County was the only tract in the Apalachee Region on the SOC priority list. Funding is provided through the Land

Acquisition Trust Fund.

d. Save Our Rivers

The Save our Rivers land acquisition program was developed under section 373.590, F.S. which requires water management districts in Florida to design a priority list directed at purchase of land for water management, supply and conservation. Funds are available through the Water Management Lands Trust Fund.

e. Private Non Profit Land Acquisition Programs

The two principle non profit land purchasers in Florida are the Trust for Public Lands and the Nature Conservancy. These organizations may keep the land they purchase for their own intentions, or sell it to local state or federal government. Purchases are usually oriented toward preservation and conservation instead of hazard mitigation, but governments who obtain land from them may have hazard mitigation intents

3. Local Government Land Acquisition

Because of the limited financial resources of many local governments in the Apalachee Region, local land acquisition programs are generally not feasible. These governments depend upon the well funded state land acquisition programs to protect their high risk lands. This section examines the

various county issues in the region concerning land acquisition.

Calhoun County

Calhoun County has no coastal areas, so land acquisition is not a major issue. The Apalachicola River forms the eastern boundary of the county. Flooding from the river has generally not been a problem in the past, but Blountstown lies in a vulnerable area that could be flooded in the event of a major storm. Although not critical, the County could prohibit Blountstown's further encroachment toward the river floodplain by acquiring land, which may not be possible because of high costs. The County has a large quantity of federally owned land within the Apalachicola Forest where development will not occur.

Franklin County

Franklin County has not had the opportunity to develop a local land acquisition program. As previously mentioned, State and Federal Government has specific interests in the County. St. Vincent, St. George and Dog Island, the Apalachicola River Basin and the Apalachicola National Forest all are owned by either State or Federal Government. Other County lands, being the most fragile in the region, are on priority lists of various land acquisition programs.

Gadsden County

For purposes of hurricane damage mitigation, Gadsden County is in no need of a land acquisition program. There are lakes in the County, however, where development can be flooded under heavy hurricane induced rainfall. The County may wish to acquire some lake and river front property in areas subject to flooding.

Gulf County

There are currently no local land acquisition programs in Gulf County. The Federal Government recently donated Beacon Lighthouse Property, Dead Man's Curve and some property at White City. These properties were acquired as a result of recurring flood damage. Because of the coastal location and vulnerability to storm damage, many State land acquisition programs are interested in Gulf County lands, ranking various properties high on priority lists as previously mentioned.

Jackson County

Being a substantial distance inland, developing a local land acquisition program is not vital to Jackson County. The Apalachicola and Chattahoochee Rivers form the eastern

boundary of the County. This land is currently undeveloped and still can be protected through an acquisition program. Flood probability from the river, however, is minimal.

Jefferson County

Jefferson County, similar to the other counties in the region, has no land acquisition program. the county has five miles of coast all in the St. Marks National Wildlife Refugee, which is protected from development. Most of the land suitable for development in the County is either owned by timber companies, agricultural or under public ownership. The Wacissa River and Aucilla River Sink are two areas ranked high on the priority list of state land acquisition programs.

Leon County

Unlike the rest of the region, Leon County may have the financial resources to participate in a local land acquisition program. In order to obtain private lands the County requests dedications as a part of the subdivision review process. This land is transformed into either public facility siting or a recreational site. Because there are no storm induced flood hazards in the County, a land acquisition program is not required.

Liberty County

Most of the land in Liberty County is either owned by St. Joe Paper Company, or is in the Apalachicola National Forest. With the exception of some areas adjacent to the Apalachicola River, the populated areas of the county are not subject to flood hazards, so land acquisition is not a major concern. The Northwest Florida Water Management District, however, has recently purchased floodplain areas along the Apalachicola River in southern Liberty County.

Wakulla County

Wakulla County, when reviewing construction permits, will often require a dedication of land as a condition for development approval. This allows for growth, but limits its occurrence in high hazard regions. A number of high risk regions in Wakulla County are on land acquisition program priority lists. The state's interest in the county, coupled with the thousands of acres within the Apalachicola National Forest will insure most of the undeveloped high hazard regions in Wakulla will remain that way.

C. Methods of Land Acquisition

In acquiring private land for public use a unit of government must consider time and money. Some techniques are cheaper in the short run, but may be challenged by time

consuming litigation, rendering them cost inefficient. The appropriate method depends upon the individual unit of government and the inherent characteristics of the land. Listed below are the various methods of public land acquisition.

1. Fee Simple Acquisition

Fee simple land acquisition involves the outright transfer of property rights from a private owner to government at market rate or below. There are two methods by which this may be accomplished. First, the owner is given the opportunity to voluntarily sell his property title. If this is not successful the government may acquire the land by the second method, eminent domain. This method is often met with resistance and usually spends substantial time in litigation.

Fee simple land acquisition gives government 100% control of the land. The problem with the acquisition of high hazard coastal land is cost. Obtaining coastal property at existing market rates is usually beyond the financial resources of most local governments. If the local unit of government possesses the financial resources to purchase the property, they often cannot afford maintenance costs that accompany the management of a public accessed area.

2. Leasebacks

Leasebacking is another form of fee simple land acquisition. When a local unit of Government purchases a tract of storm damaged property, they may lease it back to the previous property owner at a low rate, providing he takes into account hazard mitigation measures during reconstruction.

3. Partial Lot Acquisition

Partial lot acquisition grants government complete control of a section of private property, allowing the owner to remain on the rest of the tract. Government will use this method of acquisition to keep development out of either environmentally sensitive areas or lands under the 100-year flood plain. Owners of tracts that have wetlands or land unsuitable for development , on which taxes are paid, are often willing to sell to local governments in order to reduce costs.

D. Financing Land Acquisition

1. Land and Water Conservation Fund

The Land and Water Conservation Fund is administered through the U.S. Department of Interior and Florida's Department of Natural Resources. This program primarily supports the purchase of coastal lands, thus is a direct form of hazard mitigation. The program is funded on a 50%

matching basis between the State and Federal government. Revenues come from user fees at Federal recreational sites, sale of surplus lands, marine fuel tax, and offshore leasing programs.

2. Resource Conservation and Development Program

The Resource Conservation and Development Program is administered through local offices of the Soil Conservation Service. Financial assistance is available for land acquisition if it deals with resource conservation measures. Funds are available through regional branches of the Soil Conservation Service who coordinate with the Florida Department Agriculture on a 50% matching basis with the community.

3. Water Resource Development Funds

The Water Resource Development Funding program is one of few land acquisition financing programs intended for hazard mitigation. Money is channeled through the Corps of Engineers to local governments, aiding them in the purchase of lands located in the floodplain. The eligibility requirements, however, are stringent, making it difficult for local governments to obtain this type of funding. The Corps of Engineers coordinates with both the Florida Department of Environmental Regulation and the directly with the community involved.

4. Florida's Water Management Trust Fund

The Florida Water Management Trust Fund is used for land acquisition by Florida's five Water Management Districts. Monies are obtained from stamp taxes, deeds and land transactions by the Department of Environmental Resources. Lands are purchased primarily for water management purposes, water supply and protection of water resources.

5. Conservation and Recreational Lands Trust Fund

The Conservation and Recreational Lands Trust Fund is set aside for acquisition of lands on the coast near urban sites. The fund is used to protect areas that are marshy, estuarine, in state parks or recreation areas, public beaches, sensitive ecosystems, archaeological sites or state forests.

6. Watershed Protection and Flood Prevention Losses

The Watershed and Flood Prevention Losses financing program is administered through the Farmer's Home Administration. This program assists local governments in acquiring land for flood hazard mitigation. Rock Creek of the Torreya region in Liberty County is ranked 7th on the trust fund's priority list as of the beginning of 1986.

E. Coastal Land Inventory of Franklin and Gulf Counties

Table 35 is a coastal land inventory prepared 6 years ago by the Department of Coastal Zone Studies at the University of West Florida. The intent of the project was to locate coastal property for public acquisition. At the time of the study Wakulla and Jefferson County did not have coastal construction lines, thus are absent from the study. The delineation of these lines preceded the inventory.

The inventory profiles Gulf and Franklin County's ocean-front tracts. The tracts are sized in linear footage and determined to be either developed or undeveloped property. It was also determined if the tracts were publicly owned or not. Several criteria were used to determine priority lists for public acquisition, they included; coastal construction control line impact, erosion, public access, development status, geomorphology and property size. Three parcels in Apalachee were singled out, including Yon's Subdivision, North Cape San Blas and an area just East of Cape San Blas.

Conclusion

An intense public acquisition can be successful in the Apalachee Region because of the abundance of undeveloped coastal lots. Working in the Apalachee Region's favor are the large amounts of undeveloped coastal lots. State and County

TABLE 36

COASTAL LAND INVENTORY OF THE APALACHEE REGION

GULF COUNTY

LOCATION	DEVELOPED	UNDEVELOPED	LINEAR LENGTH	OWNERSHIP
BEACON HILL EAST		X	600'	
BEACON HILL	X		1000'	
BEACON HILL		X	700'	
BEACON HILL	X		200'	
BEACON HILL		X	2500'	
BEACON HILL	X		100'	
YON'S SUBDIVISION		X	2600'	
YON'S SUBDIVISION	X		100'	
E. OF YON'S SUBDIVISION		X	8200'	
ST. JOSEPH STATE PARK			46700'	STATE
S. OF ST. JOS. ST. PARK		X	2600'	
S. OF ST.JOSE. ST. PK.	X		500'	
NORTH OF CAPE SAN BLAS		X	24800'	
CAPE SAN BLAS	X		1700'	
CAPE SAN BLAS			2200'	FEDERAL
CAPE SAN BLAS			1000'	FEDERAL
CAPE SAN BLAS			2000'	FEDERAL
CAPE SAN BLAS			3700'	FEDERAL
E. OF CAPE SAN BLAS	X		1800'	
E. OF CAPE SAN BLAS		X	8400'	
E. OF CAPE SAN BLAS	X		100'	
E. OF CAPE SAN BLAS		X	7200'	
E. OF CAPE SAN BLAS	X		1200'	
INDIAN PENINSULA		X	13200'	
INDIAN PENINSULA	X		1500'	
INDIAN PENINSULA		X	3900'	
FRANKLIN COUNTY				
LITTLE ST. GEORGE ISLAND			14800'	STATE
LITTLE ST. GEORGE ISLAND			29500'	STATE
ST. GEORGE ISLAND CHANNEL			500'	
ST. GEORGE ISLAND		X	20500'	
ST. GEORGE ISLAND	X		19000'	
ST. GEORGE ISLAND		X	11250'	
ST. GEORGE ISLAND STATE PK.			32950	STATE

governments have realized that it is desirable for land in this area to remain in its natural state through land acquisition. Although this is not a direct form of hazard mitigation, it does provide a buffer between hurricane surge and structures. Allowing land to remain in its natural state means large sums of monies are not spent on the revitilization of infrastructure and buildings that may be devastated in the event of a major storm.

GROWTH MANAGEMENT TECHNIQUES

This section examines various growth management tools recommended for use by local governments as a means to promote sound hazard mitigation practices. The analysis will include: police power regulations, compensation programs, financial incentives and disincentives, taxing policies and various other methods to manage growth in coastal areas.

A. Police Power Regulations

Local governments can use their police power, which is the authority to regulate in order to promote the health, safety, welfare and morality of its citizens, in order to control development in high hazard areas. Some communities have faced legal challenges concerning the adoption of certain police power regulations. When government regulations unreasonably preclude a private property owner from all economical use of his land, the landowner may challenge through litigation. Past legal precedent favors land regulations enacted to prevent a public harm. Local governments who deny property owners certain development rights must prove that the restrictions they impose are for the protection of the general public.

Zoning is the most common way by which government regulates private property through police power. The original intent of zoning was to separate incompatible land uses. Lately, governments have utilized zoning as an effective hazard

mitigation tool. Zoning may restrict building densities, heights and land use in sensitive regions such as coastal and floodplain areas.

1. Flood Hazard Zoning

   The hazards of development in a floodplain depend upon the intensity of construction and flood risk of the area. Generally, regulating floodplain development is viewed as preventing a public harm, usually within the bounds of local government authority.

2. Subdivision Regulations

   Through subdivision regulations local governments can monitor the division of large tracts of land into small parcels for development. By enforcing density limits and facility control, local governments can take into account the specific hazard vulnerability of the subdivision and regulate accordingly.

3. Overlay zones

   Overlay zones can be used during times of an emergency as interim regulations prior to the enactment of a revised zoning ordinance. Also known as floating zones, overlay zones are used while officials reexamine and determine the zoning policy of their region.

4. Mixed use Zoning

Mixed use zoning deviates from the traditional zoning pattern by allowing different land use intensities in a single zone. Mixed use zoning can create a clustering effect on coastal developments by combining setback lines and density limitations. Developers are restricted from building within a certain distance of the shoreline in return for lenient density limitations.

B. Compensation Programs

When regulations prevent individual property owners from using their land to its highest economic use, the court may require government to provide compensation. This type of litigation is both costly and time consuming. Courts must determine what rights government and the landowner have, and than determine who has control of the land, and how much compensation is required, if any.

C. Financial Incentives and Disincentives

Since the Federal Government does not have the authority to regulate at the local level they must use indirect methods to control high risk development. The most effective way of encouraging local governments and private citizens to take into consideration hazard mitigation techniques when developing in high risk areas is the carrot and stick approach. Federal government may offer funding, the carrot, in return for local government land use regulation compliance with Federal intents.

The NFIP and CZMA (previously mentioned)are two programs that use incentive techniques to encourage localities to take into account hazard mitigation planning. The NFIP rewards communities who abide by minimum development guidelines through subsidized flood insurance. Under the CZMA, the Federal Government allocates financial assistance to those municipalities who plan their coastlines in accordance with Federal standards.

If local Governments continue to utilize poor hazard planning techniques the Federal Government may enact the stick approach and revoke funding that local governmental entities have become dependent on. Threatening to revoke highway funding is the most common utilization of the stick approach.

1. Incentive Zoning

   Incentive zoning is used as a trade off between local government and developers. Often the developer is allowed to build at increased densities in high risk areas if he allocates land for some type of public benefit. Incentive zoning is primarily used in coastal regions to encourage development far behind the shoreline where structural damage from surge should be minimal. Some incentives the builder may receive in return for compliance are increased residential units per acre, increased floor space, street improvements, additional use types and favorable tax evaluations.

D. Taxing Policies

Taxing programs can be used in a manner similar to the Federal government's carrot and stick approaches at the local level. Tax breaks may be used as a way to discourage developers from building in coastal regions. If a developer, within regulation, ignores local government mitigation desires, local governments can stick him with unfavorable tax burdens. This section details how government can use various taxing methods to encourage effective hazard mitigation.

1. Abatements

Tax abatements are used by a local government in post disaster situations to ease some of the financial burdens of redevelopment. Those who suffer storm related damage can have their taxes reduced for the post hurricane period until they have economically recovered.

2. Exemptions

Tax exemptions are enacted under more critical circumstances than abatements. When tax exemptions are imposed storm damaged lands are eliminated from the tax base. Through exemptions, monies originally intended to go to government can now be used by the property owner to aid in the recovery process.

3. Tax by Hazard Assessment

Tax by hazard assessment is used by local government to levy taxes on properties in relation to their hazard vulnerability. Generally an assessor is hired who imposes taxes based on the properties risk calculation. This technique discourages floodplain development by making it financially unattractive to do so.

4. Tax Increment Financing

Tax increment financing reduces the tax rate of an area that has recently undergone extensive hurricane damage. Local governments will sell bonds and use the money to finance the reconstruction of an area. The debt on increment bonds is eliminated during reconstruction as the tax rate slowly increases slightly above base level.

5. Parcel Development Agreement

Parcel development agreements are exchanges between a property owner and a local unit of government. Generally government will inspect an individuals house and inform him of necessary improvements directed at hazard mitigation that he must undertake before being allocated a tax break.

E. Building Codes

Building codes are enacted to protect the public from poor, unregulated construction. Enforced building codes can also aid in hazard mitigation planning if restrictions are placed in

order to minimize storm damage.

Local governments usually abide by a standardized model building code. Local governments; however, have the option of developing more stringent codes based on the unique characteristics of their locality. Regardless of what code a municipality chooses, it is their responsibility to regulate and enforce the code.

There are various model codes that municipalities may adopt. The Counties of the Apalachee Region generally abide by the Standard Building Code. The use of the code is based upon occupancy, location and type of construction.

The Southern Building Code takes into account appendix m of the Standard Building Code. This is actually an initial effort to address floodplain and high hazard areas within a building code. Under this subsection, buildings in high risk regions must acknowledge high water forces through elevation standards, anchoring standards, construction methods and record certification.

A new code that has yet to be adopted by any of the coastal counties in the Apalachee Region is the Coastal Construction Code(CCC). Unlike standard building codes, the intentions of the CCC are directed at storm loss mitigation. Structures are required to be constructed so as to remain stable under storm

conditions, taking into consideration beach and dune stability. A shortcoming of this code, however, is that it is directed toward barrier islands and does not include coastline behind the islands.

F. Other Techniques

This section details other growth management techniques that can be enacted by local governments as a form of hazard mitigation.

1. Impact Fees

An impact fee is a trade off between a developer and local government. Under normal circumstances a developer is required to donate either land or public facilities such as roads,schools or infrastructure in return for development approval. In high risk areas, however, local government can direct this technique toward hazard mitigation by requiring the developer to assist in the financing of mitigation measures based on the strain the development places on current facilities.

2. Transfer of Development Rights

Transfer of development rights enable a developer to increase construction densities on a receiving area of land by selling the property rights of restricted land. Local government are within the rights of their police power when using the transfer of development rights because the

developer usually takes no loss by selling the property.

3. Public Facilities Location

A local government can encourage development in low risk areas by strategically locating necessary public facilities and limiting their service area. It is more expensive for a developer to generate his own facilities than to use ones provided by the city, so development tends to follow the pattern of city facilities. Locating public facilities in low risk areas will discourage development in and around the flood plains.

4. Special Development Districts

Special development districts attach user fees to new developments planning to use city services and facilities. This enables a city to accommodate growth, yet keeps it in check. Special development districts also use eminent domain, taxing powers and land use controls to limit growth.

5. Hurricane Redevelopment District

A new concept in service district ordinances is the hurricane redevelopment district, used only in high risk areas. Within these districts the County Commission acts as the governing body. They first designate shore and beach preservation districts. Residents within the designated areas are charged up front fees that are earmarked for post storm restoration. This way residents in the lower risk

regions of a municipality will not be burdened with post disaster financing. Funds are also used for eminent domain land acquisition within the designated areas.

6. Sand Dune Regulations

Sand dune regulations inhibit the encroachment of development onto the beach areas of a coast line. Vegetated sand dunes serve as an important buffer between the open ocean and inshore development. Sand dune regulations can reduce the impact from a major storm if they are designed to protect the vegetation and restrict development from within a certain distance.

7. Septic Tank Regulations

After a municipality develops a public facility siting plan, a developer may counter by providing cheaper private services to his residents. A city can discourage developers from locating in the higher risk areas by attaching demanding restrictions on the allocation of various facility licenses. Septic tank regulations are the most common of these restrictions. Making it difficult to obtain a license for the installation of private septic tanks may discourage flood plain development

G. Implementation Legislation

Recent Florida legislation has attempted to address hazard

mitigation through numerous programs. These programs are designed to insure local governments are abiding by State and Federal desires, thus are effective at implementing hazard mitigation.

1. Local Government Comprehensive Planning and the Coastal Management Element

   Recent growth management legislation requires local governments to enact strict hazard mitigation policies. The Coastal Management Element of a region's Comprehensive Plan is one of the primary tools used to guide development in coastal areas. The Coastal Management Element is to address the following subjects.

   a. A map of areas subject to coastal flooding.
   b. An analyses of the environmental, socioeconomic, and fiscal impact of development and redevelopment proposed in the future land use plan, including required infrastructure on natural historic coastal resources, along with measures designed to minimize or eliminate adverse impacts.
   c. Principles for hazard mitigation, including consideration of the population density subject to possible evacuation as proposed in the future land use plan.
   d. Principles for protecting existing beach and dune systems from man induced erosion, as well as restoring altered beach and dune systems.

e. Designation of high hazard coastal areas subject to destruction or severe damage from natural disasters, for which limitations on state expenditures will be imposed.

f. Principles providing financial insurances that adequate public facilities will be in place to meet the demand imposed by development and redevelopment.

g. Identification of regulatory and management techniques, either adopted or proposed for adoption, to mitigate the threat to human life,control development and redevelopment, give consideration to cumulative impacts, and protect the coastal environment.

2. Coastal Construction Program

The Coastal Construction Program(CCP) is designed to control development seaward of the mean high water line(MHWL). All construction seaward of this line is subject to strict regulation based on the project's proximity to the MHWL. As stated in chapters 161 and 403, F.S. anyone wishing to undertake any type of development seaward of the mean high water line, must seek approval from the Department of Natural Resources. The permitting requirements are identified in the Florida Administrative Code.

a. Coastal Construction Control Line

The Coastal Zone Protection Act of 1985 requires local municipalities bordering waterfronts to design a standardized building code for developments within the

coastal building zone, defined as the land area from the seasonal high water-line to 1500 feet landward of the coastal construction control line(CCCL) on mainland areas, and 5000 feet on barrier islands. The zone for areas, like the Big Bend Area, with no CCCL consists of property seaward of the most landward portion of the velocity zone. Within this region all structures must be able to withstand 110 mph wind speeds at 30 feet off the ground, be above the flood zone and foundations must be able to survive wave, erosion and scourage forces that would accompany a 100 year storm.

3. Developments of Regional Impact

The development of regional impact process allows State and Regional authorities to closely monitor projects of large magnitude. Through the DRI process the developer is required to take into account all of the adverse effects his development proposal will have on the surrounding region before he is granted development approval. DRI's can be an important hazard mitigation tool if the development order requires the builder to take into account the surge and flood risk as well as the hurricane evacuation issues of his property. Coastal construction projects, however, are generally under the DRI threshold, therefore mitigation regulations are far less stringent.

4. Areas of Critical State Concern

A region whose preservation is of absolute necessity concerning conservation of the state's natural resources, may be designated as an Area of Critical State Concern by the State of Florida. In these regions local governments are delegated regulation enforcement. If the local government does not regulate up to state standards they lose their governing authority over the region.

In the Apalachee region, Apalachicola bay is an area that has been designated one of Critical State Concern. Restrictions imposed on the area will insure that coastal development will remain minimal, reducing the potential of storm related structural damage.

CONCLUSION

The appropriate growth management tool concerning hazard mitigation depends upon the specific County and the site within that County. Land use planning techniques can deter development from high hazard areas, and thus prevent structural damage. Most of the Apalachee Region is undeveloped, so growth can be continually checked and guided in a manner that takes into account the real threat that hurricanes are to the area.

COUNTY MITIGATION MEASURES

This section details the various ongoing hazard mitigation measures for each county in the Apalachee Region as stated in their Comprehensive Land Use Plan and Comprehensive Emergency Management Plan.

A. Calhoun County

Calhoun County does not have a Comprehensive Emergency Management Plan. The vulnerability to hurricane induced damage in the county is minimal, so the drafting of the plan is not critical.

Calhoun County is not forecasted to experience very much future growth. This coupled with the fact that a great deal of property is either publicly owned, or under paper company jurisdiction, means the County does not need to expend funds on enforcing ordinances concerning hazard mitigation. The only protective measures on-going in Calhoun County are the requirements set forth by the the NFIP.

B. Franklin County

The Franklin County Clerk of the Court is in charge of Emergency Management Administration. Due to the limited budget of the county, the Clerk is only available on a part time

basis. His primary responsibilities include interpretation and execution of the guidelines and policies of the Franklin County Comprehensive Emergency Management Plan, which is the basic format the County must follow under pre and post hazard conditions. According to the County Emergency Management Plan, assembled by DCA, the following agencies are charged with the corresponding functions concerning hazard mitigation:

1. County Commission:
   a. Restrict building in the 100 year flood zone through limited permit issuance;
   b. Instruct the Department of Planning and Zoning to maintain and update maps of all flood-prone areas; and
   c. Monitor and control density of development in areas which may have evacuation problems.

2. Office of Civil Defense:
   a. Act as the primary agency for mitigating hurricane associated hazards in the county;
   b. Keep the most current 100 year flood zone maps available for review;
   c. Provide information to the Department of Planning and Zoning on the associated hazards in Franklin County in order to limit potential damage to persons and property; and
   d. See that hazard-related public information is disseminated to the general public in a timely manner.

3. Franklin County Planning, Zoning and Building Department:
   a. Enforce building codes; and
   b. Review development for compliance with coastal setback criteria and building standards.

Franklin County has imposed several regulations directed toward hazard mitigation. Some of the major ones include the following:

a. Coastal density restrictions;
b. Encouragement of vegetation planting on sand dunes, which will increase stabilization;
c. Discourage the location of schools and public facilities along the coast;
d. Compliance with the minimum requirements set forth by the NFIP, including elevation of minimum floor-space at least two feet above base flood elevation, and all structures must be able to withstand 140mph winds;
e. Strict mobile home tie down specifications, and the restriction of mobile homes from velocity zones;
f. No recreational vehicles in sand dune areas; and
g. No development approval for developments with more than 20% of impervious service.

Franklin County has been recognized by various forms of government as being both an environmentally delicate area and extremely susceptible to hurricane induced damage. The State of

Florida has recently designated most of the county as one of critical state concern. The Federal Government has taken notice as well, transforming a large portion of Apalachicola Bay into a National Sanctuary. The accompanying rules and regulations associated with these designations will limit development, minimizing the possibility of structural damage in the event of a major hurricane.

C. Gadsden County

Gadsden County is still in the process of developing a Hazard Mitigation Annex as part of their Comprehensive Emergency Management Plan. The county has a part time Emergency Management Director who would be the one responsible for hazard mitigation related activities.

The Gadsden County Comprehensive Land Use Plan is in the revision and update phase. On-going hazard mitigation measures include the following:

a. Requirements set forth by the regular phase of the NFIP;
b. Subdivision regulations;
c. Enforcement of the Southern Standard Building Code; and
d. Review of all proposed development based on criteria contained in an informally adopted land development code.

D. Gulf County

Gulf County's Emergency Management Plan has been in effect since March 1985. The plan designates hazard mitigation responsibilities as belonging to the County Commission in conjunction with the Gulf County Civil Defense. The Council is currently working on site specific hazard mitigation plans and studies.

The Gulf County Comprehensive Plan, adopted in 1974, lays down the following mitigation measures:

a. Subdivision regulations and zoning restrictions during the development review process;
b. Enforcement of the Southern Standard Building Code; and
c. No mobile homes within the city of Port St. Joe.

The contents of the plan do not address effective hazard mitigation policies. The plan lacks a Coastal Zone Element, Recreation and Open Space Element, Future Land Use Element and a Utilities Element.

There are various other ongoing hazard mitigation policies in the county including:

a. Implementation of regulations associated with the Coastal Control Line which consists of six miles of mainland coast; and

b. Meeting of requirements as designated by the regular phase of the NFIP.

E. Jackson County

Jackson County has yet to develop a Comprehensive Emergency Management Plan. Jackson was the county in the region not under disaster declaration during the two hurricanes (Kate and Elena) of 1985. Because Jackson County is not vulnerable to the blunt of hurricane induced damage, innovative mitigation related regulations are not critical.

F. Jefferson County

The Jefferson County Comprehensive Emergency Management Plan, assembled by DCA, designates the hazard mitigation responsibilities of local agencies as follow:

1. County Commission:
   a. Restrict building in the 100 year flood zone through limited permit issuance;
   b. Instruct the Office of Building, Planning and Zoning to maintain and update maps of all flood prone areas; and
   c. Monitor and control density of development in areas which may have evacuation problems.

2. Office of Civil Defense:
   a. Act as the primary agency for mitigating hurricane associated hazards in Jefferson County;
   b. Keep the most current 100 year flood-zone maps available for review;
   c. Provide information to the Office of Building, Planning and Zoning to the associated hazards in Jefferson County in order to limit potential damage to persons or property; and
   d. See that hazard related public information is disseminated to the general public in a timely manner.

3. Office of Building, Planning and Zoning:
   a. Enforce building codes;
   b. Review development for compliance with set back criteria and building standards.

Jefferson County's Comprehensive Land Use Plan does not adequately address hazard mitigation. On-going landuse regulations in the county dealing with hazard mitigation include:

a. Subdivision regulations;
b. Individual development review for compliance;
c. Regulatory requirements of the regular phase of the NFIP; and
d. Set-back line of 100 feet along the Aucilla River.

G. Leon County

Leon County is well ahead of the rest of the region in emergency management. According to the Leon County Comprehensive Emergency Management Plan, hazard mitigation functions are the responsibility of the Department of Disaster Preparedness. The duties of the department include policy development, education and hazard mitigation information. They can also make recommendations concerning zoning and building codes.

The Tallahassee-Leon County Comprehensive Plan takes into account hazard mitigation. Guidelines laid down by the plan, and other on-going hazard mitigation measures taking place in the county include the following:

a. Subdivision regulations;
b. Storm water management ordinance;
c. Sign regulations(size,height and location);
d. Tree protection ordinances; and
e. Requirements set forth by the regular phase of the NFIP.

H. Liberty County

The Emergency Management Plan for Liberty County, assembled by DCA, details the various agencies in the county involved in hazard mitigation and their responsibilities. These agencies

and their corresponding responsibilities are as follow:

1. County Commission:
   a. Restrict building in the 100 year flood zone through limited permit issuance;
   b. Instruct the Office of Building, Planning and Zoning to maintain and update maps of all flood prone areas; and
   c. Monitor and control density of development in areas which may have evacuation problems.

2. Office of Civil Defense:
   a. Act as the primary agency for mitigating hurricane associated hazards in Liberty County;
   b. Keep the current 100 year flood-zone maps available for review;
   c. Provide information to the Office of Building, Planning and Zoning to the associated hazards in Liberty County in order to limit potential damage to persons or property; and
   d. See that hazard related public information is disseminated to the general public in a timely manner.

3. Office of Building, Planning and Zoning:
   a. Enforce building codes;
   b. Review development for compliance with set back criteria and building standards.

Most of the land in Liberty County is rural in nature, with large tracts belonging to the National Forest and paper companies. The primary hazard mitigation measures within the County would be the requirements of the regular phase of the NFIP.

I. Wakulla County

The Hazard Mitigation Annex of the Wakulla County Comprehensive Emergency Management Plan, assembled in 1985, extensively addresses hazard mitigation. According to the Issue and Policy Development section of the Annex, The Director of Disaster Preparedness is to coordinate the overall effort to address hazard mitigation in Wakulla County. The Director's responsibilities include the following:

1. Work closely with the Florida Division of Emergency Management and other agencies whose responsibilities effect the success and implementation of hazard mitigation measures;
2. Assist in identifying problems with existing regulations or practices regarding community growth and development to avoid or reduce disaster potential from natural or manmade hazards;
3. Notify the Division of Emergency Management of problems affecting Wakulla County and if necessary, suggest

appropriate local and stated legislation to reduce the risk of life and property in areas where hazards reoccur; and

4. The local Director will work closely with state, regional and other agencies to effectively use the resources and their expertise necessary to address hazard mitigation. State, regional and local efforts will be accomplished through the Interagency Management Committee. The IMC in concert with its advisory arm, the Interagency Advisory Committee , will act as the interagency coordinative body in planning and directing hazard mitigation actions and programs.

The Hazard Mitigation Annex of the County Emergency Management Plan lists the tasks of the various County agencies concerning hazard mitigation, they include:

1. The County Building Official will assure that zoning requirements and limitations are consistent with anticipated hazards;
2. The County Attorney will stress the importance of proper legal measures employed prior to hazard situations;
3. The offices of Disaster Preparedness and building Official will stress the need of adequate insurance coverage;
4. The local Red Cross representatives and the Department of Disaster Preparedness will review designated evacuation shelters that will be made available for various hazard

situations;

5. The Office of Disaster Preparedness will maintain a checklist of resources that are available for various hazardous conditions;
6. The Building Official and the Director of Disaster Preparedness will see that informative programs are initiated in stressing hazard mitigation;
7. The Director of the Department of Disaster Preparedness will assist in the development of state, regional and local hazardous mitigation policies affecting the several communities within the jurisdiction;
8. The Office of Disaster preparedness will solicit the assistance of private agencies such as insurance contractors and others in the community who could assist in recognizing hazardous problems;
9. The Director will assume the responsibility of bringing to the attention of policy makers issues and programs affecting local growth and development;
10. The Director will encourage appropriate legislation at the local level to reduce the risk of life and property in areas vulnerable to the impacts of predictable, recurring hazards;
11. The Office of Disaster Preparedness will maintain a current file of local past and anticipated hazards; and
12. The Director will request state assistance in matters pertaining to hazard mitigation beyond the capability of local government.

The Hazard Mitigation Annex of the Wakulla County Emergency Management Plan states that hazard mitigation assessment in the county will consist of a four step process including a: Community Analysis, Emergency Analysis, Mitigation Needs Assessment and a Mitigation Strategy Development. Following is a summary of these four steps:

1. Community Analysis

   A community checklist of potential hazards and their effects on future changes should be examined. Review of this checklist is necessary to identify other emergencies or hazards that will have their future existence in the community.

2. Emergency Analysis

   Emergency analysis involves examining the nature and effect of hazards when they become emergencies. This involves the type of emergency the hazard caused, the affected population by impact, and health, and the impact on the property and the economy of the region.

3. Mitigation Needs Analysis

   The mitigation Needs Analysis is used to illustrate the opportunity for improving public health and safety by preventing, avoiding or protecting people and property from a disaster.

4. Mitigation Strategy Development

Developing a mitigation strategy involves selecting from all the available resources and techniques that exist in the community.

Aside from the Emergency Management Plan, Wakulla County enacted a Comprehensive Land Use Plan in 1978 which includes the following mitigation measures:

a. Coastal Zone Protection Element identifying the boundary of the coastal zone.
b. Coastal zoning restrictions.
c. Subdivision regulations, related to hazard mitigation.

Other ongoing hazard mitigation policies in Wakulla County include:

1. A set back of 50 feet from the mean high water line for all coastal construction;
2. Coastal zone construction standards as prescribed under the Coastal Zone Protection act of 1985; and
3. Building requirements as set forth under the regular phase of the NFIP.

POLICY

This section examines region-wide mitigation policies to guide future development and post hurricane redevelopment in areas vulnerable to hurricane induced damage.

The Apalachee Regional Policy Plan fails to include hazard mitigation guidelines, so there are no adopted goals and guidelines. The following section includes recommended guideline policies that should be incorporated into the Regional Policy Plan, Local Comprehensive Plans and Peacetime Emergency Management Plans.

OBJECTIVE

To provide various hazard mitigation recommendations that local governments should consider depending on there relative location and specific hazard vulnerability. These recommendations, if implemented effectively, will decrease the probability of structural damage, increase the safety factor of the population, and keep periods of public service disruptions to a minimum in the event of a major hurricane.

The Plan

A. New Development should:

   a. Be discouraged from occurring in high risk areas;

   b. If in high risk areas be elevated one foot above the minimum requirement of the NFIP;

   c. Keep the floor space below the first floor of elevated structures free from enclosure;

   d. Be able to withstand the wind forces of a category three hurricane; and

   e. Be part of an integrated hurricane evacuation and shelter plan.

B. Hurricane reconstruction should:

   a. Be reassessed so not to be victim of recurring structural damage;

   b. If possible be relocated to a lower risk area;

   c. Be removed from city services if rebuilt in the same manner;

   d. Elevated higher, and built to withstand stronger hurricane forces than those that caused the initial damage;

   e. Be placed under more stringent growth management guidelines such as building codes and zoning regulations; and

   f. Be in compliance with existing land use regulations, even if a variance had been granted prior to the storm.

C. Local governments should:

a. Develop comprehensive land use plans that adequately address hazard mitigation through growth management techniques;

b. Finish their Peacetime Emergency Management Plan which should cover goals and duties of those involved with hazard mitigation;

c. Participate in the regular phase of the National Flood Insurance Program and enforce its residents to abide by its minimum requirements;

d. Develop innovative ways to provide salaries to officials such as planners, building inspectors and full time civil defense directors who can implement the intent of local Comprehensive Land Use Plans;

e. Establish minimum criteria levels by which new development may degrade current evacuation routes, and base building permit issuance on that criteria;

f. Adopt building codes which require structures to maintain themself in a category 3 hurricane;

g. Establish interlocal agreements directed at maintaining the level of service for existing evacuation routes, mutual assistance to provide shelter space depending on the County affected and providing recovery assistance to one another based on need;

h. Improve public awareness of the potential dangers of regional hazards and the necessary steps to prevent

structural repair costs in the event of the occurrence of that hazard;

i. Discontinue public services to storm damaged areas to prevent redevelopment in high risk regions;

j. Establish a public acquisition priority list, and present it to State and Federal land acquisition program authorities accompanied by the criteria used to establish this list;

k. Relocate public facilities out of vulnerable zones. This will discourage development from locating in high risk areas;

l. Enforce the requirements of various statewide programs that restrict development in flood hazard areas through growth management tools such as subdivision regulations, setback lines, TDR's and zoning ordinances. These programs include the Coastal Construction Control Line Program, the Coastal Zone Protection Act, Coastal Building Zone, Florida's Beach Management and Erosion Control Program, Coastal Barrier Executive Order, and the Coastal Barrier Infrastructure Policy;

m. Establish a plan that enables the provision of temporary housing and establishment of disaster field offices and application centers to occur in a timely manner in the aftermath of a major storm;

n. Redevelop hurricane damaged facilities in high risk areas only to serve predisaster densities;

o. Enforce both impact fee payments to developers who lower the level of service for existing transportation networks, and fair-share payments to developers who degrade existing transportation standards;

p. Establish density standards in all flood hazard areas;

q. Monitor existing DRI's, if applicable, and report any deviations from the development order that would negatively effect the local hazard mitigation intents to the appropriate authoritative agency;

r. Prohibit septic tanks from the 100-year flood plain.

s. Develop and implement tree and vegetation ordinances which encourage native species to enhance sand accumulation and stabilization; and

t. Not allow unrecorded subdivisions to be developed within their community.

D. Development on barrier islands should:

a. Have density limitations enforced;

b. In no way alter the vegetation on sand dunes, nor the dune itself;

c. Not be serviced by any public facilities; and

d. If permitted, be landward of setback lines and elevated in compliance with minimum criteria established by the NFIP.

E. Individual homeowners should:

a. Be aware of community hazard mitigation policies, and comply with them;

b. Abide by local construction standards, such as building codes and elevation guidelines;

c. Be aware of the location of DACs and DFOs as well as local shelters and evacuation routes; and

d. Participate in public hearings dealing with local land use regulations, so they may have a say in community hazard mitigation.

F. Developers should:

a. Elevate structures in the 100-year flood plain to comply with FEMA criteria;

b. Ensure pilings are placed far enough into the ground and steel reinforced;

c. Comply with local land use regulations; and

d. Dedicate shelters or improve evacuation systems prior to the completion of any project estimated to burden existing shelter space, or degradade the level of service of evacuation routes.

G. Mobile homes should:

a. Be adequately tied down and securely anchored;

b. Be located out of designated V zones as depicted on NFIP maps; and

c. Be apart of an integrated evacuation and shelter plan.

There are several other mitigation policies that have been mentioned in previous sections. If properly implemented these policies allow communities to locate in medium risk areas, yet greatly reduce personal injury and structural damage.

FINAL CONCLUSION

When comparing the potential monetary losses resulting from hurricane induced destruction in the Apalachee Region with the rest of the state, the numbers appear small. This is a very misleading statistic when one considers the economic condition of the residents in the area. The population in Apalachee lacks the financial resources to adequately recover from structural damage that can occur during a major storm.

Utilization of effective hazard mitigation techniques can prevent the stress on the limited finances of the Apalachee residents. If growth in the region is directed away from high risk areas, and mitigation practices are utilized on existing structures, than the disaster potential in Apalachee can be substantially lessened, minimizing recovery time and the need for post disaster assistance.

APPENDIX A

The Three Periods of the Hurricane Recovery Process

Immediate Emergency Period

The immediate emergency period begins at storm strike and continues up to a few days after the storms arrival. During this period emergency rescue operations are undertaken, which may include immediate medical assistance, shelter provision and food allocation. In catastrophic storms there may be many casualty victims. In this event extensive search and rescue operations will be undertaken.

Immediate assistance activities are carried out through an Emergency Operations Center within each county during this primary phase. State Emergency Response teams working along side local government emergency groups allocate immediate emergency supplies though these centers. Disaster Field Offices take over the functions of these emergency centers once a disaster declaration is made.

Short Term Restoration Period

The short term restoration period begins a few days after storm strike and may continue for up to a month. During this period the disaster field office serves as the primary disaster

assistance center in each County under disaster declaration. When the president declares a region as a major disaster area, a greater variation of assistance programs are available out of the field offices. Field offices process damage assessment reports and coordinate the allocation of various assistance programs to disaster stricken areas.

Disaster Assistance Centers are set up shortly after the field office has been established in counties under the President's disaster declaration. These centers are set up in buildings that are easily accessible by the public. The DACs accept application for disaster victims throughout the short range restoration period.

Long Range Reconstruction Period

The long range reconstruction period lasts until the stricken area is restored to pre hurricane condition. Most of the programs listed in the Federal Program Assistance section of the report are enacted during this period such as construction and removal of major structures. After this period the region usually has reobtained its social and economic stability.

Within 180 days of the President's disaster declaration all state and local governments must submit a Hazard Mitigation Plan to the FEMA Regional Director. The Hazard Mitigation Plan must consist of a complete analysis of all damage that resulted

from the previous storm. The plan must also contain a hazard mitigation annex which reviews strategies for the enactment and implementation of storm mitigation measures. All future disaster assistance is conditioned on the rationality of the Hazard Mitigation Plan.

APPENDIX B

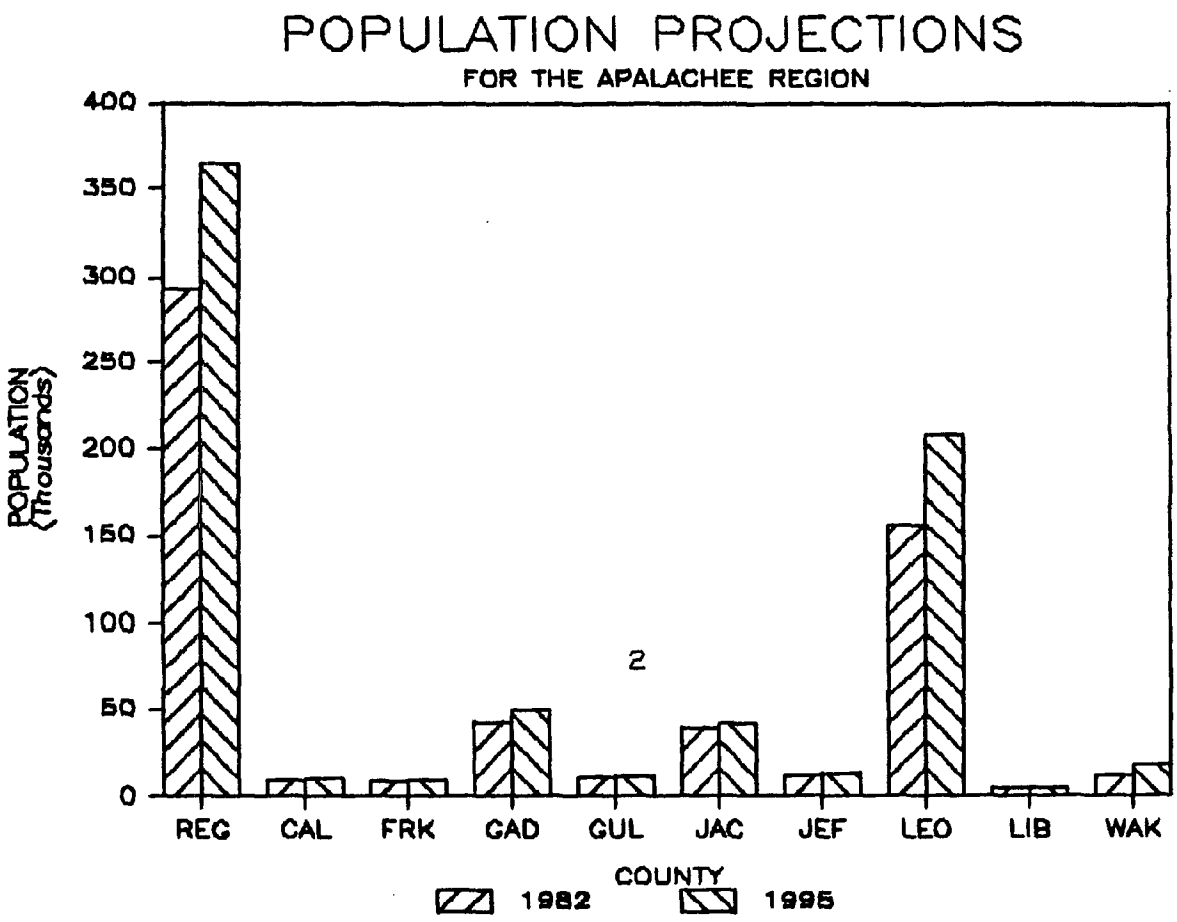
Population Projections for the Apalachee Region

Expected population growth in the Apalachee Region, ranges from slow in Calhoun, Franklin, Gulf, Jackson and Liberty Counties moderate in Gadsden and Jefferson Counties; to fast in Leon and Wakulla Counties. Local officials have to be aware of population projections in order to prepare an effective hazard mitigation plan for their area.

POPULATION PROJECTIONS
APALACHEE REGION

COUNTY	1982	1995
REGION	292,713	364,000
CALHOUN	9,270	9,600
FRANKLIN	7,894	9,000
GADSDEN	42,707	49,100
GULF	10,712	11,400
JACKSON	39,657	41,500
JEFFERSON	10,993	13,200
LEON	156,043	208,400
LIBERTY	4,353	4,800
WAKULLA	11,084	17,000

GRAPH 2


POPULATION PROJECTIONS
FOR THE APALACHEE REGION
POPULATION (Thousands)
400
350
300
250
200
150
100
50
0
REG
CAL
FRK
GAD
GUL
JAC
JEF
LEO
LIB
WAK
COUNTY
1982
1995

APPENDIX C

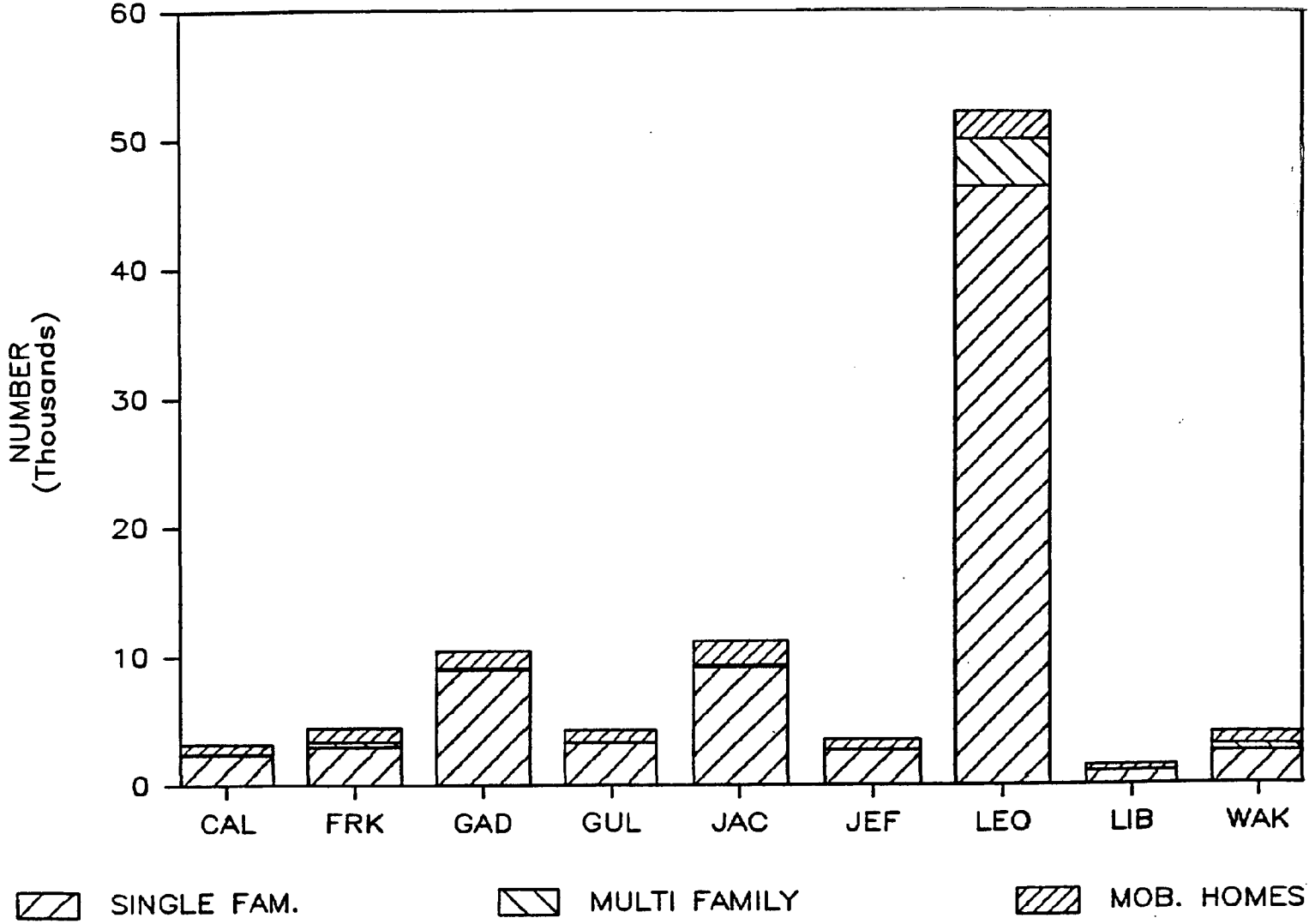
VULNERABLE HOUSING UNITS IN THE APALACHEE REGION

COUNTY	SINGLE FAMILY	MULTI FAMILY	MOBILE HOME	TOTAL
CALHOUN	2,355	75	760	3,190
FRANKLIN	2,987	380	1,110	4,477
GADSDEN	8,928	130	1,330	10,388
GULF	3,316	38	943	4,297
JACKSON	9,120	155	1,852	12,121
JEFFERSON	2,700	10	800	3,500
LEON	46,328	3,683	2,172	52,183
LIBERTY	980	52	448	1,480
WAKULLA	2,515	515	966	3,996

GRAPH 3

VULNERABLE HOUSING UNITS

APALACHEE REGION



APPENDIX D

The Saffir Simpson scale, developed by Dr. Herbert Saffir and Dr. Robert Simpson, is used to categorize hurricanes based on their intensity. The scale ranges from 1 to 5, 1 being of moderate strength and five being a catastrophic storm. The following is an assessment of the categories and storm characteristics.

Category 1-

Winds from 74 to 95 miles per hour. Can cause debris from blown vegetation and tree branches. Mobile homes that are poorly anchored may be damaged. Surge waters can inundate coastal roads

Category 2-

Winds from 96 to 110mph. Damage may be in the form of tree fall, fallen signs and mobile home destruction. Storm surge can peak at 12 feet, inundating coastal evacuation routes.

Category 3-

Winds from 111 to 139mph. Damage to masonry homes, signs, mobile homes and buildings. Coastal structures may be

destroyed, including roads, bridges and public facilities. Surge will destroy boats, docks, marinas in addition to eroding beaches.

Category 4-

Winds range from 131 to 155 mph. Roofs, windows and doors of homes may be completely destroyed. Mobile homes will also be destroyed. An eighteen foot storm surge in some areas may create extensive flooding as far as 10 miles inland. Beaches are greatly modified, and total evacuation of all coastal residents is required.

Category 5-

Winds 155mph+. Catastrophic damage to residential, commercial and industrial structures. Total evacuation of all population within 10 miles of the coast.

The Saffir Simpson Scale is used to categorize hurricanes based on their intensity. The scale ranges from 1 to 5, one being of moderate strength and five being a catastrophic storm. The Saffir Simpson Scale was developed by Herbert Saffir and Dr. Y Robert Simpson. The following is an assessment of the categories and the detriment accompanying it.

Category 1 -

Winds from 74 to 95 miles per hour. Can cause debris dislodging in the form of vegetation and tree branches. Mobile homes that are poorly anchored may be damaged. Surge waters can inundate coastal roads.

Category 2 -

Winds up to 110 mph. Damage in the form of tree fall, signs and mobile home destruction. Surge can peak at about 12 feet, inundating evacuation routes.

Category 3 -

Winds up to 130 mph. Damage to masonry homes, signs, mobile homes and buildings. Coastal structures will be destroyed, including roads and homes. Surge will destroy evacuation routes and marinas.

Category 4 -

Winds as high as 155 mph. Roofs, windows and doors of homes can be destroyed. All mobile homes completely uninhabitable. 18 foot storm surge may create extensive flooding as far as 10 miles inland. Beaches may be eroded. Total evacuation of

all coastal residents is required

Category 5 -

Winds 155mph+. Catastrophic damage to residential, commercial and industrial structures. Total evacuation of all population within 10 miles of the coast.

SAFFIR/SIMPSON HURRICANE SCALE

CATEGORY	SURGE (FT.)	WIND SPEED	DAMAGE
1	4-5	74-95	MINIMAL
2	6-8	96-110	MODERATE
3	9-12	111-130	EXTENSIVE
4	13-18	131-155	EXTREME
5	18+	155+	CATASTROPHIC

BIBLIOGRAPHY

Apalachee Regional Planning Council. Apalachee Region Hurricane Loss Study. September, 1986.

Apalachee Regional Planning Council. Hurricane Evacuation Guide to Decision Making. 1984.

Apalachee Regional Planning Council. Hurricane Evacuation Plan. 1984.

Bureau of Economic and Business Research. 1985 Florida Statistical Abstract. University of Florida Press.

Coastal Area Planning and Development Commission. A Coordination, Educational Model for Disaster Preparedness in Coastal Areas. September, 1980.

Coastal Area Planning and Development Commission. Storm Preparedness Planning Guide. April, 1984.

Coastal Resources Interagency Advisory Committee Working Group. Hurricane Post Disaster Case Study for Franklin County, Indian Rocks Beach and Cedar Key. January 13, 1986.

Coastal Zone Studies at the University of West Florida. Comprehensive Erosion Control and beach Preservation and Hurricane Protection Plan for the State of Florida. 1984.

Federal Emergency Management Agency. A Guide to Hurricane Preparedness Planning For State and Local Officials. December, 1984.

Federal Emergency Management Agency. Digest of Federal Disaster Relief Programs. 1982.

Federal Emergency Management Agency. Federal Disaster Assistance Programs Volumes 1,2,5,6,11.

Federal Emergency Management Agency. Flood Insurance Study For Franklin County. January, 1984.

Federal Emergency Management Agency. Flood Insurance Study For Gulf County. December, 1982.

Federal Emergency Management Agency. Flood Insurance Study for Wakulla County. June, 1986.

Federal Emergency Management Agency. Flood Insurance Study for Leon County. June, 1982.

Federal Emergency Management Agency. Guide For Flood Preparedness Planning. Febuary, 1983.

Federal Emergency Management Agency. Perspectives on Hurricane Preparedness Techniques in Use Today. October, 1984.

Florida Census of Housing. 1984.

Florida Department of Community Affairs, Division of Emergency Management, Bureau of Planning. Post Disaster Hazard Mitigation Plan For FLorida. 1986.

Florida Department of Community Affairs, Division of Emergency Management Natural Disaster Section. Final Post-Disaster Hazard Mitigation Plan. July, 1984.

Florida Department of Community Affairs, Division of Local Resource Planning. A local Officials Guide to Assessing Development in the Floodplain.

Florida Department of Community Affairs, Division of Local Resource Management. Floodplain Management in Florida. November, 1974.

Florida Department of Community Affairs, Division of Local Resource Management. State Temporary Housing Plan Procedures Manual. December, 1979.

Florida Department of Community Affairs, Division of Public Safety and Planning Assistance. Hurricane Hazard Mitigation at the Local Level. October, 1980.

Florida Department of Community Affairs, Division of Public Safety and Planning Assistance. State of Florida Integrated Hurricane Evacuation Plan and Hazard Mitigation Program. 1982.

Florida Department of Community Affairs, Division of Resource Planning and Management. Selective Public Acquisition of Flood-prone Land and Structures in a Post Flood Situation. January, 1986.

Franklin County. Comprehensive Emergency Management Plan. September, 1985.

Gadsden County. Gadsden County Comprehensive Emergency Management Plan. January, 1987.

Handmer John. The Identification of High Hazard Floodplain Areas for Possible Public Acquisition. 1985.

Jefferson County. Comprehensive Emergency Management Plan. December, 1985.

Kellogg, Landon. Planning and Managing Land Use in Developed Coastal Flood Hazard Areas. June, 1984.

Liberty County. Comprehensive Emergency Management Plan. June, 1986.

National Oceanic and Atmospheric Administration, Office of Coastal Zone Management. Methods For Redevelopment of Dauphin Island After Frederick. December 20, 1979.

Northeast Florida Regional Planning Council. Northeast Florida Hurricane Loss and Contingency Planning Study. December, 1985.

Rubin, Claire B. Natural Disaster Recovery Planing For Local Officials. November, 1979.

Salmon, Jack & Henningsen, Don. Prior Planning for Post Hurricane Reconstruction. January, 1987.

South Florida Regional Planning Council. South Florida Hurricane Contingency Planning Study. June, 1987.

Southwest Florida Regional Planning Council. Hurricane Loss Study 1984, Mitigation and Assistance. 1984.

Tampa Bay Regional Planning Council. Tampa Bay Regional Hurricane Loss and Contingency Planning Study. October, 1983.

United States Department of Commerce, Office of Ocean and Coastal Resource Management. Preparing for Hurricanes and Coastal Floods. March, 1983.

United States Department of the Interior, Office of Water Resource and Technology. A Process For Community Floodplain Management. November, 1979.

United States Department of the Interior, Report to Congress. Coastal Barrier Resources System. March, 1987.

Wakulla County Dept. of Emergency Preparedness. Wakulla County Peacetime Emergency Management Plan. 1986.

West Florida Regional Planning Council. Hurricane Loss and Contingency Study. December, 1985.